

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

for

PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE BASED 150 TPD
WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT

at

M/s. SATIA INDUSTRIES LIMITED

(Unit No.: 2), Village RUPANA, DIST. MUKTSAR, PUNJAB

LAND/PLOT AREA: 145763 m²

[ToR LETTER NO: No.J-11011/196/2014-IA-II(I) DATED: 22nd June 2016]

STUDY PERIOD: 1st MARCH 2016 TO 31st MAY 2016

[Category 5 (i)-"A" Pulp & paper industry excluding manufacturing of paper from waste
as per EIA Notification, 2006]

Public Hearing was conducted on 19.10.2016 at Project Site, Muktsar, Punjab



Project Proponent:



SATIA INDUSTRIAL LIMITED
Village Rupana, Dist. Sri
Muktsar sahib, Punjab-152032

Environmental Consultants:



ECO CHEM SALES & SERVICES
Office Floor, Ashoka Pavilion-A,
New Civil Road, Surat- 395 001

April – 2017



National Accreditation Board for Education & Training Quality Council of India



CERTIFICATE OF ACCREDITATION

M/s Eco Chem Sales & Services

Ashoka Pavilion-A, Opp. Kapadia Health Club, New Civil Road, Surat – 395001, Gujarat

is hereby accorded accreditation under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations (Version 3, September 2015) for the following scope:

Sl.No.	Name of the Sector	Cat.
1	Mining of minerals including Open cast/ Underground mining	A
2	Offshore and onshore oil and gas exploration, development & production	A
3	Thermal power plants	A
4	Metallurgical industries (ferrous & non-ferrous) – both primary and secondary	A
5	Cement plants	B
6	Chemical Fertilizers	B
7	Pesticides industry and pesticide specific intermediates (excluding formulations)	A
8	Textile – cotton and manmade fibers	B
9	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	A
10	Pulp & paper industry excluding manufacturing of paper from wastepaper and manufacture of paper from ready pulp without bleaching	A
11	Oil & gas transportation pipeline (crude and refinery/ petrochemical products), passing through national parks/ sanctuaries/ coral reefs/ ecologically sensitive Areas including LNG terminal	A
12	Isolated storage & handling of hazardous chemicals (As per threshold planning quantity indicated in column 3 of Schedule 2 & 3 of MSIH Rules 1989 amended 2000)	A
13	Common hazardous waste treatment, storage and disposal facilities (TSDFs)	A
14	Ports, harbours, jetties, marine terminals, break waters and dredging	B
15	Highways, Railways, transport terminals, mass rapid transport systems	A
16	Common Effluent Treatment Plants (CETPs)	B
17	Building and large construction projects including shopping malls, multiplexes, commercial complexes, housing estates, hospitals, institutions	B

Name of approved EIA Coordinators & Functional Area Experts are given in minutes of AC Meeting dated Dec. 16, 2015 posted on QCI website.

Accreditation to the above Sectors is subject to the EIA reports being prepared by the experts (EIA Coordinators & Functional Area Experts) mentioned in the above minutes and compliance to the Terms and Conditions of Accreditation.

Certificate No: NABET/EIA/1417/ SA 2 002

Valid Up to: March 10, 2017

C.E.O.



(Please refer <http://nabet.qci.org.in/environment/for/latest>)

Note

- Subject to continual compliance to NABET Scheme including Surveillance Assessment
- Updated status of accreditation available at www.qcin.org every 5th of the month



Eco Chem Sales & Services

DECLARATION

I



**National Accreditation Board
for Education and Training**
(Member of International Accreditation Forum
and Pacific Accreditation Cooperation)

QCI/NABET/EIA/ACO/17/02/0269

February 15, 2017

Eco Chem Sales & Services

Office Floor, Ashoka Pavillion-A,

Opp. Kapadia Health Club,

New Civil Road, Surat – 395001

(Kind Attention: Ms. Rekha Shah)

Sub: Validity of Accreditation as EIA Consultant organisation- Eco Chem Sales & Services

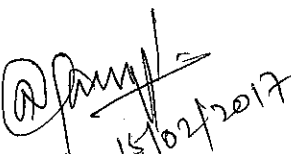
Dear Sir,

This has reference to the accreditation of your organization under QCI-NABET EIA Scheme, the validity of **M/s Eco Chem Sales & Services** is hereby extended till August 15, 2017 or completion of assessment process, whichever is earlier.

The above extension is subject to the submission of required information/documents related to assessment on time to NABET.

You are requested not to use this letter after expiry of the above stated date.

With best regards,


A.K Jha 15/02/2017
Senior Director | NABET



DECLARATION

Declaration by experts contributing to the EIA Report for "Proposed Modernization from Waste Paper to Agro Residue Based 150 TPD Writing & Printing Paper and 12.5 MW Co-Gen Power Plant" Project at Unit No.: 2, Village Rupana, Dist. Muktsar, Punjab.

"I, hereby, certify that I was a part of the EIA team in the following capacity that developed this Report".

EIA COORDINATOR

Name : Mrs. Rekha Shah


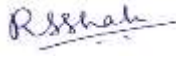

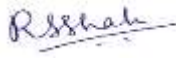
Signature & Date : 
24/04/2017


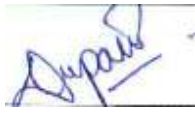

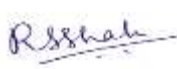
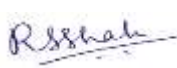
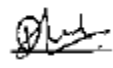

Sector No. : 24

Period of involvement : Jan- 2016 to August - 2016

Contact Information : Eco Chem Sales & Services, Office Floor, Ashoka Pavilion-A, Opp. Kapadia Health Club, New Civil Road, Surat, India-395 001
Landline No.: +91-261-2231630

FUNCTIONAL AREA EXPERTS

Functional Areas	Name of the Expert	Involvement (Period & Task**)	Signature & Date
Land Use (LU)	Mr. Nirzar Lakhia	Period of Involvement: Feb 2016- Dec 2016 Tasks: Supervision in development of landuse maps of study area using GIS / related tools, site visit for ground truth survey, finalization of landuse maps, contribution to EIA documentation	
Air Pollution Prevention, Monitoring & Control (AP)	Mrs. Rekha Shah	Period of Involvement: Feb 2016- Dec 2016 Tasks: Site visits followed by selection of monitoring locations, Supervision of air quality monitoring, Identification of impacts on Air quality, suggesting mitigation measures and contribution to EIA documentation	
Meteorology, Air Quality Modeling & Prediction (AQ)	Mr. Sanjeev Sharma	Period of Involvement: Feb 2016- Dec 2016 Tasks: Evaluation of meteorological data with collected secondary data, modeling and prediction, identification of impacts, finalization of mitigation measures and contribution to EIA documentation	
Water Pollution Prevention, Control & Prediction of Impacts	Mrs. Rekha Shah	Period of Involvement: Feb 2016- Dec 2016 Tasks: Site visit & supervision & checking of sampling locations for surface water & Ground water samples & their analysis results, identification of impacts,	

Functional Areas	Name of the Expert	Involvement (Period & Task**)	Signature & Date
(WP)		evaluation of water pollution control management, finalization of mitigation measures and contribution to EIA documentation	
Ecology and Bio-diversity Conservation (EB)	Mrs. Dipti Patel	Period of Involvement: Feb 2016- Dec 2016 Tasks: Site visit and conduct of ecological survey, assessment of the impacts of proposed project activities on the biological environment and contribution to EIA documentation	
Noise & Vibration (NV)	Mrs. Dipti Patel	Period of Involvement: Feb 2016- Dec 2016 Tasks: Checking of noise sampling results, analysis of data, identification of impacts and mitigation measures, and contribution to EIA documentation	
Socio-economic (SE)	Dr. Harshit Sinha	Period of Involvement: Feb 2016- Dec 2016 Tasks: Site visit and collection of secondary and primary from the surrounding area/villages of the proposed project. for impact identification and mitigation measures for incorporating to EIA documentation	
Hydrology, Ground Water and Water Conservation (HG)	Mrs. Rekha Shah	Period of Involvement: Feb 2016- Dec 2016 Tasks: Understanding and representing groundwater conditions, supervision of groundwater sampling locations, finalization of survey findings, identification of impacts, suggestion of mitigation measures and contribution to the EIA documentation	
Geology (GEO)	Mrs. Rekha Shah	Period of Involvement: Feb 2016- Dec 2016 Tasks: Geology and geomorphologic analysis based on secondary data, analysis of the data collected, contribution to EIA documentation	
Risk Assessment & Hazard Management (RH)	Mr. Dhaval Jhaveri	Period of Involvement: Feb 2016- Dec 2016 Tasks: Identification of impacts & mitigation measures, safety during construction and operational phase and contribution to EIA documentation	
Solid waste and Hazardous Waste Management (SHW)	Mrs. Rekha Shah	Period of Involvement: Feb 2016- Dec 2016 Tasks: Identification of waste generated from the site, studying adequacy of mitigation measures for management of hazardous waste and contribution to EIA documentation	

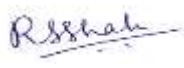




EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT No.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Declaration by the Head of the Accredited Consultant Organization:

I, Rekha Shah, hereby, confirm that the above mentioned experts prepared the "EIA / EMP and RA/DMP for Proposed Modernization from Waste Paper to Agro Residue Based 150 TPD Writing & Printing Paper and 12.5 MW Co-Gen Power Plant at Unit No.: 2, Village Rupana, Dist. Muktsar, Punjab". I also confirm that Eco Chem shall be fully accountable for any mis-leading information mentioned in this statement.

Signature : 

Name : Rekha Shah

Designation : CEO

Name of the EIA Consultant Organization : Eco Chem Sales & Services, Surat

NABET Certificate Number : NABET/EIA/1417/SA 2 002

UNDERTAKING BY CONSULTANTS



ECO CHEM
SALES & SERVICES

POLLUTION CONTROL CONSULTANT,
ENGINEERS & CONTRACTORS

Dated: 19/01/2017

To,
The Member Secretary,
Ministry of Environment, Forest & Climate Change,
Indira Paryavaran Bhavan,
Jor Bagh Road,
New Delhi – 110003

Subject: Undertaking on the compliance of Terms Of Reference issued by the MoEF&CC, New Delhi for proposed modernization from waste paper to agro residue based 150 TPD writing & printing paper and 12.5 MW co-gen power plant at M/s. SATIA INDUSTRIES LIMITED (Unit No.: 2), Village Rupana, Dist. Muktsar, Punjab

Reference: MoEF & CC office memorandum vide letter J-11011/196/2014-IA-II(I) Dated: 22nd June 2016

Respected Sir,

We hereby give you an undertaking that the Terms Of Reference (ToR) issued by the MoEF&CC, New Delhi for carrying out Environmental Impact Assessment (EIA) & Environmental management Plan (EMP) studies for proposed modernization from waste paper to agro residue based 150 TPD writing & printing paper and 12.5 MW co-gen power plant at M/s. SATIA INDUSTRIES LIMITED (Unit No.: 2), Village Rupana, Dist. Muktsar, Punjab.

Yours Sincerely,

ECO CHEM SALES & SERVICES







EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT No.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

UNDERTAKING BY PROJECT PROPONENT

An ISO 9001, 14001 & OHSAS 18001 company

 **SATIA INDUSTRIES LIMITED**

Manufacturer of Quality
Writing, Printing & Speciality
Paper with ECO MARK 

Undertaking letter for Owing EIA & EMP report

SIL:HR:2017 **January 20, 2017**

The Member Secretary,
Ministry of Environment, Forest & Climate Change,
Indira Paryavaran Bhavan,
JorBagh Road,
New Delhi – 110003

Subject: Undertaking letter for ownership of EIA and EMP and other documents of proposed modernization from waste paper to agro residue based 150 TPD writing & printing paper and 12.5 MW co-gen power plant at M/s. SATIA INDUSTRIES LIMITED (Unit No.: 2), Village Rupana, Dist. Muktsar, Punjab

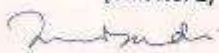
Reference: MoEF & CC office memorandum vide letter J-11011/196/2014-IA-II(I) Dated: 22nd June 2016

Respected Sir,

We hereby give you an undertaking for owing the contents and information provided in EIA and EMP report submitted to MoEF&CC, New Delhi for Environmental Clearance for proposed project with proposed modernization from waste paper to agro residue based 150 TPD writing & printing paper and 12.5 MW co-gen power plant at Village Rupana, Dist. Muktsar, Punjab

Yours Sincerely,

Satia Industries Ltd.
(Unit No. 2)


(R.K. Bhandari)
Director

Registered Office & Mill : Village: Rupana, Sri Muktsar - 152 032, Punjab, INDIA. Ph.: 262001, 262215, 263585 Fax : 01633-263499 email: satiaho@gmail.com
Branch : 613-615, Naurang House, 21, K.G. Marg, Connaught Place, New Delhi-110001 Ph.: 23710351/52/53 Fax: 23718191 e-mail : satiapaper@rediffmail.com
Branch : S.C.O. No. 90 - 92, Sector 8 - C, Madhya Marg, Chandigarh - 160018 Ph. : 0172-2760022/23, 4618377 Fax : 0172-4648606 : satiaindustriesltd@gmail.com
Branch : 364, Navjeevan Complex, 29, Station Road, Jaipur-302006, Rajasthan Ph. : 2371055, 2379554 Fax : 0141-2374433 e-mail : satiapaper.jpr@gmail.com

CONTENTS

1	INTRODUCTION	1
1.1	PURPOSE OF THE REPORT	1
1.2	IDENTIFICATION OF PROJECT & PROJECT PROPONENT	1
1.2.1	<i>Proposed Project.....</i>	<i>1</i>
1.2.2	<i>Project Proponent.....</i>	<i>1</i>
1.3	BRIEF DESCRIPTION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY & REGION ..2	
1.3.1	<i>Brief Description of the Project.....</i>	<i>2</i>
1.3.2	<i>Importance of Project to the Country and the Region</i>	<i>3</i>
1.4	OBJECTIVES OF THE EIA STUDY	4
1.5	PURPOSE OF EIA STUDY.....	5
1.6	STRUCTURE OF REPORT	5
1.7	REGULATORY FRAMEWORK	5
1.7.1	<i>Statutory Applicable to the Company.....</i>	<i>6</i>
1.8	SCOPE OF THE STUDY	6
2	PROJECT DESCRIPTION	16
2.1	TYPE OF PROJECT.....	16
2.2	NEED FOR THE PROPOSED PROJECT.....	16
2.3	LOCATION OF THE PROJECT	16
2.3.1	<i>Location map.....</i>	<i>16</i>
2.3.2	<i>Site connectivity</i>	<i>19</i>
2.3.3	<i>Industrial Activity in Study Area.....</i>	<i>19</i>
2.4	RESOURCE REQUIREMENTS	21
2.4.1	<i>Land Requirement</i>	<i>21</i>
2.4.2	<i>Man Power</i>	<i>23</i>
2.4.3	<i>Electricity (Both Unit No. 1 & Unit No. 2)</i>	<i>23</i>
2.4.4	<i>Utilities.....</i>	<i>23</i>
2.4.5	<i>Capital Cost</i>	<i>23</i>
2.4.6	<i>Water.....</i>	<i>24</i>
2.4.7	<i>Transportation of Raw Materials.....</i>	<i>25</i>
2.4.8	<i>Storage of Raw Materials, Chemicals and Disaster Prevention</i>	<i>25</i>
2.4.9	<i>Energy Efficiency</i>	<i>25</i>
2.5	RAW MATERIALS & PRODUCTS.....	25
2.5.1	<i>Storage details for raw material and chemicals:.....</i>	<i>27</i>
2.6	PAPER MANUFACTURING PROCESS AND ITS MODERNIZATION	28
2.6.1	<i>Paper Manufacturing Process.....</i>	<i>28</i>
2.6.2	<i>Stock Preparation</i>	<i>33</i>
2.6.3	<i>Paper Making.....</i>	<i>33</i>
2.6.4	<i>Converting & Finishing.....</i>	<i>33</i>
2.7	POLLUTION POTENTIAL.....	34
2.7.1	<i>Water Pollution</i>	<i>34</i>
2.7.2	<i>Air pollution.....</i>	<i>35</i>
2.7.3	<i>Solid/ Hazardous Waste.....</i>	<i>36</i>
2.7.4	<i>Noise Pollution</i>	<i>36</i>
2.8	CONSENT TO AIR, WATER AND HAZARDOUS WASTE AND ITS COMPLIANCE	37
3	DESCRIPTION OF THE ENVIRONMENT	38





3.1	INTRODUCTION.....	38
3.2	APPROACH & METHODOLOGY OF BASELINE STUDY.....	38
3.2.1	Study Area.....	38
3.2.2	Study Period.....	38
3.2.3	Sampling Location.....	38
3.2.4	Frequency of Sampling.....	38
3.2.5	Method of Sampling and Analysis.....	38
3.3	LANDUSE.....	39
3.3.1	Data Sets.....	39
3.3.2	Methodology.....	39
3.3.3	Framework of Landuse Mapping.....	39
3.4	BASELINE ENVIRONMENT.....	41
3.4.1	Topography.....	41
3.4.2	Geology & Seismology.....	42
3.4.3	Land use Pattern.....	42
3.5	METEOROLOGY.....	43
3.5.1	Temperature.....	44
3.5.2	Ambient Air Quality.....	55
3.5.3	Traffic Density.....	59
3.5.4	Hydrology.....	60
3.5.5	Water Quality.....	64
3.5.6	Soil.....	64
3.5.7	Noise.....	68
3.5.8	Ecology.....	69
3.5.9	Socio-Economic Status.....	72
4	ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES.....	77
4.1	INTRODUCTION.....	77
4.2	IDENTIFICATION OF ENVIRONMENTAL IMPACTS.....	77
4.3	ANTICIPATED ENVIRONMENTAL IMPACTS DURING CONSTRUCTION PHASE.....	77
4.3.1	Matrix Representation.....	77
4.3.2	Air Environment.....	79
4.3.3	Water Environment.....	80
4.3.4	Soil Environment.....	81
4.3.5	Noise Environment.....	82
4.3.6	Solid/Hazardous Waste.....	82
4.3.7	Risk & Hazards.....	82
4.3.8	Socio Economic.....	83
4.3.9	Other Environmental Area.....	83
4.4	ANTICIPATED ENVIRONMENTAL IMPACTS DURING OPERATION PHASE.....	83
4.4.1	Matrix Representation.....	84
4.4.2	Air Environment.....	84
4.4.3	Air Quality Predictions through Mathematical Modeling.....	86
4.4.4	Water Environment.....	92
4.4.5	Soil Environment.....	92
4.4.6	Noise Environment.....	92
4.4.7	Solid/Hazardous Wastes.....	93
4.4.8	Risk & Hazards.....	93
4.4.9	Socio-Economic.....	93
4.4.10	Other Environmental Area.....	93

4.5	SUMMARY	94
5	ANALYSIS OF ALTERNATIVES.....	95
5.1	ANALYSIS OF ALTERNATIVES	95
6	ENVIRONMENTAL MONITORING PROGRAM.....	96
6.1	INTRODUCTION.....	96
6.2	NEED FOR ENVIRONMENTAL MONITORING.....	96
6.3	MONITORING PLAN & PROGRAM	96
6.4	AIR ENVIRONMENT.....	96
6.5	NOISE ENVIRONMENT.....	98
6.6	WATER ENVIRONMENT	99
6.7	LAND ENVIRONMENT.....	100
6.8	INFRASTRUCTURAL REQUIREMENT	101
6.9	ENVIRONMENT MANAGEMENT CELL	101
6.10	CURRENT & PROPOSED PRACTICES FOR ENVIRONMENT PROTECTION	101
6.10.1	<i>Handling of Raw Materials and Mitigation Measures</i>	<i>101</i>
6.10.2	<i>Risk Assessment and Damage Control</i>	<i>101</i>
6.10.3	<i>Compliance to the recommendations of CREP guidelines.....</i>	<i>101</i>
6.11	CONCLUDING REMARKS.....	102
7	ADDITIONAL STUDIES.....	104
7.1	INTRODUCTION.....	104
7.2	PUBLIC CONSULTATION	104
7.2.1	<i>Public Hearing Advertisement</i>	<i>104</i>
7.2.2	<i>Public Hearing Photographs.....</i>	<i>105</i>
7.3	ENVIRONMENT INFORMATION CENTRE (EIC) STUDY.....	109
7.4	HYDRO GEOLOGICAL STUDY.....	109
7.4.1	<i>Lithologs.....</i>	<i>109</i>
7.4.2	<i>Hydrogeology.....</i>	<i>110</i>
7.4.3	<i>Management of the Aquifer.....</i>	<i>110</i>
7.4.4	<i>Presence of aquifer in the study area</i>	<i>111</i>
7.4.5	<i>Management plan for recharging the aquifer.....</i>	<i>111</i>
7.4.6	<i>Ground water modeling showing the pathways of the pollutants.....</i>	<i>111</i>
7.4.7	<i>Column leachate study for all types of stockpiles or waste disposal sites.....</i>	<i>115</i>
7.4.8	<i>Impact of ground water withdrawal on the surrounding area, ground water table and impact of treated waste water usage for irrigation.....</i>	<i>116</i>
7.4.9	<i>Geological features and Geo-hydrological status of the study area</i>	<i>116</i>
7.5	RISK ASSESSMENT AND SAFETY MANAGEMENT.....	117
7.5.1	<i>Objective, Philosophy and Methodology of Risk Assessment.....</i>	<i>117</i>
7.5.2	<i>Introduction</i>	<i>118</i>
7.5.3	<i>Hazardous material, process & safety.....</i>	<i>119</i>
7.5.4	<i>Safety Measures for Transportation, Storage & Handling</i>	<i>119</i>
7.6	OCCUPATIONAL SAFETY & HEALTH PROGRAM.....	121
7.6.1	<i>Construction and Erection</i>	<i>121</i>
7.6.2	<i>Operation and Maintenance.....</i>	<i>121</i>
7.6.3	<i>Hospital Facilities.....</i>	<i>122</i>
7.6.4	<i>Factory Medical Officer.....</i>	<i>122</i>
7.6.5	<i>Ambulance Van.....</i>	<i>122</i>
7.6.6	<i>First Aid Box.....</i>	<i>122</i>





7.6.7	Periodic Medical Examination.....	122
7.6.8	Management Plan for Occupational Health & Safety.....	122
7.7	FIRE FIGHTING SYSTEM AND EMERGENCY MANAGEMENT	124
7.7.1	Fire fighting system.....	124
7.7.2	Emergency Management.....	125
7.8	RISK ASSESSMENT STUDY.....	126
7.9	HAZARD IDENTIFICATION	126
7.9.1	Hazard Assessment and Evaluation.....	127
7.9.2	MCA Scenarios and Consequences Analysis.....	129
7.10	ONSITE EMERGENCY PLAN AND DISASTER MANAGEMENT PLAN	140
7.11	OFFSITE EMERGENCY PLANS.....	146
8	PROJECT BENEFITS	149
8.1	PHYSICAL INFRASTRUCTURE	149
8.2	SOCIAL INFRASTRUCTURE	149
8.3	EMPLOYMENT POTENTIAL.....	152
8.4	DIRECT REVENUE EARNING TO THE NATIONAL & STATE EXCHEQUER	153
8.5	OTHER TANGIBLE BENEFITS.....	153
9	ENVIRONMENTAL COST BENEFIT ANALYSIS.....	154
9.1	ENVIRONMENTAL COST BENEFIT ANALYSIS.....	154
10	ENVIRONMENTAL MANAGEMENT PLAN.....	155
10.1	INTRODUCTION.....	155
10.2	OBJECTIVE OF EMP	155
10.3	ENVIRONMENTAL MANAGEMENT PLAN	155
10.3.1	Construction Phase	155
10.3.2	Operation Phase.....	156
10.3.3	Odour Control Plan.....	167
10.3.4	Noise Pollution	168
10.3.5	Greenbelt Development Plan	169
10.3.6	Rainwater Harvesting System	169
10.3.7	Rainfall.....	170
10.4	ECOLOGICAL PROTECTION & CONSERVATION PLAN	176
10.5	OCCUPATIONAL HEALTH & SAFETY MANAGEMENT.....	176
10.6	CLEANER PRODUCTION	176
10.7	CORPORATE ENVIRONMENT POLICY	177
10.7.1	Standard operating procedure and Hierarchy.....	177
10.7.2	Hierarchy	177
10.8	BUDGETARY ALLOCATION FOR ENVIRONMENT PROTECTION	178
11	SUMMARY AND CONCLUSION	179
11.1	ABOUT THE PROJECT PROPONENT	179
11.2	PLANT LOCATION AND ITS SURROUNDINGS	179
11.3	PROJECT HIGHLIGHTS.....	180
11.4	PRODUCTS AND RAW MATERIALS	181
11.5	PAPER MANUFACTURING PROCESS AND ITS MODERNIZATION.....	182
11.5.1	Pulping Process.....	183
11.5.2	Environment Friendly Bleaching Process	184

11.5.3	Stock Preparation	185
11.5.4	Paper Making.....	186
11.5.5	Converting & Finishing.....	186
11.6	POWER SUPPLY	186
11.7	ENVIRONMENTAL IMPACTS AND MITIGATIVE MEASURES.....	187
11.7.1	Impact on Air Environment and Mitigative Measures.....	187
11.7.2	Impact on Water Environment and Mitigative Measures.....	188
11.7.3	Impact on Soil Quality.....	188
11.7.4	Impact due to Noise.....	189
11.7.5	Land Use Pattern.....	189
11.7.6	Impact on Terrestrial Flora & Fauna	189
11.7.7	Impacts on the Socio-Economic Environment.....	190
11.7.8	Capital Cost.....	190
11.8	ENVIRONMENTAL MANAGEMENT	190
11.8.1	Environmental Management Group	190
11.8.2	Green Belt / Landscape Development.....	190
11.8.3	Corporate Environment Policy.....	191
11.9	PUBLIC CONSULTATION	191
11.10	CONCLUDING REMARKS.....	191
12	DISCLOSURE OF CONSULTANTS	192
12.1	INTRODUCTION	192
12.2	LABORATORY INVOLVED FOR BASELINE MONITORING AND OTHER ANALYSIS	192
12.3	TEAM MEMBER FOR EIA REPORT	192





LIST OF ANNEXURE

Annexure 1: A copy of TOR letter from MoEFCC	194
Annexure 2: Land Possession Documents with Survey Numbers	201
Annexure 3: NOC copy for Unit No. 2 (70 TPD)	210
Annexure 4: A copy of NOC for Unit No. 2 (70 TPD to 150 TPD)	214
Annexure 5: CSA clearance and NOC copy for Unit No. 2 for 150 TPD agro based paper manufacturing	218
Annexure 6: Water Supply Permission Letter	239
Annexure 7: (Undertaking) elemental chlorine free bleaching	241
Annexure 8: Hazardous waste Consent	242
Annexure 9: Compliance to Air and water Consents	246
Annexure 10: EC copy obtained from CSA cum SCA	254
Annexure 11: Raw data of 12 weeks AAQ	257
Annexure 12: Environmental Information Centre (EIC) Report	265
Annexure 13: Details of Fire Equipments and Hydrants	274
Annexure 14: Material Safety Data Sheet	276
Annexure 15: Safety and Health policy (under Factories Act, 1948) of Satia Industries Ltd	284
Annexure 16: Health Record of workers	287
Annexure 17: MoU for Waste Disposal	295
Annexure 18: Location map of Project Site	303
Annexure 19: Environment Policy	304
Annexure 20: Questionnaire for Environmental Appraisal	305
Annexure 21: Photographs	323
Annexure 22: Public Hearing Proceeding	331
Annexure 23: Certified EC Compliance Report	374
Annexure 24: Photographs of CSR activities	376

LIST OF TABLES

Table 1-1: List of Director.....	2
Table 1-2: Brief Description of the Project	2
Table 1-3: Compliance with the Terms of Reference	6
Table 2-1: Co-ordinates of the Project Boundary.....	17
Table 2-2: Site Connectivity.....	19
Table 2-3: Salient Features of the Proposed Site.....	19
Table 2-4: List of Industry around Satia Industries Ltd. Mukatsar (PB.)	20
Table 2-5: List of Brick Kilns Units in Study Area (Source: Distt. Industries Centre, Muktsar, Punjab)..	21
Table 2-6: Requirement of fuels before and after modernization	23
Table 2-7: Break-up of Cost for the proposed modernization.....	23
Table 2-8: Product profiles in the existing and proposed unit.....	26
Table 2-9: Raw Materials Requirement for Plant (Unit No. 2)	26
Table 2-10: Sources of effluent with existing quantity and quantity after modernization	35
Table 2-11: Characteristics of stacks of various boilers.....	35
Table 2-12: Quantity of solid and hazardous waste before and after modernization.....	36
Table 3-1: Land use Pattern of Study Area.....	43
Table 3-2: Climatological Normal Data – Air temperature (Source : Handbook of Indian Meteorological Deptt.)	44
Table 3-3: Daily Variation of Meteorological Parameters for the month of March, 2016.....	44
Table 3-4: Daily Variation of Meteorological Parameters for the month of April, 2016	45
Table 3-5: Daily Variation of Meteorological Parameters for the month of May, 2016	47
Table 3-6: Climatological Data - Rainfall & Humidity (Source : Handbook of Indian Meteorological Deptt.)	48
Table 3-7: Climatological Normal Data - Wind Flow Pattern	49
Table 3-8: Rainfall Data (2000-2011) (Source: Tehsil Muktsar, Punjab)	50
Table 3-9: Percentage Frequency Distribution of Wind Blowing from Different Directions during March, 2016	51
Table 3-10: Percentage Frequency Distribution of Wind Blowing from Different Directions during April, 2016	52
Table 3-11: Percentage Frequency Distribution of Wind Blowing from Different Directions during May, 2016	52
Table 3-12: Percentage Frequency Distribution of Wind Blowing from Different Directions during Study Period	52
Table 3-13: Ambient Air Quality Monitoring Stations in Study Area.....	55
Table 3-14: Ambient Air Quality Monitoring for PM ₁₀ & PM _{2.5}	57
Table 3-15: Ambient Air Quality Monitoring for SO ₂ & NO _x	57
Table 3-16: Ambient Air Quality Monitoring for CO	58
Table 3-17: Traffic on Road of Malout to Muktsar.....	59
Table 3-18: Traffic on Roads of Muktsar to Malout.....	60
Table 3-19: Water Sampling Locations	61
Table 3-20: Ground water quality of study area	62
Table 3-21: Surface water quality of study area.....	63
Table 3-22: Soil Sampling Locations in the Study Area	64
Table 3-23: Physical and Chemical Characteristics of Soil in the Study Area	66
Table 3-24: Noise Measurement at different Locations in the Study Area	68
Table 3-25: General Standards for Ambient Noise Levels (As Per Schedule III of G.S.R 1063(E), MOEF (1993)	69
Table 3-26: List of Floral Species in the Study Area (Source: Divisional Forest Office, Faridkot, Muktsar)	70





Table 3-27: List of Fauna Encountered in the Study Area (Source: Divisional Forest Office, Faridkot, Muktsar)	71
Table 3-28: Demographic Profile in the villages situated in study area of the project site	75
Table 3-29: Status of Public Amenities in the villages located in study area	76
Table 4-1: Impact Identification Matrix (During Construction Phase)	78
Table 4-2: Severity Criteria for Magnitude of Impacts	78
Table 4-3: Score range for beneficial and adverse impacts.....	78
Table 4-4: Environmental Impact Matrix without Mitigation Measures (During Construction Phase)	79
Table 4-5: Impact and Mitigation Measures on Air Environment.....	79
Table 4-6: Impact and Mitigation Measures on Water Environment	80
Table 4-7: Impact and Mitigation Measures on Soil Environment	81
Table 4-8: Impact and Mitigation Measures on Noise Environment.....	82
Table 4-9: Impact and Mitigation Measures for Solid/ Hazardous Wastes.....	82
Table 4-10: Impact and Mitigation Measures for Risk & Hazards	82
Table 4-11: Impact and Mitigation Measures for Socio Economic.....	83
Table 4-12: Environmental Impact Matrix with Mitigation Measures (During Construction Phase)	83
Table 4-13: Impact Identification Matrix (Operation Phase)	84
Table 4-14: Environmental Impact Matrix Without Mitigation Measures (During Operation Phase)	84
Table 4-15: Impact and Mitigation Measures on Air Environment	85
Table 4-16: Stack Characteristics and Emission Loads	88
Table 4-17: Cumulative concentrations for SPM, NOx and SO2	89
Table 4-18: Impact and Mitigation Measures on Water Environment.....	92
Table 4-19: Impact and Mitigation Measures on Soil Environment.....	92
Table 4-20: Impact and Mitigation Measures on Noise Environment.....	92
Table 4-21: Impact and Mitigation Measures for Solid/ Hazardous Wastes	93
Table 4-22: Impact and Mitigation Measures for Risk & Hazards	93
Table 4-23: Impact and Mitigation Measures on Socio Economic conditions.....	93
Table 4-24: Environmental Impact Matrix with Mitigation Measures (During Operation Phase)	94
Table 6-1: Proposed Air Quality Monitoring Schedule	97
Table 6-2: Monitored Stack Emission Characteristics	98
Table 6-3: Proposed Noise Quality Monitoring Schedule.....	98
Table 6-4: Work place monitoring in the industrial premises	99
Table 6-5: Biogas and combined ETP approximate analysis range after modernization	99
Table 6-6: Proposed Water Quality Monitoring Schedule for ETP	100
Table 6-7: Compliance to the Charter on CREP for large Pulp and Paper industry	101
Table 7-1: Time bound action plan of the issues raised during public hearing and reply by PP	106
Table 7-2: Lithology of tube well no. 1 constructed at the study area	110
Table 7-3: Properties of storage chemicals used at the mill	119
Table 7-4: Properties of Hazardous Chemical.....	119
Table 7-5: Raw Material Storage, Handling and Transportation	120
Table 7-6: Work place monitoring in the industrial premises	123
Table 7-7: Health evaluation of workers	124
Table 7-8: Preliminary hazard analysis for process and storage areas	128
Table 7-9: Preliminary hazard analysis for the whole plant in general	129
Table 7-10: Threshold values of the Hazardous Chemicals.....	131
Table 7-11: Atmospheric Condition Assumed	131
Table 7-12: Threat zone of Evaporating Puddle for H ₂ O ₂	132
Table 7-13: Threat zone of Evaporating Puddle for H ₂ O ₂	133
Table 7-14: Threat zone of toxic gas concentration (AEGL Value).....	134
Table 7-15: Hazards and its control measures for Hydrogen Peroxide.....	135

Table 7-16: Hazards and its control measures for Chlorine Dioxide	136
Table 7-17: Siren Sounding System	140
Table 7-18: Important Telephone Numbers	148
Table 7-19: List of vehicles.....	148
Table 8-1: Amount spent on CSR activities.....	150
Table 8-2: Detail of CSR programmes/Projects/activities	150
Table 8-3: List of skill development programmes planned	153
Table 10-1: Characteristics of stacks of various boilers.....	157
Table 10-2: Proposed Air Quality Monitoring Schedule	158
Table 10-3: Equipments with dimensions and volume	160
Table 10-4: Characteristics of Raw Effluent and Effluent after Treatment	160
Table 10-5: Proposed Water Quality Monitoring Schedule for ETP	167
Table 10-6: Frequency of Cleaning of Rain Water Pipes	167
Table 10-7: Proposed Noise Quality Monitoring Schedule	168
Table 10-8: Monthly rainfall recorded at Muktsar in 2000-2011	170
Table 10-9: Section 1	171
Table 10-10: Section 2	171
Table 10-11: Section 3	171
Table 10-12: Section 4.....	171
Table 10-13: Budgetary allocation of proposed project	178
Table 11-1: Salient Features of the Proposed Site	180
Table 11-2: Project Highlights.....	180
Table 11-3: Product profiles in the existing and proposed unit	181
Table 11-4: Raw Materials Requirement for Plant (Unit No. 2)	182

LIST OF FIGURES

Figure 2-1: Water Balance Diagram for the Proposed 150 TPD Plant.....	24
Figure 2-2: Material balance of raw material and product for the proposed plant.....	28
Figure 2-3: Wet washing flowchart	29
Figure 2-4: Flow Diagram for agricultural residue based pulping	31
Figure 2-5: Flow Chart of Paper Manufacturing Process	34
Figure 3-1: Procedure for Land Use Mapping	40
Figure 3-2: Wind Rose diagram for the month of March, 2016	53
Figure 3-3: Wind Rose diagram for the month of April, 2016.....	53
Figure 3-4: Wind Rose diagram for the month of May, 2016.....	54
Figure 3-5: Wind Rose diagram for the Study Period.....	54
Figure 7-1: Variation of moisture content with depth at 1, 2 and 5 days.....	114
Figure 7-2: Variation of microbial concentration in unsaturated soil after 1, 2 and 5 days	115
Figure 7-3: Normalized microbial breakthrough concentration from column experiment	116
Figure 7-4: Source Strength in case of H ₂ O ₂ escape	132
Figure 7-5: Isopleths result of Toxic threat zone	133
Figure 7-6: Source Strength in case of Chlorine Dioxide gas escape	134
Figure 7-7: Isopleths result of Toxic threat zone	134
Figure 10-1: Components in ESP.....	158
Figure 10-2: Existing stage wise Pollutants load and its reduction in ETP.....	163
Figure 10-3: Stage wise Pollutants load and its reduction after proposed modernization	164
Figure 10-4: Semicircular gutter	171
Figure 10-5: Plan (Not to scale) of the under drainage system.....	173
Figure 10-6: Cross section (Not to scale) of the under drainage system.....	173



Figure 10-7: Plan of a perforated lateral drain	174
Figure 10-8: Details of rapid sand gravity filter	175

LIST OF MAPS

Map 2-1: Map showing Project Boundary.....	17
Map 2-2: Map Showing General and Specific Location of Project Site	18
Map 2-3: Project Layout	22
Map 3-1: Landuse Map of Study Area	43
Map 3-2: Ambient Air Quality Monitoring Stations in Study Area	56
Map 3-3: Water Sampling Locations in the study area	61
Map 3-4: Soil Sampling Locations in the Study Area	65
Map 3-5: Location map of study area	73
Map 4-1: Isopleth showing 24hourly predicted GLC's of SPM	90
Map 4-2: Isopleth showing 24hourly predicted GLC's of NOx.....	90
Map 4-3: Isopleth showing 24hourly predicted GLC's of SO2	901
Map 10-1: Soda recovery plant.....	166

ABBREVIATION

APHA	: American Public Health Association
APCM	: Air Pollution Control Measure
CPCB	: Central Pollution Control Board
CHWIF	: Common Hazardous Waste & Incineration facility
CSR	: Corporate Social Responsibility
EAC	: Expert Appraisal Committee
EIA	: Environment Impact Assessment
EC	: Environment Clearance
EHS	: Environment, Health & Safety
EMP	: Environment Management Plan
EMS	: Environment Management System
ETP	: Effluent Treatment Plant
GIDC	: Gujarat Industrial Development Corporation
GOG	: Government of Gujarat
GOI	: Government of India
GPCB	: Gujarat Pollution Control Board
HAZOP	: Hazard & Operability Study
IMD	: Indian Metrological Data
ISO	: International Standard Organization
MoEF	: Ministry of Environment & Forest
MSDS	: Material Safety Data Sheets
NOC	: No Objection Certificate
NOx	: Nitrogen Oxides
NIOSH	: National Institutes of Occupational Safety and Health
PCC	: Pollution Control Committee
PM	: Particulate Matter
PPEs	: Personal Protective Equipments
RA	: Risk Assessment
SO ₂	: SulphurDioxide
TOR	: Terms of Reference
TSDF	: Treatment, Storage and Disposal Facility





LIST OF SYMBOLS/NOTATIONS

°C	:	Degree Celsius
dB(A)	:	Decibels(A-Weighted)
gm/cc	:	Gram per Cubic Centimeter
K	:	Kelvin
Kcal/ Hr	:	Kilo Calorie per Hour
KVA	:	Kilo Volts Ampere
KLD	:	Kilo Liters per Day
Kms	:	Kilometers per Second
km/Hr	:	Kilometers per Hour
Ltr/Hr	:	Liters per Hour
Mt	:	Meters
m/s	:	Meters per Second
mg/lit.	:	Milligram/ Liters
mg/m ³	:	Milligram/cube meter of air
µg/m ³	:	Microgram/cube meter of air
µs	:	Microgram second
NTU	:	Nephelometric Turbidity Units
NO _x	:	Oxides of Nitrogen
ppt	:	Parts per Trillion
ppm	:	Parts per Million
SO ₂	:	Sulphur dioxide
Sq. km.	:	Square kilometer
Sq. mt.	:	Square Meter
TPH	:	Tonne per Hour

1 INTRODUCTION

1.1 PURPOSE OF THE REPORT

Proposed project is modernization of existing 150 TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant. In addition to this unit proposes installation of captive co-gen power plant of 12.5 MW.

Agro residue based paper manufacturing plant falls under the category no. 5(i), Category "A" i.e. pulp and paper manufacturing as per the provision of the S.O. 1533, EIA notification-2006. Also installation of 12.5 MW Captive Power Plant (CPP) based on rice husk and biogas as fuel shall be done within existing plant premises. General condition ("Power plants up to 15MW, based on biomass and using auxiliary fuel such as coal / lignite /petroleum products up to 15% are exempt") applies to proposed CPP project, thus EC will not be applicable under the category no. 1(d).

Satia Industries Limited (Unit No. 2) submitted the Form-1 along with Pre-Feasibility Report online to the Ministry of Environment, Forests & Climate Change on 01.12.2015 for grant of prior environmental clearance for proposed modernization of its existing unit with 150 TPD capacity of writing and printing paper from waste paper to agro residue based raw materials and 12.5 MW Co-Gen Power Plant at V.P.O. Rupana Distt. Muktsar, Punjab. Accordingly, the case was considered by the Expert Appraisal Committee-1 in its meeting held on 28-30th December, 2015 for the appraisal of ToRs.

The MoEFCC issued the ToR's vide letter F. No. J-11011/196/2014-IA-II (I) dated 22nd June, 2016 for modernization of 150 TPD writing and printing paper from waste paper to agro residue based and 12.5 MW Co-Gen power plant. A copy of TOR letter of the MoEFCC is attached as **Annexure 1** of the EIA Report for ready reference.

In accordance with the Terms of Reference issued by the MoEFCC, New Delhi, EIA study was carried out as per mandate of MoEFCC and Final EIA Report has been prepared after conduct of public hearing by Punjab Pollution Control Board as per the procedure provided in the EIA Notification, 2006. It is further mentioned that we have appointed ECO CHEM SALES & SERVICES, Surat (NABET Accredited EIA Consultant for Pulp & Paper industry) as environmental consultant for carrying out EIA studies, preparing EIA report and getting the Environment clearance of the proposed project.

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

1.2.1 Proposed Project

Proposed project is modernization of existing 150 TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant. In addition to this unit proposes installation of captive co-gen power plant of 12.5 MW at, V.P.O. Rupana Distt. Muktsar, Punjab.

1.2.2 Project Proponent

Satia Industries Limited (SIL), having Unit No.1 & Unit No.2 lying in same premises, is situated at Village Rupana Distt. Muktsar, Punjab. Unit no.1 is manufacturing 150 TPD of eco-friendly different varieties of paper such as writing and printing papers and different grades watermark papers using agricultural residues as raw material. To comply with the pollution standards, soda recovery plant based on Conventional Chemical Recovery to treat black liquor produced from agro based pulp mill was commissioned in March, 2006. Unit No.2 of SIL was commissioned in August, 1996 using imported and Indian waste paper as a raw material with an installed production capacity of 70 TPD.





The capacity of the plant was increased to 150 TPD writing and printing paper productions in November, 2000. Both units are having common pulp mill, utilities and effluent treatment plant.

SIL is of the firm opinion that sustainable development can be achieved through continual improvement in Environment Management System by introducing most advanced and environment friendly technologies. Hence, SIL has decided to go for modernization with the above objective in mind. Moreover, SIL will be utilizing this opportunity to introduce new technologies in the existing system also to further improve the existing environment status.

List of Board of directors with their designation, Qualification & experiences alongwith address is given below:

Table 1-1: List of Director

S. No.	Name	Address	DIN	Date of Appointment	Designation	Qualification & Experience
1	Dr. Ajay Satia	Satia Niwas, Railway Road, Muktsar	00850792	26/11/1980	Chairman cum Managing Director	MBBS, 30 years in Industry
2	Sh. Rajinder Kumar Bhandari	St. No. 4, Guru Angad Nagar, KKP Road, Near Madan Hotel, Muktsar	00732588	27/10/1994	Whole-time Director	B.A. (Hons.) MBA, 26 years in industry
3	Sh. Avinash Chander Ahuja	C-2/2533, Vasant Kunj, New Delhi	00327032	29/06/2005	Independent Director	B.E. (Mech.) from BITS (Pilani), 43 Years Retired as ED of IFCI
4	Sh. S.K. Arora	H. No. 342, Sector 2, Panchkula	01647525	11/08/2011	Independent Director	Chartered Accountant
5	Sh. Dinesh Chand Sharma	F-17, Sector 39, Noida-201301	02460345	30/09/2011	Independent Director	Master Of Engineering In Chemical Engineering
6	Sh. Inderdev Singh	House no. 268-A, Aggar Nagar, Ludhiana	00825892	14/05/2013	Independent Director	B.Com, LLB, CAIIB
7	Smt. Bindu Satia	Satia Niwas, Railway Road, Muktsar	01164115	12/11/2014	Director	Graduate
8	Sh. Chirag Satia	124, Sector 8A, Chandigarh-160022	03426414	13/02/2015	Director	C. A. (Inter)

1.3 BRIEF DESCRIPTION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY & REGION

1.3.1 Brief Description of the Project

The brief description of the project is given in **Table 1-2**.

Table 1-2: Brief Description of the Project

S. No.	Details	Description
1	Nature	Pulp & Paper Manufacturing industry, Captive Power plant
2	Size	150 TPD writing & printing paper and 12.5 MW Co-Gen Power Plant
3	Location	Unit No.: 2, Village Rupana, Dist. Muktsar, Punjab
4	Cost of the project	INR 10,000 Lakhs

1.3.2 Importance of Project to the Country and the Region

Consumption of Writing paper is increasing day by day and the demand forecast for the current financial year is 11.35 million tons and is expected to grow @ 6% during the next 3- 4 years. According to estimates, large mills account for around 52% of paper production.

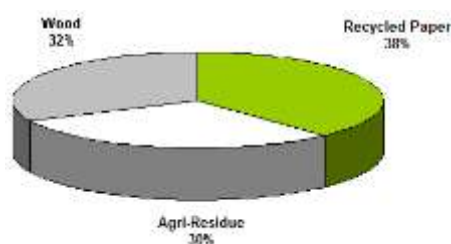
Demand Supply Gap

After globalization of Indian market, demand for quality packing paper is increasing but manufacturing is not growing as per the demand. Hence, the company shall fill up this gap by proposed modernization by improving quality of pulp, making surface size paper and introducing copier paper whose demand is increasing day after day.

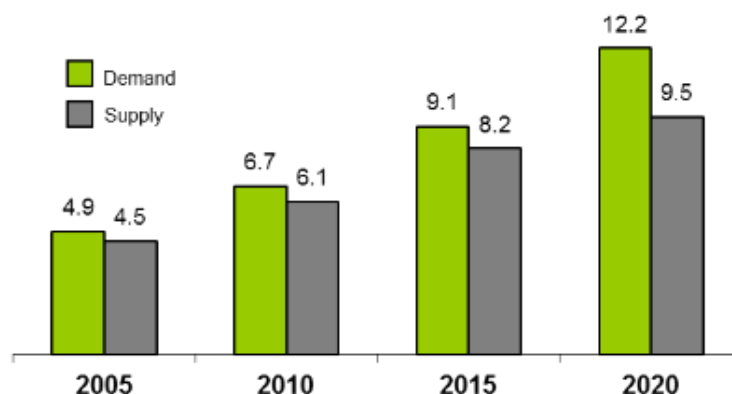
Indian Paper Industry Scenario

India is the 15th largest paper producer in the world. It provides employment to nearly 1.5 million people and contributes Rs. 25.0 billion to the government's exchequer. In last 55 years, the number of paper mills has increased from just 17 mills in 1951 to more than 666 units engaged in the manufacture of paper and paperboard.

Due to the increasing regulation and raw material prices, companies are increasingly using more non-wood based raw materials over the years. In 2006, around 70 % of the total production was based on non-wood raw materials/waste paper.



According to Indian Paper Manufacturers Association (IPMA), consumption of paper in India is set to double from the current 7.0 million tonnes per annum by 2015 (v) Market Scenario (domestic market, Export Possibility).



Employment Generation

Total Employees in existing plant = 1000 nos.

Additional Employees required after modernization = 100 nos.

Total Employees after modernization = **1100 nos.**





Environmental Concerns

With the cost of imported pulps and waste soaring, and the wood resources being limited for the developing countries, the technology of nonwood pulping will continue to develop at a rapid rate. This, along with the rapid rise in demand for paper products, represents a major potential market for suppliers to pulp and paper industry. It is expected that the current surge in new mills will continue for several decades. Added to this is the rapid increase in population in most of these countries. This puts additional pressure on the available land resources that inhibit the growth of forest plantations. As a result alternative raw materials are playing an important role in the paper industries in the developing countries. Around the world, there is a case for use of nonwood fibers for papermaking. Pulping of agricultural residues is of increasing interest due to economic and environmental factors. For fine papermakers, short fibered pulp gives better formation and opacity. These can be provided by nonwood fibers, especially straw pulp, which consumes less refining energy than wood fiber. ·

Moreover, environmental regulations prohibit burning of stubble in the fields, and this has increased the availability of straw for nonagricultural use. Current drive towards increased implementation of sustainable forest management is also driving paper industry to look for alternative fiber sources.

Fueled by various environmental and other factors, the use of nonwood plant fibers for pulping and papermaking is also expected to grow. Reduction in burning of straw requires that straw be put up for alternate use and paper production is one promising use in the world. Also, curtailing grain production to maintain grain prices will require the farmers to grow alternate crops and here also papermaking raw material is a real alternative. With these considerations, it can be safely said that use of nonwood plant fibers for pulp and paper industry is a economical and environment friendly proposition

1.4 OBJECTIVES OF THE EIA STUDY

Typical study objectives may include the following:

- To describe the proposed project(s) and associated works together with the requirements and environmental benefits for carrying out the proposed project(s);
- To identify and describe the elements of the community and environment likely to be affected by the proposed project(s), and/or likely to cause adverse impacts to the proposed project(s), including both the natural and man-made environment and the associated environmental constraints;
- To identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses;
- To identify and quantify any potential losses or damage to flora, fauna and natural habitats;
- To identify any negative impacts on sites of cultural heritage and to propose measures to mitigate these impacts;
- To propose the provision of infrastructure or mitigation measures to minimize pollution, environmental disturbance and nuisance during construction, operation (or decommissioning) of the project(s);
- To investigate the feasibility, effectiveness and implications of the proposed mitigation measures;
- To identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and the cumulative effects expected to arise during the construction, operation (or decommissioning) phases of the project(s) in relation to the sensitive receivers and potential affected uses;
- To identify, assess and specify methods, measures and standards, to be included in the detailed design, construction, operation (or decommissioning) of the project(s) which are necessary to

mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels;

- To design and specify the environmental monitoring and audit requirements; and
- To identify any additional studies necessary to implement the mitigation measures or monitoring and proposals recommended in the EIA report.

1.5 PURPOSE OF EIA STUDY

The rapid Environmental Impact Assessment study covers the field data for the pre-monsoon season (March-May, 2016), detailing the environmental status of the area; including the details of the pollution control measures proposed and the assessment of the environmental impacts of the proposed project.

1.6 STRUCTURE OF REPORT

The components of the EIA study and Report include:

- Details of project site, surrounding environment, preparation of district, survey of India and Revenue Maps of 10 km radius of the project site.
- Generation of baseline data using primary data collection and secondary data available from various government agencies on air, meteorology, water, soil, flora & fauna, socio-economics, infrastructure, sensitive areas (wild life, forests, archaeological, historical, etc).
- Detailed description of all components of the project activities during the construction and operational phases. The aspects to be determined will include the infrastructures of the project including drainage features, roads, waste generation, collection, disposal and management and utility requirements.
- Identification of sources of pollution and assessment of the impacts on the environment due to proposed modernization of 150 TPD waste paper based to agro residue based writing & printing paper.
- Preparation of EIA and EMP report with conclusions and recommendations on preventive and mitigative measures for minimizing the impact on the surrounding environment to the acceptable level during implementation and operation of the project. Development of a suitable post project monitoring program to comply with various environmental regulations, standards and norms will form part of EMP.

1.7 REGULATORY FRAMEWORK

The Environmental Law requires that every project proponent that falls under the 2006 Notification must take Environmental Clearance from Ministry of Environment and Forests, New Delhi or State level Expert appraisal committee before starting up any project. The environmental clearance is also mandatory for the expansion, modernization or renewal projects. The conditions are applicable as per the MoEFCC guidelines and EIA notifications issued and amended from time to time.

Agro residue based paper manufacturing plant falls under the category no. 5(i), Category "A" i.e. pulp and paper manufacturing as per the provision of the S.O. 1533, EIA notification-2006. Also installation of 12.5 MW Captive Power Plant (CPP) based on rice husk and biogas as fuel shall be done within existing plant premises. General condition ("Power plants up to 15MW, based on biomass and using auxiliary fuel such as coal / lignite /petroleum products up to 15% are exempt") applies to proposed CPP project, thus EC will not be applicable under the category no. 1(d).





1.7.1 Statutory Applicable to the Company

The provisions have been made in the constitution of India and many enactments so that industrialization may not have adverse impact on the environment. There are many Acts / Rules / Notifications issued by MoEFCC, few of them are mentioned below:

- Environment (Protection) Act, 1986;
- Environment (Protection) Rules, 1986;
- Water (Prevention & Control of Pollution) Act, 1974;
- Air (Prevention & Control of Pollution) Act, 1981;
- Environmental Impact Assessment (EIA) Notification, dated 14th September, 2006 as amended on 01.12.2009.

1.8 SCOPE OF THE STUDY

Compliance of ToR points as per the ToR letter issued on 22nd June, 2016 by MoEFCC. This compliance includes:

- Collection of baseline data with respect to Air, Noise, Water, Land, Biological and Socio-economic components for one season.
- Identification and assessment of impacts on environment and suggesting mitigation measures.
- Preparation of Environmental Monitoring, Management and RA/DMP Plan.
- Conducting public hearing and addressing issues raised in EIA report.

Summarized details of the compliance status of this report with the prescribed ToR are provided in **Table 1-3**.

Table 1-3: Compliance with the Terms of Reference

S. No.	ToR Points	Citation in EIA Report
A.	Specific TOR	
1.	A note on pulp washing system capable of handling wood pulp shall be included.	Complied Details are mentioned in Section 2.6 from Page no. 28 to 33 of Chapter -2 .
2.	Manufacturing process details for the existing and proposed plant shall be included. Chapter on Pulping & Bleaching shall include: no black liquor spillage in the area of pulp mill; no use of elemental chlorine for bleaching in mill; installation of hypo preparation plant; no use of potcher washing and use of counter current or horizontal belt washers. Chapter on Chemical Recovery shall include: no spillage of foam in chemical recovery plant, no discharge of foul condensate generated from MEE directly to ETP; control of suspended particulates matter emissions from the stack of fluidized bed recovery boiler and ESP in lime kiln.	Complied Details on manufacturing process are mentioned in Section 2.6 from Page no. 28 to 34 of Chapter -2 . Details of Chemical recovery plant in Section namely Description of Soda Recovery Plant , on Page No. 165 of Chapter 10 .
3.	Studies shall be conducted and a chapter shall be included to show that Soda pulping process can be employed for Eucalyptus/Casuarina to produce low kappa (bleachable) grade of pulp.	Not Applicable
4.	Commitment that only elemental Chlorine-free	Company is already having elemental Chlorine-

S. No.	ToR Points	Citation in EIA Report
	technology will be used for the manufacture of paper and existing plant without chemical recovery plant will be closed within 2 years of issue of environment clearance.	free technology for bleaching of pulp and Chemical recovery plant is already existing which is mentioned in Section 2.6.1 Page no. 28 of Chapter 2 . Undertaking on company's letter head for the same has been incorporated as Annexure 7 on page no. 241 .
5.	A commitment that no extra chlorine base bleaching chemicals (more than being used now) will be employed and AOx will remain within limits as per CREP for used based mills. Plan for reduction of water consumption.	Agreed & Complied Plan for reduction of water consumption has been given in Section 10.6 Page No. 176-177 of Chapter 10 .
B.	Additional TOR	
1.	Approval for drawl of canal water from irrigation department.	Approval attached as Annexure 6 on page no. 239-240 .
2.	Site photograph of the plant and also for the surrounding area around the plant.	Site photograph of the plant and for the surrounding area are attached as Annexure 21 on page no. 323 .
3.	Public hearing to be conducted by Punjab Pollution Control Board.	Agreed & Complied Minuted of Public Hearing Annexure 22 on page no. 331-373
4.	The issues raised during public hearing and commitment of the project proponent on the same along with time bound action plan to implement the commitment and financial allocation thereto should be clearly provided.	Issues raised and addressed during public hearing/consultation have been provided in Section 7.2 Page No. 104 of Chapter 7 .
5.	The project proponent should carry out social impact assessment of the project as per the Office Memorandum NO. J-11013/25/2014-IA.I dated 11.09.2014 issued by the Ministry regarding guidelines on Environment Sustainability and CSR related issues. The social impact assessment study so carried out should form part of EIA and EMP report.	Social impact assessment study including on Environment Sustainability and CSR related issues has been compiled in Section 10.7 Page no. 177 of Chapter 10 . Minuted of Public Hearing Annexure 22 on page no. 331-373 .
C.	Generic TOR in respect of Industry Sector	
1.	Executive Summary	Complied Executive summary has been attached in the Chapter-11 of the EIA report on page no. 179-191 .
2.	Introduction	
i.	Details of the EIA consultant including NABET accreditation	Given in Chapter 12 on page no. 192 of the EIA report
ii.	Information about the project proponent	Mentioned in Section 1.2.2 , Page No. 1 of Chapter 1 .
iii.	Importance and Benefits of the project	Importance and Benefits of the project are given in Chapter 8 on page no. 149-153 of the EIA report.
3.	Project description	
i.	Cost of project and time of completion	Cost of project is given in Section 2.4.5 Page no. 23 of Chapter 2 .
ii.	Products with capacities for the proposed project	Complied Existing & proposed products along with production capacity are mentioned in Section 2.5 Page no. 25-26 of Chapter 2 .
iii.	If expansion project, details of the existing products with capacities and whether adequate land is	Not Applicable





S. No.	ToR Points	Citation in EIA Report
	available for expansion, reference of earlier EC if any.	
iv.	List of raw materials required and their source along with mode of transportation.	Complied Existing & proposed raw materials are mentioned in Section: 2.5 Page no. 25-26 of Chapter 2 . The mode of raw material transportation are given in Section 2.4.7 on page no. 25 of Chapter 2 .
v.	Other chemicals and materials required with quantities and storage capacities	Complied Refer Section: 2.5 Page no. 27 of Chapter 2 .
vi.	Details of emissions, effluents, hazardous waste generation and their management	Complied Mentioned in Section 2.7 Page no. 34-37 of Chapter-2 .
Vii.	Requirement of water, power, with source of supply, status of approval, water balance diagram, manpower requirement (regular and contract).	Complied Refer Sections in Chapter 2 for i. <u>Water Requirement</u> : Section 2.4.6 on Page no. 24 . ii. <u>Power Requirement</u> : Section 2.4.3 on page no. 23 . iii. <u>Source of Water Supply</u> : State Irrigation Department, from canal water (existing Arniwala Canal). iv. <u>Source of Power Supply</u> : Punjab State Power Corporation Ltd (PSPCL) & Captive Co-generation 12.5 MW power plant v. <u>Status of Approval</u> : water supply from state irrigation department and copy of the permission is given as Annexure 6 on page no. 239-240 . vi. <u>Water Balance Diagram</u> : Figure 2-1 on page no. 24 . vii. <u>Manpower Requirement</u> : Section 2.4.2 on page no. 23
viii.	Process description along with major equipments and machineries, process flow sheet (quantative) from raw material to products to be provided	Complied Refer Section 2.6 Page No. 28-34 of Chapter – 2 .
ix.	Hazard identification and details of proposed safety systems	Complied Refer Section: 7.5 Page No. 120 of Chapter – 7 .
x.	Expansion/modernization proposals:	
	a. Copy of all Environmental Clearance(s) including Amendments thereto obtained for the project from MoEF&CC/SEIAA shall be attached as annexure. A certified copy of the latest Monitoring Report of the Regional Office of Ministry of Environment and Forests as per circular dated 30 th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, status of compliance of Consent to operate for ongoing/existing operation of the project from SPCB shall be attached with the EIA-EMP report.	EC copy for the proposed project obtained from SCA cum SAC with compliance report for EC conditions is attached as Annexure 10 on page no. 254 . Project proponent regularly submits six monthly compliance to the concerned authority. Also, certified copy of the latest Monitoring Report of the Regional Office of Ministry of Environment and Forests is awaited.
	b. In case the existing project has not obtained the environmental clearance, reason for not taking	As the existing plant is wastepaper based so CSA and NOC was obtained from the state Govt and

S. No.	ToR Points	Citation in EIA Report
	EC under the provisions for EIA Notifications 1994 and/or EIA Notifications 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to operate (in case of units operating prior to EIA Notifications 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further compliance report to the conditions of consents from the SPCB shall be submitted.	no EC was taken as per EIA Notifications 1994 and/or EIA Notifications 2006. CSA and NOC of existing unit are attached as Annexure 3 on page no. 210 . CSA and NOC of proposed unit are attached as Annexure 4 on page no. 214 . Status of compliance of Consent to operate for ongoing/existing operation of the project from SPCB has been attached as Annexure 9 on page no. 246 of EIA report.
4.	Site Details:	
i.	Location of the project site covering village, Taluka/Tehsil, District and State on Indian map of 1:10000000 scale, Justification for selecting the site, whether other sites were considered.	Complied Location of project site is mentioned in Annexure 18 on page no. 303 .
ii.	A toposheet of the study area of radius of 10 km and site location on 1:50000/1:25000 scale on an A3/A2 sheet.(including all eco-sensitive areas and environmentally sensitive places)	Complied Toposheet of the study area of radius of 10 km is given in Map 3-1 Page no. 43 of Chapter –3 .
iii.	Co-ordinates (lat-long) of all four corners of the site.	Co-ordinates (lat-long) of all four corners of the site have been given as Table 2-1 in Section 2.3.1 Page no. 17 of Chapter-2 .
iv.	Google map-Earth downloaded of the project site.	Complied Google map-Earth downloaded of the project site is mentioned in Map 2-1 on Page no. 17 of Chapter-2 .
v.	Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. In addition, if located within an industrial area/estate/complex, layout of industrial area and location of unit within the industrial area/estate/complex, layout of industrial area	Complied Layout plan with entry/exit gates in A3 size paper has been incorporated as Map 2-3 Page no. 22 of Chapter-2 .
vi.	Photographs of the proposed and existing (if applicable) plant site. If existing, in addition to site map, provide photographs of plantation/greenbelt in the existing project.	Complied Photographs of existing site along with greenbelt are attached as Annexure 21 on page no. 323 of the EIA-EMP Report The proposed modernization will be carried out in the existing premises only. No new land will be procured for proposed project.
vii.	Landuse break-up of total land of the project site (identified and acquired) – agriculture, forest, wasteland, water bodies, settlements, etc shall be included. (not required for industrial area)	Complied Landuse break-up is mentioned in Section 3.3 Page no. 39-41 of Chapter – 3 .
viii.	A list of major industries with name and type within study area (10 km radius) shall be incorporated. Land use details of the study area.	List of major industries with name and type within study area (10 km radius) has been incorporated as Table 2-4 & Table 2-5 Page no. 20 & 21 of Chapter-2 . Land use details of the study area in Table 3-1 Page no. 43 in Chapter – 3 .
ix.	Geological features and Geo-hydrological status of the study area shall be included.	Geological features and Geo-hydrological status of the study area has been included as Section 7.4 on page no. 109 of Chapter-7 .
x.	Details of Drainage of the project upto 5km radius of	Details of Drainage of the project upto 5km





S. No.	ToR Points	Citation in EIA Report
	study area. If the site is within 1km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)	radius of study area are included Annexure 12 on page no. 265 No major river falls within 1 km radius of the project site.
xi.	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.	The proposed modernization will be carried out in the existing premises only. No new land will be procured for proposed project. Existing land is already in possession of Satia Industries Ltd.
xii.	Rehabilitation & Resettlement (R&R) details in respect of land in line with state Government policy.	Not Applicable since proposed modernization will be carried out in the existing premises only
5.	Forest and Wildlife related issues	
i.	Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department.	Not Applicable
ii.	Land use map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha).	Not Applicable
iii.	Status of application submitted for obtaining the stage forestry clearance along with latest status shall be submitted.	Not Applicable
iv.	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon.	Not Applicable
v.	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I Fauna, if any exists in the study area.	Not Applicable
vi.	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife	Not Applicable
6.	Environmental Status	
i.	Determination of atmospheric inversion level at the project site and site specific micro- meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.	One season site-specific micrometeorological data using temperature, relative humidity, hourly wind speed, direction and rainfall has been collected are mentioned in Section: 3.5 Page no. 43-54 of Chapter – 3 . Rainfall data is mentioned in Table 3-8 Page no. 50 of Chapter – 3 .
ii.	AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and HC (methane & non-methane) should be collected. The monitoring stations should take into account the pre-dominant wind direction, population zone and sensitive	Complied A baseline study has been conducted for the period of March 2016 to May 2016 within the study area of 10 km. AAQ data given in Section 3.5.2 Page no. 55-59

S. No.	ToR Points	Citation in EIA Report
	receptors including reserved forests.	of Chapter – 3 . The monitoring locations have been selected on the basis of pre-dominant wind direction population zone and sensitive receptors.
iii.	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQPM Notification of Nov. 2009 along with- min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.	AAQ measurement for 12 weeks of all stations along with- min., max., average and 98% values for each of the AAQ parameters are mentioned in Table 3-14 to Table 3-16 Page no. 58 of Chapter – 3 . Raw data of 12 weeks AAQ has been incorporated as Annexure 11 on page no. 257257 .
iv.	Surface water quality of nearby River (60m upstream and downstream) and other surface drains at eight locations as per CPCB/MoEF & CC guidelines.	No major river falls nearby project site. Surface water quality of nearby surface water sources is mentioned in Section: 3.5.5, Table 3-21 Page no. 63 of Chapter – 3 .
v.	Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF & CC.	No
vi.	Ground water monitoring at minimum at 8 locations shall be included.	Complied Ground water monitoring is mentioned in Section: 3.5.4, Table 3-20 Page no. 62 of Chapter – 3 .
vii.	Noise levels monitoring at 8 locations within the study area.	Complied Noise level monitoring is mentioned in Section: 3.5.7, Table 3-24 , Page no. 68 of Chapter – 3 .
viii.	Soil characteristics as per CPCB guidelines.	Complied Soil monitoring is mentioned in Section:3.5.6 Table 3-23 Page No. 66 of Chapter – 3 .
ix.	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.	Complied Detail of traffic is mentioned in Table 3-17 & Table 3-18 Page no. 59-60 of Chapter – 3 .
x.	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with reference to rare, endemic and endangered species. If schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.	Complied Detail of flora & fauna is mentioned in Section: 3.5.8, Table 3-26 & Table 3-27 , Page no. 70-72 of Chapter – 3 .
xi.	Socio-economic status of the study area.	Socio-economic status of the study area is mentioned in Section 3.5.9 Page no. 72 of Chapter – 3 .
7.	Impact Assessment and Environment Management Plan	
i.	Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be well assessed. Details of the model used and the input data used for modeling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation near, sensitive	Cumulative impact of all sources of emissions on the AAQ of the area has been assessed employing mathematical model based on a steady state Gaussian plume dispersion model modeling (AERMOD). Details of the model used and the input data used for modeling are mentioned in EIA report.





S. No.	ToR Points	Citation in EIA Report
	receptors, if any.	
ii.	Water Quality modeling-in case, if the effluent is proposed to be discharged in to the local drain, then Water Quality Modeling study should be conducted for the drain water taking into consideration the upstream and downstream quality of water of the drain.	Not Applicable
iii.	Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.	Complied Details mentioned in Table no. 4.14 Page no. 84 .
iv.	A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules.	Complied Details like scheme of ETP, characteristics of treated & untreated effluent are mentioned in Section: 10.3.2 , sub-section Water Pollution Page no. 158 of Chapter – 10 .
v.	Details of stack emission and action plan for control of emissions to meet standards.	Complied Details of stack emission and its control are mentioned in Section: 10.3.2 under the subsection Air pollution Page no. 156-157 of Chapter – 10 .
vi.	Measure for fugitive emission control	No likelihood of fugitive emissions
vii.	Details of hazardous waste generation and their storage, utilization and disposal. Copies of MOU regarding utilization of solid and hazardous waste shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, Energy conservation, and natural resources conservation.	Complied Action plan for solid/hazardous waste generation, storage, utilization and disposal is mentioned in Section: Hazardous waste on Page no. 167 of Chapter – 10 . MoU attached as Annexure 17 on page no. 295 .
viii.	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.	Complied Fly ash is being/will be utilized in own brick manufacturing unit and/or send to cement manufacturing unit.
ix.	Action plan for the green belt development plan is 33% area i.e. land with not less than 1,500 trees per ha. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.	Proponent has already developed 33% of greenbelt. Green belt layout is given Map 2-3 Page no. 22 of Chapter-2 . Details of greenbelt development are mentioned in Section 10.3.5 , Pg. No. 169-170 .
x.	Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh and reduce the water requirement from other sources.	Complied Action plan for rainwater harvesting in the existing premises is mentioned in Section 10.3.6 Page no. 169 of Chapter – 10 .
xi.	Total capital cost and recurring cost/annum for environmental pollution control measures shall be	Complied Total capital cost and recurring cost/annum for

S. No.	ToR Points	Citation in EIA Report
	included.	environmental pollution control measures is included in Section 10.8 Page no. 178 of Chapter – 10 .
xii.	Action plan for post-project environmental monitoring shall be submitted.	Complied Post project environmental monitoring plan is mentioned in Section: 6.3 Page no. 96 of Chapter – 6 .
xiii.	Onsite and Offsite Disaster (natural and man-made) Preparedness and Emergency management Plan including Risk Assessment and damage control. Disaster Management plan should be linked with District Disaster Management Plan.	Complied Risk assessment for storage and handling of hazardous chemicals/solvents and action plan for handling & safety system are mentioned in Section 7.5 on page no. 117-120 Risk Assessment, of Chapter –7 . Disaster Management Plan is mentioned in Section 7.10 Page no. 140-146 of Chapter –7 .
8.	Occupational health	
i.	Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure Level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.	Complied Occupational health & safety is mentioned in Section 7.6 Page no. 121 of Chapter –7 .
ii.	Details of exposure specific health status evaluation of worker. If the worker's health is being evaluated by pre designed format, chest x-rays, Audiometry, Spirometry, Vision testing (Far & Near vision, color vision and any other ocular defect) ECG, during pre placement and periodical examinations give the details of the same. Details regarding last month analyzed data of abovementioned parameters as per age, sex, duration of exposure and departmental wise.	Complied Health check up of employees is being regularly carried out at pre placement stage as well as yearly check up is being carried out. Health record of the worker is attached as Annexure 16 on page no. 287 .
iii.	Annual report of health status of workers with special reference to Occupational Health and Safety.	
iv.	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.	Complied Occupational health & safety is mentioned in Section 7.6 Page no. 121 of Chapter –7 .
9.	Corporate Environment Policy	
i.	Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.	Yes, the company has a well-developed Environment Policy given in Section: 10.7 Page no. 177 of Chapter – 10 . Environment Policy incorporated as Annexure 19 on page no. 304 in EIA report.
ii.	Does the Environment Policy prescribe for standard operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/conditions? If so, it may be detailed in EIA.	
iii.	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environment clearance conditions? Details of this system may be given.	Complied The company has developed a Hierarchal system for dealing with the environmental issues and for ensuring compliance with the EC conditions. Details of the same are given in Section: 10.7 Page no. 177-178 of Chapter – 10 .
iv.	Does the company have system of reporting of non compliances/violations of environmental norms to	Yes, the company has developed a Hierarchal system for reporting of non-compliances /





S. No.	ToR Points	Citation in EIA Report
	the Board of Directors of the company and/or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report.	violations of environmental norms to the higher management. Details of the same are given in Section: 10.7 Page no. 177-178 of Chapter – 10 .
10.	Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.	Complied The necessary infrastructure facilities like drinking water and sanitation has been already provided to the construction workers and truck drivers within the project site.
11.	Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.	No litigation pending against the project and/or any direction/order passed by any Court of Law against the project
12.	A tabular chart with index for point wise compliance of above TORs.	Complied
13.	The TORs prescribed shall be valid for a period of three years for submission of the EIA-EMP reports along with Public Hearing Proceedings (wherever stipulated).	Noted
14.	The following general points shall be noted:	
i.	All documents shall be properly indexed, page numbered.	Agreed & Complied
ii.	Period/date of data collection shall be clearly indicated.	Agreed & Complied
iii.	Authenticated English translation of all material in Regional languages shall be provided.	Agreed & Complied
iv.	The letter/application for environmental clearance shall quote the MOEF file No. and also attach a copy of the letter.	Agreed
v.	The copy of the letter received from the Ministry shall be also attached as an annexure to the final EIA-EMP Report.	Agreed & Complied
vi.	The index of the final EIA-EMP report must indicate the specific chapter and page no. the EIA-EMP Report.	Complied
vii.	While preparing the EIA Report, the instructions for the proponents and instructions for the consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II (I) dated 4 th August, 2009, which are available on the website of this Ministry shall also be followed.	Complied
viii.	The consultants involved in the preparation of EIA-EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA- EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. Name of Consultant and the Accreditation details shall be posted on the EIA-EMP	Complied Disclosure of consultants given in Chapter 12 .

S. No.	ToR Points	Citation in EIA Report
	Reports as well as on the cover of the Hard Copy of the Presentation material for EC presentation.	
ix.	TOR's prescribed by the Expert Appraisal Committee (Industry) shall be considered for the preparation of EIA-EMP report for the project in addition to all the relevant information as per the 'Generic Structure of EIA' given in Appendix III and IIIA in the EIA Notification, 2006. The draft EIA-EMP Report shall be submitted to the State Pollution Control Board of the concerned State for conduct of Public Hearing. The SPCB shall conduct the Public Hearing/Public consultation, district-wise, as per the provisions of EIA Notifications, 2006. The Public Hearing shall be chaired by an Officer not below the rank of Additional District Magistrate. The issues raised in the Public Hearing and during the consultation process and the commitments made by the project proponent on the same shall be included separately in EIA-EMP Report in a separate chapter and summarized in a tabular chart with financial budget (capital and revenue) along with time-schedule of implementation for complying with the commitments made. The final EIA Report shall be submitted to the Ministry for obtaining Environment clearance.	Complied Public hearing has been conducted by PPCB on 19.10.2016. Issues raised and addressed during public hearing/consultation are provided in Section 7.2 on page no. 104 of Chapter 7 .





2 PROJECT DESCRIPTION

This chapter provides a condensed description of those aspects of the project likely to cause environmental effects. Details are described in following sections with regards to type, need, location, size or magnitude of project operations, technology and other related activities.

2.1 TYPE OF PROJECT

SIL (Unit No. 2) is located at Malout Road, Muktsar, falling under large Scale category manufacturing products as mentioned under for which the company had obtained Consent To Establish (CTE) and Operate (CTO) from Punjab Pollution Control Board.

SIL (Unit No. 2) was commissioned in August 1996 using waste paper as raw material with an installed production capacity of 70 TPD writing and printing paper. The capacity of the plant was increased to 150 TPD writing and printing paper productions in November 2000. The industry is presently manufacturing eco-friendly paper of different varieties such as writing and printing papers of different grades including watermark papers.

The company proposes to modernize the existing unit with 150 TPD capacity of writing and printing paper from waste paper to agro residue based raw materials and 12.5 MW Co-Gen Power Plant. Proposed modernization Project Cost is estimated Rs. 10,000 Lakhs.

2.2 NEED FOR THE PROPOSED PROJECT

- Consumption of Writing paper is increasing day by day and the demand forecast for the current financial year is 11.35 million tons and is expected to grow @ 6% during the next 3-4 years. According to estimates, large mills account for around 52% of paper production.
- According to Indian Paper Manufacturers Association (IPMA), consumption of paper in India is set to double from the current 7.0 million tonnes per annum by 2015.
- The annual global paper and paperboard production was approximately 382.0 million tonnes in 2006. It increased to 402.0 million tonnes in 2010 and is expected to increase to 490.0 million tonnes by 2020.
- Additional employment will be generated due to modernization of the plant.

2.3 LOCATION OF THE PROJECT

The industry is located near Village Rupana, District Muktsar of Punjab state and the modernization is proposed within the existing premises.

Geographically the site is located at 30°25' North latitude and 74° 31' East longitude at an altitude of 197.67 m above mean sea level. The Company owns about 36.019 acres land at Village Rupana, District Muktsar.

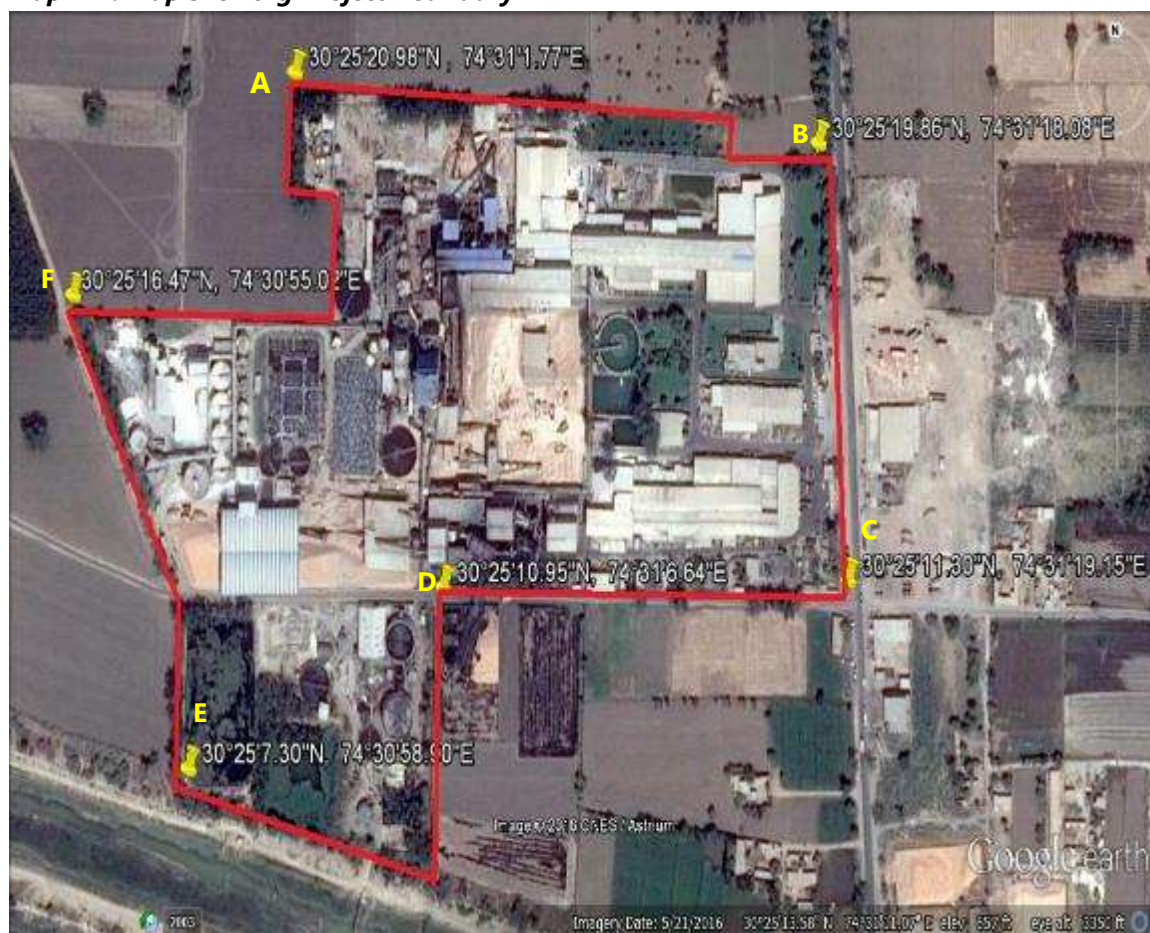
2.3.1 Location map

Location map showing general location, specific location of proposed project is given in **Map 2-2**, the project boundary map is given in Map 2-1 and co-ordinates of the project site are given **Table 2-1**.

Table 2-1: Co-ordinates of the Project Boundary

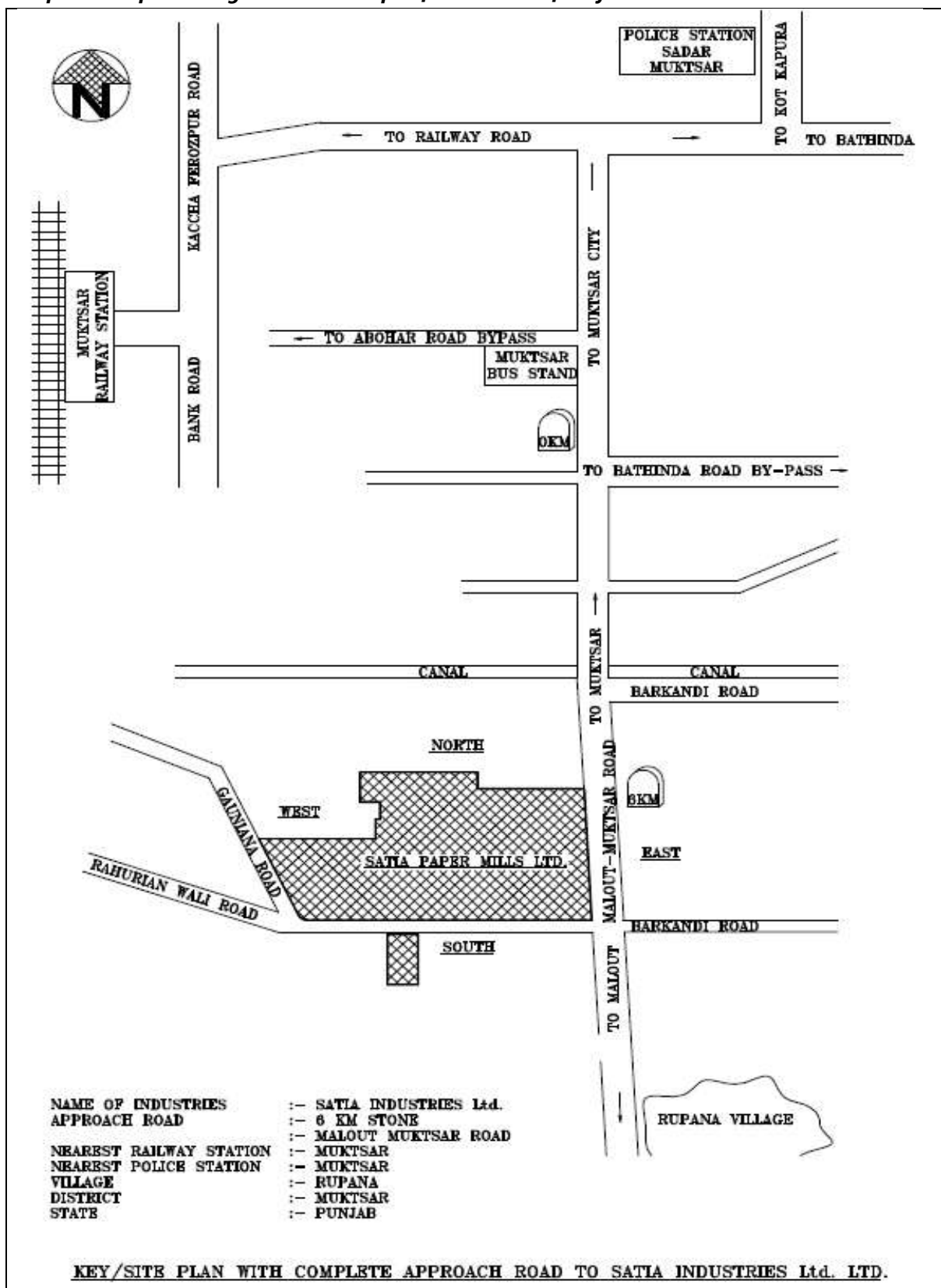
Location	Latitude	Longitude
A	30° 25' 20.98"	74° 31' 1.77"
B	30° 25' 19.86"	74° 31' 18.08"
C	30° 25' 11.30"	74° 31' 19.15"
D	30° 25' 10.95"	74° 31' 6.64"
E	30° 25' 7.30"	74° 30' 58.90"
F	30° 25' 16.47"	74° 30' 55.02"

Map 2-1: Map showing Project Boundary





Map 2-2: Map Showing General and Specific Location of Project Site



2.3.2 Site connectivity

The road, rail and air connectivity of site through various means is tabulated in **Table 2-2**.

Table 2-2: Site Connectivity

S. No.	Road, Rail and Air	Aerial Distance in kms from Project site	Direction from project site
1.	Road:		
	SH- 16	0.35	East
	SH-41	5	North-East
	Muktsar - Malout Road	6	North
	National Highway (NH) -15	24	South-West
2.	Railway Station:		
	Muktsar Railway station	7	North
3.	Airport:		
	Bhatinda Airport	28	South-East
	Ludhiana Airport	150	East of North-East

Table 2-3: Salient Features of the Proposed Site

Altitude	: 198 m above MSL
Longitude	: 74 deg. 31' East
Latitude	: 30 deg. 25' North
Maximum day temperature	: 45.6 deg.C
Minimum day temperature	: 0.7°C
Maximum Relative Humidity	: 99%
Minimum Relative Humidity	: 2.0%
Annual Rainfall	: 355.0 mm
Average wind speed	: 4.0 kmph
Predominant Wind Direction	: NE and SE
Land Availability	: 36.019 acres
Topography	: Plain
Nearest Human Settlements	: Rupana (1 Km)
Nearest City	: Muktsar (7.0 km)
Nearest Industries	: Bansal paper & Board Mill, Anand Aluminium Industries, rice and brick kiln units
Nearest seaport	: None within 10 km
Nearest River	: Chandbhan Drain in South Direction
Nearest Reserve Forest	: None
Nearest Sanctuary	: None within 10 km
Nearest National Park	: None within 10 km
Nearest Hills	: None within 10 km

2.3.3 Industrial Activity in Study Area

There are a number of industrial units in the study area. A list of these units is given in **Table 2-4** & **Table 2-5**. Small scale industrial units like rice mills and cold store are also located in the study area. Nearest large scale industries to Satia Industries are M/s Kissan Chemical & fertilizers Ltd., Kotli Road, Muktsar, M/s. Ganga Chem Fertilizers Pvt. Ltd., Muktsar, etc. In addition there are about 19 brick kilns in the study area.





Table 2-4: List of Industry around Satia Industries Ltd. Mukatsar (PB.)

S. N.	Name of industry	Product	Address	Dist (K.M.)	Direction
1	Sanmaan overseas	Rice	Sadarwala rd,Mks	8.8	NNW
2	Surya rice & Gen Mill Unit-2	Rice	Guruharsahai rd, Mks	8.8	NNW
3	Rishav rice mill	Rice	Jalalabad rd. Mks.	8.8	NNW
4	Satlej enterprises	Dal Mill	KKP road, Mks	8.8	NNW
5	Balaji soap factory,	Soap	jalalabadby pass Road Udekarn	8.8	NNW
6	Ganesh rice mill	Rice	Jbd road, Mukatsar	8.8	NNW
7	Shree guru nanak rice mills	Rice	Vpo-Kotlidevan	8.8	NNW
8	Manbir rice & gen mills	Rice	Kotli devan rd,Mks.	8.8	NNW
9	Hargobind rice mills	Rice	Balamgarh rd, Mks.	8.8	NNW
10	Abhishek industries	Rice	Guru harsahai rd Mks.	8.8	NNW
11	Janta rice mills	Rice	Balamgarh rd, Mks.	8.8	NNW
12	Mohan lal kalra rice & Gen mill	Rice	jbd rd. Mukatsar.	8.8	NNW
13	Mukti rice mill	Rice	Barkandiraod, Mks.	8.8	NNW
14	Suman steel ind	Steel Furniture	Kacha fjr rd, Mks.	8.8	NNW
15	Chaand cold store	cold store	Gaushala rd, Mks .	8.8	NNW
16	B.S. oil mill	Oil Mill	Balamgarh road, Mukatsar.	8.8	NNW
17	Mukatsar cold storage & ice factory	Ice & Cold Store	Factory road , Mukatsar	8.8	NNW
18	Star rice mills	Rice	Waring road ,Mukatsar	8.8	NNW
19	Jiwan rice mills	Rice	Sadarwal road, Mukatsar.	8.8	NNW
20	Sachdava agro industries	Rice	Jbd road, Badai	8.8	NNW
21	Bharat rice mills	Rice	Abohar road, Mukatsar	9.4	NW
22	Albro pharmaceuticals Pvt. Ltd.	medicine	Abohar rd to jbd road, Mukatsar.	8.8	NNW
23	Pathela Marble Industries	Marble	Abohar road, Mukatsar	8.8	NNW
24	J.S.Oil Mills	Oil	Tibbi sahib road, Mukatsar	8.8	NNW
25	Narindra rice & gen mills	Rice	Maur road, Mukatsar.	8.8	NNW
26	Ganesh rice mills Rice	Rice	Jallalabad road, Muktsar	8.8	NNW
27	Kassrija rice mills	Rice	Kkp Road ,Mukatsar	8.8	NNW
28	Yadav Rice Mill Unit 2	Rice	Balamgarg road , Mukatsar	8.8	NNW
29	Surya Rice and Gen Mills	Rice Mills	GuruHarshan Road Muktsar	8.8	NNW
30	Muktsar Cotton Ginning & pressing factory	Cotton Ginning	Factoy Road Muktsar	8.8	NNW
31	Kissan chemical & Fertilizers	Fertilizer	Kotli road Mukatsar	8.8	NNW
32	Adarsh rice & gen mill	Rice	Malout Road Mukatsar	8.8	NNW
33	Sanmaan Rice mill	Rice	Sadar wala road Muktsar	8.8	NNW
34	Aggarwal cattlefeed	Cattle feed	Abohar road, Muktsar	8.8	NNW
35	J.K. Rice Mill	Rice	Malout road, Muktsar	8.8	NNW
36	J. H. Agro service pvt	Cold Store	Malout road , Muktsar	8.8	NNW
37	Laxmi rice mill	Rice	Balamgarh road , Muktsar	8.8	NNW
38	Ganga Chem fertilizers pvt. Ltd.	Fertilizer	Jalallabad road , Muktsar	8.8	NNW
39	Gayatree cold storage (p) Ltd.	Cold store	Kkp road, Muktsar	8.8	NNW
40	Bansal paper & board mill	Straw board	Vpo. Mahabadhar	5.4	W
41	Anand aluminium industries	Aluminium utensils	Malout road, Muktsar	5.0	N

Table 2-5: List of Brick Kilns Units in Study Area (Source: Distt. Industries Centre, Muktsar, Punjab)

Sl. No.	Village Name	Name of Unit	Distance from Plant Site	Direction from Plant Site
1	Rupana	New age Bricks Industries	1.0	ESE
2	Goniana	Wadhwa Bricks Industries	2.3	NNW
3	"	Shivram Brick Kiln Company	2.3	NNW
4	"	NABI Gram Udyog Samiti	2.3	NNW
5	Rahurianwali	B.L. Bricks Kiln	3.8	WNW
6	"	Aggarwal Bricks Company	3.8	WNW
7	Chak Duhewala	Janta Brick Company	6.4	SSE
8	Dabra	Guru Nanak & B.K.O	6.9	SSW
9	Muktsar	Mittal Traders B.K.O.	8.8	NNW
10	"	Babu Lal Grover B.K.O.	8.8	NNW
11	"	S.S. Bricks Jalalabad Road	8.8	NNW
12	"	Grover & Company	8.8	NNW
13	Duhewala	Guru Bricks Industry	8.9	SSE
14	Thandewala	Arora Brothers B.K.O.	9.0	NE
15	"	Rajnish Kr. Harjinder Kr.	9.0	NE
16	"	S.K. Aggarwal & Co.	9.0	NE
17	"	Veer Babru Vijay Kumar	9.0	NE
18	Ude Karan	Harjinder Singh B.K.O	9.3	NNE
19	"	Lok Nath Raj Kumar B.K.O.	9.3	NNE

2.4 RESOURCE REQUIREMENTS

2.4.1 Land Requirement

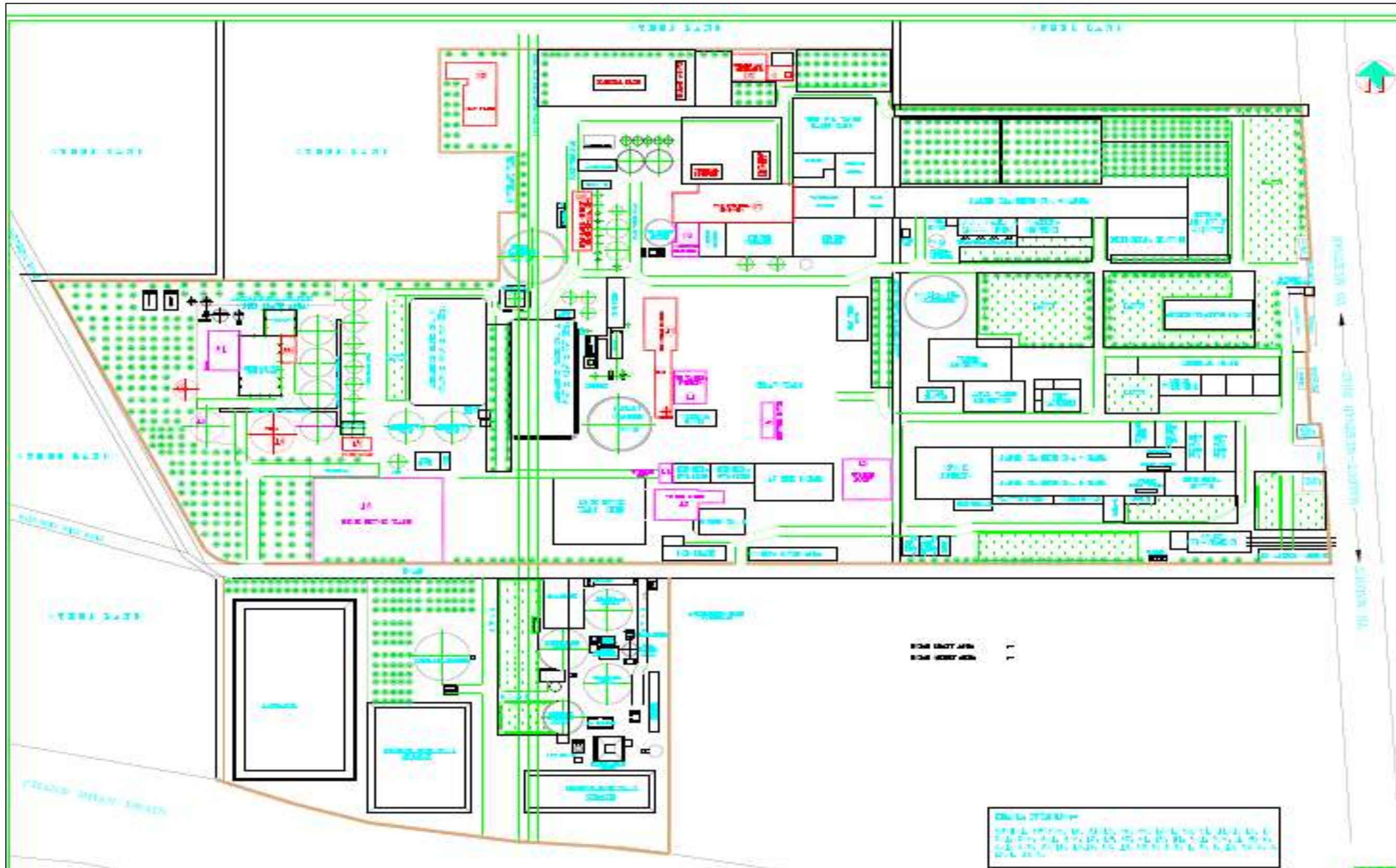
Satia Industries Ltd. has 145763 m² of existing land (comprising of Unit No. 1 & 2) to develop the complete industrial infrastructure for proposed project. Plant buildings, Raw material storage area, finished products shed, treatment facilities, fire hydrant and other ancillary amenities shall remain within the existing plot area. No additional land is required for the implementation of the proposed project and the existing land will be sufficient.

All necessary infrastructural facilities like power, transport, communication, water etc. are already available. The layout of the plant (**Map 2-3**) has provision for inclusion of all equipment and machinery required to be installed for the proposed modernization with all its accessories and auxiliaries. The layout has been designed considering various aspects such as layout constraints, flexibility in operation, optimum utilization of the available space etc. as also to minimize the effect of noise and emission of pollutants from the mill. Specifically, the following aspects have been considered. The plant layout showing the proposed plant is given in **Map 2-3**.

1. Compact layout avoiding the double handling of material and utilizing the available space effectively.
2. Optimum layout for proposed machinery.
3. Consideration to maintenance requirements of the equipment.
4. Adequate roads for truck movement without any hindrance.
5. Allocation of space for greenery and open spaces.



Map 2-3: Project Layout



2.4.2 Man Power

Local workers (skilled and semiskilled) will be employed during plant modernization phase, hence no housing facility shall be developed in the industrial premises. 100 Nos. of people will be additionally employed during the operation phase of proposed project.

2.4.3 Electricity (Both Unit No. 1 & Unit No. 2)

The industry has sanctioned load of 15 MW (11750 KVA Contact Demand) from Punjab State Power Corporation Ltd (PSPCL). The Power requirement for the existing unit no. 2 is around 4.5 MW (Total 13 MW for both units). After modernization, power requirement of both unit no. 1 & 2 is expected to be around 18 MW. The industry has already installed captive Co-generation plant of capacity 12.5 MW, one backpressure steam turbine of capacity 5 MW and another condensing steam turbine of capacity 5 MW. The industry proposes to install additional 12.5 MW capacity turbines and the existing steam condensing Turbine of 5 MW will be kept as standby. Excess power generated from proposed turbine will be sold to the grid.

2.4.4 Utilities

To meet steam requirement, Satia Industries Limited has 2 boilers of 45 and 75 TPH and another 50 TPH Recovery boiler for steam generation. Whereas the Chemical recovery Boiler is run through the Black Liquor, the other two runs on rice husk as well as biogas generated from UASB digester. The steam requirement for the proposed plant shall be met from the proposed 75 TPH boiler, which will run on rice husk and biogas generated from UASB digester. The rice husk is transported to the mill in the trucks and trolleys. The rice husk is available in plenty in the region. There is open storage area for rice husk. Requirement of fuels before and after modernization is given in **Table 2-6**.

Biogas is used as fuel for gas turbine and the same shall be used after proposed modernization also. Associated activities required by or for the project.

Table 2-6: Requirement of fuels before and after modernization

Sr. No.	Name of Fuel	Existing	Proposed	Total Modernization after
1.	Rice husk, ton/day	500	218	718
2.	Black liquor, ton/day	200	200	400

2.4.5 Capital Cost

The total investment of Rs.100.00 Crores is proposed for the up gradation/modernization of the existing unit, out of which 35.00 Crores will be spent on the Pollution control systems with E.S.P., 12.5 MW Turbine, and pure oxygen injection system. Detailed break-up of the proposed project is given in **Table 2-7**.

Table 2-7: Break-up of Cost for the proposed modernization

S. No.	Item	Cost (Rs in Lakhs)
1.	New Pulp Mill	3000
2	Steam Boiler (with ESP)	3000
3	Turbine and D.M Plant	3000
4	Pure oxygen Injection system in Aeration tank	500
5.	Miscellaneous	500
	TOTAL	10000



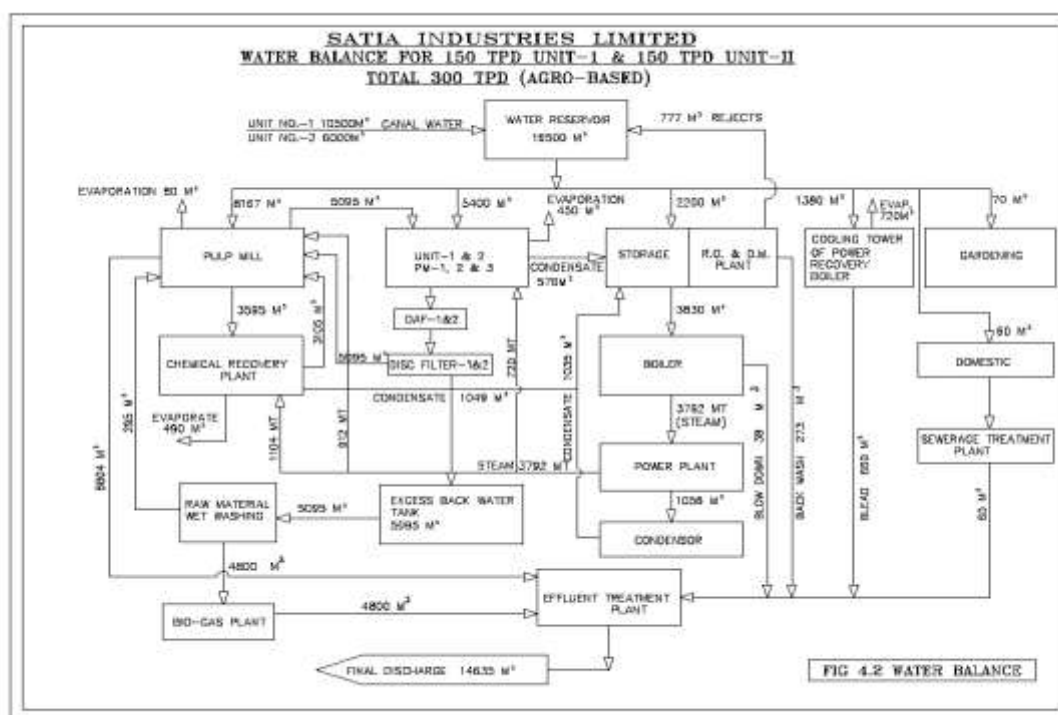
The paper industry is considered as water intensive industry. With the adoption of innovative methods and application of chemical and fiber recovery system, the industry has achieved substantial reduction of water consumption/ tons of paper with additional reduction of the chemical consumption per tons of paper. Both these innovations have been incorporated in the proposed project.

Presently, the daily water requirement is 10,500 m³ for Unit No. 1 and 870 m³ for Unit No. 2, which is met through Arniwala Canal that is hardly 2.5 KM from the mill and is connected with the industry. The daily requirement of water after proposed modernization will be approx. 6.75 cu/sec (16500 m³/day) for both unit no. 1 & 2, which will be met from canal water (existing Arniwala Canal). The company has already obtained approval from state irrigation department and the same is attached as **Annexure 6**.

To reduce the quantity of water, the company is regularly taking steps to reduce the consumption of water and presently consumption of water is 70 m³ per ton of paper. After Modernization with combined pulping and by using disc filters, fresh water will be replaced by machine backwater so fresh water consumption will be reduced from 70 m³ to 55 m³ through reprocessing of the Machine back water at various stages. Besides this, the company is also exploring possibilities for storage of water through rainwater harvesting.

Water shall be required for Process, Cooling, Drinking and Sanitation. After modernization, the total water required shall be approximately 16500 m³/day, of the total water consumption of 16500 m³; about 14635 m³ shall be discharged into plantation area. Water Balance is shown in figure 2-1.

Figure 2-1: Water Balance Diagram for the Proposed 150 TPD Plant



2.4.7 Transportation of Raw Materials

The unit is situated at Village Rupana (Muktsar) and there is no problem in transportation of finished goods and raw materials. Major raw materials i.e. wheat straw and sarkanda is available in the region. Delhi is situated at only 390 km away from the site and all the urgent requirement of stores, spares, consumables and chemicals is met out within 8-10 hours.

Transportation of raw material and finished products is a major activity of the mill. All raw materials and finished products are transported by road. SIL has sufficient area and adopted adequate measures to mitigate transportation of existing mills activities as well as for proposed project. The mill has already provided separate areas for loading & unloading of raw materials. Proper parking areas are also in practice for all vehicles i.e. trucks etc. wherever required.

2.4.8 Storage of Raw Materials, Chemicals and Disaster Prevention

SIL has already followed a proper method for storage of raw material and chemicals etc. Raw material such as wheat straw; Sarkanda; woodchips & vaneer chips, etc. is stored separately at identified places having sufficient areas. The storage of raw material is done on brick lined ground to take care of associated environmental impacts. Similarly, rice husk areas are marked separately to use it conveniently.

For main storage & in plant storage of liquid oxygen, a requisite authorization is being renewed regularly from the concerned authority for safe storage and handling. The storage area of all these chemicals is separately, identified. Moreover, mill has already formulated 'On site Emergency Plan' to take care of all preventive measures in handling & storage of chemicals with an isolated storage facility having complete safety measures.

The storage area of chemicals has sufficient capacity for its storage. A rehearsal of 'On-site Emergency Plan' is also being conducted regularly in a year after informing to concerned authorities. A regular safety audit is being conducted by the Safety Department to take remedial measures for the same. Adequate safety measures are being adopted to avoid any type of hazard arising during storage and handling. Training and awareness is imparted to employees at regular intervals for safe handling of chemicals; use of PPE's & environment control etc. PPE's are also being provided to employees.

2.4.9 Energy Efficiency

Energy conservation is prime motto of Satia Industries Ltd. and for that SIL has created special funds for latest energy efficient equipment & technology. SIL has the action plan for procurement of energy efficient equipment like pumps, motor, compressors & blowers etc. SIL will procure the energy efficient level II motor. SIL will consider only those suppliers who manufacture the equipment of star marking.

Latest LED type lighting will be procured for above plant and will have ON/OFF control with photocells. All lighting will be designed so that at low power, more illuminations is obtained. All equipments will have the characteristics of low watt losses, pipes will have less bends. Voltage of all system will be optimized to minimize the losses.

2.5 RAW MATERIALS & PRODUCTS

Satia Industries Ltd. (Unit No. 2) at present is engaged in the production of Writing and Printing Paper from waste paper and after proposed modernization, raw material shall be agricultural residues such as wheat straw, sarkanda, Wood/Veneer chips, imported wood and waste paper. Product profile is given in **Table 2-8**. The use of various raw materials and process of manufacture of various products is briefly discussed to understand pollutants generation and water conservation.





Table 2-8: Product profiles in the existing and proposed unit

S. No.	Product Name	Existing	Proposed	After up-gradation
1.	Paper	150 tons /day	150 tons /day*	150 tons/day
2.	Captive Power Plant	12.5MW + 5 MW + 5 MW**	12.5 MW	12.5MW + 5 MW +12.5 MW

*Modernization of Existing plant

** The existing 5 MW condensate Turbine will be kept as standby after up-gradation of Unit No. 2.

The raw materials for paper manufacturing are given below:

Wheat Straw: The wheat straw is supplied by local farmers / suppliers at factory gate. The promoters are already procuring wheat straw from local sources for Unit No. 1 and therefore, the Company does not expect to face any difficulty in sourcing the required quantity of wheat straw for the enhanced capacity. Peak availability season is April to July.

Sarkanda: Sarkanda, a wild grass is available in nearby area. It is used subject to availability. However, availability is small and is used along with Wheat straw.

Bagasse: Bagasse availability in the region is very small and it is used after depithing and wet cleaning along with wheat straw.

