

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
SOUTHERN ZONE AT CHENNAI

APPLICATION NO. 91 OF 2021 (SZ).
&
APPEAL NO.10 OF 2021(SZ).

G.DEVARAJAN,
S/o Govindappa Naidu,
15, Gandhi Nagar, 2nd Street,
Reliance Backside,
Arumbakkam
Chennai- 600 106
E-mail: manuraj.office@gmail.com
Contact-No: 99621 98210

... Applicant

VERSUS

1. THE STATE OF TAMIL NADU,
Rep. by the Chief Secretary to Government, & three others

... Respondents

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Certified that the contents are the above documents are true to the best of my knowledge and information

Dated at Chennai this is the day September, 2021.

Counsel for the 3rd Respondents

From
K. Ravichandran, B.E.,
Executive Engineer and ADO,
Anna Nagar Division,
Tamil Nadu Housing Board,
Thirunangalam Shopping Complex,
Chennai - 600101



To
The Member Secretary,
State Environment Impact
Assessment Authority, Tamil Nadu,
3rd Floor, Panagal Mallai,
No.1, Jennis Road, Saidapet,
Chennai - 600 015

Letter No. AND/PLG/849/2016

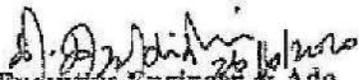
Date: 26.06.2020

Sub: Tamil Nadu Housing Board - Anna Nagar Division - Proposed Construction of mixed use development at S.No. 2, Block No. 4 of Arumbakkam village, Egmore - Nungambakkam Taluk, Chennai District - Submission of Form I, IA and Conceptual Plan - reg.

Ref: EIA Notification of MoEF dated Sept 14, 2006 amended

With reference to the above, we are submitting herewith the Form I, Form IA and Conceptual Plan with annexure including checklist pertaining to the above-mentioned project. The proposed project is construction of mixed use development with the total built up and land area of 1,42,385.11 Sq.m. and 33,146.8 sq.m respectively by Tamil Nadu Housing Board. The total project cost is Rs. 399.84 Crores and the scrutiny fee Rs.5,00,000 in favour of "The Member Secretary, SEIAA, Tamil Nadu" is also enclosed.

Hence it is requested to consider our application to the upcoming SEAC meeting and grant the Environmental Clearance for our project at the earliest.


Executive Engineer & ADO

Anna Nagar Division

Encl:

- (i) Demand Draft No. 516401 dated: 09.07.2020
- (ii) Form I & IA and Conceptual Plan with Annexure & checklist



Acknowledgement Slip for EC application

This is to acknowledge that the proposal has been successfully uploaded on the portal of the Ministry. The proposal shall be examined in the Ministry to ensure that required information has been submitted. An email will be sent seeking additional information, if any, within 20 working days. Once verified, an acceptance letter shall be issued to the project proponent.

Following should be mentioned in further correspondence

1. **Proposal No.** : SIA/TN/MIS/161937/2020
2. **Category of the Proposal** : Infrastructure and Miscellaneous Projects + CRZ
3. **Name of the proposal** : Proposed construction of mixed use development at Arumbakkam
4. **Date of Receipt of Proposal** : 06 Jul 2020
5. **Name of the Project proponent along with contact details**
 - a) **Name of the proponent** : TAMIL NADU HOUSING BOARD - ANNA NAGAR DIVISION
 - b) **State** : Tamil Nadu
 - c) **District** : Chennai
 - d) **Pincode** : 600101



Dr.JAYANTHI.M, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT
IMPACT ASSESSMENT AUTHORITY-
TAMILNADU
3rd Floor, Panagal Maaligai,
No.1 Jeelis Road, Saidapet, Chennai-15.
Phone No : 044-24359973
Fax No : 044-24359975

Letter No. SEIAA-TN/ E.No. 7627/2020, dated: 10.07.2020

To

Thiru.K.Ravichandran,
Executive Engineer and ADO
M/s.Tamil Nadu Housing Board
Anna Nagar Division
Tirumangalam Shopping Complex
Ambattur, Chennai - 600101

Sir,

Sub: SEIAA-TN - Thiru.K.Ravichandran, EE and ADO, M/s.Tamil Nadu Housing Board, Anna Nagar Division, Tirumangalam Shopping Complex, Ambattur, Chennai - Application for Environmental Clearance for proposed construction project located at S.F.No. Sl.No.2, Block No.4, Arumbakkam Village, Egmore - Nungambakkam Taluk, Chennai District- Regarding

Ref: 1. Your application dated 26.06.2020 received by this office on 10.07.2020
2. Online Proposal No. SIA/TN/MIS/161937/2020 dated: 06.07.2020

=:oOo:=

1. Your project proposal has been received in this office on 10.07.2020 along with the processing fee of Rs.5,00,000/- (Rupees Five Lakhs only) by means of Demand draft drawn from Anna Nagar West Branch ICICI Bank bearing no 546401 dated: 09.07.2020.
2. The project proponent shall forward the Hard copy & soft copy of the updated proposal to the SEAC members, obtaining list from this office only on receipt of communication to forward the proposal to the SEAC Members.
3. The POD shall contain this office reference when the Project Proponent has been advised to communicate the proposal to the SEAC Members.
4. The SEIAA will consider the proposal for the issue of EC only on receipt of recommendation from the SEAC.

[Signature]
10/7/20
For-MEMBER SECRETARY
SEIAA-TN

[Handwritten initials]
10/7/20

Form-1**APPLICATION FOR PRIOR ENVIRONMENTAL CLEARANCE****1. Basic Informations**

Project Name	Proposed construction of mixed use development at Arumbakkam	Company/Organisation Name	TAMIL NADU HOUSING BOARD - ANNA NAGAR DIVISION
Registered Address	Anna Nagar Division, Tamil Nadu Housing Board, Thirumangalam Shopping Complex, Chennai Tamil Nadu 600101	Legal Status of the Company	State Government

2.	Address for the correspondence:	
	(a) Name of the Applicant (b) Designation (Owner/ Partner/ CEO) (c) Address (d) Pin code (e) E-mail (f) Telephone No. (g) Fax No. Copy of documents in support of the competence/authority of the person making this application to make application on behalf of the User Agency .	Ravichandran K Executive Engineer and ADO Anna Nagar Division, Tamil Nadu Housing Board, Thirumangalam Shopping Complex, Chennai,,Ambattur,Tiruvallur,Tamil Nadu-600101 600101 tnhbarumbakkam@gmail.com 0- NIL

3.	Category of the Project/Activity as per Schedule of EIA Notification,2006:	
	(a) Major Project/Activity (b) Minor Project/Activity (c) Category (d) Proposal Number (e) Master Proposal Number(Single Window) (f) EAC concerned (for category A Projects only) (g) Project Type(New/Expansion/Modernization)	B(a) Building and Construction projects NIL B2 SIA/TN/MIS/161937/2020 SW/161923/2020 INFRA-2 Fresh EC

4.	(a) Number of States in which Project will be Executed	1
	(b) Main State of the project	Tamil Nadu

Details of State(s) of the project				
S. No.	State Name	District Name	Tehsil Name	Village Name
(1.)	Tamil Nadu	Chennai	Egmore Numgambakkam	Arumbakkam

5.	Details of Public Consultation:	
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(a) Whether the Project Exempted from Public Hearing?	Yes
(c) Reason	-1
(d) Supporting Document	NILL

Project Profile

Location of the project	S.No. 2, Block No. 4 of Arumbakkam Village, Egmore - Nungambakkam Taluk, Chennai District		
Town / Village (Name of more than one town may be entered by separating with)	Arumbakkam	Plot/Survey/Khasra No. (Name of more than one town may be entered by separating with)	S.No. 2
State	Tamil Nadu	District	Chennai
Tehshil	Egmore Nungambakkam	Pincode	600106
Nearest railway station	Korattur	Distance from the project site	4.57
Nearest airport	Chennai International Airport	Distance from the project site	11.46
Nearest Town/City/District Headquarters	Within City Limit	Distance from the project site	0
Village Panchayats, Zila Parishad, Municipal Corporation, Local body (Complete postal addresses with telephone nos. to be given)	Greater Chennai Corporation Address: 1131, EVR Periyar Salai, Park Town, Ripon Building, Chennai - 600 003 Telephone No: 044 25619555	Upload GPS file	Copy of Kml File  Uploaded GPS file
Shape of the project land	Block (Polygon)	Site alternative under consideration (If any)	Uploaded Site alternative under consideration
Brief summary of project	Uploaded Brief summary of project		
Does your project location falls under out of any following areas	None of above Areas		
Proposed Built up area (Built up area or covered area on all the floors puttogether including its basement and other service areas which are proposed in the building or construction projects) (In Meter /Sqr)	135031.13	Existing Built Up Area (In Meter /Sqr)	0
Does it attract any of the general conditions given below?	No		
Does it attract the specific condition given below?	No		
Interlinked Projects	No		
Whether separate application of interlinked projects has been submitted?		Date of Submission	
Whether the proposal involves approval/clearance under the Forest (Conservation) Act, 1980?	No		

Whether the proposal involves approval/clearance under the wildlife (Protection) Act,1972?	No		
Whether the proposal involves approval/clearance under the C.R.Z notification,2011?	No		
Whether there is any Government Order/Policy relevent/relating to the site?	No		
Forest land involved(hectares)	0		
Is there any litigation pending against the project?	No		

Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S.No	Information/Checklist confirmation	Yes/No	Details there of (with approximate quantities/rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	No	The proposed project site is classified as Mixed Residential use zone by Chennai Metropolitan Development Authority (CMDA).
1.2	Clearance of existing land, vegetation and buildings?	No	Since the existing land is vacant, no major clearance activities will take place. Only clearance activities will be carried out to remove shrubs and weeds.
1.3	Creation of new land uses?	No	No creation of new land use as the site involves only construction of residential building.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	Yes	Soil Testing has been done to find the suitability of soil for providing adequate foundations for the proposed structures.
1.5	Construction works?	Yes	Construction of high-rise building will be done systematically with economy of materials.
1.6	Demolition works?	No	No demolition works will be carried out as the land is vacant
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	Inside the proposed site, a small area will be utilized temporarily for construction of sheds for the migrated workers and materials. But most of the workers will be deployed from local area only.

