BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

Original Application No. 519/2016

In the matter of:

Hardeep Singh & Others   ...Applicant

Versus

SDMC & Ors.   ...Respondents

NDOH :20.07.2020

INDEX

Filed by:

(Dr. M.P. George),
Sr. Scientist.
Delhi Pollution Control Committee

New Delhi:
Dated: 13.07.2020.

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ACTION TAKEN REPORT, BEING FILED ON BEHALF OF DELHI POLLUTON CONTROL COMMITTEE (DPCC)IN COMPLIANCE OF THE ORDER OF THIS HONORABLE TRIBUNAL, DATED 01.08.2019 READ WITH ORDERS DATED 15.11.2019

Most Respectfully Showeth:

Directions of this Hon'ble Tribunal

1. That, this Hon'ble Tribunal in its Order dated 01.08.2019, was pleased to direct that DPCC undertake gap analysis and set up sufficient number of monitoring stations and acquire such number of equipments as may be necessary. Further, this Hon'ble Tribunal in its subsequent order dated 15.11.2019 reiterated the direction dated 01.08.2019 and pleased to direct that by 31.01.2020 requisite equipments will be procured and monitoring stations will be set up by that time. Other stakeholders to also do similarly.

2. Further vide order dated 15.11.2019 an action taken report was to be filed before this Hon'ble Tribunal on the aspects set out above.

Steps required to be taken as per the orders of this Honble Tribunal

3. Thus in essence, the answering respondent was to take steps for;
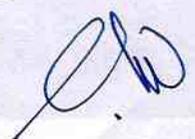
(a) *Setting up a number of monitoring stations and acquire requisite number of equipment*

(b) *Compile and publish statistical data relating to noise pollution*

(c) *Prescribe interim scale of compensation pending finalization of the same*

Action taken

4. It is most respectfully submitted that the following actions have been taken by the answering respondenttoput in place a state of the art Ambient Noise Monitoring Network in Delhi:

(a) ***Installation of the additional Noise Monitoring System***

That the already installed 5 noise monitoring stations across Delhi from the year 2013 were proving to be inadequate, considering the spurt in activities in the spread of urban and industrial areas in Delhi. Further it was felt that all the 4 categories of zones based on the ambient air quality standards in respect of noise as per the Noise Pollution (Regulation and Control) Rules, 2000 were not appropriately covered by the existing stations. So while carrying out the gap analysis, it was decided to increase the number of stations manifold to cover the major industrial and traffic corridors and to cover all the 4 zones as *Industrial Area, Commercial Area, Residential Area and Silence Zone* categorized as above under the Rules. Accordingly, as a step in that direction 26 additional locations were selected to cover the aforesaid zones for installation of noise monitoring stations. Out of the 26 additional locations, 7 are in residential, 9 in commercial, 5 in industrial areas and 5 in silence zones. The details of the aforesaid locations are submitted below:

SN	Location Name	ZONE / AREA
1	Mahatma Gandhi Institute for Combating Climate Change, Bakthawarpur Road, Bakoli,Alipur Delhi-110036	Silence Zone
2	Industrial Training Institute, Jahangirpuri, Delhi-110033	Residential Area
3	Industrial Training Institute, Narela, New Delhi-110040	Industrial Area
4	Sonia Vihar Water Treatment Plant (DJB), Sonia Vihar, New Delhi-110094	Residential Area
5	Mother Dairy Plant, 30, New PatparGanj Road, Block D,Patparganj, New Delhi-110092	Industrial Area
6	Satyawati College, Ashok Vihar, Phase- III, Delhi-110052	Residential Area

7	PGDAV College, Sriniwaspuri Nehru Nagar, New Delhi-110065	Residential Area
8	National Institute of Tuberculosis & Respiratory Diseases, Sri Aurobindo Marg, New Delhi-110016	Silence Zone
9	Chaudhary BramprakashAyurvedic Hospital, Najafgarh, Delhi-110073	Silence Zone
10	Industrial Training Institute(Shahdara), VivekVihar, Delhi-110095	Residential Area
11	IARI PUSA, PUSA institutional Area, Opposite Lohamandi,Naraina, Delhi-110028	Industrial Area
12	Major Dhayanchand National Stadium,India Gate, New Delhi-110002	Commercial Area
13	J.L.N Stadium PragatiVihar, New Delhi-110003	Commercial Area
14	Dr. Karni Singh Shooting Range, AsolaSurajKund Road, Tuglakabad, New Delhi-110044	Commercial Area
15	National Institute of Malaria Research Sector 8, Dwarka, New Delhi-110077	Commercial Area
16	Mundka Metro Residential Colony, Mundka, Delhi-110081	Residential Area
17	Shaheed Sukhdev College of Business Studies, PSP Area-IV, Dr. K.N. Katju Marg, Sector-16, Rohini, Delhi-110089	Silence Zone
18	Delhi Institute of Tool Engineering, Wazirpur Industrial Area, Wazirpur, Delhi-110052	Industrial Area
19	DITE, Okhla Industrial Area, Block A, Okhla Phase-II, Okhla Industrial Area, New Delhi-110020	Industrial Area
20	MaharshiValmiki Hospital, Bawana Industrial Area, New Delhi-110039	Silence Zone
21	ISBT Building, Kashmere Gate, Delhi-110006	Commercial Area
22	SDMC, Primary School, Krishna Market, G Block, Lajpat Nagar, New Delhi-110024	Commercial Area
23	EDMC Zonal Office , OppsiteShyamlal College, Shahdara, Delhi- 110032	Commercial Area
24	MCD Primary School, Gali No37, RegarPura, Karol Bagh, New Delhi-110005	Commercial Area
25	IMD, Lodhi Road, New Delhi- 110003	Residential Area
26	Connaught Place, New Delhi- 110001	Commercial Area

In addition to this mobile monitoring/stations will be made using more portable devices as also set out hereinafter. The new stations above are in addition to those already in place for the purpose.