Wood /Veneer Chips: Ply industry waste veneer chips as raw material will be used to make pulp for strength of paper and improve quality of black liquor

Imported Wood Pulp: Wood pulp is used as supplementary long fibre requirement in paper manufacturing. Import of wood pulp is permitted under OGL and is generally imported from USA, Finland, Sweden and Germany.

The quantities of raw materials and chemicals required on full capacity utilization, all of which are easily available, are given in **Table 2-9** for the proposed modernization. The material balance of raw material and product for the proposed plant is given as **Figure 2-2**.

Table 2-9: Raw Materials Requirement for Plant (Unit No. 2)

S. No.	Name of Raw Materials	Existing	Proposed after Modernization	Remarks
1.	Imported Waste Paper	105	0	It is used in existing plant technology only and shall discontinue in proposed project.
2.	Indian Waste Paper	5	0	
3.	Wood Pulp	1	0	
4.	Paper Additives	4.061	3.518*	*quantities reduce due to modernization technics used at proposed plant.
5.	Soap Stone	48	17.65*	
6.	Wheat straw, Sarkanda, baggase, Cotton sticks	--	218.02	Raw materials used only in proposed modernization technology.
7.	Wood chips	--	88	
8.	Caustic	--	54.09	
9.	Liquid Oxygen	--	4.32	
10.	Chlorine Dioxide	--	3.37	
11.	Hydrogen Peroxide	--	1.62	
12.	Lime	--	45.81	

2.5.1 Storage details for raw material and chemicals:

SIL has already followed a proper method for storage of raw material and chemicals etc. Raw material such as wheat straw; Sarkanda; woodchips & vaneer chips, etc. is stored separately at identified places having sufficient areas. The storage of raw material is done on brick lined ground to take care of associated environmental impacts. Similarly, rice husk areas are marked separately to use it conveniently. For main storage & in plant storage of liquid oxygen, a requisite authorization is being renewed regularly from the concerned authority for safe storage and handling. The storage area of all these chemicals is separately, identified. Moreover, mill has already formulated 'On site Emergency Plan' to take care of all preventive measures in handling & storage of chemicals with an isolated storage facility having complete safety measures. The storage area of chemicals has sufficient capacity for its storage. A rehearsal of 'On-site Emergency Plan' is also being conducted regularly in a year after informing to concerned authorities. A regular safety audit is being conducted by the Safety Department to take remedial measures for the same. Adequate safety measures are being adopted to avoid any type of hazard arising during storage and handling. Training and awareness is imparted to employees at regular intervals for safe handling of chemicals; use of PPE's & environment control etc. PPE's are also being provided to employees.

Paper additives: They are stored in sheds having enough area and easy access.

Soap stones: is stored in sheds with proper ventilation.

Wheat straw, sarkanda, baggase, cotton sticks: stored in open areas with brick lined floor.

Wood chips: stored in open areas in concrete floor.

Caustic: stored in storage tanks of adequate capacity.

Liquid oxygen: stored separately in tanks in isolated area with prior consent from PPCB

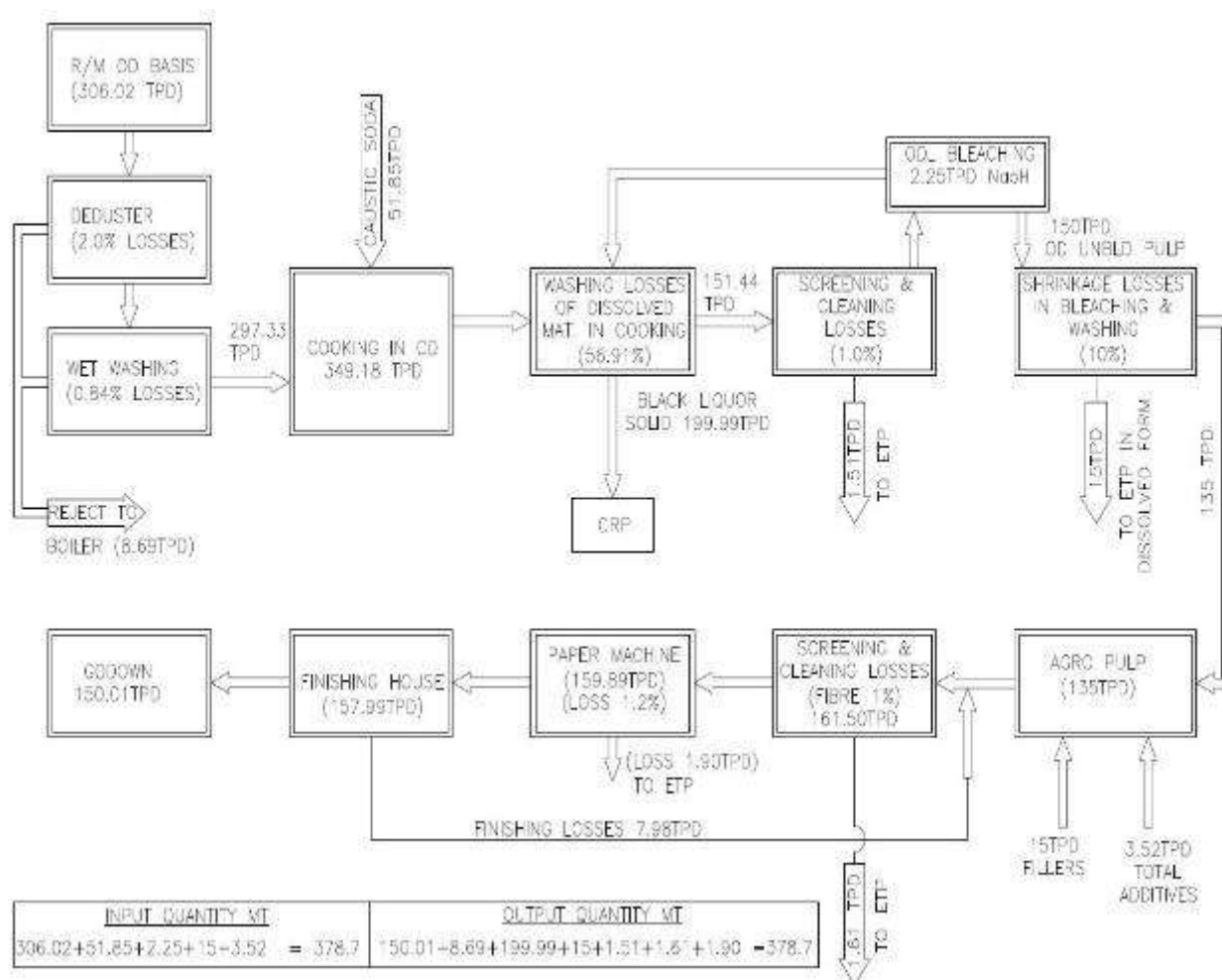
Chlorine dioxide: separate ClO₂ plant built with adequate safety measures.

Hydrogen peroxide: stored separately at isolated area





Figure 2-2: Material balance of raw material and product for the proposed plant



2.6 PAPER MANUFACTURING PROCESS AND ITS MODERNIZATION

2.6.1 Paper Manufacturing Process

The paper manufacturing process is divided in the following stages–

1. Pulping Process
2. Stock Preparation
3. Paper Making
4. Converting & Finishing

The description of the process is given as below:

Pulping Process

The main raw material for paper making is agricultural residue with small quantities of Indian/ imported wood chips.

Raw Material Preparation

The raw material for agro pulping is wheat straw, sarkanda and bagasse, cotton sticks and Wood chips Agro residues is processed through wet washing system to remove sand, fines and other

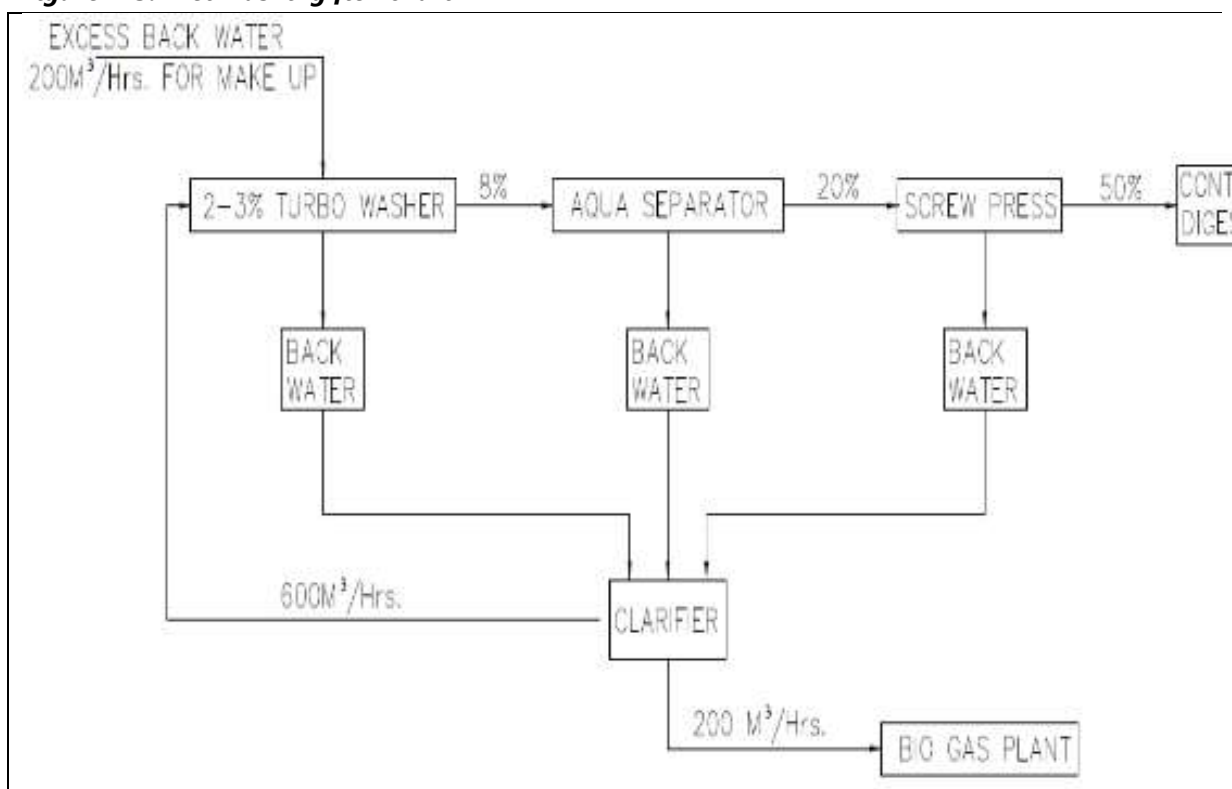
unwanted materials. Removal of these unwanted materials is beneficial to improve pulp and black liquor quality.

Wet washing system includes De-duster, turbo paddler and aqua separator. Initially wheat straw is fed through belt conveyer to De-duster for the removal of non-cellulosic material/ unwanted particles. Afterwards, wheat straw is sent to turbo paddle mixture, which maintains water level upto, predetermined level and paddle provides turbulence that dissolves dirt/mud/sand in water and cleaned wheat straw with 7-8% consistency is obtained from the top of turbo paddler. Finally, aqua separator followed by screw press works for de-watering of the raw material. The wastewater is sent to clarifier. About 75% of clarified effluent is re-circulated and other part is sent to biogas plant. Wet washing flowchart is given in **Figure 2-3**.

Bagasse is processed through depithier where approximate 80% of the total pith is removed. Depithed bagasse is fed to wet washing system to wash out remaining juice and pith. Washed wheat straw/ depithed bagasse/ sarkanda is charged in continuous digester for cooking. SIL has wet washing system and depithers sufficient enough to process Raw material

Further a clarifier of capacity 600 m³ has been introduced where paper machines back water, evaporator hot water, pumps waste water, fresh water etc are used to wash the raw material and hence mill waste water is recycled for the purpose of wet washing.

Figure 2-3: Wet washing flowchart



Continuous Cooking:

Cooking of raw material is carried out in a state of the art continuous digester to get soft and more uniform pulp, resulting in drastically reduction of bleaching chemicals requirement and gain in pulp strength properties and brightness. The purpose of the cooking is to chemically dissolve the lignin from raw material in order to obtain bleachable grade pulp.





The main components of digester are–

- Metering Screw
- Pin feeder
- Equalizing Screw
- Screw Feeder
- Cold Blow Discharge

The raw material is washed, squeezed and fed to digester. A screw feeder does squeezing after wet washing. During feeding the raw material is dewatered and homogenized. The filtrate from the screw feeder is returned to the wet cleaning system for reuse. The digester blow back valve is placed just opposite the screw feeder with the shutdown system for emergency cases to avoid the blow out of the digester content via screw feeder.

The cooking liquor, and steam for heating up the raw material is added to the inlet chamber and to the digester tubes. Different cooking and bleaching conditions are maintained for getting desired quality of pulp.

Cooking is carried out into horizontal tube digester equipped with variable speed screw which slowly conveys the material to be cooked and it ensure a high filling degree of the tube volume.

Salient Features of Continuous Digester:

- Less steam consumption per ton of pulp
- Less water consumption
- Less manpower requirement
- Low building cost and less space requirement
- Cold blow provision for improving pulp strength properties
- Gain in solid concentration of black liquor due to soft cooking
- Gain in yield due to less rejection and degradation of pulp for the same permagnate no.
- Better process control due to PLC/DCS controlled system.

Homogenous and soft cooking due to proper mixing of chemicals, steam and using of pulp aid with cooking liquor, resulting in reduction of chemicals demand in bleaching.

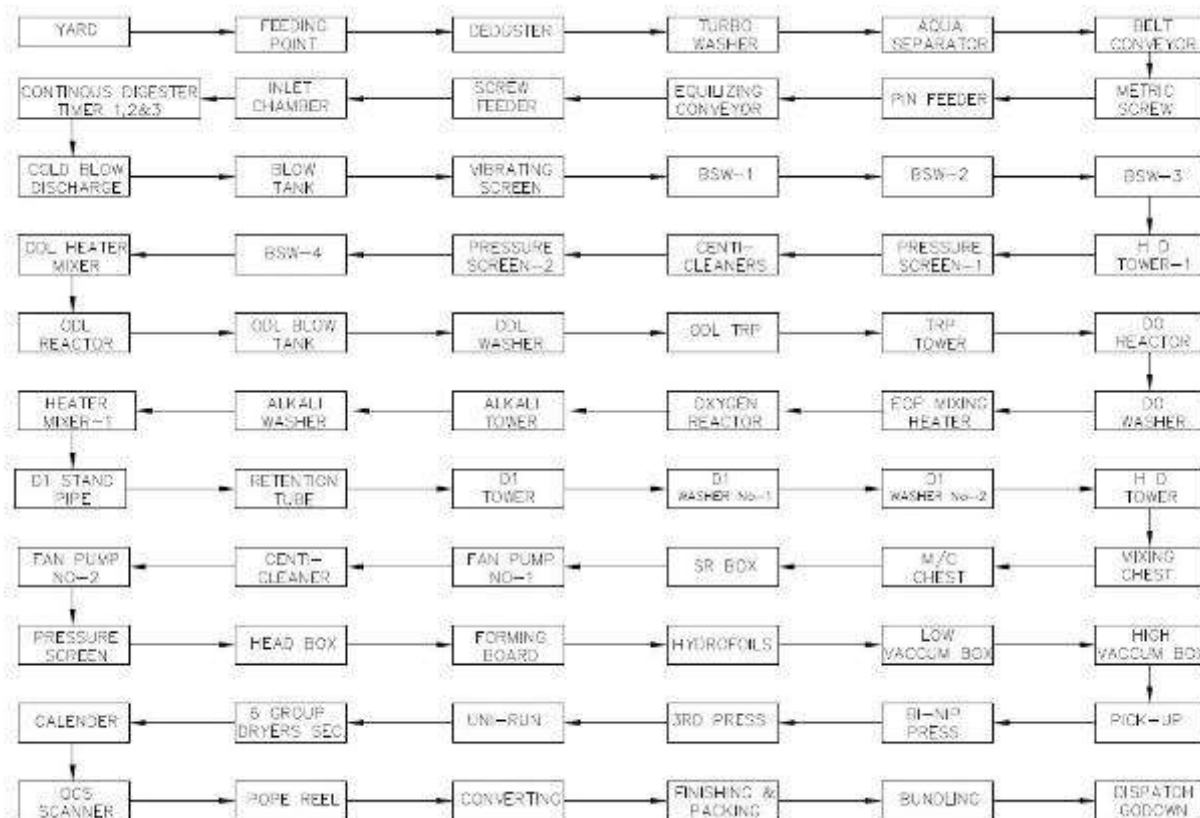
Wood pulping process

After cooking, the pulp is cooled down by injecting cold black liquor into cold blow discharge. The pulp is blown out from the cold blow discharge into the top dome of the blow tank, from there the pulp drops into the blow tank itself and is diluted to pump able consistency with black liquor.

The fresh water/ machine back water is heated up to 65 – 70°C with blow tank flash steam. This hot water is used in wet washing plant and pulp washing.

Existing pulp mill having two no's of continuous digesters are capable to produce the enhanced pulp requirement for the proposed up-gradation. Flow diagram for agro residue based pulping process is attached as **Figure 2-4**.

Figure 2-4: Flow Diagram for agricultural residue based pulping



Unbleached pulp washing, refining, screening and cleaning

The Pulp from blow tank is processed through vibrating screen and then 3 stage counter-current washing followed by 2 stages Twin-Roll Presses (TRP) for squeezing the pulp. It helps to reduce the black liquor carryover from unbleached wash plant to bleach plant. This minimizes the bleaching chemical consumption and helps to minimize the pollution load. The refining, screening and cleaning units are situated between third and fourth washer to clean and to make the pulp homogeneous. Pulp from fourth stage brown stock washer is passed through Twin-Roll Presses and the outlet of pulp is stored in an unbleached storage tower. Excess Black liquor from first brown stock washer seal tank is sent in soda recovery section to regenerate the caustic for cooking the pulp.

Satia has sufficient number of washers with counter current washing and Twin Roll Press with enhanced unbleached pulp processing capacity as per 150 MT of paper production with minimum chemical losses. The two stages TRP were procured earlier taking into consideration the future expansion.

SIL is also introducing Wood Pulp Street by using veneer chips/wood chips as raw material. These chips are the waste of the ply wood industry. The introduction of veneer chips pulping separately and mixing of the generated black liquor along with wheat straw black liquor will improve the efficiency of the chemical recovery plant. The veneer chips pulp liquor contains very small percentage of chlorides, potassium and silica when compared to wheat straw liquor. So the mixture of both liquors will reduce these non-process elements, and will help in increasing the concentration of liquor in evaporator due to less viscosity. Plant running hours will increase due to less jamming of body and boiler tubes.



Environment Friendly Bleaching Process

SIL has already employed Oxygen delignification and Chlorine dioxide bleaching to eliminate elemental chlorine bleaching i.e. the purpose of introducing Elemental Chlorine Free Bleaching (ECF Bleaching) in the process is to reduce pollution load as well as AOX level. Current bleaching Sequence is ODL D₀ (EOP) D₁ to make brown pulp into white up to desired level of brightness. The company has improved the washing of unbleached pulp by using Twin Roll Press Technology.

ODL - Oxygen Delignification

D₀ - Chlorine dioxide First Stage.

EOP – Alkali Extraction with Oxygen & Hydrogen peroxide

D₁- Chlorine dioxide Second Stage.

ODL Oxygen Delignification

The unbleached pulp mixed with oxygen and is sent to oxygen reactor. The desired retention time is provided to complete reaction and then washed pulp sent to bleaching plant. The waste water of filtrate can be used in the brown stock washers for counter current washing, TDS of ODL back water contains pollution load of organic lignin and coloring materials which will be utilized by burning in recovery boiler to produce steam and power.

D0 Stage Chlorine dioxide

ODL treated pulp is treated with Chlorine dioxide and sent to up flow tower for reaction. After the reaction, the pulp is washed in D₀ washer. In the outlet of D₀ washer NaOH, (Caustic) and Peroxide is added and sent to O₂ reactor. O₂ is injected in the inlet of the reactor. After the reaction is completed, the pulp is washed. In EOP washer and stored in a tower to maintain the retention time required.

D1 Stage Chlorine dioxide

After alkali washing, pulp is sent to up flow D₁ tower by using mild Chlorine dioxide bleaching to achieve the desired brightness and whiteness of final pulp. Afterwards, pulp is passed through Twin Roll Press (TRP).

After commissioning of Twin Roll Press, squeezing of unbleached pulp improved and consistency of outlet pulp increased from 12% to 30%. This help to utilize the generated system back water from chlorine dioxide stage in system for dilution. This reduces the water consumption as well as bleaching chemicals. The ODL D₀ EOP D₁ system is considered as environment friendly process. So less organic waste will be discharged in the waste water from the bleach plant.

To reduce water consumption & effluent generation, following steps will be taken

- Utilization of paper machine back water for washing of pulp in bleaching stages.
- Maximum circulation of bleaching plant filtrate.

SIL has sufficient number of washers for the enhanced bleached pulp processing capacity for 150 MT of paper production with minimum chemical losses.

Wood Pulping

Wood chips are fed to the digester for cooking in the presence of Sodium Hydroxide at required temperature to convert lignin, which gets dissolved in black liquor. When cooking is complete, the contents of the digester are transferred to a tank usually referred to as a blow tank. The entire

contents of the blow tank are sent to pulp washers, where the spent cooking liquor is separated from the pulp. The pulp then proceeds through various stages of washing and bleaching.

Imported Wood pulp Processing

Wood pulp received in bales/reels is loaded in hydra pulper for disintegration, from where it is taken to a separate chest after refining to get desired freeness. Refined pulp is stored in a chest from where it is sent to stock preparation section as per the furnish requirement, it will be used.

2.6.2 Stock Preparation

This is the primary stage of paper making. Different type of pulp is mixed in stock preparation in different proportion as per the quality of paper required. Other additives like AKD, PAC, whitening agent, wet end additives and fillers etc. are also added in mixing chest. From mixing chest, pulp is sent to machine chest for papermaking. From machine chest pulp is taken to head box after cleaning in centri-cleaners and pressure screen. Broke generated during papermaking and finishing is treated in a separate hydra-pulper and blended in mixing chest. Couch pit pulp from couch thickener is also sent to machine chest.

2.6.3 Paper Making

The stock received from stock preparation is pumped to head box through stuff box, centri-cleaners and pressure screens. The dilute suspension of fibers and water in head box is spread over synthetic forming fabric uniformly. This synthetic forming fabric is endless and perforated belt. It remains rotating according to machine speed. The sheet formation takes place on formation fabric where water starts draining out from the pulp suspension. The drained water is called back water which is used for stock dilution. Excess backwater is taken to Saveall for clarification. The clarified water is re-used in the process. On the synthetic forming fabric when the drainage of water through gravity reduces then water is removed by suction using vacuum.

The vacuum is applied by providing a number of suction boxes beneath the synthetic forming fabric for the drainage of water. The operating parameters are maintained and monitored continuously. In the end of sheet forming process the paper formed is called as web and it still remains quite wet.

In press part, water is removed further by passing the web between two rotating rolls along with press felt. Here, when the web is pressed between rolls, the water squeezes out and felt absorbs it. This process of pressing is done in three stages. The water absorbed by the felt is sucked through vacuum.

Now after completing the water removal process through pressing, the remaining water present in paper is removed by evaporation through drying. In this process the paper is passed over steam heated dryers. These dryers are continuously heated by injecting steam inside it. Here the paper is dried gradually. These dryers are also rotating according to machine speed. The temperature of dryers is maintained and monitored continuously. Here the paper is dried up to it's final dryness. Before reeling the paper on jumbo roll, it is calendared for smoothness and evenness.

2.6.4 Converting & Finishing

The converting process of paper comprises in two operations:

- Sheeting
- Rewinding

In sheeting process the paper rolls are taken out from pope reel and loaded on duplex sheet cutter. The paper cut into different specified sizes on this machine and it is further sent to finishing section.



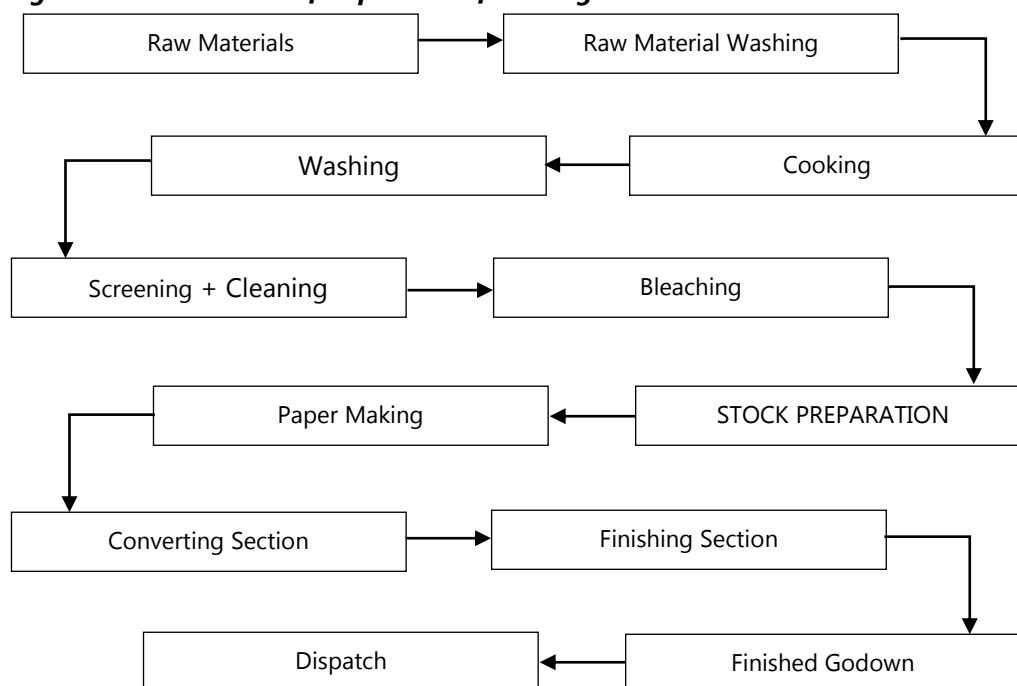


In finishing section the cut sheets are inspected manually to remove any defective sheet. Now by counting the reams of 500 sheets are made. These reams are packed into wrapper and then into Hessian/HDPE sheets in the form of bundle. The paper in the form of bundles is sent to go down for dispatch.

In rewinding process, the paper roll is un-winded and then rewinded on rewinder. The reels are made in specified sizes. The defective paper removed during converting and finishing as well as paper machine is pulped and recycled in the system. The small reels are wrapped and packed in wrapper and Hessian/HDPE sheets and finally sent to go down for dispatch.

The flow diagram of the manufacturing process is given as **Figure 2-5**.

Figure 2-5: Flow Chart of Paper Manufacturing Process



2.7 POLLUTION POTENTIAL

In principle, these are the major sources of pollution affecting the environment.

1. Water pollution
2. Air pollution
3. Hazardous waste
4. Noise and vibration

2.7.1 Water Pollution

Paper industry is one of the water intensive industry, so two types of effluents are generated in the integrated pulp & paper plants, i.e., black liquor & mill effluent. Black liquor, which is highly polluted, is treated in Chemical Recovery plant to produce value added product - Sodium hydroxide. Balance mill effluent is treated in conventional effluent treatment plant to achieve the prescribed norms of final discharge.

Break up of Liquid Effluent Generation

Three main streams are generating effluent in an integrated pulp & paper mill. The first one is raw material washing, second one is washing of unbleached pulp and finally the bleaching stages of the pulp and other minor effluent generating streams like paper machine, DM plant and boiler. Out of these three, the effluent from second stream is treated in Chemical Recovery Plant (C.R.P.) for recovery of valuable caustic soda from the effluent. The black liquor shall be treated in the chemical recovery plant to recover caustic soda.

Satia Industries Limited has provided different treatment scheme for rest of the two streams. The raw material washing effluent is also used for recovery of the energy in terms of methane (Biogas) which is used for burning in the boiler, thus reducing the fuel consumption and also reducing footprint on the carbon emission.

The bleaching & other stage effluent is treated in conventional ETP scheme comprising of primary & secondary treatment. The quantity of effluent generated from different sections of the mill is depicted in **Table 2-10**.

Table 2-10: Sources of effluent with existing quantity and quantity after modernization

S. No.	Source of Effluent	Existing Quantity of Unit No. 1 (m ³ /day)	Existing Quantity of Unit No. 2 (m ³ /day)	Quantity of Combined Unit No. 1 & 2 after up gradation
1	Wet Washing System	3760	N.A	4800
2	Pulp Mill	4090	N.A	8804
3	Paper Machine	-	870	0
4	DM Plant/Boiler	329	N.A	311
5	Cooling Tower	665	N.A.	660
6	Domestic	56*	N.A	60*
	TOTAL	8900	870	14,635

*Common for both Unit No. 1 & 2

2.7.2 Air pollution

The area of Air Pollution is gases and particles emerging out of combustion of Rice Husk in Boilers and burning of Black Liquor in recovery boiler. To meet steam requirement, Satia Industries Limited has existing 45 TPH, 75 TPH and a 50 TPH recovery boiler. After modernization the proponent will install 75 TPH power boilers. The Chemical recovery Boiler is run through the Black Liquor, the other two runs on rice husk. 75 TPH power boiler & 50 TPH recovery boiler are equipped with three field hammer type Electrostatic Precipitators (ESP's) for SPM control & 45 TPH power boiler is equipped with wet scrubber, multi cyclone separator. After commissioning of 75 TPH boiler, 45 TPH will be kept as stand by. Characteristics of stacks are given in **Table 2-11**.

Table 2-11: Characteristics of stacks of various boilers

Stack Details	45 TPH Boiler (Existing)	50 TPH Recovery Boiler (Existing)	75 TPH Power Boiler (Existing)	75 TPH Proposed for modernization
a) M.O.C.	R C C	R C C	R.C.C.	R.C.C.
b) Internal diameter				
Top	2.8 m	2.5m	2.8 m	2.8. m
Bottom	2.8 m	5.5 m	2.8 m	2.8 m
c) Height(m)				
From ground level	65 m	65 m	65 m	65 m
d) Fuel	Rice Husk	Black Liquor	Rice Husk	Rice Husk
Fuel Consumption	250 TPD	400TPD	359 TPD	359 TPD





2.7.3 Solid/ Hazardous Waste

The quantity and characteristics of solid wastes generated from the plant (shown in **Table 2-12**) and their disposal arrangement shall be as follows.

Table 2-12: Quantity of solid and hazardous waste before and after modernization

S.No.	Solid Waste	Section	Existing Quantity (MT/day)	Quantity after Modernization (MT/day)
1.	ETP Sludge (Category 32.3)	Effluent Treatment Plant	6.0	10.0
2.	Boiler Ash	Boiler House	45	63.75
3.	Lime Sludge	Cautisizing	90	173.0

Storage, Utilization and disposal of wastes

The sludge generated from primary clarifier and excess sludge from both secondary clarifiers is dewatered by sludge press. The filtrate (having approximately 75% moisture) is sold to cardboard manufacturers. The quantity and characteristics of solid wastes generated from the plant and their disposal arrangement shall be as follows: The ETP sludge is collected on RCC platform and lifted by nearby small-scale cardboard manufacturers for making cardboards. The boiler ash and lime sludge generated from causticizing plant is collected directly in the trolleys and shifted for filling of the low lying areas. SIL is having authorization for collection, storage and disposal of hazardous waste from Punjab Pollution control Board.

ETP sludge Cat 32.3: taken by Bansal Paper Board Mill, Mahabhadar.

Boiler Ash: sent to low lying areas for land filling.

Lime sludge: sent to low lying areas for land filling.

2.7.4 Noise Pollution

The acoustical environment varies dynamically in magnitude and character throughout most communities. The noise level variation can be temporal, spectral and spatial. The residential noise level is that level below which the ambient noise does not seem to drop down during the given time interval and is generally characterized by unidentified sources. Ambient noise level is characterized by significant variations above a base or a residential noise level. The maximum impact of noise is felt on urban areas or highways which are mostly due to the commercial activities and vehicular movement during peak hours of the day.

From environment point of view, higher noise levels may affect health of human beings and disturbance to animals if they are in proximity to the noise generating source. Measurement of noise levels in the in plant area and the study area at several locations has been carried out to determine the existing noise levels to subsequently assess increment in noise levels at battery limits due to the expansion of Writing and Printing Paper plant.

Noise levels recorded at each station are computed for Equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

Noise levels during the night time generally drop, therefore to compute Equivalent noise levels for the night time, noise levels are increased by 10 dB(A) as the night time high noise levels are judged more annoying compared to the day time.

It is expected that noise will be generated during the construction phase due to vehicular movement and operation of construction equipments. Well maintained vehicles and construction equipment shall be engaged to minimize the noise pollution. During operation phase, noise will be generated due to various industrial activities.

Due to power plant operations, noise pollution shall arise from Turbine, compressor, generator room, etc. High noise level shall be felt only near the active working areas. However, at distance away from the source, the level shall get considerably reduced. The plant and equipment shall be specified and designed with a view to minimize noise pollution

2.8 CONSENT TO AIR, WATER AND HAZARDOUS WASTE AND ITS COMPLIANCE

Satia Industries is adhering to the norms prescribed by PPCB and CPCB from time to time. The consent to operate under Air Act, 1981, Water Act, 1974 and authorization for collection, storage and disposal of hazardous waste is given in **Annexure 8** and their Compliance to consent conditions in **Annexure 9**. The analysis of samples of ETP, Stack gas and Ambient Air conducted by state Lab are presented in **Annexure 10**.





3 DESCRIPTION OF THE ENVIRONMENT

3.1 INTRODUCTION

The Baseline Survey is the first step in the project that gathers key information early in a project so that later judgments can be made about the quality and development results achieved of the project. The project's monitoring and evaluation plan is closely linked to each (objective) level of the log frame and includes indicators of achievement and means of verification. The Baseline Survey is an early element in the monitoring and evaluation plan and uses the log frame structure to systematically assess the circumstances in which the project commences. It provides the basis for subsequent assessment of how efficiently the activity is being implemented and the eventual results achieved.

3.2 APPROACH & METHODOLOGY OF BASELINE STUDY

3.2.1 Study Area

The impact zone within 10km radius of the Satia Industries Limited (Unit No. 2) (SIL) situated at village Rupana Distt. Muktsar (Punjab) is the study area.

3.2.2 Study Period

Study period included the months of March, April and May' 2016.

3.2.3 Sampling Location

Sampling locations for air monitoring have been shown in **Table 3-13**, water monitoring is shown in **Table 3-19**, and soil monitoring is shown in **Table 3-22** and for noise in **Table 3-24**.

3.2.4 Frequency of Sampling

Suspended particulate matter (PM₁₀ & PM_{2.5}) and gaseous samples were collected on 24 hours basis, at a frequency of twice a week and compared with National Ambient Air Quality standards.

Water, Soil and noise samples were collected from different locations within 10km radius around the proposed project site.

3.2.5 Method of Sampling and Analysis

Ambient air quality monitoring was conducted by deploying Repairable Dust Samplers & Fine Dust Samplers with required accessories for collection of particulates. Sampling and analysis was done as per the standard procedures.

- PM₁₀ and PM_{2.5} were collected at a suitable sampling rate on pre-weighed glass micro fibre filter paper (PTFE) and estimated gravimetrically, while gaseous pollutants were absorbed in suitable absorbing solutions and analysed calorimetrically with the help of a spectrophotometer.
- NO_x and SO_x samples were collected using High Volume Sampler and sample was analysed in lab using Indian Standard Method IS5182 (Part 6 and 2).
- For quality assessment, ground water samples were collected within area of 10km in radius during study period and analysed for various physical and chemical properties.

- Soil samples were collected within area of 10km in radius and were analysed for physical as well as chemical characteristics.
- Noise levels were measured in the plant, highway, residential areas and other settlement located within 10km radius around the project site.

3.3 LANDUSE

Remote sensing data provides reliable accurate baseline information for land use and Land cover mapping. Remote sensing provides land resource data in the form of different bands of the electromagnetic spectrum. Availability of such a data in different bands make it very useful for delineation of land use/land cover classes distinctly. Land use/land cover mapping both by visual interpretation and digital automated analysis is possible by satellite remote sensing techniques. The land use / land cover categories can be expanded or reduced to any degree and be made more responsive to the information the user needs. In order to secure uniformity for the whole country a master land use/land cover classification system developed by agencies like NRSC must be adopted for consideration. The classification system facilitates the planners and researchers to study the spatial difference and distinction between various lands types, from multi temporal satellite data.

3.3.1 Data Sets

Primary Data:

- GPS Survey
- Soil Infiltration Data
- Goundwater Level Data
- Water Quality Test – TDS (Field)
- Soil Sample Collection
- Water Sample Collection

Secondary Data:

- SOI Toposheet
- Geological Survey of India Maps
- National Bureau of Soil Science Maps
- Satellite Images from ASTER
- Satellite Image from Landsat 8
- Google Earth Images
- Census Book 2011
- Published Reports and Books

3.3.2 Methodology

The work is done by visual image interpretation. The following steps are involved in the classification procedure.

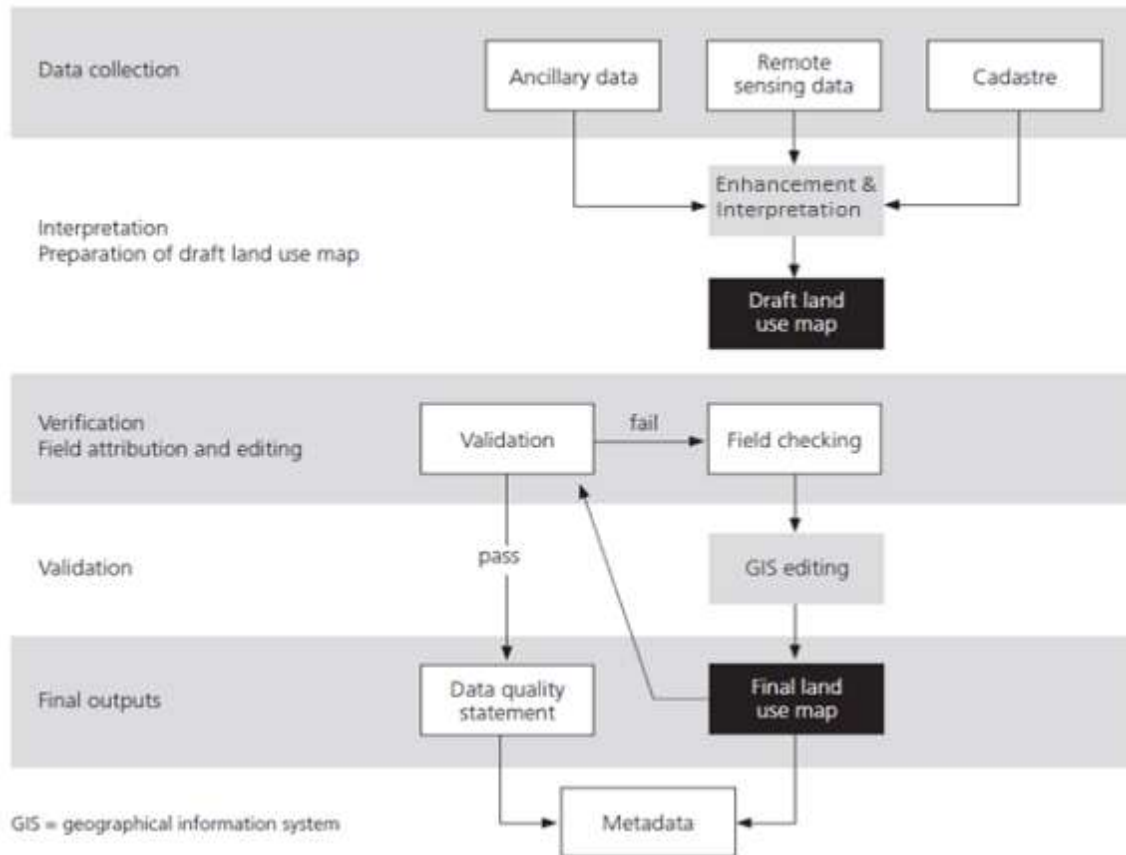
3.3.3 Framework of Landuse Mapping

The general procedure for land use mapping is summarised in **Figure 3-1** which includes data collection, Enhancement and interpretation, Draft map, verification, validation and final outputs.





Figure 3-1: Procedure for Land Use Mapping



Details for the six main parts of land use mapping are described in the following steps:

- Data Acquisition/Collection,
- Data Enhancement and Interpretation: Pre-processing and Geo-rectification.
- Training area definition, signature generation and classification for Draft Landuse Map
- Ground data collection, Verification and validation.
- Annotation, demarcation of administrative boundaries and other features.
- Generation of statistics from the classified outputs and Final report

Data Acquisition

1. Acquire the necessary data, including:

- cadastral, village, taluka boundaries etc.
- acquire appropriate remotely sensed data such as air photos, Landsat Thematic Mapper (TM), IRS LISS III / IV, Cartosat, QuickBird and so on.
- ancillary data such as state digital topographic mapping, forestry maps. This may also include previous/old land use maps, which can be used as a basis for updating

Data Enhancement

2. This Satellite image data needs to be processed in order to enhance its characteristics.

- There are various techniques available for the pre-processing of the data in order to improve the accuracy, Contrast and Brightness based on its histogram and other parameters. Geo-

rectification and/or Ortho-rectification may also be required in order to improve on its spatial accuracy.

3. Collate data in GIS environment, check projection and adjust if necessary.
4. Create a list of map sheets for the project, and assign progress indicators and date of completion for each stage.

Classification and Draft Landuse

5. Interpret data into appropriate land use classes and create land use mask dataset with land use code attribute. We may also use data standards provided by different guidelines and Acts.
6. Enter interpreted data details into the metadata table. Check the interpreted classes against remotely sensed data.
7. Create and check Symbology and layout for the draft land use data.

Data collection and field Verification

8. Plan field mapping. Meet with local field officers and use their knowledge to annotate land use maps, review draft mapping and identify problem areas for assessment in the field. Overlay roads and plan data collection routes.
9. Create field maps. Plot two sets of field maps: draft land use with cadastral boundaries and remotely sensed data with cadastral boundaries. The field maps should be at a finer scale (e.g. for 1:25 000 land use mapping, use 1:15 000 field maps). Create and print a lookup table with all land use codes for reference.
10. Label polygons with appropriate codes and annotate polygons for additional modification. Capture additional land information and classes where possible with the help of GPS. If class allocation is not possible at the time, annotate the map and photograph the site.
11. Capture the photographs and Videos of all the possible features and its surrounding areas for later reference and reports. Geographic information system (GIS) editing
12. Check that all the features are correctly labelled and any problems are resolved before final edits. Update Landuse and metadata document.
13. Prepare data for validation. Administrative and other related Boundaries:
14. Village and Taluka boundaries are mapped from sources like Census books and overlayed on the prepared Landuse map for better understanding during report preparation. A buffer of 5 and 10 km from project site is required to be shown along with the monitoring locations during the final layout of Maps. Appropriate symbology for the Layout of the Maps has been used. Final Output:
15. Complete final edits as per the data quality statement and complete the metadata. Prepare various layout of the maps depending on the project requirement like Base Map, Village Map.

3.4 BASELINE ENVIRONMENT

3.4.1 Topography

Proposed project site is basically a flat terrain. Geographically the site is located at longitude 74° 31' 6.9" E and latitude 30° 25' 20.61" N. at an altitude of 200 m above mean sea level. The Company already own about 36.019 acres of land at Village Rupana, District Muktsar.





3.4.2 Geology & Seismology

Muktsar lies in Zone III of the seismic zone, which is a Moderate Damage Risk Zone (Msk 7). For the Cyclone prone area, Muktsar lies in the High Damage Risk Zone (wind speed $V_b = 47$ m/s) (Source: BMPTC vulnerability atlas).

3.4.3 Land use Pattern

The basic idea of land use classification for the purpose of EIA study is to define the distribution of the existing land according to its actual use.

Muktsar district lies in the south western part of the state and lies between North Latitude 29° 54' 20" & 30° 40' 20" and East Longitude 74° 15' , 74° 19' and falls in Survey of India Toposheet No. 44J & 44K and covers an geographical area of 2630 km². Landuse map showing study area is shown in **Map 3-1**.

The district has a population of 9,02,702 as per 2001 census with the population density of 295 person per sq.km. The district falls in the Ferozepur division and is divided into three tehsil subdivision two sub tehsils and four development blocks namely Kotbhai, Lambi, Malout and Muktsar for the purpose of administrative control. The district shares its boundary with Faridkot district in north and north east, in North West and eastern side with Ferozepur district. On the east, it is bounded by Bathinda district of Punjab. On the south by Hanumangarh district of Rajasthan and Sirsa district of Haryana state.

Physio-graphically, the area has no river and is covered extensively by the canal network of Sirhind feeder canal to meet the irrigation and drinking water needs of the people. The area is almost a flat terrain with slightly undulating lands going upto level of 203 mRL in the NE part. The area generally slopes from NE towards SW with altitude going down to 194 mRL.

The climate of the district is dry sub humid with grass land type of vegetation. The district forms a part of Satluj sub basin and main Indus basin. The district has mostly sierozem type of soil and partly desert soil in the south western part.

The area forms a part of Satluj sub basin and main Indus basin alluvial plains. The topography of the district is almost flat. It has an average elevation of 200m amsl, and slopes gently towards south and south-west. The district is dotted with a number of isolated sand dunes of varying dimensions. The sand dunes are of longitudinal type and do not show any preferred alignment. There is no river flowing through the district. A number of artificial drains cross the district which carries the excess run off during rains.

Lithologically, Muktsar is a part of the vast Indo-Gangetic alluvial plain, composed of alternate bands of sands, silt and clay with pebbles. Sandy plains, sand dunes and topographic depressions are the common landforms. The soil of Muktsar varies from sandy to loam in texture, and is low in organic carbon, phosphorus, zinc and other micro nutrients, but high in potassium. The salt affected soil of Muktsar has been categorized as sodic soil and saline sodic soil. The villages surrounding the city produce high yields of cotton, wheat, paddy and seed oil.

The area surrounding the Project site i.e. Satia Industries Ltd. is largely an agriculture and fallow land covering around 85% of the total study area (**Table 3-1**). A small portion of the study area i.e. 0.68 % is also covered by orchards / plantation. 3.2 % of the area is covered by the canal network designed for the agriculture which shows the important role of these canals in irrigation of Muktsar district. The site is well connected with the road and railway network, this network occupies around 4 % of the total study area. Build-up area in total occupies around 6.7 % out of which only 0.5 % comes under industrial area while 6.2 % comes under habitable or settlement area. Water body occupies the remaining portion of the total study area.

Map 3-1: Landuse Map of Study Area

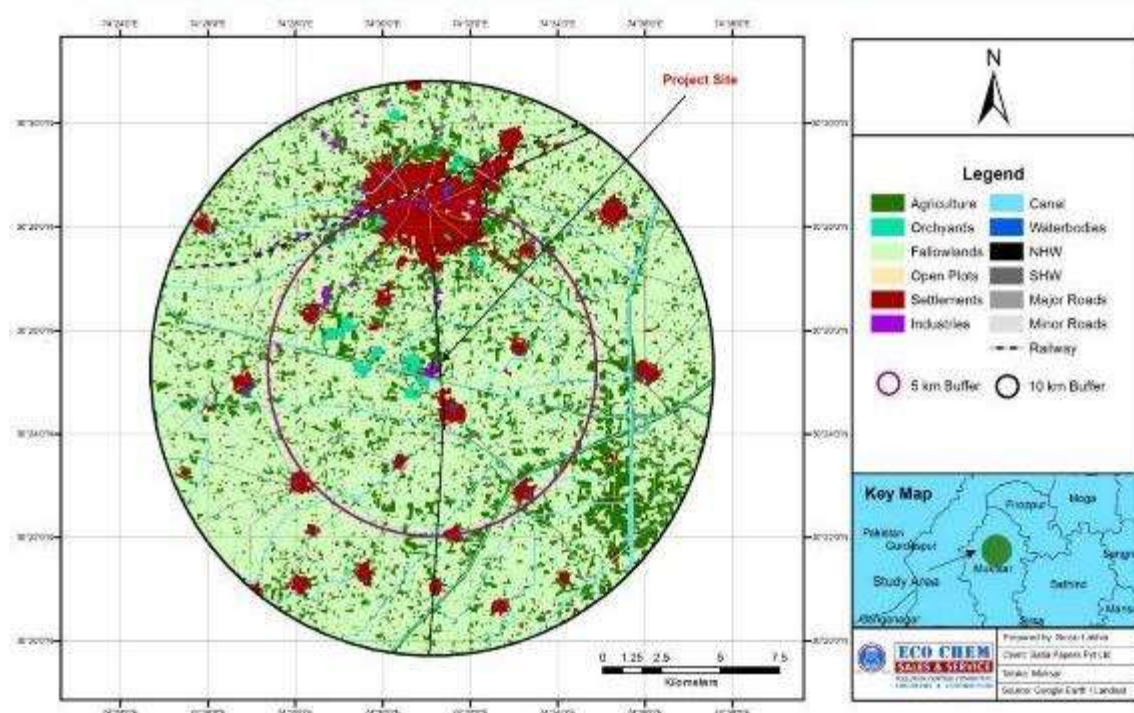


Table 3-1: Land use Pattern of Study Area

Legends	Area SqKm	Percentage
Agriculture	60.51230339	18.09%
Canal	10.72406732	3.21%
Fallow land	223.2327528	66.75%
Industries	1.635337814	0.49%
Major Roads	4.151339282	1.24%
Minor Roads	7.429868367	2.22%
NHW	1.291159204	0.39%
Open Plots	0.434503091	0.13%
Orchards	2.286043473	0.68%
Railway	0.902803351	0.27%
Settlements	20.6910457	6.19%
SHW	0.449241894	0.13%
Waterbodies	0.707523577	0.21%
Grand Total	334.4479893	100.00%

3.5 METEOROLOGY

To have an idea of existing meteorological conditions, meteorological data in terms of temperature, humidity, wind direction and wind velocity, cloud cover and rainfall were collected, details of which are presented in this chapter. Besides the above data long term meteorological data for the nearest IMD Observatory i.e. Bhatinda is also included in this Chapter to have an idea of long term meteorological conditions.





3.5.1 Temperature

Table 3-2: Climatological Normal Data – Air temperature (Source : Handbook of Indian Meteorological Deptt.)

Month		Mean (deg.C)						Extremes (deg.C)	
		Dry	Wet	Daily Max.	Daily Min.	Highest in	Lowest in	1959-1980	
		Bulb	Bulb					Highest	Lowest
January	I	10.3	8.0	20.5	4.5	24.3	0.7	27.9	-3.9
	II	18.0	12.5						
February	I	14.0	10.9	23.0	7.7	28.2	2.3	31.8	-0.9
	II	21.1	14.5						
March	I	19.6	15.1	28.6	12.5	35.0	6.9	38.9	2.4
	II	26.3	17.7						
April	I	27.5	19.8	35.8	18.7	41.4	13.0	45.4	8.9
	II	33.8	21.8						
May	I	31.2	22.5	40.1	22.7	44.6	17.0	46.2	12.4
	II	38.0	24.8						
June	I	32.9	25.2	41.2	26.8	45.6	21.4	48.2	17.2
	II	38.7	26.0						
July	I	30.7	26.3	36.8	26.2	42.1	21.8	47.6	18.4
	II	34.3	27.1						
August	I	29.9	26.5	35.3	25.3	39.0	22.0	40.7	19.3
	II	32.6	27.1						
September	I	29.0	24.5	35.3	22.6	38.4	18.8	41.5	12.4
	II	32.6	25.2						
October	I	25.4	19.9	34.0	16.2	37.1	11.9	39.4	7.9
	II	30.8	21.8						
November	I	18.2	14.0	28.3	9.5	32.9	5.1	38.4	0.3
	II	24.5	17.2						
December	I	11.9	9.2	22.7	5.2	26.7	1.4	28.9	-0.9
	II	19.3	13.6						
Annual	I	23.4	18.5	31.8	16.5	45.7	0.2	48.2	-3.9
Total/Mean	II	29.2	20.8						

I - Morning (08:30 hours), II - Evening (17:30 hours)

Table 3-3: Daily Variation of Meteorological Parameters for the month of March, 2016

Date	Avg. Wind Velocity (m/s)	Dominant Wind Direction (From)	Temperature (deg.C)			Relative Humidity (%)			Weather Condition		
			Min	Max.	Avg.	Min	Max.	Avg.	C	CL	R
01/3/16	0.7	NE	13.7	27.5	20.2	36	99	78.5	*	-	-
02/3/16	0.89	NE	14.9	28.2	21	32	99	77	*	-	-
03/3/16	1.3	NE	15.1	27.4	20.7	37	99	82.5	*	-	-
04/3/16	2.1	NW	14.8	29.1	21.2	35	99	72.7	-	*	*
05/3/16	1.6	NW	12.3	23.7	18.0	64	99	84.8	-	*	*
06/3/16	1.3	E	12.7	23.1	17.8	59	99	88.3	-	*	*
07/3/16	1.2	W	13.9	25.3	19.5	36	99	72.4	*	-	-
08/3/16	1.4	NE	15.9	25.9	20.2	42	99	78.7	*	-	-
09/3/16	0.99	NW	15.2	26.8	20.6	36	99	75.9	*	-	-
10/3/16	1.3	N	14.8	27.6	22.2	39	99	69.1	*	-	-

Date	Avg. Wind Velocity (m/s)	Dominant Wind Direction (From)	Temperature (deg.C)			Relative Humidity (%)			Weather Condition		
			Min	Max.	Avg.	Min	Max.	Avg.	C	CL	R
11/3/16	1.65	NE	16.9	27.7	22.3	52	99	79.8	-	*	*
12/3/16	2.67	NW	15.5	21.6	17.6	81	99	95.9	-	*	*
13/3/16	1.89	N	15.3	23.9	19.5	51	99	79.6	*	-	*
14/3/16	1.17	NE	14.4	25.3	19.5	61	99	85.5	*	-	-
15/3/16	1.82	NE	15.5	25.6	20.8	51	99	73.7	*	-	-
16/3/16	1.45	NE	15.5	23.1	19.4	47	99	78.3	*	-	-
17/3/16	1.67	N	14.4	21.1	18.1	68	99	87.8	-	*	*
18/3/16	1.25	N	14.4	28.2	21.8	45	99	81.6	*	*	-
19/3/16	2.59	NE	17.7	28.8	23.4	43	99	68.9	*	-	*
20/3/16	2.29	NW	16.1	28.2	22.1	35	96	67.9	*	-	-
21/3/16	2.4	NE	15	26.7	20.8	31	87	47.1	*	-	-
22/3/16	1.2	NW	13.3	27.7	20.6	25	91	56.9	*	-	-
23/3/16	1	NE	16.3	30.3	22.6	20	86	55.1	*	-	-
24/3/16	2.3	NE	17.7	30.1	24.3	26	99	63.1	*	-	-
25/3/16	2.2	W	18.8	28.1	22.6	34	96	59.2	*	-	-
26/3/16	1.9	E	17.3	28.1	22.1	29	99	63.2	*	-	-
27/3/16	0.3	E	14.4	27.7	21.1	24	99	67.8	*	-	-
28/3/16	0.6	W	14	29.2	23	23	99	54.5	*	-	-
29/3/16	0.4	NE	16.3	30.9	23.7	22	99	61.6	*	-	-
30/3/16	0	NE	16	32.5	25.5	24	99	52.2	*	*	-
31/3/16	1.53	NW	17.2	34.8	27	16	99	48.2	*	-	-
Minimum	0.3		12.3			16					
Maximum	2.7			34.8			99				
Average	1.65				21.2			71.2			
Note : C - Clear, CL - Cloud, R - Rain											

Table 3-4: Daily Variation of Meteorological Parameters for the month of April, 2016

Date	Avg. Wind Velocity (m/s)	Dominant wind Direction (From)	Temperature (deg.C)			Relative Humidity (%)			Weather Condition		
			Min.	Max.	Avg.	Min.	Max.	Avg.	C	CL	R
01/4/16	1.5	NW	19.9	32.8	26.9	18	86	45.9	*	-	-
02/4/16	1.1	NW	22	36	29	20	69	42.4	*	-	-
03/4/16	0.9	NW	22.9	34.6	27.9	24	78	50	*	-	-
04/4/16	2	N	22.2	34.3	27.7	23	86	44.6	*	-	-
05/4/16	1.7	N	21.2	33.3	27.5	12	49	28.8	*	-	-
06/4/16	2.5	NW	19.2	31.6	24.7	21	67	39.5	*	-	-
07/4/16	1.6	NW	17.7	32.7	24.5	12	82	40.1	*	-	-
08/4/16	1.4	E	16.3	33.8	26.7	6	78	32	*	-	-
09/4/16	2.4	NW	21.1	32.3	26.1	17	53	31.8	*	-	-
10/4/16	2.9	NE	20	34.4	26	10	60	35	*	-	-



Table 3-5: Daily Variation of Meteorological Parameters for the month of May, 2016

Date	Avg. Wind Velocity (m/s)	Dominant wind Direction (From)	Temperature (deg.C)			Relative Humidity (%)			Weather Condition		
			Min.	Max.	Avg.	Min.	Max.	Avg.	C	CL	R
01/5/16	1.3	NW	20.6	42.2	31.7	2	68	21.9	*	-	-
02/5/16	1	NE	21.4	42.2	33	2	44	17.3	*	-	-
03/5/16	2.5	NE	27	38.7	32.8	10	30	18.3	*	-	-
04/5/16	1.8	E	22.6	35.4	29.8	17	69	31.3	*	-	-
05/5/16	1.6	E	21.8	34.3	27.3	23	73	41.7	*	-	-
06/5/16	0.8	E	20.9	35.8	29.2	17	72	38.5	*	-	-
07/5/16	0.9	SE	22.9	37.9	31.3	12	74	32.7	*	-	-
08/5/16	0.9	E	24.6	40.3	33.2	11	59	29.3	*	-	-
09/5/16	1.8	SE	26.2	40.6	33.5	14	55	32.3	*	-	-
10/5/16	3.3	SE	26.7	40.7	32.7	15	56	32.4	*	-	-
11/5/16	2	E	24.7	37.1	31.3	19	61	35.7	*	-	-
12/5/16	1.5	NE	24.9	39.1	32.5	14	66	32.6	*	-	-
13/5/16	1.5	N	24.3	41.4	33.6	6	60	27.2	*	-	-
14/5/16	1.7	NW	23.8	40.6	33.8	10	55	24.2	*	-	-
15/5/16	1.5	NE	28.7	41.1	34.7	7	32	16.9	*	-	-
16/5/16	1.3	NW	24.4	41	33.9	6	59	20	*	-	-
17/5/16	1.4	E	24.6	42.1	34.6	5	47	19.6	*	-	-
18/5/16	0.9	E	25.1	44.1	35.3	6	47	22.6	*	-	-
19/5/16	2.2	E	28.7	43.9	35.8	8	50	23.1	*	-	-
20/5/16	1.9	SE	28	43.4	35.1	10	57	28.4	*	-	-
21/5/16	1.4	E	27.6	44	35.3	13	63	33.3	*	-	-
22/5/16	1.8	SE	28.7	43.4	36.4	15	66	34.5	*	-	-
23/5/16	3.0	E	24.8	38.5	30.7	25	62	42.2	*	-	-
24/5/16	2.8	E	24.3	36.2	30.1	23	62	44.2	*	-	-
25/5/16	1.1	E	24.9	38	31.5	16	69	37.1	*	-	-





Date	Avg. Wind Velocity (m/s)	Dominant wind Direction (From)	Temperature (deg.C)			Relative Humidity (%)			Weather Condition		
			Min.	Max.	Avg.	Min.	Max.	Avg.	C	CL	R
26/5/16	1.3	NE	25.7	39.6	34	15	49	26.8	*	*	-
27/5/16	1.3	SE	28.1	40.6	34.5	10	50	24.2	*	-	-
28/5/16	2.1	E	25.2	39.9	33.2	22	51	33.5	*	-	-
29/5/16	2.0	E	24.3	38.7	30.1	25	63	44.0	*	-	-
30/5/16	2.6	E	22.5	32.2	26.7	32	81	61.0	*	-	-
31/5/16	1.2	SE	24.2	36.2	30.6	28	87	50.2	*	-	-
Minimum	0.8		20.6			2					
Maximum	3.3			44.1			87				
Average	1.2				30.6			50.2			
Note : C - Clear, CL - Cloud, R - Rain											

The highest temperature recorded (**Table 3-2**) was 45.6°C and the lowest as 0.7°C indicating extremes during summer and winter seasons.

The daily minimum and maximum ambient temperature for the months of March, April and May, 2016, as given in

Table 3-3 to

Table 3-5, ranged between 12.3°C to 44.1°C with average daily minimum of 17.6°C and maximum of 36.4°C during the study period.

Relative Humidity

Table 3-6: Climatological Data - Rainfall & Humidity (Source : Handbook of Indian Meteorological Deptt.)

Month		Relative Humidity (%)	Rainfall		Cloud Amount of	
			Monthly	No. of	OKTAS of Sky	
			Total (mm.)	Rainy Days	All Clouds	Low Clouds
January	I	71	10.4	1.0	1.4	0.3
	II	50			1.2	0.3
February	I	66	13.0	1.4	1.5	0.3
	II	47			1.4	0.3
March	I	61	19.0	1.6	1.4	0.3
	II	41			1.5	0.4
April	I	47	5.8	0.9	1.0	0.1
	II	33			1.1	0.1
May	I	46	13.4	1.2	0.7	0.1

Month		Relative Humidity (%)	Rainfall		Cloud Amount of	
			Monthly	No. of	OKTAS of Sky	
			Total (mm.)	Rainy Days	All Clouds	Low Clouds
	II	33			0.9	0.3
June	I	53	37.7	1.9	1.3	0.3
	II	35			1.1	0.3
July	I	71	131.2	6.6	2.6	1.0
	II	58			2.4	1.0
August	I	76	124.8	5.3	2.3	0.8
	II	65			2.7	1.1
September	I	68	51.0	2.7	0.9	0.4
	II	54			1.2	0.5
October	I	58	5.8	0.4	0.3	0.0
	II	43			0.3	0.1
November	I	61	5.0	0.6	0.7	0.1
	II	45			0.5	0.1
December	I	69	6.8	0.8	0.9	0.1
	II	50			1.0	0.2
Annual	I	62	423.9	24.4	1.3	0.3
Total/Mean	II	46			1.3	0.4
Source : IMD Climatological Tables (Period (1959 - 1980) for Bathinda						
I - Morning (08:30 hours), II - Evening (17:30 hours)						

As per IMD data, Relative humidity during the period (1959-80) shown in **Table 3-6** was recorded from 46% - 76% during morning hours and 33% - 65% during evening hours. The highest monthly R.H. is 76% during mornings of August and lowest of 33% during evenings of April and May with annual total of 62% and 46% during morning and evening.

Relative humidity during the study period, shown in

Table 3-3 to

Table 3-5, ranged between 7% and 100% with average daily minimum relative humidity recorded as 51.4% and the maximum as 71%.

Cloudiness

Climatologically data showing the cloud amount in the sky during study period is shown in **Table 3-7**.

Wind Pattern

Table 3-7: Climatological Normal Data - Wind Flow Pattern

Month		Percentage No. of Days of Wind From									No. of Days with				Mean Wind
		N	NE	E	SE	S	SW	W	NW	Calm	Wind Speed (Kmph.)				Speed
											>62	20-61	1 - 19	0	(Kmph)
January	I	3	2	1	7	0	2	2	16	67	0	0	10	21	2.7
	II	4	4	0	6	1	1	1	27	56	0	0	14	17	
February	I	4	4	1	10	2	5	2	22	50	0	0	14	14	3.5





Month		Percentage No. of Days of Wind From									No. of Days with				Mean Wind
		N	NE	E	SE	S	SW	W	NW	Calm	Wind Speed (Kmph.)				Speed
											>62	20-61	1 - 19	0	(Kmph)
	II	6	4	1	6	2	2	1	36	42	0	0	16	12	
March	I	4	8	2	14	0	3	1	20	48	0	0	16	15	4.1
	II	8	8	3	6	1	2	2	35	35	0	0	21	10	
April	I	5	9	1	14	1	5	1	23	41	0	0	18	12	5.1
	II	7	7	1	5	1	3	1	45	30	0	0	21	9	
May	I	2	5	2	19	2	11	2	18	39	0	0	19	12	5.0
	II	5	5	1	6	1	7	5	39	31	0	0	21	10	
June	I	1	4	3	24	2	20	6	17	23	0	1	22	7	6.2
	II	2	5	4	9	2	11	6	30	31	0	0	20	10	
July	I	1	5	4	39	3	15	3	7	23	0	1	23	7	6.4
	II	2	8	8	20	4	8	4	15	31	0	1	21	9	
August	I	1	3	4	34	4	17	3	8	26	0	0	22	9	4.7
	II	3	8	8	19	2	7	2	16	35	0	0	20	11	
September	I	2	5	1	23	4	16	4	11	34	0	0	20	10	3.6
	II	6	8	6	8	1	6	4	21	40	0	0	18	12	
October	I	1	4	1	17	3	6	2	7	59	0	0	13	18	2.7
	I	5	6	2	6	1	1	2	22	55	0	0	14	17	
November	I	2	3	1	9	1	2	1	10	71	0	0	9	21	2.1
	II	6	2	1	3	0	0	1	21	66	0	0	10	20	
December	I	2	2	1	5	1	1	2	11	75	0	0	8	23	2.3
	II	3	2	1	5	0	1	0	24	64	0	0	11	20	
Annual Total/Mean	I	2	5	2	18	2	9	2	14	46	0	2	194	169	4.0
	II	5	6	3	8	1	4	2	28	43	0	1	207	157	
Source : IMD Climatological Tables (Period (1959 - 1980) for Bathinda															

The long term data of IMD (**Table 3-7**) for the entire period (1959-80) shows that dominant wind directions from which wind blows in the morning is SE (18%) and NW (14%) while in the evening dominant direction is NW (28%) and from SE (8%). The calm period is maximum of 75% in the Mornings of December and minimum of 23% in the mornings of March. The total annual or mean calm is 46 & 43% in the morning and evening, respectively.

Rainfall

Table 3-8: Rainfall Data (2000-2011) (Source: Tehsil Muktsar, Punjab)

S. No.	Month	Rainfall in Years											
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1	January	18.0	NIL	NIL	6.3	25.0	31.5	13.4	NIL	11.0	13.2	1.0	NIL

S. No.	Month	Rainfall in Years											
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2	February	10.0	NIL	NIL	78.5	6.0	89.5	NIL	69.5	14.0	52.0	8.0	24.8
3	March	8.0	3.0	NIL	11.0	NIL	80.5	37.2	48.6	NIL	4.3	NIL	0.8
4	April	NIL	21.0	NIL	NIL	3.0	12.9	NIL	NIL	22.0	9.1	1.0	7.5
5	May	NIL	58.0	31.5	7.0	49.1	9.6	35.0	1.2	34.0	2.0	NIL	38.3
6	June	NIL	82.0	30.2	33.0	113.3	85.9	96.6	66.8	137.0	6.5	46.0	64.0
7	July	141.0	67.0	79.5	62.0	12.0	198.0	83.6	75.0	7.0	88.3	113.0	31.0
8	August	28.0	59.0	1.2	78.0	23.0	16.0	33.3	145.4	165.0	61.2	68.0	117.6
9	September	36.0	30.0	43.7	23.0	5.0	68.2	91.0	22.0	17.0	50.0	45.0	191.2
10	October	NIL	13.0	NIL	NIL	3.0	NIL	6.1	NIL	4.0	NIL	NIL	NIL
11	November	NIL	NIL	NIL	NIL	NIL	NIL	34.0	NIL	NIL	NIL	NIL	
12	December	21.0	NIL	10.3	NIL	NIL	NIL	6.6	14.5	NIL	NIL	4.0	
Total Rainfall		262	333	196.4	298.8	239.4	592.1	436.8	443.0	411	286.6	286.0	475.2
Note : Rainfall is mm (millimeter)													

There are two sources of rainfall data, one Chief Agriculture Office Tehsil Muktsar (**Table 3-8**) for the period 2000 – 2011. Average annual rainfall is 423.9 mm as per IMD data and ranged between 196.4 to 592.1 mm at Muktsar from 2000 to 2011. The IMD data depict that 67% rainfall occurs during the months of July, August & September. Heaviest rainfall in 24h is 198.0 mm in July 2005 as against the average rainfall of 79.8 mm during the month of July. The district receives an annual rainfall of 430.7 mm in 22 rainy days which is unevenly distributed over the district. 79% of the annual rainfall occurs during monsoon period and 21% occurs during non monsoon period. The south western monsoon sets in the last week of June and withdraws towards the end of September and contributes about 79% of the rainfall. July and August are the rainiest months, rest 21% occurring during the non monsoon period in the form of thunder storm and western disturbances. The climate of the district is sub- tropical steppe, semi arid and hot which is mainly dry except in rainy months and characterized by intensely hot summer and cold winter.

Micrometeorology

Meteorological data for the 3 months i.e. March, April and May, 2016 was collected from IMD Bhatinda station. As per the normal practice the percentage frequency distribution charts are prepared out of the hourly meteorological data for the study period.

Table 3-9: Percentage Frequency Distribution of Wind Blowing from Different Directions during March, 2016

Wind blowing from	Wind Velocity range, m/s							
	≤0.5	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	≥11.1	Total
	CALM							
N	-	8.73	3.49	1.07	-	-	-	13.30
NE	-	12.6	4.83	0.94	0.26	-	-	18.68
E	-	6.85	4.70	0.8	-	-	-	12.36
SE	-	4.70	2.28	0.67	-	-	-	7.66
S	-	2.41	0.13	-	-	-	-	2.55
SW	-	3.22	0.67	-	-	-	-	3.89
W	-	11.42	5.10	0.94	-	-	-	17.47
NW	-	6.58	4.83	1.47	-	-	-	12.9
Sub-Total	-	56.58	26.07	5.91	0.26	-	-	88.85
CALM%	11.15	-	-	-	-	-	-	11.15
Total								100 %



Wind blowing from	Wind Velocity range, m/s							
	≤0.5	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	≥11.1	Total
	CALM							
N	-	10.14	5.57	0.63	-	-	-	16.34
NE	-	9.51	3.89	0.76	0.18	-	-	14.35
E	-	6.61	4.07	1.13	0.27	0.04	-	12.13
SE	-	5.02	2.76	0.63	-	-	-	8.42
S	-	3.44	0.31	0.04	-	-	-	3.80
SW	-	4.34	0.67	-	-	-	-	5.02
W	-	8.15	4.07	0.67	-	-	-	12.90
NW	-	7.06	6.25	1.53	0.09	-	-	14.94
Sub-Total	-	54.3	6.25	1.53	0.09	-	-	87.95
CALM%	12.05	-	-	-	-	-	-	12.05
Total								100 %

Figure 3-2: Wind Rose diagram for the month of March, 2016

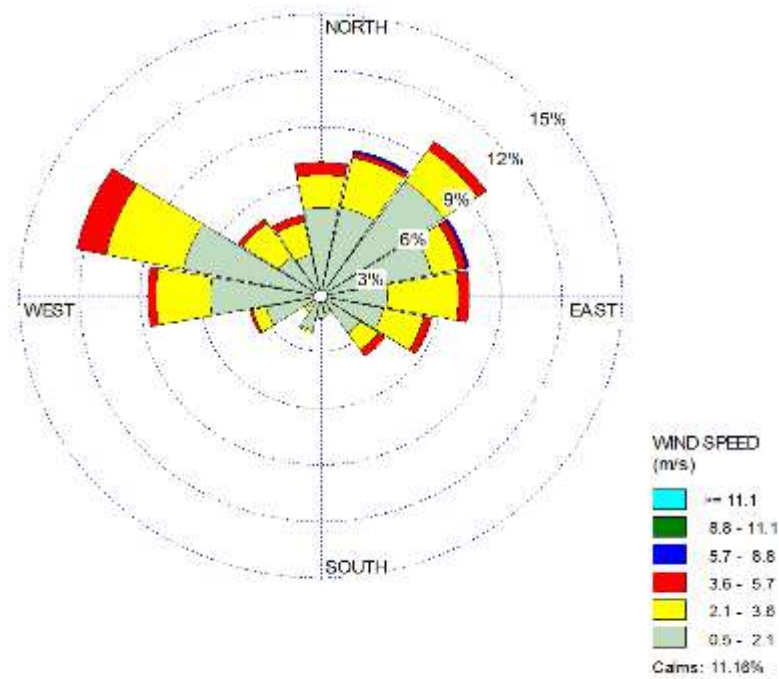


Figure 3-3: Wind Rose diagram for the month of April, 2016

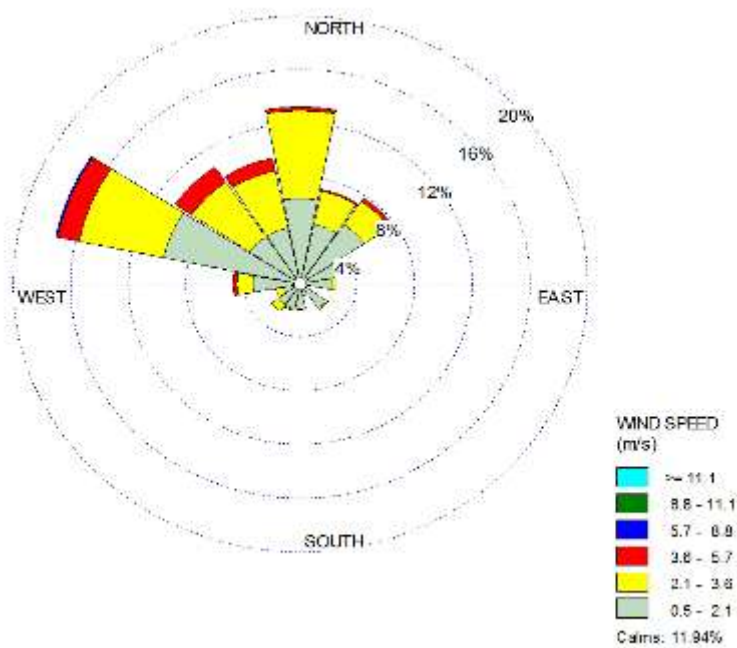




Figure 3-4: Wind Rose diagram for the month of May, 2016

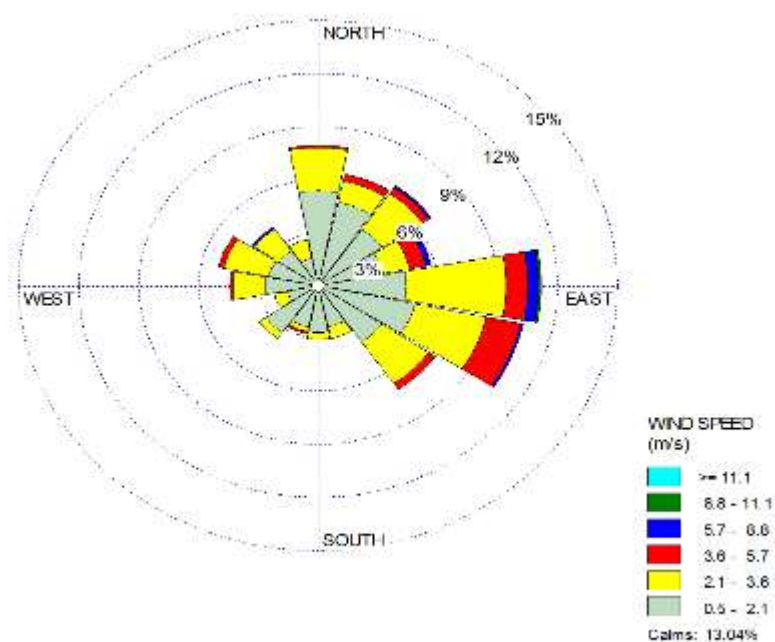
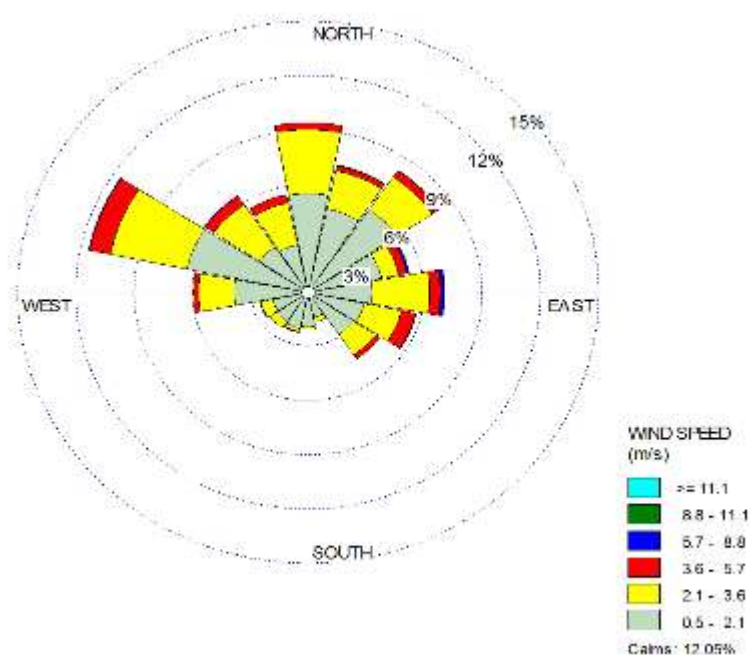


Figure 3-5: Wind Rose diagram for the Study Period



3.5.2 Ambient Air Quality

The basic objective of ambient air quality (AAQ) determination around paper plant was to assess the existing ambient levels of primary air pollutants in the area. The criteria for selecting monitoring stations on the basis of available meteorological data and other related factors was to assess the general ambient air quality status of the area and to record the maximum concentration of pollutants for determining critical targets for worst maximum concentrations. To have a clear picture of atmospheric conditions of the study area in terms of pollutants viz. sulphur dioxide, nitrogen oxides and suspended particulate matter, ambient air monitoring was carried out for 3 months i.e. March, April and May, 2016 and presented in this chapter. Eight monitoring stations, one at plant premises and 7 in study area, were selected encompassing the proposed plant. Their locations (distances and bearings) with respect to the paper plant have been given in **Table 3-13**. Prevailing wind direction and speed, local topography e.g. built up structures, trees, fencing, human population etc. along with accessibility and availability of service facilities like power and shelter and safety of instruments have been the main considerations while selecting the locations of these monitoring stations.

Table 3-13: Ambient Air Quality Monitoring Stations in Study Area

Sl. No.	Name of the Location	Distance w.r.t. the Site (km)	Direction w.r.t. the Site
AAQ1	Plant Site	-	-
AAQ2	Rupana	2.4	SSE
AAQ3	Sotha	5.9	SE
AAQ4	Goniana	2.3	NNW
AAQ5	Barkandi	2.9	E
AAQ6	Bhangchari	5.8	SW
AAQ7	Chak Giljewala	9.1	SE
AAQ8	Muktsar	7.0	N





Map 3-2: Ambient Air Quality Monitoring Stations in Study Area



Table 3-14: Ambient Air Quality Monitoring for PM₁₀ & PM_{2.5}

S. N.	Sampling Location	PM ₁₀							PM _{2.5}						
		Min. (µg/m ³)	Percentile				Max. (µg/m ³)	Avg. (µg/m ³)	Min. (µg/m ³)	Percentile				Max. (µg/m ³)	Avg. (µg/m ³)
			25	50	75	98				25	50	75	98		
1	Project Site	78.0	86.6	91.6	95.8	100.2	101.2	90.7	36.9	46.6	48.5	50.9	54.6	54.6	47.9
2	Rupana	74.8	81.2	87.1	90.6	95.4	96.0	86.4	33.6	36.6	41.0	46.0	50.0	50.2	41.1
3	Sotha	74.2	77.8	81.6	85.1	89.5	89.7	81.7	36.0	39.6	41.4	44.3	47.9	47.9	41.9
4	Chak Giljiwala	70.4	78.3	85.4	90.1	96.4	97.0	84.5	36.6	42.1	45.9	49.8	53.1	53.8	45.7
5	Barkandi	65.5	70.2	75.3	79.8	84.8	85.0	75.2	32.0	35.8	40.0	43.8	47.8	48.0	39.7
6	Goniana	65.3	68.4	72.4	76.0	80.1	80.2	72.7	32.9	36.1	38.5	41.4	43.7	43.7	38.7
7	Muktsar	61.7	67.4	73.2	77.1	83.6	84.6	72.3	36.5	38.6	40.5	44.6	47.6	48.2	41.5
8	Bhangchiri	62.5	64.7	67.0	70.3	74.8	75.0	67.7	28.9	31.5	34.0	36.5	39.4	39.8	33.9

Table 3-15: Ambient Air Quality Monitoring for SO₂ & NO_x

Sr. No.	Sampling Location	SO ₂							NO _x						
		Min. (µg/m ³)	Percentile				Max. (µg/m ³)	Avg. (µg/m ³)	Min. (µg/m ³)	Percentile				Max. (µg/m ³)	Avg. (µg/m ³)
			25	50	75	98				25	50	75	98		
1	Project Site	17.6	18.9	19.9	21.3	22.3	22.3	20.0	23.0	24.0	25.7	27.1	28.6	28.6	25.7
2	Rupana	17.6	19.0	20.4	21.5	22.2	22.4	20.2	19.0	20.5	21.2	21.9	22.8	22.8	21.2
3	Sotha	16.7	17.8	18.5	19.5	20.3	20.3	18.6	22.0	22.6	23.6	24.7	25.7	25.8	23.7
4	Chak Giljiwala	14.0	15.5	17.0	18.3	19.2	19.4	16.8	19.0	22.4	24.2	25.6	27.3	27.5	23.7
5	Barkandi	10.0	11.9	12.7	13.5	14.4	14.5	12.6	17.0	17.6	18.6	19.6	20.7	20.8	18.7
6	Goniana	10.2	11.8	12.6	13.3	14.5	14.8	12.5	15.6	16.5	17.9	18.9	19.9	20.0	17.8
7	Muktsar	11.9	12.8	13.3	14.2	15.4	15.6	13.4	17.0	17.8	18.8	19.5	21.1	21.2	18.8
8	Bhangchiri	10.2	11.4	12.0	12.8	14.0	14.2	12.1	15.5	16.8	17.3	18.0	19.1	19.2	17.4



**Table 3-16: Ambient Air Quality Monitoring for CO**

S. No.	Sampling Location	CO						
		Min. ($\mu\text{g}/\text{m}^3$)	Percentile				Max. ($\mu\text{g}/\text{m}^3$)	Avg. ($\mu\text{g}/\text{m}^3$)
			25	50	75	98		
1	Project Site	500.0	557.5	585.0	612.5	647.0	650.0	581.7
2	Rupana	510.0	545.0	565.0	592.5	618.0	620.0	566.7
3	Sotha	480.0	505.0	525.0	454.0	577.0	580.0	526.7
4	Chak Giljiwala	460.0	477.5	505.0	517.5	529.0	530.0	498.3
5	Barkandi	450.0	465.0	480.0	487.5	508.0	510.0	478.3
6	Goniana	450.0	460.0	465.0	477.5	498.0	500.0	470.0
7	Muktsar	460.0	482.5	495.0	507.5	519.0	520.0	493.3
8	Bhangchiri	440.0	452.5	465.0	477.5	489.0	490.0	465.0

Ambient Air Quality Status

Respirable Suspended Particulate Matter (RSPM)

RSPM is "defined as the component of inhaled respirable dust small enough to reach the pulmonary or alveolar region of the lung".

Classification of RSPM

Classification	Type of particles	Size of the particles
PM ₁₀	Inhalable particles	10 μm
PM _{2.5}	Fine particles	2.5 μm

Table 3-14, **Table 3-15** and **Table 3-16** presents a summarized picture of existing ambient air quality in terms of particulate and gaseous pollutants at different monitoring stations.

As is evident from the results, RSPM concentration in the study area observed a minimum of 61.7 $\mu\text{g}/\text{m}^3$ at Muktsar and maximum of 101.2 $\mu\text{g}/\text{m}^3$ at plant site. However, on an average, RSPM levels ranged from 67.7 $\mu\text{g}/\text{m}^3$ to 90.7 $\mu\text{g}/\text{m}^3$. Frequency distribution of RSPM in study area shows P-98 from 74.8 to 100.2 $\mu\text{g}/\text{m}^3$.

PM_{2.5} concentrations at various AAQ monitoring stations (**Table 3-14**) observed a minimum of 28.9 $\mu\text{g}/\text{m}^3$ at Bhangchiri and maximum of 54.6 $\mu\text{g}/\text{m}^3$ at plant site. The average PM_{2.5} concentrations during study period were recorded between 33.9 to 47.9 $\mu\text{g}/\text{m}^3$. Frequency distribution of PM_{2.5} in study area shows P-98 from 39.4 to 54.6 $\mu\text{g}/\text{m}^3$.

Sulphur Dioxide (SO₂)

SO₂ concentrations at various AAQ monitoring stations given in **Table 3-15** ranged from 10.0 $\mu\text{g}/\text{m}^3$ at Barkandi to 22.4 $\mu\text{g}/\text{m}^3$ at Rupana. The average SO₂ concentrations during study period were recorded as 12.1 to 20.2 $\mu\text{g}/\text{m}^3$. The frequency distribution in different concentration ranges reveals that all the values fall below 25 $\mu\text{g}/\text{m}^3$. The 98th percentile value for SO₂ at plant site has been determined as 22.3 $\mu\text{g}/\text{m}^3$. The situation in the study area as far as SO₂ concentrations are concerned is comfortable.

Oxides of Nitrogen (NO_x)

NO_x concentrations, in **Table 3-15**, during study period were in the range of 15.5 $\mu\text{g}/\text{m}^3$ at Bhangchiri to 28.6 $\mu\text{g}/\text{m}^3$ at plant site. Average NO_x concentration varied from 17.4 to 25.7 $\mu\text{g}/\text{m}^3$.

From the results, it may be inferred that NO_x concentrations are within permissible limits. The 98th percentile value for NO_x at plant site has been calculated as 28.6 µg/m³.

Carbon Monoxide (CO)

CO concentrations, (**Table 3-16**), during study period were in the range of 440.0 µg/m³ at Bhangchiri to 650.0 µg/m³ at plant site. Average CO concentration varied from 465.0 to 581.7 µg/m³. The 98th percentile value for CO at plant site has been calculated as 647.0 µg/m³.

Inferences of Air Quality:

Following inferences may be made from the ambient air quality monitoring and the results thus reported:

1. The 98th percentile value of RSPM 100.2 µg/m³ indicate that study area is influenced by activities such as industrial, agriculture, domestic and transport activities.
2. The 98th percentile value of PM_{2.5} is 54.6 µg/m³ is below the NAAQ standards for industrial areas.
3. SO₂ values are below 25 µg/m³ with 98th percentile concentration of 22.3 µg/m³ and hence are in no way of greater concern.
4. The 98th percentile value of NO_x (28.6 µg/m³) is far below the NAAQ standard for industrial areas.
5. A suitable green belt is planned along the periphery of the paper plant for abatement of air pollutants.

Air quality predictions have been carried out and are presented in **Chapter-4** of this report.

3.5.3 Traffic Density

The traffic density of different type of vehicles on a highway leading from Malout to Muktsar and Muktsar to Malout has been enumerated in **Table 3-17** and **Table 3-18**, respectively. The vehicle count was monitored on hourly basis. The traffic of cars, buses and trucks as well as two wheelers was found to be maximum in the morning peak hours and minimum in the night hours.

Table 3-17: Traffic on Road of Malout to Muktsar

TIME	Bus	Mini Bus	Tanker	Truck	Mini Truck	Car & Jeep	Three Wheeler	Tractor	Two Wheeler
8.00 PM	17	10	6	23	15	93	12	48	220
9.00 PM	23	7	4	23	10	143	16	42	245
10.00 PM	16	10	2	15	18	161	12	28	201
11.00 PM	21	7	3	23	10	164	13	43	244
12.00 PM	20	6	1	20	11	161	10	39	244
1.00 AM	18	5	1	20	5	108	8	25	163
2.00 AM	15	4	3	15	8	95	7	23	140
3.00 AM	20	5	2	22	6	123	11	23	153
4.00 AM	10	5	4	16	6	90	6	25	111
5.00 AM	10	3	1	15	5	105	9	18	110
6.00 AM	7	-	1	21	2	84	4	22	75
7.00 AM	8	-	1	24	8	81	1	6	70
8.00 AM	1	-	3	26	12	43	1	11	19
9.00 AM	1	-	2	18	2	33	1	9	16
10.00 AM	3	1	-	22	8	4	-	6	14
11.00 AM	1	-	1	26	3	12	-	17	2
12.00 AM	-	-	1	12	4	2	-	4	1
1.00 PM	-	-	2	19	3	2	-	3	1
2.00 PM	-	-	-	17	3	1	-	4	1





TIME	Bus	Mini Bus	Tanker	Truck	Mini Truck	Car & Jeep	Three Wheeler	Tractor	Two Wheeler
3.00 PM	1	-	1	7	2	2	-	6	2
4.00 PM	3	-	5	12	-	7	2	6	3
5.00 PM	3	1	-	12	3	13	2	24	8
6.00 PM	4	1	-	21	4	29	4	24	35
7.00 PM	11	6	-	21	16	69	7	39	99
Total	213	71	44	450	164	1625	126	495	2177

Table 3-18: Traffic on Roads of Muktsar to Malout

TIME	Bus	Mini Bus	Tanker	Truck	Mini Truck	Car & Jeep	Three Wheeler	Tractor	Two Wheeler
8.00 PM	14	4	4	9	8	89	7	16	198
9.00 PM	14	-	-	19	2	106	7	25	95
10.00 PM	13	-	1	16	7	103	4	15	126
11.00 PM	15	2	2	11	5	110	7	18	167
12.00 PM	15	1	2	10	2	76	8	13	174
1.00 AM	19	2	1	13	6	126	5	42	207
2.00 AM	17	2	1	16	6	108	6	27	204
3.00 AM	18	12	4	6	7	135	7	28	246
4.00 AM	17	2	2	13	14	155	17	28	247
5.00 AM	18	2	5	12	15	170	10	32	284
6.00 AM	11	1	7	15	12	130	5	29	182
7.00 AM	10	1	7	10	8	70	4	22	80
8.00 AM	2	1	3	13	5	46	3	8	40
9.00 AM	2	-	1	15	13	30	2	12	25
10.00 AM	-	2	2	20	2	21	-	12	10
11.00 AM	2	-	3	32	6	14	-	10	4
12.00 AM	5	-	2	8	6	8	-	4	3
1.00 PM	4	-	2	8	2	5	-	3	-
2.00 PM	2	-	-	3	2	3	-	3	-
3.00 PM	1	-	-	2	2	1	-	6	-
4.00 PM	3	-	2	8	4	8	-	9	3
5.00 PM	-	-	-	11	3	10	-	10	10
6.00 PM	3	1	2	11	8	30	1	8	26
7.00 PM	11	1	1	40	15	52	7	41	100
Total	216	34	54	321	160	1606	100	421	2431

3.5.4 Hydrology

The main water resources in study area include ground water abstracted by hand pumps, submersible pumps and tube wells. In this chapter water resources (both surface and ground), water availability and its quality in the study area has been presented.

Water Availability

Water requirement of the plant will be met from Arniwala Canal that flows 2.5 Km south of the plant site. No ground water is used in the study area for industrial purposes. The water table in study area lies 5-6 m below ground level. During rainy season, water logging takes place in this area.

Water Sampling

For water quality assessment, 8 ground water samples from hand pumps and tube wells and 8 canal water samples were collected during the study period and analyzed for various physical and chemical parameters.

The locations of water sampling stations are shown in (**Table 3-19**) and results of analysis in (**Table 3-20** and **Table 3-21**).

Table 3-19: Water Sampling Locations

S. No.	Name of the Location	Distance w.r.t. the Site (km)	Direction w.r.t. the Site
W-1	Plant Site	-	-
W-2	Rupana	2.4	SSE
W-3	Sotha	5.9	SE
W-4	Goniana	2.3	NNW
W-5	Barkandi	2.9	E
W-6	Bhangchari	5.8	SW
W-7	Chak Giljewala	9.1	SE
W-8	Muktsar	7.0	N

Map 3-3: Water Sampling Locations in the study area





Table 3-20: Ground water quality of study area

S. No.	Parameters	Unit	Location							
			Project Site	Barkandi	Rupana	Sotha	Goniana	Bhangchiri	Chak Giljiwala	Muktsar
1	Temperature	°C	27.0	28.5	27.5	28.0	27.5	28.5	28.0	27.0
2	pH	pH Unit	7.19	6.84	7.49	7.30	7.50	7.13	7.48	7.38
3	Colour	Pt.Co.scale	<05	<05	<05	<05	<05	<05	<05	<05
4	Odour	--	Unobjectionable	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless
5	TDS	mg/L	200	890	980	740	570	2120	3190	940
6	Conductivity	µmhos/cm	295	1480	1620	1130	884	3255	4902	1440
7	Turbidity	NTU	8	1.8	0.6	0.7	0.8	1.6	1	0.7
8	Total Hardness	mg/L	140	310	430	360	210	700	390	220
9	Calcium	mg/L	28	36	92	68	36	92	36	40
10	Total Alkalinity	mg/L	120	355	270	375	200	735	1060	235
11	Chloride	mg/L	37	250	250	174	170	560	830	325
12	Magnesium	mg/L	17	54	32	46	29	114	73	29
13	Sulphate	mg/L	19	75	118	60	50	320	395	105
14	Total Phosphorus (PO ₄ ⁻ P)	mg/L	1.5	3.6	3.7	2.4	1.8	4.8	4.4	2.2
15	Sodium	mg/L	24	135	150	145	125	475	840	240
16	Potassium	mg/L	5	60	55	25	40	115	380	65
17	Fluoride	mg/L	0.7	1.2	1.4	0.5	0.4	1.2	0.8	0.7
18	Phenolic Comp.	mg/L	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
19	Oil & Grease	mg/L	<01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
20	Dissolved oxygen	mg/L	5.8	5.2	5.7	5.8	6.0	5.5	5.6	5.6
21	COD	mg/L	<4	<4	<4	<4	<4	<4	<4	<4
22	BOD(3 days at 27°C)	mg/L	<4	<4	<4	<4	<4	<4	<4	<4
23	Nitrate	mg/L	1.4	3.2	1.6	2.0	1.9	3.4	2.1	2.3
24	Total Nitrogen	mg/L	1.8	3.7	2.0	2.6	2.4	4.0	2.5	2.6
25	Iron	mg/L	0.18	<0.1	<0.1	<0.1	<0.1	0.48	0.22	0.24
26	Copper	mg/L	0.07	0.64	0.09	0.06	<0.05	0.22	0.09	0.1
27	Boron	mg/L	0.03	0.34	0.07	0.03	<0.01	0.12	0.05	0.08
28	Chromium	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
29	Zinc	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
30	MPN (Total Coliforms)	No./100ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Table 3-21: Surface water quality of study area

S. No.	Parameters	Unit	Canale-SW	Rupana	Sotha	Goniana	BhangChiri	Chak Giljiwala	Mukstar
1	Temperature	°C	26.5	27.5	28	26	27	28	26.6
2	pH	pH Unit	7.18	7.14	7.3	7.2	7.07	7.14	7.52
3	Colour	Pt.Co.scale	<05	5	<05	<05	10	10	5
4	Odour	--	Unobjectionable	Odourless	Odourless	Odourless	Odourless	Unobjectionable	Odourless
5	TDS	mg/L	220	840	298	325	685	712	558
6	Conductivity	µmhos/cm	325	1250	446	488	1025	1065	830
7	TSS	mg/L	10	15	12	8	20	16	10
8	Total Hardness	mg/L	110	270	175	140	248	255	194
9	Calcium	mg/L	28	52	44	25	60	60	56
10	Total Alkalinity	mg/L	98	284	130	135	275	276	185
11	Chloride-	mg/L	60	264	85	96	188	215	174
12	Magnesium	mg/L	10	34	16	19	24	26	13
13	Sulphate- -	mg/L	20	65	24	22	54	46	54
14	Total Phosphorus (PO ₄ P)	mg/L	1.2	2.8	1.8	2	3.2	2.2	2
15	Sodium	mg/L	38	180	45	70	148	138	114
16	Potassium	mg/L	10	76	8	15	45	60	40
17	Fluoride	mg/L	0.4	0.7	0.4	0.6	0.9	0.9	0.9
18	Phenolic Comp.	mg/L	NIL	NIL	NIL	NIL	NIL	NIL	NIL
19	Oil & Grease	mg/L	<01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
20	Dissolved oxygen	mg/L	6.4	4.8	5.4	5.7	5.3	5	5.9
21	COD	mg/L	<4	16	8	6	12	18	10
22	BOD(3 days at 27°C)	mg/L	<4	5	<4	<4	5	8	4
23	Nitrate	mg/L	1.2	2	1.4	2	1.5	2.4	1.9
24	Total Nitrogen	mg/L	1.5	2.4	1.8	2.4	1.8	2.6	2.4
25	Iron	mg/L	<0.1	0.25	<0.1	0.16	0.32	0.34	0.12
26	Copper	mg/L	<0.05	0.1	0.06	<0.05	0.14	0.18	0.08
27	Boron	mg/L	<0.01	0.09	0.04	<0.01	0.07	0.1	0.05
28	Chromium	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
29	Zinc	mg/L	<0.02	0.03	<0.02	0.03	<0.02	0.05	<0.02
30	MPN (Total Coliforms)	No./100ml	Nil	8	4	Nil	4	25	4





3.5.5 Water Quality

Eight ground water samples were collected from different ground water sources like hand pumps and tube wells, from different locations within the study area. Table 3.20 presents the physical and chemical characteristics of ground water, while Table 3.21 represents surface water quality at different sampling locations including Arniwala canal. The observations emerging from this Table are as under:

- pH varied from 6.84 to 7.5 (an acceptable range of potable water).
- TDS values for all the samples varied from 200 mg/L at plant site to 3190 mg/L at Chak Giljewal, while permissible limit is 2000 mg/l.
- Total alkalinity in ground water (as CaCO_3) varied from 120 mg/L at Project site to 1060 mg/l at Chak Giljiwala.
- Total hardness (reported as CaCO_3) caused by the presence of certain salts such as calcium and magnesium dissolved in water ranged between 140 at project site to 700 mg/l at Bhangchiri.
- Chloride, another quality parameter of significance (which results from the leaching of chloride containing rocks and soils with which the water comes in contact) varied from 37 mg/L at Project Site to 830 mg/l at Chak Giljewal.
- Sulphate concentrations of more than 200 mg/l are known to cause gastro intestinal irritation when sodium or magnesium is present. In all the samples these values were much lower and varied from 19 mg/l at project site to 395 mg/l at Chak Giljewal.

Inferences on water Quality

In study area, water quality has been observed to vary considerably between the sampling locations. Mostly the parameters fall within the permissible limits of drinking water standards. Existing and proposed water requirement for the paper plant is met from canal water which has much better quality when compared to ground water. Rain Water Harvesting Scheme shall be adopted to supplement the ground water recharge.

3.5.6 Soil

In order to assess any impact on the soil properties and thereby on various crop yields or plant growth due to any industrial activity, it is pertinent to have some idea of the existing soil characteristics in study area.

Soil Quality in Study Area

Eight soil samples were collected within 10 km radius of the study area (**Table 3-22**) and were analysed for physical and chemical characteristics of soils.

Table 3-22: Soil Sampling Locations in the Study Area

S. No.	Name of the Location	Distance w.r.t. the Site (km)	Direction w.r.t. the Site
S-1	Plantation Area	-	-
S-2	Rupana	2.4	SSE
S-3	Sotha	5.9	SE
S-4	Goniana	2.3	NNW
S-5	Barkandi	2.9	E
S-6	Bhangchhari	5.8	SW
S-7	Chak Giljewala	9.1	SE
S-8	Muktsar	7.0	N

Map 3-4: Soil Sampling Locations in the Study Area

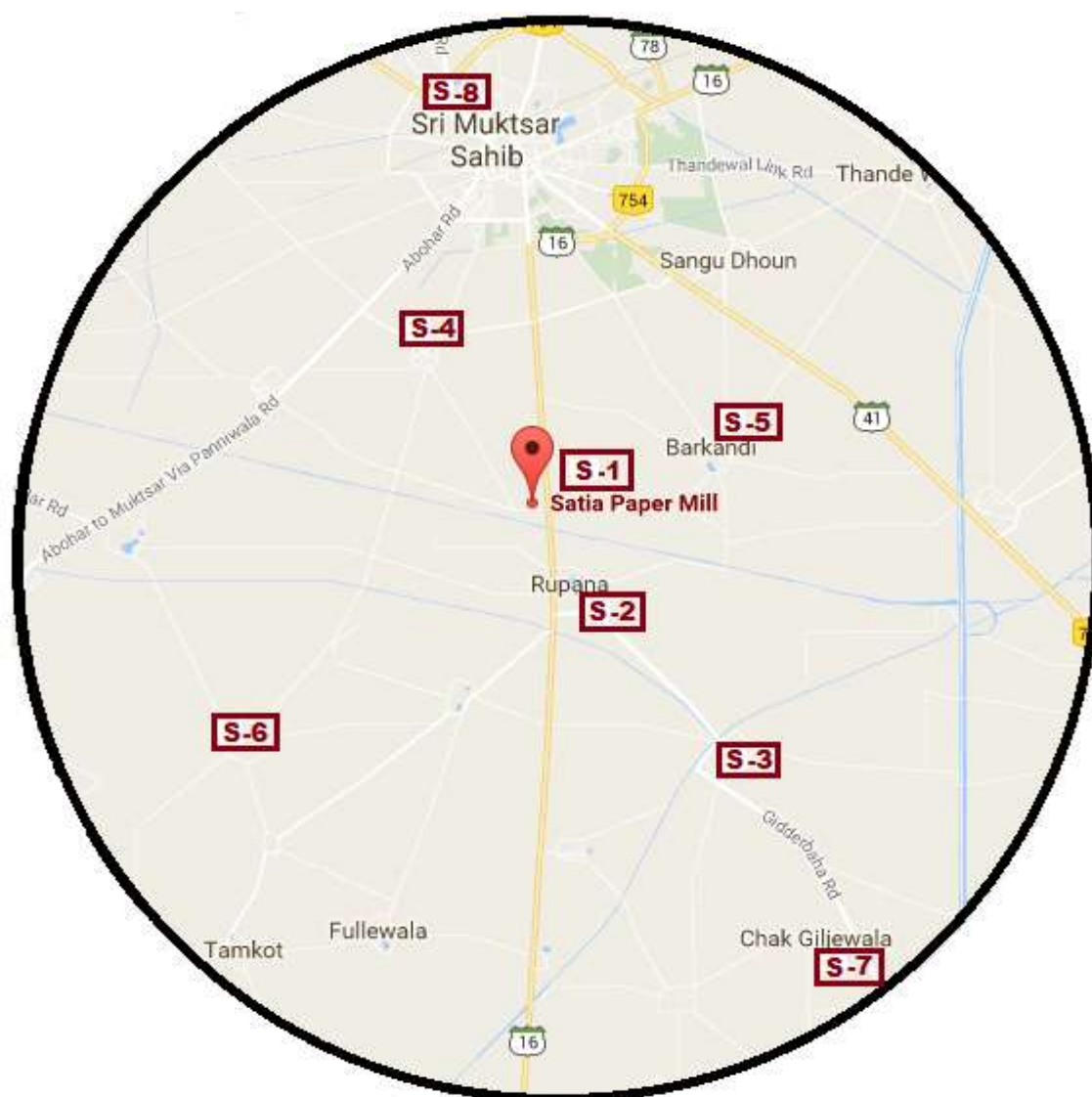


Table 3-23: Physical and Chemical Characteristics of Soil in the Study Area

[illegible]

Physical Characteristics of Soils

Physical characteristics of soils influence its use and behaviour towards plant growth. The plant support root penetration, drainage, aeration, retention of moisture and plant nutrients are linked with the physical conditions of soils. Physical properties also influence the chemical & biological behaviour of soils.

The results are given in (**Table 3-23**) and are discussed below.

1. Colour

Visual observation indicates that soils are generally light grey and dark grey in most of the study area.

2. Texture

Soil mass consists of particles of different sizes and as soil particles change in size, the behaviour of soil alters considerably. In this context, soil texture was observed visually as the texture refers to relative proportion of particles of various sizes in the soil. Texturally, the study area may be classified as sandy loam.

3. Bulk Density

The bulk weight of a unit volume of soil inclusive of pore spaces, is called bulk density. It normally decreases as mineral soils become finer in texture and varies indirectly with the total pore space present in the soil. Generally the soils with low bulk densities have favourable physical conditions. Bulk density varied in the normal range from 1.56 to 1.84 gm/cm³ in study area soils.

Chemical characteristics of soils

The chemical characteristics of soils of study area are given in (**Table 3-23**) are:

1. pH

The maximum availability of plant nutrients lies between pH 6.8 to 7.5. The microbial activities also get affected and they may increase or decrease due to soil acidity and alkalinity. Most of the soils can resist appreciable pH changes when large amount of either strongly acidic or basic materials are added. This ability to resist the change in pH is called buffering capacity of soils. Soil pH varied from 7.23 to 7.87 in study area, indicating neutral nature of soils.

2. Calcium and Magnesium

Calcium hardness in study area soils ranged from 11.4 to 12.8 meq/100g while magnesium hardness varied from 3.2 to 5.3 meq/100g of soil.

3. Sodium Absorption Ratio (SAR)

SAR was determined from analysis of water extracted from the soil. SAR in the study area varies from 0.7 to 1.0.

Inferences on Soil Quality

From the above analysis, it is derived that most of the study area soils are neutral, well textured and possess such physical & chemical characteristics which can support good vegetative growth. The soils of the agricultural fields are levelled and well drained.





3.5.7 Noise

The acoustical environment varies dynamically in magnitude and character throughout most communities. The noise level variation can be temporal, spectral and spatial. The residential noise level is that level below which the ambient noise does not seem to drop down during the given time interval and is generally characterized by unidentified sources. Ambient noise level is characterized by significant variations above a base or a residential noise level. The maximum impact of noise is felt on urban areas or highways which are mostly due to the commercial activities and vehicular movement during peak hours of the day.

From environment point of view, higher noise levels may affect health of human beings and disturbance to animals if they are in proximity to the noise generating source. Measurement of noise levels in the inplant area and the study area at several locations has been carried out to determine the existing noise levels to subsequently assess any increment in noise levels at battery limits due to the modernization of Writing and Printing Paper plant.

Noise levels recorded at each station are computed for Equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

Noise levels during the night time generally drop, therefore to compute Equivalent noise levels for the night time, noise levels are increased by 10 dB(A) as the night time high noise levels are judged more annoying compared to the day time.

Noise levels were measured near highways, residential areas and other settlements located within 10km radius around the proposed project site.

Noise measurements have been carried out both inside the plant area close to the noise generating areas and in the adjoining villages. Minimum and Maximum noise levels at various locations are given in **Table 3-24**.

Table 3-24: Noise Measurement at different Locations in the Study Area

S. No.	Name of the Locations	Distance from Proposed Site (km)	Direction from Proposed Site	Noise Level dB(A)	
				Minimum	Maximum
	Outside Plant				
N-1	Goniana	2.3	NNW	38.9	51.0
N-2	Rupana	2.4	ESE	43.4	59.7
N-3	Barkandi	2.9	NE	36.9	50.4
N-4	Rohurianwali	3.8	WNW	38.5	53.4
N-5	Dhagana	4.6	S	40.4	52.9
N-6	Mahan Bhaddar	5.4	W	39.8	54.5
N-7	Bhangchari	5.8	WSW	38.0	55.1
N-8	Sotha	7.5	SE	44.3	55.8
	Inside Plant				
N-9	Near Main Gate	-	-	42.5	69.9
N-10	Near ETP Equalization Tank	-	-	61.1	77.8
N-11	Aeration Tank	-	-	52.9	81.1
N-12	ETP Lab	-	-	50.3	57.1
N-13	Paper Machine	-	-	79.0	91.0
N-14	Pulp Mills	-	-	67.8	88.9
N-15	Bio Gas Plant	-	-	48.9	59.5
N-16	Near Power Plant	-	-	92.9	99.4
N-17	Godown	-	-	45.5	92.1
N-18	Main Lab	-	-	44.7	65.5

Noise Levels in Study Area

The noise levels in the study area are mainly due to movement of vehicles on the roads which are in proximity to the site. Measurement of noise levels show that in the study area the noise levels vary from 38.9 to 59.7 dB(A). Higher noise levels ranging from 42.5 to 99.4 dB(A) were measured at plant site. This is because of plant activities i.e. power plant, material movement and operation of plant and machinery. Typical low noise levels pertaining to quiet villages were measured at several villages. General standards for noise levels as specified by MoEFCC are given in **Table 3-25**. It can be seen that most of the values were below the day time limits prescribed for commercial area.

