COMPLIANCE STATUS REPORT

With respect to Environmental and
CRZ Clearance Granted to

Navi Mumbai International Airport (NMIA)

Period :
January 2018 – June 2018

City & Industrial Development Corporation of Maharashtra Ltd.
(CIDCO)

O/C

CITY AND INDUSTRIAL DEVELOPMENT CORPORATION OF MAHARASHTRA LIMITED

(CIN - U99999 MH 1970 SGC - 014574)

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Ref. No. ***Date :***

CIDCO/GM(ENV&F)/NMIA/2018/184 **21st Sept 2018**

The Addl. Principal Chief Conservator of Forest,
Regional Office, Western Region,
Ministry of Environment, Forests & Climate Change (MoEF&CC)
Ground Floor, East Wing, New Secretariat Building,
Civil Lines, Nagpur-440001

Sub: Submission of Six-Monthly Compliance Report (Jan-June 2018) for Environmental and CRZ Clearance in respect of proposed Navi Mumbai International Airport.

Ref: Environmental and CRZ Clearance granted by MoEF, Government of India vide letter No. 10-53/2009-IA.III dated 22nd November 2010 and Extension of Validity granted by MoEF&CC vide letter No. 10-53/2009-IA.III dated 20th December 2017.

Dear Sir,

With reference to the above, we are submitting herewith the six-monthly Environmental Compliance Status report for the period of **January – June 2018**.

The Navi Mumbai International Airport (NMIA) project has been put on fast track mode with constant monitoring of its progress by the Government of Maharashtra and the Government of India. Currently, it is in the pre-development/pre-construction phase.

CIDCO has selected Mumbai International Airport Private Limited (MIAL) to develop the proposed airport at Navi Mumbai. In this regard, a Concession Agreement was signed on 8th January 2018 between CIDCO and Navi Mumbai International Airport Private Limited (NMIAL). NMIAL is a special purpose vehicle created for this project with MIAL holding 76% stake and 24% with CIDCO.

The capacity of the proposed airport is to be 60 million passengers per annum and 1.5 million tones per annum of cargo as per the EC. NMIAL is in the process of carrying out the detailed engineering for the project.

We are submitting herewith the desired information and copies of documents are as under:

1. EC Compliance Report
2. Post Environmental Monitoring Reports
3. Water Availability Report (required as part of conditions of Extension of EC validity)
4. Letter of Award from CIDCO to MIAL dated 25 October 2017

We hope the above is to your satisfaction.

Thanking You,

Yours faithfully,

(D.R.Patil)
General Manager
Environment & Forests
CIDCO

O/C

Encl.: a/a

CC:

1. **The Member Secretary, Maharashtra Pollution Control Board, 3rd Floor, Kalpataru Point, Sion, Mumbai – 400 022.**
2. **Central Pollution Control Board, Parivesh Bhavan, Opp. VNC ward office No. 10, Subhanpura, Vadodara – 390023.**
3. **The Chairman, Maharashtra Coastal Zone Management Authority, Room No. 217 (Annex), Mantralaya, Mumbai – 400 032.**
4. **Monitoring Cell, MoEF&CC, Indira Paryavaran Bhavan, Jor Bagh Road, New Delhi – 3.**

HALF YEARLY COMPLIANCE REPORT

1.	**Name of the Project**	**:**	Navi Mumbai International Airport (NMIA) at Navi Mumbai, Taluka Panvel, Dist. Raigad, Maharashtra.
02	**MoEF & CC Clearance Letter No. & Date**	**:**	F. No. 10-53/2009-I.A.III dtd. 22.11.10
	Extension of Validity	**:**	F.No. 10-53/2009-IA.III dt 20.12.17 upto 21.11.2020
03	**Compliance Period**	**:**	01.01.2018 to 30.06.2018
04	**Project & Statutory Clearances Update**	**:**	The various conditions of Environment Clearance (EC) are being complied. Public was informed about the grant of EC by advertisement in newspaper DNA, Mumbai on 30.11.2010 and Lokmat (Marathi) on 30.11.2010 and copies of Newspaper cutting were submitted to Regional Office at Bhopal.
			A copy of letter granting EC by MoEF was sent to office of Commissioner, Konkan Division, Collector, Raigad, C.E.O., Zilha Parishad, B.D.O., Panchayat Samiti and the Sarpanch of Six Villages in the project area and local NGO from whom suggestions/representation were received while processing the proposal.
			The High Level Advisory and Monitoring Committee (HLAMC) has been constituted by Govt. of Maharashtra (GoM) vide its Order No.CID-3311/Pra.Kra.203/UD-10 dt. 13th May, 2011. A copy of this Order has been submitted to Regional Office, Bhopal.
			The updated EIA study report was submitted to all the concerned departments of GoI and GoM vide letter No.CIDCO/GM/Airport/49 dt. 21st April,2011.
			The land use plan in sanctioned development plan of Navi Mumbai is amended by incorporating 615 Ha. area as No Development Zone vide Govt. Order No.TPS-1711/2495/C.R.202/11/UD-12 dtd.21st March, 2012

			The Govt. of Maharashtra issued Notification bearing No.TPS:17112/475/CR-58/UD/12 dated 10th January, 2013;for an area around proposed International Airport called "Navi Mumbai Airport Influence Notified Area" NAINA and appointed CIDCO to be Special Planning Authority.
			The Wildlife Clearance was recommended in the 29th Meeting of Standing Committee vide letter No.P.No.6-43/2007 WL-I dtd. 1st August, 2013 of Wildlife Division of Ministry of Environment & Forest, Govt. of India.
			The Bombay High Court permitted CIDCO to clear Mangroves for the development of NMIA vide its Order dt. 29th October, 2013 in NoM.419 of 2011.
			In Principle approval for the first stage Forest Clearance for NMIA project was accorded vide Letter No.F.No.8-95/2012-FC dt. 17th December, 2013 and final approval / Stage 2 Forest Clearance has been granted by MoEF & CC vide F.No8-95/2012-FC dt. 24th April 2017
			Urban Development Department, Govt. of Maharashtra issued the G.R.No. CID/1812 /P.K.275/UD-10, dt.1st March, 2014 & 28th May 2014 for Land Acquisition & Resettlement & Rehabilitation of families falling in airport site.
			The CRZ clearance for off-site physical infrastructure of roads, bridges and interchanges has been granted by MCZMA vide letter no. MCZMA-2016/CR-6/TC-4 dated 15th February 2016.
			Proposal for shifting of Electric High Voltage Tension (EHVT) Lines was cleared by MOEFCC vide letter dt 28.08.17
			The Comprehensive EIA study report was submitted to MoEF, MCZMA and MPCB vide letter No. CIDCO/SE(AP-II)/NMIA/2017/ dt. 29th August, 2017
			Forest Clearance Stage I for shifting of EHVT Lines was received vide letter dt. 02.08.18

05	**Present Status of Project**	**:**	CIDCO has selected Mumbai International Airport Private Limited (MIAL) as Concessionaire to develop the proposed airport at Navi Mumbai and a Concession Agreement was signed on 8th January 2018 between CIDCO and Navi Mumbai International Airport Private Limited (NMIAL). Currently, CIDCO is undertaking pre-construction land clearance and pre development works at site and NMIAL is undertaking Detailed Engineering.

Present Status of Compliance to Conditions stipulated in E&CRZ Clearance No.10-53/2009-I.A. III dt. 22.11.2010 is given as under:

Sl. No.		Particular	Compliance
	Specific Condition		
I.	**Construction Phase**		
	(i)	**"Consent for Establishment" shall be obtained from State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.**	"Consent for Establishment" obtained from MPCB vide letter dt. 14.10.2015 for Phase 1 of Airport (10 MPPA, Project Cost Rs. 4424 cr.). Validity – 5 years from date of issue of letter or commissioning of Phase 1 COD, whichever is earlier.
	(ii)	**CIDCO shall rehabilitate about 3000 families of 10 settlements from 7 villages falling within the airport zone as per the R & R policy of the Government of India or the Government of Maharashtra, which ever is more beneficial to the project affected persons.**	R&R package approved vide UDD, GoM G.R.dtd.1st March, 2014 and 28th May 2014 for rehabilitation of families falling in airport site. As per approved package by GoM, R&R of PAPs is being carried out. To date about 1200 families are rehabilitated.
	(iii)	**CIDCO shall obtain necessary permission from Hon'ble High Court of Bombay for cutting or damaging of mangroves and clearance under Forest Conservation Act 1980 as per the orders in respect of notice of Motion no. 417 of 2006 in PIL no. 87/2006, as required.**	The Bombay High Court permitted CIDCO to clear Mangroves for the development of NMIA vide its Order dt. 29th October, 2013 in NoM.419 of 2011 in PIL No. 87/2006. Stage 1 Forest Clearance was accorded vide Letter No.F.No.8-95/2012-FC dtd. 17th December, 2013. Stage 2 Forest Clearance received vide letter dated 24th April 2017.

Sl. No.		Particular	Compliance
	[iv]	**The plantation and protection of mangroves over an area of 615 ha (245 hectares of good quality Mangroves Park shall be developed at Vaghivli on the north of the airport area + 60 hectare area located on the west side of the airport site around Moha creek and Panvel Creek + 310 hectares area on the northeast of the airport site between Gadhi River, Mankhurd Panvel Rail corridor and National Highway 4B shall be declared as No-development zone and CIDCO shall under take the development as Mangroves park/green area) would be developed and maintained in the shape of Biodiversity Mangrove Parks well before the airport project is initiated and its progress reported to the high level committee mentioned below at (xxxiii). CIDCO shall formally amend the land use in the sectioned development plan of Navi Mumbai following the due procedure under MRTP Act to achieve this objective.**	Amendment of NMDP incorporating 615 Ha. area as NDZ to undertake plantation and protection of mangroves approved by UDD, GoM vide G.R. dated 21st March, 2012 The same is being taken up with the support of Mangrove Cell - Forest Department in a phased manner.
	[v]	**The proposed re-coursing of tidally influenced water body outlets from Ulwe river has a large cross sectional area at the middle with the river/creek on either end remaining unchanged with its natural course. The whole system should function as was functioning earlier without airport project. Surface runoff should not be let into the channel just because the area of cross section is large. The whole airport area will be reclaimed, and the level raised to 7m whereas the existing level all around the**	1. CWPRS, Pune carried out 1D, 2D & physical Model studies based on the MoEF's approved layout plan of airport covering 1160 Ha. CIDCO/ NMIAL is designing the project, including the airport drainage system, as well as the master drainage plan of surrounding areas by incorporating the various recommendations of CWPRS 2. The preliminary drainage plan of the airport site has been prepared by the prime consultant. However, the detailed plan is prepared by

Sl. No.		Particular	Compliance
		airport will continue to be low in its natural state. There will be flow all around due to surface runoff. This additional quantity must be collected by appropriate drainage system and let into Gadhi River and not into the re-coursing channel. The recourse channel may be able to take it but not the river or creek on either side of the channel. This aspect shall be examined by CIDCO in details to avoid the flooding of the low-lying areas besides inducting other hydrological and environmental studies.	the Concessionaire as a part of Master Plan preparation, incorporating CWPRS recommendations and abiding by EC conditions. The whole Storm Water from Airport area is planned to discharge in Gadhi River. CIDCO will be monitoring the same 3. The master drainage plan for the airport and surrounding area is prepared by CIDCO, considering the core airport area and the various developments around the airport, based on CIDCO's design norms and at the same time considering CWPRS recommendations. NMIAL is also integrating the plans with CIDCO plans / CWPRS recommendations
	(vi]	**The entire system shall be studied as one composite system with appropriate boundary conditions to reflect the worst conditions – minimum 100 years to be specified and compliance ensured such as -flooding, surface runoff not only from the airport but also from surrounding areas as well, normal flow, tidal flow due to tidal surge having a long return period, possible obstructions to flow, tributaries joining the main river etc so as to take appropriate protection and remedial measures. Due to construction of recourse Channels and also due to tail end of the Gadhi & Ulwe Rivers into Panvel Creek, there is a need to prepare a Comprehensive Master Plan for Surface drainage and Flood protection, keeping in view the proposed developments. CIDCO shall submit the above Master Plan to the Ministry.**	Data on the topography of area surrounding the airport is collected. The master drainage plan of airport and surrounding area is prepared based on recommendations of the CWPRS report and submitted as a part of Comprehensive EIA report.

Sl. No.		Particular	Compliance
	(vii]	**Systemic and periodic monitoring mechanism need to be put in place by CIDCO to assess the impact on sub-surface flow/ impact on aquifers as well as surface water bodies in different seasons. Necessary additional environmental protection measures to be adopted to address the impact of proposed development in coastal sub-subsurface flow as well as impact on aquifers.**	CIDCO has appointed a Laboratory recognized by MoEF & CC, for monitoring the various environmental parameters of air, river water and groundwater, at monitoring stations around the airport, in order to establish the pre-construction/during construction data. A copy of Environmental Monitoring report is attached as **ANNEXURE I**.
	[viii]	**CIDCO shall prepare a Management Plan to handle the runoff from the airport and to ensure that runoff associated risks/ impacts such as siltation in receiving water body are avoided and are taken care within airport area during monsoons.**	The Master Drainage Plan Report of Airport and its surrounding area is prepared which includes the issue of management of runoff and associated risks during the monsoon.
	[ix]	**On the northern part of the airport there is a secondary channel of the Gadhi River which will be filled up for the airport runway construction. This will be replaced by a shorter channel along the northern boundary of the airport. The channel shall be designed appropriately through overall modeling study so that the channel provides tidal water to the mangrove park and moderate tidal flows under worst environmental conditions. Need for widening and deepening of Gadhi River may also be studied simultaneously, if required. The revised widths and depths of recourse channels shall be determined with modified drainage and worst rainfall/ tide conditions including appropriate factor of safety.**	The proposed North connecting channel is being designed in accordance with the Model studies carried out at CWPRS, Pune.

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	[x]	**The flow channels and the low lying mangrove area which will receive water from diverted recourse/ Channels should remain undisturbed. No road, embankment or any other construction shall be permitted. Any island formed due to deposition of sediment in front of Panvel creek shall be periodically removed.**	All the flow channels in No Development Zone (615 Ha.) are kept undisturbed and any deposition of sediment in Panvel Creek shall be removed periodically.
	[xi]	**A detailed map shall be submitted by CIDCO to the Ministry with quantification of affected mangrove area with density i.e. initial proposal & modified proposal and proposed mangrove forestation with species. The work on the proposed compensatory mangrove park should commence well before the construction of the airport is undertaken. The mangrove irrigation systems and diverse species selections for all the four areas may be scientifically made. The river front development in all the areas not protected by adequate mangrove buffer along the Panvel creek and Gadhi river may be considered through studies.**	Mumbai University has quantified the affected Mangrove and same was incorporated in updated EIA Report. The scheme for regeneration of Mangroves is prepared through a consultant M/s. Lewis Environment Services USA. The regeneration of mangroves is being planned in a phased manner, in consultation with the Mangrove Cell of State Forest Dept , Plantation has already commenced in the 310 ha of NDZ to the North East of airport. Scheme for river front development is being prepared by CIDCO. In addition to the mangrove protection along the river bank, a river front development plan will be in place, so as to ensure adequate bank protection
	[xii]	**Whatever EIA data was submitted and presented was related to a situation for "no airport condition". The project proposal has under gone many changes in terms of converting the lagoon as Mangrove Park, shifting of non-aeronautical activities to the south etc. Updated EIA report with all the modifications and commitments given by CIDCO shall be submitted to the MoEF, MPCB and to MCZMA. This updated EIA report will serve as**	Updated EIA report was submitted to MoEF, MPCB and MCZMA on 21 st April, 2011. A Comprehensive EIA report incorporating the various studies / activities carried out by CIDCO post Environmental Clearance, has been prepared and submitted to MoEF, MPCB and MCZMA dtd 29th August , 2017. Environmental Audit shall be

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		the preliminary baseline data. CIDCO shall submit the second report (EIA Report II) after finalization of all the facilities followed by Comprehensive EIA report prepared with approved layout of the airport, new hydrological scenario, altered topography and land use. The Comprehensive EIA report should also include ecological aspects answering quires raised by BNHS and several other points raised during the meeting. After completion of Phase I of the project, the CIDCO shall conduct the "Environmental Audit" with a reputed organization and the audit shall also include the "Validation of the conclusions drawn in the EIA Report" and to submit to MoEF, MPCB and to MCZMA and shall be uploaded on the website.	conducted after commissioning of phase 1 of the airport. The same has been mandated in the Concession Agreement for NMIA
	[xiii]	**The water quality of the River Gadhi, Ulwe, the Panvel Creek and the ground water is to be monitored on quarterly basis for TOC, Pb, Cd and Hg at all the locations identified in the EIA study for a period of at least 2 years from the commencement for the construction work and the quarterly reports to be submitted to Ministry of Environment and Forests Govt. of India and Maharashtra State Pollution Control Board.**	Water quality monitoring during pre-construction is being carried out by CIDCO through MoEF recognized Lab and regular reports being submitted to MoEFCC. During construction and operation period also monitoring of the water quality shall be carried out by CIDCO as well as Concessionaire
	[xiv]	**The waste water generated from the aircraft maintenance hangers may contain hazardous materials like lead, chromium, Sulphates, Phenolic compounds, V.O.C's etc. The surface runoff from the airport area shall also contain oils, grease, Sulphates etc, which**	Provision of oil separator chamber shall be made by the Concessionaire to separate the oil and grease from water before letting out to drainage system of airport during construction and operations phase. A Sewage Treatment Plant also will be in place while preparing the Master Plan for airport.

Sl. No.		Particular	Compliance
		cannot be sent directly to sewage treatment plant for the treatment. A separate treatment plant for managing the waste water shall be specified and adopted.	This will be monitored by CIDCO's Environmental Cell , in addition to the regular monitoring of parameters in the surrounding water bodies for any variation
	[xv]	**Based on the geological profile underneath the proposed airport, suitable consolidation factor shall be arrived to assess the additional noise/ vibration levels that would be produced during impact of landing & take off the air crafts simultaneously on both the runways. Further, the partially quarried hills in the vicinity will become a rebound shell for noise. CIDCO shall examine the details of noise/ vibration levels those are likely to be increased both during day and night time and the mitigation measures shall be installed to reduce the (noise/ vibration levels) impacts.**	The runway pavement shall be designed taking into consideration subsoil condition beneath so as to minimize noise/vibration. Necessary actions to reduce noise/vibration levels during the operations phase shall be taken by Concessionaire - The same has been mandated in the Concession Agreement for NMIA. It will be further monitored by CIDCO's Environment Cell.
	[xvi]	**Standard instrument arrival and departure procedure shall be designed to minimize the noise levels within the permissible limits for the area falling in the funnel near the airport on either side.**	While designing the SIDs and STARs by AAI/DGCA, consideration will be given to minimize noise level in the funnel during operation of Airport. The same has been mandated in the Concession Agreement for NMIA
	[xvii]	**Energy conservation to the extent of 20% shall be incorporated in the bidding documents including water conservation (reuse/recycle, rain water harvesting and water efficient fixtures) and other green building practices for various buildings proposed within the airport complex. CIDCO shall consider ECBC Guidelines 2009 to achieve the energy – efficient design.**	Necessary energy conservation and water conservation measures shall be adopted by the Concessionaire Concession Agreement (CA) for NMIA also mandates the Specifications & Standards to be abided by the Concessionaire while designing the Airport including Energy Conservation Building Code 2007 issued by Bureau of Energy Efficiency and revised from time to time.

Sl. No.		Particular	Compliance
			CA also mandates the Concessionaire to comply with all conditions laid down by the Environment & CRZ clearance granted by MoEF and to carry out checks to ensure conformity of the Airport with the environmental requirements set forth in Applicable Laws and Applicable Permits (which include all clearances, consents and approvals)
	[xviii]	**CIDCO shall prepare a detailed traffic management plan to take care of increased vehicular traffic which should also cover/ clearly delineate widening/ increasing the existing roads and associated road infrastructure approving/ installation of road safety features/ pedestrian facility/FOB/under passes etc (that can be done by carrying out road safety audits). Measures shall be taken to prevent encroachment along/within the ROWs on connecting/ main arterial roads.**	CIDCO carried out a detailed Connectivity Study "Regional and Local Transport Connectivity Plan for Navi Mumbai International Airport" through international consultant M/s. Lea Associates South Asia Pvt Ltd. Lea Associates was given the task of studying the impact of airport in the regional transportation of MMR as well as Navi Mumbai and suggest measures to be taken to enhance the airport connectivity and to manage the increased traffic. Based on the findings of this study, CIDCO would take up various projects for improving the connectivity through various modes, by giving emphasis to public transport.
	[xix]	**Necessary road (National and State Highways) and rail connectivity shall also be upgraded to handle the increased passenger and cargo traffic, in addition to metro for transition of passengers. The proposal of Havorport shall not be taken up on the north part of the airport area as this shall damage the mangroves**.	The National and State Highway surrounding the airport is being upgraded for increased traffic by MJPRCL and PWD. The proposal is to widen the existing National and State Highways in the airport vicinity to 8 Lane with service roads and further to 6 Lane with service roads has been commenced by MJPRCL. Widening of Sion – Panvel highway upto 10 lanes is completed.
	[xx]	**The measures should be taken to improve public transportation including dedicated road / MRTS corridors to access to Airport, may also be considered for the same. Energy Efficient dedicated**	M/s. Lea Associates, in its study has covered this aspect and actions to enhance the Public Transportation facilities to the airport are being initiated by the concerned Stakeholders / Authorities. CIDCO has

Sl. No.		Particular	Compliance
		rail based public transport facility; suburban/ metro train in particular, may be created between the Santa Cruz and the Navi Mumbai Airport in addition to all other links connecting various parts of Mumbai city.	initiated discussions with MRVC as well as MMRDA for planning a direct metro rail link to the airport. The Master Plan of airport envisages a metro station within the terminal and the provision of metro rail for airport has been mandated in the CA.
	[xxi]	**Traffic Management during construction phase should be clearly planned so that the traffic situation is not further worsened on the existing connecting roads. Installations of Noise barrier/ Green Belts should be clearly indicated in the plan (After identifying critical locations).**	Traffic Management Plan during construction will be prepared in consultation with Navi Mumbai Traffic Police including installation of noise barriers if required.
	[xxii]	**To avoid accidental damage (fire, hazardous material waste handling, oil spills, wastewater disposal) in the adjacent ecologically fragile surroundings and mangrove area – a risk assessment plan and disaster management plan should be prepared and with periodic compliance of safety measures in place to avoid loss due accidental damage that could have been otherwise avoided. Further CIDCO shall appoint a dedicated professional team/cell to handle disaster and associated risks.**	Consultant is appointed for preparing Risk Assessment and Disaster Management Plan for the pre-development phase of the Airport Construction. Consultant is in process of ascertaining the various activities in areas assigned to different contractors Based on suggestions of the Consultant, a Disaster Management Cell would be put in place by CIDCO to handle disaster and associated risks for the pre-development phase of the project. The updation of Disaster Management Plan for construction and commissioning phases will be done as the project implementation phase. The Concessionaire also has to abide by the CA and ensure preparedness for disaster management. It mandates the Concessionaire to prepare and publish a Disaster Management Manual before the Commercial Operations Date
	[xxiii]	**In addition to the above –CIDCO shall ensure that all the risks (such as fire, hazardous material**	Noted- Actions taken as in (xxii) above

Sl. No.		Particular	Compliance
		waste handling, oil spills, waste – both liquid/solid wastes) associated/ resultant risk during various stages of development (like planning, construction, operation) are managed within the airport area. In case of any unforeseen event as stated above the liability – environmental and social will rest with the developer/CIDCO, the decision of the high level Committee, stipulated below will be full and final for liability fixations.	
	[xxiv]	**The compliance report of the monitoring committee shall be made 'public' (put online and/or also displayed for wider dissemination of compliance) at all stages (planning, construction, operation) to ensure effective monitoring and compliance of conditions.**	Shall be complied
	[xxv]	**Environment Management Plan or associated monitoring plan shall ensure that mitigation measures detailed out in terms of role, responsibility, budgetary provisions, timeline for completion, frequency of monitoring and compliance etc.**	The Environment Management Plan will be prepared by CIDCO on the basis of recommendations by the Environment Monitoring Consultant, being appointed for carrying out various Environment related studies and monitoring.
	[xxvi]	**In order to meet all the essential aeronautical requirements and the further airport expansions, no property development shall be undertaken within the proposed aeronautical Airport Zone area (1160 ha).**	Compliance to this condition has been ensured through the CA which mandates the Concessionaire not to create any encumbrance apart from the ones agreed to by the Concession Agreement for the construction and operation of the Airport including Aeronautical and Non – aeronautical services.
	[xxvii]	**The Master plan/ Development plan of Navi Mumbai shall be revised and recasted in view of the airport development to avoid**	The Navi Mumbai Development Plan has been revised vide Govt. Order No.TPS-1711/2495/C.R. 202/11/UD-12 dtd. 21st March, 2012.

Sl. No.		Particular	Compliance
		and unplanned haphazard growth around the airport. The landuse should take care of bird menace including that from the Mangrove Parks.	Navi Mumbai development plan has been prepared for a systematic urban growth and prevent haphazard development. To ensure planned development of airport surroundings, the area around the airport has been designated as Pushpak Node. The landuse plan for this area is being prepared in such a manner to complement the airport development and will contain Airport Non Aeronautical Zone for accommodating ancillary functions of the airport, rehabilitation sites for airport PAPs and a state of the art township called Pushpak Nagar where modern commercial and residential facilities are being planned Further, to avoid haphazard development around the airport, GoM issued notification dated 10th January, 2013, declaring the area around proposed International Airport as "Navi Mumbai Airport Influence Notified Area" (NAINA) and appointed CIDCO as the Special Planning Authority. NAINA is now being planned to absorb the potential growth generated by the Navi Mumbai Airport , and regional transport corridors, both road and metro, are linked to the NAINA network in consultation with MMRDA
	[xxviii]	**All other nearby villages, if not required to be relocated should be provided with best possible infrastructure so that they compare well with the adjoining ultra modern airport infrastructure.**	All the nearby villages are being provided physical and social infrastructure under gaothan expansion scheme & Grant in Aid is also provided to villages for improvement
	[xxix]	**CRZ provisions shall be applicable on the tidally influenced diverted channels of Ulwe and Gadhi Rivers and CIDCO shall finalise the Airport plans accordingly.**	CIDCO has prepared development plans for airport and surrounding facilities accordingly. Draft Master Plan prepared by CIDCO is in strict compliance of the prevailing CRZ

Sl. No.		Particular	Compliance
			provisions. The requirement for compliance in this regard is already built into the DCA and will be appropriately ensured while executing the agreement. The same shall be monitored by Environment Cell as well as HLAMC.
	[xxx]	**Any cutting or filling up the airport site will create significant turbidity problem. CIDCO shall examine the impact on the marine life. The details will be put up on the website every 3 months.**	Turbidity during pre-construction and construction period is being tested and analysed through MOEF & CC recognized laboratory appointed to carry out regular environmental monitoring at pre-defined locations around the airport. The Laboratory has submitted its reports which establishes the turbidity levels of water bodies surrounding the site before commencement of cutting/filling of airport site and the sample surveys are now being carried out during land development works on site. Similar monitoring will be continued by the Concessionaire in future, and monitored by the Environment Cell
	[xxxi]	**CIDCO shall conduct the baseline survey of avian fauna before the start of construction and the details shall be put up every 3 months on the website in association with BNHS.**	BNHS is appointed to do the periodic base line survey of avian fauna and quarterly as well as annual reports are being received and placed on CIDCO'S website.
	[xxxii]	**The Environmental Clearance /CRZ Clearance is recommended below is only for the Navi Mumbai Airport project. CIDCO shall obtain the Environmental and CRZ clearance separately for off airport facilities and other off infrastructure projects after finalising the locations and details as may be required under the EIA Notification 2006 and the CRZ Notification.**	CIDCO has sought separate approval for associated infrastructure of airport. The CRZ clearance for off-site physical infrastructure of roads, bridges and interchanges has been granted by MCZMA vide letter dated 15th February 2016. CRZ clearance for Shifting of EHVT lines has been granted by MoEF vide letter no. F.No.11-38/2016-Ia.III dated 28th August 2017. Forest Clearance Stage I for shifting of

Sl. No.		Particular	Compliance
			EHVT Lines was received vide letter dt. 02.08.18. Process of obtaining Forest Clearance from Hon. High Court Clearance and obtaining Stage II clearance under FC Act has been initiated
	[xxxiii]	**Taking a cue from the man-made 26/11 incident arising out of external threat to our country, a strategic airport safety and security plan covering also surrounding inhabited areas of the airport shall be prepared and put in place in consultation with appropriate government departments**	Airport safety and security plan shall be prepared for submission to DGCA, AAI, BCAS by Concessionaire. The DCA mandates safety requirements and procedures to be followed vide
	[xxxiv]	**A high level advisory and monitoring committee which should include International experts of repute, reporting directly to the highest Airport Management Authority shall be constituted by CIDCO to plan, execute and maintain the environmental issues/ recommendations mentioned above. The monitoring shall be done at various stages (planning, construction, operation) of project for compliance of conditions. Budgetory provisions shall be made to the satisfaction of this Committee. The committee shall meet at least once in three months and the decisions taken in the meetings shall be put up on the web site for public information.**	High Level Advisory and Monitoring Committee (HLAMC) was constituted by Govt. of Maharashtra vide its Order dtd. 13th May, 2011. Being Complied.
	[xxxv]	**Regular modeling study of air, noise shall be carried out due to the increase in traffic**	Regular modeling study is being carried out by the agency appointed, at pre-defined locations around the airport. The Agency has submitted its reports for the pre-construction phase and now the sample surveys are being carried out during land development

Sl. No.		Particular	Compliance
			works on site. Similar monitoring will be continued by the Concessionaire in future, and monitored by the Environment Cell
	[xxxvi]	**The solid waste shall be properly collected, segregated and disposed as per the provision of Solid Waste (Management and Handling) Rules, 2000.**	Noted – will be appropriately complied as project proceeds
	[xxxvii]	**Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.**	This condition would be complied at appropriate time The Independent Engineer for airport will monitor such compliance carried out by Concessionaire
	[xxxviii]	**A First Aid Room will be provided in the project both during construction and operation of the project.**	This condition would be complied at appropriate time
	[xxxix]	**Disposal of muck during construction phase should not create any adverse effect on the neighboring 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.**	Currently, pre-development land development is in progress. Major work ongoing is cutting and filling. Condition is Noted and will be complied when excavation work is undertaken.
	[xl]	**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.**	CIDCO has appointed a Laboratory recognized by MoEF & CC, for monitoring the various environmental parameters of air, river water and groundwater, at monitoring stations around the airport, in order to establish the pre-construction/during construction data. A copy of Environmental Monitoring report is attached as **ANNEXURE I**.

