ARGUMENT NOTE

This argument note with special reference to sound pollution monitoring need to be submitted before the Hon'ble National Green Tribunal in OA 265 of 2015, OA 17 of 2021 and attached applications. Also, this may be read in continuation to earlier noise monitoring report submitted along with updated status report submitted on 18.12.2021.

It is important to note that there were contentions from the 1st respondent unit during hearing conducted by the Hon'ble Tribunal on 01.10.2021 that the noise level measurements done by the Board are not correct since other industrial units are situated which might create noise interference. Here, it is to be noted that other industrial units are situated at more distant places from the complainant's spots than expansion areas of M/s BPCL viz. IREP, MSBP or PDPP. Actually, the area spotted where sound measurement was done is around M/s. BPCL and its expansions whereas other probable sound sources are M/s. HOC, LPG Bottling plant, Prodair Air Products (Hydrogen Plant) and M/s FACT. Of the above, M/s FACT is located 1.65 to 4 kilo meter from all these complainant's spots and HOC is not functional now. It is also observed that the LPG Bottling Plant of M/s BPCL (Bharath Gas) is not under operation after 10 P.M. Hence, it was decided that M/s. HOC, M/s. FACT and LPG Bottling Plant need not be considered as contributors of noise and the location near the expansion projects mentioned above alone were selected for noise monitoring.

Earlier, the noise monitoring conducted by the Board was mainly concentrated on noise generated from flare stacks, certain process sheds, cooling tower of PDPP and other expansion works. Here, it is significant to note that all sound sources except flare stacks create noise at the ground level. The flare stacks are tall structures having not less than 50 m height everywhere.

It may also be noted that while hearing the applications, the Hon'ble Tribunal ordered as follows.

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COCHIN-682 020
REGIONAL OFFICE

M. A.BAIJU
Chief Environmental Engineer

"They can conduct test only on the basis of the manner in which the tests are being conducted and if there is any difference between the Online Monitoring and the physical test conducted by the Pollution Control Board, they are at liberty to mention the reasons as to why such things are happening. Further, they can also ascertain as to whether there is any possibility of cumulative impact of the noise that is likely to be emanated from other industries, if they are situated near or away from the 1st Respondent unit and that aspect can be noted by them in the report."

Thereafter, an action plan has been prepared to monitor sound levels of specific areas as mentioned earlier and a detailed data sheet showing distances between industries/complainants locations and measured noise intensities during day/night hours was prepared. Also, it was decided to assess sound level at one complainant's spot and two to three nearby industrial sound sources simultaneously during a specific period (Say 1 Hour) to find the effect of sound source at the complainant's spot during the particular monitoring period.

At certain locations, sound intensities observed are higher than that of nearest noise source. There were specific observations of such incidents viz. Kuzhikkad, Ayyankuzhy areas especially during daytime. It may be due to noise from nearby road due to vehicular movements during monitoring. Another reason may be due to the height of the sound sources, especially 5 number of flare stacks, (Specific location details shown in red rectangles are attached as **Enclosure 1**). Measurements may show reduced levels at source (flare stacks) and higher intensities at the receptor side which are at far distant places. This is due to the fact that in flare stacks, the sound generated is far above the ground level and the sound level may not reflect in the measurements taken near the source at ground level.

There are several study reports to find the specific characteristics of sound propagation through an open space. Sound propagation through the outdoor environment depends on several factors like source geometry and type, meteorological conditions, atmospheric absorption of sound, terrain type and contour and obstructions in the form of buildings, barriers and

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vegetation (Green belt). The relevance and importance of each factor depends on the situation under consideration. When the receptor is close to the source, only geometrical spreading and large obstacles (barriers) need to be considered. If the receptor is at a larger distance from the source, ground effects and atmospheric effects must be considered along with geometrical spreading. Accurate prediction of ground effects requires knowledge of the absorptive and reflective properties (the acoustic impedance) of the surface. Based on the acoustic impedance of the ground surface, the amplitude and phase of the reflected wave is modified. The receptor end obtains both the direct wave and the reflected wave. Depending on their relative phases and amplitudes, they may constructively add or destructively interfere. Regarding the effect of meteorology, the temperature and wind gradients can result in measured sound levels being very different to those predicted from geometrical spreading and atmospheric absorption considerations alone. Both temperature and wind vary with height above the ground and hence, the effective velocity of sound also varies with height which causes the sound waves to be refracted or bent as they propagate along curved paths. If the sound speed profile is not linear, acoustic or sound-focusing region may be formed. Usually in urban situations, buildings can be effective barriers to reduce noise. But it is also possible for buildings to produce a different acoustical effect. In this case, source level monitoring was done near the source. Here, the height of the sound sources and receptor viz. flare stacks and complainant's areas respectively have specific importance to show higher noise intensities to a certain extent at distant receptors than nearby places. In this case the source level noise monitoring was done by placing the sound level meter close to the flare stacks where low sound intensities were observed.

In addition to the above fact, a technical issue connected with this kind of noise monitoring is the lack of clarity with respect to source of noise at the receptor end. A correct base level noise in these selected spots can be

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REGIONAL OFFICE

M. A.BAIJU
Chief Environmental Engineer

assessed, only when the industrial unit, is non operational. This is practically not possible for a large industry of this magnitude.

Noise monitoring at some of complainant's spots showed values slightly exceeding the standards for residential areas. It may kindly be noted that the area outside the campus of M/s. BPCL has not been categorized by the concerned Department, and hence there is a lack of clarity on the classification of the area.

