BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL (SZ) AT CHENNAI

APPEAL No. 29/2020

BETWEEN:

S.K. Vijay Kumar   . . . Appellant

AND

SEIAA, Karnataka & others   . . . Respondents

MEMO

The Respondent No. 1 is furnishing the following document for the kind perusal of this Hon'ble Tribunal.

Sl. No.	Document	Page No.
1	Copy of observations filed by 2nd Respondent to SEIAA, Karnataka	1-19

Place: Chennai

Date: 31/01/2023

THROUGH:

H.K. VASANTH, Advocate

Adv. For 2nd Respondent

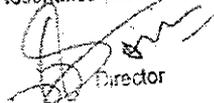No. 36, 1st Cross S.R. Nagar

Bangalore – 560 027

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OBSERVATIONS

For Resonance Laboratories Pvt. Ltd,

Director

List of Observations

SL. No.	Description
Observation I	Revised EMP incorporating proposed ETP along with flow chart in order to achieve ZLD
Observation II	Revised Land use and land cover analysis of study area based on high resolution satellite imagery
Observation III	Detailed damages and remediation measures caused due to this plant assessed as per Kyoto protocol

For Resonance Laboratories Pvt. Ltd.

Director

OBSERVATION I

For Resonance Laboratories Pvt. Ltd.

Director

Addendum to Chapter 10, Environmental Management Plan of EIA Report

The proposed project was presented in 241st SEAC meeting held on 23rd April, 2020. The committee did not agree for treatment of High TDS effluent in CETP and recommended that an in-house facility to be provided to treat and reuse the treated effluent and the plant to be ZLD compliant. The committee recommend that, issue of Environmental Clearance could be considered by SEIAA subject to submission of information to SEIAA related to revised EMP incorporating proposed ETP along with flow chart in order to achieve ZLD.

Revised Treatment Scheme for Wastewater Treatment:

Low & High TDS Effluent are generated from the manufacturing process. The Effluents are segregated at source. The Low TDS Effluent is mainly from boiler blowdown, cooling tower blowdown and washings. The high TDS effluent is from the reactors & solvent stripping process.

Previously, it was proposed that the low TDS effluent, Domestic sewage and R.O reject is treated in inhouse effluent treatment plant. High TDS effluent is sent to M/s. Pai & Pai Chemicals (I) Pvt. Ltd. (CETP) after primary treatment.

In the revised treatment scheme, no effluent will be sent to CETP. It is proposed that all the wastewater generated within the plant, both LTDS & HTDS effluents, will be treated in primary treatment followed by MEE and ATFD for HTDS effluent and LTDS effluent will be treated in biological ETP along with sewage and the treated effluent will be tertiarily treated in RO and the permeate will be used for cooling tower, excess if any will be used for flushing and washing. ZLD concept will be followed. No treated water will be discharged outside. Treatment Scheme for Wastewater is provided below.

The effluent HTDS and LTDS will be segregated at source and treated separately;

a. Treatment of High TDS Effluent

High TDS effluent is collected in a collection tank and the effluent is neutralized using Caustic Soda Lye or lime (Calcium Oxide) in neutralization tank. Effluent is then sent to Filter press, for removal of solids after primary treatment. The HTDS effluent after primary treatment and the filter press liquid will be subject to solvent stripper followed by evaporator. Evaporator condensate is sent to Low TDS ETP for further treatment along with sewage. HTDS concentrate is treated in ATFD. Salts / sludge collected from Filter press & ATFD is filled in bags & stored in the shed and sent to TSDF.

b. Treatment of Low TDS effluent

For Resonance Laboratories Pvt. Ltd.

Director

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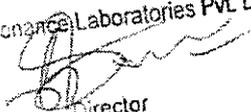
The Low TDS effluents comprising of Evaporator condensate from High TDS plant, boiler blow down, cooling tower bleed, washings, process LTDS and sewage is collected in a Collection sump. The effluent is neutralized using Caustic Soda Lye or lime (Calcium Oxide). Then the liquid effluent is treated in extended aeration system and is fed to settling tank. Further the effluent is filtered in multigrain filter and activated carbon filter. The treated effluent is contained in the polishing pond where the RO reject from fresh water treatment plant is added. This treated effluent will be further treated in RO and the permeate will be reused in the cooling tower water makeup, washing and flushing.