1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations and fill or excavations	Yes	Excavation works will be carried out for foundation of the structures. Later on, the site will be leveled. Thus, the cut and fill process will be required.
1.9	Underground works including mining or tunneling?	No	No underground works will be required as the proposed project is the construction of commercial & residential blocks.
1.10	Reclamation works?	No	Not envisaged.
1.11	Dredging?	No	Not envisaged.
1.12	Offshore structures?	No	Not envisaged.
1.13	Production and manufacturing processes?	No	Not applicable as the project is construction of high-rise residential building.
1.14	Facilities for storage of goods or materials?	Yes	Temporary sheds will be constructed for the storage of cement and other materials during construction phase.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	The grey water generation of 273 KLD will be treated in grey water treatment plant of 280 KLD and the treated grey water (271 KLD) will be utilized for Toilet Flushing (195 KLD) and Green Belt Development (20 KLD). The sewage generation of 195 KLD will be treated in Sewage Treatment Plant of 200 KLD. The excess treated grey water (56 KLD) along with the sewage generation (193 KLD) will be utilized for watering roadside trees and OSR development. Bio degradable wastes will be treated in OWC
1.16	Facilities for long term housing of operational workers?	No	No long-term operational phase workers involved in this project.
1.17	New road, rail or sea traffic during construction or operation?	No	The existing road network is sufficient for connectivity of the site with other parts of the city.
1.18	New road, rail, air water borne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	There will be no change to the existing transport infrastructure.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	As construction works will be within a specified area, there is no need for closure or diversion of existing transport routes.
1.20	New or diverted transmission lines or pipelines?	No	No new or diversion transmission lines & pipelines are required for this project.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	There will not be any alteration in the hydrology of the watercourses or aquifers due to the proposed project.
1.22	Stream crossings?	No	There is no stream crossing in the project site.
1.23	Abstraction or transfers of water from ground or surface	No	Water requirement will be sourced

	waters?		from CMWSSB.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	There is no change in the water bodies or land surface which affects the drainage or runoff.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Transportation of personnel & construction materials during construction phase will be through existing roads only.
1.26	Long-term dismantling or decommissioning or restoration works?	No	As part of this project, no long-term dismantling or decommissioning or restoration works would be involved.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	There will not be any decommissioning works.
1.28	Influx of people to an area in either temporarily or permanently?	Yes	During construction period few workers will be stationed temporarily and others will be deployed locally.
1.29	Introduction of alien species?	No	No introduction of alien species
1.30	Loss of native species or genetic diversity?	No	No loss at the site as it is plain and there is no significant species.
1.31	Any other actions?	No	Only eco-friendly activities like tree plantation will be undertaken.

2 Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	No	There is no agricultural or undeveloped land involved in this project
2.2	Water (expected source & competing users) unit: KLD	Yes	Total Fresh water Requirement - 304 KLD Source: CMWSSB
2.3	Minerals (MT)	No	No usage of mineral is envisaged
2.4	Construction material - stone, aggregates, sand / soil (expected source - MT)	Yes	The approximate consumption of cement, steel, concrete, sand, etc. are given below. Cement - 287435 Bags Steel - 8865 MT Concrete - 98001 Cum Blocks - 6629 Nos Sand - 341562 Cum.
2.5	Forests and timber (source - MT)	No	NA
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	Total power requirement - 6500 KVA Source - TANGEDCO
2.7	Any other natural resources (use appropriate standard units)	No	There is no need for other natural resources.

3 Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with
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			approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIH rules) to human health or the environment (flora, fauna, and water supplies)	Yes	Hazardous material like Paint, diesel, varnish, etc will be used in the project. As it will be stored in isolated place, it will not have any significant impact on environment.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	There will not be any occurrence of diseases as activities are confined to construction.
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	Local people will get preference in the employment during construction phase. The proposed project improves the socioeconomic standard of the surrounding by providing improved commercial services.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.	No	Not Applicable
3.5	Any other causes	No	Nil

4 Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	No	There will not be any spoil, overburden or mine waste.
4.2	Municipal waste (domestic and or commercial wastes)	Yes	The quantity of municipal solid waste generated from the proposed project will be 2,239 kg/day
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	The quantity of Hazardous waste generated from the proposed project Construction Phase: Paints, Solvents/thinners - 10 to 20 kg/day (Disposed to the authorized recyclers. Operation Phase: Used oil - 0.2 TPA (Disposed to TNPCB/CPCB authorized re-processors)
4.4	Other industrial process wastes	No	Not envisaged
4.5	Surplus product	No	Not applicable since the proposed project is construction of high-rise residential building.
4.6	Sewage sludge or other sludge from effluent treatment	Yes	STP sludge of 23 kg/day will be used as manure for greenbelt development
4.7	Construction or demolition wastes	Yes	Construction waste will be used in land filling and road pavements in the surrounding low lying areas.
4.8	Redundant machinery or equipment	No	Most of the equipments used

			during construction phase will be hired.
4.9	Contaminated soils or other materials	No	There is no source for contamination of soils or other materials.
4.10	Agricultural wastes	No	Does not arise
4.11	Other solid wastes	No	No other waste generation expected.

5 Release of pollutants or any hazardous, toxic or noxious substances to air(Kg/hr)

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	The gaseous emissions are expected from transport vehicles moving inside the project site. This will be minimized by controlling the speed of vehicles, hiring well maintained vehicles, planting trees and spraying water periodically.
5.2	Emissions from production processes	No	Does not arise since the proposed project is a mixed use development.
5.3	Emissions from materials handling including storage or transport	Yes	Emissions like dust will arise during the transportation of materials and the dust will be controlled by slow movement of vehicles, covering the materials properly and water spraying.
5.4	Emissions from construction activities including plant and equipment	Yes	Marginal quantity of emission is expected from construction activities which will be controlled by suitable control measures like water spraying.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Dust emission will be arrested by water spraying and covering the stored materials with tarpaulin cover. Septic tanks & soak pit will be provided to treat the sewage during construction phase.
5.6	Emissions from incineration of waste	No	Not Applicable
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Not Applicable
5.8	Emissions from any other sources	No	No emissions from any other sources.

6 Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with
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			approximate quantities/rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	RMC will be used at site. In case of any usage of machinery/equipment, then they will be properly covered and workers will be given ear plugs in noisy area.
6.2	From industrial or similar processes	No	Not Applicable
6.3	From construction or demolition	Yes	Noise levels in the range of 75-85 dB (A) will be generated occasionally during the construction activities. Workers in the noisy areas will be provided with earmuffs and earplugs.
6.4	From blasting or piling	No	Not applicable
6.5	From construction or operational traffic	Yes	During construction phase construction materials will be transported by road, through well maintained vehicles to control noise, vibration and emissions. During operational phase traffic noise and emissions will be increased slightly that will be minimized by paving roads with asphalt / concrete, well maintained vehicles, slow movement of vehicles and by planting trees.
6.6	From lighting or cooling systems	No	Adequate enclosures, tree plantations will be provided
6.7	From any other sources	No	Not Applicable

7 Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	As the hazardous materials will be stored in isolated place required safety measures are in place during entire period of construction, no significant risk is envisaged. However adequate safety measures to mitigate all risks anticipated out of fire in diesel will be taken care off by installing suitable firefighting system.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	The grey water generation of 273 KLD will be treated in grey water treatment plant of 280 KLD and the treated grey water (271 KLD) will be utilized for Toilet Flushing (195 KLD) and Green Belt Development (20 KLD). The sewage generation of 195 KLD will

			be treated in Sewage Treatment Plant of 200 KLD. The excess treated gray water (56 KLD) along with the sewage generation (193 KLD) will be utilized for watering roadside trees and OSR development. Bio degradable wastes will be treated in OWC
7.3	By deposition of pollutants emitted to air into the land or into water	No	There will be minimal emission of pollutants from the project site.
7.4	From any other sources	No	No other polluting sources exist.
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	There will not be any long term build up of pollutants in the environment from these sources.

8 Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	Yes	As the hazardous materials will be stored in isolated place required safety measures are in place during entire period of construction, no significant risk is envisaged. However adequate safety measures to mitigate all risks anticipated out of fire in diesel will be taken care off by installing suitable fire fighting system.
8.2	From any other causes	No	No risks from any other sources.
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	The area under study falls in Zone-III according to the Indian Standard Seismic Zoning Map. The structure was designed to be earthquake resistant. The proposed project will not be affected by natural disasters causing environmental damage.

