HALF-YEARLY POST EC COMPLIANCE REPORT

OF

"Vedant Nakshatra"

Residential and Commercial Project At S.No. 70, H.No.

1(pt) & H.No. 5(pt) of village-Kulgaon, Tal-Ambernath, Dist-

Thane.

PERIOD

July 2022 December 2022

Project Proponent

M/S. THARWANI INFRASTUCTURES.



Date:09-01-2023

To, The Principal Secretary, Environment Department 15th Floor, New Administrative Building, Mumbai – 400032.

Subject

 Submission of Half Yearly Post Monitoring Report for the period of July 2022

 December 2022 for proposed Residential and Commercial project "Vedant Nakshatra" on plot bearing S.No. 70, H.No.1(pt) &H.No.5(pt) of village-Kulgaon, Tal-Ambernath, Dist-Thane.

Reference : Environment Clearance letter No. SEIAA-EC-0000000244 dtd.27.03.2018

With reference to above mentioned subject and the condition stated in Environment Clearance Letter, we hereby submit the half-yearly compliance report along Data-Sheet and Enclosures as per compliances done at site with respect to the condition stated in Environment Clearance letter for above mentioned Project.

Hope the above are in line with your requirement and kindly acknowledge the receipt.

Thanking you. Yours faithfully, M/s. Tharwani Infrastructures.

Authorized Signatory Encl: As Above.

Tharwani Infrastructures, Near Sanjeevani Eye Clinic, Kalyan Ambernath Road, Ulhasnagar - 421 003. Contact : 8550998811 | 8550998844 | info@tharwaniinfrastructures.com | www.tharwaniinfrastructures.com

DATA SHEET

"Vedant Nakshatra"

Residential and Commercial Project At S.No. 70, H.No. 1(pt) & H.No. 5(pt) of village-Kulgaon, Tal-Ambernath, Dist-Thane.

PROJECT PROPONENT

M/S. THARWANI INFRASTUCTURES.

MONITORING THE IMPLEMENTATION OF ENVIRONMENTAL SAFEGUARDS

Ministry of Environmental and Forests Regional Office, West Central Zone, Nagpur.

PART – I <u>DATA SHEET</u>

1.	Project type: river - valley/ mining/ Industry / thermal / nuclear/ Other (specify)	Residential and Commercial Project
2.	Name of the project	"Vedant Nakshatra"
3.	Clearance letter (s) / OM/ no and date:	File No.: SEIAA-EC-0000000244 Dtd. March 27, 2018
4.	Location	At S.No. 70, H.No. 1(pt) & H.No. 5(pt) of village- Kulgaon, Tal-Ambernath, Dist-Thane.
a.	District (s)	Thane
b.	State (s)	Maharashtra.
c.	Latitude / Longitude	19° 9'54.13"N, 73°15'4.69"E
5.	Address for correspondence	
a.	Address of concerned project Chief Engineer (with pin code & telephone / telex/fax number)	Mr. Sumit Bajaj. Survey No. 70, Hissa No 1 & 5, Ramesgwadi, Badlapur (w), Tal. Ambernath.
b.	Address of Executive Project Engineer /Manager (with pin code / fax number)	
6.	Salient features	
a.	of the project	Total Plot Area: 26,450 sq.mt.
		FSI AREA: 24733.64 sq.mt
		Non FSI: 11727.83 sq.mt
		Total construction Area: 36,461.47 sq.mt

b.	of the environmental management plans	1. <u>Sewage Treatment Plant:</u>
		Sewage Treatment Plant with total capacity 250 & 285 KLD will be provided for treating the wastewater.
		Recycled wastewater will be used for Flushing, gardening etc.
		2. <u>Water Management:</u>
		Rain Water Harvesting shall be provided to recharge the ground water table.
		3. <u>Solid Waste Management:</u>
		• Dry waste: will be hand over to UMC for recycling
		• Wet waste: will be processed in the OWC for manure for landscaping/gardening
		• STP Sludge: Use as manure.
7.	Break Up Of the project Area	
a.	Submerge area: forest &: non-forest	Non-Forest
b.	Others	Nil
8.	Breakup of the project affected: Population with enumeration of those losing houses / dwelling units, only agriculture land only, both dwelling units and agriculture land and landless labourers/artisan	Not Applicable.
a.	SC, ST / Adivasis:	
b.	Others	
	(Please indicate whether these figures are based on any scientific and systematic survey carried out or only provisional figures, if a survey is carried out give details and years of survey)	
9.	Financial details	

DATA SHEET

a.	Project cost as originally planned and subsequent revised estimates and the year of price reference	Total cost: 105 Crores.
b.	Allocation made for environmental	Capital EMP Cost: 224 Lakhs
	year wise break-up	Cost for EMP O & M: 23.6 Lakhs
c.	Benefit cost ratio/ Internal rate of return and the year of assessment	
d.	Whether (c) includes the cost of environmental management as shown in the above	
e.	Actual expenditure incurred on the project so far	Rs. 73.00 Cr
f.	Actual expenditure incurred on the environmental management plans so far	Rs. 105 Lacs
10.	Forest land required	
a.	The status of approval for diversion of forest land for non-forestry use	The land is of non-forest type hence not applicable.
b.	The status of clearing and felling	Not Applicable
с.	The status of compensatory afforestation, if any.	
d.	Comments on the viability & sustainability of compensatory afforestation program in the light of actual field experience so far.	N.A.
11.	The status of clear felling in non-forest areas (such as submergence area of reservoir, approach roads), if any with quantitative information.	N.A.
12.	Status of construction	
a.	Date of commencement (Actual and/or planned)	April 2014

DATA SHEET

b.	Date of completion (Actual and/ or planned)	Occupancy Certificate obtained for building A to I. Completion date - Dec 2024
13.	Reasons for the delay if the project is yet to start	N.A.
14.	Dates of site visits	
a.	The date on which the project was monitored by the regional office on previous occasions, if any	
b.	Date of site visit for this monitoring report	NIL
15.	Details of correspondence with project authorities for obtaining action plans/ information on status on compliance to safeguards other than the routine letters for logistic support for site visits	M/s. Tharwani Infrastructures Near Sanjivani Clinic, Kalyan-Ambernath Road, Ulhasnagar- 421 003.

COMPLIANCE OF EC CONDITION

FOR

"Vedant Nakshatra"

Residential and Commercial Project At S.No. 70, H.No. 1(pt) & H.No. 5(pt) of village-Kulgaon, Tal-Ambernath, Dist-Thane.

PROJECT PROPONENT

M/S. THARWANI INFRASTUCTURES.

Point wise compliance status to various stipulations laid down by the Government of Maharashtra as per the Environmental Clearance issued vide letter no. <u>SEIAA-EC-0000000244</u> <u>dtd. 27.03.2018</u> as follows:

Specific conditions: -

Sr. No.	CONDITIONS	COMPLIANCE
1.	PP to ensure that required RG of 1694.14 should be provided on ground.	Condition Noted and provided RG of 1694.14 is on ground level.
2.	PP to submit/ upload EC compliance report.	Condition noted and we are submitting EC Compliance every six months.
3.	PP to ensure that the height of the stack of DG set should be above the tallest building in the project.	Condition is noted.
4.	PP to submit project specific DMP.	We have submitted Disaster Management Plan as Annexure 1 .
5.	PP to ensure BoD of treated waste water should be 5 mg/lit and suspended solids is 20 mg/lit	Condition is noted.
6.	PP to undertake green belt development along the road to reduce the air pollution.	Condition is noted.
7.	PP to ensure that width of the road for fire tender movement from all sides should be more than 6 m and turning radius should be 9 meters. PP to submit revised plans indicating the same.	Condition is noted.
8.	PP to upload the approved plans of the project/ plans submitted for approval to the local body, Disaster Management Plan, Environmental Management Plan, traffic study and other above said compliances etc. on the website of ec.mpcb.in	We have submitted Disaster Management Plan, Environmental Management Plan, traffic study as Annexure 1 .
9.	PP, if applicable, PP to leave clear cut side margin of 6 m from the boundary of the plot and open space and non-paved RG area should be on ground as per the orders of Hon'ble Supreme Court (Civil Appeal No.	Condition is noted.

Sr. No.	CONDITIONS	COMPLIANCE
	11150 of 2013 and SLP (Civil) No. 33402/2012) dated 17th December 2013.	
Gener	al Conditions	
1.	E-waste shall be disposed through Authorized vendor as per E-waste (Management and Handling) Rules, 2016.	Yes, E-waste shall be disposed through Authorized vendor as per E-waste (Management and Handling) Rules, 2011
2.	The Occupancy Certificate shall be issued by the Local Planning Authority to the project only after ensuring sustained availability of drinking water, connectivity of sewer line to the project site and proper disposal of treated water as per environmental norms.	We have / will obtain OC only after ensuring availability of drinking water and connectivity of sewer line to the project site. We have obtained Occupation Certificate for A to I wing Refer Annexure 2 .
3.	This environmental clearance is issued subject to obtaining NOC from Forestry & Wild life angle including clearance from the standing committee of the National Board for Wild life as if applicable & this environment clearance does not necessarily implies that Forestry & Wild life clearance granted to the project which will be considered separately on merit.	As the site is not within the radius as define under the circular number and hence NOC is not applicable.
4.	PP has to abide by the conditions stipulated by SEAC & SEIAA.	Condition is noted & we shall abide by the same.
5.	The height, Construction built up area of proposed construction shall be in accordance with the existing FSI/FAR norms of the urban local body & it should ensure the same along with survey number before approving layout plan & before according commencement certificate to proposed work. Plan approving authority should also ensure the zoning permissibility for the proposed project as per the approved development plan of the area. If applicable Consent for Establishment" shall be obtained from Maharashtra Pollution Control Board under Air and	The proposed construction shall be as per the approved plans sanction by Kulgaon - Badlapur Municipal Council. Refer Annexure 3 . We have Obtained Consent to Establish from MPCB. Refer Annexure 4
7.	Water Act and a copy shall be submitted to the Environment department before start of any construction work at the site. All required sanitary and hygienic measures should be in place before starting	Mobile toilet, soak pits have been provided in
	should be in place before stafting	construction phase and proper care regarding

Sr. No.	CONDITIONS	COMPLIANCE
	construction activities and to Be maintained throughout the construction phase.	sanitary and hygienic condition is being maintained throughout the construction phase.
8.	facilities should be provided for construction workers at the site. Provision should be made for mobile toilets. The safe disposal of wastewater and solid wastes generated during the construction phase should be ensured.	the workers at the site during construction phase.
9.	The solid waste generated should be properly collected and segregated. dry/inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material.	Agreed. The solid waste generated is being properly collected and segregated. The decomposable waste will be decomposed at site and will be used as manure; dry/inert solid waste is being disposed off in MSW disposal site.
10.	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.	Disposal of muck generated during construction phase does not have any adverse effect on neighboring communities and is being disposed off taking necessary precautions for general safety and health of people.
11.	Arrangement shall be made that waste water and storm water do not get mixed.	Covered sewage system have provided which is connected to STP for the treatment and reuse of the treated water. Excess treated water shall be disposed off into the sewer drain.
12.	All the topsoil excavated during construction activities should be stored for use in horticulture/landscape development within the project site.	Agreed. Separate stock piles had been maintained. All the top soil excavated during construction activities had been stored and utilized in horticulture/ landscape developments within the project site. The remaining excavated soil is being utilized in re- filling of foundation, road works, rising of site level etc.
13.	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	The Additional soil if any, shall be utilized in re- filling of foundation, road works, rising of site level etc.
14.	Green Belt Development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO/ Agriculture Dept.	 The green area will be approx 1694.14 Sq.mt. A combination of native evergreen trees and ornamental flowering trees, shrubs and palms are planned in the complex. There will be tree plantation of about 315 nos.

Sr. No.	CONDITIONS	COMPLIANCE
15.	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.	Soil testing was done, according to the reports all the parameters are within limit and so there is no threat to groundwater quality by leaching of heavy metals and other toxic contaminants.
16.	Construction spoils, including bituminous material and other hazardous materials must not be allowed to contaminate watercourses and the dumpsites for such material must be secured so that they should not leach into the ground water.	 There is no generation of hazardous waste at site, however proper care will be taken following the norms to disposal of the bituminous and other hazardous material at site. Also silt traps and other measures such as additional on-site will be constructed to control surface Run-off.
17.	Any hazardous waste generated during construction phase should be disposed off as per applicable rules and norms with necessary approvals of the Maharashtra Pollution Control Board.	Since this is a building construction project, there shall not be hazardous waste generated during construction. However negligible quantity of Paint waste & used oil will be generated from the site, shall be disposed through Authorized vendor of MPCB.
18.	The diesel generator sets to be used during construction phase should be low Sulphur diesel type and should conform to Environments (Protection) Rules prescribed for air and noise emission standards.	Agreed. During construction phase, DG set will be used during power failure. DG sets is enclosed with acoustic enclosure. They are running on low Sulphur diesel only with the provision of air and noise emission standards as per EP Rules, 1986
19.	The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from concern authority shall be taken.	Agreed. The diesel required for operating DG set has been stored in HDPE drums and log books will be managed adequately.
20.	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.	It will ensure that all the vehicles used for construction activities are having valid Pollution under Check (PUC) certificates. The vehicles without valid Pollution under Check (PUC) certificate are not permitted at project site.
21.	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/MPCB.	 Agreed. Ambient noise levels have been confirmed to standards both during day and night. The silent type DG set with acoustic enclosures has been installed at project site. Low Sulphur fuel is being used.

Sr. No.	CONDITIONS	COMPLIANCE
		 Exhaust is conforming to the provisions of Environment (Protection) Rules prescribed for air and noise emission standards. All vehicles entering to the site were with valid PUC certificate. All machinery used at the site is new and periodic maintenance of the machinery insured.
22.	Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and amended as on 27th August, 2003. (The above condition is applicable only if the project site is located within the 100Km of Thermal Power Stations).	Agreed.
23.	Ready mixed concrete must be used in building construction.	Yes, Ready mixed concrete with fly ash gets used in the construction
24.	Storm water control and its re-use as per CGWB and BIS standards for various applications.	Rainwater from terraces has been diverted to rainwater harvesting tank. Run off from the rest of the area shall be discharged through designed storm drainage network into Municipal SWD
25.	Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.	Agreed. Water demand during construction is being reduced by use of pre-mixed concrete, curing agents and other best practices referred.
26.	The ground water level and its quality should be monitored regularly in consultation with Ground Water Authority.	The ground water levels and its quality will be monitored regularly.
27.	The installation of the Sewage Treatment Plant (STP) should be certified by an independent expert and a report in this regard should be submitted to the MPCB and Environment department before the project is commissioned for operation. Discharge of this unused treated affluent, if any should be discharge in the sewer line. Treated effluent emanating from STP shall be recycled/refused to the maximum extent possible. Discharge of this unused treated affluent, if any should be discharge in the sewer line. Treatment of 100% gray water by	STP will be provided to treat the waste water. STP has been provided by established consultant and operation and maintenance shall be done by the technical persons of consultant. Capacity of STP (KLD): 285 KLD & 250 KLD is provided which will be utilize for Flushing and Gardening purpose.

Sr. No.	CONDITIONS	COMPLIANCE
	decentralized treatment should be done. Necessary measures should be made to mitigate the odour problem from STP.	
28. 29.	Permission to draw ground water and construction of basement if any shall be obtained from the competent Authority prior to construction/operation of the project. Separation of gray and black water should be done by the use of dual plumbing line for separation of gray and black water.	We shall use tanker water for construction activity. During Operation Phase, necessary water permission will be obtaining from Competent Authority. Yes, Grey and black water will be separated by the use of dual plumbing line.
30.	Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor-based control.	Adequate measures will be taken into consideration to minimize the wastage of water.
31.	Use of glass may be reduced up to 40% to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating in windows.	Agreed to comply with the Architect design at planning stage.
32.	Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill requirement.	Agreed to comply with the Architect design at planning stage.
33.	Energy conservation measures like installation of CFLs/TFLs for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Use CFLs and TFLs should be properly collected and disposed off / sent for recycling as per the prevailing guidelines / rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible like installing solar street lights, common solar water heaters system. Project proponent should install, after checking feasibility, solar plus hybrid non-conventional energy source as source of energy.	 Installation of LED bulbs in plant room, podium parking areas, Lift Lobby's & staircases. 40% lighting including for Road, Landscape & garden shall be kept on solar system. Also, other Lights provided on Energy saving luminaries like CFL/LED instead of metal halide lamps. CFLs will be properly collected and disposed of/sent for recycling as per the prevailing guidelines/rules of the regulatory authority to avoid mercury contamination. Use of solar panels will be adapted to the maximum extent possible for energy conservation.

Sr. No.	CONDITIONS	COMPLIANCE
34.	Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low Sulphur diesel. The location of the DG sets may be decided with in consultation with Maharashtra Pollution Control Board.	 D.G. sets will be provided as back up for Residential buildings. About 1 X 120 KVA & 62.5 KVA DG sets will be provided with acoustic enclosures. The stacks shall be provided as per MPCB norms.
35.	Noise should be controlled to ensure that it does not exceed the prescribed standards. During nighttime the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations.	 Construction equipment producing the most amount of noise fitted with noise shields. This shield is a physical barrier approx. 3 mt. In height which had provided adequate noise attenuation. Noisy construction equipment's is not permitted during night hours. Works employed in high noise areas will be rotated. Earplugs / muffs or other hearing protective wear will be provided to those working very close to the noise generating machinery. Anti-honking sign boards will be placed in the parking areas and on entry and exit points
36.	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized and no public space should be utilized.	 This effect would be prominent during construction as well as operation phase. The probability of inconvenience faced due to the frequency of truck movement during construction phase would be minimized by better control of traffic movement in the area. Noise levels expected from the planned operating conditions have been assessed and are likely to be within acceptable levels. The impacts have been mitigated by the suggested measures in the "air control and management section". Anti-honking sign boards are placed in the parking areas and on entry and exit point. The project will be provided with sufficient road facilities within the project premises

Sr. No.	CONDITIONS	COMPLIANCE
		and there will be a large area provided for the parking of vehicles.
37	Opaque wall should meet prescriptive	Efforts for the Opaque wall will meet
57.	requirement as per Energy Conservation	prescriptive requirement as per Energy
	Building Code, which is proposed to be	Conservation Building Code by use of
	mandatory for all air-conditioned spaces	appropriate thermal insulation material to fulfill
	while it is aspiration for non-air-conditioned	requirement.
	spaces by use of appropriate thermal	
	insulation material to fulfill requirement.	
38.	The building should have adequate distance	The building has adequate distance between
	between them to allow movement of fresh	them to allow movement of fresh air and natural
	air and passage of natural light, air and	light, Ventilation.
	ventilation.	Degular auguminian dans har 't
39.	Regular supervision of the above and other	Regular supervision done by our site engineer
	all through the construction phase, so as to	to take care of the construction activity and of
	avoid disturbance to the surroundings	the surroundings.
	Under the provisions of Environment	We have obtained Environmental Clearance for
40.	(Protection) Act 1986 legal action shall be	construction activity Refer Annexure 5
	initiated against the project proponent if it	Obtained Consent to Establish Refer Annexure
	was found that construction of the project	
	has been started without obtaining	1.
	environmental clearance.	
41	Six monthly monitoring reports should be	Six monthly report is submitted to respective
41.	submitted to the regional office MoEF,	departments.
	Bhopal with copy to this department and	-
	MPCB.	
42	Project proponent shall ensure completion of	We shall agree to comply with the condition.
12.	STP, MSW disposal facility, green belt	
	development prior to occupation of the	
	buildings. As agreed during the SEIAA	
	meeting, PP to explore possibility of	
	utilizing excess treated water in the adjacent	
	area for gardening before discharging it into	
	sewer line No physical occupation or	
	allotment will be given unless all above said	
	environmental infrastructure is installed and	
	made functional including water	
	from appropriate authority shall be	
	obtained	
	Wet garbage should be treated by Organic	Wet garbage is being processed in Mechanical
43.	Waste Converter and treated waste (manure)	composter and manure obtained shall be used
	should be utilized in the existing premises	in landscaping
	for gardening. And, no wet garbage will be	in minocuping.
	generating, min, no net garouge will be	

SIX MONTHLY COMPLIANCE REPORT

Sr. No.	CONDITIONS	COMPLIANCE	
	disposed outside the premises. Local authority should ensure this.		
44.	Local body should ensure that no occupation certification is issued prior to operation of STP/MSW site etc. with due permission of MPCB	Condition is noted.	
45.	A complete set of all the documents submitted to Department should be forwarded to the Local authority and MPCB.	Condition is noted and we shall fulfill the same.	
46.	In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Department.	Condition is noted and we shall approach department for any change/ amendment in the project.	
47.	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.	Separate environment management cell/ consultant with qualified staff is formed and implementing the same.	
48.	Separate funds shall be allocated for implementation of environmental protection measures/EMP along with item-wise breaks- up. This cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should reported to the MPCB & this department.	EMP allocated for all pollution devices and other facilities. Refer Annexure 9.	
49.	The project management shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the Marathi language of the local concerned within seven days of issue of this letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the Maharashtra Pollution Control Board and may also be seen at Website at http://ec.maharashtra.gov.in.	The advertisement is published in Marathi and English language local newspaper.	
50.	Project management should submit half yearly compliance reports in respect of the stipulated prior environment clearance terms and conditions in hard & soft copies to	We are submitting six monthly reports to Environment Department, Mantralay & MPCB.	

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	the MPCB & this department, on 1 st June & 1 st December of each calendar year.	
51.	A copy of the clearance letter shall be sent by proponent to the concerned Municipal Corporation and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	We shall comply the same.
52.	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. SO2, NOx (ambient levels as well as stack emissions) or critical sector parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	Condition is noted.
53.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	Condition is noted and submitted to regional office of MoEF. We are submitting herewith six- monthly reports to environment department, Mantralay & MPCB.
54.	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Condition is noted.

Sr. No.	CONDITIONS	COMPLIANCE
56.	The environmental clearance is being issued without prejudice to the action initiated under EP Act or any court case pending in the court of law and it does not mean that project proponent has not violated any environmental laws in the past and whatever decision under EP Act or of the Hon'ble court will be binding on the project proponent. Hence this clearance does not give immunity to the project proponent in the case filed against him, if any or action initiated under EP Act.	Yes, we noted the condition and agreeable the same.
57.	In case of submission of false document and non-compliance of stipulated conditions, Authority/ Environment Department will revoke or suspend the Environmental Clearance without any intimation and initiate appropriate legal action under Environmental Protection Act, 1986.	Yes, we noted the condition and agreeable the same.
58.	The Environment department reserves the right to add any stringent condition or to revoke the clearance of conditions stipulated are not implemented to the satisfaction of the department or for that matter, for any other administrative reason.	Yes, we noted the condition and agreeable the same.
59.	Validity of Environment Clearance: The environmental clearance accorded shall be valid as per EIA Notification, 2006, and amendments by MoEF&CC Notification dated 29th April, 2015.	Noted. Shall be as per the circulars prevailing at the time of granting EC.
60.	In case of any deviation or alteration in the project proposed from those submitted to this department for clearance, a fresh reference should be made to the department to assess the adequacy of the condition(s) imposed and to incorporate additional environmental protection measures required, if any.	Condition is noted & we are abiding by the same.
61.	The above stipulations would be enforced among others under the Water (Prevention	Condition is noted.

Sr. No.	CONDITIONS	COMPLIANCE
	and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rules, 1989 and its amendments, the public Liability Insurance Act, 1991 and its amendments.	
62.	Any appeal against this Environment clearance shall lie with the National Green Tribunal (Western Zone Bench, Pune), New Administrative Building, 1stFloor, D-, Wing, Opposite Council Hall, Pune, if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Condition is noted.

ANNEXURES

"Vedant Nakshatra"

Residential and Commercial Project At S.No. 70, H.No. 1(pt) & H.No. 5(pt) of village-Kulgaon, Tal-Ambernath, Dist-Thane.

PROJECT PROPONENT

M/S. THARWANI INFRASTUCTURES.

ANNEXURE-I LIST OF TREES PROPOSED

Required RG area in sq.m.=1411.25 (10%) Provided RG Area in sq.m.= 1694.14 (13.34%)

List of trees to be planted on Ground RG:

Sr.no	Botanical Name	Common Name	Qty	Height (ft)	Girth (m)
1	Peltophorum pterocarpum	Yellow Flamboyant	29	50	3
2	Lagerstroemia speciosa	Giant Crape-myrtle	29	66	3.5
3	Delonix regia	Gulmohar	56	30	2
4	Plumeria alba	Pagoda Tree	48	40	1.5
5	Alstonia scholaris	Indian Devil Tree	21	70	2
6	Tabebuia rosea	Savannah Oak	30	65	0.3
7	Bauhinia purpurea	Kanchan	36	30	0.3
8	Pongamia pinnata	Karanj	29	80	2
9	Filicium decipens	Fern Tree	27	20	0.4
10	Samanea saman	French Tamarind	10	50	0.4
	Tota	al	315		

LANDSCAPE PLAN







To,

Date:

The Member Secretary, (MPCB) Kalpataru Point 3rd Floor, Opp. Sion Circle, Sion East Mumbai – 400 022.

Subject: Submission of Half Yearly Post Monitoring Report for the period of July 2021 -December 2021 for proposed Residential and Commercial project "Vedant Nakshatra" on plot bearing S.No. 70, H.No.1(pt) &H.No.5(pt) of village-Kulgaon, Tal-Ambernath, Dist-Thane.

Reference: Environment Clearance letter No. SEIAA-EC-0000000244 dtd.27.03.2018

With reference to above mentioned subject and the condition stated in Environment Clearance Letter, we hereby submit the half yearly compliance report along with site monitoring report, Data-Sheet as per the compliance format along with annexure and Enclosures as per compliances done at site as per the condition stated in Environmental Clearance for above mentioned Project.

Hope the above are in line with your requirement and kindly acknowledge the receipt.

Thanking you,

Yours faithfully,

M/S. Tharwani Infrastructure.

Authorized Signatory

महाराष्ट्र प्रदूषणं नियंत्रण मंडळ कत्यतरू पॉइंट, २ रा मजला, सायन सर्वल, सिनेप्लनेट समोर. सायन (पूर्व), मुंबई - 200 022. कोन :-२४०१०:३७ | २४०२०७८१ Website www.mpcb.gov.in

Tharwani Infrastructures, Near Sanjeevani Eye Clinic, Kalyan Ambernath Road, Ulhasnagar - 421 003. Contact : 8550998811 | 8550998844 | info@tharwaniinfrastructures.com | www.tharwaniinfrastructures.com INFRASTRUCTURE ASPIRING FOR BETTERMENT ISO 9001 : 2008 Certified Company

To, **The Principal Secretary,** Environment Department 15th Floor, New Administrative Building, Mumbai – 400032.

Subject: Submission of Half Yearly Post Monitoring Report for the period of July 2021 – December 2021 for proposed Residential and Commercial project "Vedant Nakshatra" on plot bearing S.No. 70, H.No.1(pt) &H.No.5(pt) of village-Kulgaon, Tal-Ambernath, Dist-Thane.

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वक लिपीक पर्यावरण विभाग मुंबबु मजालय,

Tharwani Infrastructures, Near Sanjeevani Eye Clinic, Kalyan Ambernath Road, Ulhasnagar - 421 003. Contact : 8550998811 | 8550998844 | info@tharwaniinfrastructures.com | www.tharwaniinfrastructures.com

Date:

DISASTER MANAGEMENT PLAN

(OPERATING MANUAL)

For

PROPOSED CONSTRUCTION PROJECT

VedantNakshatra S.No. 70, H.No. 1(PT) of Vill – Kulgaon, Tal- Ambernath, Dist- Thane.

Proposed by:

M/S. Tharwani Infra Structures Near Sanjeevni Clinic, Kalyan-Ambarnath Road, Ulhasnagar- 421 003.

Prepared by:



SAGE (Sustainable Approach for Green Environment) LLP

205, Second Floor, Bhavani Industrial Estate, Hare Krishna Road, Opp. Main Gate of IIT Bombay, Powai, Mumbai - 400076

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Chapter 1

INTRODUCTION

1.1 Overview of the Project

Vedant Nakshatra - S.No. 70, H.No. 1(PT) of Vill – Kulgaon, Tal- Ambernath, Dist- Thane. M/S. Tharwani Infra Structure Near Sanjeevni Clinic, Kalyan-Ambarnath Road, Ulhasnagar- 421003.

The Housing & Urban Development Department is the nodal Department for ensuring proper and planned growth of cities and towns with adequate infrastructure and basic amenities. The continuous exodus of rural population to urban areas has contributed to the exponential growth resulting in severe strain on the existing infrastructure and subsequent demand for additional provisions. To keep pace with the growing demands of the urban area, the Department has been taking effective and adequate steps for efficient management & delivery of basic urban services like provision of Safe Drinking Water, Sanitation, Roads, Solid Waste Management, and Housing etc. Further one of the important reforms during 1990s was the 74thConstitutional Amendment Act which empowered the Urban Local Bodies (ULBs) to function as Local Self Government. Thus, the Housing & Urban Development Department has got paramount responsibility to make the ULBs self-sufficient and centres for good governance. The Department strives to bring about both qualitative and quantitative changes in the living standard of the urban people by putting emphasis on the following areas:

- Strengthening Urban Infrastructure, viz: Roads with Drain, Water Supply and Sewerage
- Efficient Solid Waste Management
- Development of Public Amenities including Public Park, Urban Greenery and Conservation of Water Bodies
- Urban Reforms and e-Governance
- Urban Planning Provision of Housing in the urban area and especially for the urban poor.
- Skill up gradation and financial support to the urban poor.
To help achieve the vision and ensure that the dreams come true, this Department is striving hard to rope in funds from various sources like State Plan, Non-Plan, and Government of India Assistance, RLTAP, BRGF, Municipal Fund, Local Area Development Fund of Hon'ble MLAs and Hon'ble MPs. The Department is further facilitating Urban Reforms and Policy Level changes to strengthen the Urban Local Bodies (ULBs) in terms of their finance, administration and effective and efficient delivery of basic services to the public at large. Our vision & mission is to ensure planned development of cities/towns into liveable, economically vibrant and productive, sustainable and efficient entities with provision of adequate durable public infrastructure and amenities such as drinking water supply, sanitation, roads, drainage, solid waste management, transportation, public parks, recreation areas including preservation of water bodies and heritage sites, urban forestry and affordable housing for all sections of society and bringing out efficiency in urban infrastructure and service delivery mechanisms, community participation, and accountability of ULBs/ Parasternal agencies towards citizens, in an integrated manner.