The secondary sludge from clarifier is used as manure. Online flowmeter is installed to measure the flow of HTDS. Online monitors for flow, TSS, BOD, COD and TSS will be installed for treated effluent, budgetary provision is made in EMP.
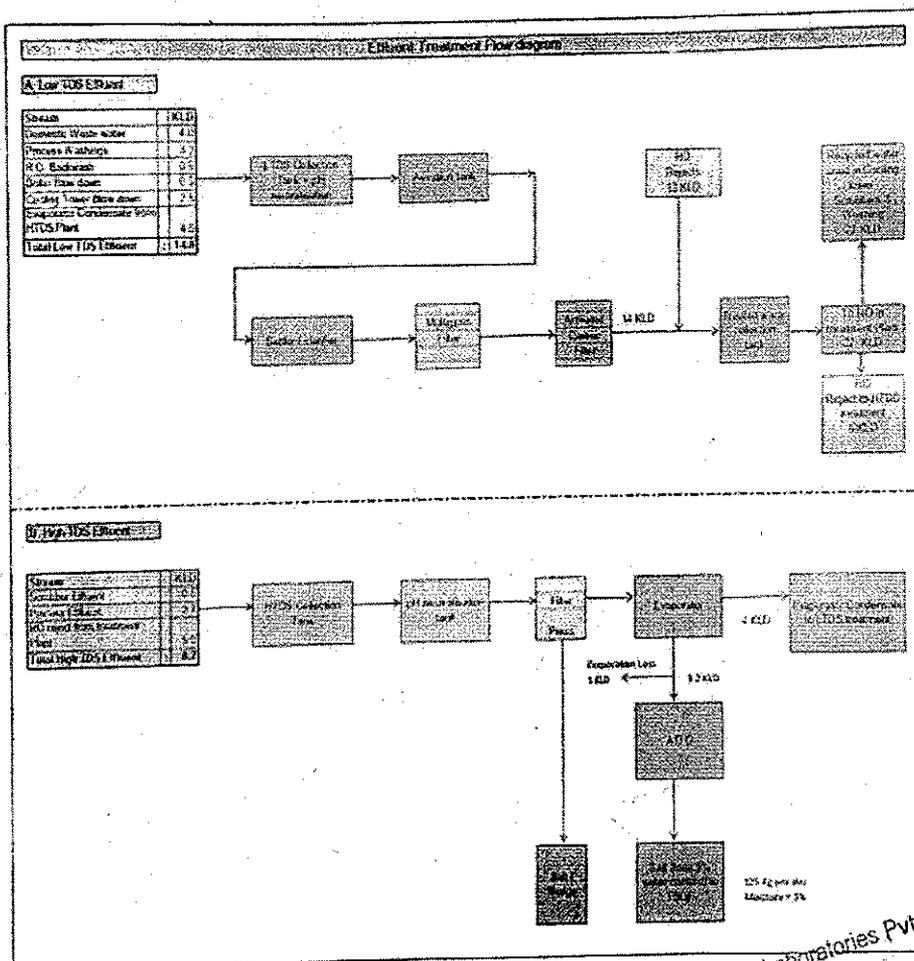

Figure: Effluent Treatment Flow Diagram
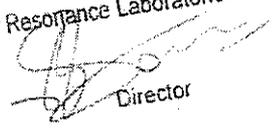
For Resonance Laboratories Pvt. Ltd.

Director

Figure: Water and Effluent Balance flow diagram

For Resonance Laboratories Pvt. Ltd.

