R.J. INDUSTRIES
SURVEY NO. 2662/61,VI. BHUJELA, TA. PINDWARA,DIST. SIROHI, RAJASTHAN-307026. M. 98240 25036, 98256 32255

To
The Member Secretary,
Ministry Of Environment, Forest and Climate Change (Ind -2)
Indira ParyavaranBhawan, MoEF&CC, 3rd Floor,
Vayu Wing Jor Bag Road, New Delhi-110003

14-08-2020

Sub: - Environmental Clearance documentation for the proposed R.J. INDUSTRIES at 2662/61, Village- Bhujela, Tehsil-PindwaraDist: Sirohi, Rajsthan- 307026.

Ref: - Minutes of the 21st meeting of the Expert Appraisal Committee(Industry-2 Sector for Chemical Based Projects),held on 15th July 2020.

Ref: - TOR No. - - No.IA-J-11011/101/2019-IA-II (I) dated 17th May 2019
Proposal No.: IA/RJ/IND2/98501/2019

Dear Sir,

With reference to the minutes of 21st meeting dated 15th July 2020, we would like to here to submit the point wise reply of additional information/inputs as under.

S.No.	Additional information/ inputs	Reply
1	Detailed/revised project estimate including for EMP	The detailed project cost with EMP details are attached as **Annexure –I.**
2.	Status of NBWL clearance of the project	NBWL Clearance applied FP/RJ/IND/4642/2019 dated 08/11/2019 **Annexure-II.**
3.	Conservation plan for schedule 1 species with budget	There are two Scheduled I fauna found within the study area Sloth bear and Pantherapardus. Accordingly conservation plan was prepared and submitted to Chief wild life warden for approval dated 29.05.2020. **Annexure-III.**
4.	Detailed ZLD plan	Details of waste water calculation and ZLD plan is attached as **Annexure-IV.**
5	Alternate source of water	Waste water generated from granite cutting and shining will be used as source of water for production of S.O Dyes after treatment. A copy of affidavit is attached as **Annexure V.**
6	Issues raised during public hearing, response and CER plan to address the same	CER plan will be based on Public hearing response is attached as **Annexure –VI.**

Kindly consider it for the grant of Environmental Clearance.

Thanking you.

Yours truly,

M/s R.J Industries

Proposed Synthetic Organic Chemicals Industry at Plot No. 2662/61, Village Bhujela, Tehsil Pindwara, District Sirohi, Rajasthan	***M/s R.J. Industries.***

COST OF PROPOSED PROJECT

Type of Cost involved	**Cost in Rupees (Crores)**	**Specification**
Land cost	0.3	4169.77 sqm
Plant	0.8	• Civil work- Rs 0.30 Cr • Commissioning –Rs 0.70 Cr • Steel work Labour Shed work Rs 0.65
Machinery	0.8	For dyes intermediate plants
Air Pollution Control device	0.9	Bag filter
ETP	0.8	ETP (15 KLD)
RO & MEE	0.9	Three Stage MEE
Pre-operative cost	0.25	Site preparation and others cost before commencement of commercial operations
Contingency	0.85	18% of total cost
Total	**5.6**	

Proposed Synthetic Organic Chemicals Industry at Plot No. 2662/61, Village Bhujela, Tehsil Pindwara, District Sirohi, Rajasthan	***M/s R.J. Industries.***

BUDGET FOR EMP IMPLEMENTATION

Sr. No.	Component	Particulars	Capital Investment (Lakhs)	Recurring Expenditure per Annum (Lakhs)
1	Air	Bag filters	90	05
2	Water	ETP comprising of pre-primary, primary, secondary & tertiary treatment, STP, etc.	80	05
3	Rain Water Harvesting	Installation of RWH System & Annual Cleaning of RWH tank	06	01
4	Hazardous Waste Area and its Management	Purchase of Additional Containers for Storage of Hazardous Waste	05	02
5	Occupational Health & Safety	Health medical checkup of workers, PPEs for Workers. Emergency Preparedness, Fire hydrant systems, fire extinguishers, emergency control room, HAZOP study	02	01
6	Environment Monitoring & Management	Environment Monitoring as per monitoring plan	01	0.5
7	Green Belt	Development and maintenance of green belt	05	01
Total (Rs.)			**189**	**15.5**

ANNEXURE-II

राजस्थान–जयपुर
वन–विभाग

।। कार्यालय उप वन संरक्षक, वन्यजीव, आबूपर्वत, सिरोही ।।

Email-forestwildlife1995@gmail.com PH.- 02974 235211

क्रमांकः एफ ( ) सर्वे/उवसं/2020–21/ दिनांकः

निमित्तः–

मुख्य वन संरक्षक,
वन्यजीव, जोधपुर।

विषयः–प्रस्ताव संख्या FP/RJ/IND/4642/2019 आर.जे. इण्डस्ट्रीज भुजेला, तहसील पिण्डवाडा।

महोदय,

उपरोक्त विषयान्तर्गत निवेदन है कि मैसर्स आर.जे. इण्डस्ट्रीज (Manufacturing of Synthetic Organic Dyes) 2662/61 Village Bhujela, Tehsil Pindwara,Distt. Sirohi द्वारा प्रस्ताव संख्या FP/RJ/IND/4662/2019 द्वारा प्रस्ताव दिनांक 08.11.2019 से ऑन लाईन प्रेषित किया गया है। प्रस्ताव में प्रस्तावित स्थल का मौका निरीक्षण अधोहस्ताक्षरकर्ता द्वारा दिनांक 08.07.2020 को क्षेत्रीय वन अधिकारी, वन्यजीव, आबूतलेटी मय स्टाफ के साथ किया गया। मौका निरीक्षण अनुसार प्रस्तावित स्थल आबूपर्वत वन्यजीव अभयारण्य की सीमा से 4.540 किमी. दूरी पर स्थित है तथा प्रस्तावित ईको सेंसिटिव जोन की सीमा 1.00 किमी. घोषित नही होने तक वर्तमान में उसे 10 किमी. ही माना जाने के निर्देश प्रदान किये गये है। तथापि यूजर एजेन्सी को प्रस्ताव हार्डकॉपी में 10 प्रतियों में प्रेषित करने हेतु लिखा जाने पर यूजर एजेन्सी द्वारा प्रस्ताव हार्ड कॉपी में 10 प्रतियों में दिनांक 13.07.2020 को प्रेषित किया गया है। प्रकरण में नियमानुसार राष्ट्रीय वन्यजीव मण्डल की स्वीकृति जारी कराने हेतु प्राप्त राजस्व की मूल 9 प्रतियां संलग्न कर निवेदन है कि प्रकरण में नियमानुसार अग्रिम आवश्यक कार्यवाही कराने का कष्ट करावे।

संलग्नः– मूल प्रस्ताव की 9 प्रतियां

भवदीय

(बालाजी करी)
उप वन संरक्षक
वन्यजीव,
माउन्ट आबू।

क्रमांकः एफ ( ) सर्वे/उवसं/2020–21/ 1764–65 दिनांकः 31-07-2020

प्रतिलिपिः7 निम्नांकित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित है।

1. अतिरिक्त प्रधान मुख्य वन संरक्षक एवं मुख्य वन्यजीव प्रतिपालक राजस्थान–जयपुर।
2. आर.जे. इण्डस्ट्रीज भुजेला, 2662/61 Village Bhujela, Tehsil Pindwara,Distt. Sirohi

Amin
उप वन संरक्षक
वन्यजीव,
माउन्ट आबू।

TimeLine Details

Proposal received date at each stage of flow.

Submitted by User Agency	Query for Shortcoming(if any) by Wildlife Warden	Resubmission of Proposal by User Agency	Query by Wildlife Warden for submitting Hard Copies	Uploading(by U.A.) of copies of receipt received from Wildlife Warden	Wildlife Warden	Chief Wildlife Warden	State Government/SBWL	NBWL/MoEFCC(WL)
22/11/2019	11/12/2019 21/01/2020	13/12/2019 22/01/2020	07/07/2020	13/07/2020	**Mount Abu Wildlife** :21/07/2020	**Rajasthan** : 04/08/2020		

Essential Details Sought History

Communication between Regional Office & State Government	Communication between State Government & Chief Wildlife Warden	Communication between Chief Wildlife Warden & Wildlife Warden	Communication between Wildlife Warden & User Agency

NOTE:- Proposal is pending at **Chief Wildlife Warden** .

राजस्थान–सरकार
वन–विभाग
कार्यालय उप वन संरक्षक, वन्यजीव, आबूपर्वत, सिरोही
Email-forestwildlife1995@gmail.com PH. No.-02974235211

क्रमांक : एफ( ) /सर्वे/उवसं./2020–21/1193 दिनांक : 10.6.2020

निमित्त:–

R.J. INDUSTRIES,
VILLAGE-BHUJELA,
TEHSIL-PINDWARA,
SIROHI.