1.1.1 Need for Planning

The plan is required to institutionalize Disaster Management in the ULBs / Department to tackle with the Disaster situation in a better way. All Urban Local Bodies(ULBs) under Housing & Urban Development Department of a city are vulnerable to any or multi-disasters, i.e. Cyclone, Flood, Urban Fire, Earthquake, Road accident, Water logging, Biological Disaster like Swine Flu (H1N1), etc.

1.1.2 Site Location Plan



Figure 1-1 Site Location Plan



Project Site Figure 1-2 Location in Google Map





Figure 1-4 Section Plan for WingA to I



Figure 1-5 Typical Building Section for Wing J to L



Figure 1-6 Typical Building Section for Wing M









Figure 1-10 Typical Floor Plan for Wing A (3rd, 4th, 5th, 6th& 7th Floor)



Figure 1-11 Typi cal Floor Plan for Wing B (1st to 7th Floors)



Figure 1-12 Typical Floor Plan for Wing C (1st to 7th Floors)



Figure 1-13 Typical Floor Plan for Wing D (1stto 7th Floor)



Figure 1-14 Typical Floor Plan for Wing E (1stto 7th Floors)





Figure 1-16 Typical Floor Plan for Wing G (1st to 7th Floors)



Figure 1-17 Typical Floor Plan for Wing H (1st to 7th Floors)



Figure 1-18 Typical Floor Plan for Wing I (1st to 7th Floors)



Figure 1-19 Typical Floor Plan for Wing J (1st, 3rd, 5th, 7th, 9th&11thFloors)



Figure 1-20 Typical Floor Plan for Wing J (2nd, 4th, 6th, 10th& 12th Floors)



Figure 1-21 Refuge Floor Plan for Wing J (8th Floor)

ELV.PROJ ELV.PROJ ELV.PROJ ELV.PROJ F.B.2'6" W. KITCHEN 8'6"X8'0" \$ BED ROOM KITCHEN BED ROOM F.B.2'6" W. 7'X9' 9'0"X9'0" 9'0"X11'0" F.B.2'6" W. KITCHEN 7'6"X8'6" LIVING RM. W.C. 4'X3' BED ROOM 9'6"X14'0" LIVING RM. LIVING RM. 9'0"X11'0" BED ROOM 9'6"X14'0" 9'6"X14'0" 11'0"X9'0" BATH DINING TOILET DUCT 4'X5'6" 6'6"X4'6" 4'X5' 13'6"X10'6" LIFT W.C. 4'X3' 103,303,503,703,903 6'6"X6'6" 104.304.504.704.904 105.305.505.705.905 BATH -TOILET 4'X5' LIFT 6'6"X4'0" DUCT DUCT 6'6"X6'6" 10'0"X10'6" PASSAGE 46"W. 6'0"X6'6" TOILET BATH 6'6"X4'0" 4'X5' 102,302,502,702,902 101.301.501.701.901 ------106,306,506,706,906 W.C. 4'X3' DUCT 13'6"X10'6" TOILET DINING BATH 6'6"X4'6" BED ROOM 4'X5' LIVING RM. LIVING RM. 4'X5'6" LIVING RM. 11'0"X9'0" 9'6"X14'0" 9'6"X14'0" W.C. 4'X3' 9'6"X14'0" BED ROOM 9'0"X11'0" 6' KITCHEN 7'6"X8'6" F.B.2'6" W. KITCHEN 7'X9' **BED ROOM** BED ROOM F.B.2'6" W. 9'0"X9'0" 9'0"X11'0" KITCHEN Ý \$ 8'6"X8'0" F.B.2'6" W. ELV.PROJ | ELV.PROJ | ELV.PROJ ELV.PROJ

Figure 1-22 Typical Floor Plan for Wing K & L (1st, 3rd, 5th, 7th, 9th&11thFloors)



Figure 1-23 Typical Floor Plan for Wing K & L (2nd, 4th, 6th, 10th& 12th Floors)



Figure 1-24 Refuge Floor Plan for Wing K & L (8th Floor)





Figure 1-26 Typical Floor Plan for Wing M (1st Floor)



Figure 1-27 Typical Floor Plan for Wing M (2nd Floor)



Figure 1-28 Typical Floor Plan for Wing M (3rd, 5th, 7th, 9th, 11th Floor)

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Figure 1-30 Refuge Floor Plan for Wing M (8th Floor)





Figure 1-32 Typical Floor Plan for Wing M (14th, 16th, 20th Floors)



Figure 1-33 Typical Floor Plan for Wing M (15th, 17th Floors)



Figure 1-34 Refuge Floor Plan for Wing M (18th Floor)


Building	Configuration
Wing A-I	Gr. + 7 Floors
Wing J-L	Gr. + 12 Floors
Wing M	Gr. + 20 Floors

Table 1.1Building Details

Table 1.2Parking Area Details

Vehicles	Parking
Cars	33
Two Wheelers	707



1.2 IDENTIFICATION OF HAZARD

The buildings are constructed in such a way that, during the fire, the fire brigade vehicles are easily move in all the location. All the corner side path are more than 9 mitre. Read market path are represent the emergency path for any type of fire.

1.3 EVENTS HAVING POTENTIAL FOR EMERGENCY LEVEL 3/ DISASTER

Natural Calamity			Fire/Explosion Hazard	Manmade Hazards		
1.	Earthquake.	1.	LPG/ PNG at Kitchen.	1.	Bomb threat.	
2.	Cyclone.	2.	Diesel spill at DG set.	2.	Terrorist attack.	
3.	Flooding.	3.	Transformers & electrical.	3.	Riot.	
4.	Tsunami.	4.	Vehicles fire at parking.			
		5.	AC and Combustibles at flats.			

Sr. No.	Phase	Demolition	Construction	Operation
1.	Diesel.	\checkmark	\checkmark	\checkmark
2.	LPG/ PNG.	\checkmark	_	Kitchen.
3.	AC Units.	—	_	\checkmark
4.	Vehicles.	\checkmark	\checkmark	\checkmark
5.	Transformer.	—		500 KVA.
6.	Gas cutting			_
	set.		,	

1.4 PURPOSE OF THE PLAN

DISASTER MANAGEMENT

Disaster management means a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for;



DM plan is intended to provide guidance to all emergency respondents within the department with a general concept of potential emergency assignments before, during, and following emergency situations.

1.5 SCOPE

- **4** Emergency prevention;
- Emergency preparedness;
- Emergency mitigation;
- Activities for preparing for and prevention of emergencies such as training and maintenance;
- Overall control and coordination arrangements for emergency response. This includes evacuation strategies for occupants with a disability.

1.6 AUTHORITIES, CODES, POLICIES

AUTHORITY

- Chief Site Controller.
- The District Disaster Management Authority under the chairmanship of the Collector/ District Magistrate/ Deputy Commissioner.
- The State Disaster Management Authority under the chairmanship of the state Chief Minister.

CODE

- ♣ National Building Code 2005.
- 🖊 D. C. Rules.
- 🖊 D. P. Rules.

POLICIES

- **Withdraw the staff in case of the human life is in peril.**
- Any equipment including PPE deployed in the rescue is inspected and replaced as required on the advice of the supplier. No access to the roof can be made in the interim unless an alternative system or kit is used.
- To insure all our rights and obligations under the relevant insurance policy and all losses are claimed

1.7 INSTITUTIONAL ARRANGEMENTS FOR DISASTER



Standby and Alert	Standby and Alert Evaluation	and Alert	Standby Transport	Standby Transport	Standby

Standby

coordinati

on of area rumour and order



1.8 PLAN MANGEMENT

ACTIVITY **RESPONSIBILITY ON** FREQUENCY **Project Proponent** At project proposal stage Development and approval Maintaining Fire Department Maintaining copies at concerned departments Revision Fire Department Two years By creating – Live page Updating Fire Department Implementation Need bases. Fire Department Review Fire Department Review of SOP, check list yearly Rehearsal/ Drill Fire Department As per following table

Table 1.3Disaster Management

Table 1.4 DMP Rehearsal/ Mock Drill Schedule

SR. NO.	ACTIVITY	FREQUENCY	REMARKS
1	Fire Evacuation Exercise	Annually	Planned or false alarm
2	Mock Drill	Annually	Table-top run through with testing. Overall Plan Mobilization of Emergency
			Control Room, Evacuation
3	Spill	Annually	Use of spill kit Practical demo
4	Flammable Gas release	Annually	Awareness program
5	Overall plan	Annually	Table top
6	Fire Extinguisher	Half Yearly	Practical demo
7	Fall & Rescue	Half Yearly	Ground & roof
8	Fire Drill	Quarterly	Hydrant system preparedness

Chapter 2

RISK ASSESSMENT & VULNERABILITY ANALYSIS

2.1 HISTORY

The past data includes Killari earthquake (6.4 on Richer scale) on September 1993, Bhuj Earth quake in January 2001; Flood due to heavy rain on 26th and 27th July 2005 (Santacruz had recorded a 944 mm of rain for 24 hours ended at 8.30 hrs. on 27th July 2005. Makran earthquake on 27th November 1945 result estimated wave height of 2 m at Mumbai. There are number of fire, Explosion instances of involving LPG gas cylinders in buildings e.g. fire on 12th floor of the Mont Blank building at Kemps corner on 13th in December 2013. Even there are instances of fire and explosion during rescue operation while removing debris by earth moving machinery damaging trapped gas cylinders. However, in the present case the Project proponent maintained high standard of safety record in the past.

2.2 DEFINITIONS

HAZARD: A hazard is a dangerous event or circumstance that has the potential to lead to an emergency or disaster.

EMERGENCY: An emergency is a dangerous event or circumstance that normally can be managed at the local level.

DISASTER: As per Disaster Management Act, 2005 "Disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of environment and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected areas."

Probability (**P**): The expression for the likelihood of an occurrence of an event or an event sequence or the likelihood of the success or failure of an event on test or demand.

Severity (S): The expression for the consequence seriousness associated with each deviation.

RISK ASSESSMENT MATRIX							
SEVERITY PROBABILITY	Catastrophic (1)	Critical (2)	Marginal (3)	Negligible (4)			
Frequent (A)	High	High	Serious	Medium			
Probable (B)	High	High	Serious	Medium			
Occasional (C)	High	Serious	Medium	Low			
Remote (D)	Serious	Medium	Medium	Low			
Improbable (E)	Medium	Medium	Medium	Low			
Eliminated (F)	Eliminated						

Risk= Severity ×Probability

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"Risk is the probability that injury to life or damage to property and the environment will occur. The extent to which risk is either increased or diminished is the result of the interaction of a multitude of causation chains of events." (Terry Jeggle and Rob Stephenson, Concepts of Hazard and Vulnerability Analysis).

"Vulnerability analysis is a process which results in the understanding of the types and levels of exposure of persons, property and the environment to the effects of identified hazards at a particular time." (Terry Jeggle and Rob Stephenson, Concepts of Hazard and Vulnerability Analysis)

- Pockets with high rise buildings or ill-designed high-risk areas exist without specific consideration of earthquake resistance.
- Similarly, unplanned settlements with substandard structures are also prone to heavy damage even in moderate shaking.
- So far as housing is concerned, vulnerability analysis has never been carried out and preliminary estimate of damages is not available for strengthening of structures under normal development improvement schemes

2.3 HAZARD IDENTIFICATION AND RISK ASSESSMENT

- P Probability
- S Severity
- R-Risk

Sr. No.	Hazardous Event	Construction Phase			Opera	ation Pl	nase
		Р	S	R	Р	S	R
1	Fall of Structure	2	2	4	1	2	2
2	Trapped in Lift	NA	NA	NA	1	2	2
3	Fire/Exposition	1	2	2	2	3	6
4	Bomb Threat	1	2	2	2	3	6
5	Cyclone	1	2	2	2	3	6
6	Earthquake	2	2	4	2	3	6

Table 2.1Hazard Identification and Risk Assessment

2.4 RISK ANALYSIS FOR FLOOD



Figure 2-2 Project and IMD Location in Contour Map

Year	Max 1	Max 2	Max 3	Max 4	Max 5
1981	241.6	171.9	134.8	98.3	96.3
1982	180.9	135.8	135	88.3	79.7
1983	173.4	150.4	147.4	137.5	130.4
1984	544.3	148.4	146.2	140.6	133.3
1985	345.5	309.3	128.2	125.8	121.6
1986	128.7	110.9	82.9	82.4	65.2
1987	153.9	100.3	91.9	86.6	78.2
1988	138.2	126.5	125	120	107.5
1989	183.3	111.9	107.2	92.1	85.3
1990	421.2	259	153.9	126.8	116.8
1991	477.6	396.8	181.1	167.9	146.8
1992	175.9	174.9	97.5	94.2	91.7
1993	700	206.9	161.1	118.4	106.5
1994	148.6	132.9	119.6	99.7	98.1
1995	162.8	70	70	58.7	58.3
1996	165.4	144.9	143.2	101.1	100.5
1997	244.2	144.1	132	122.8	118.8
1998	261.9	248.6	117.8	113	106.8
1999	233	134	85	81.3	79.4
2000	243.7	187.1	162.7	147.7	126
2001	184.9	122.4	101.5	85.5	77.5
2002	138.3	96.4	87.9	71.3	57.9
2003	147.7	131.2	95.6	93.2	91.8
2004	150.3	132.4	115.5	107.2	82.9
2005	217	209.7	161	103.9	90.5
2006	213.3	194.4	191.6	129	128
2007	279.4	157.6	146.8	114.8	111.2
2008	249.7	200	170.4	133.2	125.7
2009	194	124.9	119.6	99.6	82.9
2010	210	184.7	174	149.5	129.6
2011	210.9	178.6	162.8	126	111.7

Table 2.2Maximum Rainfall Data for Various Years at Colaba Station

Table 2.3Maximum Rainfall Data for Various Years at Santacruz Station

Year	Max 1	Max 2	Max 3	Max 4	Max 5
1981	318.2	196.4	184.9	143	132.5
1982	275.6	208.5	152.2	122.5	94.7
1983	263.4	173.1	141	122	119.4
1984	240.1	215.9	183.8	171.1	108.6
1985	223.6	189.4	169.3	155.4	144
1986	194.5	126.4	84.4	81	72.9
1987	125.7	121.3	119.7	118.1	113.7
1988	144.9	140.8	117.6	114	108.3
1989	192.1	143	104.8	101.8	98.8
1990	150.2	147.1	116.3	105.2	88
1991	399	351.5	132.6	121.7	100.3

1992	215.4	124.1	109.2	101.8	95.6
1993	312.4	140.2	131.8	130.6	91.6
1994	157.2	127.8	118.8	107.5	102.9
1995	180	158.8	106.6	104.3	98.8
1996	171.7	148.9	136.6	77.7	76.4
1997	346.2	121.9	103.2	102.1	95.7
1998	211.5	177.4	138.4	115.4	110.6
1999	134.4	132.9	117.6	75	69.9
2000	351.5	194.7	190.8	186.4	153.4
2001	161	152.4	123.5	123.4	120.2
2002	186	101.7	98.9	80.8	76.2
2003	192.9	158.8	135.3	105.4	104.9
2004	129.7	128.5	123.7	120.3	100.7
2005	944.2	223.3	208.1	149.5	118.7
2006	231	224.2	180.4	164.5	152
2007	256.6	210	174	121.4	107.6
2008	161.7	154.5	143.5	142.8	134.8
2009	274.1	243.9	160.6	147.6	111.1
2010	158.2	138	129.3	122.2	109.3
2011	232.6	220.4	192.4	184.4	125.4



Santacruz Station







Probability 0 - 1

Severity 0 - 1

Rainfall (mm)	Probability	Severity	Risk (%)
500	0.0473	0.5	2.36
600	0.0294	0.6	1.76
700	0.0198	0.7	1.38
800	0.0141	0.8	1.12
900	0.0105	0.9	0.945
1000	0.0080	1	0.80

Table 2.5Risk Analysis of More Than 500 mm Rainfall using Collected Data at Colaba Station

Pro	bal	bil	itv	0	_	1
	c a	~		~		-

Severity 0 - 1

Rainfall (mm)	Probability	Severity	Risk (%)
500	0.0587	0.5	2.935
600	0.0399	0.6	2.394
700	0.0290	0.7	2.030
800	0.0221	0.8	1.768
900	0.0175	0.9	1.575
1000	0.0142	1	1.420

2.5 VULNERABLE ZONES

2.5.1 Fire and explosion

		Downwind Affect Distance (m)							
Sr. No.	Accident Scenario	Flammable Vapour Cloud (LEL)		Blast Over Pressure (psi)			Thermal Radiation (KW/m ²)		
		60%	10%	8	3.5	1.0	10	5	2
1	Diesel Pool Fire	-	-	-	-	-	11	12	13.5
2	LPG gas Piping Jet Fire	<10	19	-	-	-	<10	<10	<10
3	LPG Cylinder Release and jet Fire	14	45	-	-	-	<10	<10	<10
4	LPG Cylinder Exposition	-	-	NA	12	26	-	-	-

Table 2.6Fire & Explosion – Vulnerable Zone

Table 2.7Effect of Blast Pressure Wave

Over Pressure (psi)	Effects			
8	Red:	Destruction of buildings		
3.5	Orange:	Serious injury likely		
1	Yellow:	Shatters glass		

Table 2.8Effect of Thermal Radiation

Radiation (kw/m ²)) Effects			
10	Red:	Potentially lethal within 60 sec)		
5	Orange:	2^{nd} degree burns within 60 sec)		
2	Yellow:	Pain within 60 sec		

SMOKE

In the early stages, smoke from the fire will quickly rise into the roof space. The smoke can spread laterally at a velocity of up to 5 m/s. An average person will walk at 1 to 2 m/s and run at 7.5 m/s. Once the building roof space is full, the smoke will start to build down. The rate at which this occurs varies significantly with the nature of the combustibles and building geometry. Although the smoke is made up mainly of entrained air, it can contain sufficient

toxic substances and asphyxiates to disorientate and disable within seconds and kill within minutes.

Most fire-related deaths are due to inhalation of toxic gases in smoke, not to fire or heat it. Carbon monoxide (CO) is thought to be the most common cause of fire-related death. Because of its high affinity for haemoglobin, relatively small concentrations of CO can saturate the blood, form carboxyhaemoglobin (COHb), and deprive tissues of oxygenation. In general, COHb smoke can also impede escape from fire, and thereby increase risk of death, by obscuring vision as a result of eye irritation and lacrimation, by impairing mobility, or by impairing mental acuity.

The simplest burning scenario is one in which a moderate fire begins on the furniture and does not spread appreciably. If the fire size is 100 KW. i.e., about 0.6 m in diameter, it can be shown that the hot smoke will have filled the room to a depth of 1 m from the floor in about 6 min; the temperature of the hot layer will have reached 100°C after 11 min. Hence, by the temperature criterion mentioned above, the environment will have become lethal in 11 min.

2.5.2 Flooding

Flooding at site is not considered as credible event.

Tsunami





Hazard Zone	1	2	3	4
Maximum Water Depth	0 to 3 m	3 to 6 m	6 to 9 m	>9 m

Tsunami velocity is dependent on the depth of water through which it travels, and is equal to the square root of depth times the gravitational acceleration. Tsunami Waves travel at a speed of approximately 700 km/h in 4000 m of water. In 10 m of water the velocity drops to about 36 km/h.

Table 2.9 Multi Hazard Data for West Coast of India-Maharashtra

Seismic Zone	Design Cyclone Wind UT [IS: 875 (III)] (m/sec)	Probable Maximum Storm Surge Heights (m)	Astronomical High Tide above Mean Sea Level (m)	Flood Proneness
IV & III	44 & 39	2.9-4.2	1.9	-

2.5.3 Bomb Threat

Bomb Threat Evacuation Guide							
THREAT	DESCRIPTION	EXPLOSIVE QTY	MIN ¹ (m)	MAX ² (m)			
	Pipe Bomb Small	100g	80	575			
	Pipe Bomb Medium	500g	100	860			
	Pipe Bomb Large	2.5kg	130	1,135			
	Briefcase/Suitcase	23kg	185	1,520			
	Compact Sedan	230kg	270	1,915			

Figure 2-6 Bomb Threat Evacuation Guide

2.5.4 Earthquake

Earthquakes are usually caused when rock underground suddenly breaks along a fault. This sudden release of energy causes the seismic waves that make the ground shake. Building develops cracks, collapses when the intensity of earthquake is more and prolonged. Probability of Occurrence: As per the earthquake zonation of India, the proposed site falls under seismic zone III which is referred as moderate risk zone. Thus the possibility and severity of the experiencing the earthquake apparently decreases. Although there are no past records of this disaster in this region, earthquake of intensity between 5.0 and 6.9 on the

Richter scale can occur in Zone III. Accordingly the measures proposed are enumerated in the section of mitigation and preparedness.

Mumbai city falls in seismic zone III which is Moderate Damage Risk Zone (MSK VII). The major earthquakes that have occurred in Mumbai region in the last 400 years are given below.

Year	1594	1618	16/8	1832	1854	18/7
Intensity (MMI)	IV	IX	IV	VI	IV	IV
Year	1906	1926	1933	1951	1963	1966
Intensity (MMI)	VI	V	V	VIII	IV	V

Table 2.10Earthqua	ike
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For high rise buildings the podium tends to move horizontally during an earthquake. At the same time the tower will bend due to the horizontal force. The most affected area is the floor above the podium. This level should be checked carefully.



Figure 2-7 Figure Showing Collapses during Earthquake

In Zone III, (moderate risk zone) earthquakes of higher intensity may be felt. Earthquakes that frightens everyone, making it difficult for people to stand. Even people in moving vehicles may feel such quakes. Structures/buildings of good design and construction suffer slight damage, while poorly designed/ built ones suffer considerable damages. (*Intensity: VII).* Intensity is here considered a classification of the severity of the ground shaking on the basis of observed effects in a limited area and is measured in the MSK Scale ranging from I to XII.

2.5.5 Cloud Burst and Flood due to Heavy Rainfall

A cloudburst is an extreme amount of precipitation, sometimes with hail and thunder, which normally lasts no longer than a few minutes but is capable of creating flood conditions. Sudden cloudburst can cause a flood to occur. This is one of the natural disasters. During the thunderstorms, the air mass that goes up from the lower level carries a certain amount of water in it. Sometimes that air current abruptly stops moving and the water mass falls down forcefully on the surface of earth. This natural phenomenon is known as cloudburst. Flooding may occur due to the following reasons • If the rainwater does get the access to the natural stream or municipal drains • Delay in water flow from all runoff towards the natural stream like river, nalla (or sea).

• Slow discharge of water, Flow diversion, Chocked up drains, nalla, and river bed.

The proposed site does not fall in any flood prone areas. Even if heavy rain fall are received, a well-designed storm water drain is proposed as also there is a municipal storm water drain of adequate capacity.

2.5.6 Wind Pressures

Site specific wind speed plays a key role in the determination of wind-induced response of structures. Numerical simulation studies for this project by means of CFD (Computational 3 Fluid Dynamics) were used for predicting the behaviour of wind in and around the proposed buildings. This analysis was carried out with applications involving fluid structure interaction. CFD technique was used for determination of wind effects on surrounding due to the high rise building. The wind speed and its direction were procured from MPCB and they were used for stimulation using CFD modelling.

After the construction of proposed high rises, reflection and deflection of wind will take place at the proposed location. Due to this, inversion of air will be observed at different zones. As per the simulated findings, the inversion zone would have wind speed of about 0.16 - 0.88 m/s. Inversion zone mostly would fall to a distance of 15 - 18m from the building line.



Figure 2-8 Wind and Cyclone Hazard in India

2.5.7 Lightning Strike

Lightning can score a direct hit on a high-rise building. It can strike the overhead power line which enters the building, or a main power line that is blocks away. Lightning can strike branch circuitry wiring in the walls of the building. Lightning can strike an object nearby, such as a tree or the ground itself and cause a surge. Voltage surges can be created by cloud to cloud lightning. A highly charged cloud which passes overhead can also induce a voltage surge. Buildings are protected from lightning by metallic lightning rods extending to the ground from a point above the highest part of the roof. A lightning arrester is a device used on electrical power systems and telecommunications systems to protect the insulation and conductors of the system from the damaging effects of lightning. The typical lightning arrester has a high-voltage terminal and a ground terminal. The conductor has a pointed edge on one side and the other side is connected to a long thick copper strip which runs down the building. The lower end of the strip is properly earthed. When lightning strikes it hits the rod and current flows down through the copper strip. These rods form a low-resistance path for the lightning discharge and prevent it from travelling through the structure itself.

2.6 CLASSIFICATION OF EMERGENCY/ DISASTER

		Vulnerability						
Sr.	Incidence		Personal			Property	Level Of	
No.	menuence	Before	During	After	Before	During	After	Emergency
		Emergency	Emergency	Emergency	Emergency	Emergency	Emergency	Linergeney
1	Fall of Structure	Low	High	Moderate	Low	High	Low	1
2	Trapped in Lift	Low	Moderate	Moderate	Low	Low	Low	1
3	Fire/Exposi tion	Low	High	Moderate	Low	High	Low	3
4	Bomb Threat	Low	High	Moderate	Low	High	Low	3
5	Flooding	Low	High	Low	Low	Low	Low	1
6	Cyclone	Low	High	Low	Low	High	Low	3
7	Earthquake	Low	High	Moderate	Low	High	Moderate	3

Table 2.11Disaster Category

Note 1:	Category 1:	Events can be controlled by Fire/ Security department with local resources.		
	Catagory 2:	Events action plan requires additional help from local fire brigade and		
	Category 2.	evacuation.		
	Category 3:	Events action plan requires mobilization of external agencies, resources and		
		evacuation		

2.7 MCA/ WORST POSSIBLE SCENARIO

Incidents may be of following types:

- 1. Fire/ Explosion
- 2. Tsunami Flooding
- 3. Cyclone
- 4. Bomb Threat
- 5. Earthquake

Either single or in combination are having potential for serious consequences/disaster. In conclusion the incidence of "Earth Quake & Evacuation" MCA/ Worst Possible Scenario. The emergency level being category three emergency it is considered for disaster control planning at site.

Chapter 3

PREVENTIVE MEASURES

3.1 SAFETY INSPECTION

Regular inspection of equipment and systems mandated by Chief Fire Officer in the NOC granted.

3.2 APPROVED PLAN

- **4** Scrupulous adherence to approved plan of building.
- **4** Protection of system put in place to handle disaster.

3.3 MAINTENANCE OF EQUIPMENT AND SYSTEMS

Regular maintenance of equipment and systems as per preventive maintenance schedule.

- Fire hydrant system
- Sprinkler system
- Detectors calibration
- CCTV system
- **4** Emergency power system
- Rescue equipment
- **u** Emergency communication systems

3.4 PUBLIC WARNING

Authorization: Any message content for public warning to be scrutinized by chief site Controller.

Sr. No.	Warning	Public Warning Agencies	Dissemination
1	No smoking		Board
2	Area under CCTV coverage		Board
3	Service weather warning received from District Disaster control cell by (press release) SMS, TV channel, Radio regarding cyclone, Flash flood and Thunderstorm	Fire and Security Department	Hand held loud speaker
4	Restricted Entry		Board
5	Evacuation		PAS. Hand held loud speaker

Table 3.1Public Warning System.

Chapter 4

HIERARCHY OF PLANS

The National Disaster Management Authority (NDMA), headed by the Prime Minister of India, is the apex body for Disaster Management in India. Setting up of NDMA and the creation of an enabling environment for institutional mechanisms at the State and District levels is mandated by the Disaster Management Act, 2005. India envisions the development of an ethos of Prevention, Mitigation and Preparedness. The Indian government strives to promote a national resolve to mitigate the damage and destruction caused by natural and man-made disasters, through sustained and collective efforts of all Government agencies, Non-Governmental Organizations and People's participation. This is planned to be accomplished by adopting a Technology-Driven, Pro-Active, Multi-Hazard and Multi-Sectoral strategy for building a Safer, Disaster Resilient and Dynamic India. Their vision is "To build a safer and disaster resilient India by a holistic, pro-active, technology driven and sustainable development strategy that involves all stakeholders and fosters a culture of prevention, preparedness and mitigation". The hierarchy of plan by NDMA is shown below:-



Figure 4-1 Hierarchy Plan Given by NDMA

Chapter 5

MITIGATION AND PREPAREDNESS

5.1 DEFINITIONS

PREPAREDNESS

Preparedness means the state of readiness to deal with a threatening disaster situation or disaster and effects thereof.

MITIGATION

Mitigation means measures aimed at reducing the risk, impact or effects of a disaster or threatening disaster situation.

RESPONSE

Conducting emergency operations to save lives and properties by positioning emergency equipment and supplies, evacuating potential victims, providing food, water, shelter and medical care to those in need and restoring critical services.

RECOVERY

Efforts to return to normal life and protect against future hazards.