Director

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Environmental Management budgetary provision

Revised EMP budgetary provision is as provided in the Table below:

Table: Environmental Management budgetary provision

Sl. No.	Description	Financial provision in Rs./annum
A	RECURRING COST	
1	Personal protection safety gadgets and health care	3,00,000
2	Tree plantation and landscaping measures (578 saplings @ Rs100 per each)	58,000
3	Environmental monitoring (air, noise, water and hazardous waste)	2,92,400
4	Maintenance of online monitoring system	1,00,000
5	Hazardous waste management & wastewater treatment operation and maintenance	40,00,000
	TOTAL	47,50,400
B	CAPITAL COST (proposed)	
1	Rainwater harvesting & groundwater recharging structures 10 nos @ Rs 10000	1,00,000
2	Tree plantation (580 saplings@ Rs300 per each)	1,73,500
3	Zero Liquid Discharge treatment plant for HTDS stream (Evaporator + Agitated Thin Film Drier + supporting boiler and auxiliary equipment)	50,000,00
	TOTAL	52,73,500

For Resonance Laboratories Pvt. Ltd.

Director

OBSERVATION II

For Resonance Laboratories Pvt. Ltd.

Director

REVISED LAND USE AND LAND COVER OF THE STUDY AREA

The proposed project was presented in 241st SEAC meeting held on 23rd April, 2020. The committee after discussion and deliberation decided to recommend the project for issue of Environmental Clearance subject to submission of information to SEIAA related to revised land use and land cover analysis of the study area based on high resolution satellite imagery.

Introduction:
Land-use refers to the way in which the land has been used by humans and their habitat, usually with accent on the functional role of land for economic activities. It is the intended employment of management strategy placed on the land-cover type by human agents, and/or managers. Land-cover refers to the physical characteristics of earth's surface, captured in the distribution of vegetation, water, soil and other physical features of the land, including those created solely by human activities; for example - settlements. The land use and Land cover are complex and largely continuous pattern and in order to understand its complexity, it is necessary to characterize them.

The satellite remote sensing, with its synoptic view and repetitively, is very helpful in order to cover large areas within a short time to characterize land use / land cover qualitatively. Remote Sensing is a powerful and accurate means of collecting data. The study of satellite imagery gives an excellent opportunity to monitor the quantitative extent of vegetation cover as well as qualitative changes due to changes in environment.

Methodology:
The Satellite data or Satellite Image downloaded from U.S. Geological Survey web site USGS Earth Explorer (www.earthexplorer.usgs.gov) and a land-use map was prepared. The following are the steps involved in preparation of Land use Land cover map.

The optimal season and latest cloud free data chosen for better discrimination of various land use types in the study are during the month of January. Accordingly, all the satellite scenes were selected on the USGS website by giving the geographic coordinates of the study area and acquired the satellite image. The satellite image selected is from Landsat 8 with ETM sensors with 11 bands. The bands from 1 to 7 have the spatial resolution of 30 m and the band 8 is having the spatial resolution of 15 m (panchromatic). The band 9 - 11 are thermal bands with spatial resolution of 100 m, but resampled to 30 m. We have used bands 1 - 7 for classification. The date of acquisition of the satellite image is 27 January 2020 with the path and row of 144 and 51, respectively. The satellite image thus acquired is subject to image enhancement including band combinations before subject to classification for better understand of the land use land cover classes. Histogram stretching which is one of the image enhancement techniques is applied to a 16-bit multispectral data. Then the subset of image was taken according to the boundary of the

For Resonance Laboratories Pvt. Ltd.