(b) **Constitution of an expert Committee for procuring equipments of latest technology**

Further considering the vast improvements made in the area of noise measurement technology and equipments over the years, it was decided to take the opinion of the domain experts in the field so that the

equipments of latest technology with specifications as published by the International Standards Laboratories are procured for the large network being created. Accordingly, a Committee of experts comprising of Principal Scientist National Physical Laboratory (NPL), Scientist-D CPCB, AGM (Environmental Engineering) NTPC and DPCC was constituted and several meetings were held in the year 2019. The detailed technical specifications were finalizedon 18.11.2019 and accepted on 28.11.2019. A copy of the same is annexed as **Annexure-1**. It is pertinent to mention that the process of identifying appropriate technology and developing latest technical specifications of various equipments to be deployed as part of the network took some time as several references to international publications had to be made and wide consultations amongst experts were required to be carried out to arrive at the detailed technical specification of the equipments and the overall architecture of the noise monitoring network.

(c) *Procurement of latest equipemments*

(i) It is most respectfully submitted that after finalization and acceptance of the various components of the Noise Monitoring Network and technical specifications of equipments,tender were floatedimmediately on 28.11.2019. The last date for the submission of tenders was fixed for 13.12.2019.The pre-bid meeting was held on 05.12.2019. As per the tender document the execution of the project was required to be carried out by 31.01.2020.Though initially eleven prospective bidders participated in the pre-bid meeting, majority of them were of the view that the timelines fixed in the tender are stringent considering the festival season in international market from where many things were to be sourced.However, keeping in mind the urgency and time lines, further extension of time for submission of bids was not considered, so that the project could be completed at an early date. DPCC finally received five bids and the Evaluation Committee after scrutinising the bids,found that none of the bidders met the requirements and thus, DPCC decided for re-tendering. It is submitted that the delay caused at this stage due

to un-responsive and un-qualified tenders and which fact was beyond the control of DPCC.

(ii) Due to the poor response by the qualified agencies during the first tendering process, certain pre-qualification requirementswere modified and the project was re-tendered on 18.12.2019 and the last date for submission of bids was kept on 09.01.2020 i.e after three weeks, considering the complexity involved in the project. The bids were opened on 09.01.2020, and after detailed technical and financial evaluation of the bids, the work of 'Supply, Installation, Commissioning, Operation and Maintenance' of Ambient Noise Monitoring Station Network was awarded to M/s ACOEM Ecotech Industries Pvt. Ltd at a cost ofRs. 3,76,24,800 (Three Crores Seventy Six Lakh Twenty Four Thousand Eight hundred Rupees), including O&M for ten years. Copy of the work order is annexed as **Annexure-2**.Considering the various activities involved in the project which include import of certain critical items, fabrication and installation at 26 locations spread throughout Delhi,60 days execution period was granted to the agency. The agency submitted the acceptance of the work order on 25.02.2020 and the execution was initiated immediately.

(iii) It is submitted that by the last week of February, 2020 the Corona-19 pandemic was spreading fast in Europe and all activities there had come to stand still. However, constant follow up was made with the agency to ensure the urgent supply of the *IEC-61672-1:2013traceable Class-I Noise Monitoring system including integral components such as microphone, pre amplifier and other specialized accessories* by the Original Equipment Manufacturer (OEM) located in France by giving it top priority to complete the project at the earliest. The assembly of critical equipments were expedited and the shipment of the equipmentsto India by first week of March, 2020 was planned.However,due to the cancellation of international flights, these equipments could only be dispatched to Mumbai by third week of March, 2020. However, the custom clearance of the goods and the dispatch from Mumbai to Delhi got delayed due to

lockdown effective from 22.03.2020.Finally, the consignment was delivered at Delhi to the agency on 30.04.2020.

(iv) The agency was asked to complete the activities on the domestic front simultaneously so as to complete the installation without further loss of time as soon as the equipments are received. Accordingly,the fabrication of mast and integration of enclosure for noise monitoring terminal (NMT) has been undertaken by sub-vendors at different industrial areas of Ghaziabad and GautamBudh Nagar. Both the sub-vendors were located in containment zones and the entire process also got delayed from the scheduled timelines. With the gradual opening of various zones and activities, critical support was provided to the agency to complete the various tasks and start installation at the 26 identified locations by the first week of May, 2020. The installation process of 20 stations could be completed by 31st May, 2020 with seamless coordination with various agencies and sub-vendors. In the rest of the stations, the installation were taken up in subsequent weeks.

(v) As part of the contract, the agency has provided the central server/central receiving station along with the application software for analysis of environmental noise. The application software has the following features:

- *Measurement of Overall Leq(equivalent level of noise over a particular time period) and statistical indices over selected time periods.*

- *Measurement of Peak, Lmin, Lmax, Slow, Fast, Impulse, SEL, etc. levels.*

- *Identification of Loudest and quietest periods during a day.*

- *Calculation of the L_d&$L_n$by day, week, month.*

The NMS that has been installed provides a comprehensive but easy to use 24x7 noise monitoring solution for long term monitoring application. The NMS are unmanned, weatherproof outdoor remote terminals and require minimum human

interface.The system could be remotely checked for multiple frequency calibration.

(vi) DPCC has also procured 05 Hand held integrating-averaging sound level meters Type-1 IEC61672-1 compliant, in October, 2019. These meters are being used as mobile ambient noise monitoring stations. They can prove very useful to cover areas where reports are received or where larger areas need to be monitored. It is understood that these mobile units/stations are in addition to those being used by other agencies, like the Police, who have also procured substantial number of mobile units.

(d) *Data Analysis, compilation and publication*

(i) The stations were put on the network through the central receiving serverhosted at DPCC officeon 1ˢᵗJune, 2020 after testing, calibration and validation of data and accordingly data ofambient noise measurements has been generated since 1ˢᵗ June, 2020. Based on the measurements since then, an analysis of the data generated for June, 2020 has been prepared which is annexed as **Annexure-3**. On analysis of the data carried out by DPCC, it has been observed that in case of 5 silence zones, the average noise levels in both day and night have exceeded the standards prescribed under the Noise Rules, 2000. Similarly, in case of 7 residential and 9 commercial areas the recorded noise levels in both day and night times have exceeded the standards. Only in the 5 industrial areas, the measured noise levels have not crossed the standards prescribed for industrial areas. The data will be moderated in coming months to arrive at baseline levels and averaging out impact of additional sources.