For And On Behalf Of The 5th Respondent

Chief Environmental Engineer

KERALA STATE POLLUTION CONTROL BOARD
GANDHI NAGAR
COCHIN-682 020
REGIONAL OFFICE

M. A.BAIJU
Chief Environmental Engineer

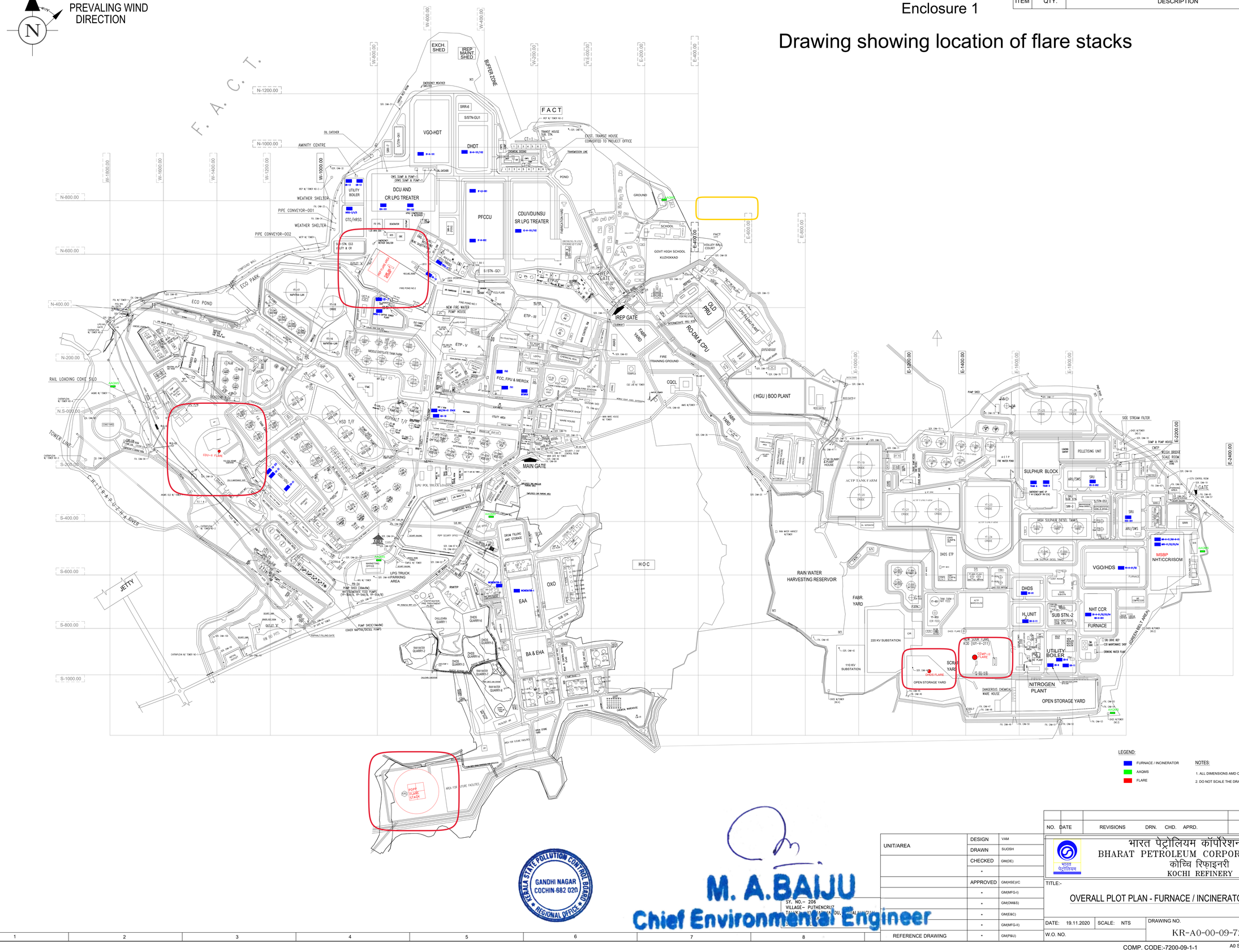
DRAWING NO. KR-A0-00-09-7200

PREVALING WIND DIRECTION

Enclosure 1

Drawing showing location of flare stacks

LIST OF MATERIALS		
ITEM	QTY.	DESCRIPTION



LEGEND:

- FURNACE / INCINERATOR
- AAQMS
- FLARE

NOTES:

1. ALL DIMENSIONS AMD CO-ORDINATERS ARE IN METERS.
2. DO NOT SCALE THE DRAWING.

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SY. NO.– 206
VILLAGE– PUTHENCRUZ
TALUK– KOCHI DIVISION, ERNAKULAM

M. A. BAIJU
Chief Environmental Engineer

NO.	DATE	REVISIONS	DRN.	CHD.	APRD.

UNIT/AREA	DESIGN	VAM
	DRAWN	SUJOSH
	CHECKED	GM(DE)
	"	
	APPROVED	GM(HSE)/C
	"	GM(MFG-I)
	"	GM(OM&S)
	"	GM(E&C)
	"	GM(MFG-II)
REFERENCE DRAWING	"	GM(P&U)

भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड
BHARAT PETROLEUM CORPORATION LIMITED
कोच्चि रिफाइनरी
KOCHI REFINERY

TITLE:- OVERALL PLOT PLAN - FURNACE / INCINERATOR / AAQMS / FLARE

DATE: 19.11.2020	SCALE: NTS	DRAWING NO. KR-A0-00-09-7200	SHT. 1 OF 1
W.O. NO.			REV. 2

COMP. CODE:-7200-09-1-1

A0 SHEET - 1189 x 841