

**HALF YEARLY COMPLIANCE REPORT FOR ENVIRONMENTAL CLEARANCE
(DECEMBER 2021 – JUNE 2022)**

**FOR
PROPOSED CONSTRUCTION OF INTEGRATED BUS TERMINUS CUM COMMERCIAL
COMPLEX**

**PROJECT PROPONENT: M/s. NAVI MUMBAI MUNICIPAL TRANSPORT
BEAPUR BHAVAN, 8th Floor, SECTOR 11,
CBD Belapur, Navi Mumbai
Maharashtra – 400614.**

**PROJECT LOCATION: VASHI BUS DEPOT
Plot No.3, Sector – 9A,
Vashi Navi Mumbai
Maharashtra – 400703.**

SUBMISSION FOR

**Ministry of Environment, Forest & Climate Change
(MoEFCC)**

**SUBMITTED BY
M/s. NAVI MUMBAI MUNICIPAL TRANSPORT
JUNE 2022**

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PROPOSED CONSTRUCTION OF INTEGRATED BUS TERMINUS CUM COMMERCIAL
COMPLEX AT PLOT No.3, SECTOR – 9A, VASHI NAVI MUMBAI, MAHARASHTRA - 400703.

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CHAPTER-1

INTRODUCTION AND PROJECT DESCRIPTION

1.1 INTRODUCTION

Proposed Project, " Proposed Construction of Integrated Bus Terminus Cum Commercial Complex at Plot No.3, Sector 9 A, Vashi, Navi Mumbai, Maharashtra 400703 is being developed by M/s Navi Mumbai Municipal Transport and the of the project have been approved by NMMC ADTP.

This project has been granted environmental clearance vide letter Dated November 7, 2019 - SEIAA -EC-0000002069 by the State Environment Impact Assessment Authority, Maharashtra.
Copy of EC is enclosed in Annexure.

1.2 PROJECT DESCRIPTION

Table 1.1: Brief Description of project

| Sl. No. | Description Details | Unit |
|---------|----------------------------|----------------|
| 1 | Plot Area | 10373.42 Sq.Mt |
| 2 | Proposed Built Up Area | 47635.20 Sq.Mt |
| 3 | Total Water Requirement | 138.8KLD |
| 4 | Fresh Water Demand | 93KLD |
| 5 | Total Wastewater Generated | 118KLD |
| 6 | Capacity of STP | 125KLD |
| 7 | Total Power Requirement | 3563.57KW |
| 8 | No. of RWH Pits | 05 |
| 9 | Solid Waste Generation | 519.33 |
| 10 | Total Parking | 420 Nos |
| 11 | Total No of Towers | 01 |
| 12 | No of Floors | 21 FLOORS |
| 13 | Height of tower | 90Mtr |

1.3 PRESENT STATUS

Project is in construction phase.

1.4 PURPOSE OF THE REPORT

This six-monthly report is being submitted as per the condition stipulated in the Environmental Clearance letter. Further, the study will envisage the environmental impacts that have generated in the local environment due to the project.

The environmental assessment is being carried out to verify:-

- That the project does not have any adverse environmental impacts in the project area and its surrounding
- Compliance with the conditions stipulated in the Environmental Clearance Letter.
- The Project Management is implementing the environmental mitigation measures as suggested in the approved Form-1, Form-1A, Environmental Management Plan (EMP) and building plans.
- The project proponent is implementing the environmental safeguards in true spirit.
- Any non-conformity in the project with respect to the environmental implication of the project.

CHAPTER-2

COMPLIANCE OF STIPULATED CONDITIONS OF ENVIRONMENTAL CLEARANCE

Name of Project: PROPOSED CONSTRUCTION OF INTEGRATED BUS TERMINUS CUM COMMERCIAL COMPLEX

Clearance No.: SEIAA -EC-0000002069 Dated November 7, 2019.