Sl. No.		Particular	Compliance
	[xli]	**Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such material must be secured so that they should not leach into the ground water.**	CIDCO has appointed a Laboratory recognized by MoEF & CC, for monitoring the various environmental parameters of air, river water and groundwater, at monitoring stations around the airport, in order to establish the pre-construction/during construction data. A copy of Environmental Monitoring report is attached as **ANNEXURE I**. Consultant is also appointed for Risk Assessment and Disaster Management which shall cover the risks to nearby ecologically fragile area due to construction spoils etc
	[xlii]	**Installation and operation of DG set shall comply with the guidelines of CPCB.**	This condition would be complied at appropriate time
	[xliii]	**The diesel generator sets to be used during construction phase should be low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.**	This condition would be complied at appropriate time
	[xliv]	**The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from Chief Controller of Explosives shall be taken.**	This condition would be complied at appropriate time
	[xlv]	**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.**	This condition would be complied at appropriate time
	[xlvi]	**Ambient noise levels should conform to residential standards both during day and night.**	This condition would be complied at appropriate time

Sl. No.		Particular	Compliance
		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.	
	[xlvii]	**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.**	This condition would be complied at appropriate time
	[xlviii]	**Ready mixed concrete must be used in building construction.**	This condition would be complied at appropriate time
	[xlix]	**Storm water control and its re-use as per CGWB and BIS standards for various applications.**	This condition would be complied at appropriate time
	(l)	**Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and This condition need to be incorporated in the Bid Document to be issued to prospective bidders. This condition need to be incorporated in the Bid Document to be issued to prospective bidders. other best practices referred.**	This condition would be complied at appropriate time .
	(li)	**Use of glass may be reduced by upto 40% to reduce the electricity consumption and load on air-conditioning. If necessary, use high quality double glass with special reflective coating in windows.**	This condition would be complied at appropriate time
	(lii)	**The approval of the competent authority shall be obtained for structural safety of the buildings due to earthquake, adequacy of**	CA mandates that the Concessionaire shall conform to National Building Code and the requisite permissions shall be obtained as per GDCR and also

Sl. No.		Particular	Compliance
		fire fighting equipment, etc. as per National Building Code including protection measures from lightening etc.	other Applicable Permits
	(liii)	**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.**	Shall be complied
	SPECIFIC CONDITION		
II.	**OPERATION PHASE**		
	i)	**Diesel power generating sets proposed as source of back up 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 of low sulphur diesel. The location of the DG sets may be decided with in consultation with Maharashtra Pollution Control Board.**	Concessionaire shall comply and same shall be monitored by Independent Engineer
	ii)	**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.**	This condition would be complied at appropriate time
	iii)	**The green belt of the adequate width and density preferably with local species along the periphery of the plot shall be raised so as to provide protection against particulates and noise.**	This condition would be complied at appropriate time
	iv)	**Weep holes in the compound walls**	This condition would be complied at

Sl. No.		Particular	Compliance
		shall be provided to ensure natural drainage of rain water in the catchment area during the monsoon period.	appropriate time
	v]	**Rain water harvesting for roof run-off and surface run- off, should be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The borewell for rainwater recharging should be kept at least 5 mts. above the highest ground water table.**	This condition would be complied at appropriate time
	vi)	**The ground water level and its quality should be monitored regularly in consultation with Central Ground Water Authority.**	Same as I (vii)
	[xvii]	**Energy conservation to the extent of 20% shall be incorporated in the bidding documents including water conservation (reuse/recycle, rain water harvesting and water efficient fixtures) and other green building practices for various buildings proposed within the airport complex. CIDCO shall consider ECBC Guidelines 2009 to achieve the energy – efficient design.**	This condition would be complied at appropriate time
	[xviii]	**CIDCO shall prepare a detailed traffic management plan to take care of increased vehicular traffic which should also cover/ clearly delineate widening/ increasing the existing roads and associated road infrastructure approving/ installation of road safety features/ pedestrian facility/FOB/under passes etc (that can be done by carrying out road safety audits). Measures shall be taken to prevent encroachment along/within the**	This condition would be complied at appropriate time

Sl. No.		Particular	Compliance
		ROWs on connecting/ main arterial roads.	
	ix]	**Efforts should be made to use solar energy to the maximum extent possible.**	This condition would be complied at appropriate time

No.		EC Condition	Compliance status
III.	**GENERAL CONDITIONS:**		
	(i)	**In the event of any change in the project profile a fresh reference shall be made to the Ministry of Environment and Forests.**	Noted.
	(ii)	**This Ministry reserves the right to revoke this clearance, if any, of the conditions stipulated are not complied with to the satisfaction of this Ministry.**	Noted.
	(iii)	**This Ministry or any other competent authority may stipulate any additional conditions subsequently, if deemed necessary, for environmental protection, which shall be complied with.**	Will be complied
	(iv)	**Full support should be extended to the officers of this Ministry's Regional Office at Bhopal and the offices of the Central and State Pollution Control Board by the project proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental protection activities.**	Will be complied
8.		**These stipulations would be enforced among others under the provisions of water (Prevention and Control of Pollution) Act, 1974 the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public**	Noted.

No.		EC Condition	Compliance status
		Liability (Insurance) Act, 1991 and Municipal Solid Wastes (Management and Handling) Rules, 2000 including the amendments and rules made thereafter.	
9.		**All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department and Civil Aviation Department from height point of view, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.**	MoCA, Defence Clearance, Stage 1 forest clearance, Wildlife and Final Forest clearance, CRZ clearance for off-site physical infrastructure of roads, bridges and interchanges clearance and Hon'ble Bombay High Court permission are obtained and other statutory clearances, if any, shall be obtained as applicable from competent authorities, at appropriate time. Wildlife Clearance was recommended in the 29th Meeting of Standing Committee and communicated vide Minutes No. P.No.6-43/2007 WL-I dtd. 1st August, 2013 of Wildlife Division of Ministry of Environment & Forest, Govt. of India. Later on vide the Minutes of 34th Standing Committee of NBWL, No: 6-48/2015 WL dtd 30th June 2015, amendment to condition no (iv) was issued with respect to development of mangrove sanctuary .
10		**The project proponent should advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at**	Complied.

No.		EC Condition	Compliance status
		Bhopal.	
11		**Environmental clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004, if applicable to this project.**	Noted.
12		**A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad / Municipal Corporation, Urban Local Body 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.**	Complied.
13		**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, NOx (ambient levels as well as stack emissions) or critical sectoral 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.**	All EC related compliance reports are uploaded on the website at the following link : https://cidco.maharashtra.gov.in/navi_mumbai_airport# under Pre-Development tab
14		**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.**	Being Complied.

No.		EC Condition	Compliance status
15		**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.**	Will be submitted in Operation Phase of project

Compliance to additional conditions stipulated by MoEF while granting Extension of Validity for Environmental and CRZ Clearance to NMIA Project

No.	EC Condition	Compliance Status
1.	**Certified report on sources and availability of water from the local body supplying water along with the permission received by them for the shall be submitted. This report shall specify the total annual water availability with the organization (local Body), the quantity of water already committed to other development projects, the quantity of water committed for this project and the balance water available for distribution. This should be specified separately for ground water and surface water sources and ensure that there is no impact on other uses.**	Water Adequacy Report is attached as **Annexure II**
2.	**Detailed traffic management and traffic decongestion plan, to ensure that the current level of service of the roads within a 5 kms radius of the project site is maintained and improved upon, shall be drawn up through an organization of repute and specializing in Transportation Planning within next 6 months. This should be based on the cumulative impact of all development**	Shall be Complied

	and increased inhabitation being carried out by the project or other agencies in this 5 kms radius from the site under different scenarios of space and time and shall be implemented to the satisfaction of State Urban Development and Transports Departments with the consent of all the concerned implementing agencies.	
3.	**Treated effluents shall also be used for irrigation and Road side plantation after taking due permissions from the concerned authorities/Forest department.**	Shall be complied in Operation Phase
4.	**Project proponent shall satisfactorily address all the complaints that have been received against the project and submit a compliance report to the Ministry.**	Compliance has been submitted to MoEF vide letter No. CIDCO/ GM (ENV & F)/NMIA/2017/1017 dated 2nd November 2017.
5.	**The extension of validity is being granted for the original proposal for which Environmental and CRZ Clearance was granted earlier. The Project proponents will not make any changes any changes in the project nature, structure and configuration and limit themselves to activities for which the Environmental and CRZ Clearance has been given earlier.**	Shall be Complied.

Date :

General Manager (E &F)
CIDCO

ENVIRONMENTAL COMPLIANCE MONITORING REPORT

for

Navi Mumbai International Airport (NMIA)

Sponsor:

City and Industrial Development Corporation of Maharashtra Ltd (CIDCO)

Period:
January to June 2018

PREPARED BY

ADITYA ENVIRONMENTAL SERVICES PVT.LTD.

MOEFCC Recognized Laboratory under EP Act 1986
Accredited under ISO 9001: 2008 & OHSAS 18001: 2007 by ICQS
www.aespl.co.in

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1. INTRODUCTION

Mumbai Metropolitan Region (MMR) comprises of areas in and around Mumbai city and includes parts of Mumbai, Thane and Raigad Districts. Mumbai is known as the commercial capital of India and MMR is an industrial and technologically advanced region, which has experienced rapid growth in income and employment. The increasing trend in trading, business and financial services, demands highest order of infrastructure. There is need to enhance the capacity of airport as the existing airport in Mumbai experiencing tremendous pressure for meeting the air traffic demands of this vibrant region. Realizing the need of second airport for Mumbai, the Government of Maharashtra granted approval and appointed City & industrial Development Corporation of Maharashtra Limited (CIDCO) as Nodal agency for implementation.

The site for the airport was selected near Panvel in Raigad district of Maharashtra state with central coordinates 18°59'33.00"N and 73°4'18.00"E. Environmental Impact Assessment (EIA) study was conducted by Centre for Environmental Science and Engineering (CESE), Indian Institute of Technology (IIT) Mumbai and updated report submitted in April 2011. Environmental Clearance was granted by Ministry of Environment and Forests vide F. No. 10-53/2009- IA.III dt 22.11.2010 and extension of validity granted vide F.No. 10-53/2009-IA.III dt 20.12.17 upto 21.11.2020.

Pre-development works for the site has expected to started in May 2017 and as compliance to the Environmental clearance, CIDCO appointed Aditya Environmental Services Pvt. Ltd. (AESPL) to conduct Compliance Environmental Monitoring for the New Mumbai International Airport (NMIA) vide (1) Tender No. CIDCO / T&C / NIMA / EC-22-11-2010/7.I.vii/xiii/xxx/010/251 dated. 16.02.2012 & its Work Order no. CIDCO / T&C / CGM (T & A)/ STE (S-I& A)/2015/867 dated 28.05.2015 for period of January – May 2018 & vide (2) Tender No. C. A. No. 01 / CIDCO/ T&C/ CGM (T&A) / STE (S& A) / 2017-18 & its Work Order No. CIDCO / T&C / CGM (T & A)/ STE (S-I& A)/2018/1383 dated 07.06.2018 from month of June 2018 onwards.

The sampling locations fixed by CIDCO for compliance monitoring every quarter as per Tender (1) as given in Chapter II for period of January 2018 – May 2018. The assignment comprises monitoring of following parameters in and around the surrounding project area:

- Ambient Air Quality Monitoring (AAQM)
- Ambient noise level monitoring
- Soil
- Ground/surface water
- Marine water and sediments for biological and physicochemical parameters.

The sampling locations fixed by CIDCO for compliance monitoring once in month for ambient Air Quality and Noise level monitoring; and once in each season (Post, pre & during monsoon) for Soil, ground water and marine/Surface water quality as per Tender (2) are as given in Chapter II for month of June 2018. The assignment comprises monitoring of following parameters in and around the surrounding project area:

- Ambient Air Quality Monitoring (AAQM)
- Ambient noise level monitoring
- Soil
- Ground/surface water
- Marine water for biological and physicochemical parameters.

2. SCOPE OF MONITORING WORK

2.1 Scope of Monitoring Work as per CIDCO Tender:

Scope of monitoring work as per CIDCO tender are as given below:

Table 2-1: Scope of Environmental Monitoring Work as per CIDCO Tender (1)

Sr. No.	Parameters – as per Annexure B	Location	Frequency	Samples / Year
1.	**Ambient Air Quality:** $PM_{2.5}$, PM_{10}, SO_2, NO_X, CO, Lead, Ammonia, Hydrocarbon (nMHC).	12	2 Stations per Month, @ one sample per station	24
2.	**Noise: Parameters: Leq Noise level** - Day time & Night time separately.	12	Same as per Air Quality	24
3.	**Soil: Parameters:** pH, Texture class, Organic carbon, Electrical Conductivity, Available Nitrogen, Available Phosphorus, Available Potassium, SO_4, Chloride, Calcium, Magnesium, Iron, Manganese, Cu, Hg, Cd, As, Pb, Zn, Al, Ni, Co, Cr, Na & K.	10	1 Sample at each station per 6 monthly periods. 10 x 1 x2 =20 samples per year	20
4.	**Ground Water Quality Parameters:** pH, Temperature, Turbidity, Alkalinity, Salinity, Total Nitrogen, Total Phosphorous, DO, BOD, COD, O&G, Residual Chlorine, Total Hardness, Chloride, TDS, Na, Fluorides (as F), NO_3, Mn, K, Fe, SO_4, Phenol, Hexa Chromium, Cu, Cd, As, Hg, Pb, Zn, Fecal Coliform (MF count/ml), Coliform Colonies, Phytoplankton, Total Heterotrophic Bacteria (spc /mL) & Chlorophyll.	10	5 Location per Month @ 1 Sample per location = 5 samples per month	60
5.	**Marine/Surface Water Quality: Physico Chemical parameters:** PH, Floating materials, Turbidity, Temperature, Salinity (ppt), TSS, TDS, TOC, DO, BOD, O&G, SO_4, NO_2, NO_3, NH_3-N, Inorganic PO_4, Ca, Mg, Fe, Cr, Cu, As, Cd, Hg, Pb, Zn.	13	For 3 seasons No. of samples 26 samples per season 26 x 3 =78 samples per year	78

6.	**Marine/Surface Water Quality: Biological parameters:** Seasonal sampling & testing (SPC) of: Phytoplankton, Zooplankton, Macrofauna, Meiofauna, Microbiology, Benthos, Diversity Indices & Coliform colonies (MPN)	3 (2 at Gadhi river entrance & 1 at Ulwe River)	For 3 seasons. No. of Samples - 3x3 **= 9** per year	9

Table 2-2: Scope of Environmental Monitoring Work as per CIDCO Tender (2)

Sr. No.	Parameters – as per Annexure B	Location	Frequency	Samples / Year
7.	**Ambient Air Quality:** $PM_{2.5}$, PM_{10}, SO_2, NO_X, CO, Lead, Ammonia, Hydrocarbon (nMHC).	12	12 Stations per Month	144
8.	**Noise: Parameters: Leq Noise level** - Day time & Night time separately.	12	Same as per Air Quality	144
9.	**Soil: Parameters:** pH, Texture, EC, Na, Mg, K, Sodium Absorption Ratio (SAR), Permeability (cm/sec), Water Holding Capacity (%), Calcium, Cation Exchange Capacity & Porosity (%).	10	10 Stations per season (Post, Pre- & During Monsoon)	30
10.	**Ground Water Quality (35):** **Physical Parameters - p**H, Temperature, Turbidity, EC, Salinity, TSS, TDS. **Chemical Parameters:** DO, BOD, COD, Magnesium, Hardness, Alkalinity, Chloride, Sulphate, Fluoride, Sodium, Potassium, Phenol, Total Phosphorous, Total Nitrogen, Sodium Absorption Ratio (SAR), Nitrite-N, Nitrate-N, Calcium. **Heavy Metals:** Fe, Zn, Mg, Mn, Cd, Cr, Hg. **Bacteriological Parameters**; Coliform Count. Total Heterotrophic Bacteria. SPC/100ML.	10	10 Stations per season (Post, Pre- & During Monsoon)	30
11.	**Marine/Surface Water Quality parameters (35):** **Physico Chemical parameters:** PH, Temperature, Turbidity, EC, Salinity (ppt), TSS, TDS. **Chemical Parameters:** Nitrate-N, Nitrite N, Phosphate-P, Silicate, DO, BOD, COD, O&G, Magnesium, Hardness, Alkalinity, Chloride, Sulphate, Fluoride, Sodium, Potassium, Phenol, Total phosphorus, Total Nitrogen. **Heavy Metals:** Fe, Zn, Mg, Mn, Cd, Cr, Hg	13	13 stations per season (Post, Pre- & During Monsoon)	39

	Bacteriological parameters: Coliform Count. Marine Biology: Phytoplankton & Zooplankton			

2.2 Locations of Monitoring:

Sampling Locations have been specified by CIDCO in its Tender. The monitoring was carried out at the same locations as fixed by CIDCO. Details of monitoring stations for Ambient Air Quality, Ambient Noise, Soil, Ground Water, Marine Water- physicochemical & biological and Sediment, and along with location maps showing station locations are as given below:

Table 2-3: Details of AAQM Stations as per CIDCO Tender (1) & (2)

Station Code	Station	Remarks
A1	Panvel CIDCO Office	Location of meteorological station & in residential zone
A2	Khandeshwar Railway Station	Commercial activity center
A3	Kalamboli CIDCO Office	Receptor oriented as it is in residential zone
A4	Kharghar Nodal Office	Receptor oriented as it is in residential zone
A5	Belapur CIDCO Bhavan	Major commercial activity center, heavy traffic movement
A6	Pargaon High School	Rural and mixed area
A7	Gavanphata Water Tank	Near to main traffic junction and hence heavy traffic movement
A8	Ambuja Cement Ltd	Industrial activity center
A9	Kille Gaothan Guest House	Receptor oriented as it is in residential zone
A10	Panchsheel Guest House	Receptor oriented as it is in residential zone
A11	Airport Entry – West	High vehicular movement at the entry / exit at the west side, near Aamra Marg
A12	Airport Entry – East	High vehicular movement at the entry / exit at the east side, near NH4B

Figure 2.1: Map of AAQM Stations as per CIDCO Tender (1) & (2)

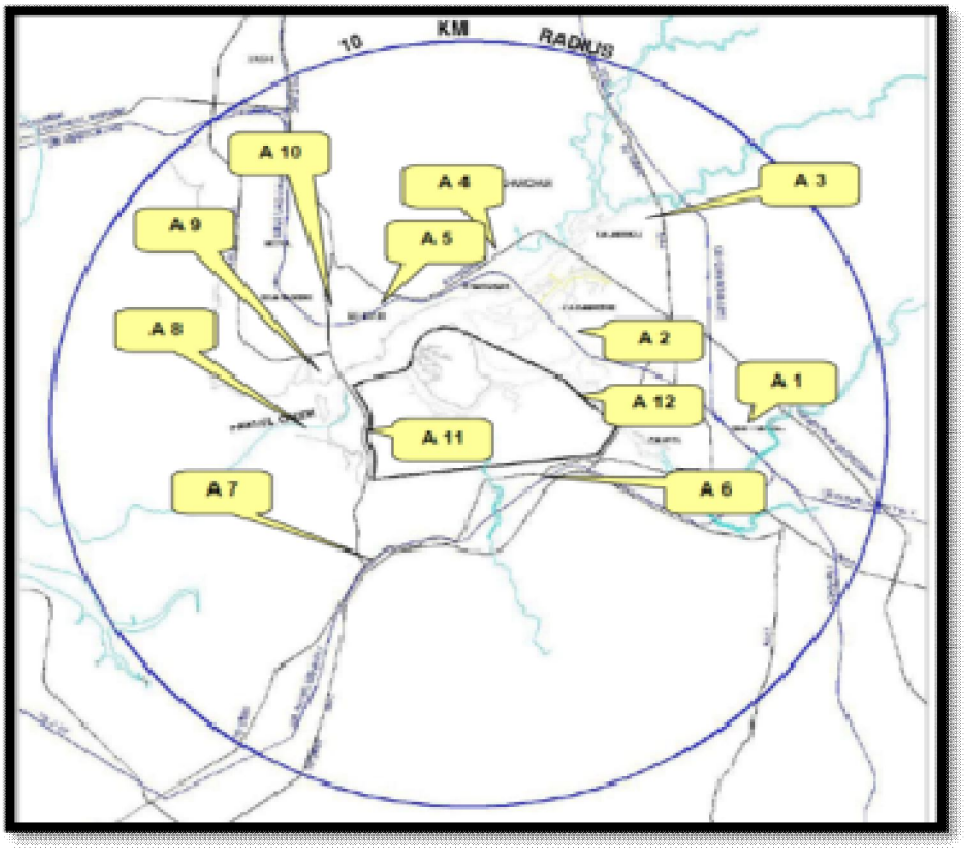


Table 2-4: Ambient Noise Level Monitoring Stations as per CIDCO Tender (1) & (2)

Sr. No.	Station Name	Category of area
N1	Ambuja Cement Limited	Industrial area
N2	CIDCO Bhavan, CBD Belapur	Commercial area
N3	Palaspa Junction	Commercial area
N4	Teen Tank Gavanphata	Commercial area
N5	Panvel CIDCO Office	Residential Area (Mixed category)
N6	Kharghar Nodal Office	Residential Area
N7	Panchsheel Guest House	Residential Area
N8	Pargaon School	Sensitive area (Mixed category)
N9	MES School	Sensitive area (Mixed category)
N10	MGM Hospital, Kalamboli	Sensitive area (Mixed category)
N11	Swapna Nagri	Residential Area (Mixed category)
N12	Karnala Bird Sanctuary	Sensitive area

Figure 2.2: Map of Noise Level Monitoring Stations as per CIDCO Tender (1) & (2)

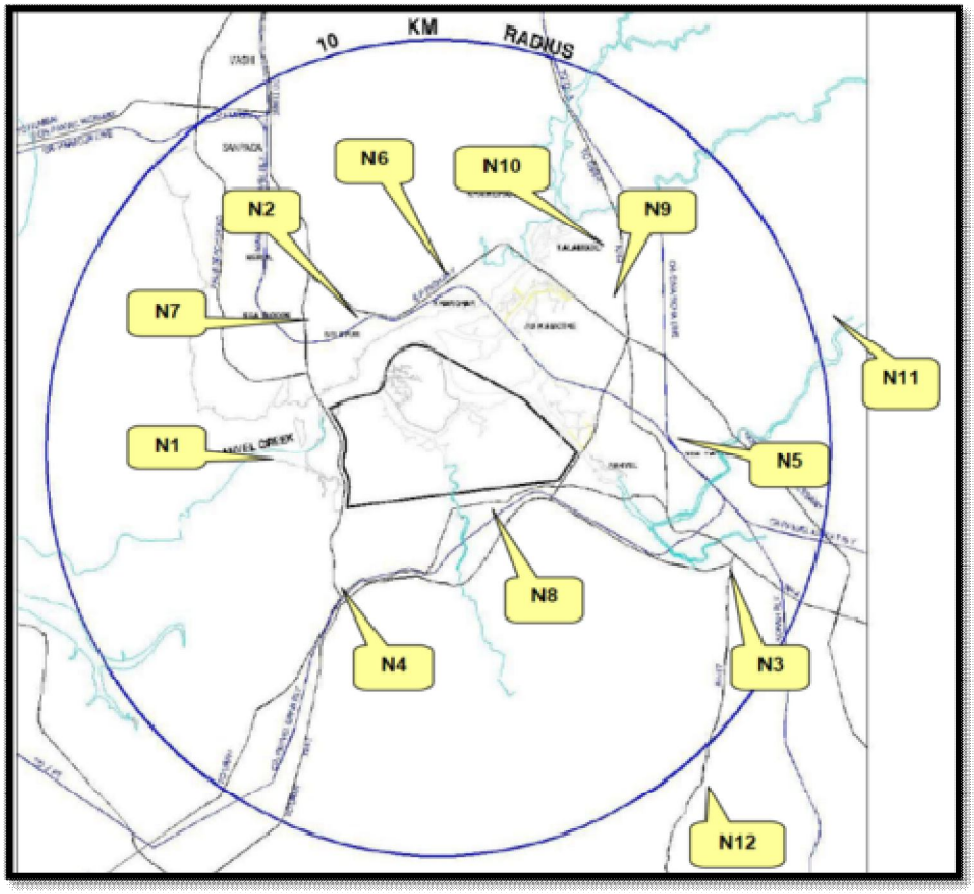


Table 2-5: Soil Quality Monitoring Stations as per CIDCO Tender (1) & (2)

Station Code	Stations Name
S1	Targhar
S2	Kopar
S3	Kombadbhuje
S4	Koli
S5	Vaghivali
S6	Ganeshpuri
S7	Ulwe
S8	Pargaon
S9	Vaghivalivada
S10	Chinchpada

Figure 2.3: Map of Soil Quality Monitoring Stations as per CIDCO Tender (1) & (2)

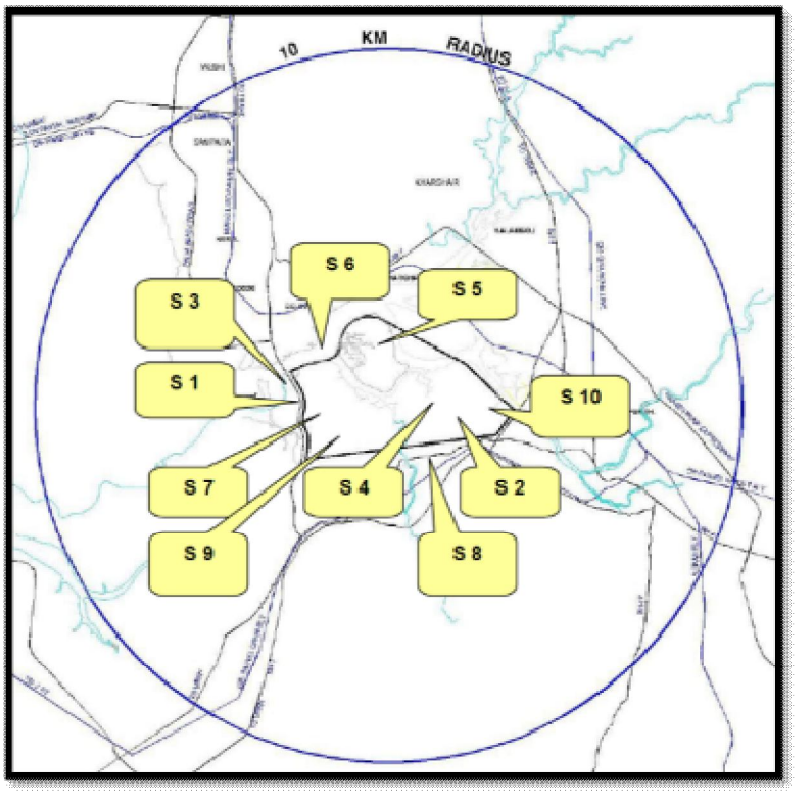


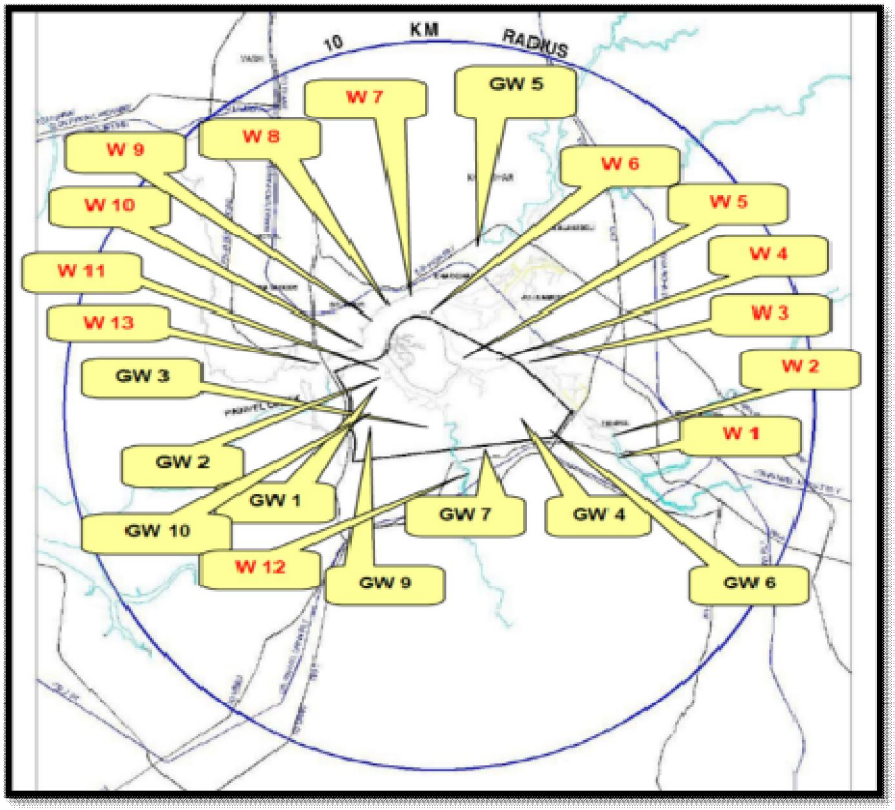
Table 2-6: Details of Ground Water Quality Monitoring Stations as per CIDCO Tender (1) & (2)