Table 3-25: General Standards for Ambient Noise Levels (As Per Schedule III of G.S.R 1063(E), MOEF (1993))

Area	Category	Limits in dB(A)	
		Day time	Night time
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence zone	50	40

Note:

1. Day time is reckoned in between 6 am and 10 pm.
2. Night time is reckoned in between 10 pm and 6 am.
3. Silence zone is defined as areas up to 100 m around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the competent authority. Use of vehicular horns, loud speakers and bursting of crackers shall be banned in these zones.
4. Mixed categories of areas should be declared as one of the four above mentioned categories by the competent authority and the corresponding standards shall apply.

3.5.8 Ecology

Introduction

A natural ecosystem is a structural and functional unit of nature. It has components, which exist in harmony and survive by interdependence. An ecosystem has self-sustaining ability and controls the number of organisms at any level by cybernetic rules, which keeps the ecosystem balanced.

The main objective of the ecological survey is aimed to assess the existing flora and fauna components in the study area.

An ecological survey of the study area was conducted particularly with reference to listing of species and assessment of the existing baseline ecological (terrestrial and aquatic ecosystem) conditions in the study area. Considering the rich bio-diversity of organisms and their role in productivity and their importance in human livelihood, it is vital to protect and safeguard these dynamic ecosystems.

Objectives of Ecological Studies

The present study was undertaken with the following objectives:

- To assess the nature and distribution of vegetation in and around the project site
- To assess the distribution of animal life spectra
- To understand the productivity of the water bodies
- To assess the biodiversity and to understand the resource potential, and
- To ascertain migratory routes of fauna and possibility of breeding grounds.





Methodology adopted for the Survey

To achieve the above objectives, a detailed study of the area was undertaken within 10 km radius area with the existing paper mill as its centre. The different methods adopted were as follows:

- Compilation of secondary data with respect to the study area from published literature and Government agencies
- Generation of primary data by undertaking systematic ecological studies in the area
- Discussion with local people so as to elicit information about local plants, animals and their uses

The review of published secondary data conducted during the study period is presented below:

Flora

During major part of the year, the vegetation is active and remains dormant only for a few months. This type of vegetation is common in open waste land and cultivated fields. After the first shower of monsoon in July, the ground becomes covered by green grass. As the monsoon advances, the ground vegetation becomes dominant and completely covered.

The floral species in the area are of common type and are devoid of medicinal and rare plant species.

The climatic conditions of the study area are well suited for a moderate natural vegetation cover. The area has hot summer, a moderate rainy season and a dry winter.

Details of different types of species of shrubs, climbers and grasses were obtained from Divisional Forest office, Faridkot. List of floral species in study area are given in **Table 3-26**.

Table 3-26: List of Floral Species in the Study Area (Source: Divisional Forest Office, Faridkot, Muktsar)

S. No.	Scientific Name	Local Name
1	<i>Acacia auriculeformis</i>	Babul
2	<i>Acacia Arabica</i>	Kikar
3	<i>Artocarpus integrifolia</i>	Kathal
4	<i>Albizia lebbek</i>	Kala Siris
5	<i>Azadirachta indica</i>	Neem
6	<i>Bauhinia speciosa</i>	Kachnar
7	<i>Butea monosperma</i>	Palas/Dhak
8	<i>Bougainvillea spectabilis</i>	Baganvilas
9	<i>Carica papaya</i>	Papita
10	<i>Cassia fistula</i>	Amaltas
11	<i>Carissa carnadas</i>	Karonda
12	<i>Callistemon lanceolatus</i>	Bottle brush
13	<i>Citrus limon</i>	Lemon
14	<i>Cynodon dactylon</i>	Dub
15	<i>Dalbergia sissoo</i>	Shisham
16	<i>Delonix regia</i>	Gulmohar
17	<i>Datura metal</i>	Dhatura
18	<i>Eucalyptus hybrid</i>	Safeda
19	<i>Ficus religiosa</i>	Pipal
20	<i>Ficus bengalensis</i>	Bargad
21	<i>Ipomaea fistulosa</i>	Behaya
22	<i>Mangifera indica</i>	Mango/Aam
23	<i>Morus alba</i>	Shehtut
24	<i>Musca sapientum</i>	Banana/Kela

S. No.	Scientific Name	Local Name
25	<i>Narium odorum</i>	Kaner
26	<i>Populus indica</i>	Poplar
27	<i>Phyllanthus emblica</i>	Amla
28	<i>Polyalthia longifolia</i>	Ashok
29	<i>Pupalia lappacea</i>	Chirchita
30	<i>Phoenix sylvestris</i>	Khajur
31	<i>Rosa indica</i>	Rose
32	<i>Syzygium cuminii</i>	Jamun
33	<i>Setaria glauca</i>	Sarkanda
34	<i>Solanum nigrum</i>	Mokoy
35	<i>Tamarindus indica</i>	Imli
36	<i>Zizyphus numularia</i>	Jharberi
37	<i>Zizyphus mauritiana</i>	Ber
38	<i>Jacaranda mimosifolia</i>	Jakranda
39	<i>Cedrela toona</i>	Tun
40	<i>Moringa oleifera</i>	Suhanjna
41	<i>Bambusa spp</i>	Bambu
42	<i>Pongamia glabra</i>	Sukhchain
43	<i>Albizia procera</i>	White Siris
44	<i>Terminalia arjuna</i>	Arjan
45	<i>Melia azadarach</i>	Drek Barma
46	<i>Melia azedarach</i>	Bakraim
47	<i>Alstonia scholaris</i>	Chitwan

Varying species of shrubs, climbers and grasses were found in the area. There were no fruit orchards, grasslands, exotic plantation, endangered and endemic species in study area. The study area has a sizeable cattle wealth which includes cows, buffaloes, horses, goats, poultry, etc. Variety of animals, birds & reptiles were observed during the field visits.

Fauna

Wild animals were not observed in the study area as there was no thick forest/ vegetation. The natural distribution of animals is largely determined by vegetation. Variety of wild animals such as Neelkanth, Girgit, Chamgadar, monkeys, Neelgai, Parrot, Wild Pig, Rabbit, and peacock are noticed in the study area. Amphibians like frogs and toads are commonly found. The list of fauna found in the study area is given in **Table 3-27**.

Table 3-27: List of Fauna Encountered in the Study Area (Source: Divisional Forest Office, Faridkot, Muktsar)

S. No.	Zoological Name	Local Name
1	<i>Boselaphus tragocamelus</i>	Neelgai
2	<i>Bubulcus ibis</i>	Baugla
3	<i>Chameleon species</i>	Girgit
4	<i>Cynopterus sphinx</i>	Chamgadar
5	<i>Columba livia</i>	Kabutar
6	<i>Corvus splendens</i>	House crow
7	<i>Corvus macrorhynchos</i>	Jangali crow
8	<i>Cuculus varius</i>	Titehri
9	<i>Dinopium benghalense</i>	Kathfoda
10	<i>Eudynamys scolopacea</i>	Koyal
11	<i>Erithacus svecicus</i>	Neelkanth
12	<i>Francolinus francolinus</i>	Kala titar
13	<i>Felis chaus</i>	Jungle cat
14	<i>Funambulus palmarum</i>	Squirrel





S. No.	Zoological Name	Local Name
15	<i>Gallinula chloropus</i>	Water hen
16	<i>Gallicrex cinerea</i>	Wild cock
17	<i>Hemiechinus auritus</i>	Jungle rat
18	<i>Hemidactylis species</i>	House Lizard
19	<i>Herpestes edwardsi</i>	Newla
20	<i>Lapus nigricollis</i>	Rabbit
21	<i>Macaca mulatta</i>	Bandar
22	<i>Nycticorax nycticorax</i>	Night Hiran
23	<i>Naja naja</i>	Nagraj
24	<i>Orthotomus sutorius</i>	House sparrow
25	<i>Paro cristatus</i>	Peacock
26	<i>Psittacula krameri</i>	Parrot
27	<i>Rattus rattus</i>	House rat
28	<i>Sus scrofa</i>	Wild Pig

3.5.9 Socio-Economic Status

The socio-economic chapter has been written, referring the Generic Structure of EIA' given in Appendix III and IIIA in the EIA Notification, 2006. The main objective of the study is to conduct demographic analysis for villages/towns coming in the radial distance of 10 km using available census data to describe inference related to demographic, social and economic conditions of the region and to conduct the social impact assessment in context to upcoming project.

The study was conducted into three parts as under:

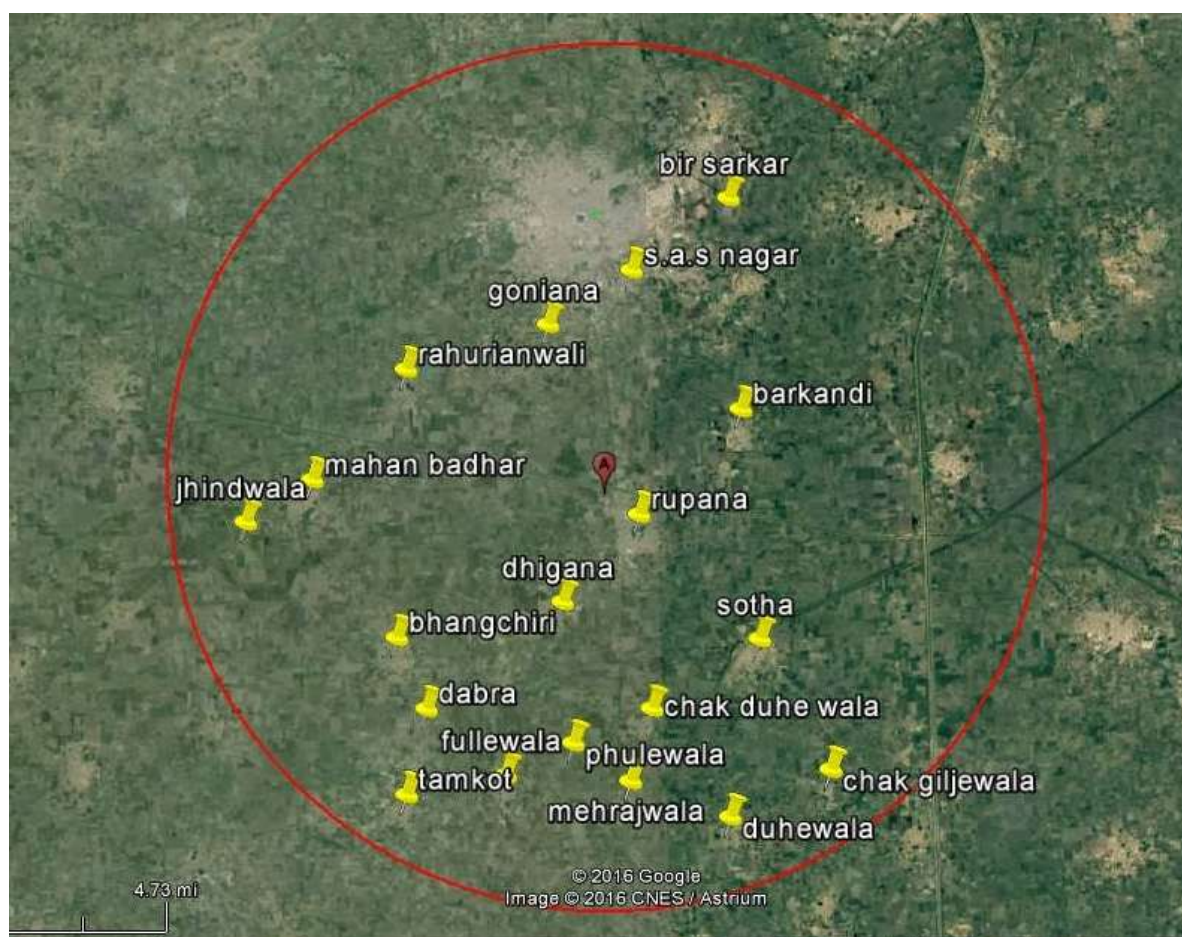
1. The project site is within the premises and construction work has not yet started, the Social Impact Assessment (Primary Survey) was done by having detailed discussion with the Proponent and villagers in surrounding villages coming under core area of 10 km.
2. Secondary analysis of Socio- economic census data (Secondary Survey) by referring 2011 census data. The field data was largely collected by conducting focus group discussion in the villages. About seven villages were visited within the distance of the 10km and discusses the issue related to the impact on the social environment due to advent Modernization of existing 150 TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant. It is to be noted that in the absence of village amenities data for 2011, the exact status of amenities are confirmed by respective village /town panchayat office for the villages/towns coming in the radial distance of 10 km and the talukas and district amenities status were taken from census 2011.
3. Planning of Social Development Program under CSR (Primary Survey) having been developed by having detailed discussion with the Proponent.

Demography is one of the important indicators of environmental health of an area. It includes description of population, available basic amenities like housing, health care services, transportation, education, water supply, roads, transport, etc. A total of 23 villages and one Town fully or partially fall in the radial distance of 10 km from the project site of M/s Satia Industry Ltd, Punjab for the proposed modernization project. Among these 71% villages' falls in the Muktsar taluka; 12.5% each in Kotbhai and Malout Taluka and 4% villages of Lambhi taluka in Muktsar district. Thus a macro level study among these has been carried in the radial distance of 10 km from the project site. The map showing the village has been prepared from google earth pro site as indicated in Fig 3.10. The study area is placed in three zones keeping in view the likely impacts of the proposed activity, namely (A) proximate zone (0-3 km radius) and (B) Intermediate (3-5 km) and (C) as Buffer zone (5-10 km radius).

Human Settlement

The demographic profiles shows that a minimum of 521 and maximum of 116747 population and an average population 7936 exist in the villages found in the radial distance of 10 km from the project site. The maximum population density is 3559/hector and the minimum is 0.6/hector, while the average population density is 7.2 persons per hector in the villages located in the radial distance of 10 km from the project site. The maximum sex ratio is 1118 and the minimum is 837 per 1000 male population. The average sex ratio is 892 per 1000 male population. While, the sex ratio of 0-6 age population has different situation. The maximum sex ratio is 1079 and the minimum 681 per thousand male population, while the average sex ratio is more skewed towards male population (828 per thousand male population). The proportion of Scheduled caste population is largely found in the area. The maximum literate population is 67.3% in Muktsar Town and the minimum literate population is 45.5% in Khunda Hala village. The average literate population among villages within the 10 km radial distance from the project site is 62.2%. However the female literacy rate is highest 25.4% in Dhigna village and the lowest is 18.8% is in Khunda Hala village. The average female literacy rate 27% is in the villages of 10 km radial distance from the project site.

Map 3-5: Location map of study area



Work Participation

The percentage of main worker in village Chibranwali is the highest (99.3%) and lowest is in village Chak Mahan Bhadhar (18.7%), while the average percentage of main worker is 88.1% in the villages located in the 10 km radial distance from the project site. The work participation rate is maximum in the village Chak Dahewala (47.7%) and the minimum is in village Chak Giljewala (29.9%); while the average work participation rate is 35.6% in the villages located in the radial distance of 10 km from





the project site. The population largely engaged in cultivation – agriculture sector (70%); Followed by labour work (20%) and Services sector (10%). The detailed villages' wise demographic and work participation status is indicated in **Table 3-28**.

Status of Basic Amenities

The villages within the 10 km from the project sites shows that only 16.7% of villages have Govt. PHC & SC; 45.8% Govt. Primary School, 41.7% has river or canal as well community centers; only 58.3% villages untreated tap water; 16.7% commercial banks; 16.7% having community centers; 16.7% villages have self-help groups; 50% Agriculture society; 83.3% telephone/mobile service and 83.3% villages has metaled road. While other public amenities like; public/private mode of transportation; and regular electric supply is present in all 24 villages. While there is hardly (8.3%) any presence of Govt. Vocational Centre and reach of total sanitation campaign is only among 25% from the total 24 villages in the 10 km radial distance from the project site. The detailed village wise information regarding public amenities in 24 villages is indicated in **Table 3-29**.

Table 3-28: Demographic Profile in the villages situated in study area of the project site

Village/Town	Area in Hect	Population	Pop_den_hect	Sex_ratio	Sex_ratio_0-6 yrs	% of SC Pop	Total Literate	Fem_Lit_Rate	Work_Pra_rate	%Main_Work	%Marg_Work
Ballamgarh	1016	3317	3.3	911	799	45.5	55.5	23.6	45.3	82.0	18.0
Bhangchari	1287	4134	3.2	888	783	39.8	55.0	23.8	34.3	92.2	7.8
Barkandi	821	2750	3.3	856	792	64.3	48.4	20.0	43.0	75.5	24.5
Bhagsar	3104	7669	2.5	870	851	55.3	51.1	21.4	34.2	92.1	7.9
Bhullar	1594	4483	2.8	892	790	43.6	52.4	22.9	30.9	91.6	8.4
Chak Duhewala	830	1690	2.0	841	788	58.7	52.3	21.0	47.7	69.5	30.5
Chak Tamkot	513	978	1.9	903	729	64.9	55.5	23.6	35.4	93.4	6.6
Chak Mahan Bhaddar	825	521	0.6	1118	1059	61.0	48.9	23.8	37.0	18.7	81.3
Chak Giljewala	259	1476	5.7	981	740	56.1	49.5	22.6	29.9	98.6	1.4
Chibranwali	870	2738	3.1	940	1079	63.0	51.9	23.3	39.6	99.3	0.7
Dabra	705	1056	1.5	837	862	53.9	52.3	21.4	36.2	97.9	2.1
Duhewala	843	1984	2.4	882	893	36.4	53.8	22.7	33.5	90.7	9.3
Dhigana	853	1779	2.1	953	929	49.6	58.4	25.4	34.3	80.3	19.7
Fatuhiwala	1026	2666	2.6	900	905	48.8	48.8	20.9	46.2	76.7	23.3
Goniana	870	3729	4.3	919	882	60.5	49.4	20.9	38.2	79.8	20.2
Khunde Halal	992	2246	2.3	902	856	72.8	45.5	18.8	31.9	99.6	0.4
Mehrajwala	703	1701	2.4	896	694	49.4	53.9	22.7	41.4	95.0	5.0
Rohurianwali	976	2727	2.8	949	860	58.4	57.0	24.8	36.4	87.3	12.7
Rupana	2453	9079	3.7	838	789	51.6	57.6	23.6	39.1	74.8	25.2
Sangu Dhaun	834	2607	3.1	884	855	47.3	58.3	23.6	36.4	80.6	19.4
Sotha	1327	3639	2.7	931	1076	40.3	56.9	24.9	32.7	93.3	6.7
Sri Muktsar sahib Township	32.8	116,747	3559.4	891	829	32.9	67.3	29.6	34.5	89.5	10.5
Thandewala	2160	6814	3.2	892	681	43.9	58.1	25.0	39.5	94.4	5.6
Ude Karan	1393	3940	2.8	891	759	43.8	57.7	24.7	35.6	89.3	10.7
Total	26286.8	190470	7.2	892	828	39.8	62.2	27.0	35.6	88.1	11.9



Table 3-29: Status of Public Amenities in the villages located in study area

Village Name	Govt. Primary School	Govt. Training ITI	Vocational Centre	Govt. PHC & SC	Tap Water Untreated	River & Canal	Total Sanitation Campaign	Telephone / Mobile	Public/Pvt mode of transportation	Metal Road	Commercial Bank	Agriculture Credit Society	Community Centre	Self Help Groups	Electric Power Supply
Ballamgarh	Yes	No		Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
Bhangchari	Yes	No		No	No	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Yes
Barkandi	No	No		No	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Yes
Bhagsar	Yes	No		No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Bhullar	Yes	No		No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	Yes
Chak	No	No		No	No	No	Yes	No	Yes	Yes	No	No	No	No	Yes
Chak Tamkot	No	No		No	No	No	Yes	No	Yes	Yes	No	No	No	No	Yes
Chak Mahan	Yes	No		No	Yes	No	No	Yes	Yes	Yes	No	No	No	No	Yes
Chak Giljewala	No	No		No	No	No	No	Yes	Yes	Yes	No	No	No	No	Yes
Chibranwali	Yes	No		Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes
Dabra	Yes	No		No	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes
Duhewala	No	No		No	No	No	No	Yes	Yes	No	No	No	No	No	Yes
Dhigana	Yes	No		No	Yes	No	No	Yes	Yes	Yes	No	No	No	No	Yes
Fatuhiwala	Yes	No		No	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Yes
Goniana	Yes	No		No	Yes	No	No	No	Yes	Yes	No	Yes	No	No	Yes
Khunde Halal	No	No		No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes
Mehrajwala	No	No		No	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	Yes
Rohurianwali	No	No		No	No	No	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Rupana	No	No		No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Sangu Dhaun	No	No		Yes	No	No	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Sotha	No	No		Yes	No	Yes	No	Yes	Yes	Yes	No	No	No	No	Yes
Muktsar (MC)	Yes	Yes		No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thandewala	No	No		No	No	No	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Ude Karan	No	Yes		No	Yes	No	No	Yes	Yes	No	No	No	No	No	Yes

4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 INTRODUCTION

The chapter aims at controlling pollution at the source level to the extent possible with the available and affordable technology followed by treatment measures before they are discharged. The proposed modernization project would create impact on the environment in two distinct phases:

- During the construction phase which may be regarded as temporary or short term; and
- During the operation phase which would have long term effects.

The construction and operational phase of the proposed modernization project comprises various activities each of which will have an impact on some or other environmental parameters. Various impacts during the construction and operation phase on the environmental parameters have been studied and mitigation measures for the same are discussed briefly below and elaborated in the subsequent sections.

4.2 IDENTIFICATION OF ENVIRONMENTAL IMPACTS

There are two major phases of this proposed project

- (i) Construction phase and
- (ii) Operation phase.

4.3 ANTICIPATED ENVIRONMENTAL IMPACTS DURING CONSTRUCTION PHASE

For the proposed modernization project, this phase involves minor construction activities like erection of new shed and other related civil works. Air, water, noise and land environment are likely to be affected by the activities, although aesthetics and socio-economic factors are also identified. But the impacts will be marginal and for short term only.

4.3.1 Matrix Representation

Impact identification matrix for construction phase is summarized in table 4.1 to 4.3



Table 4-1: Impact Identification Matrix (During Construction Phase)

Activities	Environmental Attributes										
	Air	Water	Soil	Noise	LU/ LC	Hydro geology	Geology	SHW	Risk & Occupational Hazardous	Ecology and Biodiversity	Socio Economic
Transportation of materials & machinery	✓	-	-	✓	-	-	-	-	✓	-	✓
Handling & Storage of materials	✓	-	✓	-	-	-	-	-	-	-	-
Construction of shed and related civil works	✓	✓	✓	✓	-	-	-	✓	-	-	-
Wastewater Disposal	-	✓	✓	-	-	-	-	-	-	-	-
Solid waste disposal	-	-	✓	-	-	-	-	✓	-	-	-
Employment generation	-	✓	-	-	-	-	-	-	-	-	✓

Table 4-2: Severity Criteria for Magnitude of Impacts

S. No.	Category	Description of category	Impact	
			Adverse	Beneficial
1.	No impact	-	0	0
2.	No appreciable impact	Short term reversible	-1	1
3.	Significant impact	Long term reversible	-2	2
4.	Major impact	Irreversible but of lesser extent	-3	3
5.	High impact	Irreversible but of medium extent	-4	4
6.	Permanent impact	Severe irreversible impact	-5	5

Table 4-3: Score range for beneficial and adverse impacts

S. No.	Total score	Outcome
1.	+ve / -ve	Beneficial impact / adverse impact
2.	0-150	No appreciable Beneficial impact / adverse impact
3.	151-300	Appreciable but reversible adverse impact-mitigation measures are needed
4.	301-450	Significant adverse impacts: most of the impacts are reversible. Mitigation measures are crucial.
5.	451-600	Major adverse impacts; most of the impacts are reversible. Alternative site selection to be considered.
6.	>600	Permanent irreversible impact; alternatives to the project need to be explored

Table 4-4: Environmental Impact Matrix without Mitigation Measures (During Construction Phase)

Activities	Environmental Attributes											Total
	Air	Water	Soil	Noise	LU/LC	Hydrogeology	Geology	SHW	Risk & Occupational Hazards	Ecology and Biodiversity	Socio Economic	
Transportation of materials & machinery	-2	-	-	-2	-	-	-	-	-1	-	+3	-2
Handling & Storage of materials	-2	-	-	-2	-	-	-	-	-	-	-	-4
Resource & Power requirement	-	-	-	-	-	-	-	-	-	-	-	-
Construction of shed and related minor civil works	-2	-2	-1	-2	-	-	-	-2	-	-	-	-9
Wastewater Disposal	-	-1	-1	-	-	-	-	-	-	-	-1	-3
Solid waste disposal	-1	-	-2	-	-	-	-	-2	-	-	-1	-6
Employment generation	-	-	-	-	-	-	-	-	-		+3	+3
Land Development/ Green belt Development	+3	-1	+2	+2	+3	-	-	-	-	+2	+2	+13
Total	-4	-4	-2	-4	+3	0	0	-4	-1	+2	+6	-8

4.3.2 Air Environment

Table 4-5: Impact and Mitigation Measures on Air Environment

Project Activity	Impact	Mitigation Measures
Transportation of Material & Machinery	<ul style="list-style-type: none"> Increases in respiratory ailments like asthma and bronchitis to people of nearby villages due to dust generation. 	<ul style="list-style-type: none"> Regular water sprinkling will be done to avoid dust generation from transportation. Only PUC vehicle will be used for the transportation of materials and equipment. Temporary bunds will be created during the construction phase to avoid excess wind erosion from the construction site. Transportation vehicles should maintain speed limit at all times to avoid excessive dusting.
Handling & Storage of materials	<ul style="list-style-type: none"> Particulate matter generated penetrates deeply into the lungs and cause a wide range of health problems 	<ul style="list-style-type: none"> Provision for masks for the construction workers.



	including respiratory illness, asthma, bronchitis and even cancer.	
Green belt Development	<ul style="list-style-type: none"> Dust absorber species will prevent carryover of gases out of the premises. 	<ul style="list-style-type: none"> It is proposed to plant adequate greenbelt.
Construction of shed and other minor civil works	<ul style="list-style-type: none"> Chances of Accident will increase due to construction work. Stomatal index may be minimized due to dust deposit on leaf. 	<ul style="list-style-type: none"> Dust mask will be provided to the workers. Covering will be done wherever possible.
Waste Disposal	<ul style="list-style-type: none"> Nuisance creation due to odour generated from openly disposed garbage. 	<ul style="list-style-type: none"> Garbage/wastes will be stored in covered yard and disposed off adequately.

4.3.3 Water Environment

Table 4-6: Impact and Mitigation Measures on Water Environment

Project Activity	Impact	Mitigation Measures
Construction of shed and other minor civil works	<ul style="list-style-type: none"> Resource depletion and scarcity of water to nearby dependent population due to use of water, spills and leaks during construction activities. 	<ul style="list-style-type: none"> Curing will be done with wet gunny bags. Bunds will be created to prevent water run-off from the site.
Wastewater Disposal	<ul style="list-style-type: none"> Sewage and grey water discharge due to labors 	<ul style="list-style-type: none"> Effluent generation from the construction site will be properly treated through the existing STP. Regular leak checks and maintenance will be carried out.
Green belt Development	<ul style="list-style-type: none"> Resource depletion and scarcity of water to nearby dependent population due to use of water. 	<ul style="list-style-type: none"> No groundwater will be utilized for greenbelt development. Proper utilization of water and preventive maintenance of pumps for transferring of water to construction site.

4.3.4 Soil Environment

Table 4-7: Impact and Mitigation Measures on Soil Environment

Project Activity	Impact	Mitigation Measures
Handling & Storage of materials	<ul style="list-style-type: none"> • Soil contamination due to spillage & leakage from storage of materials. • Oil spillage can affect physical and chemical properties of the soils. 	<ul style="list-style-type: none"> • Adequate storage yard with paved/lined surfaces will be carried out. • Storage area temperature will be maintained and good practices of storage and material handling will be carried out. • Spillage control will be carried out by disposing the affected soil at adequate place.
Wastewater Disposal	<ul style="list-style-type: none"> • Sewage and grey water discharge on land due to labors • Soil will be polluted due to wastewater leakage/spillage and it will affect soil fertility. 	<ul style="list-style-type: none"> • No wastewater from construction site will be allowed to dispose off on land. • Adequate sanitation facilities along with Septic tank/Soak pit system will be provided. • Regular monitoring/checking/inspection of the sewage network system
Solid Waste Disposal	<ul style="list-style-type: none"> • Soil degradation due to solid waste disposal 	<ul style="list-style-type: none"> • Garbage/wastes will be stored in adequate storage yard with paved/lined surfaces. • Disposal of construction waste for low lying areas
Construction of shed and other minor civil works	<ul style="list-style-type: none"> • Loss of top fertile soil due to construction of minor civil works • Loss of top fertile soil due to erosion due to rainwater runoff and wind • Improvement in soil texture due to binding of top soil materials due to root structure 	<ul style="list-style-type: none"> • A well designed storm water drainage network and sewerage network will be provided for the proposed project for carry away of rainwater runoff • Construction activities will be stopped during rainy days. • The greenbelt development will control the soil erosion due to wind and runoff water. Regular maintenance of greenbelt will be done. • Maximum portion of the plot area will be built up and paved to minimize the soil erosion/dust carryover due to wind. • A heightened boundary wall will be built up to reduce the carryover of soil due to wind beyond the premises.
Green belt Development		



4.3.5 Noise Environment

Table 4-8: Impact and Mitigation Measures on Noise Environment

Project Activity	Impact	Mitigation Measures
Transportation of materials & machinery	<ul style="list-style-type: none"> Increased noise levels are interference in verbal communication and disturbance in sleep. Noise pollution damages the nervous system of animal. Animal loses the control of its mind. 	<ul style="list-style-type: none"> Handling & Storage of materials Soil contamination due to spillage & leakage from storage of materials. Oil spillage can affect physical and chemical properties of the soils. Adequate storage yard with paved/lined surfaces will be carried out. Storage area temperature will be maintained and good practices of storage and material handling will be carried out. Spillage control will be carried out by disposing the affected soil at adequate place.
Construction of Buildings		
Land Development/ Green belt Development	<ul style="list-style-type: none"> Reduction in noise waves to receptors serving as a noise barrier 	<ul style="list-style-type: none"> Greenbelt development to act as a barrier for noise.

4.3.6 Solid/Hazardous Waste

Table 4-9: Impact and Mitigation Measures for Solid/ Hazardous Wastes

Project Activity	Impact	Mitigation Measures
Construction of shed and other civil related works	<ul style="list-style-type: none"> Impacts on environment due to spillage/leakage, handling and disposal of excavated material, construction wastes and other wastes 	<ul style="list-style-type: none"> Solid waste management plan will be carried out. Construction wastes will be utilized for low lying area after identifying disposal sites STP Sludge is/will be used as manure in the premises
Construction and Demolition/ Solid Waste Disposal		

4.3.7 Risk & Hazards

Table 4-10: Impact and Mitigation Measures for Risk & Hazards

Project Activity	Impact	Mitigation Measures
Transportation of materials	<ul style="list-style-type: none"> Chances of accident during transportation of materials. 	<ul style="list-style-type: none"> Transportation within the main working will be carried out directly under the supervision and control of the management. The vehicles must be maintained in good repairs and checked thoroughly at least once a week by the competent person authorized for the purpose by the Management. Traffic management plan within and outside the factory premises will be followed. Vehicle speeding and unnecessary horn honking will be avoided.

4.3.8 Socio Economic

Table 4-11: Impact and Mitigation Measures for Socio Economic

Potential Aspects	Impacts	Mitigation Measures
Employment Generation	<ul style="list-style-type: none"> Direct indirect employment will be generated. 	<ul style="list-style-type: none"> Preference will be given to local population of surrounding villages for the construction phase.

4.3.9 Other Environmental Area

No impact on Landuse/Land Cover, Hydrogeology, Geology, Ecology & Biodiversity during construction phase

Table 4-12: Environmental Impact Matrix with Mitigation Measures (During Construction Phase)

Activities	Environmental Attributes											Total
	Air	Water	Soil	Noise	LU/ LC	Hydro geology	Geology	SHW	Risk & Occupational Hazards	Ecology and Biodiversity	Socio Econ omic	
Transportation of materials & machinery	-1	-	-	-1	-	-	-	-	0	-	+3	+1
Handling & Storage of materials	-1	-	-	-1	-	-	-	-	-	-	-	-2
Resource & Power requirement	-	-	-	-	-	-	-	-	-	-	-	0
Construction of shed and other minor civil works	-1	-1	-	-1	-	-	-	-	-	-	-	-3
Wastewater Disposal	-	-	-	-	-	-	-	-	-	-	-	0
Solid waste disposal	-	-	-1	-	-	-	-	-1	-	-	-1	-2
Employment generation	-	-1	-	-	-	-	-	-	-		+3	+2
Green Belt development	+3	-1	+2	+2	+3	-	-	-	-	+2	+2	13
Total	0	-3	+1	-1	+3			-1		+2	+7	+8

4.4 ANTICIPATED ENVIRONMENTAL IMPACTS DURING OPERATION PHASE

This phase of the project is important because it generates long-term impacts as the project implementation phase starts. Air, Water, Noise and Land/Soil are likely to be affected due to the gaseous emissions, vehicular movement, and discharge of liquid effluent /solid waste. Identification and quantification of impacts during the operation phase is given in Table 4.17 and 4.18



4.4.1 Matrix Representation

Table 4-13: Impact Identification Matrix (Operation Phase)

Activities	Environmental Attributes										
	Air	Water	Soil	Noise	LU/ LC	Hydro geology	Geology	SHW	Risk Hazardous	Ecology and Biodiversity	Socio - Economic
Transportation of Materials & Machinery	✓			✓	-	-	-		✓		✓
Storage of materials	✓	-	✓	-	-	-	-		✓	-	-
Manufacturing process	✓	✓	-	✓	-	-	-	✓	✓	-	-
Operation of DG set	✓	-	-	✓	-	-	-	-	✓	-	-
Industrial /domestic wastewater generation	-	✓	✓	-	-	-	-	✓	✓	-	-
Solid Waste Disposal	-		✓	-	-	-	-	-	✓		-
Employment generation	-	-	-	-	-	-	-	-	-	-	✓

Table 4-14: Environmental Impact Matrix Without Mitigation Measures (During Operation Phase)

Activities	Environmental Attributes											Total
	Air	Water	Soil	Noise	LU/ LC	Hydro geology	Geology	SHW	Risk Hazardous	Ecology and Biodiversity	Socio - Economic	
Transportation of Materials & Machinery	-3	-	-	-3	-	-	-	-	-2	-	-2	-10
Storage of materials	-2	-	-2	-	-	-	-	-	-2	-	-	-6
Manufacturing process	-2	-2	-	-2	-	-	-	-2	-1	-	-	-9
Operation of DG set/boiler.	-3	-	-	-3	-	-	-	-1	-2	-	-	-9
Industrial /domestic wastewater generation	-	-2	-2	-	-	-	-	-2	-2	-	-	-8
Solid Waste Disposal	-	-	-2	-	-	-	-	-	-2	-2	-	-6
Employment generation	-	-	-	-	-	-	-	-	-	-	+3	+3
Total	-10	-4	-6	-8	0	0	0	-5	-11	-2	+1	-45

4.4.2 Air Environment

The baseline ambient air quality status in the study area indicates that all the criteria pollutants: PM, SO₂ & NO_x are well within the prescribed National Ambient Air Quality Standards (NAAQS) for residential, rural and other areas. The source of Air Pollution is gases and particles emerging out of combustion of Rice Husk in Boilers and burning of Black Liquor in recovery boiler. To meet steam requirement, Satria Industries Limited has 45 TPH 75 TPH and Proposed 75 TPH power boilers and another 50 TPH Recovery boiler for steam generation. The

Chemical recovery Boiler is run through the Black Liquor, the other two runs on rice husk. 75 TPH power boiler & 50 TPH recovery boiler are equipped with three field hammer type Electrostatic Precipitators (ESP's) for SPM control & 45 TPH power boiler is equipped with wet scrubber, multi cyclone separator. After commissioning of 75 TPH boiler, 45 TPH will be kept as stand by.

Pollutants like PM, SO₂ and NO_x are expected to be generated from the operation of CPP as well as D. G. Set. However D. G. Set shall be used in case of power failure only. The D.G. Set engines and auxiliaries shall be provided with filters and adequate stack height as per recommendations. Hence, only the stationary emissions from the CPP would be significant source of pollutant from the proposed project.

Main Sources: Boiler, D. G. Set, Spray dryer

APC Planned: ESP (for 50 TPH Boiler) & Multi cyclone separator followed by wet Scrubber (for Spray dryer)

The following mitigation measures for the proposed project shall be practiced to control the fugitive emission.

- Raw material such as wheat straw; Sarkanda; woodchips & vaneer chips, etc. is stored separately at identified places having sufficient areas.
- Water shall be sprinkled regularly to minimize the dust emission.
- The ash is transferred directly from the boiler, ESP to storage silos through a closed 'dense phase pneumatic conveying system' to prevent/minimize fugitive particulate emissions.
- Greenbelt shall be provided in and around the premises area, around the storage area and along the roads to minimize the generation of fugitive dust. Presence of a comprehensive green belt shall further abate dust generation due to loading/unloading activities, transportation vehicles and other related.
- Regular cleaning, inspection & maintenance of the air pollution control system shall be carried out.

The above mentioned mitigation measures shall be effective in minimizing the impacts on the air environment occurring due to the activities of the proposed plant. These impacts are also likely to barricade within the premises in presence of the Green belt developed.

Table 4-15: Impact and Mitigation Measures on Air Environment

Project Activity	Impact	Mitigation Measures
<ul style="list-style-type: none"> • Transportation of Materials & Machinery • Handling of raw material • Operation of DG set/Boiler • Manufacturing Process 	<ul style="list-style-type: none"> • Process and flue gas emission contributes to greenhouse gases, thus degrading the air quality. • Increase in level of pollutants like PM, SO_x, NO_x etc. due to gaseous emission. • Stomatal index may be minimized due to dust deposit on leaf. • Crop yield will be reduced. 	<ul style="list-style-type: none"> • Regular monitoring of air polluting concentrations. • Pollution control equipments has been/will be installed. • All tankers and vehicles shall be PUC Certified from time to time. • DG Sets will be operated during power failure only. boilers are equipped with Electrostatic Precipitators (ESP's) for SPM control. • Traffic management will be made and ensured that the same is followed. • Attenuation of pollution/protection of receptor through greenbelt/green cover. • Regular monitoring of air polluting concentrations. • Closed transportation vehicles and closed storage yard are/will be provided to control and confine the emissions.



4.4.3 Air Quality Predictions through Mathematical Modeling

Upon discharge to atmosphere, the emissions from stationary sources are subject to the following physical and chemical processes:

- An initial vertical rise, called plume rise, due to initial buoyancy and momentum of discharge
- Transport by wind in its direction
- Diffusion by turbulence
- Gravitational settling, chemical transformations, deposition, washout and other complex reactions

To meet steam requirement, Satia Industries Limited has 2 boilers of 45 and 75 TPH and another 50 TPH Recovery boiler for steam generation. Whereas the Chemical recovery Boiler is run through the Black Liquor, the other two runs on rice husk as well as biogas generated from UASB digester. The steam requirement for the proposed plant shall be met from the proposed 75 TPH boiler, which will run on rice husk and biogas generated from UASB digester. Figure below shows the existing and proposed stacks.



Since, Rice husk and biogas will be fired into the boiler, so main emissions from the stack are Particulate Matter (PM), and Nitrogen oxides (NO_x). SO₂ may also be present in the flue gas depending upon sulphur content in rice husk and H₂S in biogas. The quantity of flue gas generation will be 1,30,000 Nm³/h at full load conditions. The emission characteristics and emission loads are given below. Peak incremental concentrations due to boiler stack emissions are predicted to assess their impact on post project ambient air quality.

Prediction of impacts on air environment has been carried out employing mathematical model based on a steady state Gaussian plume dispersion model designed for point sources for short term. In the present case, AERMOD version 8.2 dispersion model based on steady state Gaussian plume dispersion and developed by United States Environmental Protection Agency [USEPA] has been used for simulations from Industrial sources.

(A) Pollutants/Model Options Considered For Computations

The model simulations deal with major pollutant Particulate Matter (PM₁₀) NO_x & SO₂ emitted from the proposed 75 TPH boiler.

(B) Model Options Used For Computations

The options used for short-term computations are:

- The plume rise is estimated by Briggs formulae, but the final rise is always limited to that of the mixing layer;
- Stack tip down-wash is not considered;

- Calms processing routine is used by default;
- Wind profile exponents is used by default, 'Irwin';
- Flat terrain is used for computations;
- It is assumed that the pollutants do not undergo any physico-chemical transformation and that there is no pollutant removal by dry deposition;
- Washout by rain is not considered;
- The model computations have been done for 10 km

(C) Model Input Data

The continuous source of emissions in the proposed project will be from Boiler. The boiler steam generation capacity will be 75 TPH. Emission from the boiler will be controlled by installation of efficient pollution control systems i.e. ESP and stack height of 65 meters as per CPCB guidelines.

Emission Source: Emission loads have been worked out on the basis of rice husk as fuel. The flue gases are passed through electrostatic precipitators before release into atmosphere through the stack. The emission rate of PM, NO_x and SO₂ are calculated as below:

PM Emission Rate

SPM concentration in the stack, mg/Nm ³	=	150
Stack flow, Nm ³ /s	=	36.12
Emission Load, mg/s	=	36.12 x 150
Emission load, g/s	=	5.418

NO_x Emission Rate

For predictions of ground level concentrations the NO_x concentration is taken as 100 ppm.

NO _x emission rate from the stack, ppm	=	100
Flue gas volume, Nm ³ /s	=	36.12
NO _x concentration, Nm ³ /s	=	100 x 10 ⁻⁶ x 36.12 = 0.003612
NO _x concentration, kg/s	=	0.003612 x 1.22 = 0.004406
NO _x emission load, g/s	=	4.407 (NO _x density = 1.22 kg/Nm ³)

SO₂ Emission Rate

For predictions of ground level concentrations the SO₂ concentration is taken as 30 ppm.

SO ₂ emission rate from the stack, ppm	=	30
Flue gas volume, Nm ³ /s	=	36.12
SO ₂ concentration, Nm ³ /s	=	30 x 10 ⁻⁶ x 36.12 = 0.0010836
SO ₂ concentration, kg/s	=	0.0010836 x 2.63 = 0.002849868
SO ₂ emission load, g/s	=	2.849 (SO ₂ density = 2.63 kg/Nm ³)



Table 4-16: Stack Characteristics and Emission Loads

S. No.	Parameter	75 TPH Power Boiler
1.	Stack Height	65 m
2.	Diameter of stack	2.8 m
3.	Velocity of exhaust gas	5.86 m/s
4.	Exhaust gas temperature	403 K
5.	Particulate emission rate	5.418 g/s
6.	NO _x emission rate	4.407 g/s
7.	SO ₂ emission rate (with 30ppm)	2.849 g/s

Mathematical Modeling

The pollutant emitted is expected to undergo some removal processes in the atmosphere (such as deposition and reaction). Since these processes of 'reduction' have not been modelled, it is expected that the simulation made in this report represent concentrations on a higher or conservative side. In this sense, the predicted concentrations should provide a very useful basis for rational assessment of air quality impacts due to emissions from the proposed expansion project. The objective of this modeling is to predict incremental additions in the concentrations due to the implementation of proposed paper plant capacity expansion in the air shed of 10 km radius.

Modeling Procedure

Prediction of ground level concentrations (GLC's) due to the boiler at the proposed expansion project has been made by AERMOD version 8.2 as per CPCB guidelines. It is US-EPA approved model to predict the air quality. The model uses rural dispersion and regulatory defaults options as per guidelines on air quality models (PROBES/70/1997-1998). For this study, uniform polar receptors on flat terrain have been assumed.

Meteorological inputs required are hourly wind speed and direction, ambient temperature, cloud cover and ceiling height. The model details are as follows:

Gaussian Plume Model

The AERMOD version 8.2 model is based on a numerical integration over the area in the upwind and cross wind directions of Gaussian plume formula. This can be applied to the point, area, line, volume sources (& other forms of area sources) simultaneously and their resultant incremental concentration of the pollutant can be predicted.

Extrapolation of Wind Speed

Wind speed at stack level is calculated by power law as given below.

$$U_{\text{stack}} = U_{10}(\text{Stack height}/10)^p$$

Where U_{10} is the wind speed at 10 meter level and p is the power law coefficient (0.07, 0.07, 0.10, 0.15, 0.35 and 0.55 for stability classes A,B,C,D,E and F respectively) as per Irwin for rural areas (USEPA, 1987).

Meteorological Data

Data recorded at the continuous weather monitoring station on wind speed, direction, and temperature at one hour interval for the monitoring period has been used as meteorological input.

Results:

In the present case model simulations have been carried using the hourly meteorological data. Short-term simulations (24hour) were carried to estimate concentrations at the receptors to obtain an optimum description of variations in concentrations over the site in 10 km radius.

The incremental concentrations are estimated for the monitoring period. For each time scale, i.e. for 24 hr the model computes the highest concentrations observed during the period over all the measurement points. Existing value has been covered in the Background Ambient Air Quality Monitoring.

For the purpose of the impact assessment, the more relevant determination for anticipated pollutants is the increase in the background concentration rather than the determination of maximum GLC values. In the present study, an attempt has been made to determine the increase in the concentration of SPM, NO_x and SO₂ for villages where the ambient air quality stations were established through a substitution of relevant of data in the AERMOD model.

Summary of Prediction on Ambient Air Quality

AERMOD version 8.2 was used in the prediction of ground level concentrations (GLC's) due to the boiler at the proposed expansion project as per CPCB guidelines. The maximum incremental GLCs of SPM, NO_x and SO₂ due to the proposed expansion project are superimposed on the maximum background concentrations recorded at the monitoring locations during the study period. The resultant cumulative concentrations after implementation of the proposed expansion project are very much likely to be within the prescribed NAAQ standards. Cumulative concentrations (Baseline + Incremental Concentration) for SPM, NO_x and SO₂ is shown in Table 4.15 and isopleths showing 24hourly predicted GLC's of SPM, NO_x and SO₂ is shown in Figure 4.1, 4.2 & 4.3 respectively. The resultant cumulative concentrations after implementation of the proposed commissioning of 75 TPH boiler are very much likely to be within the prescribed NAAQ standards.

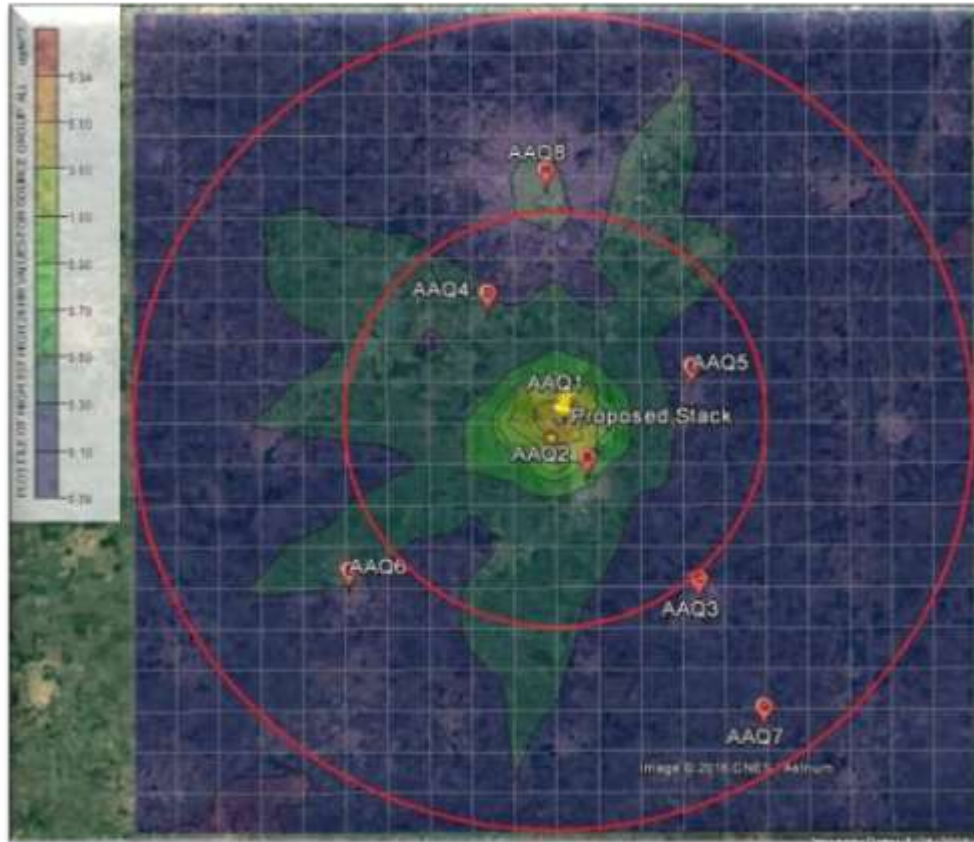
Table 4-17: Cumulative concentrations for SPM, NO_x and SO₂

	Sampling Location	Aerial distance from Plant site	Direction from Plant Site	Background concentrations in $\mu\text{g}/\text{m}^3$			Predicted incremental Maximum concentrations in $\mu\text{g}/\text{m}^3$			Resultant Maximum concentrations in $\mu\text{g}/\text{m}^3$		
				PM	NO _x	SO ₂	PM	NO _x	SO ₂	PM	NO _x	SO ₂
AAQ1	Project Site	-	---	90.7	25.7	20.0	5.33	4.34	2.80	96.03	30.04	22.8
AAQ2	Village Rupana	2.4	SSE	86.4	21.2	20.2	0.51	0.41	0.26	86.91	21.61	20.46
AAQ3	Village Sotha	5.9	SE	81.7	23.7	18.6	0.27	0.22	0.14	81.97	23.92	18.74
AAQ4	Village Goniana	2.3	NNW	72.7	17.8	12.5	0.30	0.24	0.15	73	18.04	12.65
AAQ5	Village Barkandi	2.9	E	75.2	18.7	12.6	0.29	0.23	0.15	75.49	18.93	12.75
AAQ6	Village Bhangchari	5.8	SW	67.7	17.4	12.1	0.29	0.23	0.15	67.99	17.63	12.25
AAQ7	Village ChakGiljewala	9.1	SE	84.5	23.7	16.8	0.14	0.11	0.07	84.64	23.81	16.87
AAQ8	Muktsar	7.0	N	72.3	18.8	13.4	0.33	0.26	0.17	72.63	19.06	13.57
Permissible limits										100	80	80

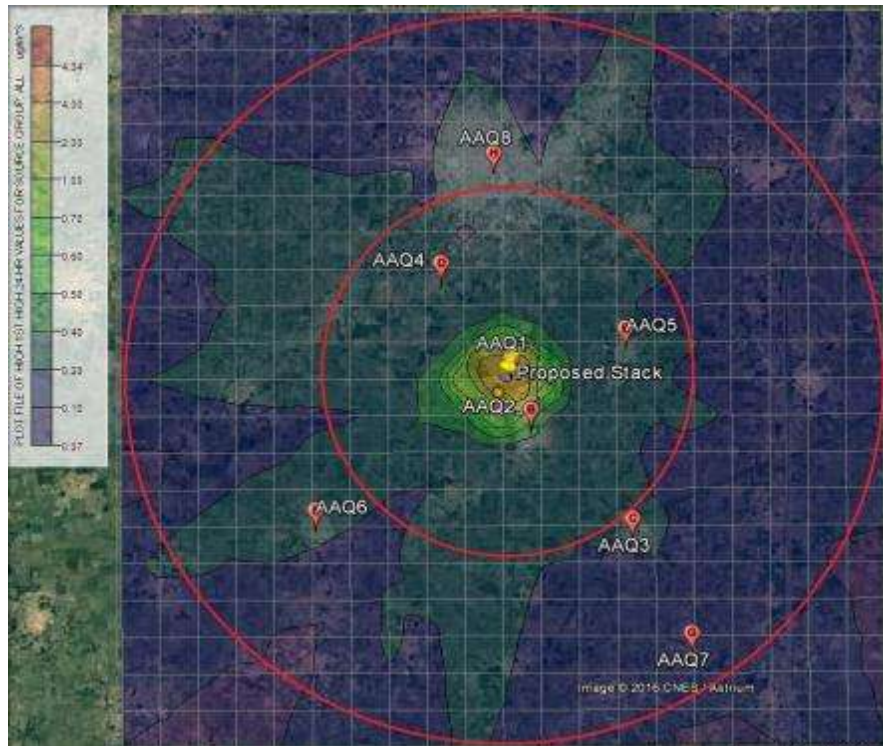




Map 4-1: Isopleth showing 24hourly predicted GLC's of SPM



Map 4-2: Isopleth showing 24hourly predicted GLC's of NOx



Map 4-3: Isopleth showing 24hourly predicted GLC's of SO₂



Interpretation

When predicted 24 hourly ground level concentrations of PM, NO_x and SO₂ emissions from the proposed source is added to background average monitored values, resultant values remain well below the prescribed NAAQS at all the location. Incremental result of PM was observed higher at plant site but the average result of PM was within the limit. Hence, there is no significant impact anticipated on the ambient air quality of the area due to the proposed source.

Conclusion of air quality model study

The modeling study has proved that the air emissions from the proposed project will not affect the ambient air quality of the region in any significant manner. This is because the proposed project will have highly efficient air pollution control equipment (ESP) to control the emissions. Ambient air quality around the project site will remain within the NAAQS meant for the residential area. NAAQS are indicative air quality criteria that are adequate to protect the human health and vegetation



4.4.4 Water Environment

Table 4-18: Impact and Mitigation Measures on Water Environment

Project Activity	Impact	Mitigation Measures
<ul style="list-style-type: none"> Manufacturing Process Domestic / Industrial wastewater generation 	<ul style="list-style-type: none"> Degradation of water quality due to release of domestic sewage and industrial effluent. Spillage of chemicals will affect the water quality due to mixing. Water quality of rain water may get degraded due to mixing of sewage with rainwater due to run off. 	<ul style="list-style-type: none"> Domestic sewage will be treated in the septic tank/soak pit system. Water conservation plan will be carried out by recycling and reuse of treated effluent in gardening, steam recovery from boiler which will reduce the fresh water demand. Proper spill control measures will be done. Regular monitoring of Underground pipe work and tank will be done. Proper storage area will be proposed with lining to avoid leakage.

4.4.5 Soil Environment

Table 4-19: Impact and Mitigation Measures on Soil Environment

Project Activity	Impact	Mitigation Measures
<ul style="list-style-type: none"> Transportation of Materials & Machinery Domestic / Industrial wastewater generation Solid waste generation 	<ul style="list-style-type: none"> Degradation of soil quality due to wastewater discharge. Plants that are grown in lightly polluted soil continuously absorb molecules of the pollutants. Since the plants cannot get rid of these molecules, they accumulate in the plant, causing higher amounts of pollution to exist in the plant than in the soil. Fuel and oil spills from motor vehicles are washed on road sides and enter the soil. 	<ul style="list-style-type: none"> Tarpaulin sheet is/will be provided to cover the trucks to prevent spillage of toxic chemicals. No toxic liquid / solid waste water is/will be disposed directly on land.

4.4.6 Noise Environment

Table 4-20: Impact and Mitigation Measures on Noise Environment

Project Activity	Impact	Mitigation Measures
<ul style="list-style-type: none"> Transportation of Materials & Machinery Operation of DG set/Boiler Manufacturing Process 	<ul style="list-style-type: none"> Lack of concentration and Causes Blood Pressure. Temporary or permanent Deafness. Noise pollution damages the nervous system of animal. Animal loses the control of its mind. Noise pollution causes poor quality of crops in a pleasant atmosphere. Loud noise is very dangerous to buildings, bridges and monuments. It creates waves which struck the walls and put the building in danger condition. It weakens the edifice of buildings 	<ul style="list-style-type: none"> Transportation activity will be carried out only during day time. PUC Certified vehicles will be used. Regular maintenance & lubrication of equipment will be carried out. Provision of ear muffs and ear plugs to prevent continuous noise exposure risk to employees working on site. D. G. Set will be equipped with acoustic enclosures.

4.4.7 Solid/Hazardous Wastes

Table 4-21: Impact and Mitigation Measures for Solid/ Hazardous Wastes

Project Activity	Impact	Mitigation Measures
<ul style="list-style-type: none"> Transportation of Materials & Machinery Storage of materials Manufacturing Process 	<ul style="list-style-type: none"> Soil contamination due to exposure of waste can cause serious impact. 	<ul style="list-style-type: none"> Wastes are/will be stored in adequate storage yard with paved/lined surfaces. Used oil and discarded containers are/ will be sold off to authorized recyclers. Segregation and disposal of other solid wastes generated by the project

4.4.8 Risk & Hazards

Table 4-22: Impact and Mitigation Measures for Risk & Hazards

Project Activity	Impact	Mitigation Measures
<ul style="list-style-type: none"> Transportation of Materials & Machinery Storage of materials Operation of DG set/Boiler Manufacturing Process 	<ul style="list-style-type: none"> Chances of accident due to vehicle collision and grounding of vessels Accidents during vehicle movement Injury to manpower during handling of storage Spillages/leakages of waste material (stack emission, wastewater and solid wastes) from process operations will cause ill health of the workers. 	<ul style="list-style-type: none"> All transportation within the main working will be carried out directly under the supervision and control of the management. Implementation of Disaster Management Plan Good material handling practices Workers will be provided with adequate PPEs like safety shoes, helmets and gloves while working in storage area to safeguard them against potential risks.

4.4.9 Socio-Economic

Table 4-23: Impact and Mitigation Measures on Socio Economic conditions

Potential Aspect	Impacts	Mitigation Measures
<ul style="list-style-type: none"> Transportation of Materials & Machinery Storage of materials Manufacturing Process 	<ul style="list-style-type: none"> Positive impact due to employment generation and surrounding people will be benefited. 	<ul style="list-style-type: none"> Local agencies will be appointed for recruitment of the manpower Preference should be given to local labour in terms of providing employment for contract based works Local service providers may be appointed for allied works and services

4.4.10 Other Environmental Area

No impact on Landuse/Land Cover, Hydrogeology, Geology, Ecology & Biodiversity during Operation phase



Table 4-24: Environmental Impact Matrix with Mitigation Measures (During Operation Phase)

Activities	Environmental Attributes											Total
	Air	Water	Soil	Noise	LU/ LC	Hydro geology	Geology	SHW	Risk Hazardous	Ecology and Biodiversity	Socio - Economic	
Transportation of Materials & Machinery	-1	-	-	-	-	-	-	-	-1	-	+3	+1
Storage of materials	-	-	-	-	-	-	-	-	-	-	+2	+2
Manufacturing process	-1	-1	-	-	-	-	-	0	-1	-	+3	0
Operation of DG set/boiler.	-	-	-	-	-	-	-	-	-	-	-	0
Industrial /domestic wastewater generation	-	-1	0	-	-	-	-	0	0	-	-	-1
Solid Waste Disposal	-	-	0	-	-	-	-	-1	-0	0	-	-1
Employment generation	-	-	-	-	-	-	-	-	-	-	+3	+3
Total	-2	-2	0	0	0	0	0	-1	-2	0	+11	+4

4.5 SUMMARY

The proposed modernization project has no major adverse impact on surrounding environment. Proposed project has no stationary air pollution emission source. Hazardous wastes will be sent to authorized recyclers and refiners. Proper upkeep and maintenance of vehicles will reduce the impact on air environment. Adequate arrangements for waste disposal will be undertaken. Also, proper drainage and disposal of sewage will be undertaken. Design and layout of building to minimize transmission of noise, segregation of particular items of plant and to avoid reverberant areas all efforts will be put-up by the project proponent to maintain the ecological balance and improve the environment in terms of ecology, Green Belt has/will be developed in surrounding of plant. A budget of Rs. 35 Crore as capital and Rs. 10 Crore/Annum as recurring cost for EMP. Positive impact is envisaged on Socio economic environment. The budget for CSR has been prepared of Rs. 2.5 crore for development of locals and surrounding villages.

5 ANALYSIS OF ALTERNATIVES

5.1 ANALYSIS OF ALTERNATIVES

As per EIA Notification 2006, as amended from time to time; this Chapter on the 'Analysis of Alternatives (Technology and Site)' is applicable only if the same is recommended at the Scoping stage.

As per the ToR points issued by MoEF&CC, New Delhi vide letter no. F. No. J-11011/196/2014-IA-II (I) dated June 22, 2016 for the proposed modernization project, the "Analysis of Alternative (Technology & Site)" is not applicable. Moreover, "Modernization from waste paper to agro residue based 150 TPD writing & printing paper and 12.5 MW co-gen power plant by Satia Industries Limited" is a modernization project, for which no new site is required. Proposed modernization will be carried out within the existing plant premises at Village Rupana, Malout Road, Distt. Muktsar, Punjab. Hence, no alternative site has been considered.

The existing technology used by SIL (Unit No. 1) for manufacturing of paper is one of the best and proven technologies; hence no alternative technology has been analyzed. The basic raw materials for the proposed modernization project are wheat straw, bagasse, sarkanda and vaneer chips and imported wood pulp, which are easily available from the nearby areas.



6 ENVIRONMENTAL MONITORING PROGRAM

6.1 INTRODUCTION

Environmental monitoring describes the processes and activities that need to take place to characterise and monitor the quality of the environment. Environmental monitoring is used in the preparation of environmental impact assessments, as well as in many circumstances in which human activities carry a risk of harmful effects on the natural environment. All monitoring strategies and programmes have reasons and justifications which are often designed to establish the current status of an environment or to establish trends in environmental parameters. In all cases the results of monitoring will be reviewed, analysed statistically and published. The design of a monitoring programme must therefore have regard to the final use of the data before monitoring starts.

6.2 NEED FOR ENVIRONMENTAL MONITORING

Environmental monitoring is critical to knowing whether the quality of our environment is getting better or worse. Information gathered through environmental monitoring is important to many different decision makers.

6.3 MONITORING PLAN & PROGRAM

Environmental Monitoring Schedule of Existing Facilities followed by SIL:

The Post Project Monitoring (PPM) plan is prepared considering the following:

1. The proposed pollution control measures for air, liquid effluents and solid waste disposal;
2. The monitoring requirements for ensuring the statutory as well as process data; and
3. The organizational/institutional set-up required for effective environment management plan implementation and post-project monitoring along with the laboratory development, manpower and budgetary requirements

The stack monitoring is being carried out at regular interval internally and by deputing outside approved pollution control laboratory. Discharge effluent monitoring is carried out on daily basis in the in-house laboratory

6.4 AIR ENVIRONMENT

Regular ambient air quality monitoring system is recommended for analyzing the variations in ground level concentrations. Satia Industries Ltd. can carry out the post project monitoring work on its own or by hiring services of a competent agency. M/s Satia Papers also desires to carry out the post project monitoring on its own.

Ambient Air Monitoring Schedule

The status of ambient air quality shall be monitored regularly, at least at 3 sampling locations out of which one in the critical down wind direction. Regular ambient air quality monitoring will be carried out for assessing the variations in ground level concentrations of pollutants (PM₁₀, PM_{2.5}, SO_x, NO_x etc.) at three different locations once in quarter during non-monsoon periods. Proposed locations are:

- Village Rupana (2.4 Km in SSE Direction).
- Village Goniana (2.3 Km in NNW Direction).
- Village Barkandi (2.9 Km in E Direction).

The flue gases discharged from the stacks shall be emitting SO₂, NO_x, CO and SPM. Portholes and sampling facilities have been provided for all stacks as per Central Pollution Control Board's guidelines. Stack flue gas analysis is carried out to check the emission levels and adopt corrective measures, if required. The main air pollutant emitted by above sources at SIL is SPM. The following two types of stacks will be monitored for emissions and its characteristics:

- Rice husk fired boilers.
- Black liquor fired boiler

Emissions will be monitored at the port holes on stacks with the help of stack monitoring kit capable to draw samples under isokinetic conditions. SPM samples will be collected in cellulose thimbles and gaseous pollutants shall be first absorbed into appropriate absorbing media and then analysed by colorimetric/volumetric methods. Standard procedures as per ISI/APHA/EPA will be followed.

Schedule proposed to ensure clean air environment is given in **Table 6-1**.

Table 6-1: Proposed Air Quality Monitoring Schedule

S. No.	Activity	Frequency
1.	Monitoring of boiler and Incinerator emissions for Temperature, Velocity Flow rate, SPM, SO ₂ , NO _x & CO	Twice a month
2.	Ambient air monitoring within SIL premises along the periphery at three locations for SPM, SO ₂ & NO _x	Once in three months excluding monsoon period
3.	Ambient air monitoring within 2 km radius of SIL at three locations for SPM, SO ₂ & NO _x	Once in three months excluding monsoon period
4.	Sprinkling of water on unpaved portion and cleaning of service roads.	Once in two days except monsoon period.

Results of emission monitoring are given in **Table 6-2** and discussed below:

The main air pollutant emitted by above sources at SIL is SPM.

Emissions were monitored at the port holes on stacks with the help of stack monitoring kit capable to draw samples under isokinetic conditions. SPM samples were collected in cellulose thimbles and gaseous pollutants were first absorbed into appropriate absorbing media and then analysed by colorimetric/volumetric methods. Standard procedures as per ISI/APHA/EPA were followed.

Emission Characteristics of Boilers

Rice husk fired boiler is the main contributors of SPM which were observed to be 78.04 mg/Nm³ from the stack provided with ESP. The concentrations of all pollutants were in compliance to the limits prescribed by PPCB.



Table 6-2: Monitored Stack Emission Characteristics

S. No.	Stack Details	45TPH Boiler	50TPH Recovery Boiler	75TPH Power Boiler	75TPH Proposed for modernization
1	M.O.C.	R.C.C.	R.C.C.	R.C.C.	R.C.C.
2	Internal diameter				
	Top	2.8 M	2.5 M	2.8 M	2.8 M
	Bottom	2.8 M	5.5 M	2.8 M	2.8 M
3	Height (m) from ground level	65 m	65 m	65 m	65 m
4	Fuel Consumption	Rice Husk	Black Liquor	Rice Husk	Rice Husk
		250 TPD	400TPD	359 TPD	359 TPD
5	SPM (mg/Nm ³)	110	95	78	-

6.5 NOISE ENVIRONMENT

Monitoring of noise levels is essential to assess the efficiency of maintenance schedules and noise protection measures undertaken.

A good quality audiometric sound pressure level meter will be essential for this purpose. Audiometric tests are also helpful in monitoring the effectiveness of ear protection devices and of noise abatement programmes. The assessment should be performed under the supervision of health officials.

Monitoring Schedule

Monitoring of noise levels is essential to assess the efficiency of maintenance schedules and noise protection measures undertaken. A good quality audiometric sound pressure level meter will be essential for this purpose. Audiometric tests are also helpful in monitoring the effectiveness of ear protection devices and of noise abatement programmes. The assessment will be performed under the supervision of health officials. Monitoring schedule proposed for noise is given in **Table 6-3**.

Table 6-3: Proposed Noise Quality Monitoring Schedule

S. No.	Activity	Frequency
1.	Noise monitoring in work area during working hours and during night	Once in a month
2.	Noise monitoring in parking area and at three locations along the SIL boundary	Once in a month

Workplace Monitoring Plan

Each workplace must be evaluated to identify potential hazards from toxic substances or harmful physical agents. It is in concern that a workplace Monitoring Plan to be prepared & implemented in consultation with FMO and Industrial Hygienists (**Table 6-4**). The work zone monitoring will be conducted in the industry with respect to following parameters such as PM_{2.5}, PM₁₀, TSPM, SO₂, NO_x, Noise, etc.

Table 6-4: Work place monitoring in the industrial premises

S. No.	Location	Frequency
1.	Pulp Mill	Once in a month
2.	Paper machine	Once in a month
3.	Power plant	Once in a month
4.	Main Gate	Once in a month

6.6 WATER ENVIRONMENT

Wastewater should be analyzed regularly for the parameters of concern as stipulated by Punjab Pollution Control Board is given below

- pH
- Dissolved Oxygen
- Chemical Oxygen Demand (COD)
- Bio-chemical Oxygen Demand (BOD)
- Oil and Grease
- Total Suspended Solids
- AOX

Following sampling locations are monitored periodically:

- Influent to wastewater to treatment plant.
- Inlet and outlets of individual treatment units.
- Final effluent before reuse or disposal

Daily analysis of influent and effluent of wastewater treatment plant is recommended during commissioning. Sampling and analysis of wastewater from individual treatment units, depending on type of treatment facility provided, may be carried out for relevant parameters once in a month. Composite samples should be prepared by collecting half hourly samples for characterizing wastewater. Methods of sample collection and preservation will be as per IS: 2488.

The samples of effluents at various steps of treatment are collected and analysed as follows:

Characteristics of Final Effluent

The samples of treated effluent were collected from effluent channel during the study period and were analysed for pH, BOD, COD, TS, TDS and TSS. The pH of the final effluent was found to be 7.2-7.4. The COD and BOD in the final effluent was less than the prescribed value of 250 mg/l and 30 mg/L respectively. Results of effluent treatment are given in **Table 6-5**

ETP is operated & maintained properly. Outgoing effluent was observed to be complying with the prescribed limits. The existing ETP is capable of handling and treating the effluent generated after the proposed modernization of the plant.

Table 6-5: Biogas and combined ETP approximate analysis range after modernization

S. N.	Parameter	Unit	Biogas Plant		Bleach Influent	Combined Influent	Final Effluent
			Inlet	Outlet			
1	Flow	m ³ /day	4800	4800	9835	14635	14635
2	pH	-	6.7-6.9	7.0-7.2	7.0-7.5	7.2-7.3	7.2-7.3
3	BOD	ppm	700-800	250-300	550-650	500-550	25-30
4	COD	ppm	2600-2800	700-800	1400-1500	1200-1300	225-250
5	TDS	ppm	1600-1800	1600-1800	1600-1800	1600-1800	1600-1800
6	TSS	ppm	2000-2500	200-250	200-300	250-300	40-50



Monitoring Schedule

To ensure proper working of Effluent Treatment Plant, monitoring schedule is proposed (**Table 6.6**). It would be ensured that healthy microbial growth is maintained in aeration tanks of ETP for this purpose microbial culture will be added regularly.

Table 6-6: Proposed Water Quality Monitoring Schedule for ETP

S. No.	Parameter	Location	Frequency
1.	pH	Inlet & Outlet of ETP	Continuous Monitoring
2.	Oil & Grease	Inlet & Outlet of ETP	Once a week
3.	S.S.	Inlet & Outlet of ETP	Everyday
4.	BOD	Inlet & Outlet of ETP	Everyday
5.	COD	Inlet & Outlet of ETP	Everyday
6.	MLSS	Aeration Tank	Everyday
7.	D.O.	Aeration Tank	Continuous Monitoring

Laboratory

An independent environmental laboratory with facilities for chemical analysis is already in operation. A separate air-conditioned dust-proof room exists for analytical instruments. The laboratory is equipped with instruments so that pH, suspended solids, oil and grease, BOD and COD and air pollutants are analysed.

6.7 LAND ENVIRONMENT

The ground water and top soil in the neighbouring areas should be analyzed for the relevant parameters presented under the baseline information at least once in six months. The average canopy height of the green belts, number and types of plant species should be enumerated once in two years using suitable techniques for vegetation sampling.

This monitoring programme will help in observing the physio-chemical properties of the soil, infiltration rates and changes in ground water quality and ground water table because the effluent is used in the irrigation of plantation maintained by industry. Also species of birds and small animals encountered in the improved ecosystem may be recorded. Monitoring of surface soils and waters at intervals of 5 years may provide useful guidelines for taking remedial measures, in time, for the present and future developmental activities.

Monitoring Schedule

The top soil and ground water in the neighbouring areas will be analysed for the relevant standard parameters at least once in six months. The average canopy height of the green belts, number and types of plant species should be enumerated once in two years using suitable techniques for vegetation sampling.

This monitoring programme will help in observing the physio-chemical properties of the soil, infiltration rates and changes in ground water quality and ground water table because the effluent is used in the irrigation of plantation maintained by industry. Also species of birds and small animals encountered in the improved ecosystem may be recorded. Monitoring of surface soils and waters at regular intervals (once in every six month) may provide useful guidelines for taking remedial measures, in time, for the present and future developmental activities.

6.8 INFRASTRUCTURAL REQUIREMENT

SIL will be purchasing the necessary equipments like high volume sampler, fine dust sampler and gaseous attachment kit for the sampling of ambient air. SIL is already equipped with water testing laboratory to carry out routine wastewater testing for BOD, COD, pH, acidity, alkalinity, TSS, TDS etc.

6.9 ENVIRONMENT MANAGEMENT CELL

An Environmental Management Group exists in the organization to look into the environmental issues and ensure that mitigation measures are properly carried out. The Environmental Management group comprise of General Manager, Manager, Assistant Manager, Shift Engineers and Environmental Scientists. The environmental scientists and shift engineers are responsible for ensuring environmental monitoring as per appropriate guidelines and procedures.

6.10 CURRENT & PROPOSED PRACTICES FOR ENVIRONMENT PROTECTION

6.10.1 Handling of Raw Materials and Mitigation Measures

SIL has sufficient area and adopted adequate measures to mitigate transportation of existing mills activities as well as for proposed modernization project. The mill has already provided separate areas for loading & unloading of raw materials. Proper parking areas are also in practice for all vehicles i.e. trucks etc. wherever required. Awareness is also inculcated among transporters to avoid overloading of material and spillages of raw material.

6.10.2 Risk Assessment and Damage Control

SIL has already identified hazards associated activities and their preventive measures to mitigate environmental risk inside the premises & its vicinity. Toxic release / fire /explosive areas have already been identified for risk assessment and damage control for emergency preparedness and response. SIL is already following emergency plan, which is approved by concerned authority. A separate Safety Department exists with Safety Officers having fire tenders/fire extinguishers.

6.10.3 Compliance to the recommendations of CREP guidelines

The Central Pollution Control Board has issued a Corporate Responsibility for Environmental Protection (CREP) for the treatment of paper plant effluent. The compliance to the provisions of CREP is followed and is given in **Table 6-7**. The mill is complying with the CREP conditions as per the direction of CPCB as under:

Table 6-7: Compliance to the Charter on CREP for large Pulp and Paper industry

Conditions	Present status
Discharge of AOX(kg/T of paper) a) AOX 1.5 kg/ton of paper within 2 years b) AOX 1.0 kg/ton of paper in 5 years	Oxygen Delignification (ODL) and Chlorine dioxide bleaching is already in operation so there is no AOX in the system.
Installation of Lime Kiln a) Within 4 years	Land filling as well as dumping of causticizing lime sludge in the low lying areas which are abundant in the region. The sludge after dumping is properly leveled and covered with good soil
Waste water discharge (m3/T of paper) a) Less than 140 cum/ton of paper within 2 years b) Less than 120 cum /ton in 4years for units installed before 1992 c) Less than 100 m3/ton of paper per units installed after 1992	With the maximum use of machine backwater and various other steps to reduce the fresh water consumption, the water discharge per ton of paper production falls well within the latest prescribed limits and is 70 m3/ton against prescribed limit of 75 m3/ton
Odour control by burning the reduced sulfur emissions in the Boiler/Lime Kiln	There is no use of Sulphur containing material in our plant; hence Odour control is not required
Utilization of treated effluent for irrigation	Treated effluent is being utilized for 450 acres of Eucalyptus plantation
Color Removal from the effluent	Treated effluent has very little color as it is agro based plant



Summary of Environmental improvements in the Existing Mills Consequent upon proposed modernization:

In order to offset some of the major environment impacts from above said modernization plan, SIL will be adopting proactive approach to further improve environment status of existing plant as follows:

- Proper maintenance of existing and new ESP for recovery boiler and rice husk fired boiler to achieve SPM level within permissible norms.
- Not much increase in existing water consumption which will be attained by reducing existing water consumption and maximizing recirculation of back water in existing unit.
- Not much increase in volume of final effluent discharge.
- No increase in maximum contract demand of electricity from grid.
- No new DG Sets will be installed.
- Reduction in AOX level in the effluent i.e. after modernization the AOX level in effluent will be less than prescribed limit of 1.0 Kg/Ton of paper.

6.11 CONCLUDING REMARKS

The study of air emissions, ambient air quality, disposal and use of treated effluents of SIL, observed impacts of SIL on different components of the environment, land use pattern, human settlements, assessment of the provisions of effluent management of SIL and in view of common environmental concerns and critical targets, and our past association following conclusions are made.

During the field data collection for the EIA study, particular attention was paid to the sources of air emissions, ambient air quality, additional water requirements, effluent treatment and its disposal along with likely impacts on the surrounding environment with respect to human settlements and water bodies.

Main environmental concerns and critical targets in the case of SIL plant are identified in above section. As the modernization at SIL is going to be achieved by replacing/ adding a few equipments so it is not going to change the air or water environment much. The marginal increase in pollution shall be controlled by existing pollution control equipments.

The surrounding air quality (after meeting the prescribed standards), ground water availability, quality and surface water quality are affected to a manageable extent as far as environmental deterioration is concerned.

Mitigatory, abatement, control measures and management plans in respect of likely concerns and critical targets and their protection measures has been one of the primary concerns of this EIA report. The conclusions on the above measures are as follows:

The suspended particulate matter from rice husk fired boilers has been controlled with the installation of Electrostatic precipitators.

A common ecological impact of a paper plant could be from deforestation; wood being the basic raw material. It is pertinent to mention here that the proposed modernization of the plant mainly depends on agro residue based raw material.

For an industry with extensive use of water for its processes there always is an apprehension that the source of water withdrawal may be adversely affected. The entire requirement of water of SIL is met from canal water. Hence there will be no adverse impact on groundwater.

About 10.0 tonnes of sludge (as such) will be recovered by SIL every day through primary clarifier, which shall be sold to various parties for manufacturing of board. There is no environmental concern on account of handling and disposal of solid wastes. Additional sludge generated after expansion will be easily utilized by these vendors.

There are no likely impacts of SIL on other environmental components such as meteorology, topography and geology, fresh water ecology, terrestrial flora and fauna, amenities, mineral resources and mining, archaeology, cultural, religious and land use. The influx of labour force, migration of outsiders is unlikely to cause any significant socio-cultural disruptions. However, there shall be large economic gains to the study area.

It can be seen from the assessment of impacts that the proposed operation of SIL will not have significant impacts on the surrounding environment. Proper arrangements for proper collection and treatment of effluents and reuse of water would not affect water environment adversely. Proper pollution control measures proposed for boilers and recovery system would ensure that air and water environment do not have any adverse impact. It is concluded that with the adoption of proposed mitigation and enhancement measures, there will be improvement in the development of commercial activities, generation of direct and indirect employment opportunities and the overall quality of life in the surrounding area.

The findings, positive steps taken by SIL and recommendations emerging out of the Environmental Impact Assessment studies suggest that the environmental concerns presented by SIL due to their current operations and after modernization shall be taken care of by adequate control measures and proper management plans proposed as above. Therefore, it is requested that the proposed modernization of Satia Industries Ltd. (Unit No. 2) at Muktsar for the manufacture of 150 TPD writing and printing paper from agro based raw material be accorded prior environmental clearance.





7 ADDITIONAL STUDIES

7.1 INTRODUCTION

As per the EIA notification dated 14th September 2006, the first technical presentation i.e. the ToR presentation was done on 30.12.2015. The MoEFCC issued the ToR's vide letter F. No. J-11011/196/2014-IA-II (I) dated Jan 29, 2016 for modernization of 150 TPD writing and printing paper from waste paper to agro residue based and 12.5 MW Co-Gen power plant. The public hearing for this proposed modernization project will be conducted at project site, village Rupana, District – Muktsar (Punjab).

7.2 PUBLIC CONSULTATION

As per Terms of Reference prescribed by the EAC of MoEF&CC vide letter dated 22.06.2016 [file no.: J-11011/196/2014-IA-II(I)], the public hearing was conducted on 19.10.2016 at 12:00 noon at the project site i.e. in the existing premises of M/s. Satia Industrie Ltd.(Unit no.2), V.P.O. Rupana, Dist. Sri Muktsar Sahib.

In this context, Punjab Pollution Control Board issued the public notice of 30 days in two daily newspapers namely, "Daily Post" (English Daily) and "Ajit" (Punjabi Daily) for getting responses from public and intimating time, date and venue of the public hearing. The copy of public notice is given with public hearing proceedings attached as **Annexure 22**. Time bound action plan of the issues raised during public hearing is given in **Table 7-1**.

7.2.1 Public Hearing Advertisement

7.2.2 Public Hearing Photographs





Table 7-1: Time bound action plan of the issues raised during public hearing and reply by PP

S. No	Name and Address of Respondent	Detail of query/statement/information/c larification sought by the person present at the venue of the hearing	Reply by the project proponent	Action Plan	Fund Allocation
1.	Sh. Harnek Singh Hundal S/o Sh. Bagga Singh, Sarpanch, Village Rupana, District Sri Muktsar Sahib	Since the establishment of the industry, not just the Village Rupana, but whole area has been benefitted. Development has taken place. I congratulate to the industry. With the proposed modernization, more development will take place and employment to the youth will be generated. Agricultural waste of the area will be utilized and stopped. Moreover, the farmers will get some price for the agricultural waste. With the establishment of this industry farmer's families have started business. Some are engaged in the transportation of straw etc. using tractor trolleys. With the population of the workers of the factory, shopkeepers of the Village Rupana are benefitted commercially, as they make shopping for their daily needs from the village shops.	Noted and thanks by PP.	Positive comment from stack holder.	--
2.	Sh. Bopar Singh S/o Sh. Jagshir Singh, Village Rupana, District Sri Muktsar Sahib	He welcomed the public and officers conducting public hearing on behalf of village Rupana. The industry was established in the year 1982 and 3000-5000 workers are connected directly or indirectly with the industry. Factory has given employment to the public in the area. Even workers form states outside Punjab, such as, U.P., West Bengal etc. have gained employment. The project has benefitted residents of village Rupana as workers have rented accommodation in the Village and buy their daily needs from	Noted and thanks by PP.	Positive comment from stack holder.	--

		the village shopkeepers. The mill owners have organized health camps and eye camps in the area. With providing of the green belt by the industry in an area measuring 450 acres, oxygen supply has been increased. The factory is keeping pollution under control and no pollution problem is faced in the area. He requested the factory owners to install another unit in the area so that the consumption of agricultural residues may be increased and also the income may increase.			
3.	Sh. Jasinder Singh S/o Sh. Naib Singh, Village Rupana, District Sri Muktsar Sahib	<p>India is an agriculture based country. With the coming up of industry economic development takes place. There is a lot of improvement than earlier stage when the industry was established. At that time, problem of ash was there, which has now been solved. Employment has been generated in the area and due to absence of which youth might have got attracted about drugs. I am of the view that along with the modernization of this unit, another unit should be established. For this modernization, I congratulate the project proponent. Trees have been planted resulting in reduction in pollution in the area. I am not connected with the factory directly or indirectly nor are none of my family member employee of the factory. He asked:</p> <ul style="list-style-type: none"> • Whether additional employment will be generated with the establishment of 12.5 MW power plant? • Whether employment will be generated with the use of agricultural waste? • Whether employment shall be given to local 	<p>The consultant of the industry told that about 100-150 direct employment and 700-800 indirect employment will be generated. Preference will be given to the local residents, if qualified/eligible persons are available. 300 TPD-600TPD agricultural wastes will be utilized by the industry. More demand will results in economic development.</p>	<p>Project Proponent has assured that 100 persons will be employed for the proposed modernization and local persons will be given preference.</p>	--





		residents only?			
4.	Sh. Navtej Singh, Kauni, Village Kauni, Member SGPC, Sri Muktsar Sahib	All earliar persons have praised the industry and I endorse the same. The industry has proved to be a boon for the area and a God's gift to the area. It is a good project to utilize agricultural wastes. The Punjab Govt. as well as Govt. of India should encourage more such projects using agricultural wastes. We are thankful to the industry for development of greenery in the area.	Noted and thanks by PP.	Positive comment from stack holder.	--
5.	Dr. Jagan Nath Grover, Grover Health Centre, Rupana	<p>For the development of any nation many things such as good minerals, technology & industry etc. are required, without which development is not possible.</p> <p>Earlier civilization and history also suggests the same. Ludhiana, Jalandhar and Mandi Gobindgarh cities development was possible only because of industrial growth. Satia has brought prosperity in the area. Now, with the use of agricultural wastes as raw materials, farmer's income will increase. The industry has proposed to use agricultural waste from 150-450 TPD after this modernization. I suggest that they should increase more capacity, as with the establishment of the industry whole area has been benefitted including farmers, workers, shopkeepers, tractor trolley owner, truck operators and traders. With the modernization, they will benefit more. We have no complaint against the industry. I wish industry owners all success. In the absence of opportunities of employment, people had to go outside which will now be available locally.</p>	Noted and thanks by PP.	Positive comment from stack holder.	--

All the views and concerns expressed during public hearing are summarized as below:

- With the proposed modernization, more development will take place and employment to the youth will be generated.
- Agricultural waste of the area will be utilized and stubble burning will be stopped.
- Direct and indirect employment will be generated like getting price for agricultural waste, transportation of agricultural straw, etc. using tractors, trolleys, etc. local residence will be preferred based on availability of qualified/eligible persons.
- The proponent has organized health camps and eye checkup camps in the area.
- The factory is keeping pollution under control and no pollution problem faced by villagers in the area. Trees have been planted resulting in the reduction of pollution in the area.
- It is suggested that the proponent should increase more capacity, as with the establishment of the industry whole area has been benefited including farmers, workers, shopkeepers, tractor trolley owner, truck operators and traders.

It was observed that all the participants present at the venue of public hearing were in favour of carrying out modernization of its existing unit from waste paper to agro residue based 150 TPD writing & printing paper and for installation of co-generation power plant of 12.5 MW. The participants are also provided the industry/factory complies with the provisions of the environmental laws for the control of pollution as per the commitment made in the draft Environmental Impact Assessment study report/EMP and it up-keeps the corporate social responsibility activities for the residents of the area as far as possible.

7.3 ENVIRONMENT INFORMATION CENTRE (EIC) STUDY

In compliance to ToRs of the Ministry of Environment, Forests & Climate Change, land use data and satellite imagery for the area is obtained and is included in this section.

Broadly the study area is Rural which is classified into traditional categories such as areas under Forests, Cultivated land (Irrigated and Unirrigated), Cultivable Waste land and 'Area Not Available for Cultivation'. In compliance to the ToRs of MoEFCC land use data for the area was obtained from Environmental Information Centre (EIC) based on the land use map and satellite imagery. The EIC report is placed at **Annexure 12** along with land use map and satellite imagery.

7.4 HYDRO GEOLOGICAL STUDY

Satia Industries Ltd. (Unit No. 2) has proposed modernization of Writing and Printing Paper from waste paper to agro residue based raw material of 150 TPD capacity along with Cogeneration Power Plant of 12.5 MW at Village Rupana, District Muktsar (Punjab). Satia Industries Ltd. has carried out a detailed hydro-geological survey to determine the ground water status of the area. Ground water analysis with bore well data, litho-logs, drawdown and recovery tests to quantify the area & volume of aquifer are presented below:

7.4.1 Lithology

The lithology of different tubewells in the industry premises is given in **Table 7-2**: Lithology of tube well no. 1 constructed at the study area





Table 7-2: Lithology of tube well no. 1 constructed at the study area

Depth Range (meter below ground level)		Thickness (m)	Strata
From	To		
0.0	1.0	1.0	Silt
1.0	1.5	0.5	Silt
1.5	2.1	0.6	Silt
2.1	2.7	0.6	Silt
2.7	4.0	1.3	Silt
4.0	4.5	0.5	Silt
4.5	5.0	0.5	Silt
5.0	6.0	1.0	Silt
6.0	6.5	0.5	Silt
6.5	7.5	1.0	Sand
7.5	9.0	1.5	Sand
9.0	10.5	1.5	Sand
10.5	12.0	1.5	Sand
12.0	13.5	1.5	Sand
13.5	15.0	1.5	Sand

Lithology of tube well no. 2 constructed at the study area

Depth Range (meter below ground level)		Thickness (m)	Strata
From	To		
0.0	0.9	0.9	Silt
0.9	1.8	0.9	Silt
1.8	2.1	0.3	Silt
2.1	2.7	0.6	Silt
2.7	3.8	1.1	Silt
3.8	4.0	0.2	Silt
4.0	5.2	1.2	Silt
5.2	5.5	0.3	Silt
5.5	6.6	1.1	Silt
6.6	7.0	0.4	Sand

7.4.2 Hydrogeology

The aquifer system of the study area belongs to huge aquifer system of Indus plain. It cannot primarily of quaternary alluvial sediments. The bore well data reveals that the groundwater occurs in alluvium formations comprising silt to coarse sand, which form the potential aquifers. In the shallow aquifer groundwater occurs under unconfined condition where as deeper aquifer semi confined or confined condition exists. The bore well data also reveals that silt group of formation dominate over the sand group.

The transmissivity values of study area ranges from 40-70 m²/day. The hydraulic conductivity of the study area is 39.31 cm/day. The value of the storativity lies in the range of 0.003 to 0.004. The depth of the water level lies approximately 2-5 m below the ground level throughout the year. The depth of water level was approximately at 5 m below the ground level at the time of excavation of tube well.

7.4.3 Management of the Aquifer

With the proposed modernization the water required shall be 16,500 m³/day approximately. The estimated waste water discharge after expansion will be approximately 14,635m³/day. The treated

waste water will be used for irrigation of eucalyptus plantation maintained by the company in an area of approximately 430 Acres. To reduce the quantity of water, the Company is regularly taking steps to reduce the consumption of water through reprocessing of the water at various stages. Besides this, the company is also taking steps for harvesting the rain water, the detail of which is mentioned in **sections 10.3.6 & 10.3.7**.

7.4.4 Presence of aquifer in the study area

The depth of the water level lies approximately 5 m below the ground level. The lithology of tube well data shows that fine to medium sand is lying at below 5 m depth of the ground level which will act as a potential aquifer zone. Up to 30 m depth below ground level the aquifer will be unconfined. At a greater depth confined aquifer may be encountered.

7.4.5 Management plan for recharging the aquifer

Following are the main advantages of artificial recharging the groundwater aquifers.

1. No large storage structures needed to store the water. Structures required are small and cost effective.
2. Enhance the dependable yield of wells and hand pumps.
3. Negligible losses as compared to losses in surface storages.
4. Improved water quality due to dilution of harmful chemical/salt.
5. No adverse effects like inundation of large surface areas and loss of crops.
6. No displacement of local population.
7. Reduction in cost of energy for lifting water especially where rise in groundwater level is substantial.
8. Utilizes the surplus surface runoff which otherwise drains off.

The water table around Satia Industry area lies 5-6 m below ground level. During rainy season, water logging takes place in this area. So there is no need to recharge the ground water. However, to augment the water resources, the roof top rain water harvesting will be carried out which will make lesser dependency on the canal water. The rain water from roofs will be taken down through vertical stakes to borehole at ground level. Bore holes will inter connect and finally taken to harvesting well. A de silting chamber will be provided to de silt and remove floating material through bar screen. The over flow will lead to chamber having filter media of coarse sand 1.5 to 2 mm, gravel 5-10 mm and boulder 5-20 mm with minimum 300 mm thick each layer. The filtered rain water will be collected in a storage reservoir and will be used for industry when required.

7.4.6 Ground water modeling showing the pathways of the pollutants

The moisture velocity in the unsaturated zone greatly depends upon the degree of saturation and varies considerably in this zone. In such a situation, it becomes essential to solve the flow equation prior to the solution of contaminant transport equation.

In unsaturated zone, voids present in the soil are partly filled with water and partly with air. Water is held in the voids due to surface tension forces. The pressure in the unsaturated zone is always less than the atmospheric pressure. The flow and storage characteristics are function of the pressure head. Flow in the unsaturated zone is usually simulated by solving Richards equation.

Governing Equation

The mass conservation equations for the simultaneous transport of water and suspended virus particles through variably saturated media under transient flow condition can be written as

Flow equation (Richards equation):





$$\frac{\partial \theta}{\partial t} = \frac{\partial}{\partial z} \left[K(\theta) \left\{ \frac{\partial \psi}{\partial z} + 1 \right\} \right] \dots \dots \dots (1)$$

Contaminant transport equation:

$$\frac{\partial C}{\partial t} + \frac{\rho}{\theta} \frac{\partial C^*}{\partial t} = \frac{\partial}{\partial z} \left(D \frac{\partial C}{\partial z} \right) - v \frac{\partial C}{\partial z} - \lambda C - \lambda^* \frac{\rho}{\theta} C^* \dots \dots \dots (2)$$

For linear sorption the equilibrium solid phase concentration C^* will be linearly proportional to the equilibrium liquid phase concentration C .

$$C^* = k_d C \text{ where } K_d \text{ is linear distribution coefficient.}$$

In Eqs. (1) and (2), ψ is the pressure head, θ is the volumetric moisture content, $K(\theta)$ is the hydraulic conductivity, C is the aqueous phase concentration, C^* is the mass of solute adsorbed on the solid matrix, D is the hydrodynamic dispersion coefficient, v is the pore water velocity in the flow direction, ρ is the bulk density of the solid matrix, λ is the first order inactivation rate coefficient in the aqueous phase, λ^* is the first order inactivation rate coefficient in the sorbed phase, z is vertical coordinate taken positive upwards and t is the time coordinate.

Eq. (1) is nonlinear in nature as the hydraulic conductivity (K) and moisture content (θ) depend on the pressure head ψ and needs the constitutive relationships for solution. The constitutive relationships proposed by Van Genuchten are used in the present study.

Constitutive Relationships

The relationship proposed by Van Genuchten are used for θ - ψ and K - θ relationships which are given as

θ - ψ Relationship:

$$\Theta = \left\{ \frac{1}{1 + (\alpha_v |\psi|)^{n_v}} \right\}^{m_v} \dots \dots \dots (3)$$

where α_v and n_v are unsaturated soil parameters with

$$m_v = 1 - \frac{1}{n_v} \dots \dots \dots (4)$$

Θ is the effective saturation defined as

$$\Theta = \frac{\theta - \theta_r}{\theta_s - \theta_r} \quad (5)$$

where θ_s is saturated water content and θ_r is residual water content of the soil.

K - θ Relationship:

$$K(\Theta) = K_s \left\{ 1 - \left\{ 1 - \Theta^{(1/m_v)} \right\}^{m_v} \right\}^2 \Theta^{(1/2)} \dots\dots\dots(6)$$

where K_s is saturated hydraulic conductivity.

Initial and Boundary Conditions for Moisture Flow

Initial condition:

Usually, the pressure head or moisture content distribution at the beginning of the simulation is used as the initial condition, i.e.

$$t = 0, \psi = \psi_0 \quad 0 \leq z \leq L \quad \dots\dots\dots(7)$$

where ψ_0 is the specified pressure head at the beginning of the simulation.

Lower boundary condition:

A gravity drainage $\left(\frac{\partial \psi}{\partial z} = 0 \right)$ boundary condition is applied at certain depth below the ground surface. i.e.

$$t > 0, \quad \left(\frac{\partial \psi}{\partial z} = 0 \right), \quad z = 0 \quad \dots\dots\dots(8)$$

Upper boundary condition:

Dirichlet type boundary condition is assigned at the ground surface i.e.

$$t > 0 \quad \psi = \psi_{top} \quad z = L \quad \dots\dots\dots(9)$$

where ψ_{top} is the prescribed pressure head at the ground surface.

Initial and Boundary Conditions for solute Transport

Initial condition:

Initially, i.e. at $t=0$, the concentration of virus is assumed to be zero, i.e.

$$t = 0, C(z) = 0, \quad 0 \leq z \leq \infty \quad \dots\dots\dots(10)$$

At the source ($z = 0$), a constant concentration boundary condition is used. i.e.

$$t \geq 0, C(t) = C_0, \quad z = 0 \quad \dots\dots\dots(11)$$

where $C_0(t)$ denotes the source concentration.

For away from the source ($z \rightarrow \infty$) the concentration flux is set to zero. i.e.

$$t \geq 0, \frac{\partial C}{\partial z} = 0, z \rightarrow \infty \quad \dots\dots\dots(12)$$

Numerical Solution

The solution proceeds in two steps. A mass conservative fully implicit finite difference scheme is used to solve Eq. (1) subject to boundary conditions (7) to (9). The solution of Eq. (1) provides the nodal pressure heads in the solution domain at successive time steps. From these pressure heads, the seepage velocity at each of the computational node is computed using Darcy law applied for unsaturated condition. Having obtained the seepage velocity in the flow domain, Eq. (2) subject to





initial and boundary conditions (10) to (12) is solved using hybrid finite volume model to obtain the virus concentration in the solution domain at successive time steps.

Infiltration into a very dry soil with Dirichlet type boundary condition at top:

This problem considers infiltration into a homogeneous soil column, which is initially dry. The soil parameters are

$\alpha_v = 0.0335 \text{ cm}^{-1}$, $\theta_s = 0.368$, $\theta_r = 0.102$, $n_v=2$, $m_v=0.5$, $K_s = 39.31 \text{ cm/day}$. Length of the soil sample is taken as 400 cm. The initial and boundary conditions are;

$$\psi(z,0) = -1000 \text{ cm}, \quad 0 \leq z \leq 400 \text{ cm}$$

$$\psi(0,t) = \psi_{\text{bottom}} = -1000 \text{ cm}$$

$$\psi(400, t) = \psi_{\text{top}} = -0.5 \text{ cm}$$

Figure 7-1: Variation of moisture content with depth at 1, 2 and 5 days

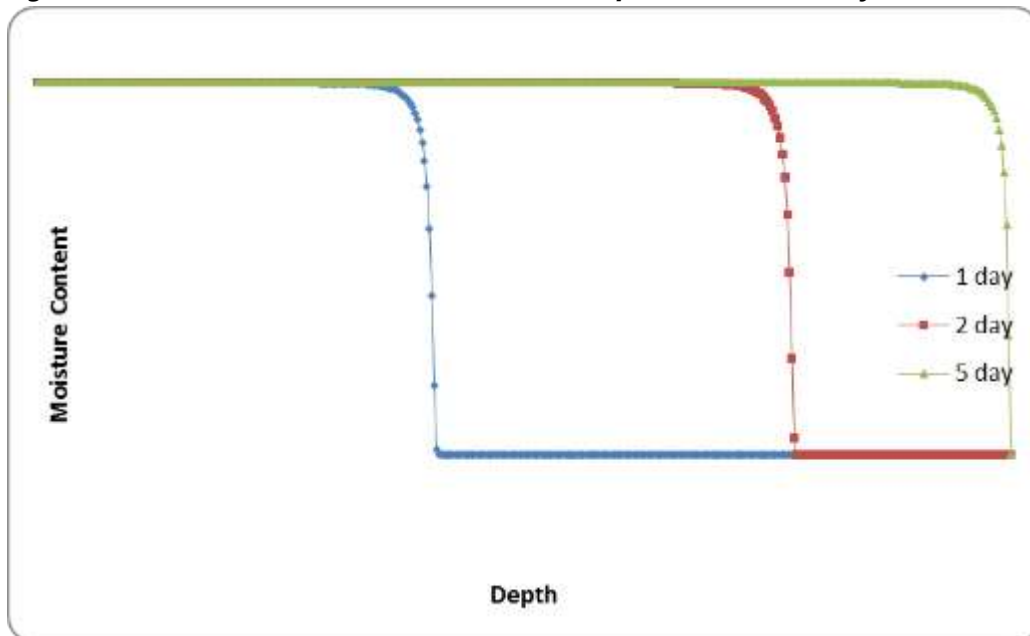
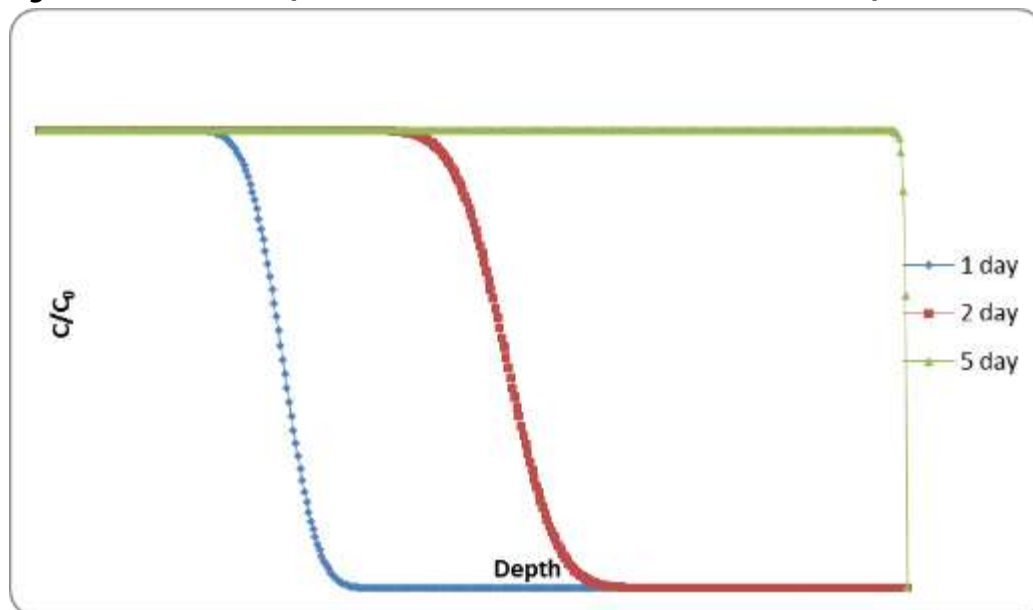


Figure 7-2: Variation of microbial concentration in unsaturated soil after 1, 2 and 5 days



For the dense grid consideration, the over all soil domain length L is divided into 401 grids such that the distance between two grids will be 1 cm. The problem is simulated using the present model with $\Delta t = 1$ sec. **Figure 7-1** shows the model predicted moisture content after 1, 2 and 5 days of simulation. It is shown from **Figure 7-1** that the moisture will take 5 days to reach up to 400m i.e continuous input of water at surface for 5days will saturate the soil up to 400m.

The virus transport model is used to obtain the virus concentrations solving Eqs. (2) subjected to initial and boundary conditions (Eqs. 10 to 12). **Figure 7-2** shows the model predicted virus concentrations at each node after 1, 2 and 5 days interval. From **Figure 7-2**, it can be concluded that the microbial concentration may reach to groundwater table after 5 days if continuously treated water will apply for 5 days. So the treated water which is used for irrigation in plantation area should be free from biological contaminants.

7.4.7 Column leachate study for all types of stockpiles or waste disposal sites

The column was made of acrylate and was 7.6 cm in diameter and 20 cm long. The experiments were conducted in laboratory at 24 °C. Treated waters collected from industry were added to the sand column as a constant input at an approximate concentration of 990 colony/ml. In the soil column 10 cm of constant head of water has been maintained. Outflow samples were collected in a dish. The mass density of sand column was 1.75 gm/cm^3 and the average velocity was about 1.6 cm/min.





Figure 7-3: Normalized microbial breakthrough concentration from column experiment

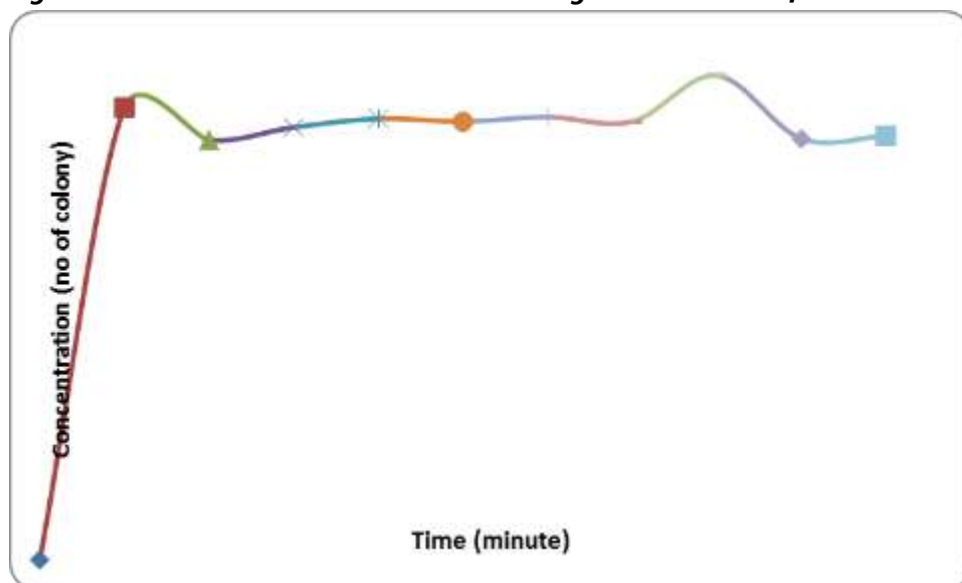


Figure 7-3 shows that as the time increases the microbial concentration increases and after some time the microbial concentration remain constant for constant head.

7.4.8 Impact of ground water withdrawal on the surrounding area, ground water table and impact of treated waste water usage for irrigation

Groundwater will not be used in the plant so there shall be no adverse impact on groundwater table. Just like all water is not suitable for human beings, in the same way, all water is not suitable for plant life. Water containing impurities, which are injurious to plants growth becomes unsuitable for irrigation. The quality of suitable irrigation water is very much influenced by the constituents of the soil which is to be irrigated. The treated water which is used for irrigation by the Satia Industry is free from sediments. Qualitative and quantitative analysis of treated wastewater discharged has been carried out and its suitability for irrigation has been adjudged. It is found that there is no impact of treated waste water on irrigation. The proportions of sodium ions present in the soil, is generally measured by a factor called Sodium Absorption Ratio and represent the sodium hazards of water. Since in this case sodium absorption ratio is lying between 0-10, the water can be used for irrigation on almost all soils and for almost all crops. Boron, selenium may be toxic to plants. The experimental results show that, the concentration of boron is less than 0.5 ppm and concentration of selenium is less than 0.1 ppm. So the treated waste water can be used for the irrigation.

7.4.9 Geological features and Geo-hydrological status of the study area

Soil samples have been collected from study area and sent to laboratory for testing the nature of the soil and its hydraulic conductivity.

Grain size analysis

The grain size analysis is widely used in classification of soils. Information obtained from grain size analysis can be used to predict soil water movement although permeability tests are more generally used.

For soil samples of soil retained on 75 micron I.S. sieve

1. The proportion of soil sample retained on 75 micron I.S. sieve is weighed and recorded weight of soil sample is as per I.S. 2720.

2. I.S. sieves are selected and arranged in the order. 4.75 mm sieve will be at top and 75 micron sieve will be at bottom. All other sieves are arranged according to its size.
3. The soil sample is separated into various fractions by sieving through above sieves placed in the above mentioned order.
4. The weight of soil retained on each sieve is recorded.

No particle of soil sample shall be pushed through the sieves. Graph is plotted between grain size of soil and % finer in a semi log graph sheet. From the graph it is concluded that the soil sample collected from the site is silty sand soil. It contains 74% sand, 22% silt and 4% clay.

Falling Head Permeability Test

Permeability is defined as the rate of flow of water under laminar conditions through a unit cross-sectional area perpendicular to the direction of flow through a porous medium under unit hydraulic gradient and under standard temperature conditions.