5.2 PREPAREDNESS

5.2.1 Emergency Control Centre (ECC) Location

Table 5.1ECC Location

Emergency	Demolition & Construction	Operation Phase	
Level 1	Site Office	Society Office	
Level 2	Near Site Office	Society Office	
Level 3	Near Site Office	Society Office	

5.2.2 ECC Equipped With Following Items

- 4 Copy of "DMP" and Technical Manuals on operating, maintenance procedures
- Telephone (Internal and External)
- Wetworked Computer Systems, Note pads, pencil etc.
- Search light/ torch
- Personal Protective Equipment (PPE)
- Public Address System (PAS)
- CCTV panel
- First aid box
- For the set of the
- Conference and Press Rooms and Video Conferencing Setup
- Uninterruptible Power Supplies with Generators
- Pantry, Dormitory and Toilet facilities

5.2.3 Evacuation Time

In order to reduce the evacuation time other than movement period following measure are proposed and detailed in response sections of this report for effective and timely evacuation





TENEMENTS	570
OCCUPANTS	2850
WIDTH OF STAIR & NO. OF STAIRCASE	2.44 & 7
NO. Of LIFT	7
MINIMUM PRACTICABLE EVACUATION TIME	14.9 mins

Table 5.2 Evacuation Time

Table 5.3Guidelines to Reduce Evacuation Time

MEASURES PROPOSED	ADDITIONAL MEASURES REQUIRED			
PRE ALAR	M PERIOD			
1. Early warning system;	1. Automatic smoke detection system shall be			
a) Fire alarm & fire detection system.	provided in lift machine room and electric			
b) Signal located at fire Control room.	meter room.			
c) With appropriate zonal indications.				
d) Smoke detector system.	2. Trained security staff & fire staff shall be			
e) Auto water sprinkler with Thermal.	posted on duty at strategic location around			
f) Detector.	the clock.			
g) LPG /PNG detector system.				
h) CCTV system.				
2. Watch and ward staff.				
PRE EVACUA	TION PERIOD			
1. Communication systems	1. Periodic Awareness programs.			
a) Intercoms & Cell phones.				
b) Public address system.				
c) Hand held loud speaker.				
d) Two way radio.				
e) Siren.				
MOVEMEN	NT PERIOD			
1. Detailed SOP's for disaster management in	1. Mock drill shall be conducted regularly			
Section 9 of DMP.	in consultation with Mumbai fire			
2. ECC, AP, Refuge floor, Escape route	brigade and log of the same shall be			
signage, enclosed staircases, fire	maintained.			
resistance doors, illumination of escape	2. Efficient PA System is recommended for			
route, emergency power supply etc. as per	entire building with standard.			
NBC provisions.	3. Building management system.			
	4. Voice evacuation system will			
	be additional advantage.			

5.3 DECONTAMINATION SUPPORT

- Sources of contamination such as accidental oil spills e.g. Diesel, transformer oil; paint brush washings during construction phase and floor washing collected during sprinkler operation are likely.
- The measures for handling decontamination include spill control kit for oils and Drench tank water for collection of contaminated water for checking before safe disposal.

5.4 SPECIAL POPULATION SUPPORT

Special consideration during evacuation required construction workers families at site during construction phase and differently abled persons during operational phase.

5.5 TRAINING AND CAPACITY BUILDING

ORIENTATION EXERCISE: Involves bringing together the people who are involved in the emergency plan, or part of the emergency plan and orientate them to it. It can be useful in inducting new members to the Team, imparting awareness among persons having no previous experience of the plan, a new plan or new staff.

DRILLS: These test a single emergency response function and involve an actual field response. Drills are generally practiced or tested under realistic conditions.

TABLE – TOP EXERCISE: This is a means to undertake some problem solving and team building and familiarizes team members with what they might need to do as an emergency scenario unfolds. It is very useful in developing what ifs and responses.

FUNCTIONAL DRILL: This is used to assess the allocation of resources and manpower. It also evaluates the communication between different groups and assesses the adequacy of current procedures and policies. The exercise is a simulation and while it covers the complete extent of the deployment of resources at the simulated level it does not go beyond the exercise room.

MOCK DRILL/ FULL SCALE EXERCISE: Evaluates the operational capability of the system in an interactive manner, allows for coordination of information, communication capabilities to be explored, inter-tenant and tenant landlord cooperation to be explored and for negotiation skills to be deployed. Full scale exercises will have a number of observers and

invitation to the relevant government agency to attend. Observations will be recorded and actions will be implemented based on learning points that are discussed at the review session whenever necessary.

NOTE: REAL EMERGENCIES DURING EXERCISES

There is always the potential for a real emergency to arise during the conduct of a drill. This situation calls for an immediate cessation of the exercise/drill and Emergency respondents should stand by for further instructions. Schedule for operation coordination, drills and exercises given in Refer Section 1.7 and a case study as illustration is enclosed as Annexure 1.

Chapter 6

RESPONSE PLAN

6.1 Disaster Mitigation Strategy by TMC

The analysis shows that various locations in Mumbai are vulnerable to different disasters in varied degrees. Preparedness and mitigation plans, therefore, will have to be evolved and implementation monitored locally at the ward level to reduce the impact of the disasters. While evolving such area specific preparedness and mitigation plans, types of vulnerabilities will essentially define the levels of preparedness and mitigation strategies. These strategies will have to be concentrated more towards the social and economically backward communities, as against the vulnerability of the overall system.

TMC Mitigation Strategy:

While devising the Mitigation Strategy it is necessary to differentiate between Disaster Preparedness and Disaster Mitigation.

- Disaster Preparedness
- Disaster Mitigation
- Goals of Mitigation Strategy

Disaster Preparedness

Preparedness focuses on plans to respond to a disaster threat or occurrence. It takes into account an estimation of emergency needs and identifies the resources to meet these needs. It also involves preparation of well-designed plans to structure the entire post-disaster response, and familiarising the stakeholders, particularly the communities through training and simulation exercises.

The best examples of preparedness activities are the development of local warning and community evacuation plans through community education, evolving local response structures and administrative preparedness by way of stockpiling of supplies; developing emergency plans for rescue and relief.

Disaster Mitigation

Pre-disaster planning consists of activities such as disaster mitigation and disaster preparedness. Disaster mitigation focuses on the hazard that causes the disaster and tries to eliminate or drastically reduce its direct effects. Examples include strengthening buildings to make them cyclone or earthquake resistant, controlling land-use patterns to restrict development in high-risk areas and diversification of economic activities to act as insurance to offset losses in different sectors.

Structural measures such as the construction of protective works or alterations designed to diminish the vulnerability of the elements at risk, and non-structural measures, such as regulating land use and building codes, and equipping line departments for damage reduction, can all reduce the impact of a disaster on a region or a population. Everything that is done to reduce or prevent the damages that a disaster may cause is called mitigation of risks. Such mitigation measures can be integrated with normal inter-departmental coordination.

Mitigation distinguishes actions that have a long-term impact from those that are more closely associated with preparedness for, immediate response to, and short-term recovery from a specific disaster, recognizing that the boundaries are not absolute. Mitigation efforts must not only be a priority for the repair, reconstruction, and rehabilitation of developed areas, but must become a prerequisite for growth in areas that have not been developed.

Goals of Mitigation Strategy

- To substantially increase public awareness of disaster risk so that the public demands safer communities in which to live and work; and
- To significantly reduce the risks of loss of life, injuries, economic costs, and destruction of natural and cultural resources that result from disasters.

6.2 DISASTER MANAGEMENT ORGANIZATION

SP	DESIGNATION FOR	DESIGNATION SUGGESTED FOR DISASTER MANAGEMENT ORGANIZATION				
NO.	DISASTER MANAGEMENT ORGANIZATION	DEMOLITION PHASE	CONSTRUCTION PHASE	OPERATION PHASE		
1.	Chief Site Controller.	Project Proponent/ Project Director.	Project Proponent/ Project Director.	Chairman of the complex/ Society Chairman.		
2.	Site Incident Controller.	Project Proponent/ Project Director.	Project Proponent/ Project Director.	 Fire department head. Manager of respective office. Secretary of the respective building. 		
3	Emergency Co-Ordinator.	Administration Officer.	Administration Manager.	Administration Manager.		
4.	Supervisor	Site Supervisor, Contractors, Supervisor, Security Officer, Safety Officer.	Site Supervisor, Contractors, Supervisor, Security Officer, Safety Officer.	 Fire Officer. Security Officer. Safety Officer. Utility Services in Charge. 		
5.	Emergency Responsedent Teams.	 Security guards. Emergency Response teams consisting of first aid trained persons, fire fighting trained persons from utility, services, watch and ward, staff and workers. All site personnel. 	 Security guards. Emergency Response teams consisting of first aid trained persons, fire fighting trained persons from utility, services, watch and ward, staff and workers. All site personnel. IRT's. 	 Security guards. Emergency Response teams consisting of first aid trained persons, fire fighting trained persons from utility, services, watch and ward, staff and workers. All site personnel. IRT's. NGO's. 		
6	All Other at Site.	Others.	Contractors.Workers.Visitors.	All other site persons not connected with emergency operations.		

Figure 6-1Disaster Management Organization

Note: The disaster management organization chart indicate the positions however the, designations and persons will change during the different phases of the project. The likely designations of the emergency respondents are detailed in the following table.

6.3 EMERGENCY RESPONSE GUIDE

EMERGENCY RESPONSE FLOW CHART



Sr. No.	Emergency Respondent Hazard	Chief Site Controller	Site incident Controller	Emergency Coordinator	Supervisor	Emergency Response Team	All Other Site Personnel
1	Fall of Structure	Task 3, 8, 16, 17, 20	Task 1, 2, 4, 13, 14, 15, 19, 21	Task 5, 6, 7, 9, 18	Task 11	Task 10	Task 12
2	Trapped in Lift	Task 3, 8, 16, 17, 20	Task 1, 2, 19, 21	Task 7, 18	Task 11	Task 10	-
3	Fire/Exposition	Task 3, 8, 16, 17, 20	Task 1, 2, 4, 13, 14, 15, 19, 21	Task 5, 6, 7, 9, 18	Task 11	Task 10	Task 12
4	Bomb Threat	Task 3, 8, 16, 17, 20	Task 1, 2, 4, 13, 14, 15, 19, 21	Task 5, 6, 7, 9, 18	Task 11	Task 10	Task 12
5	Flooding	Task 3, 8, 16, 17, 20	Task 1, 2, 4, 13, 14, 15, 19, 21	Task 5, 6, 7, 9, 18	Task 11	Task 10	Task 12
6	Cyclone	Task 3, 8, 16, 17, 20	Task 1, 2, 4, 13, 14, 15, 19, 21	Task 5, 6, 7, 9, 18	Task 11	Task 10	Task 12
7	Earthquake	Task 3, 8, 16, 17, 20	Task 1, 2, 4, 13, 14, 15, 19, 21	Task 5, 6, 7, 9, 18	Task 11	Task 10	Task 12

Table 6.1	Task to	be done	during	Various	Disaster
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TASK	DESCRIPTION	TASK	DESCRIPTION	
1.	Raising the site emergency alarm.		Proceed to Assembly point for head count and wait for further instructions.	
2.	 Inform police, Fire brigade, Ambulance and Mobilizing site emergency services. 		Head count at AP and feed back to SAR team.	
3.	Determination of level of emergency, help from Advisory team if required.	14.	Ensure Traffic control, law and order situation and crowd control.	
4.	Mobilizing EoC and AP.	15.	Withdraw the staff in case of the human life is in peril.	
5.	 Mobilizing Emergency Respondent teams, IRT's, NGO's., hospital teams. 		Ensure proper working in the emergency response activities and make sure that all conflicts are resolved.	
6.	 Mobilizing resources required for emergency response teams working. 		Authorize release of information to the media.	
7.	Ensure coordination between all emergency services.	18.	Release of authorized information to the media.	
8.	 Review the situation continuously, assess level of emergency, help from Advisory team if required, Inform district disaster control cell and declare off site emergency. 		Emergency under control report to CSC.	
9.	Evacuation.	20.	Termination of emergency, Authorize to raise All clear alarm.	
10.	Follow relevant SOP.	21.	Raise all clear alarm.	
11.	Ensure SOP implementation by the emergency response teams.			

Figure 6-2 Task Details

6.3.1 Emergency Response Organization Chart

DMP Site Emergency Operation Control CHIEF SITE CONTROLLER Site Controller Advisory Team Emergency Coordinator SITE SUPERVISER Police, Fire Brigade, Hospital, IRT's, NGO's, Media

EMERGENCY RESPONSE ORGANIZATION CHART

6.3.2 Role and Responsibilities

Chief Site Controller

a) Designation for Disaster Management Organization

b) Tasks for Chief Site Controller

- ✤ Proceed to ECC when informed of the disaster/ potential disastrous event at site.
- The chief site controller is the overall in-charge for the management of onsite response to any such incident.
- Chief Site Controller Shall relieve the site incident controller of responsibility of overall main control of the event.
- In consultation with site incident controller and advisory team he will take stock of the situation like exact location, number of people and the area affected etc. decide on level of emergency, establish immediate priorities, including search & rescue and
relief distribution strategies and mobilize external help as required & site disaster manager to take charge and give guidance over public address system.

- **u** Ensure that all the key persons are available on site/ performing the task.
- 4 Delegate any extra duty to relevant person depending upon the situation.
- Withdraw the staff in case of the human life is in peril.
- Ensure proper coordination between all Sections of the IRT, agencies working in the response activities and make sure that all conflicts are resolved.
- Ensure that adequate safety measures for responders and affected communities are in place all the time.
- 4 Authorize release of information to the media.
- **4** Give authorization for clearance signal when everything becomes normal.

* Site Incident Controller

a) Designation for Disaster Management Organization

Demolition Phase	Construction phase	Operational Phase		
Project Proponent/	Project Proponent/	Chairman of the complex		
Project Director.	Project Director.	Society Chairman		

b) Tasks for Site Incident Controller

- Assume the responsibility of the Chief Site Controller till the arrival of the chief site controller.
- On hearing of emergency alarm immediately proceed to site of incident (unless already present there).
- Assess the level of emergency and activate relevant SOP/ IAP/ emergency services of Fire and security department.
- Identify the areas likely to be affected by the emergency. Give information as requested by the head of the Fire Brigade, Police.
- Direct out the emergency operations.
- **4** Assist the law and order machinery.
- **4** In case of Evacuation follow SOP Number 3.

- Guide occupants on steps being taken for evacuation in a systematic manner & device system for two-way communication with the affected persons in the building especially in lifts and rooms.
- Ferform such other duties as assigned by Chief Site Controller.

Emergency Coordinator

a) Designation for Disaster Management Organization

Demolition Phase	Construction Phase	Operation Phase
Project Director/	Project Director/	Fire Department Head/ Security Head/ Manager of the Respective Office/ Security of the Respective Building
Project Manager.	Project Manager.	

b) Tasks for Site Incident Controller

- The Emergency Co-Ordinator is the focal point of contact for various line departments, representatives of Govt. authorities/ IRT's/ NGO's and ULB's etc. Call for participating in the response.
- **4** Ensure proper coordination between all emergency respondents.
- Release of authorized information to the media and take steps to reduce/ eliminate panic.
- Assure occupants of continuous communication and take all measures to keep up their morale high.
- **4** Liaise with the law and order machinery.
- For the such other duties as assigned by Chief Site Controller

***** Supervisor

a) Designation for Disaster Management Organization

Demolition Phase	Construction phase	Operational Phase
Administration	Administration	Administration
Officer	Manager	Manager

b) Tasks for Site Incident Controller

- On receiving emergency alert supervisor of the affected area to proceed to site (if not already at incident spot) as directed from ECC.
- Supervisor of the non-affected area to keep attention to announcements and follow emergency co-ordinator instructions.
- **4** Guide and assist to carry out firefighting operations.
- Guide and assist the search and rescue team for search of the trapped persons and rescue of the same to assembly area
- **4** Supervise and ensure the safe implementation of emergency operations as per SOP
- For form such other duties as assigned by Chief Site Controller.

Emergency Respondent Teams – SAR Team

Demolition Phase	Construction phase	Operational Phase
Security Personnel.	Security Personnel.	Security Personnel.
First Aid Trained Persons	First Aid Trained Persons	First Aid Trained Persons
Fire Fighting Trained Persons	Fire Fighting Trained Persons	Fire Fighting Trained Persons
		Fire Brigade/ NDRF

a) Search and Rescue (SAR) Team

b) Tasks for SAR Team

- 4 On receiving emergency alert proceed to site as directed from ECC.
- Carry out firefighting operations.
- **4** Search of the trapped persons and rescue of the same to assembly area.
- Provide first aid to the injured where ever necessary and shift to first aid room for further action.
- Carry out evacuation of the building as per directions from ECC. Perform such other duties as assigned by Chief Site Controller.

Emergency Respondent Teams – Engineering Team

Demolition Phase	Construction phase	Operational Phase
Electricians.	Electricians.	Utility operators
Mechanics	Mechanics Electricians.	
Gas Cutter/ welders	Gas Cutter/ welders	Mechanics
Pump Operators	Pump Operators	Gas Cutter/ welders
Earth Moving Vehicle Drivers Drivers		Drivers. Instrumentation Technicians. Gas Supply Company Technicians.

a) ENGINEERING SERVICES TEAM

b) TASKS FOR ENGINEERING SERVICES TEAM

- On receiving emergency alert proceed to respective work places/ as directed from ECC.
- **4** Ensure uninterested water supply to fire hydrant system.
- **4** Ensure uninterested power supply to fire water pumps and emergency lighting.
- Restore power supply in case affected to emergency equipment (Loss of power will mean loss of fire systems if prolonged. Water re- connection is a priority).
- **4** Restore Power supply to emergency lighting.
- Ensure adequate warning to emergency co-ordinator before stopping power to lifts; bring the lifts to safe position.
- Attend Lift failures.
- **4** Ensure working of de watering pumps at basement.
- Restore and maintain communication network such as PAS system, siren, phones, TV, radio systems.
- Assist the search and rescue team in case of any metal cutting operation, vehicle failures etc.
- **4** Perform such other duties as assigned by Chief Site Controller.

Emergency Respondent Teams – Advisory Team

a) ADVISORY TEAM

Demolition Phase	Construction phase	Operational Phase	
Chief Site Controller	Chief Site Controller	Chief Site Controller	
Disaster Control cell Officer	Disaster Control cell Officer	Disaster Control cell Officer	
Fire Brigade Officer	Fire Brigade Officer	Fire Brigade Officer	
Police Officer	Police Officer	Police Officer	
Medical Adviser	Medical Adviser	NDRF officer	
Sr. Member of Organization	Sr. Member of Organization	MEP Officer	
Expert in the Field	Expert in the Field	Medical Adviser, NGO Representative, Safety &Security officer, LCG Member, Sr. member of Organization, Expert in the Field	

b) TASKS FOR ADVISORY TEAM

- ♣ Proceed to ECC when informed of the disaster/ potential disastrous event at site.
- **4** Assess the relevant data received at ECC.
- **4** Assist the Chief Site Controller in decision making process.
- Collect relevant information and Take stock of situation time to time and advise Site Chief Controller.
- ↓ Perform such other duties as assigned by Chief Site Controller.

All Other At Site

a) ALL OTHER AT SITE

Demolition Phase	Construction phase	Operational Phase
Contractors	Contractors	All other site persons not included above list
Workers	Workers	
Visitors	Visitors	

b) TASKS FOR ALL OTHER AT SITE

4 In Case of noticing Fire:

- i. Raise the raise break glass fire alert.
- ii. Dial '(emergency number)' and inform fire/security department.
- iii. Raise verbal fire alarm to activate other persons in the area.
- Contain the fire by closing windows and doors to minimize the danger of the fire and smoke spreading.
- Extinguish the fire if; you have been trained in the use of a fire extinguisher, it is safe to do so or you have someone in support.
- Remove or help to Rescue occupants from the area of immediate danger. To refuge area and follow further instructions from ECC regarding evacuation.
- On receiving emergency evacuation proceed to Assembly point.
- Persons of non-affected building/ area keep attention to announcements and follow emergency co-ordinator instructions.
- 4 Co-operate in head count procedure at Assembly Point.

Warning Systems

- 1. Warning of fire or emergency received at fire &/ security department by fire call point, CCTV panel, by watch ward staff, leak detector, smoke detector, intercom in flats, mobile, bell in lifts, hooters at control room.
- 2. Two way communication to emergency respondents by walky talky.
- 3. Warning to occupants by PAS/ hand held loudspeaker and Siren electrical/ hand operated located at strategic location and operated from at ECC by fire &/ security department.

4. SIREN CODE

Emergency Level 1 &	•	One continuous wailing sound of 20 second
2	•	duration. Repeat after a minute
		Three interrupted wailing sounds of 15 seconds
Emergency Level	:	duration each with a gap of 30 seconds. Repeat
		after a minute gap
All Clear	:	Long whistle of one minute duration

6.4 RESCUE AND RELIEF OPERATION

Emergency co-ordinator has to maintain log book of rescue and relief operations.

The priority of the SAR will be to:



- 🖊 Maintain safety
- Protect assets
- Ensure security
- **4** Maintain or return business continuity

6.5 RESPONSE ACTIVITIES SPECIFIC TO DISASTER

SOP's specific to disaster enclosed in Section 9 of this report.

6.6 REQUISITION OF SERVICES/ ASSISTANCE

Emergency co-ordinator to establish communication to district disaster control room for requisition of services/ assistance of IRTs /NGOs.

Chapter 7

RECOVERY

7.1 DEACTIVATION OF THE DEPARTMENT EMERGENCY OPERATIONS CENTRE

Deactivation of the ECC once the recovery operations are over as declared by chief site controller.

7.2 MEDICAL

The emergency co-ordinator has to ensure following:

- ↓ Information and help desk at the site
- Informing the relatives of the injured
- ✤ Follow up of injured at hospital, if any

7.3 DAMAGE ASSESSMENT FOR INSURANCE SURVEY WITH FOLLOWING OBJECTIVES

- **4** Reduce the loss in terms of assets if a disaster happens; and
- Reduce lost income in the event that the facility becomes unavailable or partly unavailable.

Note: The emergency co-coordinator to maintain the record and coordinate with insurance agencies.

Chapter 8

FINANCIAL ARRANGEMENTS

8.1 DMP - RESOURCES BUDGET PROVISION

SR. NO.	DESCRIPTION OF ITEM	AMOUNT (Rs.)
1	Fire Water Underground Tank.	72,00,000
2	Fire Water Overhead Tank.	17,87,500
3	Fire Hydrant System.	40,00,000
4	Fire Pump Room.	50,00,000
5	Water Sprinkler System Wet riser	6,99,000
6	Water Sprinkler System Distribution 17,38,50	
7	Sprinklers	4,89,000
8	Smoke Detection System.	2,19,875
9	Heat Detection System.	2,19,875
10	Fire Alarm System. 2,19,87	
11	CCTV Security System. 2,19,87	
12	Emergency Power (DG Set). 22,40,00	
13	Public Address System.	61,832
14	Fire Resistant Door.	1,58,10,000
15	Signages.	30,0,000
16	Lightening Arrestor. 5,00,00	
17	Rescue Equipments.	50,00,000
18	Fire extinguishers	2,02,000
	Total	4,59,07,332
		4.5 Cr.

Table 8.1 Inventory of Resources

8.2 O & M EXPENDITURE PROVISION

SR. NO.	DESCRIPTION	COST PER ANNUM (Rs.)
1	Watch and ward/ security & staff 10 nos.	12,00,000
2	Fire hydrant system inspection repair and maintenance.	1,80,000
3	Portable Fire Extinguishers inspection repair and maintenance.	10,100
4	Smoke detection system inspection repair and maintenance.	10,993
5	Water sprinkler system inspection repair and maintenance.	86,925
6	Fire alarm system inspection repair and maintenance.	38,750
7	CCTV security system inspection repair and maintenance.	65,000
8	Emergency power (DG Set) inspection repair and maintenance.	1,79,200
9	Personnel protective equipment damaged replacement.	3,00,000
10	Fire Audit, Training, Mock Drill, Fire Drill, Safety Awareness Program.	5,00,000
11	Others.	2,00,000
	Total	27,70,969
		27 Lakhs

Table 8.2O& M Expenditure

Maintenance cost is **6.04%** of the total installation cost.

Chapter 9

STANDARD OPERATING PROCEDURES

9.1 S.O.P. for Disaster Management Control by TMC

> On Receiving Warning

- Inform Municipal Commissioner, Additional Municipal Commissioners and Deputy Municipal Commissioners.
- Designated officer will take charge of control room operations.
- Disseminate warning to Ward Control Room.
- Relay warning to the public through media (TV, FM Radio, SMS, etc.)

> When Disaster Strikes

- Co-ordinate with C.P. Control, Jt.C.P. (Traffic) Control and Fire Brigade for rescue and relief operations.
- Co-ordinate with Railways for management of disruption of rail traffic, congestion on platforms and evacuation of stranded passengers. Co-ordinate with BEST/ State Transport authorities for deployment of buses

Rescue & Relief Operations

- Ploy Search & Rescue teams from the Regional Command of Fire Brigade.
- Co-ordinate with Home Guards and identified voluntary agencies for providing emergency water and foo d, taking the help of Search &Rescue Team wherever necessary.
- Co-ordinate evacuation of stranded people to the nearest transitory shelter with the help of volunteers.
- Co-ordinate with Dy. Municipal Commissioner (Education) for special care of school children according to the contingency plan.
- Co-ordinate with Jt. Municipal Commissioner (Health) and Executive Health Officer for treatment of the injured and sick.

• Deployment of emergency medical teams where people cannot be immediately shifted.

Post Disaster Actions

- Co-ordinate with Police and Health authorities for corpse disposal.
- Co-ordinate with Chief Engineer (Solid Waste Management) for deployment of machinery for disposal of carcasses and removal of debris and garbage.
- Deploy paramedical teams for anti-fly measures and spraying of insecticides.

9.2 SOP FOR FIRE/EXPLOSION

9.2.1 Incident Scenario

Fire/ explosion at the site or in the building towers with potential for damage to property and loss of life.

Mumbai has topped the list among 88 cities in India with and 236 deaths in 2008-12, followed by Delhi with 185 cases and 186 deaths, a report by the National Crime Records Bureau (NC-RB) stated. Among states, Maharashtra (1,095 cases, 820 deaths) stands third after Andhra Pradesh and Gujarat. During that period, 6,700 people died and 947 were injured in the country. Maharashtra recorded an average of over 160 deaths annually, while Mumbai averages 40. Andhra Pradesh recorded 1,394 deaths, Gujarat 1,204 and Maharashtra 820 in that period. Other states recorded half or less deaths than the top three. Mumbai and Delhi topped among cities, followed by Hyderabad (132 cases/136 deaths), Ahmedabad (130/130), Vijayawada (199/122) and Rajkot (77/77). Maharashtra climbed to the second spot with 331 fires in 2011. It witnessed a rise in deaths due to fire caused due to short-circuits in residential and commercial establishments. In 2008, the state recorded 120 deaths; it rose to 131 in 2009 and 152 in 2010. A sharp rise was noticed in 2011, when the toll increased by 263, but it fell to 154 in 2012, the report said.

As per the National Building Code of India, buildings of more than 15 metres height require fire prevention measures, but in Mumbai, as per development control regulations, only buildings of more than 2.4m height require strict fire prevention measures.

9.2.2 Scope

This SOP is applicable for fire incidents on the site;

- Fire of combustibles at the building lower floors
- Fire of combustibles at the building upper floors
- ♣ Fire of combustibles at the building above 14th floors
- Vehicle at fire
- PNG/LPG release followed by fire/ explosion
- ↓ Diesel release followed by fire/ explosion
- **4** Transformer fire/ explosion

9.2.3 Purpose

The purpose is to localize the emergency, minimize effects of fire, explosion on property and people, effective rescue and medical treatment and safe evacuation.

9.2.4 Impact Zones

Sr.No.	Scenario	Impact Zone
1.1	Fire of combustibles at the building lower floors.	Complete building.
1.2	Fire of combustibles at the building upper floors.	Complete building.
1.3	Fire of combustibles at the building above 14^{th} floors.	Complete building.
1.4	Vehicle at fire.	Initial evacuation up to 15 m.
1.5	PNG /LPG release followed by fire/ explosion.	Initial evacuation up to 30 m.
1.6	Diesel release followed by fire/ explosion.	Initial evacuation up to 15 m.
1.7	Transformer fire/ explosion.	Initial evacuation up to 15 m.

9.2.5 Emergency response agency

***** Primary Agency

4 Fire and Security Department

***** Secondary Agencies

- ♣ Fire brigade and Police
- **4** The fire services in the Urban Local Bodies (ULB's)

- District Disaster Control Cell
- 📥 RITs
- 🖊 NGOs

Emergency Response Guide





9.2.6 Dos and DON'Ts

DO'S

- On noticing fire emergency actuate nearest fire alarm button and/ or inform the Supervisor and follow further instructions and proceed to assembly point.
- **4** Supervisor to inform fire brigade and mobilize firefighting trained persons,
- **4** Cordon off the area, move upwind and evacuate the area.
- **4** Keep the gas cylinder cool with water spray.
- Use AFFF to blanket the oil diesel, spill area. (Aq. Film Forming Foam)
- 4 If there's a lot of smoke, crawl along the floor where the air will be cleanest.

DON'TS

- 4 Do not enter the site unless instructed if you are outside and disaster alarm is heard.
- No smoking
- 4 Avoid use of lift during fire at building.
- 4 Do not panic. Avoid running all over the place prevent others from doing so.

9.2.7 Prevention and Mitigation Activities

- **4** Provision of firefighting equipment.
- Provision of PPE.
- **4** Provision of smoke detectors and Alarm system.
- 4 Water sprinkler.
- 4 CCTV.
- PAS system.

9.2.8 Preparedness activities

- ↓ Fire Drill, Mock Drill.
- Prepare back up teams ready for rotation of personnel.
- **4** Keep a torch light and a working transistor radio with spare batteries.
- 4 Display an updated list of emergency telephone numbers.

Ensure	that	communication	equipment	are	in	working	order
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Figure 9-1Fire Station Response

Note - Assume speed of truck as 20 km/hr and the time to reach is 12.3 min.

9.2.9 Response activities

- **4** Raising the site emergency alarm.
- ↓ Inform police, Fire brigade and Mobilizing site emergency services.
- 4 Determination of level of emergency, help from Advisory team, if required.
- ✤ Mobilizing EoC and AP.
- Hobilizing Emergency Respondent teams, IRTs, NGOs.
- **Wobilizing resources required for emergency response teams working.**
- **4** Coordination between all emergency services.
- Communication with district disaster control cell and declaring off site emergency (if situation escalates).
- Head count at AP and feed back to SAR team.

- **4** SAR and Evacuation.
- **4** SOP implementation by the emergency response teams.
- Traffic control, law and order situation and crowd control.
- **4** Release of authorized information to the media.
- Emergency under control report to CSC.
- **4** Termination of emergency and All clear alarm.

9.2.10 Life saving measures

- 4 In case cloth on fire lie on ground and cover in blanket.
- **4** Pour water on burn for at least for 10 minutes.
- 4 Avoid breaking the burn blisters on skin and removing pieces of burnt cloth.
- **4** Remove tight items such as watch, bracelet, and ring before swelling occurs.