9 Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting utilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: <ul style="list-style-type: none"> o Supporting Infrastructure (roads, power supply, waste or waste water treatment, etc.) o housing development 	No	Proposed infrastructure like roads, power supply, etc. will not create any impact on the environment. Housing development in and around project site No Extraction Nil

	<ul style="list-style-type: none"> o extractive industries o supply industries o Other 		
9.2	Lead to after-use of the site, which could have an impact on the environment	No	No impact will be seen due to proposed the activity
9.3	Set a precedent for later developments	No	No impact is seen due to the proposed activity
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	Not applicable

(III) Environmental Sensitivity

S.No	Areas	Name/Identity	Aerial distance (within 15km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	No	No such areas within 15 Km radius
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	No	Nil
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	No such areas within 15 Km radius
4	Inland, coastal, marine or underground waters	Yes	Coovum River - 0.01 km (N) Chetpet Lake - 3.77 km (E) Adyar River - 5.6 km (S) Korattur lake- 5.61 km (NNW) Retteri Lake - 5.97 km (NNE) Ambattur Lake - 7.38 km (NW) Porur Lake - 7.47 km (SW) Ayanambakkam Tank - 7.69 km (WNW)
5	State, National boundaries	No	No such areas within 15 Km radius
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	No	No such areas within 15 Km radius
7	Defence Installations	No	No such areas within 15 Km radius
8	Densely populated or built-up area	Yes	Arumbakkam - 0.1 km (S)
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	Appasamy Hospitals - 0.95 km (SE) Prime Indian Hospitals - 0.1 (S) Government Hospital for Ladies & Children Clinic - 0.63 (SW) National Star Matriculation Higher Secondary School - 0.29 (SE) Ambal Matriculation School - 0.45 (S)
10	Areas containing important, high quality or scarce resources.(ground water resources,surface resources,forestry,agriculture,fisheries,tourism,minerals)	No	No such areas within 15 Km radius
11	Areas already subjected to pollution or environmental damage.(those where existing legal environmental standards are exceeded)	No	No such areas within 15 Km radius

12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No	The area under study falls in Zone-III, according to the Indian Standard Seismic Zoning Map
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Document to be attached

1.	Upload a copy of PFR	Uploaded a copy of PFR.
2.	Upload a copy of EMP	Uploaded a copy of EMP.
3.	Upload Scanned copy of covering letter.	Uploaded Scanned copy of covering letter..
4.	Upload Additional attached if any(Single PDF)	Uploaded Additional attached if any(Single PDF).
5.	Whether It is a violation case and application is being submitted under Notification No. S.O.804(E) dated 14.03.2017 ?	No

Essential Details Sought

S. No.	EDS Sought Date	EDS Sought	Letter
(1.)	25/08/2020	It is requested to submit the above details through online and hard copies to the SEIAA office for further processing of the application.	<u>EDS Letter</u>
(2.)	25/08/2020	It is requested to submit the above details through online and hard copies to the SEIAA office for further processing of the application.	<u>EDS Letter</u>
(3.)	11/10/2020	The correction have been made as per the instruction received	

Additional Details Sought

S. No.	ADS Sought Date	ADS Sought	Letter
NO Record			

Undertaking

I hereby give undertaking that the data and information given in the application and enclosures are true to be best of my knowledge and belief. And I am aware that if any part of the data and information found to be false or misleading at any stage, the project will be rejected and clearance given, if any to the project will be revoked at our risk and cost. In addition to above, I hereby give undertaking that no activity/ construction/ expansion has since been taken up.

Name of Applicant	Ravichandran K
Designation	Executive Engineer and ADO
Name of Company (Applicant Name should not be given here)	TAMIL NADU HOUSING BOARD - ANNA NAGAR DIVISION
Address	Anna Nagar Division, Tamil Nadu Housing Board, Thirumangalam Shopping Complex, Chennai

FORM IA

I. Land Environment

S. No	Information	Details with source of information data
1.1	<p>Will the existing land use get significantly altered from the project that is not consistent with the surroundings? (Proposed land use must conform to the approved Master Plan / Development Plan of the area. Change of land use if any and the statutory approval from the competent authority are submitted).</p> <p>Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.</p>	<p>The proposed project site is classified as Mixed Residential Zone by Chennai Metropolitan Development Authority (CMDA). The supportive document of the same is enclosed as Annexure.</p> <p>The map showing the site location and surrounding features of the site are given in Figure 1.1 and Figure 1.5 (Chapter 1). The site layout indicating the contour levels is enclosed as Annexure I.</p>
1.2	<p>List out all the major project requirements in terms of the</p> <ul style="list-style-type: none"> ➤ Land area, ➤ Built-up area, ➤ Water consumption, ➤ Power requirement, ➤ Connectivity, ➤ Community facilities, ➤ Parking needs etc. 	<p>Mixed use development consisting of a Commercial block (2B+G+19 Floors), 2 Residential blocks (2B+S+19 Floors - each 152 units) with a total of 304 units</p> <ul style="list-style-type: none"> • 33,157 Sq.m. • 1,35,031.13 Sq.m. • Fresh Water Consumption - 304 KLD • 6500KVA • The Project Site is well connected by road, rail and air ways. The project site is located adjacent to Poonamallee High Road. All other connectivity like rail and airways are well connected to the site. • Nil • Provided in the conceptual plan
1.3	<p>What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facilities, details of the existing land use, disturbance to the local ecology)</p>	<p>The proposed project is the construction of mixed development. This will be provided with open space, stilt & basement provision for parking and landscaping internally itself. An adequate mitigation measure will be adopted to reduce the negative impacts due to the project during the Construction.</p>

1.4	Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc may be given).	The type of soil is silty sand from ground level to 11.0 m. The proposed project site is a vacant land and classified as mixed residential Area and not utilized for cultivation. The project site falls under Seismic Zone - III (Moderate).
1.5	Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)	The project site does not involve any alteration natural drainage systems. The surface drainage will be planned as per existing contour system. The map showing the natural drainage of the project site is shown in <i>Figure 1.3</i> (Chapter 1).
1.6	What are the quantities of earthwork involved in the construction activity cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc.)	All the topsoil excavated during construction phase shall be stored and used for landscape development within the project site. The lower strata earth excavated from pile foundation is either used for filling the plinths, road substructure and leveling. The excess quantity will be transported to outside for leveling of sites.
1.7	Give details regarding water supply, waste handling etc. during the construction period.	The quantity of water required during construction phase will be 35 KLD which will be met from nearby water supplier through tankers. The concrete debris will be used for site grading and road filling.
1.8	Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)	The proposed project site is fairly flat with minor undulations. There is no wetland within the project site.
1.9	Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal)	No, the waste does not contribute to any health hazards. Construction Waste: ✓ Waste materials like MS Rods, bricks, concrete, broken tiles, wood pieces, cement bags etc. which will be 100 kg/day (Max.) during peak construction would be segregated. Recyclable material will be sold to authorize dealers. Rest will be used within project site for filling & leveling purpose. Remaining will be sent for disposal through authorized vendors. Cement bags will be used for road making.

	✓ Excavated Soil of 14,520 m ³ will be stored in covered areas and will be later used for landscaping purpose. Remaining soil will be used for back filling & leveling of site. Unused soil will be disposed off to designated site through authorized vendors on payment basis.
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II. WATER ENVIRONMENT

S. No.	Information	Details with source of information data
2.1	Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.	During operation phase water requirement will be met through CMWSSB. Fresh water demand is <u>304KLD</u> . The Water Balance Chart is given in the <u>Figure 2.1</u> of Conceptual Plan
2.2	What is the capacity (dependable flow or yield) of the proposed source of water?	The Water requirement during construction phase will be met through Water Tankers. During the operation phase the water requirement will be met from CMWSSB which is having adequate quantity of water.
2.3	What is the quality of water required, in case, the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality)	Water requirement will be met from CMWSSB and the quality of water confirms the as per IS 10500 drinking water standards.
2.4	How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)	The grey water generation of 273 KLD will be treated in grey water treatment plant of 280 KLD and the treated grey water (271 KLD) will be utilized for Toilet Flushing (195 KLD) and Green Belt Development (20 KLD). The sewage generation of 195 KLD will be treated in Sewage Treatment Plant of 200 KLD. The excess treated grey water (56 KLD) along with the sewage generation (193 KLD) will be utilized for watering roadside trees and OSR development. Bio degradable wastes will be treated in organic waste converter and non-bio degradable wastes will be disposed to Authorized Recyclers. The water balance chart is given in Figure 2.1 (Chapter 2) of the Conceptual Plan.