विषय:– **Submission of SCHEDULE Ist SPECIES CONSERVATION PLAN within study area of our project M/s R.J. INDUSTRIES IS Planning to start the manufacturing unit of Synthetic organic chemicals located at Survey No.2662/61,Bhujela,Tehsil-Pindwara Dist.-sirohi,Rajasthan-307026.**

प्रसंग:– आपका पत्रांक दिनांक 29.05.2020 के कम में।

उपरोक्त विषय एवं प्रांसगिक पत्र के कम में लेख हैं कि M/S RJ इण्डस्ट्रीज सर्वे नम्बर 2662/61 ग्राम भुजेला,तहसील पिण्डवाडा,जिला सिरोही ने अपने पत्रांक दिनांक 29.05.2020 द्वारा **SCHEDULE Ist SPECIES CONSERVATION PLAN** इस कार्यालय को प्रेषित किया है। अतः उक्त **SCHEDULE Ist SPECIES CONSERVATION PLAN इस कार्यालय द्वारा प्राप्त किया गया।**

(बालाजी करी IFS)
उप वन संरक्षक
वन्यजीव, आबूपर्वत

SCHEDULE I SPECIES CONSERVSTION PLAN

SYNTHETIC ORGANIC CHEMICALS INDUSTRY AT PLOT NO. 2662/61, VILLAGE- BHUJELA, TEHSIL-PINDWARA, DISTRICT: SIROHI, RAJASTHAN

SCHEDULE I SPECIES CONSERVSTION PLAN

INTRODUCTION

1.1 Biological Environment

The biological study of the study area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment.

Biological environment is an integrate part of the environment, it constitute all living beings of that area. Hence, any change in the surrounding environment could cause loss of species or decrease in biodiversity of the area. Therefore, the present study has been undertaken to assess the impact of proposed project on biological environment. Based on the baseline status and elements of impact in the proposed project, mitigation measures are evolved to sustain the biological diversity. Field survey was conducted for baseline study of existing ecological environment during March-May, -. In general Biological diversity is represented by flora and fauna. For the study of biological environment of any area Flora is categorized mainly in to three groups as herbs, shrubs and trees; similarly fauna is divided into mammals, birds and reptiles.

1.2 Objectives

The biological study of the study area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment.

1.3 General Vegetation & Forest

The landscape of the 10 km radius study area of this project is undulating, with occasional hills. In general the altitude of the area is ranging from 400 to 500m above MSL. The rain fall in this area is varying from 650-750mm, with average 30-33 rainy days per year. This topography and climatological conditions of the area supports Tropical forests in this area. As per Champion & Seth, this area harbors dry mixed deciduous forest thorn Forest.

M/s R. J. Industries is planning to start the manufacturing unit of Synthetic organic chemicals located at Plot No. 2662/61, Village- Bhujela, Tehsil-Pindwara, Dist: Sirohi, Rajasthan. Purpose of the report is to identify environmental aspects, impacts and mitigation measures arising out from proposed project and to prepare EIA/EMP, RA/DMP report as per Terms of Reference (ToR) issued by EAC, Delhi. The proposed project is a Greenfield project to manufacture Dyes Intermediates with the capacity of 41MT/M.

Table 1: List of Flora & Fauna in the Study Area of above said project

S.No.	Common Name	Species Name	Family
Shrubs			
1.	Aak	*Calotropis gigantea*	Asclepiadaceae
2.	Vilayati Babool	*Prosopis juliflora*	Fabaceae
3.	Jhar Beri	*Zizyphus nummularia*	Rhamnaceae
4.	Awal/ Tarwar	*Cassia auriculata*	Caesalpiniaceae
5.	Dhatura	*Datura stramonium*	Solanaceae
6.	Behaya	*Ipomoea carnea*	Convolvulaceae
7.	Raimunia	*Lantana camara*	Verbenaceae
Herbs			
1.	Latjeera	*Achyranthes aspera*	Amaranthaceae
2.	Jangli chaulai	*Amaranthus spinosus*	Amaranthaceae
3.	Satyanasi	*Argemone mexicana*	Papaveraceae
4.	Aak	*Calotropis prosera*	Asclepiadaceae
5.	Doob Ghas	*Cynodon dactylon*	Poaceae
6.	Oontkata	*Echinops echinatus*	Asteraceae
7.	Badi Dudhi	*Euphorbia hirta*	Euphorbiaceae
8.	Gajar Ghas	*Parthenium hysterophorus*	Asteraceae (Compositae)
9.	Khareti or Bala	*Sida cordifolia*	Malvaceae
10.	Kantkeri	*Solanum xanthocarpum*	Solanaceae
11.	Sarphonka	*Tephrosia purpurea*	Fabaceae

12.	Gokhru	*Tribulus terrestris*	Zygophyllaceae
Grass			
1	Doob ghas	*Cynodon dactylon*	Poaceae
2	Sheda Grass	*Dichanthium annulatum*	Poaceae
3	Makra	*Dactyloctenium aegyptium*	Poaceae

Table 2: Phyto-Sociology of Core Zone (Herbs & Grass)

S.no.	Scientific Name	F	D	A	RF	RD	RA	IVI	H'
1	*Achyranthes aspera*	37.5	1.875	5.0	4.62	5.81	9.97	20.40	2.41
2	*Amaranthus spinosus*	62.5	2.625	4.2	7.69	8.14	8.37	24.20	
3	*Argemone mexicana*	50	1.625	3.3	6.15	5.04	6.48	17.67	
4	*Calotropis prosera*	62.5	2.125	3.4	7.69	6.59	6.78	21.06	
5	*Cynodon dactylon*	87.5	5.125	5.9	10.77	15.89	11.67	38.34	
7	*Echinops echinatus*	62.5	1.5	2.4	7.69	4.65	4.78	17.13	
8	*Euphorbia hirta*	100	3.25	3.3	12.31	10.08	6.48	28.86	
9	*Launaea procumbens*	37.5	1.375	3.7	4.62	4.26	7.31	16.19	
10	*Parthenium hysterophorus*	87.5	3.875	4.4	10.77	12.02	8.83	31.61	

11	*Sida cordifolia*	37.5	0.75	2.0	4.62	2.33	3.99	10.9	
								3	
12	*Solanum xanthocarpum*	62.5	4.875	7.8	7.69	15.12	15.55	38.3	
								6	
13	*Tephrosia purpurea*	75	2.375	3.2	9.23	7.36	6.31	22.9	
								1	
14	*Tribulus terrestris*	50	0.875	1.8	6.15	2.71	3.49	12.3	
								6	

#: Total no of quadrate in which species occurred, F: Frequency (%), D: Density, A: Abundance, RF: Relative Frequency, RD: Relative Density, RA: Relative Abundance, IVI: Important Value Index

Phyto-Sociology of Core Zone (Shrub)								
Scientific Name	**F**	**D**	**A**	**RF**	**RD**	**RA**	**IVI**	**H'**
Calotropis gigantea	50	0.875	1.75	14.81	12.50	11.46	38.78	**2.03**
Caparis desidua	12.5	0.25	2.00	3.70	3.57	13.10	20.37	
Cassia auriculata	37.5	1.25	3.33	11.11	17.86	21.83	50.80	
Datura stramonium	50	0.875	1.75	14.81	12.50	11.46	38.78	
Ipomoea carnea	37.5	1	2.67	11.11	14.29	17.46	42.86	
Lantana camara	62.5	1.375	2.20	18.52	19.64	14.41	52.57	
Prosopis juliflora	87.5	1.375	1.57	25.93	19.64	10.29	55.86	

#: Total no of quadrate in which species occurred, F: Frequency (%), D: Density, A: Abundance, RF: Relative Frequency, RD: Relative Density, RA: Relative Abundance, IVI: Important Value Index

Table Important value Index (IVI) for herb and grass species in the buffer zone

S.no.	Scientific Name	F (%)	D	A	RF	RD	RA	IVI	H'
1	*Acalypha indica*	72.86	1.04	1.43	4.58	3.12	1.36	9.05	
2	*Achyranthes aspera*	35.71	1.26	3.52	2.24	3.76	3.34	9.34	
3	*Adiantum raddianum*	17.14	0.37	2.17	1.08	1.11	2.06	4.24	
4	*Aerva persica*	12.86	0.33	2.56	0.81	0.98	2.42	4.21	
5	*Amaranthus spinosus*	55.71	1.31	2.36	3.50	3.93	2.24	9.67	3.74
6	*Amaranthus viridis*	37.14	1.10	2.96	2.33	3.29	2.81	8.43	
7	*Apluda mutica*	10.00	0.27	2.71	0.63	0.81	2.58	4.01	
8	*Argemone mexicana*	47.14	0.90	1.91	2.96	2.69	1.81	7.46	
9	*Aristida funiculata*	12.86	0.33	2.56	0.81	0.98	2.42	4.21	
10	*Blumea lacera*	30.00	0.64	2.14	1.89	1.92	2.03	5.84	
11	*Cassia occidentalis*	40.00	0.74	1.86	2.51	2.22	1.76	6.49	
12	*Cassia tora*	51.43	0.70	1.36	3.23	2.09	1.29	6.61	
13	*Cenchrus ciliarias*	21.43	0.50	2.33	1.35	1.49	2.21	5.05	
14	*Cleome viscosa*	25.71	0.67	2.61	1.62	2.01	2.48	6.10	
15	*Corchorus tridens*	48.57	1.17	2.41	3.05	3.50	2.29	8.84	
16	*Croton bonplandianum*	31.43	0.53	1.68	1.97	1.58	1.60	5.15	
17	*Echinops echinatus*	32.86	0.77	2.35	2.06	2.30	2.23	6.60	
18	*Eragrostis ciliaris*	31.43	0.47	1.50	1.97	1.41	1.42	4.81	
19	*Euphorbia hirta*	58.57	1.60	2.73	3.68	4.78	2.59	11.05	
20	*Euphorbia milli*	10.00	0.23	2.29	0.63	0.68	2.17	3.48	
21	*Euphorbia neriifolia*	47.14	1.01	2.15	2.96	3.03	2.04	8.03	
22	*Fagonia schweinfurthii*	10.00	0.19	1.86	0.63	0.55	1.76	2.95	
23	*Hibiscus lobatus*	10.00	0.27	2.71	0.63	0.81	2.58	4.01	
24	*Indigofera cordifolia*	51.43	1.16	2.25	3.23	3.46	2.13	8.82	