1. The permeameter is made of non-corrodible material with a capacity of 1000 ml, with an internal diameter of 100 mm and effective height of 127.3 mm.
2. The mould has a detachable base plate and a removable exterior collar.
3. The compacting equipment has a circular face with 50 mm diameter and a length of 310 mm with a weight of 2.6 kg.
4. The drainage base is a porous disc, 12 mm thick with a permeability 10 times that of soil.
5. The drainage cap is also a porous disc of 12 mm thickness with an inlet/outlet fitting.
6. The container tank has an overflow valve. There is also a graduated jar to collect discharge.
7. The stand pipe arrangements are done on a board with 2 or 3 glass pipes of different diameters.

Methodology

1. Prepare the soil specimen as specified.
2. Saturate it. Deaired water is preferred.
3. Assemble the permeameter in the bottom tank and fill the tank with water.
4. Inlet nozzle of the mould is connected to the stand pipe. Allow some water to flow until steady flow is obtained.
5. Note down the time interval t for a fall of head in the stand pipe h .
6. Repeat step 5 three times to determine t for the same head.
7. Find a by collecting q for the stand pipe. Weigh it correct to 1 gm and find a from $q/h = a$.

$$k = 2.303 \frac{a}{A} \frac{1}{t} L \log_{10} \frac{h_1}{h_2} \text{ cm/sec}$$

Coefficient of permeability

From the above experiment, it was found that the coefficient of permeability of the soil was 4.55×10^{-4} cm/sec. From the experimental results, it can be concluded that the plantation area of 450 acres is capable to absorb the total effluent generated by the industry after expansion.

7.5 RISK ASSESSMENT AND SAFETY MANAGEMENT

7.5.1 Objective, Philosophy and Methodology of Risk Assessment

Objective

The principle objective of this study is to identify major risks in the manufacturing and to evaluate on-site & off-site consequences of identified hazard scenarios. Pointers are then given for effective





mitigation of hazards in terms of suggestions for effective disaster management, suggesting minimum preventive and protective measures & change of practices to ensure safety.

Philosophy

The following aspects and areas are covered in this study;

- Identification of major risk areas
- Hazard identification / Identification of failure cases
- Consequential analysis of probable risks / failure cases
- Determination of the probable risk by releasing of chemical due to leakage of storage tank and catastrophic failure
- Risk assessment on the basis of the above evaluation & risk acceptability
- Minimum preventive & protective measures to be taken to minimize risks to maximum possible extent
- Giving pointers for effective disaster management
- Suggesting other measures to further lower the probability of risk

Methodology

Design data, built in safety systems are studied. Discussions are held with officials. Safety related individual system is discussed. Hazard identification exercise is conducted taking into consideration of materials, material handling methods, operating procedures, built in safety in reactors, operating parameters and safety measures to be taken in proposed plant. Few areas like process building, storage of hazardous chemicals, to evaluate safety systems in the event of any abnormalities occurring. Containment failure scenario related to storage area is considered for hazard analysis and consequences of such containment failures are considered in detail. Thus, this study is mainly oriented towards actual risks rather than chronic risks.

7.5.2 Introduction

Satia Industries Ltd. is an existing agro-based Integrated Pulp and Paper Mill with captive power generation unit located at Rupana Distt. Muktsar (Punjab). Presently the unit is involved in manufacturing of writing and printing paper with the production capacity of 150 TPD from waste paper and now, the unit intends to change the raw material from waste paper to agro residue. The Risk Assessment Study for the proposed project has been carried out and all the details are elaborated in this chapter. Based on the findings & recommendations of RA report, management plan has also been prepared and included.

Risk Assessment is defined as a continuous and integrated process of identification, evaluation and measurement of risks, along with their potential impact on the organization.

The benefits of risk assessment include the following:

- Prevention or reduction in occurrence of accidents.
- Mitigation of the severity and/or consequences by the way of improved process techniques, fire protection systems, arrangements of storage, inventory monitoring to fit production requirements.
- Confidence building in employees by improving competency.
- Preparedness and prompt response to deal with any accident.

7.5.3 Hazardous material, process & safety

Hazardous Products: No hazardous product is produced in the mill.

Hazardous Raw Materials

Hazardous substances may be classified into two main classes: Flammable substances and Toxic substances. Flammable substances or the vapours arising in some reaction require interaction with air for their hazard to be realized. Toxic substances are those whose exposure may result in occupational diseases in the human beings in vicinity. The main and only product of the unit is writing and printing paper which is non-hazardous. The basic raw materials for the manufacturing of writing and printing paper will be agro waste like wheat straw, rice husk, and sarkanda along with the few hazardous chemicals like, Chlorine Dioxide and Hydrogen Peroxide (30%). Hazardous characteristics of the major flammable/ toxic materials employed in different stages of production are listed in **Table 7-** and the details of hazardous properties are listed in following **Table 7-**.

Table 7-3: Properties of storage chemicals used at the mill

Chemical	Codes/Label	TLV	BP	MP
			°C	
Sodium Hydroxide	Corrosive	2 mg/m ³	1390	318.4

TLV: Threshold Limit Value; BP: Boiling Point; MP: Melting Point

Table 7-4: Properties of Hazardous Chemical

Property	Unit	Chlorine Dioxide	Hydrogen Peroxide
Boiling point	°C	11	108
Vapour Pressure	atm	1	0.0071
Flash point	°C	NA	NA
Freezing point	°C	-59	-33.0
Density	Kg/m ³	1.54	1.1
Ambient Saturation Conc	ppm	1,000,000	15,373
TLV/TWA	ppm	0.1	1.4
IDLH	ppm	5	75
LEL	%	10	NA
UEL	%	NA	NA
Hazardous Classification	--	Hazardous, Toxic & Non-Flammable	Hazardous, Toxic & Non-Flammable

7.5.4 Safety Measures for Transportation, Storage & Handling

General Safety Measures for Storage

For the safe storage company has provided the following safety measures.

- Storage area is enough and away from important buildings, especially vital production and service buildings to ensure that fire in storage area can be prevented from spreading to the building.
- Display boards has been provided on all storage tanks which includes the name of the product, stored material of construction, calibration of tanks and date of painting.
- In order to avoid the accident due to spillage or overflow, the level indicators are placed which helps to know the exact liquid level inside the tank.





- All the storage tanks are provided with dyke wall and transferring pumps which helps to reduce the risk of tank leakages.
- Raw material is properly stored in stacks and the sufficient space is provided between two stacks. Temp. of each stack of raw material is checked every week to avoid the possibility of auto combustion and proper record is maintained.
- Proper earthing is provided to all storage tanks to prevent the firing due to static charges.
- Water filled chamber is provided on silencer pipe of each and every vehicle before allowing it to enter in storage area.
- Hazardous display board and national fire prevention association code are displayed on all storage tanks.
- Mountings like temperature indicator and pressure gauge are provided to all storage tanks for measuring the physical conditions of materials stored in it.
- Smoking is strictly prohibited in mills premises on-site detectors for fire based on heat &/or smoke detection with alarm system will be provided as required.
- Fire hydrants are provided at various points in storage yard and fire fighting equipments (fire extinguishers, water-bucket, sand buckets and hydrant points) are provided at various places in the plant area so that prompt action can be taken at smoldering stage.
- The management will prepare the booklet on disclosure of information to general public, workers and authorities.

The details of raw material storage, handling and transportation are given in **Table 7-**.

Table 7-5: Raw Material Storage, Handling and Transportation

Name of Chemical	Physical Form	Type of Storage	Storage Tank Capacity	Max. Storage Capacity	Storage Pressure Kg/cm ²	Storage Temp. °C	Source	Mode of Transportation
Chlorine Dioxide	Gas	Storage Tank	50 m3	100 m3	Atm.	Amb.	Local	Self Manufacturing
Hydrogen Peroxide (30%)	Liquid	HDPE cane	10 MT	15 M.T	Atm.	Amb.	Local	By Road

Safety Measures for preventive maintenance

The safety measures in form of the general Do's & Don'ts for safety in process & other plant area are as below:

- Do not work on equipment without permission from plant head and maintenance head.
- Keep proper and adequate fire extinguisher near work area.
- Use proper PPE's.
- Do not allow any employment without pre-medical check-up or without checking fitness.
- Check all motors are disconnected and fuse pulled out before maintenance.
- Work in any equipment must be conducted in presence of supervisor.
- Make sure all process lines are disconnected.
- Additional safety measures in form of the checklist covering Do's & Don'ts of preventive maintenance, manufacturing utility staff for safety related measures should be updated timely and made available to all concern department & personnel.

7.6 OCCUPATIONAL SAFETY & HEALTH PROGRAM

Occupational safety and health (OSH) is an area concerned with protecting the safety, health and welfare of people engaged in work or employment. The goals of occupational safety and health programs include fostering a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment.

OSH can also be used for moral, legal, and financial reasons. All organisations have a duty of care to ensure that employees and any other person who may be affected by the companies undertaking remain safe at all times. Moral obligations would involve the protection of employee's lives and health. Legal reasons for OSH practices relate to the preventative, punitive and compensatory effects of laws that protect worker's safety and health. OSH can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs.

Health hazards associated with the occupation are called occupational hazards. In industry due to handling of toxic and hazardous substance there are possibilities of developing occupational diseases. Occupational health needs attention both during construction & erection and operation & maintenance phases. However, the problem varies both in magnitude and variety in the above phases.

7.6.1 Construction and Erection

The occupational health problems envisaged at this stage can mainly be due to constructional accident and noise. To overcome these hazards, in addition to arrangements to reduce it within TLV's, necessary protective equipments shall be provided to workers.

7.6.2 Operation and Maintenance

The problem of occupational health, in the operation and maintenance phase is primarily due to noise and chemical exposure. The necessary personal protective equipments are given to all the workers. The working personnel are given the following appropriate personnel protective equipments.

- Industrial safety helmet
- Face shield with replaceable acrylic vision
- Punk Type safety goggles for dust protection
- Chemical splash proof goggles
- Eye/ Face shower & eye wash bottles
- Gum boots
- Welders equipment for eye and face protection
- Cylindrical type earplug
- Emergency chlorine leakage control kit
- Ear muffs
- PVC apron
- Full body harness
- Water gel blankets
- Asbestos and rubber hand gloves
- Acid/Alkali proof PVC hand gloves
- Self-contained breathing apparatus
- Boiler suit





- Electrically tested electrical resistance hand gloves

7.6.3 Hospital Facilities

It is proposed that client will make formal agreements with nearby hospital having facilities to attend fire and toxic effect cases for attending the affected persons in the emergency arising out of accidents, if any.

7.6.4 Factory Medical Officer

A qualified doctor has been appointed as FMO on retainer ship basis. Apart from him, paramedical Staff will be employed.

7.6.5 Ambulance Van

An ambulance van is available with the company.

7.6.6 First Aid Box

First aid boxes are available at the different location in the plant; training is given to employees for First Aid.

7.6.7 Periodic Medical Examination

The medical checkup program is being conducted as pre-employment and post-employment check-up programs. Pre-employment check-up has been mandatory and tests like chest x rays, audiometry, spirometry vision testing, ECG, haemogram (examination of the blood), urine (Routine and Microscopic), complete physical examination i.e. Musculo-skeletal disorders (MSD), backache, pain in minor and major joints, fatigue, etc. are being conducted.

Medical check-up of all the employees is being carried out periodically by qualified medical officer and health records are maintained in prescribed format.

The Workers employed are medically examined by a qualified medical practitioner/Factory Medical Officer, in the following manner:

- Once in a period of 6 months, to ascertain physical fitness of the person to do the particular job and to ascertain the health status of all the workers in respect of occupational health hazards to which they are exposed and in cases where in the opinion of the Factory Medical Officer it is necessary to do so at a shorter interval in respect of any workers;
- In periodic and premedical examinations, various parameters are being checked. Viz. Liver Function Tests, Chest X-rays, Audiometry, Spirometry, Vision testing (Far & Near vision, color vision and any other ocular defect) ECG and other parameters as will be found necessary as per the opinion of Factory Medical officer.

7.6.8 Management Plan for Occupational Health & Safety

Following management plan has been proposed so that exposure of the workers can be kept within Permissible Exposure Level (PEL)/Threshold Level value (TLV) to protect their health;

1. To formulate and implement an Environmental management Plan (EMP) for OHS with following aims:
 - To keep airborne concentration of toxic and hazardous chemicals below PEL and TLV.

- Protect general health of workers likely to be exposed to such chemicals
 - Providing training, guidelines, resources and facilities to concerned department for occupational health hazards.
 - Permanent changes to workplace procedures or work location to be done if it is found necessary on the basis of findings from workplace Monitoring Plan.
2. EMP be formulated on the guidelines issued by Bureau of Indian Standards on OHS Management Systems: IS 18001:2000 Occupational Health and Safety Management Systems.
 3. EMP is incorporated in Standard Operating Procedure also.
 4. The EMP includes measure to keep airborne concentration of toxic and hazardous chemicals below its PEL and TLV, like
 - a. Leak surveys
 - b. Separate storage for toxic chemicals
 - c. Exhaust ventilation
 - d. Proper illumination
 - e. On-line detectors toxic chemicals like chlorine
 - f. Close processes to avoid spills and exposures
 - g. Supply of proper PPEs like air mask, berating canisters, SCBA sets, on-line breathing apparatus at the places where there is possibility of presence of toxic chemicals
 - h. Decontamination procedure for empty drums and carboys.
 - i. Regular maintenance program for pumps, equipment, instruments handling toxic and corrosive chemicals
 - j. Display of warning board
 - k. Training to persons handling toxic and corrosive chemicals
 - l. All First Aid Measures such as Flushing bottles for eyes with plenty of water, Flushing bottles for skin with plenty of water while removing contaminated clothing and shoes and flush skin with plenty of soap and water, not to induce vomiting, fluid and electrolytes as antidotes have been made available.
 5. Workplace Monitoring Plan

Each workplace must be evaluated to identify potential hazards from toxic substances or harmful physical agents. It is in concern that a workplace Monitoring Plan to be prepared & implemented in consultation with FMO and Industrial Hygienists. The work zone monitoring has been conducted in the industry during the study period with respect to following parameters such as PM_{2.5}, PM₁₀, TSPM, SO₂, NO_x, Noise, etc.

Table 7-6: Work place monitoring in the industrial premises

S. No.	Location	PM ₁₀ (24 h) (µg/m ³)	PM _{2.5} (24 h) (µg/m ³)	SO ₂ (24 h) (µg/m ³)	NO ₂ (24 h) (µg/m ³)	Noise dB(A)
1.	Pulp Mill	88.9	48.2	32.6	20.3	67.8 - 88.9
2.	Paper machine	82.5	44.8	24.5	22.8	79.0 - 91.0
3.	Power plant	74.6	32.9	18.6	26.9	92.9 - 99.4
4.	Main Gate	78.7	36.0	11.8	18.4	42.5 - 69.9

6. Health Evaluation of Workers

- The management has derived a plan to check and evaluate the exposure specific health status evaluation of workers.
- Workers have been checked for physical fitness with special reference to the possible health hazards likely to be present where he/she is being expected to work before being employed for that purpose. Basic examinations like Liver Function tests, chest x ray, Audiometry, Spirometry





Vision testing (Far & Near vision, color vision and any other ocular defect) ECG, etc. are carried out.

- However, the parameters and frequency of such examination are decided in consultation with Factory Medical Officer and Industrial Hygienists.

While in work, all the workers are periodically examined for the health with specific reference to the hazards which they are likely to be exposed to during work. Health evaluation is carrying out considering the bodily functions likely to be affected during work. The parameters and frequency of such examination are decided in consultation with Factory Medical Officer and Industrial Hygienists Plan of monthly and yearly report of the health status of workers with special reference to Occupational Health and Safety. Details of Health evaluation of workers is placed in **Table 7-**.

Table 7-7: Health evaluation of workers

To which chemicals workers are exposed directly or indirectly	Whether these chemicals are within TLV/Permissible exposure levels as per ACGIH recommendation	What measures company have taken to keep these chemicals within PEL/TLV	How the workers are evaluated concerning their exposure to chemicals during pre-placement and periodical medical monitoring	What are onsite and offsite emergency plan during chemical disaster
Hydrogen Peroxide	Within TLV Limit Conc.: BDL	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective Threshold limits value. Ensure that eyewash stations and safety showers are proximal to the work-station location.	1. Lung Function Test	1. Fire hydrant system and foam monitor 2. Trainer fire fighter 3. Sand bucket stand
Chlorine Dioxide	Within TLV Limit Conc.: BDL	Local exhaust ventilation, personnel protective equipment,	Lung Function Test, Examination of Respiratory and eyes, chest roentgenogram, x-ray if necessary	

7.7 FIRE FIGHTING SYSTEM AND EMERGENCY MANAGEMENT

7.7.1 Fire fighting system

- Necessary fire fighting arrangements at each strategic location of the mill specifically, the raw material storage yard, finished product godown, chemical godown and all the electrical penal rooms are covered by suitable kind of fire extinguishers and fire hydrant networks. At different strategic locations, fire hose boxes (containing fire hose pipes and gun metal nozzles) are provided.
- Mock drill & training are being conducted at scheduled intervals.
- Fire fighting team members are available at any time in the premises.

7.7.2 Emergency Management

Emergency Planning:

- Emergency siren and wind sock has been installed.
- On Site emergency Plan is prepared.
- Tele Communication system and mobile phone are used in case of emergency situations for communication.
- First Aid Boxes and Occupational health centre are made at site.

Safety Practices in the Work Area:

- We inform our all employees of the potential hazards of contact with chemicals and train them in appropriate first-aid procedures.
- Chemical handling areas are clearly marked and restricted to qualified, trained personnel only.

Emergency Procedures

- In case of emergencies, follow recommended first aid and emergency response procedures adopted.

Transportation Emergencies

In emergency situations resulting from vehicle accidents:

- Notify the local police, fire departments, emergency responders and the carrier.
- Isolate the area.
- Any person not dressed in proper protective clothing and not using a NIOSH approved self-contained breathing apparatus should be kept a safe distance away.
- Call to the supplier
- Seek immediate medical assistance for those injured and follow recommended first aid procedures.

Leaking Containers

- When handling a leaking bottle personnel protective clothing, goggles and NIOSH approved self contained breathing equipment must be worn.
- Clear contaminated area of non-essential personnel and send them to assembly point.
- There should be provision of proper ventilation. Scrub the floors and equipment with soap and water.

First Aid Procedure

Immediate medical assistance is required if chlorine dioxide and hydrogen peroxide are inhaled or has contacted the eyes or skin.

If chlorine dioxide and hydrogen peroxide has been inhaled, move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.





For skin contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

If hydrogen peroxide comes in contact with the eyes, check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately

In all cases of injury, obtain immediate medical attention. Provide emergency personnel with information about all materials used by the person and provide appropriate information and first aid procedures.

Details of Fire equipments and Hydrants are attached as **Annexure 13**.

7.8 RISK ASSESSMENT STUDY

Risk involves the occurrence or potential occurrence of some accidents consisting of an event or sequence of events. The description of the tasks of the various phases involved in the risk analysis is detailed below. The study aims to analyze the risk associated with the following scenarios in the pulp & paper mill:

- i) Hazards associated with various processes
- ii) Raw material storage in the plant.

The risk analysis assessment study covers the following:

- Identification of potential hazard area;
- Identification of representative failure cases;
- Assessment of the overall suitability of the site from hazard minimization and disaster management point of view;
- Furnishing of specific recommendations on the minimization of the worst accident possibilities; and
- Preparation of broad Disaster Management Plant (DMP), On-site Emergency Plan, which includes Occupational Health & Safety Plans

7.9 HAZARD IDENTIFICATION

Hazard is an inherent property of a substance, agent, and source of energy or situation having potential of causing undesirable consequences.

Identification of hazards in pulp & paper mill is of primary significance in the analysis, quantification & cost effective control of accidents involving chemicals and process. Estimation of probability of an unexpected event and its severity form the basis of quantification of risk in terms of damage to property, environment or personnel as:

$$\text{Risk} = \text{Probability} \times \text{Severity}$$

Therefore, the type, quantity, location and conditions of release of a toxic or flammable substance have to be identified in order to estimate its damaging effects, the area involved and the possible precautionary measures required to be taken.

The following two methods of hazard identification have been employed in the study:

- Identification of major hazards based on Manufacture, Storage, And Import of Hazardous Chemicals Rules (MSIHC Rules), 2000 Government Of India, as amended till date.
- Process Hazard Analysis (PHA) is a method to evaluate and identify credible hazardous scenarios. PHA is a thorough, orderly, systematic approach for identifying, evaluating, and controlling the hazards of processes involving hazardous chemicals.

The probable potential hazards are classified as under:

1. Storage Hazards: All the hazardous materials used during the manufacturing activity are stored in drum/tank/cylinder. Storage hazard can be evaluated based on the storage of various materials. The condition of event like catastrophic failure of storage tank, rupture of pipe connected to storage tank, small crack and leakage in the tank may lead to storage hazard.

2. Fire hazards: Fire hazard can be evaluated based on storage quantity and flammability of materials stored. The condition of events like spillage, leakage of material could leads to fire. Equipment failures, presence of open flame or spark in the area, static charge accumulation, open live cables and reaction between incompatible materials are some of the reasons which lead to the occurrence of fire.

3. Toxicity Hazard: Toxic substances affect in three ways by ingestion, absorption & inhalation. Adequate provision of safety along with personnel protective equipment are made, breathing apparatus and emergency kit are provided at various locations of the installation.

4. Explosion Hazard: Release of energy in a rapid and uncontrolled manner gives rise to explosion. Identified locations having explosion hazards are in tank and storage area (warehouse). Extra care shall be taken by providing rupture disc, pressure release valve and temperature controller. In addition, fire and explosion hazard is identified as catastrophic failure of storage tanks area.

5. Corrosive Hazard: Corrosion is a chemical reaction-taking place at the surface of metal. The corrosive chemicals have their typical hazard when it comes in contact with human tissues. Most corrosive substances produce chemical burns, while certain chemical produce deep ulceration. Other has detailing effect on skin and may cause dermatitis. This also has adverse effects on weakening the strength of material in contact.

6. Mechanical Hazard:

Following mechanical hazards are identified which can cause any unforeseen event which will again result in accident.

- Handling of cranes, trolleys, construction machineries.
- Handling of mechanical equipments like shovel, forklift, etc.
- Handling of raw material MS Scrap, products and various mechanical accessories.
- Maintenance workshop etc.

7. Electrical Hazard:

Use of various electrical instrument, electrical appliances may cause electrical hazards during use of various appliances.

7.9.1 Hazard Assessment and Evaluation

Preliminary Hazard Analysis (PHA)

It is based on the philosophy "prevention is better than cure". Safety is relative and implies freedom from danger or injury. But there is always some element of danger or risk in anything we do or build. The purpose of preliminary hazard analysis is to identify early in the design process the potential





hazards associated with, or inherent in, a process design, thus eliminating costly and time consuming delays caused by design changes made later. This also eliminates potential hazard points at design stage itself. A preliminary hazard analysis is carried out initially to identify the major hazards associated with storages and the processes of the plant. This is followed by consequence analysis to quantify these hazards. Finally, the vulnerable zones are plotted, for which risk reducing measures are deduced and implemented. There are various process activities involved in this pulp and paper mill operations like raw material handling and preparation, chemical pulping bleaching of pulp stock preparation paper making & processing except for chemical pulping, pulp bleaching and chemical recovery from black liquor, all the other processes involve purely mechanical operations that are not complex or hazardous. Chemical pulping involves cooking of raw material with sodium hydroxide. Sodium hydroxide is a mildly hazardous chemical in nature. The washing and paper manufacturing process contains no involvement of any hazardous chemicals as such. Oxygen delignification and chlorine dioxide bleaching are used to eliminate elemental chlorine bleaching i, e. The purpose of introducing elemental chlorine free bleaching (ECF bleaching) in the process is to reduce pollution load as well as AOX level. Bleaching process including ODL, chlorine dioxide, alkali extraction, hydrogen peroxide, oxygen i.e. (ODL, EOP, pulping sequence) is being employed which reduces pollution load in treated waste water and improve product quality. Hence, no major hazards with the potential for any emergency situation exist in the process plant.

A preliminary hazard analysis is carried out initially to identify the major hazards associated with storages and the processes of the plant. This is followed by consequence analysis to quantify these hazards. Finally, the vulnerable zones are plotted, for which risk reducing measures are deduced and implemented. The various process activities involved in this pulp and paper mill operations are:

- Raw material handling and preparation
- Chemical Pulping
- Bleaching of pulp
- Stock Preparation
- Paper Making & Processing

Except for chemical pulping, pulp bleaching and chemical recovery from black liquor, all the other processes involve purely mechanical operations that are not complex or hazardous. Chemical pulping involves cooking of raw material with sodium hydroxide at temperatures below 175°C. No major hazards are expected from this process. Sodium hydroxide is a mildly hazardous chemical in nature.

The washing and paper manufacturing process contains no involvement of any hazardous chemicals as such. Hence, no major hazards with the potential for any emergency situation exist in the process plant. The other hazards related to boiler operation and other storage areas are given in and preliminary hazard analysis for whole of the plant is given in .

Table 7-8: Preliminary hazard analysis for process and storage areas

Equipment	Process	Potential Hazard	Provision
Power Transformer	--	Fire & Explosion	All electrical fittings and cables are provided as per the specified standards
Switch Yard Control Room	-	Fire in cable trenches and switches	All electrical fittings and cables are provided as per the specified standards
Caustic	Used in chemical pulping	Leakage	Standby storage tank provided to empty up the leaking tank.

Table 7-9: Preliminary hazard analysis for the whole plant in general

PHA Category	Description of plausible hazards	Recommendation	Provision
Environmental Factors	Any leakage and eventuality of source of ignition	-	All electrical fittings and cables are provided as per the specified standards. All motor starters are flame proof.
	Fire hazard in the storage facility.	A well-designed fire protection including mechanical foam, dry powder and fire buckets are provided.	Fire extinguishers of medium capacity are provided at all potential fire hazard places. In addition to the above, fire hydrant network is also provided.

7.9.2 MCA Scenarios and Consequences Analysis

A Maximum Credible Accident (MCA) can be characterized as the worst credible accident. In other words, an accident in an activity, resulting in the maximum consequence distance, that is still believed to be possible. A MCA analysis does not include a quantification of the probability of occurrence of the accident. Another aspect, in which the pessimistic approach of MCA studies appears, is the atmospheric condition that is used for dispersion calculations.

The Maximum Credible Loss (MCL) scenarios have been developed for the facility. The MCL cases considered, attempt to include the worst "Credible" incidents-what constitutes a credible incident is always subjective. Nevertheless, guidelines have evolved over the years and based on basic engineering judgment, the cases have been found to be credible and modeling for assessing vulnerability zones is prepared accordingly.

The objective of the study is emergency planning, hence only holistic & conservative assumptions are used for obvious reasons. Hence, though the outcomes may look pessimistic, the planning for emergency concept should be borne in mind whilst interpreting the results.

This has been done for weather conditions having wind speed 3.0 m/s. In Consequence Analysis, geographical location of the source of potential release plays an important role. Consideration of a large number of scenarios in the same geographical location serves little purpose if the dominant scenario has been identified and duly considered.

The Consequence Analysis has been done for selected scenarios by ALOHA (version 5.4.1.2) of EPA. The details of software used for MCA analysis are described below.

- A computer based version ALOHA 5.4.1.2 is used to calculate toxic and explosive effect of the accidental release of liquid chemicals within the plant area.
- ALOHA (Areal Locations of Hazardous Atmosphere) is a computer program designed especially for use by people responding to chemical release as well as for emergency planning and training.
- ALOHA was jointly developed by the National Oceanic and Atmospheric Administration (NOAA) and the Environment Protection Agency (EPA).
- The mathematical model is based on the Emergency Response Planning Guidelines (ERPGs) which gives Toxic Levels of Concern (LOCs) to predict the area where a toxic liquid concentration might be high enough to harm people.
- ALOHA models key hazards-toxicity, flammability, thermal radiation (Heat), and over pressure (expansion blast force)-related to chemical releases that result in toxic gas dispersion, fire and/or explosion





Definitions & Explanation of Terms Used

EPRG-1: The maximum concentration in air below which it is believed nearly all individuals could be exposed for up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odour.

EPRG-2: The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

ERPG-3: The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.

AEGL-1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

AEGL-2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL-3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

IDLH: IDLH is an estimate of the maximum concentration in the air to which a healthy worker could be exposed without suffering permanent or escape-impairing health effects.

LEL: LEL is the minimum concentration of fuel in the air needed for a fire or an explosion to occur if an ignition source is present. If the concentration is below the LEL, there is not enough fuel in the air to sustain a fire or an explosion -- it is too lean.

UEL: UEL is the maximum concentration of fuel in the air that can sustain a fire or an explosion if an ignition source is present. If the concentration is above the UEL, there is not enough oxygen to sustain a fire or an explosion -- it is too rich (much like an engine that cannot start because it has been flooded with gasoline).

STEL: The concentration to which workers can be exposed continuously for a short period of time without suffering from

(1) Irritation

(2) Chronic or Irreversible tissue damage

(3) Narcosis of sufficient degree to increase injury, impair self-rescue or materially reduce work efficiency and provide that the daily TLV-TWA is not exceeded.

TWA: The time-weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day by day, without adverse effect.

Source Strength: The source strength is either the rate the chemical enters the atmosphere or the burn rate, depending on the scenario. A chemical may escape very quickly (so that source strength is high), as when a pressurized container is ruptured, or more slowly over a longer period of time (so that source strength is low), as when a puddle evaporates.

Threat zone: It represents the area within which the hazard level (toxicity, flammability, thermal radiation, or overpressure) is predicted to exceed the Level of Concern (LOC) at some time after a release begins.

Evaporation Puddle: Choose Puddle from the Source submenu under the set up menu to model a liquid that has spilled and formed a puddle on the ground. ALOHA can model the puddle either as an evaporating puddle or, if the chemical is flammable, as a Pool Fire. Choose Puddle when a puddle has already formed on the ground and is not changing in area. If liquid is continuing to leak from a tank and spilling into a puddle (so that the puddle's area and volume are increasing) choose Tank from the Source submenu instead. Check the "Tank source" help topic to learn more about this option.

Toxic Threat zone: A Toxic Level of Concern (LOC) is a threshold concentration of an airborne pollutant, usually the concentration above which a hazard may exist.

Threat at point: It represents the specific information about the hazards at point of interest (such as schools and hospitals) in and around the threat zones.

Possible Accident Scenario

Major two raw materials, chlorine dioxide and hydrogen peroxide, are used for the manufacturing activity area hazardous, which are hazardous in nature. The details of storage and properties of hazardous chemical are given earlier in *Table 7*-and the threshold value of these hazardous chemicals is mentioned in this chapter..

Different scenarios for occurrence of any accidents due to storage/usage of hazardous chemicals are prescribed below;

Scenario-A: Release of chemical due to leakage and form evaporating puddle (not burning)

Scenario-B: Release of chemical due to leakage and form burning puddle (pool fire)

Scenario-C: Release of chemical due to catastrophic failure (Bleve)

During the current analysis only Scenario- A is considered for both hydrogen peroxide and chlorine dioxide because Scenario- B & C is not applicable as the chemical is non-flammable. The atmospheric condition and possibilities of source strength considered at the time of accident are given in follow tables.

Table 7-10: Threshold values of the Hazardous Chemicals

Sr. No.	Hazardous Chemicals	Threshold Value*		
		AEGL / ERPG-1	AEGL / ERPG-2	AEGL / ERPG-3
1.	Hydrogen Peroxide	10 ppm	50 ppm	100 ppm
2.	Chlorine Dioxide	0.15 ppm	1.1 ppm	2.4 ppm
*AEGL: Acute Exposure Guideline Levels (For Chlorine Dioxide) ERPG: Emergency Response Planning Guidelines (For H2O2)				

Table 7-11: Atmospheric Condition Assumed

Particulars	Details
Wind	3.0 meters/second
Ground Roughness	Open Country
Cloud Cover	0 tenths
Air Temperature	40° C
Stability Class	C
Relative Humidity	50%





Table 7-12: Threat zone of Evaporating Puddle for H_2O_2

Particulars	For Hydrogen Peroxide	For Chlorine Dioxide
Tank/Cylinder Diameter	2.1 m	1.0 m
Tank/Cylinder Length	2.9 m	1.15 m
Tank/Cylinder volume	10 m ³	900 kg
Internal Temperature	40° C	40° C
Chemical Mass in Tank	14.5 T	2.89 Kg
Circular Opening Diameter	1 inches	1 inches
Opening from Drum bottom	0.5 m	0.5 m
Internal Pressure at Failure	--	1.2 atm
Percentage of Tank Mass in Fireball	100%	

Scenario- A1: Release of hydrogen peroxide due to leakage and form evaporating puddle (Not burning)

a) Source Strength

When H_2O_2 escape from the tank as a liquid and form evaporation puddle, then approximate average sustained release rate will be 1.02 Kg/min and hence approx. 33.9 Kg of liquid will be released in one minute and form evaporating puddle. The puddle will be spread to diameter of 18.2 m. Source Strength in case of H_2O_2 escape and Isopleths result of toxic threat zone is given in **Figure 7-4** and **Figure 7-5**.

Figure 7-4: Source Strength in case of H_2O_2 escape

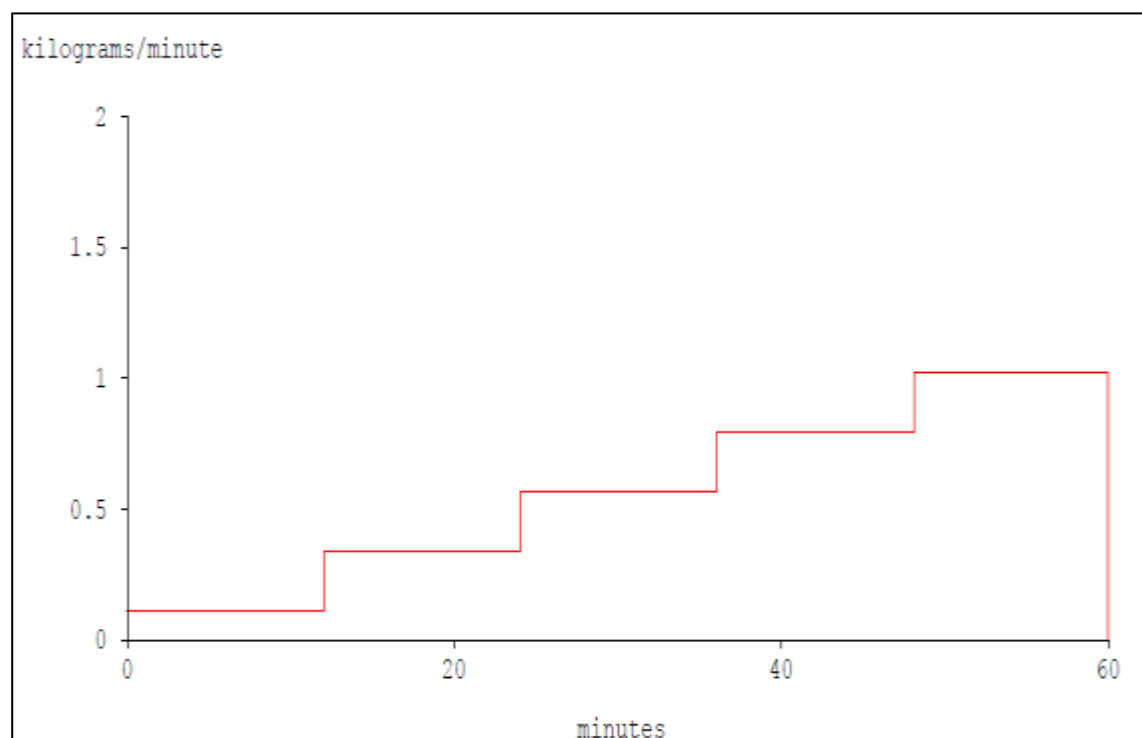
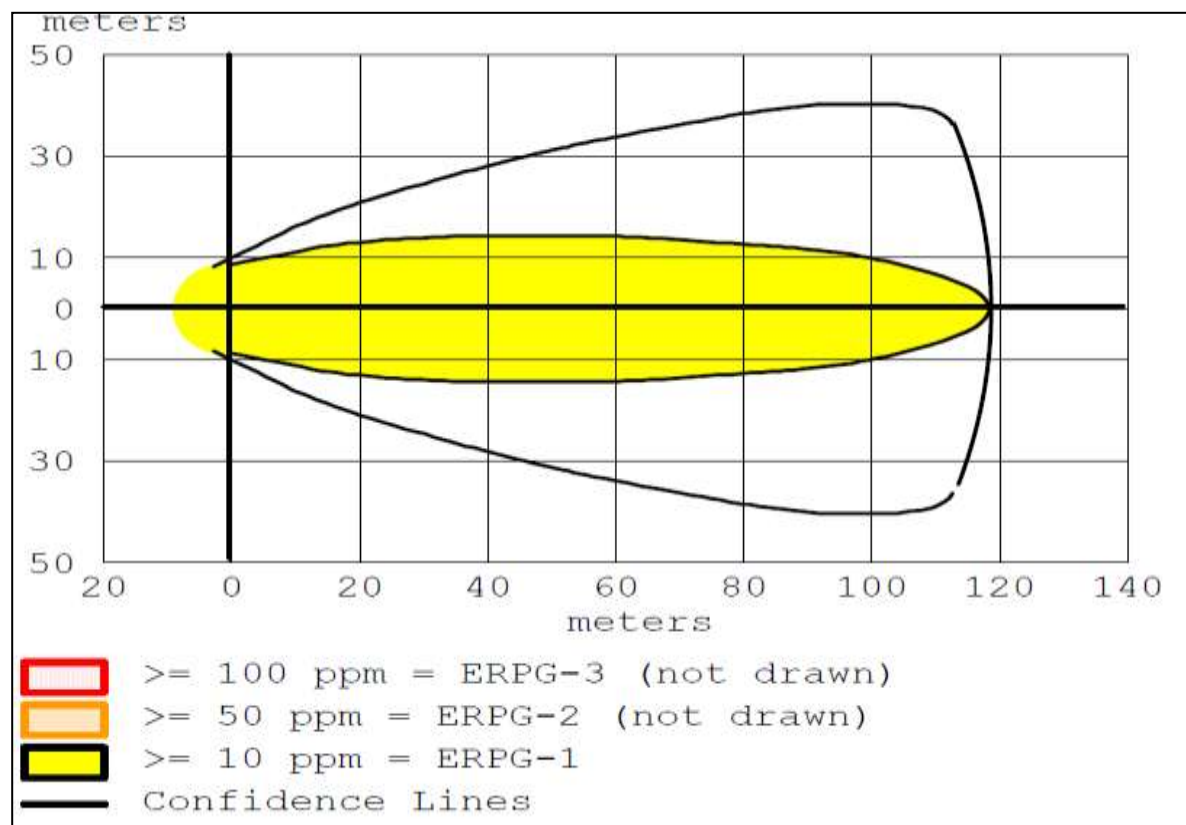


Figure 7-5: Isopleths result of Toxic threat zone



b) Threat Zone

Model output of the threat zone of evaporating puddle for H_2O_2 chemical release is given in **Table 7-13**.

Table 7-13: Threat zone of Evaporating Puddle for H_2O_2

Threat Zone	Concentration, ppm	ERPG	Threat Zone
Red	100	ERPG-3	20 m.
Orange	50	ERPG-2	39 m.
Yellow	10	ERPG-1	119 m.

c) Threat at point

In case of leakage of H_2O_2 liquid and form evaporating (not burning), the significant effects will be up to 119 m in case of toxic threat zone. Thus the effect in case of any accident will remain within existing premises and there will be no significant concentration or effect in outside the plant premises.

Scenario-A2: Release of Chlorine dioxide due to leakage and form evaporating puddle (Not burning)

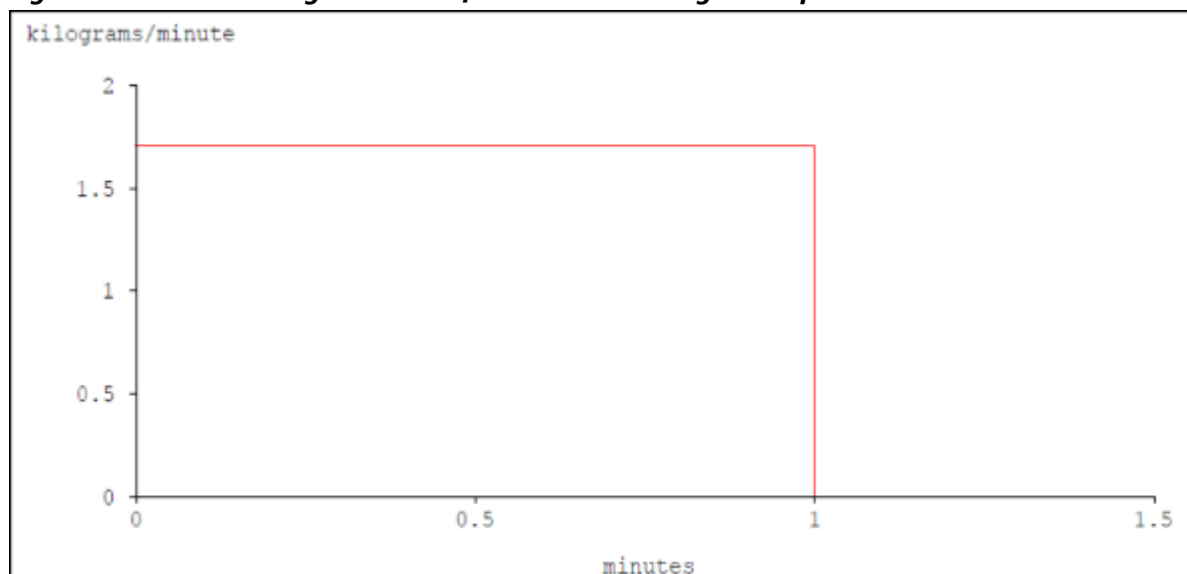
a) Source Strength

In case of chlorine dioxide gas escape from cylinder by a hole of 1 inch, then approximate average sustained release rate will be 28.2 g/Sec and hence approx. 1.69 Kg of gas will be released in one minute as shown in **Figure 7-6**.





Figure 7-6: Source Strength in case of Chlorine Dioxide gas escape



b) Threat Zone

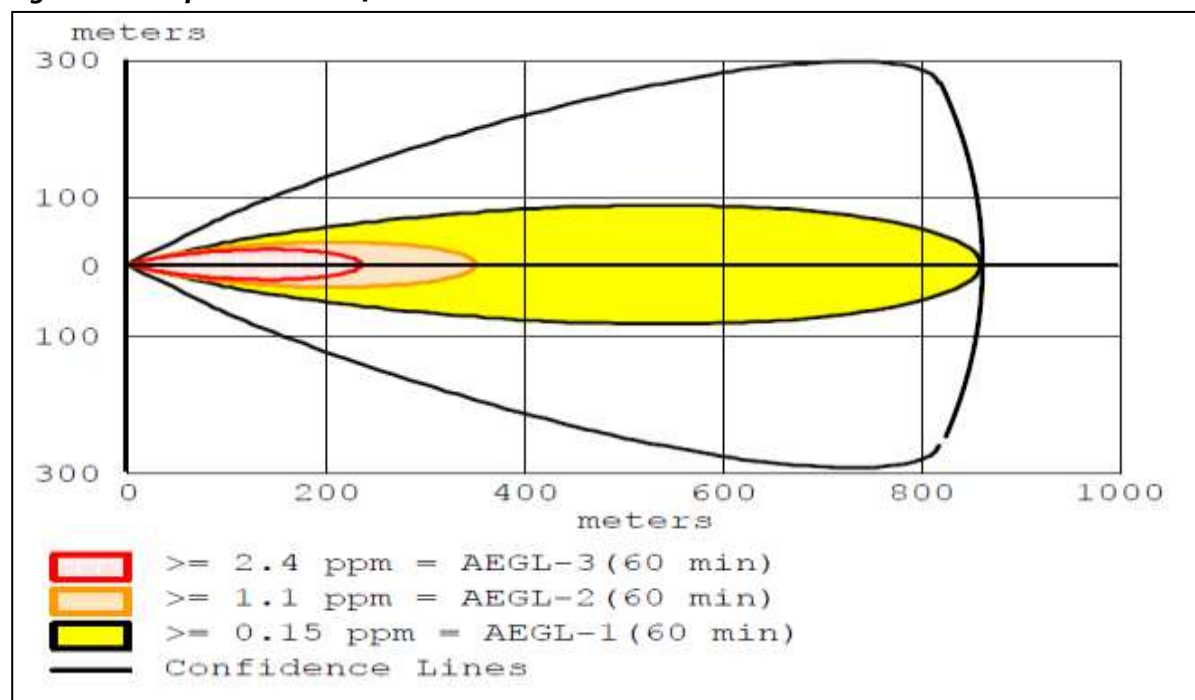
Toxic Threat Zone

Model output and Isopleths result of Toxic threat zone for gas release is given in **Figure 7-7**.

Table 7-14: Threat zone of toxic gas concentration (AEGL Value)

Threat Zone	Concentration, ppm	Threat Zone
Red	2.4	237 m
Orange	1.1	352 m
Yellow	0.15	862 m

Figure 7-7: Isopleths result of Toxic threat zone



c) Threat at point

In case of leakage of chlorine dioxide gas from drum through hole and not burning, the significant effects will be up to 862 m in case of toxic threat zone. Thus the effect in case of any accident will remain in surrounding of the unit only and there will be no significant concentration or effect at a far distance to the nearest habitat area.

Safety Hazard

Safety of plant personnel and equipment's is of utmost importance irrespective of plant size. Units should bring its environment, health and safety policy and follow it. The need of safety is to protect and serve the mankind, to search and suggest the safe ways of behaviour and keeping the safe working. The concept of safety has developed through three stages: Accident Prevention, Total Loss prevention and Total Loss Control. The chemical poses more of Occupational Health Hazard, while fuel poses more of safety / accidental hazards. Hazard & risk assessment has been carried out for exposure to harmful dust / vapours, liquid pool evaporation or boiling and leakage's in confined space. The hazards involved and its control measures for the chemicals which are being handled or stored in the premises are given in table 7-15.

Table 7-15: Hazards and its control measures for Hydrogen Peroxide

Types of hazard / exposure	Acute hazards / symptoms	Prevention	First aid / fire fighting
Fire	combustible materials	No open flames, No sparks, and No smoking.	Use water. Do not use dry chemicals or foams
Explosion	Slightly explosive in presence of open flames and sparks, heat, organic materials, metals, acids.	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limits value. Ensure that eyewash stations and safety showers are proximal to the work-station location.	Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out
Inhalation	Slightly hazardous in case of inhalation (lung sensitizer)	Ventilation, local exhaust, or breathing protection.	Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Call a doctor.
Skin	Irritation to skin	Protective gloves and boots.	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Eyes	Irritation	Safety goggles, face shield or eye protection in combination with breathing protection.	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention





Types of hazard / exposure	Acute hazards / symptoms	Prevention	First aid / fire fighting
			immediately.
Ingestion	Nausea, vomiting, or loss of consciousness.	Do not eat, drink, or smoke during work.	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Table 7-16: Hazards and its control measures for Chlorine Dioxide

Types of hazard / exposure	Acute hazards / symptoms	Prevention	First aid / fire fighting
Fire	Not combustible but enhances combustion of other substances, Oxidising agent	No open flames, No sparks, and No smoking.	Self-contained breathing apparatus with a full facepiece operated in pressure demand or other positive pressure mode.
Explosion	Reacts violently with organics, phosphorus, potassium hydroxide and sulphur, causing fire and explosion hazard	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limits value. Ensure that eyewash stations and safety showers are proximal to the work-station location.	Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out
Inhalation	Slightly hazardous in case of inhalation (lung sensitizer)	Ventilation, local exhaust, or breathing protection.	Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Call a doctor.
Skin	Irritation to skin	Protective gloves and boots.	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Eyes	Irritation	Safety goggles, face shield or eye protection in combination with breathing protection.	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.
Ingestion	Nausea, vomiting, or loss of consciousness.	Do not eat, drink, or smoke during work.	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such

Types of hazard / exposure	Acute hazards / symptoms	Prevention	First aid / fire fighting
			as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Observation and Recommendation to prevent exposure to chemicals are as follows:

- Safety guards (enclosures) are provided on the moving parts of the machines.
- Safety hand rails are also provided around the heavy machineries.
- Standard operating procedures (SOP) also provided near the machines to read before operation. It is available in Hindi and English Language which can be easily readable to the workers.
- Personal Protective Equipment (PPE) like goggles, safety shoes, helmet, apron, earplugs, facemask & clothing are provided to employees as per the job requirements
- First aid kit is provided at every working location.
- Hand trolley is also used occasionally for manual handling and movement of the raw material and products.
- Proper ventilation is provided throughout the plant.
- Separated eating facilities are provided which allow for washing before eating.
- Facilities that allow work clothes to be separated from personal clothes, and for washing / showering after work are provided.
- Policy for periodic health checks will be implemented.
- Use of filter respirators when exposed to dust.

Following actions are being taken to ensure safety

- Procedures of safe shut down and isolation.
- Actions to be taken if emergency arise from any fire, explosion, collapsing of structures or equipments etc.
- Workers are fed with the knowledge of safety measures and controls.
- The workers are trained for the operation of artificial respiratory equipment such as self contained breathing equipment.
- Rehearsals are done so that on-site personnel can fully train themselves for the emergency.
- Emergency boards are provided at the various places in Punjabi, Hindi and English to materialize the emergency.
- Suggestions from the workers will always be welcomed to modify the system as well as to make system more reliable and effective.
- Material Safety data Sheet (MSDS) of the chemical used and products are made available at the place of use also attached here as **Annexure 14**.
- Storage and process areas are posted with "No Smoking" signs. Smoking is prohibited throughout the factory. All management staff, executives are responsible to ensure compliance
- Adequate ventilation is provided in process area so that airborne concentration does not exceed threshold limit value.
- On site and off site emergency plan has been prepared.





- Annual mock drill is regularly carried out to train and aware the workers and other employees in case of emergency situation as a part of on-site emergency. Record of the same are maintained regularly.
- Assembly Point has been decided where all the employees and worker should meet at the time of emergency occurrence. Counting of workers and employees take place immediately at assembly point and compared with those present.
- To provide appropriate instruction, training, retraining and supervision to employees in health and safety, first aid and to ensure that adequate publicity is given to ensure proper implementation of fire prevention methods and an appropriate fire fighting service together with training facilities for personnel involved in this service; To organize collection, analysis and presentation of data on accident, sickness and incident involving people injury or injury to health with a view to taking corrective, remedial and preventive action; To promote through the established machinery, joint consultation in health and safety matters to ensure effective participation by all employees
- To publish/notify regulations, instructions and notices in the common language of employees
- To prepare separate safety rules for each type of occupation/processes involved in a plant
- To ensure regular safety inspection by a competent person at suitable intervals of all buildings, equipments, work places and operations.

Safety organization

A safety organization is formed in the mill comprising of Technical Director as the Incident controller. A detailed organization chart of safety organization is given below prescribing the roles of different personnel's roles and responsibilities.

Safety Committee

Safety committee in the mill is formed comprising of HODs and workers in 50:50 ratio. A total of 14 members are part of this committee. A quarterly meeting of the safety committee is started from November – 2007. The committee shall discuss their plan of action for implementation of safe working habits among the employees and labourers. They shall also discuss about the accidents happened during the previous quarter and failure/ negligence to be identified to prevent the accidents in future. A report of the same shall be sent to the Chief Inspector of factories & boiler for their reference & record.

Details of Inspection Procedures & Systems

The inspection of various equipments like pressure vessels, lifting tools and tackles, etc. are being carried out on regular basis through an external agency of repute. The agency also issues certificate for the proper maintained equipments. A copy of the same is available with maintenance department in the mill.

Vital Records & methods to their safeguard

All the vital records of the industry are safeguarded in a room and all the necessary measures like fire fighting arrangement etc. are taken to prevent any danger to the records.

Information to Workers & Public

Safety Awareness among workers

The mill has a full-fledged training room with state-of-the-art training facilities like multimedia projector, a laptop (computer), trained professionals and subject matter experts to train the employees & labourers about the hazards present in the mill. All the employees and labourers are given training about the mill operations and their work that they supposed to do with respect to safety aspects. The safety department has films about safety to show to their workers. The training record of each of the worker is maintained in the personnel department.

Public Awareness and Disclosure of information

The mill does not pose any disaster that may release to environment and affect the people living in the surrounding. But, to avert any eventuality, the mill is planning to educate people living in the vicinity about the hazards that are present in the premises.

Observations & Recommendations

From the Risk Analysis studies conducted, it would be observed that by and large, the risks will be confined within the boundary walls in case of fire & explosion, it will create OFF-site emergency situations and required more attention and emergency preparedness for combat such situations. To minimize the consequential effects of the risk scenarios, following steps are being taken.

- All the pipelines, equipment & machines are color coded as per the BIS standards mentioned to protect from corrosion. Also, there is clear demarcation of safe passage.
- Routes, emergency exits & fire exits, safe assembly points etc. in different sections of the plant.
- The work permit system is started in the mill on experimental basis and with-in-a few weeks are expected to be implemented fully in whole of the plant. For its full implementation, the various training programs are being organized in the mill to train different users from different sections.
- The maintenance departments have maintained the entire breakdown/ periodic maintenance records and the routine maintenance are being carried out strictly as per the schedule. Daily log books are maintained in the respective departments and all the precautions are taken before doing any work to prevent the chances of accident, however minor it is.
- Plant should meet provisions of the manufacture, storage & import of Hazardous
- Chemicals Rules, 2000 & the Factories Act, 1948.
- Emergency siren has been provided in the plant to declare emergency.
- Emergency handling facilities to be maintained in tip top condition at all time.
- Safe operating procedure has been prepared for hazardous process and material handling process.
- Safety devices and control instruments to be calibrated once in a year.
- Periodic on site emergency mock drills and occasional off site emergency mock drills are conducted, so those staffs are trained and are in a state of preparedness to tackle any emergency.
- Safety manual has been prepared and the same is distributed to all employees and nearby public.
- Manual call points for fire location identification to be installed in plant premises.
- Induction safety course to be prepared and trained all new employees before starting duties in plant





7.10 ONSITE EMERGENCY PLAN AND DISASTER MANAGEMENT PLAN

As emergency is said to have risen when operators in the plant are not able to cope with a potential hazardous situation i.e. loss of an incident causes the plant to go beyond its normal operating conditions, thus creating danger. When such an emergency evolves, chain of events which affect the normal working within the factory area and / or which may cause injuries, loss of life, substantial damage to property and environment both inside and around the factory takes place and a DISASTER is said to have occurred. It is necessary for all industries must prepare a Disaster Plan for their respective operations. The various steps involved in the Disaster Management Plan can be summarized as follows:

1. Minimize risk occurrence (Prevention)
2. Rapid Control (emergency response)
3. Effectively rehabilitate damaged areas (Restoration)

Disaster Management Plan is evolved by careful scrutiny and interlinking of

1. Types and causes of disaster
2. Technical know-how
3. Resource availability

DMP is the term used to express, unpredicted accident /burst/failure of system, causing there by injury to a large number of persons in and around the mill. For such eventualities, management plan is prepared as how to tackle disaster and what steps to be taken in case of disaster. This is to ensure that in case of disaster there may not be a chaos and all the steps are taken with cool and composed mind. This will definitely reduce the casualties and ensure proper treatment to the victims. The Disaster Management Plan enumerated in the following pages cover the steps required for handling any type of emergency at Satia Industries Limited, Muktsar. The safety and health policy (under Factories Act, 1948) of Satia Industries Ltd, Muktsar is attached as **Annexure 15**.

Identification of hazard

At the Satia Industries Ltd. the following hazards are envisaged:-

- (i) Bursting of digesters.
- (ii) Fire in the raw material section where agriculture waste, rice husk stored

Table 7-17: Siren Sounding System

S. No.	Type of system	Type of siren sounding
1	Fire	2 minutes continuous siren
2	Pressure vessel failure	1 minutes siren after every 10 seconds break silence
3	All other	After every 5 seconds break silence inhalations

First aid

Move the affected person immediately to an uncontaminated area, remove contaminated clothing and wash contaminated parts of body with plenty of water, call a physician and obtain medical assistance at the earliest.

Failures of pressure vessel

Following preventive measures have been taken to avoid the disaster:-

- Each digester is tested internally and externally after every six months and proper record is maintained.
- Hydraulic testing of each digester is performed annually and proper record is maintained.

- Safety valve is provided in each digester and these are tested periodically and proper record is maintained.
- Extra lid locking arrangement is provided for each digester.
- Each digester is provided with rigid forged lever and release bolt.
- Each digester and its steam line is provided with pressure gauges.
- Lock switch (electrical) is provided in each digester so that only the responsible person can operate the digester.
- A register is maintained to keep the record regarding the checking of lid, lid lock, release bolt etc. before steaming the digester (after closing the lid, lid lock release valve etc. by operator) these are checked by Shift Incharge/Supervisors on duty and essential entries are made in the register specially kept for this purpose only then operator can run the digester.
- Safe operating procedure is displayed at various places on operating floor

Corrosive chemical

Satia Industries Ltd. has caustic lye and hydrochloric acid storage tanks.

1. Cautionary notices are displayed on board.
2. Precautions to be taken are displayed on board.
3. Floor area is smooth and having adequate drainage system.
4. Suitable protective wear for hands and feet, suitable apron, face shield, chemical safety goggles etc. are provided.
5. Tanks and pipe lines are periodically checked and proper record is maintained.
6. Adequate fresh water supply is there in the area.
7. Each tank is equipped with level indicator system.
8. All flanges in pipe lines are wrapped with PVC sheet.

Fire

The hazardous in mill falls into three categories:

- (a) The storage of raw material.
- (b) The paper manufacturing process.
- (c) The finished stock storage.

In the paper manufacturing process moisture content, is retained sufficiently enough not to offer any favourable climate for combustion. However, at the end, paper has 6-7% moisture content and if it catches fire accidentally will burn instantly. The process includes dry or mechanical friction also.

Types of Disaster:

1. Due to Fire and Explosion
2. Due to Vapour Cloud
3. Due to Toxic Gas Release from:
 1. Within the Unit
 2. External Sources
4. Hurricane, Flood, Cyclone and other Natural Calamities

This plan is developed to make best possible use of resources to:

- Reduce possibilities of accident.
- Contain the incident and control it with minimum damage.
- Safeguard others
- Rescue the victims and treat them suitable
- Identify the persons affected/ dead.
- Inform relatives of the casualties.
- Provide authoritative information to the news media.
- Preserve relevant records and equipment needed as evidence incase of any inquiry.
- Rehabilitate the affected areas.





The primary purpose of the on-site emergency plan is to control and contain the incident and so as to prevent from spreading to nearby plant. It is not possible to cover every eventuality in the plan and the successful handling of the emergency will depend on appropriate action and decisions being taken on the spot. Following three staged activities suggested as they are co-related and provide better points for emergency preparedness, emergency action and subsequent follow up.

A) Pre-emergency activity

The following are the details of Pre-emergency plan:

Internal Safety Survey

It is to be conducted by Safety department.

- To identify various hazards in plant area.
- To check protective equipment of workability.
- To check various safety installations.
- To check fire system, fire water pumps, water shower etc.
- To suggest extra modification required.

Third Party Survey

Experts of consultants can conduct Third Party Survey.

- To identify various hazards inside the factory.
- To conduct survey on available safety equipments.
- To check built in safety system for its efficiency.
- To suggest modification/new additions in the system.

Non-Destructive Testing (NDT)

- To prepare a list of equipments/pipe lines for non-destructive testing.
- To prepare a plan for replacements/repairs as per testing reports.
- To maintain plant wise record to compare with the last period

Safety valve Testing

- To prepare a lists in the plant.
- To prepare a periodic schedule for their testing & maintaining record.
- To prepare a plan for replacements/repairs.

Fire Fighting system Testing

- To prepare a list of fire hydrants, fire fighting appliances, fire water pumps and other available appliances and maintain the record.
- To plan for testing schedule.
- To replace defective equipments/accessories.
- To check fire water pumps capacity.
- To check all the fire fighting equipments/appliances under fire services for operability.

Mock drills

- Internal mock drill to be conducted for training the workers.
- Periodic drills to be conducted to check the performance of workers and equipments.
- To know the draw backs/defects of the system and its corrective actions.

Training

- To operate regular training of the employees for handling various safety equipments.
- To train workers for fire emergency.
- To educate workers for different type of emergency.

Personal Protective Equipments (PPE)

- To arrange for sufficient quantity of personal protective equipments.
- To train workers to use each PPE.
- To maintain them in good condition.

Communication

- To maintain internal/external communication system in good working condition.

- To modify the siren sound for emergency.
- To install wind-sacks to indicate wind direction.

Emergency Lights

- To check and maintain the emergency lights in control room and selected areas.
- To keep sufficient number of torches in supervisor's cabin/plant and in each department

Emergency Control Room

- To identify the place of emergency control room.
- To identify the alternative emergency control room.
- To keep sufficient quantity of PPE in control rooms.
- To provide proper telephone system in emergency control room.
- To provide plan of the factory showing hazardous points and emergency control point in emergency control room.

Assembly Points

- To identify the location for assembling the plant emergency staff and co-ordinate in case of emergency.
- To utilize the services of others to fix assembly points for non essential workers and to assemble in case of emergency.
- Considering the kind of disaster & wind direction administrative block & canteen have been marked as assembly points for the workers who are not working during the execution of emergency plan.

Liaison with State Authorities

- To keep liaison with police, fire brigade, factory inspector, collector, local hospital and keep them informed.
- To inform them about the requirement in advance.
- To keep them informed about mock drills.

Following preventive measures have been taken to avoid disaster

1. Storage area is enough and away from important buildings, especially vital production and service buildings to ensure that fire in storage area can be prevented from spreading to the building.
2. Raw material is properly stored in stacks and the sufficient space is provided between two stacks.
3. Temperature of each stack of raw material is checked every week to avoid the possibility of auto combustion and proper record is maintained.
4. Water filled chamber is provided on silencer pipe of each and every vehicle before allowing it to enter in storage area.
5. Smoking is strictly prohibited in mills premises
6. Hydrants are provided at various points in storage yard.
7. Storage yard is within boundary and at a safe distance from the boundary to avoid fire from outside the wall.
8. Entire mill is divided in different zones to avoid spread of fire from one zone to other.
9. Fire fighting equipments (fire extinguishers, water-bucket, sand bucket, hydrant points) are provided at various places in the plant area so that prompt action can be taken at smouldering stage. Blue print showing location of hydrants is attached.
10. Process area is kept neat and clean

B) Emergency Organization

Under these activities, the staffs in the plant at various levels with pre-assigned duties is expected to work in a coordinated manner to meet emergency situation, remove the emergency conditions and bring the plant to normal with the help of resources available within and outside the plant.





Availability and correct use of different means of communication and control is an important time activity.

In case of any accident failure of pressure vessel burst/major fire etc. which may turn into a disaster, concerned operator or assistant operator/watchman on duty will inform to the On-duty shift In charge/Supervisor/Security Officer and after that he shall turn back to control the emergency until and unless Shift In charge comes at the spot. Shift In charge/ Security Officer will inform at one to the Rescue Force Co-ordinator and Department Head and then he shall have full control until Rescue Force Co-ordinator and his crew does not reach at the spot. Department Head shall inform firstly to the Chief Emergency Co-ordinator and then Chief Plant Co-ordinator after that he shall reach at the spot of mishap. He shall access the situation and initiate remedial measures.

Sequence of action in case of various types of emergencies (Fire and Leakage of chemicals):

- Any person noticing fire or explosion or leakage of chemicals from pipeline or other equipment, should attract attention of nearby personnel by using siren available within premises.
- The area is checked clear of people and organize emergency shutdown of the plant/ equipment
- The total quantity of chemical leaked is ascertained and discharge of Air pollutants through stack is stopped
- Other persons in the area should help the injured persons to go out of the place i.e. at open area and immediately arrange for first aid.
- Simultaneously by telephone he should contact the emergency control centre.
- He should inform the Incident controllers and key personnel depending upon the nature of emergency.
- He will also guide the outside agency emergency aid services till the incident controller/ site main controller reaches to the site of Incident.
- As soon as Incident controller/site main controller reaches to the site of incident he will take charge of the situation and guide/advice in tackling the emergency.
- It is necessary to know that everyone on the site should be accounted for and that the relatives of casualties have been informed. As plant is small there is no problem of accounting the personnel. It is necessary to have an up dated list of the names of people at site on holidays and weekly off days.
- If the situation is not likely to be controlled by the available sources incident controller/site main controller will assess the situation and declare the emergency as "OFF SITE EMERGENCY".
- The incident controller/site main controller will continue to do the available resources to control and contain the emergency till the outside authorities and aid services reaches to the incident site.
- After District Authority reaches to the site, it will extend all the necessary help, assistance and give required information/data as when required to control & contain the emergency.

CHIEF EMERGENCY CO-ORDINATORS:-

President (Work)

He shall be responsible for :- (a) Shifting of victims to the hospital if required. (b) Arranging vehicles to bring the persons/experts required to take care of the incident like doctor etc. (c) Get in touch with hospital/nursing homes to get him, prepared to take care of the victims. (d) Contacting other factories. (e) To take help of the police & fire brigade. (f) Inform Govt. Authorities. (g) To inform new Agencies. (h) Liaison with govt. bodies.

Following officers and their staff will assist the Chief Emergency Co-ordinator:-

V.P. (P&A): 1. contacting other factories 2. C.M.O./Nursing Homes 3. Police Station.

SR.G.M. Raw Material 1. Shifting of victims to the hospitals. 2. Arrangement of vehicles

V.P. (Finance): 1. Factory gate

EMERGENCY RESCUE FORCE CO-ORDINATOR:-

Sr. Security officer/security officer/Sr. security supervisor shall be responsible for controlling of disaster shifting of victims from the spot and first aid of victims. Members of team and allocation of duties are as follows:-

Controlling Crew: Operator on duty, shift In charge on duty, Electrician on duty, fitter on duty, trained persons on duty, security guards on duty.

CHIEF PLANT CO-ORDINATOR PRESIDENT (WORKS): He shall be responsible for operation of plant he will take steps to normalizing the mill working after disaster.

COMMUNICATION CO-ORDINATOR V.P. (P&A)

He shall be responsible for communication with the people inside & outside the plant. He shall keep contact with district authorities, fire brigade, media agencies & workers of the plant. He will be assisted with his office-staff, security supervisor & liaison officer. He shall also take roll call of the people in the plant. He will further keep constant touch with Chief Emergency Co-coordinator & apprise him of the situation.

C) Post – Emergency Activities

A post-emergency base activity of steps taken after the emergency is over so as to establish the reasons of the emergency and preventive measures to be taken.

The main steps involve:

- Collection of records
- Conducting inquiries and preventive measures.
- Making Insurance claims
- Inquiry reports and suggestions Implementations

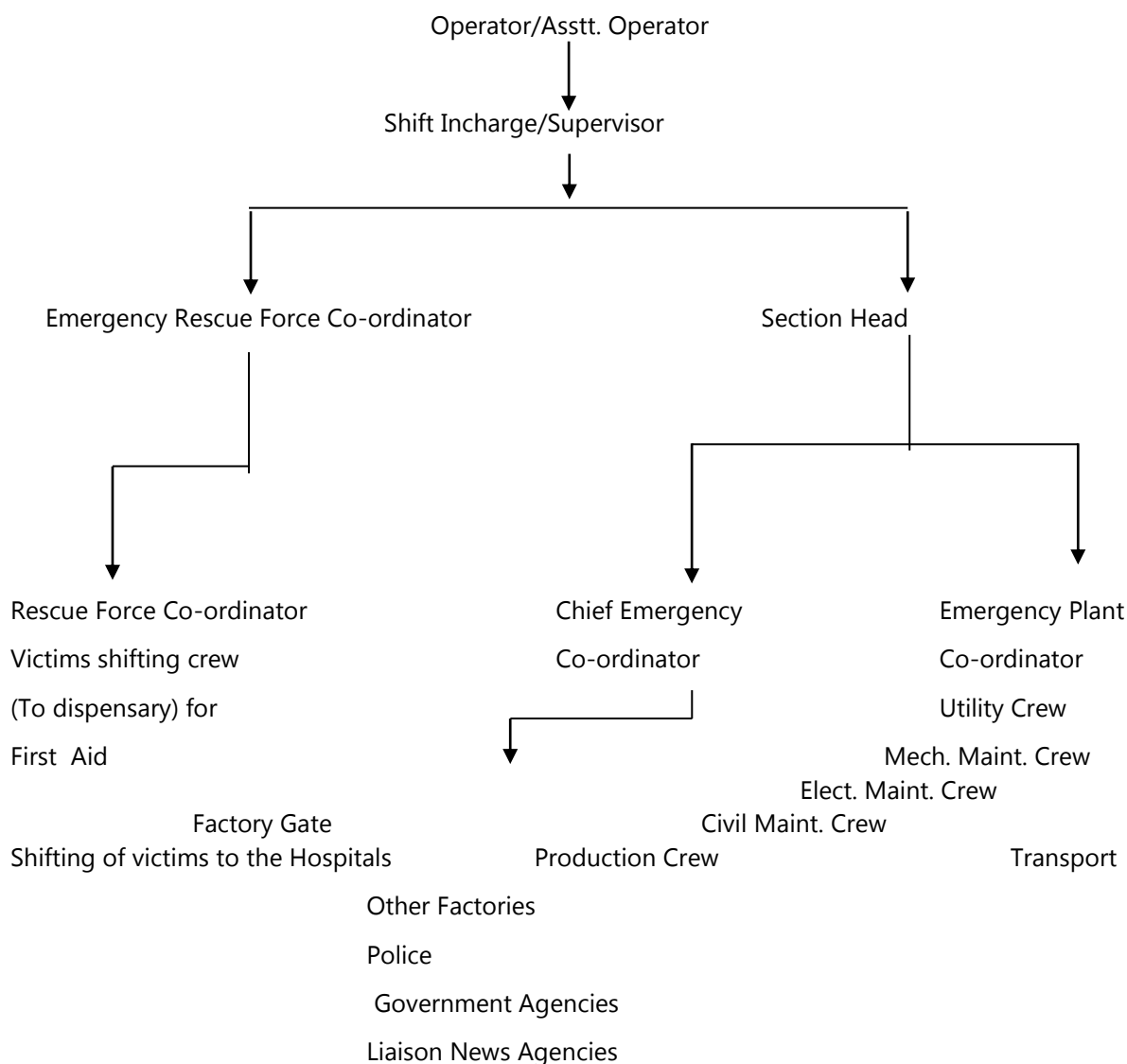
Emergency Preparedness Plan (EPP)

EPP involves the constitution of the emergency committee and its preparedness for any eventuality occurred within and outside of the plant.

The Emergency Plan Organization plan is in flow diagram given below:

(Chlorine Leakage)





7.11 OFFSITE EMERGENCY PLANS

Role of Management

1. Immediately sound district administration giving details of accident and impending risk involved.
2. Sound the fire fighting agencies to be ready for any emergency response.
3. Contact meteorological department to work out the probable course of vapour cloud.
4. Dispatch emergency response vehicle with public address system to warn the public of concerned area advising best escape route.
5. Contact Government transport agencies in case of evacuation are required.
6. Contact public health department giving them details of Antidotes/medicines.
7. Contact local police department and inform them of the disaster and area where effective policing may be required to maintain law and order.
8. Give true story in media so that rumour and confusion could be minimized.

Role of district administration

1. To keep watch on overall situation after the accident.
2. To give direction to nearby hospital of the area, giving them details of accident and activating them to receive casualties. Designated members of the team should reach hospital and organise relief operation.
3. To give direction to metrological department and get the data of wind direction from them, based on this they have to arrive at vapour clouds path and the most likely localities which shall get affected.
4. Direction to transport agencies and organise evacuation if required.
5. Direction to police department and organise proper security arrangements.
6. Direction to media people and give them the right picture so that rumour mongering and confusion could be minimized.
7. Organise dry runs of its emergency response programme so that people are aware of this programme and respond fast to the instructions of his team in an actual disaster.
8. The proper communication systems should exist so that in an actual situation, information flows fast.

Role of police

On receipt of information, Police will organise:

- Maintain law and order situation.
- Stoppage of traffic from both ends of the road (Malout –Muktsar Road) if required depending upon the wind direction.
- Cordoning of the affected areas. Information may be collected from factory gate emergency centre.
- Warning to the people living in the adjacent area for evacuation and safe escape routes if necessary.
- Restricting the entry of unauthorised persons.
- Vigilance in liaison with factory employees against anti-social elements.
- Set up separate communication control point with police head-quarters for reinforcement of required services giving situation report.
- Extending help in removing of injured persons to the nearest first aid Centre/Hospital, completing legal formalities in case of any casualty.
- Rescue operation of people affected in nearby localities

Role of medical service

- To depute doctors and nurses to the factory/affected area with ambulance and provide immediate medical relief to casualties.
 - Transport serious casualties to hospital as deemed necessary.
 - Seek help from nearby Hospitals for the following antidotes, emergency occupational medicines etc. along with the services of expert Doctors
1. Injection dexamethasone.
 2. Injection methanlene.
 3. Injection avil.
 4. Benadril.
 5. Philips milk of magnesia.
 6. Lasagnas (Victims halls, streusels)
 7. Eye Drops.
 8. Nose Drops.
 9. Glucose Ms.





10. Brancodylitors Injection
11. Transfusion Apparatus.
12. Medicated oxygen cylinder

Role of meteorological department

- Convey early notification of impending changes in weather condition to district authority and factory.

Role of Muktsar municipality

- Arranging temporary shelter for affected/evacuated people.
- Arranging drinking water at site.
- Arranging Snacks etc. for combating team/affected people

Role of fire brigade

Chief fire officer along with other employees has to rush to the site and give assistance if required.

Role of transport officer District Transport Officer Muktsar

- Control the traffic movement/divert traffic through alternate route if required.
- Arranging vehicles

The list of important telephone numbers are given in table 7-18

List of vehicles is given as table 7-19. Beside these vehicles, Vehicles from other sources may also be arranged at the time of requirement

Table 7-18: Important Telephone Numbers

S. No.	Name of Officials	Telephone No
1	Hon'ble Dy.Commissioner	263643
2	Sr.Superintendent of Police	263809
3	Dy.Superintendent of Police	263070
4	S.D.M.	262031
	HOSPITALS	
1	Civil Hospital	262175
2	Mission Hospital	262616
3	Adesh Hospital	262164
4	Rural Hospital	262064
5	Police Station City	262049
6	Police Station Sadar	262028
7	National Insurance Co.Ltd.	262679
8	Fire Brigade Muktsar	262101
9	S.D.O (Telephone)	260742

Table 7-19: List of vehicles

S. No.	Vehicle Number	Make
1	PB-30A-2626	JEEP
2	PB-30-D-5804	JEEP
3	CH-01AK-8277	CAR
4	PB-30G-2438	CAR
5	PB-30C-1557	Ambulance

8 PROJECT BENEFITS

The pulp and paper industry is one of the oldest of the core industrial sectors. The socio-economic importance of paper has its own value to the country's development as it is directly related to the industrial and economic growth of the country. Although paper has many uses, its most important contribution to modern civilization is its use as a medium to record information. The pulp and paper industry offers an incredible opportunity to work with other science and engineering professionals in a truly high-tech environment that produces environmentally responsible products. The proposed modernization project at the existing site is well situated and connected by road. These form significant assets to the proposed project at Village Rupana, Muktsar. Further, the project would have lesser stress on environment due to manufacture of paper from agricultural residue which has dual benefit of conservation of wood and other resource apart from solving the disposal problem of agro-residues which indicates sustainable industrial development. Greenbelt development planned by the proponent for the proposed project would also add in to the physical infrastructure by adding aesthetic value in the existing scenario.

8.1 PHYSICAL INFRASTRUCTURE

With the modernization of SIL, there is likelihood of renovation of the existing infrastructure in terms of storage space for raw material, finished products and installation of new equipments.

8.2 SOCIAL INFRASTRUCTURE

Owing to the Primary survey and secondary data, the socio –economic situation portal for 24 villages located in the radial distance of 10 km suggest the following intervention programs are recommended under the corporate social responsibility as under:

1. Since the total sanitation campaign is only 25% of the villages, it is recommended to take it as priority intervention programs.
2. The average work participation rate is only 35.6% and that too largely based on cultivation (70%); followed by labour work (20%) and only 10% for service sector, it is strongly recommended to start National Skill Development program for the resident youth population to provide employment.
3. Since the basic medical facilities is present in only 16.7% of villages, it is strongly recommended to start mobile health van facilities to make avail health facilities to the resident population of these villages.
4. Since only 41% of the villages have natural water facilities and 59% of the villages are having dry status, it recommend to start lift irrigation program as well as recharge ground water to avail the water for both drinking and domestic use for the resident population.
5. Since the Self-help groups are largely witnessed in all the 16.7% of villages, it is recommended to start micro-credit scheme linked with income generation activities for the young population of the villages.

The company since its inception is doing philanthropic work and during the last three financial years, the amount spend in doing philanthropic activities in the nearby villages is around Rs.64.24 lakhs approximately - largely expenditure made on developing school infrastructure, Panchayat infrastructure, eradication of Poverty and hunger, empowerment of women, rural medical camps and relatepreventive activities etc. The amount actually spent on CSR activities in last three fiscal years is given in **Table 8-1**. The proponent is actively involved in assisting for uplifting the society through its contribution in social welfare activities & programs. It directly organizes various



Table 8.1: Amount spent on CSR activities

Financial Year	2% of Average net Profit of last three years	Actual Amount Spent during the respective financial year
2014-15	22.96	7.92
2015-16	19.63	23.45
2016-17	13.72	32.87
Total	56.31	64.24
Note: Photographs of CSR activities are attached as Annexure-24		

Note: Photographs of CSR activities are attached as **Annexure-24**

[illegible]

S. No.	Planned activities under CSR as per specific needs	Budgetary Plan (Rs.)					
		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	Total
3.	Community Welfare activities						
i	Worship places development & beautician	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000
ii	Distribution of seeds & saplings	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	5,00,000
iii	Promotion & support to various Govt. Schemes	2,00,000	2,00,000	2,00,000	2,00,000	2,00,000	10,00,000
Total		6,00,000	6,00,000	6,00,000	6,00,000	6,00,000	30,00,000
4.	Infrastructural Development						
i	Village pond retrieval	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000
ii	R.O instaillation	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000
Total		6,00,000	6,00,000	6,00,000	6,00,000	6,00,000	30,00,000
5.	Community Water Conservation						
i	Rain water harvesting and ground water recharge pits	5,00,000	5,00,000	5,00,000	5,00,000	5,00,000	25,00,000
ii	Water conservation awareness programs	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	5,00,000
Total		6,00,000	6,00,000	6,00,000	6,00,000	6,00,000	30,00,000
6.	Afforestation Programs						
i	Plantation of trees in village road side	5,00,000	5,00,000	5,00,000	5,00,000	5,00,000	25,00,000
ii	Development of nursery	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	5,00,000
Total		6,00,000	6,00,000	6,00,000	6,00,000	6,00,000	30,00,000
7.	Community Capacity Building						
i	Impairing vocational training for technical skills, self-employment training for women as stitching, embroidery, tailoring, handicrafts	2,00,000	3,00,000	4,00,000	5,00,000	6,00,000	20,00,000
Total		2,00,000	3,00,000	4,00,000	5,00,000	6,00,000	20,00,000
Grand Total		45,00,000	47,00,000	51,00,000	53,00,000	54,00,000	2,50,00,000

The total cost of the project is Rs.100 Crore and about 2.5% from the total cost Rs.2.5 crores i.e Rs. 50 Lakhs/annum.have been assigned for doing philanthropic activities in 05 years in Phase for the selective villages.

Village "Kauni" has been adopted as "Model Village" by the company. Various socio-economic activities like health programs, building school infrastructure, furniture etc are being done





by the company. The villages would be different for each year however the management reserve the decisions for repeating the philanthropic services in the same villages owing to the need of the community.

The current expenses are tentative and largely will be replanned owing to the demand and necessity of the community. The budget heads of each activities may vary owing to the demand and also some new activities later would be added under these assigned budget.

8.3 EMPLOYMENT POTENTIAL

The direct & indirect employment potential of the project would be significantly beneficial for the area. Skilled and Semi-skilled employment potential in terms of indirect employment of the area will be non-marginal and will usually remain widespread across a long region. As the proposed modernization project takes place indirect employment is likely to grow further. Overall assessment of the employment and income effects indicates that the project has strong positive direct as well as indirect impact on employment and income generation of the area. Modern paper manufacturing facilities use state-of-the-art automation and intelligent systems that offer a safe and exciting environment for engineers and skilled technicians to apply their expertise and education. The persons from different discipline including Chemical, Mechanical, Electrical, computer, electronics and Environmental engineering find employment opportunities in pulp and paper industry. Satia Industries Limited has been recruiting professional in all the specified fields from all over the country with competitive pay packages. Unemployment for un-skilled workers is quite common in the study area. It is expected that substantial portion of the investment in this project will trickle down to the local people in the form of employment and income.

SKILL DEVELOPMENT PROGRAMME

The socio-economic environment of the study area in the vicinity of the plant due to the SIL operations revealed the following perceptions about the plant. The plant provides opportunity for direct employment for the local populace. Substantial socio-economic benefits, by way of alternative means of livelihood are likely to accrue to the local populace of the area in the transportation sector and other services, like, dhabas, tea stalls etc. providing food and other provisions to the drivers, cleaners and visitors to the plant.

The proposed modernized unit shall generate additional employment opportunities, both direct and indirect. The relevant aspects of the impact on the socio-economic environment shall be positive. The employment multiplier effect will also relate to construction, shopping, recreation, hospital, transport & communication, banking etc., which will impact positively on the socio-economic environment.

Satia Industries Ltd proposes to utilize agro residues as raw material for paper making. It also proposes to utilize Rice Husk as fuel to meet the fuel requirement of the plant. The use of agro waste as raw material and fuel generates considerable rural incomes and considerable enhancement in the rural productivity. Thus, the new unit shall have a very positive impact on the agro based rural economy.

The average work participation rate is only 35.6% and that too largely based on cultivation (70%); followed by labour work (20%) and only 10% for service sector, it is strongly recommended to start "Skill Development program" for the resident youth population to provide employment. The program shall be initiated in collaboration with the nearby technical institutes of repute. Courses will be exclusively run for local people in regard of the skills for the industry in question. The course fee of the participants shall be borne by the company. Only successful applicants who would qualify the minimum prescribed standards shall be given employment in the industry.

Following courses shall be organized under "Skill Development program" as given in **Table 8-3** to enhance the employability of local population.

Table 8.3: List of skill development programmes planned

S. No.	Course Title	Eligibility	Duration	Collaborative Institute
1.	Boiler & Turbine operations	ITI course in Electrical/Mechanical	04 Weeks	Adesh Polytechnic, Muktsar
2.	Handling of hazardous chemicals/wastes like ClO_2	10+2	02 weeks	Adesh Polytechnic, Muktsar
3.	ETP Operations (Performance Evaluation)	10+2	02 Weeks	Thapar University, Patiala
4.	Environmental Monitoring including air/stack gases, water/wastewater etc.	Diploma in Civil/Chemical Engg.	04 weeks	Thapar University, Patiala

8.4 DIRECT REVENUE EARNING TO THE NATIONAL & STATE EXCHEQUER

The Indian Paper Industry accounts for about 1.6% of the world production of paper and paperboard. The estimated turnover of the industry is Rs 25,000 crore approximately and its contribution to the exchequer is around Rs. 2918 crore. The industry provides employment to more than 0.12 million people directly and 0.34 million people indirectly. The mills use a variety of raw material viz. wood, bamboo, recycled fibre, bagasse, wheat straw, sarkanda, etc.; approximately 35% are based on chemical pulp, 44% on recycled fibre and 21% on agro-residues. The geographical spread of the industry as well as market is mainly responsible for regional balance of production and consumption. Over all paper consumption (including newsprint) has now touched 8.86 million tons and per capita consumption is pegged at 8.3 kg. So far, the growth in paper industry has yielded the growth in GDP on an average 6-7 per cent over the last few years. Paper consumption is poised for a big leap forward in synchrony with the economic growth and is estimated to touch 13.95 million tons by 2015-16. The futuristic view is that growth in paper consumption would be in multiples of GDP and hence an increase in consumption by one kg per capita would lead to an increase in demand of 1 million tons. With different taxes including direct and indirect taxes, the pulp & paper industry provides a great return to the national and state exchequer.

8.5 OTHER TANGIBLE BENEFITS

SIL will be an agro-residue based pulp & paper mill so it will reduce the consumption of wood for the manufacture of paper; moreover, it solves the problem of disposal of agro-residues like wheat straw and bagasse which are the main raw materials in SIL. The boilers used for the generation of steam uses rice husk as a fuel rather than using some conventional fuels. In addition, the biogas produced during anaerobic decomposition of wet washing effluent reduced the organic load of effluents and the biogas produced is also used as a fuel in boilers which further reduced the requirement of raw material in boiler.





9 ENVIRONMENTAL COST BENEFIT ANALYSIS

9.1 ENVIRONMENTAL COST BENEFIT ANALYSIS

As per EIA Notification dated 14th September, 2006; as amended from time to time, the Chapter on "Environmental Cost Benefit Analysis" is applicable only, if the same is recommended at the Scoping stage. As per the ToR points issued by MoEF&CC, New Delhi vide letter no. F. No. J-11011/196/2014-IA-II (I) dated June 22, 2016 for the proposed modernization project, the Environmental Cost Benefit Analysis is not required.

10 ENVIRONMENTAL MANAGEMENT PLAN

10.1 INTRODUCTION

Proper execution, operation and maintenance of all pollution control measures and development of enhancement measures are absolutely necessary to ensure that not only environment within but also the outside of SIL area is not affected due to its construction and operation. Here Environmental Management Plan is presented.

Satia Industries Ltd. proposes to modernize the existing Unit No. 2 from waste paper to agro residue based raw material of capacity of 150 TPD by replacing few types of equipment. The paper plant shall utilize agro-waste such as wheat straw & sarkanda and wood/Veneer chips as its raw material whereas, the boilers shall facilitate waste heat recovery and shall mainly utilize agro-waste such as rice husk as its fuel. By utilization of agro-waste as its raw material as well as fuel, the project shall also make a modest contribution towards prevention of deforestation and exhaustion of natural resources. The proposed location of the unit at Muktsar is considered to be suitable for the proposed activities in every respect.

10.2 OBJECTIVE OF EMP

The objectives of EMP are to provide:

- Project management team with evidence of practical and achievable plans to ensure that the project's environmental requirements are complied with.
- An integrated plan of monitoring, assessing and controlling potential impacts.
- Local, State and Commonwealth authorities with a framework to confirm compliance with policies and requirements.
- The community with evidence that the GNP will be managed in an environmentally acceptable manner.

The detailed EMP will be reviewed and periodically updated, if necessary, to reflect knowledge gained during the course of the project's construction and operations. Changes to the detailed EMP will be implemented in consultation with the relevant authorities where necessary.

10.3 ENVIRONMENTAL MANAGEMENT PLAN

10.3.1 Construction Phase

The impact on the environment during the construction phase of the project shall be very small owing to the type of activities. However, the control of pollution during the construction phase is also of considerable importance. Whenever applicable, detailed procedures shall be developed to control of pollution during project execution phase. The following factors require attention during the construction and project implementation stage.

Site Preparation

The clearance of site will involve the movement of small quantity of soil and debris and produces some unstable material. The levelling operations will also involve the stock piling of backfill materials. All the disturbed slopes shall be stabilized before the onset of monsoon. During dry





weather conditions it is necessary to control the dust created by the excavation, levelling and transportation activities by sprinkling of water to the extent feasible.

Sanitation

The site shall be provided with sufficient and suitable temporary toilet facilities to allow proper standards of hygiene for construction workers. These facilities shall be well designed and maintained to ensure minimum environmental impact.

Water Supply

Adequate drinking water supply shall be provided for the onsite workers.

Construction Noise

Construction noise is usually due to equipment used for fabrication, erection, clearing of land, site preparation, etc. Maximum noise levels near the construction area shall be 75 dB(A) in industrial areas and 65 dB(A) in other areas, as per the norms of CPCB.

Following methods are proposed for the control construction noise:-

1. Acoustic barriers near the construction site.
2. Materials need to be stock-piled and unused equipment to be placed between noisy equipment and other areas.
3. Construction of temporary earth bunds using soil, etc.
4. The noise control measures shall be applied at appropriate steps, the most effective being control at the source.

Construction Equipment and Waste

The gasoline and diesel powered construction vehicles should be properly maintained to minimize smoke in the exhaust emissions. The vehicle maintenance area shall be located in a manner so as to prevent contamination of ground water by accidental spillage of oil. Unauthorized dumping of waste oil shall be prohibited. Combustible waste shall be burnt in a controlled manner. Other wastes shall be disposed off in an approved dump created for the purpose. Particular care shall be taken to ensure that the spent liquid waste arising from chemical cleaning operations is suitably neutralized before disposing off the same.

Site Security:

The site shall be secured by fencing and manned entry points.

10.3.2 Operation Phase

Land Environment

As the soil in the surrounding area is of moderate to high permeability, it is essential that any kind of spillage, accidental or intentional, should be prevented on these areas. The factory management shall provide suitable storage tanks to minimize these spillages.

Air pollution

The status of ambient air quality shall be closely monitored to assess the change, if any, due to implementation of the new project and also the influence of other industries that may come up in the area in the future, which otherwise may be overviewed by regulatory agencies.

The air pollutants are gases and particles emerging out of combustion of rice husk in boilers and burning of Black Liquor in recovery boiler. To meet steam requirement, Satia Industries Limited has 45 TPH, 75 TPH and Proposed 75 TPH power boilers for steam generation (**Table 10-1**). The chemical recovery boiler utilizes the black liquor as fuel, while, the other two run on rice husk. 75 TPH power boiler & 50 TPH recovery boiler are equipped with three field hammer type Electrostatic Precipitators (ESP's) for SPM control & 45 TPH power boiler is equipped with wet scrubber, multi cyclone separator

Table 10-1: Characteristics of stacks of various boilers

S. No.	Stack Details	45 TPH Boiler	50 TPH Recovery Boiler	75 TPH Power Boiler	75 TPH Proposed for modernization
1	M.O.C.	R.C.C.	R.C.C.	R.C.C.	R.C.C.
2	Internal diameter				
	Top	2.8 m	2.5 m.	2.8 m	2.8 m
	Bottom	2.8 m	5.5 m	2.8 m	2.8 m
3	Height (m) from ground level	65 m	65 m	65 m	65 m
4	Fuel Consumption	Rice Husk 250 TPD	Black Liquor 400TPD	Rice Husk 359 TPD	Rice Husk 359 TPD

Industry has already installed ESP with the recovery boiler and power boiler for the control of particulates from the flue gases. With the proposed 75 TPH Boiler, industry plans to install ESP in order to achieve the prescribed norms of emissions from the stack i.e. 150 mg/Nm³.

Details of ESP

Electrostatic dust precipitation is the most economical and widely applied method for de dusting and demisting of gases. An Electrostatic Precipitator (ESP) is a device that removes dust particles from a flowing gas using a force of an induced electrostatic attraction (i.e like charges repel, unlike charges attract).

Working of ESP

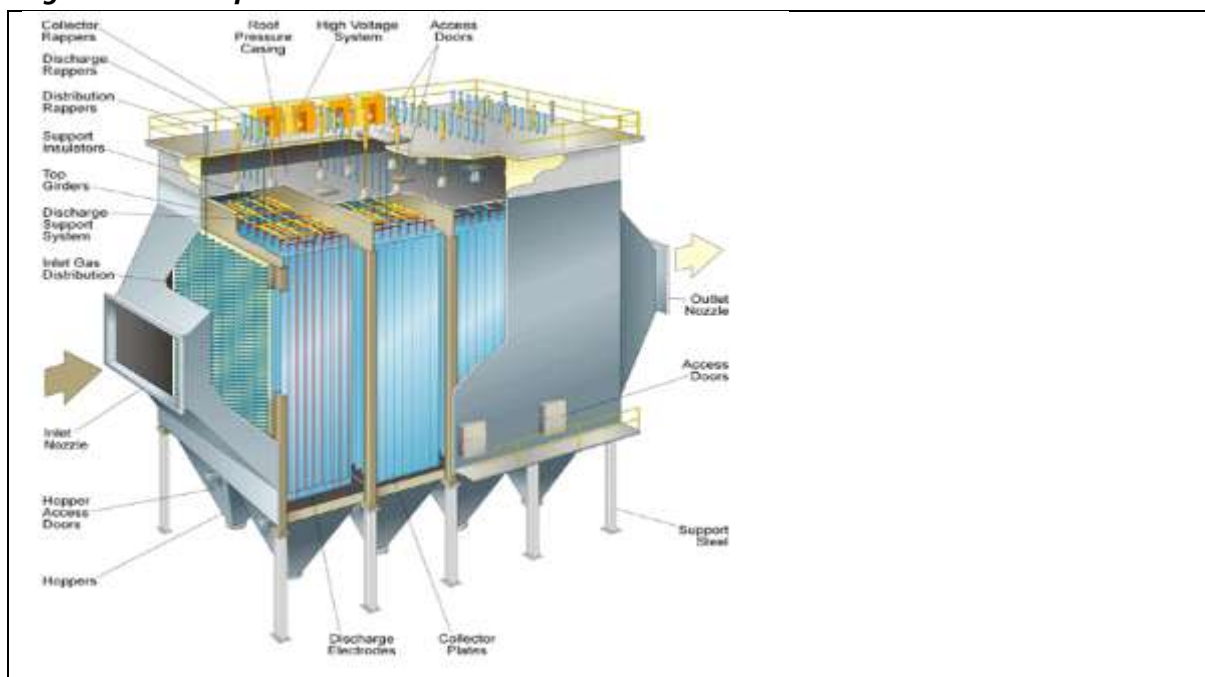
The ESP is divided into two or more fields, which will operate independently from each other. The specially contoured plate collecting electrodes arranged parallel to the gas stream shall be suspended by top supports from the suspension beam. The lower ends of the electrodes shall be held in rapping bars. Discharge electrodes held in frames will be located between the rows of collecting electrodes. The discharge system of each field shall be supported on solid HT porcelain insulators located at ESP top. The flue gases after economizer will be channeled through ducts to the precipitator and evenly distributed over the whole section by means of distribution baffles. The negative high tension produced by the HT sets shall be applied to the discharge electrodes. At the tips of these electrodes, a corona effect will be produced due to the high voltage. This corona effect shall separate the gas molecules negative and positive ions. Now the negatively charged particles will be attracted by positively charged collecting electrodes. The discharge system and the collecting electrodes shall be periodically cleaned by means of rapping devices. The dust falling down into the hoppers will be extracted by the dust conveying system.

Components in ESP are Electrodes, high voltage transformer, rectifier, Insulators and Hopp. All are mentioned in **Figure 10-1**.





Figure 10-1: Components in ESP



Lawns and greenery will be maintained in open spaces and water sprinkling shall be done on roads within plant to suppress dust. Proposed green belt shall also help in attenuating air pollution.

The flue gases discharged from the stacks shall be emitting SO₂, NO_x, CO and SPM. Portholes and sampling facilities have been provided for all stacks as per Central Pollution Control Board's guidelines. The status of ambient air quality shall be monitored regularly, at least at 3 sampling locations out of which one in the critical down wind direction. Stack flue gas analysis is carried out (3-4 times in a month's) to check the emission levels and adopt corrective measures, if required.

Schedule proposed to ensure clean air environment is given in **Table 10-2**.

Table 10-2: Proposed Air Quality Monitoring Schedule

S. No.	Activity	Frequency
1.	Monitoring of boiler and Incinerator emissions for Temperature, Velocity, Flow rate, SPM, SO ₂ , NO _x & HC	Twice a month
2.	Ambient air monitoring within SIL premises along the periphery at three locations for SPM, SO ₂ & NO _x	Once in three months excluding monsoon period
3.	Ambient air monitoring within 2 km radius of SIL at three locations for SPM, SO ₂ & NO _x	Once in three months excluding monsoon period
4.	Sprinkling of water on unpaved portion and cleaning of service roads.	Once in two days except monsoon period.

Water Pollution

Water pollution would be caused by the operation of SIL. A well conceived and designed Effluent Treatment Plant for treating mill effluents generated from SIL already exists. The black liquor will be incinerated in the recovery furnace after evaporation for Soda recovery.

Description of Mill Effluent Treatment Plant (ETP)

Bio Gas Plant –

The effluent from the raw material washing is passed through hill screens to remove the light weight raw material particles through it. These are collected and sent back to the process for cooking. The clear effluent then is fed to equalization tank, where the pH & alkalinity is maintained by adding lime into it.

The effluent then is passed to the primary clarifier where the settled sludge is scrapped and pumped into Mark Saveall for thickening. The clean effluent is collected in buffer tank meant to provide residence time prior to parallel feeding in two numbers of the anaerobic reactors.

Nutrients in the form of Urea & DAP are fed in a certain ratio of BOD:N:P (100:2.5:0.5). The volume of each reactor is 3500 m³, sufficient for anaerobic reactions to produce the methane gas, which will be used in the boiler. The methane gas is collected on top of the reactor with the help of 3-fold hood, provided to catch even minor gas generation. The gas is collected in a gas holder and blowed to the boiler for energy recovery.

The effluent is separated from the gas and is taken into two nos. of tube settlers. This helps in removing the excess anaerobic sludge from the effluent and the collected sludge is recycled back into the anaerobic reactors.

The clarified effluent from here is mixed with the untreated effluent from the other streams of the mill. The sludge generated from primary clarifier and excess sludge from secondary clarifiers is dewatered by sludge press. The sludge is disposed off.

Effluent Treatment Plant

Effluent from Bio Gas Plant, Bleaching section of pulp mill and other minor streams are mixed equalization tank to fed in the primary clarifier. The solids are allowed to settle down in the primary clarifier and the clear water is passed to aeration tank no. 1.

The effluent is provided with urea & DAP along with recirculated MLSS from the intermediate clarifier to maintain the levels of MLSS in aeration tank no. 1. The aeration tank is equipped with 1395 nos. of 300 mm dia disc diffusers and Turbo Blower of 8400 m³/h capacity for maintaining dissolved oxygen level in the tank.

The effluent from A.T.#1 is then pumped into the two nos. of intermediate clarifier for removing the MLSS from it which is pumped back into aeration tank no.1. The clear effluent from intermediate clarifier is passed for second stage of aeration in Aeration Tank No. 2. The aeration tank is equipped with 1395 nos. of 500 mm tubular diffusers and Turbo Blower of 4200 m³/h capacity for maintaining dissolved oxygen level in the tank.

The MLSS is maintained in this tank additionally to reduce the pollutant level at its minimum. The MLSS is recovered in the final secondary clarifier and re-circulated back in both the aeration tanks. Excess MLSS of both clarifier under flow is removed through the Decanter and used as Manure in our own plantation

The final effluent is discharged into the plantation area where eucalyptus plantation is developed. Whole effluent is consumed into the plantation area making the mill virtually zero-effluent discharge industry.

The existing ETP is capable to handle the effluent generated after modernization the production capacity to 150 MTD. The treated effluent volume shall be kept below 15000 m³/day by taking steps to reduce water consumption.





Existing Effluent Treatment Plant (ETP) for 300 TPD Paper Productions:

The existing ETP set up is capable of handling the effluent generated after modernization of the plant. The existing aerobic effluent treatment plant (in which the total mills effluent is treated) consists of two stage diffused aeration system with Turbo blowers. Industry proposes to install pure oxygen injection system of activated sludge process to treat the effluent within permissible limits. Details of each unit of ETP are given in **Table 10-3**.

Table 10-3: Equipments with dimensions and volume

Unit	Dimensions	Volume (m ³)
Clarifier (Anaerobic Plant)	20 m (dia.), 3.50 m (SWD)	1099
UASB Reactor two number	23.6 m (dia.), 7.8 m (SWD)	3500
Buffer Tank	28 m x 3.0 m	1846
Equalization Tank	8 m x 8 m x 3.5 m	224
Secondary Clarifier	26 m (Dia.), 3.5 m (SWD)	1857
Primary Clarifier	30 m (dia), 3.8 m (SWD)	2685
Aeration Tank-1	67.4 m x 46.2 m x 5 m	15570
Aeration Tank-2	59.5 m x 42.8 m x 4.35 m	11078
Intermediate Clarifier No.1	18 m (dia), 3.86 m (SWD)	982
Intermediate Clarifier No.2	18 m (dia), 3.89 m (SWD)	990
Final Clarifier	28.7 m (dia), 3.5 m (SWD)	2263

Discharge of Effluent

The estimated discharge after modernization of Unit no. 2 shall be 5715 m³/day and total discharge from both units will be approximately 14635 m³/day, which will be discharged for irrigation in eucalyptus plantation maintained by the company in an area of 450 acres approx. and crop fields by nearby farmers. The expected characteristics of combined and final treated effluents are given in **Table 10-4**.

Table 10-4: Characteristics of Raw Effluent and Effluent after Treatment

Parameter	Combined Influent	Effluent after Treatment
Flow (m ³ /day)	14635	14635
pH	7.2-7.6	6.5-8.5
Suspended solids (mg/l)	2000-2500	<50
BOD (mg/l)	<550	<30
COD (mg/l)	<1300	<250

Contingency plan for disposal of wastewater in monsoon season

The Company has built the plant in the area of 36.019 acres of land, besides developing green belt by planting eucalyptus trees in an area of approx. 450 Acres (on lease) at village Rupana, which is situated at around 6 KMs from Muktsar City. No additional land will be procured for proposed modernization.

The precipitation in the area occurs mainly due to south west monsoon. The normal annual rainfall of the Muktsar district is 430.7 mm in 22 days. The south western monsoon sets in the last week of June and withdrawn towards the end of September and contributes about 79% of the total rainfall. Remaining 21% occurs during non monsoon period in the form of thunderstorm and western disturbances. The climate of the district is characterized by the subtropical, semi arid and hot which is mainly dry except in rainy season. Winter season starts from late November and remains up to middle of March. It is followed by hot summer which continues to the end of June. Table 1 shows the monthly rainfall recorded in Muktsar district from 2000-2011. From this table it is

found that the maximum rainfall occurs in the month of June, July and August and very small percentage of total rainfall occurs during other periods.

Table 1: Monthly rainfall recorded in Muktsar district from 2000-2011

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
January	18.0	NIL	NIL	6.3	25.0	31.5	13.4	NIL	11.0	13.2	1.0	NIL
February	10.0	NIL	NIL	78.5	6.0	89.5	NIL	69.5	14.0	52.0	8.0	24.8
March	8.0	3.0	NIL	11.0	NIL	80.5	37.2	48.6	NIL	4.3	NIL	0.8
April	NIL	21.0	NIL	NIL	3.0	12.9	NIL	NIL	22.0	9.1	1.0	7.5
May	NIL	58.0	31.5	7.0	49.1	9.6	35.0	1.2	34.0	2.0	NIL	38.3
June	NIL	82.0	30.2	33.0	113.3	85.9	96.6	66.8	137.0	6.5	46.0	64.0
July	141	67.0	79.5	62.0	12.0	198.0	83.6	75.0	7.0	88.3	113.0	31.0
August	28.0	59.0	1.2	78.0	23.0	16.0	33.3	145.4	165.0	61.2	68.0	117.6
September	36.0	30.0	43.7	23.0	5.0	68.2	91.0	22.0	17.0	50.0	45.0	191.2
October	NIL	13.0	NIL	NIL	3.0	NIL	6.1	NIL	4.0	NIL	NIL	NIL
November	NIL	NIL	NIL	NIL	NIL	NIL	34.0	NIL	NIL	NIL	NIL	
December	21.0	NIL	10.3	NIL	NIL	NIL	6.6	14.5	NIL	NIL	4.0	
Total Rainfall	262	333	196.4	298.8	239.4	592.1	436.8	443.0	411	286.6	286.0	475.2

According to CGWB data, the ground water table lies 2-5 m below the ground level in Muktsar district and hydraulic conductivity of soil was computed to be 34.78m/day. As per CGWB report, the climate of the district is sub- tropical steppe, semi arid and hot which is mainly dry and the rainfall is unevenly distributed.

With the proposed modernization/expansion the water required shall be 16,500 m³/day approximately. The estimated waste water discharge after modernization will be approximately 14,635 m³/day. The treated waste water will be used for irrigation of plantation maintained by the company in an area of approximately 450 Acres.

The amount of the effluents to be disposed off depends upon the age, type of plants, climatic conditions, soil texture and quality of effluents. The total discharge of effluent is so regulated that it is consumed within 12-18 hours and there is no standing water left in the trenches. Though most of the plants are suitable for utilizing the effluents, yet, those tree species which are fast growing can transpire high amounts of water and are able to with stand high moisture content in the root environment are most suitable for such purposes. Eucalyptus is one such species, which has the capacity to transpire large amounts of water, and remains active through out the year. Other species suitable for this purpose are poplar and leucaena. Out of these three species, eucalyptus seems to be the best choice as poplar remains dormant in winter and thus cannot bio-drain effluent during winter months.

The depth of the water level was approximately 5 m below the ground level at the time of construction of the tube well. The industry has 450 acres area of Eucalyptus plantation around the periphery of the plant. The coefficient of permeability of the soil in the plantation area was found to be 4.55×10^{-4} cm/sec. Hence, approx. 7,00,000 m³/day of discharge can be absorbed in 450 acres of plantation area without considering any evaporation and transpiration losses.

Eucalyptus has been planted in the plantation area and as per the Karnal Technology (Central soil research Institute, Karnal), it is possible to dispose of 120 m³/Day /Acre. So in order to dispose of 14635 m³/day, approx. 125 acres of plantation area is required and the industry has developed plantation in the area of 450 acres, which is more than sufficient area available to dispose of the total effluent generated from the industry. Moreover, considering the normal annual rainfall of the Muktsar district as 430.7 mm in 22 days (As per CGWB Report of 2013), total discharge of rainwater along with wastewater in monsoon season on the plantation area will be 14635 + 1490 =





approx. 16125 m³/day, which can easily be absorbed in the plantation area. As per past record, water logging in the plantation area was never experienced.

So, it can be concluded that the plantation area of 450 acres is more than sufficient to absorb the total effluent (14635 m³/day) generated by the industry after modernization. As a contingent measure, the industry is already having 450 acres of plantation area which is more than three times in order to compensate the discharge of wastewater in rainy seasons.