2.5	Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)	There will be no diversion of water from other users. Water will be sourced from CMWSSB through pipes.
2.6	What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity)	The grey water generation of 273 KLD will be treated in grey water treatment plant of 280 KLD and the treated grey water (271 KLD) will be utilized for Toilet Flushing (195 KLD) and Green Belt Development (20 KLD). The sewage generation of 195 KLD will be treated in Sewage Treatment Plant of 200 KLD. The excess treated grey water (56 KLD) along with the sewage generation (193 KLD) will be utilized for watering roadside trees and OSR development. Bio degradable wastes will be treated in organic waste converter and non-bio degradable wastes will be disposed to Authorized Recyclers. The water balance chart is given in Figure 2.1 (Chapter 2) of the Conceptual Plan.
2.7	Give details of the water requirements met from water harvesting? Furnish details of the facilities created.	Runoff from the roof will be collected and led to the sumps. And for the paved and unpaved surface trench of 1m wide will be constructed all along the boundary in which pits of 29nos will be laid inside the trench. The layout showing Rain water harvesting details are provided in Annexure I
2.8	What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long-term basis? Would it aggravate the problems of flooding or water logging in any way?	There will be no major changes in the land use pattern of the project site. During the rainy season only little increase in water level can be observed. The buildings will be designed with adequate storm water drainage network and rain water harvesting structures and also the compound will be constructed maintaining the site contour, in order to prevent water logging in the project site during monsoons.
2.9	What are the impacts of the proposal on the ground water? (Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent authority, if	Ground water will not be tapped for this project as the water requirement will be met from CMWSSB. So, there is no depletion of ground water. Rainwater harvesting system will be proposed for recharging of ground water to improve

	any)	quality and quantity of ground water resources.
2.10	What precautions/measures are taken to prevent the run-off from construction activities polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)	During the construction phase the runoff from the construction site will not pollute much. So, the runoff is connected to external storm water drains after required filtration.
2.11	How is the storm water from within the site managed? (State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels)	Runoff from the roof will be collected and led to the sumps. And for the paved and unpaved surface trench of 1m wide will be constructed all along the boundary in which pits of 29nos will be laid inside the trench. The excess water and other surface run-off will be disposed through external storm water drain.
2.12	Will the deployment of construction laborers particularly in the peak period lead to unsanitary conditions around the project site. Justify.	Most of the laborers will be deployed locally and the adequate sanitary facilities will be provided for workers residing there temporarily.
2.13	What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)	During construction phase, Septic tanks followed by soak pit will be provided to treat the sewage generated from construction laborer camp. During operational phase, the grey water generation of 273 KLD will be treated in grey water treatment plant of 280 KLD and the treated grey water (271 KLD) will be utilized for Toilet Flushing (195 KLD) and Green Belt Development (20 KLD). The sewage generation of 195 KLD will be treated in Sewage Treatment Plant of 200 KLD. The excess treated grey water (56 KLD) along with the sewage generation (193 KLD) will be utilized for watering roadside trees and OSR development.
2.14	Give details of dual plumbing system if treated waste is used for flushing of toilets or any other use	The treated waste water will be pumped to separate overhead tanks from where it will be re-lifted to flush water tanks. From there the treated wastewater will be supplied to Water Closet and Urinals through separate flushing down take pipes. Flushing lines (using recycled treated effluent) shall be painted with a suitable demarcating color as per IS Codes to differentiate the pipeline for end usages. Separate tanks will also be

	provided from where it will be utilized for toilet flushing and green development.
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III. VEGETATION

S. No.	Information	Details with source of information data
3.1	Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with its unique features, if any)	No.
3.2	Will the Construction involve extensive clearing or modification of vegetation? (provide a detailed account of the trees & vegetation affected by the project)	No, there will not be any significant loss in trees or vegetation. Only minor clearing activities will take place to clear the thorny shrubs and trees around the Periphery of the project Site.
3.3	What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale?)	The green belt development will be done in and around the periphery of the project site in an area of <u>5,060 Sq.m.</u> List of species proposed for green Belt development are given in Conceptual plan.

IV. FAUNA

S. No.	Information	Details with source of information data
4.1	Is there likely to be any displacement of fauna- both terrestrial and aquatic or creation of barriers for their movement? Provide the details.	The project activity is neither displacing any terrestrial or aquatic fauna. The land does not come under migration route or does not intercept any corridor of fauna movement.
4.2	Any direct or indirect impacts on the avifauna of the area? Provide details.	There is no direct or indirect impact on the avifauna of the area.
4.3	Prescribe measures such as corridors, fish ladders etc to mitigate adverse impacts on fauna	Not applicable

V. AIR POLLUTION

S. No.	Information	Details with source of information data
5.1	Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed	There is no significant increase in the atmospheric gases due to the proposed construction of commercial buildings. DG set is the only possible source of emission. The emission will be dispersed with adequate height of stack. Authenticity of baseline Monitoring

	constructions)	Report has been enclosed. The heat island effect is minimized by developing green belt and parks.
5.2	What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the meteorological parameters.	The proposed project involves the construction of commercial blocks hence no odorous fumes and hazardous gases generated. Dust generated from construction & road activities is suppressed by sprinkling of water in the activity zone and insignificant level of smoke arose from the construction equipment & vehicles which is mitigated by proper maintenance. During operational phase only fugitive emissions are expected. Greenbelt will be developed within the compound and they will help the sorption of gaseous pollutants.
5.3	Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site	Adequate parking area of <u>39,374.26</u> Sq.m will be provided within the project site. Also, the site is well connected to the existing road network which is feasible. This infrastructure does not cause any bottleneck.
5.4	Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category	The whole area will be connected with well-maintained internal roads and pedestrian pathways will be constructed. The roads are shown clearly in the site layout.
5.5	Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above	The noise level inside the site will be increased slightly due to the movement of vehicles and from the machines used in construction activities. The noise level will be reduced by the slow movement of vehicles. Installation of speed humps will reduce the speed of the vehicles. Properly well-maintained vehicles will be used to reduce the noise. Proper enclosures will be provided for D.G. sets.
5.6	What will be the impact of DG sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details	The DG sets will be provided with acoustic enclosures. Equipment shall be kept in good conditions to keep the noise level within 90 dB (A).

VI. ASTHETICS

S. No.	Information	Details with source of Information data
6.1	Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?	The proposed project will not affect obstruction of the view, scenic amenity or landscapes around the project site. In fact, this project will exhibit green belt development around the periphery of the project site.
6.2	Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?	As the proposed project will be carried out within the confined area there will not be any adverse impacts from new constructions on the existing structures.
6.3	Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.	No local considerations.
6.4	Are there any anthropological or archaeological sites or artifacts nearby? State if any other significant features in the vicinity of the proposed site have been considered.	There are no anthropological, archaeological, artifact sites nearby the site area

VII. SOCIO ECONOMICS

S. No.	Information	Details with source of Information data
7.1	Will the proposal result in any changes to the demographic structure of local population? Provide the details.	There will not be any changes to the demographic structure of local populations, as it is mixed use development comprising both commercial and residential buildings and the socio-economic power of the surroundings will increase.
7.2	Give details of the existing social infrastructure around the proposed project.	The people living in the vicinity of the project areas have been employed. Many Educational Institutions & industries are located within 5 km radius
7.3	Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?	The proposed project will not cause any disturbance to the local communities. There are no sacred sites or cultural values nearby.

VIII. BUILDING MATERIALS

S. No.	Information	Details with source of Information data
8.1	May involve the use of building materials with high-embodied energy. Are the construction	Standard list of building materials will be used and their use is inevitable. Some of them have high embodied energy like

	materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)	<p>cement, steel, etc. Selection of energy efficient material in the proposed project wherever feasible has been considered.</p> <p>Efforts have been taken to minimize the use of virgin wood and Building materials to the possible extent materials with high recycle content are proposed to be used in the project.</p> <p>Also, the regionally available materials are given priority.</p>
8.2	Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?	<ul style="list-style-type: none"> ✓ Use of well-maintained vehicles for construction activities ✓ Vehicles carrying construction materials should be properly covered ✓ Equipment like earmuffs, earplugs etc., will be used for hearing protection for workers ✓ Cover piles of building materials like cement, sand and other materials ✓ Limitation of vehicle speeds ✓ Control dust through fine water sprays
8.3	Are recycled materials used in roads and structures? State the extent of savings achieved?	<ul style="list-style-type: none"> ✓ Excavated top soil will be used for green expanses in the site ✓ Broken concrete will be used for erosion control
8.4	Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.	The method of collection, segregation & disposal of the garbage generated during the operation phases is detailed in the Conceptual Plan.

IX. ENERGY CONSERVATION

S. No.	Information	Details with source of Information data
9.1	Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?	Electricity connection is obtained from TANGEDCO. Total Electric load for the project is <u>6500 KVA</u> . Details on energy conservation are provided in Chapter 4 of the Conceptual Plan.
9.2	What type of, and capacity of, power back-up you plan to provide?	<u>4 x 250 KVA</u> capacities of DG Set will be used as backup for power requirement during emergency conditions in operation phase of the proposed buildings.
9.3	What are the characteristics of the glass	We propose to provide good quality glass

	you plan to use? Provides specifications of its characteristics related to both short wave and long wave radiation	for window panels.
9.4	What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.	<p>(i) The window wall ratio of the Building envelope is also maintained to enhance the entry of required daylight and limit the entry of heat.</p> <ol style="list-style-type: none"> 1. Windows will be provided to reduce both heating/cooling energy consumption. 2. The Building envelope is designed in an energy efficient way by limiting the heat entry through the Building envelope 3. Use of energy efficient lamps. 4. Shrub planting helps in shading walls and windows.
9.5	Does the layout of streets & buildings maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details.	Solar street lights (150 Nos) and solar panel will be used in reducing energy and maintenance cost.
9.6	Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?	Green belt with native trees will be developed on the periphery of buildings and boundaries the project site. This will help buildings cool in the summer and enhance sun shine in the winter. Shade trees will save 40 % on summer cooling costs when trees mature.
9.7	Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications.	It has been proposed to construct building considering natural ventilation, reducing dependent on electrical energy. Use of LED lamps which are energy efficient.
9.8	What are the likely effects of the building activity in altering the micro-climates? Provide a self-assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?	<ul style="list-style-type: none"> ➤ The air pollutants released into the atmosphere is insignificant and that too from the vehicles/equipment's. ➤ Trees and bushes planted around the site helps in reducing the heat island effect by reducing ambient air temperature through evapo-