9.2.11 Recovery activities

- 4 Get the de-warning from chief site controller and announce the same
- Information centres will be set up to provide response information to the public, relatives of victims and media
- **4** Replenishment of used stocks of firefighting materials
- Follow up of injured at hospital.
- Setting up help desk
- Record keeping
- 4 Clean and rehabilitate the disaster site.
- If people are buried under the debris, call for help of the rescue teams and render your help.
- Determine priorities for restoration work and seek the advice of a conservator as to the best methods and options, and obtain cost estimates.
- Contact insurers.
- 4 Analyse the disaster and improve the plan in the light of experience.

9.2.12 Resource requirements

ADDITIONAL RESOURCES

- Fire extinguishers.
- **4** PPE, SCBA, Fire suit.
- ↓ Search and rescue equipment Ropes, ladders, Search light.
- **4** Combustible gas, CO and Oxygen detector.
- 4 PAS and Two way radio.
- ↓ Lightening arrestor scheme
- ♣ Fire glass break alarm system
- Smoke detectors
- PAS system

9.2.13 Terms and Definitions

Fire: A process of combustion characterized by heat or smoke or flame or any combination of these. Hazard - any situation that has fire potential.

Explosion: A sudden release of energy characterized by accompaniment of a blast wave.

Smoke: Smoke is defined as a mixture of hot vapours and gases produced by the combustion process along with unburned decomposition, condensation matter and the quantity of air that is entrained or otherwise mixed in to the air

9.2.14 Revision/ rehearsal/ drill/ history

Sr. No.	Date Of Revision/updating	Revision No.	Reason For Revision
1.	XXX.	0	Nil, First edition.

9.3 SOP FOR BOMB THREAT, SUSPECT MAIL/ PARCEL

9.3.1 Incident scenario

- 1. Bomb threat; Hoax message. Genuine message.
- 2. Letter bomb.
- 3. Pocket/ parcel/ book bomb.

9.3.2 Scope

This SOP is applicable for the bomb threat at site. The threat may be in different forms such as letter bomb, parcel bomb, book bomb, car bomb, human bomb etc.

9.3.3 Purpose

The purpose is to localize the emergency, minimize effects of bomb threat/ explosion on property and people, effective search, rescue and systematic evacuation to safe location from the vulnerable zone.

9.3.4 Impact Zones

THREAT	DESCRIPTION	EXPLOSIVE QTY	MIN ¹ (m)	MAX ² (m)
-	Pipe Bomb Small	100g	80	575
1 at	Pipe Bomb Medium	500g	100	860
	Pipe Bomb Large	2.5kg	130	1,135
	Briefcase/Suitcase	23kg	185	1,520
	Compact Sedan	230kg	270	1,915

Bomb Threat Evacuation Guide

Note:

- 4 Min. withdrawal distance is intended for use by essential personnel with adequate frontal and overhead protection.
- Maximum evacuation distance is governed by the greater of the throw distance for fragmentation or the glass breakage/falling hazard distance.
- Radio or mobile phone transmissions: min. of 25 m from the device is recommended as the safe distance for transmissions.
- A bomb causes damage both by blast effect and by missiles which it scatters on explosion. Missiles effect extends over a fairly wide area. Blast effect is proportional to the explosively small area but affects everything within that area.
- Due to small size, and hence small quantity of explosive charge, homemade bombs do too cause much damage beyond 3-4 meters by blast effect. The missile effect of

homemade bombs of common type may not extend beyond 10 meters of the point of explosion. Blast and missile effect of a large homemade bomb would extend over a much wider area.

- Car bomb /human bomb /Time bomb: The timing device is usually concealed in the bomb. It is rarely possible to identify a Time Bomb or to ascertain the set time. There is therefore a measure of risk in dealing with a Time Bomb.
- Letter bomb: Normally letter bombs contain a charge of explosive, usually a high explosive and a suitable initiating device. The fundamental principle is that about 60 g of high explosive can, or explosion, cause fatal injuries to a man with 60 cm.
- If approximate size of bomb is known use this information as guide to provide safe minimum distance for evacuation.

9.3.5 Emergency response agency

PRIMARY AGENCY

Fire and security Department

***** SECONDARY AGENCIES

- Police Bomb Detection & Disposal Squad (BDDS).
- Fire brigade and Police.
- **4** The fire services in the Urban Local Bodies (ULB's).
- District Disaster Control Cell.
- 📥 RIT's.
- 📥 NGO's.

9.3.6 Dos and DON'Ts

DOs

- Cordon off the area.
- Evacuate the area
- Be careful about entering into a room in which or seat which an explosion has occurred to bring you there. It may be used to trap you.

- Examine carefully without moving or tilting the suspected object, its shape, size construction, finish, marking and special features, if any. Note these particulars down. Try to identify it ascertain whether the object has been moved or handled before you saw it.
- Consideration should be given to suspicious vehicles/packages at the EoC and Assembly points also.
- **4** Follow the rule **"DO NOT TAKE THE BOMB AWAY FROM THE PUBLIC.TAKE THE PEOPLE AWAY FROM THE BOMB".**

DON'Ts

- Do not panic.
- Do not open a closed room/ door/ window/ cupboard/ box in the normal way tap wood cover and open with a ling pole or in any other improvised manner.
- 4 Do not switch on any electric line, if the room is dark. Use hand torch for illumination.
- Do not touch, lift, drag kick, hit or move the suspected object, examine room or place quickly to see, if there is any wire or string held taut, any loose pair of insulated wires connected door/ window/ cupboard/ box or any lighted fuse or lighted rope if so.

9.3.7 Prevention and Mitigation Activities

- 🔶 CCTV
- PAS System

9.3.8 Preparedness activities

- **Wock drill for evacuation.**
- Training; Learn about causes and effects. Speak about them in a calm and composed manner.
- Awareness program Posters, boards. Prepare back up teams ready for rotation of personnel. Ensure that communication equipment are in working order.

9.3.9 Response activities

EVACUATION

Response to Bomb Threat Call

- **4** Emergency coordinator to take over the communication.
- During the conversation with the bomb threat caller, the receiver of the call should observe for certain other information like way that the employees do not panic and get confused.
- It will be very difficult to control the employees, if they run for their life in panic and confusion.
- **4** The announcer should keep his calm and should not show any anxiety.
- He should specify the evacuation route more clearly, details of guides who will guide the employees to the safer area and the location of assembly area.
- He should also state the importance of remaining in the assembly area till further instruction.

Evacuation

- Use Siren, PAS and Walkie-Talkie sets to intimate the site personnel in the affected area for evacuation.
- Evacuate the personnel to refuge area and to assembly point as the case requirement, verify head count at assembly point.
- **Wobilize AP and head count event.**

Precautions – DOs AND DON'Ts

- 🖊 Remain calm
- ↓ Walk out of the building quietly and orderly manner
- Follow the evacuation route only
- Follow instruction from guides on any confusion about the route and assembly area.
- **4** Switch off the machinery and power supply before leaving the area.
- Help ladies and old people to safe area.
- **4** Remain in the assembly area until further instructions are given.
- Check for all the employees at the assembly area. If anybody is missing, the matter should be immediately reported to the co-ordinator of Bomb Threat Committee.

- ↓ Do not run. Walk calmly
- 4 Do not argue or try to obtain details about the bomb from anybody leading to time loss.
- **4** Do not obstruct the flow of evacuation.
- Do not leave any personal belongings
- **4** Do not obstruct passage to anybody.
- 4 Do not make noise at the assembly area.
- Do not spread rumours.

9.3.10 Life saving measures

Quickly take shelter/ fall on floor and protect head with both hands.

9.3.11 Recovery activities

- Establish a program to restore both the disaster site and the damaged materials to a stable and usable condition.
- Determine priorities for restoration work and seek the advice of a conservator as to the best methods and options, and obtain cost estimates.
- Contact insurers.
- 4 Analyse the disaster and improve the plan in the light of experience.

9.3.12 Resource requirements

BOMB DISPOSAL

- **4** Strong, smooth string of well twisted cotton yarn or plastic yarn.
- **4** Long pole.
- **4** A bucket or tin can with its top open.
- ♣ A sharp knife or a pair of scissors.

FIRE FIGHTING EQUIPMENTS

- Fire hydrant system (Refer Annexure No. 1).
- **Water sprinkler system.**
- **4** Portable Fire extinguishers.
- ♣ PPE, SCBA, Fire suit.

SEARCH AND RESCUE EQUIPMENT

- **4** Ropes, ladders.
- ↓ Portable flood lights, Search light.
- **4** Combustible gas, CO and Oxygen detector.
- 4 Cutting set.

SPECIALIZED HEAVY EARTHMOVING EQUIPMENT

- 🖊 JCB.
- **4** Dumper.
- Crane.

9.3.13 Terms and Definitions

Bomb

A device or any size or shape, which can look obvious or be camouflaged, may vary in its sophistication, and may not necessarily explode (i.e incendiaries, toxic/noxious substances, sharps, animals/reptiles). May be referred to as an Improvised Explosive Device (IED).

Bomb Threat

A threat, written or verbal, delivered by electronic, oral or other medium, threatening to place or uses an explosive, chemical, biological or radiological device at a time, date, and place or against a specific person or organization. It is not necessary for any other action to be taken by the offender.

9.3.14 Revision/rehearsal/drill/history

Sr. No.	Date of Revision/updating	Revision No.	Reason For Revision
1.	XXX.	0	Nil, First edition.

9.4 SOP FOR EVACUATION

9.4.1 Incident Scenario

Safe evacuation of the site during emergency to assembly point.

9.4.2 Scope

This procedure describes the process to prepare for and safely evacuate during an emergency such as fire, explosion, bomb threat, chemical spill, personal threat, and injury etc. including drills that may be conducted in preparation of this.

This procedure applies to all:

- **4** Management
- Project participants
- **4** Employees
- Sub-contractors
- 🖊 Visitors.

9.4.3 Purpose

The purpose is systematic safe evacuation of all persons away from the vulnerable zone to safe place.

9.4.4 Impact zones

Sr.No.	SCENARIO	IMPACT ZONE
1.	Overcrowding/ stampede.	Escape route to Assembly point.

9.4.5 Emergency response agency

***** Primary Agency

↓ Fire and security Department

✤ Secondary Agencies

- **↓** Fire brigade and police.
- **4** The fire services in the Urban Local Bodies (ULBs).
- District Disaster Control Cell.
- 🖊 RITs.

TABLE: ASSEMBLY POINT			
EmergencyConstructionOperational Phase			
Level 1	Site Office	At Assembly Points	
Level 2	Near Site Office	At Assembly Points	
Level 3	Near Site Office	At Assembly Points	

9.4.6 Dos and DON'Ts

PRECAUTIONS – DO'S AND DON'TS

- 🖊 Remain calm.
- **Walk out of the building quietly and orderly manner.**
- Follow the evacuation route only.
- Follow instruction from guides on any confusion about the route and assembly area.
- **4** Switch off the machinery and power supply before leaving the area.
- Help ladies and old people to safe area.
- **4** Remain in the assembly area until further instructions are given.
- Check for all the employees at the assembly area. If anybody is missing, the matter should be immediately reported to the co-ordinator of Bomb Threat Committee.
- \downarrow Do not run. Walk calmly.
- Do not argue or try to obtain details about the bomb from anybody leading to time loss.
- Do not obstruct the flow of evacuation.
- 4 Do not leave any personal belongings.
- Do not obstruct passage to anybody.
- 4 Do not make noise at the assembly area.
- Do not spread rumours.

Use staircase during evacuation and avoid lift as power may fail.

9.4.7 Prevention and Mitigation Activities

- \rm CCTV
- PAS System

9.4.8 Preparedness Activities

- Evacuation drill.
- 🖊 Training;
- ↓ Learn about causes and effects.
- **4** Speak about them in a calm and composed manner.
- **4** Evacuation signs & diagrams are included in each relevant area.
- **4** Evacuation diagrams.
- **4** Prepare back up teams ready for rotation of personnel.
- **4** Keep a torch light and a working transistor radio with spare batteries.

9.4.9 Response Activities

- **u** Ensure the safe evacuation of all occupants from the building.
- **4** Account for all occupants at the assembly area.
- Ensure occupants do not attempt to re-enter the building until it is safe to do so.
- Alert all occupants without further compromising life and assist those which are persons with special needs.

Evacuation of Alternatively-Abled Persons

In the event of an emergency it is important that those persons with a disability or a condition that may cause them to make it safely to an assembly point are appropriately catered for. This can be achieved in the following way:

- **4** SAR team members have training in assisting persons that are disabled
- Information identifying PEEP's (Personal Emergency Evacuation Plan) Maintained at EoC.
- **H** Provision of an evacuation chair.

9.4.10 Life Saving Measures

FIRE SAFETY PLAN

- 4 Individual floor layouts
- Population of floors
- Wumber and kind of exits
- **4** Zoning of the floor by area and occupants
- 4 Refuge floors and area
- 4 Evacuation diagram
- 4 Assembly point
- **4** Site surroundings map

Recovery Activities

- **4** Guide the search and rescue team with geographic information and persons trapped.
- **4** Setting up help desk.
- Record keeping.
- **4** Replenish depleted resources.
- Check for injuries and first treat yourself, then help others. Follow up with injured at hospital.

GETTING BACK TO NORMAL

4 Analyse the disaster and improve the plan in the light of experience.

9.4.11 Resource Requirements

- ♣ PPE, SCBA, Fire suit.
- 4 Ropes, ladders.
- ♣ Portable flood lights, Search light.
- **4** Combustible gas, CO and Oxygen detector.
- **4** Cutting set.
- **4** Specialized heavy earthmoving equipment.

9.4.12 Terms and Definitions

EVACUATION:

The orderly movement of people from a place of danger.

EMERGENCY RESPONSE TEAM (ERT):

Specialist or specially trained personnel to attend to specific incidents to contain control or eliminate the emergency using emergency response equipment. The ERT may be in place longer than the ECO which is primarily focused around evacuation.

REFUGE:

An area on a floor or area that is specifically designed to protect people from heat, smoke and toxic gases and which provides direct access to an exit.

PHYSICALLY CHALLENGED PERSON:

The official definition of a disabled person, while helpful in determining who should have a PEEP, may not cover the full range of personnel for whom effective evacuation may be compromised. Obese personnel and those with an illness or injury that is not chronic or permanent may also need assistance in the event of an emergency. Consideration must be given in times of emergency as to the additional resource required to handle both known PEEP holders and persons for whom effective evacuation may prove problematic.

PERSONAL EMERGENCY EVACUATION PLAN (PEEP):

An individualized emergency plan designed for an occupant with a disability who may need assistance during an emergency.

VISITOR:

A person who is within a facility who is temporarily visiting the facility and is not employed at or for the facility, either on a permanent, casual, temporary, contracting basis, a resident or inmate or studying at the facility. Visitor implies that the person has not received an induction to the Precinct.

9.4.13 Revision /Rehearsal /Drill /History

Sr. No.	Date Of Revision/updating	Revision No.	Reason For Revision
1.	XXX.	0	Nil, First edition.

Evacuation drill will be held at least annually and will be planned in the training schedule. Record of the drill to be maintained by fire and security department. All staff is trained assuming each role as necessary. Recognizing that infrequent performance in the role will result in knowledge decay an awareness of duties specific to each role is insisted during training program.

9.5 SOP FOR CYCLONE

9.5.1 Incident Scenario

The cyclone passing over the site as a result there is potential for property damage and loss of life. The strong cyclonic winds circulate in anti-clockwise direction in the Northern Hemisphere Tropical storms are intense low pressure areas from the centre of which pressure increases outwards- The amount of the pressure drop in the centre and the rate at which it increases outwards gives the intensity to these storms and the strength of winds.

Sr.No.	Types of Disturbances	Associated Wind Speed in the Circulation
1.	Low Pressure Area.	Less Than 17 Knots (<31 kmph).
2.	Depression.	17 To 27 Knots (31 To 49 kmph).
3.	Deep Depression.	28 To 33 Knots (50 To 61 kmph).
4.	Cyclonic Storm.	34 To 47 Knots (62 To 88 kmph).
5.	Severe Cyclonic Storm.	48 To 63 Knots (80 To 118 kmph).
б.	Very Severe Cyclonic Storm.	64 To 119 Knots (119 To 221 kmph).
7.	Super Cyclonic Storm.	120 Knots and above. (222 kmph& above).

(Based on World Meteorological Organization Classification).

9.5.2 Scope

This SOP is applicable for the site Cyclone incidents.

9.5.3 Purpose

The purpose is to minimize effects of cyclone hazards on property and people, effective rescue and medical treatment and systematic evacuation to safe location if required.

9.5.4 Impact Zones

Sr.No.	Scenario	Impact Zone
1.	Cyclone.	Depends of intensity of cyclone.
2.	After effect fires.	Refer SoP No. 3.
3.	After effect flood.	Not anticipated at site.

Table 9.2Major Cyclone in Mumbai

Name	Year
Greater Bombay Cyclone	1882 (Death 100000)
Indian Tropical Cyclone	2001
Cyclone Gonu	2007
Phyan	2009
Jal	2010

Pre and Post-monsoon storms are more violent than the storms of the monsoon season. Life span of a severe cyclonic storm in the Indian seas averages about 4 days from the time it forms until the time it enters the land.

9.5.5 Emergency Response Agency

Primary Agency

↓ Fire and security Department

Secondary Agencies

- **4** Fire brigade and police.
- ↓ The fire services in the Urban Local Bodies (ULB's).
- District Disaster Control Cell.
- 🖊 RITs.
- \rm MGOs.

9.5.6 Dos and DON'Ts

BEFORE THE CYCLONE SEASON

- 4 Check your building and roof are in good condition.
- **4** Trim tree branches well clear of your house.
- Clear property of loose material that could cause injury and damage during extreme winds.

UPON A CYCLONE WARNING

- **4** Don't ignore warnings and don't go sightseeing.
- **4** Listen to local radio/TV for further information.

ON WARNING OF LOCAL EVACUATION

Heed warnings and follow advice given.

WHEN THE CYCLONE STRIKES

- **U**isconnect all electrical appliances.
- **4** Stay inside and shelter well-clear of windows.
- 4 Listen to your radio for cyclone updates.
- Beware the calm 'eye'. Don't assume the cyclone is over if a calm period is due to the 'eye', violent winds will soon resume from the opposite direction.
- **4** If driving, stop clear of trees, power lines and streams.
- **4** If in a public building, get away from glass.

AFTER THE CYCLONE

- **4** Don't go outside until advised officially that it is safe.
- 4 Listen to local radio for official warnings and advice.
- If you had to evacuate, don't go home until advised. Use route recommended and stay calm.
- **UDD** Don't make unnecessary telephone calls.

Beware of fallen power lines, damaged buildings and trees, and flooded water courses.

9.5.7 Prevention and Mitigation Measures

- **4** Provision of firefighting equipment.
- Provision of PPE.
- **4** Provision of smoke detectors and Alarm system.
- \rm Water sprinkler.
- 🖊 CCTV.
- ♣ PAS system.

9.5.8 Preparedness Activities

- ♣ Fire drill, mock drill.
- Training; Learn about causes and effects. Speak about them in a calm and composed manner
- ↓ Awareness program Posters, boards.
- **4** Prepare back up teams ready for rotation of personnel.
- **4** Keep a torch light and a working transistor radio with spare batteries.

9.5.9 Response Activities

- Raising the site emergency alarm
- **4** Inform police, Fire brigade and Mobilizing site emergency services
- 4 Determination of level of emergency, help from Advisory team if required
- Mobilizing EoC and AP
- Mobilizing Emergency Respondent teams, IRT's, NGO's.
- Mobilizing resources required for emergency response teams working
- 4 Co -ordination between all emergency services
- Communication with District Disaster Control Cell and declaring off site emergency (if situation escalates).
- Head count at AP and feed back to SAR team
- SAR and Evacuation
- SOP implementation by the emergency response teams

- **4** Traffic control, law and order situation and crowd control.
- **4** Release of authorized information to the media.
- **under** control report to CSC.
- **4** Termination of emergency and 'All Clear Alarm'.

9.5.10 Life Saving Measures

Hitting flying objects can be fatal, avoid moving in open during cyclone.

9.5.11 Recovery Activities

- 4 Get the de-warning from District Control Room and announce the same
- 4 Give immediate assessment to the authority on damage, massive casualty etc
- **4** Guide the search and rescue team with geographic information and high damage
- Setting up help desk
- Record keeping
- **4** Replenish depleted resources
- Keep calm, switch on the transistor radio and obey any instructions you hear on the radio.
- Check for injuries and first treat yourself, then help others. Follow up with injured at hospital
- 4 If there is a fire try to put it out with help of people around you.
- 4 Clean and rehabilitate the disaster site.
- If people are buried under the debris, call for help of the rescue teams and render your help.

9.5.12 Resource Requirements

Firefighting equipment

- Fire hydrant system (Refer Annexure No. 1)
- **Water sprinkler system.**
- **4** Portable Fire extinguishers.
- **4** PPE, SCBA, Fire suit.

Search and rescue equipment

k Ropes, ladders.

- Fortable flood lights, Search light.
- **4** Combustible gas, CO and Oxygen detector.
- **4** Cutting set.

Specialized heavy earthmoving equipment

- 🖕 JCB.
- 4 Dumper.
- \rm Crane.

9.5.13 Terms and Definitions

Cyclone: A weather system consisting of an area of low pressure, in which winds circulate at speeds exceeding 61 km/h, also known as 'Cyclone' or Tropical Storm. These are non-frontal synoptic scale weather systems originating over tropical waters with organized convention and definite cyclonic surface wind circulation. Winds rotate around the low pressure centre in an anti-clockwise direction in the Northern Hemisphere and in a clockwise direction in the Southern Hemisphere.

Depression (low pressure area): Region where the barometric pressure is lower relative to that in the surrounding regions at the same level and wind speed in circulation is between 17 and 27 knot (31 and 49 km/h).

Doppler radar: Radar capable of measuring the change in frequency of a radar wave caused by the relative motion of an object in the atmosphere within the area of radar coverage.

Evacuation: Organized, phased and supervised dispersal of people from dangerous or potentially dangerous areas.

Eye of the Cyclone: A term used for the centre of a cyclone. It is the point where the wind rotates in a counter-clockwise direction. In the centre of eye the wind is calm or slight and rainfall and cloudiness is nil or light.

Gale: Wind with a speed between 34 and 40 knots (Beaufort scale wind force 8).

Knot: A knot is a unit of speed and used around the world for maritime and aviation purposes.

1 international knot = 1 nautical mile per hour = 1.852 kilometres per hour.

Landfall: A point on the land where a cyclone just crosses the coast.

9.5.14 Revision/ Rehearsal/ Drill/ History

Sr. No.	Date Of Revision/updating	Revision No.	Reason For Revision
1.	XXX	0	Nil, First edition.

9.6 SOP FOR EARTHQUAKE

9.6.1 Incident Scenario

An earthquake is a violent shaking of the earth's crust due to breaking and shifting of rock beneath the earth surface. Earthquake is a common form of natural disaster which can take place any moment and at any place without any warning and can bring any scale of damage. There may be such locations which are distant, isolated and difficult to reach. There may also be a situation when simultaneously different types of incidents occur requiring different specialized handling. For example while a building may have collapsed in case of earthquake, short circuits, gas leaks (PNG lines if provided) may also have occurred resulting in fire at a number of places. In case of earth quake there is very little or virtually no time for evacuation and to take preventive measures for occurrence of such disaster.

9.6.2 Scope

This SOP is applicable for the site earth quake incidents.

9.6.3 Purpose

The purpose is to effective search and rescue of the earth quake affected location, medical treatment to injured and safe evacuation of people to safe location.

Sr.No.	Scenario	Impact Zone
1.	Earthquake.	Depends of intensity of earth quake.
2.	After effect fires.	Refer SoP No. 3.
3.	After effect flood.	Not anticipated at site.

9.6.4 Impact zones
9.6.5 Emergency response agency

Primary Agency

Fire and security Department

Secondary Agencies

- **Fire brigade and Police.**
- **4** The fire services in the Urban Local Bodies (ULB's).
- Listrict Disaster Control Cell.
- 🖊 RITs.
- 📥 NGOs.

9.6.6 Dos and DON'Ts

DURING AN EARTHQUAKE

- **Whether States and Keep Of States and Practice Drop, Cover and Hold.**
- Keep away from buildings, especially old, tall buildings or detached buildings, electricity wires and poles, slopes and walls. They are liable to collapse.
- **U** Do not panic. Remain calm and self-assured and help others who are distressed.
- **UO NOT use the elevators.**
- Do not turn on switches if you have electric connection in your place. Use your torch
- **W** Do not touch any metal object in contact with loose, hanging electric wires.
- Do not go near damaged structures or ender badly damaged buildings
- Do not go sightseeing or wandering in the streets aimlessly to see what is happening around.
- **Whether States and States and States and Keep the roads clear for the movement of relief and rescue teams.**
- Do not spread rumours.

INDOORS:

- Take cover under a sturdy desk, table, or bench or against an inside wall, and hold on. If there isn't a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.
- Do not rush to the doors or the exits and keep well away from windows, mirrors and furniture.

- Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.
- Stay in bed—if you are there when the earthquake strikes—hold on and protect your head with a pillow, unless you are under a heavy light fixture that could fall.
- 4 In that case, move to the nearest safe place.
- Let younger children, elderly and disabled people leave first.

Use a doorway for shelter only if it is in close proximity to you and if you know it is a strongly supported, load bearing doorway.

Stay inside until the shaking stops and it is safe to go outside. Most injuries during earthquakes occur when people are hit by falling objects when entering into or exiting from buildings.

Be aware that the electricity may go out or the sprinkler systems or fire alarms may turn on.

OUTDOORS

- **4** Stay there if safe.
- **Wove away from buildings, streetlights, and utility wires.**
- Do not run and do not wander in the street or on the roads for sightseeing. Walk towards an open place, in a calm and composed manner.
- 4 You must keep the roads free for movement of rescue and relief teams

IN A MOVING VEHICLE

- Move to side of the road and stop. Stop as quickly as safety permits and stay in the vehicle. Avoid stopping near or under buildings, trees, overpasses, and utility wires.
- Proceed cautiously once the earthquake has stopped, watching for road and bridge damage

TRAPPED UNDER DEBRIS

- \blacksquare Do not light a match.
- Do not move about or kick up dust.
- **4** Cover your mouth with a handkerchief or clothing.

- Tap on a pipe or wall so rescuers can locate you. Use a whistle if one is available.
- Shout only as a last resort—shouting can cause you to inhale dangerous amounts of dust.

9.6.7 Prevention and Mitigation Measures

- **4** Provision of firefighting equipment.
- Provision of PPE.
- **4** Provision of smoke detectors and Alarm system.
- **Water sprinkler**.
- 4 CCTV.
- PAS System.

9.6.8 Preparedness Activities

- Fire drill, mock drill.
- Training; Learn about causes and effects. Speak about them in a calm and composed manner
- Awareness program Posters, boards.
- Frepare back up teams ready for rotation of personnel.
- **Weep** a torch light and a working transistor radio with spare batteries.
- Keep an updated list of telephone numbers like Doctor, Fire, Police and District Administration, Ambulance, water, electricity, etc and all your family members should know them.
- **4** Arrange your place in such a manner that it is easy to move around.
- 4 Attach shelves, gas cylinders, flower pots etc., to the walls of the room.
- Place heavy objects on the floor or in lower shelves
- **u** Teach all members of your family how to turn off electricity and gas supply
- **u** Ensure that communication equipment are in working order

9.6.9 Response Activities

Earthquake assumption worst possible scenario.

TIME FRAME 0 TO 15 MINUTES

Earth quake noticed manually or detected on equipment/ sensor fire department to activate at site alarm from control room.

Site controller to inform the chief site controller and activate DMP Activate emergency services for firefighting (if any), the search and rescue teams in the affected areas with immediate effect.

Inform police, Fire brigade and Mobilizing site emergency services.
TIME FRAME 0 TO 30 MINUTES

Chief Site controller to analyse the available initial information on damage and needs. Verify the authentic of the incident and take decision on the level of the disaster, inform District Disaster Control Cell and mobilize external support agencies.

Emergency Co-ordinator to Mobilizing EoC if not affected or alternate EoC if required and feasible; Assembly point and head count.

Site controller to activate first aiders to provide first aid to affected and arranges to shift injured people to hospital if required. Emergency Coordinator to ensure appropriate mobilization of medical services from external agencies.

TIME FRAME 0 TO 3 HRS

Site controller to activate Maintenance team to re-establish communication links and restoration of critical utility services like water for firefighting, restoration of access roads.

Emergency Coordinator to Mobilize emergency response teams, coordinate with District disaster cell for IRT's. NGO's help and establish media management/ guidance to volunteers and aid agencies and for rumour control.

Provide additional security in affected areas and maintain law and order situation.

TIME FRAME 0 TO 24 HRS

Restore essential services i.e. power, water supply, communication Facilities etc. on priority basis.

Develop situation report of the affected areas and share with all Stakeholders.

Set-up an information centre/ help desk for identification.

NOTE: EXPECT EARTHQUAKE AFTER SHOCKS

- While Evacuation keep clear of buildings and glass in particular. Point key will be roll calls so rescue team knows where to concentrate their efforts in the event of building collapse.
- ↓ In the event of the quake ceasing and no visible damage be aware of aftershocks.
- **4** Re-occupy when safe to do so.
- **4** Be aware that items, especially those stored overhead may well have become dislodged.

9.6.10 Life Saving Measures

1. During Earthquake drop to the floor, take cover under a study desk or table and hold on to it so that it do not move away from you Wait there until the shaking stops.



2. Escape when you are inside building.



3. When you are outside building.





Move away from power lines, posts, walls, false ceiling, parapet, falling flower pots and other elements that may fall or collapse. Stay away from building with glass panes.

4. When on the road.



9.6.11 Recovery Activities

- 4 Get the de-warning from District Control Room and announce the same
- 4 Disseminate precautionary information on post disaster health hazards and remedies
- Give immediate assessment to the authority on damage, massive casualty etc
- **4** Guide the search and rescue team with geographic information and high damage
- Setting up help desk
- Record keeping
- **4** Replenish depleted resources
- Keep calm, switch on the transistor radio and obey any instructions you hear on the radio.
- Expect after shocks
- Check for injuries and first treat yourself, then help others. Follow up with injured at hospital
- 4 If there is a fire try to put it out with help of people around you.
- 4 Clean and rehabilitate the disaster site.
- 4 If people are buried under the debris, call for help of the rescue teams and render your help.