Director

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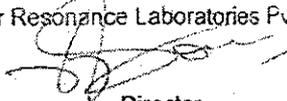
study area (10 km radius from the project site). The digital classification technique has been used for the extraction of the land use/land cover information from the imagery. Unsupervised classification method with nearest neighborhood algorithm was used to classify the satellite image. After the completion of the initial classification, the classified image was subject to post classification improvements. Here, the misclassified pixels were re-classified considering small areas of interest (AOI) or through interactive editing (onscreen visual interpretation) for improved accuracy. For onscreen interpretation, the satellite data was displayed in standard false color composite (FCC) format by assigning blue, green and red color of the monitor to the green, red and near infra-red bands of satellite data respectively, in ordered to discriminate the land use features clearly. Other band combination was also used in discriminating the different land use classes. Satellite image was subjected to pan sharpening to enhance the resolution by keeping the multispectral feature. For this the band 8 of the satellite data with 15 m resolution is merged with the multispectral image having bands 1 to 7 with 30 m resolution to get the enhanced image (Figure a). This enhanced image was used to identify the misclassified pixels and re-classify them into correct classes.

The classified output has a 'salt and pepper' appearance, because of the difference in reflectance value of each pixel. A low pass filter (3 x 3) was applied for smoothening of the output data and to minimize the 'salt and pepper' effect.

Land use - Land cover classification:
Five different land use/land cover classes have been identified in the study area and the image was classified accordingly. Table below shows the information about the extent of land use/land cover classes thus derived from the satellite image in the study area and represented in Figure b.

Following are the land use land cover classes in the study area with descriptions of each class.

a) Agriculture/Agricultural Plantations
This land cover class is the Agriculture and plantations of Coconut in the study area. These can be readily recognized in the satellite image with bright red tone and having definite structure with clear boundaries. Total area of this land cover is 14472.05 ha, which is 45.34% to the total area. This is largest land cover class in the study area.

b) Agriculture Fallow
This land use class is Agriculture land but currently not in cultivation. Out of total area, 7832.79 ha area comes under built-up land use land cover class. This is 24.98% of total area.

For Resonance Laboratories Pvt. Ltd.
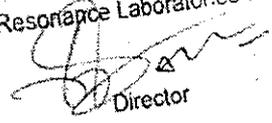
Director

c) Forest

This land cover class is the area that is covered by forests or the forest canopy or open woodland. This class comes under vegetation class and is 310.47 ha, which is 0.99% of total area.

d) **Wetland**

This land cover class is weedy vegetation shallow or marshy land around the lakes in the study area. Aquatic species dominate the stand with water hyacinth. This class covers 109.8 ha area with 0.35% to the total study area.

e) **Water body**

This category comprises areas with surface water, in the form of lakes and flowing as rivers. These are seen clearly on the satellite image in blue to dark blue or cyan color depending on the depth of water. These areas were identified and mapped as water bodies; this unit is spatially distributed in 228.93 ha area with 0.73% to the total area.

f) **Built-up Land**

This land use land cover class is defined as an area of human habitat developed due to non-agriculture use. The built-up land in 10 km radius from project site comprises of towns and villages including buildings, Industries, transport and communications utilities. Out of total area, 8,658.56 ha area comes under built-up land use land cover class. This is 27.61% of total area.

Table 3.21: Land use / land cover classes in the study area.

Sl.	Land use Land cover classes	Area (ha)	Area (%)
1	Agriculture/Agricultural Plantations	14218.73	45.34
2	Agricultural Fallow	7832.79	24.98
3	Forest	310.47	0.99
4	Wetland	109.76	0.35
5	Water body	228.93	0.73
6	Built up	8658.56	27.61

For Resonance Laboratories Pvt. Ltd.