25	*Indigofera oblongifolia*	15.71	**0.60**	3.82	0.99	**1.79**	3.62	6.40
26	*Indigofera tinctoria*	22.86	**0.66**	2.88	1.44	**1.96**	2.73	6.13
27	*Justicia procumbens*	12.86	**0.53**	4.11	0.81	**1.58**	3.90	6.29
28	*Launaea procumbens*	58.57	**0.76**	1.29	3.68	**2.26**	1.23	7.17
29	*Mollugo cerviana*	32.86	**0.51**	1.57	2.06	**1.54**	1.49	5.09
30	*Ocimum americanum*	41.43	**0.67**	1.62	2.60	**2.01**	1.54	6.15
31	*Parthenium hysterophorus*	50.00	**1.10**	2.20	3.14	**3.29**	2.09	8.52
32	*Pavonia zeylanica*	15.71	**0.44**	2.82	0.99	**1.32**	2.67	4.98
33	*Peristrophe bicalyculata*	24.29	**0.59**	2.41	1.53	**1.75**	2.29	5.56
34	*Phyla nodiflora*	30.00	**0.49**	1.62	1.89	**1.45**	1.54	4.87
35	*Phyllanthus fraternus*	58.57	**1.13**	1.93	3.68	**3.37**	1.83	8.88
36	*Physalis minima*	17.14	**0.27**	1.58	1.08	**0.81**	1.50	3.39
37	*Pteridium aquilinum*	12.86	**0.30**	2.33	0.81	**0.90**	2.21	3.92
38	*Sida acuta*	34.29	**0.47**	1.38	2.15	**1.41**	1.30	4.87
39	*Sida cordifolia*	40.00	0.76	1.89	2.51	2.26	1.80	6.57
40	*Solanum surattense*	32.86	0.70	2.13	2.06	2.09	2.02	6.18
41	*Solanum xanthocarpum*	44.29	0.74	1.68	2.78	2.22	1.59	6.59
42	*Sorghum halepense*	18.57	0.81	4.38	1.17	2.43	4.16	7.76
43	*Tephrosia purpurea*	62.86	1.33	2.11	3.95	3.97	2.01	9.92
44	*Tephrosia villosa*	38.57	0.84	2.19	2.42	2.52	2.07	7.02
45	*Tribulus terrestris*	34.29	0.53	1.54	2.15	1.58	1.46	5.20
46	*Tridax procumbens*	64.29	1.24	1.93	4.04	3.71	1.83	9.59
47	*Xanthium strumarium*	27.14	0.43	1.58	1.71	1.28	1.50	4.48

#: Total no of quadrate in which species occurred, F: Frequency (%), D: Density, A: Abundance, RF: Relative Frequency, RD: Relative Density, RA: Relative Abundance, IVI: Important Value Index

Table 38: **Important value Index (IVI) for shrub species in the buffer Zone**

S.no.	Scientific Name	F (%)	D	A	RF	RD	RA	IVI	H'
1.	*Adhatoda vasica*	24.29	0.51	2.12	2.98	3.18	3.96	10.13	3.00
2.	*Calotropis gigantea*	47.14	0.56	1.18	5.79	3.45	2.21	11.45	
3.	*Calotropis prosera*	58.57	1.24	2.12	7.19	7.69	3.97	18.85	
4.	*Capparis decidua*	10.00	0.17	1.71	1.23	1.06	3.21	5.50	
5.	*Carissa congesta*	15.71	0.33	2.09	1.93	2.03	3.91	7.87	
6.	*Cassia auriculata*	51.43	1.16	2.25	6.32	7.16	4.21	17.68	
7.	*Clerodendrum viscosum*	18.57	0.34	1.85	2.28	2.12	3.45	7.86	
8.	*Datura stramonium*	32.86	0.50	1.52	4.04	3.09	2.85	9.97	
9.	*Dhatura metal*	41.43	0.66	1.59	5.09	4.06	2.97	12.12	
10.	*Dodonaea viscosa*	7.14	0.24	3.40	0.88	1.50	6.36	8.74	
11.	*Grewia tenax*	22.86	0.30	1.31	2.81	1.86	2.46	7.12	
12.	*Indigofera oblongifolia*	17.14	0.36	2.08	2.11	2.21	3.90	8.21	
13.	*Ipomoea carnea*	40.00	1.03	2.57	4.91	6.36	4.81	16.09	
14.	*Lantana camara*	74.29	1.64	2.21	9.12	10.16	4.14	23.42	
15.	*Lawsonia inermis*	17.14	0.30	1.75	2.11	1.86	3.27	7.24	
16.	*Mimosa hamata*	38.57	0.56	1.44	4.74	3.45	2.70	10.89	
17.	*Nerium oleander*	27.14	0.60	2.21	3.33	3.71	4.14	11.18	
18.	*Nyctanthes arbor-tristis*	17.14	0.36	2.08	2.11	2.21	3.90	8.21	
19.	*Opuntia dillenii*	4.29	0.14	3.33	0.53	0.88	6.24	7.65	
20.	*Prosopis juliflora*	51.43	1.40	2.72	6.32	8.66	5.09	20.07	
21.	*Securinega virosa*	10.00	0.24	2.43	1.23	1.50	4.54	7.27	
22.	*Sesbania sesban*	40.00	0.54	1.36	4.91	3.36	2.54	10.81	
23.	*Thevetia peruviana*	34.29	0.59	1.71	4.21	3.62	3.20	11.03	
24.	*Vitex negundo*	27.14	0.57	2.11	3.33	3.53	3.94	10.81	
25.	*Zizyphus nummularia*	44.29	0.81	1.84	5.44	5.04	3.44	13.92	

26.	*Ricinus communis*	41.43	1.01	2.45	5.09	6.27	4.58	15.94	

S.no.	Scientific Name	F (%)	D	A	RF	RD	RA	IVI	H'
1.	*Adhatoda vasica*	24.29	0.51	2.12	2.98	3.18	3.96	10.13	3.00
2.	*Calotropis gigantea*	47.14	0.56	1.18	5.79	3.45	2.21	11.45	
3.	*Calotropis prosera*	58.57	1.24	2.12	7.19	7.69	3.97	18.85	
4.	*Capparis decidua*	10.00	0.17	1.71	1.23	1.06	3.21	5.50	
5.	*Carissa congesta*	15.71	0.33	2.09	1.93	2.03	3.91	7.87	
6.	*Cassia auriculata*	51.43	1.16	2.25	6.32	7.16	4.21	17.68	
7.	*Clerodendrum viscosum*	18.57	0.34	1.85	2.28	2.12	3.45	7.86	
8.	*Datura stramonium*	32.86	0.50	1.52	4.04	3.09	2.85	9.97	
9.	*Dhatura metal*	41.43	0.66	1.59	5.09	4.06	2.97	12.12	
10.	*Dodonaea viscosa*	7.14	0.24	3.40	0.88	1.50	6.36	8.74	
11.	*Grewia tenax*	22.86	0.30	1.31	2.81	1.86	2.46	7.12	
12.	*Indigofera oblongifolia*	17.14	0.36	2.08	2.11	2.21	3.90	8.21	
13.	*Ipomoea carnea*	40.00	1.03	2.57	4.91	6.36	4.81	16.09	
14.	*Lantana camara*	74.29	1.64	2.21	9.12	10.16	4.14	23.42	
15.	*Lawsonia inermis*	17.14	0.30	1.75	2.11	1.86	3.27	7.24	
16.	*Mimosa hamata*	38.57	0.56	1.44	4.74	3.45	2.70	10.89	
17.	*Nerium oleander*	27.14	0.60	2.21	3.33	3.71	4.14	11.18	
18.	*Nyctanthes arbor-tristis*	17.14	0.36	2.08	2.11	2.21	3.90	8.21	
19.	*Opuntia dillenii*	4.29	0.14	3.33	0.53	0.88	6.24	7.65	
20.	*Prosopis juliflora*	51.43	1.40	2.72	6.32	8.66	5.09	20.07	
21.	*Securinega virosa*	10.00	0.24	2.43	1.23	1.50	4.54	7.27	
22.	*Sesbania sesban*	40.00	0.54	1.36	4.91	3.36	2.54	10.81	
23.	*Thevetia peruviana*	34.29	0.59	1.71	4.21	3.62	3.20	11.03	
24.	*Vitex negundo*	27.14	0.57	2.11	3.33	3.53	3.94	10.81	
25.	*Zizyphus nummularia*	44.29	0.81	1.84	5.44	5.04	3.44	13.92	