Period of compliance Report: DECEMBER 2022 – JUNE 2022

| Sr No | Environment Clearance Conditions | Compliances Status |
|-------|--|---|
| | Specific Conditions: | |
| I | The PP to get NOC from Competent authority with reference to Thane Creek flamingo sanctuary if the project site falls within 10KM radius from the said sanctuary boundary. The planning Authority to ensure fulfilment of this condition before granting CC. | Condition was noted for the compliance. Flamingo. NOC Received post 60th meeting held at NBWL; NOC for Wildlife (Flamingo) received on 1st February 2021. (Copy Enclosed) |
| II | PP to explore the possibility to buy electric buses under CER activity. | Condition has been noted for the compliance and process has been initiated for purchasing 30 Electric Buses along with chargers (Copy Enclosed) |
| PIII | PP to submit report of AAQM modelling study | Condition has been noted for the compliance and AAQM modelling study report has been submitted on 13/08/2019. (Copy Enclosed) |
| IV | PP to submit CER Plan to Municipal commissioner, and submit the acknowledgement copy to Member Secretary, SEIAA | Condition has been noted for the compliance and CER Plan submitted to Municipal commissioner and acknowledgement copy submitted to Member Secretary, SEIAA on 13/08/2019. (Copy Enclosed) |
| V | PP to ensure that CER plan get approved from Municipal Commissioner/District Collector | Condition has been noted for the compliance and Complied (Copy Attached) |
| VI | PP shall comply to standard EC conditions mentioned in the Office Memorandum issued by MoEF & CC vide F.No.22-34/2018-IA.III dt.04.01.2019 | Condition has been noted for the compliance and has been complied. |
| VII | SEIAA decided to grant EC for - FSI:15560.13m2, Non FSI:32280.09m2 & Total BUA:47815.81m2. IOD no.NMMC/TPO/ADTP/3881/2018, Approval Date-27.09.2018 | Condition has been noted for the compliance and has been complied. |

| Sr No | Environment Clearance Conditions | Compliances Status |
|-------|--|--|
| | General Conditions: | |
| I | E-waste shall be disposed through Authorized vendor as per E-waste (Management and Handling) Rules, 2016. | Condition has been noted for the compliance. There is no E- Waste generated at the project site. |
| II | The Occupancy Certificate shall be issued by the Local Planning Authority to the project only after ensuring sustained availability of drinking water, connectivity of sewer line to the project site and proper disposal of treated water as per environmental norms. | Condition has been noted for the compliance |
| III | This environmental clearance is issued subject to obtaining NOC from Forestry & Wildlife angle including clearance from the standing committee of the National Board for Wildlife as if applicable & this environment clearance does not necessarily implies that Forestry & Wild life clearance granted to the project which will be considered separately on merit. | NOT APPLICABLE |
| IV | PP has to abide by the conditions stipulated by SEAC& SEIAA. | Condition has been noted for the compliance and complied accordingly. |
| V | The height, Construction built up area of proposed construction shall be in accordance with the existing FSI/FAR norms of the urban local body & it should ensure the same along with survey number before approving layout plan & before according to commencement certificate to proposed work. Plan approving authority should also ensure the zoning permissibility for the proposed project as per the approved development plan of the area. | Condition has been noted for the compliance and has been complied. |
| VI | If applicable Consent for Establishment" shall be obtained from Maharashtra Pollution Control Board under Air and Water Act and a copy shall be submitted to the Environment department before start of any construction work at the site. | Condition has been noted for the compliance and has been complied. (Copy Attached) |

| | | |
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| VII | All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase. | Condition has been noted for the compliance and has been complied. |
| VIII | Adequate drinking water and sanitary facilities should be provided for construction workers at the site. Provision should be made for mobile toilets. The safe disposal of wastewater and solid wastes generated during the construction phase should be ensured. | Condition has been noted for the compliance and has been complied. |
| IX | The solid waste generated should be properly collected and segregated. dry/inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material. | Condition has been noted for the compliance and has been complied. |
| X | Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority. | Condition has been noted for the compliance and has been complied. |
| XI | Arrangement shall be made that wastewater and storm water do not get mixed. | Condition has been noted for the compliance. |
| XII | All the topsoil excavated during construction activities should be stored for use in horticulture / landscape development within the project site. | Condition has been noted for the compliance and has been complied. |
| XIII | Additional soil for levelling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved. | Condition has been noted for the compliance and has been complied. |
| XIV | Green Belt Development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO/ Agriculture Dept. | Condition has been noted for the compliance. |
| XV | Soil and ground water samples will be tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contaminants. | Condition has been noted for the compliance. |
| XVI | Construction spoils, including bituminous material and other hazardous materials must not be allowed to contaminate watercourses and the dumpsites for such material must be secured so that they should not leach into the ground water. | Condition has been noted for the compliance and has been complied. |