Assessment of adequacy of ETP after proposed expansion

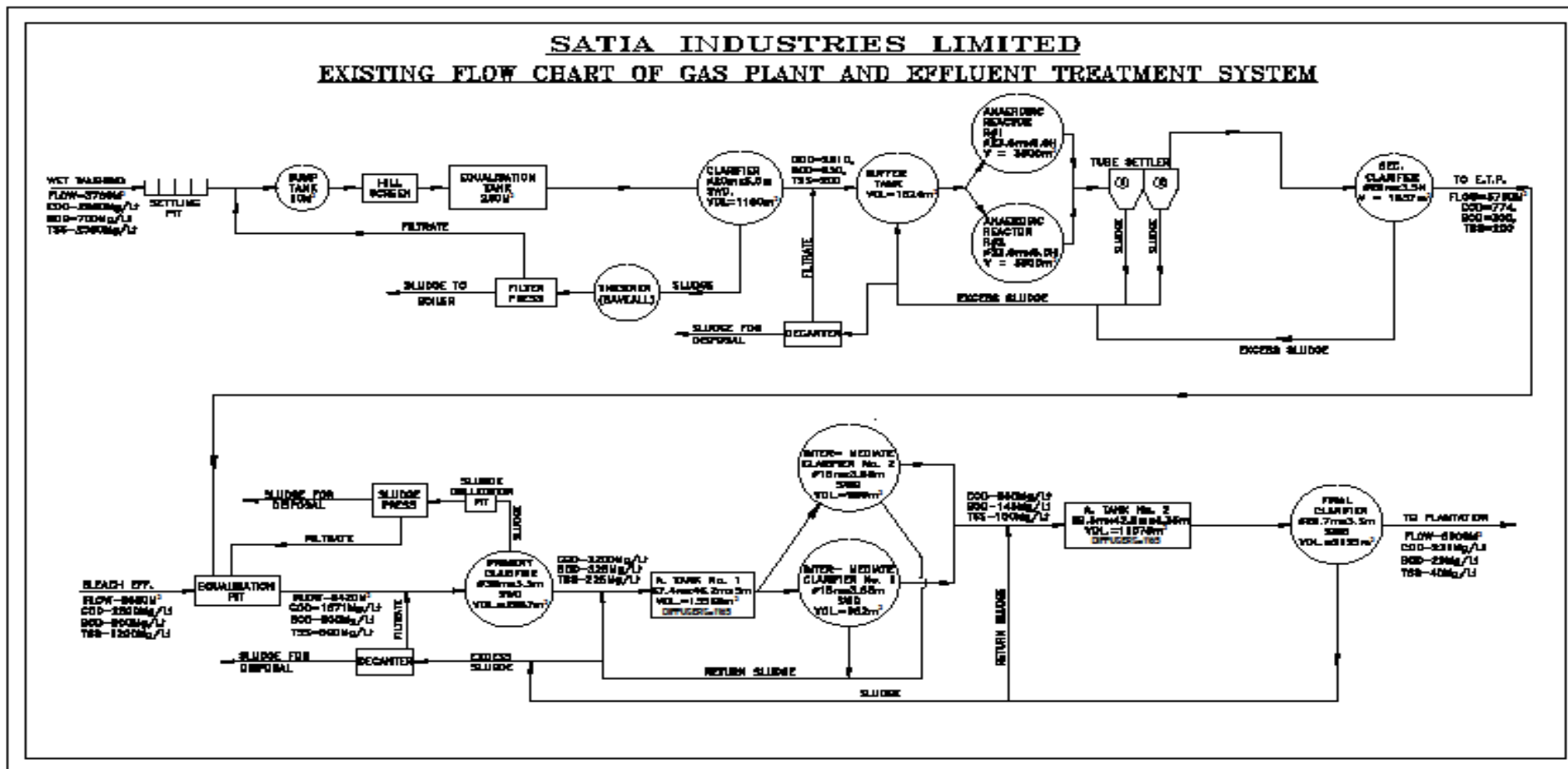
The existing ETP is capable to handle the increased load of effluent (14635 m³/day) generated after modernization since the designed capacity of existing ETP is to treat 14635 m³/day of effluent. However, few modifications will be done in the ETP to increase the overall efficiency of the ETP.

Modifications proposed in ETP plant include:

- Conventional aeration in aeration tanks in ETP will be replaced with diffused aeration by introduction of air-blowers with disc and tubular diffusers in both the aeration tanks.
- Addition of pure oxygen injection through turboxile blowers in aeration tank for better COD/BOD reduction efficiencies.
- Increasing the operational efficiencies of sludge press in both ETP and gas plant by introducing vacuum washers instead of belt press
- Introduction of Decanters for excess MLSS removal from system and the same sludge will be used in our own plantation as Manure
- Machinery up-gradation like pumps, air blowers, pipelines, valves etc. to handle the increased hydraulic load.
- Installation of 3 no. of hill screens in gas plant to remove the unwanted / floated fiber particles from the incoming effluent.
- Super sand filters to be introduced to treat gas plant secondary effluent to reduce TSS load and subsequently, it will lead to COD reduction

Stage wise Pollutants load and its reduction is given in flow chart shown as **Figure 10-2** & **Figure 10-3** showing status of existing and proposed ETP, respectively.

Figure 10-2: Existing stage wise Pollutants load and its reduction in ETP



Description of Soda Recovery Plant

The company has already set up chemical recovery unit to treat black liquor generated during wheat straw pulping and wood chips pulping. The unit is running successfully from the year 2014. This chemical recovery plant is presently under-utilized as only 200 Tons / day solids are available from the existing pulp production against the designed capacity of 400Tons solids / day.

Keeping in view the availability of agro residue raw material in this area, the industry has planned to convert Unit No.2 from waste paper to agro residue based plant by utilizing the existing 200 tons/day of agro residue based pulp mill, and 100 tons /day wood Pulp Mill and chemical recovery plant (400 Tons / day) to their full capacity.

The brief description of existing CRP is given below. The plant is divided into three sections:

- Multiple Effect Evaporator (To concentrate weak black liquor)
- Chemical recovery boiler
- Causticizing Plant

1. Multiple Effect Evaporators (MEE)

MEE is capable to handle 3600 M3/day of weak black liquor that will be generated from Unit No. 1 and upgraded Unit No. 2. Evaporation is done in falling films plate type multiple effect evaporators in two parallel (7 Effects). The low pressure steam (3-3.5 kg/cm²) is used from turbine exhaust as heating media in 1st effect. Weak black liquor is fed in 7th effect. Black liquor and vapors flow in the counter current manner. The liquor produced is called semi-concentrated black liquor and collected in separate tanks. Vapor from last body (7th effect) is condensed in a surface condenser, where 650 mm HG of vacuum is created with the help of vacuum pump. After up gradation, approx. 2955 m³ vapors will be converted to foul condensate which will be re-circulated for unbleached pulp washing. Fresh condensate of live steam will be used in Boiler house for steam generation. Evaporator plant is capable to concentrate weak black liquor from 14% solids to 62% solids at evaporation rate of 125 TPH and steam economy of 5.8. 645 M.T of concentrated Black Liquor will be stored in HBL tank.

2. Recovery Boiler

After up-gradation, approx.645 ton (245 ton Moisture and 400 ton solids) of HBL will be fired in boiler where the Organics of black liquor will be ignited as gases and the inorganic settle at the bottom of the boiler and passes out of the boiler, as smelt. The smelt will be dissolved in weak white liquor called green liquor. The organics, which are burnt, generate heat and the heat will be used to generate high pressure steam, which will run turbine to produce power.

3. Causticizing Plant

The Green liquor (Approx 23-25 % as Sodium carbonate) generated from Chemical recovery boiler will contain mostly Sodium Carbonate. In Caustic zing plant the Green liquor is treated with Calcium Hydroxide solution. The plant contains 4 numbers of clarifiers to allow the reaction to change the Sodium Carbonate to Sodium Hydroxide and Calcium Hydroxide to Calcium Carbonate. The Calcium Carbonate comes as waste that will be used for land filling and other purposes. The white liquor (Sodium hydroxide) generated @100 ton /day will be used for wheat straw raw material cooking.

Settling area is designed to handle the 100 TPD production of white liquor from green liquor generated from 400 tons solids fired in boiler. The flow sheet of chemical recovery plant is attached as **Map 10-1**.



Table 10-5: Proposed Water Quality Monitoring Schedule for ETP

S. No.	Parameter	Location	Frequency
1.	pH	Inlet & Outlet of ETP	Continuous
2.	Oil & Grease	Inlet & Outlet of ETP	Once a week
3.	S.S.	Inlet & Outlet of ETP	Everyday
4.	BOD	Inlet & Outlet of ETP	Everyday
5.	COD	Inlet & Outlet of ETP	Everyday
6.	MLSS	Aeration Tank	Everyday
7.	D.O.	Aeration Tank	Continuous Monitoring

Table 10-6: Frequency of Cleaning of Rain Water Pipes

S. No.	Activity	Frequency
1.	Checking that roof top is clear of any unwanted material	Once every fortnight during non monsoon season and everyday during monsoon period
2.	Checking and keeping entry to drain pipes free of blockages	Same as above
3.	Brooming of roof top and removing leaves, waste paper etc.	Once a week during non monsoon season and everyday during monsoon period
4.	Keeping storm water drains clean	Once in a month during non monsoon season and everyday during monsoon period
5.	Cleaning of silt bed provided before ground water injection	Once every week during monsoon period and once in two months during non monsoon period

Hazardous waste

Category 32.3: Solid wastes require efficient collection and disposal techniques. The sludge generated from primary clarifier is dewatered by sludge press. The filtrate (having approximately 75% moisture) is sold to cardboard manufacturers. Land filling for ash from boilers has been proposed for solid wastes SIL is having authorization for collection, storage and disposal of hazardous waste from Punjab Pollution control Board. After modernization/ up-gradation, the disposal mode of solid and hazardous waste Category No 32.3 will continue to remain the same.

Storage, Utilization and disposal of wastes

The sludge generated from primary clarifier and excess sludge from both secondary clarifiers is dewatered by sludge press. The filtrate (having approximately 75% moisture) is sold to cardboard manufacturers. The quantity and characteristics of solid wastes generated from the plant and their disposal arrangement shall be as follows: The ETP sludge is collected on RCC platform and lifted by nearby small-scale cardboard manufacturers for making cardboards. The boiler ash and lime sludge generated from causticizing plant is collected directly in the trolleys and shifted for filling of the low lying areas. SIL is having authorization for collection, storage and disposal of hazardous waste from Punjab Pollution control Board.

ETP sludge Cat 32.3: taken by Bansal Paper Board Mill, Mahabhadar

Boiler Ash: sent to low lying areas for land filling

Lime sludge: sent to low lying areas for land filling

MoU for disposal of these wastes is attached as **Annexure 17**.

10.3.3 Odour Control Plan

Odour can be defined as the "perception of smell" or scientific terms as "a sensation resulting from the reception of stimulus by the olfactory sensory system". Whether pleasant or unpleasant, odors





are induced by inhaling air-borne volatile organics or inorganic. An odour is the most complex of all the air pollution problems.

The chemicals used or manufactured at SIL do not release any disagreeable odor. However if any spillage or leakage of chemicals takes place then following material handling procedures will be followed to reduce the ODOUR and release of chemical vapors in atmosphere.

The main sources of odor would be the vents of reactors which are passed through a well-condensate system & then through designed water scrubber before releasing to air. The scrubbed water containing the contaminants is treated in the ETP. The following are the main odour emitting sources:-

- Vapour Releases from reactors.
- Fugitive odours escaping from unloading / loading of raw material and finished goods respectively.
- Fugitive odours escaping during opening of Centrifuge and driers.
- Minor releases in the ETP operations.

Detail odour management plan is formulated which include odour control during the normal operation, facility of odor control, precautions during the loading and transfer of chemicals.

Spill control measures

The accidental spill of chemicals is handled in a systematic manner to reduce the odor.

- The area where the chemical spillage can take place is covered with appropriate adsorbent material like soda ash, saw dust or even earth using all necessary PPE.
- Contaminated area is then cleaned with soap and water and the water used is transferred to ETP.
- Masking agents (e.g. PIION, ECOPEARL) spray is then used to reduce the impact of lingering odors

10.3.4 Noise Pollution

Noise is generated during operation of turbo generator, and due to movement of vehicles. Proper acoustic enclosures are provided for D.G. Sets. Trees and shrubs would also act as barriers and sinks for noise. Good sound absorbing and fire resistant insulation is provided for walls and panels in the work area to protect the indoors of SIL from noise of movement of vehicles. Proper mitigation measures shall be implemented to control the noise to keep it within the prescribed norms. The industry has proposed 74500 m² area for green belt around the periphery of the plant. This will help in reducing the adverse effect of noise pollution in general. Use of PPE like ear plugs and ear muffs shall be made compulsory near the high noise generating machines. Moreover, the personnel shall be provided breaks in their working hours, with the continuous exposure not exceeding three (3) hours. Monitoring schedule proposed for noise is given in **Table 10-7**.

Table 10-7: Proposed Noise Quality Monitoring Schedule

S. No.	Activity	Frequency
1.	Noise monitoring in work area during working hours and during night	Once in a month
2.	Noise monitoring in parking area and at three locations along the SIL boundary	Once in a month

10.3.5 Greenbelt Development Plan

Green belt development is one of the important components of Environmental Management Plan. Green belt development shall have the following objectives:

- Effective absorption of fugitive-emissions including odour;
- Noise pollution control;
- Improvement in aesthetics;
- Optimum use of unused land.

Green belt development plan for a particular site depends upon; nature and extent of pollution load, assimilative capacity of the ecosystem, climatic conditions, soil conditions and water quality.

The industry has developed 74500 m² area for green belt around the periphery of the plant. Depending upon the topo-climatological conditions and regional ecological status, selection of appropriate plant species is very important for development of green belt. Fast growing pollution resistant evergreen species with dense canopy having large leaf area index shall be chosen for green belt development. The details of existing green belt and layout plan showing green belt are given in given **Map 2-3** Page no. **22** of **Chapter-2**.

10.3.6 Rainwater Harvesting System

Roof top rain water harvesting has been proposed to collect all the rain water falling on the roof. Suitable drainage and collection system will be provided for the same. The collected rain water after passing through desilting chambers shall be injected into the ground. The details of calculations of Rain Water Harvesting, layout of drainage and Scheme for reuse of rainwater in the premises of plant are given below:

Following are the main advantages of artificial recharging the groundwater aquifers.

1. No large storage structures needed to store the water. Structures required are small and cost effective.
2. Enhance the dependable yield of wells and hand pumps.
3. Negligible losses as compared to losses in surface storages.
4. Improved water quality due to dilution of harmful chemical/salt.
5. No adverse effects like inundation of large surface areas and loss of crops.
6. No displacement of local population.
7. Reduction in cost of energy for lifting water especially where rise in groundwater level is substantial.
8. Utilizes the surplus surface runoff which otherwise drains off.

The major problem in respect of groundwater is the overall decline in the water level. Declining of water level will aggravate with installation of the more number of tube well. Based on the lithologs provided, the area comprises of clays interrelated with beds of fine medium and coarse sand (**Table 2-8**). The sand formations are highly permeable and can contain the sufficient quantity of ground water. However, to augment the ground water resources, the roof top rain water harvesting will be carried out to recharge the ground water in the factory premises.

The rain water from roofs will be taken down through vertical stakes to borehole at ground level. Bore holes will inter connect and finally taken to harvesting well. A de silting chamber will be provided to de silt and remove floating material through bar screen. The over flow will lead to chamber having filter media of coarse sand 1.5 to 2 mm, gravel 5-10 mm and boulder 5-20 mm with minimum 300 mm thick each layer. One deep base up to sub soil water table will be drilled and 160 mm PVC 3 mm perforated pipe will be installed upto sub soil water table with P-gravel around the





pipe. The solid pipe will be provided between filtering media and ground level to clean in case of blockage through air compressor. The rain water will be harvested for ground water recharge.

To augment the ground water resources, Satia Industries Ltd. proposes to harvest the roof top rain water and recharge the ground water in the factory premises. The rain water from roofs will be taken down through vertical stakes to borehole at ground level. Bore holes will inter connect and finally taken to harvesting well. Designing of rainwater harvesting structure is under progress.

10.3.7 Rainfall

The maximum annual rainfall of the Muktsar which is near to study area is 198 mm in July 2005. About 80-85% of annual rainfall occurs during the monsoon months. It is assumed that 80% of the total rainfall can be harvested. Here 25 mm/hr of rainfall intensity is adopted for rainwater harvesting structures in this area. Normal monthly rainfall recorded at Muktsar from 2000-2011 is shown in **Table 10-8**.

Table 10-8: Monthly rainfall recorded at Muktsar in 2000-2011

Month/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
January	18.0	NIL	NIL	6.3	25.0	31.5	13.4	NIL	11.0	13.2	1.0	NIL
February	10.0	NIL	NIL	78.5	6.0	89.5	NIL	69.5	14.0	52.0	8.0	24.8
March	8.0	3.0	NIL	11.0	NIL	80.5	37.2	48.6	NIL	4.3	NIL	0.8
April	NIL	21.0	NIL	NIL	3.0	12.9	NIL	NIL	22.0	9.1	1.0	7.5
May	NIL	58.0	31.5	7.0	49.1	9.6	35.0	1.2	34.0	2.0	NIL	38.3
June	NIL	82.0	30.2	33.0	113.3	85.9	96.6	66.8	137.0	6.5	46.0	64.0
July	141	67.0	79.5	62.0	12.0	198.0	83.6	75.0	7.0	88.3	113.0	31.0
August	28.0	59.0	1.2	78.0	23.0	16.0	33.3	145.4	165.0	61.2	68.0	117.6
September	36.0	30.0	43.7	23.0	5.0	68.2	91.0	22.0	17.0	50.0	45.0	191.2
October	NIL	13.0	NIL	NIL	3.0	NIL	6.1	NIL	4.0	NIL	NIL	NIL
November	NIL	NIL	NIL	NIL	NIL	NIL	34.0	NIL	NIL	NIL	NIL	
December	21.0	NIL	10.3	NIL	NIL	NIL	6.6	14.5	NIL	NIL	4.0	
Total Rainfall	262	333	196.4	298.8	239.4	592.1	436.8	443.0	411	286.6	286.0	475.2

Harvesting of Rainfall

The factory is spread in an area of 36.019 acres, housing the factory, associated buildings, lawns and open areas. To make the buildings rainwater harvesting adaptable requires the fixing of gutters to the edges of roof all around to collect and transport the rainwater from the roof to storage tank as shown in **Figure 10-4**. Gutters are channels made of either plain galvanized iron sheets or cut PVC pipes. These channels are fixed to the roof ends to divert the rain water into the storage tank. Down pipe will carry the rainwater from gutter to the storage tank. Down pipe is joined with the gutter at one end where as the other end is connected to the filter unit of the storage tank. PVC or GI pipe is used for down pipe. Channelizing and conveying the harvested water to the recharge structures will have to be according the ground condition also.

Figure 10-4: Semicircular gutter

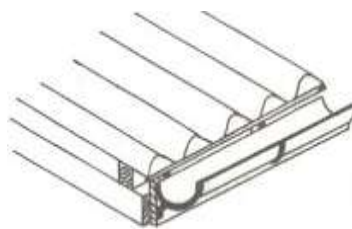


Table 10-9: Section 1

S. No.	Building name	Roof Size (m)	Roof area (m ²)
1	Waste Paper shed PM-1 & 2	25 × 10	250
2	Paper Machine – 2	95 × 15	1425.0
3	Shed in front of PM-2	20 × 15	300
4	Electrical workshop & MCC	15 × 6 (2 Nos.)	180
5	PCC & HT room	22.8 × 6	136.80
6	MCC & compressor room PM-2	20 × 10	200
7	Vacuum pump shed PM-2	20 × 5.5	110
Total roof area			2601.8 m²

Table 10-10: Section 2

S. No.	Building name	Roof Size in (m)	Roof area (m ²)
1	Finishing house storage shed	15 × 12	180
2	Finishing house PM-2	15 × 15	225
3	Mechanical workshop	21.5 × 9.5	204.25
4	Mechanical workshop shed	21.5 × 7	150.5
5	Store keeper room	5 × 8	40
6	Store godown-2 and store office	64 × 10.7	684.8
7	Store godown-1	42.5 × 9.5	403.75
8	New administrative block	42.78 × 17.22 (1.5 No)	1105.01
9	Car parking	29 × 5	145
10	Raw material office	11 × 9 (1.5 no)	148.5
Total roof area			3286.81 m²

Table 10-11: Section 3

S. No.	Building name	Roof Size in (m)	Roof area in (m ²)
1	Paper Machine-1	85 × 13.5	1147.5
2	Transformer Shed PM-1	22.8 × 5	114.0
3	Old laboratory	10 × 5 (2 No)	100.0
4	Vacuum Pump shed PM-1	15 × 5	75.0
5	Laboratory-1	15 × 10	150.0
6	Director Tech office	10 × 5	50.0
7	Finishing house PM-1	35 × 13.5	472.5
8	Excise Godown	30 × 25	750.0
Total roof area			2859 m²

Table 10-12: Section 4

S. No.	Building Name	Roof Size (m)	Roof area (m ²)
1	Stock Preparation PM-1 & 2	38 × 31 (2 nos.)	2356.0





In the present proposal rainwater harvesting only from roof top is considered, since the runoff generated through the ground surface and the lawns is not considered fit for ground water recharge. The ground surface is littered with the dust particle from the raw material storage yard, boiler ash etc. The movement of trucks and other machinery in the yard and the connecting roads inside the factory premise may collect contaminants and if recharged may contaminate the ground water. Keeping this constraint in mind, harvesting the runoff generated from the open land is not at this stage considered.

The present proposal is considered for the roof top areas of the existing buildings. At this stage only part of the roof top areas of the existing buildings as mentioned in section 1, 2, 3 and 4 are considered. The present proposal considers 2601.8 m² of roof top area for first part, 3286.81 m² of roof top area for second part, 2859 m² of roof top area for third part and 2356 m² for fourth part for rainwater harvesting.

Enclosure tank:

A watertight tank either of masonry or concrete is used. The sides and floors are coated with waterproof material.

For Section 1: Length of the tank for filtration is 5.25 m, width of the tank is 3.5 m (

Table 10-9).

For Section 2: Length of the tank for filtration is 6.8 m, width of the tank is 4.5 m (**Table 10-10**).

For Section 3: Length of the tank for filtration is 6.3 m, width of the tank is 4.2 m (**Table 10-11**).

For Section 4: Length of the tank for filtration is 5.8 m, width of the tank is 3.8 m (**Table 10-12**).

Under-drainage system

In this case it is suggested to use perforated pipe system of underdrainage system. In a perforated pipe system, a number of lateral drains are attached to a central drain or manifold as shown in **Figure 10-5** & **Figure 10-6**. The drains are made of cast iron.

For section 1:

In this case it is suggested to use 3.7 cm diameter of laterals at a spacing of 15 cm c/c. They are also provided with holes at the bottom in such a way that holes are at 300 with vertical. The holes are 13 mm in diameter. No of perforations in each lateral is 4. Total no of laterals in either side of the manifold is 70. Concrete blocks of 40 to 50 mm thick are placed on the floor of the filter for supporting lateral drains. In this case diameter of the manifold is 45 cm.

For Section 2:

In this case it is suggested to use 4.1 cm diameter of laterals at a spacing of 15 cm c/c. They are also provided with holes at the bottom in such a way that holes are at 300 with vertical. The holes are 13 mm in diameter. No of perforations in each lateral is 5. Total no of laterals in either side of the manifold is 92. Concrete blocks of 40 to 50 mm thick are placed on the floor of the filter for supporting lateral drains. In this case diameter of the manifold is 60 cm.

For Section 3:

In this case it is suggested to use 4.1 cm diameter of laterals at a spacing of 15 cm c/c. They are also provided with holes at the bottom in such a way that holes are at 300 with vertical. The holes are 13 mm in diameter. No of perforations in each lateral is 5. Total no of laterals in either side of the

manifold is 84. Concrete blocks of 40 to 50 mm thick are placed on the floor of the filter for supporting lateral drains. In this case diameter of the manifold is 52 cm.

For Section 4:

In this case it is suggested to use 4.1 cm diameter of laterals at a spacing of 15 cm c/c. They are also provided with holes at the bottom in such a way that holes are at 300 with vertical. The holes are 13 mm in diameter. No of perforations in each lateral is 5. Total no of laterals in either side of the manifold is 78. Concrete blocks of 40 to 50 mm thick are placed on the floor of the filter for supporting lateral drains. In this case diameter of the manifold is 48 cm.

Figure 10-5: Plan (Not to scale) of the under drainage system

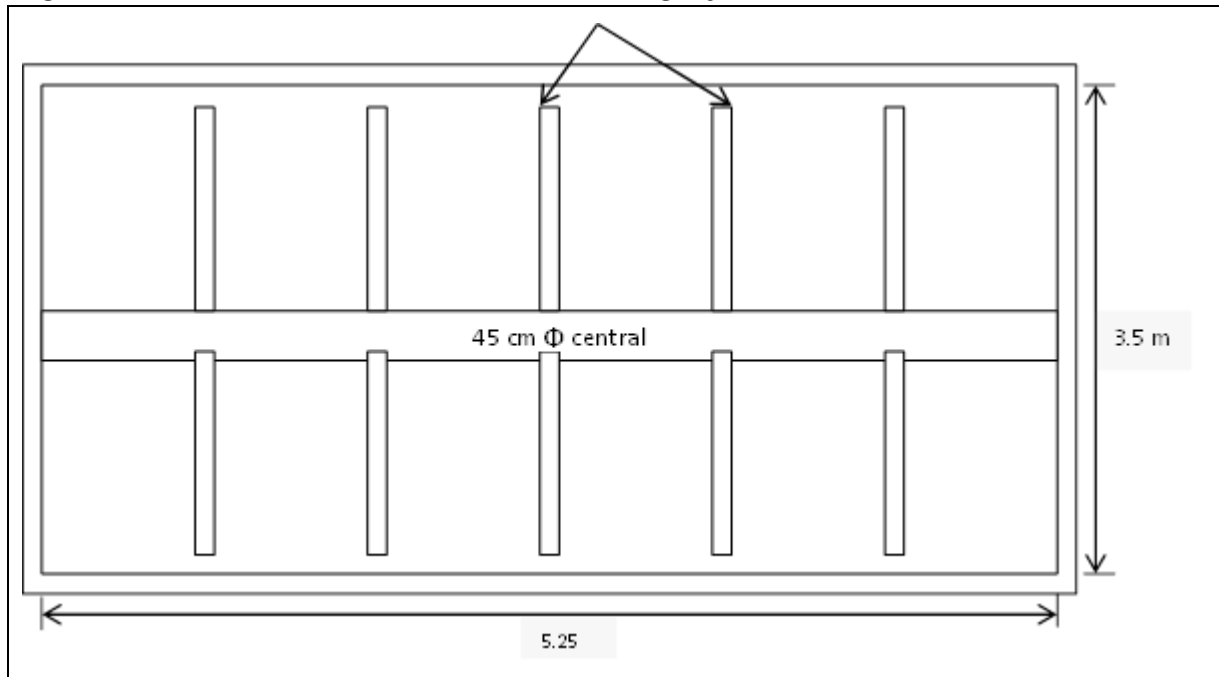


Figure 10-6: Cross section (Not to scale) of the under drainage system

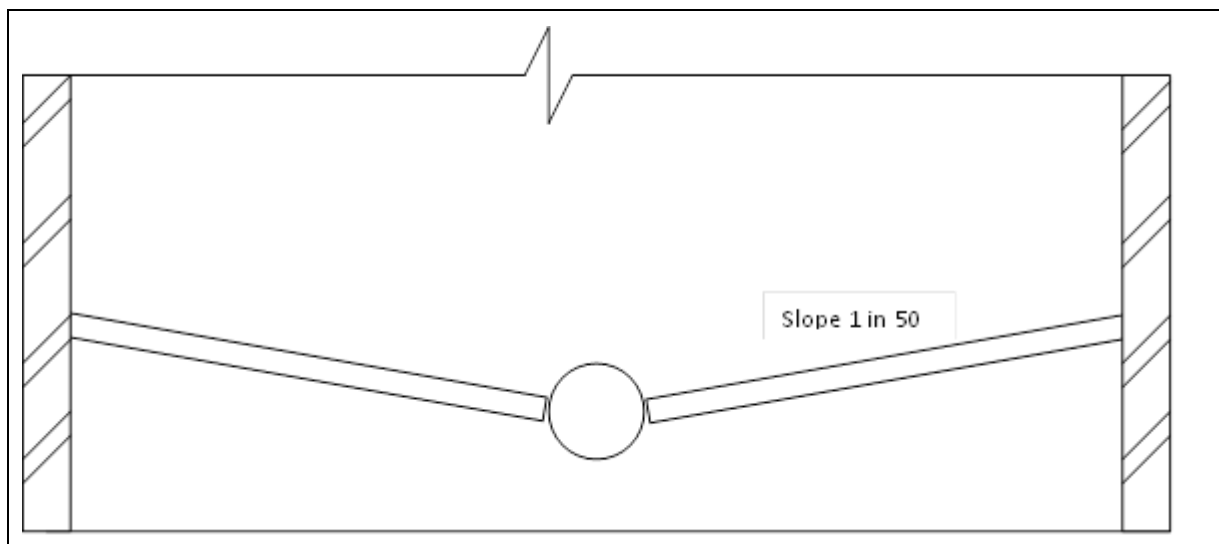
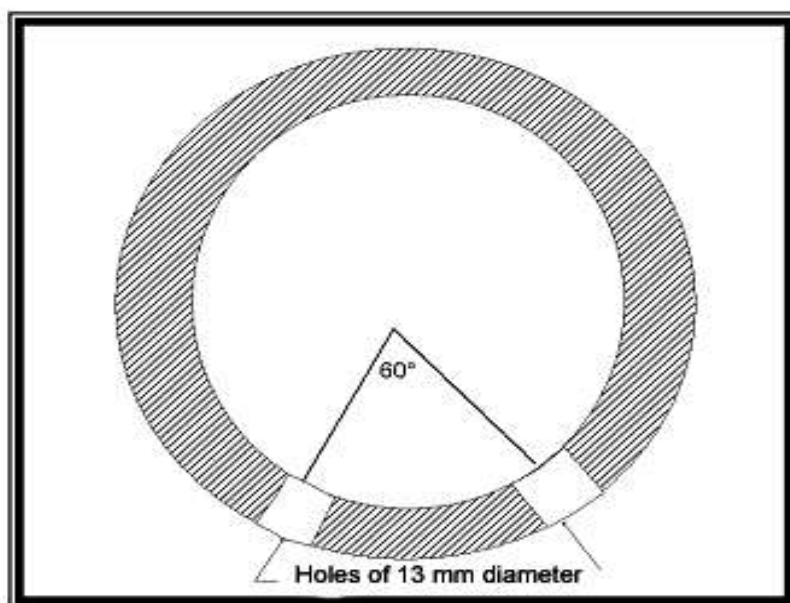




Figure 10-7: Plan of a perforated lateral drain



Base material:

Gravel is used as the base material, which is placed on the top of the underdrainage system. The gravel being used should be clean and free from clay, dust, silt and organic matter and should be durable, hard, round and strong. In this case the thickness of the 40 mm size gravel is 60 cm and 3 mm size gravel is 45 cm. The size of gravel increases from top to bottom, i.e. 3 mm size gravel is placed above the 40 mm size gravel.

Filter media sand:

A layer of coarse sand is placed above the 3 mm size gravel. The effective size of sand used is 0.75 mm and its uniformity coefficient lies in between 1.4 and 1.7 ensuring increased rate of filtration. In this case the thickness of sand layer is 30 cm.

Appurtenances:

The following special device is to be provided in case of the rapid sand filters.

i) Air compressor:

The agitation of sand grain during the washing of the filters can be achieved by compressed air. So an air compressor having the capacity of supplying the compressed air at the rate of 0.6 to 0.8 m³/min per square meter of the filter area for 5 minutes should be installed.

ii) Wash water troughs:

The water used for washing the filters is collected in wash water troughs which are placed above the sand bed level. The trough may be of cast iron, concrete, steel or wrought iron.

For Section 1:

In this case the troughs are placed at a distance of 1.75 m apart and the total number of troughs to be used is 3. Depth of the trough is 35 cm including 5 cm freeboard. i.e 3 no of wash water troughs of size 35×20 cm may be used.

For Section 2:

In this case the troughs are placed at a distance of 1.7 m apart and the total number of troughs to be used is 4. Depth of the trough is 40 cm including 5 cm freeboard. i.e 4 no of wash water troughs of size 40×20 cm may be used.

For Section 3:

In this case the troughs are placed at a distance of 1.57 m apart and the total number of troughs to be used is 4. Depth of the trough is 37 cm including 5 cm freeboard. i.e 4 no of wash water troughs of size 37×20 cm may be used.

For Section 4:

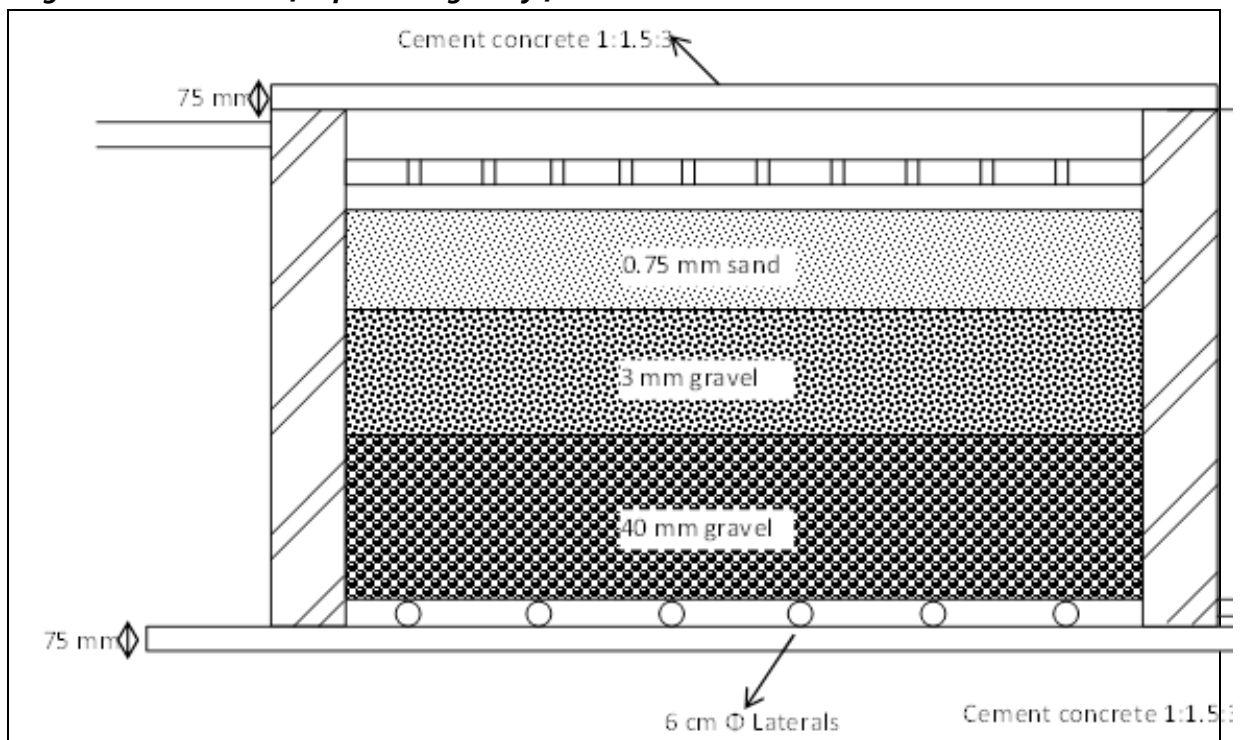
In this case the troughs are placed at a distance of 1.57 m apart and the total number of troughs to be used is 4. Depth of the trough is 37 cm including 5 cm freeboard. i.e 4 no of wash water troughs of size 37×20 cm may be used.

iii) Rate control devices:

There are various devices to control the rate of flow of water which may be fitted at the outlet of the filter such as dug well. But in this study it is found that the groundwater level is 5-6 m below ground level. During the rainy season water logging takes place in this area. So it is not advisable to allow the harvested water to recharge the ground water through dug well. Instead of recharging, the harvested water can be collected in a tank and will be used for industry. A water reservoir of 2500 m³ already exists in the industry. So this reservoir will be used for collection of harvested water.

Figure 10-8 shows details of a typical rapid sand gravity filter.

Figure 10-8: Details of rapid sand gravity filter





10.4 ECOLOGICAL PROTECTION & CONSERVATION PLAN

SIL has taken vigorous efforts for attaining continual development for maintaining environmental quality and optimum utilization of natural resources. For natural resources conservation, efficient & green technology is given top priority. Some of the natural resources conservation schemes already adopted and implemented are given herewith:

1. Burning of rice husk in boiler to save the coal.
2. Burning of black liquor in fluidized bed Chemical Recovery Boiler.
3. Water conservation per tonne of product.

10.5 OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

First Aid Centre exists with qualified doctors having full-fledged facility for the benefit of employees. The free of cost medical facility is provided to all employees at Company First Aid Centre and Ambulance is also attached with it to take care during any emergency. Annual medical check up of employees, organizing health related programmes of various diseases are being conducted at regular interval.

10.6 CLEANER PRODUCTION

SIL is introducing Oxygen delignification and Chlorine dioxide bleaching to eliminate elemental chlorine bleaching. The purpose of introducing Elemental Chlorine Free Bleaching (ECF Bleaching) in the process is to reduce pollution load as well as AOX level.

Water Conservation steps in the existing plant:

To reduce the fresh water consumption in the mill, following steps were taken already during the commissioning stage of the mill:

1. The generated back water from paper machine is re-circulated to washing showers of screen & decker in pulp mill.
2. The foul condensate generated from evaporation of black liquor is utilized for washing of unbleached pulp at brown stock washer no. 4
3. Counter-current washing on Brown Stock Washers (BSW) of pulp mill
4. The black liquor generated from BSW – Ist stage is being used to dilute caustic soda lye for use in cooking of raw material in pulp mill.
5. The machine back water is pumped into save-all for fiber recovery and the clear backwater is recirculated in pulp mill.
6. The condensate from paper machine is recirculated back to the boiler for steam generation.
7. Utilization of treated wastewater from final outlet of ETP for plantation maintained by the company & floor as well as equipment cleaning.
8. The generated black liquor is used in soda recovery plant for recovery of caustic soda.

Water Conservation steps proposed after modification/ up-gradation of plant:

1. The generated back water from paper machine shall be used in washing showers of bleaching plant washers.
2. The foul condensate generated from evaporation of black liquor shall be utilized for washing of unbleached pulp at BSW No. 4.
3. Chlorine dioxide, alkali extraction & Peroxide stage generated filtrate shall be used for dilution in same stage before washing.
4. Utilization of black liquor from brown stock washing to soda recovery plant.

5. The machine back water will be pumped into save-all for fiber recovery and clear back water will be used for washing of pulp in bleaching plant.
6. The condensate from paper machine will be recirculated back to the boiler for steam generation.
7. Utilization of a portion of treated wastewater from ETP in ETP itself in place of fresh water.

The water conservation has been an ongoing effort at SIL over a period of time. A number of water conservation schemes have been adopted to save water both at the process level as well as the use of paper machine effluent through reclamation and recycling. As a result of these efforts, SIL has achieved water consumption per ton of paper below the laid down norms.

10.7 CORPORATE ENVIRONMENT POLICY

Satia Industries Limited (SIL) is committed to fulfilling its obligation to environment along with sustainable growth (**Annexure 19**). Using agro-based raw material and adopting eco-friendly techniques, the company is doing its best to reduce the load on environment and maximize the use of agro waste which was otherwise burnt in the fields raw to its potential. Following policies are adopted by the industry as passed by the Board of the company.

- Comply with all applicable environmental regulations and norms and report refusal of consent/NOC or any other infringement of law to the Board
- Train all of our staff on our environmental program and empower them to contribute and control the emissions/discharge as per norms.
- Adopt technology and process improvement to reduce waste and then reuse or recycle to the best possible extent.
- Conserve natural resources by responsive, efficient and sustainable use.
- Improve resource efficiency (including our use of water, energy and raw materials).
- Assess the environmental impact of any new processes or products we intend to introduce in advance.
- Encourage environmental responsibility from suppliers and contractors.
- Communicate and involve all employees and other interested parties for effective implementation of the policies.
- Regularly appraise, review, report and rectify environmental performance and set targets to achieve continuous improvement.
- Plant maximum level of trees and other plants to keep the environment clean and green

10.7.1 Standard operating procedure and Hierarchy

Standard operating procedure have been made for controlling pollution mainly in Water pollution, Air pollution, Solid waste generation/reuse and disposal, Hazardous waste handling and disposal.

Different sets of operating parameters have been fixed at different stages starting from the point of origin to the point of final discharge for on land irrigation both for quantity and quality of the water and daily reported and any deviation is immediately taken up at the level of its origin for necessary correction and the same is upgraded to higher level in the hierarchy till it is corrected.

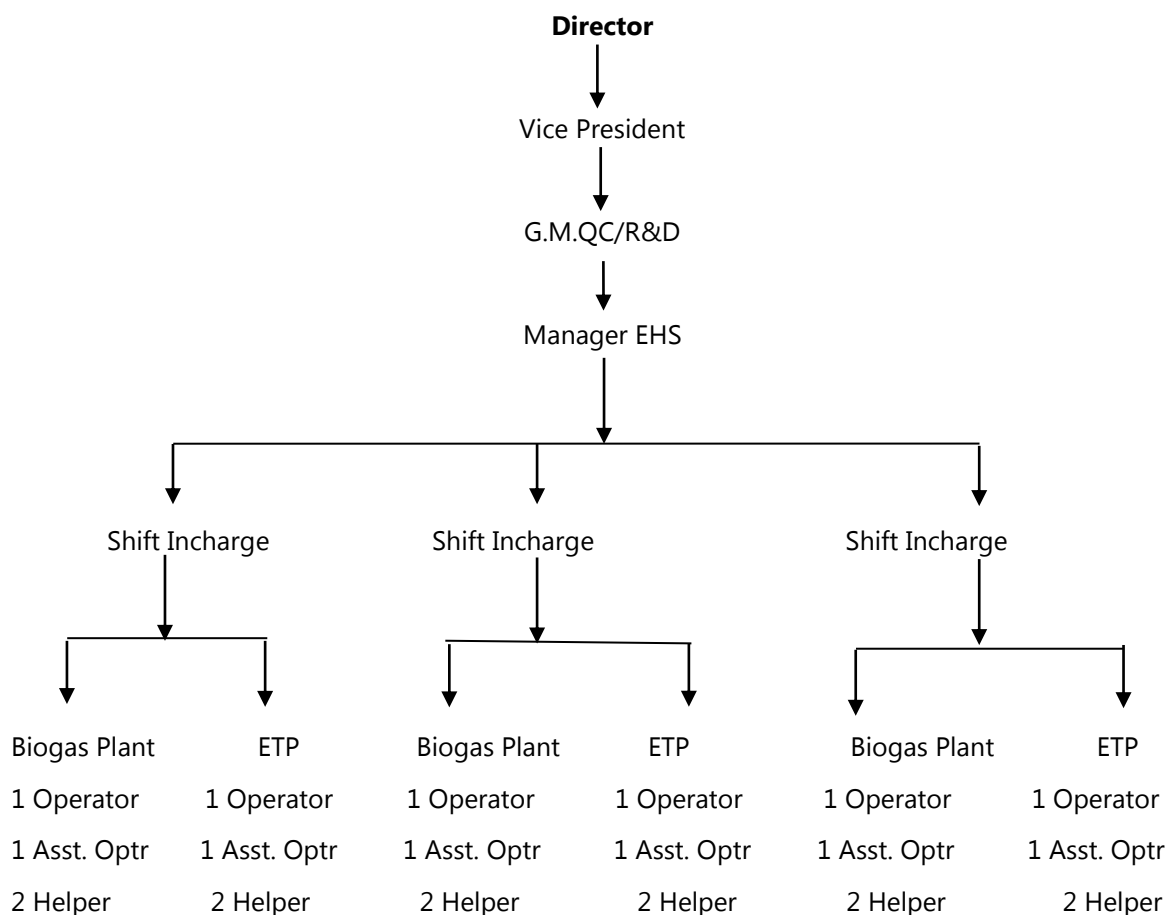
The same is possible with the well-equipped laboratory available at SIL premises and team to operate the plant & test both influent & effluent water in ETP to meet the discharge standards as per guidelines of Pollution control board.

Non-compliance is reported by operator to Shift In-charge which is further brought to the notice of Manger (EHS), who makes it agenda point in board meeting.

10.7.2 Hierarchy

The hierarchy for implementing the environment policies of the company are given in the following organization chart





Note: Apart from above, sufficient manpower is also available for rest and leave relievers from below shift incharge level to operate the plant regularly to meet the discharge standard parameters of air and water.

10.8 BUDGETARY ALLOCATION FOR ENVIRONMENT PROTECTION

The total investment of Rs.100.00 Crores is proposed for the up gradation/modernization of the existing unit, out of which Rs. 15.00 Crores will be spent on the Pollution control systems with E.S.P., 12.5 MW Turbine, and pure oxygen injection system (**Table 10-13**). Recurring cost will be approx. Rs. 10 Crores.

Table 10-13: Budgetary allocation of proposed project

S.No.	Item	Capital Cost (Rs in Lakhs)	Recurring Cost (Rs in Lakhs/annum)
1.	New Pulp Mill	3000	300
2	Steam Boiler (with ESP)	3000	300
3	Turbine and D.M Plant	3000	300
4	Pure oxygen Injection system in Aeration tank	500	50
5.	Miscellaneous	500	50
	TOTAL	10000	1000

11 SUMMARY AND CONCLUSION

Satia Industries Ltd. (unit-2) located at Malout Road, V.P.O. Rupana, Distt. Mukatsar, Punjab. Proposed project is modernization of existing 150 TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant and installation of captive co-gen power plant of 12.5 MW.

Agro residue based paper manufacturing plant falls under the category no. 5(i), Category "A" i.e. pulp and paper manufacturing as per the provision of the SO 1533, EIA notification-2006. Also installation of 12.5 MW Captive Power Plant (CPP) based on rice husk and biogas as fuel shall be done within existing plant premises. General condition ("Power plants up to 15MW, based on biomass and using auxiliary fuel such as coal / lignite / petroleum products up to 15% are exempt") is apply to proposed CPP project, thus EC will not be application under the category no. 1(d).

M/s Satia Industries Limited (Unit No. 2) submitted the FORM-1 along with Pre-Feasibility Report online to the Ministry of Environment, Forests & Climate Change on 01.12.2015 for grant of prior environmental clearance for proposed modernization of its existing unit with 150 TPD capacity of writing and printing paper from waste paper to agro residue based raw materials and 12.5 MW Co-Gen Power Plant at V.P.O. Rupana, Distt. Muktsar, Punjab. Accordingly the case was considered by the Expert Appraisal Committee-1 in its meeting held on 28-30th Dec, 2015 for the appraisal of TORs.

The MoEF issued the TOR's vide letter F. No. J-11011/196/2014-IA-II (I) dated Jan 29, 2016 and amended TOR on June 22, 2016 for modernization of 150 TPD writing and printing paper from waste paper to agro residue based and 12.5 MW Co-Gen power plant.

In accordance with the Terms of Reference issued by the Ministry of Environment Forests & Climate Change, New Delhi, EIA study was carried out as per mandate of CPCB/MoEF and Draft EIA Report has been prepared and is being submitted to Punjab Pollution Control Board along with other documents for conduction of Public Hearing as provided in the procedure laid in the EIA Notification, 2006. It is further mentioned that we have appointed M/s. ECO CHEM SALES & SERVICES. (a NABET Accredited EIA Consultant for Pulp & Paper industry) as an environmental consultant for getting the Environment clearance of the proposed project.

11.1 ABOUT THE PROJECT PROPONENT

Satia Industries limited (Unit No. 2) is located at Malout Road, Muktsar, falling under large Scale category manufacturing products as mentioned under for which the company had obtained Consent To Establish and Operate from Punjab Pollution Control Board.

The industry is presently manufacturing eco-friendly paper of different varieties such as writing and printing papers of different grades including watermark papers.

Satia Industries is of the firm opinion that sustainable development can be achieved through continual improvement in Environment Management System by introducing most advanced and environment friendly technologies. Hence, SIL has decided to go for modernization with above objective in mind. Moreover, SIL will be utilizing this opportunity to introduce new technologies in the existing system also to further improve the existing environment status.

11.2 PLANT LOCATION AND ITS SURROUNDINGS

The industry is located near Village Rupana, District Muktsar of Punjab state and the modernization is proposed within the existing premises. Geographically the site is located at 30 deg. 25' North latitude and 74 deg. 31' East longitude at an altitude of 197.67 m above mean sea level. The





Company already own about 36.019 Acres land at Village Rupana, District Muktsar. The site is located at a distance of 6 kms from Muktsar at Muktsar - Malout Road. The National Highway connecting Delhi passes at a distance of about 26 kms NE from the plant site and Railway station is located at a distance of 7 KM from the site. The plant is situated at a distance of about 50 Km from Bhatinda. The nearest Airport is situated at Ludhiana at a distance of 150 Km from the site. All necessary infrastructural facilities like power, transport, communication, water etc. are already available. The basic input for proposed plant is agro waste as raw material as well as fuel. The site of the plant is the centre of agro residue. Wheat straw, rice husk and Sarkanda are available locally. Important features are given in **Table 11-1**.

Table 11-1: Salient Features of the Proposed Site

Altitude	:	198 m above MSL
Longitude	:	74 deg. 31' East
Latitude	:	30 deg. 25' North
Maximum day temperature	:	45.6°C
Minimum day temperature	:	0.7 °C
Maximum Relative Humidity	:	99%
Minimum Relative Humidity	:	2.0%
Annual Rainfall	:	355.0 mm
Average wind speed	:	4.0 kmph
Predominant Wind Direction	:	NE and SE
Land Availability	:	36.019 acres
Topography	:	Plain
Nearest State Highway	:	SH - 16
Nearest Railway Station	:	Muktsar
Nearest Human Settlements	:	Rupana (1 Km)
Nearest City	:	Muktsar (7.0 km)
Nearest Industries	:	Bansal paper & Board Mill, Anand Aluminium Industries, rice and brick kiln units
Nearest seaport	:	None within 25 km
Nearest River	:	Chandbhan Drain in South Direction
Nearest Airport	:	Ludhiana (150 km)
Nearest Reserve Forest	:	None
Nearest Sanctuary	:	None within 25 km
Nearest National Park	:	None within 25 km
Nearest Hills	:	None within 25 km

11.3 PROJECT HIGHLIGHTS

Proposed project is modernization of existing 150 TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant and installation of captive co-gen power plant of 12.5 MW. Salient features of project are given in **Table 11-2**.

Table 11-2: Project Highlights

S. N.	Item	Existing	Proposed
1	Capacity	150 TPD wastepaper based writing and printing Paper	150 TPD agro residue based writing and printing paper
2.	Land (Acres)	36.019	36.019

S. N.	Item	Existing	Proposed
3.	Water Usage (m3/day) for both Unit No. 1 & 2	11,370	16,500
4.	Water (m3 / ton of paper)	70	55
5.	Source of water	Arniwala Canal	Arniwala Canal
6.	Power Requirement with source	4.5 MW (from Co-Gen and PSPCL)	8.0 MW (from Co-Gen and PSPCL)
7.	Rice husk (MT/Day)	500	718
8.	Mill Effluent generation (m3/day) from both units	8900	14,635
9.	Black Liquor recovery (tons/day)	200	400
10.	BOILERS/ APCDs	45 TPH boiler- Multicyclones with wet scrubber 75 TPH boiler with ESP 50 TPH Recovery Boiler - ESP	The steam requirement for the proposed plant shall be met from the proposed 75 TPH boiler, which will run on rice husk and biogas generated from UASB digester. After commissioning the 75 TPH Boiler, the existing 45 TPH boiler shall be kept as standby. ESP will be installed with 75 TPH boiler
11.	T.G. Units	12.5 MW 5.0 MW capacity Turbine (Extraction cum condensing steam Type) 5.0 MW capacity Turbine (back pressure steam Type)	Additional 12.5 MW capacity turbine will be installed and the existing steam condensing Turbine of 5 MW will be kept as standby.
12.	D.G. Sets	No D.G. Set	No Additional D.G. Sets

11.4 PRODUCTS AND RAW MATERIALS

Satia Industries Ltd. (Unit No. 2) at present is engaged in the production of Writing and Printing Paper from waste paper and after proposed modernization, raw material shall be agricultural residues such as wheat straw, sarkanda, Wood/Veneer chips, imported wood and waste paper. Product profile is given in **Table 11-3**. The use of various raw materials and process of manufacture of various products is briefly discussed to understand pollutants generation and water conservation.

Table 11-3: Product profiles in the existing and proposed unit

S. No.	Product Name	Existing	Proposed
1.	Paper	150 tons /day	150 tons /day* (*Modernization of Existing plant)
2.	Captive Power Plant	12.5MW + 5 MW + 5 MW**	12.5 MW

**** The existing 5 MW condensate Turbine will be kept as standby during operation phase of proposed modernization project.**





The raw material for paper manufacturing is Wheat straw, Sarkanda, Bagasse, Wood /Veneer chips and Cotton sticks.

Wheat Straw: The wheat straw is supplied by local farmers / suppliers at factory gate. The promoters are already procuring wheat straw from local sources for Unit No. 1 and therefore, the Company does not expect to face any difficulty in sourcing the required quantity of wheat straw for the enhanced capacity. Peak availability season is April to July.

Sarkanda: Sarkanda, a wild grass is available in nearby area. It is used subject to availability. However, availability is small and is used along with Wheat straw.

Bagasse: Bagasse availability in the region is very small and it is used after depithing and wet cleaning along with wheat straw.

Wood /Veneer Chips: Ply industry waste veneer chips as raw material will be used to make pulp for strength of paper and improve quality of black liquor

Imported Wood Pulp: Wood pulp is used as supplementary long fibre requirement in paper manufacturing. Import of wood pulp is permitted under OGL and is generally imported from USA, Finland, Sweden and Germany.

The quantities of raw materials and chemicals required on full capacity utilization, all of which are easily available, are given in **Table 11-4** for the proposed modernization

Table 11-4: Raw Materials Requirement for Plant (Unit No. 2)

S. No.	Name of Raw Materials	Existing	Proposed after Modernization	Remarks
1.	Imported Waste Paper	105	0	It is used in existing plant technology only and shall discontinue in proposed project.
2.	Indian Waste Paper	5	0	
3.	Wood Pulp	1	0	
4.	Paper Additives	4.061	3.518*	*quantities reduce due to modernization technics used at proposed plant.
5.	Soap Stone	48	17.65*	
6.	Wheat straw, Sarkanda, baggase, Cotton sticks	--	218.02	Raw materials used only in proposed modernization technology.
7.	Wood chips	--	88	
8.	Caustic	--	54.09	
9.	Liquid Oxygen	--	4.32	
10.	Chlorine Dioxide	--	3.37	
11.	Hydrogen Peroxide	--	1.62	
12.	Lime	--	45.81	

11.5 PAPER MANUFACTURING PROCESS AND ITS MODERNIZATION

The paper manufacturing process is divided in the following stages–

1. Pulping Process
2. Stock Preparation
3. Paper Making
4. Converting & Finishing

The description of the process is given as below –

11.5.1 Pulping Process

The main raw material for paper making is agricultural residue with small quantities of Indian/ imported wood chips.

Raw Material Preparation

The raw material for agro pulping is wheat straw, sarkanda and bagasse, cotton sticks and Wood chips. Agro residues is processed through wet washing system to remove sand, fines and other unwanted materials. Removal of these unwanted materials is beneficial to improve pulp and black liquor quality.

Wet washing system includes De-duster, turbo paddler and aqua separator. Initially wheat straw is fed through belt conveyer to De-duster for the removal of non-cellulosic material/ unwanted particles. Afterwards, wheat straw is sent to turbo paddle mixture, which maintains water level upto, predetermined level and paddle provides turbulence that dissolves dirt/mud/sand in water and cleaned wheat straw with 7-8% consistency is obtained from the top of turbo paddler. Finally, aqua separator followed by screw press works for de-watering of the raw material. The wastewater is sent to clarifier. About 75% of clarified effluent is re-circulated and other part is sent to biogas plant.

Bagasse is processed through depither where approximate 80% of the total pith is removed. Depithed bagasse is fed to wet washing system to wash out remaining juice and pith. Washed wheat straw/ depithed bagasse/ sarkandais charged in continuous digester for cooking. SIL has wet washing system and depithers sufficient enough to process Raw material

Further a clarifier of capacity 600 M³ has been introduced where paper machines back water, evaporator hot water, pumps wastewater, fresh water etc. are used to wash the raw material and hence mill wastewater is recycled for the purpose of wet washing.

Continuous Cooking

Cooking of raw material is carried out in a state of the art continuous digester to get soft and more uniform pulp, resulting in drastically reduction of bleaching chemicals requirement and gain in pulp strength properties and brightness. The purpose of the cooking is to chemically dissolve the lignin from raw material in order to obtain bleachable grade pulp.

The main components of digester are–

- Metering Screw
- Pin feeder
- Equalizing Screw
- Screw Feeder
- Cold Blow Discharge

The raw material is washed, squeezed and fed to digester. A screw feeder does squeezing after wet washing. During feeding the raw material is dewatered and homogenized. The filtrate from the screw feeder is returned to the wet cleaning system for reuse. The digester blow back valve is placed just opposite the screw feeder with the shutdown system for emergency cases to avoid the blow out of the digester content via screw feeder.

The cooking liquor, and steam for heating up the raw material is added to the inlet chamber and to the digester tubes. Different cooking and bleaching conditions are maintained for getting desired quality of pulp.





Cooking is carried out into horizontal tube digester equipped with variable speed screw which slowly conveys the material to be cooked and it ensure a high filling degree of the tube volume.

After cooking, the pulp is cooled down by injecting cold black liquor into cold blow discharge. The pulp is blown out from the cold blow discharge into the top dome of the blow tank, from there the pulp drops into the blow tank itself and is diluted to pump able consistency with black liquor.

The fresh water/ machine back water is heated up to 65 – 70°C with blow tank flash steam. This hot water is used in wet washing plant and pulp washing.

Existing pulp mill having two no's of continuous digesters are capable to produce the enhanced pulp requirement for the proposed up-gradation.

Unbleached pulp washing, refining, screening and cleaning

The Pulp from blow tank is processed through vibrating screen and then 3 stage counter-current washing followed by 2 stages Twin-Roll Presses (TRP) for squeezing the pulp. It helps to reduce the black liquor carryover from unbleached wash plant to bleach plant. This minimizes the bleaching chemical consumption and helps to minimize the pollution load. The refining, screening and cleaning units are situated between third and fourth washer to clean and to make the pulp homogeneous. Pulp from fourth stage brown stock washer is passed through Twin-Roll Presses and the outlet of pulp is stored in an unbleached storage tower. Excess Black liquor from first brown stock washer seal tank is sent in soda recovery section to regenerate the caustic for cooking the pulp.

Satia has sufficient number of washers with counter current washing and Twin Roll Press with enhanced unbleached pulp processing capacity as per 150 MT of paper production with minimum chemical losses. The two stages TRP were procured earlier taking into consideration the future expansion.

SIL is also introducing Wood Pulp Street by using veneer chips/wood chips as raw material. These chips are the waste of the ply wood industry. The introduction of veneer chips pulping separately and mixing of the generated black liquor along with wheat straw black liquor will improve the efficiency of the chemical recovery plant. The veneer chips pulp liquor contains very small percentage of chlorides, potassium and silica when compared to wheat straw liquor. So the mixture of both liquors will reduce these non-process elements, and will help in increasing the concentration of liquor in evaporator due to less viscosity. Plant running hours will increase due to less jamming of body and boiler tubes.

11.5.2 Environment Friendly Bleaching Process

SIL has already employed Oxygen delignification and Chlorine dioxide bleaching to eliminate elemental chlorine bleaching i.e. the purpose of introducing Elemental Chlorine Free Bleaching (ECF Bleaching) in the process is to reduce pollution load as well as AOX level. Current bleaching Sequence is ODL D₀ (EOP) D₁ to make brown pulp into white up to desired level of brightness. The company has improved the washing of unbleached pulp by using Twin Roll Press Technology.

ODL - Oxygen Delignification

D₀ - Chlorine dioxide First Stage

EOP – Alkali Extraction with Oxygen & Hydrogen peroxide

D₁- Chlorine dioxide Second Stage

ODL Oxygen Delignification:

The unbleached pulp mixed with oxygen and is sent to oxygen reactor. The desired retention time is provided to complete reaction and then washed pulp sent to bleaching plant. The waste water of filtrate can be used in the brown stock washers for counter current washing, TDS of ODL back water contains pollution load of organic lignin and coloring materials which will be utilized by burning in recovery boiler to produce steam and power.

D₀ Chlorine dioxide

ODL treated pulp is treated with Chlorine dioxide and sent to up flow tower for reaction. After the reaction, the pulp is washed in D₀ washer. In the outlet of D₀ washer Noah, (Caustic) and Peroxide is added and sent to O₂ reactor. O₂ is injected in the inlet of the reactor. After the reaction is completed, the pulp is washed. In EOP washer and stored in a tower to maintain the retention time required.

D₁ Stage Chlorine dioxide

After alkali washing, pulp is sent to up flow D1 tower by using mild Chlorine dioxide bleaching to achieve the desired brightness and whiteness of final pulp. Afterwards, pulp is passed through Twin Roll Press (TRP).

After commissioning of Twin Roll Press, squeezing of unbleached pulp improved and consistency of outlet pulp increased from 12% to 30%. This help to utilize the generated system back water from chlorine dioxide stage in system for dilution. This reduces the water consumption as well as bleaching chemicals. The ODL D₀ EOP D₁ system is considered as environment friendly process. So less organic waste will be discharged in the waste water from the bleach plant.

To reduce water consumption & effluent generation, following steps will be taken

- Utilization of paper machine back water for washing of pulp in bleaching stages.
- Maximum circulation of bleaching plant filtrate.

SIL has sufficient number of washers for the enhanced bleached pulp processing capacity for 150 MT of paper production with minimum chemical losses.

Wood Pulping

Wood chips are fed to the digester for cooking in the presence of Sodium Hydroxide at required temperature to convert lignin, which gets dissolved in black liquor. When cooking is complete, the contents of the digester are transferred to a tank usually referred to as a blow tank. The entire contents of the blow tank are sent to pulp washers, where the spent cooking liquor is separated from the pulp. The pulp then proceeds through various stages of washing and bleaching.

Imported Wood pulp Processing

Wood pulp received in bales/reels is loaded in hydra pulper for disintegration, from where it is taken to a separate chest after refining to get desired freeness. Refined pulp is stored in a chest from where it is sent to stock preparation section as per the furnish requirement, it will be used.

11.5.3 Stock Preparation

This is the primary stage of paper making. Different type of pulp is mixed in stock preparation in different proportion as per the quality of paper required. Other additives like AKD, PAC, whitening agent, wet end additives and fillers etc. are also added in mixing chest. From mixing chest, pulp is sent to machine chest for papermaking. From machine chest pulp is taken to head box after cleaning in centri-cleaners and pressure screen. Broke generated during papermaking and finishing





is treated in a separate hydra-pulper and blended in mixing chest. Couch pit pulp from couch thickener is also sent to machine chest.

11.5.4 Paper Making

The stock received from stock preparation is pumped to head box through stuff box, centri-cleaners and pressure screens. The dilute suspension of fibers and water in head box is spread over synthetic forming fabric uniformly. This synthetic forming fabric is endless and perforated belt. It remains rotating according to machine speed. The sheet formation takes place on formation fabric where water starts draining out from the pulp suspension. The drained water is called back water which is used for stock dilution. Excess backwater is taken to Saveall for clarification. The clarified water is re-used in the process. On the synthetic forming fabric when the drainage of water through gravity reduces then water is removed by suction using vacuum.

The vacuum is applied by providing a number of suction boxes beneath the synthetic forming fabric for the drainage of water. The operating parameters are maintained and monitored continuously. In the end of sheet forming process the paper formed is called as web and it still remains quite wet.

In press part, water is removed further by passing the web between two rotating rolls along with press felt. Here, when the web is pressed between rolls, the water squeezes out and felt absorbs it. This process of pressing is done in three stages. The water absorbed by the felt is sucked through vacuum.

Now after completing the water removal process through pressing, the remaining water present in paper is removed by evaporation through drying. In this process the paper is passed over steam heated dryers. These dryers are continuously heated by injecting steam inside it. Here the paper is dried gradually. These dryers are also rotating according to machine speed. The temperature of dryers is maintained and monitored continuously. Here the paper is dried up to its final dryness. Before reeling the paper on jumbo roll, it is calendared for smoothness and evenness.

11.5.5 Converting & Finishing

The converting process of paper comprises in two operations:

- Sheeting
- Rewinding

In sheeting process the paper rolls are taken out from pope reel and loaded on duplex sheet cutter. The paper cut into different specified sizes on this machine and it is further sent to finishing section.

In finishing section the cut sheets are inspected manually to remove any defective sheet. Now by counting the reams of 500 sheets are made. These reams are packed into wrapper and then into Hessian/HDPE sheets in the form of bundle. The paper in the form of bundles is sent to go down for dispatch.

In rewinding process, the paper roll is un-winded and then rewinded on rewinder. The reels are made in specified sizes. The defective paper removed during converting and finishing as well as paper machine is pulped and recycled in the system. The small reels are wrapped and packed in wrapper and Hessian/HDPE sheets and finally sent to go down for dispatch.

11.6 POWER SUPPLY

The industry has sanctioned load of 15 MW (11750 KVA Contact Demand) from Punjab State Power Corporation Ltd (PSPCL). The Power requirement for the existing unit no. 2 is around 4.5 MW (Total

13 MW for both units). After modernization, power requirement of both unit no. 1 & 2 is expected to be around 18 MW. The industry has already installed captive Co-generation plant of capacity 12.5 MW, one backpressure steam turbine of capacity 5 MW and another condensing steam turbine of capacity 5 MW. The industry proposes to install additional 12.5 MW capacity turbine and the existing steam condensing Turbine of 5 MW will be kept as standby. Excess power generated from proposed turbine will be sold to the grid.

11.7 ENVIRONMENTAL IMPACTS AND MITIGATIVE MEASURES

11.7.1 Impact on Air Environment and Mitigative Measures

The source of Air Pollution is gases and particles emerging out of combustion of Rice Husk in Boilers and burning of Black Liquor in recovery boiler. To meet steam requirement, Satia Industries Limited has 45 TPH 75 TPH and Proposed 75 TPH power boilers and another 50 TPH Recovery boiler for steam generation. The Chemical recovery Boiler is run through the Black Liquor, the other two runs on rice husk. All boilers are equipped with three field hammer type Electrostatic Precipitators (ESP's) for SPM control. After commissioning of 75 TPH boiler, 45 TPH will be kept as stand by.

Industry has already installed ESP with the recovery boiler and power boiler for the control of particulates from the flue gases. With the proposed 75 TPH Boiler, industry plans to install ESP in order to achieve the prescribed norms of emissions from the stack i.e. 50 mg/Nm³.

RSPM concentration in the study area observed a minimum of 61.7µg/m³ at Muktsar and maximum of 101.2µg/m³ at plant site. However, on an average, RSPM levels ranged from 67.7µg/m³ to 90.7µg/m³. Frequency distribution of RSPM in study area shows P-98 from 74.8 to 100.2µg/m³.

PM_{2.5} concentrations at various AAQ monitoring stations observed a minimum of 28.9 µg/m³ at Bhangchiri and maximum of 54.6 µg/m³ at plant site. The average PM 2.5 concentrations during study period were recorded between 33.9 to 47.9 µg/m³. Frequency distribution of PM_{2.5} in study area shows P-98 from 39.4 to 54.6µg/m³.

SO₂ concentrations at various AAQ monitoring stations ranged from 10.0µg/m³ at Barkandi to 22.4µg/m³ at Rupana. The average SO₂ concentrations during study period were recorded as 12.1 to 20.2µg/m³. The frequency distribution in different concentration ranges reveals that all the values fall below 25µg/m³. The 98th percentile value for SO₂ at plant site has been determined as 22.3µg/m³. The situation in the study area as far as SO₂ concentrations are concerned is comfortable.

NOx concentrations during study period were in the range of 15.5µg/m³ at Bhangchiri to 28.6µg/m³ at plant site. Average NOx concentration varied from 17.4 to 25.7µg/m³. From the results, it may be inferred that NOx concentrations are within permissible limits.

The 98th percentile value for NOx at plant site has been calculated as 28.6µg/m³.

CO concentrations during study period were in the range of 440.0µg/m³ at Bhangchiri to 650.0µg/m³ at plant site. Average CO concentration varied from 465.0 to 581.7µg/m³.

The 98th percentile value for CO at plant site has been calculated as 647.0µg/m³.

To meet steam requirement, Satia Industries Limited has 2 boilers of 45 and 75 TPH and another 50 TPH Recovery boiler for steam generation. Whereas the Chemical recovery Boiler is run through the Black Liquor, the other two runs on rice husk as well as biogas generated from UASB digester. The steam requirement for the proposed plant shall be met from the proposed 75 TPH boiler, which will run on rice husk and biogas generated from UASB digester. The rice husk is transported to the mill in the trucks and trolleys. The rice husk is available in plenty in the region. There is open storage area for rice husk.





The industry had already installed ESP with the recovery furnace for the control of particulates from the flue gases. With the proposed 75 TPH Boiler, industry plans to install ESP in order to achieve the prescribed norms of emissions from the stack. The concentrations of SO_2 and NO_x in the boiler flue gases are in compliance to the limits prescribed by PPCB. Green belt inside the SIL complex, is an ongoing process to abate air emissions from the vehicles on road & to attenuate the noise generated from the traffic and to improve the aesthetics of the plant area. Open spaces where tree plantation is not possible, will be covered with shrubs and grasses for soil binding and to control air pollution due to soil dust.

11.7.2 Impact on Water Environment and Mitigative Measures

The paper industry is considered as water intensive industry. With the adoption of innovative methods and application of chemical and fiber recovery system, the industry has achieved substantial reduction of water consumption/ tons of paper with additional reduction of the chemical consumption per tons of paper. Both these innovations have been incorporated in the proposed project.

Presently, the daily water requirement is $10,500 \text{ m}^3$ for Unit No. 1 and 870 m^3 for Unit No. 2, which is met through Arniwala Canal that is hardly 2.5 KM from the mill and is connected with the industry. The daily requirement of water after proposed modernization will be approx. 6.75 cu/sec ($16500 \text{ m}^3/\text{day}$) for both unit no. 1 & 2, which will be met from canal water (existing Arniwala Canal). To reduce the quantity of water, the company is regularly taking steps to reduce the consumption of water and presently consumption of water is 70 m^3 per ton of paper. After Modernization with combined pulping and by using disc filters, fresh water will be replaced by machine backwater so fresh water consumption will be reduced from 70 m^3 to 55 m^3 through reprocessing of the Machine back water at various stages. Besides this, the company is also exploring possibilities for storage of water through rainwater harvesting.

Water shall be required for Process, Cooling, Drinking and Sanitation. After modernization, the total water required shall be approximately $16500 \text{ m}^3/\text{day}$, of the total water consumption of 16500 m^3 , about 14635 m^3 shall be discharged into plantation area maintained by the company in an area of approximately 450 acres and crop fields by nearby farmers.

The existing ETP set up is capable of handling the effluent generated after modernization the production capacity to 150 MT per day. The existing aerobic effluent treatment plant (in which the total mills effluent is treated) consists of two stage activated sludge process. The second stage aeration tank (AT2) and sludge settling tank (SST2) results in enhanced degradation of the effluent.

The company has already set up chemical recovery unit to treat black liquor generated during wheat straw pulping and wood chips pulping. The unit is running successfully from the year 2014. This chemical recovery plant is presently under-utilized as only 200 Tons / day solids are available from the existing pulp production against the designed capacity of 400Tons solids / day.

Keeping in view the availability of agro residue raw material in this area, the industry has planned to convert Unit No.2 from waste paper to agro residue based plant by utilizing the existing 200 tons/day of agro residue based pulp mill, and 100 tons /day wood Pulp Mill and chemical recovery plant (400 Tons / day) to their full capacity.

11.7.3 Impact on Soil Quality

SIL is already in possession of requisite land for the proposed modernization. Some cut and fill operations may disturb the soil profile, but the impact will be temporary and insignificant. The land use pattern, outside the proposed site area will not be affected to any extent.

The sludge generated from primary clarifier and excess sludge from both secondary clarifiers (left after recirculation in aeration tank) is dewatered by sludge press. The filtrate (having approximately 75% moisture) is sold to cardboard manufacturers. The quantity and characteristics of solid wastes generated from the plant and their disposal arrangement shall be as follows:

The ETP sludge is collected on RCC platform and lifted by nearby small-scale cardboard manufacturers for making cardboards. The boiler ash and lime sludge generated from causticizing plant is collected directly in the trolleys and shifted for filling of the low lying areas.

SIL is having authorization for collection, storage and disposal of hazardous waste from Punjab Pollution control Board. After modernization/ up-gradation, the disposal mode of solid and hazardous waste will continue to remain the same.

11.7.4 Impact due to Noise

Noise will be generated due to various industrial activities. Proper mitigation measures shall be implemented to control the noise to keep it within the prescribed norms. The industry has proposed 74500 m² area for green belt around the periphery of the plant. This will help in reducing the adverse effect of noise pollution in general. Use of PPE like ear plugs and ear muffs shall be made compulsory near the high noise generating machines. Moreover, the personnel shall be provided breaks in their working hours, with the continuous exposure not exceeding three (3) hours.

Due to power plant operations, noise pollution shall arise from Turbine, compressor, generator room, etc. High noise level shall be felt only near the active working areas. However, at distance away from the source, the level shall get considerably reduced. The plant and equipment shall be specified and designed with a view to minimize noise pollution.

11.7.5 Land Use Pattern

Lithologically, Muktsar is a part of the vast Indo-Gangetic alluvial plain, composed of alternate bands of sands, silt and clay with pebbles. Sandy plains, sand dunes and topographic depressions are the common landforms.

The soil of Muktsar varies from sandy to loam in texture, and is low in organic carbon, phosphorus, zinc and other micro nutrients, but high in potassium. The salt affected soil of Muktsar has been categorized as sodic soil and saline sodic soil. The villages surrounding the city produce high yields of cotton, wheat, paddy and seed oil.

The area surrounding the Project site i.e. Satia Paper Mill Ltd. is largely an agriculture and fallow land covering around 85% of the total study area. A small portion of the study area i.e. 0.68 % is also covered by orchards / plantation. 3.2 % of the area is covered by the canal network designed for the agriculture which shows the important role of these canals in irrigation of Muktsar district. The site is well connected with the road and railway network, this network occupies around 4 % of the total study area. Buildup area in total occupies around 6.7 % out of which only 0.5 % comes under industrial area while 6.2% comes under habitable or settlement area. Water body occupies the remaining portion of the total study area.

11.7.6 Impact on Terrestrial Flora & Fauna

There are no likely adverse impacts from higher noise levels or emissions during construction on the animals and birds at the project site. There are no endangered and endemic species in study area. Therefore, there will be no impact on the fauna and floral species due to the construction activities.

The boilers and recovery system emissions will be below the level which could disturb or distract animal life and exert damage on the vegetation. Development of green belt and proper landscape plan will bring about a positive impact and will enhance the aesthetics of the area.





11.7.7 Impacts on the Socio-Economic Environment

The socio-economic environment of the study area in the vicinity of the plant due to the SIL operations revealed the following perceptions about the plant.

- The plant shall provide opportunity for direct employment for the local populace.
- Substantial socio-economic benefits, by way of alternative means of livelihood are likely to accrue to the local populace of the area in the transportation sector and other services, like, dhabas, tea stalls etc. providing food and other provisions to the drivers, cleaners and visitors to the plant.

The proposed modernization shall generate additional employment opportunities indirectly. The relevant aspects of the impact on the socio-economic environment shall be positive. The employment multiplier effect will also relate to construction, shopping, recreation, hospital, transport & communication, banking etc., which will impact positively on the socio-economic environment. The SIL plant proposes to utilize agro residues as raw material for paper making. It also utilizes Rice Husk as fuel to meet the fuel requirement of the plant. The use of agro waste as raw material and fuel generates considerable rural incomes and considerable enhancement in the rural productivity. Thus, the proposed unit shall have a very positive impact on the agro based rural economy. There are no historical/ archeological monuments, biosphere reserve, defence installation of national importance in the 10 km radius study area.

The company since its inception is doing philanthropic work and during the last three each financial year the amount spend in doing philanthropic activities in the nearby villages is around Rs.22 lakhs approximately - largely expenditure made on developing school infrastructure, Panchayat infrastructure, eradication of Poverty and hunger, empowerment of women, rural medical camps and related preventive activities etc. The total cost of the project is Rs.100 Crore and about 2.5% from the total cost Rs.2.5 crore have been assigned for doing philanthropic activities in 10 years in Phase for the selective villages.

11.7.8 Capital Cost

The total investment of Rs.100.00 Crores is proposed for the up gradation/modernization of the existing unit, out of which 15.00 Crores will be spent on the Pollution control systems with E.S.P., 12.5 MW Turbine, and pure oxygen injection system.

11.8 ENVIRONMENTAL MANAGEMENT

11.8.1 Environmental Management Group

An Environmental Management Group exists in the organization to look into the environmental issues and ensure that mitigation measures are properly carried out. The Environmental Management group comprises of General Manager, Site Engineers and environmental scientists. The environmental Scientists and site engineers are responsible for ensuring environmental monitoring as per appropriate guidelines and procedures. Industry has already laid down Corporate Environment Policy (CEP).

11.8.2 Green Belt / Landscape Development

Green belt development plan for a particular site depends upon; nature and extent of pollution load, assimilative capacity of the ecosystem, climatic conditions, soil conditions and water quality. The industry has proposed 74500 m² area for green belt around the periphery of the plant. Depending

upon the topo-climatological conditions and regional ecological status, selection of appropriate plant species is very important for development of green belt. Fast growing pollution resistant evergreen species with dense canopy having large leaf area index shall be chosen for green belt development.

11.8.3 Corporate Environment Policy

Satia Industries Limited (SIL) is committed to fulfilling its obligation to environmental along with sustainable growth. Using agro-based raw material and adopting eco-friendly techniques, the company is doing its best to reduce the load on environment and maximize the use of agro waste which was otherwise burnt in the fields raw to its potential. Environmental policy is adopted religiously by the industry as passed by the Board of the company.

11.9 PUBLIC CONSULTATION

As per Terms of Reference prescribed by the EAC of MoEF&CC vide letter dated 22.06.2016 [file no.: J-11011/196/2014-IA.II(I)], the public hearing was conducted on 19.10.2016 at 12:00 noon at the project site i.e. in the existing premises of M/s. Satia Industrie Ltd.(Unit no.2), V.P.O. Rupana, Dist. Sri Muktsar Sahib. PPCB issued the public notice in two daily newspapers namely, "Daily Post" (English Daily) and "Ajit" (Punjabi Daily) 30 days prior to Public hearing date.

All the participants present at the venue of public hearing were in favour of carrying out modernization of its existing unit from waste paper to agro residue based 150 TPD writing & printing paper and for installation of co-generation power plant of 12.5 MW. The participants are also provided the industry/factory complies with the provisions of the environmental laws for the control of pollution as per the commitment made in the draft Environmental Impact Assessment study report/EMP and it up-keeps the corporate social responsibility activities for the residents of the area as far as possible.

11.10 CONCLUDING REMARKS

It can be seen from the assessment of impacts that the proposed modernization of SIL (Unit no. 2) will not have significant impacts on the surrounding environment. Proper arrangements for collection and treatment of effluents and reuse of water would not affect water environment adversely. Proper pollution control measures proposed for boilers and recovery system would ensure that air and water environment do not have any adverse impact.

SIL will be an agro-residue based pulp & paper mill after modernization, so it will reduce the consumption of wood for the manufacture of paper; moreover, it solves the problem of disposal of agro-residues like wheat straw and bagasse which are the main raw materials in SIL. The boilers used for the generation of steam uses rice husk as a fuel rather than using some conventional fuels. In addition, the biogas produced during anaerobic decomposition of wet washing effluent reduced the organic load of effluents and the biogas produced is also used as a fuel in boilers which further reduced the requirement of raw material in boiler.

It is concluded that with the adoption of proposed mitigation and enhancement measures, there will be improvement in the development of commercial activities, generation of direct & indirect employment opportunities and the overall quality of life in the surrounding area.





12 DISCLOSURE OF CONSULTANTS

12.1 INTRODUCTION

In 1986, ECO CHEM SALES & SERVICES (ECSS) started with a set of limited services and unlimited dreams backed with a vision to develop into a full service environmental and engineering group. Focused efforts with transparent policies towards pursuit of excellence formed the way of life. Very shortly we were recognized as Environmental Specialists. ECO CHEM SALES & SERVICE (ECSS), an extended arm of Ecosystem Resource Management Pvt. Ltd. is a group of Scientists, Engineers, and Professional Pollution Consultants. We are a NABET Accredited company having accreditation in 15 industrial sectors of the schedule of industries. We take up consultancy projects including conducting of Environment Impact Assessment Studies, Risk Assessment Studies, life cycle assessment, preparing EIA/EMP Reports, Risk Assessment and Disaster Management Reports, Preparation of DPR, undertaking Third Party Inspection and Project Management Consultancy, in accordance with various statutory clearances like Environment Clearance, CRZ Clearance, Forest Clearance, CTE, CCA etc., from Ministry of Environment and Forest & State Pollution Control Boards. Eco Chem Sales & Services (ECSS), Surat is NABET Accredited consultant by QCI New Delhi. The list of consultants is available at

<http://nabet.qci.org.in/environment/pop.asp?file=documents/Annexure7.pdf&heading=Accredited%20EIA%20Consultant%20Organizations%20with%20accredited%20sectors>.

12.2 LABORATORY INVOLVED FOR BASELINE MONITORING AND OTHER ANALYSIS

NABL accredited Laboratory, Certificate No. T – 2013, dated 26/10/2015 valid up to 25/10/2017 for testing of water, wastewater, sewage, air, noise and soil.

12.3 TEAM MEMBER FOR EIA REPORT

- | | |
|-----------------------|-------------------------|
| • Ms. Parul Patel | As team member AP & AQ |
| • Mr. Mehul Petkar | As team member HG & GEO |
| • Ms. Ishita Garg | As team member WP |
| • Ms. Nazneen Mansuri | As team member SHW |
| • Mr. Ashok Rathoure | As team member EB |
| • Mr. Shashank Uniyal | As team member RH |
| • Dr. Amit Dhir | As EIA team member |

ANNEXURES





Annexure 1: A copy of TOR letter from MoEFCC

F. No. J-11011/196/2014-IA.II(I)
Government of India
Ministry of Environment, Forest and Climate Change
(I.A. Division)

Indira Paryavaran Bhawan
Jor Bagh Road, Aliganj,
New Delhi - 110003
E-mail: satish.garkoti@nic.in
Tel: 011- 24695316

Dated: 22nd June, 2016

To
✓ M/s Satia Industries Ltd.,
Village Rupana, District Muktsar Sahib,
Punjab - 152032.

Subject: Modernization of existing 150 TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant and installation of 12.5 MW Co-gen Power Plant of M/s Satia Industries Ltd. at Village Rupana, District Muktsar, Punjab -prescribing of ToRs regarding.

Sir,

This has reference to your online application No IA/PB/IND/33581/2015 dated 1st December, 2015 along with the application in prescribed format (Form-I), copy of pre-feasibility report and proposed TORs for undertaking detailed EIA study as per the EIA Notification, 2006, as amended for the project mentioned above. The proposed project activity is listed at S.No. 5(i), under category 'A' of the Schedule of EIA Notification, 2006 and appraised at the Central level.

2.0 M/s. Satia Industries Limited proposes to modernize existing unit of 150TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant and installation of 12.5 MW of captive co-gen power plant. The project is located at Village Rupana, Taluka and District Muktsar, Punjab. The existing land area of 1,45,763 m² will be used for the integrated Pulp & Paper plant, out of which 48,102 m² land will be used for green belt development. Total project cost is approx. Rs. 100 Crores. Proposed employment generation from modernized project will be around 100 direct employments and 2000 indirect employment.

3.0 The electricity load of 15 MW has been sanctioned from Punjab State Power Corporation Ltd. (PSPCL). Company also proposes to install 12.5 MW Co-Generation Power Plant. The raw material and fuel requirement for project are Rice Husk, Bio Mass Fuel like Wheat straw, Sarkanda, Baggase, Cotton sticks and Wood chips. Requirement would be fulfilled by nearby surrounding areas as well as imported/Indian wood chips fuel consumption will be mainly rice husk.

4.0 Water Consumption for the proposed modernization project will be 6000 KLD for unit no. 2. The water requirement for both the units is estimated as 16500 KLD.

5.0 The above proposal was considered by the Expert Appraisal Committee (Industry) during its 2nd meeting held on 28th -30th December, 2015 for prescribing TORs for undertaking detailed EIA/EMP study.

1

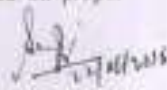
7.0 Based on the information furnished and presentation made by the project proponent, the Committee recommended prescribing following specific TORs for undertaking detailed EIA and EMP study in addition to the generic TOR enclosed at Annexure-1 read with additional TORs at Annexure-2.

- i. Approval for drawl of canal water from irrigation department.
- ii. Site photograph of the plant and also for the surrounding area around the plant.
- iii. Public hearing to be conducted by Punjab Pollution Control Board
- iv. The issues raised during public hearing and commitment of the project proponent on the same along with time bound action plan to implement the commitment and financial allocation thereto should be clearly provided.
- v. The project proponent should carry out social impact assessment of the project as per the Office Memorandum No. J-11013/25/2014-IA.1 dated 11.08.2014 issued by the Ministry regarding guidelines on Environment Sustainability and CSR related issues. The social impact assessment study so carried out should form part of EIA and EMP report

8.0 The undersigned is directed to inform that the Ministry of Environment, Forest and Climate Change (MoEFCC) after accepting the recommendation of the EAC (Industry-I), hereby decided to accord ToRs for the above project. Although, system generated automatic ToRs for the project have been issued to you as per Ministry's directive; however, the final EIA/EMP report should be submitted based on the ToRs issued to you vide this letter.


9.0 It is requested that the draft EIA Report may be prepared in accordance with the above mentioned specific TORs and enclosed generic TORs and additional TORs and thereafter further necessary action including conduct of public consultation may be taken (if required) for obtaining Environment Clearance in accordance with the procedure prescribed under the EIA Notification, 2006 as amended.

10.0 The TORs are valid for a period of three years from today i.e 22.06.2016 and will expire on 21.06.2019. However, this period could be further extended by a maximum period of one year provided an application is made by the project proponent at least three months before the expiry of the validity period, together with updated Form-1, based on proper justification.


(Dr. Satish C. Garkoti)
Scientist 'F'

Copy to:-

1. The Secretary, Department of Environment, Government of Punjab.
2. The Additional Principal Chief Conservator of Forests (C) Ministry of Environment, Forest and Climate Change, Regional Office (NZ) Bays No. 24-25, Sector-31 A, Dakshin Marg, Chandigarh-160030.


(Dr. Satish C. Garkoti)
Scientist 'F'





ANNEXURE -I GENERIC TERMS OF REFERENCE (TOR) IN RESPECT OF INDUSTRY SECTOR

1. Executive Summary
2. Introduction
 - i. Details of the EIA Consultant including NABET accreditation
 - ii. Information about the project proponent
 - iii. Importance and benefits of the project
3. Project Description
 - i. Cost of project and time of completion.
 - ii. Products with capacities for the proposed project.
 - iii. If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.
 - iv. List of raw materials required and their source along with mode of transportation.
 - v. Other chemicals and materials required with quantities and storage capacities
 - vi. Details of Emission, effluents, hazardous waste generation and their management.
 - vii. Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)
 - xiii. Process description along with major equipments and machineries, process flow sheet (quantitative) from raw material to products to be provided
 - ix. Hazard identification and details of proposed safety systems
 - x. Expansion/modernization proposals:
 - a. Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF/SEIAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Regional Office of the Ministry of Environment and Forests as per circular dated 30th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, status of compliance of Consent to Operate for the ongoing /existing operation of the project from SPCB shall be attached with the EIA-EMP report.
 - b. In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.
4. Site Details
 - i. Location of the project site covering village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered.
 - ii. A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)
 - iii. Co-ordinates (lat-long) of all four corners of the site.
 - iv. Google map-Earth downloaded of the project site.

- v. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
- vi. Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.
- vii. Landuse break-up of total land of the project site (identified and acquired), government/private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included. (not required for industrial area)
- viii. A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area.
- ix. Geological features and Geo-hydrological status of the study area shall be included.
- x. Details of Drainage of the project upto 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)
- xi. Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.
- xii. R&R details in respect of land in line with state Government policy

5. **Forest and wildlife related issues (if applicable):**

- i. Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable)
- ii. Landuse map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (*in case of projects involving forest land more than 40 ha*)
- iii. Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.
- iv. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-a-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon
- v. Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area
- vi. Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife

6. **Environmental Status**

- i. Determination of atmospheric inversion level at the project site and site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.
- ii. AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO₂, NO_x, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.
- iii. Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov, 2009 along with - min.,



- max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.
- iv. Surface water quality of nearby River (60m upstream and downstream) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.
- v. Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF&CC.
- vi. Ground water monitoring at minimum at 8 locations shall be included.
- vii. Noise levels monitoring at 8 locations within the study area.
- viii. Soil Characteristic as per CPCB guidelines.
- ix. Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.
- x. Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.
- xi. Socio-economic status of the study area.

7. Impact Assessment and Environment Management Plan

- i. Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be well assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.
- ii. Water Quality modelling – in case, if the effluent is proposed to be discharged in to the local drain, then Water Quality Modelling study should be conducted for the drain water taking into consideration the upstream and downstream quality of water of the drain.
- iii. Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.
- iv. A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules.
- v. Details of stack emission and action plan for control of emissions to meet standards.
- vi. Measures for fugitive emission control
- vii. Details of hazardous waste generation and their storage, utilization and disposal. Copies of MOU regarding utilization of solid and hazardous waste shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, Energy conservation, and natural resource conservation.
- viii. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.

- ix. Action plan for the green belt development plan in 33 % area i.e. land with not less than 1,500 trees per ha. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.
- x. Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.
- xi. Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.
- xii. Action plan for post-project environmental monitoring shall be submitted.
- xiii. Onsite and Offsite Disaster (natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster management plan should be linked with District Disaster Management Plan.

8. Occupational health

- i. Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.
- ii. Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre placement and periodical examinations give the details of the same. Details regarding last month analyzed data of abovementioned parameters as per age, sex, duration of exposure and department wise.
- iii. Annual report of health status of workers with special reference to Occupational Health and Safety.
- iv. Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.

9. Corporate Environment Policy

- i. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
- ii. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
- iii. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.
- iv. Does the company have system of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report

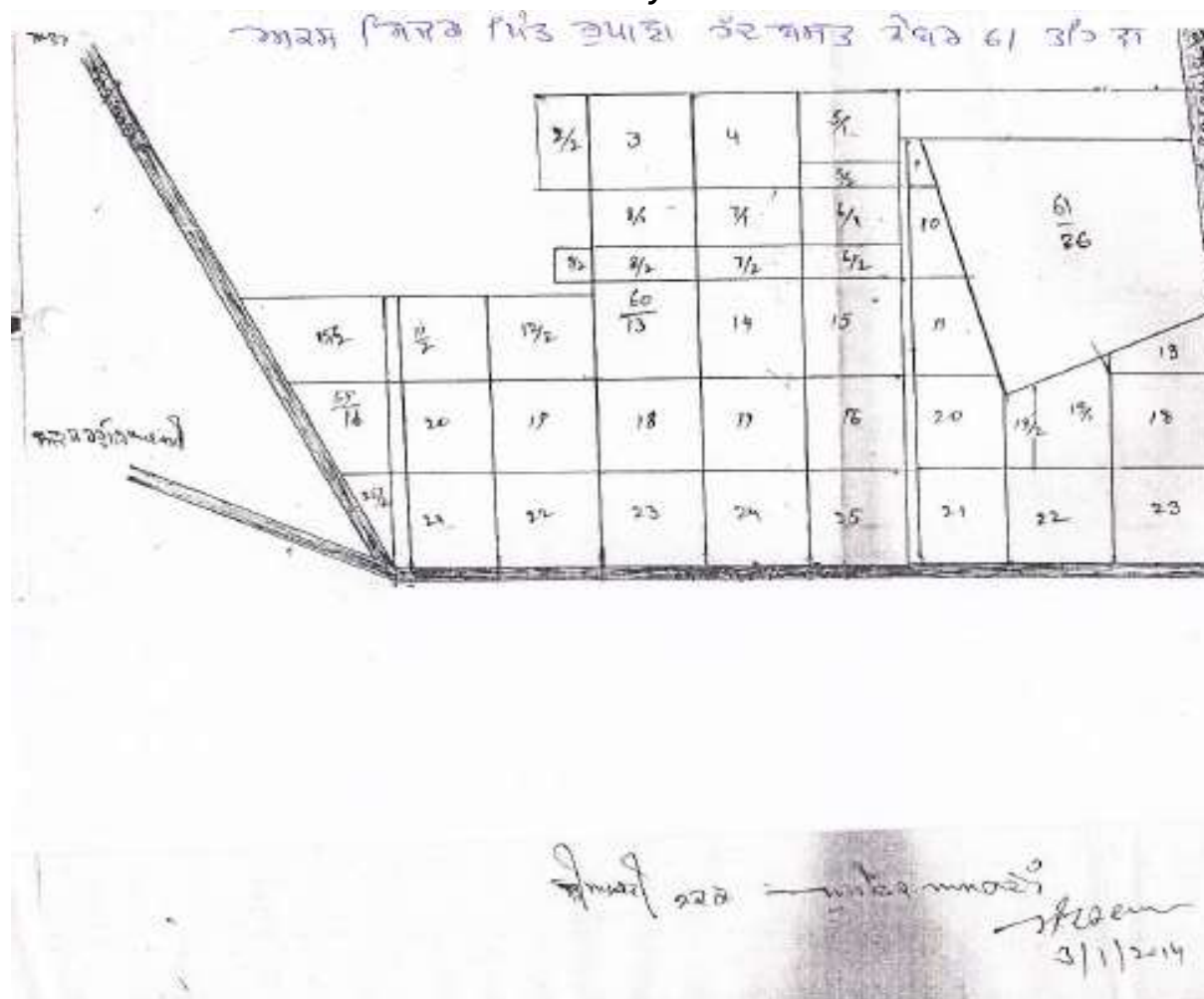


10. Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.
11. Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.
12. A tabular chart with index for point wise compliance of above TORs.
13. The TORs prescribed shall be valid for a period of three years for submission of the EIA-EMP reports along with Public Hearing Proceedings (wherever stipulated).

The following general points shall be noted:-

- i. All documents shall be properly indexed, page numbered.
- ii. Period/date of data collection shall be clearly indicated.
- iii. Authenticated English translation of all material in Regional languages shall be provided.
- iv. The letter/application for environmental clearance shall quote the MOEF file No. and also attach a copy of the letter.
- v. The copy of the letter received from the Ministry shall be also attached as an annexure to the final EIA-EMP Report.
- vi. The index of the final EIA-EMP report must indicate the specific chapter and page no. of the EIA-EMP Report.
- vii. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MOEF vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry shall also be followed.
- viii. The consultants involved in the preparation of EIA-EMP report after accreditation with Quality Council of India (QCI) /National Accreditation Board of Education and Training (NADET) would need to include a certificate in this regard in the EIA-EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. Name of the Consultant and the Accreditation details shall be posted on the EIA-EMP Report as well as on the cover of the Hard Copy of the Presentation material for EC presentation.
- ix. TORs prescribed by the Expert Appraisal Committee (Industry) shall be considered for preparation of EIA-EMP report for the project in addition to all the relevant information as per the 'Generic Structure of EIA' given in Appendix III and IIIA in the EIA Notification, 2006. Where the documents provided are in a language other than English, an English translation shall be provided. The draft EIA-EMP report shall be submitted to the State Pollution Control Board of the concerned State for conduct of Public Hearing. The SPCB shall conduct the Public Hearing/public consultation, district-wise, as per the provisions of EIA notification, 2006. The Public Hearing shall be chaired by an Officer not below the rank of Additional District Magistrate. The issues raised in the Public Hearing and during the consultation process and the commitments made by the project proponent on the same shall be included separately in EIA-EMP Report in a separate chapter and summarised in a tabular chart with financial budget (capital and revenue) along with time-schedule of implementation for complying with the commitments made. The final EIA report shall be submitted to the Ministry for obtaining environmental clearance.

Annexure 2: Land Possession Documents with Survey Numbers





S. I. L. RUPANA.

<u>MUSTI No</u>	<u>Kilano</u>	<u>Area in K.M.</u>
60	12/2	6-0 गाँवभर/मि
	19	8-0
	22	8-0
	23	8-0
	2/2	4-8
	3	8-0
	4	8-0
	5/1	6-7
	5/2	1-7
	6/1	4-18
	6/2	3-2
	7/1	4-18
	7/2	3-2
	8/1	4-18
	8/2	3-2
	9/2	0-12
	11/2	5-14
	13	8-0
	14	8-0
	15	8-0
	16	8-0
	17	8-0
	18	8-0
	20	7-12
	21	7-12
	24	8-0
	25	8-0

 167-12

+ 121-7

 288-19 Marlas

S.I.L. RUPANA.

Musti/No KilaNo Area in km

61

1/2

0-18

10

3-14

11

4-10

11

1-6

12

1-7

13

1-13

2

8-18

19

7-8

19

0-10

20

7-10

21

7-12

22

8-0

23

9-10

26

16-6

26

25-9

26

1-16

15

7-0

16

5-18

25

2-2

2

121-7

59

15

7-0

16

5-18

25

2-2

2

121-7

P.T.O.-II



EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.: 2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

[illegible]

ਸਮਾਂਸਦੀ - 2009		2010 ਵਿੱਚ - 2009		ਹੋਦਸਤ ਨੰ -		ਸੀ ਰਿਪੋਰਟ ਦੀ ਮੁਲਾਂਕਣ ਮਿਤੀ		ਮਿਤੀ -	ਮੁੱਲ
1	2	3	4	5	6	7	8		
ਸਦਨ ਨੰ ਮਾਲ/ਪੰਨੀ ਨੰਬਰ	ਪਤਨੀ ਨੰਬਰ	ਮਾਲਕ ਦਾ ਨਾਂ ਅਤੇ ਵੇਰਵਾ	ਕਾਰਜਕਾਰੀ ਦਾ ਨਾਂ ਅਤੇ ਵੇਰਵਾ	ਸਿਮਰੀ ਦਾ ਸਾਫਲ	ਸਿਮਰੀ ਅਤੇ ਮਾਲ ਨੰਬਰ	ਸਮਾਂ ਅਤੇ ਤੋਂ ਦੇ ਕਿਸਮ			
					01 A 001	7-8 ਡਿਪਾਰਟਮੈਂਟ ਮਾਲਕ	✓		
					01 A 002	0-10 000 500	✓		
					01 A 003	0-10 000 500	✓		
					01 A 004	0-10 ਡਿਪਾਰਟਮੈਂਟ ਮਾਲਕ	✓		
					01 A 005	0-10 ਡਿਪਾਰਟਮੈਂਟ ਮਾਲਕ	✓		
					01 A 006	0-10 000 500	✓		
					01 A 007	0-10 000 500	✓		
					01 A 008	0-10 000 500	✓		
					01 A 009	0-10 000 500	✓		
					01 A 010	0-10 000 500	✓		
					01 A 011	0-10 000 500	✓		
					01 A 012	0-10 000 500	✓		
					01 A 013	0-10 000 500	✓		
					01 A 014	0-10 000 500	✓		
					01 A 015	0-10 000 500	✓		
					01 A 016	0-10 000 500	✓		
					01 A 017	0-10 000 500	✓		
					01 A 018	0-10 000 500	✓		
					01 A 019	0-10 000 500	✓		
					01 A 020	0-10 000 500	✓		
					01 A 021	0-10 000 500	✓		
					01 A 022	0-10 000 500	✓		
					01 A 023	0-10 000 500	✓		
					01 A 024	0-10 000 500	✓		
					01 A 025	0-10 000 500	✓		
					01 A 026	0-10 000 500	✓		
					01 A 027	0-10 000 500	✓		
					01 A 028	0-10 000 500	✓		
					01 A 029	0-10 000 500	✓		
					01 A 030	0-10 000 500	✓		
					01 A 031	0-10 000 500	✓		
					01 A 032	0-10 000 500	✓		
					01 A 033	0-10 000 500	✓		
					01 A 034	0-10 000 500	✓		
					01 A 035	0-10 000 500	✓		
					01 A 036	0-10 000 500	✓		
					01 A 037	0-10 000 500	✓		
					01 A 038	0-10 000 500	✓		
					01 A 039	0-10 000 500	✓		
					01 A 040	0-10 000 500	✓		
					01 A 041	0-10 000 500	✓		
					01 A 042	0-10 000 500	✓		
					01 A 043	0-10 000 500	✓		
					01 A 044	0-10 000 500	✓		
					01 A 045	0-10 000 500	✓		
					01 A 046	0-10 000 500	✓		
					01 A 047	0-10 000 500	✓		
					01 A 048	0-10 000 500	✓		
					01 A 049	0-10 000 500	✓		
					01 A 050	0-10 000 500	✓		



EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

[illegible]

[illegible]



EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT No.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Annexure 3: NOC copy for Unit No. 2 (70 TPD)

PUNJAB POLLUTION CONTROL BOARD, PATIALA.

To 18596 13/10/97

M/s Satia Paper Mills Ltd. (Unit No. II)
Vill & P.O. Rupana,
Malout Road,
Mukatsar.

Name of the Managing Director :	Dr. Ajay Satia
Scale of the Industry :	Large
Consent Fee Details :	Rs. 30000/- vide R.No. 55/1148 Dtd. 14.07.97

Sub: "No Objection Certificate" from Pollution Angle.
No. MKS-2 dt. 27.09.97

Reference your application dated 14.07.97 on the above
cited subject to the Regional Environmental Engineer,
Faridkot.

The Pollution Control Board Punjab, has "No Objection"
for setting up the industry for the manufacture of writing and
printing paper @ 70MT/day of Village & P.O. Rupana, Malout
Road, Mukatsar.

Subject to the following conditions:-

1. The NDC is valid only for registration of application
and issue of demand notice for electric connection by
P.S.E.B./Water supply connection/loans etc. However,
the industry shall obtain a clearance certificate from
the Board to the effect that it has installed proper
and adequate pollution control equipments for the
purposes of release of electric connection by P.S.E.B.
and drawing the last installment of loan from financial
institutions.
2. The N.D.C. is valid for period of one year from the
date of its issue or till the commissioning of the
industry whichever is earlier.
3. The industry shall apply for consents of the Board as
required under the provisions of the Water (Prevention
& Control of Pollution) Act, 1974, and the Air
(Prevention & Control of Pollution) Act, 1981 two months
before the commissioning of the industry.
4. The industry shall provide adequate arrangements for
fighting the accidental leakages/dischARGE of any air
pollutant/gas/liquids from the vessels, mechanical
equipments etc. which are likely to cause environmental
pollution.

5. The industry shall comply with any other conditions laid down or directions issued by the Board under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 from time to time.
6. Nothing in this N.O.C. shall be deemed to preclude the institution of any legal action nor relieve the applicant from any responsibilities or penalties to which the applicant is or may be subjected under the provisions of the Water/Air Acts respectively.
7. The project has been approved by the Board from pollution angle and the industry shall obtain the approval of site from other concerned departments, if need be.
8. The industry shall plant minimum of three suitable varieties of trees at the density of not less than 1000 trees per acre along the boundary of the industrial premises.
9. The industry shall construct and commission the ETP simultaneously with the main project and the treated effluent shall conform to the standards adopted by the Board for such discharges.
10. The industry shall construct a pucca storage tank of sufficient capacity to hold back the effluent in case of failure of Re-circulation system and also for no demand period.
11. The industry shall provide terminal manhole at the end of each collecting system and a manhole upstream of final outlet (s) out of the premises of the industry for measurement of flow and for taking samples. b
6/10
12. All the under ground water retaining structures shall be lined with an impervious layer so as to avoid seepage and contamination of sub-soil/water.
13. The industry shall, for the purpose of measuring and recording of quantity of water consumed, affix meters of such standards at such places as approved by the Environmental Engineer, Pollution Control Board, Regional Office, Faridkot.
14. The industry shall submit the performance study of the treatment facilities within a period of three months after the commissioning of the treatment plant.
15. The industry shall not consume any fuel for burning purposes without the prior written permission of the Board.
16. The industry shall not discharge any trade effluents anywhere. Only domestic effluent shall be discharged onto land for irrigation after treating in the septic tank.





M/s Satia Paper Mills Ltd.

17. The industry shall submit clearance certificate from the concerned departments regarding the compliance of the conditions imposed by C.S.A. in the environmental clearance granted vide No. 188 dtd. 09.05.97.
18. All amendments/revisions made by the Board in the effluent and/or emission/stack height standards shall be applicable to the industry from the date of such amendments/revisions.
19. The industry shall provide green belt of 10m width of different types of broad leaves trees all around its crushing units and shall not remove any plantation without the prior permission of the Board.
20. The industry shall install separate energy meter within one month for its effluent treatment plant/recirculation system and maintain the record on daily basis of consumption of energy for the running and maintainance of effluent treatment plant/recirculation system.
21. The adequacy and efficacy of the Effluent Treatment Plant and the Air Pollution Control Device will be the entire responsibility of the industry.
22. The industry shall provide adequate and appropriate pollution control measures to control water/air/odour pollution to the satisfaction of the Board and shall obtain clearance certificate from the Board before commissioning of its plant.
23. The industry shall not install any boiler and steam required will be taken from M/s Satia Paper Mills Ltd., (Unit No. 1) as proposed.
24. The industry shall obtain clearance from Govt. of India, Ministry of Industry for licensed for licensed capacity.
25. The industry shall leave 40ft. wide green space on both sides of 132 KV. electric line.
26. The industry shall take approach for unit No.1 through its old unit and shall stop using unauthorised approach being used at site.
27. The industry shall amend its on-site emergency plan, keeping in view, the new unit proposed by it.
28. The industry shall make proper and adequate fire fighting arrangements in all parts of the plant and shall provide fire hydrants of adequate capacity.
29. The industry shall obtain clearance from Site Appraisal Committee.

30. The industry shall make proper provisions for the storage & disposal of hazardous waste to be generated from it in accordance with Hazardous Waste (Management & Handling) Rules, 1989.

31. The industry shall not import any hazardous chemicals/waste without prior permission of Punjab Pollution Control Board/ Ministry of Environment, Govt. of India.

Amplified 35/11/80
The industry shall obtain cover under the P.L.I Act 1997.

6/10
Environmental Engineer-III,
Senior Environmental Engineer (CM),
Patiala.

Endst.No. _____

Dated _____

A copy of the above is forwarded to the following for information & necessary action:-

1. The Environmental Engineer, Pb. Pollution Control Board, Regional Office, Faridkot.
2. Computer Centre, Pollution Control Board, Punjab.

Sd/-
Environmental Engineer-III,
Senior Environmental Engineer (CM),
Patiala.





Annexure 4: A copy of NOC for Unit No. 2 (70 TPD to 150 TPD)

10/10/2012 11:00 AM
Village Rupana, Dist. Muktsar.

PUNJAB POLLUTION CONTROL BOARD
Zonal Office, Unit No. 12, Power House Road, Bathinda.

No. 11-9-13 Dated 11-9-13

To
M/s Satia Industries Ltd, Unit No.
Village Rupana,
Dist. Muktsar.

Name of the Applicant: Sh. J.R. Sharma, Director
Scale of the Industry: Large
NOC Fee Details: Rs. 45,000/- at Head Office, Patiala.

Subject: "Consent to Establish (NOC)" for expansion from Pollution Angle under the provisions of Water (Prevention & Control of Pollution) Act, 1974 & Air (Prevention & Control of Pollution) Act, 1981 - M/s Satia Industries Ltd, Unit No. 12, Power House Road, Bathinda.

Ref. NO. SW/2012/NOC/Exp- 07 Dated: 09.04.2012.

Reference your application regarding the subject cited matter received through the Environmental Engineer, Regional Office, Bathinda.

The Punjab Pollution Control Board has "No Objection" for registration of expansion of its industrial unit to manufacture writing & printing paper @ 150 TPD using waste paper as raw material in its existing premises in village Rupana, Dist. Muktsar subject to the following conditions:-

- The NOC is valid only for submission of application and issue of demand notice for electric connection by P.S.P.C.B. / supply connection/burn etc. However, the industry shall obtain a clearance certificate from the Board to the effect that it has installed proper and adequate pollution control equipments for the purpose of release of electric connection by P.S.P.C.B. and discharging the less effluent of clean from chemical substances. The NOC is valid for one year, or till the commissioning of the industry for expansion purposes, whichever is earlier.
- The industry shall provide adequate arrangements for fighting the accidental leakage/discharge of any air pollutant/gas/liquids from the vessels, mechanical equipments etc. which are likely to cause environmental pollution.
- The industry shall comply with any other conditions laid down or directions issued by the Board under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 from time to time.
- Nothing in this N.O.C. shall be deemed to neither preclude the institution of any legal action nor relieve the applicant from any responsibilities or penalties to which the applicant is or may be subjected to, under the provisions of the Water/Air Acts respectively.
- The consent has been granted for the least from pollution angle only and the industry shall submit the approval of air from other concerned departments, if need be.

