ADDITIONAL INFORMATION TO EAC INDUSTRY-2 (MoEFCC)
Expansion of Mumbai Refinery from 7.5 MMTPA to 9.5 MMTPA, Installation of Propylene Recovery Unit and revamp of CPP at HPCL Mumbai Refinery

Query 1: Variation has been observed in products list reflected in EIA report vis a vis presentation. Comparison of product in tabular form w.r.t existing and proposed expansion to be given properly.

Response: Following table indicates existing & post expansion unit capacities.

Units	Existing Design Capacity (KTPA)	Post Expansion Capacity(KTPA)	Remarks
CDU/VDU-I	4000	6000	Expansion
CDU/VDU-II	3500	3500	No change
NAPHTHA SPILTTER UNIT	1222	1222	No change
Naphtha Hydro Treater (NHT) /Isomerization	250	300	Expansion
NHT/Continuous Catalytic Reformer	545	654	Expansion
PRIME G+	475	570	Expansion
New Fluidized Catalytic Cracking Unit (FCCU)	1227	1227	No change
Old FCCU	950	950	No change
Diesel Hydro Desulphurization Unit	2270	2270	No change
Diesel Hydro Treater Unit	2200	2200	Revamp
Propane De-asphalting Unit	755	755	No change
Hydrogen Generation Unit (HGU)	14.5	14.5	No change
New HGU	-	36	New
Vis-breaker (VBU)-New Residue up gradation unit	-	565	New
Propylene Recovery Unit (PRU)	-	100	New
New Captive Power Plant (CPP)	-	81 MW	New

Product list for existing refinery and post expansion is as below.

Product	Existing Capacity (000'TPA)	Post Expansion Capacity (000'TPA)
LPG	332	471
LAN	272	238
SCN	96	96
TREATED HEXANE	30	30
SOLVENT 1425	8.5	8.5
MS	1075	1590
MTO	48	48
ATF	600	600
SKO	52	52
DIESEL	2586	3466
LDO	88	0
RPO	70	0
IFO	567	815
SULPHUR	37	67
VG-10	229	505
VG-30	478	545
150 N GR I	81	70
500 N GR-I	206	100
SPINDLE OIL –GR-I	15	15
SPINDLE OIL –GR-II	19	32
150 N GR-II	38	76
500 N GR-II	7	92
BRIGHT STOCK	61	50
IO-100	9	15

Query 2: Reason for high baseline value of PM10 to be given.

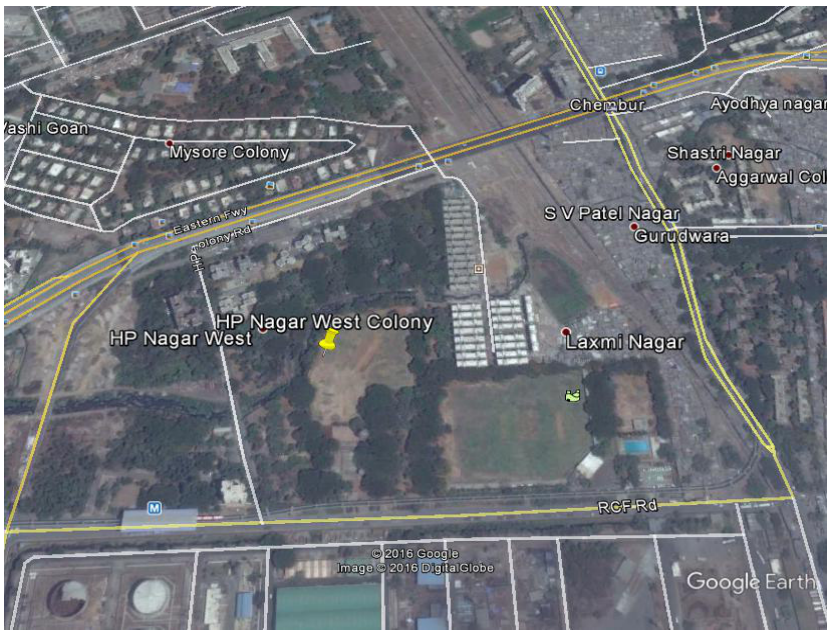
Response: Ambient air quality data was collected at 6 locations during March-May 2015.