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| XVII | Any hazardous waste generated during construction phase should be disposed off as per applicable rules and norms with necessary approvals of the Maharashtra Pollution Control Board. | Condition has been noted for the compliance. |
| XVIII | The diesel generator sets to be used during construction phase should be low sulphur diesel type and should conform to Environments (Protection) Rules prescribed for air and noise emission standards. | Condition has been noted for the compliance and has been complied. |
| XIX | The diesel required for operating DG sets shall be stored in underground tanks and If required, clearance from concern authority shall be taken. | Condition was noted for the compliance. Diesel is bought in barrels as and when required. |
| XX | Vehicles hired for bringing construction material to the site should be in good condition and should have a pollution check certificate and should conform to applicable air and noise emission standards and should be operated only during non-peak hours. | Condition was noted for the compliance and records maintained |
| XXI | Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/MPCB. | Condition has been noted for the compliance. And test conducted regularly. |
| XXIII | Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and amended as on 27th August, 2003. (The above condition is applicable only if the project site is located within the 100Km of Thermal Power Stations). | NOT APPLICABLE |
| XXIII | Ready mixed concrete must be used in building construction. | Condition was noted for the compliance and complied accordingly. |
| XXIV | Storm water control and its re-use as per CGWB and BIS standards for various applications. | Condition has been noted for the compliance and provisions considered. |
| XXV | Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred. | Condition was noted for the compliance and complied by using Ready Mix Concrete |
| XXVI | The ground water level and its quality should be monitored regularly in consultation with Ground Water Authority. | NOT APPLICABLE AS NO BORE WELL AT PROJECT SITE |

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| XXVII | The installation of the Sewage Treatment Plant (STP) should be certified by an independent expert and a report in this regard should be submitted to the MPCB and Environment department before the project is commissioned for operation. Discharge of this unused treated effluent, if any should be discharge in the sewer line. Treated effluent emanating from STP shall be recycled/refused to the maximum extent possible. Discharge of this unused treated effluent, if any should be discharge in the sewer line. Treatment of 100% gray water by decentralized treatment should be done. Necessary measures should be made to mitigate the odour problem from STP. | Condition has been noted for the compliance. |
| XXVIII | Permission to draw ground water and construction of basement if any shall be obtained from the competent Authority prior to construction/operation of the project. | Condition has been noted for the compliance. There is No Bore / Well at project site. |
| XXIX | Separation of gray and black water should be done by the use of dual plumbing line for separation of gray and black water. | Condition has been noted for the compliance. |
| XXX | Fixtures for showers, toilet flushing, and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor-based control. | Condition has been noted for the compliance. |
| XXXI | Use of glass may be reduced up to 40% to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating in windows. | Condition has been noted for the compliance. |
| XXXII | Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill requirement. | Condition has been noted for the compliance. |

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| XXXIII | Energy conservation measures like installation of CFLs /TFLs for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Use CFLs and TFLs should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible like installing solar street lights, common solar water heaters system. Project proponent should install, after checking feasibility, solar plus hybrid non-conventional energy source as source of energy. | Condition has been noted for the compliance. |
| XXXIV | Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low sulphur diesel. The location of the DG sets may be decided with in consultation with Maharashtra Pollution Control Board. | Condition has been noted for the compliance. |
| XXXV | Noise should be controlled to ensure that it does not exceed the prescribed standards. During night-time the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations. | Condition has been noted for the compliance and complied accordingly. |
| XXXVI | Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized and no public space should be utilized. | Condition has been noted for the compliance and complied accordingly. |
| XXXVII | Opaque wall should meet prescriptive requirement as per Energy Conservation Building Code, which is proposed to be mandatory for all air-conditioned spaces while it is aspiration for non-air-conditioned spaces by use of appropriate thermal insulation material to fulfill requirement. | Condition has been noted for the compliance. |
| XXXVIII | The building should have adequate distance between them to allow movement of fresh air and passage of natural light, air and ventilation. | Condition has been noted for the compliance and complied accordingly. |

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| XXXIX | Regular supervision of the above and other measures for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings. | Condition has been noted for the compliance and complied accordingly |
| XL | Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance. | Condition has been noted for the compliance. |
| XLI | Six monthly monitoring reports should be submitted to the Regional office MoEF, Bhopal with copy to this department and MPCB. | Condition has been noted for the compliance. |
| XLII | Project proponent shall ensure completion of STP, MSW disposal facility, green belt development prior to occupation of the buildings. As agreed during the SEIAA meeting, PP to explore possibility of utilizing excess treated water in the adjacent area for gardening before discharging it into sewer line No physical occupation or allotment will be given unless all above said environmental infrastructure is installed and made functional including water requirement in Para 2. Prior certification from appropriate authority shall be obtained. | Condition has been noted for the compliance. |
| XLIII | Wet garbage should be treated by Organic Waste Converter and treated waste (manure) should be utilized in the existing premises for gardening. And, no wet garbage will be disposed outside the premises. Local authority should ensure this. | Condition has been noted for the compliance. |
| XLIV | Local body should ensure that no occupation certification is issued prior to operation of STP/MSW site etc. with due permission of MPCB. | Condition has been noted for the compliance. |
| XLV | A complete set of all the documents submitted to Department should be forwarded to the Local authority and MPCB. | Condition has been noted for the compliance and complied. |
| XLVI | In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Department. | Condition has been noted for the compliance. No Change in Scope of work. |
| XLVII | A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards. | Condition has been noted for the compliance. |