		<p>transpiration.</p> <p>➤ The area will be dry and the warm air which is less dense rises up and helps in the dispersion of pollutants. Thus, there will be no inversion effects.</p>									
9.9	<p>What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the U-values or the R-values of the individual components.</p>	<p>The U value and the R value for roof, external walls and fenestration will be designed as per the standards of Energy Building Code.</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Configuration Proposed</th> <th>Resultant Value</th> </tr> </thead> <tbody> <tr> <td>U-Factor for roof</td> <td>RC Slab finished in bituminous waterproofing, PCC Laid to slope, IPS and white china mosaic with glazed finishing</td> <td>0.261 W/m²(°C)</td> </tr> <tr> <td>U-Factor for walls</td> <td>200mm block work, clad in 25mm granite slabs</td> <td>0.352 W/m²(°C)</td> </tr> </tbody> </table>	Parameter	Configuration Proposed	Resultant Value	U-Factor for roof	RC Slab finished in bituminous waterproofing, PCC Laid to slope, IPS and white china mosaic with glazed finishing	0.261 W/m ² (°C)	U-Factor for walls	200mm block work, clad in 25mm granite slabs	0.352 W/m ² (°C)
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U-Factor for roof	RC Slab finished in bituminous waterproofing, PCC Laid to slope, IPS and white china mosaic with glazed finishing	0.261 W/m ² (°C)									
U-Factor for walls	200mm block work, clad in 25mm granite slabs	0.352 W/m ² (°C)									
9.10	<p>What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans</p>	<p>All buildings will be designed such that when an emergency situation arises evacuation can be done efficiently. The firefighting system consists of automatic fire alarm system, smoke alarms, fire extinguishers and fire hydrants. Contact details for the nearest Fire Safety Department will be displayed prominently within the site.</p>									
9.11	<p>If you are using glass as wall material provides details and specifications including emissivity & thermal characteristics</p>	<p>Glass will be used as a wall material in the proposed project.</p>									
9.12	<p>What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.</p>	<p>This is a construction project with no significant pressure difference inside and outside of the building. Infiltration will be reduced by sealing cracks and gaps and by properly placed plants near the buildings.</p>									
9.13	<p>To what extent the non-conventional energy technologies are utilized in the overall energy consumption? Provide details of the renewable energy technologies used.</p>	<p>The site layout has been developed taking into consideration the need for utilizing renewable resources i.e. sunlight and local air movement. The blocks will be spaced such that sufficient sunlight and natural ventilation reaches each dwelling unit reducing the dependency on electrical energy.</p>									

X. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

S. No.	Information	Details with source of Information data
10.1	Environmental Management Plan would consist of all mitigation measures pertaining to the anticipated impacts raised due to the various activities related to the project during Construction and Operation phase. Along with that Environmental Monitoring Plan will be proposed in such a way to monitor the impacts during operation phase for the entire period.	<p>The impacts on air quality during construction & operation phase will be due to vehicular movement, which will be controlled by spraying water on roads, use of dust covers, etc.</p> <p>The Impacts on noise quality during construction & operation phase will be due to the vehicular movement and this will be controlled by adopting better traffic management.</p> <p>The impacts on water quality during the construction & operational phase will be due to waste water generation which will be treated in the GTP & STP and treated waste water will be used for gardening, toilet flushing & utilized for watering road side trees and OSR Development.</p> <p>The impact on soil will be due to generation of construction waste. This will be controlled by implementing appropriate waste management system in both the phases of the project.</p> <p>The detailed EMP is given in Section 4.0 of Conceptual Plan.</p>

I hereby given undertaking that the data and information given in the application and enclosures are true to the best of my knowledge ad belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost.

Date: 10.10.2020

Place: Chennai

EXECUTIVE ENGINEER &
ANNA NAGAR DIVISION
Tamil Nadu Housing Board
(Signature of the applicant) Chennai-600

K. Ravichandran, B.E.,
Executive Engineer and ADO,
Anna Nagar Division,
Tamil Nadu Housing Board,
Thirumangalam Shopping Complex,
Chennai - 600101



PROJECT NAME :
PROPOSED CONSTRUCTION OF
MIXED-USE DEVELOPMENT

PROJECT PROPONENT :
TNHB FORESHORE ESTATE
DIVISION, ARUMBAKKAM,
CHENNAI

SOURCE :
GOOGLE EARTH



LEGENDS

- EDUCATIONAL INSTITUTIONS
- RESIDENTIAL AREAS
- HOSPITALS

FIGURE 1.2 - SURROUNDING FEATURES OF THE PROPOSED SITE (WITHIN 500 METERS)