Station Code	Stations Name
GW1	Open well at Kombadbhuje
GW2	A well near pond at Ganeshpuri
GW3	Open well at Vaghivalivada
GW4	Open well at Koli
GW5	Open well at Kopar
GW6	Open well at Chinchpada
GW7	A well near pond at Pargaon
GW8	A well near pond at Vaghivali
GW9	Open well at Ulwe
GW10	A well near pond at Targhar

Table 2-7: Details of Marine Water Quality Monitoring Stations as per CIDCO Tender (1) & (2)

Station Code	Station details / Location
W1	Extreme end of Gadhi River (upstream side)
W2	Near Pargaon village (200m from W1) in Gadhi River
W3	Near Jui Village (300m from W2) in Gadhi River
W4	Near Kopar Khadi (300m from W3) in Gadhi River
W5	Near Vaghivali village (500m from W4) in Gadhi River
W6	Vaghivali creek junction (300m from W5) in Gadhi River
W7	Near Kharghar Rly Station (300m) in Gadhi River
W8	Near Belpada (300m from W7) in Gadhi River
W9	Near Konkan Bhavan (300m from W8) in Gadhi River
W10	Near Divala village (300m from W10) in Gadhi River
W11	At Junction of Ulwe and Gadhi Rivers in Panvel Creek
W12	In Ulwe River
W13	Near Rathi bander in Panvel Creek

Figure 2.4: Surface Marine, Ground Water & Sediment Monitoring Stations as per CIDCO Tender (1) & (2)



2.3 Period/Time of Sampling:

The sampling survey was carried out as per following schedule during January to June 2018 for Ambient Air quality and Noise Level Monitoring only as per scope of work as per CIDCO tender (1) & (2)

Table 2-8: Period/Time of Sampling for this Survey

Month	Parameter	Sampling Stations	Dates of Sampling	Time Period
January 2018	AAQ	A11 & A12	31.01.18	24 hours starting from 10:00am
	NLS	N9 & N12	19.01.18	24 hours starting from 10:00am
	Soil	S1 & S7	31.01.18	Grab sample
	Ground Water	GW1, GW2, GW8, GW9 & GW10	31.01.18	Grab sample
February 2018	AAQ	A1 & A3	28.02.18	24 hours starting from 10:00am
	NLS	N5 & N10	28.02.18	24 hours starting from 10:00am
	Soil	S3 & S6	27.02.18	Grab sample
	Ground Water	GW3, GW4, GW5, GW6 & GW7	27.02.18	Grab sample
March 2018	AAQ	A4 & A5	28.03.18	24 hours starting from 10:00am
	NLS	N2 & N6	29.03.18	24 hours starting from 10:00am
	Soil	S4 & S9	29.03.18	Grab sample
	Ground Water	GW1, GW2, GW8, GW9 & GW10	29.03.18	Grab sample
	Marine Water	W1, W2, W3, W4, W5, W6, W7, W8, W9, W10, W11, W12 & W13	30-31.03.18	Grab sample
April 2018	AAQ	A2 & A6	23.04.18	24 hours starting from 10:00am
	NLS	N1 & N2	24.04.18	24 hours starting from 10:00am
	Soil	S2 & S8	23.04.18	Grab sample
	Ground Water	GW3, GW4, GW5, GW6 & GW7	24.04.18	Grab sample
May 2018	AAQ	A7 & A10	22.05.18	24 hours starting from 10:00am
	NLS	N4 & N8	23.05.18	24 hours starting from 10:00am
	Soil	S5 & S10	22.05.18	Grab sample
	Ground Water	GW1, GW2, GW8, GW9 & GW10	23.05.18	Grab sample
June 2018	AAQ	A1, A2, A3, A4	11.06.18	24 hours starting from 10:00am
		A5, A6 A9, A10	12.06.18	
		A7, A8, A11, A12	13.06.18	
	NLS	N5, N6, N7, N11	12.06.18	
		N8, N9, N10, N12	13.06.18	
		N1, N2, N3, N4	14.06.18	

As per the Tender (1) Conditions Marine & surface water physico- chemical sampling was required to be done for 3 stations per quarter @ 2 samples per station – 13 stations to be

accommodated in one of the quarter- total 78 samples as also Marine Biological/sediment Analysis was required to be done at 9 locations per year. This would have meant to cover totally different 3 locations every quarter – which would not have given any meaningful interpretation. AESPL therefore approached CIDCO vide its email dt 10.10.2015 requesting for covering all 13 sample locations in each quarter at two samples per location- i.e. 26 samples totally. Thus over 3 quarters, total 78 samples will be covered. CIDCO has vide its email dt 05.11.2015 clarified that they are acceptable to revised work plan. Hence, AESPL team collected samples at 13 locations from 30-31 March 2018 during pre-monsoon.

2.4 Constraints in completing Environmental Baseline Monitoring as per CIDCO Tender (1):

- Sediment samples at location W2 could not be collected due to rocky substratum during marine survey in March 2018.

3. METHODOLOGY ADOPTED FOR ENVIRONMENTAL MONITORING

3.1 AMBIENT AIR QUALITY

3.1.1 Reconnaissance Survey:

Reconnaissance survey in study area (10km around proposed airport site) shows that sources of air pollution include the following:

- heavy traffic along Amara Marg, NH4B and Uran / JNPT Road
- construction activity
- industries in Panvel industrial estate (private)
- burning of poor quality fuels in villages within proposed site and nearby

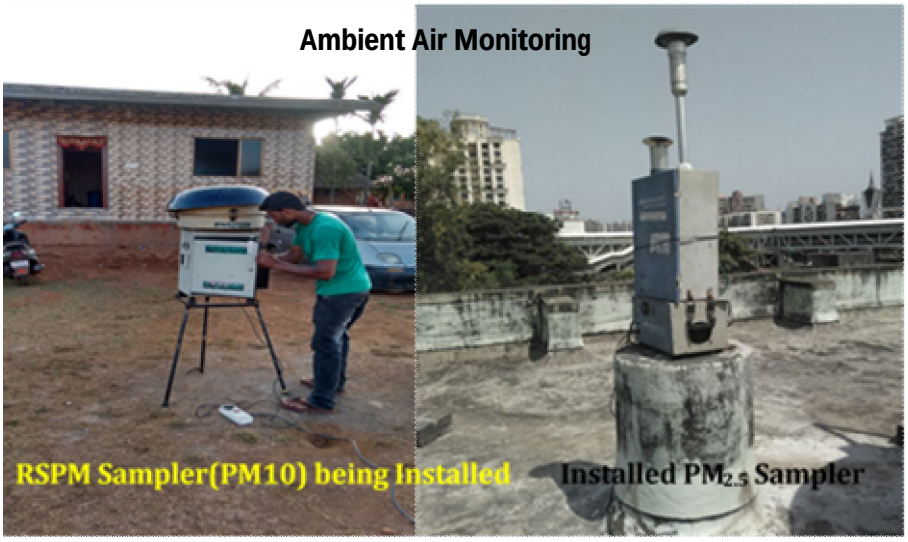
In order to arrest the deterioration in air quality, Govt. of India has enacted Air (Prevention and Control of Pollution) Act in 1981. The responsibility has been further emphasized under Environment (Protection) Act, 1986. Therefore, Central Pollution Control Board had published guideline for measurement of Ambient Air Pollutants Quality Monitoring (NAAQM) in November 2009 at national level.

3.1.2 Methodology for Ambient Air Quality Monitoring:

To monitor Air Pollutants in Ambient air following method of analysis adopted

S N	Parameter	Sampling Equipment	Method of Analysis	Reference
1.	PM_{10}	RSPM Sampler / Glass Fiber filter paper	Gravimetric analysis	CPCB Guidelines Manual 2011
2.	$PM_{2.5}$	$PM_{2.5}$ Sampler / Filter – PTFE, Teflon membrane	Gravimetric analysis	CPCB Guidelines Manual 2011
3.	SO_2	Absorption in TCM	West & Gaeke Method	CPCB Guidelines Manual 2011
4.	NO_X	Absorption in NaOH	Jacob – Hochheiser (Sodium Arsenic)	CPCB Guidelines Manual 2011
5.	CO	Sampling in Tedlar bags / CO Meter	GC with Methaniser	CPCB Guidelines Manual 2011
6.	Lead	Sampling using EPM 2000 equivalent Glass Fiber Filter paper	AAS Method	CPCB Guidelines Manual 2011
7.	NH_3	Absorption in sulfuric acid	Indophenol Method	CPCB Guidelines Manual 2011
8.	nMHC	Collection Activated Carbon	Gas Chromatography	APHA

Ambient Air Monitoring



3.1.3 Selection of Ambient air sampling location

Selection of representative location is very important. Following precautions to be taken:

- It should be away from source & other interferences
- Install sampler at free flowing well mixed area (3m) above ground level
- Install Pre - Calibrated Air Samplers with pre-weighted Filter papers
- Transport the samples to reach earliest at laboratory for further analysis
- Gaseous Samples were preserved in cold box before taking to laboratory

3.2 AMBIENT NOISE LEVEL

3.2.1 Reconnaissance Survey:

Reconnaissance survey in study area (10km around proposed airport site) shows that sources of air pollution include the following:

- heavy traffic along Amara Marg, NH4B and Uran/JNPT Road
- construction activity
- industries in Panvel industrial estate (private)
- noise from human habitats/villages within proposed site and nearby

Noise pollution in urban areas is now being recognized as a major environmental issue around the world. With increasing awareness of the adverse impacts of noise on human health, more and more people becoming less tolerant to environmental noise. The objective of this exercise is to assess the baseline status within study area and to compare the noise levels with Ambient Noise Standards for the area.

3.2.2 Methodology for Sample Collection

Integrated Sound Level Meter C390 was used for undertaking the surveys and installed on tripods at the selected locations over a 24-hour period. This Meter is then taken to laboratory where the data

collected is downloaded onto PC using specialized software.

Noise is measured in decibel (dB) and 'A' weighting is used for this entire monitoring since in this method of frequency weighting, the signal generated reproduces the way the human ear responds to a range of acoustic frequencies. Leq: The equivalent continuous Sound Pressure Level for a particular duration. The Day-Night Equivalent Sound Level refers to average sound exposure over a 24- hour period. Leq day & night values are calculated from hourly Leq values, with the Leq values for the night time increased by 10 dB to reflect the greater disturbance potential from night time noises.

Center C-390 Sound level Meter with data logger

3.3 Soil

The purpose of soil testing is to identify the soil fertility that the plants or crop, in a given area will experience.

3.3.1 Reconnaissance Survey:

The study area is rural in character and large tracts are being cultivated as paddy fields. Soil is also seen plentifully at bottom of hills where it supports large vegetation.

3.3.2 Methodology of Sample Collection:

Soil samples are collected after removing top two inches – which may contain high amount of organic carbon and humus. The soil area and volume could be a large field, a small garden, or simply the root zone of a single tree or shrub. The most difficult step in soil testing is accurately representing the desired area of soil. When the sampling area is determined, a sufficient number of soil cores taken to acquire a representative sample. This is generally 10 to 20 cores. The depth of sample for surface soils was taken from 0 to 6 inches or as deep as the primary tillage.

Soil samples collected from proposed project stations by using stainless steel soil sampling probe, packed in labeled polythene bags & send for analyze the physicochemical characteristics. The sample so collected is then made representative by coning- quartering and then stored in plastic bags, sealed and then sent to laboratory for analysis.

3.4 GROUND WATER SAMPLING

3.4.1 Reconnaissance Survey:

The villages in study area use ground water from open/bore well and use it for drinking and other domestic purposes. Ground water gets contaminated due to bad sanitary habits such as washing of utensils, cattle and bathing and location of septic tanks in/near the open wells.

3.3.2 Methodology of Sampling:

Ground water sample is collected by using containers and the sampling container is rinsed before using it for storing water samples. Ground water samples are stored in two separate

containers for Physicochemical & Microbiological analysis and preservatives added as recommended by Standard Methods APHA, stored in cold storage box and transferred to the laboratory for the further analysis.

Ground Water Sampling in Progress

3.5 MARINE WATER, SEDIMENTS & PLANKTON SAMPLING EQUIPMENTS

3.5.1 Reconnaissance Survey:

The study area represents complex hydrodynamic system. The Ulwe river flows down through the mountains (to the south) in the centre of project site and joins the Panvel creek. The Gadhi river flows from the East to the West. The Ulwe river will be diverted/retrained as part of the project and the Gadhi river will be partly retrained towards the northern part of the site. The river Gadhi receives sewage from Panvel town and nearby areas. Both the rivers drain into the Panvel creek which drains into the Arabian sea to the west. The Panvel creek also receives effluents from CETP at MIDC Taloja and sewage from NMMC STPs in Nerul.

3.5.2 Methodology of Sampling:

3.5.2.1 Niskin Bottle - Marine Water Sampler

This Water Sampler is used to collect samples at various water depths and can operate at any depth on a cable or line with a messenger.

Niskin Sampler

3.5.2.2 Plankton Net - Biological Samples

This plankton net operates a cable or lined by hand or behind a boat, it can be towed vertically or horizontally. Nets comes in varieties of size (Mesh no. 00 equal an aperture of 0.30 inches).

Plankton Net

3.5.2.3 Grab Sampler - For Marine Sediments

Sediment grab operate at any depth on a cable or line by free fall (without a messenger). It is extremely heavy and can take samples of hardest rocky ocean bottoms.

Grab Sampler

3.5.2.4 Selection of Stations, Preservation and Transportation of Samples as per Tender (1) for Month of March 2018

Marine samples were collected from sampling locations in Gadhi River, Ulwe River and Panvel Creek at the locations indicated by CIDCO – in all 26 samples were collected from 13 sampling locations for physicochemical samples (Stations 1 to 10 are located in Gadhi River & Station 11 & 13 are in Panvel Creek while station 12 in Ulwe River), while 3 samples were collected 1 from Ulwe river and 2 at entrance of Gadhi rivers for biological samples. A good amount of mangrove vegetation was noted on either side of stream from station 4 to 6. Sampling locations were approached by boat (wherever possible) and collection done irrespective of tide. Depending of water depth at sampling location during sampling, both

(surface and bottom) samples were collected. The samples were preserved and taken to laboratory using vehicle on same day.

Labelling the water samples

Collection of surface water sample

Zooplankton Sampling in progress

Collection of zooplankton Sample

Bottom marine water sampling

Collection of benthos sample

3.6 Laboratory Credentials & Quality Assurance

Sampling and analysis were done by laboratory of Aditya Environmental Services Pvt Ltd located at Plot P-1, MIDC Commercial plots, Mohopada, Tal Panvel, Dist. Raigad.

- Environmental Laboratory of AESPL is recognized by Ministry of Environment & Forest (MoEFCC), Govt. of India under Environment (Protection) Act, 1986
- Laboratory is also accredited under ISO 9001:2015 and OHSAS18001:2007 Management Systems
- Environmental sampling conducted by our experienced, qualified environmental staff & Analysis and reporting by approved Government Analyst.
- Instruments used for sampling are from reputed manufacturer & are regularly calibrated.
- Chemicals used are Analytical Reagent grade and from reputed manufacturer.
- Analytical Instrumentation used in the laboratory is regularly calibrated.
- AESPL has regular program of Preventive Maintenance & Annual Maintenance for all critical equipment's.
- Ground Water, Soil Analysis - using APHA, BIS, ASTM & CPCB standards Methods for water Analysis.
- Standard Methods Adopted in the laboratory are those prescribed by APHA, BIS, ASTM & CPCB for water, waste & marine water analysis using methods as per NIO (National Institute of Oceanography) Manual.
- AESPL has CRMs (Certified Reference Material) for heavy metals from reputed manufacturers for heavy metals and Standard sea water which we use for analysis.
- AESPL regularly participates in Proficiency testing with reputed Organizations like Central Pollution Control Board (CPCB), Goa State Pollution Control Board and others as also Intra laboratory QC testing to check performance of our chemists.
- Overall approach & methodology is as per the Best practices as per prevailing norms of Central Pollution Control Board /Ministry of Environment, Forests and Climate Change (MOEF & CC) etc /Internationally adopted practices.

4. COMPILATION OF DATA & INFERENCE

4.1 Ambient air quality monitoring report

4.1.1 AAQM Data

Ambient Air quality was monitored with relevant parameters as per NAAQS standards published by CPCB in November 2009 considering that the present project is for development of International Airport for Navi Mumbai area. Data is compiled and presented below:

Table 4-1: Ambient air quality monitoring of various stations of project area during January to May 2018 as per Tender (1)

Sampling Locations	Airport Entry (West) (A11)	Airport Entry (East) (A12)	Panvel CIDCO Office (A1)	Kalamboli CIDCO Office (A3)	Kharghar CIDCO Office (A4)	Belapur CIDCO Office (A5)	Khandeshwar Railway Station (A 2)	Pargaon High School (A 6)	Gavanphata Water Tank (A7)	Kille Gaothan Guest House (A9)	Limit #	Unit
Sampling Date	**31.01.2018**		**28.02.18**		**28.03.18**		**23.04.18**		**22.05.18**			
$PM_{2.5}$	19.4	19.5	18.7	20.1	18.7	20.3	18.3	18.7	18.6	18.3	60	µg/m³
PM_{10}	62.8	61.2	60.5	62.8	60.8	64.3	57.5	59.5	58.1	56.9	100	µg/m³
SO_2	12.6	12.1	11.9	12.6	11.9	12.4	11.1	11.6	11.1	11.0	80	µg/m³
NO_X	15.1	14.9	14.3	15.3	14.3	15.2	15.7	16.3	13.4	14.2	80	µg/m³
CO	0.12	0.10	0.11	0.16	0.12	0.11	0.26	0.30	0.28	0.26	4	mg/m³
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	µg/m³
NH_3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	400	µg/m³
nMHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	ppm

ND–Not detected (Note # Limits as per National Ambient Air Quality Standards NAAQS,2009)

Table 4-2: Ambient air quality monitoring of various stations of project area during June 2018 as per Tender (2)

Sampling Locations	Panvel CIDCO Office (A1)	Khandeshwar Railway Station (A 2)	Kalamboli CIDCO Office (A3)	Kharghar Nodal Office (A4)	Belapur CIDCO Office (A5)	Pargaon High School (A 6)	Kille Gaothan Guest House (A9)	Panchsheel guest House A10	Gavanphata Water Tank (A7)	Ambuja Cement Ltd A8	Airport Entry (West) (A11)	Airport Entry (East) (A12)	Limit #	Unit
Sampling Date	**11.06.18**				**12.06.18**				**13.06.18**					
$PM_{2.5}$	18.3	19.5	20.4	19.1	20.0	19.5	20.4	19.5	20.8	19.1	20.4	20.0	60	µg/m³
PM_{10}	56.2	59.1	62.9	57.0	60.8	60.0	61.2	59.5	62.9	56.7	61.6	61.2	100	µg/m³
SO_2	11.7	15.2	12.6	11.8	12.4	12.1	12.5	12.0	12.2	11.8	12.2	12.8	80	µg/m³
NO_X	14.7	59.1	15.8	14.8	15.3	15.0	15.3	15.0	15.4	15.0	15.2	15.2	80	µg/m³
CO	0.30	0.32	0.28	0.28	0.22	0.24	0.21	0.26	0.38	0.32	0.25	0.20	4	mg/m³
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	µg/m³
NH_3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	400	µg/m³
nMHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	ppm

ND–Not detected (Note # Limits as per National Ambient Air Quality Standards NAAQS,2009)

4.1.2 Inference of AAQM Data

As per Tender (1):

The concentration of Particulate Matter – 10 μ (PM10) matter was observed above 50 μg/m³ at all sampling locations. The level of Particulate Matter - 2.5 μ (PM 2.5) was observed high at Kalamboli CIDCO office, Belapur CIDCO Bhavan, Airport Entry (West and East) due to high vehicular movement and residential zone; at other places it is noted low, $PM_{2.5}$ is noted under NAAQS limit at all stations. Amongst gaseous pollutant, Nitrogen Oxide level, Sulfur dioxide levels and Carbon monoxide are under NAAQS norms during January to May 2018. Over all air pollutants level was observed below NAAQS standards.

As per Tender (2):

The concentration of Particulate Matter – 10 μ (PM_{10}) matter was observed above 50 μg/m³ at all sampling locations. The level of Particulate Matter - 2.5 μ ($PM_{2.5}$) was observed high at Kalamboli CIDCO office, Belapur CIDCO Bhavan, Kille Gaothan Guest House, Gavanphata Water Tank, Airport Entry (West and East) due to high vehicular movement and residential zone; at other places it is noted low, $PM_{2.5}$ is noted under NAAQS limit at all stations. Amongst gaseous pollutant, Nitrogen Oxide level, Sulfur dioxide levels and Carbon monoxide are under NAAQS norms from June 2018 onwards. Over all air pollutants level was observed below NAAQS standards

4.2 AMBIENT NOISE LEVEL MONITORING REPORT

4.2.1 Noise Level Data

Ambient Noise level was monitored over 24 hours' duration for Day and Night time as per Schedule - II of Environmental Protection Act 1986. Results of analysis are compiled below:

Table 4-3: Ambient Noise Level Monitoring at various stations during Jan to Jun 2018 as per tender (1) & (2)

Stn Code	Sampling Location	Sampling Date	Observed Value (Leq) (dB(A))						Limiting Standard (Leq) as per EP Act Schedule II. dB(A)	
			Day Time			Night Time				
			Max	Min	Avg	Max	Min	Avg	Day Time	Night Time
N9	MES School	**19.01.18**	80.5	60.7	71.4	86.9	46.8	65.1	**75**	**70**
N12	Karnala Bird Sanctuary		58.3	44.9	49.5	51.4	42.9	44.8	**75**	**70**
N 5	Panvel CIDCO Office	**28.02.18**	77.2	56.9	68.0	61.7	51.8	56.5	**75**	**70**
N10	MGM Hospital, Kalamboli		70.2	54.2	63.9	60.8	50.1	56.8	**75**	**70**
N2	Belapur CIDCO Office	**29.03.18**	84.6	60.5	70.2	84.3	63.7	67.9	**75**	**70**
N6	Kharghar CIDCO Office		80.3	65.4	65.7	85.2	50.4	58.3	**75**	**70**
N 1	Ambuja Cement Limited	**24.04.18**	84.1	65.7	68.3	77.5	61.1	66.3	**75**	**70**
N 2	CIDCO Bhavan Belapur		81.5	64.7	68.8	76.1	58.5	61.8	**75**	**70**
N 4	Teen Tank Gavanphata	**23.05.18**	68.3	54.1	62.7	65.2	50.2	60.4	**75**	**70**
N8	Pargaon School		62.1	42.7	57.1	60.1	40.1	57.5	**75**	**70**
N 5	Panvel CIDCO Office	**12.06.18**	53.0	42.9	48.3	45.5	37.7	40.6	**75**	**70**
N6	Kharghar CIDCO Office		54.6	47.8	51.2	41.2	35.0	38.1	**75**	**70**
N 7	Panchsheel Guest House		58.8	48.6	53.7	47.1	32.4	39.7	**75**	**70**
N11	Swapna Nagari		59.0	51.0	54.1	45.5	36.7	41.1	**75**	**70**
N8	Pargaon School	**13.06.18**	48.5	43.8	46.2	43.2	33.7	38.5	**75**	**70**
N9	MES School		50.3	39.6	44.9	38.5	34.6	36.5	**75**	**70**
N10	MGM Hospital, Kalamboli		55.9	40.1	48.0	38.4	33.2	35.8	**75**	**70**
N 12	Karnala bird Sanctuary		51.8	39.5	45.6	42.4	30.5	36.4	**75**	**70**
N1	Ambuja Cement Limited	**14.06.18**	81.8	49.5	71.4	77.4	50.5	63.7	**75**	**70**

N 2	CIDCO Bhavan Belapur		68.5	53.8	61.2	53.2	43.7	48.5	**75**	**70**
N3	Palaspa junction		70.3	52.6	61.5	55.5	44.6	50.1	**75**	**70**
N 4	Teen Tank Gavanphata		71.9	53.1	62.5	58.4	43.2	50.8	**75**	**70**

4.2.2 Inference of Noise Data as per tender (1) & (2)

During day time, the average noise level was observed in the range of 44.9 - 71.4 dB(A) & during Night time 35.8 - 67.9 dB(A) at all locations during sampling period. It is observed average sound level are below EP Act Standards at all stations during day and as well as time for period of January 2018 – June 2018 respectively.

4.3 SOIL QUALITY MONITORING REPORT

4.3.1 Soil Analysis Data

Data on soil analysis is compiled and presented below for the sampling period January 2018 – June 2018:

Table 4-4: Soil analysis of various stations of project area during January to June 2018

Sr. No.	Locations	Targhar (S1)	Ulwe (S7)	Kombadbhuje (S3)	Ganeshpuri (S6)	Koli (S4)	Vaghivalivada (S9)	Kopar (S 2)	Pargaon (S 8)	Vaghivali (S 5)	Chinchpada (S10)	Unit
	Sampling Date	**31.01.18**		**27.02.18**		**29.03.18**		**23.04.18**		**22.05.18**		
1.	pH	6.76	6.63	6.52	6.54	6.72	6.68	6.18	6.21	6.25	6.84	--
2.	TOC	0.10	0.11	0.11	0.12	0.14	0.11	0.15	0.17	0.14	0.11	%
3.	TKN	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
4.	Conductivity	134.2	138.2	145.6	138.2	146.3	126.4	124.6	127.2	135.4	128.8	µS/cm
5.	Calcium	52	58	68	46	74	68	48	38	42	32	mg/kg
6.	Magnesium	24	11	32	18	18	34	14	16	12	9	mg/kg
7.	Sulphate	62	68	86	75	86	76	42	36	54	68	mg/kg
8.	Chlorides	112	106	151	126	132	132	82	66	31	56	mg/kg
9.	Sodium	6	8	8	8	9	8	4	6	5	8	mg/kg
10.	Potassium	14	4	18	10	12	18	24	18	15	20	mg/kg
11.	Phosphates	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
12.	Iron	0.6	0.8	0.3	0.4	0.4	0.5	0.7	0.6	0.8	0.5	mg/kg
13.	Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
14.	Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
15.	Nickel	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
16.	Zinc	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
17.	Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
18.	Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
19.	Manganese	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
20.	Aluminum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
21.	Cobalt	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
22.	Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg
23.	Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/kg

4.3.2 Soil Data Inference:

There was marginal high level of metals like Calcium, Magnesium and Potassium were observed (at Targhar, Ulwe, Kombadbhuje, Ganeshpuri and Vaghivalivada). This may be due to previous landfilling activity by CIDCO at these sites. Over all soil quality was observed fertile in nature and suitable to grow local plants varieties at all locations.