26.	*Ricinus communis*	41.43	1.01	2.45	5.09	6.27	4.58	15.94	

#: Total no of quadrate in which species occurred, F: Frequency (%), D: Density, A: Abundance, RF: Relative Frequency, RD: Relative Density, RA: Relative Abundance, IVI: Important Value Index

S.no.	Scientific Name	F (%)	D	A	RF	RD	RA	IVI	H '
1.	*Acacia catechu*	12.86	0.20	1.56	0.79	0.78	1.54	3.11	3.97
2.	*Acacia leucopholea*	17.14	0.39	2.25	1.06	1.51	2.22	4.79	
3.	*Acacia nilotica*	27.14	0.47	1.74	1.67	1.84	1.72	5.23	
4.	*Acacia senegal*	7.14	0.13	1.80	0.44	0.50	1.78	2.72	
5.	*Adina cordifolia*	30.00	0.37	1.24	1.85	1.45	1.22	4.53	
6.	*Aegle marmelos*	27.14	0.30	1.11	1.67	1.17	1.09	3.94	
7.	*Ailanthus excelsa*	32.86	0.47	1.43	2.03	1.84	1.42	5.29	
8.	*Alangium salvifolium*	12.86	0.16	1.22	0.79	0.61	1.21	2.62	
9.	*Albizia lebbeck*	17.14	0.33	1.92	1.06	1.29	1.89	4.24	
10.	*Annona squamosa*	20.00	0.39	1.93	1.23	1.51	1.91	4.65	
11.	*Anogeissus pendula*	31.43	0.44	1.41	1.94	1.73	1.39	5.06	
12.	*Anogiessis latifolia*	27.14	0.41	1.53	1.67	1.62	1.51	4.80	
13.	*Azadirachta indica*	47.14	0.61	1.30	2.91	2.40	1.29	6.60	
14.	*Balanites aegyptiaca*	15.71	0.19	1.18	0.97	0.73	1.17	2.86	
15.	*Bauhinia purpurea*	10.00	0.17	1.71	0.62	0.67	1.69	2.98	
16.	*Bauhinia racemosa*	11.43	0.11	1.00	0.70	0.45	0.99	2.14	
17.	*Boswellia serrata*	4.29	0.06	1.33	0.26	0.22	1.32	1.81	
18.	*Butea monosperma*	60.00	0.99	1.64	3.70	3.86	1.62	9.18	
19.	*Carissa congesta*	17.14	0.31	1.83	1.06	1.23	1.81	4.10	
20.	*Cassia fistula*	55.71	0.96	1.72	3.44	3.75	1.70	8.88	
21.	*Cassia roxburghii*	24.29	0.46	1.88	1.50	1.79	1.86	5.15	
22.	*Cassia siamea*	41.43	0.83	2.00	2.56	3.24	1.98	7.77	
23.	*Cordia myxa*	31.43	0.40	1.27	1.94	1.57	1.26	4.76	

24.	*Dalbergia latifolia*	18.57	**0.27**	1.46	1.15	1.06	1.44	3.65
25.	*Dalbergia sissoo*	18.57	**0.31**	1.69	1.15	1.23	1.67	4.05
26.	*Dalbergia sissoo*	45.71	**0.79**	1.72	2.82	3.07	1.70	7.59
27.	*Delonix regia*	44.29	**0.54**	1.23	2.73	2.12	1.21	6.07
28.	*Dichrostachys cinerea*	2.86	**0.03**	1.00	0.18	0.11	0.99	1.28
29.	*Diospyros cordifolia*	38.57	**0.63**	1.63	2.38	2.46	1.61	6.45
30.	*Diospyros melanoxylon*	55.71	**0.83**	1.49	3.44	3.24	1.47	8.15
31.	*Emblica officinalis*	7.14	**0.11**	1.60	0.44	0.45	1.58	2.47
32.	*Erythrina indica*	5.71	**0.06**	1.00	0.35	0.22	0.99	1.56
33.	*Eucalyptus globolus*	21.43	**0.31**	1.47	1.32	1.23	1.45	4.00
34.	*Feronia limonia*	5.71	**0.09**	1.50	0.35	0.34	1.48	2.17
35.	*Ficus benghalensis*	15.71	**0.20**	1.27	0.97	0.78	1.26	3.01
36.	*Ficus glomerata*	12.86	**0.14**	1.11	0.79	0.56	1.10	2.45
37.	*Ficus religiosa*	12.86	**0.16**	1.22	0.79	0.61	1.21	2.62
38.	*Flacourtia indica*	2.86	**0.04**	1.50	0.18	0.17	1.48	1.83
39.	*Grewia tiliaefolia*	10.00	**0.16**	1.57	0.62	0.61	1.55	2.78
40.	*Holoptelea integrifolia*	20.00	**0.27**	1.36	1.23	1.06	1.34	3.64
41.	*Lannea coromandelica*	51.43	**0.74**	1.44	3.17	2.91	1.43	7.51
42.	*Mangifera indica*	11.43	**0.20**	1.75	0.70	0.78	1.73	3.22
43.	*Maytenus emarginata*	15.71	**0.40**	2.55	0.97	1.57	2.52	5.05
44.	*Moringa oleifera*	17.14	**0.30**	1.75	1.06	1.17	1.73	3.96
45.	*Morus alba*	24.29	**0.34**	1.41	1.50	1.34	1.39	4.23
46.	*Parkinsonia aculeata*	10.00	**0.13**	1.29	0.62	0.50	1.27	2.39
47.	*Phoenix sylvestris*	20.00	**0.33**	1.64	1.23	1.29	1.62	4.14
48.	*Phyllanthus emblica*	22.86	**0.31**	1.38	1.41	1.23	1.36	4.00
49.	*Pithecellobium dulce*	34.29	**0.51**	1.50	2.11	2.01	1.48	5.61
50.	*Polyalthea longefolia*	24.29	**0.51**	2.12	1.50	2.01	2.09	5.60

51.	*Pongamia pinnata*	47.14	0.80	1.70	2.91	3.13	1.68	7.71
52.	*Prosopis cineraria*	10.00	0.26	2.57	0.62	1.01	2.54	4.16
53.	*Prosopis juliflora*	52.86	1.13	2.14	3.26	4.42	2.11	9.79
54.	*Salvadora persica*	32.86	0.60	1.83	2.03	2.35	1.80	6.18
55.	*Samanea saman*	25.71	0.44	1.72	1.59	1.73	1.70	5.02
56.	*Saraca indica*	30.00	0.41	1.38	1.85	1.62	1.36	4.84

The field visit to the project area has been carried out to inventories the flora of the area. Secondary data has also been surveyed and a final inventory of the flora of the area is prepared. It is found that 26 tree species, 12 herbs, 13 shrubs 05-grass and 04 climber species are reported from the area. The analysis of the flora of the area is presented in **Table-1.1** and is represented in graph, **Figure 1.1.** Details of all plant species, their family, local name, habit and habitat is given in **Table 1.2**

Sl. No.	Habitat	No. of Species
1.	Trees	26
2.	Shrubs	12
3.	Herbs	13
4.	Climbers	04
5.	Grass	05
Total		**60**

Fauna were recorded in Core and Buffer Zone of Project Study Site

S.No	Scientific Name	Common Name	Status	Core area	Buffer Area
1	*Boselaphus*	Nilgai	Sch.III	-	+
2	*Presbytis entallus*	Langur	Sch.II	-	+
3	*Macaca mulatta*	Bandar	Sch.II	-	+
4	*Canis aureus*	Jackal/Siyar	Sch.II	-	+
5	*Lepus nigricollis*	Hare	Sch.IV	+	+
6	*Rattus rattus*	House Rat	Sch.V	+	+
7	*Herpestes*	Common Mongoose	Sch.II	-	+
8	*Funambulus*	Five Striped Palm	Sch.IV	+	+
Reptiles					
9	*Eryx johnii*	Red sand Boa	Sch.IV	-	+
10	*Mabuya carinata*	Brahminy Skink/	-	+	+

11	*Calotes versicolor*	Common Garden	-	+	+
12	*Hemidactylus*	House	-	-	+
13	*Naja naja*	Kobra	Sch.II	-	+
Amphibians					
14	*Rana tigerinus*	Indian Bull Frog	Sch.IV	-	+
15	*Rana limnocharis*	Indian cricket Frog	Sch.IV	-	+
Butterflies					
16	*Danaus chrysippus*	Plain Tiger	-	+	+
17	*Colotis eucharis*	Plain Orange-Tip	-	-	+
18	*Pieris canidia*	Indian Cabbage White	-	+	+
19	*Papilio polytes*	Common mormon	-	+	+
20	*Ixias marianne*	White –orange Tip	-	-	+
Arthropods and Mollusca					
21	*Buthus sp.*	Scorpion	-	-	+
22	*Periplaneta*	Cockroach	-	+	+
23	*Apis indica*	Choti Madhumakkhi	-	-	+
24	*Apis dorsata*	Badi Madhumakkhi	-	-	+
25	*Artema atlenta*	Spider	-	-	+
26	*Argiope arcuata*	Spider	-	-	+
Fish species					
27	*Cyprinus carpio*	Common carp	-	-	+
28	*Cirrhinus reba*	Reba Carp	-	-	+
29	*Channa punctatus*	Snakehead fish	-	-	+
30	*Ctenopharyngodon*	Grass Carp	-	-	+
31	*Catla catla*	Indian Carp	-	-	+
32	*Gambusia affinis*	Mosqito fish	-	-	+
33	*Labeo rohita*	Rohu	-	-	+