Director

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SATELLITE IMAGE OF PROJECT SITE
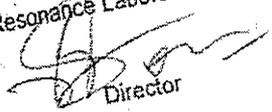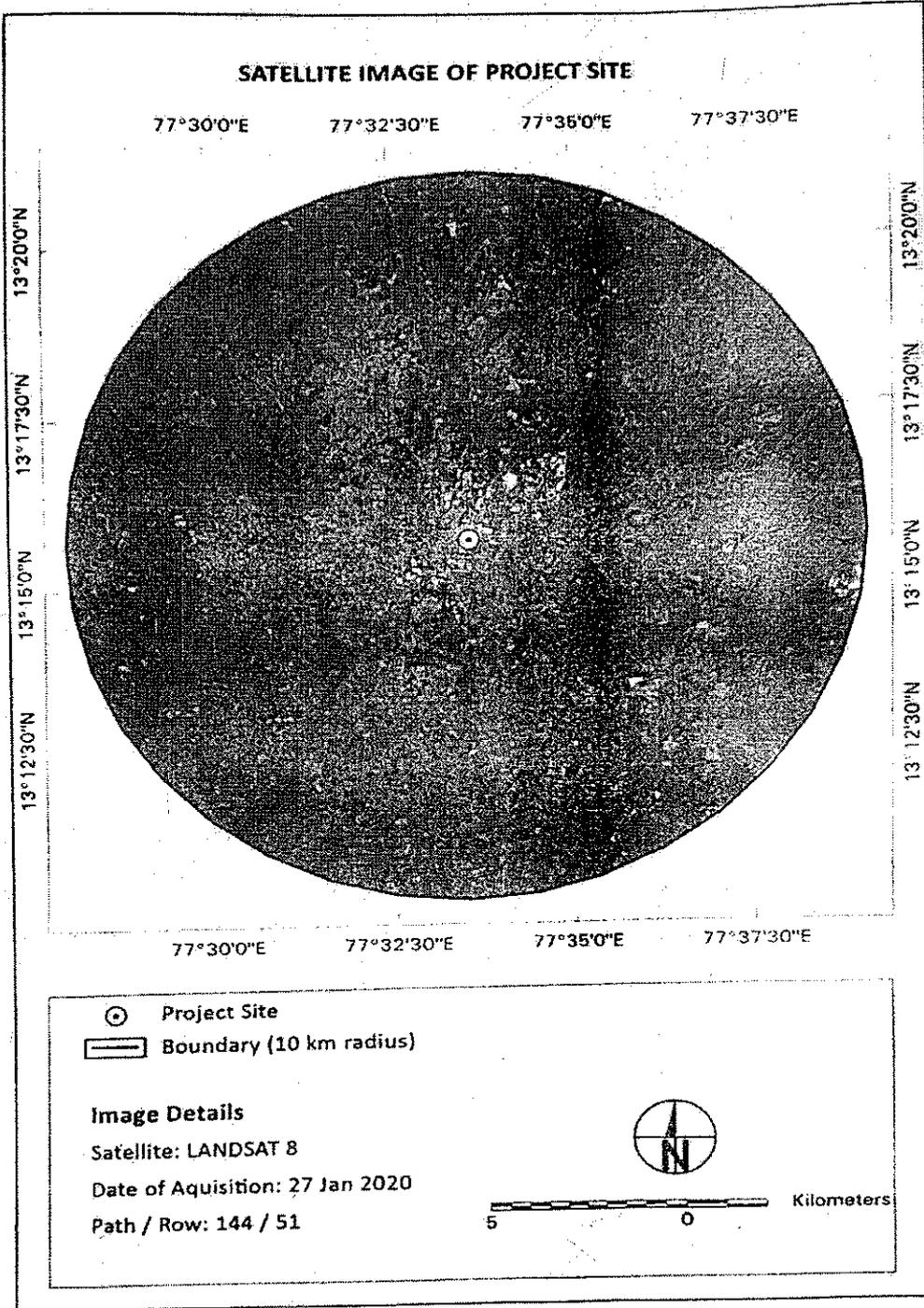

Figure a: Satellite image of project site

For Resonance Laboratories Pvt. Ltd.