No.	Location	Avg.	PM10 Standard (NAAQS 2009)	98th Percentile
A1	HPCL Colony East	72	100 µg/m3	91
A2	HPCL Colony West	94	100 µg/m3	110
A3	Gawanpada	114	100 µg/m3	126
A4	Terminal area Wadala	95	100 µg/m3	112
A5	Prayagnagar	89	100 µg/m3	97
A6	Mahul Village	56	100 µg/m3	70

Out of the 6 locations mentioned, 3 locations 98th Percentile of PM10 values are within limit and at three locations the values are crossing the limit. Reasons for the values crossing the limits are explained below.

HPCL Colony West (A2)

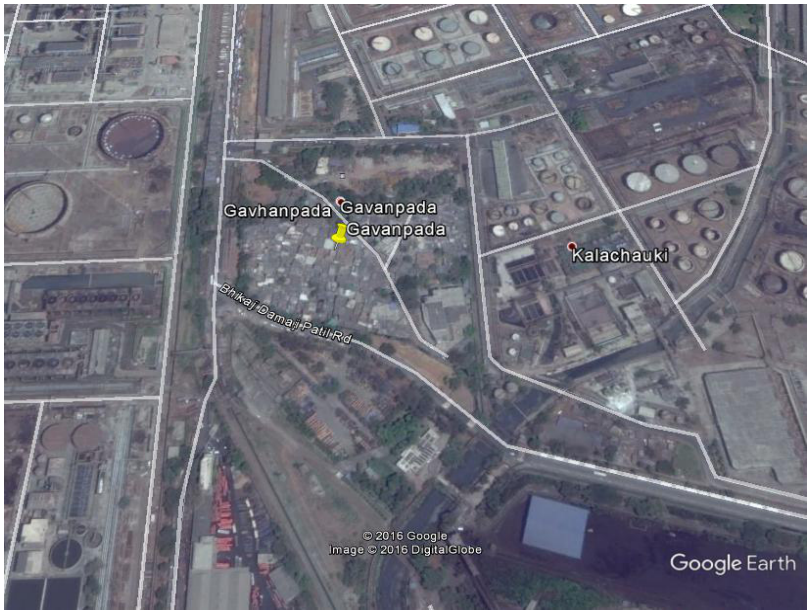
A2 site is located at a distance of around 1.0 km in NNW direction from the project site. Eastern Freeway road is passing in western direction where recorded Passenger Car Unit (PCU) is 174 per hour in a day. Whereas RCF road passes in the south direction, where PCU was recorded 161 per hour. Because of vehicular moments (heavy trucks) 98th percentile value is 110 µg/m3 which is exceeding the limit. South side of HPCL colony, BPCL truck movement causes increase in particulates in the air. Also vacant triangular plot near the freeway is another source of dust in the air. In addition to this there is a crematorium beside the colony which is also a source of particulate matters in air. On an average PM10 concentration were found to be below the NAAQ limits (100 µg/m3).



Location map of HPCL Colony West (Google Earth)

Gawanpada (A3)

This site is located at distance of 0.6 km from the project site. This village is surrounded by roads on all four sides and one road is passing from the middle of the village. Total five roads are connecting to the village. Road coming from the western direction is connecting to the Port Trust. Hence there is a significant vehicular movement (100 PCU per hour is recorded at one side of the road). Maximum value and 98th percentile values of PM10 concentration is exceeding the NAAQ standards.



Location map of Gawanpada (Google Earth)

Terminal Area Wadala (A4)

Terminal area Wadala is located at a distance of 4.5 km in the western direction. This site is surrounded by 2 main roads- one in the west and other in the south direction. Major road is Bombay port trust road which is passing from south to north direction. Heavy vehicular movement takes place on the port road. The 98th percentile value (112 µg/m3) was exceeding the NAAQ limits. Whereas the average PM10 value was found within NAAQ standard.