(ii) It is further submitted that subsequent to the aforesaid information obtained from the analysis of the data, it has been decided to identify the local sources of noise emissions so as to take appropriate corrective action. Teams have been constituted to visit the areas around these stations where the measurements are exceeded the prescribed standards and assess the sources of noise emission. Hand held integrating-averagingsound level meters Type-1 IEC61672-1 compliant, which were procured in October,
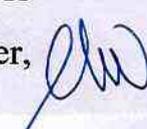
2019have been provided to the inspecting teams to enable them to identify the local sources of noise emission. Based on the reports of the inspecting teams, further action will be taken as a constant process.These reports will be forwarded to the authorities prescribed under Noise Rules for the appropriate action including prevention of noise emissions at these local sources.

(iii)   It has been further decided that every week the data received at the central station will be analysed and the same will be shared with the prescribed authorities, concerning the exceeding grades of noise level, supported duly by analysis of the data for further necessary action for stoppage of the source.

(e) *Interim Compensation*

It is most respectfully submitted that the Central Pollution Control Board has submitted a report on the scale of compensation to be levied for the violation of Noise Rules 2000 and it has been decided to by the answering respondent to implement the same.

5. In view of the submissions made above above, it is most respectfully submitted that the answering respondentstands fully and strongly committed for implementing the orders of this Hon'ble Tribunal and the other requirements under the Rules and would continue to vigorously follow up with various agencies for this purpose as an ongoing exercise.It is further most respectfully submitted that the slight delay which has taken place in submitting the present report is inadvertent and bonafide and was beyond the control of the answering respondent and the same is deeply regretted.

6. Wihtout affecting any of the submissions made above, it is most respectfully submitted that inadvertenty, if there is still any part of the order of this Hon'ble Tribunal which has been missed out, then it is most respectfully submitted that the same will be done immediately. The present action taken report is prayed to be taken on record of this Hon'ble Tribunal.

Submitted and prayed accordingly.
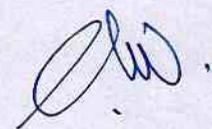
(Dr. M.P. George),
Scientist-C, DPCC.

TECHNICAL SPECIFICATION

1.0 SCOPE OF PRESENT TENDER ENQUIRY

Delhi Pollution Control Committee (DPCC) has planned to augment the Real Time Ambient Noise Monitoring Network with additional 26 Noise Monitoring Station (NMS) with 4G or better modem for transmission of data to dedicated Central Receiving Station (New).

Basic Network Architecture and Layout is shown in Annexure- IV. The Noise monitoring stations shall provide SMS alarms notification to the Central Receiving Station to warn about overpassed alarm user predefined thresholds as well as for internal system self-diagnosis report.

2.0 The new additional sites will transmit the data to the Central Receiving Station using 4G or better communication with the following:

- All the remote stations should be operational in a real time mode and central station should be able to access any remote station in network mode.
- The remote stations should be field operational and tolerant to extreme environmental conditions in India, in high or low temperatures and high humidity.
- The remote stations should be rugged and should not require manual intervention for at least 5 years except routine calibration and battery replacements.
- The communication between Remote and Central Receiving station must be two-way communication system.
- The Central Receiving Station will poll the remote station at user predefined regular intervals. If any alarm condition is met at remote stations, this alarm will be immediately communicated by SMS to the Central Receiving Station. After receiving the alarm the Central Receiving Software will immediately poll the remote station under alarm condition and will automatically download the data that caused the alarm to properly analyze it.
- The vendor should offer a network attach storage with minimum 4 TB of HDD and should be used for incremental backup.

- Operator from Central Receiving Station must be able to configure parameters of remote stations via software.

- Operator from Central Receiving Station must be able to restart the Remote Station through command via software.
- The Central Server data need to be distributed to DPCC and Delhi Government. Vendor should provide a web enabled software to distribute the data and products to authorized users with highly secured mode. Web portal should provide public access to view and download limited data as defined by DPCC.

- Type of reports to be generated from Central Receiving Station:
    (i)   Leq (Day time)   : 06:00 AM to 10:00 PM - Daily
    (ii) Leq (Night Time) : 10:00 PM to 06:00AM - Daily
    (iii) L10, L50, L90 etc.
    (iv) List of the values with their location and time should be compiled in Tabular form for assessment of noise data.
    (v)   Monthly report generation for all the stations.
    (vi) Yearly report generation for all the stations.
    (vii) Data in any other user define format (In graphic or tabular format).

3.0 TECHNICAL SPECIFICATIONS OF REMOTE STATION

The Remote Station for Ambient Noise Monitoring Network should have a standalone operating terminal, appropriate for outdoor installation for continuous measurement of ambient noise. Microphone connected to an advanced acoustic signal processing unit, complete with an electronic measurement and processed-data storage, provided with an integrated 4G or better communication system.

The Remote Station should allow the connection of other meteorological sensors whose measurements can contain scientific correlations with Noise Levels.

3.1 General Specifications of Noise Monitoring Station (NMS) :

NMS consists of a weatherproof cabinet containing a noise level analyzer a communication device for transmitting data to receiving station, a back plate and an outdoor microphone, all of which can be mounted on a mast.