Bird's species recorded on project study area

S.No.	Scientific Name	Common Name	Status according to IWPA-1972	Core area	Buffer Area
1	*Anas platyrhynchos domesticus*	Domestic duck	-	-	-
2	*Actitis hypoleucos*	Common Sandpiper	Schedule IV	-	+
3	*Ceryle rudis*	Pied Kingfisher	Schedule IV	-	+
4	*Ardeola grayii*	Indian Pond Heron	Schedule IV	-	+

5	*Fulica atra*	Common coot	Schedule IV	-	+
6	*Ardea cinerea*	Grey Heron	Schedule IV	-	+
7	*Vanellus cinereus*	Red-wattled lapwing	-	-	+
8	*Ploceus philippinus*	Baya weaver	Schedule IV	+	+
9	*Francolinus pondicerianus*	Grey francolin	Schedule IV	+	+
10	*Milvus migrans*	Black kite	Schedule IV	-	+
11	*Upupa epops*	Common hoopoe	-	-	+
12	*Merops orientalis*	Green bee-eater	-	+	+
13	*Centropus bengalensis*	Lesser coucal	Schedule IV	-	+
14	*Psittacula krameri*	Rose-ringed parakeet	Schedule IV	-	+
15	*Halcyon smyrnensis*	White-throated kingfisher	Schedule IV	-	+
16	*Apus affinis*	House swift	-	-	+
17	*Columba livia*	Rock pigeon	Schedule IV	-	+
18	*Streptopelia enegalensis*	Laughing dove	Schedule IV	-	+
19	*Streptopelia decaocto*	Eurasian dove	Schedule IV	-	+
20	*Streptopelia tranquebarica*	Red Collared dove	Schedule IV	+	+
21	*Egretta garzetta*	Little egret	Schedule IV	-	+
22	*Bubulcus ibis*	Cattle egret	Schedule IV	+	+
23	*Corvus splendens*	House crow	Schedule V	-	+
24	*Dicrurus macrocercus*	Black drongo	Schedule IV	+	+
25	*Saxicoloides fulicata*	Indian robin	-	+	+
26	*Sturnus contra*	Asian Pied starling	Schedule IV	-	+
27	*Acridotheres tristis*	Common myna	Schedule IV	-	+
28	*Pycnonotus cafer*	Red-vented bulbul	Schedule IV	+	+
29	*Corvus macrorhynchos*	Jungle crow	-	-	

30	*Turdoides striatus*	Jungle babbler	Schedule IV	-	+
31	*Nectarinia asiatica*	Purple sunbird	Schedule IV	-	+
32	*Passer domesticus*	House sparrow	Schedule IV	+	+
33	*Motacilla maderaspatensis*	White-browed wagtail	-	-	+
34	*Motacilla flava*	Yellow wegtail	-	-	+
35	*Microcarbo niger*	Little cormorant	Schedule IV	-	+
36	*Himantopus himantopus*	Black wing Still	Schedule IV	-	+
37	*Saxicola caprata*	Pied Bush chat	Schedule IV	-	+
38	*Prinia socialis*	Ashy Warn- Warbler	Schedule IV	+	+
39	*Chrysocola ptes festivus*	Wood pecker	Schedule IV	-	+
40	*Amaurornis phoenicurus*	White-breasted waterhen	Schedule IV	-	+
41	*Dendrocitta vagabunda*	Rufous tree pie	Schedule IV	-	+

Indian sloth bear

Indian sloth bear (Melursus ursinus ursinus) (George Kearsley Shaw 1791)

- Length: 290 mm (11 in) in females and about 310 mm (12 in) in males
- Weight: 55 to 105 kg (121 to 231 lb). (Average)
- Habitat:.
- Distribution: forest cover, broad unfrosted swath in the south, where Mount Abu Wildlife Sanctuary.
- Food: Termites, Ants, honey, fallen fruits
- Life span:40 Year
- Status: Vulnerable (2016)

Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Ursidae

Habit

Sloth Bears subsist primarily on termites, ants, and fruits. Sloth Bears are the only species of bear adapted specifically for myrmecophagy. Sloth bears inhabit a wide variety of habitats, including grasslands, thorn scrub, sal (Shorea robusta) forest and moist evergreen forest

Like other myrmecphagous mammals, they have especially small home ranges compared to other ursids. The ratio of insects to fruits in the diet varies with the seasonal and geographical availability of each food.

Sloth Bears occupy a wide range of habitats on the Indian mainland including wet and dry tropical forests, savannahs, scrublands, and grasslands.

Fruits may comprise 70–90% of the diet during the fruiting season, whereas termites and other insects may comprise >80% of the diet the rest of the year. Sloth Bears typically breed May through July, and females give birth, usually to one or two cubs, from November to January.

In study area it was reported that Sloth Bears may also feed on food waste in nearby village area.

Habitat threats

Loss of forested areas outside parks and reserves poses a major threat to sloth bears because it causes population fragmentation, thereby leaving small, nonviable populations within the parks. A high degree of dispersion among protected areas with sloth bears is evident. Furthermore, habitat degradation outside the parks, caused by overgrazing, overharvest of forest products (cutting timber, lopping branches, collecting fruits and honey), establishment of monoculture plantations (e.g., tea,

rubber, teak, eucalyptus), expansion of agricultural areas, and settlement of refugees, diminishes natural food supplies for sloth bears and may result in reduced reproduction.

Use and Trade

Poaching of Sloth Bears for trade in parts has been reported (Servheen 1990, Garshelis et al. 1999a, Sathyakumar et al. 2012), but its current extent and impact on bear populations is uncertain. Compared to other Asian bear species, commercial trade in Sloth Bear parts appears to be relatively low (Burgess et al. 2014).

Threats

Major threats to this species are habitat loss or degradation (often related to human population growth), retaliation from human–bear conflicts, and (to a lesser degree). Habitat has been lost, degraded, and fragmented by overharvest of forest products (timber, fuelwood, fodder, fruits, honey), establishment of monoculture plantations (e.g. teak, eucalyptus), over-grazing, extraction of minerals, quarrying, settlement of refugees, and expansion of agricultural areas, human settlements, and roads (Santiapillai and Santiapillai 1990).

In some parts of the range, encounters between people and Sloth Bears have led to numerous serious human injuries and many deaths.

Conservation Status

Sloth Bears are listed in Appendix I of CITES and are completely protected under Schedule I of the Indian

Wildlife Protection Act of 1972.

Specific conservation recommendations

A pre-project assessment should be conducted in association with local wildlife authorities, to predict the response of Sloth Bears to a proposed project.

- Expand and update information on the distribution of sloth bears across their range
- Develop and implement a more reliable and consistent means of assessing relative sloth bear densities across their range
- Work shall be temporarily stalled in case an leopard wondering to the project site.
- Alert should be sounded in case any leopards are observed.
- In case of Man-animal conflict, the Wildlife department shall be intimated within 12 hours.
- The rest houses shall be fully covered and safe in case of any eventual attack by these animals to avoid any Man-animal conflict.
- Natural habitat will be preserved in the surrounding.
- The people living in the surrounding area and employee of the company would be motivated towards the protection of the animal. Motivation will lead to timely information to the concerned authorities about any threat to wild life or any cases of pouching/hunting.
- Boundary demarcation to keep away the animal from the project site.

Leopard (*Panthera pardus*)

Species Authority: Linnaeus, 1758

Length: 90-165 cm (Body)

Weight: 30-91 Kg. (Average)

Tail: 60-110 cm.

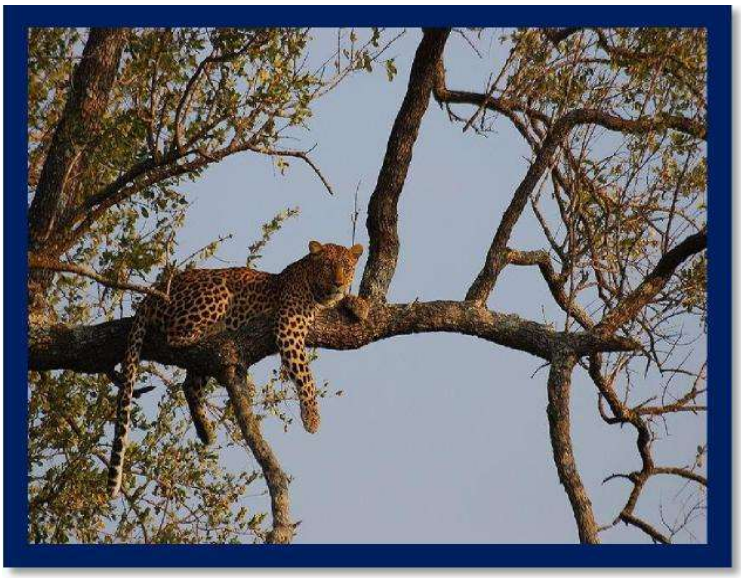
Habitat: Highest inner ranges of the Himalaya

Distribution: All regions of Himalaya.