Location map of Terminal area Wadala (Google Earth)

Query 3: One month VOC data to be submitted.

Response: Due to prolonged monsoon in Maharashtra, at present, monitoring of ambient air quality for VOC outside the refinery complex will not be representative.

Leak Detection and Repair (LDAR) survey was carried out by M/s Labindia Instruments Pvt. Limited during the month of March-April, 2016. These points are monitored at a distance of 1 meter from the leak source. During this survey around 29, 500 different points were covered within the refinery. Summary of the LDAR survey is tabulated below:

S.No.	Unit Name	No. of points monitored	Max VOC Emission Reading (ppm)
1	Hydrogen Generation Unit	2688	328
2	Diesel Iso-therming Unit	2935	213
3	ISOM	6337	192
4	CCR	3998	135
5	DHT	5681	252
6	Prime-G+	3472	49.7
7	MS Blending Unit	780	104
8	Tank Wagon Gantry	3533	233

Inspection of seal gaps in storage tanks is being undertaken for identification and rectification in conformance to the guide lines.

Query 4: Water balance chart of the existing and proposed units to be furnished properly.

Response: The process effluent from refinery process is treated in state-of-the-art Integrated Effluent Treatment Plant (IETP) and zero effluent discharge is achieved by recycling 100 % of effluent processed of which the RO permeate is used for feed to DM plant and RO reject is used for make-up as closed loop cooling water system.

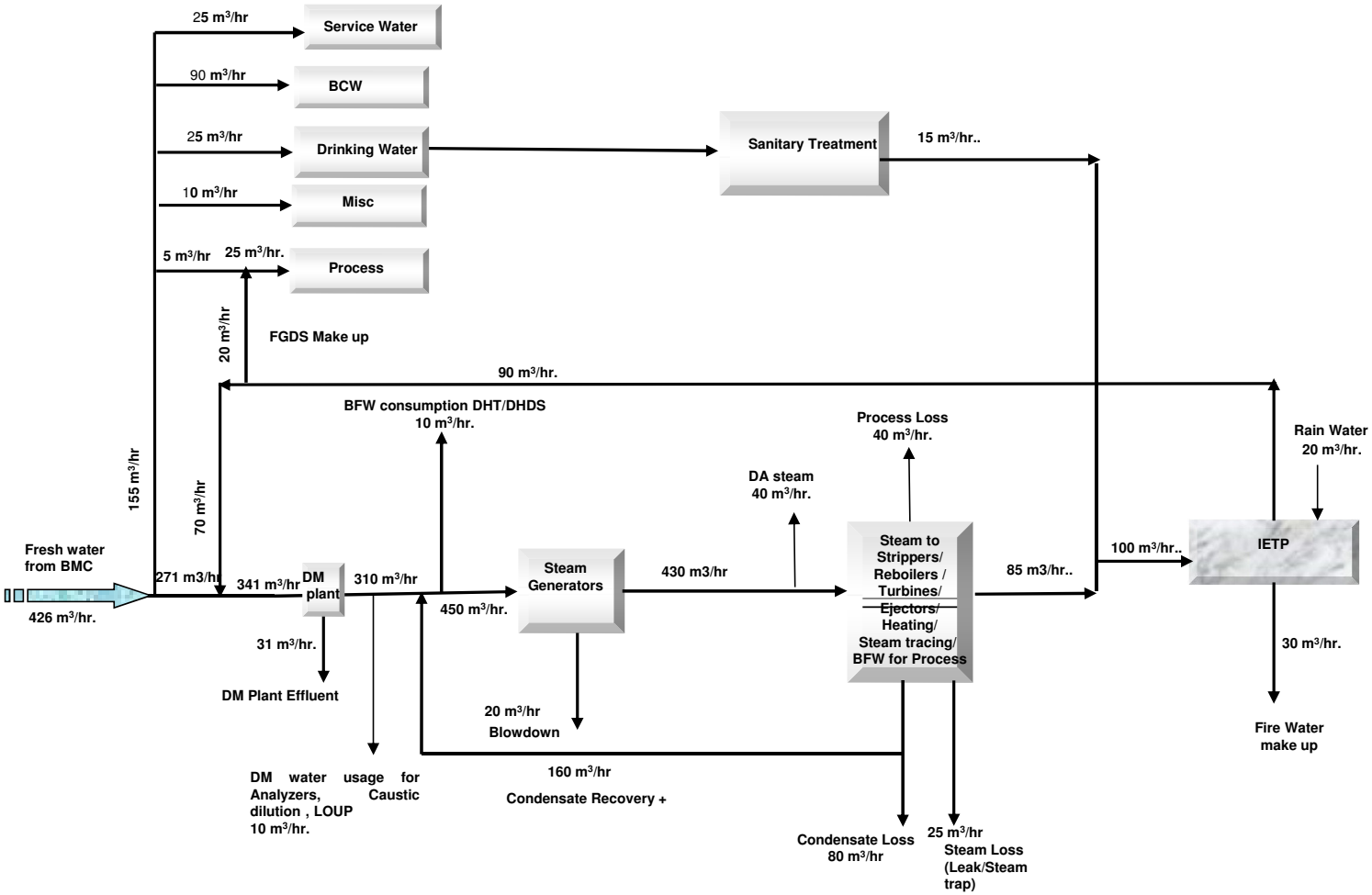
Post Expansion 112 m^3/hr. is the incremental fresh water requirement and 48m^3/hr. will be increase in feed to IETP. 70% of the feed to IETP will be recycled and rest 30% will be used as a make-up to cooling water and fire water system. Presently around 90 m^3/hr. of water is being recycled from IETP, post MREP recycle will increase to 124 m^3/hr., an increase of 34 m^3/hr.