(i)	Standards	:	IEC 61672-1 (2003/2013)* Class 1, Class 1 type for Omni directional
(ii)	Power Supply	:	230v AC±10% Uninterrupted power supply with power backup at least 6 hrs. Instruments should have internal rechargeable battery with capacity of 10 hrs in case of power failure.
(iii)	Time weighting	:	Fast, Slow, Impulse and Peak IEC 61672-1 (2013)
(iv)	Frequency /weighting	:	A and C
(v)	Dynamic Span	:	110 dB or more(30-130dB)
(vi)	Noise floor	:	< 19(A) dB
(vii)	Memory	:	Storage of all the above measured and stored data for at least 1 month at 1-second acquisition rate
(viii)	Calibration	:	Automatic Calibration
(ix)	Resolution	:	0.1 dB (A)
(x)	Display	:	Auto brightness, alpha numeric, display High viewing angle, high brightness display.
(xi)	Operating Temperature Range	:	-10 ^{0}C to +50^{0}C
(xii)	Humidity Range for external devices	:	90% condensing
(xiii)	Humidity range for internal devices	:	90 % RH Non - Condensing
(xiv)	Communication ports	:	RS232, USB, Ethernet/TCP/IP or better
(xv)	Sampling Rate	:	Short Leq time history user selectable from 125ms, 1 second or 2 second etc. Leq, Lmax, Lmin and Ln periods adjustable between 1 minute and 1 hour.
(xvi)	Measured and Stored data	:	(1) Leq, Lmax, Lmin, Lpeak, L10,L50 & L90 . (2) Short time Leq with Measured time and date.
(xvii)	Number of Input Channels	:	02

(xviii)	Communication mode with central receiving station/ server	:	3G/4G, internet connectivity, mobile connectivity or better.
(xix)	Programmability		Fully Programmable. All functions must be programmable from remote access or direct from the instrument.
(xx)	Diagnostic	:	Self-diagnostic feature should be available.
(xxi)	Essential functions		Time Synchronization with central receiving station/ server.
(xxii)	Remote Access	:	Web interface with Web monitoring feature
(xxiii)	Remote Calibration	:	Remote calibration from Central Station

* Class I Type international certification with Horizontal and Vertical reference direction either from LNE, PTB, METAS, CEM or BEV .

3.2 Enclosure:-

A. Remote Stations:-

Weatherproof cabinet	Weatherproof enclosure with IP-65 protection suitable for mounting on mast.
Security	Should be supported/equipped with standard sensors to check the unauthorized intrusion and have ability to produce telecommunication alarm if the enclosure has been opened. In-built GPS position,.
Mast	Length of Lattice mast should be 4 meter and to be mounted in a concrete base. The material of the mast should be galvanized and non-corrosive.
Cabling	All cables are armored and protected by conduits
Flexible	There should be provision of adopting/ installing standard interfaces.

B. UPS Enclosure:

Weatherproof enclosure protection suitable for housing of Electric connection, UPS and batteries (6hrs backup)

Note: All the installation and mounting accessories bolts should be of stainless steel to avoid corrosion.

3.3 Specification for Outdoor Microphone:

Standards	IEC 61672-1(2003/2013) Class1, Class 1 type for Omni directional
Sensitivity	50-60 mV/Pa
Microphone Type	Permanent Outdoor Microphone based on External polarized capsule (for better Temperature and Humidity performance)
Operating Temp	-10°C to + 50°C

Humidity Range external components	90% RH (Condensing)
Humidity Range internal components	90% RH (non condensing)
Range	30- 130 dB (SPL)
Frequency response	IEC 61672 Class 1 (2003/2013)
Output connector	Compatible with NMT
Pole adapter	Suitable for instrument monitoring
Accessories Required	Bird spike, wind screen, Protected Extension cable

3.4 Laptops   -   01No.

01 no. of laptop will be required for data abstraction from remote station (in case of telemetric communication failure) with MS Office 2010or better at the time of delivery, antivirus and noise post processing software.

Laptop configuration is mentioned below:

Make	:	HP/Dell
Operating System	:	Windows 10 or better at the time of delivery
Hard disk capacity	:	2 TB or more
RAM	:	6 GB or more
Processor	:	Core™i9 or better at the time of delivery
Screen Size	:	15 inch LCD display.

4.0 Specification of Hardware and software for Central Receiving Station.

4.1 Dual Redundant, Hot Standby Servers - 1 No.'

The server has 2 TB HDD or latest for data receiving, retrieval and archiving with software for receiving, processing, visualization, data basing and archiving and communication accessories including cables, civil work, modems, switches etc.

Specifications

1. The servers should be fixed in a 19" (800x1000mm) 42" rack with casters and glass door. The architect of the servers should be 100% redundancy with heat beat / status being reported to the administrator on Email/SMS in case of the failure event.

2. Both servers will be loaded with original software's and should be always in Hot position to take over from main server to secondary server and vice versa.

3. The data base will be updated in both the servers in real time to avoid any loss of data in case of server failure.

4. The performance/benchmark during the acceptance of system will include,
   - Raid 5 implemented on both servers with 3 hard discs in each server.
   - Automatic fail over process.
   - Automatic / manual fail back process.
   - Intimation to administrator during fail over / fail back.
   - Time taken during failover (should be less than 20 seconds)
   - Both the servers will be connected to a common keyboard and monitor through a KVM switch.
   - 24 port Giga switch will be installed in the rack for connecting the nodes
   - Dual port Wan hardware firewall should be provided

The hardware details of the sever is (01 Number, identical servers required for Hot redundancy located within Central Station in 19" rack)

1) Manufactured by ISO 9000 and 14000 manufacturing unit HP/COMPAQ/IBM/DELL ONLY

2) Processor- Intel Xeon Quad Core or higher with minimum, 2 MB L2 Cache memory, Front Side Bus - 800 Mhz

3) Rack Mountable- 4U / 6U- Rack Mountable Server with rack mounting kit

4) No. of processors- 01 number (Dual Processor)

5) Memory - 8 GB RAM / Scalable to 16 GB min, ECC DDR RAM memory (800 MHz minimum)

6) HDD- 1* 1 TB (hot plug) Ultra 160 SCSI disks. 10 K RPM

7) Networking- 1 x 10/100/1000 MBPS Ethernet controller 11)

8) DVD reader, DVD RW Drive

9) Power Supply- Redundant Hot Pluggable power supply, 1 x 600 W or more (N*1 redundancy).