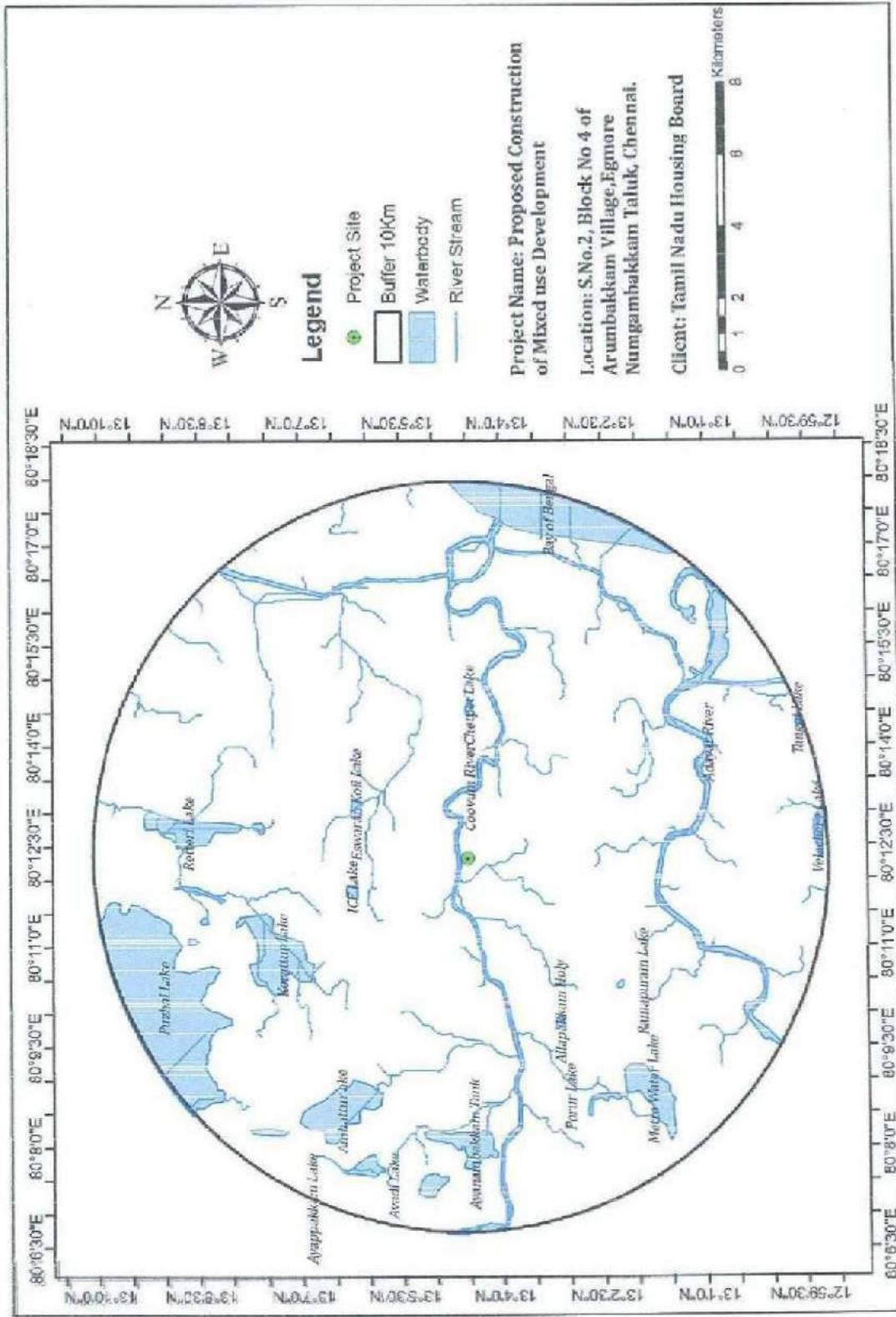


FIGURE 1.4 - DRAINAGE MAP SHOWING 10 KM RADIUS AROUND THE PROJECT SITE

Conceptual Plan TNHB - Proposed Construction of Mixed Development

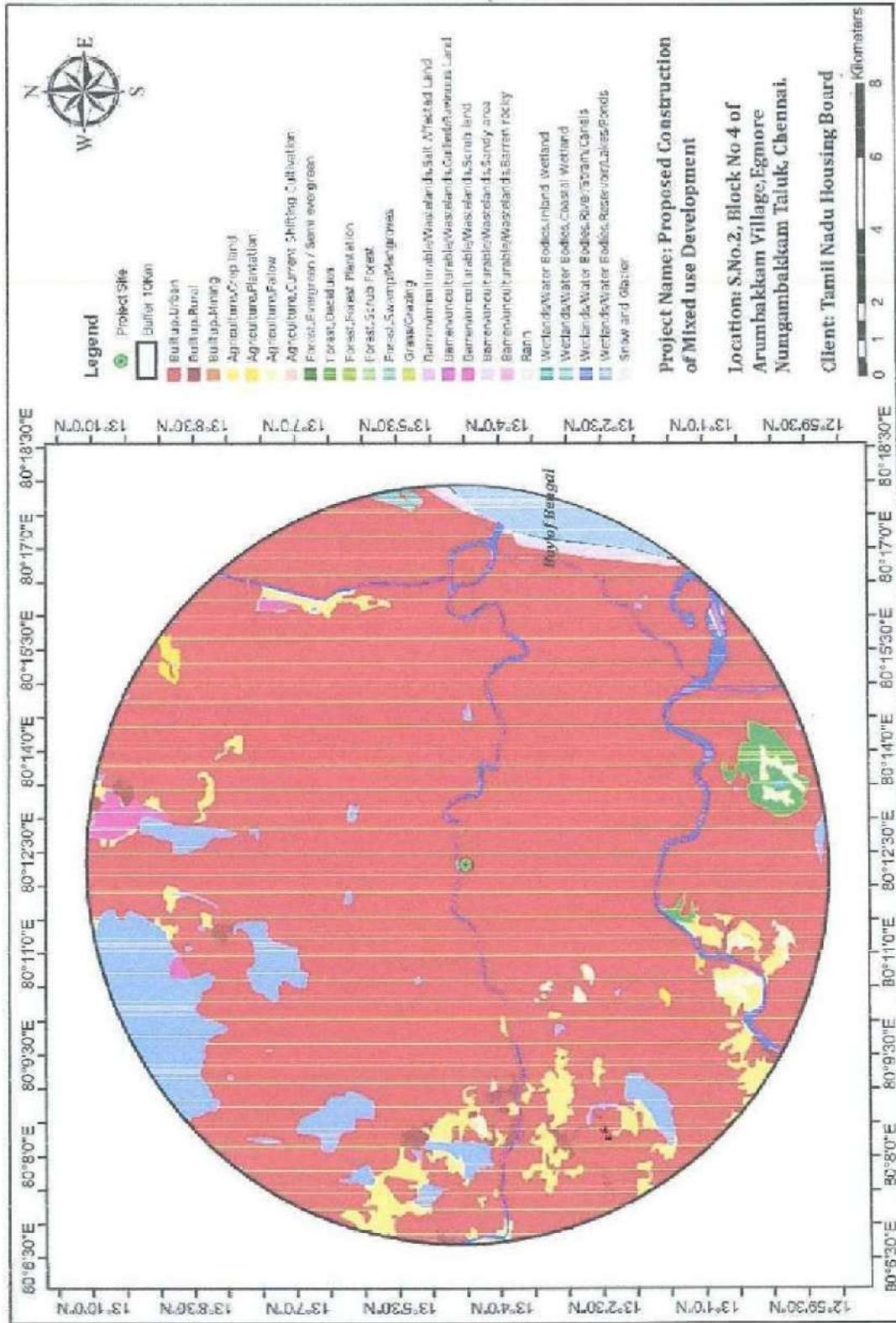


FIGURE 1.5 - LAND USE MAP SHOWING 10 KM RADIUS AROUND THE PROJECT SITE

2. PROJECT DESCRIPTION

2.1 PROJECT DETAILS

M/s. Tamil Nadu Housing Board has proposed to construct mixed development consisting of a Commercial block (2B+G+19 Floors), 2 Residential blocks (2B+S+19 Floors - each 152 units) total of 304 units at S. No. 2, Block No. 4 of Arumbakkam Village, Egmore - Nungambakkam Taluk, Chennai District, Tamil Nadu with total built up area of 1,35,031.13 Sq.m. and land area of 33,157 Sq.m.

Topography: Topographically, the project area is undulating terrain. There is no alteration in drainage pattern.

Site connectivity: The project site is located adjacent to the Poonamallee High Road. All other connectivity like rail and airways are well connected to the site and the details are provided in the Table below.

TABLE 2.1 ENVIRONMENTAL SETTING OF THE PROJECT SITE

S. No.	Particulars	Details
1	Latitude	13°04'38.08"N
2	Longitude	80°12'18.84"E
3	Present Land Use	Mixed Residential use zone
4	Nearest Highway	<ul style="list-style-type: none"> • Poonamallee High Road - 0.03km (S) • Jawaharlal Nehru Road - 0.51 km (W) • Shanti Colony Main Road - 0.61 km (N)
5	Nearest Railway Station	<ul style="list-style-type: none"> • Korattur- 4.57 km (NNW) • Perambur- 5.31 km (NE) • Nungambakkam- 3.2 km (ESE) • Chetpet- 4.05 km (E) • Mambalam- 4.90 km (SSE)
6	Nearest Airport	Chennai International Airport -11.46 km (SSW)
7	Nearest Town/ City	Within City Limit
8	Hills/ Valleys	NIL (within 10 km radius)
9	Topography	Plain
10	National Parks/Wildlife Sanctuaries	Guindy National Park - 8.76 km (SSE)
11	Reservoir/Lake/River/Sea	<ul style="list-style-type: none"> • Coovum River -0.01km (N) • Chetpet Lake - 3.77 km (E) • Adyar River - 5.6 km (S) • Korattur lake- 5.61 km (NNW) • Retteri Lake - 5.97 km (NNE) • Ambattur Lake - 7.38 km (NW) • PorurLake - 7.47 km (SW) • Ayanambakkam Tank - 7.69 km (WNW)

S. No.	Particulars	Details
12	Reserved/ Protected Forests	NIL (within 10 km radius)
13	Archaeological Important Places	<ul style="list-style-type: none"> • Egmore Museum -5.49 km (E) • Wellesley House -8.57 km (E)
14	Seismicity	Seismic Zone III as per IS 1893 (Part-1): 2002
15	Defense Installations	NIL (within 10 km radius)
16	Nearest Port	Chennai Port -9.31 km (E)

TABLE 2.2 LAND USE SPLIT UP OF THE PROJECT SITE

S. No.	Description	Area (Sq.m)	%
1	Plot Coverage	5,192.39	15.66
2	Green Belt Area	5,060.00	15.26
3	OSR	3,346.00	10.09
4	Open Parking Area	4,769.70	14.39
5	Internal Roads	10,960.91	33.06
6	Other Utility area	606.40	3.38
7	Children's Play area	514.60	01.55
8	Future Expansion	2,707.00	8.16
TOTAL LAND AREA		33,157.00	100.00

TABLE 2.3(a) BUILT UP AREA STATEMENT WITH FLOOR WISE ACTIVITIES

Block Name	Activity	No. of Floors	FSI (Sq.m)	Non FSI (Sq.m)	Total (Sq.m)
Block I (Commercial)	Parking	Basement 1		9368.00	9368.00
	Parking	Basement 2		9368.00	9368.00
	Office	Ground	2771.25		2771.25
	Office	1st Floor	2769.92		2769.92
	Office	2nd Floor	2769.92		2769.92
	Office	3rd Floor	2769.92		2769.92
	Office	4th Floor	2769.92		2769.92
	Office	5th Floor	2769.92		2769.92
	Office	6th Floor	2769.92		2769.92
	Office	7th Floor	2769.92		2769.92
	Office	8th Floor	2769.92		2769.92
	Office	9th Floor	2769.92		2769.92
	Office	10th Floor	2769.92		2769.92
	Office	11th Floor	2769.92		2769.92
	Office	12th Floor	2769.92		2769.92
	Office	13th Floor	2769.92		2769.92
Office	14th Floor	2769.92		2769.92	
Office	15th Floor	2769.92		2769.92	
Office	16th Floor	2769.92		2769.92	

	Office	17th Floor	2769.92		2769.92
	Office	18th Floor	2769.92		2769.92
	Office	19th Floor	2769.92		2769.92
	Office	Sub Total	55,399.73	18,736	74,135.73
Block II (Residential)		Stilt Floor	46.37	1032.41	1078.78
		1st Floor	1078.78		1078.78
		2nd Floor	1078.78		1078.78
		3rd Floor	1078.78		1078.78
		4th Floor	1078.78		1078.78
		5th Floor	1078.78		1078.78
		6th Floor	1078.78		1078.78
		7th Floor	1078.78		1078.78
		8th Floor	1078.78		1078.78
		9th Floor	1078.78		1078.78
		10th Floor	1078.78		1078.78
		11th Floor	1078.78		1078.78
		12th Floor	1078.78		1078.78
		13th Floor	1078.78		1078.78
		14th Floor	1078.78		1078.78
		15th Floor	1078.78		1078.78
		16th Floor	1078.78		1078.78
		17th Floor	1078.78		1078.78
		18th Floor	1078.78		1078.78
		19th Floor	1078.78		1078.78
		Sub Total	20,543.19	1032.41	21,575.60
Block III (Residential)		Stilt Floor	53.84	1228.15	1281.99
		1st Floor	1281.99		1281.99
		2nd Floor	1281.99		1281.99
		3rd Floor	1281.99		1281.99
		4th Floor	1281.99		1281.99
		5th Floor	1281.99		1281.99
		6th Floor	1281.99		1281.99
		7th Floor	1281.99		1281.99
		8th Floor	1281.99		1281.99
		9th Floor	1281.99		1281.99
		10th Floor	1281.99		1281.99
		11th Floor	1281.99		1281.99
		12th Floor	1281.99		1281.99
		13th Floor	1281.99		1281.99
		14th Floor	1281.99		1281.99
		15th Floor	1281.99		1281.99
		16th Floor	1281.99		1281.99
		17th Floor	1281.99		1281.99
		18th Floor	1281.99		1281.99
		19th Floor	1281.99		1281.99
		Sub Total	24,411.65	1228.15	25,639.80