4.4 GROUND WATER QUALITY ANALYSIS REPORT

4.4.1 GW Analysis Data

The physicochemical analysis of ground water study showed considerable variation and is compiled and presented below:

Table 4-5: Ground water analysis of various stations of project area during Jan to Jun 2018

Sr. No.	Sampling Locations	GW 1	GW 2	GW 8	GW 9	GW 10	GW 3	GW 4	GW 5	GW 6	GW 7	GW 1	GW 2	GW 8	GW 9	GW 10
	Sampling month	Jan 18					Feb 18					March 18				
1	pH	7.01	6.76	6.78	6.53	7.22	6.49	7.42	6.96	7.12	6.92	7.11	6.82	6.78	6.58	7.28
2	Temperature, ˚C	28.1	28.4	28.2	27.6	28.6	27.6	28.1	28.4	28.0	27.5	28.1	28.2	27.9	28.1	28.1
3	Turbidity, NTU	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	Alkalinity, mg/L	92	60	68	48	58	48	62	58	72	84	88	58	70	50	60
5	Salinity, ppt	1.6	1.8	2.5	2.0	1.8	2.0	2.3	1.8	1.4	1.4	1.8	1.9	2.0	2.0	2.0
6	TKN, mg/L	ND	ND	ND	ND	ND	ND	1.12	ND	ND	ND	ND	1.96	ND	ND	ND
7	Total P, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	DO, mg/L	6.4	6.4	6.2	6.5	6.6	6.4	6.3	6.2	6.1	6.1	6.6	6.5	6.5	6.5	6.4
9	BOD, mg/L	32	20	24	18	12	18	16	14	8	22	24	22	28	20	12
10	COD, mg/L	80	60	70	60	40	60	60	40	20	60	60	70	80	60	40
11	Oil & Grease, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12	Residual Free Chlorine, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	Hardness ($CaCO_3$), mg/L	112	54	78	68	54	74	70	54	64	92	108	58	74	74	58
14	Chlorides (Cl), mg/L	86	40	63	36	40	48	52	59	42	78	92	40	60	40	42
15	TDS, mg/L	140	60	110	100	140	120	140	100	60	100	150	80	120	120	130
16	Na, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17	Fluoride (F), mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	Nitrate, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	Mn, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	K, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	Iron (Fe), mg/L	0.02	0.11	0.10	0.12	0.11	0.20	0.20	0.11	0.16	0.06	0.06	0.14	0.15	0.16	0.10
22	Sulphate, mg/L	20	14	32	32	40	40	62	18	30	38	26	28	30	38	36

Sr. No.	Sampling Locations	GW 1	GW 2	GW 8	GW 9	GW 10	GW 3	GW 4	GW 5	GW 6	GW 7	GW 1	GW 2	GW 8	GW 9	GW 10
	Sampling month	Jan 18					Feb 18					March 18				
23	Phenol, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	Hexavalent Chromium, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
25	Cu, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	Cd, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
27	As, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	Hg, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	Pb, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	Zn, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Fecal Coliform	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	240	≥1600	≥1600
32	Coliform Colonies	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
33	Phytoplankton (no x 10^3/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	Total Heterotrophic Bacteria, spc/ml	124	86	120	109	107	128	109	117	121	159	117	102	97	109	92
35	Chlorophyll (mg/m^3)	0.003	0.001	0.003	0.003	0.002	0.004	0.001	0.005	0.007	0.006	BDL	BDL	0.01	BDL	BDL

GW1: Open Well at Kombadbhuje; GW2: Well near pond at Ganeshpuri; GW3: Open well at Vaghivalivada; GW4: Open Well at Koli; GW5: Open well at Kopar; GW6: Open well at Chinchpada; GW7: A well Near Pargaon; GW8: Well near Vaghivali; GW9: Open well at Ulwe; GW10: Well near pond at Targhar

Table 4.5 Contd.:

Sr. No.	Sampling Locations	GW 3	GW 4	GW 5	GW 6	GW 7	GW 1	GW 2	GW 8	GW 9	GW 10
	Sampling month	April 18					May 18				
1	pH	7.41	7.22	7.63	7.54	7.09	7.49	7.55	7.58	7.33	8.10
2	Temperature, ° C	28.3	28.6	28.4	28.5	28.8	28.6	28.8	28.7	28.2	28.5
3	Turbidity, NTU	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	Alkalinity, mg/L	68	58	76	84	82	198	212	236	204	202
5	Salinity, ppt	1.5	1.4	2.2	1.8	2.0	2.4	2.6	2.4	1.6	1.8
6	TKN, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7	Total P, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	DO, mg/L	5.3	6.5	6.0	6.4	5.8	6.2	5.6	5.4	5.2	5.6
9	BOD, mg/L	28	18	22	20	16	24	18	16	6	12
10	COD, mg/L	75	56	64	56	43	58	68	42	24	65
11	Oil & Grease, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12	Residual Free Chlorine, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	Hardness ($CaCO_3$), mg/L	84	82	68	92	76	180	222	210	198	184
14	Chlorides (Cl), mg/L	30	42	52	32	28	54	72	52	81	53
15	TDS, mg/L	80	80	90	90	70	100	110	80	140	90
16	Na, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17	Fluoride (F), mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	Nitrate, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	Mn, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	K, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	Iron (Fe), mg/L	0.03	0.03	0.08	0.05	0.04	0.6	0.8	0.6	0.5	0.6
22	Sulphate, mg/L	16	12	ND	38	36	30	11	11	29	30
23	Phenol, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	Hexavalent Chromium, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
25	Cu, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	Cd, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
27	As, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	Hg, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

(January – June 2018)

Sr. No.	Sampling Locations	GW 3	GW 4	GW 5	GW 6	GW 7	GW 1	GW 2	GW 8	GW 9	GW 10
	Sampling month	April 18					May 18				
29	Pb, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	Zn, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Fecal Coliform	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600	≥1600
32	Coliform Colonies	Present									
33	Phytoplankton (no x 10^3/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	Total Heterotrophic Bacteria, spc/ml	120	72	110	107	102	111	128	98	142	152
35	Chlorophyll (mg/m^3)	0.02	0.06	0.04	0.02	0.02	0.03	0.01	0.02	0.01	0.05

GW1: Open Well at Kombadbhuje; GW2: Well near pond at Ganeshpuri; GW3: Open well at Vaghivalivada; GW4: Open Well at Koli; GW5: Open well at Kopar; GW6: Open well at Chinchpada; GW7: A well Near Pargaon; GW8: Well near Vaghivali; GW9: Open well at Ulwe; GW10: Well near pond at Targhar

4.4.2 GW Analysis Inference:

The ground water quality showed considerable variation. Some ground water parameters were within desirable limit, some between desirable and permissible limit and few exceeded the permissible limit. The ground water did not fully comply the quality requirements as per IS 10500 revised in 2012 for purpose of drinking water.

The quality of collected ground water was not suitable for drinking purpose due to the presence of Fecal coliform, E. coli colonies & heterotrophic bacteria at all locations i.e. Koli, Kopar, Pargaon, Chinchpada, Vaghivalivada, Ulwe, Ganeshpuri, Vaghivali, Targhar & Kombadbhuje. Proper treatment of ground water required before consumption.

4.5 MARINE WATER QUALITY ANALYSIS REPORT (PHYSICOCHEMICAL PARAMETERS)

4.5.1 Analytical Data - Physicochemical Parameters during pre-monsoon:

Table 4-6: Marine water physicochemical analysis of various stations of project area during March 2018

Sr.No.	Parameter	W 1	W 2	W 3	W 4	W 5	W 6		W 7		W 8		W9		W10		W11		W12	W13	
		S	S	S	S	S	S	B	S	B	S	B	S	B	S	B	S	B	S	S	B
1.	pH	6.48	7.23	7.14	6.95	6.76	6.62	6.72	7.12	7.19	7.19	7.04	6.92	6.98	6.85	6.89	7.12	7.14	7.16	7.20	7.21
2.	Floating Matter	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
3.	Turbidity, NTU	2.4	3.4	2.0	2.4	1.9	4.3	4.5	3.1	4.3	4.0	4.2	4.4	4.5	2.5	3.2	3.2	3.6	4.2	3.8	3.9
4.	Temperature,℃	32.0	31.0	32.0	31.0	32.0	31.5	30.5	31.0	31.5	30.0	29.0	31.0	30.5	30.5	30.0	31.0	31.0	32.0	32.0	31.0
5.	Salinity, ppt	13.6	14.0	13.9	13.1	13.3	20.0	20.4	20.1	20.9	20.9	20.2	21.3	21.5	22.3	22.6	23.1	23.4	5.6	23.5	23.6
6.	TSS, mg/L	124	132	120	136	122	140	158	136	146	146	153	184	214	128	136	142	152	184	156	162
7.	TDS, mg/L	1250	1240	960	2210	2040	2840	2190	3120	2530	2530	2620	2130	2190	2230	2410	1850	2180	3120	3140	3180
8.	TOC, mg/L	1.2	1.4	1.3	1.7	1.3	1.2	1.6	1.8	2.4	2.1	1.4	1.3	1.6	1.5	1.4	1.4	2.2	2.3	1.7	1.9
9.	DO, mg/L	5.5	5.8	6.2	6.0	6.1	6.1	5.9	5.8	6.1	6.1	6.3	6.5	6.4	5.9	5.8	5.9	6.0	6.1	5.6	5.9
10.	BOD, mg/L	20	28	22	14	10	22	28	26	20	20	24	28	26	20	24	20	24	26	22	24
11.	O&G, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12.	Sulphate, mg/L	82.4	96.3	88.4	28	18	48	62	72	54	82	52	64	70	45	58	24	24	36	46	49
13.	Nitrite, mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.	Nitrate, mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.	TAN, mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.	Inorganic PO_4, mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.	Ca, mg/L	98	132	332	214	80	136	120	96	88	75	78	52	56	42	56	62	68	36	58	62
18.	Mg, mg/L	24.3	33.4	58.6	33.6	14.3	20.4	24.3	11.2	22.6	24.6	32.1	12	18	23	12	10	12	18	11	13
19.	Fe, mg/L	0.12	0.12	0.10	0.10	0.08	0.14	0.10	0.11	0.08	0.08	0.09	0.09	0.10	0.10	0.12	0.10	0.12	0.11	0.14	0.13
20.	Cr, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21.	Cu, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22.	As, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23.	Cd, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24.	Hg, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
25.	Pb, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26.	Zn, mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

4.5.2 Inference - Physicochemical Parameters during pre-monsoon:

The pH value ranged from 6.48 to 7.23 at surface and 6.72 to 7.21 at bottom suggest slight acidic to basic nature of water. Salinity was low due to influx of fresh water and collection during pre-monsoon. The total suspended solids were found due to accumulation of discharge from surrounding villages in the Panvel Creek and Ulwe river respectively.

The Total dissolved solids were noted high which suggest the high concentration of dissolved salts and deteriorated quality of water. Total organic carbon was noted low which suggest there were no accumulation of organic matter in water body.

Dissolved Oxygen level more than 5 mg/l is within normal limit suggest good amount of dissolved oxygen in the water body to support living organism. BOD value suggests the presence of biodegradable organic wastes present in water body which comes as domestic waste, discharge of sewage from surrounding areas and effluents from CETP at MIDC Taloja and sewage from NMMC STPs in Nerul.

The Sulphate value were found in low concentration which represents anthropogenic contamination. The concentration of Calcium, Manganese and Iron were low due natural origin.

4.6 MARINE WATER QUALITY ANALYSIS REPORT (BIOLOGICAL PARAMETERS)

4.6.1 Analytical Data - Biological Parameters during pre-monsoon:

As per Tender (1)
Biological parameters viz. Phytoplankton, Zooplankton, Benthos and Microbiology were analyzed, and compiled data is presented below:

Table 4-7: Marine water biological analysis of various stations of project area during March 2018

Parameter	W 2	W 11		W12
	S	S	B	S
Phytoplankton				
Population(nox10³/L)	64	36.8	28.8	301.6
Total Genera	15	14	10	18
Major Genera	*Scenedesmus, Thalassiosira, Navicula, Nitzschia*	*Nitzschia, Thalassiosira, Leptocylindrus, Skeletonema*	*Thalassiosira, Skeletonema, Nitzschia, Navicula*	*Pleurosigma, Thalassiosira, Leptocylindrus, Scenedesmus*
Diversity Index	2.09	2.19	1.68	2.19
Zooplankton				
Population (no x 10³/100m³)	9	62		4
Total Group	6	5		7
Major Groups	Copepoda Decapoda larvae Polychaetes	Copepoda, Gastropods Lamellibranch Foraminiferans		Copepoda, Gastropods Foraminiferans Lamellibranch
Biomass (ml/100m³)	7.58	20.73		3.79
Diversity Index	0.46	0.04		0.90
Benthos				
Population (no x 10²/ m²)	Sample could Not be collected due hard substratum	83		250
Total Group		3		1
Major group		Polychaete, Amphipod		Polychaete, amphipods
Biomass (gm/ m²)		0.33		1.27
Diversity Index		0.00		1.00
Microbiology				
Coliform/100 ml	*P	*P	*P	*P
E. coli	*P	*P	*P	*P

4.6.2 Inferences - Biological Parameters during pre-monsoon:

4.6.2.1 Phytoplankton

In March 2018, Phytoplankton population density ranges from 36.8-301.6 x 10^3/l at surface of stations 2, 11 and 12; population was noted 28.8 x 10^3/l at bottom of Station 11. Highest phytoplankton population at surface water of station 12 may be due to influx of domestic water from surrounding villages;

total generic groups ranges from 14-18 nos. at surface water of stations W2, W11 and W12. Maximum generic diversity 18 no. is observed at surface water of Station 12 during March 2018.

Thalassiosira, *Navicula*, *Skeletonema and Nitzschia*, are most common ones, followed by rest of observed genera like *Leptocylindrus*, *Scenedesmus*, *Pleurosigma*.

The other fresh water phytoplankton genera found are *Scenedesmus*, *Oscillatoria* in Gadhi River (Station 2). *Nitzschia*, *Thalassiosira* and *Navicula* are common Genera noted in all stations 2, 11 and 12 mostly present in surface water. Graphical representations of phytoplankton population and total genera is represented in Figure 4.2.

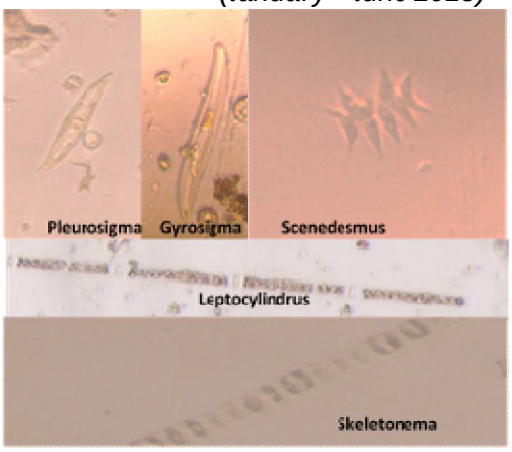


Figure 4.1: Phytoplankton found in samples for March 2018

The above graph represents the population of phytoplankton is more at station 12; and less at station 11, which represents there is discharge of sewage and domestic waste. The phytoplankton trend with respect to total number of genera is almost same throughout all stations. Some of the major genera seen were photographed and shown in figure 4.1.

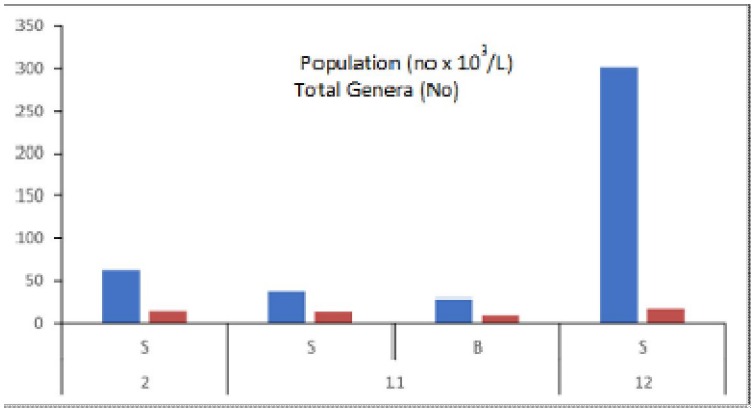


Figure 4.2 : Graphical representation of phytoplankton population and total genera *for March 2018*

4.6.2.2 Zooplankton

In March 2018, the zooplankton biomass ranged from 3.79 to 20.73 ml/100 m^3 with population density of 4 to 62 no x 10^3/100m^3 while having good faunal group ranging from 5-7 nos. The zooplankton was noted with good population and group diversity. Copepods, decapods larvae, & polychaetes were common groups observed as, figures 4.3 represents zooplankton standing stock graphically.

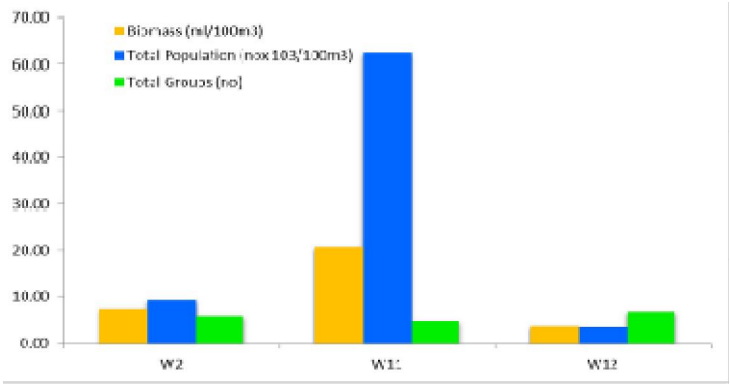


Figure 4.3: Graphical representations of Zooplankton Biomass, Population and total group

The above graph represents that average standing stock reported from all stations; Station 12 shows lowest population and biomass when compared to station 12 & 11.

Figure 4.4: Zooplankton found in samples for March 2018

4.6.2.3 Benthos

Macro-benthic biomass noted 0.00 to 1.27 gm/m^2 with population 83 to 250 x $10^2/m^2$ and Polychaete being only faunal group found at station 11 and 12 respectively.

Benthic sample couldn't be collected at station 2 because of hard bottom. The benthos observed was poor in terms of biomass of Benthos, population & diversity as well.

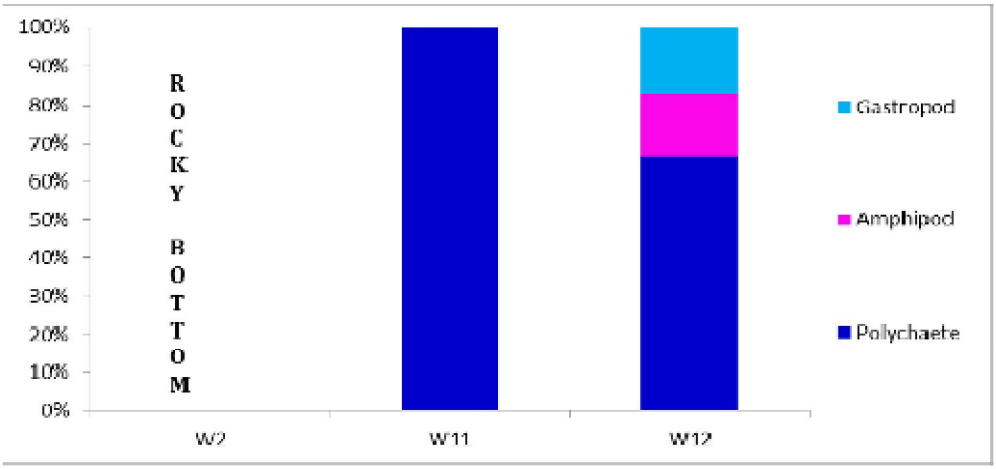


Figure 4.5: Graphical representation of benthic population for March 2018

The benthic organisms found at sampling area shown in Figure 4.6 and Figure 4.5 represents the graphical representations of population of benthic organisms' groups in percentage.

The graphs represent the Polychaete as major stable benthic component.

Figure 4.6: ***Benthic organism found in samples for March 2018***

4.6.2.4 Microbiology

Coliform and E. Coli microbes were present at all stations in surface and bottom levels. No specific trend was observed.

5. CHAPTER V: CONCLUSION & RECOMMENDATION

Based on the study of activities planned during pre-development works and on the basis of the environmental baseline monitoring results, certain issues have been identified and steps proposed to mitigate the environmental impacts as suggested below:

5.1 Ambient Air Quality

5.1.1 Observations

As can be seen from analysis data, Table 4.1, the particulate levels are under NAAQS limit in terms of PM 10 and PM 2.5 – particularly the PM 2.5 which is mostly from very heavy automobile traffic.

5.1.2 NMIA Pre-Development Activities and impacts anticipated on Air Quality:

- demolition of hill which will generate of material like murum and rock which will be utilized within site and balance will be taken to fill up nearby areas.
- Site level is currently low and will be increased to +6 to +7m above existing GL by using excavated material.
- The area of the site is partially inundated during high tide.

The air will get polluted by activities like excavation, land filling, controlled blasting, construction, material handling and transportation during construction phase due to traffic and high dust levels.

5.1.3 Mitigation Measures Proposed:

Following mitigation measures are strongly proposed to ensure minimal impacts on ambient air quality:

- Use of temporary screens of tin or fabric to create barriers against dust.
- Provision for water sprinkling at the construction site and along roads for dust suppression.
- Wheel wash system on roads leading out of site to ensure that truck tyres do not spew out dust.
- Trucks carrying earth, sand or stone should be covered with tarpaulin to avoid spillage. Overloading of such trucks should be strictly avoided.
- Workers working in high dust areas and on earth moving machineries should be provided with face masks/goggles for their protection- such provision should be built into the contract documents.
- High tech equipment should be used for controlled (delayed) blasting with proper blast pattern along with cover on rock surface being excavated which will generate minimal noise as well as dust.
- Construction machinery and equipment should be maintained in good working condition with PUC Certification for all transport vehicles used. All vehicles &

construction equipment which do not meet vehicular pollution standards will not be allowed within construction site.

5.2 Ambient Noise:

5.2.1 Observations from Data:

Ambient Noise levels are within the limits prescribed under Schedule II of Environmental Protection Act 1986, however both Day and Night Time values are towards the higher side (barely meeting the Noise standards).

5.2.2 NMIA Pre- Development Activities and impacts anticipated on Ambient Noise Levels:

Construction activities at NMIA during pre-development works include:

- demolition of hill which will generate of material like murum and rock which will be utilized within site and balance will be taken to fill up nearby areas.
- Site level is currently low and will be increased to +6 to +7m above existing GL by using excavated material.
- The area of the site is partially inundated during high tide.

The ambient noise levels will get affected by activities like (a) use of Earth moving machinery like Excavators, Wheel Loaders etc. and trucks for handling and re-handling of excavated material (b) controlled blasting (c) demolition of houses and existing structures.

5.2.3 Mitigation Measures Proposed:

Following mitigation measures are strongly proposed to ensure minimal impacts on ambient noise levels:

- Use of temporary screens of tin to create barriers against noise propagation in active construction areas.
- Workers working in high noise areas and on earth moving machineries should be provided with ear muffs/ear plugs for their protection- such provision should be built into the contract documents.
- Trucks and construction machinery should be well maintained to ensure low noise generation. Norms of Noise levels for Construction machinery as specified under EP Act should be strictly followed.
- High tech equipment should be used for controlled (delayed) blasting with proper blast pattern along with cover on rock surface being excavated which will generate minimal noise.
- construction activity should not be carried out night time hours.
- construction machineries and DG sets used should be provided with silencers.
- DG sets used should conform to EP Act norms for air pollution and noise.
- Before controlled blasting the surrounding villages should be informed, so that they can go to a safe place away from the project site.

5.3 Soil

5.3.1 Observations from Data:

Soil is fertile and can support vegetation.

5.3.2. NMIA Pre – Development Activities and impacts anticipated on soil:

Construction activities at NMIA during pre-development works include:

- demolition of hill which will generate of material like murum and rock which will be utilized within site and balance will be taken to fill up nearby areas.
- Site level is currently low and will be increased to +6 to +7m above existing GL by using excavated material.
- The area of the site is partially inundated during high tide.

The soil will get affected by above activities.

5.3.3 Mitigation measure proposed:

Following mitigation measures are strongly proposed to ensure minimal impacts on soil quality:

- removal of existing top soil within site by excavating and storing the same for future use.
- Such excavated soil should be stored separately and used as final top layer after landfilling is completed.

5.4 Ground Water:

5.4.1 Observations from Data:

Ground Water quality is poor and fails to meet IS 10500:2012 norms at number of locations. The area of the site is low lying and partially inundated during high tide. Ground water occurrence is high and mostly open dug wells are seen in the area.

5.4.2 NMIA Pre- Development Activities and impacts anticipated on Ground Water Quality:

Construction activities at NMIA during pre-development works include:

- demolition of hill which will generate of material like murum and rock which will be utilized within site and balance will be taken to fill up nearby areas.
- Site level is currently low and will be increased to +6 to +7m above existing GL by using excavated material.
- The area of the site is partially inundated during high tide.

The ground water quality will get affected by above activities.

5.4.3 Further Study Suggested:

- As per clause (vii) under specific conditions of the Environmental clearance granted for the NMIA project by MOEFCC, “systematic and periodic monitoring mechanism

need to be put in place by CIDCO to assess the impact on sub surface flow /impact on aquifers as well as surface water bodies in different seasons. Necessary additional environmental protection measures to be adopted to address the impact of proposed development in coastal sub surface flow as well as impact on aquifers".

The above study needs to be undertaken by a Functional Area Expert specializing in Hydrology/Geo- hydrology urgently in view of the fact that pre-development activities have started.

5.4.4 Mitigation Measures for Rehabilitated Settlements:

As can be seen ground water quality is poor and hence CIDCO should make adequate piped water supply available for people to be accommodated in Rehabilitated settlements.

5.5 Marine Water:

5.5.1 Observations from Data:

Marine Water quality is moderate, may be due to hindrances.

5.5.2 NMIA Pre- Development Activities and impacts anticipated on Marine Water Quality:

Construction activities at NMIA during pre-development works include:

- demolition of hill which will generate of material like murum and rock which will be utilized within site and balance will be taken to fill up nearby areas.
- Site level is currently low and will be increased to +6 to +7m above existing GL by using excavated material.
- The area of the site is partially inundated during high tide.

The marine water quality will get affected by activities such as land filling, diversion of courses of Ulwe and training of Gadhi rivers.

5.5.3 Further Study Suggested:

The re- coursing of Ulwe river and training of Gadhi river with provision of special channel to the North of the site in the proposed Master plan needs detailed studies so far as its impacts on marine water quality and drainage on the entire area is considered. The Environmental clearance has several clauses pertaining to this as below:

(1) The proposed re-coursing of tidally influenced water body outlets from Ulwe river has a large cross-sectional area at the middle with the river/creek on either end remaining unchanged with its natural course. The whole system should function as it was functioning earlier without airport project. Surface runoff should not be let into the channel just because the area of cross section is large. The whole airport area will be reclaimed, and the level raised to 7m whereas the existing level all around the airport will continue to be low in its natural state. There will be flow all around due to surface runoff. This additional quantity must be collected by appropriate drainage

system and let into Gadhi River and not into the recoursing channel. The recourse channel may be able to take it but not the river or creek on either side of the channel. This aspect shall be examined by CIDCO in details to avoid the flooding of the low-lying areas besides inducting other hydrological and environmental studies.

(2) The entire system shall be studied as one composite system with appropriate boundary conditions to reflect the worst conditions – minimum 100 years to be specified and compliance ensured such as -flooding, surface runoff not only from the airport but also from surrounding areas as well, normal flow, tidal flow due to tidal surge having a long return period, possible obstructions to flow, tributaries joining the main river etc. so as to take appropriate protection and remedial measures. Due to construction of recourse Channels and also due to tail end of the Gadhi & Ulwe Rivers into Panvel Creek, there is a need to prepare a Comprehensive Master Plan for Surface drainage and Flood protection, keeping in view the proposed developments. CIDCO shall submit the above Master Plan to the Ministry.

(3) On the northern part of the airport there is a secondary channel of the Gadhi River which will be filled up for the airport runway construction. This will be replaced by a shorter channel along the northern boundary of the airport. The channel shall be designed appropriately through overall modeling study so that the channel provides tidal water to the mangrove park and moderate tidal flows under worst environmental conditions. Need for widening and deepening of Gadhi River may also be studied simultaneously, if required. The revised widths and depths of recourse channels shall be determined with modified drainage and worst rainfall/tide conditions including appropriate factor of safety.

The above studies need to be undertaken on priority in view of the fact that pre-development activities have started.

5.5.4 Mitigation Measures for protection of Marine Water Quality:

Mitigation measures which should be taken up at NMIA during pre-development works:

- landfilling should be taken up in areas away from those land parcels which are inundated during high tide.
- for excavated areas and freshly filled up areas, proper garland drains leading to settlement basins followed by filter bunds should be provided so that rain water does not carryover the loose excavated material into marine areas.
- polyelectrolytes should be used to help settle loose suspended material in the settlement basins.

REPORT ON
WATER AVAILABILITY FOR
NAVI MUMBAI INTERNATIONAL AIRPORT
(NMIA) & REUSE OF TREATED EFFLUENT

Compliance to Clause No. 3 (i) & (iii) of Extension of EC & CRZ clearance granted on 20th Dec 2017 for establishment of 'Navi Mumbai International Airport (NMIA)' at Mumbai by M/s City & Industrial Development Corporation of Maharashtra Ltd (CIDCO).

JUNE 2018

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REPORT ON WATER AVAILABILITY FOR NAVI MUMBAI INTERNATIONAL AIRPORT (NMIA) & REUSE OF TREATED EFFLUENT

Compliance to Clause No. 3 (i) & (iii) of Extension of EC & CRZ clearance granted on 20th Dec 2017 for establishment of 'Navi Mumbai International Airport (NMIA)' at Mumbai by M/s City & Industrial Development Corporation of Maharashtra Ltd (CIDCO).

Navi Mumbai International Airport (NMIA) is planned in Panvel Taluka, District Raigad about 40km to South East of present Chatrapati Shivaji International Airport (CSIA) for Mumbai city. The NMIA will cater to air traffic for city of Mumbai – Navi Mumbai and will fill in a large gap for air traffic to/fro Mumbai city.