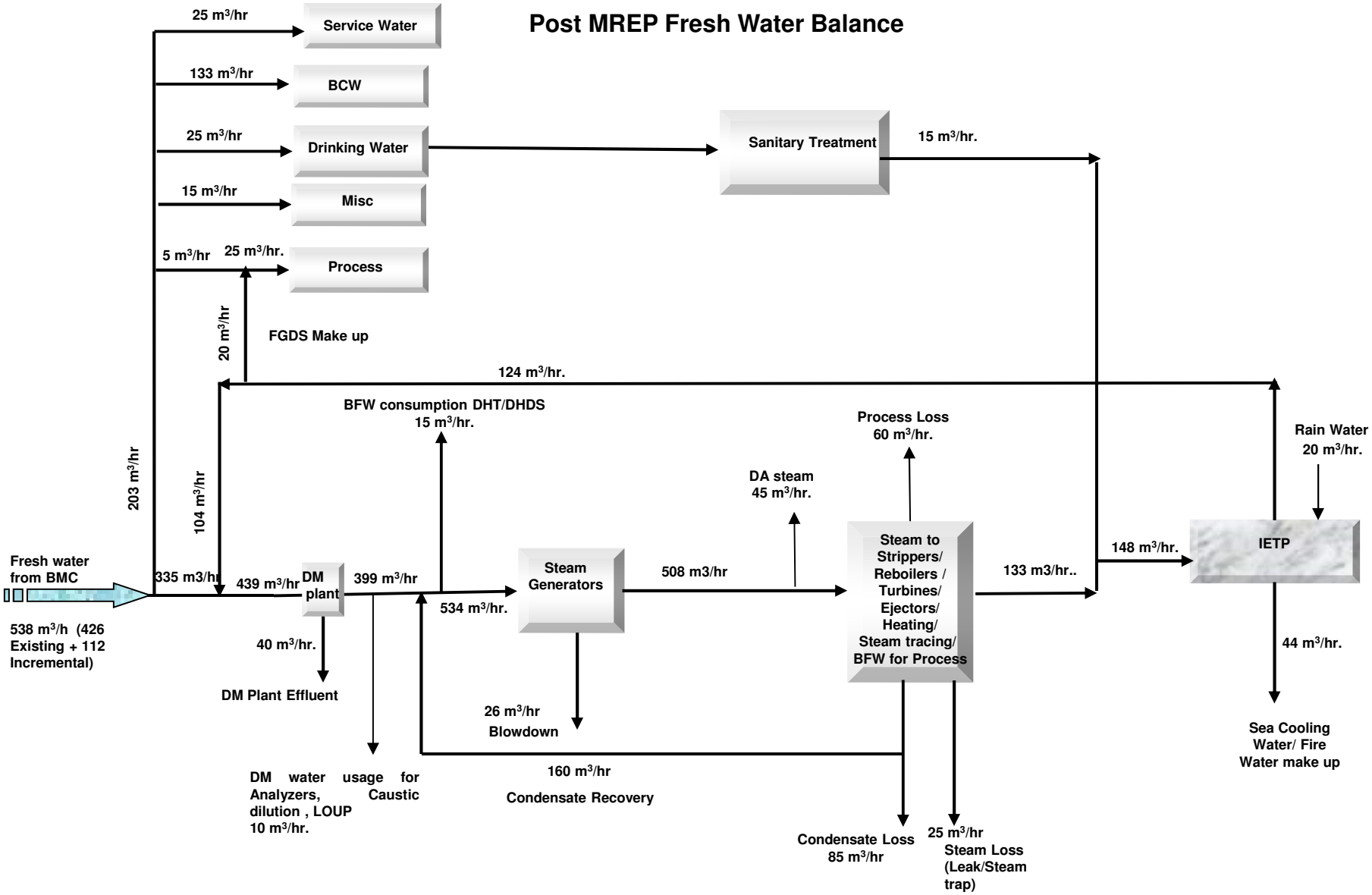
Presently 160 m^3/hr. of condensate is recovered and recycled. In addition, various schemes are under active consideration to recover more condensate.