Block II & III	Combined Basement 1		6804	6804
	Combined Basement 2		6804	6804
Sub Structure (Solid waste management, Generator & Pump room)		72		
	Sub Total	72	13,608	13,680
Total		1,00,426.57	34,604.56	1,35,031.13

TABLE 2.3(b) SUMMARY OF BUILT UP AREA STATEMENT

Block Name	No. of Floors	No. of Units	FSI (Sq.m)	Non FSI (Sq.m)	Total (Sq.m)
Block I - Commercial	2B + G + 19 Floors		55,399.73	18,736.00	74,135.73
Block II - Residential	2B + S + 19 Floors	152	20,543.19	1,032.41	21,575.60
Block III - Residential	2B + S + 19 Floors	152	24,411.65	1,228.15	25,639.80
Block II & III (Combined Basement)				13,608.00	13,608.00
Sub Structure			72.00		72.00
Total		304	1,00,426.57	34,604.56	1,35,031.13

TABLE 2.4 SALIENT FEATURES OF PROPOSED PROJECT

S.No	Description	Details
1	Survey Number	2
2	Revenue Village	Arumbakkam
3	Taluk	Egmore - Nungambakkam
4	District	Chennai
5	Total area of Extent	33,157sq.m
6	Total Built up area	1,35,031.13sq.m
7	Achieved FSI	3.03 (Permissible FSI -3.25)
8	Maximum Building height	79.75 m
9	Road width	7.2 m
10	Brief Description of Project	The proposed project is construction of mixed-use development consisting of a Commercial block (2B+G+19 Floors), 2 Residential blocks (2B+S+19 Floors - each 152 units) total of 304 units.
11	Expected Occupancies	7,546 Nos
12	Parking provided	Four-Wheeler Parking Two-Wheeler Parking
		1,062 Nos 2,212 Nos
13	Green belt Area	5,060 sq.m (15.26 %)
14	Total Fresh Water Requirement	304 KLD
15	Source of Water Supply	Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB)
16	• Domestic	304KLD

	<ul style="list-style-type: none"> • Toilet Flushing (recycled water) • Green belt development (recycled water) 	195 KLD 20 KLD
17	Quantity of waste water generation	Grey water generation - 273 KLD Sewage generation - 195 KLD
18	Treatment system for waste water generation	Grey water treatment plant - 280 KLD Sewage treatment plant - 200 KLD
19	Mode of disposal of treated waste water	Toilet Flushing - 195 KLD Green belt development - 20 KLD Reuse for watering road side trees and OSR development - 249 KLD
20	Solid waste generation, treatment and management in kg/day <ul style="list-style-type: none"> ⬇ Municipal Solid waste <ul style="list-style-type: none"> • Bio-degradable • Non-Biodegradable ⬇ STP sludge ⬇ Hazardous waste 	2,239 kg/day 896 kg/day (DWC) 1,343kg/day (Authorized Recyclers) 23 kg/day (Manure for Gardening) 0.2 TPA (Disposed to TNPCB authorized re-processors)
21	Power requirement & Source <ul style="list-style-type: none"> • DG sets 	6,500 KVA & TANGEDCO <ul style="list-style-type: none"> • 4 x 250 KVA
22	Project cost	Rs. 399.84 Crores

2.2 POPULATION DETAILS

The total manpower requirement during the construction phase and the expected population during the operational phase of the project are given below in *Table - 2.5a* and *Table - 2.5b* respectively.

TABLE 2.5a MANPOWER REQUIREMENTS DURING CONSTRUCTION PHASE

S.No.	Description	
1	Approximately 320 persons	Inclusive of workmen, Labourers, Supervisors, Engineers, Architects & Managers

TABLE 2.5b ESTIMATED POPULATION DURING OPERATIONAL PHASE

Description	No. of DU	Population (Nos.)
Block I - Commercial		5540
Block II - Residential	152	912
Block III - Residential	152	912
Visitors	-	182
Total	304	7,546

(3BHK - 6 persons per unit and 1 person for every 10 sq.m for office building as per National Building code)

2.3 CONSTRUCTION MATERIALS

Quantity of construction materials required is given in Table 2.6.

TABLE 2.6 QUANTITY OF CONSTRUCTION MATERIALS REQUIRED

S. NO.	MATERIAL DESCRIPTION	APPROXIMATE QUANTITY	UNITS OF MEASUREMENT
1	Cement	287435	Bags
2	Sand	8865	Cum
3	Concrete	98001	Cum
4	Steel	6629	MT
5	Blocks	341562	Nos

2.4 WATER REQUIREMENT

Water requirement during Construction Phase will be about 35 KLD which will be sourced from outside through tankers by civil contractors.

Total water requirement during operation phase will be 519 KLD. The fresh water requirement of 304 KLD will be sourced from Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB). The request letter submitted to CMWSSB for supply of fresh water dated: 26.06.2020 and the same is enclosed as Annexure V. The details of water requirement calculation are given in Table 2.7 & 2.8 and the water balance chart is shown in Figure 2.2.

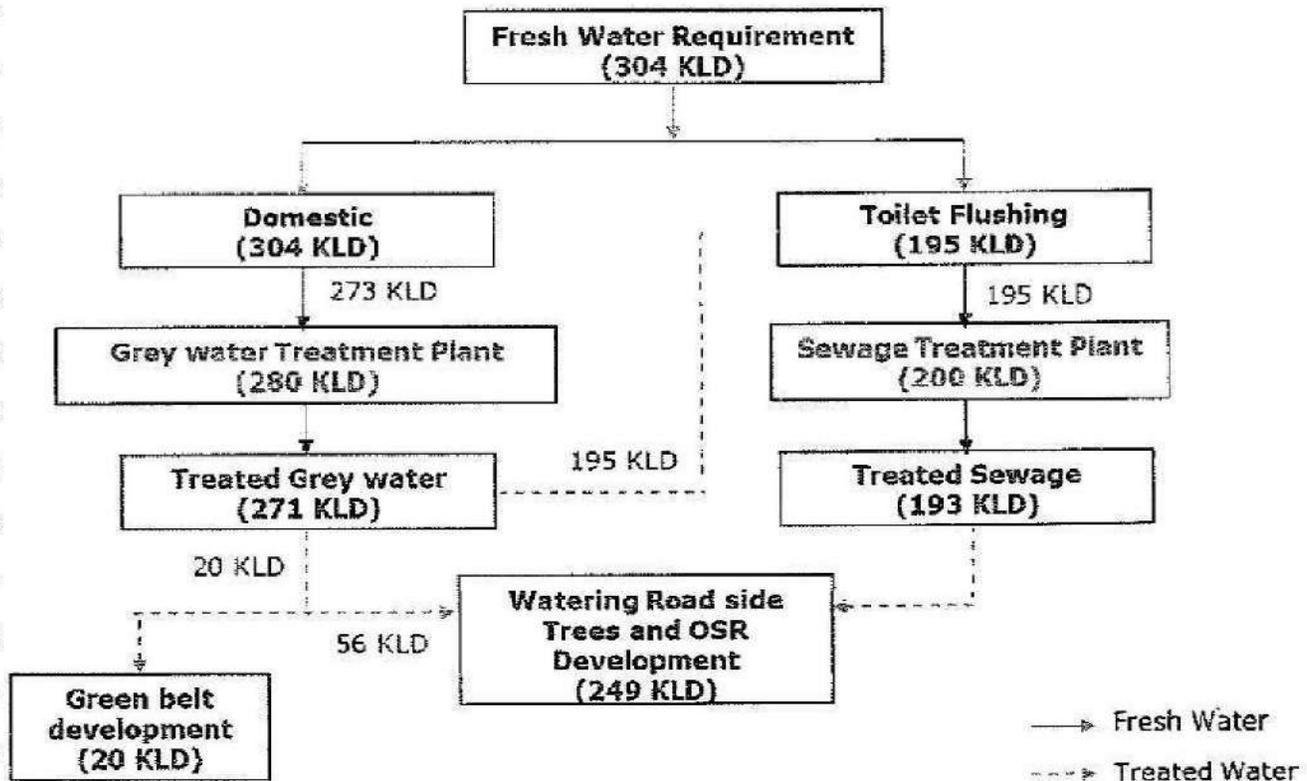
TABLE 2.7 WATER REQUIREMENT DURING CONSTRUCTION PHASE

S. No	Description	Total No. of Persons	Water Demand Per Person/Day	Demand Per Person/Day (In LPCD)		Domestic Water Demand (LPCD)	Flushing Demand (LPCD)
				Domestic Use	Toilet Flushing Use		
1	Workers	320	45	25	20	8000	6400
2	Curing	-	-	-	-	21,000	-
TOTAL						29,000	6,400
GRAND TOTAL (IN KLD)						35	

TABLE 2.8 WATER REQUIREMENT CALCULATION DURING OPERATIONAL PHASE

Description	Population	Water Demand as per norms (LPCD)		Water Requirement (LPCD)	
		Domestic	Flushing	Domestic	Flushing
Block I - Commercial	5540	25	20	138500	110800
Block II - Residential	912	90	45	82080	41040
Block III - Residential	912	90	45	82080	41040
Visitors	182	5	10	910	1820
Total	7906			303570	194700
Total (KLD)				304	195

Source: National Building Code 2016



Source - CMWSSB

FIGURE 2.1 WATER BALANCE CHART

2.5 WASTEWATER GENERATION AND DISPOSAL

2.5.1 DURING CONSTRUCTION PHASE

Quantity of sewage generated during construction phase will be 14 KLD. Thus, the sewage will be treated by providing septic tank followed by soak pits.