Director

LAND USE LAND COVER MAP OF PROJECT SITE IN 10 KM RADIUS

Legend:

- ⊙ Project Site
- Boundary (10 km radius)
- Road network
- Rail network
- Agriculture/Agricultural Plantations
- Agricultural Fallow
- Forest
- Wetland
- Waterbodies
- Built up
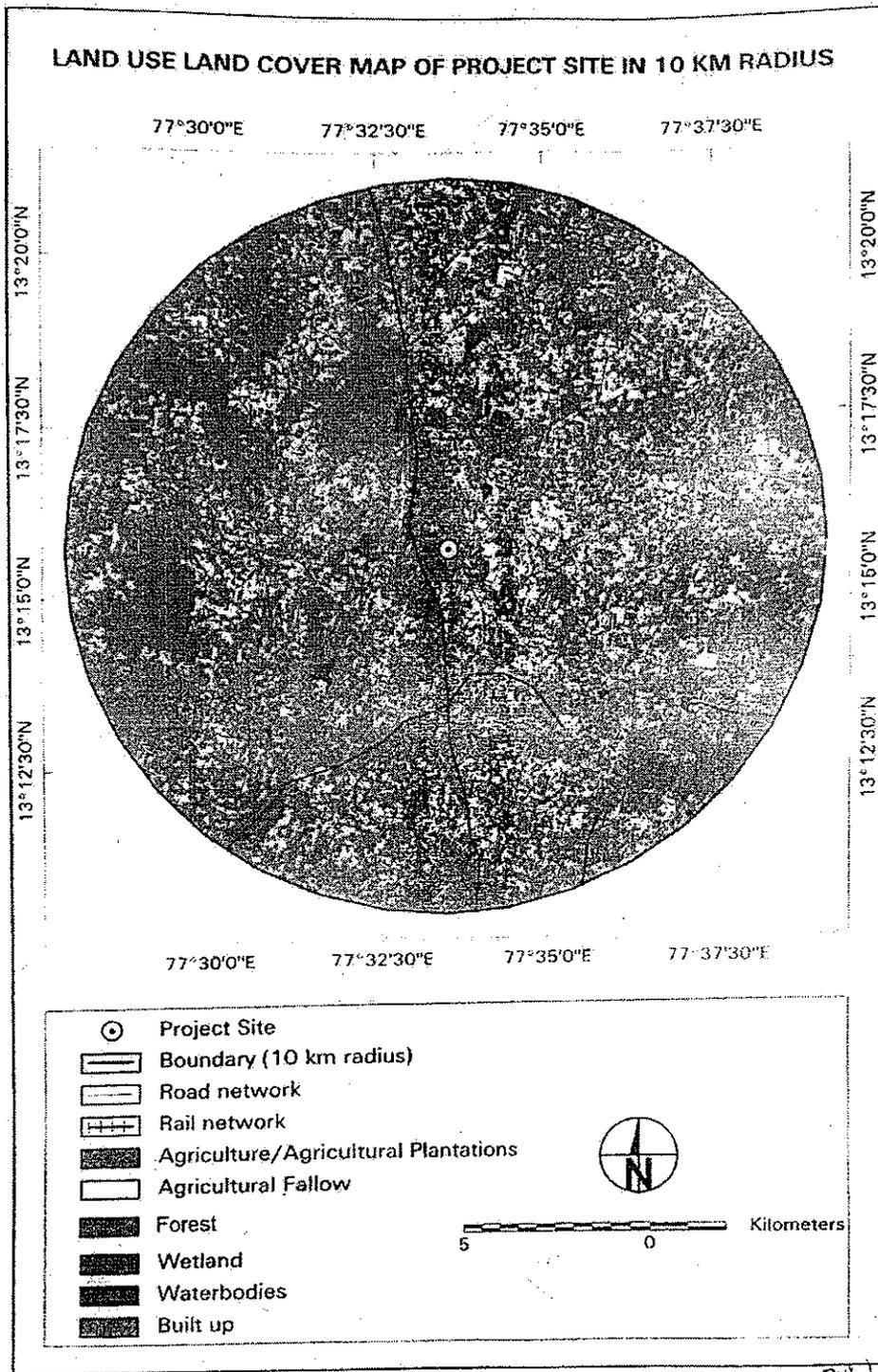
Figure b: Land use land cover map of project site

OBSERVATION III

For Resonance Laboratories Pvt. Ltd.