GETTING BACK TO NORMAL

Establish a program to restore both the disaster site and the damaged materials to a stable and usable condition.

4 Determine priorities for restoration work and seek the advice of a conservator as to the best methods and options, and obtain cost estimates.

4 Contact insurers.

4 Analyse the disaster and improve the plan in the light of experience.

4 Eat something to make you feel better and more capable of helping others.

4 When you can move out of the place carry with you essential food, water container, torch, transistor radio and medicines you normally use.

4 Do not drink water from open sources/ containers without filtering or purification.

9.6.12 Resource Requirements

Fire Fighting Equipment

- Fire hydrant system (Refer Annexure No. 1).
- **Water sprinkler system.**
- **4** Portable Fire extinguishers.
- ♣ PPE, SCBA, Fire suit.

Search and Rescue Equipment

- Ropes, ladders
- Portable flood lights, Search light.
- 4 Combustible gas, CO and Oxygen detector
- **4** Cutting set

Specialized Heavy Earthmoving Equipment

- 🖊 JCB
- **L** Dumper
- 4 Crane

9.6.13 Terms and Definitions

Earthquake: A sudden slipping or movement of a portion of the earth's crust, accompanied and followed by a series of vibrations.

Aftershock: An earthquake of similar or lesser intensity that follows the main earthquake.

Fault: The fracture across which displacement has occurred during an earthquake. The slippage may range from less than an inch to more than 10 yards in a severe earthquake.

Epicentre: The place on the earth's surface directly above the point on the fault where the earthquake ruptures began. Once fault slippage begins, it expands along the fault during the earthquake and can extend hundreds of miles before stopping.

Seismic Waves: Vibrations that travel outward from the earthquake fault at speeds of several miles per second. Although fault slippage directly under a structure can cause considerable damage, the vibrations of seismic waves cause most of the destruction during earthquakes.

Magnitude: The amount of energy released during an earthquake, which is computed from the amplitude of the seismic waves. A magnitude of 7.0 on the Richter scale indicates an extremely strong earthquake. Each whole number on the scale represents an increase of about 30 times more energy released than the previous whole number represents. Therefore, an earthquake measuring 6.0 is about 30 times more powerful than one measuring 5.0.

9.6.14 Revision/ rehearsal/ drill/ history

Sr. No.	Date Of Revision/updating	Revision No.	Reason For Revision
1.	XXX	0	Nil, First edition.

9.7 SOP FOR FLOOD

26 July 2005 Floods

In Mumbai, if you mention the date 26 July, many of those old enough will assume you are talking about the day in the great Indian city was brought to a standstill by severe flooding. Over 1,000 people were dead in the floods across the state of Maharashtra, many of them in Mumbai. Torrential rain hammered the state for 4 days. In Mumbai, as much as 994 mm (39.1 inches) of rain fell in just 24 hours. Trains, airports, roads, subway, hospitals, schools and even mobile telephone networks were in chaos. Much of the flooding in Mumbai occurred along the 18 km long Mithi River, a river in Salsette Island which merges into the sea at Mahim creek. The downpour increased levels of Lake Powai, which started to overlow, spilling vast amounts of water into the Mithi.

In a study in the Indian Institute of Technology-Bombay (IIT-B), Monash Academy and IIT-B's Interdisciplinary Program in Climate Studies found areas spanning from Worli, Prabhadevi, Elphinstone to Santacruz, Saki Naka, Kurla, Chunnabhatti and Chembur, Deonar, Trombay, Govandi and Mankhurd are at a maximum risk of floods and landslides (http://www.hindustantimes.com/mumbai/5-mumbai-wards-at-risk-of-floods-landslidesstudy/story-p33hYmkp5bhUnE8WtLltaN.html).

9.7.1 Incident Scenario

Heavy rain, followed by flooding of the locality, submerged roads resulting in to blocked access to site, potential for damage to properly and loss of life.

9.7.2 Scope

This SOP is applicable for the site flooding incidents.

9.7.3 Purpose

The purpose is to search and rescue operations of the persons trapped in the flooded and evacuation of people to safe location from vulnerable zone.

9.7.4 Impact Zones

SR.No.	Scenario	Impact Zone
1.	Earthquake.	Depends of intensity of earth quake.
2.	After effect fires.	Refer SoP No. 3.
3.	After effect flood.	Not anticipated at site.

9.7.5 Emergency Response Agency

Primary Agency

4 Fire and security Department

* Secondary Agencies

- 4 Fire brigade and Police.
- ↓ The fire services in the Urban Local Bodies (ULB's).

- **4** District Disaster Control Cell.
- 🖊 RIT's.
- 📥 NGO's.

9.7.6 Dos and DON'Ts

DO'S

- **U** Stay away from downed power lines.
- In high flood-prone areas, keep materials on hand like sandbags, plywood, plastic sheeting, and plastic garbage bags.
- Be aware of drainage channels and areas known to flood, so that you or your evacuation routes are not cut off.
- If you choose or are told to evacuate, move to a safe area before access is cut off by flood water.
- Monitor local radio/ television broadcasts.

DON'TS

- 🕹 Do not panic.
- Avoid driving into water of unknown depth. Moving water can quickly sweep your vehicle away.
- **4** Do not allow children to play in flooded areas.
- Test drinking water for portability; wells should be pumped out and the water tested before drinking.
- 4 Do not use fresh food that has come in contact with floodwaters.
- Do not to move into flooded areas because the authorities may have removed the manholes for efficient drainage and the indicators may get shifted due to water currents.
- 4 Do not walk on footpath covers may have been dislocated due to current
- Do not enter damaged buildings or structures
- **U** Do not touch electric poles, utility wires/cables
- **4** Do not use telephones except in life-threatening situations

DURING EVACUATION

- The entire family would evacuate together as a unit. However, to avoid stampede and confusion and in cases of inadequate transport or limited time, emergency evacuation would be undertaken in the following order:
 - a) Seriously injured and sick
 - b) Children, women and handicapped
 - c) Old
 - d) Able bodied
- Secure their homes/establishments. Close and lock doors and windows
- **urn off the main water valve and electricity.**
- Leave early enough to avoid being trapped.
- Follow recommended evacuation routes.
- Not to take shortcuts. They may be dangerous.
- **4** Stay away from downed power lines.

9.7.7 Prevention and Mitigation Activities

- Provision of life jackets, ropes.
- Provision of PPE.
- **4** Provision of smoke detectors and Alarm system.
- **Water sprinkler**.
- 🔶 CCTV.
- 📥 PAS System.

9.7.8 Preparedness Activities

- Mock drill
- Frepare back up teams ready for rotation of personnel.
- **Weep** a torch light and a working transistor radio with spare batteries.
- **U** Display an updated list of emergency telephone numbers.
- Ensure that communication equipment are in working order
- Estimate your vulnerability to floods by determining the elevation of your property.

Evaluate and check your insurance coverage. As construction grows around areas, flood prone areas change.

9.7.9 Response Activities

- **4** Raising the site emergency alarm
- 4 Inform police, Fire brigade and Mobilizing site emergency services
- 4 Determination of level of emergency, help from Advisory team if required
- 4 Mobilizing EoC and AP
- Hobilizing Emergency Respondent teams, IRT's, NGO's.
- **4** Mobilizing resources required for emergency response teams working
- 4 Co -ordination between all emergency services
- Communication with district disaster control cell and declaring off site emergency (if situation escalates)
- Head count at AP and feed back to SAR team
- SAR and Evacuation
- SOP implementation by the emergency response teams
- **W** Traffic control, law and order situation and crowd control.
- **4** Release of authorized information to the media.
- Emergency under control report to CSC
- **4** Termination of emergency and 'All Clear Alarm'.

9.7.10 Life Saving Measures

- 4 Let the unconscious person lie on side position,
- 4 Give artificial respiration

9.7.11 Recovery Activities

- **4** Get the de-warning from chief site controller and announce the same
- Information centres will be set up to provide response information to the public, relatives of victims and media
- **4** Replenishment of used stocks of rescue materials
- Follow up of injured at hospital.

- ♣ Setting up help desk
- Record keeping
- 4 Clean and rehabilitate the disaster site.
- Determine priorities for restoration work and seek the advice of a conservator as to the best methods and options, and obtain cost estimates.
- Contact insurers.
- 4 Analyse the disaster and improve the plan in the light of experience.

9.7.12 Resource Requirements

- ✤ Life jackets
- Search and rescue equipment Ropes, ladders, Search light.
- **4** PAS System.

9.7.13 Terms and Definitions

Mitigation

Activities taken to reduce the severity or consequences of an emergency.

Preparedness

Activities, tasks, programs, and systems developed and implemented prior to an emergency that are used to support the prevention of, mitigation of, response to and recovery from emergencies.

Response

Immediate and ongoing activities, tasks, programs, and systems to manage the effects of an incident that threatens life, property, operations, or the environment.

9.7.14 Revision/ Rehearsal/ Drill/ History

Sr. No.	Date Of Revision/updating	Revision No.	Reason For Revision
1.	XXX	0	Nil, First edition.

APPENDIX-1 CASE STUDY

- 1. The **security guard** at ECC (Emergency Control Centre) gets smoke detector gets activated on display panel at seven PM.
- 2. The security guard alerts the firefighting trained person on duty to attend and **verify the status** of the same and initiates firefighting operation with portable fire extinguisher.
- 3. The firefighting trained commutates the status to ECC and security person informs following information the **Site Incident Controller (Fire Department Head)** with identifying himself.
 - \triangleright Place: 10th floor lobby.
 - Incidence: Smoke coming from cable junction box.
 - ≻ Time: 7 pm.
 - ➤ Casualty: Nil.
 - Status: In house firefighting operation initiated as per fire/ explosion SOP.
- 4. Site incident controller while proceeding to incident site informs the same information to;
 - > Chief Site Controller Chairman of The Society proceeds to the ECC.
 - **Emergency co-coordinator Secretary of the Society** proceeds to the ECC.
- 5. Chief Site Controller and Emergency co-coordinator proceeds to at ECC and get further status report from the site incident controller.
- 6. **Emergency co-ordinator** raise fire alarm and activates site emergency services and coordinates activities such as;

Engineering Team

- Electricians to proceed to incident place to attend the problem, ensure power to emergency lighting and fire pump.
- Fire pumps operators to ensure working of sprinkler system and fire hydrant system.

Search and Rescue Team

Alert occupants of the 10th floor and floor below and floor above it and start evacuating of the same to refuge floor using staircase and take head count with guidance of site chief controller as precautionary measure.

- All occupants of the specified floor follow the evacuation instructions and all others keep alert for further announcements.
- 7. **Site incident controller** sends the status of incident to ECC especially potential of case escalating the incidence and smoke likely to enter the lift shaft.
- 8. **Emergency co-ordinator** guides SAR team to inform the occupants and Engineering team stops the lift operations.
- 9. The problems are attended safely and site incident controller informs the same to ECC.
- 10. Chief site controller after verifying authorizes to give all clear alarm.

11. Emergency co-coordinator raise the all clear alarm.

It should be noted that the sequence of operations in this case study are for illustration purpose to explain the use of this document effectively, involvement of offsite agencies excluded in this case study simplify the event. However actual scenario may be complex due to, fire spread to other flats, injury, smoke spread, power failure due to affected cable etc. hence need table top exercise involving all stake holders before any Mock Drill.

APPENDIX-2

DIRECTORY (EMERGENCY CONTACT NUMBERS)

S. No.	DESCRIPTION	CONTACT NUMBER			
	FIRE BRIGADE				
1	Emergency Control Room	101 / 22620111/			
2	Fire Brigade office MIDC Badlapur	0251-2682400			
	POLICE				
1	Police Control.	100			
2	Commissioner Of Police, Thane	022-25344499			
	Additional Commissioner of Police	022-25340070			
4	Deputy Commissioner of Police	022-25399760			
5	Joint Commissioner of Police	022-25342163			
6	Badlapur Police Station	0251-2665927			
MEDICAL ASSISTANCE (HOSPITALS)					
1	Bhagawati Hospital	0251-2670726			
2	Dhanvantari Hospital	0251-2690262			
3	Mamata Hospital	0251-2692372			
4	Rathod Dental Clinic	09970620380			
	ADMINISTRATION/ REGUL	ATORY AGENCIES			
1	Mantralaya Control	022-22024243			
2	Collector, Thane	022-25344041			
3	Additional Collector, Thane	022-25345132			
4	Rapid Action Force Camp	022-27762640			
5	Sub-Divisional Officer	022-25345110			
6	Tahsildar	0251-2688000			
	KEY PERSONNEL CONTACT	PHONE NUMBERS			
1.	M/s Tharwani Infrastructures	0251-2720600			

APPENDIX-3 ABBREVIATIONS

AFFF.	Aqueous Film Forming Foam.
AP.	Assembly Point.
C.T.S.	City Survey Number.
CCTV.	Close Circuit Television.
CO.	Carbon Monoxide.
CSC.	Chief Site Controller.
DC.	Development Code.
DDMA.	District Disaster Management Authority.
DG Set.	Diesel Operated Generator Set.
DM.	Disaster Management.
ECC.	Emergency Control Centre.
ERT.	Emergency Response Team.
HOD.	Head Of Department.
IAP.	Incident Action Plan.
IDRN.	India Disaster Resource Network.
IRT.	Incident Response Team.
Kmph	Kilometre Per Hour.
KW/m ²	Kilowatt Per Square Meter.
LEL.	Lower Explosive Limit.
LPG.	Liquefied Petroleum Gas.
Max.	Maximum.
TMC	Thane Municipal Corporation
Min.	Minimum.
NBC.	National Building Code.
NDMA.	National Disaster Management Authority.
NDRF.	National Disaster Response Force.
NGO's.	Non-Governmental Organizations.
PAS.	Public Address System
PEEP.	Personal Emergency Evacuation Plan.
PNG.	Piped Natural Gas.
PPE.	Personal Protective Equipment.
SAR.	Search And Rescue.
SCBA.	Self-Contained Breathing Apparatus.
SMS.	Short Message Service.
SOP's.	Standard Operating Procedures.
TV.	Tele Vision.
ULB's.	Urban Local Bodies.

Environment Management Plan-Construction Phase

Sr. No	Media	Aspect	Mitigation Measures	Implementation Schedule	Responsibility
1	Air	material handling and other construction activities.	Water Sprinkling of roads. Covered material storage area specifically for gravels and cement	Three times in peak construction activity in summer season	Site Engineer Project Proponent/ Site Contractor
2	Noise	Noise generated from construction activities, operation of construction equipment and traffic.	Site Barricading upto 6 mt all around the building which is to be constructed. Plantation along as species suggested	Prior to construction activity.	Project Proponent/ Site Contractor
3	Water	Surface runoff from project site, Oil/ fuel and waste spills, Improper debris disposal	Labor camps will be provided with sanitary facilities. Temporary toilets with septic tank and soak pit will be provided considering peak labour force. Adequate house-keeping facilities and practices will be maintained.	Prior to start structure work (peak construction activity)	Site Engineer / Safety Officer

Environment Management Plan-Construction Phase

Sr. No	Media	Aspect	Mitigation Measures	Implementation Schedule	Responsibility
4	Land use and aesthetics	Land development	Green Belt development with local species trees on ground for the proposed development.	During Construction activity trees will be planted	Project Proponent
5	Ecology, flora and fauna	Habitat disturbance during construction activity. Loss of vegetation.	Trees with ecological important species shall be planted.	During Construction	Project Proponent

Environment Management Plan-Operation Phase

Sr. No.	Media	Aspect	Mitigation Measures	Implementation Schedule	Responsibility / Maintenance
1	Air	Vehicular Emission, Dust emission & vehicular movement	The Building is having entry exit from existing 18.00 mt wide Road. Green Belt development along the road to reduce the air borne particles and to absorb the vehicular emissions Conclusion of parking analysis that one way & two way movement is provided wherever is possible for better maneuvering of the vehicles.	Before Handing over to end user	Project proponent
2	Noise	Noise from D.G sets, vehicle movement.	DG sets with acoustic enclosure. Maximum sound pressure level shall be 75 dB(A) at 1 meter from the enclosure surface as per the CPCB standards	Before Handing over to end user	Project proponent
3	Water	Sewage Discharge to Sewer line/recycled after treatment as per MPCB norms.	Total sewage generation shall be 445KLD. STP's shall be provided with 450 KLD capacity. Monitoring of STP inlet and outlet. Recycling of treated waste water for flushing and landscaping. Excess treated sewage shall be discharge in Municipal drains	Throughout the life cycle of project	Society 3

Environment Management Plan-Operation Phase

Sr. No.	Media	Aspect	Mitigation Measures	Implementation Schedule	Responsibility / Maintenance
4	Soil	Storage and disposal of solid waste, Discharge of sewage, Fuel and material spills, Pesticides use	OWC to process the Biodegradable waste for manure generation.	Before Handing over to users and throughout the life cycle of project	Housing society
5	Ecology, flora and fauna	Change in land cover.	RG area with 315 No's of trees (mainly local species) including podium RG.	Trees shall be planted during construction phase	Project proponent
6	Socio- economy	Job opportunity	The project will provide job opportunity in form of security guard, house keeping, gardener etc within project.		

Cost of EMP

Sr. No.	Method Adopted	Setting-Up Cost (Rs. Lakhs)
1	Rain Water Harvesting	60.0
2	Solid waste management	10.0
3	STP	53.0
4	Energy Conservation measures	88.0
5	Landscaping	13.0
	Total	224.00

Sr. No.	Method Adopted	Annual Maintenance And Operational Cost (Rs. Lakhs)
1	Rain Water Harvesting	3.0
2	Solid waste management	6.0
3	STP	8.0
4	Energy Conservation measures	4.0
5	Landscaping	2.6
	Total	23.60

TRAFFIC IMPACT ASSESSMENT STUDY OF PROPOSED RESIDENTIAL AND COMMERCIAL DEVELOPMENT AT AMBERNATH

By

M/s. THARWANI INFRASTRUCTURE



Prepared by



SAGE (Sustainable Approach for Green Environment) LLP

205, Second Floor, Bhavani Industrial Estate, Hare Krishna Road, Opp. Main Gate of IIT Bombay Powai, Mumbai - 400076

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Chapter 1

Introduction

1.1 Study Background

Vedant Nakshatra - S.No.70, H.No.1 (PT) &H.No.5 (PT) of Village Kulgaon, Tal-Ambernath, District-Thane has been proposed to construct Residential cum Commercial building by M/s. Tharwani Infrastructures. Conducting a TIA (Traffic Impact Assessment) is a part of the basic requirements to get any new establishment approved by the Ministry of Environment and Forestry (MoEF). The Ministry weighs the potential benefits of the establishment on the surrounding transportation and environmental systems against the negative impact and decides to approve or reject the construction of the proposed establishment.

(SAGE) Sustainable Approach for Green Environment LLP has been commissioned by the project proponent, M/s Tharwani Infrastructure to provide a Traffic Impact Study for this project.

1.2 Scope of the Study

The entire study can broadly be broken into the following tasks:

- Visit the site and understand the existing traffic pattern, traffic facilities and field constraints.
- Collect relevant traffic survey data through primary and secondary surveys fortraffic impact assessment.
- Quantify the traffic volume and density for road network around the project with and without extra demand for the coming project
- Project the traffic density for next 25 years for road network
- Study the traffic impact of the development on the surrounding road network with the consideration of future changes in the traffic and infrastructure.
- Study the internal traffic within the site layout to demonstrate the vehicular speed and space requirement.

- Calculate the time requirement to exit the vehicles for disaster management plan during peak hours.
- Identify the adequacy of the transport infrastructure and the remedial measures to improve the traffic plan.
- Preparation of final report, submission and presentation to the committee.

1.3 Report Structure

The report has been organized in the following order:

- **Chapter 1**: A brief introduction of the project
- Chapter 2: Background of the project and the road network to be studied is provided
- Chapter 3: The primary traffic surveys conducted to obtain the network traffic data
- **Chapter 4**: The performance of the road network in terms of LoS for the current and the projected future traffic and assess the impact of the proposed complex on the LoS.
- **Chapter 5**: Study of Parking space.
- Chapter 6: Retrieval Time Calculation in case of emergency as well as peak hours.
- Chapter 7: Analysis of Swept path
- **Chapter 8**: Traffic Management Plan during the development as well as after completion of proposed project for external and internal traffic.
- Chapter 9: Summary and Conclusion.

1.4 Design Parameters

The basic design parameters considered for the study has been illustrated below:

- 1. The social status as well as economic well-being of the residents plays an important role in determining the parking demand for any residential project.
- 2. The visitors will expect a safe and efficient circulation with good levels of service i.e. minimum waiting time at security check, proper traffic control at entry/exits, minimum congestion delays and pleasing aesthetics.

- 3. A design vehicle is a vehicle whose dimensions and operational characteristics are used to establish layout geometry. Toyota Innova (Big Car) and Maruti Swift (Small Car) and Volvo 400 (Fire Tender) were chosen as the design vehicles.
- 4. The maximum number of traffic a road can carry is referred to as its Capacity or design service volume. The service volumes considered for the project is given below:

Type of Roadway	Road Capacity*	Category
4-Lane (Two Way)	3000	Arterial
	1.0	

*Indian Road Congress 106:1990 Urban Road Capacity

5. Level of Service (LoS) can be defined as a letter designation that describes a range of operating characteristics on a given facility. Six Levels of Services are defined for capacity analysis. They are given letter designations from A to F, with LoS 'A' representing best level of operational standards and LoS 'F' the worst.

Level of Service (LoS)	Volume / Capacity Ratio (V/C)	Level of Comfort	Nature of flow
Α	< 0.30	Highest	Free flow
В	0.30 - 0.50		Reasonably free flow
С	0.50 - 0.70		Stable flow
D	0.70 - 0.90	Threshold	Approaching unstable flow
Ε	0.90 - 0.99		Unstable flow
F	≥1	Lowest	Forced Flow

 Table 1.1 Description of LoS Based on V/C Ratio

1.5 Entry/Exit Lane Capacity

Entry / Exit Lane Capacity for Car Parks		
Sr. No.	Type of Entry	Capacity (Veh/hour/lane)
	Free flow access into internal distributor road/structure (no parking	
1	spaces immediately after access i.e. Car Hoist distributing to several	800
	levels of car park)	
2	Free flow access	580
3	Lifting-arm barrier without ticket issue	550
4	Lifting-arm barrier with automatic ticket issue (push button)	360
5	Lifting-arm barrier with access card (slot-based)	235
6	Lifting-arm barrier with transponder (no slot – RFID etc.)	380

Sr. No.	Type of Exit	Capacity (Veh/hour/lane)
1	Ticket on entry and payment at a manned exit	240
2	Lifting-arm barrier without ticket issue	550
3	Ticket on entry and variable payment to a machine linked to the exit barrier	270
4	Ticket on entry and operation of the exit barrier by a prepaid ticket or token	400
5	Free flow exit	Analysis based on specific road layout (i.e. yield etc.)

*Rates based on:Design recommendations for multistory and underground car parks, Institute of Structural Engineers, 3rd Edition, June 2002 and HBS 2001, FGSV Vertag, January 2002

Chapter 2

Project Background

The plot Vedant Nakshatra situated at - S.No.70, H.No.1 (PT) & H.No.5 (PT) of village Kulgaon, Tal-Ambernath, District-Thane proposed site by M/s Tharwani Infrastructures is surrounded by different commercial buildings and hotels. The location of the plot is suitable for residential and commercial development.



Figure 2.1 Location of Proposed Plot (M/s Tharwani Infratructures)

Vehicles	Parking
Cars	33
Two Wheelers	707

Table 2.1 Details of Parking Area

Chapter 3

Site Appreciation, Existing Transport Network and Base Traffic

Extensive surveys were conducted on the road network around proposed project for getting the primary data related to the road network. The extensive surveys include - Road Inventory Surveys for network geometry.

3.1 Survey Locations



Figure 3.1 Locations for Data Collection

3.2 Schedule of Surveys for Data Collection

Sr. No.	Location	Date
1	DP Road	16/09/2016
2	Station Road (A-B)	16/09/2016
3	Station Road (B-C)	16/09/2016

Table 3.1 Schedule of Survey

3.3 Road Inventory Survey

Traffic survey was conducted for 12 hours to understand the hourly traffic variation for the roads. The hourly traffic distribution for different vehicles for all the mentioned locations has been illustrated in the below figures:

3.3.1 DP Road







Figure 3.3Hourly Total PCU and Volume Distribution for DP Road



Figure 3.4Modal Split (vehicles) for DP Road
3.3.2 Station Road (A-B)



Figure 3.5Categories Wise Hourly Traffic Distribution for Station Road (A-B)



Figure 3.6Hourly Total PCU and Volume Distribution for Station Road (A-B)



Figure 3.7Modal Split (vehicles) for Station Road (A-B)

3.3.3 Station Road (B-C)







Figure 3.9Hourly Total PCU and Volume Distribution for Station Road (B-C)



Figure 3.10Modal Split (vehicles) for Station Road (B-C)

Chapter 4

Traffic Data Analysis

4.1 Traffic Analysis

The road network around proposed site was analysed to determine its performance in order to observe the traffic and the projected traffic for the coming 25 years. To measure the network performance, volume by capacity ratio (V/C) and Level of Services (LoS) were calculated as per IRC recommendations.

Urban network is also analysed in terms of V/C ratio and LoS. This analysis is done for the four major and minor roads which will get affected by the traffic of proposed project.

4.2 Methodology Adopted for the Traffic Analysis

- 1. The first step was to calculate the traffic of this road network for coming twenty five years with the growth rate of 5% per year.
- 2. Volume of the traffic is converted to PCU (Passenger Car Unit) based on the number of vehicles and by using the appropriate conversion factor for each type of vehicle.
- The relevant Design Service Volume (DSV) of each road has been taken as the capacity as per IRC 106 – 1990.
- Level of Services (LoS) is identified for each road for each study year on the basis of Volume by Capacity ratio for the particular road.
- 5. The LoS has been calculated with and without the new development to identify the impact of proposed complex on present as well as future traffic on the road network.

4.3 Estimation of Capacity and LoS (for 2016)

Following analysis is done by considering theoretical capacity of roads. In this analysis the vehicles parked at the road side has not been considered.

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	V/C (Without Project)	LoS (Without Project)
DP Road	4 Lane (Two Way)	Arterial	459	0.11	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	1269	0.30	А
Station Road (B-C)	4 Lane (Two Way)	Arterial	1573	0.37	В

 Table 4.1 Estimation of LoS Value for Maximum Peak (2016)

Table 4.2 Estimation of LoS Value for 2016 (Morning 8 am – 11 am)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	V/C (Without Project)	LoS (Without Project)
DP Road	4 Lane (Two Way)	Arterial	296	0.07	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	1252	0.29	А
Station Road (B-C)	4 Lane (Two Way)	Arterial	1344	0.31	В

Table 4.3 Estimation of LoS Value for 2016 (Evening 5 pm – 8 pm)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	V/C (Without Project)	LoS (Without Project)
DP Road	4 Lane (Two Way)	Arterial	362	0.08	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	1110	0.26	А
Station Road (B-C)	4 Lane (Two Way)	Arterial	1515	0.35	В

4.4 Estimation of Capacity and LoS (after 5 years scenario-2021)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	585	639	0.14	0.15	А	В
Station Road (A-B)	4 Lane (Two Way)	Arterial	1620	1769	0.38	0.49	В	В
Station Road (B-C)	4 Lane (Two Way)	Arterial	2007	2191	0.47	0.51	В	С

 Table 4.4 Estimation of LoS Value for Maximum Peak (Year 2021)

Table 4.5 Estimation of LoS Value for Year 2021 (Morning 8am – 11am)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	378	432	0.09	0.10	А	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	1598	1747	0.37	0.41	В	В
Station Road (B-C)	4 Lane (Two Way)	Arterial	1715	1899	0.40	0.44	В	В

Table 4.6 Estimation of LoS Value for Year 2021 (Evening 5pm – 8pm)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	462	516	0.11	0.12	А	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	1416	1565	0.33	0.37	В	В
Station Road (B-C)	4 Lane (Two Way)	Arterial	1934	2118	0.45	0.49	В	В

4.5 Estimation of Capacity and LoS (after 15 years scenario-2031)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	954	1008	0.22	0.24	А	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	2638	2787	0.62	0.65	С	С
Station Road (B-C)	4 Lane (Two Way)	Arterial	3269	3453	0.76	0.81	D	D

 Table 4.7 Estimation of LoS Value for Maximum Peak (Year 2031)

Table 4.8 Estimation of LoS Value for Year 2031 (Morning 8am – 11am)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	615	669	0.14	0.16	А	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	2602	2751	0.61	0.64	С	С
Station Road (B-C)	4 Lane (Two Way)	Arterial	2794	2978	0.65	0.69	С	С

Table 4.9 Estimation of LoS Value for Year 2031 (Evening 5pm – 8pm)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	753	807	0.18	0.19	А	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	2307	2456	0.54	0.57	С	С
Station Road (B-C)	4 Lane (Two Way)	Arterial	3150	3334	0.73	0.78	D	D

4.6 Estimation of Capacity and LoS (after 25 years scenario-2041)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	1553	1607	0.36	0.38	В	В
Station Road (A-B)	4 Lane (Two Way)	Arterial	4297	4446	1.00	1.04	Е	F
Station Road (B-C)	4 Lane (Two Way)	Arterial	5325	5509	1.24	1.29	F	F

 Table 4.10 Estimation of LoS Value for Maximum Peak (Year 2041)

Table 4.11 Estimation of LoS Value for Year 2041 (Morning 8am – 11am)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	1002	1056	0.23	0.25	А	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	4239	4388	0.99	1.02	Е	F
Station Road (B-C)	4 Lane (Two Way)	Arterial	4551	4735	1.06	1.10	F	F

Table 4.12 Estimation of LoS Value for Year 2041 (Evening 5pm – 8pm)

Road	Type of Carriageway	Road Category	Total PCU (Without Project)	Total PCU (With Project)	V/C (Without Project)	V/C (With Project)	LoS (Without Project)	LoS (With Project)
DP Road	4 Lane (Two Way)	Arterial	1226	1280	0.29	0.30	А	А
Station Road (A-B)	4 Lane (Two Way)	Arterial	3758	3907	0.88	0.91	D	Е
Station Road (B-C)	4 Lane (Two Way)	Arterial	5130	5314	1.20	1.24	F	F

4.7 Comparison for Traffic Impact Due To Proposed Development with Current Facility



> Effect of V/C new development on D P Road

Figure 4.1Effect by New Development on D P Road



Effect of V/C new development on Station Road (A-B)

Figure 4.2 Effect of V/C by New Developmenton Station Road (A-B)



> Effect of V/C new development on Station Road (B-C)



4.8 Mitigation Measures

- The Mumbai Metropolitan Region Development Authority (MMRDA) plans to extend the proposed Thane-Bhiwandi-Kalyan monorail corridor up to Badlapur to connect Bhiwandi, Ambernath and Badlapur to Thane.
- Mumbai Urban Infrastructure Project (MUIP), Multi Modal Corridor connecting Virar and Alibaug, to be extended to Kalyan Ring Road, Shirgaon-Padgha-Titwala-Badlapur Link, Neral-Dasturi Naka-Matheran Road, Khopoli Bypass Road. These upcoming public transport alternatives are expected to reduce the PCU load by 15% and improve the LOS from F to D

Chapter 5

Parking Study Report

5.1 General Development Layout

M/s Tharwani Infrastructure has planned a Residential cum Commercial development at Ambernath. This site is well accessed by Public Transport i.e. Railway station, Bus stand.