1. Phasing of Airport Project & Water Requirement as per Phases:

As per Revised Master Plan submitted by Navi Mumbai International Airport Private Limited (NMIAL), the Concessionaire of NMIA, development of Airport is planned in four phases and forecasted passenger traffic along with the water demand in various phases is as below:

Table 1.0 Project Phasing & Water Requirement

Sr. No	Phase	Design Year	Passenger Capacity forecasted in MPPA	Water Demand in MLD Cumulative
1	I	2017-18	10	6.86 MLD
2	II	2020-21	20	10.85 MLD
3	III	2026-27	40	19.39 MLD
4	IV Final Phase	2030-31	60	27.94 MLD

Water requirement for Navi Mumbai International Airport project covers aeronautical and non-aeronautical areas. Quantity of water required for various operations per day is calculated consisting of all requirement of passengers, visitors, staff, commercial facilities, air and land side facilities, Cargo, GSE, Flight catering, Flushing, AC Plant, irrigation for planted area, and fire-fighting etc.

The water required for NMIA shall be sourced from CIDCO's, own existing water mains of Hetawane Water Supply Scheme located on the western side of the airport. The anticipated water supply demands are calculated based on the available guidelines and using benchmarks as comparatives for best practices of other airports in the region (other demands which includes GSE, Cargo, Defense and Hangars are calculated based on suitable assumptions and gathered data for different airports). The various demands are detailed in the Table 2 & 3 below. Contribution from rain water harvesting has not been considered at this stage, as this water shall be used only for landscaping/irrigation purpose. The total Water demand for NMIA is within the water demand approved as part of Environmental Clearance of the project.

Table 2.0 Water Demand for NMIA

SN	Description	Unit	Volume			
			Phase I	Phase II	Phase III	Final Phase
1	**Total domestic water demand**					
	Drinking Water Requirement including UFW	MLD	2.56	4.88	9.71	14.36
1.A	Fire Demand including UFW	MLD	1.07	1.07	1.07	1.07
	Total Potable water requirement	MLD	3.63	5.95	10.78	15.62
2	Non-Domestic Water demand					
2.A	Total Irrigation Water Demand including UFW	MLD	0.69	0.69	0.88	1.07
2.B	Water required for HVAC including UFW	MLD	1.46	2.15	3.61	5.06
2.C	GSE, Cargo, Defence and Hangars including UFW	MLD	0.12	0.14	0.28	0.42
	Flushing Water Demand with UFW	MLD	0.96	1.92	3.85	5.77
2.D	Total Non-Domestic water requirement	MLD	3.23	4.90	8.62	12.32
	Total Water Requirement	**MLD**	**6.86**	**10.85**	**19.40**	**27.94**

The Detailed water demand analysis is shown in the Table 3. The total estimated ultimate water demand of 27.94 MLD is for Final Phase of 60mppa. However as per Environmental Clearance (EC) from MoEFCC for the project the approved total water demand is 41.0 MLD. Therefore, even considering possible enhancement in airport's capacity in future, as indicated in Chapter 3, additional water demand is thus well within the EC approved total demand of 41.0 MLD.

1.1 Network Analysis

The combined potable water and firefighting network is designed to cater for peak flow to supply water and firefighting demands up to the storage tanks of individual facilities. The source for domestic and firefighting demand is from the potable water storage tank at WTP in U1 plot located at west side of airport, through main pipeline along with smaller diameter pipelines running through the utility corridor to create a loop system. The diameter of the network pipelines varies from 450mm - 250mm for Phases I and II and pipe sizes will go up to 355mm for Final Phase according to the hydraulic requirements and design criteria. The proposed potable water network is shown in Figure 1.

1.2 Potable Water and Fire Fighting Water Pump Set

The potable water pumps will be connected to the storage tank at the WTP by suction headers. The potable pump suction header is not connected to the fire suction header and

located at higher level to ensure that the fire reserve is maintained. The potable pump set is of end suction centrifugal pump and consists of the following:

- Two numbers pump sets, one working and one standby, each having 167 l/s, 28m head capacity for Phases I and II. Two (2) numbers pump set, one working and one standby, each having 357 l/s, 28m head for Final Phase will be needed for the supply of water.

- One number of inline booster pump having 220 l/s, 15m head capacity for Final Phase will be required to boost the pressure at location X: 295421.21, Y: 2100643.95. Inline booster pump will not be required for Phases I and II.

The firefighting pump is connected to the storage tank by a suction header. In the event of a fire the fire pumps shall start, the potable pump suction header is not connected to the fire suction header and located at higher level to ensure that the fire reserve is maintained. The firefighting pump set is of end suction centrifugal pump and with 60 l/s discharge and 60m head with adequate standby options.

1.3 Network Hydraulic Balance

Analysis was carried out for potable water network. The sizing of the mains and sub-mains have been calculated taking into consideration the flow, head loss, velocity, and other relevant constraints. The results obtained show that the system will work within the required values with respect to pressure, flow, velocity and head losses.

Table No. 3: Detailed Water Demand Analysis under Various Phases

SN	Description	Unit	Value	Phase I	Phase II	Phase III	Final Phase
	Passenger Handling Capacity	MPPA		10	20	40	60
1	Terminal Building Water Demand						
	Drinking Water Requirement						
a	Passenger at Terminal building (Average pax/per day)	Person/d		27,397	54,795	109,589	164,384
	Drinking water demand per capita	l/d	30	821,918	1,643,836	3,287,671	4,931,507
b	Office Staff, Workers and vendors (assumed)	Person/d		11,000	22,000	44,000	66,000
	Office staff (incl. Canteen) drinking water requirement per capita	l/d	40	440,000	880,000	1,760,000	2,640,000
c	Visitors per day 1.5 times passengers (assumed)	Person/d	1.5	41,096	82,192	164,384	246,575
	Visitors water requirement Per Capita	l/d	10	410,959	821,918	1,643,836	2,465,753
d	Water required for Aircraft maintenance (20 Nos based on BIAL data for 60 MPPA.)	Nos.		5	10	15	20
		lit.	8000	40000	80000	120000	160000
e	Water required for Cargo	m^2		37643	37643	82412	127180
		l/d	5	188215	188215	412060	635900
f	Water required for GSE	m^2		13578	22837	39310.5	55784
		l/d	5	67890	114185	196552.5	278920
g	Flight catering	Persons		27,397	54,795	109,589	164,384
		l/d	6	164384	328767	657534	986301
h	Fire Fighting						
	ARFF	LS		500000	500000	500000	500000
	Fire Fighting			432000	432000	432000	432000
i	Water required for Defence	m^2		18276	36553	73105	109658
		l/d	5	91382	182763	365527	548290
	Total drinking water requirement without UFW (Unaccounted for Water)	l/day		3,156,747	5,171,684	9,375,180	13,578,672

SN	Description	Unit	Value	Phase I	Phase II	Phase III	Final Phase
	Total drinking water requirement without UFW	MLD		3.16	5.17	9.38	13.58
	Total drinking water requirement with UFW	**%**	**15%**	**3.63**	**5.95**	**10.78**	**15.62**
B	Flushing Water Demand						
a	Passenger at Terminal building (Average pax/per day)	Person/d		27,397	54,795	109,589	164,384
	Flushing water demand per capita	l/d	15	410,959	821,918	1,643,836	2,465,753
b	Office Staff and vendors (assumed)	Person/d		11,000	22,000	44,000	66,000
	Office staff (incl. Canteen) Flushing water requirement per capita	l/d	20	220,000	440,000	880,000	1,320,000
c	Visitors per day 1.5 times passengers (assumed)	Person/d	1.5	41,096	82,192	164,384	246,575
	Visitors Flushing water requirement Per Capita	l/d	5	205,479	410,959	821,918	1,232,877
d	Water required for Cargo	m2		37643	37643	82411.5	127180
		l/d	2	75286	75286	164823	254360
e	Water required for GSE	m2		13578	22837	39310.5	55784
		l/d	2	27156	45674	78621	111568
f	HVAC Demand						
	Water required for HVAC	l/d		1,270,000	1,870,000	3,135,000	4,400,000
g	Irrigation Demand						
	Water requirement for Irrigation/landscaping	m2		99726	99726	127397	155068
	Assuming 6 lit water required per sqare meter as per NBC Vol.2 2016, clause 4.1.5.2	l/m2	6	598356	598356	764382	930408
h	Total flushing water requirement without UFW	l/d		2,807,236	4,262,193	7,488,579	10,714,966
	Total flushing water requirement without UFW	MLD		2.81	4.26	7.49	10.71
	Total flushing water requirement with UFW	**%**	**15%**	**3.23**	**4.90**	**8.61**	**12.32**
	Total Water Demand			**6.86**	**10.85**	**19.39**	**27.94**

2.0 CIDCO's Sources of Water in Navi Mumbai Area:

The Water requirement of NMIA is to be met from the Hetwane water supply scheme having source at Hetawane Dam. Accordingly CIDCO is the sourcing local authority for the procurement of water from Hetawane dam. This Hetawane Dam is belonging to the Irrigation Dept/ Water Resources Dept. Govt of Maharashtra. The Govt. of Maharashtra vested the ownership of this Dam to State Govt. entity Konkan Irrigation Development Corporation. (KIDC). The natural pure water is available from Hetawane dam and is supplied to the CIDCO areas including Navi Mumbai International Airport (NMIA) located within CIDCO area.

The CIDCO has executed agreements for supply of water from the Hetawane dam source. The KIDC has executed agreement for Supply of water from Hetawane Dam to CIDCO, in Navi Mumbai area.

Initially the agreement was executed for 100MLD of water (38.88MCum out of Total Hetawane dam capacity of 147.49 MCum) This 100MLD agreement executed by CIDCO with KIDC is enclosed as **Annexure-1** herewith.

Further additional 50 MLD of quota has been sanctioned by Govt. of Maharashtra recently from this Hetawane dam & accordingly CIDCO has executed additional agreement of 50MLD of water quota. The copy of the additional agreement of 50MLD with KIDC & CIDCO is enclosed as **Annexure-2**. Thus CIDCO is getting 150 MLD of water (58.38MCum) for supplying water to Navi Mumbai area including Navi Mumbai International Airport area.

The Govt. of Maharashtra further allocated Balganga Dam to cater the increase in water demand in Navi Mumbai area. This Balganga Dam has capacity of 350 MLD (127.75 MCum). The copy of such letter issued by Govt. of Maharashtra mentioning the capacity of 127.75 MCum is enclosed herewith as **Annexure-3.**

Further Govt. of Maharashtra (GoM) has entrusted the planning and development of fringe area of Navi Mumbai International Airport as a "Navi Mumbai Airport Influenced Notified Area" (NAINA) to cater the planned and developed growth surrounding the Airport. The GoM further allocated the Kondhane Dam source of Water Resource Dept. having capacity of 250 MLD (94.89 MCum) The copy of the Govt. Resolution of allocating Kondhane Dam to CIDCO is enclosed as **Anneuxre-4.**

Thus CIDCO has Total annual water availability with organization of about 281.02 MCum (750 MLD) as indicated in Table – 4 below along with various envisaged water commitment for other projects.

Sufficient surface water resources being available, therefore no ground water sources will be utilized in near future for NMIA water supply needs.

The following Table gives the details of sources of Water, availability of water, daily water consumption and surplus water upto the estimated final construction phase of 2030-31:

Table 4.0 Demand & Supply of Water (MLD)

Year	Water Available to CIDCO from various sources in MLD				Envisaged Water Committed to various projects	Balance Water estimated for distribution
	Hetawane	Balganga	Kondhane	Total	Daily Consumption	
2017-18	150	-	-	150	108	42
2021-22	150	150	150	450	400	50
2026-27	150	250	250	650	550	100
2030-31	150	350	250	750	650	100

The above table clearly indicates that the demand of water supply for the airport zone would be fulfilled from balance water available from CIDCO's own source.

3.0 Non-Domestic Water

The non-domestic water demand inclusive of irrigation or landscaping, flushing, HVAC water requirement is considered in domestic water demand. Treated / Recycled water from Sewage Treatment Plant (STP) and Effluent Treatment Plant (ETP) is considered to meet other water demand.

3.1 Network Analysis

The re-cycled water network is designed to cater for peak flow to supply water from the re-cycled water tank at STPs located at west and east side of the proposed airport, using the main pipeline along with smaller diameter pipelines running through utility corridor to create a loop system in the Final Phase. The diameter of the network pipelines varies from 400 mm - 90mm for all three phases, according to the hydraulic requirements and design criteria. The proposed re-cycled water network is shown in Figure 1.

3.2 Re-cycle Water Pump Set

The re-cycled water pump is connected to the storage tank at STP by a suction header. The re-cycled pump set is of end suction centrifugal pump and consists of the following:

- STP at west side: two numbers pump set - one working and one standby mode - each of 103 l/s, 29m head for Phases I & II. Two numbers pump set - one working and one standby mode - each of 156 l/s, 29m head for Final Phase.
- STP at east side: two numbers pump set - one working and one standby mode - each of 1.5 l/s, 29m head for Phases I & II. Two numbers pump set - one duty and one standby mode - each of 52 l/s, 29m head in Final Phase.

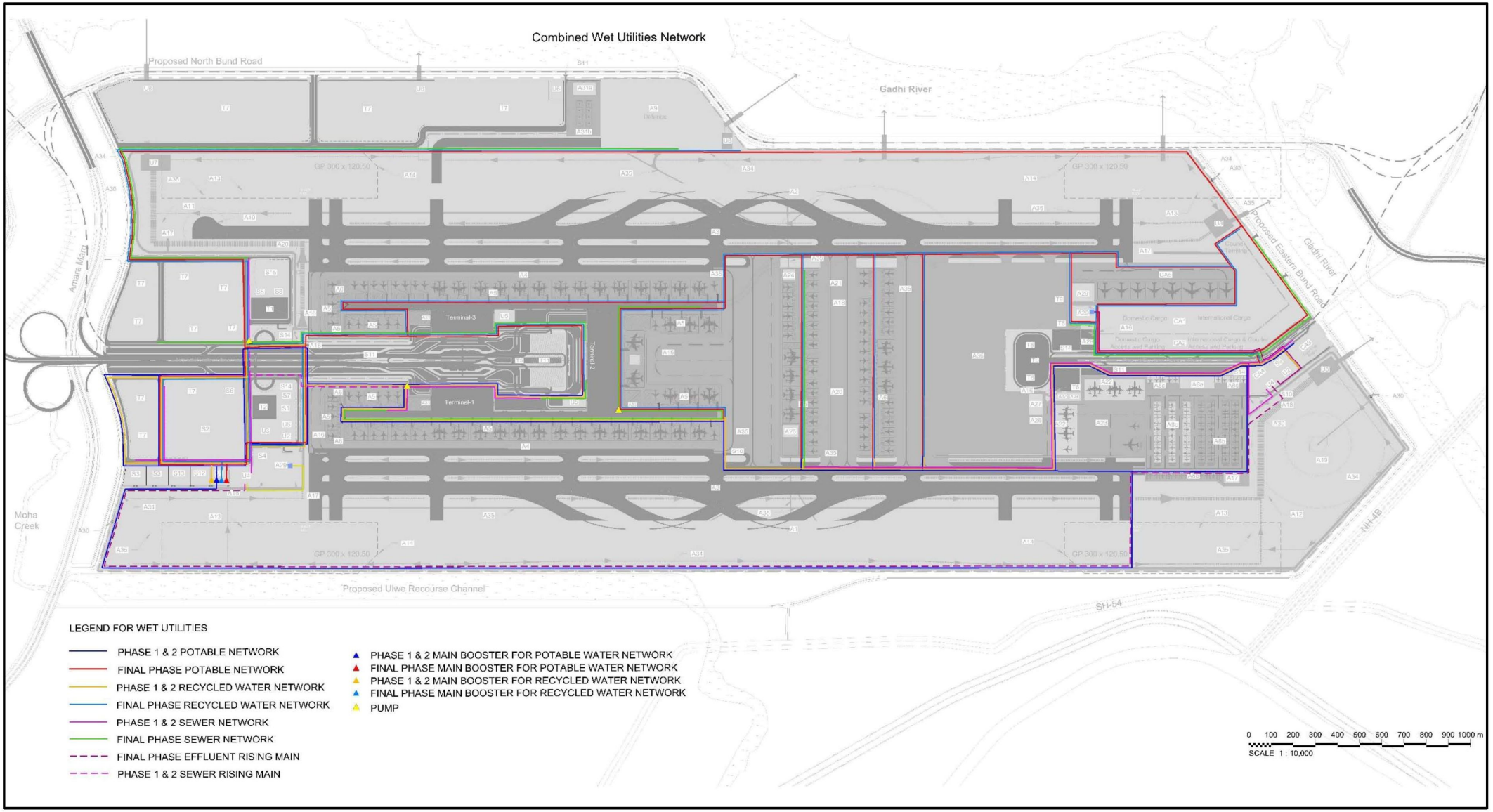

Figure 1: Combine Wet Utility Routing Dia

3.3 Network Hydraulic Balance

Analysis has been carried out for re-cycled water network. The sizing of the mains and sub-mains has been calculated taking into consideration flow, head loss, velocity, other relevant constraints. The results obtained show that the system will work within the required values with respect to pressure, flow, velocity and head losses.

3.4 Design Criteria

The water network will be sized using hydraulic modelling software where the Hazen-Williams formula has been used in pipe sizing. This formula is one of the most frequently used formula for the analysis of pressure pipe systems.

$$V=0.849 * C * (D/4)0.63 * (H/L)\ 0.54$$

Where:
V = Velocity in m/sec

C = Hazen-Williams roughness coefficient

D = Pipe diameter in metres

H = Pressure head loss in metres

L = Pipe length in metre

The following requirements have been considered in the design of the water network:

- The recommended pipe material to be used for network is HDPE. The roughness coefficient for Hazen William Equation C is considered as 145.
- Pipe pressure rating should be PN10, Class PE100 for recycled water network.
- Pipe pressure rating should be PN16, Class PE100 for water and firefighting network
- The minimum pipe cover shall be 1.00 m.
- The maximum permissible velocity inside pipes shall not exceed 2 m/sec to avoid excessive pressure loss in the system.
- Two fire hydrants are considered operating at the same time for hydraulic calculations.
- Fire duration shall be considered 2.0 hours at each hydrant.

3.5 Storage and Area Requirements for Tanks and Pumps

3.5.1 Storage and Area Requirements for WTP

The U1 plot marked for WTP shall be used for treatment (softening) of re-cycled water received from STP and ETP storage tanks for HVAC purpose and will house storage tank for 8-hour storage capacity after softening. The plot shall also house water tank for storage of fresh water from municipal authorities (treated water) and will have capacity of 1.5 days of domestic water demand. Part of the municipal water storage will be maintained as fire demand for the Terminal Buildings, support facilities and ARFF. Plot U1 is shown in Figure 2.

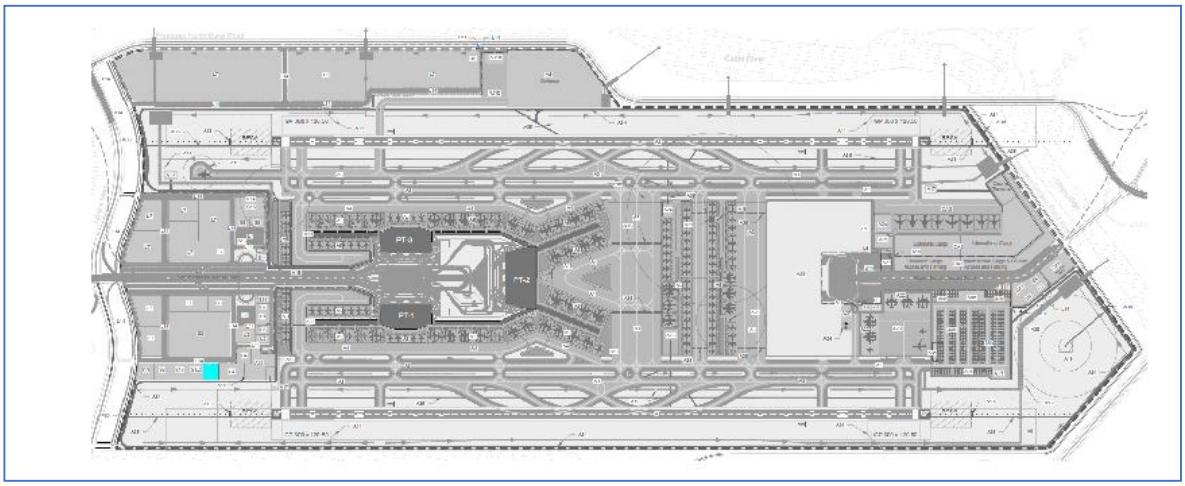

Figure 2: MAP Water Treatment Plant Location

Table 5 : Area required for treated water storage tank at WTP for Phase I to Final Phase

	Water storage MLD (Considering 1.5-day potable water storage with fire storage in separate chamber)			Pumps		Total Space required for Tanks and pumps at WTP U1 plot (m^2)
	Capacity (ML)	Capacity (m^3)	Space required (m^2)	Fire-fighting (m^2)	Potable Water (m^2)	
Phase I & II	8.925	8925	1623	50	50	1723
Final Phase	23.423	23423	4260			4360
Approximate area required for pumps and tanks at Final Phase at WTP (m^2)						**4360**

Soft Water Requirement			
	Capacity (ML)	Capacity in Cum @ 8 hours	Storage Area (m^2)
Phase I & II	2.52	530	177
Final Phase	5.06	1687	563

3.5.2 Storage and Area Requirements for STP

Re-cycled water storage shall be provided as shown in the Table 6. The output of the STP and ETP will be fed to a re-cycled water storage tank. Water storage will be maintained at the treatment plant atthe STPs.

Table 6: Area required Recycled water storage tank

	Re-cycled water storage (for 8 hrs.) tank			Pumps	Total Space required
	Capacity (ML)	Capacity (m^3)	Space required (m^2)	Re-cycled water Pump (m^2)	
Phase I & II	2.74	2740	166	60	226
Final Phase	9.74	9740	591		651
Approximate area required for pumps and tank at Final Phase at West Side (m^2)					**651**

	Re-cycled water storage (for 8 hrs.) tank			Pumps	Total Space required
	Capacity (ML)	Capacity (m^3)	Space required (m^2)	Re-cycled water Pump (m^2)	
Phase I & II	-	-	-	40	-
Final Phase	1.02	1020	62		102
Approximate area required for pumps and tank at Final Phase at East Side (m^2)					**102**

3.6 Chilled Water

3.6.1 Strategy

Demand assessment has been made for air-conditioning requirement of various buildings located in NMIA, and suitably located centralized chiller plant has been planned to provide chilled water to different buildings. This enables provision of high capacity energy efficient units and operation of chiller units at off-duty timing when the power demand for the complex is low, there by cost effectiveness of the system is achieved.

3.6.2 Demand

The air-conditioning load for the proposed airport complex works is estimated at 22590 TR, as given in Table 7 out of which more than 90% is for the terminal buildings of NMIA. Thus, a centralized chiller plant shall only be considered for the terminal buildings and the buildings in western part of NMIA site near the chiller plant while the other buildings which are located more than a km away such as the ATCT, general aviation terminal building, cargo complex etc. shall be provided with individual plants within the building envelope. Even in the case of terminal buildings it is proposed to have independent centralized plant for the T2 and T3 considering that the load for each terminal building is more than 2000TR.

Table 7 : Cooling Load Details for Airport Complex in TR

SN	Name of Building	Phase I	Phase II	Phase III	Final Phase
1	Terminal Building - 1	5250	8060	8060	8060
2	Terminal Building - 2	0	0	6150	6150
3	Terminal Building -3	0	0	0	6150
4	Tech. Block	425	425	425	425
5	MET Office Bldg.	85	85	85	85
6	Apt. Adm. Bldg. 210	210	425	425	425
7	ATC Tower	0	0	195	195
8	GA Ter. Bldg.	210	210	425	425
9	Cargo Bldg.	100	100	300	510
10	MRO Support Bldg.	50	50	110	165
	Total	**6330**	**9355**	**16175**	**22590**

3.6.3 Proposed Infrastructure

Thus, there will be three central AC plants for the three terminal buildings. The main AC plant of 9135 TR shall be installed adjacent to west power complex for air-conditioning Terminal 1 and the adjoining smaller buildings at Sl. Nos. 5, 6 and 7 in the table above. Considering that the AC plant shall work on 24hrs basis it is proposed to install 5No. 2500 TR centrifugal units out of which 4Nos will work during peak load conditions while 1No will be sufficient to work during night operations.

Two AC plants of 6400 TR shall be installed adjacent to Terminal 2 and 3 for air-conditioning of the respective terminal buildings see Figure 3. Each AC plant shall be installed with 4No. 2500 TR chilling units out of which 3Nos will work during peak load conditions while one unit will be sufficient during night operations and one unit shall remain as standby.

It is proposed to consider installation of 11 KV chilling units. Necessary chilled water pumps, condenser water pumps and hot water generators shall be installed adjacent to the chilling units while the cooling tower shall be installed on the roof of chilled water plant building. The clean water requirement to compensate for the evaporation, drift, and bleeding loss in the cooling towers is worked out to 4.85 MLD at 100% stage. The phase wise requirement was assessed as 1.27 and 1.87 MLD for Phase I, II respectively. The make-up water for the cooling tower shall be provided for each chiller plant adjacent to the cooling tower.

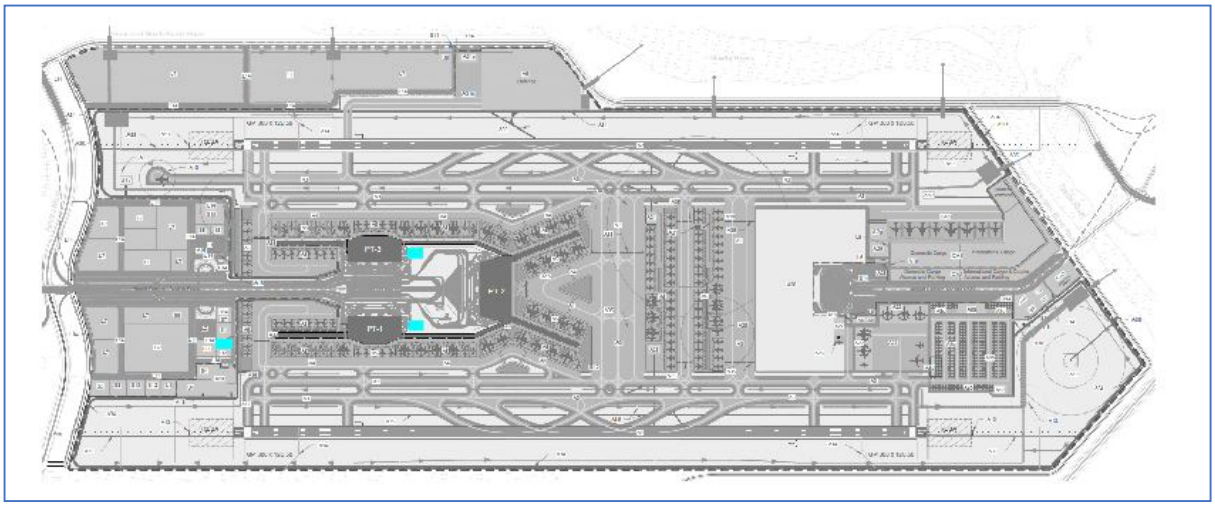

Figure 3: MAP Chiller Plant Locations

3.6.4 Facility Requirements

The total built up area required for the three Chiller plants along with all ancillary equipment and facilities is worked out to 19100 m2. The area can be divided as 6500 m2 for the chiller plant adjacent to west power complex proposed for T-1, 5200 m2 for each of the two chiller plants adjacent to T-2 and T-3. The cooling towers, the makeup water tank and the chilled water expansion tank shall be located on the roof of the chiller plant building. The approximate roof area will be about 1000 m2 for the chiller plant adjacent to west power complex while it will be about 800 m2 for T-2 and T-3.

The chilled water for T-1 shall be taken through 2No. 1.0m diameter pipes one for supply and the other for return. However, considering that a drainage channel is passing adjacent to the chiller plant the pipes will have to cross over the channel but below the road it is proposed to take 4Nos pipes for supply and 4Nos for return. The diameter of each pipe will be reduced to 400mm and after insulation the outer diameter may not exceed 600mm diameter.

3.7 Water Treatment

3.7.1 Purpose

To define the concept for the provision of the water treatment, to provide water of various qualities and flow requirements at NMIA.

As the source of water for NMIA is from the CIDCO's own source of Natural Pure Treated Water no further treatment is required to use this water for drinking purposes. Only treatment/softening has been considered for re-cycled water received from STP and ETP storages to cater to the requirement for soft water for chiller packages.

3.7.2 Design Basis

3.7.2.1 Raw Water Flow and Characteristics

The water requirement will be met from the already laid water mains of CIDCO. As the water will be taken from the treated transmission main of CIDCO, it is assumed that the supplied water shall have been treated to meet the criteria, specified at Drinking water standards IS:10500. Therefore, no further treatment is needed for this water. The requirement for soft waters for chiller packages will be met by polishing the treated sewage from the Sewage Treatment Plant (STP). Treated sewage will be supplied from the STP to the WTP area. Based on the design brief, treatment plant for soft waters will be designed to cater the flow requirement as per Table 8.