Contd.....

-2-

7. The industry shall plant minimum three suitable varieties of trees at the density of not less than 1000 trees per acre along the boundary of the industrial premises.
8. The industry shall operate the existing effluent treatment plant properly and effectively, so as to conform to the standards prescribed by the Board.
9. The industry shall dispose off the treated effluent as well as domestic effluent on land for irrigation purposes and shall not allow it to seep into any water bodies or outside of its premises.
10. The industry shall not dispose the sewage sludge with treated effluents which are used, re-used or re-cycled.
11. The industry shall ensure that the effluent discharged by it is within limit.
12. (a) The industry shall ensure that at any time the emissions do not exceed the maximum standards laid down by the Board from time to time.
- (b) The industry shall ensure that the emissions from each stack shall conform to the following maximum standards laid down by the Board.

Steam Generating Capacity	Maximum particulate matter	
	A.	B.
	Area upto 5 Km from the periphery of class I and II class town.	
Less than 2 ton/hr.	500 mg/NM ³	1200 mg/NM ³
2 ton to 10 ton/hr.	500 mg/NM ³	1000 mg/NM ³
Above 10 ton to 15 ton/hr.	300 mg/NM ³	800 mg/NM ³
Above 15 ton/hr.	150 mg/NM ³	150 mg/NM ³
All emissions normalized to 1.2 m/s wind speed.		

13. The industry shall discharge all gases through a stack of minimum height as specified in the following standards laid down by the Board.

STACK HEIGHT FOR STEAM PLANTS	
Steam Generating Capacity	Stack Height
1. Less than 2 ton/hr. 5 meters or exceeds the height of neighboring building which ever is more.	
2. More than 2 ton/hr. to 5 ton/hr.	12 meters
3. More than 5 ton/hr. to 10 ton/hr.	15 meters
4. More than 10 ton/hr. to 15 ton/hr.	18 meters
5. More than 15 ton/hr. to 20 ton/hr.	21 meters
6. More than 20 ton/hr. to 25 ton/hr.	24 meters
7. More than 25 ton/hr. to 30 ton/hr.	27 meters
8. More than 30 ton/hr. 30 meters or exceeds the formula	

$$H = 1.4 Q_1^{0.4}$$

Where Q_1 = Quantity of SO₂ in Kg/hr.

Q_2 = Quantity of particulate matter in Ton/day

- (a) For industrial furnaces and kilns, the criteria for selection of stack height would be based on that used for the corresponding steam generation.

- (b) Stack height for diesel generating sets:

Capacity of diesel generating set	Height of the Stack
0-50 KVA	Height of the building + 1.5M.
50-100 KVA	do + 1.0M.
100-150 KVA	do + 2.5M.
150-200 KVA	do + 3.0M.
200-250 KVA	do + 3.5M.
250-300 KVA	do + 3.5M.

Contd...3...





Satia Industries Ltd. (India),
Village Rupana, Dist. Muktsar

3.

For higher KVA rating stack height in meters shall be worked out according to the formula:

$$H = 3 + 0.2 \frac{Q}{V} \frac{1}{\Delta T}$$


where H = height of the building or chimney where the generator set is installed

13. The industry shall provide terminal manhole at the end of each collecting system and a manifold system for flow measurement at the proximity of the industry for measurement of flow and for taking samples.
14. All the under ground water measuring instruments shall be fixed with an importance level as to avoid stoppage and compensation of stoppage.
15. The industry shall, for the purpose of monitoring and recording of quantity of water consumed, with meters of certified standards at such places as approved by the Environment/ Emission Pollution Control Board, Regional Office Patiala.
16. The industry shall keep the height of exhaust pipes with ventilation equipment etc. at least 3 meters above the roof level.
17. The industry shall ensure that the emissions from the each stack shall conform to the emission standards laid down by the Board from time to time.
18. The industry shall not consume any fuel except rice husk for boiler and 1250 for D.G. set within the per centum permission of the Board.
19. All amendments/revisions made by the Board in the effluent and/or emission stack height standards shall be applicable in the industry from the date of such amendments/revisions.
20. The industry shall install separate equipment for an effluent treatment plant/air pollution control device and monitor the record on daily basis of consumption of energy for the running and maintenance of effluent treatment plant/air pollution control device.
21. The industry shall install proper and adequate effluent treatment plant and Air Pollution Control Device as per feasibility report submitted for it, simultaneously with the main project.
22. The industry shall develop adequate land area as per Control Technology for use of treated trade effluent for irrigation.
23. The industry shall make proper and adequate arrangements for storage of fuel within its premises.
24. The industry shall dispose off the fuel ash in an environmentally sound manner and develop the adequate land area for the same within its premises along with the main project.
25. The industry shall get the permission for change of land use from the Competent Authority of the state, if required be.
26. The industry shall obtain authorization of the Board as required under rule 3 of the Hazardous Waste Management, Handling & Trans-boundary Movement Rules, 2008.
27. The industry shall get performance study of effluent treatment plant, air pollution control device carried out once in a year from the laboratory of the Board.
28. The industry shall provide proper canopy with D.G. set to contain the sound pressure level within the standards laid down by the Ministry of Environment & Forests.
29. The industry shall install air pollution control device and effluent treatment plant simultaneously with main plant as per scheme given in the feasibility report and adequacy & effects of this pollution control device will be entire responsibility of the industry.

Contd....4..

-4-


30. The industry shall dispose off the effluents in an environmentally sound manner.
31. The industry shall get its testing plans approved under the provisions of section 3A of the Punjab Factories Rules, 1952.
32. The Board reserves the right to revoke the consent to establish POCU granted to the industry at any time in case the industry is found violating any of the conditions of the consent to discharge POCU granted under the Water Pollution & Control of Punjab Act, 1974 and/or Prevention & Control of Pollution Act, 1981.


Environmental Engineer,
For Senior Environmental Engineer,
Zonal Office, Bathinda.

Encl. No. _____

Dated: _____

A copy of the above is forwarded to the Environmental Engineer,
Punjab Pollution Control Board, Regional Office, Bathinda for information and
necessary action.


Environmental Engineer,
For Senior Environmental Engineer,
Zonal Office, Bathinda.





Annexure 5: CSA clearance and NOC copy for Unit No. 2 for 150 TPD agro based paper manufacturing

150 T Agro
CSA

Ph: 0175-2215793, 2200460
Fax : 0175-2215636, 220460

STATE COMPETENT AUTHORITY
Government of Punjab
(Office of the Member Secretary)

VATAVARAN BHAWAN,
NABHA ROAD,
PATIALA-147001

Registered

No. CSA/2016/S 111 Dated 14-1-16

To
✓ M/s Satia Industries Ltd (Unit No. 2),
Village Rupana, District Muktsar

Subject: Environmental clearance as required under Press Note 17 (1984 series) by SCA-cum-SAC.

It is intimated that the subject cited application of the industry for change in raw material from waste paper to agro waste i.e. wheat straw, sarkanda, baggase @ 218 TPD, wood chips @ 88 TPD (Total 306.02 TPD) for manufacturing of writing & printing paper @ 150 TPD (existing production capacity) and for installation of co-generation power plant of 12.5 MW in the existing premises located in the revenue estate of Village Rupana, District Muktsar, was considered by the SCA-cum-SAC in its 91st meeting held on 04.01.2016. In the said meeting, it was decided to grant environmental clearance under Press Note 17 (1984 series) to the industry subject to the conditions as proposed by the member departments.

As such, environmental clearance under Press Note 17 (1984 series) is, hereby, granted, subject to the following conditions as proposed by the member departments:

Conditions by P.P.C.B.

1. The industry will submit feasibility report/technical details for capacity enhancement of recovery boilers from 25 TPH to 40 TPH & 15 TPH to 25 TPH, respectively viz-a-viz upgradation of ESPs to achieve the standards at enhanced capacity.
2. The industry will develop additional 140 acres of land for plantation as proposed by it.
3. The industry will install piezometers at suitable points for monitoring of ground water from time to time.
4. The industry will submit proposal for disposal of fly ash to be generated from the ESPs.

Conditions by DOF

5. All the reactions will be carried out in the closed vessels.
6. The industry will provide flame-proof Electric fittings.
7. No manual handling of chemicals will be done.
8. The industry will make appropriate arrangements for fire extinguishers.
9. The industry will upgrade the emergency plan and health and safety policy from time to time.
10. The building plans of the factory shall submitted to the Director of Factories, Punjab and other departments such as PUDA and CETP etc. before starting the construction.
11. Names and connecting telephone numbers of nearby health institutions should be displayed on the board and made known to all concerned in the vicinity of the plant also.
12. The industry will install Chlorine leakage detector to detect the leakage of chlorine.
13. The industry will keep chlorine safety kit and breathing apparatus to fight the leakage of chlorine.
14. The monitoring of chlorine will be done in the work environment and record of the same will be kept.
11. The industry will improve its liquor effluent treatment plant to treat black liquor.
12. The industry shall comply with the provisions of Factories Act, 1948 and Punjab Factory Rules, 1952.
13. The industry will comply with the provisions of Schedule XI and Schedule XVI under Rule 102 of Punjab Factory Rules, 1952.
14. The industry will educate the workers and the people in the vicinity about the hazards that can arise from the factory.
15. The industry will make adequate and appropriate arrangements so that there is no generation of any static charge.
16. The unit will be operated under the supervision of experienced staff only.
17. The industry shall submit compliance report of the conditions of approval of site to Director of Factories, Punjab before commissioning of its project.
18. The industry shall be inspected after commissioning of its proposed project to monitor the compliance of conditions of approval of site.

Conditions by CTP

19. The industry will leave 28 ft. width of land from its own land in front of its premises for widening of existing approach road from 94 feet to 150 feet as per the provisions of Master Plan.
20. The industry shall deposit Rs.41,000/- as prescribed processing fee in the shape of Bank Draft in the office of Chief Town Planner, Punjab.





M/s Satia Industries Ltd (Unit No. 2), Village Rupana, District Muktsar

-3-

General conditions

21. The entrepreneur will also comply with the conditions of the earlier environmental clearance granted under Press Note 17 (1984 series) vide letter no. 710 dated 08.02.2013.
22. The industry shall submit compliance report of the conditions of this environmental clearance to the Punjab Pollution Control Board, Patiala, before the commissioning of the project.
23. This site clearance from environmental angle is, hereby, granted under Press Note No. 17 (1984 Series). However, the industry will obtain site clearance and approvals from other departments, under any other Act/rules, as the case may be.
24. This environmental clearance shall remain valid for a period of five years from the date of its issuance.

[Signature]
14/1/2016
Environmental Engineer (CSA)

Endst. No. CSA/2015/R/

Dated _____

A copy of the above is forwarded to the following for information and necessary action:-

1. The Principal Secretary to Govt. of Punjab, Deptt. of Industries & Commerce, Udyog Bhawan, Sector 17, Chandigarh.
2. The Director of Factories, Punjab, SCO 87-88, Sector 17-D, Chandigarh.
3. The Director of Industries & Commerce, Pb., Udyog Bhawan, Sector-17, Chandigarh
4. The Principal Chief Conservator of Forests, Pb., Forest Complex, Sector-68, SAS Nagar
5. The Director (Health), Deptt. of Health & Family Welfare, Pb., Sector-34, Chandigarh.
6. The Chief Town Planner, Pb., Department of Town & Country Planning, 6th Floor, PUDA Bhawan, Phase-8, Mohali.
7. The Director of Agriculture, Punjab, Kheti Bhavan, Institutional Site No.204, Near Dara Studio, Sector-56, Mohali.
8. The Chief Fire Officer, C/o Director Local Bodies, Januja Building, SCO 131-132, Sector 17-C, Chandigarh.
9. The Member Secretary, Punjab Pollution Control Board, Nabha Road, Patiala.

[Signature]
Environmental Engineer (CSA)



PUNJAB POLLUTION CONTROL BOARD Zonal Office, Power House Road, Street No. 12, Bathinda

Website:- www.ppcb.gov.in

Industry ID: R12MKS69323

Application No: 3673867

Date: 30/03/2016

To

M/s Satia industries Ltd. (unit-2)
V.p.o.rupana district sri muktsar sahib
Muktsar
152032
Tehsil: Muktsar
District: Muktsar

Subject : Grant of 'Consent to Establish' (NOC) for an industrial unit u/s 25 of Water(Prevention & Control of Pollution)Act, 1974 and u/s 21 of Air(Prevention & Control of Pollution)Act,1981.

With reference to your application for 'Consent to Establish'(NOC) an industrial plant u/s 25 of Water(Prevention & Control of Pollution)Act, 1974 and u/s 21 of Air(Prevention & Control of Pollution)Act, 1981, you are, hereby, permitted to establish the industrial or an expansion addition to discharge the effluent(s) & emission(s) arising out of your premises subject to the following conditions:

A. Particulars of the Industry

Name of the Applicant	Janak Raj Sharma
Address of industrial premises	M/s Satia industries ltd. (unit-2) V.p.o.rupana district sri muktsar sahib Muktsar 152032 Tehsil :Muktsar District :Muktsar
Capital investment of the industry	0.0 lakhs
Scale of the industry	Large
Office District	Bathinda
NOC fee details	--





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Satia Industries Ltd. (Unit-2), V.p.o.rupana district sri muktsar sahi,
Muktsar, Muktsar

Fee For	Bank Name	Branch Name	Draft No./Money Receipt No.	Date	Amount (In Rupees)
CTE	Punjab National Bank	Kacha Ferozpur Road, Muktsar	401432	29/09/2015	88000.0
Raw Materials name with quantity per day		Agro waste i.e. wheat straw, Sarkanda, Baggase @ 218 TPD, Wood chips @ 88 TPD (Total 306.02 TPD)			
Products with quantity per day		Writing & printing paper @ 150 TPD			
By-Products, if any, with quantity per day		--			
Details of machinery and process		Writing & printing manufacturing unit			
Details of Effluent Treatment plant		No new ETP proposed. Existing ETP installed for treating trade effluent of M/s Satia Industries Ltd. (unit-1) proposed to handle the combined effluent for both units along with the some modification as proposed by the industry.			
Mode of Disposal		Trade effluent - Existing : 870 KL/day Proposed : 5223 KL/day – discharged onto land for plantation developed in an area of 400 acres Domestic effluent @ 60 KL/day from Unit-1 & Unit-2 – discharged onto land for plantation after passing through septic tanks.			
Standars to be achieved under Water(Prevention & Control of Pollution) Act, 1974		As prescribed by the PPCB/CPCB/MOEF.			
Sources of emissions and type of pollutants		flue gas emissions from rice husk fired boiler of capacity 75 TPH The industry has proposed to operate both CRPs including standby at present (15 TPH) of Unit-1 along with modification in both CRPs to handle the total black liquor through these CRPs of Unit No.1 & proposed Unit No.2			
Mode of disposal of emissions with stack height		Stack of 60 mtrs height above GL with boiler of capacity 75 TPH.			
Quantity of fuel required in TPD		Rice husk for 75 TPH capacity boiler			
Type of Air Pollution Control Devices to be installed		ESP is proposed to be installed as APCD with 75 TPH capacity boiler			

Standards to be achieved under Air(Prevention & Control of Pollution) Act, 1981	As prescribed by the PPCB/CPCB/MOEF.
---	--------------------------------------

B. Particulars of Consent to Establish (NOC) granted to the industry

No. R16MKSCTE3673867	Date of issue :30/03/2016
	Date of expiry :30/03/2017

C. Main Conditions :

1. The industry shall not start any construction activity before obtaining Environmental Clearance as required under the EIA notification dt. 14.09.2006 from the Ministry of Environment & Forests, Govt. of India, New Delhi.
2. The industry will submit feasibility report/technical details for capacity enhancement of recovery boilers from 25 TPH to 40 TPH & 15 TPH to 25 TPH respectively viz.-a-viz. upgradation of ESPs to achieve the standards at enhanced capacity of these boilers.
3. The industry will develop additional 140 acres of land for plantation as proposed by it.
4. The industry will install piezometers at suitable points for monitoring of ground water from time to time.
5. The industry will submit proposal for disposal of fly ash to be generated from the ESPs.

D. General Conditions :

1. The N.O.C. is valid for period of one year from the date of its issue or till the commissioning / modernization / upgradation of the exiting industry, whichever is earlier.
2. The industry shall install and commission the pollution control devices as per proposal / feasibility report submitted by it to the Board simultaneously along with the main project and the treated emissions shall conform to the such standards laid down/ adopted by the Board for such discharges. If there is any probability of noise pollution/ odour pollution/ fugitive emissions, then, the industry shall also take suitable preventive measures simultaneously along with the main project.
3. The industry shall apply for varied consents to operate under the Water Act, 1974 & Air Act, 1981, two months before the commissioning of the industry.
4. The industry will install online continuous stack emission monitoring system for all the APCDs and will connect with the server of the PPCB/ CPCB.
5. The industry will install online continuous effluent monitoring system for the ETP and will connect with the server of the PPCB/ CPCB, if applicable.
6. The industry will install CCTV cameras alongwith digital video recorder (DVR) on the pollution control devices and its connectivity with the server of the Board.
7. The industry shall provide adequate arrangements for fighting the accidental leakages/discharge of any air pollutant/gas/liquids from the vessels, mechanical equipments etc. which are likely to cause environmental pollution.
8. The industry shall comply with any other conditions laid down or directions issued by the Board under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 from time to time.
9. Nothing in this N.O.C. shall be deemed to neither preclude the institution of any legal action nor relieve the applicant from any responsibilities or penalties to which the applicant is or may be subjected to, under the provisions of the Water/Air Acts respectively.





Satia industries Ltd. (unit-2), V.p.o.rupana district sri muktsar sahib,
Muktsar, Muktsar

10. The project has been approved by the Board from pollution angle only and the industry shall obtain the approval of site from other concerned departments, if need be.
11. The industry shall plant minimum three suitable varieties of trees at the density of not less than 1000 trees per acre along the boundary of the industrial premises.
12. The industry shall operate its effluent treatment plant properly and effectively, so as to conform to the standards prescribed by the Board for such discharges onto land for plantation / irrigation.
13. The industry shall dispose off the treated trade as well as domestic effluent on land for irrigation purposes and shall not allow it to stagnate anywhere inside or outside of its premises.
14. The industry shall not irrigate the vegetable crops with treated effluents which are used/consumed as raw.
15. The industry shall ensure that the effluent discharged by it is toxicity free.
16. a) The industry shall ensure that at any time the emissions do not exceed the emissions standards laid down by the Board from time to time.
b) The industry shall ensure that the emissions from each stack shall conform to the following emission standards laid down by the Board.

Steam Generating capacity	Required particulate matter	
	A.	B.
	Area upto 5 Km from Other than "A"	
	the periphery of class	
	I and class-II town.	
Less than 2 ton/hr.	800 mg/NM3	1200 mg/NM3
2 ton to 10 ton/hr.	500 mg/NM3	1000 mg/NM3
Above 10 ton to 15 ton/hr	350 mg/NM3	500 mg/NM3
Above 15 ton/hr	150 mg/NM3	150 mg/NM3

All emissions normalized to 12% carbon dioxide.

17. The industry shall discharge all gases through a stack of minimum height as specified in the following standards laid down by the Board -

(i) STACK HEIGHT FOR BOILER PLANTS -

Steam Generating Capacity	Stack heights
1. Less than 2 ton/hr.	9 meters or 2-times the height of neighbouring building which ever is more.
2. More than 2 ton/hr. to 5 ton/hr.	12 meters
3. More than 5 ton/hr. to 10 ton/hr	15 meters
4. More than 10 ton/hr. to 15 ton/hr	18 meters
5. More than 15 ton/hr. to 20 ton/hr	21 meters

6. More than 20 ton/hr. to 25 ton/hr. 24 meters
7. More than 25 ton/hr. to 30 ton/hr. 27 meters
8. More than 30 ton/hr. 30 meters or using the formula

$$H = 14 Q^{10.3}$$

or

$$H = 74 Q^{20.27}$$

Where Q1 = Quantity of SO2 in Kg/hr.

Q2 = Quantity of particulate matter in Ton/day.

(ii) Stack height for diesel generating sets:

Capacity of diesel generating set	Height of the Stack
0-50 KVA	Height of the building + 1.5Mt.
50-100 KVA	-do- + 2.0Mt.
100-150 KVA	-do- + 2.5Mt.
150-200 KVA	-do- + 3.0Mt.
200-250 KVA	-do- + 3.5Mt.
250-300 KVA	-do- + 3.5Mt.

For higher KVA rating stack height H (in meter) shall be worked out according to the formula:

$$H = h + 0.2 (KVA)^{0.5}$$

where h = height of the building in meters where the generator set is installed.

18. The industry shall provide terminal manhole at the end of each collecting system and a manhole upstream of final outlet (s) out of the premises of industry for measurement of flow and for taking samples.
19. All the under ground water retaining structures shall be lined with an impervious layer so as to avoid seepage and contamination of sub-soil/water.
20. The industry shall keep the height of exhaust pipes with ventilation equipments etc. at least 3 meters above the roof level.
21. All amendments/revisions made by the Board in the effluent and/or emission/stack height standards shall be applicable to the industry from the date of such amendments/revisions.
22. The industry shall not consume any fuel except rice husk for boiler, HSD for DG set (s), Biogas, black liquor & furnace oil for recovery boiler without the prior written permission of the Board.
23. The industry shall submit a building plan prepared by the Director of Factories / Chartered Architect / Chartered Engineer as may be authorized to do so under the provisions of section 3-A of the Punjab Factory Rules, 1952.
24. The industry shall obtain permission from the Central Ground Water Authority for the abstraction of ground water before installation of any tubewell.
25. The industry shall install separate energy meters for its effluent treatment plant/air pollution control devices and maintain the record on daily basis of consumption of energy for the running and maintenance of effluent treatment plant/air pollution control devices.
26. The industry shall, for the purpose of measuring and recording of quantity of water consumed, affix





*Satia industries ltd. (unit-2), V.p.o.rupana district sri muktasr sanib,
Muktasr, Muktasr*

electromagnetic flow meters (EMFs) of such standards at such places as approved by the Environmental Engineer, Pollution Control Board, Regional Office, Bathinda.

27. The pollution control devices shall be interlocked with the manufacturing process of the industry.

28. The industry shall develop adequate land area as per Karnal Technology for use of treated trade effluent for irrigation.

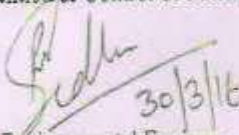
29. The industry shall make proper and adequate arrangements for storage of fuel within its premises.

30. The industry shall dispose off the fuel ash in an environmentally sound manner and develop the adequate land area for the same within its premises along with the main project.

31. The industry shall install air pollution control devices with the main plant as per scheme given in the feasibility report and adequacy & efficacy of these pollution control devices will be entire responsibility of the industry.

32. The industry shall provide proper canopy with D.G. set (s) to contain the sound pressure level within the standards laid down by the Ministry of Environment & Forests.


33. The Board reserves the right to revoke the consent to establish (NOC) granted to the industry at any time in case the industry is found violating any of the conditions of the consent to establish (NOC) granted under the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981.


30/3/16
Asstt Environmental Engineer

For Senior Environmental Engineer

Endst. No. _____ Dated : _____

A copy of the above is forwarded to the Environmental Engineer, Punjab Pollution Control Board, Regional Office, Bathinda for information & necessary action.


Asstt. Environmental Engineer

For Senior Environmental Engineer

EC letter for Satia Industries limited- Unit-I

F.N. J-11011/196/2014-IA.II(I)
Government of India
Ministry of Environment & Forests & Climate Change

Indira Paryavaran Bhawan,
Jor Bagh, Lodi Road,
New Delhi-110003.

E-mail: adraju@gmail.com
Tele fax: 011: 24695236

Dated: 5th February, 2015

To
M/s Satia Industries Ltd.,
Malout Road, village Rupana,
Muktsar – 152032, PUNJAB.

Sub: EC for Writing & Printing paper from 60 TPD to 150 TPD and 12.5 Co-gen Power Plant of **M/s Satia Industries Ltd.** at village Rupana, Dist. Muktsar, Punjab – **Environmental Clearance (EC) –reg.**

Sir,

This is with reference to this Ministry's grant of Terms of Reference (TOR) dated 21.07.2011 for preparation of EIA-EMP Report for 150TPD and 12.5 MW Co-gen Plant and your application received on 03.01.2013 for environmental clearance. Public Hearing was held on 12.10.2012; however it was chaired by an Officer of the rank of a sub-divisional Magistrate and in view of this, MoEF&CC vide letter dated 21.03.2013 sought fresh P.H. as the earlier P.H. was chaired by an officer of the rank of Sub-Divisional magistrate. The Punjab SPB conducted a fresh P.H. on 30.09.2013. The revised EIA-EMP report was received vide letter dated 26.05.2014.

The pulp and paper manufacturing industry is listed at S.No. 5(i) in Category A of the schedule of EIA Notification, 2006 and appraised by the Expert Appraisal Committee (Industry) of MoEF.

2. The aforesaid proposal was considered by the Reconstituted Expert Appraisal Committee (Industry) (EAC (I)) in its 22nd Meeting held on 28th-29th August 2014. The project proponent, namely M/s Satia Industries Ltd (SIL) and their consultants, namely Eco Chem Sales & Service, Surat (NABET accredited for Pulp & Paper Sector).

3. The Plant was commissioned in 1984 using agricultural residues as raw material with an installed production capacity of 20 TPD Writing and Printing Paper. The Plant is located 6km from Muktsar at Muktsar-Malout Road in village Rupana. The latitude is 30°, 25'N and longitude is 74°, 31'E and altitude is 197.67m above MSL. There are no National Parks or Wildlife Sanctuary/Biosphere within 10km radius of the project. It was informed that the

Signature

2

expansion of the unit from 20TPD to 60TPD of Writing and Printing Paper in the year 2000 did not require an EC as the costs of the expansion project was within Rs 50 crores and operated with a CTO. Compliance of consent conditions has been submitted. It was informed that to comply with pollution control standards, a soda recovery plant based on conventional chemical recovery to treat black liquor produced from agro based pulp mill was commissioned in March 2006. The industry is presently manufacturing eco-friendly paper of different varieties and grades of writing and printing paper. A State-of-the-Art Bio-methanation Plant based on UASB System to treat wastewater was also installed.

4. The present proposal is for Modernisation/Expansion of its existing unit to further enhance production capacity of Writing & Printing Paper from 60TPD to 150 TPD at village Rupana, Dist. Muktsar, Punjab.

S.N.	Item	Existing Writing and Printing Paper	Proposed Writing & Printing Paper & Cogen-Unit
1.	Capacity (TPD)	60	150
2.	Land (acres)	36.019	36.019
3.	Water usage (m ³ /d)	6600	10,500
4.	Water (m ³ /T of Paper)	110	70
5.	Power Requirement (MW)	4.25 (from Co-gen and PSPCL)	7.5
6.	Mill Effluent Generation (m ³ /d)	5800	9420
7.	Black Liquor (m ³ /d)	750	1800
8.	Boilers/APCDs	27 TPH Boiler - Multicyclones with wet scrubber 45 TPH Boiler - Multicyclones with wet scrubber 15 TPH Recovery Boiler- ESP	The steam requirement for the enhanced capacity will be met from the proposed 75TPH boiler, which will run on rice husk and biogas generated from UASB digester. After commissioning the 75TPH boiler, the existing 2 boilers will be kept as standby and ESP installed in the 75TPH boiler.
9.	T.G.Units	5MW turbine (2 No.s)	12.5 MW additional turbine will be installed
10.	D.G.Sets	-	-

5. The main raw materials along with source and mode of transportation are given below:

S.N.	Raw Material/Chemicals	Consumption for existing Plant (60TPD capacity)	Consumption for Proposed Expansion (150TPD capacity)
1.	Wheat Straw + Sarkanda + Bagasse	155 MT	315MT

Signature





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.: 2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

3

2.	Wood & Veneer Chips	-	62MT
3.	Rice Husk	170MT	250MT
4.	Total Caustic Soda	29.6 MT	76.36MT
5.	Chlorine (as element)	6MT	Nil
6.	Chlorine Dioxide	Nil	3.75MT
7.	Oxygen	-	4.5MT
8.	Hydrogen peroxide	-	1.8MT
9.	Lime	15MT	51.2MT
10.	Soapstone	15MT	35MT
11.	Nutrients: Urea DAP	100Kg, 35Kg	210Kg, 105Kg
12.	Paper Additives	0.965MT	2.405MT

6. SII is introducing Oxygen delignification and Chlorine dioxide bleaching to eliminate elemental chlorine bleaching, i.e. the purpose of introducing Elemental Chlorine Free Bleaching (ECF Bleaching) in the process is to reduce pollution load as well as AOX level. Current bleaching sequence is being changed to make brown pulp into white up to desired level of brightness. The company has improved the washing of unbleached pulp by using Twin Roll Press Technology.

7. To reduce water consumption & effluent generation drastically, following steps will be taken:

- Utilization of paper machine black water for washing of pulp in bleaching stages.
- Maximum circulation of bleaching plant filtrate.
- Sufficient number of washers for the enhanced bleached pulp processing capacity for 150MT of paper production with minimum chemical losses.
- Generated black liquor is used in soda recovery plant for recovery of caustic soda.
- Chlorine dioxide, alkali extraction & Peroxide stage generated filtrate will be used for dilution in same stage before washing.
- Condensate from paper machine will be re-circulated back to the boiler for steam generation.
- Utilization of a portion of treated wastewater from ETP in ETP itself in place of fresh water.

By adopting the aforesaid water conservation measures, the freshwater consumption will reduce to 70m³/t of paper produced, which is below the 75m³/T standard.

8. To meet the steam requirement, SII has 2 boilers of 27 tph and 45tph, which run on rice husk and biogas and 15 tph Recovery boiler. The steam requirement for the enhanced capacity shall be met from proposed 75tph boiler, which will also run on Rice Husk and biogas. Power requirement of 4.25MW is met from grid and existing 10MW Co-gen plant with back pressure 5MW turbine and another extraction-cum-condensing steam turbine of 5MW capacity. Additional power requirement for the expansion project will be met from the proposed 12.5 MW Turbine and the existing 2 turbines, which will kept as standby.

Signature

4

9. One-season data was collected during October-December 2011. The ambient air quality monitoring conducted at 8 locations in the work zone and in the surrounding areas shows that the ambient air quality monitoring of the major AAQ parameters is within prescribed limits vide E(P)A, Rules. Data on AAQ monitoring indicates the following:

Parameter	Range (ug/m ³)	98 Percentile (ug/m ³)
PM10	47-96	87.51
PM2.5	24.7-44.2	42.38
SO ₂	5.9-14.3	12.79
NO ₂	10.1-22.3	19.32

In order to avoid fugitive dust emissions from different sources, dust collectors are provided at material transfer points. The major areas of fugitive dust emissions are: (i) Combustion of rice husk and (ii) Burning of Black Liquor in incinerator. The major mitigative measures proposed include the following: (i) 75tph Boiler to be equipped with ESP, (ii) Adequate stack heights has been provided for 45 & 27 tph Boilers, which are equipped with multi-cyclones, however, both these boilers would be standby after the expansion and (iii) ESP has been provided for the Recovery Boiler. Further, roads within the premises have been concreted. Green belt has also been developed.

10. The total water requirement (including existing) shall not exceed 10,500m³/day. Of the total water consumption of 10,500m³/d, about 9420m³/d will be used in plant process, 1000m³/d as make-up water in cooling tower/DM water for boilers and 80m³/d for domestic use. It was informed that no tube well is proposed to be installed as the entire water requirement of the project would be obtained from Sirhind Canal at a distance of 1km, for which permission from the State Irrigation Dept. has been obtained. Water quality parameters with respect to Ca, Mg, Na, K, iron, Copper, Chromium and Zinc were found to be below permissible limits at 8 locations of monitoring. Certain water quality parameters such as Chloride, sodium, TDS, Total Alkalinity were on found to be on the higher side as compared to level found in canal water. TDS was found to be in the range of 1010-1120 mg/m³ as against the level of 100.7 in canal water.

11. Major steps for water conservation include: (i) Installation of the latest technology which includes USAB Plant and two-stage aeration system, (ii) Existing aerobic ETP (in which total mill effluents are treated) consisting of two-stage sludge process. After the treatment process, the concentration of AOX in the treated wastewater is well within the prescribed standards of 1kg per tonne of paper. Provisions of fibre recovery from the paper machine backwater and its reuse to the max. Will be made to minimise consumption of fresh (make-up) water. Presently, the generation of black liquor from the existing pulp mill is approximately 750m³/d and after expansion, the quantity of black liquor generated will increase to 1800m³/d. The existing chemical recovery plant has a capacity to handle only 150T solids/d and is presently under-utilised to 80T/d. With the proposed expansion, the generation of solids will be about 266.7T/d and the existing Chemical Recovery Unit will be upgraded. By adopting various water conservation measure in the process, the freshwater consumption shall be reduced to 70m³/ton of paper produced against the norm of 75m³/T.

Signature

12. The effluents (9420m³/d) after treatment are discharged into a drain and are used for irrigation of Unit's plantation as well as irrigation of agricultural crops of farmers. An amount of 1800m³/d of black liquor from pulp washing is fed into chemical recovery boiler for recovery of chemicals. Of the 9420m³/d, 520 m³/d are water losses and the balance 8900 m³/d are discharged into drains for irrigation of plantation in an area of 207 acres, on which approximately 80,000 trees /shrubs have been planted.

13. The solid wastes generated from the plant operations and disposal are as given below:

S.N.	Solid Wastes	Section	Existing Quantity (MT/day)	Quantity After Expansion (MT/Day)	Disposal Arrangements
1.	ETP Sludge	ETP	2.5 TPD	6 TPD	Collected by small-scale cardboard manufacturers for making cardboard.
2.	Boiler Ash	Boiler House	35TPD	45TPD	Filling Low lying areas
3.	Lime Sludge	Hypo Preparation	105kg/D	Nil	Store in HDPE bags and disposed off through a Common TSDF at village Numbua, Tehsil Dera Bassi, dist. Mohali, Punjab. Approx 35MT/Annum sent to TSDF. MOU signed.
4.	Lime Sludge	Cautisizing	25TPD	90TPD	
5.	Used Oil				Stored in drums and disposed off to authorized recyclers and reprocessors of used oil

14. An amount of Rs 8 lakhs was spent on CSR during 2011-12. After expansion SIL proposes to spend 5% of the capital cost in the next 5 years on CSR activities as given below:

ACTIVITY	AMOUNT TO BE SPENT (Rs in lakhs)					TOTAL
	1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	
Upgradation of Eye Hospital being supported by SIL	15	-	-	-	-	15
Eye Hospital	-	10	10	10	10	40
Health check-ups, mobile vans and in Family Planning	10	10	10	10	10	50
Supporting cultural and sports activities	2.50	2.50	2.50	2.50	2.50	12.50
Scholarships and Books, school uniforms, tuition fees, etc	2.50	2.50	2.50	2.50	2.50	12.50

[Signature]





6

Water supply & Sanitation, repairs and whitewash of community buildings in nearby villages	5	5	5	5	5	25
Miscellaneous	5	5	5	5	5	25
TOTAL	45	40	40	40	40	205

Of the total capital costs of Rs 41 crores for the expansion project, a total of Rs 11 crores will be spent on environmental management plan and recurring cost will be Rs 4 crores. There are no court cases/litigation pending against the project.

15. Public Hearing was held on 30.09.2013. The participants of the Public Hearing were in favour of the proposed expansion plan of the company.

16. The Expert Appraisal Committee after deliberations recommended the project for environmental clearance subject to stipulation of the following specific conditions along with other environmental conditions as given below:

SPECIFIC CONDITIONS

- i. Compliance to all the specific and general conditions stipulated for the existing plant by the Central/State Government shall be ensured and regular reports submitted to the Ministry and its Regional Office at Chandigarh.
- ii. The project authority shall install ESPs with the boilers to achieve the particulate emission below prescribed limits. The emissions from chemical recovery section shall be controlled through ESPs to meet the prescribed norms.
- iii. 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.
- iv. The proponent shall obtain prior permission of the State Irrigation Department for use of water from Srihand Canal.
- v. The company shall limit the water consumption upto 75 m³/tonne of product. 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. Adequate steps including use of modern RO/UF based technologies shall be used to increase recycling and reduce water consumption.
- vi. The company shall install Oxygen Delignification (ODL) Plant and use Elemental Chlorine Free Bleaching (ECF Bleaching) in the process and shall maintain AOX below 1 kg/tonne of paper production.

7

- vii. An amount of 1800m³/d of black liquor from pulp washing shall be used in chemical recovery boiler for recovery of chemicals. The existing Chemical Recovery Unit shall be upgraded. The proponent shall adopt other water conservation measures for reducing freshwater consumption, which include the following, to reduce the freshwater requirements below prescribed standards of 75m³/T of paper produced.
 - Utilisation of paper machine black water for washing of pulp in bleaching stages.
 - Maximum circulation of bleaching plant filtrate.
 - Sufficient number of washers for the enhanced bleached pulp processing capacity for 150MT of paper production with minimum chemical losses.
 - Generated black liquor is used in soda recovery plant for recovery of caustic soda.
 - Chlorine dioxide, alkali extraction & Peroxide stage generated filtrate will be used for dilution in same stage before washing.
 - Condensate from paper machine will be re-circulated back to the boiler for steam generation.
 - Utilisation of a portion of treated wastewater from ETP in ETP itself in place of fresh water.
 - viii. The proponent shall treat the 8900 m³/d of wastewater generated and water quality parameters such as Chloride, Sodium, TDS, COD, Total Alkalinity, etc shall meet the standards for discharge notified under Environment (Protection) Rules, 1986, before discharge into drains. In case of discharge for irrigation of plantation, in addition to the aforesaid parameters, the wastewater discharged shall also meet the prescribed standards with respect to Sodium Absorption Ratio (SAR), Boron, etc before irrigation for plantation.
 - ix. The water quality characteristics of the treated effluents and of groundwater, below the zone of discharge onto the land, shall be got tested at regular intervals through NABL and reports of the same furnished as part of the compliance report submitted to the MOEF, RO Chandigarh. In case the levels exceed the prescribed limits, the effluents shall be treated to prescribed standards and only thereafter discharge onto the land.
 - x. The company shall submit the comprehensive water management plan along with monitoring plan for the ground water quality and the level, within three months from date of issue of this letter.
 - xi. 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. Online flow meter, pH meter, conductivity meter etc. shall be installed. The report shall be submitted to Ministry's Regional Office at Chandigarh, SPCB and CPCB.
 - xii. Ground water quality study in and around the project area shall be conducted through installation of piezometers in consultation with the State Ground Water Board and report on data on groundwater quality (pre-monsoon) shall be submitted to Ministry's Regional Office at Chandigarh, SPCB and CPCB as part of compliance report.

- xiii. The project authority shall dispose of hazardous waste as per the provision of Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.
- xiv. The company shall develop green belt in 33% of the total land as per the CPCB guidelines to mitigate the effect of fugitive emissions. A time-series photographs (pre-monsoon and post-monsoon) of both ground as well as aerial view of the greenbelt (existing and in proposed projects) and submit the same as part of compliance report to RO, Chandigarh.
- xv. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
- xvi. The company shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling.
- xvii. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the pulp and paper sector shall be strictly implemented.
- xviii. Data on ambient air, stack and fugitive emissions shall be regularly submitted online to Ministry's Regional office at Chandigarh, SPCB and CPCB as well as hard copy once in six months and display data on PM₁₀, PM_{2.5}, SO₂ and NO_x outside the premises at the appropriate place for the general public.
- xix. All the commitments made to the public during the Public Hearing/Public Consultation meeting held on 30.09.2013 shall be satisfactorily implemented and a separate budget for implementing the same shall be allocated and information submitted to the Ministry's Regional Office at Chandigarh.
- xx. The proponent shall adopt a 'Model Village' under CSR. A total of 5% of the capital cost of the project shall be earmarked towards various activities under CSR Plan under Enterprise Social Commitment and shall be implemented during the first 5 years of the project, which may include 2% of the net retain profits of the project. The activities may be based on Public Hearing issues and other need based activities identified in consultation with the local communities and District Administration. The detailed CSR Plan along with item-wise and village-wise details along with time-lines shall be prepared in consultation with the villages and the district administration and submitted to the Ministry's Regional Office at Chandigarh. Implementation of such program shall be ensured accordingly in a time bound manner. The details shall be uploaded on the company website and also submitted as part of the Annual Report of the company.
- xxi. Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, Safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.



A. GENERAL CONDITIONS

- i. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.
- ii. At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM₁₀, PM_{2.5}, SO₂ and NO_x are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Chandigarh and the SPCB/CPCB once in six months.
- iii. Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.
- iv. 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 EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).
- v. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
- vi. The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.
- vii. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.
- viii. Requisite funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Chandigarh. The funds so provided shall not be diverted for any other purpose.
- ix. A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.






EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT No.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

10

- x. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF at Chandigarh. The respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM_{10} , $PM_{2.5}$, SO_2 , NO_x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.
 - xi. 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 Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Chandigarh / CPCB / SPCB shall monitor the stipulated conditions.
 - xii. 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 along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEF at Chandigarh by e-mail.
 - xiii. 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 of Environment and Forests 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 Regional office at Chandigarh.
 - xiv. 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 commencing the land development work.
17. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
 18. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
 19. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management, Handling and

11

Transboundary Movement) Rules, 2008 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.

(Amardeep Raju)
Scientist 'C'

Copy to

1. The Secretary, Department of Environment, Government of Punjab, Secretariat, Chandigarh.
2. The Additional Principal Conservator of Forests, Regional Office (NZ), Bays No. 24-25, Sector 31-A, Dakshin Marg, Chandigarh 160 047
3. The Chairman, Punjab Pollution Control Board, Vatavaran Bhavan, Nabha Road, Patiala-147001.
4. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
5. Monitoring Cell, Ministry of Environment & Forests, Paryavaran Bhavan, CGO Complex, New Delhi.
6. Guard file / Record file.

(Amardeep Raju)
Scientist 'C'

COMPLIANCE REPORT TO ALL SPECIFIC AND GENERAL CONDITIONS OF ENVIRONMENTAL CLEARANCE

SPECIFIC CONDITIONS

Sr. No.	SPECIFIC CONDITIONS	STATUS
1	Compliance to all the specific and general conditions stipulated for the existing plant by the central/state Government shall be ensured and regular reports submitted to the Ministry and its RO, Chandigarh.	All specific and general conditions will be fulfilled and the copies of consents under Air & Water Acts are being submitted which are valid upto 31.03.2018 and Authorization of Hazardous waste collection, storage and disposal valid upto 14.02.21 is enclosed As Annexure -1
2	The Project authority shall install ESPs with the boiler to achieve the particulate emission below prescribed limits. The emissions from chemical recovery section shall be controlled through ESPs to meet the prescribed norms.	The PA has installed ESPs with the boilers to achieve the particulate emissions well below the prescribed limits. Test Reports enclosed As Annexure-2
3	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.	Yes, in case of any treatment process disturbance/failure in ETP, the unit will be shut down and shall not be restarted until the control measures are rectified. We will run the unit as per the guidelines
4	The proponent shall obtain prior permission of state irrigation Department for use of water from Sirhind canal.	We have the Water withdrawal permission letter to use water from Sirhind Canal from irrigation department. Letter enclosed As Annexure -3
5	The company shall limit the water consumption up to 75m ³ /tone of product. The industry shall ensure the compliance of the standard for discharge of the treated effluent from the unit as stipulated under the EPA rules or SPCB whichever is more stringent. Adequate steps including use of modern RO/UF based technologies shall be used to increase recycling and reduce water consumption	The water consumption is well below 75 m ³ /tone of product, since the water requirement is 10500m ³ /day and paper production is 150TPD so the water consumption per ton of product comes out to be 70m ³ . The treated effluent parameters fall well within the PPCB standards. The industry has installed online water monitoring system and the specimen online reports are being submitted As Annexure -4A & 4B
6	The company shall install oxygen Delignification (ODL) Plant and use elemental chlorine free bleaching (ECF Bleaching) in the process and shall maintain AOX below 1kg/ton of paper production.	Oxygen Delignification (ODL) and Chlorine dioxide bleaching is already in operation so there is no AOX in the system.
7	An amount of 1800m ³ /d of black liquor from washing shall be used in chemical recovery boiler for recovery of chemicals. The exiting Chemical Recovery unit shall be upgraded. The proponent shall adopt other water conservation measures for reducing freshwater consumption. Which include the following to reduce the freshwater requirements below prescribed stand red of 75 m ³ /T of paper produced. <ul style="list-style-type: none"> Utilization of paper machine back water for washing of pulp in bleaching stages. Maximum circulation of bleaching plant 	1800 m ³ /day of black liquor produced from pulp washing is already being used in chemical recovery boiler for recovery of chemicals. Recovery boiler has already commissioned and operational. Paper machine back water is being used for washing of pulp Bleach plant filtrate is circulated to its maximum





	<p>filtrate.</p> <ul style="list-style-type: none"> Sufficient number of washers for the enhanced bleaching pulp processing capacity for 150 MT of paper production with minimum chemical losses. Generated black liquor is used in soda recovery plant for recovery of chemicals. Chlorine dioxide, alkali extraction & Peroxide stage generated filtrate will be used for dilution in same stage before washing. Condensate from paper machine will be re-circulated back to boiler for steam generation. Utilization of a portion of treated wastewater from ETP in ETP itself in place of fresh water. 	<p>Adequate number of washers already installed for minimum chemical losses in bleaching process</p> <p>Black liquor already used in recovery plant</p> <p>Chlorine dioxide, alkali extraction and Peroxide stage generated filtrate is being reused</p> <p>Condensate already being re-circulated to boiler</p> <p>ETP treated wastewater is used in Mud washer and Belt press in ETP to reduce fresh water load and also in wet scrubber of boiler (flow chart enclosed) As Annexure-5.</p>
8	<p>The proponent shall treat the 8900 m³/d of wastewater generated and water quality parameters such as chloride sodium TDS, COD, Total alkalinity, etc shall meet be standard for discharge notified under Environment (Protection) rules 1986, before discharge into drains. In case of discharge for irrigation of plantation, in addition to be aforesaid parameters, the wastewater discharged shall also meet the prescribed standards with respect to sodium Absorption Ratio (SAR) Boron, etc before irrigation for plantation.</p>	<p>8900 m³/day of treated wastewater well under prescribed parameters being discharged to plantation. The test reports are enclosed which shows that all norms are being achieved along with SAR. As Annexure-6.</p>
9	<p>The water quality characteristics of the effluents and of groundwater, below the zone of discharge onto the land, shall be got tested at regular intervals through NABL and reports of the same furnished as part of the compliance report submitted to the MOEF, RO Chandigarh. In case the levels exceed the prescribed limits, the effluents shall be treated to prescribed standards and only thereafter discharge onto the land.</p>	<p>Water quality characteristics of the effluent and of groundwater are tested by PPCB Lab, which is NABL accredited and reports are enclosed along with online monitoring reports of discharged effluent. Also the groundwater quality in the discharge area is also continuously monitored at the four piezometers points in the upstream and downstream area and the test reports are attached As Annexure-7.</p>
10	<p>The company shall submit the comprehensive water management plan along with monitoring plan for the ground water quality and the level within three months from date of issue of this letter.</p>	<p>Water management plan and the groundwater quality reports are enclosed As Annexure-8.</p>
11	<p>Adequate number of influent and effluent quality monitoring stations shall be set up in consulation with the state pollution control Board and regular monitoring shall be carried out for all relevant parameters to maintain the effluent treatment efficiency. Online flow meter, pH Meter conductivity meter etc. shall be installed. The report shall be submitted to</p>	<p>Effluent quality monitoring Stations are already set up with PPCB consultation for influent and effluent quality monitoring and online water monitoring system is installed. Reports and documents regarding online water monitoring system enclosed As Annexure-4A & 4B.</p>

	Ministry's Regional office at Chandigarh SPCB and CPCB as part of compliance report.	
12	Ground water quality study in and around the project area shall be conducted through installation of piezometers in consultation with the state Ground water Board and report on data on ground water quality (pre-monsoon) shall be submitted to Ministry's Regional office at Chandigarh SPCB and CPCB as part of compliance report.	Piezometers to check groundwater quality already installed in consultation with PPCB and reports on data on groundwater quality (pre-monsoon) are enclosed As Annexure-9.
13	The project authority shall dispose of hazardous waste as per the provision of hazardous wastes (Management handling and Trans boundary Movement) Rules, 2008.	Hazardous waste of Category 32.1 & 32.3 was generated in the system. Hazardous waste of Cat. 32.1 was lifted by M/S Nimbua Greenfield (PUNJAB) Limited (MoU enclosed). But after the introduction of Elemental Chlorine Free (ECF) bleaching, there was no more generation of hazardous waste of Cat. 32.1. So now only hazardous waste of Cat. 32.3 is generated in the system, which is lifted by M/S Bansal Paper Board Mill (MoU/permissions enclosed) As Annexure-10 & there are no spent chemicals, strong acids and bases used in pulp & paper making process.
14	The company shall develop green in 33% of the total land as per the CPCB guidelines to mitigate the effect of fugitive emissions. A time-series photographs (pre-monsoon and post –monsoon) of both ground as well as aerial view of the greenbelt (existing and in proposed projects) and submit the same as part of compliance report to RP, Chandigarh	The industry has a total area of 486 acres out of which more than 450 acres have eucalyptus plantation and in balance area the green belt is developed in maximum possible area having different species of plants like roses, ficus, grape fruit, mango, ashoka tree, lemon plant, royal palms, and tree plantation alongside the boundary of the unit enclosed As Annexure-11 .(PHOTO)
15	Occupational health surveillance of the workers shall be done on a regular basis and records maintained per the factories Act.	Health checkup and health records of workers being maintained as per Factories ACT (record enclosed) As Annexure-12.
16	The company shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling.	Already installed fire pumps and fire line to prevent possible fire hazards (fire hydrant layout enclosed) As Annexure-13.
17	All the recommendations made in the charter on corporate Responsibility for environment protection (CREP) for the pulp and paper sector shall be strictly implemented.	Compliance to the Charter on Corporate Responsibility for environment protection (CREP) for the pulp and paper sector is enclosed As Annexure - 14.
18	Data on ambient air, stack and fugitive emissions shall be regularly submitted online to Ministry regional office at Chandigarh, SPCB and CPCB as well as hard copy once in six month and display data on PM _{2.5} , SO ₂ and NOX outside the premises at the appropriate place for the general public.	Online air monitoring system is installed (documents enclosed) on stacks to transfer data to PPCB and CPCB and online data is being regularly transmitted to PPCB, CPCB. Hard copies of the same are enclosed we can see on the following websites: As Annexure- 15. WATER: www.xylemcpcb.com Username: satia_industries Password: satia@675 AIR: www.nevcocpcb.com Username: satia_industries Password: sindustries@124
19	All the commitments made to the public during the public hearing //public consultation meeting held on 30.09.2013 shall be satisfactorily implemented and a separate budget for implementing the same shall be allocated and information submitted to the	Though no specific commitments were made as all the speakers spoke in favour of the industry, however the public expected that more employment be given to local people, accordingly: <ul style="list-style-type: none"> Industry has made a policy that all unskilled labor will be preferably employed from local





	Ministry's Regional office at Chandigarh.	<p>region</p> <ul style="list-style-type: none"> For skilled positions, engineering graduates from different fields will be taken in as trainees & will be given on the job training for skill development, who will be absorbed on regular basis after training. The company has committed itself for meeting CSR & provision, expenditure for the same is being done as per company law See Annexure-16. 															
20	The proponent shall adopt a "Model Village" under CSR. A total of 5% of the capital cost of the project shall be earmarked towards various activities under CSR plan under enterprise social Commitment and shall be implemented during the 5 year of the project, which may include 2% of the net retain profits of the project. The activities may be based on public hearing issues and other need based activities identified in consultation with the local communities and District Administration. The detailed CSR Plan along with item-wise and villages and the district administration and submitted to the Ministry's Regional office at Chandigarh. Implementation of such program shall be ensured accordingly in the time bound manner. The details shall be up loaded on the company website and also submitted as part of the Annual Report of the Company.	<p>Village "Kauni" has been adopted as "Model Village" by the company. Various socio-economic activities like health programs, building school infrastructure etc are being done by the company.</p> <table border="1"> <thead> <tr> <th>Financial Year</th><th>2% of Average net Profit of last three years (Rs. In Lacs)</th><th>Actual Spent Amount During the respective Financial year (Rs. In Lacs)</th></tr> </thead> <tbody> <tr> <td>2014-15</td><td>22.96</td><td>7.92</td></tr> <tr> <td>2015-16</td><td>19.63</td><td>23.45</td></tr> <tr> <td>2016-17</td><td>13.72</td><td>17.18</td></tr> <tr> <td>Total</td><td>56.31</td><td>48.55</td></tr> </tbody> </table> <p>In village "Kauni" various social activities like free eyes checkup camp, promoting education etc. are being carried out on regular basis. See Annexure-17.</p>	Financial Year	2% of Average net Profit of last three years (Rs. In Lacs)	Actual Spent Amount During the respective Financial year (Rs. In Lacs)	2014-15	22.96	7.92	2015-16	19.63	23.45	2016-17	13.72	17.18	Total	56.31	48.55
Financial Year	2% of Average net Profit of last three years (Rs. In Lacs)	Actual Spent Amount During the respective Financial year (Rs. In Lacs)															
2014-15	22.96	7.92															
2015-16	19.63	23.45															
2016-17	13.72	17.18															
Total	56.31	48.55															
21	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	All facilities for the housing of labour outside the site with all infrastructures are available															

Annexure-1 to 17 mentioned in above table is attached separately with EIA report.

GENERAL CONDITIONS

Sr. No.	GENERAL CONDITIONS	STATUS
1	No future expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Noted that without the prior approval of the Ministry of Environment and Forests, no further expansion and modification in the plant will be carried out.
2	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM10, PM2.5, and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission be	Two AAQ monitoring stations already set up to check the concentration of PM10, PM2.5, SO2 and NOX. AAQ data and stack emission data enclosed As Annexure- I

	regularly submitted to this Ministry including its Regional Office at Chandigarh and the SPCB/CPCB once in six months.	
3	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	The industrial wastewater is collected in a proper manner and treated so as to conform to the latest prescribed standards and the wastewater is utilized in the 450 acres plantation
4	The overall noise levels in and around the plant area shall be kept well within the standards (85Dba) by providing noise control measures including acoustic hoods, silencers enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to be standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).	Acoustic hoods, silencer enclosures are provided at all the noise generation to keep the noise level well within the prescribed limits (85Dba)
5	Occupational health surveillance of the worker shall be done on a regular basis and records maintained as per the factories Act.	Occupational health surveillance of the worker is regularly done and records are enclosed As Annexure-II
6	The company shall develop rain water harvesting structures to harvest the rain waste for utilization in the lean season besides recharging the ground water table.	Rain water harvesting is being practiced in the industry (photos enclosed). Further the industry is in talk with different parties for further up gradation of the of Rain Water Harvesting system all over the premises See Annexure-III
7	The project proponent shall also comply with all the environment protection measures and safeguards recommended in the EIA/EMP report. Future, the company must undertake socio-economic development activities in the surrounding village like community development programs, educational programs, drinking water supply and health care etc.	The company is involved in various socio-economic development activities like free eye checkup camp and other socio-economic work (details enclosed) As Annexure IV.
8	Requisite funds shall be earmarked toward capital cost and recurring cost/annum for environment pollution control measures to conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional office of the Ministry at Chandigarh. The funds so provided shall not be diverted for any other purpose.	For the environmental pollution control measures the funds earmarked and already utilized towards capital cost as : <ul style="list-style-type: none"> • RO & ETP up gradation – 5.50 Crores • ESP – 2.0 Crores • CRP up gradation – 3.5 Crores Provisions for recurring cost/annum expenditure are made out of normal cash accruals on year to year basis
9	A copy of clearance letter shall be sent by the proponent to concerned panchayat, zilaparisad /Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	As no suggestions were received while processing the proposal from the concerned body, the clearance letter need not to be sent. The clearance letter has been uploaded on the website of the company See Letter As Annexure-V
10	The project proponent shall upload the status of compliance of the stipulated environment clearance condition, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF at	The status of compliance of the stipulated environment clearance condition, including results of monitored data is available on company website and is being updated periodically. Our Site : www.satiagroup.com





	Chandigarh. The respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM10, PM2.5, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	See Annexure – VI
11	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 Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Chandigarh / CPCB / SPCB shall monitor the stipulated conditions.	Noted for compliance. Six monthly compliance report and the results of monitored data would be sent to MOEF & CC, RO Chandigarh. Hard copy is being submitted.
12	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 along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEF at Chandigarh by e-mail.	Form V attached of financial year 2015-2016 of Unit 1 and Unit 2 attached As Annexure-VII.
13	The 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 of Environment and Forests 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 language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Chandigarh.	The public was informed by advertisement in two local newspaper (enclosed) and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in See Annexure –VIII
14	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 commencing the land development work.	Letter was sent to the Ministry and copy of the same is attached for you record As Annexure-IX

Annexure-I to IX mentioned in above table is attached separately with EIA report.

Annexure 6: Water Supply Permission Letter

Number.6262/111-R

To
Executive Engineer
Abohar Canal Division
Abohar

Date : 22/10/2014

Subject :- Enhancement of Water supply from 6.00 cusec to 7.50 cusec to Satia Industries Ltd, Rupana of Outlet situated at RD-12400-R Arniwala distributory.

Reference :- Your Office letter no. 467/57-R dated 08.09.2014 and Number-188/57-R, dated 30.06.2014.

With reference to above subject and the letter received regarding Satia Industries Ltd. Rupana to Bulk supply Water from RD No.12400-R Arniwala distributory making 7.50 cusec from 6.00 cusec bulk supply hereby permission is granted temporary on the following conditions:-

Conditions :-

1. To evaluate the rate of supply of 7.50 cusec it will be considered that supply is for 365 days throughout the year and 24 hours a day and its price will be according to revised rate in the April and will be charged for full year which comes Rs.4724624/- and increase in the rate will be charged from the company which is revised by Punjab Government time to time. The company will be liable to pay the balance of current years increased price accordingly.
2. If in any case, there is any cut, break down and closure of water supply may be due to natural reasons, the canal department will not be bound to give the supply and no deduction will be given in the price and also no claim/loss will be accepted by the canal department.
3. The consumer will be liable to construct the channel and outlet at the spot and also will be liable for other related work. This expenditure and maintenance will be born at the cost of consumer.
4. M/s Satia Industries Ltd. will not dispose its effluent or treated disposal in the water of canal.
5. If the sanction water is used for the any other purpose, in that case the water supply will be closed.

Certified that this is a true and
Correct copy as a translation
of a certificate written in English

NOTARY

Assent to be True Copy

App. by Govt of India
MUMBAI-152026 (P)

Sd/-
Superintendent Engineer
Ferozepur Canal Circle,
Ferozepur





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT No.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Number 3639-41/57-R

Dated : 19-11-14

1. Copy is sent to S.D.O., Muktsar Canal Sub-Division, Muktsar for information and further action.
2. Copy to Satia Industries Ltd. Rupana with advise to deposit the amount of full year and execute the agreement and accept the conditions of canal department.
3. D.F.D., Abohar, Canal Division, Abohar



Sd/-
Executive Engineer
Abohar Canal Division
Abohar

Certified that the above is a true and
Correct English translation
of a certificate issued to [Signature]

NOTARY

Attested to be True Copy

[Signature]
Advocate & Notary Public
App. by Govt. of India
MUKTSAR-152026 (Ptn)

Annexure 7: (Undertaking) elemental chlorine free bleaching



SATIA
INDUSTRIES
LIMITED

ANISO 9001, ISO 14001 & ISO 26001 certified

Manufacturer of Quality
Writing, Printing & Specialty
Paper with ECO MARK



SIL/2016/2249

November 17, 2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that we at Satia Industries Limited (Unit No. 2) (SIL) located at Malout Road, Muktsar proposes to modernize the existing unit with 150 TPD capacity of writing and printing paper from waste paper to agro residue based raw materials and 12.5 MW Co-Gen Power Plant.

We, hereby commit that only elemental Chlorine-free technology will be used for the manufacture of paper.

This undertaking is given without any prejudice on requirement of MoEFCC, New Delhi.

For Satia Industries Ltd.

Director

Registered Office & MH : Village: Rupans, Sol Muktsar : 152 832, Punjab, INDIA, Ph: 0162301, 252215, 253985 Fax : 01623-253499 email: satiaho@gmail.com

Branch: 612-618, Harnam House-21, K.G. Marg, Connaught Place, New Delhi-110001 Ph: 23710351/5253 Fax: 23715191 e-mail: satiapapercredit@gmail.com

Branch: S.C.D. No. 98-92, Sector 8-C, Madhya Marg, Chandigarh - 160018 Ph: 0172-2780020/21, 9618377 Fax: 0172-4849694 satiaindustries1@gmail.com

Branch: 38A, Navjeevan Complex, 28, Station Road, Jodhpur-342005, Rajasthan Ph: 2371655, 2378554 Fax: 0141-2374423 e-mail: satiapaper_jr@gmail.com





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Annexure 8: Hazardous waste Consent

Satia industries limited (unit-I), Vpo rupana district muktsar,
Muktsar, Muktsar

PUNJAB POLLUTION CONTROL BOARD
Vatavaran Bhawan, Nabha Road, Patiala

No. HWM/MKS/2016/3650274 Registered Dated: 15/02/2016

To
Satia industries limited (unit-I)
Vpo rupana district muktsar
Muktsar
Tehsil :Muktsar
District :Muktsar

787
15/2/16

Subject :- Authorization for operation of a facility for Collection,Storage,Disposal, of hazardous wastes generated under Rule 5 of the Hazardous Waste(Management ,Handling and Trans-boundary Movement) Rules,2008 .

1.	(a)	Number of authorization	1	HWM/MKS/2016/3650274
	(b)	Date of issue	1	15/02/2016
	(c)	Date of Expiry	1	14/02/2021
	(d)	Category and Quantity of Hazardous Wastes	1	category 32.1 8.583 ton and for storage, collection and disposal of hazardous waste for category 32.3 @ 2.5 TPD (900 TPA) of schedule-I
	(e)	Scale of Industry	1	Large

2. **Sh. JR Sharma** of M/S Satia industries limited (unit-I) is hereby granted an authorization to operate a facility for Collection,Storage,Disposal, of hazardous waste in the premises situated at **Vpo rupana district muktsar Muktsar Muktsar**

3. The industry shall apply for renewal of Authorization two months before the date of expiry of this authorization.

4. The industry will dispose off its hazardous waste to authorized recycler as per the Hazardous Wastes (Management,Handling & Transboundary Movement) Rules, 2008.

5. Special Conditions if any typed manually. *[Signature]*

1

Annexure-I

TERMS AND CONDITIONS OF AUTHORIZATION:

1. The authorized person shall comply with the provisions of the Environment(Protection) Act 1986 and the Rules made there under.
2. The authorization or the renewal shall be produced for inspection at the request of an officer authorized by the Board.
3. The person authorized shall not rent, lend, sell, dispose, transfer or transport the hazardous wastes to other place without obtaining the prior permission of the Board.
4. Any unauthorized change in personnel, equipment and working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorization.
5. It is the duty of the authorized person to take prior permission of the State Pollution Control Board to close down the facility.
6. An application for the renewal of an Authorization shall be made as laid down under these Rules.
7. The occupier generating hazardous waste/operator of a facility for collection and storage of hazardous waste shall maintain records of such operations in Form-3.
8. The occupier/operator of a facility shall send annual returns to the Board in form-4 on or before 30th day of the June following to the financial year to which that return relates.
9. The Authorized person shall report, about the accident which occurs at the hazardous waste storage/treatment site immediately to the Board.
10. An occupier who is generating hazardous waste shall store his waste category wise on site in environmentally sound manner till its treatment.
11. An occupier /generator shall not store hazardous wastes in open ground. It must be stored in an isolated site away from plant operational area.
12. The storage tank/container of the hazardous wastes should be in good condition and made off (or lined with) an appropriate material which does not react with the waste contained in it and can withstand the physical and environment conditions during storage and handling.
13. The occupier generating hazardous waste shall mark each container holding hazardous waste with the marking "HAZARDOUS WASTE" both in English and Punjabi.
14. The storage area should be fenced properly and a sign Board indicating "DANGER" and "HAZARDOUS WASTE" sign & nature of the waste shall be placed at storage site.
15. The occupier generating hazardous waste shall provide the required safety devices like safety mask, goggles, hand-gloves, gum boots etc to the workers for handling the hazardous waste. The occupier shall impart training to the personnel/workers for handling and storage of hazardous wastes.
16. There should be sufficient & efficient provisions to avoid under ground water contamination from waste storage of hazardous wastes.
17. The occupier shall be responsible for any damage of life/or property during storage of his waste and will obtain Public Liability Insurance, wherever applicable .
18. The occupier and operator of a facility also be liable to reinstate or restore damaged or destroyed elements of the environment at his cost, failing which the occupier or the operator of a facility, as the case may be, shall be liable to pay the entire cost of remediation or restoration and pay in advance an amount equal to the cost estimated by the State Pollution Control Board.
19. The industry shall take steps wherever feasible, for reduction in hazardous waste generated or recycled or reused.





Satia Industries limited (unit-2), Ppo Rupana district muktsar,
Muktsar, Muktsar

20. The industry shall display on line data outside the main factory gate on display Board of size (6ft.* 4ft.) on quantity and nature of hazardous chemicals being used in the plant, water & Air emissions and hazardous waste generated within factory premises.
21. The industry shall handle the hazardous waste strictly in accordance with the provisions of Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and guidelines issued by Central Pollution Control Board/Ministry of Environment & Forests, New Delhi.
22. Non compatible hazardous waste and material shall not be mixed in the same storage container.
23. The occupier who is generating hazardous waste shall draw authorized recycler as per Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008.
24. The industry will dispose off its hazardous waste authorized recycler as per Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008.
25. The occupier of the transport facility shall ensure that the hazardous waste are shifted in the container in a manner suitable for handling storage and transport and the labelling and packaging shall be easily visible and able to withstand physical condition and climatic factors.
26. Packaging, Labelling of Used/Waste oil shall be in accordance with the provisions of the rules made by the Central Government under the Motor Vehicles Act, 1988 and other guidelines issued from time to time.
27. All hazardous waste chamber shall be provided with a general label as given in Form-8.
28. No transporter shall accept hazardous waste from any occupier for disposal unless it is accompanied by five copies of the manifest (Form-9) as per the colour codes. The transporter shall give a copy of the manifest signed the dated in the occupier and retain the remaining four copies to be used as prescribed in sub-rule (5).
29. The occupier shall provide the transporter of six copies of the manifest as per the colour code indicated below :-

Copy 1(White).	Forwarded to the Punjab Pollution Control Board by the Occupier
Copy 2(Light Yellow).	Signed by the Transporter and retained by the Occupier.
Copy 3(Pink).	Retained by the Operator of facility.
Copy 4(Orange).	Returned to the Transporter by the operator of facility after accepting waste.
Copy 5(Green).	Forward to Punjab Pollution control Board by the operator of facility after disposal.
Copy 6(Blue).	returned to the occupier by the operator of facility after disposal.

30. The occupier shall obtain necessary No Objection Certificate from State Pollution Council Board in the respective states involved in case of any inter and intra State Transport of hazardous waste.
31. The occupier shall provide the transporter with relevant information in form to regarding the hazardous nature of the wastes and measures to be taken in case of an emergency.
32. The transporter shall transport the hazardous waste only in authorized for transportation of hazardous waste.
33. The person authorized for transportation of hazardous waste shall prior permission of the Board to close down the transportation facility.
34. The authorization is subject to the conditions mentioned above and also to such conditions as specified in the Hazardous waste (Management & Handling) Rules as amended from time to time framed under the Environment (Protection) Act 1986.


Environmental Engineer (HWM)

" This is computer generated document from OCMMS by PPCB "

Endst. No. _____

Dated: _____

A copy of the above is forwarded to the Environmental Engineer,
Punjab Pollution Control Board, Regional Office, Bathinda for information.


Environmental Engineer,
Zonal Office, Bathinda





Annexure 9: Compliance to Air and water Consents

Satia Industries Ltd. Rupana (Sri Muktsar Sahib)

Compliance of the terms & conditions of consent granted under Air Act vide letter no ZO/BTUAPC/2011/F-138 dtd. 27.06.2013.

Sr. No.	Particulars of conditions	Acceptance/Compliance Report																				
1.	The industry shall apply for renewal of consent at least two months before expiry of the consent.	Noted please																				
2.	The industry shall ensure that at any time the emissions do not exceed the emissions standards laid down by the Board from time to time.	Noted & being complied.																				
3.	The industry shall ensure that the emission from each stack shall conform to the following emission standard laid down by the board <table border="1" style="width: 100%;"> <thead> <tr> <th rowspan="2">Steam Generating Capacity</th> <th colspan="2">Required particulate matter</th> </tr> <tr> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td></td> <td colspan="2">Area upto 5 km from the periphery of class other than 'A' I & class-II town</td> </tr> <tr> <td>Less than 2 ton/hr.</td> <td>800mg/nm³</td> <td>1200mg/nm³</td> </tr> <tr> <td>2 ton to 10 ton/hr.</td> <td>500mg/nm³</td> <td>1000mg/nm³</td> </tr> <tr> <td>Above 10 ton to 15 ton/hr.</td> <td>350mg/nm³</td> <td>500mg/nm³</td> </tr> <tr> <td>Above 15 ton/hr.</td> <td>150mg/nm³</td> <td>150mg/nm³</td> </tr> </tbody> </table> All emissions normalized to 12% carbon dioxide	Steam Generating Capacity	Required particulate matter		A	B		Area upto 5 km from the periphery of class other than 'A' I & class-II town		Less than 2 ton/hr.	800mg/nm ³	1200mg/nm ³	2 ton to 10 ton/hr.	500mg/nm ³	1000mg/nm ³	Above 10 ton to 15 ton/hr.	350mg/nm ³	500mg/nm ³	Above 15 ton/hr.	150mg/nm ³	150mg/nm ³	
Steam Generating Capacity	Required particulate matter																					
	A	B																				
	Area upto 5 km from the periphery of class other than 'A' I & class-II town																					
Less than 2 ton/hr.	800mg/nm ³	1200mg/nm ³																				
2 ton to 10 ton/hr.	500mg/nm ³	1000mg/nm ³																				
Above 10 ton to 15 ton/hr.	350mg/nm ³	500mg/nm ³																				
Above 15 ton/hr.	150mg/nm ³	150mg/nm ³																				
4.	a) The industry shall discharge all gases through a stack of minimum height as specified in the following standards laid down by the Board. (i) STACK HEIGHT FOR BOILER PLANTS <table border="1" style="width: 100%;"> <thead> <tr> <th>Steam Generating Capacity</th> <th>Stack heights</th> </tr> </thead> <tbody> <tr> <td>1. Less than 2 ton/hr.</td> <td>9 meter or 2 times the height of neighboring building whichever is more</td> </tr> <tr> <td>2. More than 2 ton/hr. to 5 ton/hr.</td> <td>12 meters</td> </tr> <tr> <td>3. More than 5 ton/hr. to 10 ton/hr.</td> <td>15 meters</td> </tr> <tr> <td>4. More than 10 ton/hr. to 15 ton/hr.</td> <td>18 meters</td> </tr> <tr> <td>5. More than 15 ton/hr. to 20 ton/hr.</td> <td>21 meters</td> </tr> <tr> <td>6. More than 20 ton/hr. to 25 ton/hr.</td> <td>24 meters</td> </tr> <tr> <td>7. More than 25 ton/hr. to 30 ton/hr.</td> <td>27 meters</td> </tr> <tr> <td>8. More than 30 ton/hr. to</td> <td>30 meters or using the formula $H=14Q_1^{0.5}$ Or $H=74Q_2^{0.37}$ Where Q_1= Quantity of SO_2 in Kg/hr. Q_2= Quantity of particulate matter in ton/day. </td> </tr> </tbody> </table>	Steam Generating Capacity	Stack heights	1. Less than 2 ton/hr.	9 meter or 2 times the height of neighboring building whichever is more	2. More than 2 ton/hr. to 5 ton/hr.	12 meters	3. More than 5 ton/hr. to 10 ton/hr.	15 meters	4. More than 10 ton/hr. to 15 ton/hr.	18 meters	5. More than 15 ton/hr. to 20 ton/hr.	21 meters	6. More than 20 ton/hr. to 25 ton/hr.	24 meters	7. More than 25 ton/hr. to 30 ton/hr.	27 meters	8. More than 30 ton/hr. to	30 meters or using the formula $H=14Q_1^{0.5}$ Or $H=74Q_2^{0.37}$ Where Q_1 = Quantity of SO_2 in Kg/hr. Q_2 = Quantity of particulate matter in ton/day.	Noted please & the height of each stack is as per standard laid down by the Board.		
Steam Generating Capacity	Stack heights																					
1. Less than 2 ton/hr.	9 meter or 2 times the height of neighboring building whichever is more																					
2. More than 2 ton/hr. to 5 ton/hr.	12 meters																					
3. More than 5 ton/hr. to 10 ton/hr.	15 meters																					
4. More than 10 ton/hr. to 15 ton/hr.	18 meters																					
5. More than 15 ton/hr. to 20 ton/hr.	21 meters																					
6. More than 20 ton/hr. to 25 ton/hr.	24 meters																					
7. More than 25 ton/hr. to 30 ton/hr.	27 meters																					
8. More than 30 ton/hr. to	30 meters or using the formula $H=14Q_1^{0.5}$ Or $H=74Q_2^{0.37}$ Where Q_1 = Quantity of SO_2 in Kg/hr. Q_2 = Quantity of particulate matter in ton/day.																					

For Satia Industries Ltd

 (J. P. SHARMA)
 Director (Legal)

ii)	For industrial furnaces and kilns, the criteria for selection of stack height would be based on fuel used for the corresponding stack generation.	N.A.
iii)	Stack height for diesel generating sets: Capacity of DG set Height of the Stack 0.50 kva Ht. of building + 1.5 mtr. 50-100 kva Ht. of building + 2.0 mtr. 100-150 kva Ht. of building + 2.5 mtr. 150-200 kva Ht. of building + 3.0 mtr. 200-250 kva Ht. of building + 3.5 mtr. 250-300 kva Ht. of building + 3/5 mtr.	N.A.
	For higher KVA rating stack height (h _{mt}) shall be worked out according to the formula:- $H = h + 0.2(kva)^{0.5}$ Where h=height of the building in meters where the generator set is installed.	N.A.
5.	The Govt. of Punjab Department of Science, Technology & Environment vide its notification no.4/46/92-3st/2839 dt.29.12.1993 has put prohibition on the use of rice husk as fuel after 1.4.1995 except the following :- "In the form of briquettes and use of rice husk in fluidised bed combustion. So the industry shall make the necessary arrangement to comply with the above notification."	Noted please We have installed FBC furnace boilers.
6.	The industry shall not consume any fuel except rice husk for burning purposes in the boiler furnaces without prior written permission of the Board.	Noted please.
7.	The industry will install the separate energy meter for running pollution control devices and monthly reading may be sent to the Board by the fifth of the following month.	The energy meter has installed.
8.	The industry shall provide port holes, platforms and/or other necessary facilities as may be required for collecting the samples of emissions from any chimney, flue or duct or any outlets. Specifications of the port holes shall be as under:- i) The sampling ports shall be provided at least 8 times chimney diameter downstream and 2 times upstream from the flow disturbance. For a rectangular cross section the equivalent diameter(D _e) shall be calculated from the following equation to determine the upstream, downstream distance:- $D_e = 2LW/(L+W)$ Where L= length mtr. W = width in mtr. ii) The sampling port shall be 7 to 10 cm in diameter.	Noted please Port-holes has been provided. The needful has been done as advised.

For Setia Industries Ltd

(J. R. SHARMA)
Director (Legal)





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

: 3 :

9.	The industry shall comply with any other conditions laid down or directions issued in the due course by the Board under the provisions of the Air (Prevention & Control of Pollution) Act, 1981.	Noted please
10.	Nothing in this consent shall be deemed to preclude the institution of any legal action nor relieve the applicant from any responsibilities, liabilities or penalties to which the application is or may be subjected to under this or any other act.	Noted please
11.	The industry shall plant minimum of three suitable varieties of trees at the density of not less than 1000 trees per hectare all along the boundary of the industrial premises.	Noted please. Needful has already done.
12.	Any amendments/revisions made by the Board in the emission/stack height standards shall be applicable to the industry from the date of such amendments/revisions.	Noted please.
13.	The industry shall dispose off its solid wastes generated by the burning of fuel in a proper manner and to the satisfaction the Board to avoid public nuisance and air pollution problem.	This is being done please.
14.	The industry shall maintain the following record to the satisfaction of the Board:- a) Log books for running of air pollution control devices or pumps/motors used for running of the same. b) Register showing the results of various tests conducted by the industry for monitoring of stack emission and ambient air. c) Register showing the stock of absorbents and other chemicals to be used for scrubbers.	The request record is be maintained.
15.	The existing control equipment shall be altered or replaced in accordance with the direction of the Board, and no control equipment or chimney shall be altered or as the case may be erected or re-erected except with the previous approval of the Board.	Noted please.
16.	The industry shall not discharge any fugitive emissions. All gases shall be emitted through a stack of suitable height, as per the norms fixed by the Board from time to time.	Noted please.
17.	The industry shall provide adequate arrangements for fighting the accidental leakage/discharge of any air pollutants/gas/liquids from the vessel, mechanical equipments etc. which are likely to cause environmental pollution.	Noted please.
18.	The air pollution control equipments shall be kept at all the time in good running condition and; G) all failures of control equipments. Gii) the emission of any air pollutant into the atmosphere in excess of the standards laid down by the Board occurring or being apprehended to occur due to accident or other unforeseen act or event. "Shall be intimated through Fax to the Environmental Engineer, Regional Office, Bathinda, as well as to the Director of Industries, Punjab, Chandigarh as required under rule 10 of Punjab State Board for the Prevention and Control Air Pollution Rules, 1983."	This has been noted & is being complied regularly.

For Satia Industries Ltd

(J. R. SHARMA)
Director (Legal)

19.	The industry shall get its emission tested from class 'A' Laboratory approved by the Board/Board's lab. And submit the results to the Board within two months for further extension in validity of the consent.	Noted please.
20.	The industry shall ensure that no air pollution problem or public nuisance is created in the area due to discharge of emissions from the industry.	Noted please.
21.	The industry shall obtain cover under the Public Liability Insurance Act, 1991.	Noted please.
22.	The pollution control devices shall be interlocked with manufacturing process of the industry.	Noted please.
24.	The industry shall get performance study of air pollution control devices carried out once every year from a recognized laboratory and submit the same to the Board.	Noted please.
25.	The industry shall put up display board indicating Environment data as per performa enclosed at the main entrance gate.	Noted please.
26.	The industry shall comply with the provisions of Ministry of Environment & Forests notification GSR371(E) dated 17.05.2002 as amended from time to time for control of noise pollution from the D.G.Set.	Noted please.
28.	The industry shall install on-line stack emissions monitoring device within two months from the date of issuance of this consent.	Needful has been done.
29.	The industry shall not manufacture more than 55 tpd of writing & printing paper by using agro waste/waste paper as raw materials.	Industry is manufacturing 60tpbd writing & printing paper as granted in consent 3020 dtd. 10.50.2010.
30.	The industry shall dispose off the rice husk ash in an environmentally sound manner.	Noted please & is being complied with regularly.
31.	The Board reserves the right to revoke this consent to operate at any time, in case the industry is found violating any of the conditions of the consent and/or the provisions of Air (Prevention & Control of Pollution) Act, 1981 as amended from time to time.	Noted & accepted please.

For Beta Industries Ltd.

(J. R. SHARMA)
Director (Legal)





Satia Industries Ltd, Rupana, Sri Muktsar Sahib

Compliance of the terms & conditions of consent granted under Water Act vide letter no.ZO/HEI/WTC/2013/F-140 dated 27.6.2013.

Sr.N o.	Particulars of conditions				Acceptance/Compliance Report
1.	The consent is issued for the discharge of effluents as per details given below from the premises of the industry through the out-let(s) authorized by the Board.				Noted please
Sr. No.	Description	Quantity m ³ /day	Mode of final plantation		
1.	Trade effluent		On to land for plantation		
2.	Domestic effluent		-do-		
2.	The effluent discharge through the authorized outlet shall conform to the standards prescribed by Board as per Board's Notification to the issued from time to time.				Noted please
3.	The industry shall make necessary and adequate arrangements to hold back the effluent in case of failure of effluent treatment plant.				has been complied with a stand by storage tank has been made.
4.	The industry shall comply with the following stipulations :-				Noted please
i)	The industry shall apply for renewal of consent at least two months before expiry of the consent.				
ii)	The issuance of this consent does not convey any property right in either real or personal property, or any exclusive privileges, nor it authorizes any injury to private property or any invasion of personal rights, nor any infringement of central, state or local laws or regulations.				Noted please.
iii)	The consent does not authorize or approve the construction of any physical structures or facilities for undertaking of any work in any natural water course.				Noted please
iv)	Nothing in this consent shall be deemed to preclude the institution of any legal action nor relieve the applicant from any responsibilities, liabilities or penalties to which the applicant is or may be subjected under this or any other act.				Noted please.
v)	During the period beginning from the date of issuance and the date of expiration of this consent, the applicant shall not discharge floating solids or visible foam.				Noted please.
7.	The industry shall not discharge any trade effluent and domestic effluent.				Noted & complied with

For Satia Industries Ltd

(J. R. SHARMA)
Director (Legal)

8.	Any amendments/revisions made by the Board in the tolerance limits for discharges shall be applicable to the industry from the date of such amendments/revisions.	Noted please
9.	The authorized outlet and mode of disposal shall not be changed without the prior written permission of the Board.	Noted please
10.	The industry shall not use any unauthorized out-let(s) for discharge effluents from its premises.	Noted please
11.	The industry shall not change or alter the manufacturing processes so as to change the quality and/or quantity of the effluents generated without the written permission of the Board.	Noted please
12.	Any upset conditions in the plant/plants of the factory, which is likely to result in increased effluent and/or result in violation of the standards laid down by the Board shall be reported to the Environmental Engineer, Punjab Pollution Control Board, Regional Office, Bathinda through fax under intimation to the Board failing which any stoppage and upset conditions that come to the notice of the Board's officers, will be deemed to the intentional violation of the conditions of consent.	Noted please
13.	All underground water retaining structures shall be lined with an impervious layer, so as to avoid seepage and contamination of sub-soil/water.	has been complied with
14.	The industry shall provide terminal manhole(s) at the end of each collection system and a manhole upstream of final outlet (s) out of the premises of the industry for measurement of flow and for taking samples.	has been complied with
15.	The responsibility to monitor the effluent discharged from the authorized outlet and to maintain a record of the same rests with the industry. The Board shall only test check the accuracy of these reports for which the industry shall deposit the sample collection and testing fee with the Board as and when required.	Noted & we are maintaining the record.
16.	The industry shall for the purpose of measuring and recording the quantity of water consumed and effluent discharge, affix meters of such standards and at such places as approved by the Environmental Engineer, Punjab Pollution Control Board, Regional Office, Punjab.	Already exist measuring device/meter have been installed.
17.	Solids, sludges, dirt silt or other pollutants separated from or resulting from treatment of intake of supply water prior to use by the applicant shall be disposed off in such a manner so as to prevent any pollutant from such materials from entering any such water. Any live fish, shell fish or animals collected or tapped as a result of intake water screening or treatment may be returned to water body habitat.	Noted & has been complied with
18.	The diversion or bye pass of any discharge from facilities utilized by the applicant to maintain compliance with the terms and conditions of this consent is prohibited except: b) Where unavoidable to prevent loss of life or some property.	Noted please & will be complied as directed if situation arises.

For Satia Industries Ltd

(J. R. SHARMA)
Director (Legs)





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

	damage or a) Where excessive storm drainage or run off would damage facilities necessary for compliance with terms and conditions of this consent. The applicant shall immediately notify the consent issuing authority in writing of such such diversion or bye-pass in accordance with the procedure specified above for.	
19.	Solids, sludges, filter backwash or other pollutant removed from or resulting from treatment or control of waste waters shall be disposed off in such a manner as to prevent from any pollutants from such materials from entering natural water.	Noted & has been complied with.
20.	The industry shall ensure that no water pollution problem is created in the area due to discharge of effluents from its industrial premises.	Noted & has been complied with.
21.	The industry shall plant minimum of three suitable varieties of trees at the density of not less than 1000 trees per hectare all along the boundary of the industrial premises.	Needful done & we have developed green belt over an area of more than 62 acres planting eucalyptus.
22.	The industry shall not irrigate vegetable crops with the treated effluents which are used/consumed as raw.	Noted & has been complied with.
23.	The industry will submit the monthly readings of the separate energy meter for running effluent treatment plant to the Board by the fifth of the following month.	Already being complied with.
24.	The pollution control devices shall be interlocked with the manufacturing process of the industry.	Has been complied with.
25.	The industry shall put up display board indicating Environment data as per performs enclosed at the main entrance gate.	Already complied with.
26.	The industry shall not manufacture more than 150 tpd of writing & printing paper by using agro waste/waste paper as raw material.	Has been complied with industry is producing 60 tpd paper as per consent granted vide 3022 dtd. 10.05.2010.
27.	The industry shall treat the entire black liquor in the chemical recovery plant and leachages of waste water, if any, from the said plant will be collected in a tank for further treating in the chemical recovery plant.	Has been complied with.

28.	The industry shall use only continuous type digester for chemical pulping process and two batch type spherical digesters will be used only for re-cooking of semi cooked knitter screens/west wash reject of continuous type digester.	Has been complied with.
29.	The industry shall regularly maintain the land area developed by it, so as to ensure no stagnation of wastewater in the said land area and proper record will be maintained for utilizing wastewater in such segment alongwith frequency of application of the wastewater in the said segment.	Has been complied with.

For Satia Industries Ltd.

 J. R. SHARMA
 Director (Legal)

30.	The Management & Handling of the sludge generated from effluent treatment plant/process will be done in an environmentally sound manner.	Has been complied with
31.	The Board reserves the right to revoke the consent granted to the industry at any time in case the industry is found violating any of the conditions of the consent under Water & Prevention & Control of Pollution Act, 1974 as amended time to time.	Noted & accepted please.

For Satish Industries Ltd

(J. R. SHARMA)
Director (Legal)





Annexure 10: EC copy obtained from CSA cum SCA

14-FEB-2013 12:24 PUNJAB-POLLUTION-CONTROL 91752299468 P. 01

Ph: 0176-2216793
 Fax: 0176-2216836

STATE COMPETENT AUTHORITY
 Government of Punjab
 (Office of the Member Secretary)

VATAVARAN BHAWAN,
 NABHA ROAD,
 PATIALA-147001

No. CSA/2013/S/ 710
 Registered
 Dated 8.2.13

To
 M/s Satia Industries Ltd., (Unit No. 2),
 Village Rupana, District Muktsar.

Subject: Environmental clearance as required under the Press Note 17 (1984 series) by SCA-cum-SAC.

It is intimated that the application of the industry for increase in the production capacity of manufacturing of writing & printing paper from 70 TPD to 150 TPD by using wastepaper as raw material, in its existing unit located in the revenue estate of Village Rupana, District Muktsar in an area measuring as 36.019 acres, was considered by the SCA-cum-SAC in its 81st meeting held on 23.01.2013. In the said meeting, it was decided to grant the clearance of site from environmental angle under Press Note 17 (1984 series) to the industry subject to the following conditions:

Conditions by P.P.C.B.

1. The industry will dismantle pipeline provided from digesters installed in unit no. (I) towards the unit no. (II) so as to rule out the possibility for use of agro waste pulp in unit no. (II), before grant of NOC.
2. The industry will obtain varied consents under the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 from the Punjab Pollution Control Board for increased capacity.
3. The industry will install electromagnetic flow meters for consumption of raw water (canal water) in its various processes, re-circulation system and pipeline carrying wastewater of high TDS to the fresh water clarifier, before grant of NOC.
4. The industry will remove all bye-pass pipelines kept for discharge of its wastewater from its re-circulation system / DAF, before grant of NOC.
5. The industry will obtain necessary approvals from various departments, wherever needed including report from the Department of Town & Country Planning, before grant of NOC for regularization of its production capacity.

Conditions by DOF

6. All the reactions will be carried out in the closed vessels.
7. The industry will provide flame-proof electric fittings.
8. No manual handling of chemicals will be done.
9. The industry will make appropriate arrangements for fire extinguishers.

-2-

10. The Industry will upgrade the emergency plan and health and safety policy from time to time.
11. The building plans of the factory should be got approved from Director of Factories, Punjab and other concerned departments such as PUDA and CTP etc. before starting the construction.
12. Names and connecting telephone numbers of nearby health institutions should be displayed on the board and made known to all concerned in the vicinity of the plant also.
13. The Industry will install chlorine leakage detector to detect the leakage of chlorine.
14. The Industry will keep chlorine safety kit and breathing apparatus to fight the leakage of chlorine.
15. The monitoring of chlorine will be done in the work environment and record of the same will be kept.
16. The Industry will improve its liquor effluent treatment plant to treat black liquor.
17. The Industry shall comply with the provisions of Factories Act, 1948 and Punjab Factory Rules, 1952.
18. The industry will educate the workers and the people in the vicinity about the hazards that can arise from the factory.
19. The Industry will make adequate and appropriate arrangements so that there is no generation of any static charge.
20. The unit will be operated under the supervision of experienced staff only.
21. The Industry shall submit compliance report of the conditions of approval of site to Director of Factories, Punjab before commissioning of its project.
22. The Industry shall be inspected after commissioning of its proposed project to monitor the compliance of conditions of approval of site.

Conditions by CTP

23. The Industry will leave 28 feet wide strip of land from its premises for widening of approach road from 94 feet to 150 feet as per bye-laws of the Draft Master Plan of Shri Muktsar Sahib. The Industry will also leave 20 m wide 'No Construction Zone'.
24. The Industry will obtain permission from the Competent Authority for approach to the industrial premises from the Scheduled Road since the industrial plant abuts the 'Scheduled Road'.

General conditions

25. The entrepreneur will also comply with the conditions of the earlier environmental clearance issued vide letter no. 188 dated 09.05.1997.
26. This site clearance does not preclude the institution of any legal action nor relieve the applicant from any responsibilities or penalties to which the applicant is or may be subjected under the provisions of any other Act.





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

M/s Satia Industries Ltd., (Unit No. 2),
Village Rupana, District Muktsar

-3-

27. The industry shall submit compliance report of the conditions of this environmental clearance to the Punjab Pollution Control Board, Patiala, before the commissioning of the expansion project.
28. This site clearance from environmental angle is, hereby, granted under Press Note No. 17 (1984 Series). However, the industry will obtain site clearance and approvals from other departments, under any other Act/rules, as the case may be.
29. This site clearance shall remain valid for a period of five years from the date of its issuance.

[Signature]
Environmental Engineer (CSA)

Endst. No. CSA/2013/S/711-19

Dated 8/2/2013

A copy of the above is forwarded to the following for information and necessary action:-

1. The Principal Secretary to Govt. of Punjab, Deptt. of Industries & Commerce, Udyog Bhawan, Sector 17, Chandigarh.
2. The Director of Factories, Punjab, SCO 87-88, Sector 17-D, Chandigarh.
3. The Director of Industries & Commerce, Pb., Udyog Bhawan, Sector-17, Chandigarh
4. The Principal Chief Conservator of Forests, Pb., Forest Complex, Sector-68, SAS Nagar
5. The Director (Health), Deptt. of Health & Family Welfare, Pb., Sector-34, Chandigarh.
6. The Chief Town Planner, Pb., Department of Town & Country Planning, 6th Floor, PUDA Bhawan, Phase-8, Mohall.
7. The Director of Agriculture, Punjab, SCO 85-86, Sector 34-A, Chandigarh.
8. The Chief Fire Officer, C/o Director Local Bodies, Januja Building, SCO 131-132, Sector 17-C, Chandigarh.
9. The Member Secretary, Punjab Pollution Control Board, Nabha Road, Patiala.

[Signature]
Environmental Engineer (CSA)

For Satia Industries Ltd.
[Signature]
Director

Annexure 11: Raw data of 12 weeks AAQ

Project Site

Date	PM10	PM _{2.5}	SO ₂	NO _x	CO
01/03/2016	88.5	47	19.5	24.5	580
02/03/2016	90.2	48.2	19.0	25.0	
07/03/2016	94.6	52.4	20.1	26.4	
08/03/2016	98.5	54	20.5	27.2	
15/03/2016	86.8	47.6	18.6	24.0	620
16/03/2016	80.6	42.6	18.0	23.5	
23/03/2016	91.2	47.5	19.6	25.6	
24/03/2016	78.0	36.9	18.2	23.0	
01/04/2016	93.5	49.8	20.6	26.8	650
02/04/2016	98.2	54.6	22.3	28.5	
07/04/2016	96.5	52.1	21.2	27.0	
08/04/2016	79.2	37.4	17.8	23.6	
15/04/2016	85.8	45.6	19.2	24.0	500
16/04/2016	92.0	49.7	21.4	25.8	
23/04/2016	97.6	52.2	21.9	27.6	
24/04/2016	99.0	54.6	22.2	28.6	
01/05/2016	94.4	48.7	20.7	26.8	550
02/05/2016	89.2	46.9	19.4	25.4	
06/05/2016	83.7	45.2	18.5	23.5	
07/05/2016	80.0	38.6	17.6	23.0	
14/05/2016	87.9	47.5	19.0	24.6	590
15/05/2016	95.5	50.2	21.4	27.2	
22/05/2016	98.0	49.7	21.8	27.8	
23/05/2016	94.6	50.5	20.6	26.5	
Max.	99.0	54.6	22.3	28.6	650.0
Min.	78.0	36.9	17.6	23.0	500.0
Average	90.6	47.9	20.0	25.7	581.7
98%	98.8	54.6	22.3	28.6	647.0





Rupana

Date	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
01/03/2016	81.4	36.8	19.4	19.4	540
02/03/2016	90.2	47.5	21.2	21.5	
07/03/2016	86.5	42.3	20.4	20.4	
08/03/2016	80.0	35.6	19.0	19.0	
15/03/2016	87.6	45.7	20.2	21.5	510
16/03/2016	91.8	48.0	21.5	22.0	
23/03/2016	94.7	46.7	22.0	22.6	
24/03/2016	86.3	37.2	19.6	20.2	
01/04/2016	79.5	33.6	18.4	20.5	570
02/04/2016	74.8	34.0	18.0	20.8	
07/04/2016	77.3	35.8	18.8	21.2	
08/04/2016	85.0	38.6	20.4	21.8	
15/04/2016	89.5	43.0	21.5	22.0	600
16/04/2016	92.7	49.7	22.0	22.5	
23/04/2016	96.0	50.2	22.4	22.8	
24/04/2016	93.4	47.4	21.9	21.8	
01/05/2016	88.2	42.3	20.6	20.5	620
02/05/2016	83.9	36.9	19.6	21.0	
06/05/2016	80.4	35.0	19.0	19.8	
07/05/2016	76.2	34.7	17.6	20.4	
14/05/2016	87.6	40.2	20.3	21.2	560
15/05/2016	94.8	44.6	21.4	22.8	
22/05/2016	90.0	41.7	22.0	21.4	
23/05/2016	86.2	39.4	18.7	20.6	
Max.	96.0	50.2	22.4	22.8	620.0
Min.	74.8	33.6	17.6	19.0	510.0
Average	86.4	41.1	20.2	21.2	566.7
98%	95.4	50.0	22.2	22.8	618.0

Sotha

Date	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
03/03/2016	86.2	44.2	19	24.8	520
04/03/2016	77.8	40.8	17.5	22.5	
09/03/2016	80.2	38.5	18.4	23.0	
10/03/2016	84.0	42.8	19	24.4	
17/03/2016	89.3	46.9	20.2	25.5	580
18/03/2016	83.5	43.2	19.4	24.0	
25/03/2016	80.5	40.7	18.3	23.2	
26/03/2016	77.1	39.6	17.5	22.4	
03/04/2016	74.2	36.0	17.9	22.0	500
04/04/2016	75.0	37.4	16.7	22.6	
09/04/2016	81.6	39.5	18.5	23.6	
10/04/2016	84.0	43.8	19.4	24.4	
17/04/2016	89.7	47.9	20.3	25.8	480
18/04/2016	78.5	40.2	18.5	23.0	
25/04/2016	85.0	42.1	20	24.6	
26/04/2016	82.4	40.0	18.6	23.8	
02/05/2016	77.6	44.5	17.5	22.2	530
03/05/2016	79.2	41.9	18.2	23.0	
08/05/2016	85.5	45.7	19.6	24.8	
09/05/2016	88.4	47.8	19.9	25.5	
16/05/2016	81.6	40.6	17.6	23.5	550
17/05/2016	77.0	38.9	16.9	22.2	
24/05/2016	75.2	38.0	17.8	22.0	
25/05/2016	87.5	45.7	20	25.5	
Max.	89.7	47.9	20.3	25.8	580.0
Min.	74.2	36.0	16.7	22.0	480.0
Average	81.7	41.9	18.6	23.7	526.7
98%	89.5	47.9	20.3	25.7	577.0



**Chak Giljiwala**

Date	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
03/03/2016	77.6	41.2	15.2	20.5	500
04/03/2016	82.4	45.6	16.5	22.4	
09/03/2016	86.9	47.0	17.4	24.6	
10/03/2016	90.4	49.8	18.6	25.5	
17/03/2016	72.3	41.7	14.0	19.2	530
18/03/2016	84.5	46.8	17.3	24.4	
25/03/2016	94.6	52.3	19.0	26.5	
26/03/2016	90.0	50.4	18.2	25.2	
03/04/2016	87.5	49.8	17.6	24.0	470
04/04/2016	72.9	42.2	14.6	19.2	
09/04/2016	77.5	44.8	15.5	22.5	
10/04/2016	82.3	46.2	16.3	24.6	
17/04/2016	86.7	49.7	17.0	25.8	510
18/04/2016	80.0	42.3	15.8	23.4	
25/04/2016	92.4	53.8	18.4	26.5	
26/04/2016	94.5	51.0	18.6	27.0	
03/05/2016	78.5	43.8	15.5	23.6	520
04/05/2016	74.6	40.2	14.4	21.8	
10/05/2016	70.4	36.6	14.0	19.0	
11/05/2016	83.7	39.2	16.8	22.2	
18/05/2016	89.8	42.7	18.2	24.6	460
19/05/2016	95.6	47.0	18.8	26.0	
26/05/2016	97.0	50.4	19.4	27.5	
27/05/2016	86.2	41.6	17.0	23.4	
Max.	97.0	53.8	19.4	27.5	530.0
Min.	70.4	36.6	14.0	19.0	460.0
Average	84.5	45.7	16.8	23.7	498.3
98%	96.4	53.1	19.2	27.3	529.0

Barkandi

Date	PM10	PM2.5	SO2	NOX	CO
03/03/2016	75.6	40.2	12.5	18.6	490
04/03/2016	77.0	43.7	13.0	19.0	
11/03/2016	70.2	35.0	12.4	17.2	
12/03/2016	67.3	33.4	11.4	17.6	
19/03/2016	75.2	41.8	12.8	19.2	460
20/03/2016	79.6	45.6	13.4	20.2	
27/03/2016	84.2	47.6	14.5	20.5	
28/03/2016	85.0	48.0	14.2	20.8	
03/04/2016	80.3	40.1	13.6	19.5	450
04/04/2016	75.4	36.5	12.8	18.5	
11/04/2016	79.2	37.9	13.5	19.8	
12/04/2016	71.9	35.0	12.0	17.6	
19/04/2016	67.4	32.6	10.4	17.0	480
20/04/2016	65.5	32.0	10.0	17.4	
27/04/2016	70.9	37.8	12.4	17.8	
28/04/2016	81.6	44.2	13.8	19.4	
02/05/2016	84.6	46.1	14.2	20.0	
03/05/2016	76.4	40.2	13.5	18.6	510
08/05/2016	72.3	38.5	12.0	17.8	
09/05/2016	69.5	36.1	11.5	17.0	
16/05/2016	67.4	35.0	10.5	17.6	480
17/05/2016	74.6	39.9	12.4	19.0	
24/05/2016	70.0	40.5	11.6	18.2	
25/05/2016	83.7	45.5	14.0	20.0	
Max.	85.0	48.0	14.5	20.8	510.0
Min.	65.5	32.0	10.0	17.0	450.0
Average.	75.2	39.7	12.6	18.7	478.3
98%	84.8	47.8	14.4	20.7	508.0





Goniana

Date	PM10	PM2.5	SO2	NOX	CO
03/03/2016	72.6	35.6	12.5	18.0	460
04/03/2016	68.4	32.9	11.5	16.5	
11/03/2016	77.6	41.5	13.8	19.0	
12/03/2016	70.3	38.5	12.2	17.8	
19/03/2016	80.0	43.7	14.8	19.8	450
20/03/2016	68.2	36.7	11.6	17.0	
27/03/2016	65.3	33.5	10.2	15.5	
28/03/2016	72.4	39.8	12.6	17.6	
03/04/2016	75.4	41.4	13.5	18.8	480
04/04/2016	78.0	42.7	13.0	19.5	
11/04/2016	69.3	37.2	10.8	16.2	
12/04/2016	66.2	34.5	11.9	15.8	
19/04/2016	74.8	43.7	12.8	18.5	460
20/04/2016	78.1	41.5	13.6	19.4	
27/04/2016	72.4	38.5	12.5	18.0	
28/04/2016	68.3	34.6	11.8	16.5	
02/05/2016	65.9	36.3	10.4	15.8	500
03/05/2016	80.2	42.9	14.2	20.0	
08/05/2016	75.5	40.4	13.2	18.6	
09/05/2016	72.0	38.0	12.6	17.8	
16/05/2016	67.7	35.2	11.5	16.5	470
17/05/2016	73.9	39.6	13.0	18.0	
24/05/2016	79.2	41.2	14.2	19.5	
25/05/2016	72.2	38.0	12.8	17.4	
Max.	80.2	43.7	14.8	20.0	500.0
Min.	65.3	32.9	10.2	15.5	450.0
Average	72.7	38.7	12.5	17.8	470.0
98%	80.1	43.7	14.5	19.9	498.0

Muktsar

Date	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
05/03/2016	65.2	38.4	12.0	17.2	500
06/03/2016	74.2	45.6	13.5	18.5	
13/03/2016	70.3	38.7	12.8	18.9	
14/03/2016	79.8	45.0	14.2	19.4	
21/03/2016	62.4	36.5	12.4	17.0	480
22/03/2016	77.3	43.2	14.2	19.5	
29/03/2016	74.0	40.7	13.5	20.4	
30/03/2016	68.9	38.8	12.8	17.0	
05/04/2016	82.5	47.0	15.2	20.6	520
06/04/2016	80.0	46.2	14.4	21.2	
13/04/2016	74.6	40.3	13.0	18.8	
14/04/2016	63.9	37.6	12.4	17.5	
20/04/2016	67.8	38.0	12.8	18.0	460
21/04/2016	72.9	40.4	13.5	19.2	
28/04/2016	77.0	44.5	14.5	18.8	
29/04/2016	84.6	48.2	15.6	21.0	
04/05/2016	80.4	46.2	14.2	20.2	510
05/05/2016	66.2	39.5	12.8	17.8	
12/05/2016	73.5	40.7	13.5	19.2	
13/05/2016	70.0	40.2	13.0	18.5	
20/05/2016	63.4	36.9	11.9	17.5	490
21/05/2016	61.7	37.8	12.5	17.8	
28/05/2016	68.8	40.5	13.0	18.4	
29/05/2016	76.4	44.4	14.2	19.6	
Max.	84.6	48.2	15.6	21.2	520.0
Min.	61.7	36.5	11.9	17.0	460.0
Average	72.3	41.5	13.4	18.8	493.3
98%	83.6	47.6	15.4	21.1	519.0



**Bhangchiri**

Date	PM10	PM2.5	SO2	NOX	CO
05/03/2016	70.2	34.2	11.8	17.0	460
06/03/2016	64.5	30.2	10.6	16.2	
13/03/2016	62.9	29.8	10.2	15.5	
14/03/2016	70.6	35.0	12.5	18.0	
21/03/2016	67.0	33.2	11.8	16.8	480
22/03/2016	63.4	30.1	11.0	15.6	
29/03/2016	66.5	32.6	12.2	17.6	
30/03/2016	71.4	36.8	12.8	18.8	
05/04/2016	63.4	33.7	11.5	16.8	440
06/04/2016	66.0	32.0	11.9	17.6	
13/04/2016	65.2	29.5	12.6	17.0	
14/04/2016	69.8	38.9	13.8	18.9	
21/04/2016	70.4	34.7	13.0	18.4	470
22/04/2016	74.6	37.6	14.2	18.0	
29/04/2016	75.0	39.8	13.2	18.5	
30/04/2016	62.5	28.9	11.6	16.4	
03/05/2016	64.9	31.5	12.8	16.8	490
05/05/2016	70.1	35.0	11.4	17.9	
12/05/2016	73.0	37.5	13.8	19.2	
13/05/2016	66.9	36.4	11.0	17.0	
20/05/2016	69.7	38.0	12.6	17.8	450
21/05/2016	63.4	31.4	11.4	16.8	
28/05/2016	64.8	32.6	10.5	17.0	
29/05/2016	68.8	34.4	12.0	17.5	
Max.	75.0	39.8	14.2	19.2	490.0
Min	62.5	28.9	10.2	15.5	440.0
Average	67.7	33.9	12.1	17.4	465.0
98%	74.8	39.4	14.0	19.1	489.0



Environmental Information Centre

(An Initiative of Ministry of Environment and Forests, Govt. of India)

Village: Rupana

District: Mukatsar, Punjab

Client :Satia Industries Limited.



Environmental Information Centre

IL&FS Environmental Infrastructure and Services
Limited

4rd Floor. Dr. Gobaldas Bhawan.



TABLE OF CONTENTS

Chapter 1

1.0	Environmental Information Centre	03
-----	----------------------------------	----

Chapter 2

2.0	Secondary Environmental Data	04
2.1	Land Use/Land Cover	05
2.2	Drainage Pattern	07
2.3	Natural Disaster Prone Areas	07

Appendix 1: Satellite Imagery

Appendix 2: Drainage Pattern

Appendix 3: Earthquake Vulnerability Map

Appendix 4: Wind and Cyclone Vulnerability Map

CHAPTER 1

1.0 Environmental Information Centre

The EIC has been set up by the Ministry of Environment and Forests (MoEF). It provides comprehensive easy-to-use environmental data and information on the environmental clearance process and environmental regulation in India. The EIC envisages to efficiently meeting the environmental data needs of all stakeholders involved with Environmental Impact Assessment (EIA) and Environmental decision making. EIC has completed seven years of operation. During the first year, EIC operated at a regional level database, focusing on states of Andhra Pradesh, Gujarat and Maharashtra. Since the second year, EIC is making detailed database for any part of India on request of the data users.

The environment, being a multi-disciplinary area, a multitude of agencies are involved in collection of environmental data. However, there is no single organization in India which tracks the data available with various data collection agencies and makes it available in form and manner required by the environmental professionals and decision makers. Moreover the environmental data is not available in value added form which can improve the quality of EIA and the decision making process.

The mission is to provide

- 1. high quality environment data and information on India in a timely and cost effective manner*
- 2. to improve environmental studies and projects*
- 3. screening and scoping the decision making processes*
4. With this background, Environmental Information Centre (EIC) has been conceived by Ministry of Environment and Forests (MoEF) as a clearing house of environmental information. To operate EIC on a pilot basis and assess its commercial viability, MoEF has appointed **IL&FS Environmental and Infrastructure Services Limited (IEISL), formerly IL&FS Ecosmart Ltd.** as the Project Management Consultant. The pilot EIC has been financed by the World Bank under the Environmental Management Capacity Building (EMCB) Project.





CHAPTER 2

2.1 Secondary Environmental Data

In secondary environmental data services we have used secondary data on key infrastructure, land use and land cover data have been used to furnish data products that are useful to undertake study for **Village Rupana, District Mukatsar of Punjab**. The service is provided to **Satia Industries Limited**.