10) Operating System- Win Server (latest available version), with media and manual, Antivirus for Win Server Antivirus should provide comprehensive Virus protection for Windows based network. It must provide Virus protection at the Gateway for all inbound and Outbound HTTP, SMTP & FTP Traffic across the network with hardware Firewall.

11) Audited TPC-C throughput- Must have audited TPMC rating Certificate must be attached

12) Keyboard- Standard Keyboard (104 Keys) Mouse - PS/2 type Microsoft or equivalent scroll mouse

13) Monitor- 19" Flat Panel LCD Monitor.

14) Router – Suitable router and firewall for security

15) Multiple communication possibilities

➢ Mobile phone system 4G or better.

➢ SMS for alarms and smart phone data request

➢ Communication via IP link (client or server)

➢ Optional-Alternative communications systems (Optical Fiber)

➢ Redundant communications. Each remote station could include up to three types of communication profiles. If one communication profile fails, the system will connect with redundant communication system automatically.

4.2 Web Enabled Servers - 1 No

All Specifications are same as above server but not hot redundant. The Central Server data need to be shared with web Enabled Server for distribution to DPCC & CPCB.

4.3 UPS - 1 No

Any standard make 5 KVA UPS with sealed maintenance free batteries for 6 hours Power back to Hot redundant servers, web servers and data processing computer.

4.5 Data processing Workstation PC -01 No

Work station will be used for data abstraction, visualization from central server. Specification for works station is mentioned below:

Make/Company	:	HP/Dell/Lenova Desktop PC
Operating System	:	Windows 10 professional or better at the time of delivery.
Hard disk capacity	:	2 X 1 TB or more
RAM	:	8 GB or more
Processor	:	5th Generation Intel® core I7- 2600s processor (2.8 hz) or better

processor(4M cache, up to 3.0 GHz , TPM) or better

Display   :   22.0".

Accessories   :   Mouse, Bag etc.

Workstation shall equipped with all accessories like mouse, keyboard, 22" screen, DVD reader/writer, internal audio, External O/P ports, graphic card and any other accessories.

4.6 Specification of Software for Central Receiving Station

Software package for the communication, from measuring and acquisition stations, both locally and remotely via a PC.Intuitive and easy to use application which runs on Windows OS.Data Retrieval in real time or by command with automatic and/or manual operation and data storage in a SQL database, in order to allow and carry out the data analysis and data processing. It must be compatible and seamlessly to integrate to old system in new noise monitoring terminals.

Software Management:

➤ Software capable for requesting, downloading, editing, processing and representation and management of data.

➤ The software integrates the entire data request commands made to the stations in real time data or data saved in the memory.

➤ Software allows the user to change and/or modify the configuration of the stations, enable to perform tasks such as date and time synchronization with the computer and adds new measuring channels specifying the different sampling and storage periods, as well as the statistical calculations to be stored.

Hand on Operations

The following parameters of stations must be configurable for each station.

➤ Allow the Setting of Date/Time of the station.

➤ Downloading of data stored in the station

➤ Downloading the station's configuration of PC

➤ Downloading of PC's configuration to the stations

➤ Alarm trigger user settings for each channel.

➤ Channel calibration settings.

➤ Real time data request from each channel.

Data Analysis

➤ Data enquiry over several days

> ➤ Comparison of readings between stations
> ➤ Daily statistics enquiry
> ➤ Strip charts of the daily statistics.
> ➤ Comparison between the daily statistics of various stations
> ➤ Comparison between parameters from the same station or from different stations

Visualization of Data

> ➤ Enquiry of data in Table Form
> ➤ Enquiry of data in graph form
> ➤ Temporary graphs composition window

Additional Features

> ➤ Printing of various reports and graphs as per the prescribed format as per annex.
> ➤ Zoom in and Zoom out facility with automatic graph scale Resizing
> ➤ Registers all the events like Information messages, error messages.
> ➤ Information of the communications resources used by the PC at that moment Exportation of readings to .txt, word, excel, jpeg, pdfand xml files.
> ➤ Configuring maximum and minimum thresholds and sending alarms by e-mail or SMS if data exceeds them.
> ➤ Customizing maps with icons representing the selected stations. Icons should change their color if there is an alert in a station.
> ➤ Creating, enquiring and displaying on graphs new variables using configured parameters and operators.
> ➤ Configuring maximum and minimum thresholds and sending alarms by e-mail or SMS if data exceeds them.

Regular updates of software shall be provided on half yearly basis. Software shall be modified as per our requirement and it must include basic and advance statistical tools for data analysis and report generation for managing the huge database.

4.7 Web Enabled Software for data distribution

The Web Software Platform must be able for web posting of the data available on the [Central Server at DPCC, 5th FloorISBT, Building, Delhi, in such a way that all authorized persons with an internet connection (ADSL) would have the possibility to access to the information of all the noise monitoring terminals. The user can customize the way to display the noise parameters. The user can play the role as administrator and define other

users access rights. Considering data transmission from the remote terminals to the Central Server is carried out via 3G or better cellular network, data can be updated, for example, every 5 minutes or 10 minutes, or 15 minutes, as programmed by the DPCC Officials. The Web Enabled Software must have following features:

1) Only authorized users can access the web enabled data
2) The format for administrator for issue of user id and password should be provided.
3) The authorized user should have access to current data and historical data.
4) User should have provision for full graphical plotting of the time series of the data and comparison of data from historical data of the station.
5) Graphical and GIS based visualization of all the Noise monitoring terminal
6) In graphical representation should have full attributes, which should be displayed by positioning cursor on the map.
7) Image superposition on a map or on an imported noise map
8) The selected station by clicking on the map must show the geographical information and status of the stations, for example Name of station, Station ID, Latitude, Longitude, Height (msl) etc.
9) On selecting a station, the complete menu of the data should be displayed.
10) Data can be selected both in Tabular and graphical format
11) The graphical display for all noise parameters should be available
12) The graphical plot of noise data analysis like Peak Noise, average noise etc.are available for the user.
13) Noise monitoring at all the station should be available with Calibration check status, Noise level alarm, saturation level indication.
14) The authorized users can download noise data in PDF and Excel format.
15) User should have provision for full graphical plotting of the time series of the data and comparison of data from historical data of the station.
16) Graphical and GIS based visualization of all the Noise monitoring terminal
17) In graphical representation should have full attributes, which should be displayed by positioning cursor on the map
18) Image superposition on a map or on an imported noise map
19) The selected station by clicking on the map must show the geographical information and status of the stations, for example Name of station, Station ID, Latitude, Longitude, Height etc.
20) Automated reports about user-selected periods (day, week, month, year, etc.) in word, pdf and jpg format.
21) Limited display of data in DPCC website for public domain as per format.
22) Spectrogram: real-time display of the frequency representation of the acoustic levels measured versus time
23) Noise mapping at all the station should be available with Calibration check status, Noise level alarm, saturation level indication.