Table 8: WTP Capacity for soft waters

Requirement	Phase I	Phase III	Phase III	Final Phase
Soft Water for Chiller Packages (MLD)	1.59	2.52	3.61	5.06

3.7.2.2 Space Requirement

Opportunity for the provision of Treatment Plant on modular basis as per the requirement of each phase will be explored in later stages of planning. Total indicative area required for the Water Treatment Plant considering all phases of development is specified in Table 9.

Table 9: WTP Area Requirement

Item	Final Phase
Indicative Area Requirement for Treatment (m^2)	2530 m^2
Indicative Area Requirement for Treated Water Storage (m^2)	Refer – Table - 5
Indicative Area Requirement for Fire Water Storage (m^2)	Refer – Table - 5
Indicative Area Requirement for Soft Water Storage (m^2)	Refer – Table - 5

3.8 Sewage Collection System

Sewerage planning strategy is to develop the layout of the system to cater to the needs of phased growth. Sewer layout in Phase I and II is planned in the western side of the airport to collect sewage from Terminal 1 and south-east part of the airport. See Figure 4 below.

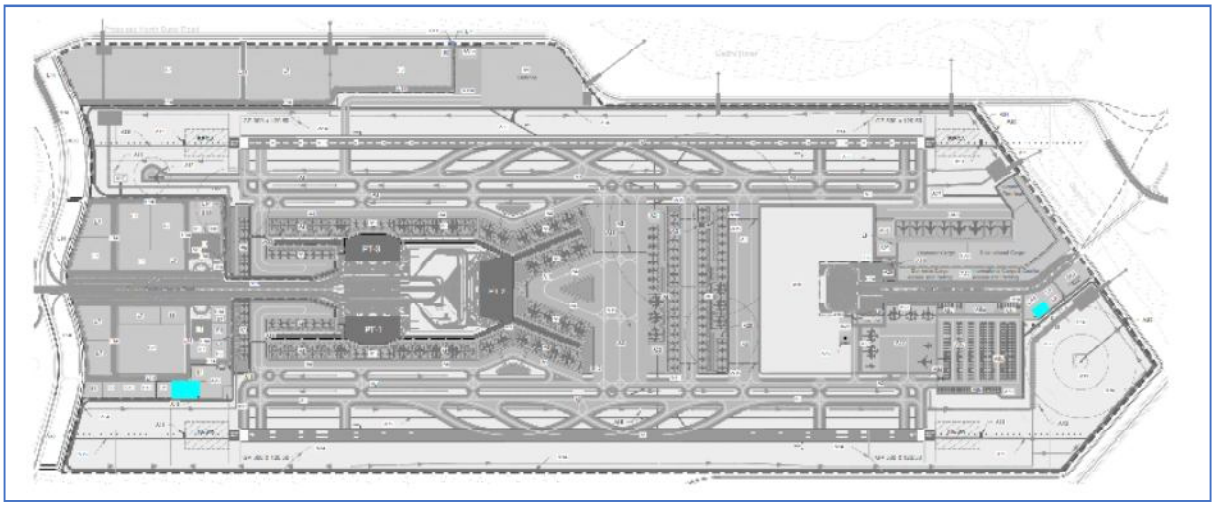

Figure 4: MAP Sewage Treatment Plant Locations

In Final Phase sewerage system will be expanded to cater the needs of Terminal 2, 3, and future developments. The sewage network will connect in the two STPs proposed in Phase I and II. Three pumping stations are proposed to restrict the level of sewers to 5.5 AMSL.

3.8.1 Planning Principles

Planning principles are followed as per the Manual of sewerage and sewage treatment system, Part A Engineering, by Central Public Health and Environmental Engineering Organization of India (CPHEEO).

- Sewage collection volume is considered as 90% of water demand;
- Peaking factor of 2.5 is applied;
- Alignment of sewers in dedicated corridor, minimum disruption in operation of the airport terminals and movement of airplanes;
- Phased layout of the sewerage system to support phased growth;
- Utilize gravity for sewerage collection avoiding/minimizing cost of operation and maintenance of interim pumping stations;
- Grading of sewers to maintain minimum velocity >0.6m/s for self-cleansing;
- Pressure mains are proposed in HDPE material and gravity pipes in concrete material

Table 10: Sewage Collection Volume

Description	Unit	Volume			
		Phase-I	Phase-II	Phase-III	Final Phase
Sewerage from different facilities	MLD	2.72	5.25	10.50	15.75
Aircraft Waste	MLD	0.02	0.04	0.08	0.12
Total	**MLD**	**2.74**	**5.29**	**10.58**	**15.87**

3.8.2 Proposed Systems

Proposed sewage network system is shown in Figure 1. Terminal manholes are proposed to be provided with flow measuring devices and will be located inside the STP plots.

3.8.3 Effluent Network

Effluent network to collect wastewater from GSE areas, Cargo, hangars, aircraft maintenance, etc. laden with oil and grease will be collected through a gravity network that will deliver wastewater to effluent treatment plants to be located in the STP plots. After treatment, treated water will be pumped to storage tanks for further use for secondary purposes. Terminal manholes are proposed to be provided with flow measuring devices and will be located inside the STP plots.

4.0 Sewage Treatment

4.1 Purpose

Sewage treatment plant will be designed to cater following requirements:

- 80% water recovery from STP to reduce the demand of municipal water
- Treatment will be provided to reuse the treated sewage for (i) Flushing and (ii) Irrigation of horticulture (iii) HVAC and (iv) Other use

4.2 Design Basis

4.2.1 Development Phases and Raw Water Supply

Sewage generated at various sources within the airport facility will be conveyed by Sewerage Network to the Sewage Treatment Plant (STP) for further treatment.

Greasy waste output from catering will be provided with preliminary treatment for Oil & Grease removal within the plot boundary of the specific facility. After preliminary treatment, these waste water will be transferred to a STP for further treatment. As airport will be developed in phases, cumulative capacity of the Sewage generation as per water demand calculations, under each phase is specified in Table 11.

Table 11: Airport Phases

Phase	Phase I	Phase II	Phase III	Final Phase
Cumulative Sewage Generation (MLD)	2.74	5.29	10.58	15.87

The total estimated sewerage generation of 15.87 MLD is for Final Phase of 60mppa. However as per Environmental Clearance (EC) from MoEFCC for the projected STP capacity approved is 30 MLD. Therefore, even considering possible enhancement in airport's capacity in future, as indicated in Chapter 3, additional sewerage generation shall be well within the EC approved total STP capacity of 30.0 MLD.

The airport project is planned with multiple Sewage Treatment Plants based on SBR philosophy with Tertiary Treatment. The STPs will be planned to reuse and recycle entire sewage and reuse the same for Cooling and flushing/gardening washing of floors, spraying water on the road, etc. This will help reduce water demand on Public supplies.

4.3 Plant Configuration

4.3.1 Location of the plant

As mentioned earlier, major development of airport in the initial phases will happen towards the west side of airport; whereas last phase of development will happen towards the north east side of the airport. Considering the developmental phases and the sewage generation in each phase, it has been proposed to provide two separate STPs. One STP will be located on the west side of the airport whereas second STP will be located on the east side of the airport. Considering the quantity of sewage generation, it has been proposed to construct the STP on western side in two stages and STP on the eastern side shall also be constructed in phases. Table 12 presents the cumulative sewage treatment capacities expected in different phases.

Table 12: Sewage treatment requirements

Development Phase	Eastern STP Capacity (MLD)	Western STP Capacity (MLD)
Phase I & II	0.14	5.15
Final Phase	0.79	15.08

As the sewage generation in initial phases from the eastern side of the airport is expected to be less, therefore option of providing containerized STP on interim basis for sewage treatment for eastern side may be considered. Opportunity for the provision of treatment plants on modular basis as per the requirement of each phase will be explored in the later phases of planning.

4.3.2 Liquid Waste from Aircraft

Considering the possibility that liquid waste from the aircrafts (also known as Blue water) may pose hazards for plants and animals, it will be separately collected and adequately sanitized before sending to a sewage treatment plant for further treatment. The wastes will initially be collected in various designated collection pits. From collection pits, wastes will be transferred to equalization tanks through suction tanker for sanitization. Sanitized wastes will then be transferred to STP by pumping for further treatment.

4.3.3 Sludge Disposal

Screening and Grit collected inside the STP will be sent for disposal. Sludge generated inside the STP will be dewatered to reduce the volume. Dewatered biological sludge can be used as fertilizer depending on the requirement. Excess sludge will be disposed to Chal, Taloja authorized dumping ground.

4.3.4 Area Requirement

Opportunity for the provision of treatment plant on modular basis as per the requirement of each phase will be explored. Total indicative area required for the Sewage Treatment Plant considering all phases of development is specified in Table 13.

Table 13: Indicative Area Requirement

Indicative Area	Phase I & II	Final Phase
STP - Western Side (m^2)	2833	8707
STP - Eastern Side (m^2)	437	

5.0 Other important water conservation measures:

- Installation of dual plumbing system
- Reuse of STP treated water for flushing, HVAC cooling and landscaping
- Use of irrigation systems for landscaped areas: drip irrigation for trees and shrubs and sprinklers for lawn areas
- Use of native and naturalized trees in landscaping
- There is adequate balance natural surface water available in Navi Mumbai area to meet the water requirement of the proposed NMIA airport project upto its maximum planned capacity of 60 MPPA in 2030-31
- The entire water supply will be sourced from surface water therefore ground water use is not contemplated for drinking water supply is proposed for use in Navi Mumbai region.
- With the water available and availability as given above and water conservation measures proposed, the NMIA airport project will not have any impact on water availability for other users

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ANNEXURE-1

भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये ONE THOUSAND RUPEES

रु.1000 Rs.1000

सत्यमेव जयते

INDIA

महाराष्ट्र MAHARASHTRA

संतोष स्टॅम्प वेन्डर

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शॉप नं. ४१, प्रभात सेंटर, सेक्टर-१ए, सी.बी.डी., नवी मुंबई.

मुद्रांक प्रमुख लिपिक कोषागार कार्यालय, ठाणे

अ.नं. 18507 दिनांक 4 SEP 2009

नांव सिडको लि.

रा. सी बी डी हस्ते बि. डेरा

यांना रू. 1000/- चा फ्रॅंकीकेतर मुद्रांक विकला.

लायसन्स नं. ८/२००३

श्री. एस. डी. वाळणूसकर

मुद्रांक विक्रेता

SEP 2009

WATER SUPPLY AGREEMENT

BETWEEN

KONKAN IRRIGATION DEVELOPMENT CORPORATION

(IRRIGATION DEPARTMENT, GOVERNMENT OF MAHARASHTRA)

AND

CITY & INDUSTRIAL DEVELOPMENT CORPORATION OF MAHARASHTRA Limited

(GOVERNMENT OF MAHARASHTRA)

For 100 MLD water

This agreement made on the 9th day of September Two Thousands Nine between **City and Industrial Development Corporation** (which expression herein-after referred to as **CIDCO**, shall unless excluded by or it be repugnant to the context of meaning thereof be deemed to include its successors and assigns), registered under the Indian Companies Act, 1956 and having its registered office at Nirmal, Nariman point, Mumbai – 400 021, of the One Part and the **Konkan** (Water Resources Department), **Irrigation Development Corporation** (Which expression hereinafter referred to as **KIDC**, shall unless excluded by or it be repugnant to the context or meaning there of be deemed to include its successors and assigns) having its Registered office at Sinchan Bhavan, Kopari Colony, Thane. **of the Other Part.**

Whereas the CIDCO is desirous of drawing water through a separate outlet already constructed, at their own cost. (CIDCO outlet) from the Hetawane Reservoir, on river Bhogeshwari, located at Kamarli, Tal. Pen, Dist. Raigad, (hereinafter referred to as **the said source**) for the use of drinking water supply.

AND whereas the CIDCO has applied to the KIDC for permission to draw 100 Million liters of water per Day (100 MLD) from the said source, and whereas the CIDCO is authorized of drawing 100 MLD water, vide Government letter (Water Resources Department) No. MIS/1098/330/(93/98), dated 11.03.98 and subsequently has agreed in joint meeting on 26.03.2004, to draw the same from the said source through CIDCO outlet for the use by the CIDCO for drinking water supply to Navi Mumbai and other villages.

AND whereas the CIDCO has paid Rs. 14 Crores (rupees Fourteen Crores only) to KIDC, as part of the proportional cost of capital outlay of the project and has agreed to pay the balance amount in the stipulated period.

AND whereas the KIDC has agreed to grant the aforesaid permission to the CIDCO, on the terms and conditions hereinafter appearing.

AND whereas under the said terms and conditions. The CIDCO has to deposit with the Executive Engineer, Hetawane Medium Project Division, Kamarli to the KIDC a sum of Rs. 18 lakhs as **'Security' equivalent to 2 months CIDCO's probable annual water charges** based on yearly

sanctioned quota and as communicated, **in cash or** in the form of **FIXED deposit receipt or bank guarantee** issued by a scheduled / nationalized bank, having it's main / branch office situated locally for the due observance and performance, by the CIDCO, of the terms and conditions of this Agreement.

AND whereas the CIDCO has accordingly prior to the execution of these presents, deposited with the KIDC Rs. 18 lakhs. As security for the due observance and performance by the CIDCO of the terms and conditions herein contained.

AND whereas it has been agreed that the said amount will not carry any interest, if deposited in cash.

Definitions.

Quota – Quota means demand for water sanctioned and communicated to **CIDCO** by the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad.

KIDC means Konkan Irrigation Development Corporation, Thane.

CIDCO – CIDCO means City & Industrial Development Corporation, New Mumbai (USER)

Yearly Applicable Demand- Yearly applicable demand means the water demand for the period from 1st November to 31st October communicated by the USER i.e. CIDCO to the Executive Engineer and sanctioned by Konkan Irrigation Development Corporation, every year in the month of September along with its bifurcation for Domestic, Industrial, Drinking, Agriculture etc. purpose.

USER – user means water – using agency CIDCO.

Executive Engineer – Executive Engineer means Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, Dist. Raigad.

NOW THIS AGREEMENT WITNESSTH AS FOLLOWS;

1 (a) Hetawane Medium Project is multipurpose project constructed for providing irrigation water to Pen Taluka and water supply to CIDCO, and other agencies. The revised estimated cost of I -

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head works required for storing the water required for above purpose has been considered.

(b) The gross storage of the project has been considered as147.49 M.cum, out of which 38.88 M.cum. will be made available to the CIDCO and therefore the proportion of CIDCO's water use to the gross storage is 26.36%. The CIDCO has agreed to share proportionate cost of the dam, to the tune of Rs. 47 Crores and the same amount is paid by CIDCO. Hence provided water supply is made on permanent basis to them.

(c) Whereas the CIDCO's desire of constructing a separate out let at their own cost, the estimated total cost of outlet is Rs.8.25 crores (likely to be revised). which shall be paid by CIDCO. The revised costs shall be finalized only after the completion of construction of the project , the difference of cost finalized need to be paid, by CIDCO, as per the revision.

In consideration of the CIDCO making payment to KIDC, as herein specified and observing and performing the contents and conditions herein contained, KIDC has granted permission to CIDCO to draw 100 million liters of water per day (100MLD) from the said source on permanent basis for use by CIDCO's for drinking water supply to Navi Mumbai and other villages, commencing from the 18th June 2001 (as the CIDCO water releases have been, commenced on that day) and this agreement has been, made effective from that date.

1 (d) In consideration of the CIDCO making payment to the KIDC, as hereinafter specified and observing and performing as per the conditions herein contained, KIDC do hereby grants to the CIDCO permission to draw 100 MLD of water i.e. (38.88 M.Cum. of water per year including losses), from the said reservoir for domestic use and use the same only for the CIDCO's said purpose on permanent basis supply commencing from the **18th June 2001** on the following terms and conditions.

1) The quota assigned for domestic use shall not exceed 10% of total yearly water demand. In the case wherein, the water used for domestic exceeds 10%, the excess use shall be charged at penal rate specified in **clause (10)** of this agreement.

2) The water requirement, other than the present domestic water requirement such as industrial, agricultural (Public parks) etc. if any demanded by CIDCO shall be deemed to be **separate and independent for the sole purpose** and water charges assessment shall be **accordingly separate & independent** for other clauses of this agreement.

2. The permission hereby granted shall be subject to the provisions of the Maharashtra Irrigation Act 1976 and the Bombay Canal Rules 1934 and subsequent revision, if any, in force and any executive orders issued in this behalf by Government (**Water Resource Department**) or Konkan Irrigation Development Corporation and any statutory amendment thereof from time to time and for the time being in force.

3. Nothing herein contained shall be deemed to imply any guarantee on the part of the Konkan Irrigation Development Corporation as to the availability or otherwise of any specific quantity of water to CIDCO and KIDC shall not be responsible for the non supply or inadequate supply of water on any account whatsoever.

However in case of inadequate or non-supply due to shortage of water or due to the reasons beyond the control of the KIDC, bill shall be charged as per actual quantity of water supply during such period.

The CIDCO shall use the water drawn from the said reservoir for the specified purpose only. The CIDCO shall not sell the water from the said source to any other person, firm or company or other body for use of other than the said purpose. In the event of the CIDCO selling water drawn from the said source, the KIDC without prejudice to its rights will forthwith revoke the license. KIDC shall be entitled to recover from the CIDCO the proceeds of any such sale made by the CIDCO will be charged at penal rate of 25% over & above usual rate of specified purpose.

5. The Konkan Irrigation Development Corporation shall be entitled to utilize water of the Hetawane Project, as will be available after meeting the agreed requirement of the CIDCO; as to which matter the decision of the Konkan Irrigation Development Corporation, shall be final and binding on the CIDCO, for such purpose as Konkan Irrigation Development Corporation deems fit.

6. The permission hereby granted shall not in any manner prejudicially affect the existing water rights vested in the upstream riparian owners, nor shall it in any way prejudice Konkan Irrigation Development Corporation's right to hereafter launch or implement in public interest any new scheme or schemes of its own, on or in connection with the present source of channel of water supply available to the CIDCO, subject however to the safeguarding of its reasonable demand referred in this agreement.

7 (a). For ascertaining the quantity of water drawn by the CIDCO, the CIDCO shall forthwith at his own cost and after obtaining prior approval in writing thereto of the **Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad** install independent pipe line fitted with separate automatic electronic water measuring devices for use of water for the said intention (hereinafter referred to as "the said

electronic measuring devices") at such places as would be indicated by the Executive Engineer Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad. The entire pipeline showing locations of the metering equipments from the said source for different purposes shall be got jointly verified and got approved from Executive Engineer. Layout from the said source shall be got approved from the Executive Engineer. No changes in the approved layout shall be made without the prior written approval from the Executive Engineer, in the event of the CIDCO failing to install and keep in proper working order the said electronic measuring devices for use of water for the said plant and supply to the said residential area as aforesaid, the CIDCO shall be liable to pay for the full sanctioned water quota as mentioned in clause 7 (d) of this agreement. During such period, 125% of the proportionate sanctioned quantity will be charged at the prevailing rates for the said purpose. The said electronic measuring devices shall always be kept under the lock and seal of the **Executive Engineer,Hetwane** & keys of such lock shall at all times remain with the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal.-Pen, Dist – Raigad. The CIDCO shall at all times during the subsistence of this agreement, at its own cost, maintain the said electronic measuring devices in proper working order and condition.

7 (b). Meter reading for the water so drawn by the CIDCO will be taken on the said electronic measuring devices on the last day of each month at agreed time, jointly by the authorized representative of the Executive Engineer Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad, and of the CIDCO.

7 (c). If at any time, in the opinion of the Executive Engineer Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad, the said electronic measuring devices are found defective, the same shall be tested for its accuracy and the cost

of such testing shall be borne and paid by the CIDCO. If on such testing the said electronic measuring devices are found to be defective, the CIDCO shall forthwith get the same repaired and set right at its own cost, and in event of CIDCO failing to do so within 30 (Thirty) days thereafter, the Executive Engineer Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad, may proceed to do so on account and at the cost of the CIDCO.

(d) In the event of the said electronic measuring devices going out of order and becoming defective, the quantity of water drawn by CIDCO during the period when the meter was defective and not working shall be ascertained in the following manner.

i) If the said electronic measuring devices remain out of order for a period of less than 30 days, then the quantity of water deemed to be drawn by the user during the said period shall be taken to be 90% of the yearly sanctioned demand as communicated in clause No. (1) or average for the last six months whichever is **higher.**

ii) If the said electronic measuring devices remain out the order for a period exceeding 30 days then the quantity of water deemed to be drawn by the user during the said period shall be taken to be 110% of the yearly sanctioned demand as communicated in clauses **(1)** or average for the last six months, whichever is higher. This will be made applicable for the period during which the measuring device remained out of order.

The aforesaid provision will also apply also when the quantity of water drawn by the CIDCO cannot be measured on account of removal of the said electronic measuring devices for repairs or the same in the opinion of the Executive Engineer, Hetawane Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad not working properly.

iii) If electronic meter meant for domestic or for agricultural use is not fitted or remains out of order or is removed, the water charges will be levied as per the rates specified for the industrial use for the total quota as referred to in clause **1(c)** of this agreement.

iv) In case, CIDCO desires to draw water less then 100 MLD of water, then CIDCO shall inform on 1st November every year or before, their actual requirement to KIDC for the next year so that KIDC can utilize excess water for other purpose. Royalty charges will be levied on such a demanded quota for every year as intimated in November irrespective of actual lower use.

8. Billing will be done on bi-monthly basis. The Executive Engineer, to the office of the CIDCO, shall send the bill for the water drawn by the CIDCO during the previous calendar months in duplicate / triplicate within 15 days after the end of the water consumption month. The CIDCO shall thereafter duly pay the same by a demand draft drawn in the name of the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal.- Pen, Dist – Raigad, within a fortnight from the date of receipt of the bill and shall not allow the same to fall in arrears. If the CIDCO fails to pay the amount within this stipulated time (15 days from the date of receipt of the bill i.e. before the end of the current month) extra charges not exceeding **10% per annum** of the amount due will be charged. If the delay in payment of water charges exceeds six months, the KIDC reserves the right to terminate the water supply with a notice of 15 days in advance.

9. The cost of all works in connection with the arrangements for water supply including the cost of measuring devices and its installation and maintenance shall be borne by the CIDCO.

10. Subject to the provisions of clause (7) hereof, the CIDCO shall pay to the KIDC at the time and in the manner specified in clause (11) hereof water charges for the quantity of water drawn by the CIDCO from the said reservoir as measured by said electronic measuring devices at the following rates, namely: -

i) As CIDCO desires to share the proportionate cost of Dam. The water charges shall levied as per Government Resolution of Water Resources Department govt. Reso. (गपुद/१००१ / ९५/२००१/सिं.व्य./धो./ दि. 24.10.2001 व्हाईड परिशिष्ठ - 3 घरगुती वापर अ/४) including subsequent modification in it. Moreover these rates are subject to change due to revision made by GOM from time and again and as such revised rate shall be binding on both CIDCO and KIDC.

ii) Provided however that after the expiry of two years from the date the CIDCO start drawing water from the said reservoir if in any month the quantity of water drawn by CIDCO is less than **90 per cent of the quantity** of water specified in clause (1) hereof, then the CIDCO shall pay to the KIDC water charges calculated for 90 per cent of the quantity of water specified in clause (1) hereof or for average of the quantity of water drawn by the CIDCO during the period of previous three months including the month in question whichever is **greater.**

iii) For any reasons, if the CIDCO would like to reduce/increase the demand of water made earlier/entered in the agreement, they will be required to make the revised annual demand before the commencement of the year i.e. 1st day of November. On acceptance of such revised demand, the CIDCO will be charged as per revised demand for period specified, other conditions remaining same. A supplementary agreement on hundred rupees stamp paper for this revised quantity must be made, which will form part of main agreement.

iv) No penal rate will be levied for the quantity limited to **10%** in excess of the sanctioned one. For quantity used in **excess of this 10%** without prior sanction, **a penal rate of 25%** will be charged over the basic rate. The delay in payment on account of this also, will be governed by clause (8) above.

v) For any unforeseen reasons should there be abrupt fluctuations in the demand & supply on both sides, such cases will be decided at KIDC level only, by giving due considerations to the availability of water in the reservoir visa vis other demands.

vi) In addition to the payment of water charges referred to above the CIDCO shall also pay to the KIDC local cess fund at the rate of 20 paisa per rupee of basic water charges.

The local cess fund will be charged to the CIDCO as per prevailing norms. As decided if the joint meeting dated 26.03.2004, if CIDCO submits exemption certificate from all local bodies, then from the date of certificate, the local cess fund need not be charged to KIDC, through their bills, it shall be the responsibility of CIDCO to settle the issue with local bodies, without any reference with KIDC.

vii) Water bills - The bi monthly bills for the period from November to August (For 10 months) shall be prepared on the basis of actual quantity of water lifted at the prevailing rate. The bill for the month of September & October (11th & 12th month) shall be prepared by taking review of annual sanctioned demand and the terms and conditions of the agreement and then shall be adjusted and paid accordingly, while adjusting so it shall be considered that the 90% of the annual sanctioned demand has been lifted/used.

The water lifted in excess, upto 10% of sanctioned demand shall be charged at prevailing basic rate and

excess above 10% (without, prior permission) will be charged at penal rate of 1.25 times of the normal rate, as mentioned in the relevant clause. However the local cess shall be charged on single rate only.

11 (a). The CIDCO shall pay to the Executive Engineer, water charges and local funds cess either in advance every bi-month's on the basis of anticipated quantum of water to be drawn by it from the said source during the months or on monthly basis within fifteen (15) days from the date of receipt of the bi-monthly demands by the USER from the Executive Engineer, **on default of the USER to pay the water rate or local fund cess as aforesaid vide Clause 10. Government / KIDC shall without prejudice to its any other rights and remedies be entitled to terminate this agreement forthwith as per Clause No.8.**

11 (b). In the case of disputes regarding quantity of water billed or rate at which the bill is prepared the CIDCO shall first pay the complete amount of the bill raised by Executive Engineer and then claim for refund of any excess amount charged giving the reason / justification of wrong billing will be entertained. However, the decision of Superintending Engineer, North Konkan Irrigation Project Circle, Kalwa in this regards shall be final and binding on the CIDCO.

12. Government hereby reserves to itself the right to revise from time to time the water rates and local fund cess and CIDCO shall pay the such revised water rates and local fund cess as may be fixed by Government/KIDC from time to time.

13. The CIDCO shall not discharge the effluent in any nalla or river and shall not pollute directly or indirectly any portion of the said nalla/river even by septic tank effluents. **If any water sources are polluted** by any industry as identified by Irrigation/Pollution Control Board/MIDC/MJP, **the CIDCO shall be charged with a penalty of Rupees 5,000/- per such incident per day till it is rectified. The opinion of Maharashtra Pollution Control Board in respect of degree of pollution will be binding on the CIDCO.**

The CIDCO shall recycle the effluent water for their use such as gardening, recreation, cooling, cleaning, washing and manufacturing process etc. so that at least 50% reduction in consumption of fresh water is achieved.

14. The effluent disposal arrangement made by the CIDCO shall be got approved by the CIDCO from the Maharashtra Pollution Control Board / Environmental Department of Government prior to commencing the operation of pumping / drawing water from source.

15. The CIDCO shall at all times allow an officer of KIDC / **Water Resource** Department of the Government or its representative, authorized in that behalf to inspect the said work as well as the accounts and copies **taken** of entries from the records maintained by the CIDCO.

16. Any notice of other documents to be given to or served upon the CIDCO may be given served on behalf of the KIDC by the Executive Engineer, and any such notice or documents shall be deemed to have been duly given to or served upon the CIDCO or send by registered post to the CIDCO, if it is delivered at the registered office of the CIDCO or **serve** by registered post to the registered address for the time being of the CIDCO.

17. The sum of Rs.18.00 lakhs mentioned earlier in this agreement in the form of FDR/Bank Guarantee/cash paid by the CIDCO to the Executive Engineer, of KIDC shall be held by the KIDC as security for the due observance and performance by the CIDCO of the covenants, terms and conditions herein contained. In case of default on the part of the CIDCO to perform and observe any of the said covenants terms and conditions, it shall be lawful for the KIDC in its absolute discretion to forfeit the whole of the security deposit or any part thereof without prejudice nevertheless to any rights and remedies which the KIDC may have against the CIDCO under these presents for such breach and the CIDCO shall forthwith pay up the amount so forfeited and shall always maintain the

original amount of deposit throughout the period of this agreement. On the expiry of the terms of this agreement, the said security deposit of Rs.18.00 lakhs or such part thereof, as shall not have been appropriated as aforesaid, shall be refunded to the CIDCO.

18. All amounts due to the Konkan irrigation Development Corporation by CIDCO under this agreement shall be deemed to be arrears of land revenue and may without prejudice to any other rights and remedies of the Konkan Irrigation Development Corporation be recovered from the CIDCO as arrears of land revenue.

19. On the expiry of the terms of this agreement, Government may renew this agreement within 90 days for such further period and on such terms and conditions, as KIDC may at it absolute discretion deem fit.

20. The cost incurred in the execution of this agreement including stamp duty etc. and in the incidental charges for this agreement if any shall be borne and paid by the CIDCO.