| | | |
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| XLVIII | Separate funds shall be allocated for implementation of environmental protection measures/EMP along with item-wise break-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should reported to the MPCB & this department. | Condition has been noted for the compliance and complied accordingly. |
| XLIX | The project management shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the Marathi language of the local concerned within seven days of issue of this letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the Maharashtra Pollution Control Board and may also be seen at Website at http://ec.maharashtra.gov.in . | Condition has been noted for the compliance and has been complied (Copy Enclosed) |
| L | Project management should submit half yearly compliance reports in respect of the stipulated prior environment clearance terms and conditions in hard & soft copies to the MPCB & this department, on 1st June & 1st December of each calendar year. | Condition has been noted for the compliance. |
| LI | A copy of the clearance letter shall be sent by proponent to the concerned Municipal Corporation and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent. | Condition has been noted for the compliance. |
| LII | The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM, SO ₂ , NO _x (ambient levels as well as stack emissions) or critical sector parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain. | Condition has been noted for the compliance. |

| | | |
|------|---|--|
| LIII | The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. | Condition has been noted for the compliance |
| LIV | The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail. | Condition has been noted for the compliance. |

CHAPTER-3

DETAILS OF ENVIRONMENTAL MONITORING

3.1 AMBIENT AIR QUALITY MONITORING

3.1.1 Ambient Air Quality Monitoring Stations

Ambient air quality monitoring has been carried out at one location at the Project in the month of March 2022 site to assess the ambient air quality. This will enable to have a comparative analytical understanding about air quality and the changes in the air environment in the study area with respect to the condition prevailing. The location of the ambient air quality monitoring stations was taken at North West Corner of the plot.

The sampler was placed near the site office and was free from any obstructions. Surroundings of the sampling site represent residential environmental setting.

3.1.2 Ambient Air Quality Monitoring Methodology

Monitoring was conducted in respect of the following parameters:

| PARAMETER | METHOD |
|---|---|
| Particulate Matter (PM _{2.5}) | Gravimetric method (CPCB guidelines 2012, NAAQS Volume -I) |
| Particulate Matter (PM ₁₀) | IS 5182 (Part-23):2006, Reaffirmed -2017 |
| Sulphur Dioxide (SO ₂) | IS 5182 (Part-02):2006, Reaffirmed -2017 |
| Nitrogen Dioxide (NO ₂) | IS 5182 (Part-06):2006, Reaffirmed -2017 |
| Ammonia (NH ₃) | Indophenol Blue method 4. 1 (CPCB guidelines 201 2, NAAQS Volume-I) |
| Carbon Monoxide (CO) | IS 5182(Part-10): 1999, Reaffirmed -2009 |
| Benzene(C ₆ H ₆) | IS 5182(Part-11): 2006 |
| Ozone (O ₃) | Chemical Method (NAAQS Volume-I) |

| | |
|----------------------|-----------------------------|
| Lead (Pb) | ASS Method (NAAQS Volume-I) |
| Nickel (Ni) | ASS Method (NAAQS Volume-I) |
| Arsenic (As) | ASS Method (NAAQS Volume-I) |
| Benzo(a)pyrene (BaP) | IS 5182(Part-12): 2004 |

The duration of sampling of PM_{2.5}, PM₁₀, SO₂ and NO₂ was 24 hourly continuous sampling per day and CO were sampled for 1 hours continuous, thrice in 24-hour duration monitoring. The monitoring was conducted for one day at each location. This is to allow a comparison with the National Ambient Air Quality Standards.

The air samples were analysed as per standard methods specified by Central Pollution Control Board (CPCB) and IS: 5182.

Respirable Dust Samplers instruments have been used for monitoring Particulate Matter (PM₁₀), Respirable fraction (<10 microns) and gaseous pollutants like SO₂, and NO₂. Pulse pumps and mylar bags were used for collection of Carbon monoxide samples. Gas Chromatography techniques have been used for the estimation of CO.