Director

ASSESSMENT OF DAMAGES AS PER KYOTO PROTOCOL:

The proposed project was presented in 241ˢᵗ SEAC meeting held on 23ʳᵈ April, 2020. The committee after discussion and deliberation decided to recommend the project for issue of Environmental Clearance subject to submission of information to SEIAA related to damages and remediation measures caused due to this plant assessed as per Kyoto protocol.

It is seen from the detailed EIA study, that the violation of M/s. Resonance Laboratories Pvt. Ltd. is only regulatory lapse and the damage to the environment is negligible as all the measures stipulated in the CFO are followed and all pollution control measures were in place during the violation period (2012-2019). However, based on the SEAC recommendation, assessment of damages has been carried out as per Kyoto Protocol is being submitted to SEIAA for consideration.

PREAMBLE

M/s. Resonance Laboratories Pvt. Ltd. is an existing industry established in the year 1992 and in operation from 1994. The unit had obtained EC, for 5 products with a capacity of 37.64 TPA, vide F. No. DEE 117 EPC 91 dated: 20.08.1992 valid up to 2012.

In 2012, the unit had gone for expansion from 5 to 9 products with a capacity of 10.29 TPA & obtained CTE & CTO.

The unit expanded from 5 products with a capacity of 37.64 TPA to 9 products with a capacity of 10.29 TPA and to 19 products of same capacity, without prior Environmental Clearance as per EIA Notification 2006 and its amendments. So, the project falls under violation category as per violation notification vide S.O. 804(E) dated 14ᵗʰ March 2017.

Hence, 2012 is considered as the base year for environmental/ecological damage assessment that is the year where the industry has violated the EIA Notification 2006, ie., started manufacturing new products without the Prior Environmental Clearance and made an economical gain.

Assessment of environmental / ecological damage has been carried out as per Kyoto Protocol for both construction phase & operation phase of the industry during financial year 2012-13 till 2018-19 and are presented under:

A. CONSTRUCTION PHASE:
No construction activity carried out from 2012 till date.

For Resonance Laboratories Pvt. Ltd.

Director

B. OPERATION PHASE:

Environmental / ecological damage has been assessed from financial year 2012-13 till 2018-19. The Kyoto Protocol is an international treaty which extends the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits state parties to reduce greenhouse gas emissions, based on the scientific consensus that (part one) global warming is occurring and (part two) it is extremely likely that human-made CO_2 emissions have predominantly caused it.

The Kyoto Protocol applies to the six greenhouse gases (GHG):
- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF_6).

Based on Air Quality data of the industry, all emissions have been considered as CO_2 equivalent for quantification. Thus, Carbon footprint assessment has been used to denote carbon accounting to quantify the damage caused during 2012 to 2019 from activities from this facility.
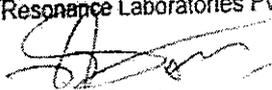
Carbon Footprint Calculations:

A carbon footprint is the total sum of greenhouse gas (GHG) emissions caused by an organization or industry. The first step towards managing GHG emissions is to measure them.

- **Step 1- Data collection:**
  Electricity and fuel consumption by the facility, has been considered for calculating CO_2e emissions from financial year 2012-13 till 2018-19. Below table provides the details of Electricity and Fuel consumed during financial year 2012-13 till 2018-19.

SL. No.	Particulars		Unit	Quantity
1	Average Electricity Consumed per Year		MWh	59.958
	Total Electricity consumed (During Financial Year 2012-13 till 2018-19)		Mega Watt hours (MWh)	419.706
2	Fuel Consumed (in terms of Terajoules)			
	a	HSD used in Boilers (200 kg/h and 600 kg/h) and Thermic Fluid Heater (1 Lakh kcal/h)	TJ	13.96
	b	HSD used in DG Sets of 100 kVA and 160 kVA	TJ	4.12

For Resonance Laboratories Pvt. Ltd.