21. IF THE CIDCO COMMITS BREACH OF ANY OF THE TERMS AND CONDITIONS OF THE AGREEMENT, KONKAN IRRIGATION DEVELOPMENT CORPORATION SHALL BE ENTITLED TO CANCEL THIS PERMISSION AND DISCONTINUE THE SUPPLY OF WATER WITHOUT PAYMENT OF ANY COMPENSATION, WHATSOEVER, TO THE CIDCO.

22. The KIDC/Government (Water Resources Department) hereby reserves to itself it's right to change / amend / modify / cancel / revise any of the terms and conditions, rules and regulations of water management and Maharashtra Irrigation Act and rules laid under their which shall be applicable for this agreement.

original amount of deposit throughout the period of this agreement. On the expiry of the terms of this agreement, the said security deposit of Rs.18.00 lakhs or such part thereof, as shall not have been appropriated as aforesaid, shall be refunded to the CIDCO.

18. All amounts due to the Konkan irrigation Development Corporation by CIDCO under this agreement shall be deemed to be arrears of land revenue and may without prejudice to any other rights and remedies of the Konkan Irrigation Development Corporation be recovered from the CIDCO as arrears of land revenue.

19. On the expiry of the terms of this agreement, Government may renew this agreement within 90 days for such further period and on such terms and conditions, as KIDC may at it absolute discretion deem fit.

20. The cost incurred in the execution of this agreement including stamp duty etc. and in the incidental charges for this agreement if any shall be borne and paid by the CIDCO.

21. IF THE CIDCO COMMITS BREACH OF ANY OF THE TERMS AND CONDITIONS OF THE AGREEMENT, KONKAN IRRIGATION DEVELOPMENT CORPORATION SHALL BE ENTITLED TO CANCEL THIS PERMISSION AND DISCONTINUE THE SUPPLY OF WATER WITHOUT PAYMENT OF ANY COMPENSATION, WHATSOEVER, TO THE CIDCO.

22. The KIDC/Government (Water Resources Department) hereby reserves to itself it's right to change / amend / modify / cancel / revise any of the terms and conditions, rules and regulations of water management and Maharashtra Irrigation Act and rules laid under their which shall be applicable for this agreement.

IN WITNESS WHEREOF THE common Seal of the .....has been hereunder affixed ..... and .....the Executive Engineer, Hetawane Medium Project Division Kamarli, Tal. Pen, Dist. Raigad has for and on behalf of the KIDC hereto set his hand and affixed the seal of his office the day and year first herein above written.

THE COMMON SEAL OF .....
WAS PURSUANT TO A RESOLUTION
Of the board of Director of the
CIDCO dated the.....
Hereto affixed in the presence of .....

1.....(G. S. GILL)

2.....(S. C. DESHPANDE)

Two Directors of the ~~CIDCO~~ KIDC who in token thereof have hereto set their respective hands in the presence of .....

1..... V. V. Gaikwad SECRETARY

2.....(G. G. BABAR).....

SIGNED, SEALED AND DELIVERED by the Executive Engineer, Hetawane Medium Project Division Kamarli, Tal. Pen, Dist. Raigad.
For and on behalf of KIDC in the presence of.....

1.....

2.....

ANNEXURE-2

महाराष्ट्र MAHARASHTRA

R 496234

DIST. TREASURY OFFICE THANE

जिल्हा कोषागार कार्यालय, ठाणे
17 MAR 2015
मुद्रांक एकूण विक्रीचे / लिपीक

17/3/2015

AGREEMENT

BETWEEN

CITY & INDUSTRIAL DEVELOPMENT CORPORATION OF MAHARASHTRA LIMITED

AND

KONKAN IRRIGATION DEVELOPMENT CORPORATION

FOR SUPPLY OF ADDITIONAL 50 MLD WATER TO CIDCO FROM HETAWANE DAM

50 MLD Water

जोडपत्र-२/ Annexure -II

20 MAR 20

मुद्रांक विक्री नोंदवही अनु. क्र. 83437 दिनांक

दस्ताचा प्रकार: CIDCO Agr दस्त नोंदणी करणार आहात का? होय/नाही

मिळकतीचे वर्णन :

मुद्रांक विकत घेणाऱ्याचे नाव :

दुसऱ्या पक्षकाराचे नाव :

हस्ते असल्यास नाव, पत्ता Yagnesh Koli सही

मुद्रांक शुल्क रक्कम : 500/-

मुद्रांक विक्रेत्याची सही व ठिकाण:
राणे स्टॅम्प वेंडर, दुकान क्र.३१, प्रभात सेंटर,
सेक्टर-१-अे,सी.बी.डी. बेलापूर, नवी मुंबई-४००६१४.

(सी. डी. बी. राणे)
परवाना क्र. १२०१०४२

ज्या प्रयोजनासाठी ज्यांनी मुद्रांक खरेदी केला त्यांनी त्याच कारणासाठी मुद्रांक खरेदी केल्यापासून ६ महिन्यात वापरणे बंधनकारक आहे.

This agreement made on the 23rd day of March Two Thousands Fifteen between **City and Industrial Development Corporation of Maharashtra Limited** (which expression herein-after referred to as **CIDCO/ USER**, shall unless excluded by or it be repugnant to the context or meaning thereof be deemed to include its successors and assigns), registered under the Indian Companies Act, 1956 and having its registered office at 'Nirmal', Nariman Point, Mumbai - 400 021, of the One Part and the **Konkan Irrigation Development Corporation**, (Which expression hereinafter referred to as **KIDC**, shall unless excluded by or it be repugnant to the context or meaning thereof be deemed to include its successors and assigns) having its Registered office at 'Sinchan Bhavan', Kopari Colony, Thane, of the Other Part.

Definitions:

Quota - Quota means demand for water sanctioned and communicated to CIDCO by the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, dist. Raigad.

23/3/15

महाराष्ट्र MAHARASHTRA

R 496235

TREASURY OFFICE THANE

जिल्हा कोषागार कार्यालय,
ठाणे
17 MAR 2015
मुद्रांक पडताळ लिपीक / लिपीक

17/3/2015

KIDC means Konkan Irrigation Development Corporation, Thane.

CIDCO - CIDCO means City &. Industrial Development Corporation of Maharashtra Limited, Navi Mumbai (USER),

Yearly Applicable Demand- Yearly applicable demand means the water demand for the period from 1st November to 31st October communicated by the USER i.e. CIDCO to the Executive Engineer and sanctioned by Konkan Irrigation Development Corporation, every year in the month of September along with its bifurcation for Domestic, Industrial, Drinking use.

USER - user means water - using agency CIDCO.

23/3/15

20 MAR 20

जोडपत्र-२/ Annexure -II

मुद्रांक विक्री नोंदवही अनु. क्र. 83438 दिनांक

दस्ताचा प्रकार: CIDCO Agr दस्त नोंदणी करणार आहात का? होय/नाही

मिळकतीचे वर्णन :

मुद्रांक विकत घेणाऱ्याचे नाव :

दुसऱ्या पक्षकाराचे नाव :

हस्ते असल्यास नाव, पत्ता Yagnesh Koli सही

मुद्रांक शुल्क रक्कम : 500/-

मुद्रांक विक्रेत्याची सही व विक्रीचे ठिकाण:
राणे स्टॅम्प वेंडर, दुकान क्र.३१, प्रभात सेंटर,
सेक्टर-१-ए,सी.बी.डी. बेलापूर, नवी मुंबई-४००६१४.

(श्री. डी. बी. राणे)
परवाना क्र. १२०१०४२

ज्या कारणासाठी ज्यांनी मुद्रांक खरेदी केला त्यांनी त्याच कारणासाठी मुद्रांक खरेदी केल्यापासून ६ महिन्यात वापरणे बंधनकारक आहे.

CIDCO Navi Mumbai LIMITED

Executive Engineer - Executive Engineer means Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, Dist. Raigad.

WHEREAS The CIDCO is the New Town Development Authority declared for the area designated as a site for the new towns of Navi Mumbai by Government of Maharashtra in exercise of its powers under Subsection (1) and (3-A) of Section 113 of the Maharashtra Regional and Town Planning Act 1966 (Maharashtra XXXVII of 1966 (hereinafter referred to as "the said Act"). CIDCO has already entered in to an Agreement on 9 September 2009 with KIDC in the matter lifting of water from KIDC. CIDCO requires additional water so as to cater increasing demands from the end users, as a result CIDCO is now desirous of drawing additional 50 MLD water for the use of drinking purpose from Hetawane Reservoir constructed on river Bhogeshwari, at Village Kamarli, Tal. Pen, Dist. Raigad, (hereinafter referred to as the said source), through a separate outlet already constructed at their own cost (herein referred to as "CIDCO outlet"). AND WHEREAS, KIDC expressed its willingness to provide the same to CIDCO.

23/3/15

MAHARASHTRA

R 496236

TREASURY OFFICE THANE

जिल्हा कोषागर कार्यालय, ठाणे
17 MAR 2015
मुद्रांक परवाना लिपीक / लिपीक

17/3/2015

AND WHEREAS, in pursuance of the 12th meeting of the ministerial high power committee, Water Resources Department, Government of Maharashtra vide letter dated 31/01/2008 bearing No. bks/2007/(701/2007) I.M.(R) approved in principle the said proposal of CIDCO

WHEREAS, CIDCO is desirous of drawing additional 50 MLD water for the use of drinking purpose from Hetawane Reservoir constructed on river Bhogeshwari, at Village Kamarli, Tal: Pen, Dist: Raigad, (hereinafter referred to as the said source), through a separate outlet already constructed at their own cost (herein referred to as CIDCO outlet)

AND WHEREAS, CIDCO has applied to KIDC for permission to draw additional 50 Million

25/3/15

20 MAR 2

जोडपत्र-२/ Annexure -II

मुद्रांक विक्री नोंदवही अनु. क्र. 83489 दिनांक

दस्ताचा प्रकार: CIDCO Agr — दस्त नोंदणी करणार आहात का? होय/नाही

मिळकतीचे वर्णन :

मुद्रांक विकत घेणाऱ्याचे नाव :

दुसऱ्या पक्षकाराचे नाव : Yognesh Koli

हस्ते असल्यास नाव, पत्ता

मुद्रांक शुल्क रक्कम : 500/-

मुद्रांक विक्रेत्याची सही व शिक्का

(सी. डी. बी, ठाणे) परवाना क्र. १२११०४१

ज्या कारणासाठी ज्यांनी मुद्रांक खरेदी केला त्यांनी त्याच कारणासाठी मुद्रांक खरेदी केल्यापासून ६ महिन्यात वापरणे बंधनकारक आहे.

CIDCO LIMITED Mumbai

Litres of water per Day (50 MLD) from the said source, and whereas CIDCO is authorized to draw additional quota of 50 MLD water, in the 12[th] meeting of the Ministerial High Power Committee, vide Government letter (Water Resources Department) No. bks/2007(701/2007),I.M.(R),dated 31-01-2008 and subsequently has agreed in joint meeting on 14.10.2014, to draw the same from the said source through CIDCO outlet for the use by CIDCO for drinking water supply to Navi Mumbai and other villages.

AND WHEREAS, CIDCO has agreed that 8% water is being supplied by CIDCO for commercial purpose and balance 92% is supplied for domestic purpose;

AND WHEREAS, CIDCO has to pay to Konkan Irrigation Development Corporation, Thane a sum of Rs. 128,70,39,000 (Rs. One Hundred Twenty Eight Crores, Seventy Lakh Thirty Nine Thousand only) towards the capital contribution as per Government Resolution, Water Resources Department, No. Map Dand/ 2309/ (255/2009)/ MI-2, dated 29.07.2009 at the rate of Rs. 66,002 per Thousand CuM as prevailing on the date of agreement;

23/3/15

0 MAR 2

AND WHEREAS, CIDCO has to pay to Konkan Irrigation Development Corporation, Thane, a sum of Rs. 12.41 Crores (Twelve Crores Forty One Lakhs Only) towards the cost of Irrigation restoration Charges at the rate of Rs.1,00,000/- (Rs. One Lakh only) per Hectare of command Aera curtailed due to the said reservation of water, as prevailing on the date of agreement according to the Government resolution, Water Resources Department No. Misc 2008/(131/01)/Si.Vya.(Dho), Dated 06/03/2009;

AND WHEREAS, CIDCO has to pay to Konkan Irrigation Development Corporation, Thane, a sum of Rs. 7.6973 Crores (Seven Crores Sixty Nine Lakhs Seventy Three Thousand Only) towards the price rise over the cost of Irrigation restoration charges as mentioned hereinabove according to the Government resolution, Water Resources Department No. Misc 2013/415/2013/Si.Vya.(Dho), Dated.16/08/2014;

AND WHEREAS, CIDCO has paid Rs. 9.00 Crores (Rupees Nine Crores only) to KIDC, as part of the proportional cost of capital contribution of the project vide CIDCO's letter No. CIDCO/SE(Env)/2009 Dated 05.03.2009 by cheque No. 083545 drawn on Syndicate Bank, Chembur Branch and has agreed to pay the balance amount in four installments as stipulated hereinafter;

AND WHEREAS, KIDC has agreed to grant the aforesaid permission to CIDCO, on the terms and conditions hereinafter appearing;

AND WHEREAS, under the said terms and conditions, CIDCO has to deposit with the Executive Engineer, Hetawane Medium Project Division, Kamarli a sum of Rs. 4,88,000 (Rs. Four Lakhs Eighty Eight Thousand Only) as 'Security' equivalent to 2 month's probable annual water charges based on yearly sanctioned quota and as communicated, in cash/cheque or in the form of Fixed Deposit Receipt or bank guarantee issued by a scheduled / nationalized bank, having it's main / branch office situated locally for the due observance and performance, by CIDCO, of the terms and conditions of this Agreement;

AND WHEREAS CIDCO has accordingly, prior to the execution of these presents, deposited with the KIDC **Rs. 4.88 lakhs**, as security for the due observance and performance by CIDCO of the terms and conditions herein contained.

2-7-31 b

AND WHEREAS it has been agreed that the said amount will not carry any interes
deposited in cash,

NOW THIS AGREEMENT WITNESSTH AS FOLLOWS;

1. a) In consideration of CIDCO making payments (as provided herein) to KIDC
CIDCO agreeing hereinafter specified and observing and performing
convenience and conditions herein contained, KIDC has granted permissi
CIDCO to draw Additional 50 million litres of water per day, i.e. 19.5 Mcum per
on permanent basis for distribution by CIDCO, (8 %, i.e. 1.56 Mcum for Indus
Commercial use and 92%, i.e. 17.94 Mcum for Drinking / Domestic water sup
Navi Mumbai and other surrounding villages) for a term of six years comme
from 1st day of April 2015 on the following terms and conditions.

b) The quota assigned for domestic use shall not exceed 110% of total yearly
demand. In the event, the water used for domestic use exceeds 110%, the e
use shall be charged at the rates applicable for industrial use.

c) The Industrial/ commercial water requirement, and the domestic water requirem
CIDCO shall be deemed to be separate and independent for the sole purpos
water charges assessment shall be accordingly separate & independent fo
other clauses of this agreement.

d) CIDCO shall pay to KIDC, the capital cost of the Project, amountin
Rs. 128,70,39,000 (Rs. One Hundred Twenty Eight Crores, Seventy Lakhs
Nine Thousand only) as per Government Resolution, Water Resources Depart
No. Map Dand/ 2309/ (255/2009)/ MI-2, dated 29.07.2009 at the rate of Rs. 6
per Thousand CuM as prevailing on the date of agreement. As CIDCO has pa
amount of Rs. 9.00 Crores, out of the total capital contribution, vide CIDCO's
No. CIDCO/SE(Env)/2009 Dated 05.03.2009 by cheque No. 083545 draw
Syndicate Bank, Chembur Branch, CIDCO shall pay the remaining cost of c
contribution amounting to Rs. 119.7039 Crores in 4 installments as per the sch
shown hereinafter.

e) In addition to this, CIDCO shall also pay to Konkan Irrigation Develop
Corporation, Thane, a sum of Rs. 12.41 Crores (Twelve Crores Forty One
Only), at the time of agreement, towards the cost of Irrigation restoration Charg

Sr. No.	
2	
3	
4	

the rate of Rs.1,00,000/- (Rs. One Lakh only) per Hectare of command Aera curtailed due to the said reservation of water, as prevailing on the date of agreement according to the Government resolution, Water Resources Department No. Misc 2008/(131/01)/Si.Vya.(Dho), Dated 06/03/2009.

The schedule of payment to be made by CIDCO in respect of the said reservation of water is as follows:

Sr. No.	Scheduled date of payment on or before	Amount of capital contribution (Rs. Crores)	Amount of Irrigation restoration charges (Rs. Crores)	Price rise over Irrigation restoration charges (Rs. Crores)	'Security equivalent to 2 month's probable annual water charges	Total (Rs. Crores)
1	31.03.2015	29.7039	12.41	7.6973	0.0488	49.86
2	30.06.2015	30.00	0	0		30.00
3	30.09.2015	30.00	0	0		30.00
4	31.12.2015	30.00	0	0		30.00
	Total	119.7039	12.41	7.6973	0.0488	139.86

2. The permission hereby granted shall be subject to the provisions of the Maharashtra Irrigation Act 1976 and the Bombay Canal Rules 1934 and subsequent revision, if any, in force and any executive orders issued in this behalf by Government (Water Resource Department) or Konkan Irrigation Development Corporation and any statutory amendment thereof from time to time and for the time being in force.

3. Nothing herein contained shall be deemed to imply any guarantee on the part of the Konkan Irrigation Development Corporation as to the availability or otherwise of any specific quantity of water to CIDCO and KIDC shall not be responsible for the non-supply or in adequate supply of water on any account whatsoever.

However in case of inadequate or non-supply due to shortage of water or due to the reasons beyond the control of the KIDC, bill shall be charged as per actual quantity of water lifted during such period.

4. CIDCO shall use the water drawn from the said reservoir for the specified purpose only. CIDCO shall not sale the water from the said source to any other person, firm or company or other body for use of other than the said purpose. In the event of CIDCO selling water drawn from the said source, then KIDC, without prejudice to its rights will forthwith revoke the license. KIDC shall be entitled to recover from CIDCO the proceeds

of any such sale made by the CIDCO will be charged at penal rate of 25% over & a usual rate of specified purpose.

5. The Konkan Irrigation Development Corporation shall be entitled to utilize water o Hetawane Project, as will be available after meeting the agreed requirement o CIDCO as to which matter, the decision of the Konkan Irrigation Develop Corporation shall be final and binding on the CIDCO for such purpose as Ko Irrigation Development Corporation deems fit.

6. The permission hereby granted shall not in any manner prejudicially affect the ex water rights vested in the upstream riparian owners, nor shall it in any way preju Konkan Irrigation Development Corporation's right to hereafter launch or impleme public interest any new scheme or scheme of its own, on or in connection with present source of channel of water supply available to CIDCO, subject, however, t safeguarding of its reasonable demand referred to in clause (5) above.

7. CIDCO shall not construct the pick-up weir in the river bed of the said river unles proposals, plans, drawings, specifications, estimates and all other details thereo previously submitted to and approved in writing by an officer authorised in that beha KIDC and while granting its approval to the construction of the pick-up weir, KIDC impose such conditions as it may in its discretion think fit

8. (a) For ascertaining the quantity of water drawn by CIDCO, CIDCO shall forthwith, own cost and after obtaining prior approval in writing thereto of the Exec Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, Dist. Rai install independent pipe line fitted with separate automatic electronic w measuring devices for use of water for the said independent intention (herein referred to as "the said electronic measuring devices") at such places a indicated by the Executive Engineer Hetawane Medium Project Division, Kam Tal. Pen, Dist. Raigad. All the pipeline showing locations of the mete equipments from the said source for different purposes shall be got jointly ver and got approved from Executive Engineer. Layout from the said source sha got approved from the Executive Engineer. No changes in the approved la shall be made without the prior written approval from the Executive Enginee the event of CIDCO failing to install and keep in proper working order the

electronic measuring devices for use of water for the said plant and supply to the said residential area as aforesaid, CIDCO shall be liable to pay for the full sanctioned water quota as mentioned in clause 8(d) I and II of this agreement. During such period, 125% of the proportionate sanctioned quantity will be charged at the prevailing rates for the said purpose. The said electronic measuring devices shall always be kept under the lock and seal of the Executive Engineer, Hetawane & keys of such lock shall at all times remain with the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal.- Pen, Dist - Raigad. CIDCO shall at all times during the subsistence of this agreement, at its own cost, maintain the said electronic measuring devices in proper working order and condition.

(b) Meter reading for the water so drawn by CIDCO will be taken on the said electronic measuring devices on the last day of each month at agreed time, jointly by the authorized representative of the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, Dist. Raigad, and of the CIDCO.

(c) If at any time, in the opinion of the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, Dist. Raigad, the said electronic measuring devices are found defective, the same shall be tested for its accuracy and the cost of such testing shall be borne and paid by CIDCO. If on such testing the said electronic, measuring devices are found to be defective, CIDCO shall forthwith get the same repaired and set right at its own cost, and in event of CIDCO failing to do so within 30 (Thirty) days thereafter, the Executive Engineer, Hetawane Medium Project Division, Kamarli, Tal. Pen, Dist. Raigad, may proceed to do so on account and at the cost of CIDCO.

(d) In the event of the said electronic measuring devices going out of order and becoming defective, the quantity of water drawn by CIDCO during the period when the meter was defective and not working shall be ascertained in the following manner.

I. If the said electronic measuring devices remain out of order for a period of less than 30 days, then the quantity of water deemed to be drawn by the user during the said period shall be taken to be 90% of the yearly sanctioned demand as communicated in clause No. (1) or average for the last six months

whichever is higher.

ii. If the said electronic measuring devices remain out of order for a p... exceeding 30 days then the quantity of water deemed to be drawn by the... during the said period shall be taken to be 110% of the yearly sanct... demand as communicated in clause No. (1) or average for the last six mo... whichever is higher. This will be made applicable for the period during ... the measuring device remained out of order.

The aforesaid provision will also apply when the quantity of water drav... CIDCO cannot be measured on account of removal of the said elec... measuring devices for repairs or the same is not working properly i... opinion of the Executive Engineer, Hetawane Medium Project Div... Kamarli, Tal. Pen, Dist. Raigad.

iii. If elec... nic meter meant for domestic or for agricultural use is not fu... remain... ut of order or is removed, the water charges will be levied as p... rate... ified for the industrial use for the total quota as referred to in cla... (c) ... f this agreement.

iv. In c... CIDCO desires to draw water less than 50 MLD of water, then C... shall ... n on 1st November every year or before, their actual requirem... KIDC ... the next year so that KIDC can utilize excess water for any ... purpos... Royalty charges will be levied on such a demanded quota for ... year as ... imated in November irrespective of actual lower use.

9. Billing will be ... e on monthly basis. The Executive Engineer (Hetawane M... Project Divisi... to the office of the CIDCO, shall send the bill for the water dra... the CIDCO d... ... previous calendar months in duplicate / triplicate within 15... after the e... the water consumption month. CIDCO shall thereafter duly pa... same by a ... nd draft drawn in the name of the Executive Engineer, Heta... Medium Pr... Division, Kamarli, Tal. Pen; Dist - Raigad, for and on behalf ... Government, within a fortnight from the date of receipt of the bill and shall not allo... same to fall in arrears. If CIDCO fails to pay the amount within this stipulated tim... days from the date of receipt of the bill i.e. before the end of the current month)

23/8/15

charges not exceeding 10% per annum of the amount due will be charged. If the delay in payment of water charges exceeds six months, KIDC reserves the right to terminate the water supply with a notice of 15 days in advance.

The cost of all works in connection with the arrangements for water supply including the cost of measuring devices and its installation and maintenance shall be borne by CIDCO.

Subject to the provisions of clause (8) hereof, the CIDCO shall pay to the KIDC at the time and in the manner specified in clause (12) hereof water charges for the quantity of water drawn by the CIDCO from the said reservoir as measured by the said electronic measuring devices at the following rates, namely: -

i) As CIDCO desires to share the proportionate cost of Dam. The water charges shall be levied as per Maharashtra Water Resources Regulatory Authority's order No. MWRRA/ 2011/BWT-Order/(59)/315 Dated 30/05/2011, including subsequent modifications in it, if any. Moreover these rates are subject to change due to revision made by MWRRA from time and again and as such revised rate shall be binding on both CIDCO and KIDC. In the event of the quantity of water drawn by CIDCO is less than 90 per cent of the quantity of water specified in clause (1) hereof, then the CIDCO shall pay to the KIDC water charges calculated for 90 per cent of the quantity of water specified in clause (1) hereof or for average of the quantity of water drawn by the CIDCO during the period of previous three months including the month in question whichever is greater.

ii) For any unforeseen reasons, if the CIDCO would like to reduce/increase the demand of water made earlier/entered in the agreement, they will be required to make the revised annual demand before the commencement of the year i.e. 1st day of November. On acceptance of such revised demand, the CIDCO will be charged as per revised demand for period specified, other conditions remaining same. A supplementary agreement on hundred rupees stamp paper for this changed quantity which will form part of the main agreement.

iii) No penal rate will be levied for the quantity limited to 10% in excess of the sanctioned one. For quantity used in excess of this 10% without prior sanction a penal rate of 25% will be charged over the basic rate. The delay in payment on

account of this also, will be governed by. clause (9) above.

iv) For any unforeseen reasons (such as sudden closure, of the units or sudden in production etc.), there could be abrupt fluctuations in the demand on both s such cases will be decided by KIDC & CIDCO mutually by giving considerations to the availability of water in the particular sub-basin and so on.

v) In addition to the payment of water charges referred to above the CIDCO s also pay to the KIDC local cess fund at the rate of 20 paisa per rupee of b water charges. The local cess fund will be charged to the CIDCO as prevailing norms. As decided in the joint meeting dated 26.03.2004 , if CID submits exemption certificate from all local bodies, then from the date certificate, the local cess fund need not be charged to KIDC, through their bil shall be the responsibility of CIDCO to settle the issue with local bodies, wit any reference with KIDC.

vi) Water bills - The monthly bills for the period from November to August (Fo months) shall be prepared on the basis of actual quantity of water lifted a prevailing rate. The bill for the month of **September & October** (11 th & 12th mo shall be prepared by taking review of annual sanctioned demand and the te and conditions of the agreement and then shall be adjusted and paid accordi while adjusting so it shall be considered that the 90% of the annual sanctio deman . . is been lifted/used.

The wat lifted in excess, upto 10% of sanctioned demand shall be charge single ar : excess above 10% (without prior permission) will be charged at p rate . . .5 times of the normal rate, as mentioned in the relevant cla Howev . . local cess shall be charged on single rate only.

12. a) CIDCO shall : to the Executive Engineer, water charges and local funds cess e in advanc . is per demand of Executive Engineer, every month on the bas anticipated . . tum of water to be drawn by it from the said source during the mo or on mo . basis within fifteen (15) days from the date of receipt of mo demands . . user from the Executive Engineer, on default of the user to pa water rate or local funds cess as aforesaid vide clause No. 11, Government/ shall without prejudice to any other rights and remedies be entitled to terminate agreement forthwith as per clause No. 9.

13.

14.

b) In the case of disputes regarding quantity of water billed or rate at which the bill is prepared the CIDCO/USER, shall first pay the complete amount of the bill and then claim for refund of any excess bill charged giving the reason / justification of wrong billing. However, the decision of Superintending Engineer, North Konkan Irrigation Project Circle, Kalwa, Thane in this regards shall be final and binding on the CIDCO.

13. Government hereby reserves to itself the right to revise from time to time the water rates and local fund cess and CIDCO shall pay such revised water rates and local fund cess as may be fixed by Government / KIDC from time to time.

14. The USER/CIDCO shall not discharge the effluent in any nalla or river and shall not pollute directly or indirectly any portion of the said nalla/river even by septic tank effluents. If any water sources are polluted by any industry as identified by Irrigation/Pollution Control Board/MIDC/MJP, the CIDCO shall be charged with a penalty of Rupees 5,000/- per such incident per day till it is rectified. The opinion of Maharashtra Pollution Control Board in respect of degree of pollution will be binding on CIDCO.

The USER/CIDCO shall recycle the effluent water for their use such as gardening, recreation, cooling, cleaning, washing and manufacturing process etc. so that at least 50% reduction in consumption of fresh water is achieved.

15. The effluent disposal arrangement made by CIDCO shall be got approved by CIDCO from the Maharashtra Pollution Control Board / Environmental Department of Government prior to commencing the operation of pumping / drawing water from source.

16. CIDCO shall at all times allow an officer of KIDC / Water Resource Department of the Government or its representative, authorized in that behalf to inspect the said work as well as the accounts and copies taken of entries from the records maintained by CIDCO.

17. Any notice of other documents to be given to or served upon CIDCO may be given served on behalf of KIDC by the Executive Engineer, and any such notice or documents shall be deemed to have been duly given to or served upon CIDCO or sent by

registered post to CIDCO, if it is delivered at the registered office of CIDCO or s registered post to the registered address for the time being of CIDCO.

18. The said sum of Rs. 4.88 lakhs mentioned earlier in this agreement in the f FDR/Bank Guarantee/cash/cheque paid by the CIDCO to the Executive Engin KIDC shall be held by KIDC as security for the due observance and performa CIDCO of the covenants, terms and conditions herein contained. In case of defa the part of CIDCO to perform and observe any of the said covenants term conditions, it shall be lawful for KIDC in its absolute discretion to forfeit the whole security deposit or any part thereof without prejudice nevertheless to any right remedies which the KIDC may have against CIDCO under these presents fo breach and CIDCO shall forthwith pay up the amount so forfeited and shall maintain the original amount of deposit throughout the period of this agreeme expiry of the terms of this agreement, the said security deposit of Rs. 4.88 lakhs o part thereof, as shall not have been appropriated as aforesaid, shall be refun CIDCO.