The details of the Proposed Residential cum Commercial Development are given below:

• The total parking facility proposed for this development is 707 for Two Wheelers and 33 for Cars.

The parking statement of vehicles is presented in Table 2.1

The internal traffic circulation and the parking facility at Ground level are presented in following figures.

• Figures 5.1 and Figure 5.2 represents Ground Floor Parking Plan for Wing A to I and Ground Floor Parking Plan for Wing J to M respectively.



Figure 5.1 Ground Floor Parking Plan for Wing A to I



Figure 5.2 Ground Floor Parking Plan for Wing J to M

Chapter 6

Retrieval Analysis

It is important to ensure the safety of each of the occupant of the project during an emergency via proper DMP. In addition to safety of residents, the vehicles from each parking floor should be also be retrieved in a systemic manner. The planning of this retrieval is necessary in case of multilevel parking's to ensure smooth retrieval in quickest possible time.

The main objective of this analysis is to determine the total time required to vacate the entire parking area. In this project 707 parking spaces for Two Wheelers and 33 parking spaces for Cars are provided.

Assumptions:

- 1. Speed for Cars = 10Kmph on straight 5Kmph at curves
- 2. Headway for Cars = 1 m
- 3. During an emergency, all Car Hoists will be used for evacuation (exit)
- 4. During emergency, there will be simultaneous retrieval from multiple Exits
- 5. During emergency, the adjoining area will be cordoned off with help of police and Retrieval will be marshalled with help of security wardens
- 6. Cars will be retrieved one level after other
- 7. Retrieval Time for each car includes the backup manoeuvre and slow down at turns
- 8. The principle of LIFO (Last In First Out) will be applied
- 9. Initial Delay and Circulation Delay time is considered

Sr. No.	Description	Value
1	Average speed of vehicle within parking lot	10 Kmph (5.6 m/sec)
2	Average speed of vehicles on Car Hoists/turns	05Kmph (2.8 m/sec)
3	Space headway considered	1 m
4	Time headway considered	0.4 second (@10 Kmph)

Vehicles	Parking
Cars	33
Two Wheelers	707

Table 6.1 Parking Statement – Retrieval Analysis

6.1 Retrieval Time Calculation

During peak morning hour, when office going traffic will be predominant, there will be a high demand of vehicles, i.e. it would be required to retrieve 40% of total vehicles. The total time taken for retrieval of cars from each floor was calculated. This has been illustrated in Table No. 6.2 and table No.6.3.

Table 6.2 Retrieval Analysis for Emergency Scenario (100%)

Building No.	No. of cars in lane width	Total Cars+TW	Exit lane	Retrieval Time	Total Retrieval Time considering unforeseen delays (additional 5 minutes)
Wing A to M	2	740	4	9	14 minutes

 Table 6.3 Retrieval Analysis for Peak scenario (40%)

Building No.	No. of cars in lane width	Total Cars+TW	Exit lane	Retrieval Time	Total Retrieval Time considering unforeseen delays (additional 5 minutes)
Wing A to M	1	297	2	8	13 minutes

Considering simultaneous retrieval of Cars and Two Wheelers as well as additional 5 minutes each for circulation issue and unforeseen delays, retrieval time for cars and two wheelers from Wing A to M is **14 minutes** in emergency scenario. For peak scenario, retrieval time for cars and two wheelers from Wing A to M is **13 minutes**.

Chapter 7

Swept Path Analysis

It is the analysis of the path of the design vehicle undertaking a moment and/or a turning manoeuvre. At a basic level this includes calculating the Thread of each wheel during the turn and also calculating the manoeuvring space needed by the vehicle body (front & rear overhang). This is carried out using swept path analysis which demonstrates the following analysis:

- 1. To study the internal traffic plan layout for movement of the designed vehicle and space requirement.
- 2. To carry out the swept path analysis of vehicular movement for the proposed site layout at turning point of plan layout.
- 3. To suggest the solutions for free flow movement of internal traffic and possible geometric congestions at the site.



Figure 7.1Detailed Design and Dimensions of Design Car Vehicle



Figure 7.2 Detailed Design and Dimensions of Design Fire Engine Vehicle

Note: Speed for fire tender movement = 10 Kmph on straight 5 Kmph at curves.



Figure 7.3 Swept Path Analysis for Car



Chapter 8

Traffic Management Plan

8.1 Introduction

The proposed project, Vedant Nakshatra proposes to safely manage the vehicular traffic and acknowledges the safety of road users. This chapter contains the guidelines, general requirements and procedures to be used when activities or areas of work have a potential to impact on the highway and local traffic. The proposed project site is about 0.9 km away from Sewri station and hence would majorly impact the local traffic.

The road construction and maintenance activities are the integral part of road network development particularly for developing and transitional economies. The road work zones are areas of conflict between normal operating traffic, construction workers, road building machineries and construction traffic. Work zone accidents are caused by several factors such as frequently changing environment that occurs during road work whereby the driver is often surprised, insufficient warning signs foe normal and construction traffic, lack of audible warning to workers and inadequate provisions of safety devices to protect workers. An ideal way to reduce work zone accidents is to create a working area that does not influence the normal traffic flow by segregating and shielding the site.

To ensure safety of all, there is a need to adopt an efficient and effective plan for management of traffic. Work Zone Traffic Management Plans (WZTMP) are required to meet the safety needs of regular traffic as well as work traffic, ensuring minimum disruption in access to properties and movement of pedestrians

8.2 Purpose of Traffic Management Plans (TMP)

The primary purpose of the Traffic Management Plans is to provide for the reasonably safe and efficient movement of road users through or around the proposed project while reasonably protecting the workers and equipment. When the normal function of the roadway is affected with the presence of workers and equipment, the TMP provides for continuity of the movement for motor vehicle, bicycle and pedestrian traffic, transit operations and access to properties and utilities.

Work zones present constantly changing conditions that are not expected by the road users, which creates an even higher degree of vulnerability for the workers present near the roadway. A concurrent objective of the TMP is the efficient construction and maintenance of the highway, as well as efficient resolution of traffic incidents, if any, likely to occur in the work zone. The TMP, therefore, should facilitate the smooth and efficient flow of traffic as well as safe working environment.

8.3 Basic Principles of Work Zones Traffic Management Plans (WTMP)

The basic safety principles governing the design of roadways should also govern the design of Work Zones Traffic Management Plans (WTMP). While designing the WTMP, all care needs to be taken so that anyone coming along the road or the footpath from any direction understands exactly what is happening and what is expected of him/her.

The aim should be to facilitate the passage of road users through such work zones using roadway geometrics, roadside features and Traffic Control (TC) devices comparable to those for normal highway operations. Thus, road user movement should be free from any hazard with the following aspects in view:

• WTMP at work sites should be designed on the assumption that drivers will only reduce their speeds if they clearly perceive a need to do so. Frequent and abrupt changes in geometrics such as lane narrowing, dropped lanes, or main roadway transitions, that require rapid manoeuvres, need to be avoided.

- Provisions should be made for the safe operation of work, particularly on high-speed, high-volume roads.
- Bicyclists and pedestrians, including those with disabilities, should be provided with access and safe passage through the work zones. Bicyclists and pedestrians should be guided in a clear and positive manner while approaching and traversing the work zones.
- Roadway occupancy (i.e. using the roadway for construction activities) should be scheduled during off-peak hours, and if necessary, night work should be considered after carefully assessing its pros and cons.
- Road users and worker safety and accessibility in work zones should be an integral and high-priority element of every project, from planning through design and construction.
- Early co-ordination with officials having jurisdiction over the affected cross streets and those providing emergency services, should take place before roadway or side street closings.
- Special plan preparation and co-ordination with transit, other highway agencies, law enforcement and other emergency units, utilities, schools and railways are needed for reducing unexpected and unusual road users resistance.
- Special attention may be needed to regulate and control heavy commercial vehicle traffic in the work zones.

8.4 Planning of WTMP

The planning and designing of WTMP should be based on some of the important considerations:

1. Provide safety for road users and workers

- 2. Minimize hindrance or delay to road users
- 3. Provide clear and positive guidance to road users
- 4. Ensure roadside safety maintenance
- 5. Ensure that planners and decision makers have the necessary knowledge
- 6. Provide good public relations

8.5 Traffic Calming

A Traffic Management plan indicating traffic circulation, traffic calming and traffic control is indicated. Traffic calming is intended to slow and control motor-vehicle traffic in order to improve safety for pedestrians and bicyclists. Traffic calming measures are of various types like speed tables, curb extension, chicane etc. These are mitigation measures to ensure safety.

8.6 Traffic Control Measures

Generally, the internal roads are undivided to maintain flexibility of traffic lanes. Minimum 6m wide roadway width has been provided for the movement of vehicles. Recommended design speed on the internal road is 15kmph and on the turns is 10kmph. Speed tables will be provided near the entrance/exit point to control traffic and regulate speed of vehicles. An illustrative picture is also shown in Figure 7.1. Additionally, the following shall be required to maintain traffic flow at required level of service.

- Road Markings and Signages: Proper road markings (edge, median, arrows, turning, Kerb) and Signages (direction, turning, speed, and pedestrian crossings) will be installed and maintained on all roads in the vicinity of project premises.
- On-street parking will be prohibited on all external and internal streets.

- Pick and drop at designated places only.
- Preferably no U-Turn on roadway
- Traffic calming measures speed tables, signage Apart from internal signage it will be requested to provide necessary signage and traffic control measures, on neighbouring roads, such as Speed limit, Left hand curve, pedestrian crossing etc.

8.7 Traffic control measure for site

- 1. Speed Bumps will be provided at entry/exits as well as on longer distances.
- 2. Safety Mirrors at curve ends will be installed as safety measure and to give a proper view of the approaching vehicles.
- 3. Signage to specify speed limit on curves and straight road, no parking zones, disabled parking etc. will be displayed at respective locations.
- 4. Fire Extinguisher will be installed at multiple points in case of emergency.
- 5. Floor Markings will be provided to denote the parking space, reserve parking, visitors parking, etc.
- 6. Sufficient Lights at proper distances will be installed to prevent collision and accidents during night time.
- 7. Pedestrian Crossing will be installed for safe road crossing.
- 8. Temple Area will be marked with Silence Area signage

Sr. No	Description	Signage
1	Speed Limit	SPEED LIMIT
2	Silence Zone	HORNS PROHIBITED
3	Pedestrian Crossing	PEDESTRIAN CROSSING
4	Left Hand Curve	A

Figure 8.1Traffic Control Measures

Chapter 9

Summary and Conclusion

9.1 Summary

The first chapter provided a brief introduction to the presented study and the study area. All the steps needed to be done in the project were also listed, and the structure of the report was provided.

The second chapter provided basic information regarding the proposed establishments. The connectivity of the study area was discussed. Background of the study road network was also provided.

The third chapter listed down the surveys conducted to generate the basic and primary traffic data for the study network as well as the residential complex. The summaries of the surveys were presented.

The fourth chapter dealt with the congestion and LoS analysis of the roads in the network. The impact of the new development was quantified in terms of V/C ratio. Also, impact analyses for long term period were carried out with project and without project. Here, it has been analysed for the coming 25 years with the 10-year intervals. The years in which any road was reaching its theoretical capacity was also identified.

The fifth chapter is all about parking space proposed for this project.

The sixth chapter gives the retrieval time in case of emergency as well as for peak hours for proposed project.

The Seventh Chapter gives the ideal movement of car and Fire truck for free movement in parking at straight path and at curves

The eighth chapter is giving idea about traffic management plan during the project development and after completion of proposed project.

9.2 Concluding Remarks

Traffic Impact (Current Scenario):

Traffic impact analysis shows that, generated traffic from the proposed new development will not have considerable impact because road width is wider and traffic density is lower. Also, maximum LoS of each road of the this road network is good as presented in Table 4.1 on the surrounding road network in terms of V/C ratio and Level of Service (LoS). It was also noted that, with all these changes, most of the roads are providing acceptable level of service. LoS C represents a condition of stable flow with average travel speed. Peak hour traffic impact of the entire residential development on the roads is between 8 am to 11 pm (morning peak hours) and 5 pm to 8 pm (evening peak hours). All the analysed roads i.e. DP Road and Station Road have Level of Service between B to D for without project estimation. These roads represent best operating conditions and the general level of comfort and convenience provided to the road users is excellent.

Traffic Impact (Future Scenario):

Traffic congestion level for future scenario at study area was analysed and their results shows the changes in V/C ratio and Level of Service. This effect would have negligible impact on the future traffic scenario.

कुळगांव बदलापूर नगरपरिषद

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प्रति,

बांधकाम पूर्णतेचा दाखला/भोगवटा प्रमाणपत्र

मे.थारवानी इन्फ्रास्ट्रक्चरचे प्रोप्रा.श्री.मोहन हरदासमल थारवानी, द्वारा श्री.सतिश ओक (वास्तुशिल्पकार) कुळगांव बदलापूर

श्री.सतिश ओक (वास्तुशिल्पकार) बदलापूर. बांधकाम परवाना क्र. सीओ/८२/६९३२ यांचे दिनांक १९/१/२०१७ रोजीचे अर्जावरुन दाखला देण्यात येतो की, त्यांनी कुळगांव-बदलापूर नगरपरिषद हद्दीत स.नं. ७० हि.नं.१ पैकी व ५ पैकी, मौजे कुळगांव ता.अंबरनाथ कुळगांव-बदलापूर नगरपरिषद यांचे कडील बांधकाम परवानगी जा.क्र. कुबनप/ नरवि/ बांप /२७१४-१८२,दि.११/१०/२०१३ अन्यये मंजूर केलेल्या नकाशे प्रमाणे राहणेसाठी बांधकाम पूर्ण केले आहे. खालील अटींवर भोगवटा प्रमाणपत्र देण्यात येत आहे. (बांधकाम पूर्ण झाल्याची तारीख १५/१/२०१७) (विंग डी,ई,एफ,जी,एच व आय करीता)

	विंग - डी	विंग - ई	विंग - एफ	
मजल	संख्या	संख्या	संख्या	
 तळमजला 	स्टिल्ट	स्टिल्ट	स्टिल्ट	
२) पहिला मजला	४ ब्लॉक - १४ खोल्या	४ ब्लॉक - १२ खोल्या	४ ब्लॉक - १२ खोल्या	1 4 8 30
३) दुसरा मजला	४ ब्लॉक - १४ खोल्या	४ ब्लॉक - १२ खोल्या	४ ब्लॉक - १२ खोल्या	
४) तिसरा मजला	४ ब्लॉक - १४ खोल्या	४ ब्लॉक - १२ खोल्या	४ ब्लॉक - १२ खोल्या	रहिवास
५)चौथा मजलाा	४ ब्लॉक - १४ खोल्या	४ ब्लॉक - १२ खोल्या	४ ब्लॉक - १२ खोल्या	1. 1. 1. 1.
६) पाचवा मजला	४ ब्लॉक - १४ खोल्या	४ ब्लॉक - १२ खोल्या	४ ब्लॉक - १२ खोल्या	
७) सहावा मजला	४ ब्लॉक - १४ खोल्या	४ ब्लॉक - १२ खोल्या	४ ब्लॉक - १२ खोल्या	an and
८) सातवा मजला	४ ब्लॉक - १४ खोल्या	४ ब्लॉक - १२ खोल्या	४ ब्लॉक - १२ खोल्या	24.00
	२४ व्यॉक-१४ ग्रोल्ग	२/ ल्लॉक-/४ खोल्या	२८ ब्लॉक-८४ खोल्या	142.02
labol-	२८ बनाक-३८ आल्पा	रह प्लाक ८४ ज्यारमा	10 411 00 0111	and the second s
<u> </u>	विंग - जी	विंग - एच	विंग - आय	
एकूण- मजले	रेट प्याय-50 जाल्या विंग - जी संख्या	विंग - एच संख्या	विंग - आय संख्या	
एकूण- मजले १) तळमजला	हिंग - जी संख्या सिटल्ट	विंग - एच संख्या रिटल्ट	विंग - आय संख्या सिटल्ट	
एकूण- मजले १) तळमजला २) पहिला मजला	रिट प्राय-५८ जाल्या विंग - जी संख्या रिटल्ट ४ ब्लॉक - १२ खोल्या	विंग - एच संख्या स्टिल्ट ४ ब्लॉक - १२ खोल्या	विंग - आय संख्या स्टिल्ट ४ ब्लॉक - १४ खोल्या	
एकूण- मजले १) तळमजला २) पहिला मजला ३) दुसरा मजला	रिट प्र्याफ-९८ जाल्या विंग - जी संख्या रिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - एच संख्या सिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - आय संख्या स्टिल्ट ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या	
एकूण- मजले १) तळमजला २) पहिला मजला ३) दुसरा मजला ४) तिसरा मजला	रिट प्र्याय-५८ जाल्या विंग - जी संख्या रिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - एच संख्या सिंटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - आय संख्या स्टिल्ट ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या	रहिवास
एकूण- मजले १) तळमजला २) पहिला मजला ३) दुसरा मजला ४) तिसरा मजला ५)चौथा मजलाा	रिट प्राय-५८ आत्पा विंग - जी संख्या रिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - एच संख्या सिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - आय संख्या स्टिल्ट ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या	रहिवास
एकूण- मजले १) तळमजला २) पहिला मजला ३) दुसरा मजला ४) तिसरा मजला ५)चौथा मजलाा ६) पाचवा मजला	रिट प्रमाय-९८ आत्पा विंग - जी संख्या रिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - एच संख्या सिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - आय संख्या सिटल्ट ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या	रहिवास
एकूण- मजले १) तळमजला २) पहिला मजला ३) दुसरा मजला ४) तिसरा मजला ५)चौथा मजलाा ६) पाचवा मजला ७) सहावा मजला	रिट प्रमाय- ५२ उप्रोल्पा विंग - जी संख्या रिटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - एच संख्या स्टिल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - आय संख्या सिटल्ट ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या	रहिवास
एकूण- मजले १) तळमजला २) पहिला मजला २) दुसरा मजला ४) तिसरा मजला ४) चौथा मजलाा ६) पाचवा मजला ७) सहावा मजला ८) सातवा मजला	रिट प्रांभ- ५२ छाल्पा विंग - जी संख्या रिटेल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - एच संख्या सिंटल्ट ४ ब्लॉक - १२ खोल्या ४ ब्लॉक - १२ खोल्या	विंग - आय संख्या सिटल्ट ४ ब्लॉक - १४ खोल्या ४ ब्लॉक - १४ खोल्या	रहिवास

3 जेव्हा सज्जा (बाल्कनी) बंदिस्त करण्यात आला/आली असेल तर त्याचे समोरील व वरील १/३ क्षेत्रासाठी ,लुवर्स ग्लास, शटर्स अथवा ग्रील्स लावणे, अनिवार्य राहील व पॅरोपेट सोडून उर्वरित समोरील क्षेत्रासाठी ग्लेजड शेटर्स बंदिस्त करणे आवश्यक राहील.

२ तसेच तळमजल्यास व टेरेस फलोअरला बाल्कनी बंदिस्त करणे अनुज्ञेय असणार नाही.

भोगवटा प्रमाणपत्र सोबत दर्शविलेले नकाशातील बांधकामा व्यतिरिक्त इतर बांधकाम हे अनधिकृत समजण्यात येवून त्यावर महाराष्ट्र प्रादेशिक व नगर रचना अधिनियम १९६६ चे कलम ५२ ते ५६ नुसार कारवाई करण्यात येईल याची नोंद घ्यावी.

8 भविष्यात सामासिक अंतरातील जागा नगरपरिषदेस रस्ता रुंदीकरणासाठी आवश्यक भासल्यास हस्तांतरीत करावी लागेल. टेरेस व पॉकेट टेरस बंदिस्त करु नये.

पावसाळी पाणी वाया जावू नये यासाठी रुफ टॉप हार्वेस्टिंग करणेत यावे व पाणी जमीनीमध्ये मुरवावे.

 द विषयाधीन प्रकल्पामध्ये बसविण्यात आलेल्या मलनिस्सारण प्रक्रिया संयंत्राची दैनिक देखभाल व संनियंत्रण संबंधित विकासक/भविष्यात निर्माण होणाऱ्या सोसायटीने करावी

७ दर सहा महिन्यांनी या यंत्रणेचे लेखा परिक्षण अहवाल मलनिस्सारण विभागास देण्यात यावा.

८ सदर यंत्रणा कार्यान्वित न राहिल्यास भविष्यात नगरपालिकेच्या भूमिगत गटार योजनेस मलनिस्सारण व्यवस्था जोडणे बंधनकारक राहिल व अशा वेळेस प्रती सदनिका रु. १०००/- शुल्क भरणे आवश्यक राहील

सहाय्यक नगर रचनाकार कुळगांव-बदलापूर नगरपरिषद कुळगाव. प्रत-कर विभाग, कुळगांव-बदलापूर नगरपरिषद

नगरव Z कुळगांव

मुख्याधिकारी तथा नियोजन प्राधिकारी कुळगांव-बदलापूर नगरपरिषद कल्प्यांव नगरपरिषद दुवे रुग्णालय ईमारत, पहिला मजला, आदर्श विदयामंदिर रोड, बदलापूर रेल्वे स्टेशन (पूर्व) कुळगांव, पिन-४२१५०३, ता.अंबरनाथ जि.ठाणे, ईमेलः- coud.kulgaonbadalapur@maharashtra.gov.in. वेबसाईटः- http://kbmc.gov.in

कुळगाव बदलापूर नगरपरिषद

जावक क्रमांक/कु-ब.न.प./नरवि/ ४७१८ /२०१७-२०१८

दिनांक: 9६ / 0६/२०१७

बांधकाम पुर्णतेचा दाखला / भोगवटा प्रमाणपत्र

प्रति,

मे.थारवानी इन्फ्रास्ट्रक्चरचे प्रोप्रा.श्री.मोहन हरदासमल थारवानी, द्वारा श्री.सतिश ओक,(वास्तुशिल्पकार) कुळगांव-बदलापूर

श्री.सतिश ओक (वास्तुशिल्पकार) बदलापूर. बांधकाम परवाना क्र. सीओ/८२/६९३२ यांचे दिनांक ५/५/२०१७ रोजीचे अर्जावरुन दाखला देण्यात येतो की, त्यांनी कुळगांव-बदलापूर नगरपरिषद हद्दीत स.नं.७० हि.नं.१ व ५ पैकी मौजे कुळगांव, ता.अंबरनाथ कुळगांव-बदलापूर नगरपरिषद यांचे कडील बांधकाम परवानगी जा.क्र. कुबनप/नरवि/ बांप /२७१४-१८२, दि.११/१०/२०१३ व सुधारीत बांधकाम परवानगी जा.क्र.कुबनप/नरवि/बांप/८९६९-१६४ दि.३१/१२/२०१५ अन्वये मंजूर केलेल्या नकाशे प्रमाणे राहणेसाठी /वाणिज्यसाठी बांधकाम पूर्ण केले आहे. (बांधकाम पूर्ण झाल्याची तारीख १/५/२०१७) (विंग ओ,बी व सी करीता)

	1. C. M.	f	वंग - अे				विंग	ग - बी			विं	ग - सं	f	
मजले	संख्या				₹	ांख्या		संख्या				वापर		
१) बत्रप्र बत्ना		भा	ग स्टिल्ट	3		गिरन								
3) तळनजला	७ दुकाने								-	and the second				
२) पहिला मजला	कर्माशअल एरिया	2	ब्लॉक	c	खोल्या	8	ৰ্লাক	38	खोल्या	8	ब्लॉक	35	खोल्या	
३) दुसरा मजला	No.	8	জ্লাক	30	खोल्या	8	জ্লাক	.38	खोल्यां	8	জ্লাঁক	38	खोल्या	
४) तिसरा मजला		8	ब्लॉक	30	खोल्या	8	ब्लॉक	38	खोल्या	8	ब्लॉक	36	खोल्या	
५) चौथा मजला		8	ब्लॉक	30	खोल्या	8	ब्लॉक	38	खोल्या	8	ब्लॉक	36	खोल्या	राहवास,
६) पाचवा मजला		8	ब्लॉक	30	खोल्या	8	ब्लॉक	38	खोल्या	8	ब्लॉक	38	खोल्या	anoisa
७) सहावा मजला		8	ब्लॉक	36	खोल्या	8	ন্লাক	38	खोल्या	8	ন্লাক	38	खोल्या	
८) सातवा मजला		8	ब्लॉक	30	खोल्या	8	ब्लॉक	38	खोल्या	8	ৰ্লাক	38	खोल्या	
एकूण-	७ दुकाने कर्माशअल एरिया	२६	ब्लॉक	330	खोल्या	25	ब्लॉक	55	खोल्या	૨૮	ब्लॉक	356	खोल्या	

- १ जेव्हा सज्जा (बाल्कनी) बंदिस्त करण्यात आला/आली असेल तर त्याचे समोरील व वरील १/३ क्षेत्रासाठी ,लुवर्स ग्लास, शटर्स अथवा ग्रील्स लावणे, अनिवार्य राहील व पॅरोपेट सोडून उर्वरित समोरील क्षेत्रासाठी ग्लेजड शेटर्स बंदिस्त करणे आवश्यक राहील.
- २ तसेच तळमजल्यास व टेरेस फ्लोअरला बाल्कनी बंदिस्त करणे अनुज्ञेय असणार नाही.
- ३ भोगवटा प्रमाणपत्र सोबत दर्शविलेले नकाशातील बांधकामा व्यतिरिक्त इतर बांधकाम हे अनधिकृत समजण्यात येवून त्यावर महाराष्ट्र प्रादेशिक व नगर रचना अधिनियम १९६६ चे कलम ५२ ते ५६ नुसार कार्यवाही करण्यात येईल याची नोंद घ्यावी.
- ४ भविष्यात सामासिक अंतरातील जागा नगरपरिषदेस रस्ता रुंदीकरणासाठी आवश्यक भासल्यास हस्तांतरीत करावी लागेल. टेरेस व पॉकेट टेरस बंदिस्त करु नये.
- भ पावसाळी पाणी वाया जावू नये यासाठी रुफ टॉप हार्वेस्टिंग करणेत यावे व पाणी जमीनीमध्ये मुरवावे.

52915

कुळगांव-बदलापूर नगरपरिषद कुळगांव.

प्रत, १) कर विभाग, कुळगांव-बदलापूर नगरपरिषद



मुख्याध्रिकारी तथा नियोजन प्राधिकारी कुळगांव-बदलापूर नगरपरिषद कुळगांव.



07		a period in such as		- 1/7	0
10.51					STIN
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.78 1566.74

3.36 NIL

WING 'A, B & C' COMPLETED VIDE LETTER

WING 'D TO I' COMPLETED VIDE LETTER M

70.85	
42.68	11 (9)
8 3	
REA DIAGRAM SCALE 1.500	

8 MT. W. ROAD SET BACK (B)	Lister.
1/2 X 36.12 X 4.47 X 1 NO = 80.73 SC	MT
1/2 X 82.88 X 3.96 X 1 NO = 164.10 SO	MT.
1/2 X 47.15 X 4.21 X 1 NO = 99.25 SO	MT
1/2 X 44.32 X 2.75 X 1 NO = 60.94 SC	ML
TOTAL ADDITION = 405.02 SQ	MT.

	ADDRESS CALLS & CALLS & CONTRACT & CONTRACT			BURG
	WING 'L' TOTAL TERRACE AREA	=	238.06	sQ.
	WING 'M' TOTAL TERRACE AREA	=	904.37	SQ.
	TOTAL 20 % TERRACE ARE	A = 1	291.36	SQ.
	18.MT.W. ROAD AREA C	ALCU	LATION	
PF	OP. ROAD AREA =	2860	.69 80.	MT.

ROAD SET BACK (A) AREA = 125.45 SC

ROAD SET BACK (A) AREA = 405.02 \$

TOTAL 18 MT, ROAD AREA = 3391.16 \$

WING 'K'TOTAL

TERRACE AREA STATEMENT

AS PER D.C.R. NO. 15.4.3

SQ.MT.	SECOND FLOOR BUILT UP AREA	203,63	(SPE
SQ.MT.	THIRD FLOOR BUILT UP AREA	203,63	
	FOURTH FLOOR BUILT UP AREA	203.63	
	FIFTH FLOOR BUILT UP AREA	203.63	
MT.	SIXTH FLOOR BUILT UP AREA	203.63	
MT. MT.	SEVENTH FLOOR BUILT UP AREA	203.63	
MT.	TOTAL FLOOR BUILT UP AREA	1588.72	1
	EXECSS BALC. AREA	13.41	
	TOTAL BUILT UP AREA	1602.13	1

TOTAL AREA = (WING A+B+C+D+E+F+G+H+1) 10058.02 SQ.MT.

TOTAL N.D.Z AREA IN SQ.MT.