3.1.3 Ambient Air Quality Monitoring Results

| Parameter | Result | Limit as per NAAQS | Unit |
|--|--------|--------------------|-------------------|
| Particulate Matter (PM _{2.5}) | 49 | 60 | mg/m ³ |
| Particulate Matter (PM ₁₀) | 91 | 100 | mg/m ³ |
| Sulphur Dioxide (SO ₂) | 24 | 80 | mg/m ³ |
| Nitrogen Dioxide (NO ₂) | 37 | 80 | mg/m ³ |
| Ammonia (NH ₃) | < 10.0 | 400 | mg/m ³ |
| Carbon Monoxide (CO) | 1.2 | 04 | mg/m ³ |
| Benzene (C ₆ H ₆) | < 0.05 | 05 | mg/m ³ |
| Ozone (O ₃) | < 33.0 | 100 | mg/m ³ |
| Lead (Pb) | 0.064 | 1.0 | mg/m ³ |
| Nickel (Ni) | < 12.0 | 20 | mg/m ³ |
| Arsenic (As) | < 1.2 | 06 | mg/m ³ |
| Benzo(a)pyrene (BaP) | < 0.2 | 01 | mg/m ³ |

3.2 AMBIENT NOISE MONITORING

3.1.1 Ambient Noise Monitoring Locations

The main objective of noise monitoring in the study area is to assess the present ambient noise levels at North West corner of the Plot due to various construction allied activities around the site and increased vehicular movement. A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the area. Ambient noise monitoring was conducted at North West corner in the month of March 2022.

3.2.2 Methodology of Noise Monitoring

Noise levels were measured using integrated sound level meter manufactured by Kusam – Mecro KM929 MK I Sr. No. AIR-I-057. Sound Level Meter has been designed to meet the measurement requirement of noise engineers, noise quality control & health prevention in various environments, such as noise measurement in factory, Office, Traffic Road, Family & all other noise measurement applications.

Noise level monitoring was carried out continuously for 24-hours with one-hour interval starting at 06:25 hrs to 05:25 hrs next day. The noise levels were monitored on working days only.

During each hour Leq were directly computed by the instrument based on the sound pressure levels. Lday (Ld), Lnight (Ln) and Ldn values were computed using corresponding hourly Leq. Monitoring was carried out at 'A' response and fast mode.

3.2.3 Ambient Noise Monitoring Results

The location of ambient noise monitoring results is summarized in the below tabulation

| Day Time | Noise Level dB(A) | Night-time | Noise Level dB(A) |
|---------------|----------------------|-----------------|----------------------|
| 06:13 | 59.2 | 22:15 | 60.2 |
| 07:13 | 65.2 | 23:15 | 54.4 |
| 08:13 | 63.8 | 00:15 | 56.2 |
| 09:14 | 68.2 | 01:15 | 57.2 |
| 10:14 | 66.6 | 02:15 | 52.3 |
| 11:15 | 64.2 | 03:15 | 50.8 |
| 12:15 | 64.8 | 04:15 | 51.9 |
| 13:15 | 65.1 | 05:15 | 56.3 |
| 14:15 | 69.1 | | |
| 15:15 | 70.2 | | |
| 16:15 | 63.3 | | |
| 17:15 | 62.4 | | |
| 18:15 | 61.8 | | |
| 19:15 | 63.3 | | |
| 20:15 | 62.0 | | |
| 21:15 | 58.9 | | |
| Day Time Avg. | 64.3 | Night-time Avg. | 55.9 |

3.2.4 Discussion on Ambient Noise Levels in the Study Area

Day Time Noise Levels:

The day-time noise level was found to within limit prescribed for residential area.

Night-time Noise Levels:

The night-time noise level was found to within limit prescribed for residential area.

3.3 GROUNDWATER QUALITY MONITORING

3.3.1 Groundwater Quality Monitoring Locations

Facility at project site is using water through tanker for the construction purpose and RO water for drinking purpose. There is no bore well present at site. So, ground water monitoring is not required.

3.4 SOIL MONITORING

3.4.1 Soil Monitoring Locations

The objective of the soil monitoring is to identify the impacts of ongoing project activities on soil quality and predict impacts, which have arisen due to execution of various constructions allied activities. Accordingly, a study of assessment of the soil quality has been carried out.

To assess impacts of ongoing project activities on the soil in the area, the physico-chemical characteristics of soils were examined by obtaining soil samples from selected point and analysis of the same. One sample of soil was collected from the project site in the month of March 2022 for studying soil characteristics.