19. All amounts due to the KIDC by the CIDCO under this agreement shall be deem be arrears of land revenue and may without prejudice to any other rights and rem of the KIDC be recovered from the CIDCO as arrears of land revenue.

20. On the expiry of the terms of this agreement, Government/KIDC may reme agreement within 90 days for such further period and on such terms and conditio KIDC may at it absolute discretion deem fit.

21. The cost incurred in the execution of the incidental charges for this agreement inc stamp duty shall be borne and paid by CIDCO.

22. IF CIDCO COMMITS BREACH OF ANY OF THE TERMS AND CONDITIONS O AGREEMENT, KONKAN IRRIGATION DEVELOPMENT CORPORATION SHA ENTITLED TO CANCEL THIS PERMISSION AND DISCONTINUE THE SUPPL WATER WITHOUT PAYMENT OF ANY COMPENSATION, WHATSOEVE CIDCO.

23. The KIDC/Government (Water Resources Department) hereby reserves to itself it

to change / amend/ modify/ cancel/ revise any of the terms and conditions, rules and regulations of water management and Maharashtra Irrigation Act and rules laid under them which shall be applicable to this agreement.

IN WITNESS WHEREOF THE common Seal of the .....has been hereunder affixed .....and the Executive Engineer, Hetawane Medium Project Division Kamarli, Tal. Pen. Dist. Raigad has for and on behalf of the KIDC hereto set his hand and affixed the seal at his office the day and year first herein above written.

THE COMMON SEAL OF 25/3/15

was pursuant to a resolution

S.S.CHAUDHARI
Chief Engineer (NM)
EMP. No. 32531

of the board of Director of

CIDCO dated the .....

Hereto affixed in the presence of.....

1. SANJAY K. CHOTHIA, ACE(C1) CIDCO.
2. N.R. Nimkar, SE(W/S) CIDCO.

Representatives

Two Directors of KIDC who in token thereof have hereto set their respective hands in the presence of

1. B-C. Kunjir
CHIEF ENGINEER
WATER RESOURCES DEPTT.
KONKAN REGION, MUMBAI-1
2. .....

SIGNED, SEALED AND DELIVERED by the Executive Engineer, Hetawane Medium Project Division Kamarli, Tal. Pen. Dist- Raigad.

For and on behalf of KIDC in presence of.....

1. A-S-Kaldeke
Superintending Engineer
North Konkan Irrigation Project Circle,
Kalwa, (Thane).
2. R-B-Badhekar
Assistant Superintending Engineer,
North Konkan Irrigation Project,
Circle, THANE.

ANNEXURE-3

C13 031

Annexure A C/23

No.MIW 1287/1075/536/Kharland.

GOVERNMENT OF MAHARASHTRA
Irrigation Department,
Mantralaya, Bombay-400 032.
Dated the 18th April, 1990.

To :

The Additional Chief Engineer,
City And Industrial Development
Corporation of Maharashtra Ltd.,
"Nirmal", 2nd floor, Nariman Point,
BOMBAY - 400 021.

Sub : Allocation of Balganga Project in Taluka Pen, District Raigad to CIDICO.

Ref : Your letter No.CIDCO/ACE/380/F-1366, dated 6.1.1990.

Sir,

With reference to your letter, cited under referenc it is to communicate you that the entire proposed storage of Balganga Project, District Raigad is hereby being exclusivel reserved for CIDCO subject to the following conditions :-

(1) Survey and Investigation for the Revised Project Report will be carried out by Irrigation Department on request and at the cost of CIDCO.

(2) The construction of dam and appurtenant works will be carried out by CIDCO at its own cost but under the supervision of Irrigation Department on usual charges.

(3) The work can also be taken up by Irrigation Department if so desired by CIDCO, under "Deposit Contribution work" system.

(4) Even though the entire cost of the construction of th project would be borne by CIDCO, royalty charges on use of water will have to be paid by CIDCO to Government of Maharashtra as per rules.

(5) The completed dam will be subject to periodical inspects during each year by the 'Dam Safty Organisation' of the Irrigation Department, for which the usual prescribed fees will be payable by CIDCO and also corrective measu as per instructions of 'Dam Safty Organisation' will have to be carried out promptly by CIDCO in accordance with the procedure.

Receipt of the letter may kindly be acknowledged.

Yours faithfully,

(J.M. PRADHAN)
Asstt. Secretary to the Government of Maharashtra

Copy to :-
The Chief Engineer, Irrigation Department, Konkan Region, Bombay, for information and necessary action.
Desk-Estt.(O&M), Irrigation Department, Mantralaya.
Desk-(Kharland), Irrigation Department, Mantralaya.

C/S 002

Annexure 'B'

- 425

जा. क्र. ठापामं/पु.३/२१/५११९

ठाणे पाटबंधारे मंडळ, ठाणे-३,
सिंचन भवन, कोपरी, ३रा मजला, ठाणे.
दिनांक :- १२/१०/९०.

प्रति,

अतिरीक्त मुख्य अभियंता,
शहर व औद्योगिक मंडळ [सिडको],
सिडको भवन, नवी मुंबई.

विषय :- बाळगंगा प्रकल्प, ता. पेण, जि. रायगड
पाणीपुरवठा प्रकल्प म्हणून राबविणेबाबत
सर्वेक्षण अंदाजपत्रकास प्रशासकीय मान्यता
मिळणेबाबत.

संदर्भ :- १] महाराष्ट्र शासन, पाटबंधारे विभाग, मंत्रालय,
मुंबई-३२ यांचे इंग्रजी प. क्र. एमआयडब्ल्यू/१२८७/
१०७५/३३६ दि. १८.४.१९०.

२] मुख्य अभियंता, पाटबंधारे विभाग, कोंकण प्रदेश,
मुंबई-२३ यांचे पत्र क्र. ८९-०१/[८९/८७]ता. ५/
४१६९ दिनांक २५.९.१९९०.

...

संदर्भिय शासन पत्र क्र. १ नुसार बाळगंगा प्रकल्प हा फक्त पाणीपुरवठा प्रकल्प म्हणून राबविण्याचे शासनाने निश्चीत केले आहे. ह्या प्रकल्पाचे सर्वेक्षणाचे प्राकलने तयार केली असुन त्यास प्रशासकीय मान्यता मिळणेसाठी पाठविण्यात येत आहे.

सध्याच्या तरतुदीनुसार व नियोजनानुसार ह्या प्रकल्पाच्या प्राथमिक सर्वेक्षणाचे अंदाजपत्रक रु. ३,६१,५८३/- असुन ह्यामध्ये प्रत्यक्ष कामानुसार फेरबदल होण्याची शक्यता आहे. सध्या रु. ३,६१,५८३/- च्या अंदाजित किंमतीस प्रशासकीय मान्यता देऊन सदरहू रक्कम "अनामत" म्हणून कार्यकारी अभियंता, पाटबंधारे प्रकल्प अन्वेक्षण विभाग, ठाणे यांचेकडे जमा करावी ही विनंती.

सर्वेक्षणाचा खर्च ह्या रकमेपेक्षा जास्त झाल्यास जास्तीचा खर्च पुन्हा सिडकोस द्यावा लागेल.

ह्या प्रकल्पाच्या संबंधात शासनाच्या संदर्भीय पत्राची प्रत माहितीसाठी पाठविण्यात येत आहे. शासन पत्रात नमुद केल्यानुसार हा प्रकल्प पाणीपुरवठा म्हणून राबविण्यासाठी शासनाने ज्या अटी सदरहू पत्रात नमुद केल्या आहेत त्या सर्व अटी सिडकोस बंधनकारक राहतील.

सोबत सर्वेक्षणाच्या प्राकलनाच्या ३ प्रती पाठविल्या असुन त्यास प्रशासकीय मान्यता दिल्यावर १ प्रत परत ह्या कार्यालयास पाठवावी ही विनंती.

सहपत्र :- १) प्राकलने ३
तीन प्रती.
२) शासनाचे संदर्भिय

सही/-
अधीक्षक अभियंता,
ठाणे पाटबंधारे मंडळ, ठाणे.

(23)

FOR OFFICIAL USE ONLY

KIDC - 2

GOVT OF MAHARASHTRA
IRRIGATION DEPARTMENT

BALGANGA WATERSUPPLY PROJECT OF CIDCO

(City & Industrial Development Corporation)

VOL - II

REPORT, ESTIMATES & APPENDICES

1 — 247 Total - 251 004

BALGANGA

PROJECT

REPORT

INTRODUCTION

Balganga Project (Tal. - Pen, Dist. - Raigad) is purely a water-supply project on Balganga river proposed to be undertaken by CIDCO to meet increasing domestic and water supply needs of New Bombay City.

The CIDCO requested Irrigation Department of Govt. of Maharashtra in October 1990 to undertake the work of survey, investigation and preparation of project report for the Balganga Project, as a deposit work. The work has accordingly been carried out and report is now being presented.

The CIDCO has informed that it intends to have maximum utilisation of potential of water available in Balaganga River and that minimum requirement of CIDCO is 350 MLD for 365 days which comes to 127.75 Mcum. It could seen from report (para 3.7) that, with the proposed dam at Niphad site on Balganga River, it is possible to meet this requirement.

Kolhatkar

(Shri G. R. Kolhatkar)
Executive Engineer
I.P.I. Division
Thane

Shinde

(Shri K.D. Shinde)
Superintending Engineer
Thane Irrigation Circle
Thane

(17)

ANNEXURE-4

कोंढाणे प्रकल्प, तालुका कर्जत, जिल्हा रायगड पाणीपुरवठा प्रकल्प म्हणून वर्गीकृत करणेबाबत तसेच सदर प्रकल्प जलसंपदा विभागाकडून सिडको लिमिटेड, नवी मुंबई यांचेकडे आहे त्या स्थितीत हस्तांतरीत करणेबाबत.

महाराष्ट्र शासन
जलसंपदा विभाग
शासन निर्णय क्रमांकः संकीर्ण २०१६/(३१२/१६)/२०१६ खारभूमी
मंत्रालय, मुंबई - ४०० ०३२.
दिनांक :- १८ ऑगस्ट, २०१७

प्रस्तावना-

महाराष्ट्र शासनाने सिडको, नवी मुंबई यांना नवी मुंबई विमानतळ प्रभावित अधिसूचित क्षेत्राचा (Navi Mumbai Airport Influensed Notified Area- NAINA) विकास हाती घेण्यासाठी विशेष नियोजन प्राधिकरण म्हणून नियुक्ती केली आहे. या प्रकल्पांतर्गत येणारे एकूण क्षेत्र ६४४ वर्ग किलोमीटर इतके असून २७० गावांचा समावेश त्यात आहे. या क्षेत्राच्या विकासाचा प्रारुप आराखडा तयार करण्याचे काम प्रगतीत असून त्यानुषंगाने कर्जत तालुक्यातील कोंढाणे धरण पिण्याच्या पाण्यासाठी सिडकोला हस्तांतरीत करण्याच्या संदर्भात प्रस्ताव सिडको, नवी मुंबई यांचेकडून शासनास प्राप्त झाला.

कोंढाणे प्रकल्पास शासन निर्णय क्र.लपायो-२०११/१००/(७/२०११)/खारभूमी, मंत्रालय, मुंबई यांचे दिनांक १९/५/२०११ चे पत्रान्वये रुपये ८०.३५ कोटी इतक्या रकमेस प्रशासकीय मान्यता (२००९-१० दरसूची) प्रदान केली आहे. नियोजन व वित्त विभागाने फक्त शेल्फवर ठेवण्यासाठी प्रशासकीय मान्यतेस सहमती प्रदान केलेली होती. प्रशासकीय मान्यतेनुसार २०.१९ दलघमी पाणीसाठा करुन त्यापैकी ३.०० दलघमी सिंचनाकरीता, १३.५५ दलघमी पाणी पिण्यासाठी गृहीत धरण्यात आले आहे. मंजूर अंदाजपत्रकानुसार धरणाची उंची ३९.०३ मीटर इतकी प्रस्तावित आहे. प्रशासकीय मान्यतेनुसार २४० हेक्टर क्षेत्र सिंचनाखाली येणार आहे.

कोकण पाटबंधारे विकास महामंडळाच्या नियामक मंडळाच्या दिनांक १२/८/२०११ रोजीच्या ५३ व्या बैठकीमध्ये पाण्याची वाढीव गरज लक्षात घेता धरणस्थळी उपलब्ध येव्यानुसार सर्व पाणी साठविण्याच्या दृष्टीने कोंढाणे प्रकल्प, तालुका कर्जत, जिल्हा रायगड या धरणाची उंची ३२.६० मीटरने वाढवून (एकूण उंची ७१.६३ मीटर) पूर्वीच्या २०.१९ दलघमी ऐवजी एकूण १०५.४४ दलघमी पाणीसाठा निर्माण करण्याच्या प्रस्तावास मान्यता देण्यात आली आहे. त्या वाढीव पाणीसाठ्याचा उपयोग पिण्यासाठी

व औद्योगिक वापरासाठी ९४.८९ दलघमी आणि सिंचनासाठी ३ दलघमी (सिंचन क्षेत्र २४० हेक्टर) अशा रितीने करण्याचे प्रस्तावित आहे.

कोंढाणे प्रकल्पाच्या रुपये ८०.३५ कोटी किंमतीच्या प्रस्तावास शासनाने शेल्फवर ठेवण्यासाठी प्रशासकीय मान्यता प्रदान केली होती. तथापि, महामंडळ स्तरावर कामाची निविदा निश्चित करण्यात येऊन कंत्राटदाराला कामाचे कार्यारंभ आदेश देण्यात आले.

या प्रकल्पाच्या संदर्भात मा. उच्च न्यायालय, मुंबई येथे एक जनहित याचिका, कंत्राटदाराने दाखल केलेली एक रिट याचिका व एक अवमान याचिका तसेच प्रकल्पाच्या समर्थनार्थ कोंढाणे धरण परिसर विकास मंचाने दाखल केलेली रिट याचिका प्रलंबित आहेत.

कोंढाणे प्रकल्पामध्ये जनहित याचिका क्रमांक ६३/२०१२ मा.उच्च न्यायालयात प्रकल्पाच्या बांधकामाचे अनुषंगाने झालेल्या अनियमिततेबाबत उघड चौकशी करण्यास शासनाने मान्यता दिलेली आहे. त्याप्रमाणे लाचलुचपत प्रतिबंधक विभागामार्फत उघड चौकशी सुरू आहे. याचिकाकर्त्याने प्रकल्पाचे काम करण्यास हरकत घेतलेली नाही. या प्रकल्पाची नवी मुंबई विमानतळ प्रभावीत अधिसूचित क्षेत्राच्या (Navi Mumbai Airport Influensed Notified Area- NAINA) विकासासाठी आवश्यकता विचारात घेऊन आणि २४० हेक्टर क्षेत्र सिंचनाखाली आणण्याच्या दृष्टीने सदर प्रकल्प जलसंपदा विभागाकडून सिडको लिमिटेड, नवी मुंबई यांचेकडे आहे त्या स्थितीत हस्तांतरीत करण्याची बाब शासनाच्या विचाराधीन होती.

त्यानुसार दिनांक ३ जुलै, २०१७ रोजी झालेल्या मंत्रीमंडळाच्या बैठकीत सदर प्रस्ताव विचारार्थ ठेवण्यात आला होता. त्यास मंत्रीमंडळाने मान्यता देण्याचा निर्णय घेतला. त्याअनुषंगाने खालीलप्रमाणे निर्णय निर्गमित करण्यात येत आहे.

शासन निर्णय :-

१) सिडको मर्यादित, नवी मुंबई यांचे विनंतीनुसार व कोकण पाटबंधारे विकास महामंडळाच्या नियामक मंडळाच्या ठरावानुसार सिडको मर्यादित, नवी मुंबई विकसित करीत असलेल्या "नवी मुंबई विमानतळ प्रभावित अधिसूचित क्षेत्र (Navi Mumbai Airport Influenced Notified Area-NAINA)" अंतर्गत येणाऱ्या ६४४ वर्ग किलोमीटर क्षेत्रातील २७० गावांच्या पिण्याच्या पाण्याची सध्याची आणि भविष्यातील गरज विचारात घेता जलसंपदा विभागाकडील कोंढाणे प्रकल्प, सिडको मर्यादित, नवी मुंबई यांना त्यांच्या मागणीप्रमाणे मालकी हक्काने आहे त्या स्थितीत,

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सद्य:स्थितीतील भविष्यातील सर्व दायित्वासह खालील अटी व शर्ती नुसार हस्तांतरीत करण्याच्या प्रस्तावास मान्यता व पाणीपुरवठा प्रकल्प म्हणून घोषित करण्यास मान्यता देण्यात येत आहे.

क) मा.उच्च न्यायालय, मुंबई येथील कंत्राटदारांच्या रिट याचिका क्र.४०४/१०१३ संदर्भात मा.न्यायालयाने दिनांक १८/०२/२०१३ रोजी दिलेल्या निर्णयास अनुसरुन कंत्राटदाराने दाखल केलेल्या अवमान याचिका क्र. ३३४/२०१३ मधील कायदेशीर बाब तपासून कंत्राटदारास देयकाची रक्कम अदा करावयाची जबाबदारी सिडकोची राहील.

ख) प्रकल्प कार्यान्वित करण्यापूर्वी सर्व आवश्यक संविधानिक मान्यता सिडकोने घ्याव्यात.

ग) प्रकल्प कोणत्या अभिकरणाकडून कार्यान्वित करावयाचा यांचे स्वातंत्र्य सिडकोस राहील.

घ) या प्रकल्पाच्या कार्यान्वयीकरणाबाबत सद्य:स्थितीत लाच लुचपत प्रतिबंधक विभाग (एसीबी) मार्फत चौकशी सुरु आहे. सदर चौकशीस कोणतीही बाधा येणार नाही याची दक्षता घ्यावी.

च) विविध चौकशी समित्यांनी प्रकल्पाला मान्यता देतांना ज्या त्रुटी दर्शविल्या आहेत किंवा ज्या मान्यता आवश्यक असून घेतलेल्या नाहीत त्या सर्व बाबींचे कायदेशीर निरसन करण्यात यावे.

छ) कोंढाणे प्रकल्पास महाराष्ट्र जलसंपत्ती नियमन प्राधिकरण (MWRRA) ची मान्यता, पाणी वापर संस्थेने (सिडकोने) घ्यावी.

ज) धरणांचे संकल्पन सिडकोने मध्यवर्ती संकल्पचित्र संघटना, नाशिक यांचेकडून करुन घ्यावे.

झ) भूसंपादन व पुनर्वसन प्रकरणी महसूल खात्याशी समन्वय साधून जमिन संपादनाची/ खरेदीची कार्यवाही सिडकोने करावी.

२) कोंढाणे प्रकल्पाच्या एकूण १०५.९७ दलघमी साठ्यापैकी, १०.५५ दलघमी पाणी प्रचलित सिंचन पाणीपट्टी दरानुसार, पाणीपट्टी रक्कम सिडकोला अदा करण्याच्या अटीवर शेतीसाठी मान्यता देणे.

३) कोंढाणे प्रकल्प पाणीपुरवठा प्रकल्प म्हणून संबोधण्यात यावा.

सदर शासन निर्णय नगर विकास विभागाच्या दिनांक १२.१२.२०१६ रोजीच्या, वित्त विभागाच्या अनौपचारिक संदर्भ क्रमांक - ३११/व्यय-१२, दिनांक ०३.०१.२०१७ अन्वये व विधी

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व न्याय विभागाच्या अनौपचारिक संदर्भ क्रमांक-१२१४-२०१६/ई, दिनांक ११.०१.२०१७ अन्वये मिळालेल्या सहमतीनुसार निर्गमित करण्यात येत आहे.

सदर शासन निर्णय दिनांक ३ जुलै, २०१७ रोजी मा मंत्रीमंडळाच्या बैठकीत झालेल्या निर्णयानुसार निर्गमित करण्यात येत आहे.

सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेताक २०१७०८१९११२७१५७४२७ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करुन काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने.

Dharane Mallikarjun Irappa

Digitally signed by Dharane Mallikarjun Irappa
DN: c=IN, o=Government Of Maharashtra, ou=Water Resources Department, postalCode=400032, st=Maharashtra, 2.5.4.20=42153c779eba7d6ca17364b6d3785 7b105b20a01d36c767c7ed1d7d278837bd7, cn=Dharane Mallikarjun Irappa
Date: 2017.08.19 11:18:22 +05'30'

(म.ई. धरणे)
उप सचिव, महाराष्ट्र शासन

प्रत,

१. महालेखापाल, महाराष्ट्र राज्य (लेखा व अनुज्ञेयता) मुंबई/नागपूर.
२. महालेखापाल, महाराष्ट्र राज्य (लेखा परिक्षा), मुंबई/नागपूर.
३. वित्त विभाग (व्यय-१२), मंत्रालय, मुंबई ३२
४. नियोजन विभाग (कार्यासन १४३४), मंत्रालय, मुंबई ३२.
५. नगर विकास विभाग (कार्यासन न.वि.-१०), मंत्रालय, मुंबई ३२.
६. आयुक्त कोकण भवन, सी.बी.डी. बेलापूर, नवी मुंबई.
७. उपाध्यक्ष व व्यवस्थापकीय संचालक,सिडको भवन, सी.बी.डी बेलापूर, नवी मुंबई.
८. कार्यकारी संचालक, कोकण पाटबंधारे विकास महामंडळ, ठाणे.
९. आंतर वित्त सल्लागार व उप सचिव, जलसंपदा विभाग, मंत्रालय, मुंबई.
१०. जिल्हाधिकारी, रायगड/ठाणे.
११. विभागीय संपर्क अधिकारी, माहिती व जनसंपर्क महासंचालनालय, मंत्रालय,मुंबई. (२ प्रती)
१२. खारभूमी, संग्रहार्थ.

KONDANE PROJECT

Tal. Karjat, Dist. Raigad

SALIENT FEATURES BY KIDC, WRD. GoM.

Particulars	Details in Metric Unit
1) Name of Project	Kondane Project, Tal. Karjat Dist. Raigad
2) Scope of the scheme	A Medium Project with storage on Ulhas River near village Kondane Tal. Karjat, Dist. Raigad. For entirely drinking water supply.
3) Source	Ulhas River
4) Upstream Utilization	Nil
5) Yield and utilization for the project	
i) Catchment Area	53.25 Sq. Km.
ii) Average annual rainfall	3515.85 M.
iii) 95 % dependence Yield	105.44 cum.
iv) Gross annual utilization	114.0 Mcum.
v) Water reserved for Irrigation	3.00 Mcum.
vi) Water proposed for CIDCO	94.89 Mcum.
6) Dams and Reservoir	
i) Gross Capacity of F.R.L. 140.00 m	105.44 cum.
ii) Capacity of Dead Storage:	1.92 cum.
iii) Capacity of Live Storage	103.52 cum.
iv) Carry Over	0.0 cum.
v) Evaporation losses, Lake losses	4.42 cum.
vi) Area under submergence	425 Ha.
vii) No. of villages under submergence with population	Only a single wadi i.e. Mundewadi & a few houses 6 Nos. of Chochi gets affected due to the new project
7) Control Levels:	
i) River Bed level	71.67 M.
ii) Sill level	84.55 M.
iii) Crest level	135.00 M.
iv) F.R.L.	140.00 M.
v) M.W.L.	140.50 M.
vi) T.B.L.	143.00 M.
8) Type of Dam	Earthen Dam with gated spillway in saddle
9) Maximum height of Dam	
i) From the river bed	71.33 .
ii) From the Deepest foundation	74.00 M.
10) Total Quantity of Dam	
i) Earth work Hearting	1.984 Mcum
ii) Earth work casing	8.015 Mcum
11) Total length of dam	
i) Ch – 40 to 950	640.0
ii) Free board	2.50 M.
12) Spillway	
i) Type	Ogee type
ii) Design flood	1094.57 Cumecs 38660.21 cusecs
iii) Depth of water on crest	5.00 M
iv) Length of Spillway (O.F. section (Ch-950 M. to -1020 M.)	70.00 M.
v) No. of gates	5 Nos. (Size 12 M X 5.00 M.)
13) Outlet at Right Bank of Dam	
i) Location	Ch. 740.00
ii) Sill R.L.	84.55 M.
iii) No. of Gates	5 Nos (1.80 x 1.20). 5 Nos.
iv) Size of Gates	1100 m x 650 m 12.00 x 6.50

(Note : This information is as per Revised Administrative Proposal prepared by KIDC, WRD, Govt. of Maharashtra.)

Executive Engineer (Kondhane)

CITY AND INDUSTRIAL DEVELOPMENT CORPORATION OF MAHARASHTRA LIMITED

REGD. OFFICE :
"NIRMAL", 2nd Floor, Nariman Point,
Mumbai - 400 021.
PHONE : (Reception) 00-91-22-6650 0900
00-91-22-6650 0928
FAX : 00-91-22-2202 2509 / 6650 0933

HEAD OFFICE :
CIDCO Bhavan, CBD-Belapur,
Navi Mumbai - 400 614.
PHONE : 00-91-22-6791 8100
FAX : 00-91-22-6791 8166

Ref. No.: CIDCO/MD/NMIA/051/233

Date : October 25, 2017

LETTER OF AWARD

To:

Mumbai International Airport Private Limited
Chhatrapati Shivaji International Airport,
1st Floor, Terminal 1B, Santacruz (E),
Mumbai – 400 099, Maharashtra
Kind Attn: Mr. G.V. Sanjay Reddy, Managing Director

Dear Sir,

Sub: Letter of Award for the Concession for Navi Mumbai International Airport

1. Unless otherwise defined, all capitalised terms herein, shall have the meaning ascribed to it in the Request for Proposal No. CIDCO/T&C/NMIA/01/2013-14 issued on May 4, 2016 including its revision dated October 14, 2016 and all subsequent Addendums thereto ("**RFP**").

2. We refer to your Bid under the cover letter dated February 13, 2017, submitted in response to the RFP for the implementation of the Navi Mumbai International Airport ("**Project**") in accordance with the terms of the Concession Agreement (*enclosed in the RFP*).

3. We are pleased to inform that your Bid providing for the Premium of **12.60**% **(twelve decimal six zero percent)** of the Gross Revenue, on an annual basis, as share of the Authority, has been accepted and **Mumbai International Airport Private Limited(MIAL)** has been approved as the 'Selected Bidder' for the implementation of the Project, subject to fulfilment of the following terms and conditions as per the terms of the RFP:

   (a) The Selected Bidder shall incorporate a Special Purpose Vehicle under the Companies Act, 2013 (*who shall act as a Concessionaire*) in accordance with the provisions of the RFP (including the Concession Agreement and Shareholders' Agreement) for the implementation of the Project; and

   (b) The Concessionaire shall implement the Project in accordance with the provisions of the RFP (including the Concession Agreement).

4. Unless specified otherwise by the Authority, the Selected Bidder is required to meet the following compliance requirements as per the terms of the RFP:

(a) sign and return the duplicate copy of LOA within 7 (seven) days of its receipt to the Authority as acknowledgement of the receipt and agreement of the terms of the LOA, along with the certified true copy of the board resolution/ power of attorney authorising such execution;

(b) execute and deliver the Concession Agreement through the Concessionaire within 60 (sixty) days of this LOA, for the implementation of the Project in accordance with the terms and conditions contained thereof along with the certified true copy of the board resolution/ power of attorney authorising such execution;

(c) submit the Performance Security within 60 (sixty) days of the execution of the Concession Agreement, in accordance with the terms of the RFP (*including the Concession Agreement*) and extend the validity of the Bid Security for the period until the Performance Security is provided;

(d) submit the initial Master Plan to the Authority within 30 (thirty) days of the issuance of the LOA.

5. In the event, the Selected Bidder fails to comply with the requirements of paragraphs 4 (a), (b) or (c) above, the Authority shall forfeit the Bid Security submitted by the Selected Bidder in accordance with the terms of the RFP.

6. In the event, the Selected Bidder fails to comply with the requirements of paragraph 4(d) above, the Authority shall have the right to levy liquidated damages in accordance with the terms of the Concession Agreement.

7. The Selected Bidder shall comply with all other requirements as set out in the RFP and for all purposes, the conditions of the RFP may be read as a part of this 'Letter of Award'.

8. If the Selected Bidder fails to act as above and fails to get the Concession Agreement executed within the period prescribed in paragraph 4, then, this LOA shall automatically cease to exist (without any conduct from any party) and have no effect whatsoever, on the expiry of such period. Further, the Selected Bidder shall not be entitled and shall be considered to have foregone all its rights, benefits and interests arising under or pursuant to this LOA on the expiry of the period prescribed in paragraph 4.

9. The final version of the RFP and the Concession Agreement along with Schedules thereof incorporating the Addendums is being provided with this LOA for the needful.

Thanking You,

Yours Sincerely,

(Bhushan Gagrani)
Vice Chairman & Managing Director

Received
(R.K. Jain)
CBO-M12
25/10/17