5.0 Back facility: The vendor should quote for NAS (Network attached storage with RAID 5) minimum 4 TB for automatic incremental backup of existing and new database.

6.0 **Calibrator**:

  Specifications for External Acoustic Calibrator

   STANDARDS

   EN/IEC 60942 (2003), Class 1

   Sound pressure level:

   Nominal: Dual range 94 dB and114 dB/single range

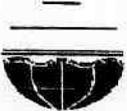   **Frequency**   : 1000 Hz

   Power   : Battery operated

   Carry and storage case to be provided

   Adaptor   : suitable adaptor for microphone (as quoted by vendor).

Delhi Pollution Control Committee

5th Floor I.S.B.T. Building Complex Kashmere Gate Delhi 110006
Visit us at :http: //dpcc.delhigovt.nic.in

File No.DPCC/(12)(1)(240)/Lab(A)/2019/2345   Date:- 13/2/2020

To,
M/s ACOEM Ecotech Industries Pvt. Ltd.,   *Annexure-2*
Plot No-57,Sector-2, Pithampur, Dist: Dhar,
Madhya Pradesh-454775

Sub:- Supply, Installation, Commissioning, Operation and Maintenance of Real Time Ambient Noise Monitoring Station Network (NMS) equipped with Twenty Six(26) nos. of noise monitoring stations and Central Server called the 'Noise Project'.

Ref:- Our tender document no. DPCC/Lab(A)/2019/ T03 dated 18/12/2019, your tender document no. ACOEM-IN/DPCC/NMT/INR dated 27/12/2019.

Sir,

With reference to above the Competent Authority in this organization is pleased to accept your offer for procurement of 26 no. Real Time Noise Monitoring Station Network (NMS) and central server called the 'Noise Project' which include supply of goods, cost of installation and commissioning, incidental cost, cost of central server, Incidental expenses and networking, Data communication equipment and accessories, training and operation & maintenance for 10 year as per following breakup.

S.No.	Product Code	Description	Quantity
1.	CUB3020000 CS01203000B CUB1002000A	• CUBE Expert Wifi/3G (NMT), As per Standard IEC 61672-1(2003/2013) Class-I • RAL 135-5M-5m cable LEMO 7 pin for PRE22 • CUBE- External 3in1 antenna	26 nos.
2.	CAL3014000	Calibrator CAL31, As per Standard EN/IEC 60942 (2003) Class-I	01 nos.
3.	SOFTWARE	• Data analysis software for central receiving station • Web Monitoring Software	01 no.
4.	Accessories & Mountings	• Enclosure of NMT • MAST & Mounting Accessories	26 nos.
		• Dual Redundant Server +UPS • Data processing work station PC • Laptop	01 SET
5	Operation & Maintenance	• O & M including one data analyst and maintenance team of 5 Person, Security, Electricity, Communication, for Each NMT spares and consumables	10 years

1

2.

The total award price for entire scope of work as detailed in tender clause 4.1 shall be Indian rupees Rs. 3,76,24,800 (**Three crore seventy six lakh twenty four thousand eight hundred rupees only**) (Excluding **taxes**) as per the following breakup.

S.no.	Description of work	No. of quantity	Price (INR)
1.	Supply of goods off the self as per Noise Monitoring Station (NMS) in Delhi including all duties except GST	26	29478800.00
2.	Cost of installation and commissioning of Noise Monitoring Station (NMS)	26	26000.00
3.	Price of other incidental cost if any for noise monitoring station (NMS)	26	00.00
4.	Cost of Central Server at DPCC Headquarter	01	400000.00
5.	Commissioning, Incidental Expenses as Networking, Data Communication Equipment and Accessories	01	20000.00
6.	Cost of training for above noise Project	01	30000.00
7.	Operation and maintenance		
i.	Operation and maintenance of Noise Monitoring Station for 1st year	26	650000.00
ii.	Operation and maintenance of Noise Monitoring Station for 2nd year	26	676000.00
iii.	Operation and maintenance of Noise Monitoring Station for 3rd year	26	702000.00
iv.	Operation and maintenance of Noise Monitoring Station for 4th year	26	728000.00
v.	Operation and maintenance of Noise Monitoring Station for 5th year	26	754000.00
vi.	Operation and maintenance of Noise Monitoring Station for 6th year	26	780000.00
vii.	Operation and maintenance of Noise Monitoring Station for 7th year	26	806000.00
viii.	Operation and maintenance of Noise Monitoring Station for 8th year	26	832000.00
ix.	Operation and maintenance of Noise Monitoring Station for 9th year	26	858000.00
x.	Operation and maintenance of Noise Monitoring Station for 10th year	26	884000.00
	Total Contract Price Excluding tax		37624800.00

The other terms and Conditions for Supply, Installation, Commissioning, Operation and Maintenance of **Real Time Ambient Noise Monitoring Station Network (NMS)** equipped with Twenty Six(26) nos. of noise monitoring stations and Central Server called the **'Noise Project'** will be same as per tender document no. DPCC/Lab(A)/2019/ T03.

You are requested to Submit acceptance of order within 7 days and complete all the formalities as per tender conditions submission of Performance Security in the form of Bank Guarantees and complete the project within 60 days.