3.4.2 Methodology of Soil Monitoring

Monitoring was conducted in respect of the following parameters:

| TEST PARAMETER | TEST METHOD |
|-----------------------------|-----------------------|
| pH (10 % Solution) | Test Method |
| Loss on Drying @ 105°C | SW-846-9045-C |
| Loss on Ignition @550°C | APHA 2540 |
| Sulphate as SO ₄ | APH A 2540 |
| Chloride as Cl | IS 3025(Part 24)2009 |
| Copper | IS 3025(Part 32)2007 |
| Cobalt | IS. 3025(P-45)1993 |
| Lead | IS: 3025(P-45)1993 |
| Iron | IS:3025(P-34)1988 |
| Manganese | IS:3025(P-31)1988 |
| Zinc | APHA 23rd Edition |
| Nickel | IS 3025 (Part 49)2009 |
| Chromium | IS 3025 (Part 54)2003 |

3.4.3 Soil Monitoring Results

The physico-chemical characteristics of the soil, as obtained from the analysis of the soil sample are presented

| Test Parameter | Result | Unit | Test Method |
|-----------------------------|--------|-------|-----------------------|
| pH (10 % Solution) | 6.9 | % | Test Method |
| Loss on Drying @ 105°C | 5.3 | % | SW-846-9045-C |
| Loss on Ignition @550°C | 3.2 | mg/L | APHA 2540 |
| Sulphate as SO ₄ | 52 | mg/kg | APH A 2540 |
| Chloride as Cl | 137 | mg/kg | IS 3025(Part 24)2009 |
| Cooper as Cu | 158 | mg/kg | IS 3025(Part 32)2007 |
| Cobalt as Co | <2 | mg/kg | IS. 3025(P-45)1993 |
| Lead as Pb | 95 | mg/kg | IS: 3025(P-45)1993 |
| Iron as Fe | 56897 | mg/kg | IS:3025(P-34)1988 |
| Manganese as Mn | 5124 | mg/kg | IS:3025(P-31)1988 |
| Zinc as Zn | 82 | mg/kg | APHA 23rd Edition |
| Nickel as Ni | 135 | mg/kg | IS 3025 (Part 49)2009 |
| Chromium as Cr | 89 | mg/kg | IS 3025 (Part 54)2003 |

3.4.4 Discussion on Soil Characteristics in the Study Area

The soil in study area is characterized by moderate organic content. The soil quality in the project area has not been affected by the project activities.

TEST REPORT AMBIENT AIR QUALITY MONITORING


| Report No. | PAPL/A-374A/03-22 | Report Date | 30/03/2022 | |
|--|---|--------------------|-----------------------------|--|
| Work Order No. | NMMC/D.E.(Civil)/VBD106/2022 Dated 07/03/2022 | | | |
| Name of Customer | M/s. Navi Mumbai Municipal Transport | | | |
| Address | Construction of Integrated Bus Terminus cum Commercial complex on Plot No. 3, Sector 9A, Vashi, Navi Mumbai.400703. | | | |
| MoEF Certificate No. | S.O.3744(E) dated 17.10.2019 | Valid up to | 16/10/2024 | |
| Type of sampling | AAQM | 24 Hrs. | ✓ AAQM 24 Hrs. AAQM 24 Hrs. | |
| Instrument used | RDS | ✓ | FDS | |
| | ID No. | PAPL/LAB/016 | ID No. | |
| | Calibration Due Date | 31/08/2022 | Calibration Date | |
| | | | 01/09/2022 | |
| Date of Sampling | 23/03/2022 | Sample Ref. No | 977A/A-374A/03-22 | |
| Location of sampling | North West Corner near Steel Yard | | | |
| Sample Collected By | Padmaja Aerobiologicals Pvt. Ltd. | | | |
| POLLUTION PARAMETERS | | | | |
| Parameter | Result | Limit as per NAAQS | Unit | Method |
| Particulate Matter (PM _{2.5}) | 49 | 60 | µg/m ³ | Gravimetric method (CPCB guidelines 2012, NAAQS Volume -I) |
| Particulate Matter (PM ₁₀) | 91 | 100 | µg/m ³ | IS 5182(Part-23):2006,Reaffirmed-2017 |
| Sulphur Dioxide (SO ₂) | 24 | 80 | µg/m ³ | IS 5182(Part-02):2001,Reaffirmed-2017 |
| Nitrogen Dioxide (NO ₂) | 37 | 80 | µg/m ³ | IS 5182(Part-06):2006,Reaffirmed-2017 |
| Ammonia (NH ₃) | <10.0 | 400 | µg/m ³ | IS:5185 (Part-25):2018 |
| Carbon monoxide (CO) | 1.2 | 04 | mg/m ³ | IS 5182(Part-10):1999,Reaffirmed -2009 |
| Benzene (C ₆ H ₆) | <0.05 | 05 | µg/m ³ | IS 5182(Part-11):2006 |
| Ozone (O ₃) | <33.0 | 100 | µg/m ³ | IS:5185 (Part-9):1974 Reaffirmed-2019 |
| Lead (Pb) | 0.064 | 1.0 | µg/m ³ | AAS Method (NAAQS Volume-I) |
| Nickel (Ni) | <12.0 | 20 | ng/m ³ | AAS Method (NAAQS Volume-I) |
| Arsenic (As) | <1.2 | 06 | ng/m ³ | AAS Method (NAAQS Volume-I) |
| Benzo(a)pyrene (BaP) | <0.2 | 01 | ng/m ³ | IS 5182(Part-12):2004 |