Food: Wild sheep, bharal & ibex

Life span: 12-17 Year

Status: Near Threatened



Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Carnivora

Family: Felidae

Genus: Pantherinae

Species: Panthera

Sub-Species: *Panthera pardus*

3.1.2 Habit

Leopards are ambush predators, pouncing on their prey before it chance to react. They approach potential prey by crouching low to the ground, getting as close as 3 to 10 m to prey before pouncing. Leopards are not likely to chase prey after the first pounce. Once a prey item is captured, they immediately break the prey's neck, causing paralysis. After breaking the prey's neck, leopards asphyxiate them and carry the carcass to a secluded feeding location, typically in a nearby tree. They may also cover prey carcasses in leaves and soil. Their tremendous strength allows them to tackle prey up to 10 times their own weight.

Leopards generally prey upon mid-sized ungulates, which include small antelopes (Bovidae), gazelles (Gazella), deer (Cervidae), pigs (Sus), primates (Primates) and domestic livestock. They are opportunistic carnivores and eat birds (Aves), reptiles (Reptilia), rodents (Rodentia), arthropods (Arthropoda), and carrion when available. Leopards prefer prey that weigh between 10 and 40 kg. They are also known to scavenge from cheetahs (Acinonyx jubatus), solitary hyenas (Hyaenidae), and smaller carnivores as well. They are known to cache food and may continue hunting despite having multiple carcasses already cached.

Leopards are promiscuous, as both males and females have multiple mates. Females attract potential mates by excreting pheromones in their urine. Females initiate mating by walking back and forth in front of a male and brushing up against him or swatting him with her tail. The male then mounts the female while frequently biting her nape. Copulation last an average of three seconds with six minute intervals between each copulation bout. A single breeding pair may copulate up to 100 times per day for several days, during which time they share food resources.

Leopards are solitary, nocturnal carnivores. Although they sometimes hunt during overcast days, they are less diurnal in areas close to humans in comparison to uninhabited areas. They mark their territory with urine, feces, and claw marks and communicate with conspecifics by growling, roaring, and spitting when aggravated and purring when content. They also make a rasping cough to advertise their presence to conspecifics. Leopards are most comfortable in the lower forest canopy, where they often feed, and descend from the canopy head-first. They are comfortable in water and are adequate swimmers. When hunting, leopards move with a slow, crouching walk. They can run at bursts of up to 60 km/hour, jump more than 6 m horizontally and 3 m vertically. Leopards are facultative drinkers and obtain much of their water requirements from ingested prey. Leopard's have advanced vision and hearing, which makes them especially adept at hunting in dense forests.

3.1.3 Habitat

Leopards inhabit a variety of terrain. They are most populous in mesic woodlands, grassland, and forests. They also occupy mountainous, scrub, and desert habitats. They favor trees throughout their entire geographic distribution, and have been recorded at 5638 meters on Mt. Kilimanjaro.

3.1.4 Conservation Status

Leopards are declining in parts of their geographic range due to habitat loss and fragmentation, and hunting for trade and pest control. As a result, leopards are listed as "near threatened" on the IUCN red List of threatened Species and, Categorized as Schedule I species as per Wildlife Conservation Act, 1972. Common leopard included on CITES Appendix I.

3.1.5 Threats

Hunting of Indian leopards for the illegal wildlife trade is the biggest threat to their survival. They are also threatened by loss of habitat and fragmentation of formerly connected populations, and various levels of human–leopard conflict in human–dominated landscapes.

3.1.6 Conservation Measures

A pre-project assessment should be conducted in association with local wildlife authorities, to predict the response of Leopard to a proposed project.

- Work shall be temporarily stalled in case an leopard wondering to the project site.
- Alert should be sounded in case any leopards are observed.
- In case of Man-animal conflict, the Wildlife department shall be intimated within 12 hours.
- The rest houses shall be fully covered and safe in case of any eventual attack by these animals to avoid any Man-animal conflict.
- Natural habitat will be preserved in the surrounding.
- The people living in the surrounding area and employee of the company would be motivated towards the protection of the animal. Motivation will lead to timely information to the concerned authorities about any threat to wild life or any cases of pouching/hunting.
- Boundary demarcation to keep away the animal from the project site

3.3 Budget for Conservation of Scheduled species

Total budget for the Biodiversity Management & Wildlife Conservation Plan would be **Rs 6.5 lakh** only. The breakup of the budget is given below.

Table 3. 1Budget for conservation

S.N	Work Activity	Budget(Rs.)
1.	Habitat improvement programme	1,50,000/-
2.	Seed distribution among the villagers	50,000/-
3.	Afforestation program	2,50,000/-
4.	Awareness programme for "Biodiversity" conservation	1,00,000/-
5.	Boundary demarcation	1, 00,000/-
	Total	**6,50,000/-**

ZERO LIQUID DISCHARGE PLAN

Industrial Waste water (13.2 KLD) which will be treated in Effluent Treatment Plant (ETP Capacity: 15 KLD) followed by RO (Capacity: 1.5 KL/hr) & MEE (Capacity: 0.5 KL/hr). Treated water will be recycled in Gardening, Processing, equipment, floor washing, scrubber and flushing. Hence, Zero Liquid Discharge (ZLD) will be achieved & Domestic Waste water (2 KLD) will be disposed off into soak pit.

Effluent Treatment Scheme of Industrial waste water:

Process sequence and description for Effluent Treatment to achieve zero liquid discharge is given below:

1. ***Collection Tank***

Nature of effluent from different unit or plant (i.e. Process, Cooling Tower, Scrubber etc.) is varying according to process involved. This variation in parameter is affecting the treatment of effluent. Flow equalization is one of the most effective management procedures for constant and effective treatment. Steady state conditions are created when the influent flow is equalized over a defined period of time. With equalization/collection tank, you can provide a more uniform desired flow rate of effluent to different treatment processes.

2. ***Neutralization Tank***

Neutralization involves adjusting the pH of a liquid to approach the “neutral” pH of 7.0 (neither acid nor base).Generally, neutralization involves the use of an acid (pH less than 7) to lower the pH of a tank of basic (or alkaline) liquid (pH greater than 7), or the use of a base (or alkali) to raise the pH of a tank of acidic liquid. Neutralization using acidic or basic material generates suspended solids/sludge.

3. ***Filter Press***

Filter press is a machine, which performs filtration & separation of solid particle and water. A filter press consists of a series of chambers containing square or rectangular filter plates supported in a frame. Once the filter chambers are loaded with slurry, the plates are forced together with hydraulic rams or pressurized comprise air. Using this pressurized system slurry is filtered through filtration cloths.

4. ***Aeration Tank***

Filter water from filter press will comes to aeration tank. Aeration is the process of adding air into wastewater to allow aerobic bio-degradation of the pollutant components. It is an integral part of most biological wastewater treatment systems. Unlike chemical treatment which uses chemicals to react and stabilize contaminants in the wastewater stream, biological treatment uses microorganisms that occur naturally in wastewater to degrade wastewater contaminants.

5. ***Settling Tank***

Settling tank or clarifiers allow the microorganisms and other solids to settle after biological treatment. Settled sludge is periodically drained for dry and disposal.

6. Pressure Sand Filter

Pressure Sand Filter is a depth filter method, where particulates are captured within a porous body of material (i.e. Sand, etc). These filters are the most popular method for removal of turbidity from water.

7. Activated Carbon Filter

Activated Carbon filtering is a method of filtering that uses a bed of activated carbon to remove contaminants and impurities, using chemical adsorption. Activated carbon filters are generally employed in the process of removing organic compounds and/or extracting colour from water, thereby making the water suitable for discharge or use in manufacturing processes.