Director

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	Total HSD consumed (During Financial Year 2012-13 till 2018-19)	**Terajoule** **(TJ)**	**11.578**

- **Step 2- Calculation Methodology:**
  - Carbon Footprint for Electricity = (Total Electricity consumed during Financial Year 2012-13 till 2018-19) X (Emission Factor)
    - = 419.706 x 0.85
    - = 356.75 tCO_2e

  - Carbon Footprint for HSD = (Total HSD consumed during Financial Year 2012-13 till 2018-19) X (Emission Factor)
    - = 11.578 x 74.1
    - = 857.93 tCO_2e

  - Total Carbon Footprint (tCO_2e) = (Carbon Footprint for Electricity + Carbon Footprint for HSD)
    - = (356.75 + 857.93)
    - = 1,214.68 tCO_2e

Emission factors considered are as under:
  - Emission factor for Electricity = 0.85 $tCO2e$ per MWh
    (Source: CO_2 emission factor database, version 06, CEA (Government of India), http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

  - Emission factor for High Speed Diesel = 74.1 tCO_2e per TJ
    (Source: IPCC 4th Assessment Report, https://www.ipcc.ch/assessment-report/ar4)

Carbon Disclosure Project (CDP), annually discloses carbon risk by pricing carbon internally. As per its 2016 & 2017 Annual reports, Lowest and Highest Carbon Pricing reported for India are USD 2.12 and USD 29.41 respectively. (Source: Source: Carbon Disclosure Project, 2017. *Carbon Disclosure Project, 2016 https://www.cdp.net/en).

Carbon pricing for India as reported in CDP were taken and Social Cost of Carbon (SCC) for India was obtained from Dynamic Integrated Climate-Economy model (referred to as the DICE model) (Source: William D. Nordhaus, Revisiting the Social Cost of Carbon, Yale University. November 21, 2016). The SCC value obtained for India is USD 10 per tCO_2e. Considering average USD value for last 10 years, the cost in terms of INR is Rs. 628.29.

Total SCC for Emissions by the facility = SSC value for India (in Rs.) x Total Carbon Footprint   in (tCO_2e)

For Resonance Laboratories Pvt. Ltd.

Director

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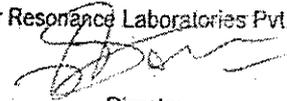
$$= 628.29 \times 1214.68$$

$$= Rs.\ 7,63,171.29\ \text{say Rs. 7.63 Lakhs}$$

All the necessary pollution control measures as per the stipulation of the KSPCB have been implemented. The existing activities have not led to contamination of ambient air, groundwater and soil as is evident from the baseline analysis reports.

It is seen from the detailed study that the violation of M/s. Resonance Laboratories Pvt. Ltd. is only regulatory lapse and the damage to the environment is negligible as all the measures stipulated in the CFO are followed.

Based on the above financial quantification of damage calculated as per Kyoto protocol during violation period and being a Socially & Environmentally responsible company, a Budgetary allocation with respect to remediation, natural and community resource augmentation plan is provided in the Table below.
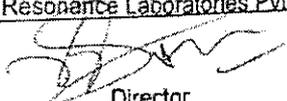
Table: Budgetary allocation

Sl. No.	Description	Financial provision in Rs. Lakhs
1	Natural resource augmentation	7.63
2	Community augmentation	1.75
		9.38 say 10

Rupees Ten Lakhs Only

The SEAC during the appraisal has recommended that Rs.15 lakhs be earmarked for natural resource and community augmentation plan. Since Resonance Laboratories Private Ltd., has under gone loss during the previous years (as detailed in Chapter 13 of EIA report) and the violation is only a regulatory lapse it is requested to allow us to make budgetary provision of Rs. 10 lakhs based on the above calculations. The details of the plan with respect to remediation of natural resource and community augmentation action are as under:

Table: Natural resource & Community Augmentation Plan

Sl. No.	Activity	Fund Allocated (Rs. in Lakhs)	Time line (year wise)
1	Augmenting the resource in government schools	8	2020-21
2	Providing solar street light within the factory premises	2	2020-21
	Total	Rs. 10 Lakhs	

For Resonance Laboratories Pvt. Ltd.

Director

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