(Dr. M.P.George)
Senior Scientist, (Air)
DPCC, Delhi

# Observation on Ambient Noise Levels

at

Different Land Use Areas of Delhi

JUNE, 2020

DPCC

Introduction:

Noise has emerged as a leading environmental nuisance. Noise is an underestimated threat that can cause a number of short- and long-term health problems, such as sleep disturbance, cardiovascular effects, poorer work and school performance, hearing impairment, etc. DPCC recently strengthened the Noise Monitoring Network in Delhi with 26 more Noise monitoring stations. These stations were installed in different land use areas to assess the real time noise levels. Five stations is situated in silence zone which include educational institute and hospitals, Nine station is situated in commercial zone which include markets and stadiums, Seven station is situated in residential zone and five station is situated in industrial area. The location of these stations shown in the map.
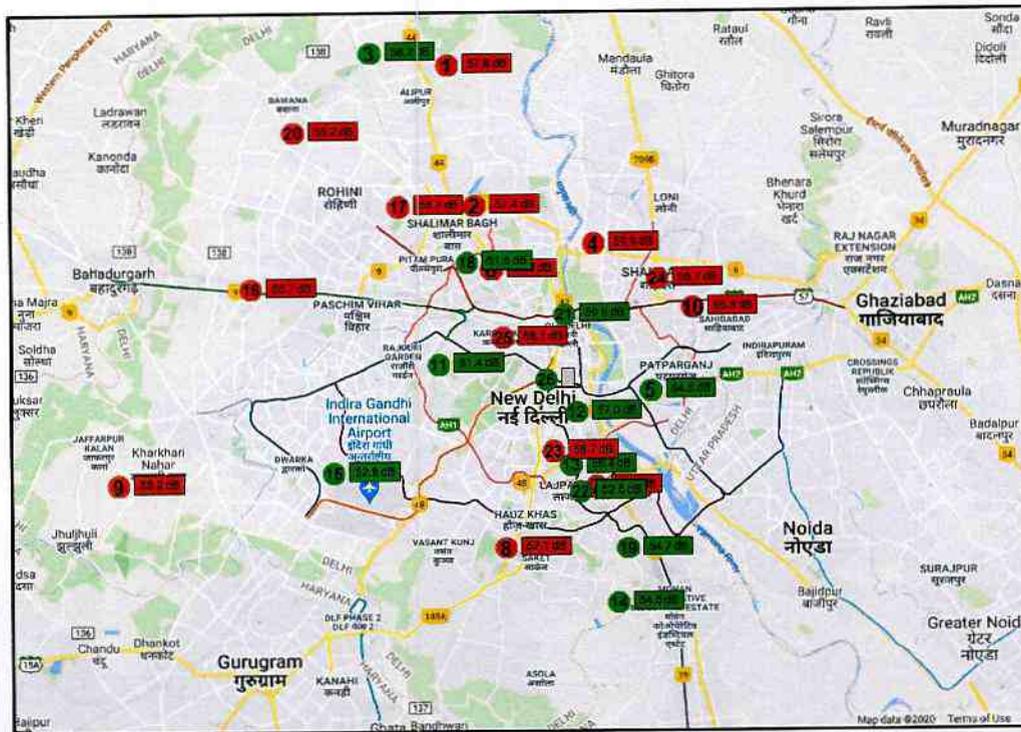
The land use based distribution of 26 Noise monitoring stations is shown in table no.1

SN	Location Name	ZONE / AREA
1	Mahatma Gandhi Institute for Combating Climate Change, Bakthawarpur Road, Bakoli, Alipur Delhi-110036	Silence Zone
2	Industrial Training Institute, Jahangirpuri, Delhi-110033	Residential Area
3	Industrial Training Institute, Narela, New Delhi- 110040	Industrial Area
4	Sonia Vihar Water Treatment Plant (DJB), Sonia Vihar, New Delhi-110094	Residential Area
5	Mother Dairy Plant, 30, New Patpar Ganj Road, Block D,Patparganj, New Delhi-110092	Industrial Area
6	Satyawati College, Ashok Vihar, Phase- III, Delhi-110052	Residential Area
7	PGDAV College, Sriniwaspuri Nehru Nagar, New Delhi-110065	Residential Area

8	National Institute of Tuberculosis & Respiratory Diseases, Sri Aurobindo Marg, New Delhi-110016	Silence Zone
9	Chaudhary Bramprakash Ayurvedic Hospital, Najafgarh, Delhi-110073	Silence Zone
10	Industrial Training Institute (Shahdara), Vivek Vihar, Delhi-110095	Residential Area
11	IARI PUSA, PUSA institutional Area, Opposite Lohamandi, Naraina, Delhi-110028	Industrial Area
12	Major Dhayanchand National Stadium, India Gate, New Delhi-110002	Commercial Area
13	J.L.N Stadium Pragati Vihar, New Delhi-110003	Commercial Area
14	Dr. Karni Singh Shooting Range, Asola Suraj Kund Road, Tuglakabad, New Delhi-110044	Commercial Area
15	National Institute of Malaria Research Sector 8, Dwarka, New Delhi-110077	Commercial Area
16	Mundka Metro Residential Colony, Mundka, Delhi-110081	Residential Area
17	Shaheed Sukhdev College of Business Studies, PSP Area-IV, Dr. K.N. Katju Marg, Sector-16, Rohini, Delhi-110089	Silence Zone
18	Delhi Institute of Tool Engineering, Wazirpur Industrial Area, Wazirpur, Delhi-110052	Industrial Area
19	DITE, Okhla Industrial Area, Block A, Okhla Phase-II, Okhla Industrial Area, New Delhi-110020	Industrial Area
20	Maharshi Valmiki Hospital, Bawana Industrial Area, New Delhi-110039	Silence Zone
21	ISBT Building, Kashmere Gate, Delhi-110006	Commercial Area
22	SDMC, Primary School, Krishna Market, G Block, Lajpat Nagar, New Delhi-110024	Commercial Area
23	EDMC Zonal Office, Oppsite Shyamlal College, Shahdara, Delhi-110032	Commercial Area
24	MCD Primary School, Gali No37, Regar Pura, Karol Bagh, New Delhi-110005	Commercial Area
25	IMD, Lodhi Road, New Delhi-110003	Residential Area
26	Connaught Place, New Delhi-110001	Commercial Area

Methodology:-

IEC 61672-1 certified Class 1 Integrating averaging Sound Level Meters with an Omni directional microphone are used for real time measurement of ambient noise. Image of one of the installed Noise Monitoring Station is shown below.Data generated by these stations is processed as per prescribed standard protocol.