| | | | | |
|---------------------|------|----|---------------------------|-----|
| Sampling conditions | Rain | No | Construction site near by | Yes |
| | Wind | No | Vehicular Activity | No |

Remark:--

Note: This test report may not be produced in part or full, without the permission of this laboratory.
This test report refers only to the sample submitted for the testing.


Analyst


For Padmaja Aerobiologicals Pvt. Ltd.

WTR-F-001

CERTIFICATE OF ANALYSIS

Date: - 31.03.2022

Report No : PAPL/EW-02A/03-22
Sample Ref. No. : 01A/EW-02A/03-22
Name of Industry : Navi Mumbai Municipal Transport
Address : Construction of Integrated Bus Terminus cum Commercial complex on Plot no 3, sector 9A, Vashi Navi Mumbai - 400703
Name of Sample : Soil Sample
Sample Quantity : 1 kg
Sample Collected by : PAPL
Date of Collection : 23.03.2022
Date of Receiving : 23.03.2022

| Sr. No. | Test Parameter | Result | Unit | Test Method |
|---------|-----------------------------|--------|-------|-----------------------|
| 1 | pH (10 % Solution) | 6.9 | --- | SW-846-9045-C |
| 2 | Loss on Drying @ 105°C | 5.3 | % | APHA 23rd Edition |
| 3 | Loss On Ignition @550°C | 3.2 | % | APHA 23rd Edition |
| 4 | Sulphate as SO ₄ | 52 | mg/kg | IS 3025(Part 24)2009 |
| 5 | Chloride as Cl | 137 | mg/kg | IS 3025(Part 32)2007 |
| 6 | Copper as Cu | 158 | mg/kg | IS: 3025(P-45)1993 |
| 7 | Cobalt as Co | <2 | mg/kg | IS: 3025(P-45)1993 |
| 8 | Lead as Pb | 95 | mg/kg | IS:3025(P-34)1988 |
| 9 | Iron as Fe | 56897 | mg/kg | IS:3025(P-31)1988 |
| 10 | Manganese as Mn | 5124 | mg/kg | APHA 23rd Edition |
| 11 | Zinc as Zn | 82 | mg/kg | IS 3025(Part 49)2009 |
| 12 | Nickel as Ni | 135 | mg/kg | IS 3025(Part 54)2003 |
| 13 | Chromium as Cr | 89 | mg/kg | IS 3025 (Part 52)2003 |

Remark: ---

ANALYSED BY

REVIEWD BY

Dr. N.T. Joshi (Director)
Mr. R. B. Chaudhari
AUTHORIZED SIGNATORY

Abbreviations:-

Abbreviations: ---

AIR-F-011

Ref. No. : 977B/A-374B/03-22

Date: 30/03/2022

Work Order No. : NMMC/D.E.(Civil)/VBD106/2022 Dated 07/03/2022

Name of the Industry: M/s. Navi Mumbai Municipal Transport
Construction of Integrated Bus Terminus cum
Commercial complex on Plot No. 3, Sector 9A,
Vashi, Navi Mumbai.400703.