1) S.NO. 70, H.NO. 1(PT) = 7800.71 SQ

2) S.NO. 70, H.NO. 5(PT) = 1145.55 SQ

TOTAL N.D.Z. AREA = 8946.26 50

FLOOR/TYPE OF BLDG. WING 'A' WING 'B' WING 'C'

FIRST FLOOR BUILT UP AREA 227.12 160.06 223.82

GROUND FLOOR BUILT UP AREA 139.82 NIL NIL

3 1/	2 X 2 X	37.51	X	7.56	X	NO	100	141.79	SQ.MT
5 1/	2 X	18.44	X	3.32	X	NO		30.61	SQ.MT.
6 1/	2 X	18,44	X	10.37	X	NO		95.61	SQ.MT.
		11	DIA	LADD	TICK	Masic	1228	560.12	SQ.MT.

R.G. AREA CALCULATION



R.G. 1 4







SOAK PIT.

STAIRCASE AREA CALCULATION (EXEMPTED IN F.A.R.)

WING	A		133.01	SQ.MT,	
WING	'B'	=	115.19	SQ.MT.	
WING	'C'	=	115.19	SQ.MT.	
WING	'D!		112.76	SQ.MT.	
WING	'E'	=	114.49	SQ.MT.	
WING	'E'	=	114.49	SQ.MT.	
WING	'G'		114.49	SQ.MT.	
WING	H!	-	114.49	SQ.MT.	
WING.	'I'	=	112.76	SQ.MT.	
AIRCAS	E AREA	ŧ	1046.87	SQ.MT.	



(6)

BLOCK PLAN

SCALE 1:500

TO 100 36 NOS. NIL MMERCIAL NIL NIL NIL DTAL PARKING 36 NOS. 347.50 NOS 314 NOS NIL

REQUIRED | PROVIDED

LATS AREA FOUR WHEELER PARKING

IN SQ.MTS.

TO 50

PARKING AREA STATEMENT FOR WING 'K & L'

CONSIDERING FUTURE EXPANSION IS PROVIDED

NIL

STATEMENT OF PERMISSIBLE F.S.I. AS PER STANDERIES BUILDING BYE LAWS ----- (D)

PERMISSIBLE AREA AS PER NEW D.C. RULE = 12701.32 (A) AREA APPROVED EARLIER INCLUDING D.P. ROAD AREA = 10090.75 ************* LESS: -LESS D.P. ROAD AREA = 3391,16

TOTAL NET PREVIOUSLY APPROVED AREA ON THE NET PLOT = 6699.59 (B NORMAL F.S.I. PERMISSIBLE (1.10 OF THE NET PLOT AREA) = 12701,32-6699,59 = 6001.73 X 1.1 = 6601.90 SQ.MT. (A - B)

20% F.S.I WITH PAYMENT OF PREMIUM ON BALANCE AREA ******* (A - B)

= 12701.32.6699.59 = 6001.73 X 20% = 1200.34 SQ.MT.



TWO WHEELER PARKING

REQUIRED PROVIDED

347.50 NOS 348 NOS

NIL

NIL

AREA (COMPLETED BUILDINGS)		STAMP OF APPROVAL OF PLAN 1
KBMC/TPD/4718 DATED - 16.06.2017 BMC/TPD/2622 DATED - 05.04.2017		Forth Sta
VING 'D' WING 'E' WING 'F' WING 'G' WING'H' WING	11	अट क. ? ला अधीन राहून गेभू २२७ बांधकाम नकाओं मंजरी
NIL NIL NIL NIL NI	L	रंगाने दुरूसी
157.53 127.74 127.74 127.74 127.74 157	.53	(2223-390 1349e
157.53 127.74 127.74 127.74 127.74 157	.53	astrat and and and and
157.53 127.74 127.74 127.74 127.74 157	.53	M _ H_ P
157.53 127.74 127.74 127.74 127.74 157	.53	महायाक नगर रचनाकार कल्पाव करनापर नगरपालिक
157.53 127.74 127.74 127.74 127.74 157	.53	कुळगांव-बदलापूर नगरपालिका,परिषद कृळगांच
157.53 127.74 127.74 127.74 127.74 157	.53	
1102.71 894.18 894.18 894.18 894.18 1102	.71	
6.72 0.63 0.63 0.63 6	.72	
VCESS BALC 22 72 SO MT - 10000 75 CO MT	.43	
RULT UD ADEA CTATEMENT WING IN		
PREVIOUSLY APPROVED VIDE LETTER	NO.L	
MINOR CHANGES ARE MADE IN GR &	2018 1ST	1) S.NO. 70, H.NO. 1(PT) = 23000 00 SO MT
FL.		2) S.NO. 70, H.NO. 5(PT) = 3450.00 SQ.MT.
FLOOR OF BLDG. AREA IN SQ.	MTS.	TOTAL LAND AREA = 26450.00 SQ.MT.
FIRST FLOOR BUILT UP AREA 305.85		PROFORMA AREA STAEMENT. SQ. MTS.
SECOND FLOOR BUILT UP AREA 372 14	1	AREA OF PLOT 26450.00 DEDUCTION FOR
THIRD FLOOR BUILT UP AREA 372.14		a ROAD ACQUISITION AREA
FOURTH FLOOR BUILT UP AREA 372.14	-	C ANY RESERVATION (NO DEVELOPEMENT ZONE) 8946.26
FIFTH FLOOR BUILT UP AREA 372.14	3	d TOTAL (a+b+c) 12337.42 3 NET GROSS AREA OF PLOT (1- 2) 14112.58
CTC SIXTH FLOOR BUILT UP AREA 372.14	4	4 DEDUCTION FOR 5% AMENITY OPEN SPACE NIL 4 DEDUCTION FOR 10% RECREATIONAL GARDEN 1411.25
SEVENTH FLOOR BUILT UP AREA 372.14	5	NET AREA OF PLOT = 90% OF NET PLOT 1411.25 PREVIOUSLY APPROVED AREA ON THE NET PLOT TABLE (D) 2000 D0
EIGHTH FLOOR BUILT UP AREA 342.38	7	7 ADDITION FOR F.S.I. IF ANY
NINTH FLOOR BUILT UP AREA 372.14		Anca UNDER D.P. ROAD AKEA (4.1.1 OF D.C.R.37) 6782.32 B TOTAL AREA (6+7) 13481.91
TENTH FLOOR BUILT UP AREA 372.14	9	NOHMAL F.S.I.PERMISSIBLE (1.10 OF THE NET PLOT AREA) REFER DETAIL FSI PERMISSIBLE WITH PAYMENT OF PREMIUM 20% TABLE (D)
TWELETH FLOOR BUILT UP AREA 372.14		PEHMISSIBLE BUILT UP (REFER DETAIL STATEMENT(D)) 21284.15
THIRTEEN FLOOR BUILT UP AREA 372.14		b PROPOSED TOR UTILISED 10 TOTAL PERMISSIBLE BUILT UP AREA 21284.15
FOURTEEN FLOOR BUILT UP AREA 318.89	1	11 EXISTING FLOOR AREA(WING A TO I) 10090,75
FIFTEENTH FLOOR BUILT UP AREA 318.89	1	IS EXCESS BALCONY AREA TAKEN IN F.S.I. (AS PER B(0)BELOW NIL
SIXTEENTH FLOOR BUILT UP AREA 318.89	·····	IS TOTAL BUILT UP AREA PROPOSED (10+11+12) 21109.24 15 TOTAL BUILT UP AREA CONSUMED (14/8) 1.56
SEVENTEENTH FLOOR BUILT UP AREA 318.89		
EIGHTEENTH FLOOR BUILT UP AREA 318.89		BALCONY AREA STATEMENT.
NINETEENTH FLOOR BUILT UP AREA 318.89		b PROPOSED BAL. AREA PER FLOOR. SHOWN IN TABLE
TWENTIETH FLOOR BUILT UP AREA 318.89		T.D.R.
TOTAL FLOOR AREA 7419.72		a PERMISSIBLE b PROPOSED TDR UTILISED
EXCESS BALC.AREA 14.21		PARKING STATEMENT
TOTAL BUILT UP AREA 7433.93		a PARKING REQUIRED
PROPOSED BUILT UP AREA STATEMENT IN SQ.MTS.		SCOOTER/ MOTOR CYCLE, CYCLE
GROUND FLOOR BUILT UP APEA 26 74		b GRAGES PERMISSIBLE. C GARAGES PROPOSED. SHOWN IN
FIRST FLOOR BUILT UP ABEA 465,68 269 47		CAR TABLE SCOOTER / MOTOR CYCLE,
SECOND FLOOR BUILT UP AREA 465.68 269.47		CYCLE d TOTAL PARKING PROVIDED
THIRD FLOOR BUILT UP AREA 465.68 269.47		LOADING & UNLOADING STATEMENT.
FOURTH FLOOR BUILT UP AREA 269.47		LOADING & UNLOADING PROVIDED.
FIFTH FLOOR BUILT UP AREA 269.47	-	NOTES:
SIXTH FLOOR BUILT UP AREA 269.47		BOUNDRY OF THE PLOT. BLACK PROPOSED STRUCTURES. RED
SEVENTH FLOOR BUILT UP AREA 269.47		F.B IS ARCHITECTURE PROJECTION 0.75 MT. W.
EIGHTH FLOOR BUILT UP AREA 236.87	•	DEVELOPERS RESERVE THE RIGHTS TO ADD T.D.R. AS AND WHEN AVAILABLE
TOTAL FLOOR AREA 1433.75 2150.78		* LIFT WILL BE INSTALLED ONLY IN CASE OF ADDITIONAL FLOORS
TOTAL BUILT UP APEA NIL 0.03	•	DEVELOPERS RESERVE THE RIGHTS TO CHANGE THE SHAPE, SIZE AND POSITION OF R.G.
TOTAL APEA (1.4.11.) 2504 50 00 117		BOUNDARY RECTIFY AS PER SITE CONDITION
101AL AREA (L & M) = 3304.30 50.1011.		CERTIFICATE FOR AREA.
		CERTIFIED THAT THE PLOT UNDER REFERENCE WAS GOT SURVED BY ME ON DT 1.09.2011 AND THE DIMENSIONS OF SIDES ETC. OF PLOT STATED ON PLANS
		ARE AS MEASURED ON SITE AND THE AREA SO WORKED 26450.00 SQ.MT.AND
66		INCLICS WITH THE AREA STATED IN DOCUMENT OF OWNERSHIP / T.P. RECORD.
T. XI		SIGN. OF ARCHITECT
B IN 2 SITE UNDER REFERANCE	E P	PROPOSED HOUSING SCHEME ON PROPERTY BEARING
The I	S	TAL-AMBERNATH DIST-THANE
- 69 L°		
	F	PROPRIETOR SHRI. MOHAN H. THARWANI
INT. AL		<pre></pre>
KA FI	F	FOR: M/S. THARWANI INFRA STRUCTURE THROUGH ITS OF OWNER/ALTORNEY
Atto And I		
VAX A-		Leely ARCHITECT'S INC
3		GROUND FL.ASHIRWAD APT.
		OPP. APNA BAZAR, KULGAON BADI APUB (E)
		DRN BY CHKD BY DATE SCALE
		ASMITA S.D.OAK 04.07.2018 AS SHOWN
	Not served	

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437 Fax: 24044532/4024068/4023516 Website: http://mpcb.gov.in Email: jdwater@mpcb.gov.in



Kalpataru Point, 2nd and 4th floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai-400022

Infrastructure/RED/L.S.I No:- Format1.0/CC/UAN No.0000087955/CE 2\04000481 To, M/s. Tharwani Infrastructures on plot bearing S.No. 70, H.No.1(pt) &H.No.5(pt),Vedant Nakshtra (Residential Project) of village-Kulgaon, Tal-Ambernath, Dist-Thane

Date: 09 04 2021



Sub: Revalidation of Consent to Establish for Construction of Residential Cum Commercial Project under red Category.

- Ref: 1. Previous Consent to Operate granted vide Format 1.0/BO/RO-HQ/UAN No. 0000015713/CO/CC-1808000051 dt. 01/08/2018.
 - 2. Your application MPCB-CONSENT- 0000087955 dt: 22/09/2020
 - 3. Minutes of consent Committee held on 01.02.2021, 12.02.2021 & 25.02.2021

Your application NO. MPCB-CONSENT-0000087955

For: grant of Consent to Establish under Section 25 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization / Renewal ofAuthorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundry Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I,II,III & IV annexed to this order:

- 1. The consent is granted for a period up to Commissioning of unit or valid up to: 22/04/2024
- 2. The capital investment of the project is Rs.80 Cr. (As per undertaking submitted by pp).
- 3. The Revaldiation of Consent to Establish is valid for Residential Cum Commercial Project named as M/s. Tharwani Infrastructures, on plot bearing S.No. 70, H.No.1(pt) &H.No.5(pt),Vedant Nakshtra (Residential Project) of village-Kulgaon, Tal-Ambernath, Dist-Thane on Total Plot Area of 26450.00 SqMtrs for Completed construction BUA of 25,256.27 sq.mt out of Total Construction BUA 36,461.47 sq.mt SqMtrs as per EC granted dated 27/03/2018 including utilities and services

Sr.No	Permission Obtained	Plot Area (SqMtr)	BUA (SqMtr)
1	Environment Clearance dtd, 27/03/2018	26450.00	36461.47
2	1st Consent to Operate (part) dt: 01/08/2018	35222.90	11204.27
3	Consent to establish dt: 23/04/2014	33120.00	38104.11

4. Conditions under Water (P&CP), 1974 Act for discharge of effluent:

Sr No Description		Permitted (in CMD)	Standar	Standards to Disposal		
1.	Trade effluent	Nil	NA	NA		

Sr No	Description	Permitted	Standards to	Disposal
2.	Domestic effluent	445	As per Schedule - I	The treated effluent shall be 60% recycled for secondary purposes such as toilet flushing, air conditioning, cooling tower make up, firefighting etc. and remaining shall be connected to the sewerage system provided by local body

5. Conditions under Air (P& CP) Act, 1981 for air emissions:

Stack No	Description of stack / source	Number of Stack	Standards to be achieved	
S-1	DG set (62 KVA)	1	As per Schedule -II	
S-2	DG set (30 KVA)	1	As per Schedule -II	

6. Conditions under Solid Waste Rules, 2016:

Sr No	Type Of Waste	Quantity & UoM	Treatment	Disposal
1	DRY WASTE	718 Kg/Day	Segregate	Hand over to Local recyclers
2	WET WASTE	1056 Kg/Day	Treatment in Composting Maching	Will be used as Manure for Landscaping
3	STP SLUDGE	28 Kg/Day	Filter Press	Will be used as Manure for Landscaping

7. Conditions under Hazardous & Other Wastes (M & T M) Rules 2016 for treatment and disposal of hazardous waste:

Sr No	Category No.	Quantity	UoM	Treatment	Disposal
		NA			

- 8 This Board reserves the right to review, amend, suspend, revoke etc. this consent and the same shall be binding on the industry.
- 9 This consent should not be construed as exemption from obtaining necessary NOC/permission from any other Government agencies.
- 10 The treated effluent shall be 60% recycled for secondary purposes such as toilet flushing, air conditioning, cooling tower make up, firefighting etc. and remaining shall be utilized on land for gardening.
- 11 PP shall install online monitoring system for BOD, TSS and flow at the outlet of STP with connectivity to MPCB Server.
- 12 PP shall extend/submit BG to from total sum of Rs. 10 Lakhs towards compliance of EC and consent to establish condition.
- 13 PP shall install organic waste digester along with composting facility/biodigester (biogas) with composting facility for the treatment of wet garbage.
- 14 Project Proponent shall make provision of charging port for Electric vehicles in at least 10% total available parking are

15	PP shall take	adequate	measure	to	control	noise	and	dust	emissions	during
	construction ph	ase.								

- 16 PP Shall use only Surface water for their Commercial activity.
- 17 Project Proponent shall submit an affidavit in Board's prescribed format within 15 days regarding the compliance of conditions of EC /CRZ clearance and C to E
- 18 The Project proponent shall comply with the conditions stipulated in Environment Clearance granted by GOM, vide no: SEIAA-EC-0000000244 dt: 27/03/2018

For and on behalf of the Maharashtra Pollution Control Board.

manno

(Ashok Shingare IAS), Member Secretary

Received Consent fee of -

Sr.No	Amount(Rs.)	Transaction/DR.No.	Date Transaction Type	
1	125000.00	MPCB-DR-1988	21/09/2020 NEFT	

Copy to:

- 1. Regional Officer, MPCB, Kalyan and Sub-Regional Officer, MPCB, Kalyan II
- They are directed to ensure the compliance of the consent conditions.
- 2. Chief Accounts Officer, MPCB, Sion, Mumbai

SCHEDULE-I

Terms & conditions for compliance of Water Pollution Control:

- 1) A] As per your application, you have Installed Sewage Treatment Plants (STP) with the design capacity of 500 CMD
 - B] The Applicant shall operate the sewage treatment plant (STP) to treat the sewage so as to achieve the following standards prescribed by the Board or under EP Act, 1986 and Rules made there under from time to time, whichever is stringent.

Sr.No Parameters		Limiting concentration not to exceed in mg/l, except for pH			
1	рН	5.5-9.0			
2	BOD	5			
3	COD	50			
4	TSS	20			
5	NH4 N	5			
6	N-total	10			
7	Fecal Coliform	less than 100			

- C] The treated domestic effluent shall be 60% recycled for secondary purposes such as toilet flushing, air conditioning, cooling tower make up, firefighting etc. and remaining shall be utilized on land for gardening and connected to the sewerage system provided by local body.
- 2) The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or and extension or addition thereto.
- 3) The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.
- 4) The Applicant shall comply with the provisions of the Water (Prevention & Control of Pollution) Act,1974 and as amended, and other provisions as contained in the said act.

Sr. No.	Purpose for water consumed	Water consumption quantity (CMD)	
1.	Industrial Cooling, spraying in mine pits or boiler feed	0.00	
2.	Domestic purpose	484.00	
3.	Processing whereby water gets polluted & pollutants are easily biodegradable	0.00	
4.	Processing whereby water gets polluted & pollutants are not easily biodegradable and are toxic	0.00	

5) The Applicant shall provide Specific Water Pollution control system as per the conditions of EP Act, 1986 and rule made there under from time to time.

SCHEDULE-II

Terms & conditions for compliance of Air Pollution Control:

1) As per your application, you have proposed to provide the Air pollution control (APC)system and also proposed to erect following stack (s) and to observe the following fuel pattern-

Stack No.	Stack Attached To -	APC System	Height in Mtrs.	Type of Fuel	Quantity & UoM
S-1	DG Set (62 KVA)	Acoustic enclosure	10	HSD	15.75 Ltr/Hr
S-2	DG set (30 KVA)	Acoustic enclosure	10	HSD	7.50 Ltr/Hr

2) The applicant shall operate and maintain above mentioned air pollution control system, so as to achieve the level of pollutants to the following standards.

Total Particular matter	Not to exceed	150 mg/Nm3
Total Falticular matter	NOL LU EXCEEU	1.20 mg/mm3

- 3) The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacemenalteration well before its life come to an end or erection of new pollution control equipment.
- 4) The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).

5) Conditions for utilities like Kitchen, Eating Places, Canteens:-

- a) The kitchen shall be provided with exhaust system chimney with oil catcher connected to chimney through ducting.
- b) The toilet shall be provided with exhaust system connected to chimney through ducting.
- c) The air conditioner shall be vibration proof and the noise shall not exceed 68 dB(A).
- d) The exhaust hot air from A.C. shall be attached to Chimney at least 5 mtrs. higher than the nearest tallest building through ducting and shall discharge into open air in such a way that no nuisance is caused to neighbors.

Sr. No.	Consent(C2E/C2 O/C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
1	Revalidation of Consent to Establish	Rs. 10 lakh	15 Days	Towards Consent to Establish conditions	Up to Commissioning of the project	Up to Commissioning of the project

SCHEDULE-III Details of Bank Guarantees:

** The above Bank Guarantee(s) shall be submitted by the applicant in favour of Regional Officer at the respective Regional Office within 15 days of the date of issue of Consent. # Existing BG obtained for above purpose if any may be extended for period of validity as above.
		BG	Forfeiture Hi	story			
no.	Consent (C2E/C2O/C2R)	Amount of BG imposed	Submission Period	Purpose of BG	Amount of BG Forfeiture	Reason of BG Forfeiture	
			NA			2	
		B	G Return det	ails			
no.	Consent (C2E/C	20/C2R) I	3G imposed P	ourpose of	BG Amo Re	unt of BG turned	
			NA				
		S	CHEDULE-IV				
ndi	tions during con	struction	phase				
1	A During construct MSW treatment	tion phase and dispos	, applicant sha sal facility for t	II provide t he staff an	emporary se d worker qua	wage and rters.	
I	During construction phase, the ambient air and noise quality shall be maintained and should be closely monitored through MoEF approved laboratory.						
	 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. 						

General Conditions:

- 1 The applicant shall provide facility for collection of samples of sewage effluents, air emissions and hazardous waste to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.
- 2 The firm shall strictly comply with the Water (P&CP) Act, 1974, Air (P&CP) Act, 1981 and Environmental Protection Act 1986 and Solid Waste Management Rule 2016, Noise (Pollution and Control) Rules, 2000 and E-Waste (Management & Handling Rule 2011.
- 3 Drainage system shall be provided for collection of sewage effluents. Terminal manholes shall be provided at the end of the collection system with arrangement for measuring the flow. No sewage shall be admitted in the pipes/sewers downstream of the terminal manholes. No sewage shall find its way other than in designed and provided collection system.
- 4 Vehicles hired for bringing construction material to the site should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.
- 5 Conditions for D.G. Set
 - a) Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.
 - b) Industry should provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room should be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB (A) shall also be provided. The measurement of insertion loss will be done at different points at 0.5 meters from acoustic enclosure/room and then average.
 - c) Industry should make efforts to bring down noise level due to DG set, outside industrial premises, within ambient noise requirements by proper sitting and control measures.

- d) Installation of DG Set must be strictly in compliance with recommendations of DG Set manufacturer.
- e) A proper routine and preventive maintenance procedure for DG set should be set and followed in consultation with the DG manufacturer which would help to prevent noise levels of DG set from deteriorating with use.
- f) D.G. Set shall be operated only in case of power failure.
- g) The applicant should not cause any nuisance in the surrounding area due to operation of D.G. Set.
- h) The applicant shall comply with the notification of MoEFCC, India on Environment (Protection) second Amendment Rules vide GSR 371(E) dated 17.05.2002 and its amendments regarding noise limit for generator sets run with diesel.
- 6 Solid Waste The applicant shall provide onsite municipal solid waste processing system & shall comply with Solid Waste Management Rule 2016 & E-Waste (M & H) Rule 2011.
- 7 Affidavit undertaking in respect of no change in the status of consent conditions and compliance of the consent conditions the draft can be downloaded from the official web site of the MPCB.
- 8 Applicant shall submit official e-mail address and any change will be duly informed to the MPCB.
- 9 The treated sewage shall be disinfected using suitable disinfection method.
- 10 The firm shall submit to this office, the 30th day of September every year, the environment statement report for the financial year ending 31st march in the prescribed Form-V as per the provision of rule 14 of the Environmental (Protection) Second Amended rule 1992.
- 11 The applicant shall obtain Consent to Operate from Maharashtra Pollution Control Board before commissioning of the project.

For and on behalf of the Maharashtra Pollution Control Board.

1 duano

(Ashok Shingare IAS), Member Secretary



Date: 25th January 2022

To, **Tharwani Infrastructures,** Near Sanjeevni Eye Clinic, Kalyan Ambernath Road, Vitthalwadi, Ulhasnagar-421003.

Project: Vedant Nakshatra & Vedant Millenia

Dear Sir,

This is with reference to your discussion with **Mr.Vikram Vaidya** on Zero Garbage Project, we are happy to provide you with the details of the project.

The Project goes as under:

A. Point of Action:

- 1. Create awareness drive among members by way of seminars, education programs on waste management.
- 2. Inculcate habit of segregating waste in two or more.
- 3. Use of separate bins to store dry and wet waste.
- 4. Installation of composting unit to convert waste into compost
- 5. Ensure proper treatment of waste

B. Benefits of the process:

- Improve green cover in the city
- Ecofriendly process
- Easy handling and simple procedure
- Odorless
- Improves the environment
- An ultimate solution for organic waste disposal.
- Up gradation of the natural resources by completing the cycle of nature.

C. Proposal :

Assumption:

- A) Population to the location / No of household = N/A
- B) Floating population (Including canteen, HQ as well as hostel & mess) = N/A
- C) Total Population/ Flats = N/A
- D) Quantity of bio-degradable waste = upto 100 kgpd & 150 kgpd

Based on the above fact and figures, we are glad to present Semi-Automatic machines

1. Bhumibutti Composting Machine with curing rack system





Bhumibutti Composting Machine

Single Curing System





Above images depict the original & may vary

Technical Specifications for Bhumibutti Composting Machine:

Туре	Specification
Motor	Three phase 3 HP motor
Type of Shredding	Wet and dry shredding
Frame	Non- corrosive frames
Body Dimension	Powder coated body with SS hoper
Safety features	Overload trip safety
Add Features	Noise reduction
	model Anti vibration model
Dimension	43 24*53 (3.5*2*4.4 ft)

Technical Specifications for curing rack system:

Single Curing System				
Single Curing rack system	Powder coated			
Angle	37*37*3mm			
Angle 2	25*25*3mm			
Bar	10mm			
Plates	6mm			
Dimension (L*B*H)	12ft*2ft*7ft			





STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY

Environment department, Room No. 217, 2nd floor, Mantralaya, Annexe, Mumbai- 400 032. Date:March 27, 2018

To,

Mr. Mohan Tharwani ,Survey No. 70, Near Church, Rameshwadi, Badlapur West at At S. No.70, H. No. 1(pt) & H. No. 5 (pt) of Village- Kulgaon, Tal- Ambernath, Dist- Thane

Subject:Environment Clearance for Expansion of Proposed Residential Commercial Project" Vedant Nakshtra" at Plot
Bearing S.No. 70 , H.No 1(Pt) & H.No 5 (Pt) , Vil -Kulgaon , Tal- Ambernath ,Dist- Thane Proposed By
Tharwani Infrastructure

Sir,

This has reference to your communication on the above mentioned subject. The proposal was considered as per the EIA Notification - 2006, by the State Level Expert Appraisal Committee-II, Maharashtra in its 53rd rd meeting and recommend the project for prior environmental clearance to SEIAA. Information submitted by you has been considered by State Level Environment Impact Assessment Authority in its 123rd meetings.

2. It is noted that the proposal is considered by SEAC-II under screening category schedule 8a, category B as per EIA Notification 2006.