The data under all categories, except for the administrative boundary and key infrastructure features, is provided for an area of approximately 10 km buffer around the project area located at longitude **74° 31' 6.9" E** and latitude **30° 25' 20.61" N**.

Distance of Nearest Key Infrastructure Features from Project Area:

Sr. No.	Nearest Infrastructure Feature	Distance from Project Area
1	Village Rupana	1.99Km in South-East Direction
2	NH-15	23.55Km in South-West Direction
3	SH-06	0.35Km in East Direction
4	Railway line	6.35Km in North-West Direction
5	Mukatsar Railway Station	6.25Km in North-East Direction
6	Chanbhan Drain	0.48Km in South Direction
7	Arniwala Subbranch	2.50Km in South Direction
8	Bhatinda Airport	28.40Km in South-East Direction

A layout of raw satellite imagery has been presented as Appendix 1.

All the maps mark the area within 10 km of the project area as the area of interest.

2.2 Drainage Pattern

Method of Data Preparation

The drainage pattern has been captured from the satellite images and updated with the help of various secondary data sources available. The drainage pattern has been over-layer on the administrative boundary map and has been presented as Appendix 2.

The area is well drained by Chanbhan and Arniwala canal, flowing in south direction of the study area.

2.3 Natural Disaster Prone Areas

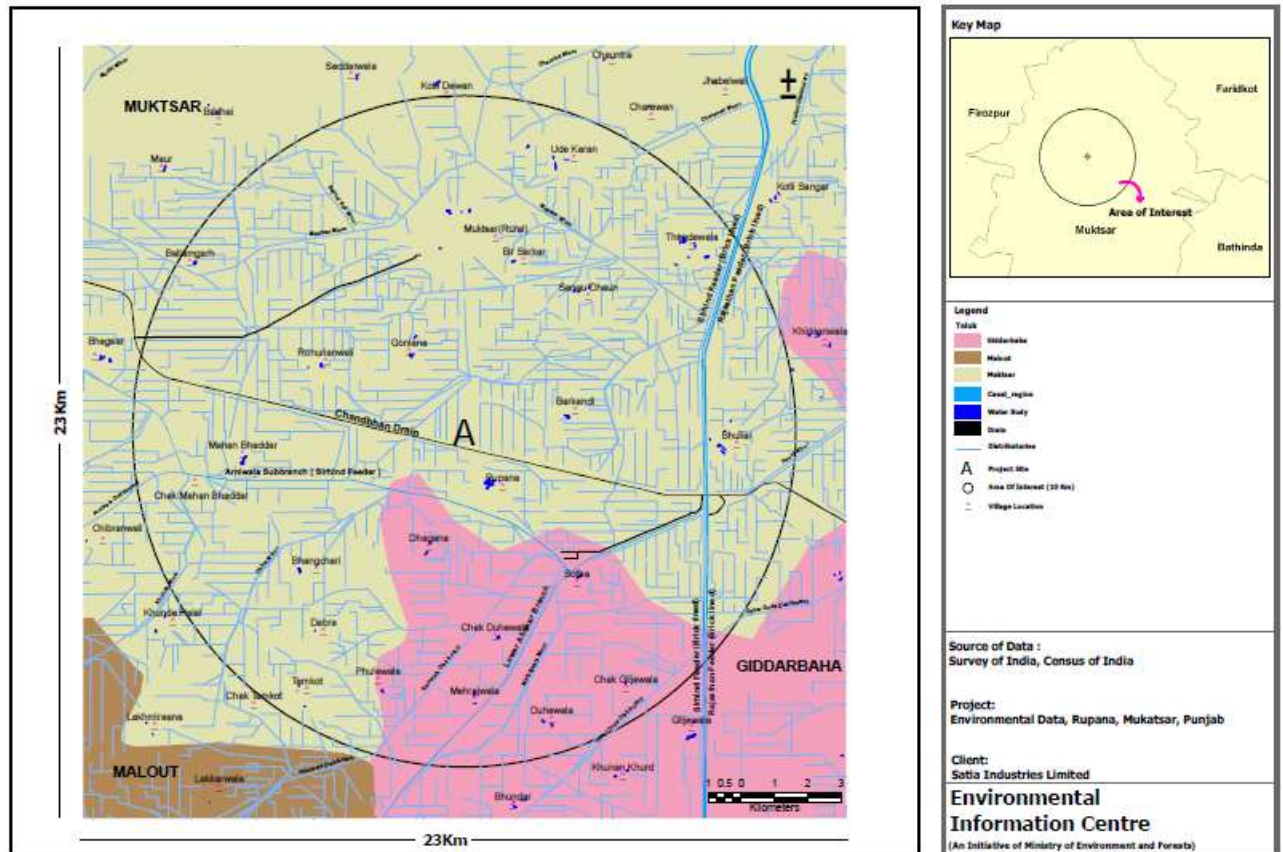
Mukatsar lies in the Zone III of the seismic zone, which is a Moderate Damage Risk Zone (Msk 7). The Seismic zone is depicted on the Earthquake Vulnerability Map and has been presented as Appendix 3.

For the Cyclone prone area, Mukatsar lies in the High damage risk zone (wind speed $V_b = 47$ m/s) Source: BMPTC vulnerability atlas. The cyclone prone area has been depicted on the Wind and Cyclone Vulnerability Map and has been presented as Appendix 4.

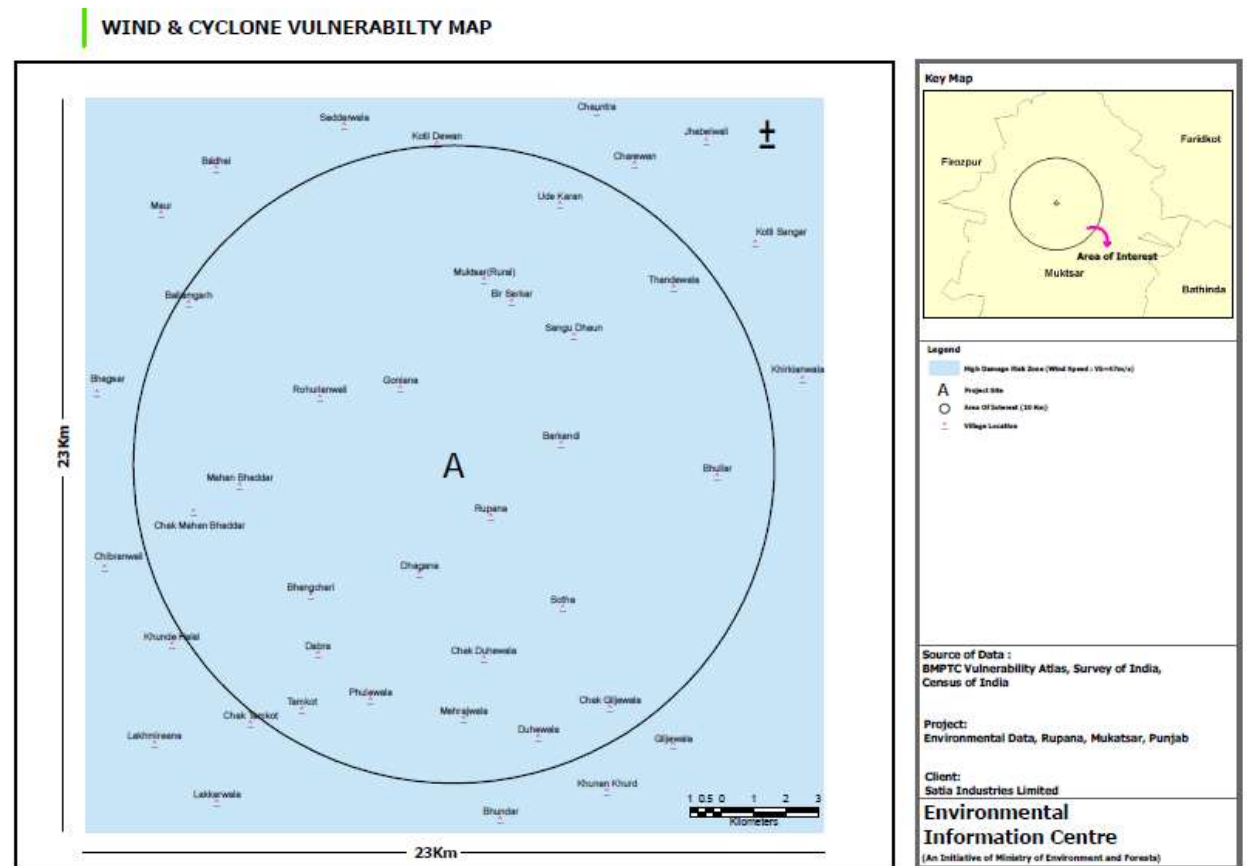


APPENDIX-2

DRAINAGE PATTERN MAP



APPENDIX-4



S. No.	Deptt.	W/ Type	Dcp. 10Kg	Dcp. 5Kg	Foam Type	CO ₂ 4- 1/2 Kg.	Dcp. 2Kg	Rubber Hose Reel	ABC 5 Kg	DCP 22 Kg. Trolly	All Type Total
45	D.M. Plant								1		
46	Labour Colony										
	Grand Total								37		

DETAIL OF HYDRANTS

S. No.	Place	Hydrant No.
1	NEAR PUMP HOUSE	1
2	BACK SIDE PAPER GODOWN	
3	NEAR MECH. W / SHOP	1
4	BACK SIDE BOILER HOUSE	
5	CONTINUOUS DIGESTER	
6	HYPPO PLANT	
7	RICE HUSK CAVIAR	1
8	WHEAT CLEANER	1
9	BACK SIDE REG. CUTTER	
10	-Do -	
11	RAW MATERIAL GODOWN	CPO Yard is covered
12	-Do -	
13	-Do -	
14	-Do -	
15	-Do -	
16	-Do -	
17	PULPER NO.2	
18	BACK SIDE PAPER MACHINE	
19	NEAR PAPER MACHINE GATE	1
20	BACK SIDE FINISHING HOUSE	
21	NEAR JUTE YARD	
22	-Do -	
23	NEAR EFFLUENT PLANT	
24	-Do -	
25	ON DRAIN NEAR BIO GAS PLANT	
26	NEAR BELE PRESS	
27	RAW MATERIAL YARD ROAD NO.-1	1
28	RAW MATERIAL YARD ROAD NO.-2	
29	-Do -	
30	-Do -	
31	-Do - ROAD NO.3	
32	RAW MATERIAL YARDN EAR BOUNDRY	
33	-Do -	
34	OXYGEN GAS PLANT	





Annexure 14: Material Safety Data Sheet



<h2 style="text-align: center;">SDS</h2> <h3 style="text-align: center;">SAFETY DATA SHEET</h3>																	
1. PRODUCT AND COMPANY INFORMATION Chemical name: CHLORINE DIOXIDE AQUEOUS SOLUTION, ClO₂, < 3% Producer: Eka Chemicals AB Bleaching Chemicals Division SE-445 80 BOHUS, Sweden Tel: +46 31 58 70 00 Fax: +46 31 58 79 45																	
2. COMPOSITION/INFORMATION ON INGREDIENTS <table border="1" style="width: 100%;"> <thead> <tr> <th>Chemical name</th> <th>Concentration</th> <th>CAS Number</th> <th>EG Number</th> <th>Hazard labelling</th> <th>R phrases</th> </tr> </thead> <tbody> <tr> <td>Chlorine dioxide</td> <td><3%</td> <td>10049-04-4</td> <td>233-162-8</td> <td>T (toxic) C (corrosive) N (environmental hazard)</td> <td>R25 R34 R50</td> </tr> </tbody> </table>						Chemical name	Concentration	CAS Number	EG Number	Hazard labelling	R phrases	Chlorine dioxide	<3%	10049-04-4	233-162-8	T (toxic) C (corrosive) N (environmental hazard)	R25 R34 R50
Chemical name	Concentration	CAS Number	EG Number	Hazard labelling	R phrases												
Chlorine dioxide	<3%	10049-04-4	233-162-8	T (toxic) C (corrosive) N (environmental hazard)	R25 R34 R50												
3. HAZARDS IDENTIFICATION Human health effects: Harmful if swallowed. Chlorine dioxide gas is highly toxic. Environmental hazards: Harmful to plants and animals, with aquatic organisms being particularly sensitive. At concentrations of more than 3%, the solution is highly toxic to aquatic organisms. Other hazards: Chlorine dioxide gas is toxic and explosive at concentrations of more than 12% in air.																	
4. FIRST-AID MEASURES Inhalation: Ensure access to fresh air if chlorine dioxide has been inhaled. Provide the injured party with oxygen in the event of severe breathing difficulties and seek immediate hospital treatment. Skin contact: Wash the skin with soap and water; if required, wash inside the clothing also. Remove and wash contaminated clothing. Eye contact: Rinse immediately with water and seek medical attention. Ingestion: Rinse out the mouth and drink a few glasses of water or milk immediately, but only if the person is fully conscious. Do not induce vomiting! Seek hospital treatment if more than a minimal amount has been swallowed. Contact ERC, Emergency Response Center for more detailed information, tel. +46 8 33 70 43.																	
5. FIRE-FIGHTING MEASURES Extinguishing media: Water is recommended since chlorine dioxide is soluble in water and the toxic effects are reduced on dilution. Specific hazards: Chlorine dioxide has highly toxic characteristics. Use a gas mask as a preventive measure, if there is any risk of chloride dioxide in the air.																	
6. ACCIDENTAL RELEASE MEASURES Personal precautions: Gas mask, safety goggles and safety gloves are necessary when dealing with major spills. Possible sources of ignition must be removed. Environmental precautions: Spills of chlorine dioxide solutions should be diluted to a low concentration using copious amounts of water. Methods for cleaning up: Dilute with copious amounts of water. Contact expert assistance in the event of major releases. Inform the local emergency services.																	

7. HANDLING AND STORAGE

Handling:

Technical measures

Ensure necessary ventilation in work areas in which chlorine dioxide is being used. Use local exhaust ventilation at point of vapour emissions.

Protective measures

- Ensure that gas masks/gas filters are available.
- Ensure that emergency shower facilities are available.

Safe handling advice

- Avoid contact with the chemicals and materials indicated in paragraph 10 (Incompatible substances).
- Avoid inhalation and skin and eye contact.
- Avoid contact between chlorine dioxide solution and sources of ignition or heat.

Storage:

Technical measures

See below.

Storage conditions

Chlorine dioxide solution should be stored at the lowest possible temperature in ventilated tanks equipped with an explosion hatch. Increased temperature may cause gas vaporisation and may lead to decomposition.

Incompatible substances

Chlorine dioxide aqueous solution should be stored separate from organic material and reducing agents, e.g. sulphur and chlorides.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Limit value:

0.3 mg/m³ = 0.1 ppm

Technical measures:

Efficient ventilation in buildings in which chlorine dioxide is handled.

Personal protective equipment/measures:

- Avoid all unnecessary exposure.
- Respiratory protection: use respiration filter at concentrations of up to 1 ppm and gas mask at concentrations above this.
- Safety goggles or safety visor.
- Safety gloves made of butyl rubber, neoprene or PVC.
- Protective clothing made of polyester or acrylic.
- Eye bath.

Special measures:

Emergency showers or baths must be made available.

9. PHYSICAL AND CHEMICAL PROPERTIES

The following physical data applies to pure chlorine dioxide.

Appearance and odour: Yellowish green to orange gas with a strong, pungent smell at room temperature, weak green colour in aqueous solution

pH in solution: 2-3 at 8 g/l

Freezing point (1 atm): -59°C

Boiling point (1 atm): 11°C

Flash point: Not applicable

Explosion range: >12% in air

Relative gas density: 2.4 (air = 1)

Density (0°C): 1.54 kg/dm³

Solubility in water: 8 g/l at 15°C





10. STABILITY AND REACTIVITY

Chlorine dioxide aqueous solution is an oxidising agent, which is stable as long as the solution is stored in cold and dark conditions. Chlorine dioxide can decompose to chlorine gas and oxygen gas.

Conditions to avoid:

- High temperatures. Gaseous chlorine dioxide is emitted on heating. The gas can decompose and react with flammable material.
- UV light sources. UV light causes decomposition – explosion may occur.
- Static electricity.
- Any open fires or other sources of ignition.

Materials to avoid:

- Iron, copper and their alloys.
- Chlorides and other reducing agents.
- Mixtures with organic material are highly flammable. In the event of contact with oils, the reaction is very violent and explosion may occur.
- Chlorine dioxide gas can be ignited or made to explode by means of friction or impact.

11. TOXICOLOGICAL INFORMATION

Chlorine dioxide solution in concentrations of between 0.3 and 3% is classified as a substance hazardous to human health and irritating to the eyes. Chlorine dioxide is quickly broken down into other chlorine derivatives such as chlorate, chlorite and chloride. High concentrations of chlorine dioxide may occur in air during manufacture.

Acute toxicity:

LD₅₀ (orally, rat) = 39-113 mg/kg

Chlorine dioxide is a reacting and oxidising gas, which oxidises haemoglobin in the blood to methaemoglobin. This leads to a lack of oxygen in body tissue since methaemoglobin does not have the same ability to transport oxygen.

Symptoms (chlorine dioxide gas)

Initially, chlorine dioxide affects the eyes, skin and airways. Normal symptoms of over-exposure are coughing, pallid skin, headache, fatigue, nausea, breathing difficulties and irritation to the eyes, skin and mucous membranes. The first symptoms appear immediately.

Acute over-exposure can cause bronchitis, pneumonia and pulmonary oedema.

Local effects:

Inhalation

Inhalation causes irritation of the mucous membranes.

Skin and eyes

Chlorine dioxide aqueous solution is an eye and skin irritant.

Long term toxicity:

Chronic exposure may lead to lung damage and damage to the teeth.

12. ECOTOXICOLOGICAL INFORMATION

Mobility:

Chlorine dioxide absorbed into water has low volatility.

Persistence/
decomposability:

Chlorine dioxide is quickly decomposed forming chlorate, chlorite and chloride.

Bioaccumulation:

Chlorine dioxide is quickly converted into the products of its decomposition. There is no evidence to show bioaccumulation in animals.

Ecotoxicity:

Chlorine dioxide is toxic to aquatic organisms.

Lowest specification for fish is LC₅₀=0.02 mg/dm³ (96 h, *Pimephales promelas*)

13. DISPOSAL CONSIDERATIONS

Waste:

Small quantities can be disposed of in the drainage system after dilution with large volumes of water.

Contaminated packaging:

Packaging must be cleaned with water.

General:

Consult the public authorities for information in the event of major volumes of waste.

14. TRANSPORT INFORMATION

Chlorine dioxide aqueous solution in concentrations of < 3% has not been classified as hazardous goods.

15. REGULATORY INFORMATION

Classification and labelling

Classification and labelling according to the commission directive 67/548 EEG:

Hazard class: Irritant

Hazard code: Xi

Labelling:



Irritant

CHLORINE DIOXIDE AQUEOUS SOLUTION, < 3%

Risk phrases (R36)

Irritating to eyes.

Safety phrases (S(1/2)-23-26-28-36/37/39-45-61) (Keep locked up and out of the reach of children)¹⁾

Do not breathe the vapour.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

After contact with skin, wash immediately with plenty of water.

Wear suitable protective clothing, safety gloves and eye/face protection.

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Avoid release to the environment.

¹⁾ Not relevant, used only for the labelling of consumer products

16. OTHER INFORMATION

Recommended use

The major use of chlorine dioxide is for bleaching paper pulp. Other areas of use are in water purification and as a disinfectant.

Follow the safety regulations during all use of chlorine dioxide. Failure to do so may lead to serious injury to persons or damage to property.

Coordinator for this safety data sheet

Margaretha Karlsson, tel: +46 8 743 40 00

Reviewed by Åke Brodén, Eka Chemicals AB, Stockholm





HALOX TECHNOLOGIES, INC.

**CHLORINE DIOXIDE DISSOLVED
IN WATER, < 0.054% (w/w)¹**

MATERIAL SAFETY DATA SHEET

This MSDS is supplied by Halox Technologies, Inc. as a service rather than as a supplier of chlorine dioxide. For emergency information contact your sodium chlorite supplier.

SECTION I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Chlorine dioxide

CHEMICAL FORMULA: ClO₂

CHEMICAL NAME: Chlorine dioxide

CHEMICAL FAMILY: Inorganic compound

Halox Technologies, Inc.
Bridgeport, CT 06610
www.haloxtech.com
MKT-TDS-0032

CHEMICAL TYPE: Chlorine dioxide gas absorbed
in water solution. Antimicrobial.

Date Prepared: 21 June 2004

Spsds: 15 April 2002

**EMERGENCY TELEPHONE NUMBER AND
TELEPHONE NUMBER FOR INFO: CON-
TACT YOUR SODIUM CHLORITE SUPPLIER.**

SECTION II. HAZARD INGREDIENTS/IDENTITY INFORMATION

CHEMICAL NAME	CAS NUMBER	PRODUCT ID NO.	WT. %
Chlorine dioxide	10049-04-4	NA 9191	0.054 (540 mg/l) ¹

This product is not considered hazardous by 29 CFR 1910.1200.

EXPOSURE LIMITS: Chlorine dioxide (Note: Limits are for concentration in air, not aqueous solution.)

OSHA PEL- TWA	OSHA PEL- STEL	NIOSH REL- TWA	NIOSH REL- STEL	ACGIH TLV- TWA	ACGIH TLV- STEL
0.1 ppm	0.3 ppm	0.1 ppm	0.3 ppm	0.1 ppm	0.3 ppm

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

AQUEOUS SOLUTION

APPEARANCE/ODOR: Pale yellow to yellow/chlorine-like.

VAPOR PRESSURE: ~5mm Hg at 25 °C (ClO₂)

BOILING POINT: Same as water.

MELTING POINT: Same as water.

EVAPORATION RATE: Not applicable

SPECIFIC GRAVITY: 1.0 at 0 °C

ODOR THRESHOLD: No data

CHLORINE DIOXIDE GAS

ODOR: Chlorine-like

BOILING POINT: 11 °C

SOLUBILITY IN WATER: 3.01 g/l at 25 °C and 34.5 mm Hg (partial pressure)

SPECIFIC GRAVITY: Not available.

MELTING POINT: -59 °C (as 100% ClO₂)

% VOLATILE: 100%

pH: 2.5 -3.5 (for Halox generated 540 ppm solution).

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Dilute chlorine dioxide solutions do not present a fire hazard.

EXTINGUISHING MEDIA: Water. Use water spray to reduce vapors.

UNSUITABLE EXTINGUISHING MEDIA: Dry chemical, CO₂, halon.

SPECIAL PROTECTIVE EQUIPMENT: Protect from respiratory exposure.

SPECIAL EXPOSURE HAZARDS: None.

FLASH POINT: Not applicable.

AUTOIGNITION: Not applicable.

UPPER/LOWER FLAMMABILITY LIMITS: None.

HAZARDOUS COMBUSTION: None

FIRE/EXPLOSION HAZARDS: None.

SENSITIVITY TO MECHANICAL/STATIC DISCHARGE: None known.

SECTION V. REACTIVITY DATA

STABILITY: Stable under ambient conditions. Avoid contact with direct sunlight and excessive heat.

HAZARDOUS REACTIONS: None known.

CONDITIONS TO AVOID: Avoid elevated temperatures to reduce/avoid evolution of ClO₂ gas.

INCOMPATIBILITY: Corrosive to steel, stainless steel, and many other materials. Avoid contact with reducing agents.

HAZARDOUS DECOMPOSITION: When chlorine dioxide gas is heated to decomposition, chlorine gas is produced. Chlorine gas creates hydrochloric acid when mixed with water or steam.

SECTION VI. HEALTH HAZARD DATA

ROUTES OF ENTRY: Inhalation, ingestion, skin and eye contact.

TARGET ORGANS: Eyes, skin, respiratory tract and mucous membranes.

ACUTE HEALTH EFFECTS

INGESTION: Not a normal route of exposure. Harmful if swallowed. Can cause irritation to mouth, esophagus, stomach, and mucous membranes.

SKIN CONTACT: Corrosive. May cause redness and irritation.

EYE CONTACT: Contact causes redness, irritation, pain, blurred vision, tearing, corneal injury and burns.

INHALATION: Harmful if inhaled. Coughing, headaches, labored breathing, nausea, shortness of breath, pulmonary edema.

CHRONIC HEALTH EFFECTS

May have effects on lungs, resulting in chronic bronchitis and permanent lung damage (with chronic exposure).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: May aggravate existing skin and respiratory conditions.

EMERGENCY AND FIRST AID PROCEDURES

EYES: In case of contact, immediately flush with water for at least 15 to 20 minutes. Lift upper and lower lids and rinse well under them. Get immediate medical attention.

SKIN: Immediately rinse excess material off skin with large amounts of water; remove contaminated clothing and shoes; then wash with soap and water. If heavy contamination has occurred, then discard the clothing in a manner that limits further exposure. Otherwise, thoroughly clean contaminated clothing and shoes before reuse. Get medical attention.



**HALOX MSDS**

Page 3 of 4

**< 0.054% (w/w) CHLORINE DIOXIDE
DISSOLVED IN WATER**

INHALATION: Remove from exposure. If individual is not breathing, administer cardiopulmonary resuscitation (CPR) and get immediate medical attention. If individual is breathing, but with difficulty, get medical attention.

INGESTION: Do not induce vomiting. Do not give anything by mouth to an unconscious person. Get medical attention.

TOXICOLOGY INFORMATION

ACUTE ORAL TOXICITY: No information.

ACUTE DERMAL TOXICITY: No information.

INHALATION EFFECTS: Strong respiratory irritant.

IRRITATION TO SKIN: Irritant. Can give transient pain and redness.

IRRITATION TO EYES: Strong irritant.

SENSITIZATION DATA: No information.

REPRODUCTIVE TOXICITY: Chlorine dioxide did not cause birth defects in laboratory animals, even at exceptionally high exposure levels.

CARCINOGENICITY: This product does NOT contain compounds known to cause cancer according to NTP, IARC or OSHA.

MUTAGENICITY: Chlorine dioxide did test positive in a small fraction of mutagenesis assays conducted, however, in a two year mouse bioassay there was no clear evidence of carcinogenicity.

TERATOGENICITY: No information.

LD₅₀ (oral) rats: 292 mg/kg

LC₅₀ (inhalation) rats: 500 ppm/15 min. (Note: This refers to ppm in air NOT in solution)

IRRITATION (rabbit): Moderate irritant to eyes.

AQUATIC TOXICITY:

LC₅₀ (96 hrs) Fathead minnow, juvenile: 0.02 mg/l

LC₅₀ (96 hrs) Fathead minnow, adult: 0.17 mg/l

LC₅₀ (96 hrs) Bluegill, young of the year: 0.15 mg/l

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

STORAGE: Store aqueous solution in a cool, dry environment in suitable storage containers. Solutions in pure water can be maintained for months in closed, UV protected containers.

LARGE SPILL: Isolate hazard area and deny entry to unnecessary or unprotected personnel. Keep combustibles away from spill. Ventilate area of spill or leak. Remove gas with a fine water spray. Stop leak if you can do it without risk. Wear a self-contained breathing apparatus. Contain spilled liquid with sand or earth. Place in a disposal container. Avoid runoff into storm sewers and ditches that lead to waterways. Never discharge directly into a lake, pond, stream, river, or other natural body of water.

SMALL SPILL: Rinse with large amounts of water.

HANDLING: Wear appropriate protective clothing. Avoid prolonged contact with skin and clothing. Avoid breathing vapors. Wash with soap and water after handling.

RESPIRATORY PROTECTION: Use general room ventilation or local exhaust ventilation to keep airborne exposure below the PEL. If ventilation is not adequate, wear an approved respirator.

SKIN PROTECTION: Wear impervious gloves, boots and apron.

EYE PROTECTION: Always wear safety glasses with side shields or a full face shield.

PERSONNEL PROTECTION: Air-purifying full-face respirator. Chemical-resistant gloves, safety glasses with side shields or chemical goggles. Eye wash facility and emergency shower should be in close proximity.

UNSUITABLE HANDLING/STORAGE MATERIALS: Avoid contact with oxidizable organic materials. Avoid concentrating the vapors as extremely highly concentrated vapors (10% (w/w) in air) may explosively decompose on shock, friction, concussion or materials.

TRANSPORTATION AND REGULATORY INFORMATION

Shipping chlorine dioxide is not allowed.

TRANSPORTATION DESCRIPTION

DOT/TDG: Not determined

UN ID NO.: Not applicable

IMDG/SFA: Not determined

PROPER SHIPPING NAME: Not applicable

AIR (ICAO/IATA-DGR): Not determined

REGULATORY INFORMATION

CANADA DSL: In compliance

US TSCA: In compliance

WHMIS CLASSIFICATION: Not determined

OSHA REGULATED: Non hazardous. Corrosive as defined in 29 CFR 1910.1200

HMIS RATING: Not rated

NFPA RATING: Not rated

SARA 302: Not subject to SARA Section 302

SARA 311/312: Not subject to SARA Section 311/312

SARA 313: Subject to SARA Section 313

CALIFORNIA PROPOSITION 65: Not subject to California Proposition 65

CERCLA REPORTABLE QUANTITIES: Not subject to CERCLA

DISPOSAL CONSIDERATIONS

PRODUCT DISPOSAL: In accordance with municipal, provincial, state and federal regulations.
RCRA: D002.

ECOLOGICAL INFORMATION

BIODEGRADABILITY: No data.

OTHER INFORMATION: None.

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and we expressly disclaim all warranties of every kind and nature, including warranties of merchantability and fitness for a particular purpose in respect to the use or suitability of the product. Nothing is intended as a recommendation for uses, which infringe valid patents, or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.

¹ 540 mg/l is the concentration obtained under ideal conditions at the Halox testing facility. This is based on multiple data points from non-consecutive days with all variables and parameters under scrupulous control.





Annexure 15: Safety and Health policy (under Factories Act, 1948) of Satia Industries Ltd

M/S. SATIA INDUSTRIES LTD. RUPANA (MUKTSAR)

SAFETY AND HEALTH POLICY FRAMED UNDER THE FACTORIES ACT, 1948

Establishment Business Policy and Practices relating to Safety and Health not only ensure well-being of employees and the neighboring community but also call for highest standards of efficiency in performance of all business operations. Prevention and control of personal injury and property loss and safeguarding the health of the employees as well as the neighbouring community will be accorded too priority in all operations of the Pulp & Paper Manufacturing Process.

The standards of performance relating to Safety and Health that the Division will constantly strive to meet are as follows:-

HEALTH

1. All occupational & risks will be identified and published.
2. Programme to protect against identified occupational health risks will be implemented.
3. Exposures to all occupational health risks will be monitored and controlled to comply with statutory requirements.
4. Precise guidelines will be worked out so that all our employees are fully aware of identified occupational health risks and preventive and protective measures.
5. Appropriate government agencies, customers and the public will be advised on all new and significant information on occupational health hazards discovered by Pulp and Paper Industry.
6. Existing facilities will be upgraded wherever necessary, to control exposure to comply with statutory levels, existing or forecasted.
7. Feasibility of achieving the lowest levels of exposures to all health risks will be critically examined while designing new facilities.
8. Compliance of occupational health laws and regulations will be carefully monitored.
9. Efforts will be made maintain constant interaction with Government and other authentic agencies on occupational health matters.
10. To ensure the cleanliness of the factory free from Effluvia arising from any drain, privy or other nuisance and to ensure the removal of dust accumulations daily by sweeping dusting and see the cleanliness of work rooms including inside walls, fitting and fixtures that the work rooms should be cleaned by washing, using disinfective and some other effective methods.
11. Effective arrangement to be made for :
 - (a) Disposal of wastes and effluent, prevent accumulation of dust or fume or other impurity, which is likely to injure the health.
 - (b) Adequate ventilation and circulation of fresh air and create temperature, which may secure reasonably comfortable conditions and prevent injury to health of workmen.
 - (c) Sufficient, effective and suitable lighting in every part of the factory where work is being carried out and also in the latrines, urinals etc.
 - (d) Over-crowding in the rooms, which is injurious to health, be avoided.

for SATIA INDUSTRIES LTD

Authorized Signatory

(e) Sufficient supply of drinking water (cold or normal) at suitable points as per the seasons to be made.

SAFETY

1. Safety will be primary concern through all phases of planning, development, production, distribution and application of our products.
2. Precise guidelines will be developed so that all our employees, customers, transporters and the concerned people understand the nature of our materials handled by them and the hazards associated with their storage, transport and use.
3. New facilities will be designed, maintained and operated in such manner that adequate safety measures are built therein to contain hazards which can result in accidental fires, explosion or injuries.
4. Standards and procedures will be developed to ensure uniform application of safe practices in all activities.
5. Each employee will take appropriate action to ensure that the various elements of the safety programme are understood and implemented within his area of accountability.
6. Adequate stress will be laid on continuous education so that each employee knows the safe way to perform his job and does his part in protecting himself co-workers and neighboring community from injury.
7. Organizational set up at the level of each department/section to carry out the declared policy clearly assigning the responsibility at each level.
8. Providing the measures of safety performance of the factory in its Annual Return.
9. A continuous programme of inspection and investigation will be maintained to detect and eliminate unsafe practices and working conditions.
10. Active participation of employees in all safety and improvement programme through forums consisting of all levels of personnel will be ensured.
11. Causes of injuries and potentially hazardous occurrences shall be promptly and thoroughly investigated and corrective actions taken to prevent recurrence. Appropriate disciplinary action will be initiated against infractions of safety rules and regulations.
12. As part of accident prevention programme "Off-the job " safety will be stressed on the employees.
13. Fencing machinery by safeguards of substantial constructions shall be constantly maintained and kept in a position by the parts of machinery go fenced are in motion or use. It will also be ensured that only specially trained adult workers bearing tight fitting clothing is allowed to examine any machinery while in motion ,carry out lubrications or adjusting operation and carry out mounting or shipping of belts or lubrications or adjusting operation and carrying out mounting or shipping of belts or lubrications of other adjusting operations.
14. To ensure effective guarding to prevent danger every screw set, bolts or key on any revolving shaft, spindle, wheel or pinion.
15. To ensure that every hoist and lift is of good mechanical construction, sound material and adequate strength properly maintained and thoroughly examined by a competent person.

For SATIA INDUSTRIES LTD.

Authorized Signatory





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT No.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

16. To ensure safe means of access to every place at which any, person is at any time require to work.

For SATIA INDUSTRIES LTD.
(J.R.Sharma)
OCCUPIER
Authorised Signatory

Annexure 16: Health Record of workers

Sarla Industries Ltd. Rupore (M.K.S.)

HEALTH REGISTER

SATURDAY

NOTE—(i) Column 8—Should be recorded in case of transfer or discharge should be noted.
(ii) Column 11—Should be recorded in case of transfer or discharge should be noted.

Name of Cording Surgeon: (i) Mr. _____ Date: _____
(ii) Mr. _____ Date: _____
(iii) Mr. _____ Date: _____

Serial No.	Roll No.	NAME OF WORKER	Sex	Age	Date of Birth	Date of joining	Date of leaving	Reason for leaving	Health of the worker at the time of joining	Health of the worker at the time of leaving	Remarks	Remarks of Medical Examination by Cording Surgeon	Remarks of Medical Examination by Cording Surgeon	Remarks of Medical Examination by Cording Surgeon	Remarks of Medical Examination by Cording Surgeon	Remarks of Medical Examination by Cording Surgeon
1	1122	S. S. S.	M	42												
2	1121	S. S. S.	M	42												
3	1120	S. S. S.	M	42												
4	1119	S. S. S.	M	42												
5	1118	S. S. S.	M	42												
6	1117	S. S. S.	M	42												
7	1116	S. S. S.	M	42												
8	1115	S. S. S.	M	42												
9	1114	S. S. S.	M	42												
10	1113	S. S. S.	M	42												
11	1112	S. S. S.	M	42												
12	1111	S. S. S.	M	42												
13	1110	S. S. S.	M	42												
14	1109	S. S. S.	M	42												
15	1108	S. S. S.	M	42												
16	1107	S. S. S.	M	42												
17	1106	S. S. S.	M	42												
18	1105	S. S. S.	M	42												
19	1104	S. S. S.	M	42												
20	1103	S. S. S.	M	42												
21	1102	S. S. S.	M	42												
22	1101	S. S. S.	M	42												
23	1100	S. S. S.	M	42												
24	1099	S. S. S.	M	42												
25	1098	S. S. S.	M	42												
26	1097	S. S. S.	M	42												
27	1096	S. S. S.	M	42												
28	1095	S. S. S.	M	42												
29	1094	S. S. S.	M	42												
30	1093	S. S. S.	M	42												
31	1092	S. S. S.	M	42												
32	1091	S. S. S.	M	42												
33	1090	S. S. S.	M	42												
34	1089	S. S. S.	M	42												
35	1088	S. S. S.	M	42												
36	1087	S. S. S.	M	42												
37	1086	S. S. S.	M	42												
38	1085	S. S. S.	M	42												
39	1084	S. S. S.	M	42												
40	1083	S. S. S.	M	42												
41	1082	S. S. S.	M	42												
42	1081	S. S. S.	M	42												
43	1080	S. S. S.	M	42												
44	1079	S. S. S.	M	42												
45	1078	S. S. S.	M	42												
46	1077	S. S. S.	M	42												
47	1076	S. S. S.	M	42												
48	1075	S. S. S.	M	42												
49	1074	S. S. S.	M	42												
50	1073	S. S. S.	M	42												

Dr. YUVAJ MARKAN
M. B. S. S. M.D. (OPHTH.)
PROF. PATIL A RITE'S MATERNITY HOSPITAL
MUMBAI



ELASTICITY

NOTE:—(1) Column 4—Detailed summary of reasons for transfer or discharge should be noted.
(2) Column 11—Should be expanded as Follows/Suggested.

(In respect of persons employed in occupations declared to be dangerous operations under section 17)

Name of Civilizing Burgess	Age	Sex	Time	Place
(9) Mr.		Male	Time	Place
(10) Mr.		Male	Time	Place
(11) Mr.		Male	Time	Place

Serial No.	Work No.	NAME OF WORKER	Sex	Age (last birthday)	Date of registration or admission	Date of leaving or discharge	Reason for leaving or discharge	Status at the time of discharge	How satisfied as to medical results	General Medical Examination by Director Surgeon		If registered from any other period of imprisonment with medical record	Report due from prison during last day before discharge	If sent out of institution or hospital	Stationary with view of continuing treatment
										Result of Medical Examination					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
36	252	Handup Raman	M	51						NAD					
37	252	Chandrasekar	M	44						NAD					
38	253	Saravananappa	M	34						NAD					
39	254	Manikandan	M	35						NAD					
40	255	Subbaraj	M	35						NAD					
41	256	Ram Aditya	M	42						NAD					
42	257	Subbaraj	M	52						NAD					
43	258	Subbaraj	M	35						NAD					
44	259	Subbaraj	M	30						NAD					
45	260	Subbaraj	M	34						NAD					
46	261	Subbaraj	M	37						NAD					
47	262	Subbaraj	M	30						NAD					
48	263	Subbaraj	M	36						NAD					
49	264	Subbaraj	M	39						NAD					
50	265	Subbaraj	M	50						NAD					
51	266	Subbaraj	M	35						NAD					
52	267	Subbaraj	M	34						NAD					
53	268	Subbaraj	M	23						NAD					
54	269	Subbaraj	M	38						NAD					
55	270	Subbaraj	M	52						NAD					
56	271	Subbaraj	M	44						NAD					
57	272	Subbaraj	M	35						NAD					
58	273	Subbaraj	M	40						NAD					
59	274	Subbaraj	M	36						NAD					
60	275	Subbaraj	M	33						NAD					
61	276	Subbaraj	M	53						NAD					
62	277	Subbaraj	M	50						NAD					
63	278	Subbaraj	M	40						NAD					
64	279	Subbaraj	M	38						NAD					
65	280	Subbaraj	M	51						NAD					
66	281	Subbaraj	M	34						NAD					
67	282	Subbaraj	M	33						NAD					
68	283	Subbaraj	M	38						NAD					
69	284	Subbaraj	M	35						NAD					
70	285	Subbaraj	M	30						NAD					

Dr. YUVRAJ MANKAR
MR. MS. - M. S. JINETA
MOBILE - 98222
PROF. PATIL'S GYN & MATERNITY HOSPITAL
MUMBAI

HEALTH REGISTER

REGISTER

(NOTE) —(3) Column 4—Detailed summary of request for transfer or discharge should be stated.
(4) Column 5—Should be signed as follows: (Suspended).

(Is request of person, respondent or designations declared to be dangerous operators under section 87)

Number of Existing Burgers	Number of Burgers	From	To
(a) 30	10	From	50
(b) 40	10	From	50
(c) 50	10	From	50

Dr. YUVRAJ MARRAK
M.B.B.S. M.D. (GYN)
REGD. NO. 2138
FROM
PATILALAYA GYN & MATERNITY HOSPITAL
MUMBAI.



Satia Industries Ltd. Rupana (Hks.)

FORM NO. 17

HEALTH REGISTER

SATIEN

NOTE:—(1) Column 9—Detailed summary of reasons for transfer or discharge should be stated
(2) Column 11—Should be expressed as Fit/Unfit/Suspended.

(In report of person, employed in occupation declared to be dangerous operations under section 87)

Name of Continging Surgeon: (1) Mr. _____ (2) Mr. _____ (3) Mr. _____

Place of Continging Surgeon: (1) _____ (2) _____ (3) _____

Serial No.	Work No.	NAME OF WORKER	Age	Age from birth	Days of employment in present work	Days of absence of work in last 12 months	Reason for absence or discharge	Nature of the work or occupation	Remarks or remarks	Status of Medical Examination by Continging Surgeon		Remarks	Signature of Continging Surgeon
										Fit	Unfit		
1	1911	Rudh Singh	40	34						Fit			
2	1912	Rudh Singh	40	34						Fit			
3	1913	Rudh Singh	40	34						Fit			
4	1914	Rudh Singh	40	34						Fit			
5	1915	Rudh Singh	40	34						Fit			
6	1916	Rudh Singh	40	34						Fit			
7	1917	Rudh Singh	40	34						Fit			
8	1918	Rudh Singh	40	34						Fit			
9	1919	Rudh Singh	40	34						Fit			
10	1920	Rudh Singh	40	34						Fit			
11	1921	Rudh Singh	40	34						Fit			
12	1922	Rudh Singh	40	34						Fit			
13	1923	Rudh Singh	40	34						Fit			
14	1924	Rudh Singh	40	34						Fit			
15	1925	Rudh Singh	40	34						Fit			
16	1926	Rudh Singh	40	34						Fit			
17	1927	Rudh Singh	40	34						Fit			
18	1928	Rudh Singh	40	34						Fit			
19	1929	Rudh Singh	40	34						Fit			
20	1930	Rudh Singh	40	34						Fit			
21	1931	Rudh Singh	40	34						Fit			
22	1932	Rudh Singh	40	34						Fit			
23	1933	Rudh Singh	40	34						Fit			
24	1934	Rudh Singh	40	34						Fit			
25	1935	Rudh Singh	40	34						Fit			
26	1936	Rudh Singh	40	34						Fit			
27	1937	Rudh Singh	40	34						Fit			
28	1938	Rudh Singh	40	34						Fit			
29	1939	Rudh Singh	40	34						Fit			
30	1940	Rudh Singh	40	34						Fit			
31	1941	Rudh Singh	40	34						Fit			
32	1942	Rudh Singh	40	34						Fit			
33	1943	Rudh Singh	40	34						Fit			
34	1944	Rudh Singh	40	34						Fit			
35	1945	Rudh Singh	40	34						Fit			
36	1946	Rudh Singh	40	34						Fit			
37	1947	Rudh Singh	40	34						Fit			
38	1948	Rudh Singh	40	34						Fit			
39	1949	Rudh Singh	40	34						Fit			
40	1950	Rudh Singh	40	34						Fit			

Dr. YUVRAJ MANNAN
M.B.B.S. (M.D. (ORTH.))
REGD. No. 3089
PROP. SATIATA MATERNITY HOSPITAL
MUKTSAR

PAGES 65-17

HEALTH REGISTER

NOTE 1-(1) Column 8-Detailed summary of reasons for transfer or discharge should be stated.
(2) Column 11-Should be assigned as Fictitious/Suppressed.

(^c) In neither of common scenarios is termination declared to be dangerous occasion under written NT).

Name of Carolina Support	Amount of money supported by Carolina Support	
	Year	Amount
(i) Mr. _____	_____	_____
(ii) Mr. _____	_____	_____
(iii) Mr. _____	_____	_____

[illegible]

EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Satin Industries Ltd. Rupam (Mks.)

FORM NO. 17

BASTOS

HEALTH REGISTER

NOTE—(a) Column 8—Detailed summary of report the transfer or discharge should be made
(b) Column 11—Should be entered as fit/unfit/undergo.

(In report of person, employed or occupation declared to be dangerous operations under section 87)

Report of Certifying Surgeon

(a) Mr. _____ From _____ to _____

(b) Mr. _____ From _____ to _____

(c) Mr. _____ From _____ to _____

Serial No.	Work No.	NAME OF WORKER	Sex	Age (last birth day)	Date of joining (or) period of service	Date of leaving (or) discharge	Reason for leaving (or) discharge	Signature of the worker or representative	Date of Medical Examination by Certifying Surgeon	Is reported from which year period of experience and detailed notes	Is reported to be fit/unfit/undergo	Is reported of sufficient evidence to	Signature with date of Certificate
1	2	3	4	5	6	7	8	9	10	11	12	13	14
71	274	Pappa Bana	m	30					Jan-16	NBS			fit
72	275	Vijay Bana	m	42					NBS				fit
73	276	Kallappa G	m	34					NBS				fit
74	277	Chandappa S	m	34					NBS				fit
75	278	Arjunappa S	m	35					NBS				fit
76	279	Saravappa S	m	38					NBS				fit
77	280	Rajappa S	m	41					NBS				fit
78	281	Shankarappa S	m	42					NBS				fit
79	282	P. B. S. S	m	37					NBS				fit
80	283	N. B. S.	m	42					NBS				fit
81	284	M. B. S.	m	41					NBS				fit
82	285	P. B. S.	m	31					NBS				fit
83	286	V. B. S.	m	32					NBS				fit
84	287	G. B. S.	m	36					NBS				fit
85	288	L. B. S.	m	32					NBS				fit
86	289	S. B. S.	m	31					NBS				fit
87	290	H. B. S.	m	33					NBS				fit
88	291	S. B. S.	m	37					NBS				fit
89	292	S. B. S.	m	32					NBS				fit

Dr. Y. S. S. MARKAN

M. B. S. M. D. (GPHS)

1800, No. 2216

PROF.

PATILIA RIVER MATERNITY HOSPITAL

MORILAL

FORM NO. 17

HEALTH REGISTER

NOTE:—(1) Column 8—Should not carry any reason for transfer or discharge should be stated.
(2) Column 11—Should be expanded as Far/Under/Supervised.

(In respect of person, employed in occupations declared to be dangerous operations under section 47)

Name of Employing Employer: (a) Mr. _____ From _____ to _____
(b) Mr. _____ From _____ to _____
(c) Mr. _____ From _____ to _____

Serial No.	Roll No.	NAME OF WORKER	Sex	Age	Date of birth	Date of joining or entry in service	Reason for leaving or discharge	Medical Officer's name	Remarks	State of Medical Examination by Employing Employer	8. Suspended from work after period of suspension with medical certificate	9. Name of Doctor from whom medical certificate received	10. Date of receipt of medical certificate	11. Signature of Employer
1	1474	Ganesh S/o	M	34						NAD				ft
2	1544	Pranay S/o	M	25						NAD				ft
3	1544	Rishi S/o	M	22						NAD				ft
4	1611	Ajit S/o	M	26						NAD				ft
5	1725	Subhash S/o	M	25						NAD				ft
6	1754	Anita S/o	M	24						NAD				ft
7	2125	Rajendra S/o	M	44						NAD				ft
8	2125	Anand S/o	M	21						NAD				ft
9	2125	Madhavi S/o	M	20						NAD				ft
10	2227	M. Anand S/o	M	34						NAD				ft
11	2226	Jay S/o	M	22						NAD				ft
12	2226	Jay S/o	M	24						NAD				ft
13	2444	Ramesh S/o	M	25						NAD				ft
14	2444	Harish S/o	M	26						NAD				ft
15	2444	Jay S/o	M	25						NAD				ft
16	2444	Rajendra S/o	M	26						NAD				ft
17	2444	Madhavi S/o	M	24						NAD				ft
18	2444	Madhavi S/o	M	24						NAD				ft
19	2444	Rajendra S/o	M	24						NAD				ft
20	2444	Madhavi S/o	M	24						NAD				ft
21	2444	Madhavi S/o	M	24						NAD				ft
22	2444	Madhavi S/o	M	24						NAD				ft
23	2444	Madhavi S/o	M	24						NAD				ft
24	2444	Madhavi S/o	M	24						NAD				ft
25	2444	Madhavi S/o	M	24						NAD				ft
26	2444	Madhavi S/o	M	24						NAD				ft
27	2444	Madhavi S/o	M	24						NAD				ft
28	2444	Madhavi S/o	M	24						NAD				ft
29	2444	Madhavi S/o	M	24						NAD				ft
30	2444	Madhavi S/o	M	24						NAD				ft
31	2444	Madhavi S/o	M	24						NAD				ft
32	2444	Madhavi S/o	M	24						NAD				ft
33	2444	Madhavi S/o	M	24						NAD				ft
34	2444	Madhavi S/o	M	24						NAD				ft
35	2444	Madhavi S/o	M	24						NAD				ft
36	2444	Madhavi S/o	M	24						NAD				ft
37	2444	Madhavi S/o	M	24						NAD				ft
38	2444	Madhavi S/o	M	24						NAD				ft
39	2444	Madhavi S/o	M	24						NAD				ft
40	2444	Madhavi S/o	M	24						NAD				ft
41	2444	Madhavi S/o	M	24						NAD				ft
42	2444	Madhavi S/o	M	24						NAD				ft
43	2444	Madhavi S/o	M	24						NAD				ft
44	2444	Madhavi S/o	M	24						NAD				ft
45	2444	Madhavi S/o	M	24						NAD				ft
46	2444	Madhavi S/o	M	24						NAD				ft
47	2444	Madhavi S/o	M	24						NAD				ft
48	2444	Madhavi S/o	M	24						NAD				ft
49	2444	Madhavi S/o	M	24						NAD				ft
50	2444	Madhavi S/o	M	24						NAD				ft

Dr. PANKAJ MARKAN
M.B.B.S., M.D. (OPHTH)
REGD. No. 2226
PROF.
PATIALA SVD & MATERNITY HOSPITAL
MUKTSAR





Satia Industries Ltd. Rupana (Mks.)

FORM NO. 17

HEALTH REGISTER

NOTE:—(i) Column 8—(Detailed summary of reasons for transfer or discharge should be stated)
(ii) Column 13—Should be approved as Fit/Unfit (Suspended).
(In respect of person employed in occupation declared to be dangerous operation under section 97)

Name of Certifying Surgeon: (i) Mr. _____ (ii) Mr. _____ (iii) Mr. _____

Serial No.	Work No.	NAME OF WORKER	Sex	Age (last birth date)	Date of birth of present one	Date of birth of child in this mine	Reason for transfer to this mine	Reason for transfer to other mine	Reason for transfer to other place	Date of Medical Examination by Certifying Surgeon	Is recommended for work with special precautions or suspended or discharged on medical grounds	Is certified as fit or unfit or suspended or discharged on medical grounds	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14
72	3214	Mr. D. D. Datta	M	35						Fit			Fit
73	3234	Mr. D. D. Datta	M	46						Fit			Fit
74	3252	Mr. D. D. Datta	M	20						Fit			Fit
75	3275	Mr. D. D. Datta	M	20						Fit			Fit
76	3283	Mr. D. D. Datta	M	25						Fit			Fit
77	3293	Mr. D. D. Datta	M	29						Fit			Fit
78	3314	Mr. D. D. Datta	M	28						Fit			Fit

Dr. YUVRAJ SARKAR
M. B. B. S. M. D. (COSETH)
REGD. No. 21138
PROF.
PATILAYA S. MATERNITY HOSPITAL
MUKTSAR

Annexure 17: MoU for Waste Disposal

Bansal paper board mills, Village mahabodhar, abohar road, distt. muktsar,
Muktsar, Muktsar

PUNJAB POLLUTION CONTROL BOARD Vatavaran Bhawan, Nabha Road, Patiala

No. HWM/MKS/2015/2576006

1032

Registered

Dated: 21/04/2015

To

Bansal paper board mills,
Village mahabodhar, abohar road, distt. muktsar
Muktsar
Tehsil :Muktsar
District :Muktsar

22.04.2015

Subject :- Authorization for operation of a facility for Reception,Transport,Storage,Disposal, of hazardous wastes generated under Rule 5 of the Hazardous Waste(Management ,Handling and Trans-boundary Movement) Rules,2008 .

1.	(a)	Number of authorization	1	HWM/MKS/2015/2576006
	(b)	Date of issue	1	21/04/2015
	(c)	Date of Expiry	1	31/03/2020
	(d)	Category and Quantity of Hazardous Wastes	1	Category 32.3 of schedule-I [Process Sludge containing absorbable organic halides (AOH) @ 2.5 TPD (900 TPA) reprocessed by the industry as raw material by lifting from M/s Satia Industries Ltd. (Unit-I) or M/s Nicer Green Board & Papers Pvt. Ltd. for the manufacturing card board / mix board @ 4.5 TPD.
	(e)	Scale of Industry	1	Small

2. Sh. Pawan Kumar Bansal of M/S Bansal paper board mills, is hereby granted an authorization to operate a facility for Reception,Transport,Storage,Disposal, of hazardous waste in the premises situated at Village mahabodhar, abohar road, distt. muktsar Muktsar Muktsar
3. The industry shall apply for renewal of Authorization two months before the date of expiry of this authorization.
4. The industry will dispose off its hazardous waste to authorized recycler as per the Hazardous Wastes (Management,Handling & Transboundary Movement) Rules, 2008.
5. Special Conditions if any typed manually.





Animal paper board mill, Village Rupana, Dist. Muktsar, Punjab

- i) The industry will receive hazardous waste of category 32.3 of schedule - I, ETP sludge from M/s Satia Industries Ltd. (Unit-I) Village Rupana, Dist. Sri Muktsar Sahib or M/s Nicer Green Board & Papers Pvt. Ltd., Village Golewala, Dist. Faridkot @ 500 TPA.
- ii) The industry will get the approval from Central Pollution Control Board as required under the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 amended till date for utilization of hazardous waste i.e. ETP sludge of paper mills, two months before expiry of such approval and submit copy of same to the Board.
- iii) The authorization is granted to operate a facility for collection, transportation, storage & reprocessing of hazardous waste of category 32.3 of schedule-I of the rules.
- iv) The industry will transport hazardous waste through its own vehicle with registration number PB-30G-6646 and / or RJ-13J-4236 as per provision of the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008.
- v) The industry will comply with the conditions of permission for utilization of hazardous waste as a supplementary resource or after processing, issued by the Central Pollution Control Board.

Annexure-I

TERMS AND CONDITIONS OF AUTHORIZATION:

1. The authorized person shall comply with the provisions of the Environment(Protection) Act 1986 and the Rules made there under.
2. The authorization or the renewal shall be produced for inspection at the request of an officer authorized by the Board.
3. The person authorized shall not rent, lend, sell, dispose, transfer or transport the hazardous wastes to other place without obtaining the prior permission of the Board.
4. Any unauthorized change in personnel, equipment and working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorization.
5. It is the duty of the authorized person to take prior permission of the State Pollution Control Board to close down the facility.
6. An application for the renewal of an Authorization shall be made as laid down under these Rules.
7. The occupier generating hazardous waste/operator of a facility for collection and storage of hazardous waste shall maintain records of such operations in Form-3.
8. The occupier/operator of a facility shall send annual returns to the Board in form-4 on or before 30th day of the June following to the financial year to which that return relates.
9. The Authorized person shall report about the accident which occurs at the hazardous waste storage/treatment site immediately to the Board.
10. An occupier who is generating hazardous waste shall store his waste category wise on site in environmentally sound manner till its treatment.
11. An occupier/generator shall not store hazardous wastes in open ground. It must be stored in an isolated site away from plain operational area.
12. The storage tank/container of the hazardous wastes should be in good condition and made off or lined with an appropriate material which does not react with the waste contained in it and can withstand the physical and environment conditions during storage and handling.
13. The occupier generating hazardous waste shall mark each container holding hazardous waste with the marking "HAZARDOUS WASTE" both in English and Punjabi.
14. The storage area should be fenced properly and a sign Board indicating "DANGER" and "HAZARDOUS WASTE" sign & nature of the waste shall be placed at storage site.
15. The occupier generating hazardous waste shall provide the required safety devices like safety mask, goggles, hand-gloves, gum boots etc to the workers for handling the hazardous waste. The occupier shall impart training to the personnel/workers for handling and storage of hazardous wastes.
16. There should be sufficient & efficient provisions to avoid under ground water contamination from waste storage of hazardous wastes.
17. The occupier shall be responsible for any damage of life/property during storage of his waste and will obtain Public Liability Insurance, wherever applicable.
18. The occupier and operator of a facility also be liable to reinstate or restore damaged or destroyed elements of the environment at his cost, failing which the occupier or the operator of a facility as the case may be, shall be liable to pay the entire cost of remediation or restoration and pay in advance an amount equal to the cost estimated by the State Pollution Control Board.
19. The industry shall take steps wherever feasible, for reduction in hazardous waste generated or recycled or reused.





General paper board mill, Village muktsar, Mohar road, dist. muktsar,
Sheikhpur, Muktsar

20. The industry shall display on line data outside the main factory gate on display Board of size (6ft. * 4ft.) on quantity and nature of hazardous chemicals being used in the plant, water & Air emissions and hazardous waste generated within factory premises.
21. The industry shall handle the hazardous waste strictly in accordance with the provisions of Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and guidelines issued by Central Pollution Control Board/Ministry of Environment & Forests, New Delhi.
22. Non compatible hazardous waste and material shall not be mixed in the same storage container.
23. The occupier who is generating hazardous waste shall draw authorized recycler as per Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008.
24. The industry will dispose off its hazardous waste authorized recycler as per Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008.
25. The occupier of the transport facility shall ensure that the hazardous waste are shifted in the container in a manner suitable for handling storage and transport and the labelling and packaging shall be easily visible and able to withstand physical condition and climatic factors.
26. Packaging, labelling of Used Wastes shall be in accordance with the provisions of the rules made by the Central Government under the Motor Vehicles Act, 1988 and other guidelines issued from time to time.
27. All hazardous waste chamber shall be provided with a general label as given in Form-8.
28. No transporter shall accept hazardous waste from any occupier for disposal unless it is accompanied by five copies of the manifest (form-9) as per the colour codes. The transporter shall give a copy of the manifest signed the dated in the occupier and retain the remaining four copies to be used as prescribed in sub-rule (5).
29. The occupier shall provide the transporter of six copies of the manifest as per the colour code indicated below :-

Copy 1(White).	Forwarded to the Punjab Pollution Control Board by the Occupier
Copy 2(Light Yellow).	Signed by the Transporter and retained by the Occupier.
Copy 3(Pink).	Retained by the Operator of facility.
Copy 4(Orange).	Returned to the Transporter by the operator of facility after accepting waste.
Copy 5(Green).	Forward to Punjab Pollution control Board by the operator of facility after disposal.
Copy 6(Blue).	returned to the occupier by the operator of facility after disposal.
30. The occupier shall obtain necessary No Objection Certificate from State Pollution Council Board in the respective states involved in case of any inter and intra State Transport of hazardous waste.
31. The occupier shall provide the transporter with relevant information in form to regarding the hazardous nature of the wastes and measures to be taken in case of an emergency.
32. The transporter shall transport the hazardous waste only in authorized for transportation of hazardous waste.
33. The person authorized for transportation of hazardous waste shall prior permission of the Board to close down the transportation facility.
34. The authorization is subject to the conditions mentioned above and also to such conditions as specified in the Hazardous waste (Management & Handling) Rules as amended from time to time framed under the Environment (Protection) Act 1986.

21/04/2015
Environmental Engineer (HWM)

" This is computer generated document from OCMMS by PPCB "

GRAM PANCHAYAT
VILLAGE BHULLAR DISTT (SRI MUKTSAR SAHIB)

TO WHOM SOEVER IT MAY CONCERN

No.....

Date..06-10-2015

We, the Sarpanch & Panchayat of village Bhullar have approached Satia Industries Ltd. for disposing their Boiler Ash in our sem area (apprx. 1100 acres) where subsoil water has made this area land uncultivable.

We also undertake that we alongwith Mill people will cover this land with ordinary soil (ਮਿੱਟੀ) after filling it with boiler ash so that no fly ash cause air pollution and land is made cultivatable afterwards.

ਜਗਨ ਸਿੰਘ
ਗਰਾਮ ਪੰਚਾਇਤ, ਭੁੱਲਰ
ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ
ਜਗਨ ਸਿੰਘ

ਜਗਨ ਸਿੰਘ ਸਰਪਚ
ਗਰਾਮ ਪੰਚਾਇਤ, ਭੁੱਲਰ
ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT No.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

GRAM PANCHAYAT

VILLAGE PHULLEWALA DISTT (SRI MUKTSAR SAHIB)

TO WHOM SOEVER IT MAY CONCERN

No.....

Date..20-10-2016

We, the Sarpanch & Panchayat of village Phullewala have approached Satia Industries Ltd. for disposing their Boiler Ash in our sem area (apprx. 134.5.. acres) where subsoil water has made this area land uncultivable.

We also undertake that we alongwith Mill people will cover this land with ordinary soil (ਮਿੱਟੀ) after filling it with boiler ash so that no fly ash cause air pollution and land is made cultivatable afterwards.

[Handwritten signature]
ਸਰਪੰਚ, ਪੰਚਾਇਤ, ਪੁਲੇਵਾਲਾ

ਮਿਤੀ: 20-10-2016

ਸਤਿਆ ਇੰਡਸਟਰੀਜ਼ ਲਿਮਟਿਡ
ਸਤਿਕਾਰ ਮੰਡਲ, ਪੰਜਾਬ

GRAM PANCHAYAT

VILLAGE MEHRAJWALA (DISTT SRI MUKTSAR SAHIB)

TO WHOM SOEVER IT MAY CONCERN

No.....

Date..... 01-03-17

We, the Sarpanch & Panchayat of village Meharajwala have approached Satia Industries Ltd. for disposing their Boiler Ash in our sem area (apprx..... 980 acres) where subsoil water has made this area land uncultivable.

We also undertake that we alongwith Mill people will cover this land with ordinary soil (मिट्टी) after filling it with boiler ash so that no fly ash cause air pollution and land is made cultivatable afterwards.


नमकील सिंह मखपांड
ग्राम पंचायत, महराजवाला
01-03-17





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Ambuja Cement

Ref: ACL/EMD/2016/10(3)

26th Oct, 2016

M/S SATIA INDUSTRIES LTD
Muktsar- Malout road,
Village Rupana,
MUKTSAR.

Subject: Consent for lime sludge lifting from your Chemical Recovery plant

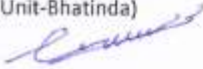
Dear sir,

This is in reference to our discussions regarding exploring the possibility of using your lime sludge in our unit. We have checked the samples collected by us from your plant in our laboratory and conveyed the results to your Quality Control Manager Sh. S. M. Rao.

As agreed mutually, you will take all the precautions to maintain the quality parameters as per this last sample. We assure you that we shall lift the maximum possible lime sludge produced from your plant. You will provide for loading of the lime sludge and rest of the charges like transportation and unloading will be borne by us.

This MOU will continue till the time we mutually agree and may be terminated by the either party giving a notice of minimum three months.

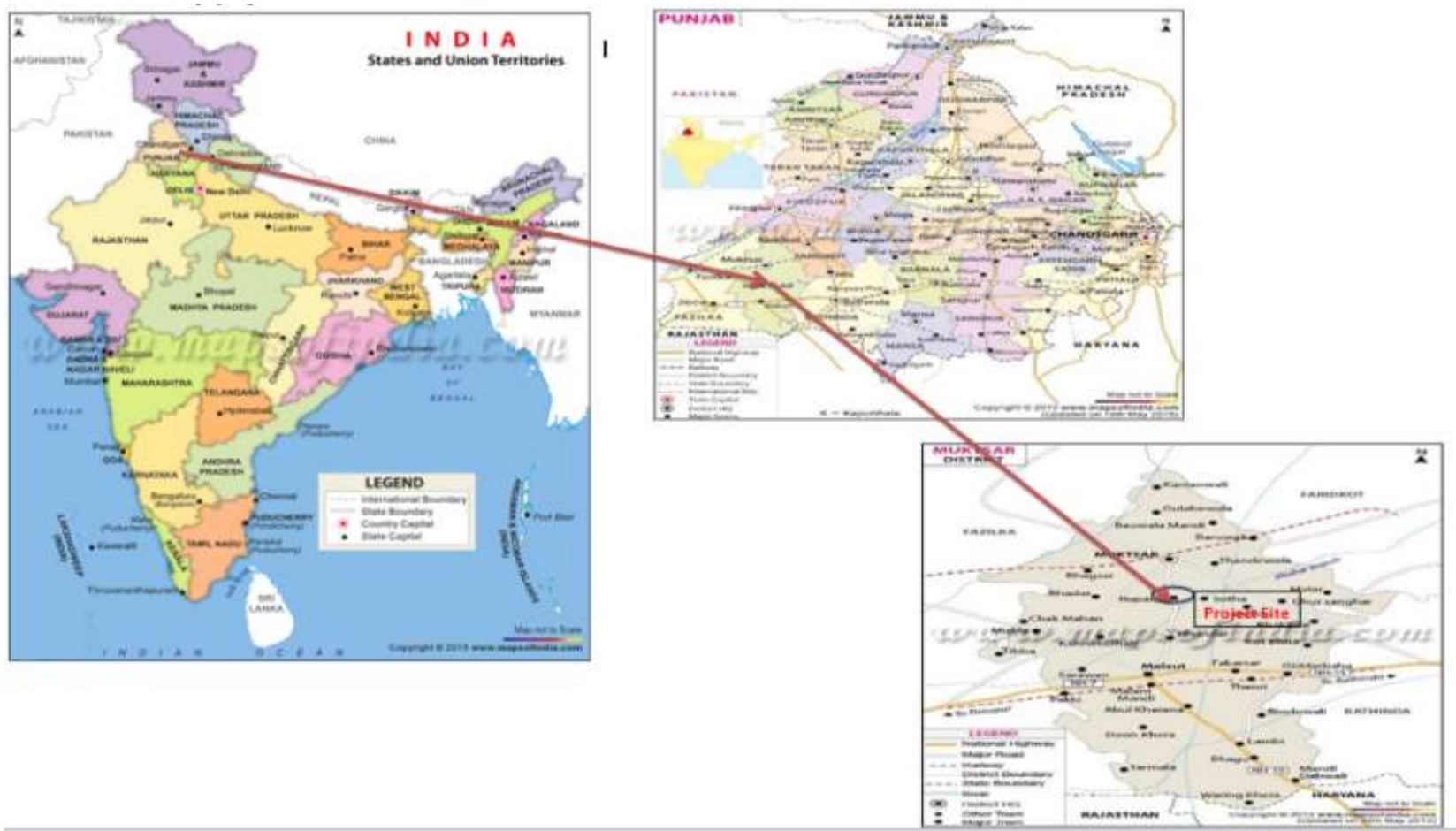
Thanking you,
Yours Faithfully,
For Ambuja Cements Limited,
(Unit-Bhatinda)


(Sanjay K Singh)
Head - EMD

AMBUJA CEMENTS LIMITED
(UNIT-BATHINDA)

P.O. GNDTP, Malout Road, Distt. Bathinda, Punjab -- 151002
Phone : 0184-6706202, 6706442 FAX No. 0164-2273484,
CIN No. L26942GJ1961PLC004717
Website: www.ambujacement.com
(Regd. Off. P.O. Ambuja Nagar, Taluka - Kodinar, Distt. Gir Somnath, Gujarat 362715)

Annexure 18: Location map of Project Site





Annexure 19: Environment Policy



SATIA INDUSTRIES LIMITED

Environment Policy

Satia Industries Limited (SIL) is committed to reducing its impact on environment. Using agro-based raw material and adopting eco-friendly techniques, the company is doing its best to reduce the load on environment and maximize the use of raw materials to its potential. With approximately 400 acres of Eucalyptus plantation SIL is determined to improve the ecosystem around its premises. Through sound management practices and decisions, SIL strives to protect our environment. SIL is dedicated to the practice of environmental stewardship and promotion of health, safety and well being of our employees. These values originate at the company's top management and are emphasized through all levels of responsibility within the organization.

As such, SIL agrees to:

- Comply with all applicable environmental regulations.
- Train all of our staff on our environmental program and empower them to contribute and participate.
- Minimize our waste and then reuse or recycle as much of it as is possible.
- Conserve natural resources by responsive, efficient and sustainable use.
- Develop and improve operations and technologies to minimize waste, and other pollution.
- Improve resource efficiency (including our use of water, energy and raw materials).
- Assess the environmental impact of any new processes or products we intend to introduce in advance.
- Encourage environmental responsibility from suppliers and contractors.
- Communicate this policy to all employees and other interested parties.
- Regularly review environmental performance and set targets to achieve continuous improvement.

For Satia Industries Ltd.


Director

Annexure 20: Questionnaire for Environmental Appraisal

QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL

(INDUSTRY SECTOR PROJECTS)

Note 1 : All information given in the form of annexures should be part of this File itself. Annexures as separate files will not be accepted.

Note 2 : Please enter x in appropriate box where answer is Yes/No

I. General Information

1. A. Name of the Project: Satia Industries Limited,
(Unit No:2)
Malout Road, Rupana, Distt.
Muktsar, Pb.
Phone No.: 01633-262001
Fax No.: 01633-263499
E.mail : satiapaper@gmail.com

B. Plant Capacity: 150 TPD

C. Location

Village	Tehsil	District	State
Rupana	Muktsar	Muktsar	Punjab

D. Geographical Information

1. Latitude : 30 Deg 25' 20.61" North
2. Longitude : 74 Deg 31' 6.9" East
3. Elevation above Mean Sea Level (meters) : 197.67 m
4. Total Area envisaged for setting up of project : 36.019 Acres
5. Nature of terrain : Plain
6. Nature of soil : Alluvium formations comprising silt to coarse sand
7. Permeability (cm/sec) : 4.55×10^{-4} cm/sec.

E. Alternate sites considered : None

F. Reasons for selecting the proposed site based on comparative evaluation of environmental considerations.

Since it is a modernization of existing plant so no alternative sites were considered.





II. Environmental Setting

A. Current land usage of the proposed project site Area(in hectares) : Within the existing premises.

1. Notified Industrial Area/Estate	: No
2. Agricultural	No
Irrigated	: -
Unirrigated	: -
3. Homestead	: Nil
4. Forest	: Nil
5. Grazing	: Nil
6. Fallow	:
7. Marshy	: Nil
8. Mangroves	: Nil
9. Others (Pl. specify)	
Total	: 36.019 Acres

B. Please indicate area earmarked for each of the following (sq.m.): The details are given in Layout Plan in Annexure-I

1. Plant Facilities	:	Total area 145805m ² . Covered area 44200m ²
2. Ash Disposal	:	Separate area for disposal of Ash exist 2020 m ²
3. Storage (Fuel)	:	13150m ²
4. Storage (Water)	:	1510m ²
5. Storage (Hazardous Waste)	:	60 m ²
6. Storage (Hazardous Chemicals)	:	NA
7. Storage (Others) Raw material	:	10750m ²
8. Approach Road(s)	:	8500m ²
9. Township	:	Nil
10. Green Belt	:	13800 m ² (Within premises) 4,33,136 m ² (Separate for Eucalyptus plantation)
11. Others (Admin., Utility, ETP, Future Expansion etc.)	:	51495 m ²
Total	:	578941 sq m.

*107 acre is Extra area for Eucalyptus plantation.

C. Is the proposed site located: No in a low-lying area?

If yes,

1. Level before filling : N.A.
(above MSL, in meters)

2. Level after filling : N.A.
(above MSL in meters)

Quantity of Fill Material Source
required (in cum.)

N.A.

D. Proximity to sea/water bodies:

Sea Other Water bodies
like River/creek/lake
etc. (Please specify)

Distance of site* Chand bhan Drain
Boundary (in m)

Distance of plant 480 m
facilities (in m)

* From highest flood line/high tide line

E. Whether any of the following, exist within 7 km of the periphery of the project site. If so, please indicate aerial distance and the name of the eco-system as given under the Table.

S. No.	Name	Area falling within 7 km periphery of project (ha.)	Aerial Distance (in km)
--------	------	---	-------------------------

1. National Park/Wildlife Sanctuary : Nil

2. Tiger Reserve/Elephant Reserve/Turtle Nesting Ground : Nil

3. Core Zone of Biosphere Reserve : Nil

4. Habitat for migratory birds : Nil

5. Lakes/Reservoir/Dams : Nil

6. Stream/Rivers : Arniwala Canal

7. Estuary/Sea : Nil

8. Mangroves : Nil

9. Mountains/Hills : Nil

10. Notified Archaeological sites : Nil





11. Any other
Archaeological sites : Nil
12. Industries/Thermal
Power Plants : Few industries
within 10 km distance (Table 2.3).
13. Defence Installation : Nil
14. Airports : Bhatinda
15. Railway Lines* : Bhatinda-Muktsar Branch
16. National/State : SH-06

* 0.5 km from Railway lines/National/State Highway should be maintained.

F. Description of the flora/vegetation within 7 km under following headings.

1. Agricultural Crops : Wheat, Paddy, Sugarcane, Pulses
2. Commercial Crops : Kharif and Rabi
3. Plantation : Heavy plantation.
4. Natural Vegetation/
Forest type. : 57.13% Agriculture land
27.22% area in Fallow land
5. Grass Lands : Nil
6. Endangered species : Nil
7. Endemic species : Nil
8. Others (Please specify): Nil

G. Description of fauna (non-domesticated) within 7 km under following headings.

1. Total listing of
faunal elements : Given in Chapter 11.
2. Endemic fauna species : Variety of wild species.
3. Endangered species : Nil
4. Migratory species : Nil
5. Route of migratory
species of birds and
mammals : Not applicable
6. Details of aquatic
fauna (if applicable) : Not applicable

III. Meteorological Parameters

A. Seasonal - Monitoring Data (continuous monitoring for one full season except monsoon should be carried out)

1. Temperature (in deg.C) : (Extremes)

- a) Maximum : 45.6°C
 b) Minimum : 0.7°C
 c) Mean : 25.03 °C
2. Rainfall (in mm) :
 a) Maximum : 592.1 mm
 b) Minimum : 196.4 mm
 c) Mean : 355.0 mm Annual
3. Mean value of humidity : 71 %
 (in %)
4. Inversion occurrence : Not available
 a) In percentage :
 b) Height in meters :
5. Seasonal Wind-rose : Given in Fig. 4.4 of the EIA Report
 pattern (16 points
 on compass scale)
6. Hourly mean Meteorological data (based on one full
 season data collected at site required as input for air
 quality modeling) : Not applicable

Hour	Wind Speed in kmph	Predominant Wind direction	Ambient Air Temp. (in deg.K)
------	-----------------------	-------------------------------	------------------------------------

Given in Tables 4.1 to 4.3 of the EIA Report.

IV. Ambient Air Quality Data

(Frequency of Monitoring should be as per guidelines of CPCB and monitoring should cover one full season (excluding monsoon). Sampling and analysis was done as per the ISI/ASTM methods.

- A. Season and period for which : Post monsoon season, October,
 monitoring has been carried November and December, 2011
 out
- B. Frequency of sampling : Twice a week
- C. Number of samples collected : ~ 20
 at each site.

Date, Time & Location	Wind Direction & Speed	24 hourly Concentration as monitored (in ug/m3)	Permissible Standard (As per EPA/ SPCB consent)	Remarks (Name of the instrument and sensitivity)
--------------------------	------------------------------	--	--	---

Given in Chapter-3 and Tables 3.14 of EIA Report.

D. 24 hourly concentration (in ug/m3)

Pollution(s)	Maximum	Minimum	Mean	98%
RSPM	96.0	74.8		95.4
PM-2.5	54.6	33.6		50.0
SO2	17.6	22.4		22.2
NOx	19.0	22.8		22.8





**EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB**

E. Specify air pollution issues in the project area.

List of industries is given below:

S.N.	Name of Industry	Main Product	Distance from SIL
1	M/s Bharat Rice Mills Abohar Road Muktsar	Rice	9.4
2	M/s Ganga Chem Fertilizer Pvt Ltd Jallalabad Road Muktsar	Fertilizer	8.8
3	M/s Bansal Paper and Board Mill VPO Mahabadhar	Straw Board	5.4
4	M/s Albro Pharmaceutical Pvt Ltd Abohar Road	Medicine	8.8
5	M/s Kassrijja Rice Mill KKP Road	Rice	8.8
6	M/s Aggarwal Cattle Feed	Cattle feed	8.8

v. Manufacturing Process details: (Given in Chapter-3)

A. Raw materials (including process chemicals, catalysts & additives). Given in Table 3.1 of EIA Report.

List of raw materials to be used at all stages of manufacture	Physical and chemical nature of raw material	Quantity (tones/month) full production capacity	Source of materials	Means of transportation (Source to storage site) with justification
---	--	---	---------------------	---

B. Brief description of the manufacturing technologies : For 150 TPD writing and printing paper as given in Section 2.5 of Chapter-2 would be adopted.

C. Details of process technology: The project would be set up as know how/collaboration per the latest technology for manufacturing and quality control.

D. Production profile (tones/year) :

Name of Products, Byproducts and Intermediate	Existing	Proposed activity (new/modernization/expansion)	Total
---	----------	---	-------

Products

A. Main Products 150 TPD 150 TPD(Agro residue based) 150 TPD
(Writing & Printing Paper)

B. By Products - - -
(Soda ash)

C. Intermediate Products - - -

E. Means of transportation of raw material and final products

Means of Transport	Raw Material (in TPD)	Final Product (in TPD)
1. Road	306.02	150
2. Rail	-	-
3. Pipeline	-	-
4. Others, Please specify	-	-

VI. Water

Water Requirement per day: Given in
water balance diagrams.

Purpose	Before expansion m3/Day	After expansion m3/Day	Source	Type Treated/ untreated/ Fresh/ Recycled	Remarks
1. Project					
i) Process	800	5507	(Canal Water)		
ii) Cooling Water	0	493			
iii) DM Water	0				
iv) Dust Suppression					
v) Drinking/ Domestic	50	80			
vi) Green Belt					
vii) Fire Service					
viii) Others (Chemical Preparation)					
Boiler					
2. Township					
i) Green Belt					
ii) Drinking					
iii) Others (Please specify)					
TOTAL	800	6000			





B. Source of Raw Water Supply : Canal Water

S.No.	Source	Cu.m./hr	Cu.m./day
1.	Canal	-	16500
2.	River	-	-
3.	Groundwater	-	-
4.	Other surface water bodies (Please specify)	-	-

C. Lean Season flow in case of : Not applicable
 surface water source
 (cusecs/cumecs)

D. Groundwater (a) Recharge Rate/Withdrawal rate-

1. Ground water level (meters) :

i) Premonsoon	: 8 to 10 m
ii) Post monsoon	: 2 to 5 m

E. Competing Users of the Water : Industrial & Irrigation
 Source and Domestic

S. No.	Usage	Present consumption (cu.m/day)		Addition Proposed as per local plan		Total	
		Surface	Ground	Surface	Ground	Surface	Ground
1.	Irrigation						
2.	Industry	800	-	6000	-	-	16500
3.	Drinking						
4.	Others (Please specify)						
	Total						

F. Physico-chemical analysis of Raw Water at intake point : Not applicable. Ground water will be used.

G. Physico-chemical analysis of treated water to be used in project/township : Given in Chapter 3 of the EIA report

H. Waste water management :

1. Description of waste water: treatment plan with flow chart : ETP details are given in Section 3.5.1.3 of the EIA Report.

2. Characteristics of discharge: Steam before and after Treatment

Item	Characteristics
------	-----------------

	Before	After

Given in EIA Report.		

3. Daily discharge (m3/day) from different sources:

(After expansion)	:	14635	m3/day
a) Plant operation	:	13634	
b) Workshop	:	-	
c) D.M,RO effluent	:	273	
d) Domestic	:	30	
e) Other (specify) Sanitary:		660 (cooling Tower)	
	:	38 misc	
Total	:	14635	
4. Quantity of water recycled			
a) (in %)	:	5%	
b) (in cum/day)	:	525 m3/day	
5. Details of recycling mechanism	:	Water recovered from paper machine will be used in raw material washing, pulp washing, pulp bleaching, purchased pulp pulper etc.	

6. Mode of final discharge/disposal of treated effluent:

Treated effluent is discharged on land irrigation in a nearby Eucalyptus Plantation (450acre) maintained by company through pipe line.

Mode	Length (in m)	Quantity (in m3/day)

i) Open Channel	-	-
ii) Pipeline	500 meter	14635 m3/day
iii) Others (Please Specify)		
Total		14635 m3/day

7. Point of final discharge:

Treated effluent is discharged on land irrigation in a nearby Eucalyptus Plantation (107 acre) maintained by company Through pipe line

Final Point	Quantity discharged (in m3/day)

i) Plantation area maintained by plant	- 14635 m3/Day
ii) Agricultural land	-
iii) Fallow Land	-
iv) Forest Land	-
v) River/Stream/Drain	-
vi) Lake	-
vii) Estuary	-
viii) Sea	-
Total	14635 m3/day





8. Lean season flow rate in : nil
case of discharge in a
river/stream
9. Downstream users of water (in case if river, reservoir
lake)
- a) Human : Not applicable
b) Irrigation :
c) Industry :
d) Others (Pl. specify) :

10. Analysis of river water 100 : Canal sample report attached as
meters upstream of discharge Table 6.2.
point and 100 meters down-
stream of discharge point
(except in rainy/monsoon
season) alongwith details
of aquatic life.

11. What is the predicted impact : No Impact
on water quality of the
receiving body due to
discharge ? (Briefly state
the prediction tool adopted)

VII. Solid Waste Management :

A. Details

Following are the solid wastes generated during paper manufacturing process –

S. No.	Solid Waste	Section	Existing Quantity	Quantity after Expansion (MT/day)
1	ETP Sludge (MT/day)	Effluent Treatment Plant	6.0	10.0
2	Boiler Ash (MT/day)	Boiler House	45	63.75
3.	Lime Sludge (MT/day)	Bleach Liquor Preparation	NA	NA
4.	Used Oil (LPA)	Different sections	-	-

- B. If waste(s) contain any hazardous/toxic substance/radioactive materials or heavy metals, provide data and proposed precautionary measures. : Annual contract for hazardous waste with TSDF exists.
- C. What are the possibilities of recovery and recycling of wastes? : The ETP sludge is collected on RCC platform and lifted by nearby small-scale cardboard manufacturers for making cardboards. The boiler ash is collected directly in the trolleys and shifted for filling of the low lying areas.
- D. Possible users of Solid Waste(s) : No
- E. Method of disposal of solid waste(s) :
- | Method | Qty. (TPM) |
|---------------------|------------|
| 1. Landfill | : 63.75TPD |
| 2. Incineration | : - |
| 3. Recovery | : - |
| 4. Downstream users | : - |
- F. In case of landfill :
1. Is solid waste amenable for landfill : N.A.
 2. Dimensions and life of landfill for Lime sludge : Nil
 3. Life of landfill : Nil
 4. Proposed precautionary and mitigative measures along with design features.
- G. In case of incineration : Not applicable
1. Details of incinerator : -
 - i) Type : -
 - ii) Size : -
 - iii) Capacity : -
 - iv) Fuel : -
 2. Likely composition and quantum of emissions : -
- | S.No. | Composition | Quantity (in cu.m/hr) |
|-------|-------------|-----------------------|
| N.A. | | |

VIII. Noise Pollution Control and Management





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

- A. Source : Plant & Machinery generate noise.
- B. Level at Source (dB) : < 95 bBA at source
- C. Level at project boundary : <60 dBA
Capacity (dB)
- D. Abatement measures (give : Acoustic Enclosures
source-wise details)

IX. Fuel/Energy Requirements

A. Total Power Requirement (MW)

	Project	Township	Other (pl.specify)	Total
Present (in existing)	4.25 MW FROM Co.Gen. & PSPCL			4.25MW
Proposed	3.25MW	-	-	3.25MW
Total	7.50MW			7.5MW

B. Source of Power (MW)

Present	4.25MW Turbine Own generation & from PSPCL
Proposed	7.5MW from Turbine 12.5MW Captive generation and from PSPCL if required)
Total	7.5MW

C. Details of Fuel used

S. No.	Fuel	Daily Consumption	Calorific Value	% Ash	% Sulphur
		Existing/Proposed	(Kcals/kg)		
1.	Gas	-			
2.	Naphtha	-			
3.	HSD				
4.	Fuel Oil	-			
5.	Coal	-			
6.	Rice Husk	300/425	3500	11-12	-
7.	Other	-			

D. Source of Fuel (Distance from [km])

1. Port : Rice husk is available locally
2. Mine :
3. Refinery :
4. Storage depot/Terminal :

E. Mode of Transportation of fuel Rice husk to site

1. Trucks (numbers/day) : 20-25

2. Pipeline (length in km) :
3. Railway Wagons (numbers/day) :

x. Atmospheric Emissions

A. Flue gas characteristics (SPM, SO₂, NO₂, CO in ug/m³)

S.No.	Pollutant	Source of Emission	Emission rate g/s	Concentration in flue gas (µg/Nm ³)
1.	SPM	Boiler	6.25	-
2.	NO _x		7.625	-

B. Size distribution of SPM at the top of the stack :

S.No.	Range	% by weight
1.	Micron	-
2.	1 - 10 Micron	-
3.	10 - 20 Micron	
4.	<20 Micron	

C. Stack emission Details (All the stacks attached to process units, boilers, captive power plant, DG Sets, incinerator both for existing and proposed activity) :

Plant section & units*	Stack No.	Height from ground level (m)	Internal Dia-meter (Top)	Emission Rate (kg/hr)* SPM SO ₂ NO _x	Heat Gas Temp. of exhaust Gases (deg.K)	Exit Velo-city (m/sec)	Exhaust Gas Volume in flow rate (M ³ /hr)
------------------------	-----------	------------------------------	--------------------------	---	---	------------------------	--

Boiler Capacity		25 TPH	27 TPH	45TPH	75TPH	130°C	4.6 m/s	31.44 m ³ /s
Stack details		(Proposed)						
a)	M.O.C.	R.C.C.	R.C.C.	R.C.C.	R.C.C.			
b)	Internal diameter							
-	Top	2.2 m	2.5 m	2.8 m	2.8 m			
-	Bottom	2.2 m	5.0 m	2.8 m	2.8 m			
c)	Height (m)							
-	From ground level.	65 m	65 m	65m	65 m			
-	From roof of building							

*Note: Please indicate the specific section to which the stack is attached. For e.g. Process section, DG Set, Boiler, Power Plant, incinerator etc.

Emission rate (kg/hr) for each pollutant (SPM, SO₂, NO₂ etc) should be specified.

D. Details of fugitive emissions : Fugitive emissions from raw material handling and movement of





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

fugitive emissions and trucks.
quantities estimated)

- E. Predicted impact on air quality: No significant impact on air
(as per CPCB Guidelines for quality.
conducting the air quality
modeling)

XI. Pollution load statement (Applicable to Expansion
and Modernization Projects only) :

XII. Storage of chemicals :
(inflammable/explosive/
hazardous/toxic substances)

Name	Number of Storages	Capacity (T)	Physical and Chemical Compo- sition	Consum- ption (in TPD)	Maximum Quantity of storage at any point of time	Source of supply	Means of trans- porta- tion
Caustic Lye		Liquid, NaOH		15.00 ton	70 Tons		by Tankers
Re generated		white Liquor NaoH		64.00ton			by Pump
Dyes and Pigments		Powder		2.405	-		By trucks

III. Occupational Health and Industrial Hygiene

- A. What are the major occupational health and safety hazards anticipated. (Explain briefly) : No major health hazard is observed.
- B. What provisions have been made/ propose to be made to confirm to health/safety requirements (Explain briefly) : Proper medical policy for employees is adopted and periodic medical checkup is carried out.
- C. Details of personal protective equipment provided/to be provided to the workers : Gloves, Goggles, Helmets, Masks, Safety shoes are provided to workers as per the requirement.
- D. Details of proposed measures : control of fugitive emission/odour nuisance from different sources : Adequate measures are in vogue to control fugitive emissions from digester blow ups and material handling.
- E. Details of fire protection and safety measures envisaged to take care of fire and explosion hazards : Fire fighting system with hydrants, dry chemical powder, foam & CO2 fire extinguishers will be provided.

XIV. Pollution Control Aspects:

- A. Details of Pollution Control Systems:

S. No.	Existing		Proposed to be installed
i)	Air	Boiler 75 TPH-ESP	Boiler-75TPH-ESP
		Boiler 45 TPH-Multicyclones & Wet Scrubber	
		Rec.Boiler 50 TPH- ESP	
ii)	Water	ETP of 14635 m3/Day capacity No additional capacity required.	
iii)	Noise	All equipments within Enclosed buildings	
iv)	Solid Waste	ETP sludge - Cardboard Manufacturers Boiler Ash - Landfill Hypo Lime Sludge- NA	

B. Efficiency of each pollution control equipment/system installed

1. Existing Units :

S. No.	Name of the System Equipment	Design Efficiency %	Present Working Efficiency %
All ESP's are of 99.5% efficiency.			

2. Proposed Project :

S.No.	Name of the System Equipment	Design Efficiency %
1.	Multicyclones	
2.	Treema cyclone	
3.	Wet Scrubber	99.5
4.	ESP	99.5
5.	ETP	95

xv. Green Belt Plan : Given in layout plan At Fig. 3.2.

A. Total area of project (in ha.) : 36.019 Acres

B. Area already afforested (for existing projects), in ha. : 207 Acres

C. Area proposed to be afforested (in ha.) : -

D. Plant species proposed
 1. Indigenous : Given in Annexure 12.1
 2. Exotic :

E. Width of green belt (minimum, in m.)
 1. Along plant boundary : 30 m
 2. Roads and avenues within the plant :
 3. Ash Dike :
 4. Township :
 5. Other ornamental, garden spaces :





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

6. Commercial plantations etc. :

F. Trees planted & proposed

- | | | |
|----------------------------|---|---------------------------|
| 1. Planted | : | 100000 |
| 2. Survival rate | : | 95% |
| 3. List of species planted | : | As given in Annexure 13.1 |
| 4. Proposed (Nos) | : | Not specific number |
| 5. List of species | : | As given in Annexure 13.1 |

XVI. Construction Phase Management Aspects:

- A. Estimated duration of construction: 6 to 8 months.
in months
- B. Number of persons to be employed :
for construction
- | | | |
|------------|---|----|
| 1. Peak | : | 25 |
| 2. Average | : | 15 |
- C. What provision has been made for : No labour force will stay at
the sewage treatment for the site. Existing lavatories
construction workers? are sufficient.
- D. How the fuel (kerosene/wood, etc.) : Not applicable
requirement of labour force will
be met to avoid cutting of trees
from the adjoining areas.
- E. Proposed Health care Measures : Medical checkup will be done
with emphasis on protection from by qualified doctors.
endemic diseases
- F. Educational and other social : Not required as the duration
welfare measures proposed is short and labourers will
not stay at site.

XVII. Human Settlement : Given in Table 1.1.

S. No.	Aerial distance from the periphery of the site		
	Upto 500m from periphery	5 kms from the periphery	5-10 from the periphery
1. Population	-	17630	140156
2. Number of Houses	-	3299	24530
3. Present Occupational - Pattern	-		

XVIII. Rehabilitation & Resettlement Plan

(Wherever applicable) : Not applicable. Project
will be set up in already
owned land.

A. Village(s) affected by the project

S.No.	Village (Tribal/Others)	Population	Occupation	Average Income per annum
1.	Nil			
2.				

B. Population to be displaced : Nil

S.No.	Name of Village	Population		
		Landoustees only	Homestead Oustees only	Land and Homestead oustees
1.	N.A.			
2.				
3.				

C. Salient features of Rehabilitation Plan : N.A.

- i) Site where the people are proposed to be resettled.
- ii) Facilities proposed at the resettlement site
- iii) Compensation package
- iv) Agency/Authority responsible for their resettlement.

XIX. Expenditure on Environmental Measures

A. Capital cost of the project (as proposed to approved by the funding agency/financial institutions)- Rs.Lakhs : 4100

B. Cost of environmental protection measures (Rs.Lakhs): 1100

S. No.		Recurring Cost per annum Rs. Lakhs	Capital Cost Rs. Lakhs
1.	Air Pollution Control	-	200 for ESP's
2.	Water Pollution Control	-	900 for USAB in ETP, and ODL and Clo2 system
3.	Noise Pollution Control	-	-
4.	Environment Monitoring and Management	-	-
5.	Reclamation borrow/mined area	N.A.	N.A.
6.	Occupational Health	-	-
7.	Green Belt	-	-
8.	Others (Pl. specify)Solid Waste	-	-
	Total		1100Lakhs

C. Details of organizational set up/ : Staff and infrastructure cell for environmental management is already in position. and monitoring.

D. Details of community welfare/ : Occasional medical check ups peripheral development programmes and Providing assistance envisaged/being undertaken by the to schools. project proponent





xx. Public Hearing Details : To be held.

A. Date of Advertisement :

B. Newspapers in which the advertisement appeared (with copies) :

C. Date of Hearing :

D. Panel Present :

E. List of public present along with address and occupation :

F. Summary/details of public hearing report:

S. No.	Issue raised	Recommendation of panel	Response of Project Proponents

Annexure 21: Photographs



A view of the existing plant



View of Soda Recovery





View of Green Belt inside premises



View of Green Belt outside premises



Another View of Green Belt outside premises



View of existing ETP





Another view of ETP



A view from entry gate of Satia Industries Ltd.



A view of Existing Plant



Ambient air quality monitoring at Rupana Village (Sarpanch Office)





Ambient air quality monitoring at Satia Industries Ltd.



Ambient air quality monitoring at Bhangchiri Village



Ambient air quality monitoring at Barkandi Village (Sarpanch House)



Ambient air quality monitoring at Muktsar






Groundwater Sampling at Guniana Village



Effluent Sampling at Satia Industries Ltd.

Annexure 22: Public Hearing Proceeding

 PUNJAB POLLUTION CONTROL BOARD VATAVARAN BHAWAN, PATIALA <small>Tel. Fax : 0175-2216802 PRX : 7200282, 2200557 Web: http://www.ppcb.gov.in</small>	
No. EE (Mega)/2016/_____ Dated _____	
Regd.	
To	The Secretary to Govt. of India, Ministry of Environment, Forests & Climate Change, Indira Paryavaran Bhavan, Jorbagh Road, New Delhi - 110 003.
Subject:	Proceedings of the public hearing conducted on 19.10.2016 in connection with the application filed by M/s Satia Industries Ltd., (Unit No. 2), for obtaining Environmental Clearance as required under the EIA notification dated 14.9.2006 for carrying out modernization of its existing unit from waste paper to agro residue based 150 TPD writing & printing paper and for installation of co-generation power plant of 12.5 MW located in the revenue estate of V.P.O. Rupana, District Sri Muktsar Sahib, (Punjab).
<p>It is intimated that the subject cited industry, has applied for obtaining environmental clearance as required under the EIA notification dated 14.9.2006 for carrying out modernization of its existing unit from waste paper to agro residue based 150 TPD writing & printing paper and for installation of co-generation power plant of 12.5 MW located in the revenue estate of V.P.O. Rupana, District Sri Muktsar Sahib, (Punjab). The project is covered under EIA notification no. 1533 (E) dated 14.9.2006 and the Terms of Reference for preparing draft EIA study report for the said project have been prescribed by the EAC of MoEF&CC. Accordingly, the Industry had submitted draft rapid EIA study report alongwith summary report of the same to the Board and requested for conduct of the public hearing for proposed plan of the project.</p> <p>In compliance to provision of the EIA notification dated 14.9.2006, the Board issued public notice of 30 days in two daily newspapers for getting responses from public and intimating time, date & venue of the public hearing fixed for 19.10.2016 at the site of the project. A copy of the public notices is enclosed herewith as Annexure-I. Thereafter, public hearing for the said project was conducted on 19.10.2016, which was attended by 257 persons. A copy of the attendance sheet containing the details of persons, who attended the said hearing, is enclosed herewith as Annexure-II.</p> <p>The public hearing process was supervised and presided over by the Additional Deputy Commissioner, Sri Muktsar Sahib, Environmental Engineer (Mega), PPCB, Patiala and Environmental Engineer, PPCB, Regional Office, Bathinda. The summary of the public hearing proceedings reflecting all the views and concerns expressed during the public hearing, duly signed by the Additional Deputy Commissioner, Sri Muktsar Sahib is enclosed herewith as Annexure-III.</p>	





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

M/s Satia Industries Ltd., (Unit No. 2),
V.P.O. Rupana, District Sri Muktsar Sahib, (Punjab)

-2-

The Punjab Pollution Control Board had made arrangement to carry out video recording of the entire public hearing process and a copy of the same is also enclosed herewith as **Annexure-IV** for further necessary action at the end of the Ministry of Environment, Forests & Climate Change, Govt. of India, New Delhi.
DA/- As above

(Dr. Babu Ram)
Member Secretary

Endst. No. _____

Dated _____

A copy of the above alongwith a copy of proceedings is forwarded to the Deputy Commissioner, Sri Muktsar Sahib for information and necessary action. He is requested to get a copy of the proceeding of the public hearing displayed conspicuously at his office.

DA/- As above

(Dr. Babu Ram)
Member Secretary

Endst. No. 5675262

Dated 22/12/16

A copy of the above alongwith a copy of proceedings is forwarded to the following for information and necessary action:

1. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office, Bathinda.
2. The Environmental Engineer (Computers), Punjab Pollution Control Board, Head Office, Patiala for displaying the proceeding of public hearing on the website of the Board.
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office, Bathinda. He is also requested to get a copy of the proceeding of the public hearing displayed conspicuously at his office. Also, a copy of the proceedings may be sent to the concerned Zila Parishad and Village Panchayat for displaying the same conspicuously.
4. M/s Satia Industries Ltd., (Unit No. 2), V.P.O. Rupana, District Sri Muktsar Sahib, (Punjab). The industry is advised to submit final EIA report after incorporating the grievances/suggestions raised by the public in the public hearing to the Ministry of Environment, Forests & Climate Change, New Delhi for obtaining the environmental clearance, before starting any developmental activities on its proposed project.

DA/- As above.

(Dr. Babu Ram)
Member Secretary

16-9-16

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ

ਬਾਤਾਵਰਨ ਭਵਨ, ਨਾਭਾ ਰੋਡ, ਪਟਿਆਲਾ।
0175-2200380, 2-23

ਫੋਨ: 0175-2200282, ਟੈਲੀ-ਫੈਕਸ : 0175-2215802



ਜਨਤਕ ਸੁਚਨਾ

[illegible][illegible]

- [illegible]





PUNJAB POLLUTION CONTROL BOARD
VATAVARAN BHAWAN, NABHA ROAD, PATIALA
Phone: 0175-2200282, TELE-FAX: 0175-2215802

PUBLIC NOTICE

It is for the information of all concerned that M/s Satia Industries Ltd., Unit No. 21, has proposed to carry out modernization of its existing plant of 100 TPD writing & printing paper from waste paper to agro residue based and for installation of co-generation power plant of 12.5 MW in the existing premises located in the revenue estate of V.P.O. Rupana, District Sri Muktsar Sahib.

The project is covered under the EIA notification No. S.O. 1633 (E) dated 14.12.1986 issued by Ministry of Environment, Forests & Climate Change, Govt. of India, New Delhi, and the industry is required to obtain approval/consent to establish from Ministry of Environment, Forests & Climate Change, New Delhi.

As a part of the procedure for seeking environmental clearance, as notified by Ministry of Environment, Forests & Climate Change, New Delhi, the industry has applied to the Punjab Pollution Control Board for conduct of the public hearing of its proposed modernization of the existing industrial plant. The draft Basic Environment Impact Assessment (EIA) report alongwith executive summary of the project submitted by the industry is available in the following offices, which can be perused during the office hours on any working day:

1. The Deputy Commissioner, Sri Muktsar Sahib
2. The Executive Officer, Municipal Council, Sri Muktsar Sahib
3. The Chairman, Zila Parishad, Sri Muktsar Sahib
4. The General Manager, District Industries Centre, Sri Muktsar Sahib
5. Regional Office, Ministry of Environment, Forests & Climate Change, Govt. of India, Bldg No. 24 & 25, Sector 3, I.C.A. Chandigarh
6. Environmental Engineer, Punjab Pollution Control Board, Regional Office, Bathinda

Notice is hereby given to all concerned to be suggestions, views, comments and objections, if any, on the proposed project to the Member Secretary, Punjab Pollution Control Board, Vatavaran Bhawan, Nabha Road, Patiala, within 30 days of the publication of this notice. Besides, a public hearing will also be held on 18.09.2016 at 12.00 Noon at the project site i.e. in the existing premises of M/s Satia Industries Ltd., Unit No. 21, V.P.O. Rupana, District Sri Muktsar Sahib, which can be attended by any person including local residents, environmental groups and others, located at the project site/sites of displacement/losses likely to be affected. Oral/written suggestions, if any, can also be made during the public hearing. No TA/DA will be admissible for attending the public hearing.