CERTIFICATE OF ANALYSIS
NOISE LEVEL MEASUREMENTS

Date of Sampling: 23/03/2022 to 24/03/2022

LOCATION: North East Corner near Site Entrance

| Day Time | Noise Level dB(A) | Night Time | Noise Level dB(A) |
|---------------|----------------------|-----------------|----------------------|
| 06:13 | 59.2 | 22:13 | 60.2 |
| 07:13 | 65.2 | 23:13 | 54.4 |
| 08:13 | 63.8 | 00:13 | 56.2 |
| 09:13 | 68.2 | 01:13 | 57.2 |
| 10:13 | 66.6 | 02:13 | 52.3 |
| 11:13 | 64.2 | 03:13 | 50.8 |
| 12:13 | 64.8 | 04:13 | 51.9 |
| 13:13 | 65.1 | 05:13 | 56.3 |
| 14:13 | 69.1 | | |
| 15:13 | 70.2 | | |
| 16:13 | 63.3 | | |
| 17:13 | 62.4 | | |
| 18:13 | 61.8 | | |
| 19:13 | 63.3 | | |
| 20:13 | 62.0 | | |
| 21:13 | 58.9 | | |
| Day Time Avg. | 64.3 | Night Time Avg. | 54.9 |

Remarks:-

Instrument used: -Kusam-Meco KM 929 MK1 Sr. No. PAPL/LAB/071

Calibration Due date: - 31/03/2022.

Limit During Day Time < 75dB(A)

Limit During Night Time < 70dB(A)

For Padmaja Aerobiologicals Pvt.

AIR-F-005

CERTIFICATE OF ANALYSIS

ANALYSIS REPORT FOR STACK EMISSION

| | |
|------------------------------|---|
| Sample / Report Ref. No. | 977C/A-374C/03-22 |
| Work Order No. | NMMC/D.E.(Civil)/VBD106/2022 Dated 07/03/2022 |
| Report Date | 30/03/2022 |
| Name of Industry Address: | M/s. Navi Mumbai Municipal Transport Construction of Integrated Bus Terminus cum Commercial complex on Plot No. 3, Sector 9A, Vashi, Navi Mumbai.400703. |
| Sample Collected by | PADMAJA AEROBIOLOGICALS PVT. LTD. |
| Date of Sampling | 23/03/2022 |

PARTICULARS OF STACK

| | |
|--|-------------------|
| Stack Attached to | D.G. Set (125KVA) |
| Stack Diameter (Meter) | 0.1016 |
| Stack Height (Meter) | 1.0 Above Roof |
| Stack Temperature (°C) | 133 |
| Stack Velocity of Flue Gases (m/s) | 12.7 |
| Stack Volume of Flue Gases (Nm ³ /hr) | 271 |
| Type of Fuel | Diesel |

POLLUTION PARAMETERS

| Parameter | Result | Limit | Unit | Method |
|-------------------------|--------|-------|---------|---|
| Particulate Matter (PM) | 0.154 | 0.3 | g/kw-hr | IS-11255 (Part 1) 1985 R-2019 |
| SO ₂ Conc. | 0.11 | NS | Kg/day | IS-11255 (Part 2) 1985 R-2019 |
| NO _x Conc. | 0.098 | 9.2 | g/kw-hr | IS 11255 (Part 7) 2005 Reaffirmed 2012 |


Remark: --

Instrument used: -Polltech make Model PEM- SMS4, Instrument I.D. No. PAPL/LAB/075

Calibration Due date: - 28/02/2023.

NS: Not Specified


Analyst


For Padmaja Aerobiologicals Pvt. Ltd.

AIR-F-007

Ref. No.: 977D/A-374D/03-22

Date: 30/03/2022

Work Order No. :- NMMC/D.E.(Civil)/VBD106/2022 Dated 07/03/2022

Name of the Industry: M/s. Navi Mumbai Municipal Transport
Construction of Integrated Bus Terminus cum
Commercial complex on Plot No. 3, Sector 9A,
Vashi, Navi Mumbai.400703.

CERTIFICATE OF ANALYSIS

D.G SET NOISE LEVEL MEASUREMENT

Date of Sampling: 23/03/2022

| Time | Locations | Noise Level in dB (A) (Day Time) | Limit dB (A) |
|------------|--|--|--------------|
| 11:10 hrs. | D.G. Set 125 KVA(Door Opened) | 95.7 | -- |
| 11:14 hrs. | D.G. Set 125 KVA(Door Closed-East side) | 73.1 | <75 |
| 11:15 hrs. | D.G. Set 125 KVA(Door Closed-West side) | 72.0 | <75 |
| 11:16 hrs. | D.G. Set 125 KVA(Door Closed-North Side) | 73.7 | <75 |
| 11:17 hrs. | D.G. Set 125 KVA(Door Closed-South Side) | 72.5 | <75 |

Remark: --

Instrument used: - Kusam-Meco KM 929 MK1 Sr. No. PAPL/LAB/068

Calibration Due date: - 06/08/2022.


For Padmaja Aerobiologicals Pvt. Ltd.