HPCL has also undertaken rain water harvesting from nearby hills and rooftop rain water harvesting.

Water Balance charts for existing refinery and post expansion are as follows:

Existing Refinery Fresh Water Balance





Misc:- Fresh water to Laboratory, Individual AC plant chilling loss, miscellaneous including safety shower, Contract manpower water consumption.

Process Loss – HGU steam reforming ,Atomizing steam ,DA vent, Soot blowing, Flare steam.

Query 5: Issues raised during public hearing & commitments made by the project proponent in the form of tabular chart with financial budget for complying with the commitments made.

Query 6: Year wise detailed plan to be redrawn up to 2.5% of the project cost out of the issues emerged from public consultation.

Response to Query 5 and 6: As proposed during EAC meeting, Rs. 30 Crores shall be earmarked towards Enterprise Social Responsibility (ESR) in neighborhood areas and item wise details along with time bound action plan shall be prepared. Implementation of such program shall be ensured accordingly in a time bound manner. Outlay of the ESR expenditure will be on various activities. The major activities would be grouped under following headings:

- Child Education and Schools upliftment,
- Swachh Bharat activities,
- Health and Hospital improvement in neighborhood
- Infrastructure (Police, Old age and Handicapped, Social Welfare & Neighborhood communities),
- Traffic Management Improvement.

Tabular chart for issues raised during public hearing & commitments with financial budget is as follows:

Issues raised during the public hearing with year wise detailed financial budget				Tentative Financial Budget		
S. No.	Issues	HPCL response	Tentetive Plan/activity	Expenditure (in lacs) for 3 years		
				Oct'16-Sept'17	Oct'17-Sept'18	Oct'18-Sept'19
1	There is no place for our children to play	We can make gardens for local people / children.	As there is no open space, playing area can be developed in school/society ground. Playing equipments can be provided.	40	44	48
2	No employment for village people.	We have contacted Regional Directorate of Apprentice Training (RDAT) and after their training they will get skilled in particular trade and then we can take them as apprentices in our company. We have proposal for 60 people per year for training from local community.	Training of local people will be taken up for skill development, these candidates will be provided class room training at RDAT centre and practical training in refinery. Basis this training they can get job oppurtunity anywhere in India.	100	110	121
3	Heavy vehicular traffic (Traffic Management Improvement.)	We have requested Government for triangular plot near freeway for parking space, with water facility and hence it will be utilized for clearing traffic on the road.	We have approached traffic authorities and municipal corporation for allotment of this plot. After allotment parking space will be developed with all the required amenities like toilet and drinking water.	200	220	242
4	Basic civic amenities (Swachh Bharat activities)	Bharat Nagar old toilets will be renovated.	Bharat Nagar public toilet already renovated. In consultation with renowned NGO other public toilets in the vicinity will be taken up for renovation.	50	55	61
5	Asphalt / stones are lying on the road – which is not cleared since last 3 months.	No solid waste of HPCL Refinery is thrown outside. However, will extend its support for cleaning the waste outside also.	Regular scrapping activity will be taken up on the main roads in the vicinity of the refinery.	20	22	24
6	Medical Facilities - Health and Hospital improvement in neighborhood	For yearly income below Rs.50000/-, Medical facilities are provided free at Shusrut Hospital and for yearly income between Rs. 50000 and Rs. 100000, medical fees @ 50% only of the cost of treatment is charged.	Maintenance cost to Sushrut Hospital	200	220	242
			Maintenance of 2 nos. of mobile medical van for medical purpose.	52	57	63
			Maintenance of 2 nos. of cardiac ambulance for medical purpose.	48	53	58
7	Child Education and Schools upliftment	NIL	Distributrion of water coolers, school aids, benches to nearby schools. Organising annual athletic meet for nearby schools.	120	132	145
8	Infrastructure (Police, Old age and Handicapped, Social Welfare & Neighborhood communities)	NIL	Development of infrastructures	80	88	97
			Total	910	1001	1101
			Total expenditure in 3 years			3012

*** 10% escalation considered for each year.**

Query 7: Detail traffic management plan to be drawn.

Response: After commissioning of the Uran LPG pipeline, number of LPG tankers have reduced by around 15 tankers per day.

Post MREP, additional traffic movement will be due to extra sulfur recovery by around 15 trucks/day due to change in fuel specs from BS-IV to BS-VI. Products will mainly go through pipeline except LPG, Bitumen, Sulfur, etc. and the increased use of pipeline transfer will not increase truck movement.

In addition to above, there are general traffic movements for public and material serving to locality and other installations. However, as the necessity is felt, HPCL agrees to

- Create an agency which will support traffic police during peak hours (with their prior concurrence).
- Provide physical aids to the traffic police for traffic control (based on their requirements).
- Development of the plot earmarked by BMC near freeway for parking place for tankers after necessary clearances from BMC.
- Token system will be implemented and only 5-6 trucks will be in refinery at any point of time, sequencing will be done and trucks will be called at allotted time.

HPCL has already approached traffic authorities and Municipal Corporation for acquiring this plot. Once HPCL gets the plot, it will be developed for parking trucks coming to refinery for loading. Communication system will be developed to minimize truck parking on the roads.

With the above measures an efficient traffic management system will be put in place.

Query 8: Commitment along with timeline for installing mechanical scrapper in oil and grease trap/tank.

Response: At MR a fully-functional Integrated Effluent Treatment Plant (IETP) is operational for treating the process effluent generated. The IETP is designed to fully comply with all the norms and to recycle all the treated effluents 100% back to our processes. The other source of non-process effluent is the Sea Cooling Tower blow downs which are

directly discharged via a natural Nalla to the Mahul creek. There are battery of oil catchers and API separators followed by final oil catcher at the discharge point. All the free oil if any are collected at all the check points. API separators are designed to collect the traces of free oil by pneumatic operated Rotating Drum Skimmers and slotted pipes. In addition to it API separators are also designed to settle the silt/sludge. At the final oil catcher at the discharge point another pneumatic operated Rotating Drum Skimmer is deployed to collect any oil sheen slipped from upstream. MR has engaged an Oil Spill Response (OSR) contract for all types of salvage operation. MR is also part of a shared service for engaging a Tier-I OSR facility through the Mumbai Port Trust (MbPT).

Order placed for online 'Oil & Grease' analyzer in API separator final discharge which will be integrated with pneumatic rotating drum skimmers.