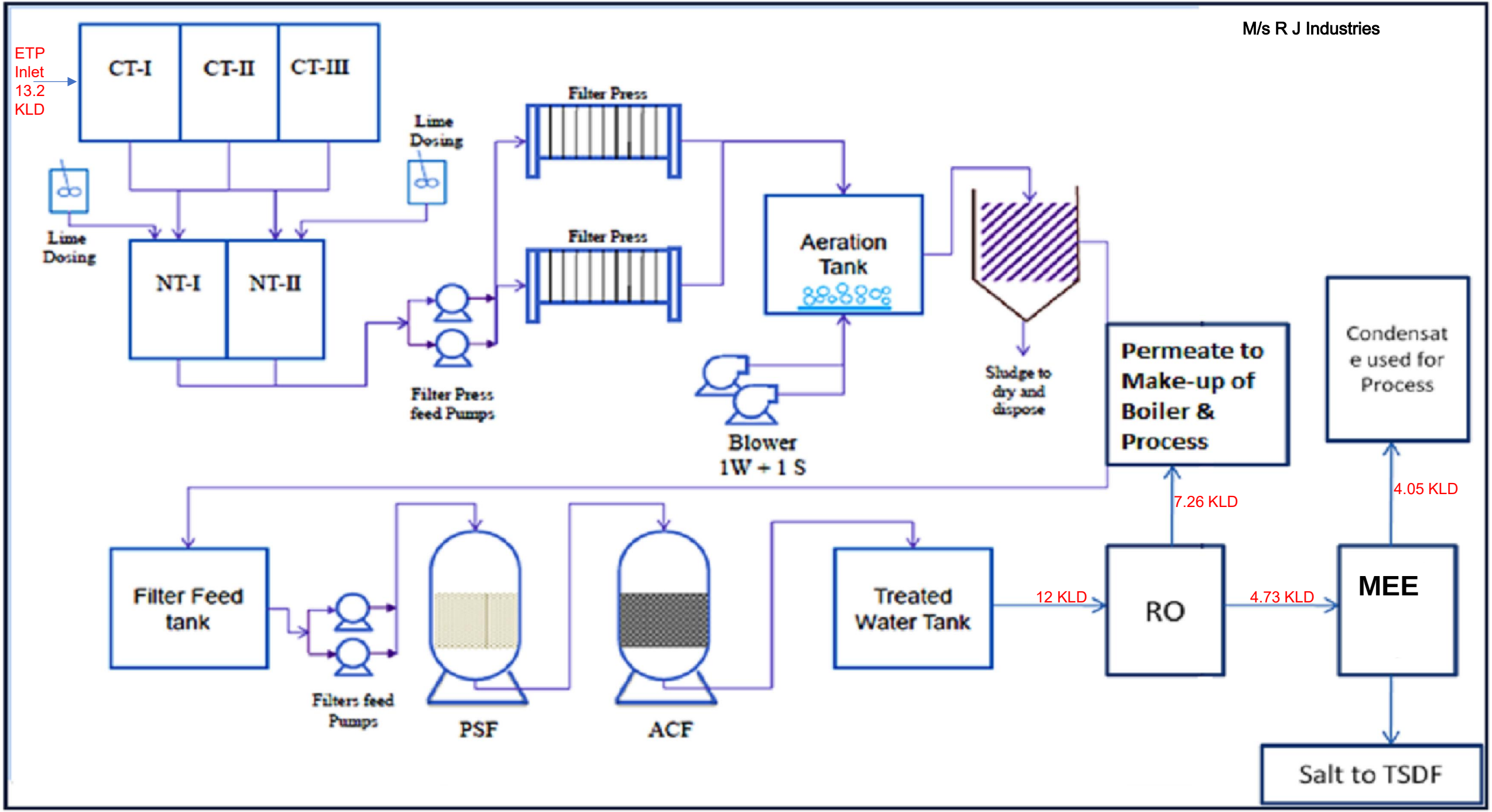
8. Reverse Osmosis

Reverse Osmosis, commonly referred to as RO, is a process where demineralization or deionization of water occurs by pushing it under pressure through a semi-permeable Reverse Osmosis Membrane. Reverse osmosis can remove many types of dissolved and suspended solid from water, including bacteria, and is used in both industrial processes and the production of potable water.

9. Multiple Effect Evaporator

Reject of reverse osmosis is having high solid contains. Separation of solids is done by heating media (i.e. Steam, Coal, Electric, etc) using evaporation method is called Evaporator. In a multiple-effect evaporator, water is boiled in a sequence of vessels. Evaporated water is condensed using cooling water and resent to ETP for further treatment.

M/s R J Industries



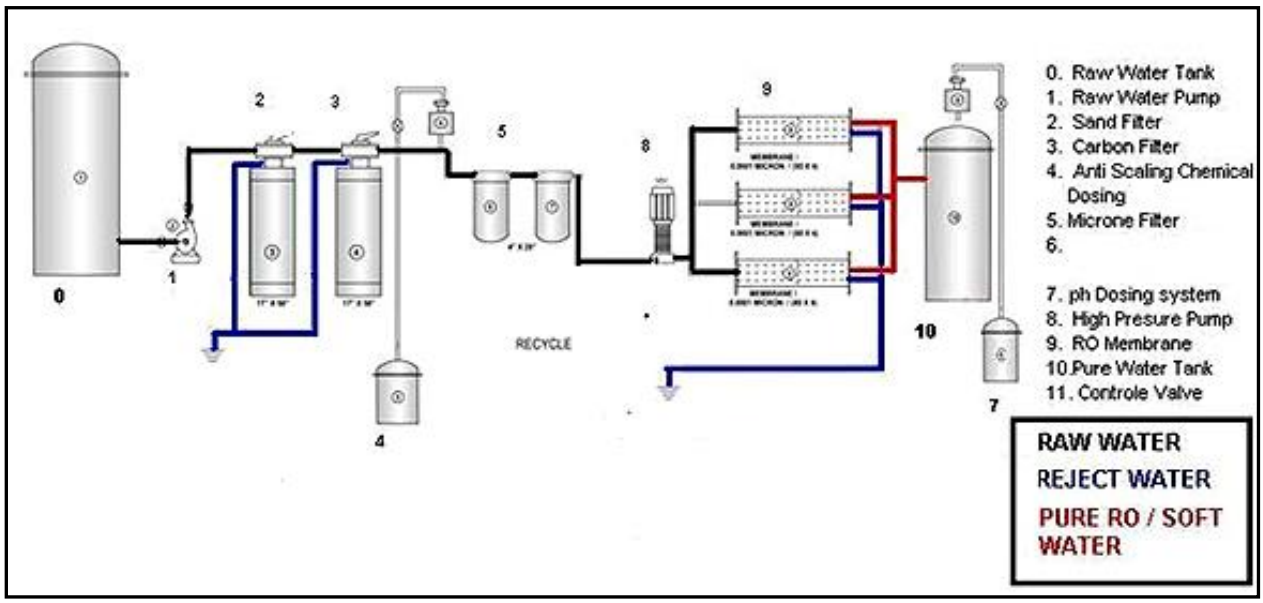


Figure 2 **Treatment Diagram of RO plant**

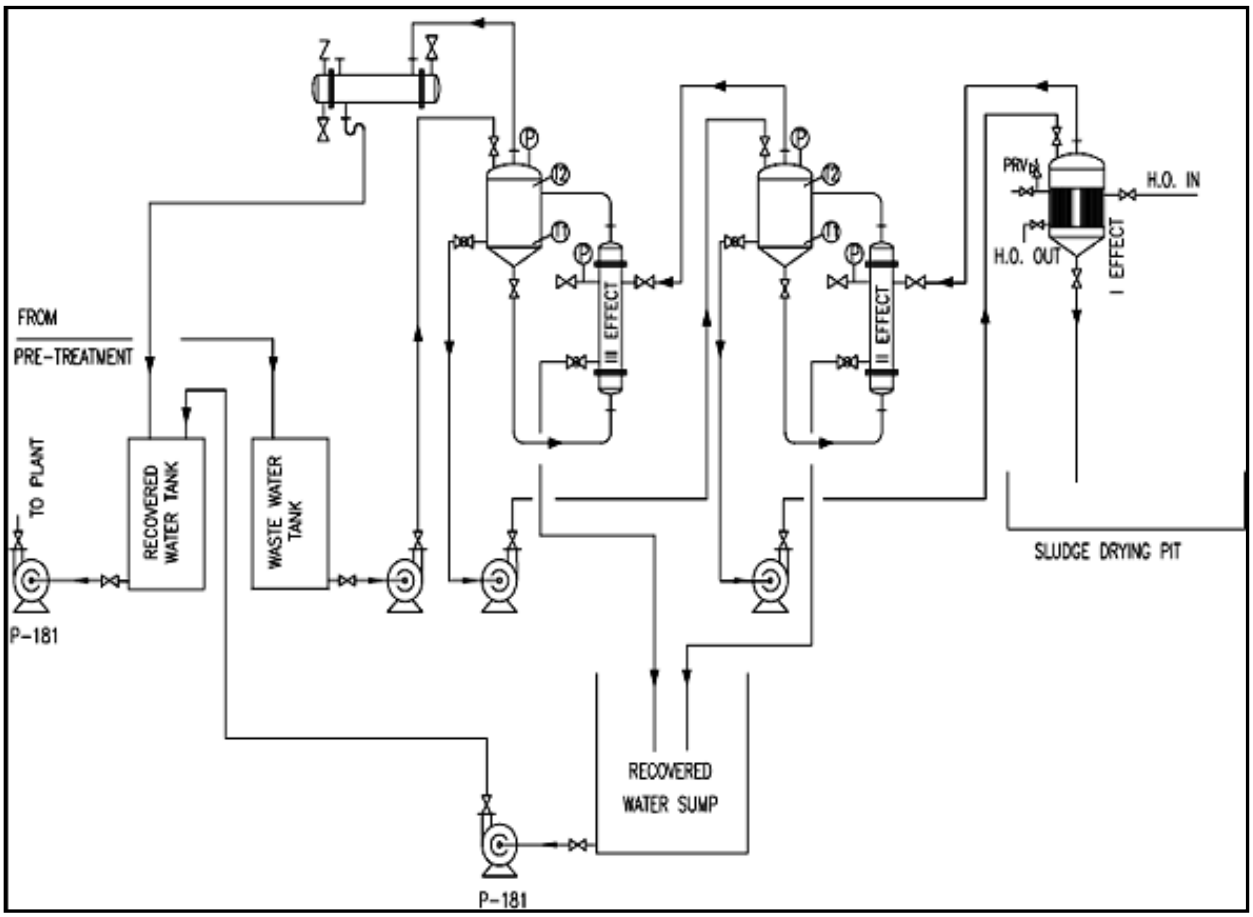


Figure 3 **Layout of MEE**

ANNEXURE_V

MEMORANDUM OF UNDERSTANDING

This Memorandum of understanding (MOU) is made on this 29th July 2020 at Abu Road, Rajasthan.