MEMBER SECRETARY

DAILY POST 16.09.16

PUBLIC HEARING MIS SATIATION			
Sr. No.	Name of Person & Address	Mobile No.	Signature
क्र. सं.	नाम व पता	मोबाइल नं.	हस्ताक्षर
①	हंडे गंगा सिंग वंशाचारी	94654	हंडे गंगाचारी
2.	सगरीर सिंग & पंडित सिंग वंश	15422 97210 12501	सगरीर सिंग
3	चरसिंह सिंग & सगरीर सिंग वंश	—	
4	बलवीर सिंग & बलवीर सिंग वंश	98765 4014	बलवीर सिंग
5	मनवीर सिंग & चरसिंह सिंग वंश	—	मनवीर सिंग
6	बेदीर सिंग & चरसिंह सिंग वंश	—	
7	जयदाम सिंग & बलवीर सिंग वंश	99882 81273	जयदाम
8	बेदीर सिंग & सगरीर सिंग वंश	88727 99501	बेदीर सिंग
9	बलवीर सिंग & बलवीर सिंग वंश	98767 72199	बलवीर सिंग
10	बलवीर सिंग & बलवीर सिंग वंश	—	
11	बलवीर सिंग & बलवीर सिंग वंश	84378 27688	
12	बलवीर सिंग & बलवीर सिंग वंश	98723 35207	बलवीर सिंग
13	बलवीर सिंग & बलवीर सिंग वंश	715885 815880	बलवीर सिंग
14	बलवीर सिंग & बलवीर सिंग वंश	94774 48836	बलवीर सिंग
15	बलवीर सिंग & बलवीर सिंग वंश	80343 70342	बलवीर सिंग
16	बलवीर सिंग & बलवीर सिंग वंश	98760 89076	बलवीर सिंग
17	बलवीर सिंग & बलवीर सिंग वंश	98552 74622	बलवीर सिंग





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Sr. No	Name of person and Address	mobile No	Signature
18	ਪ੍ਰਿਥਵੀ ਪਦ ਸਿੰਘ 1/6 ਮਾਮਲੇ 2 ਰਪਾਦ	99143 16710	ਪ੍ਰਿਥਵੀ ਪਦ
19	ਗੁਰਦੀਪ ਸਿੰਘ 2/2 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98722 73507	ਪ੍ਰਿਥਵੀ ਪਦ
20	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98157 92032	ਪ੍ਰਿਥਵੀ ਪਦ
21	ਮੀਰਜੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	75084 01140	ਪ੍ਰਿਥਵੀ ਪਦ
22	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	99159 5311	ਪ੍ਰਿਥਵੀ ਪਦ
23	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98141 52400	ਪ੍ਰਿਥਵੀ ਪਦ
24	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98186 74806	ਪ੍ਰਿਥਵੀ ਪਦ
25	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	95307 23413	ਪ੍ਰਿਥਵੀ ਪਦ
26	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98721 76236	ਪ੍ਰਿਥਵੀ ਪਦ
27	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98149 34000	ਪ੍ਰਿਥਵੀ ਪਦ
28	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98148 78530	ਪ੍ਰਿਥਵੀ ਪਦ
29	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98724 15000	ਪ੍ਰਿਥਵੀ ਪਦ
30	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	98728 98890	ਪ੍ਰਿਥਵੀ ਪਦ
31	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	80544 70116	ਪ੍ਰਿਥਵੀ ਪਦ
32	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	97018 33721	ਪ੍ਰਿਥਵੀ ਪਦ
33	ਗੁਰਮੀਤ ਸਿੰਘ 5/5 ਰਪਾਦ ਸਿੰਘ ਰਪਾਦ	75089 39798	ਪ੍ਰਿਥਵੀ ਪਦ

Sr.NO.	Name of Person and Address	mobile No	Signature
34	સેવક સિંઘ 56 રામચંદ્ર સિંઘ રામપાલ	—	COM
35	રામચંદ્ર સિંઘ 56 ગાંધી સિંઘ રામચંદ્ર	98765 20986	m. p. r. e. e.
36	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	98722 45512	રામચંદ્ર સિંઘ
37	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	—	—
38	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	99159 15137	m. p. r. e. e.
39	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	98144 59765	રામચંદ્ર
40	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	98724 10388	રામચંદ્ર
41	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	95927 87754	m. p. r. e. e.
42	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	—	રામચંદ્ર
43	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	98722 88506	—
44	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	82830 59660	—
45	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	94781 85407	રામચંદ્ર
46	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	—	—
47	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	80547 50046	—
48	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	99797 91196	રામચંદ્ર
49	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	98765 21981	રામચંદ્ર
50	રામચંદ્ર સિંઘ 56 રામચંદ્ર સિંઘ રામચંદ્ર	—	રામચંદ્ર





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Sl. No.	Name of Person and Address	Mobile No	Signature
51	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਪੁਰਾਣੀ ਮਾਠ	—	—
52	ਵਿਦਿਆ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	96669 84135	—
53	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	98884 78034	—
54	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	85289 55989	—
55	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	—	—
56	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	94639 18841	—
57	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	98152 87768	—
58	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	—	—
59	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	80541 63121	—
60	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	81968 46531	—
61	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	99888 70997	—
62	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	98148 70046	—
63	ਮਾਸਟਰ ਸਿੰਘ ਸਿੰਘ ਰਾਮਪੁਰ	—	—

S.No.	Name of Person and Address	mobile no.	Signature COMMITTEE
65	સરજીતી સપ્તાહી નગર	78271 14606	78271
66	ગુપ્ત મોડી માલગી માલગી ડી. પાંચડાના ઘાટ	97804 42364	97804
67	સરજીતી સપ્તાહી નગર	97807 62774	97807
68	સરજીતી સપ્તાહી નગર	81568 75384	81568
69	સરજીતી સપ્તાહી નગર	98458 83888	98458
70	સરજીતી સપ્તાહી નગર	98150 98880	98150
71	સરજીતી સપ્તાહી નગર	98760 80373	98760
72	સરજીતી સપ્તાહી નગર	95928 40856	95928
73	સરજીતી સપ્તાહી નગર	98155 94988	98155
74	સરજીતી સપ્તાહી નગર	98350 91819	98350
75	સરજીતી સપ્તાહી નગર	99140 00494	99140
76	સરજીતી સપ્તાહી નગર		
77	સરજીતી સપ્તાહી નગર	97401 03677	97401





Sl. No	Name of Person and Address	mobile No	Signature
78	ਸਤਾਰ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	91153 15300	
79	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	99887 98686	
80	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	8591 006055	
81	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	8591	
82	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	99141718 06	
83	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	94046 07337	
84	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	93016 12415	
85	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	98445 82931	
86	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	98153 99102	
87	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	96467 67186	
88	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	94635 54205	
89	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	93922 78029	
90	ਗੁਰਮੁਖ ਲਿ. ਈ. ਕੰਗੜੇ ਲਿ. ਪਹਾੜੀ	99144	

S. No. Name of Person and Address mobile No			(6)
			Signature COMMITTEE
91	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ	76963 60227	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
92	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	94171 96944	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
93	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	93921 69454	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
94	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	78379 40754	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
95	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	99846 61675	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
96	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	99148 15900	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
97	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	99148 96537	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
98	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ		ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
99	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	94630 46744	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
100	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	94642 18837	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
101	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	98833848	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
102	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	99146 69144	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
103	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	97803 19768	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ
104	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ ਪੁਰਾਣੀ	98785 56653	ਮਾਸਟਰ ਸ਼੍ਰੀ. ਗੁਰਮੁਖ ਸਿੰਘ





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Sl NO	Name of Person and Address	mobile NO	signature
105	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	85287 35239	ਮਾਨੋਜ ਕੁਮਾਰ
106	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	80537 12205	ਮਾਨੋਜ ਕੁਮਾਰ
107	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	87289 07826	ਮਾਨੋਜ ਕੁਮਾਰ
108	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	85580 93806	ਮਾਨੋਜ ਕੁਮਾਰ
109	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	94633 16641	ਮਾਨੋਜ ਕੁਮਾਰ
110	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	94630 81835	ਮਾਨੋਜ ਕੁਮਾਰ
111	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	—	ਮਾਨੋਜ ਕੁਮਾਰ
112	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	980 30 00073	ਮਾਨੋਜ ਕੁਮਾਰ
113	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	—	ਮਾਨੋਜ ਕੁਮਾਰ
114	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	8557 881632	ਮਾਨੋਜ ਕੁਮਾਰ
115	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	85152-52258	ਮਾਨੋਜ ਕੁਮਾਰ
116	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	80542 63443	ਮਾਨੋਜ ਕੁਮਾਰ
117	ਮਾਨੋਜ ਕੁਮਾਰ ਸਿੰਘ ਮਾਨੋਜ ਕੁਮਾਰ ਬਾਗੀਚਾ	85569 00862	ਮਾਨੋਜ ਕੁਮਾਰ

Sl. No	Name of Person and Address	mobile No	Signature COMMTRA
118	ਗੁਰਮਿਤ ਸਿੰਘ ਨੰਬਰ 10 ਫੇਰਾਕੋਟ	—	—
119	ਮਨਦੀਪ ਸਿੰਘ ਫੇਰਾਕੋਟ	—	—
120	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	98488 85431	—
121	ਪ੍ਰੀਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	98555 85787	—
122	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	95014 85121	—
123	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	98787 17986	—
124	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	99145 42584	—
125	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	85570 43760	—
126	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	98144 24368	—
127	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	—	—
128	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	97798 72506	—
129	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	95215 52763	—
130	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	99144 56183	—
131	ਗੁਰਮਿਤ ਸਿੰਘ ਫੇਰਾਕੋਟ	—	—





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

S.No	Name of Person and Address	mobile no	signature
132	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	97818 28736	my/132
133	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	93562 00006	my/133
134	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	98888 69687	my/134
135	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	98149 06779	my/135
136	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	98723 76494	my/136
137	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	98882 43101	my/137
138	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	—	my/138
139	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	—	my/139
140	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	—	my/140
141	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	95019 92497	my/141
142	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	70875 67071	my/142
143	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	94171 33734	my/143
144	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	—	my/144
145	ਗੁਰਮਿਤ ਸਿੰਘ ਭੁੱਲਰ ਦੀ ਘਰਾਣਾ	90412 88009	my/145

Sr no	Name of Person and Address	mobile no	Signature COMMITTEE
146	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	92802 79027	ਮਾਸਟਰ
147	ਮਾਸਟਰ ਸ੍ਰੀ ਮਨਦੀਪ ਸਿੰਘ	—	ਮਾਸਟਰ
148	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	99142 00499	ਮਾਸਟਰ
149	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	—	ਮਾਸਟਰ
150	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	—	ਮਾਸਟਰ
151	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	—	ਮਾਸਟਰ
152	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	99154 78483	ਮਾਸਟਰ
153	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	—	ਮਾਸਟਰ
154	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	98151 68941	ਮਾਸਟਰ
155	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	—	ਮਾਸਟਰ
156	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	—	ਮਾਸਟਰ
157	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	—	ਮਾਸਟਰ
158	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	98727 20674	ਮਾਸਟਰ
159	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	98727	ਮਾਸਟਰ
160	ਮਾਸਟਰ ਸ੍ਰੀ ਹਰਜੋਤ ਸਿੰਘ	98760	ਮਾਸਟਰ





161	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	97793	
		22020	
162	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	9988x	
		88912	
163	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
164	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
165	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
166	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
167	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
168	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
169	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
170	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
171	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	98729	
		88853	
172	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
173	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
174	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	
175	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	98553	
		13422	
176	ਸਮਾਜਿਕ ਅਤੇ ਸਾਮਾਜਿਕ ਸੇਵਾਵਾਂ	—	

(7)			
COMMITRA			
177	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
178	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
179	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
180	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
181	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
182	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
183	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
184	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
185	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
186	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
187	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
188	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ
189	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	98728 65851	ਸ਼ਰਭੀ ਸਿੰਧੂ
190	ਭਾਰਤੀ ਸਿੰਧੂ / ਸ਼ਰਭੀ ਸਿੰਧੂ ਭਾਰਤੀ ਸਿੰਧੂ	—	ਸ਼ਰਭੀ ਸਿੰਧੂ





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

191	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	99881040 89	ਮੁੱਲ ਵਧਾਉਣਾ
192	ਮਾਸ਼ੀਨਾਂ ਲਈ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	—	
193	ਕਾਗਜ਼ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	99760 37358	ਮੁੱਲ ਵਧਾਉਣਾ
194	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	—	ਮੁੱਲ ਵਧਾਉਣਾ
195	ਕਾਗਜ਼ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	98141 86910	ਮੁੱਲ ਵਧਾਉਣਾ
196	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	98553 79101	ਮੁੱਲ ਵਧਾਉਣਾ
197	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	98887 74459	ਮੁੱਲ ਵਧਾਉਣਾ
198	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	98552 77289	ਮੁੱਲ ਵਧਾਉਣਾ
199	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	—	ਮੁੱਲ ਵਧਾਉਣਾ
200	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	97802 69439	ਮੁੱਲ ਵਧਾਉਣਾ
201	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	—	ਮੁੱਲ ਵਧਾਉਣਾ
202	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	98553 51826	ਮੁੱਲ ਵਧਾਉਣਾ
203	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	—	ਮੁੱਲ ਵਧਾਉਣਾ
204	ਮਾਸ਼ੀਨਾਂ ਦੇ ਆਰੰਭ ਲਈ ਭੁਵਿੱਖੀ ਖਾਤਾ	—	ਮੁੱਲ ਵਧਾਉਣਾ

		8	
		COMMTRA	
205	2530 લી. ડી. 2530 લી. વખાણ	—	—
206	સોડા લી. ડી. ગરમી લી. વખાણ	—	—
207	પેપર લી. ડી. ગરમી લી. વખાણ	—	—
208	ગરમી લી. ડી. ગરમી લી. વખાણ	95921	—
209	ગરમી લી. ડી. ગરમી લી. વખાણ	98200	—
210	ગરમી લી. ડી. ગરમી લી. વખાણ	95171	—
211	ગરમી લી. ડી. ગરમી લી. વખાણ	35448	—
212	ગરમી લી. ડી. ગરમી લી. વખાણ	—	—
213	ગરમી લી. ડી. ગરમી લી. વખાણ	98147	—
214	ગરમી લી. ડી. ગરમી લી. વખાણ	23049	—
215	ગરમી લી. ડી. ગરમી લી. વખાણ	—	—
216	ગરમી લી. ડી. ગરમી લી. વખાણ	981414153	—
217	ગરમી લી. ડી. ગરમી લી. વખાણ	98357	—
218	ગરમી લી. ડી. ગરમી લી. વખાણ	24185	—
219	ગરમી લી. ડી. ગરમી લી. વખાણ	—	—
220	ગરમી લી. ડી. ગરમી લી. વખાણ	—	—





221	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98103	16476	111627
222	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	—	—	—
223	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	—	—	—
224	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	—	—	—
225	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98550	18383	116933
226	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98728	76463	175191
227	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98148	71662	169810
228	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98151	72222	170373
229	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	—	—	—
230	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	—	—	—
231	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98768	52032	150800
232	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98768	77191	175959
233	ਮੇਲੀਧਰਮ ਦੀ ਸ਼ਰੀਰੀਕ ਦੀ ਭੇ	98151	—	—

		9 COMMITTEE	
234	મહાકામો લી. ડી. ગોડા લી. ગુલામ		મજાલુ લી. લી.
235	રજીસ્ટ્રાર ડી. ગુલામ ગોડા	84272 63600	મજાલુ લી. લી.
236	મજાલુ લી. ગોડા ગોડા	—	મજાલુ લી. લી.
237	મજાલુ લી. ગોડા ગોડા	—	મજાલુ લી. લી.
238	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
239	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
240	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
241	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
242	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
243	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
244	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
245	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
246	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
247	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.
248	મજાલુ લી. ડી. ગોડા લી. ગુલામ	—	મજાલુ લી. લી.





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

249	ਗਰਮ ਪਾਣੀ ਦਾ ਖਰੀਦ ਪ੍ਰਮਾਣ		
250	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਨੂੰ ਦਿਖਾਉਣ ਵਾਲਾ ਚਿੱਠੀ		
251	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਪ੍ਰਮਾਣ (ਗਰਮ ਪਾਣੀ)		
252	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਪ੍ਰਮਾਣ (ਗਰਮ ਪਾਣੀ) 1501653137		
253	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਪ੍ਰਮਾਣ (ਗਰਮ ਪਾਣੀ)		
254	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਪ੍ਰਮਾਣ (ਗਰਮ ਪਾਣੀ)		
255	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਪ੍ਰਮਾਣ (ਗਰਮ ਪਾਣੀ)		
256	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਪ੍ਰਮਾਣ (ਗਰਮ ਪਾਣੀ) 15790944		
257	ਗਰਮ ਪਾਣੀ ਦਾ ਵਰਤੋਂ ਪ੍ਰਮਾਣ (ਗਰਮ ਪਾਣੀ)		

ਈ.ਆਈ.ਏ. ਨੋਟੀਫਿਕੇਸ਼ਨ ਨੰਬਰ 14.9.2006 ਅਧੀਨ ਮੇਸ: ਸੇਡੀਆ ਇੰਡਸਟਰੀਜ਼ ਲਿਮਟਿਡ (ਯੂਨਿਟ ਨੰਬਰ-2) ਪਿੰਡ ਝੁਪਾਣਾ, ਜ਼ਿਲ੍ਹਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ (ਪੰਜਾਬ) ਵੱਲੋਂ ਆਪਣੇ ਮੌਜੂਦਾ ਪਲਾਂਟ ਵਿੱਚ 150 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਵੇਸਟ ਪੈਪਰ ਅਧਾਰਿਤ ਰਾਈਟਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੇਪਰ ਨੂੰ ਖੇਤੀਬਾੜੀ ਰਹਿੰਦ-ਮੁੰਦ ਅਧਾਰਿਤ ਕਰਨ ਲਈ ਅਤੇ 12.5 ਮੈਗਾਵਾਟ ਦੇ ਕੋਜਲਰੇਸ਼ਨ ਪਾਵਰ ਪਲਾਂਟ ਲਗਾਉਣ ਲਈ ਆਪਣੇ ਮੌਜੂਦਾ ਪਲਾਂਟ ਦਾ ਅਧੁਨਿਕੀਕਰਣ ਕਰਨ ਲਈ ਦਿੱਤੀ ਗਈ ਅਗਨੀ ਦੇ ਮਖੈਪ ਵਿਚ ਝੁਪਾਣੀ ਲੋਕ ਸੁਣਵਾਈ ਮਿਤੀ 19.10.2016 ਦੀ ਕਾਰਵਾਈ।

ਕਾਰਵਾਈ ਵਿੱਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਹੇਠ ਲਿਖੇ ਵਿਅਕਤੀ ਹਾਜ਼ਰ ਸਨ:

1. ਸ੍ਰੀ ਕੁਲਵੰਤ ਸਿੰਘ, ਆਈ.ਏ.ਐਸ.,
ਰਾਜੀਕ ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ (ਵ),
ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ।
2. ਸ੍ਰੀ ਹਾਜ਼ਿਵ ਸ਼ਰਮਾ,
ਵਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ, (ਮੈਗਾ),
ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ,
ਪਟਿਆਲਾ।
3. ਇੰਜ. ਐਸ.ਐਸ. ਯਾਦਵਾਲ,
ਵਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ,
ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ,
ਖੇਡਰੀ ਚੌਡਰ, ਬਠਿੰਡਾ।

ਵਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ (ਮੈਗਾ) ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ, ਪਟਿਆਲਾ ਨੇ ਮੇਸ: ਸੇਡੀਆ ਇੰਡਸਟਰੀਜ਼ ਲਿਮਟਿਡ (ਯੂਨਿਟ ਨੰਬਰ-2) ਪਿੰਡ ਝੁਪਾਣਾ, ਜ਼ਿਲ੍ਹਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ ਵੱਲੋਂ ਵਾਤਾਵਰਣ, ਜੰਗਲਾਤ ਅਤੇ ਸੋਸ਼ਲੀ ਤਬਦੀਲੀ ਮੰਤਰਾਲਾ, ਭਾਰਤ ਸਰਕਾਰ, ਨਵੀਂ ਦਿੱਲੀ ਦੁਆਰਾ ਈ.ਆਈ.ਏ. ਨੋਟੀਫਿਕੇਸ਼ਨ ਨੰਬਰ 1533 (ਈ) ਮਿਤੀ 14.9.2006 ਦੇ ਤਹਿਤ ਆਪਣੇ ਮੌਜੂਦਾ ਪਲਾਂਟ ਵਿੱਚ 150 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਵੇਸਟ ਪੈਪਰ ਅਧਾਰਿਤ ਰਾਈਟਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੇਪਰ ਨੂੰ ਖੇਤੀਬਾੜੀ ਰਹਿੰਦ-ਮੁੰਦ ਅਧਾਰਿਤ ਕਰਨ ਲਈ ਅਤੇ 12.5 ਮੈਗਾਵਾਟ ਦੇ ਕੋਜਲਰੇਸ਼ਨ ਪਾਵਰ ਪਲਾਂਟ ਲਗਾਉਣ ਲਈ ਆਪਣੇ ਮੌਜੂਦਾ ਪਲਾਂਟ ਦਾ ਅਧੁਨਿਕੀਕਰਣ ਕਰਨ ਲਈ ਵਾਤਾਵਰਣ ਕਲੀਅਰੈਂਸ ਲੋੜ ਲਈ ਦਾਖਲ ਕੀਤੀ ਗਈ ਅਗਨੀ ਦੇ ਝੁਪਾਣੀ ਲੋਕ ਸੁਣਵਾਈ, ਰਾਜੀਕ ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ (ਵ), ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ-ਕਮ-ਪਰਿਜਾਈਡਿੰਗ-ਕਮ-ਸੁਪਰਵਾਈਡਿੰਗ ਅਫਸਰ ਜੀ ਦੀ ਪ੍ਰਧਾਨਗੀ ਹੇਠ ਅਤੇ ਹੋਰ ਹਾਜ਼ਰ ਅਫਸਰਾਂ ਅਤੇ ਇਸ ਲੋਕ ਸੁਣਵਾਈ ਵਿੱਚ ਹਾਜ਼ਰ ਹੋਏ ਹੋਏ ਸ਼ਾਮਲ। ਪਿੱਛਾਂ ਦੇ ਲੋਕਾਂ ਦਾ ਸਵਾਗਤ ਕੀਤਾ। ਉਹਨਾਂ ਹਾਜ਼ਰ ਲੋਕਾਂ ਨੂੰ ਦੱਸਿਆ ਕਿ ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਆਪਣੇ ਮੌਜੂਦਾ ਪਲਾਂਟ ਦਾ ਅਧੁਨਿਕੀਕਰਣ ਕਰਨ ਲਈ ਦਿੱਤੀ ਗਈ ਅਗਨੀ ਧਾਰੇ ਹੋਈ ਕਾਰਵਾਈ ਜਾਂ ਕੰਮਲਾ ਕਰਨ ਤੇ ਪਹਿਲਾਂ ਲੋਕ ਸੁਣਵਾਈ ਕਰਨਾ ਜ਼ਰੂਰੀ ਹੈ। ਉਹਨਾਂ ਇਹ ਗੱਲ ਵੀ ਲੋਕਾਂ ਦੇ ਧਿਆਨ ਵਿੱਚ ਲਿਆਈ ਕਿ ਇੰਡਸਟਰੀ ਨੇ ਪ੍ਰਸਤਾਵਤ ਈ.ਆਈ.ਏ. ਰਿਪੋਰਟ ਦੀਆਂ ਨਕਲਾਂ ਲਮੇਤ ਕਾਰਜਾਵਾਹੀ ਪਲਾਸੇ ਦੀ ਇਕ-ਇਕ ਕਾਪੀ ਵਫ਼ਤਰ ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ, ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ, ਜ਼ਿਲ੍ਹਾ ਪਰਿਸਦਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ, ਜਨਰਲ ਮੈਨੇਜਰ, ਜ਼ਿਲ੍ਹਾ ਇੰਡਸਟਰੀਅਲ ਸੈਟਰ, ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ, ਕਾਗਜ਼ ਸਾਧਕ ਅਫਸਰ, ਮਿਊਸਿਪਲ ਕੋਰਪੋਰੇਸ਼ਨ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ, ਖੇਤਰੀ ਚੌਡਰ ਐਮ.ਓ.ਈ.ਐਫ ਅਤੇ ਸੋਸ਼ਲੀ ਤਬਦੀਲੀ, ਚੰਡੀਗੜ੍ਹ, ਅਤੇ ਖੇਤਰੀ ਚੌਡਰ, ਬਠਿੰਡਾ, ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ ਵਿੱਚ ਰਖੀ ਗਈ ਸੀ, ਤਾਂ ਜੋ ਉਸੇ ਪਬਲਿਕ (ਜਨਤਾ) ਅਤੇ ਹੋਰ ਗੱਲਬਾਤ ਇਹ ਕਾਗਜ਼ ਪੱਤਰ ਦੇਖ ਸਕਣ। ਉਹਨਾਂ ਇਹ ਵੀ ਕਿਹਾ ਕਿ ਇਸ ਜਨਤਕ ਸੁਣਵਾਈ ਦੀ ਪੜ੍ਹ ਦੇ ਮਹੱਤਵਪੂਰਨ ਅਖਬਾਰਾਂ ਅਰਥਾਤ ਡੇਲੀ ਪੋਸਟ (ਅੰਗਰੇਜ਼ੀ ਰੋਜਨਾ) ਅਤੇ ਅਜੀਤ (ਹਿੰਸਤੀ ਪੰਜਾਬੀ) ਵਿੱਚ ਮਿਤੀ 16.09.2016 ਨੂੰ ਪ੍ਰਕਾਸ਼ਤ ਕੀਤੀ ਗਈ ਸੀ ਤਾਂ ਜੋ ਆਮ ਜਨਤਾ ਨੂੰ ਇਸ

18

1 of 11

Sundh Singh





ਸਿੰਗ ਸਿੰਗੀਆ ਮਿਸ਼ਨਰੀਜ਼ ਲਿਮਟਿਡ ਨਿਯੁਕਤ
ਇਸ ਪਲਾਟ, ਜਿਲ੍ਹਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਜ਼ਿਲ੍ਹਾ

ਪ੍ਰਕਾਸ਼ਨ ਦੀ ਗੱਲ, ਤਰੀਖ ਅਤੇ ਸਮੇਂ ਦਾ ਪਤਾ ਲੱਗ ਜਾਵੇ, ਨਾਲ ਹੀ ਕਿ ਜਨਤਾ ਨੂੰ ਇਹ ਵੀ ਪਤਾ ਲੱਗ ਜਾਵੇ ਕਿ ਈ.ਆਈ.ਏ. ਰਿਪੋਰਟ ਦਾ ਖਰੜਾ ਅਤੇ ਕਾਰਜਕਾਰੀ ਰਿਪੋਰਟ ਦਾ ਮੁਲਾਂਮਾ ਕਿਸ ਦਫਤਰ ਵਿੱਚ ਪ੍ਰਕਾਸ਼ਨ ਤੋਂ ਪਹਿਲਾਂ ਵੇਖਿਆ ਜਾ ਸਕਦਾ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ ਇਹਨਾਂ ਇੰਡਸਟਰੀ ਦੇ ਨੁਮਾਇੰਦਿਆਂ ਨੂੰ ਕਿਹਾ ਕਿ ਉਹ ਆਪਣੇ ਪ੍ਰੋਜੈਕਟ ਬਾਰੇ ਅਤੇ ਈ.ਆਈ.ਏ. ਰਿਪੋਰਟ ਬਾਰੇ ਲੋਕਾਂ ਨੂੰ ਵਿਸ਼ਵਾਸ ਰੂਪ ਵਿੱਚ ਦੱਸਣ।

ਸ੍ਰੀ ਅਮਿਤ ਪੀਤ, ਜੋ ਕਿ ਇੰਡਸਟਰੀ ਦਾ ਵਾਤਾਵਰਣ ਸਲਾਹਕਾਰ ਹੈ, ਨੇ ਹਾਜ਼ਰ ਲੋਕਾਂ ਨੂੰ ਪ੍ਰੋਜੈਕਟ ਦੇ ਪ੍ਰਸਤਾਵਿਤ ਆਧੁਨਿਕੀਕਰਣ ਬਾਰੇ ਵਿਸਥਾਰ ਰੂਪ ਵਿੱਚ ਹੇਠ ਲਿਖੇ ਅਨੁਸਾਰ ਦੱਸਿਆ।

1. ਇਹ ਇੰਡਸਟਰੀ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ ਸ਼ਹਿਰ ਤੋਂ 6 ਕਿਲੋਮੀਟਰ ਦੀ ਦੂਰੀ ਤੇ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ-ਮਲੋਟ ਸੜਕ ਤੇ ਪਿੰਡ ਰੁਪਾਣਾ, ਜਿਲ੍ਹਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ ਵਿਖੇ ਸਥਿਤ ਹੈ।
2. ਇਸ ਇੰਡਸਟਰੀ ਦੇ ਮਹੱਤਵਪੂਰਨ ਤੱਥ ਹੇਠ ਲਿਖੇ ਅਨੁਸਾਰ ਹਨ :
 - ਮੋਤੀਆ ਇੰਡਸਟਰੀ ਦੇ ਯੂਨਿਟ ਨੰ. 1 ਅਤੇ 2 ਹਨ ਜੋ ਕਿ ਇੱਥੇ ਹੀ ਪਰੀਸਰ ਵਿੱਚ ਪਿੰਡ ਰੁਪਾਣਾ, ਜਿਲ੍ਹਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ ਵਿਖੇ ਲੱਗੇ ਹੋਏ ਹਨ।
 - ਯੂਨਿਟ ਨੰ. 1 ਦੌਲੇ ਰੋਸਨਾ 150 ਟਨ ਵੱਖ-ਵੱਖ ਕਿਸਮ ਦਾ ਰਾਈਟਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੇਪਰ ਅਤੇ ਵਾਟਰ ਮਾਰਕ ਪੇਪਰ ਖੇਤੀਬਾੜੀ ਰਹਿੰਦ-ਖੂੰਹਦ ਮੁੱਦ ਨੂੰ ਖੋਲ੍ਹੇ ਮਾਲ ਦੇ ਡੋਰ ਤੇ ਵਰਤ ਕੇ ਤਿਆਰ ਕੀਤਾ ਜਾਂਦਾ ਹੈ।
 - ਮੋਤੀਆ ਇੰਡਸਟਰੀਜ਼ ਲਿਮਟਿਡ ਦਾ ਯੂਨਿਟ ਨੰ.2, ਅਗਸਤ, 1996 ਵਿੱਚ ਸ਼ੁਰੂ ਹੋਇਆ ਸੀ ਜਿਸ ਦੀ ਸ਼ਮਰੱਥਾ 70 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਸੀ ਅਤੇ ਇਸ ਵਿੱਚ ਵਿਦੇਸ਼ਾਂ ਤੋਂ ਮੰਗਵਾਇਆ ਹੋਇਆ ਅਤੇ ਲੋਕਲ ਰੋਸਟ ਪੇਪਰ ਖੋਲ੍ਹੇ ਮਾਲ ਦੇ ਡੋਰ ਤੇ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ।
 - ਇਸ ਪਲਾਂਟ ਦੀ ਸਮਰੱਥਾ 150 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਰਾਈਟਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੇਪਰ ਬਣਾਉਣ ਲਈ ਨਵੰਬਰ 2012 ਵਿੱਚ ਜ਼ਰੂਰੀ ਹੋਈ ਸੀ।
 - ਮੌਜੂਦਾ ਪ੍ਰੋਜੈਕਟ ਅਨੁਸਾਰ ਇਸ ਯੂਨਿਟ ਵਿੱਚ 150 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਰੋਸਟ ਪੇਪਰ ਆਧਾਰਿਤ ਰਾਈਟਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੇਪਰ ਨੂੰ ਖੇਤੀਬਾੜੀ ਰਹਿੰਦ-ਖੂੰਹਦ ਆਧਾਰਿਤ ਕਰਨ ਲਈ ਅਤੇ 12.5 ਮੀਗਾਵਾਟ ਦੇ ਕੋ-ਜਨਰੇਸ਼ਨ ਪਾਵਰ ਪਲਾਂਟ ਲਗਾਉਣ ਉਪਰੰਤ ਪਲਾਂਟ ਦਾ ਆਧੁਨਿਕੀਕਰਣ ਕਰਨ ਦਾ ਪ੍ਰਸਤਾਵ ਹੈ।
 - ਇਸ ਇੰਡਸਟਰੀ ਦੇ ਦੋਵੇਂ ਯੂਨਿਟਾਂ ਵਿੱਚ ਪਲਪ ਮਿਲ, ਹੋਰ ਸਾਧਨ ਅਤੇ ਰੋਸਟ ਐਂਕੂਲੇਟ ਸੇਧਣ ਦਾ ਪਲਾਂਟ ਲਗਿਆ ਹੋਇਆ ਹੈ।
 - ਇਸ ਇੰਡਸਟਰੀ ਦੁਆਰਾ ਬਣੀਕ ਲੀਕਰ ਨੂੰ ਸੇਧਣ ਲਈ ਮਾਰਚ, 2006 ਵਿੱਚ ਕੈਮੀਕਲ ਰਿਕਵਰੀ ਪਲਾਂਟ ਸਥਾਪਿਤ ਕੀਤਾ ਗਿਆ ਸੀ।
 - ਇਸ ਇੰਡਸਟਰੀ ਨੇ ਆਪਣੇ ਯੂਨਿਟ ਨੰ. 1 ਵਿੱਚ ਵੈਟ-ਵਾਸ਼ ਉਤਸ਼ਾਹ ਨੂੰ ਸੇਧਣ ਲਈ ਇੱਕ ਆਧੁਨਿਕ ਤਕਨੀਕ ਦਾ ਖ਼ੂ.ਏ.ਐਸ.ਬੀ. ਸਿਸਟਮ ਆਧਾਰਿਤ ਪਲਾਂਟ ਲਗਾਇਆ ਹੋਇਆ ਹੈ।
 - ਪਾਣੀ ਦੇ ਇਸਤੇਮਾਲ ਅਤੇ ਪ੍ਰਦੂਸ਼ਣ ਇਸਤੇਮਾਲ ਲਈ ਮਹਾਨਗਰ ਜਲ ਪ੍ਰਬੰਧਨ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ ਹੈ।

18

12/10/20

Sunil Singh



ਸਿੱਧੂ ਮੁਕਤਸਰ ਐਗਰੋ-ਵਾਸਟ ਪ੍ਰੋਜੈਕਟ (ਫਾਈਨ ਟੈਕਸਟ)
ਪਿੰਡ ਰੂਪਾਨਾ, ਜ਼ਿਲ੍ਹਾ ਮੁਕਤਸਰ, ਪੰਜਾਬ

11	ਟੀ.ਜੀ. ਯੂਨਿਟ ਯੂਨਿਟ ਨੰ. 1 ਅਤੇ 2 ਲਈ	<ul style="list-style-type: none"> 12.5 ਮੈਗਾਵਾਟ 5.0 ਮੈਗਾਵਾਟ ਸਮਰੱਥਾ ਵਾਲੀ ਟਰਬਾਈਨ (ਐਕਸਟਰੈਕਸ਼ਨ ਕਮ ਕੰਡੇਨਸਿੰਗ ਸਟੀਮ ਟਾਈਪ) 5.0 ਮੈਗਾਵਾਟ ਦੀ ਸਮਰੱਥਾ ਵਾਲੀ ਟਰਬਾਈਨ (ਬੈਕ ਪ੍ਰੈਸ਼ਰ ਸਟੀਮ ਟਾਈਪ) 	12.5 ਮੈਗਾਵਾਟ ਦੀ ਇੱਕ ਹੋਰ ਟਰਬਾਈਨ ਲਗਾਈ ਜਾਵੇਗੀ ਅਤੇ 5 ਮੈਗਾਵਾਟ ਦੀ ਸਮਰੱਥਾ ਵਾਲੀ ਟਰਬਾਈਨ (ਐਕਸਟਰੈਕਸ਼ਨ ਕਮ ਕੰਡੇਨਸਿੰਗ ਸਟੀਮ ਟਾਈਪ) ਨੂੰ ਸਟੈਂਡ-ਬਾਈ ਰੱਖਿਆ ਜਾਵੇਗਾ।
12	ਡੀ.ਜੀ. ਸੈਟ	ਕੋਈ ਨਹੀਂ	ਕੋਈ ਨਹੀਂ

4. ਰਾਈਟਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੇਪਰ ਬਣਾਉਣ ਲਈ ਹੇਠ ਲਿਖਿਆ ਪ੍ਰੀਕਿਰਿਆ ਚੁੱਦੀਆਂ ਹਨ:
- ਪਲਾਂਟਿੰਗ ਪਰਾਸਸ- ਇਸ ਤਰ੍ਹਾਂ ਬੱਚੇ ਮਾਲ ਦੀ ਵਰਤੋਂ ਕੰਟੀਨਿਊਸ ਡਾਈਸਟਰ ਵਿੱਚ ਪਕਾਉਣ, ਕੁਝਿੰਗ ਅਤੇ ਪਲਾਂਟਿੰਗ ਦੀ ਵਰਤੋਂ, ਸਾਫ਼ ਕਰਨਾ ਅਤੇ ਬਲਾਇੰਗ ਕਰਨਾ।
 - ਸਟਾਕ ਬਣਾਉਣਾ- ਸੋਮ ਸਟੈਂਡ ਅਤੇ ਨੇਮੀਕਲਜ਼ ਮਿਲਾਉਣੇ।
 - ਪੇਪਰ ਬਣਾਉਣਾ- ਲਗਾਤਾਰ ਚੱਲਣ ਵਾਲੀ ਮਸ਼ੀਨ ਵਿੱਚ ਲਗਦੀ ਨੂੰ ਪਾਣੀ ਵਿੱਚ ਘੋਲ ਕੇ ਪੇਪਰ ਦਾ ਅਕਾਰ, ਢੇਰਾ, ਪਾਣੀ ਨਿਵੇਸ਼ਣਾ, ਸ਼ਕਤੀ ਅਤੇ ਯਾਗਰ ਦੀ ਚਮਕ ਬਣਾਉਣਾ।
 - ਅਕਾਰ ਬਦਲਣਾ- ਇਸ ਪਰਾਸਸ ਵਿੱਚ ਕਾਗਜ਼ ਦੀ ਗੋਲ ਅਤੇ ਸ਼ੀਟ ਬਣਾਉਣਾ, ਇਸ ਦੀ ਸਫ਼ਾਈ ਕਰਨਾ ਅਤੇ ਪੈਕ ਕਰਨਾ।
 - ਅਤਿਰਿਕਤ ਪਰਾਸਸਜ- ਉਦਾਹਰਣ ਵੱਜੋਂ ਕੈਮੀਕਲ ਰਿਕਵਰੀ, ਬਾਇਲਰ ਅਤੇ ਐਡਜ਼ਟ ਟਰੀਟਮੈਂਟ ਪਲਾਂਟ।
5. ਨਮੂਨਾ ਲੈਣ ਲਈ ਜਗ੍ਹਾ ਦਾ ਵਿਵਰਣ :
- 8 ਸਥਾਨਾਂ ਤੇ (ਪੈਰਾਮੀਟਰਪੀ.ਐਮ., ਪੀ.ਐਮ., ਸਲਫਰ ਡਾਈਆਕਸਾਈਡ, ਐਨ.ਓ.ਐਕਸ ਅਤੇ ਕਾਰਬਨ ਮੋਨੋਆਕਸਾਈਡ ਦੇ ਹਥੜੇ ਵਿੱਚ ਦੋ ਵਾਰ ਡਿੱਗ ਮਹਿੰਨੇ ਲਈ)
 - ਪਾਣੀ ਦੀ ਗੁਣਵੱਤਾ- 8 ਜਗ੍ਹਾ ਤੇ ਗਰਾਊਂਡ ਅਤੇ 8 ਸਰੋਤ ਵਾਟਰ ਦੇ ਨਮੂਨੇ ਲਏ ਗਏ (ਆਈ.ਐਸ. 10500 ਅਨੁਸਾਰ ਸਥਾਪਿਤ ਪੈਰਾਮੀਟਰ ਦੀ ਪੜਖ ਲਈ)।
 - ਮਿੱਟੀ ਦੀ ਗੁਣਵੱਤਾ- 8 ਸਥਾਨਾਂ ਤੇ।
 - ਨੁਆਇਜ਼ ਲੈਵਲ :- 8 ਸਥਾਨਾਂ ਤੇ, ਪਰੀਖਣ ਸਮੇਂ ਵਿੱਚ ਇੱਕ ਵਾਰੀ।
6. ਹਵਾ ਵਾਰਾਫਰਣ :
- ਹਵਾ ਨੂੰ ਦੂਸਿਤ ਕਰਨ ਵਾਲੇ ਮੋਜੂਦਾ ਕਾਰਨ- ਰਾਹੀਸ ਹਸਕ ਨੂੰ ਯਾਇਲਰ ਵਿੱਚ ਜਲਾਉਣਾ ਅਤੇ ਚਲੇਕ ਲੀਕਰ ਨੂੰ ਸੋਫ਼ਾ ਰਿਕਵਰੀ ਪਲਾਂਟ ਵਿੱਚ ਇੰਨਸਨਰੇਟ ਕਰਨਾ।
 - ਹਵਾ ਦੇ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਲਈ ਅਪਣਾਏ ਜਾਣ ਵਾਲੇ ਮਾਪਦੰਡ ਹੇਠਾਂ ਦਿੱਤੇ ਅਨੁਸਾਰ ਹਨ:

ਇੰਡਸਟਰੀ ਨੇ ਰਿਕਵਰੀ ਕਰਨਸ ਵਿੱਚੋਂ ਨਿਕਲਣ ਵਾਲੀਆਂ ਅਸਿਹਤਜਨਕ ਲੁਈ ਪਾਰਟੀਕੁਲੇਟ ਮੈਟਰ ਦੀ ਮਾਤਰਾ ਨੂੰ ਕੰਟਰੋਲ ਕਰਨ ਲਈ ਈਐਸਪੀ ਲਗਾਇਆ ਹੋਇਆ ਹੈ। ਇੰਡਸਟਰੀ ਵੱਲੋਂ 75

48

ਟੀਪੀਐਚ ਸਮੇਂ ਦੇ ਨਵੇਂ ਬਾਇਲਰ ਦੀ ਫਰਨੇਸ ਵਿੱਚ ਨਿਕਲਣ ਵਾਲੀਆਂ ਅਮੀਸਨਜ਼ ਵਿੱਚ ਪਾਰਟੀਕੁਲੇਟ ਮੈਟਰ ਦੀ ਮਾਤਰਾ ਨੂੰ ਕੰਟਰੋਲ ਕਰਨ ਲਈ ਈਐਸਪੀ ਲਗਾਉਣ ਦੀ ਤਜਵੀਜ਼ ਹੈ।

7. ਜਲ ਵਾਤਾਵਰਣ :

- ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਵੱਖ-ਵੱਖ ਪਰਾਸਤ ਜਿਵੇਂ ਕਿ ਕਾਰਜ ਬਨਾਉਣ, ਕੁਲੀਤ, ਪੀਣ ਅਤੇ ਸਵਾਈ ਪ੍ਰਬੰਧ ਵਸਤੇ ਪਾਣੀ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ। ਇੰਡਸਟਰੀ ਨੂੰ ਦੋਵਾਂ ਯੂਨਿਟਾਂ ਵਿੱਚ ਰਾਈਟਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੈਪਰ ਬਨਾਉਣ ਲਈ 16500 ਕਿਲੋਲੀਟਰ ਪ੍ਰਤੀ ਦਿਨ ਪਾਣੀ ਦੀ ਹਰਕਤ ਹੋਵੇਗੀ, ਜਿਸ ਦੀ ਪੂਰਤੀ ਅਰਵੀਵਾਲਾ ਕਲਾਲ ਤੋਂ ਹੋਵੇਗੀ।
- ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਕੱਢੇ ਤੋਂ ਮਿਹ ਦੇ ਢੇਰਾਂ ਪਾਣੀ ਨਾਲ ਡੁੱਬੀਆਂ ਜਲ ਸਰੋਤ ਵਧਾਉਣ ਲਈ ਹੇਠ ਵਾਟਰ ਹਾਰਵੇਸਟਿੰਗ ਦਾ ਪ੍ਰਸਤਾਵ ਹੈ।

8. ਇੰਡਸਟਰੀ ਵਿੱਚ ਲਗਾਏ ਐਕੂਲੈਟ ਟਰੀਟਮੈਂਟ ਪਲਾਂਟ ਦਾ ਵਿਵਰਣ ਹੇਠ ਲਿਖੇ ਅਨੁਸਾਰ ਹੈ -

- ਇੰਡਸਟਰੀ ਦੇ ਯੂਨਿਟ ਨੰ. 1 ਵਿੱਚ ਵੈਟ-ਵਾਸ਼ ਤੇ ਨਿਕਲਣ ਵਾਲੀ ਉਤਪਾਦ ਨੂੰ ਸੋਧਣ ਲਈ ਪਹਿਲਾਂ ਯੂ.ਏ.ਐਸ.ਬੀ. ਮਿਸਟਰ ਦਾ ਜਲ ਸਿਰਫ ਯੰਤਰ ਲੱਗਾਇਆ ਹੋਇਆ ਹੈ।
- ਸਮੇਂ-ਸਮੇਂ 'ਤੇ ਜਲ ਨੂੰ ਵੇਖ ਕਰਨ ਲਈ ਪ੍ਰੀਮਰੀ ਕਲੋਰੀਵਾਇਰ ਲਗਾਇਆ ਹੋਇਆ ਹੈ।
- 2 ਸਟੇਜ ਐਕਟੀਵੇਟਿਡ ਸਲੱਜ ਪ੍ਰੋਸੈਸ ਟਰੀਟਮੈਂਟ ਪਲਾਂਟ ਲਗਾਇਆ ਹੋਇਆ ਹੈ।
- ਸਲੱਜ ਵਿੱਚ ਪਾਣੀ ਨੂੰ ਕੱਢਣ ਲਈ ਵੈਕੂਅਮ ਰਿਕਲਰ ਅਤੇ ਫਿਲਟਰ ਪਰੈਸ ਲਗਾਏ ਹੋਏ ਹਨ।
- ਯੂਨਿਟ ਨੰ. 2 ਦੇ ਅਧੁਨਿਕੀਕਰਨ ਤੋਂ ਬਾਅਦ ਯੂਨਿਟ ਨੰ. 1 ਵਿੱਚ ਲਗੇ ਈ.ਟੀ.ਪੀ. ਦੀ ਸਮਰੱਥਾ 100 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਨੂੰ ਸੋਧਣ ਲਈ ਸਹੀ ਹੈ।

9. ਪਲਾਂਟ ਤੋਂ ਪੈਦਾ ਹੋਏ ਟੋਜ ਰਹਿੰਦ-ਖੂੰਹਦ ਦਾ ਵਿਵਰਣ ਹੇਠ ਅਨੁਸਾਰ ਹੈ:

ਕ੍ਰਮ ਨੰ.	ਟੋਜ ਰਹਿੰਦ-ਖੂੰਹਦ	ਭਾਗ	ਮੌਜੂਦਾ ਮਾਤਰਾ (ਮੀਟ੍ਰਿਕ ਟਨ ਪ੍ਰਤੀ ਦਿਨ)	ਅਧੁਨਿਕੀਕਰਣ ਤੋਂ ਬਾਅਦ ਮਾਤਰਾ (ਮੀਟ੍ਰਿਕ ਟਨ ਪ੍ਰਤੀ ਦਿਨ)
1.	ਈ.ਟੀ.ਪੀ. ਸਲੱਜ (ਕੰਟੇਨਰ 32.3)	ਐਕੂਲੈਟ ਟਰੀਟਮੈਂਟ ਪਲਾਂਟ	6.0	10.0
2.	ਬੁਆਇਲਰ ਦੀ ਸ਼ਾਅਰ	ਬੁਆਇਲਰ ਡਾਗ	45	61.75
3.	ਜੁਨਾ ਸਲੱਜ	ਕਾਟੀਸਾਇਟਿੰਗ	90	85.17

10. ਮੈਲਿਡ ਵੇਸਟ ਜਨਰੇਸ਼ਨ:

ਕੰਟੇਨਰ 22.3: ਸਲਿਡ ਵੇਸਟ ਨੂੰ ਕੁਲੈਕਟ ਕਰਨ ਅਤੇ ਡਿਸਪੋਜ਼ ਆਫ ਕਰਨ ਲਈ ਫੂਕਰੇ ਟਰੱਕ ਦੀ ਲੋੜ ਹੈ। ਪ੍ਰਾਈਮਰੀ ਕਲੋਰੀਵਾਇਰ ਤੇ ਨਿਕਲਣ ਵਾਲੀ ਸਲੱਜ ਵਿੱਚ ਪਾਣੀ ਕੱਢਣ ਲਈ ਸਲੱਜ ਪਰੈਸ ਦੀ ਵਰਤੋਂ ਕਰਨ ਉਪਰੰਤ ਸਲੱਜ (ਜਿਸ ਵਿੱਚ ਤਕਰੀਬਨ 75 ਪ੍ਰਤੀਸ਼ਤ ਨਮੀ ਹੁੰਦੀ ਹੈ) ਨੂੰ ਕਾਰਡ-ਬੋਰਡ ਬਨਾਉਣ ਦੀਆਂ ਫੈਕਟਰੀਆਂ ਨੂੰ ਦੇਖਿਆ ਜਾਂਦਾ ਹੈ। ਬੁਆਇਲਰ ਦੀ ਫਰਨੇਸ ਵਿੱਚ ਨਿਕਲਣ ਵਾਲੀ ਰਾਖ ਨੂੰ ਨੀਵੇਂ ਕਵਾਂ ਦੀ ਡਰਾਈ ਲਈ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ। ਇੰਡਸਟਰੀ ਨੇ ਕੰਟੇਨਰ 32.3 ਅਧੀਨ ਪੈਸਥ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਪੋਰਡ ਤੇ ਇਸ ਨੂੰ ਕੁਲੈਕਟ ਕਰਨ ਅਤੇ ਡਿਸਪੋਜ਼ ਆਫ ਕਰਨ ਲਈ ਹਰਵਰਡ ਵੇਸਟ ਫੂਲਰ ਅਧੀਨ ਆਬਰਾਈਜਿਸ਼ਨ ਲਈ ਹੋਈ ਹੈ। ਇੰਡਸਟਰੀ ਦੇ

18

2.2.1

Sunjit Singh





ਸੰਸਦੀ ਮਹਾਂਸਭਾ ਵਿੱਚ ਪੇਸ਼ ਕੀਤਾ ਗਿਆ (ਉਦਾਹਰਣ)

ਅਨੁਨਿਵੇਸ਼ਿਤ ਤੇ ਬਾਅਦ ਸੋਧਿਤ ਢੰਗ ਨੂੰ ਡਿਸਪੋਜ਼ ਆਫ਼ ਕਰਨ ਦਾ ਤਰੀਕਾ ਅਤੇ
ਹਜਾਰਡਸ ਏਸਟ ਕੈਟੋਰੀ 32.3 ਉੱਚੀ ਰਹੇਗੀ।

11. ਕਾਰਪੋਰੇਟ ਸਿਸਟਮ ਰਿਸਪੋਨਸੀਬਿਲਟੀ ਪ੍ਰੋਗਰਾਮ ਦੇ ਅਧੀਨ ਹੇਠ ਲਿਖਿਆ ਕ੍ਰਿਆਵਾਂ ਕੀਤੀਆਂ ਜਾਂਦੀਆਂ
ਹਨ -

- ਸੰਸਦਾ ਸਮੇਂ ਦੌਰਾਨ ਪਿੰਡਾਂ ਵਿੱਚ ਸਿਰਫ਼ 25 ਪ੍ਰਤੀਸ਼ਤ ਸਾਫ਼ ਸਫ਼ਾਈ ਅਭਿਆਨ ਹੈ, ਇਸ ਲਈ
ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਇਸ ਅਭਿਆਨ ਨੂੰ ਪਹਿਲ ਦੇ ਅਧਾਰ ਤੇ ਕਰਨ ਦਾ ਪ੍ਰਸਤਾਵ ਹੈ।
- ਸੰਸਦਾ ਸਮੇਂ ਇਲਾਕੇ ਦੇ ਜ਼ਿਲ੍ਹਾਦਾਰ ਲੋਕ ਬੇਤਰੱਬਾਣੀ (70 ਪ੍ਰਤੀਸ਼ਤ), ਮਕਦੂਰੀ (20 ਪ੍ਰਤੀਸ਼ਤ)
ਅਤੇ ਸਰਵਿਸ ਸੈਕਟਰ (10 ਪ੍ਰਤੀਸ਼ਤ) ਵਿੱਚ ਹਨ, ਇਸ ਲਈ ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਇਲਾਕੇ ਵਿੱਚ
ਨਿਸ਼ਕਲ ਸਕਿਲ ਡਿਵੈਲਪਮੈਂਟ ਪ੍ਰੋਗਰਾਮ ਸ਼ੁਰੂ ਕਰਨ ਅਤੇ ਨੌਜਵਾਨਾਂ ਨੂੰ ਨਿਰੀਆ ਮੁੱਦਿਆ
ਕਰਦਮੁੰਦ ਦਾ ਪ੍ਰਸਤਾਵ ਹੈ।
- ਸੰਸਦਾ ਸਮੇਂ ਪਿੰਡਾਂ ਵਿੱਚ ਮੁਢਲੀਆਂ ਸਿਹਤ ਸੇਵਾਵਾਂ ਸਿਰਫ਼ 16.7 ਪ੍ਰਤੀਸ਼ਤ ਹਨ ਅਤੇ ਇੰਡਸਟਰੀ
ਵੱਲੋਂ ਪਿੰਡਾਂ ਵਿੱਚ ਇਹ ਸੇਵਾਵਾਂ ਪ੍ਰਦਾਨ ਕਰਨ ਲਈ ਸਬੰਧਤ ਪਿੰਡਾਂ ਵਿੱਚ ਮੋਬਾਈਲ ਹੈਲਥ ਵੇਨ
ਦੀ ਸਹੂਲਤ ਸ਼ੁਰੂ ਕੀਤੀ ਜਾਵੇਗੀ।
- ਸੰਸਦਾ ਸਮੇਂ ਪਿੰਡਾਂ ਵਿੱਚ 41 ਪ੍ਰਤੀਸ਼ਤ ਪੇਂਡੂ ਲੋਕਾਂ ਨੂੰ ਬੁਰਰੀ ਪਾਣੀ ਦੀ ਸੁਵਿਧਾ ਪ੍ਰਾਪਤ ਹੈ
ਅਤੇ 59 ਪ੍ਰਤੀਸ਼ਤ ਲੋਕਾਂ ਕੋਲ ਇਸ ਦੀ ਕੋਈ ਸੁਵਿਧਾ ਨਹੀਂ ਹੈ, ਇਸ ਲਈ ਇੰਡਸਟਰੀ ਵੱਲੋਂ
ਲੋਕਾਂ ਨੂੰ ਪੀਣ ਅਤੇ ਘਰੇਲੂ ਵਰਤੋਂ ਲਈ ਪਾਣੀ ਦੀ ਸੁਵਿਧਾ ਦੇਣ ਅਤੇ ਧਰਤੀ ਦੇਣਲੇ ਪਾਣੀ ਦਾ
ਪੈਂਡਰ ਫਰਾਉਣ ਦਾ ਪ੍ਰਸਤਾਵ ਹੈ।
- ਸੰਸਦਾ ਸਮੇਂ ਇਲਾਕੇ ਵਿੱਚ 16.7 ਪ੍ਰਤੀਸ਼ਤ ਵਾਲੇ ਪਿੰਡਾਂ ਵਿੱਚ ਸਭੇ ਸਹਾਇਤਾ ਗਰੁਪਜ਼ ਸਥਾਪਿਤ
ਕੀਤੇ ਗਏ ਹਨ ਅਤੇ ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਇਹਨਾਂ ਪਿੰਡਾਂ ਦੇ ਨੌਜਵਾਨਾਂ ਦੀ ਆਮਦਨ ਪੈਦਾ ਕਰਨ
ਦੇ ਢੰਗਾਂ ਲਈ ਮਾਈਕਰੋ ਕਰੈਡਿਟ ਸਕੀਮ ਸਬੰਧਤ ਕਾਰਜ ਸ਼ੁਰੂ ਕੀਤੇ ਜਾਣ ਦੀ ਤਰਜ਼ੀਜ਼
ਹੈ।

ਇੰਡਸਟਰੀ ਦੇ ਸ਼ੁਰੂ ਹੋਣ ਤੋਂ ਹੁਣ ਤੱਕ ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਇਲਾਕੇ ਵਿੱਚ ਪਰਉਪਕਾਰੀ ਕੰਮ
ਕੀਤੇ ਗਏ ਹਨ ਅਤੇ ਪਿਛਲੇ ਤਿੰਨ ਸਾਲਾਂ ਦੌਰਾਨ ਨੇੜੇ ਦੇ ਪਿੰਡਾਂ ਵਿੱਚ ਤਕਰੀਬਨ 22 ਲੱਖ ਰੁਪਏ ਸਕੂਲਾਂ,
ਪੰਚਾਇਤਾਂ ਦੇ ਹੁਨਿਆਰੀ ਢਾਂਚੇ ਦੇ ਵਿਕਾਸ, ਗਰੀਬੀ ਅਤੇ ਰੂਪਮਈ ਪੱਛਮ ਕਰਨ, ਇਸਤਰੀਆਂ ਦੀ ਸਿਹਤ,
ਪਿੰਡਾਂ ਵਿੱਚ ਸਿਹਤ ਕੇਂਪ ਅਤੇ ਹੋਰ ਹੋਰ ਤਰ੍ਹਾਂ ਦੀਆਂ ਕਾਰਵਾਈਆਂ ਆਦਿ ਤੇ ਖਰਚ ਕੀਤੇ ਹਨ। ਇਸ
ਪ੍ਰੋਜੈਕਟ ਦੀ ਕੁਲ ਕੀਮਤ ਤਕਰੀਬਨ 100 ਕਰੋੜ ਰੁਪਏ ਹੈ ਅਤੇ 2.5 ਪ੍ਰਤੀਸ਼ਤ ਦੇ ਹਿਸਾਬ ਨਾਲ ਕੁਲ 2.5
ਕਰੋੜ ਰੁਪਏ ਅਗਲੇ 10 ਸਾਲਾਂ ਵਿੱਚ ਤਰਤੀਬਵਾਰ ਪਰਉਪਕਾਰੀ ਕੰਮਾਂ ਤੇ ਖਰਚਣ ਲਈ ਰਾਖਵੇਂ ਕੀਤੇ ਗਏ
ਹਨ।

ਇਸ ਤੋਂ ਪਿੱਛੇ ਵਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ (ਸੇਰਾ) ਨੇ ਲੋਕਾਂ ਨੂੰ ਦੱਸਿਆ ਕਿ ਈਆਈਏ
ਨੋਟੀਫਿਕੇਸ਼ਨ ਮਿਤੀ 14.9.2006 ਦੇ ਮੁਤਾਬਿਕ ਸੇਰੇ ਤੇ ਸੰਸਦਾ ਲੋਕ ਪ੍ਰੋਜੈਕਟ ਪ੍ਰਮੋਟਰ ਕੋਲੋਂ ਕਿਸੇ ਵੀ ਤਰ੍ਹਾਂ ਦੀ
ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰ ਸਕਦੇ ਹਨ ਜਾਂ ਆਪਣੇ ਸੁਝਾਓ ਦੇ ਸਬੰਧੇ ਹਨ। ਇਹ ਵੀ ਸੇਰੇ ਤੇ ਸੰਸਦਾ ਲੋਕਾਂ ਦੇ
ਧਿਆਨ ਵਿੱਚ ਲਿਆਂਦਾ ਗਿਆ ਕਿ ਉਹਨਾਂ ਵੱਲੋਂ ਮੰਗੀ ਗਈ ਜਾਣਕਾਰੀ ਅਤੇ ਪ੍ਰੋਜੈਕਟ ਪਰਮੋਟਰ ਵੱਲੋਂ ਦਿੱਤੇ
ਜਵਾਬ ਲੋਕ ਸੁਣਵਾਈ ਦੀ ਕਾਰਵਾਈ ਵਿੱਚ ਦਰਜ ਕੀਤੇ ਜਾਣਗੇ ਜੋ ਕਿ ਵਾਤਾਵਰਣ, ਸੰਗਠਨ ਅਤੇ ਸੋਸ਼ਲੀ
ਡਾਈਲੋਗੀ ਮੰਤਰਾਲੇ, ਭਾਰਤ ਸਰਕਾਰ ਨੂੰ ਅਗਲੇਰੀ ਕਾਰਵਾਈ ਕਰਨ ਲਈ ਭੇਜੀ ਜਾਵੇਗੀ। ਇਸ ਲਈ
ਉਹਨਾਂ ਲੋਕਾਂ ਨੂੰ ਬੈਨਤੀ ਕੀਤੀ ਕਿ ਉਹ ਇੱਕ ਇੱਕ ਕਰਕੇ ਪ੍ਰੋਜੈਕਟ ਫਾਰ ਜਾਣਕਾਰੀ ਜਾਂ ਮੁੱਦਿਆਂ ਬਾਰੇ ਸੇਰਾ

18

ਸੰਸਦਾ

Sunjit Singh

ਜਾਂਦੇ ਹਨ। ਉਹਨਾਂ ਇਹ ਵੀ ਦੱਸਿਆ ਕਿ ਹੁਣ ਤੱਕ ਪ੍ਰਾਜੈਕਟ ਬਾਰੇ ਲਿਖਤੀ ਰੂਪ ਵਿੱਚ ਜਾਣਕਾਰੀ, ਟਿੱਪਣੀ, ਕੋਈ ਸੁਝਾਅ, ਇਤਰਾਜ਼ ਜਾਂ ਹੋਰ ਜਾਣਕਾਰੀ ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਬੋਰਡ ਨੂੰ ਨਹੀਂ ਮਿਲੇ ਹਨ।

ਇਸ ਤੋਂ ਪਿੱਛੋਂ ਸਭ ਤੋਂ ਪਹਿਲਾਂ ਲੋਕਾਂ ਵੱਲੋਂ ਪੁੱਛੀ ਗਈ ਜਾਣਕਾਰੀ ਅਤੇ ਪ੍ਰਸ਼ੰਸਾ ਲਗਾਉਣ ਵਾਲਿਆਂ ਵੱਲੋਂ ਦਿੱਤੇ ਜਵਾਬ ਹੇਠ ਲਿਖੇ ਅਨੁਸਾਰ ਹਨ:

ਕ੍ਰਮ ਨੰ.	ਵਿਅਕਤੀ ਦਾ ਨਾਮ	ਸੁਣਵਾਈ ਵਿੱਚ ਹਾਜ਼ਰ ਲੋਕਾਂ ਦੁਆਰਾ ਪੁੱਛੇ ਗਏ ਪ੍ਰਸ਼ੰਸਾ/ਸੁਝਾਅ ਅਤੇ ਵਿਚਾਰਾਂ ਦਾ ਵਿਵਰਣ	ਪੁੱਛੇ ਗਏ ਪ੍ਰਸ਼ੰਸਾ/ਸੁਝਾਅ ਅਤੇ ਵਿਚਾਰਾਂ ਦਾ ਸੰਨਤ ਵੱਲੋਂ ਜਵਾਬ
1	ਸ੍ਰੀ ਹਰਨੇਕ ਸਿੰਘ ਚੰਦਲ, ਪੁੱਤਰ ਸ੍ਰੀ ਬੇਰਾ ਸਿੰਘ, ਸਰਪੰਚ, ਪਿੰਡ ਰੂਪਾਣਾ, ਜ਼ਿਲ੍ਹਾ ਮੁਕਤਸਰ ਸਾਹਿਬ।	<ul style="list-style-type: none"> ਇੰਡਸਟਰੀ ਦੇ ਲੱਗਣ ਨਾਲ ਮਿਹਰ ਪਿੰਡ ਰੂਪਾਣਾ ਨੂੰ ਵੀ ਕਈ ਬਣਨ ਸਾਥੇ ਇਲਾਕੇ ਨੂੰ ਲਾਭ ਹੋਇਆ ਹੈ। ਇਲਾਕੇ ਦਾ ਵਿਕਾਸ ਹੋਇਆ ਹੈ ਅਤੇ ਪਿੰਡਸਟਰੀ ਦੇ ਮਾਲਕਾਂ ਦਾ ਪੱਧਰ ਵਧਾ ਦਿੱਤਾ ਹੈ। ਇੰਡਸਟਰੀ ਦੇ ਪ੍ਰਾਚਾਰਿਕ ਅਧਿਕਾਰੀਆਂ ਨਾਲ ਇਲਾਕੇ ਦਾ ਹੋਰ ਵਿਕਾਸ ਹੋਵੇਗਾ ਅਤੇ ਨਿਵਾਸੀਆਂ ਨੂੰ ਹੋਮਗਰ ਮਿਲੇਗਾ। ਬੇਰਾ ਦੀ ਰਹਿੰਦ-ਖੂੰਹਦ ਵਰਤੋਂ ਵਿੱਚ ਆਵੇਗੀ ਅਤੇ ਕਿਸਾਨਾਂ ਦੁਆਰਾ ਭੋਜਨ, ਕਣਕ ਦੀ ਰਹਿੰਦ-ਖੂੰਹਦ ਨੂੰ ਨਹੀਂ ਮਾਰਿਆ ਜਾਵੇਗਾ ਅਤੇ ਕਿਸਾਨ ਆਪਣੀ ਬੇਤੀਬਾੜੀ ਦੀ ਰਹਿੰਦ-ਖੂੰਹਦ ਨੂੰ ਮੁਲ ਵੇਚ ਸਕਣਗੇ। ਇਸ ਇੰਡਸਟਰੀ ਦੇ ਸਥਾਪਿਤ ਹੋਣ ਨਾਲ ਕਿਸਾਨਾਂ ਦੇ ਪਰਿਵਾਰਾਂ ਨੂੰ ਬਿਜਲੀ ਸਹੂਲਤ ਮਿਲੇਗੀ ਜਿਸ ਨਾਲ ਕਿਸਾਨਾਂ ਨੇ ਟਰੈਕਟਰ ਟਰਾਲੀਆਂ ਨੂੰ ਵਰਤਕੇ ਖੇਤੀ ਦੀ ਫੇਰਾ ਢੁਆਈ ਦਾ ਕੰਮ ਸੁਰੂ ਕੀਤਾ ਹੋਇਆ ਹੈ। ਇੰਡਸਟਰੀ ਵਿੱਚ ਕੰਮ ਕਰਦੇ ਕਾਮਿਆਂ ਦੀ ਤਰਾਫ਼ ਵੱਧਣ ਨਾਲ ਪਿੰਡ ਰੂਪਾਣਾ ਦੇ ਆਰਥਿਕ ਪੱਧਰ ਵੱਧੇਗਾ ਅਤੇ ਪਿੰਡ ਵਿੱਚ ਹੋਰ ਵੀ ਆਪਣੀ ਰੋਜ਼ਾਨਾ ਵਰਤੋਂ ਦੀਆਂ ਵਸਤੂਆਂ ਪਿੰਡ ਦੀਆਂ ਇਹਨਾਂ ਢੁਕਵਾਂ ਤੇ ਪਹੰਚਦੇ ਹਨ। 	<ul style="list-style-type: none"> ਇਸ ਸਬੰਧ ਵਿੱਚ ਕੋਈ ਜਵਾਬ ਦੇਣ ਦੀ ਲੋੜ ਨਹੀਂ।
2	ਸ੍ਰੀ ਬੇਰਾ ਸਿੰਘ ਪੁੱਤਰ ਸ੍ਰੀ ਸਰਪੰਚ ਸਿੰਘ, ਪਿੰਡ ਰੂਪਾਣਾ, ਜ਼ਿਲ੍ਹਾ ਮੁਕਤਸਰ ਸਾਹਿਬ।	<ul style="list-style-type: none"> ਇਹਨਾਂ ਨੇ ਲੋਕ ਸੁਣਵਾਈ ਲਈ ਆਏ ਲੋਕਾਂ ਅਤੇ ਲੋਕ ਸੁਣਵਾਈ ਬਹੁਮਤੀ ਲਈ ਆਏ ਹੋਏ ਅਥਰਾ ਦਾ ਪਿੰਡ ਰੂਪਾਣਾ ਦੀ ਹਰੇਕ ਪੱਧਰਾਂ ਵੱਲੋਂ ਅਤੇ ਦੱਸਿਆ ਕਿ ਇਹ ਇੰਡਸਟਰੀ 1982 ਵਿੱਚ ਲਗੀ ਸੀ ਅਤੇ ਇਸ ਦੇ ਲਗਭਗ ਨਾਲ 3000 ਤੋਂ 5000 ਲੋਕਾਂ ਨੂੰ ਸਿੱਧੇ ਜਾਂ ਅਸਿੱਧੇ ਤੌਰ ਤੇ ਰੁਜ਼ਗਾਰ ਮਿਲਿਆ ਹੈ। 	<ul style="list-style-type: none"> ਇਸ ਸਬੰਧ ਵਿੱਚ ਕੋਈ ਜਵਾਬ ਦੇਣ ਦੀ ਲੋੜ ਨਹੀਂ।

188

2.2.2

Surjit Singh



	<p>1. ਇਸ ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਇਲਾਕੇ ਦੇ ਲੋਕਾਂ ਲਈ ਰੁਜ਼ਗਾਰ ਦੇ ਮਾਧਨ ਪੈਦਾ ਕੀਤੇ ਹਨ ਅਤੇ ਦੂਸਰੇ ਰਾਸ਼ੀ ਜਿਵੇਂ ਕਿ ਉਤਰਪ੍ਰਦੇਹ, ਪਸ਼ਚੀਮ ਬੰਗਾਲ ਆਦਿ ਤੋਂ ਵੀ ਕਾਰੀਆਂ ਨੂੰ ਇਸ ਫੈਕਟਰੀ ਵਿੱਚ ਰੁਜ਼ਗਾਰ ਮਿਲਿਆ ਹੋਇਆ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ ਇਸ ਇੰਡਸਟਰੀ ਦੇ ਸਥਾਪਿਤ ਹੋਣ ਨਾਲ ਪਿੰਡ ਝਪਲਾ ਦੇ ਵਾਸੀਆਂ ਨੂੰ ਬਹੁਤ ਲਾਭ ਹੋਇਆ ਹੈ ਕਿਉਂਕਿ ਫੈਕਟਰੀ ਵਿੱਚ ਕੰਮ ਕਰਦੇ ਕਾਰੀਆਂ ਨੇ ਆਪਣੇ ਰਹਿਣ ਲਈ ਪਿੰਡ ਵਿੱਚ ਕਿਰਾਏ ਤੇ ਮਕਾਨ ਲਏ ਹੋਏ ਹਨ ਅਤੇ ਉਹ ਆਪਣੇ ਰੋਜ਼ਾਨਾ ਖਰਚੇ ਦੀਆਂ ਚੀਜ਼ਾਂ ਪਿੰਡ ਦੇ ਦੁਕਾਨਦਾਰਾਂ ਤੋਂ ਪ੍ਰਾਪਤ ਕਰਦੇ ਹਨ। ਇੰਡਸਟਰੀ ਦੇ ਮਾਲਕਾਂ ਵੱਲੋਂ ਆਪਣੇ ਦੁਆਲੇ ਦੇ ਖੇਤੀਬਾੜੀ ਵਿੱਚ ਸਿਹਤ ਰੱਖ ਅਤੇ ਲੋਕਾਂ ਦੇ ਕੰਪ ਲਗਾਏ ਜਾਂਦੇ ਹਨ। ਇੰਡਸਟਰੀ ਵੱਲੋਂ 450 ਏਕੜ ਵਿੱਚ ਕੀੜੀ ਗਈ ਪਲਾਸਟਿਕ ਕਰਨ ਨਾਲ ਵਾਤਾਵਰਣ ਵਿੱਚ ਆਕਸੀਜਨ ਦੀ ਮਾਤਰਾ ਵਿੱਚ ਵਾਧਾ ਹੋਇਆ ਹੈ। ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਕਿਸੇ ਤਰ੍ਹਾਂ ਦਾ ਪ੍ਰਦੂਸ਼ਣ ਨਹੀਂ ਹੋਇਆ ਜਾਂਦਾ ਅਤੇ ਖੇਤੀਬਾੜੀ ਵਿੱਚ ਇਸ ਇੰਡਸਟਰੀ ਦੇ ਲਗਣ ਉਪਰੰਤ ਪ੍ਰਦੂਸ਼ਣ ਦੀ ਹੋਈ ਸਮੱਸਿਆ ਨਹੀਂ ਹੈ। ਉਹਨਾਂ ਵੱਲੋਂ ਇੰਡਸਟਰੀ ਦੇ ਮਾਲਕਾਂ ਨੂੰ ਇਲਾਕੇ ਵਿੱਚ ਇੱਕ ਹੋਰ ਯੂਨਿਟ ਲਗਾਉਣ ਦੀ ਅਪੀਲ ਕੀਤੀ ਗਈ ਤਾਂ ਕਿ ਪਿੰਡ ਅਤੇ ਆਸੇ ਪਾਸੇ ਦੇ ਲੋਕਾਂ ਦੇ ਖੇਤਾਂ ਵਿੱਚ ਪੈਦਾ ਹੋਣ ਵਾਲੇ ਖੇਤੀਬਾੜੀ ਗਰੀਬ-ਮੁੱਢ ਦੀ ਆਤ ਵਧੇ ਜਿਸ ਨਾਲ ਉਹਨਾਂ ਦੀ ਆਮਦਨ ਵਿੱਚ ਵਾਧਾ ਹੋਵੇ।</p>	
<p>2. ਸ੍ਰੀ ਜਸਵਿੰਦਰ ਸਿੰਘ ਪੁੱਤਰ ਸ੍ਰੀ ਨਾਇਬ ਸਿੰਘ, ਪਿੰਡ ਰੂਪਨਾ, ਜ਼ਿਲ੍ਹਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ।</p>	<p>• ਭਾਰਤ ਵਿੱਚ ਬੇੜੀ ਪ੍ਰਚਲਨ ਦੇਸ਼ ਹੈ ਅਤੇ ਇੰਡਸਟਰੀ ਲਗਣ ਨਾਲ ਇਲਾਕੇ ਦੀ ਆਰਥਿਕ ਸਥਿਤੀ ਦਾ ਵਿਕਾਸ ਹੋਵੇਗਾ। ਇਸ ਇੰਡਸਟਰੀ ਦੇ ਲੱਗਣ ਤੋਂ ਬਾਅਦ ਇਸ ਵਿੱਚ ਬਹੁਤ ਸੁਧਾਰ ਹੋਇਆ ਹੈ ਕਿਉਂਕਿ ਜ਼ਰੂਰੀ ਵਿੱਚ ਇੰਡਸਟਰੀ ਦੇ ਚਲਣ ਨਾਲ ਚਿਮਨੀ ਤੋਂ ਸੁਆਹ ਭਿਗਣ ਦੀ ਸਮੱਸਿਆ ਹੁੰਦੀ ਸੀ ਜੋ ਹੁਣ ਖਤਮ ਹੋ ਚੁਕੀ ਹੈ। ਇਲਾਕੇ ਵਿੱਚ ਰੁਜ਼ਗਾਰ ਦੇ ਸਾਧਨ ਪੈਦਾ ਹੋਏ ਹਨ ਜਿਨ੍ਹਾਂ ਤੋਂ ਕਿਸਾਨਾਂ ਨੂੰ ਸਕਦਾ ਹੈ ਕਿ ਇਲਾਕੇ ਦੇ ਨੌਜਵਾਨਾਂ ਦਾ ਨਾਸ਼ਾ ਵੱਲ ਰੁਕਾਵਟ ਵੱਧ ਜਾਂਦਾ। ਮੇਰੇ ਮੁਰਾਬਿਬ</p>	<p>➤ ਇਸ ਸਮੇਂ ਵਿੱਚ ਕੋਈ ਜਵਾਬ ਦੇਣ ਦੀ ਲੋੜ ਨਹੀਂ।</p>

	<p>ਇਸ ਅਧਿਕਾਰਤ ਨਾਲ-2 ਸਿੱਲ ਮਾਲਕਾਂ ਵੱਲੋਂ ਹੋਰ ਸ਼ੁਨਿਤ ਸਥਾਪਿਤ ਕਰਨਾ ਚਾਹੀਦਾ ਹੈ ਅਤੇ ਇਸ ਅਧਿਕਾਰਤ ਲਈ ਮੇਂ ਇਹਨਾਂ ਨੂੰ ਵਧਾਈ ਦਿੰਦਾ ਹੈ । ਇੰਡਸਟਰੀ ਦੁਆਰਾ ਹੁੱਕਾਂ ਦੇ ਲਗਾਉਣ ਨਾਲ ਇਲਾਕੇ ਵਿੱਚ ਪ੍ਰਦੂਸ਼ਣ ਦਾ ਲੈਵਲ ਘਟਿਆ ਹੈ । ਮੇਂ ਜਿਥੇ ਜਾਂ ਅਸਿਰੋ ਤੋਂ ਫੈਕਟਰੀ ਨਾਲ ਨਹੀਂ ਜੁੜਿਆ ਹੋਇਆ ਅਤੇ ਨਾ ਹੀ ਮੇਰਾ ਕੋਈ ਪਰਿਵਾਰਕ ਮੈਂਬਰ ਇਸ ਦਾ ਕਰਮਚਾਰੀ ਹੈ । ਮੇਂ ਪੁਛਣਾ ਚਾਹੀਦਾ ਹਾਂ ਕਿ :</p> <ul style="list-style-type: none"> • ਕੀ 12.5 ਮੈਗਾਵਾਟ ਪਾਵਰ ਪਲਾਂਟ ਦੇ ਲੱਗਣ ਨਾਲ ਰੁਜ਼ਗਾਰ ਦੇ ਸਾਧਨ ਪੈਦਾ ਹੋਣਗੇ । • ਕੀ ਇੰਡਸਟਰੀ ਦੁਆਰਾ ਪੇਤੀ ਦੀ ਰਹਿੰਦ-ਖੂੰਹਦ ਚਰਚਣ ਨਾਲ ਵੀ ਰੁਜ਼ਗਾਰ ਦੇ ਸਾਧਨ ਪੈਦਾ ਹੋਣਗੇ । • ਕੀ ਰੁਜ਼ਗਾਰ ਸਿਰਫ ਇਲਾਕੇ ਦੇ ਲੋਕਾਂ ਨੂੰ ਹੀ ਦਿੱਤਾ ਜਾਵੇਗਾ । 	<p>• ਇੰਡਸਟਰੀ ਦੇ ਸਹਾਇਕਾਂ ਵੱਲੋਂ ਦੱਸਿਆ ਗਿਆ ਕਿ ਪ੍ਰਸਤਾਵਿਤ ਅਧਿਕਾਰਤ ਨਾਲ ਤਕਰੀਬਨ 100-150 ਲੋਕਾਂ ਲਈ ਸਿੱਧੇ ਤੌਰ ਤੇ ਅਤੇ 700 - 800 ਲੋਕਾਂ ਲਈ ਅਸਿਰੋ ਤੋਂ ਤੇ ਰੁਜ਼ਗਾਰ ਦੇ ਸਾਧਨ ਪੈਦਾ ਹੋਣਗੇ । ਉਹਨਾਂ ਦੱਸਿਆ ਕਿ ਜੇਕਰ ਇਲਾਕੇ ਵਿੱਚ ਪੈਰੋ ਲਿਏ ਅਤੇ ਯੋਗ ਵਿਅਕਤੀ ਮਿਲਣਗੇ ਤਾਂ ਉਹਨਾਂ ਨੂੰ ਪਹਿਲ ਦਿੱਤੀ ਜਾਵੇਗੀ । ਇੰਡਸਟਰੀ ਦੇ ਇਸ ਅਧਿਕਾਰਤ ਨਾਲ ਤਕਰੀਬਨ 300 - 600 ਹਨ ਪ੍ਰਤੀ ਦਿਨ ਖੇਤੀਬਾੜੀ ਰਹਿੰਦ-ਖੂੰਹਦ ਦੀ ਵਰਤੋਂ ਹੋਵੇਗੀ ਅਤੇ ਇਸ ਮੰਗ ਨਾਲ ਇਲਾਕੇ ਦੀ ਆਰਥਿਕ ਤਰੱਕੀ ਹੋਵੇਗੀ।</p>
<p>4. ਸ੍ਰੀ ਨਵਤੇਜ ਸਿੰਘ ਕੋਟੀ, ਮੈਂਬਰ, ਐਸ.ਜੀ.ਪੀ.ਸੀ. ਪਿੰਡ ਕੋਟੀ ਜਿਲਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ</p>	<p>➤ ਇਹਨਾਂ ਵੱਲੋਂ ਕਿਹਾ ਗਿਆ ਕਿ ਉਪਰੋਕਤ ਸਾਰੇ ਵਿਅਕਤੀਆਂ ਵੱਲੋਂ ਇੰਡਸਟਰੀ ਦੀ ਤਰੀਕ ਕੀਤੀ ਗਈ ਹੈ ਅਤੇ ਮੇਂ ਵੀ ਉਹਨਾਂ ਦੇ ਵਿਚਾਰ ਨਾਲ ਸਹਿਮਤ ਹਾਂ । ਇਹ ਇੰਡਸਟਰੀ ਇਲਾਕੇ ਲਈ ਵਰਦਾਨ ਸਾਬਤ ਹੋਈ ਹੈ ਅਤੇ ਇਸ ਦੀ ਸਥਾਪਨਾ ਇਲਾਕੇ ਲਈ ਪਰਮਾਤਮਾ ਦਾ</p>	<p>➤ ਇਸ ਸਬੰਧ ਵਿੱਚ ਕੋਈ ਜਵਾਬ ਦੇਣ ਦੀ ਲੋੜ ਨਹੀਂ ।</p>

18

Page 9 of 11

Singh Singh





	<p>ਇੱਕ ਵਰਤਾਨ ਹੈ। ਬੇਤਰੀਕਤਾ ਨੂੰ ਚੰਗੇ-ਮੁੱਢ ਨੂੰ ਵਰਤਣ ਲਈ ਇਹ ਇੱਕ ਅੱਡਾ ਪ੍ਰਸਿੱਧ ਹੈ। ਪੰਜਾਬ ਸਰਕਾਰ ਅਤੇ ਭਾਰਤ ਸਰਕਾਰ ਨੂੰ ਇਸ ਤਰ੍ਹਾਂ ਦੇ ਪ੍ਰਸਿੱਧ ਨਿਸ਼ ਵਿੱਚ ਬੇਤਰੀਕਤਾ ਨੂੰ ਵਰਤਣੀ ਜਾਂਦੀ ਹੋਵੇ ਸਥਾਪਿਤ ਕਰਨ ਲਈ ਉਦੀਆਂ ਨੂੰ ਉਤਸ਼ਾਹਿਤ ਕਰਨਾ ਚਾਹੀਦਾ ਹੈ। ਅਸੀਂ ਸਾਰੇ ਇੰਡਸਟਰੀ ਦੁਆਰਾ ਸਥਾਪਿਤ ਕੀਤੀ ਗਈ ਹਰੀ ਪੌਣੀ ਲਈ ਪੰਨਵਾਦੀ ਹਾਂ।</p>	
<p>5. ਸ਼੍ਰੀ ਸਰਨ ਨਾਥ ਗਰੋਵਰ, ਗਰੋਵਰ ਹੋਲਡਿੰਗਜ਼ ਨੇਟਵਰਕ, ਸ਼੍ਰੀਡ ਫ਼ਾਫ਼ਾ, ਜਿਲਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਸਾਹਿਬ।</p>	<p>> ਕਿਸੇ ਵੀ ਦੇਸ਼ ਦੀ ਤਰੱਕੀ ਲਈ ਵੱਖ-ਵੱਖ ਚੀਜ਼ਾਂ ਜਿਵੇਂ ਕਿ ਚੰਗੇ ਪੜ੍ਹਾਈ, ਤਕਨੀਕ ਅਤੇ ਇੰਡਸਟਰੀ ਆਦਿ ਦੀ ਜ਼ਰੂਰਤ ਹੁੰਦੀ ਹੈ ਅਤੇ ਇਹਨਾਂ ਤੋਂ ਬਿਨਾਂ ਦੇਸ਼ ਦੀ ਤਰੱਕੀ ਸੰਭਵ ਨਹੀਂ ਹੈ। ਪਹਿਲੀਆਂ ਜਾਣਿਆਤਾਰ ਅਤੇ ਇਤਿਹਾਸ ਦੀ ਇਹ ਮੁਢਲੀ ਦਿੱਤਾ ਹੈ। ਲੁਧਿਆਣਾ, ਸਲੋਪਰ ਅਤੇ ਮੱਛੀ ਚੌਥਿੰਗੜ ਵਰਗੇ ਸ਼ਹਿਰਾਂ ਦੇ ਵਿਕਾਸ ਇੰਡਸਟਰੀਆਂ ਦੇ ਸਥਾਪਿਤ ਹੋਣ ਨਾਲ ਹੀ ਸੰਭਵ ਹੋਇਆ ਹੈ। ਇਸ ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਇਲਾਕੇ ਵਿੱਚ ਭੁਸ਼ਹਾਲੀ ਲਿਆਈ ਗਈ ਹੈ ਅਤੇ ਹੁਣ ਇਸ ਵੱਲੋਂ ਬੇਤਰੀਕਤਾ ਰਹਿੰਦੇ-ਮੁੱਢ ਨੂੰ ਕੋਰੇ ਮਾਲ ਦੇ ਤੌਰ ਤੇ ਵਰਤਣ ਨਾਲ ਕਿਸਾਨ ਦੀ ਅਮਦਨ ਵਿੱਚ ਵਾਧਾ ਹੋਵੇਗਾ। ਇੰਡਸਟਰੀ ਵੱਲੋਂ ਤਕਰੀਬਨ 150 ਤੋਂ 450 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਦੇ ਪਿਸ਼ਾਬ ਨਾਲ ਬੇਤਰੀਕਤਾ ਰਹਿੰਦੇ-ਮੁੱਢ ਇਸ ਪ੍ਰਸਤਾਵਿਤ ਆਧੁਨਿਕੀਕਰਣ ਤੋਂ ਬਾਅਦ ਵਰਤੋਂ ਵਿੱਚ ਲਿਆਉਣ ਦੀ ਤਜਵੀਜ਼ ਹੈ। ਮੈਂ ਮੁਢਲਾ ਦਿੱਤਾ ਹਾਂ ਕਿ ਇੰਡਸਟਰੀ ਮਾਲਕਾਂ ਵੱਲੋਂ ਹੋਰ ਵਿਸਥਾਰ ਕੀਤਾ ਜਾਵੇ ਕਿਉਂਕਿ ਇਸ ਇੰਡਸਟਰੀ ਦੇ ਸਥਾਪਿਤ ਹੋਣ ਨਾਲ ਪਿਸ਼ਾ, ਕਿਹੜੀਆਂ, ਦੁਖਾਨਦਾਰ, ਹਰੀਕਟ-ਟਰਾਲੀ ਮਾਲਕਾਂ ਅਤੇ ਹੋਰ ਮਾਲਕਾਂ ਨੂੰ ਲਾਭ ਹੋਇਆ ਹੈ ਅਤੇ ਇਸ ਆਧੁਨਿਕੀਕਰਣ ਨਾਲ ਪਿਸ਼ਾ ਨੂੰ ਹੋਰ ਲਾਭ ਹੋਵੇਗਾ। ਮੈਂ ਇੰਡਸਟਰੀ ਮਾਲਕਾਂ ਦੀ ਸਫਲਤਾ ਲਈ ਕਾਮਨਾ ਕਰਦਾ ਹਾਂ। ਉਪਰੋਕਤ ਦੂਸਰਾ ਹਿੱਸਾ ਮੇਰਿਆਂ ਤੋਂ ਬਿਨਾਂ ਟੋਰੀਏ ਦੇ ਲਾਭ ਨੂੰ ਬਾਹਰ ਜਾਣਾ ਪੈਣਾ ਸੀ ਜੋ ਕਿ ਹੁਣ ਇਥੇ ਹੀ ਮੌਜੂਦ ਹਨ।</p>	<p>> ਇਸ ਸਬੰਧ ਵਿੱਚ ਕੋਈ ਸਵਾਬ ਦੇਣ ਦੀ ਲੋੜ ਨਹੀਂ।</p>

Page 10 of 11

ਦਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ (ਮੈਗਾ) ਨੇ ਸੁਰਵਾਈ ਵੇਲੇ ਸੰਸ਼ੁਦ ਲੋਕਾਂ ਨੂੰ ਬੇਨਤੀ ਕੀਤੀ ਕਿ ਜੇਕਰ ਕੋਈ ਹੋਰ ਇਸ ਪ੍ਰਸਿੱਧਤਾ ਵਾਲੇ ਕੋਈ ਸੂਚਨਾਂ ਜਾਂ ਸੰਪਰਕੀਕਰਨ ਚਾਹੁੰਦਾ ਹੈ ਤਾਂ ਉਹ ਇਸ ਬਾਰੇ ਪੁੱਛ ਸਕਦਾ ਹੈ। ਪਰ ਕੋਈ ਵੀ ਵਿਆਕਤੀ ਅੰਗੇ ਨਹੀਂ ਆਇਆ। ਇਸ ਜਨਤਕ ਸੁਰਵਾਈ ਵਿੱਚ 257 ਲੋਕ ਹਾਜ਼ਰ ਸਨ।

ਪਰਿਜਾਈਡਿੰਗ-ਕਮ-ਸੁਪਰਵਾਈਜਿੰਗ ਅਕਸਰ ਨੇ ਦੱਸਿਆ ਕਿ ਲੋਕ ਜਨਤਕ ਸੁਰਵਾਈ ਵੇਲੇ ਸੰਸ਼ੁਦ ਸਾਰੇ ਹੀ ਵਿਆਕਤੀ ਇੰਡਸਟਰੀ ਦੇ ਸੰਸ਼ੁਦ ਪਲਾਂਟ ਵਿੱਚ 150 ਟਨ ਪ੍ਰਤੀ ਦਿਨ ਵੇਸਟ ਪੈਪਰ ਅਧਾਰਿਤ ਗਾਈਡਿੰਗ ਅਤੇ ਪ੍ਰਿੰਟਿੰਗ ਪੇਪਰ ਨੂੰ ਬੇਤਰੀਬੀ ਰਹਿੰਦ-ਪੁਹੰਦ ਅਧਾਰਿਤ ਕਰਨ ਲਈ ਅਤੇ 12.5 ਮੈਗਾਵਾਟ ਦੇ ਬੈਜਨਹੇਸਨ ਪਾਵਰ ਪਲਾਂਟ ਲਗਾਉਣ ਲਈ ਆਪਣੇ ਸੰਸ਼ੁਦ ਪਲਾਂਟ ਦਾ ਅਧੁਨਿਕੀਕਰਣ ਕਰਨ ਦੇ ਹੋਰ ਵਿੱਚ ਹਨ ਜੋ ਕਿ ਪਿੱਛੇ ਰੁਪਏ ਜਿਲਾ ਸ੍ਰੀ ਮੁਕਤਸਰ ਨਾਹਿਬ ਵਿੱਚ ਸੰਸ਼ੁਦ ਹੈ। ਕਸ਼ਮੀਰੇ ਇੰਡਸਟਰੀ ਡਰਾਫਟ ਇਨਵਾਇਰਨਮੈਂਟਲ ਇਮਪੈਕਟ ਅਸੈਸਮੈਂਟ ਸਟੇਡੀ ਰਿਪੋਰਟ/ਈ.ਐਮ.ਪੀ ਦੇ ਅਧੀਨ ਕੀਤੇ ਗਏ ਵਾਅਦਿਆਂ ਦੇ ਮੁਤਾਬਿਕ ਜੋ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਲਈ ਇਨਵਾਇਰਨਮੈਂਟਲ ਕਾਨੂੰਨਾਂ ਦੀ ਪਾਲਣਾ ਕਰੇ ਅਤੇ ਇਲਾਕੇ ਦੇ ਨਿਵਾਸੀਆਂ ਲਈ ਕਾਰਪੋਰੇਟ ਸੋਸਲ ਰਿਸਪੋਂਸੀਬਿਲਟੀ ਦੇ ਅਧੀਨ ਸਹਾਇਤਾ ਜਾਰੀ ਰੱਖੇ।

ਲੋਕ ਸੁਰਵਾਈ ਨਿਗਰਾਨ-ਕਮ-ਪ੍ਰੀਜਾਈਡਿੰਗ ਅਧਿਕਾਰੀ ਅਤੇ ਆਏ ਲੋਕਾਂ ਦੇ ਸੰਨਿਵਾਦ ਦੇ ਮਤਦਾਨ ਨਾਲ ਮੁਕੰਮਲ ਹੋਈ।

Sunil Singh

(ਐਸ.ਐਸ. ਸਾਲੀਵਾਲ)
ਦਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ
ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ
ਖੇਤਰੀ ਦਫਤਰ, ਬਠਿੰਡਾ

Harpreet Singh

(ਗਾਇ ਸਰਮਾ)
ਦਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ (ਮੈਗਾ)
ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ
ਖੇਤਰੀ ਦਫਤਰ ਪਟਿਆਲਾ

Harpreet Singh

(ਕੁਲਵੰਤ ਸਿੰਘ) ਆਈ.ਏ.ਐਸ.
ਦਫ਼ਤਰੀ ਰਿਪੋਰਟੀ ਕਮਿਸ਼ਨਰ (ਵ),
ਸ੍ਰੀ ਮੁਕਤਸਰ ਨਾਹਿਬ





Proceedings of the public hearing conducted on 19.10.2016 in connection with the application filed by M/s Satia Industries Ltd., (Unit No. 2), for obtaining Environmental Clearance as required under the EIA notification dated 14.9.2006 for carrying out modernization of its existing unit from waste paper to agro residue based 150 TPD writing & printing paper and for installation of co-generation power plant of 12.5 MW, located in the revenue estate of V.P.O. Rupana, District Sri Muktsar Sahib, (Punjab).

The following were present to supervise the proceedings:-

1. Sh. Kulwant Singh, IAS
Additional Deputy Commissioner (D),
Sri Muktsar Sahib.
2. Er. Rajeev Sharma,
Environmental Engineer (Mega),
Punjab Pollution Control Board,
Patiala.
3. Er. S.S. Dhaliwal,
Environmental Engineer,
Punjab Pollution Control Board,
Regional Office, Bathinda.

Environmental Engineer (Mega), Punjab Pollution Control Board, Patiala welcomed the ADC(D), Sri Muktsar Sahib-cum-Supervising-cum-Presiding Officer, other officers present on the dais and people from adjoining towns/villages, who came to attend the public hearing of the project in connection with the application filed by M/s Satia Industries Ltd., (Unit No. 2) in the office of the Ministry of Environment and Forests & Climate Change, Govt. of India, New Delhi for getting Environmental Clearance under EIA notification no. 1533 (E) dated 14.9.2006 for modernization of existing unit No. 2 from waste paper based to agro residue based 150TPD writing & printing paper by using Wheat straw, Sarkanda, Bagasse, Wood/Veneer chips and Cotton sticks as raw material and installation of a co-generation power plant of 12.5 MW in the existing premises of industry, located in the revenue estate of V.P.O. Rupana, District Sri Muktsar Sahib. He apprised the public present there about the requirement of conducting the public hearing before deciding on the application filed by the industry for getting the said clearance for carrying out modernization of the existing unit. He also brought into the notice of general public that the industry has submitted copies of draft rapid EIA report alongwith the Executive Summary of the same and a copy of each such document was placed in the office of Deputy Commissioner, Sri Muktsar Sahib; Chairman, Zila Parishad, Sri Muktsar Sahib; General Manager, DIC, Sri Muktsar Sahib; E.O. Municipal Council, Sri Muktsar Sahib; Regional Office of MoEF at Chandigarh and Regional Office, Punjab Pollution Control Board, Bathinda of the PPCB for access to the public and other stakeholders. He further brought out that a notice of public hearing was published in two prominent newspapers namely, 'Daily Post (English Daily)' and 'Ajit'

KS S.S. Dhaliwal

(Punjab Daily) on 16.09.2016 to make the public aware of the date, time & venue of the public hearing and about the places/offices where the public could access the draft EIA report and its Executive Summary report before the said hearing. Thereafter, he requested the representative of the industry to elaborate about the main features of the project and the draft EIA study report.

Mr. Amit Dhir, Environmental Consultant of M/s Satia Industries Ltd., (Unit No. 2), brought out the details of the proposed plan of the project before the public as under:

1. The site of the industry is located at a distance of 6 km from Sri Muktsar Sahib town at Si Muktsar Sahib-Malout Road, Village Rupana, Distt. Sri Muktsar Sahib, Punjab.
2. Salient Features of the existing industry are as under:
 - Satia Industries Limited (SIL) having Unit No.1 & Unit No.2 located in same premises is situated at village Rupana Distt. Sri Muktsar Sahib.
 - Unit No.1 is manufacturing 150 TPD of eco-friendly different varieties of paper such as writing and printing papers and different grades of watermark papers using agricultural residues as raw material.
 - Unit No.2 of SIL was commissioned in August, 1996 using imported and Indian waste paper as a raw material with an installed production capacity of 70 TPD.
 - The capacity of the plant was increased to 150 TPD writing and printing paper production in November, 2012.
 - Proposed project is modernization of existing 150 TPD waste paper based writing & printing paper plant to agro residue based writing & printing paper plant. In addition to this, the unit proposes installation of captive co-gen power plant of 12.5 MW.
 - Both the units are having pulp mill, utilities and effluent treatment plant.
 - The Industry has installed the chemical recovery plant for treatment of black liquor in March 2006.
 - A state-of the-art technology bio-methanation plant based on UASB system to treat wet wash wastewater has also been installed in unit no. 1.
 - Excellent water management for use, reuse & recycling has been adopted.
3. Project Highlights

S. N.	Item	Existing	Proposed
1	Capacity	150 TPD wastepaper based writing and	150 TPD agro residue based





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Proceedings of Public Hearing of
M/s Satia Industries Ltd., (Unit No. 2),
V.P.O. Rupana, District Sri Muktsar Sahib (Punjab)

		printing Paper	writing and printing paper
2.	Land (Acres) for both Unit No. 1 & 2	36.019	36.019
3.	Water Usage (m ³ /day) for both Unit No. 1 & 2	11,370	16,500
4.	Water (m ³ / ton of paper)	70	55
5.	Source of water	Arniwala Canal	Arniwala Canal
6.	Power Requirement with source	4.5 MW (from Co-Gen and PSPCL)	8.0 MW (from Co-Gen and PSPCL)
7.	Rice husk (MT/Day)	500	718
8.	Mill Effluent generation (m ³ /day) from both units	10,000	14,635
9.	Black Liquor recovery (tons/day)	200	400
10.	BOILERS/ APCDs for both Unit No. 1 & 2	45 TPH boiler-Multicyclones with wet scrubber 75 TPH boiler with ESP 50 TPH Recovery Boiler - ESP 25 TPH Recovery Boiler (Standby)- ESP	The steam requirement for the proposed plant shall be met from the proposed 75 TPH boiler, which will run on rice husk and biogas generated from UASB digester. After commissioning the 75 TPH Boiler, the existing 45 TPH boiler shall be kept as standby. ESP will be installed with 75 TPH boiler
11.	T.G. Units for both Unit No. 1 & 2	12.5 MW 5.0 MW capacity Turbine (Extraction cum condensing steam Type) 5.0 MW capacity Turbine (back pressure steam Type)	Additional 12.5 MW capacity turbine will be installed and the existing steam condensing Turbine of 5 MW will be kept as standby.
12.	D.G. Sets	No D.G. Set	No Additional D.G. Sets

4. Following steps are involved in manufacturing of writing and printing paper:

18

Sunil Singh

- **PULPING PROCESS:** which include raw material washing, cooking in continuous digester and pulp washing, cleaning & bleaching.
- **STOCK PREPARATION:** including addition of soap stone & chemicals.
- **PAPER MAKING:** including web formation, pressing, drying and calendaring.
- **CONVERTING & Finishing:** including cutting into reels and sheets, finishing & packing.
- **AUXILIARY PROCESSES:** like chemical recovery, boilers and effluent treatment plant

5. Details of sampling stations:

8 stations: (Parameters: PM₁₀, PM_{2.5}, SO₂, NO_x & CO twice a week for 3 months)

- **Water quality:** 8 Ground Water Samples & 8 Surface water sample (Analyzed for relevant parameters of IS 10500)
- **Soil Quality:** 8 locations.
- **Noise levels:** 8 locations, once during the study period.

6. AIR ENVIRONMENT

- Present sources of Air pollution are: burning of rice husk in boiler furnace and incineration of black liquor in Soda Recovery Plant.
- **Mitigation measures taken/proposed for air pollution are as under:**

The industry has already installed ESP with the recovery furnace for the control of particulates from the flue gases. The industry has proposed to install ESP with 75 TPH capacity new boiler in order to achieve the prescribed norms of emissions from the stack.

7. WATER ENVIRONMENT:

- Water is used for various activities such as process, cooling, drinking and sanitation. The fresh water requirement shall be 16,500m³/day for manufacturing of writing & printing paper in both units, which will be met from surface water.
- There is a proposal to provide rainwater harvesting system to recharge the run-off of roof-tops into groundwater.

8. Details of effluent treatment plant provided by the industry are as under:

- The industry has an ETP consisting of UASB for treatment of effluent from wet washing system already installed in unit no. 1.
- Primary clarifier for removal of suspended solids

K8

Page 4 of 10

nic

Sun J J Singh





Proceedings of Public Hearing of
M/s Satia Industries Ltd., (Unit No. 2),
V.P.O. Rupana, District Sid Muktsar Sahib (Punjab)

- Two stage ASP process
- The sludge is dewatered on a vacuum thickener and filter press
- The existing ETP of unit no. 1 is adequate to handle effluent to be generated after proposed modernization in unit no. 2.

9. **The details of the solid wastes being generated from the plant are given as under:**

Sr. No	Solid Waste	Section	Existing Quantity (MT/day)	Quantity after Modernization (MT/day)
1	ETP Sludge (Category 32.3)	Effluent Treatment Plant	6.0	10.0
2	Boiler Ash	Boiler House	45	63.75
3	Lime Sludge	Cautisizing	90	85.17

10. **Solid Waste Generation**

Category 32.3: Solid wastes require efficient collection and disposal techniques. The sludge generated from primary clarifier is dewatered by sludge press. The filtrate (having approximately 75% moisture) is sold to cardboard manufacturers. Land filling for ash from boilers has been proposed for solid wastes SIL is having authorization for collection, storage and disposal of hazardous waste from Punjab Pollution control Board. After modernization/ up-gradation, the disposal mode of solid and hazardous waste Category No 32.3 will continue to remain the same.

11. Following activities are being undertaken under the Corporate Social Responsibility programme:
1. Since the total sanitation campaign is only 25% in the villages, it is proposed to take it as priority intervention programs.
 2. The local area is largely based on cultivation (70%); followed by labour work (20%) and only 10% for service sector, it is strongly proposed to start National Skill Development programs for the resident youth population to provide employment.
 3. Since the basic medical facilities is present in only 16.7% of villages, it is proposed to start mobile health van facilities to make avail health facilities to the resident population of these villages.
 4. Since only 41% of the villages have natural water facilities and 59% of the villages are having dry status, it is proposed to start lift irrigation program as well as recharge ground water to avail the water for both drinking and domestic use for the resident population.

Sunjit Singh

5. Since the Self-help groups are largely witnessed in all the 16.7% of villages, it is proposed to start mikro-credit scheme linked with income generation activities for the young population of the villages.

The company since its inception is doing philanthropic work and during the last three financial years, the amount spend in doing philanthropic activities in the nearby villages is around Rs.22 lakhs approximately - largely expenditure made on developing school infrastructure, Panchayat infrastructure, eradication of Poverty and hunger, empowerment of women, rural medical camps and related preventive activities etc. The total cost of the project is Rs.100 Crore and about 2.5% from the total cost Rs.2.5 crores have been assigned for doing philanthropic activities in 10 years in Phase for the selective villages

Thereafter, Environmental Engineer (Mega) brought into the notice of public present at the venue of hearing that as per the provisions of ETA notification dated 14.9.2006, as amended time to time, the persons present at the venue may seek any information or clarifications or suggestions on the project from the project promoter. It was also brought into the notice of the persons present there that the information or clarifications sought by them and reply given by the project proponent will be recorded in the proceedings of the public hearing, which will be sent to the MoEF&CC for further consideration. Therefore, he requested the persons present in the hearing to seek information or clarifications on the project one by one. He also informed that no information / clarifications / comments / views / suggestions/objections on the project have been received from the public in writing by the Punjab Pollution Control Board, so far.

Thereupon, the detail of the information / clarifications sought by the persons present at the venue of hearing and the reply given by the project proponent is as under:

Sr. No	Name of the person	Detail of query / statement / information / clarification sought by the person present at the venue of hearing.	Reply of the query / statement / information / clarification given by the project proponent
1.	Sh. Hamek Singh Hundal S/o Sh. Bagga Singh, Sarpanch, Village Rupana, District Sri Muktsar Sahib	Since the establishment of the industry, not just the Village Rupana, but whole area have been benefited. Development has taken place. I congratulate to the industry. With the proposed modernization, more development will take place and employment to the youth will be generated. Agricultural waste of the	No reply is required to be given in this regard.





Proceedings of Public Hearing of
M/s Satia Industries Ltd., (Unit No. 2),
V.P.O. Rupana, District Sri Muktsar Sahib (Punjab)

		area will be utilized and stubble burning will be stopped. Moreover, the farmers will get some price for the agricultural waste. With the establishment of this industry farmer's families have started business. Some are engaged in the transportation of straw etc. using tractor trolleys. With the population of the workers of the factory, shopkeepers of Village Rupana are benefitted commercially, as they make shopping for their daily needs from the village shops.	
2.	Sh. Bohar Singh S/o Sh. Jagshir Singh, Village Rupana, District Sri Muktsar Sahib	He welcomed the public and officers conducting public hearing on behalf of village Rupana. The industry was established in the year 1982 and 3000-5000 workers are connected directly or indirectly with the industry. Factory has given employment to the public in the area. Even workers from States outside Punjab, such as U.P., West Bengal etc. have gained employment. The project has benefitted the residents of village Rupana as workers have rented accommodation in the Village and buy their daily needs from the Village shopkeepers. The mill owners have organized health camps and eye camps in the area. With providing of the green belt by industry in an area measuring 450 acres, oxygen supply has been increased. The factory is keeping pollution under control and no pollution problem is faced in the area. He requested the factory owners to install another unit in the area so that the consumption of	No reply is required to be given in this regard.

Surjit Singh

		agricultural residue may be increased and also the income may increase.	
3.	Sh. Jasvinder Singh S/o Sh. Naib Singh, Village Rupana, District Sri Muktsar Sahib	<p>India is an agriculture based country. With the coming up of industry economic development takes place. There is a lot of improvement than earlier stage when the industry was established. At that time, problem of ash was there, which has now been solved. Employment has been generated in the area and due to absence of which youth might have got attracted about drugs. I am of the view that alongwith the modernization of this unit another unit should be established. For this modernization I congratulate the project proponent. Trees have been planted resulting in reduction in pollution in the area. I am not connected with the factory directly or indirectly nor none of my family member are employee of the factory. He asked :</p> <ul style="list-style-type: none"> • Whether additional employment will be generated with the establishment of 12.5 MW power plant? • Whether employment will be generated with the use of agricultural waste? • Whether employment shall be given to local residents only. 	<p>The consultant of industry told that about 100-150 direct employment and 700-800 indirect employment will be generated. Preference will be given to local residents, if qualified/ eligible persons are available. 300 TPD - 600 TPD agricultural waste will be utilized by the industry. More demand will result in economic development.</p>
4.	Sh. Navtej Singh, Kauni, village Kauni, Member SGPC, Sri Muktsar Sahib	All earlier persons have praised the industry and I endorse the same. The industry has proved to be a boon for the area and is a God's gift to the area. It is a good project to utilize agricultural wastes. The Punjab Govt. as well as Govt. of India should	No reply is required to be given in this regard.

18

Sanjit Singh





EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Proceedings of Public Hearing of
M/s Satia Industries Ltd., (Unit No. 2),
V.P.O. Rupana, District Sri Muktsar Sahib (Punjab)

		encourage more such projects using agricultural wastes. We are thankful to the industry for development of greenery in the area.	
5.	Dr. Jagan Nath Grover, Health Centre, Rupana	For development of any nation many things such as good minerals, technology & industry etc. are required, without which development is not possible. Earlier civilization and history also suggests the same. Ludhiana, Jalandhar and Mandi Gobindgarh cities development was possible only because of industrial growth. Satia has brought prosperity in the area. Now, with the use of agricultural waste as raw material farmers income will increase. The industry has proposed to use agricultural waste from 150 - 450 TPD after this modernization. I suggest that they should increase more capacity, as with the establishment of the industry whole area has been benefitted including farmers, workers, shopkeepers, tractor trolley owners, truck operators and traders. With the modernization, they will benefit more. We have no complaint against the industry. I wish industry owners all success. In the absence of opportunities of employment, people had to go outside which will now be available locally.	No reply is required to be given in this regard.


Environmental Engineer (Mega) further requested the persons present at the venue of hearing that if anyone else wants to seek any information/clarification on the proposed project, but no one came forward. This public hearing was attended by 257 persons.


The Presiding-cum-Supervising Officer observed that all the participants present at the venue of public hearing were in favour of carrying out modernization of its existing unit from waste paper to agro residue based 150 TPD


Sumjit Singh

writing & printing paper and for installation of co-generation power plant of 12.5 MW located in the revenue estate of V.P.O. Rupana, District Sri Muktsar Sahib, provided the industry complies with the provisions of the environmental laws for the control of pollution as per the commitments made in the draft Environmental Impact Assessment study report/EMP and further that it up-keeps the corporate social responsibility activities for the residents of the area as far as possible.

The hearing ended with vote of thanks to the Supervisor-Cum-Presiding Officer and the public present in the hearing.


(S.S. Dhaliwal)
Env. Engineer,
PPCB, Regional Office,
Bathinda



(Rajeev Sharma)
Env. Engineer (Mega)
PPCB, Patiala


(Kulwant Singh) IAS,
Addl Deputy Commissioner,
Sri Muktsar Sahib




EIA & EMP REPORT FOR PROPOSED MODERNIZATION FROM WASTE PAPER TO AGRO RESIDUE
BASED 150 TPD WRITING & PRINTING PAPER AND 12.5 MW CO-GEN POWER PLANT AT UNIT NO.:
2, VILLAGE RUPANA, DIST. MUKTSAR, PUNJAB

Annexure 23: Certified EC Compliance Report



भारत सरकार
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST &
CLIMATE CHANGE



दूरभाष नं० *SPEED 0117*
Telephone No. : +91-172-2638994
Fax No. : +91-172-2638135
उत्तर क्षेत्रीय कार्यालय,
ब्लॉक नं० 24 – 25, सेक्टर – 31 ए,
दक्षिण मार्ग, चंडीगढ़ – 160030
Northern Regional Office
Bays No. 24 – 25, Sector – 31 A,
Dakshin Marg, Chandigarh – 160030
E-mail: chdmoeenv@gmail.com
ajay.mehrotra13@gov.in

No. 5-309/2011-RO (NZ) *1119* Dated: 31.3.2017

To,
✓ Shri S.M. Rao,
General Manager,
M/s Satia Industries Ltd.,
Sri Muktsar Sahib 152 032.

Sub: EC for writing & Printing paper from 60 TPD to 150 TPD and 12.5 Co-gen Power plant of M/s Satia Industries Ltd., Sri Muktsar Sahib – reg.

Ref: Your letter no. SIL/ENV/2017 dated 10.3.2017.


Sir,

Your kind attention is drawn to the above mentioned subject & letter under reference. It was noted that para-wise reply along with relevant annexure were submitted in view of non compliance reported by this office. Also refer your email dated 21.3.17 & 22.3.2017 vide which copy of the minutes of meeting held at MOEFCC, New Delhi was submitted.

The scrutiny of reports, as submitted vide letter dated 10.3.17, shows a few analytical reports, consents etc. were enclosed along with compliance status without proper marking in the text. Moreover, reports like water balance, compliance of CREP & other charts were not authenticated.

You are, therefore, directed to submit rectification report on "Not Complied" conditions along with authenticated annexure at the earliest directly to the Ministry under intimation to this office.

Yours faithfully,


 Advisor

Handwritten notes:
No. 5-309/2011-RO (NZ) 1119
15.03.2017
15.03.2017
15.03.2017

Chandigarh 2016-17 51



भारत सरकार

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST &
CLIMATE CHANGE



दूरभाष नं०

Telephone No. : +91-172-2638994

Fax No. : +91-172-2638135

उत्तर क्षेत्रीय कार्यालय,

बेज नं० 24 - 25, सेक्टर - 31 ए,

दक्षिण मार्ग, चंडीगढ़ - 160030

Northern Regional Office

Bays No. 24 - 25, Sector - 31 A,

Dakshin Marg, Chandigarh - 160030

E-mail: chdmoeenv@gmail.com

ajay.mehrotra13@gov.in

No. 5-309/2011-RO (NZ)/119

Dated: 31.3.2017

To,

✓ Shri S.M. Rao,
General Manager,
M/s Satia Industries Ltd.,
Sri Muktsar Sahib 152 032,

Sub: EC for writing & Printing paper from 60 TPD to 150 TPD and 12.5.Co-gen Power plant of M/s Satia Industries Ltd., Sri Muktsar Sahib - reg.

Ref: Your letter no. SIL/ENV/2017 dated 10.3.2017.

Sir,

Your kind attention is drawn to the above mentioned subject & letter under reference. It was noted that para-wise reply along with relevant annexure were submitted in view of non compliance reported by this office. Also refer your email dated 21.3.17 & 22.3.2017 vide which copy of the minutes of meeting held at MOEFCC, New Delhi was submitted.

The scrutiny of reports, as submitted vide letter dated 10.3.17, shows a few analytical reports, consents etc. were enclosed along with compliance status without proper marking in the text. Moreover, reports like water balance, compliance of CREP & other charts were not authenticated.

You are, therefore, directed to submit rectification report on "Not Complied" conditions along with authenticated annexure at the earliest directly to the Ministry under intimation to this office.

Yours faithfully,

Advisor

Chandigarh 2016-17

51





Annexure 24: Photographs of CSR activities