Observations:-

Daily day and night variations is shown in graphs attached at **annexure-I,**

Silence Zone (Day-50 dB(A) Leq& Night-40dB(A) Leq) :-

    05 silence zone were monitored which include hospital campus and educational institute. The standards exceeded at all the locations. The day & night ranges were shown in the table no-1.

Table No: 1

S.No.	Stations	Location	Day	Night
1	Alipur	Educational Institute	54.2-65.9	50.6-55.8
2	PootKhurdBawana	Hospital	51.3-65.6	48.9-57.5
3	Rohini	Educational Institute	55.6-59.3	50.1-62.4
4	SriAuribindoMarg	Hospital	51.1-65.2	48.1-53.8
5	Najafgarh	Hospital	50.7-60.2	47.6-54.5

Residential Zone (Day- 55 dB(A) Leq& Night-45 dB(A) Leq):-

07 residential areas were monitored **to** know the real time ambient noise levels. In general day time noise met the standards at different locations however on few days the standard was exceeded. In general night time standards were exceeded at all location. The range observed in month of June is shown in the table no-2:-

Table No:2

S.No.	Stations	Day	Night
1	Ashok vihar	55.6-59.3	52.5-58.5
2	IMD, Lodhi road	56.5-60.9	53.7-58.3
3	Jahangirpuri	56.4-60.8	52.6-60.6
4	Mundka	53.6-58.7	52.0-57.4
5	Nehru Nagar	54.9-62.0	53.2-56.5
6	Sonia Vihar	51.1-64.8	50.3-60.5
7	VivekVihar	54.8-59	52.5-60.9

Commercial Zone (Day- 65 dB(A) Leq& Night-55 dB(A) Leq):-

Nine Commercial areas were monitored to know the real time ambient noise levels. In general day time noise met the standards at different locations however on few days the standard was exceeded. In general night time standards were exceeded at all location. The range observed in month of June is shown in the table-3:-

Table No.:3

S.No.	Stations	Day	Night
1	Shahdara	64.8-67.0	61.8-64.3
2	Karol Bagh	64.8-69.4	56.1-60.4
3	Connaught Place	—	—
4	Kashmiri Gate	58.2-61.2	54.7-60.7
5	Lajpat Nagar	60.6-63.5	53.8-60.2
6	National Stadium	54.4-60.7	48.2-58.8
7	JLN Stadium	54.0-62.1	50.7-54.9
8	Dr.Karni Singh Shooting Range	54.2-59.1	46.9-55
9	Dwarka, Sector 8	58.8-65.2	55.0-60.4

Industrial Zone (Day- 75 dB(A) Leq& Night-70 dB(A) Leq):-

Five industrial areas were monitored to know the real time ambient noise levels. In general day time noise met the standards at different locations however on few days the standard was

exceeded. In general night time standards were exceeded at all location. The range observed in month of June is shown in the table no-4:-

Table No: 4

S.No.	Stations	Day	Night
1	Narela	58.2-62.9	54.4-60.5
2	Wazirpur	59.6-65.3	54.1-62.7
3	Okhla, Phase II	54.0-59.1	48.5-56.7
4	PUSA (Very close to Naraina Industrial area)	59.6-67.4	53.3-60.6
5	Patparganj	55.0-62.7	52.1-61.8

Conclusion:-

Analysis of Hourly datashows that Leq rangevaried from 40 to 70 db(A) in different land use area of Delhi.

Alipur , Karnisingh Shooting rage , Najafgarh and National Institute of Tuberculosis and respiratory diseaseshows more than 30 % of monitored hours the values observed in range of 40-50dB(A).

At Sahadara 91% of hours the values are observed between 60-70dB(A) while at all other location it was observed that maximum hours the values are within 50 to 60 dB(A).

The other stations which recorded more than 60% values in the range of 60-70dB(A) are Dwarka , Karol Bagh and LajpatNager . Station wise data showed in- table -I

The short term data compared to prescribed standard shows that ambient noise levels exceeded the prescribe standards at silence, residential and commercial zones. At industrial area the noise level meet the prescribe standards. The ambient noise is indicative in nature and shows the activity in community. Though in general it seems the primary source is vehicular noise. However survey of nearby area of these stations will be undertaken for the identification of sources to develop customised action plan for each location.

ANNEXURE-I

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Alipur

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Ashok Vihar

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Dr. Krni Singh

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Dwarka

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Lodhi Road, Mausam Bhawan

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Jahangirpuri

Fluctuation in Noise Level(LAeq in dBA) in Month of June at JLN Statdium

Legend: JLN_Stadium_L06h-22h, JLN_Stadium_L22h-06h

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Karol bagh

Legend: Karol_Bagh_L06h-22h, Karol_Bagh_L22h-06h

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Fluctuation in Noise Level(LAeq in dBA) in Month of June at Kashmiri Gate

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Lajpat Nagar

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Mundka

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Najafgarh

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Narela

Fluctuation in Noise Level(LAeq in dBA) in Month of June at National stadium

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Nehru Nagar

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Okhla

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Patparganj

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Poot Koond Bawana

Fluctuation in Noise Level(LAeq in dBA) in Month of June at PUSA

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Rohini

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Shahdhara

Fluctuation in Noise Level(LAeq in dBA) in Month of June at Sonia Vihar

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Fluctuation in Noise Level(LAeq in dBA) in Month of June at Wazirpur