Between:

M/S. LAXMI GRANITE
ADD. – B-11,ROAD NO – 11, GROWTH CENTER,PHASE-2,MAVAL,ABU ROAD,RAJASTHAN
GST NO.:- 08AAGFL2477G1Z6

M/S. R.J. INDUSTRIES
ADD.:-S. NO.:2662/61, Vi- Bhujela, Te- Pindwara, Dist- Sirohi. Rajasthan.
GST NO.:- 08AAYFR6338Q1ZX

Both **M/S. LAXMI GRANITE** and **M/S. R.J. INDUSTRIES** may be herein after jointly referred to as the "parties" and individually as a "party".

Where as **M/S. LAXMI GRANITE** regularly produces water from granite cutting and shine as waste water of its existing products and **M/S. R.J. INDUSTRIES,** is in need of utilizing the said water for its production activities for manufacturing of S.O. Dyes.

Stamp Vendor Deep[illegible]h Kumar Lic.No.04/2011-12

Stamp Purchaser Name M/s R. S. Industries

Address Vill Bhayli Teh Pindwara

Register S.No 339 Date 29/9/2020

Stamp Value 100/- No — Purpose —

Auth.Person Name & Address —

Purchaser Sign. Stamp Vendor Sign.

AND WHEREAS **M/S. R.J. INDUSTRIES**, intends to purchase granite cutting and shine waste water from **M/S. LAXMI GRANITE** .

now the refer it is mutually agreed and declared by and between the parties as under:

1. **M/S. LAXMI GRANITE** would provide 15 KLD of granite cutting and shine waste water as per the specification agreed by the parties. Because of that **M/S. LAXMI GRANITE** will gain an advantage in its production rate.
2. **M/S. R.J. INDUSTRIES** would be responsible for providing their tankers to **M/S. LAXMI GRANITE** and would bear the transportation cost, insurance cost ect. And would take adequate preventive safety measures in ensuring that the goods safely reach their premises. And the filter it by add alum in waste water in storage tank.
3. **M/S. R.J. INDUSTRIES** would confirm to **M/S. LAXMI GRANITE** that they would use the our waste water by for production purpose only.

In witness whereof , this MOU has been executed and delivered by the duly authorized officers of the parties hereto.

For and on behalf of

M/S. LAXMI GRANITE

Partner

For and on behalf of

M/S. R.J. INDUSTRIES

Partner

MEMORANDUM OF UNDERSTANDING

This Memorandum of understanding (MOU) is made on this 29th July 2020 at Abu Road, Rajasthan.

Between:

M/S. SHRI RAM MARBLE AND MINERALS
ADD. – A151A, AMBAJI INDUSTRIAL AREA, ABU ROAD, SIROHI, RAJ. 307026
GST NO.:- 08AJAPM7505M1ZZ

M/S. R.J. INDUSTRIES
ADD.:- S. NO.:2662/61, Vi- Bhujela, Te- Pindwara, Dist- Sirohi. Rajasthan.
GST NO.:- 08AAYFR6338Q1ZX

Both **M/S. SHRI RAM MARBLE AND MINERALS** and **M/S. R.J. INDUSTRIES** may be herein after jointly referred to as the "parties" and individually as a "party".

Where as **M/S. SHRI RAM MARBLE AND MINERALS** regularly produces water from granite cutting and shine as waste water of its existing products and **M/S. R.J. INDUSTRIES,** is in need of utilizing the said water for its production activities for manufacturing of S.O. Dyes.

Stamp Vendor Deepesh Kumar, Lic.No.04/2011-12

Stamp Purchaser Name- M/s R.J. Industries

Address- Vi. Bhujela Teh. Pindwara

Register S.No- 3319 Date- 29/9/2020

Stamp Value- 100/- No- — Purpose- All

Auth.Person Name & Address-

Purchaser Sign. Stamp Vendor Sign.

AND WHEREAS **M/S. R.J. INDUSTRIES**, intends to purchase granite cutting and shine waste water from **M/S. SHRI RAM MARBLE AND MINERALS** .

now the refer it is mutually agreed and declared by and between the parties as under:

1. **M/S. SHRI RAM MARBLE AND MINERALS** would provide 15 KLD of granite cutting and shine waste water as per the specification agreed by the parties. Because of that **M/S. SHRI RAM MARBLE AND MINERALS** will gain an advantage in its production rate.
2. **M/S. R.J. INDUSTRIES** would be responsible for providing their tankers to **M/S. SHRI RAM MARBLE AND MINERALS** and would bear the transportation cost, insurance cost ect. And would take adequate preventive safety measures in ensuring that the goods safely reach their premises. And the filter it by add alum in waste water in storage tank.
3. **M/S. R.J. INDUSTRIES** would confirm to **M/S. SHRI RAM MARBLE AND MINERALS** that they would use the our waste water by for production purpose only.

In witness where of, this MOU has been executed and delivered by the duly authorized officers of the parties hereto.

For and on behalf of

M/S. SHRI RAM MARBLE AND MINERALS

M/S. SHRI RAM MARBLE & MINERALS

Partner

PROPRIETOR

For and on behalf of

M/S. R.J. INDUSTRIES

Partner

ANNEXURE-VI

Issues raised during public hearing, response and CER plan to address the same

S.No.	Public Questions /Comments and Suggestions	Proponent Responses	Time bound action plan
1.	**Narayan Lal Chaudhary village Bhujela** *He asked PP to provide information regarding the proposal dealing with the advancement of neighboring children, schools and solar energy for school education.*	*The installation of solar street lights in the villages and provision for scholarships in schools have been proposed in the project.*	• Rs- 12 Lakhs is marked for Scholarship and infrastructure development in nearby Govt. School • Rs 2.5 Lakhs is marked in CER for Solar lighting in Village • These commitment will be completed after successful operation of one year of the plant.
2.	**Mr. Sandeep from village Kacholi** *asked about the provision of training in industries*	*Industrial training camps are organized time to time*	• Rs 1.5 Lakhs is marked for the Skill Development programs / Industrial Training for nearby villagers • These commitment will be completed after successful operation of one year of the plant.
3.	**Mr. Praveen Kumar** from village Wadera asked about *the provision of employment in unit*.	*M/S RJ Industries said that on the basis of qualification and skill 50 percent in direct and 50% percent indirect employment will be provided in which local people will be given priority.*	Total 35 persons will be hired on regular basis. Out of which 50% will be hired from local area as per qualification and skills. This will be started from construction phase of the project.
4.	**Mr. Khetaram Chaudhary Village Sanawada** *He asked that ground water will be used in the proposed project* *He was asked about what are the provision of groundwater recharging in this situation.*	*The provision of reusing treated Strom water management will be done on project site*	• Rs 6.00 lakhs will be marked for rain water harvesting facilities

			• This will be started from construction phase of the project.
5.	**Smt Nanudevi resident village Swaroopganj** *She want to know about the proposals for economic-social development in nearby areas*	*The Socio economic development of the area in the proposed project various work proposals have been made. Local women will get employment especially in the canteen of the industry and priority will be given in employment for other small /domestic works.*	• The proposed project will provide Rs 16 Lakhs will be earmarked for CER activity • Total cost of the project is Rupees ~5.6 Corers. The implementation of CER will from the beginning of the project up to 7 years of working.
6.	**Mr. Gopalram Village Richdi** *Regarding employment of local youth in the project proposed*	*The local people will be provided employment on priority basis on their merit and skill.*	• This will be started from construction phase of the project
7.	**Mr. Kesar Singh Village Swaroopganj** *He asked due the establishment of this industry, the surrounding area there will be an adverse effect on the health of the residents*	*The measures have been proposed for the control of air and water pollution as per the norms with the setup of proposed project. With the said measures air and water pollution will be controlled as per the standards. Apart from this zero discharge technique will be established so that there will be minimum possibility of negative environmental impact on the nearby areas.*	• Capital investment in EMP for the proposed project will be ~189 Lakhs rupees out of which ~18 Lakhs INR will be spent only for pollution control • The EMP will be implement from the construction as well as operational phase of the project.

Proposed Synthetic Organic Chemicals Industry at Plot No. 2662/61, Village Bhujela, Tehsil Pindwara, District Sirohi, Rajasthan	***M/s R.J. Industries***.

CORPORATE ENVIRONMENTAL RESPONSIBILITIES (CER)

S.No.	**Activities**	**Cost (Rs lakhs)**
1	Infrastructure creation for village school	12
2	Skill Development programs in near village	1.5
3	Electrification Including Solar power	1.5
4	Avenue plantation in nearby villages	1.0
	Total	16