Brief Information of the project submitted by you is as below :-

1.Name of Project	Expansion of Proposed Residential Commercial Project" Vedant Nakshtra"				
2.Type of institution	Private				
3.Name of Project Proponent	Mr. Mohan Tharwani ,Survey No. 70, Near Church, Rameshwadi, Badlapur West				
4.Name of Consultant	Mr. H.K. Desai Enviro Analysts & Engineers Pvt. Ltd.,B-1003, Enviro House Western Edge II, Behind Metro Mall Western Express Highway Borivali (E), Mumbai-400066				
5.Type of project	Housing Scheme with Shops				
6.New project/expansion in existing project/modernization/diversification in existing project	Expansion				
7.If expansion/diversification, whether environmental clearance has been obtained for existing project	EC on 14th Dec,2015 (SEAC-2013/CR-408/TC-I) for construction of 16 Wing (Wing A-P are of G/S +7 Floors) with total construction area of 35,222.90 sq.m.				
8.Location of the project	At S. No.70, H. No. 1(pt) & H. No. 5 (pt) of Village- Kulgaon, Tal- Ambernath, Dist- Thane				
9.Taluka	Ambernath				
9.Taluka 10.Village	Ambernath Kulgaon				
9.Taluka 10.Village 11.Area of the project	Ambernath Kulgaon KBMC (Kulgaon -Badlapur Municipal Council)				
9.Taluka 10.Village 11.Area of the project	Ambernath Kulgaon KBMC (Kulgaon -Badlapur Municipal Council) YES				
9.Taluka 10.Village 11.Area of the project 12.IOD/IOA/Concession/Plan Approval Number	Ambernath Kulgaon KBMC (Kulgaon -Badlapur Municipal Council) YES IOD/IOA/Concession/Plan Approval Number: RECEIVED BY KBMC BY 25-01-2017 (JVK NO. /KBMC/NRV/B.P./766-144/2016-2017)				
9.Taluka 10.Village 11.Area of the project 12.IOD/IOA/Concession/Plan Approval Number	Ambernath Kulgaon KBMC (Kulgaon -Badlapur Municipal Council) YES IOD/IOA/Concession/Plan Approval Number: RECEIVED BY KBMC BY 25-01-2017 (JVK NO. /KBMC/NRV/B.P./766-144/2016-2017) Approved Built-up Area: 36461.47				
9.Taluka 10.Village 11.Area of the project 12.IOD/IOA/Concession/Plan Approval Number 13.Note on the initiated work (If applicable)	Ambernath Kulgaon KBMC (Kulgaon -Badlapur Municipal Council) YES IOD/IOA/Concession/Plan Approval Number: RECEIVED BY KBMC BY 25-01-2017 (JVK NO. /KBMC/NRV/B.P./766-144/2016-2017) Approved Built-up Area: 36461.47 Constructed FSI AREA = 11204.26 sq.m. ,Constructed Non FSI Area= 4035.81 sq.m. ,Total constructed area = 15,240.07 Sq.m.				
9.Taluka 10.Village 11.Area of the project 12.IOD/IOA/Concession/Plan Approval Number 13.Note on the initiated work (If applicable) 14.LOI / NOC / IOD from MHADA/ Other approvals (If applicable)	Ambernath Kulgaon KBMC (Kulgaon -Badlapur Municipal Council) YES IOD/IOA/Concession/Plan Approval Number: RECEIVED BY KBMC BY 25-01-2017 (JVK NO. /KBMC/NRV/B.P./766-144/2016-2017) Approved Built-up Area: 36461.47 Constructed FSI AREA = 11204.26 sq.m. ,Constructed Non FSI Area= 4035.81 sq.m. ,Total constructed area = 15,240.07 Sq.m. NA				
9.Taluka 10.Village 11.Area of the project 12.IOD/IOA/Concession/Plan Approval Number 13.Note on the initiated work (If applicable) 14.LOI / NOC / IOD from MHADA/ Other approvals (If applicable) 15.Total Plot Area (sq. m.)	AmbernathKulgaonKBMC (Kulgaon -Badlapur Municipal Council)YESIOD/IOA/Concession/Plan Approval Number: RECEIVED BY KBMC BY 25-01-2017 (JVK NO. /KBMC/NRV/B.P./766-144/2016-2017)Approved Built-up Area: 36461.47Constructed FSI AREA = 11204.26 sq.m. ,Constructed Non FSI Area= 4035.81 sq.m. ,Total constructed area = 15,240.07 Sq.m.NA26450.00				

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17.Net Plot area	12701.32
	FSI area (sq. m.): 24733.64 sq.m.
18 (a).Proposed Built-up Area (FSI & Non-FSI)	Non FSI area (sq. m.): 11727.83sq.m
	Total BUA area (sq. m.): 36461.47sqm
	Approved FSI area (sq. m.):
18 (b).Approved Built up area as per DCR	Approved Non FSI area (sq. m.):
2011	Date of Approval:
19.Total ground coverage (m2)	4645 sqm.
20.Ground-coverage Percentage (%) (Note: Percentage of plot not open to sky)	36 %
21.Estimated cost of the project	105000000



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	22.Production Details								
Serial Number	Pro	duct	Existing	(MT/M)	Proposed (MT/M)	Total (MT/M)			
1	Not ap	plicable	Not apj	plicable	Not applicable	Not applicable			
		2	3.Tota	l Wate	r Requirement				
		Source of	water	KBMC/ trea	ated water from STP				
		Fresh wate	er (CMD):	317					
		Recycled w Flushing (vater - CMD):	160					
		Recycled w Gardening	vater - (CMD):	7.504	HML				
		Swimming make up (pool Cum):	NA	fefre Jan				
Dry season	:	Total Water Requirement (CMD) :		484					
		Fire fightin Undergrou tank(CMD)	ng - Ind water):	75 cum (2 nos.)					
		Fire fightin Overhead tank(CMD)	ng - water):	25 cum (each wing)					
		Excess trea	ated water	234					
		Source of water		KBMC/RWH/ treated water from STP					
		Fresh water (CMD):		317					
		Recycled water - Flushing (CMD):		160					
		Recycled w Gardening	(CMD):	0					
		Swimming make up (pool Cum):	NA	When				
Wet season:	1:	Total Wate Requireme :	er ent (CMD)	477	mont	of			
		Fire fightin Undergrou tank(CMD)	ng - Ind water):	75 cum (2 r		UI			
		Fire fightin Overhead tank(CMD)	ng - water):	25 cum (each wing)					
			ated water	241					
Details of S pool (If any	Swimming y)	NA							

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	Shri Satish.M.Gavai (Member
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24.Details of Total water consumed											
Particula rs	Cons	sumption (C	nption (CMD) Loss (CMD) Effluent (CMD)				D)				
Water Require ment	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total		
Domestic	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable		
		Level of th water table	e Ground e:	0.8 m to 3.6	5 m						
		Size and n tank(s) an Quantity:	o of RWH	Wing A to I capacity)- 6	= 110 Cum Nos.	(2 day capac	ity) ,Wing L	to M = 99 C	um(2 day		
		Location o tank(s):	f the RWH	Ground leve	el (UG)	X	7				
		Quantity o pits:	f recharge	NA	b	A Solit	A.				
25.Rain V Harvesti	Water ng	Size of rec :	harge pits	NA		3	B				
(RWH)		Budgetary (Capital co	allocation ost) :	Rs. 60.0 Lakhs							
		Budgetary (O & M cos	allocation st) :	Rs. 3.4 Lakhs							
		Details of if any :	UGT tanks	Domestic Water Tank =320 Flushing Water Tank =170 Fire Water Tank UG = 75 (nos.), OH = 25 cum (each wing) Rain Water Harvesting Tank 209 Location of tank Ground level							
			-72	1000	004	1/					
D6 Storm	water	Natural wa drainage p	attern:	West To Ea	st						
drainage	i water	Quantity o water:	f storm	Actual design discharge = 0.144 m3/s (based on the 4 no. of outlets= 0.036 m3/s) Total design discharge= 0.09 m3/s							
		Size of SW	D:	0.30m x 0.30 m							
		Sewage ge in KLD:	neration	445 KLD							
		STP techno	ology:	MBBR Technology							
27.Sewa	nge and	Capacity o (CMD):	f STP	500 KLD							
Waste w	vater	Location & the STP:	area of	Ground leve	el						
		Budgetary (Capital co	allocation st):	Rs.38.0 Lak	ths						
		Budgetary (O & M cos	allocation st):	Rs. 6.00 Lakhs							

	28.Solie	d waste Management			
TATe che monorchien in	Waste generation:	Debris has been disposed of by covered trucks to the authorized sites with the permission of local body.			
the Pre Construction and Construction phase:	Disposal of the construction waste debris:	Debris will be used for backfilling and counter weight of raft, road works, etc. Brickbats will be used for waterproofing. Reinforcement will be sent for reuse Nominal surplus construction debris shall be disposed of by covered trucks to the authorized sites with the permission of local body			
	Dry waste:	718 Kg/Day			
	Wet waste:	1056Kg/Day			
Waste generation in the operation Phase:	Hazardous waste:	NA			
	Biomedical waste (If applicable):	NACOTAC			
	STP Sludge (Dry sludge):	28 Kg			
	Others if any:	Nil			
	Dry waste:	Will be hand over to authorized recyclers.			
	Wet waste:	Will be processed in the OWC for manure for landscaping/ gardening			
	Hazardous waste:	NA			
Mode of Disposal of waste:	Biomedical waste (If applicable):	NA			
	STP Sludge (Dry sludge):	To be used as a manure			
	Others if any:	nil			
	Location(s):	Ground Level			
Area requirement:	Area for the storage of waste & other material:	65 sq.m.			
	Area for machinery:	2.77 SQ.M.			
Budgetary allocation	Capital cost:	Rs.10.0 Lakhs			
(Capital cost and O&M cost):	O & M cost:	Rs.6.00 Lakhs			

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29.Effluent Charecterestics									
Serial Number Parameters		Unit	Inlet Effluent Charecterestics	Outlet Effluent Charecterestics	Effluent discharge standards (MPCB)				
1 Not applicable		Not applicable	Not applicable	Not applicable	Not applicable				
Amount of e (CMD):	effluent generation	Not applicable							
Capacity of	the ETP:	Not applicable							
Amount of t recycled :	reated effluent	Not applicable							
Amount of v	water send to the CETP:	Not applicable							
Membershi	p of CETP (if require):	Not applicable							
Note on ET	P technology to be used	Not applicable							
Disposal of	the ETP sludge	Not applicable							



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Serial Number Description Cat UOM Existing Proposed Total Method of Disposal 1 Not applicable Not applicable Not applicable <	30.Hazardous Waste Details										
1 Not applicable applicable Not applicable applicable Not applicable applicable Not applicable Not applicable	Serial Number	Descr	ription	Cat	UOM	Exis	ting	Proposed	Total	Method of Disposal	
31.Stacks emission Details Sorial Number Section & units Fuel Used with Quantity Stack Ne. Stack Ne. applicable Height from ground level (m) Internal diameter (m) Temp. of Exhaust Gases 1 Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable	1	Not applicable Not applicable		Not applicable	Not applicable	No applio	ot cable	Not applicable	Not applicable	Not applicable	
Serial Number Section & units Fuel Used with Quantity Stack No. Height from applicable Internal lameter (m) Temp. of Exhaust Gases 1 Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable 1 Not applicable Not applicable Not applicable Not applicable Not applicable N		31.Stacks emission Details									
1 Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable Serial Number Type of Fuel Existing Proposed Total 1 Not applicable Not applicable Not applicable Not applicable 33.Source of Fuel Not applicable Not applicable Not applicable Not applicable 34.Mode of Transportation of fuel to site Not applicable Not applicable Not applicable Source of power supplicable Source of power requirement: MSEB During Construction plase 100 KVA During Operation plase 100 KVA During Operation plase 3668 KW During Operation plase 11 X 200 KVA, 1 X 80KVA Defails of high teasion line passing through the plot if any: NA I.Solar lighting 2.75 lights J.ED lights Asolar hot water system	Serial Number	ed with ntity	ed with htity Stack No. Jevel		Height from ground level (m)	Internal diameter (m)	Temp. of Exhaust Gases				
32. Details of Fuel to be used Serial Number Type of Fuel Existing Proposed Total 1 Not applicable Not applicable Not applicable Not applicable 33.Source of Fuel Not applicable Not applicable Source of applicable Source of power 34.Mode of Transportation of fuel to site Not applicable Mot applicable Source of power Source of power supply: Source of power supply: MSEB Diving Construction Phase; (Demand Load) 100 KVA Doring Operation phase 100 KVA pase (Connected load): 3668 kW During Operation phase 2232 KW ad): Transformer: NIL Do set as Power back-up during add; Tenel used: HSD During Operation phase: 1 X 200 KVA, 1 X 80KVA operation phase; 1 X 200 KVA, 1 X 80KVA Details of high tension line passing through the plot if any: NA 1.Solar lighting 2.75 lights 3.LED lights 3.LED lights 4.solar hot water system 4.solar hot water system	1	1 Not applicable Not ap				No applio	ot cable	Not applicable	Not applicable	Not applicable	
Serial Number Type of Fuel Txisting Proposed Total 1 Not applicable				32.De	tails of F	^r uel (to be	e used			
1 Not applicable Not applicable Not applicable 33.Source of Fuel Not applicable Not applicable 34.Mode of Transportation of fuel for site Not applicable Not applicable 35.Energy Source of power supply: MSEB During Construction Phase: (Demand Load) Do KWA Do KWA Construction Phase: (Demand Load) Do KWA During Construction Phase During Operation phase (Connected load): During Operation phase (Connected load): During Operation phase (Connected load): During Operation phase (Demand load): Transformer: NIL Details of high tension line passing through the plot if any: I X 200 KVA, 1 X 80KVA Details of high tension line passing through the plot if any: Satisfights J.LED lights J.LED lights J.LED lights	Serial Number	Тур	pe of Fuel	5	Existing	ter	5077	Proposed	7	Total	
33. Source of Fuel Not applicable 34. Mode of Transportation of fuel to site Not applicable Source of power supply : Source of power supply : Source of power supply : MSEB During Construction Phase: (Denand Load) Do G set as Power back-up during construction phase During Operation phase (Connected Load): During Operation phase (Connected Load): During Operation phase (Denand Load): During Operation phase (Connected Load): Transformer: NIL Do S set as Power back-up during operation phase (Denand Load): Transformer: NIL Details of high tension line passing in ny: Lenergy savite y non-conventional method: Solar lighting 3.LED lights J.ED lights J.ED lights	1	Not	applicable	Y CAN	lot applicabl	.e	N	lot applicabl	e	Not applicable	
34.Mode of Transportation of fuel to site Source of power During Construction phase During Operation phase (Demand Date up of phase (Demand Date up of phase (Demand Date up of phase Feel used: HSD Details of high	33.Source o	f Fuel	3	Not a	pplicable	2		19:0	24		
Source of power supply: MSEB During Construction Phase: (Demand Load) MSEB DG set as Power back-up during construction phase 100 KW During Operation phase (Connected load): 100 KVA During Operation phase (Connected load): 3668 KW During Operation phase (Demand load): 2232 KW DG set as Power back-up during operation phase: 2232 KW DG set as Power back-up during operation phase: 1 X 200 KVA, 1 X 80KVA De lais of high tension line passing through the plot if any: NA Energy saving by non-conventional method: 1. Solar lighting 2.T5 lights 3.LED lights 4.solar hot water system Na	34.Mode of	Transportat	tion of fuel to	site Not a	pplicable			12	$\langle Z \rangle$		
Source of power supply : MSEB During Construction Phase: (Demand Load) MSEB DG set as Power back-up during construction phase (Connected load): 100 KVA During Operation phase (Connected load): 3668 KW During Operation phase (Demand Load): 2232 KW During Operation phase (Demand Load): 2232 KW During Operation phase (Demand Load): 1 X 200 KVA, 1 X 80KVA During Operation phase (Demand Load): 1 X 200 KVA, 1 X 80KVA During Operation phase (Demand Load): 1 X 200 KVA, 1 X 80KVA During Operation phase (Demand Load): 1 X 200 KVA, 1 X 80KVA Data lighting 2.T5 lights 3.LED lights 4.solar hot water system NA			E,		.05	20	<u>^ (</u>	1 3	E		
Source of power supply: MSEB During Construction Phase: (Demand Load) 100 KW DG set as Power back-up during construction phase (During Operation phase (Connected load): 100 KVA During Operation phase (Connected load): 3668 KW During Operation phase (Demand load): 2232 KW DG set as Power phase (Demand load): 232 KW DG set as Power phase (Demand load): 1 X 200 KVA, 1 X 80 KVA DG set as Power back-up during operation phase: 1 X 200 KVA, 1 X 80 KVA Details of high tension line passing through the plot if any: NA LED lights 3.LED lights 4.solar hot water system Na			$\langle O \rangle$	X	35.EI	nerg	JY	4	B		
During Construction Phase: (Demaind Load) 100 KW DG set as Power back-up during construction phase 100 KVA During Operation phase (Connected load): 3668 KW During Operation phase (Demand load): 3668 KW During Operation phase (Demand load): 2232 KW During Operation phase (Demand load): 1232 KW During Operation phase: 1 X 200 KVA, 1 X 80 KVA Operation phase: HSD Details of high tension line passing through the plot if any: NA 1. Solar lighting 3.LED lights 4.solar hot water system NA			Source of supply :	Source of power supply : MSEB							
Power DG set as Power back-up during construction phase 100 KVA Power During Operation phase (Connected load): 3668 KW During Operation phase (Demand load): 2232 KW Dady: Transformer: NIL DG set as Power back-up during operation phase: NIL DG set as Power back-up during operation phase: 1 X 200 KVA, 1 X 80KVA operation phase: I X 200 KVA, 1 X 80KVA Operation phase: NIL DG set as Power back-up during operation phase: NIL Details of high tension line passing through the plot if any: NA 1. Solar lighting 2.75 lights 3.LED lights 4.solar hot water system Solar hot water system			During Co Phase: (De Load)	100 KW							
Power requirement: During Operation phase (Connected load): 3668 KW During Operation phase (Demand load): 2232 KW Transformer: NIL DG set as Power back-up during operation phase: NIL Fuel used: 1 X 200 KVA, 1 X 80KVA Details of high tension line passing through the plot if any: NA Energy saving by non-conventional method: 1. Solar lighting 2.75 lights 3.LED lights 4.SIDE hot water system		DG set as Power back-up during construction phase			100 KVA						
Image: Constant of the phase (Demand load): 2232 KW Image: Constant of the phase (Demand load): 2232 KW Image: Constant of the phase (Demand load): 2232 KW Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Constant of the phase (Demand load): 1 X 200 KVA, 1 X 80KVA Image: Consten (Demaster of the phase (Demand load): <	Por	MOT	During Op phase (Con load):	eration nnected	3668 KW						
Transformer: NIL DG set as Power back-up during operation phase: 1 X 200 KVA, 1 X 80KVA Fuel used: HSD Details of high tension line passing through the plot if any: NA Energy saving by non-conventional method: 1. Solar lighting 2.T5 lights 3.LED lights 4.solar hot water system V	require	ement:	During Op phase (Der load):	eration mand	2232 KW						
DG set as Power back-up during operation phase: 1 X 200 KVA, 1 X 80KVA Fuel used: HSD Details of high tension line passing through the plot if any: NA Energy saving by non-conventional method: 1. Solar lighting 2.T5 lights 3.LED lights 4.solar hot water system			Transform	er:	NIL						
Fuel used: HSD Details of high tension line passing through the plot if any: NA Energy saving by non-conventional method: 1. Solar lighting 2.T5 lights 3.LED lights 4.solar hot water system V		DG set as back-up d operation		Power uring phase:	1 X 200 KVA, 1 X 80KVA						
Details of high tension line passing through the plot if any: NA Energy saving by non-conventional method: 1. Solar lighting 2.T5 lights 3.LED lights 4.solar hot water system			Fuel used:		HSD						
Energy saving by non-conventional method: 1. Solar lighting 2.T5 lights 3.LED lights 4.solar hot water system			Details of tension lin through th any:	high le passing le plot if	NA						
1. Solar lighting 2.T5 lights 3.LED lights 4.solar hot water system	Energy saving by non-conventional method:										
	1. Solar ligh 2.T5 lights 3.LED lights 4.solar hot y	nting s water syster	n								
36.Detail calculations & % of saving:			3	6.Detail	calculati	ons	& %	of savin	g:		

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Serial Number	Energy Conservation Measures					Saving %				
1			as above			24.00%				
		31	7.Details	of poll	ution c	ontrol S	ystems			
Source	Ех	isting poll	ution contro	l system	L		Proposed to	be install	ed	
Not applicable		No	t applicable				Not ap	plicable		
Budgetary	allocation	Capital c	ost:	Rs 88.0	lakhs					
(Capital O&M	cost and cost):	0 & M co	st:	Rs. 4.0la	akhs					
38	.Envir	onmen	tal Man	agen	nent p	lan Bu	ıdgetary	Alloca	ation	
		a)	Construc	ction p	hase (v	vith Bre	ak-up):			
Serial Number	Attri	butes	Parar	neter	বর্ধি	Total (Cost per annu	m (Rs. In I	Lacs)	
1	Air Env	ironemnt	Water sp	orinkling	(0)	3192	1.00			
2	E	HS 5	Health, saf aid fa	fety & firs cility	st	9	2.00			
3	Land env	vironment	Sanitary fa waste manag	Sanitary facility and waste water 1.50 management						
4	E	HS	Enviror Monit	Environmental 3.00			>			
		5	o) Operati	ion Ph	ase (wi	th Breal	k-up):			
Serial Number	Comp	onent	Descr	Description Capita			ital cost Rs. In Operational and Maintenance Lacs cost (Rs. in Lacs/yr)			
1	Water En	vironment	Rain Water Harvesting		ng	60		3		
2	solid	waste	MSW		रम प्र	10	SZ '	6		
3	Water re	quirement	STP		N/O	53		8		
4	Energy	/ saving	solar energy system		n (88		4		
5	land env	rironment	Landso	caping	~	13		2.6		
39.Storage of chemicals (inflamable/explosive/hazardous/toxic substances)										
Description		Status	Location	8	Storage Capacity in MT	Maximum Quantity of Storage at any point of time in MT	Consumption / Month in MT	Source of Supply	Means of transportation	
Not app	licable	Not applicable	Not applica	ble	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
1				0.1						
			40. A	ny Oth	ier Into	rmation	1			

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CRZ/ RRZ clearance obtain, if any:	Not Applicable	
Distance from Protected Areas / Critically Polluted areas / Eco-sensitive areas/ inter-State boundaries	not within 10 km	
Category as per schedule of EIA Notification sheet	schedule 8a, category B	
Court cases pending if any	NA	
Other Relevant Informations	The project is the expansion project. previously got EC(As per EC on 14th Dec,2015 (SEAC-2013/CR-408/TC-I) for construction of 16 Wing (Wing A-P are of G/S +7 Floors) with total construction area of $35,222.90$ sq.m.)	
Have you previously submitted Application online on MOEF Website.	Yes	
Date of online submission	10-10-2016	

3. The proposal has been considered by SEIAA in its 123rd meeting & decided to accord environmental clearance to the said project under the provisions of Environment Impact Assessment Notification, 2006 subject to implementation of the following terms and conditions:

Specific Conditions:	FIN FIN
I	PP to ensure that required RG of 1694.14 should be provided on ground.
II	PP to submit/ upload EC compliance report.
III	PP to ensure that the height of the stack of DG set should be above the tallest building in the project.
IV	PP to submit project specific DMP.
V	PP to ensure BoD of treated waste water should be 5 mg/lit and suspended solids is 20 mg/lit
VI	PP to undertake Green belt development along the road to reduce the air pollution.
VII	PP to ensure that width of the road for fire tender movement from all sides should be more than 6 m and turning radius should be 9 meters. PP to submit revised plans indicating the same.
VIII	PP to upload the approved plans of the project/ plans submitted for approval to the local body, Disaster Management Plan, Environmental Management Plan, traffic study and other above said compliances etc on the website of ec.mpcb.in
IX	PP, if applicable, PP to leave clear cut side margin of 6 m from the boundary of the plot and open space and non-paved RG area should be on ground as per the orders of Hon'ble Supreme Court (Civil Appeal No. 11150 of 2013 and SLP (Civil) No. 33402/2012) dated 17th December 2013.

General Conditions:

I	E-waste shall bedisposed through Authorized vendor as per E-waste (Management and Handling) Rules, 2016.		
п	The Occupancy Certificate shall be issued by the Local Planning Authority to the project only after ensuring sustained availability of drinking water, connectivity of sewer line to the project site and proper disposal of treated water as per environmental norms.		
Ш	This environmental clearance is issued subject to obtaining NOC from Forestry & Wild life angle including clearance from the standing committee of the National Board for Wild life as if applicable & this environment clearance does not necessarily implies that Forestry & Wild life clearance granted to the project which will be considered separately on merit.		
IV	PP has to abide by the conditions stipulated by SEAC& SEIAA.		
V	The height, Construction built up area of proposed construction shall be in accordance with the existing FSI/FAR norms of the urban local body & it should ensure the same along with survey number before approving layout plan & before according commencement certificate to proposed work. Plan approving authority should also ensure the zoning permissibility for the proposed project as per the approved development plan of the area.		

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VI	If applicable Consent for Establishment" shall be obtained from Maharashtra Pollution Control Board under Air and Water Act and a copy shall be submitted to the Environment department before start of any construction work at the site.		
VII	All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase.		
VIII	Adequate drinking water and sanitary facilities should be provided for construction workers at the site. Provision should be made for mobile toilets. The safe disposal of wastewater and solid wastes generated during the construction phase should be ensured.		
IX	The solid waste generated should be properly collected and segregated. dry/inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material.		
X	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.		
XI	Arrangement shall be made that waste water and storm water do not get mixed.		
XII	All the topsoil excavated during construction activities should be stored for use in horticulture / landscape development within the project site.		
XIII	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.		
XIV	Green Belt Development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO/ Agriculture Dept.		
XV	Soil and ground water samples will be tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contaminants.		
XVI	Construction spoils, including bituminous material and other hazardous materials must not be allowed to contaminate watercourses and the dumpsites for such material must be secured so that they should not leach into the ground water.		
XVII	Any hazardous waste generated during construction phase should be disposed off as per applicable rules an norms with necessary approvals of the Maharashtra Pollution Control Board.		
XVIII	The diesel generator sets to be used during construction phase should be low sulphur diesel type and should conform to Environments (Protection) Rules prescribed for air and noise emission standards.		
XIX	The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from concern authority shall be taken.		
XX	Vehicles hired for bringing construction material to the site should be in good condition and should have a pollution check certificate and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.		
XXI	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/MPCB.		
XXII	Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and amended as on 27th August, 2003. (The above condition is applicable only if the project site is located within the 100Km of Thermal Power Stations).		
XXIII	Ready mixed concrete must be used in building construction.		
XXIV	Storm water control and its re-use as per CGWB and BIS standards for various applications.		
XXV	Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.		
XXVI	The ground water level and its quality should be monitored regularly in consultation with Ground Water Authority.		
XXVII	The installation of the Sewage Treatment Plant (STP) should be certified by an independent expert and a report in this regard should be submitted to the MPCB and Environment department before the project is commissioned for operation. Discharge of this unused treated affluent, if any should be discharge in the sewer line.Treated effluent emanating from STP shall be recycled/refused to the maximum extent possible. Discharge of this unused treated affluent, if any should be discharge in the sewer by decentralized treatment should be done. Necessary measures should be made to mitigate the odour problem from STP.		
XXVIII	Permission to draw ground water and construction of basement if any shall be obtained from the competent Authority prior to construction/operation of the project.		
XXIX	Separation of gray and black water should be done by the use of dual plumbing line for separation of gray and black water.		
XXX	Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor based control.		

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XXXI	Use of glass may be reduced up to 40% to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating in windows.		
XXXII	Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill requirement.		
XXXIII	Energy conservation measures like installation of CFLs /TFLs for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Use CFLs and TFLs should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible like installing solar street lights, common solar water heaters system. Project proponent should install, after checking feasibility, solar plus hybrid non-conventional energy source as source of energy.		
XXXIV	Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low sulphur diesel. The location of the DG sets may be decided with in consultation with Maharashtra Pollution Control Board.		
XXXV	Noise should be controlled to ensure that it does not exceed the prescribed standards. During nighttime the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations.		
XXXVI	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized and no public space should be utilized.		
XXXVII	Opaque wall should meet prescriptive requirement as per Energy Conservation Building Code, which is proposed to be mandatory for all air-conditioned spaces while it is aspiration for non-air-conditioned spaces by use of appropriate thermal insulation material to fulfill requirement.		
XXXVIII	The building should have adequate distance between them to allow movement of fresh air and passage of natural light, air and ventilation.		
XXXIX	Regular supervision of the above and other measures for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings.		
XL	Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance.		
XLI	Six monthly monitoring reports should be submitted to the Regional office MoEF, Bhopal with copy to this department and MPCB.		
XLII	Project proponent shall ensure completion of STP, MSW disposal facility, green belt development prior to occupation of the buildings. As agreed during the SEIAA meeting, PP to explore possibility of utilizing excess treated water in the adjacent area for gardening before discharging it into sewer line No physical occupation or allotment will be given unless all above said environmental infrastructure is installed and made functional including water requirement in Para 2. Prior certification from appropriate authority shall be obtained.		
XLIII	Wet garbage should be treated by Organic Waste Converter and treated waste (manure) should be utilized in the existing premises for gardening. And, no wet garbage will be disposed outside the premises. Local authority should ensure this.		
XLIV	Local body should ensure that no occupation certification is issued prior to operation of STP/MSW site etc. with due permission of MPCB.		
XLV	A complete set of all the documents submitted to Department should be forwarded to the Local authority an MPCB.		
XLVI	In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by t Department.		
XLVII	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.		
XLVIII	Separate funds shall be allocated for implementation of environmental protection measures/EMP along with item-wise breaks-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should reported to the MPCB & this department.		
XLIX	The project management shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the Marathi language of the local concerned within seven days of issue of this letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the Maharashtra Pollution Control Board and may also be seen at Website at http://ec.maharashtra.gov.in.		
L	Project management should submit half yearly compliance reports in respect of the stipulated prior environment clearance terms and conditions in hard & soft copies to the MPCB & this department, on 1st June & 1st December of each calendar year.		

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LI	A copy of the clearance letter shall be sent by proponent to the concerned Municipal Corporation and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	
LII	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM. SO2, NOx (ambient levels as well as stack emissions) or critical sector parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	
LIII The project proponent shall also submit six monthly reports on the status of compliance of the conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.		
LIV The environmental statement for each financial year ending 31st March in Form-V as is manda submitted by the project proponent to the concerned State Pollution Control Board as prescrib Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the webs company along with the status of compliance of EC conditions and shall also be sent to the res- Regional Offices of MoEF by e-mail.		



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4. The environmental clearance is being issued without prejudice to the action initiated under EP Act or any court case pending in the court of law and it does not mean that project proponent has not violated any environmental laws in the past and whatever decision under EP Act or of the Hon'ble court will be binding on the project proponent. Hence this clearance does not give immunity to the project proponent in the case filed against him, if any or action initiated under EP Act.

5. In case of submission of false document and non-compliance of stipulated conditions, Authority/ Environment Department will revoke or suspend the Environment clearance without any intimation and initiate appropriate legal action under Environmental Protection Act, 1986.

6. The Environment department reserves the right to add any stringent condition or to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the department or for that matter, for any other administrative reason.

7. Validity of Environment Clearance: The environmental clearance accorded shall be valid as per EIA Notification, 2006, and amendments by MoEF&CC Notification dated 29th April, 2015.

8. In case of any deviation or alteration in the project proposed from those submitted to this department for clearance, a fresh reference should be made to the department to assess the adequacy of the condition(s) imposed and to incorporate additional environmental protection measures required, if any.

9. The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rules, 1989 and its amendments, the public Liability Insurance Act, 1991 and its amendments.

10. Any appeal against this Environment clearance shall lie with the National Green Tribunal (Western Zone Bench, Pune),New Administrative Building, 1stFloor, D-, Wing, Opposite Council Hall, Pune, if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

Shri Satish.M.Gavai (Member Secretary SEIAA)

Copy to:

- 1. SHRI JOHNY JOSEPH, CHAIRMAN-SEIAA
- 2. SHRI UMAKANT DANGAT, CHAIRMAN-SEAC
- 3. SHRI M.M.ADTANI, CHAIRMAN-SEAC-II
- 4. SHRI ANIL .D. KALE. CHAIRMAN SEAC-III
- **5.** SECRETARY MOEF & CC
- **6.** IA- DIVISION MOEF & CC
- 7. MEMBER SECRETARY MAHARASHTRA POLLUTION CONTROL BOARD MUMBAI
- 8. REGIONAL OFFICE MOEF & CC NAGPUR
- 9. MUNICIPAL COMMISSIONER THANE
- **10.** REGIONAL OFFICE MPCB THANE
- **11.** REGIONAL OFFICE MIDC AMBERNATH
- 12. REGIONAL OFFICE MIDC THANE
- 13. MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO. LTD
- **14.** COLLECTOR OFFICE THANE

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Secretary SEIAA)

ENVIRONMENT MANAGEMENT PLAN – BUGDETARY ALLOCATION

FOR

"Vedant Nakshatra" Proposed Residential and Commercial Project at At S.No. 70, H.No. 1(pt) & H.No. 5(pt) of village-Kulgaon, Tal-Ambernath, Dist-Thane.

Sr. No	PARTICULARS	SETUP COST (IN LAKHS)	OPERATIONAL & MAINTENANCE COST (IN LAKHS / YEAR)
1	STP	53	8
2	RAIN WATER HARVESTING	60	3
3	ENERGY SAVING	88	4
4	GARDENING	13	2.6
5	SOLID WASTE MANAGEMENT	10	6
6	TOTAL	224	23.6