2.5.2 DURING OPERATION PHASE

The sewage generated will be separately collected and treated the grey water and sewage generated during the operation phase. Quantity of grey water and sewage generated during operational phase shall be 273 KLD and 195 KLD respectively. The grey water generated will be treated through grey water treatment plant of 280 KLD capacity and the sewage generated will be treated through Sewage Treatment Plant of capacity 200 KLD. The treated grey water of 271 KLD will be utilized for Toilet flushing (195 KLD) and greenbelt development (20 KLD). The excess treated grey water of 56 KLD and sewage of 193 KLD totalling 249 KLD will be utilised for watering road side trees and OSR development.

CHARACTERISTIC OF SEWAGE

Parameters	Characteristics		CPCB Standard
	Raw Sewage	Treated Sewage	
pH	6.5 - 8.0	6.5 - 7.5	6.5 - 9.0
TSS	300 mg/lit	< 5 mg/lit	< 20 mg/lit
BOD	350 mg/lit	< 10 mg/lit	< 10 mg/lit
COD	600 mg/lit	< 20 mg/lit	< 50 mg/lit
Oil & Grease	100 mg/lit	< 5 mg/lit	-
Fecal Coliform	$10^5 - 10^6$	-	< 100

CHARACTERISTIC OF WASTEWATER

Parameters	Characteristics		CPCB Standard
	Raw wastewater	Treated water	
pH	8.0 - 9.0	6.5 - 7.5	6.5 - 9.0
TSS	300 mg/lit	< 10 mg/lit	< 100 mg/lit
BOD	250 mg/lit	< 10 mg/lit	< 30 mg/lit
COD	500 mg/lit	< 50 mg/lit	---

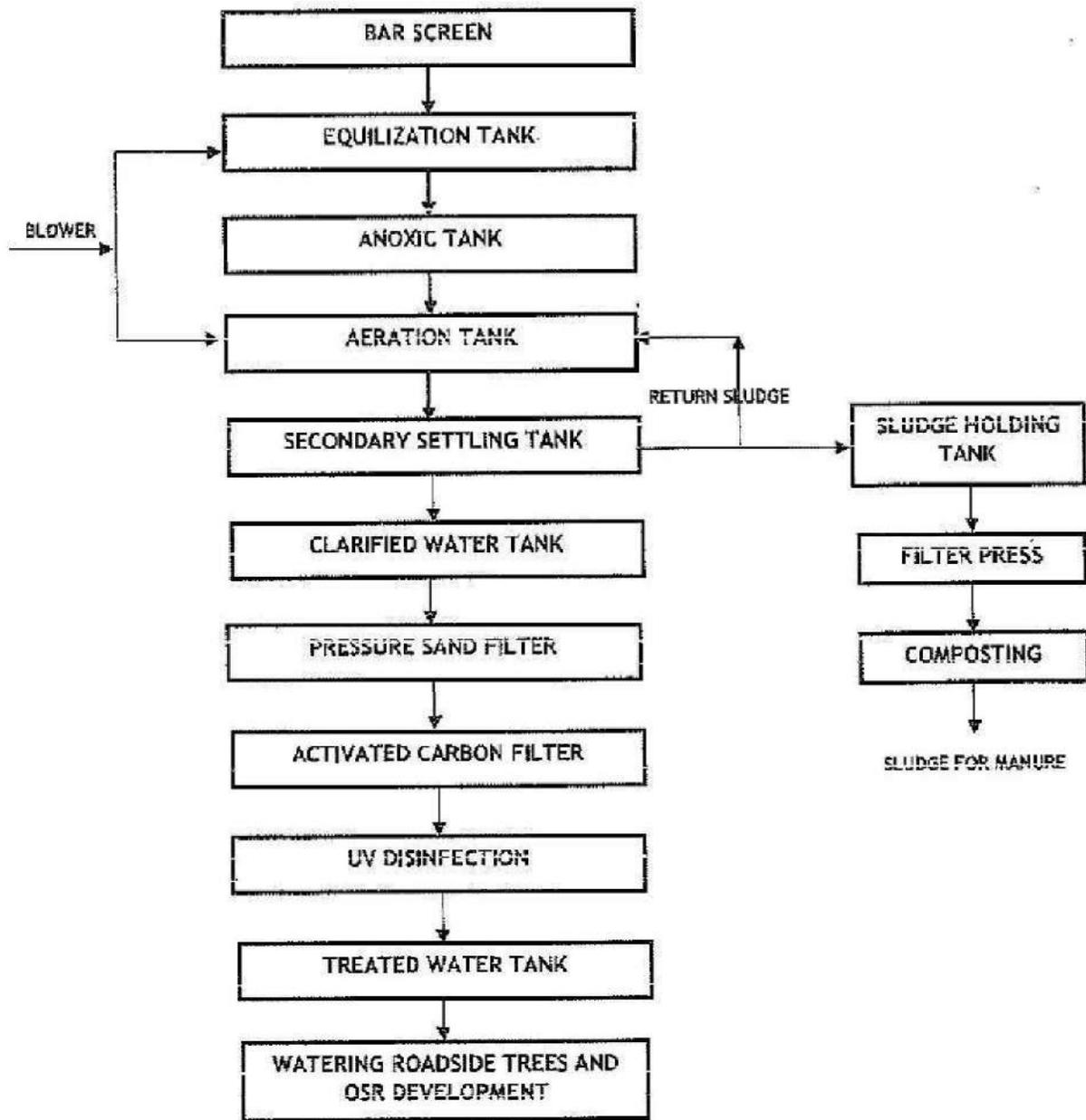


FIGURE 2.2a SEWAGE TREATMENT PLANT PROCESS FLOW DIAGRAM

Sewage Treatment Plant - 200 KLD

Scope of Work

- Concept development, design & detailed Engineering
- Fabrication & supply of all equipments
- Erection of all equipments
- Testing, pre commissioning and commissioning of the plant

Flow Logistics

Sewage Treatment Plant

Source	: Domestic Sewage
Capacity	: 200 KLD
Operating hrs	: 20 hrs
Plant Flow Rate	: 10 cum/hr

Quality Logistics

S. No	Parameter	Units	STP Inlet	STP Outlet
1	pH	-	6.0 - 8.0	6.0 - 8.0
2	TSS	Mg/l	10 - 400	<10
3	BOD	Mg/l	250 - 350	<20
4	COD	Mg/l	500 - 650	<150
5	Total Nitrogen	Mg/l	<50	<10

Codes & Standards

All design, fabrication, inspection, and testing of the plant will be done with respect to the latest Indian Standards. In case of non-availability of standards, good engineering practice will be adopted.

Standards to be followed

Pressure vessels	- ASME SEC VIII
Pumps	- IS 5120
Others	- Available IS standards

In case of non-availability of standards, good engineering practice will be adopted.

Process Description

SEWAGE TREATMENT PLANT

- The Raw Sewage from various sources will get collected in the Collection tank through Bar Screen Chamber in order to remove the floating particles. The sewage is then pumped to the Anoxic tank. Air diffusion is provided in the aeration tank through air blower & diffuser arrangement.
- The Sewage from the Collection tank is then pumped to the Anoxic tank provided with agitator mechanism in order to address the Total nitrogen.
- The Overflow from the Anoxic tank is then sent to the aeration tank. Air & diffuser arrangement is provided in the aeration tank. Biological treatment takes place through the special type of floating media called MBBR media. MBBR Media will expedite the treatment with minimum sludge.
- The aerated sewage is then led to tubesettler tank provided with tubesettler Internals where the sludge settles at the bottom of the tank. The clarified water is then sent to Clarified Water tank. Here Sodium hypochlorite dosing is done for disinfection purpose in inlet of PSF & Outlet of ACF.
- The settled sludge is recirculated to the aeration tank to maintain the MLSS concentration and the excess sludge will be pumped into the sludge holding tank from where it is sent to the filter press unit through Screw pump for dewatering purpose.
- The clarified water is then pumped to Pressure Sand Filter(PSF), Activated Carbon Filter (ACF) using filter feed pump in order to remove the suspended particles, Turbidity, Color and odour. The outlet of Activated carbon Filter stored in storage tank for further process.

Equipments List

SEWAGE TREATMENT PLANT

Civil Work - Client's Scope

Equalization / Collection tank, Bar Screen Chamber, Anoxic Tank, Aeration tank, Tube Settler Tank, Sludge Holding Tank, Clarified Water Tank, STP Treated Water Tank, PCC / RCC pedestal for all Electromechanical items.

Electromechanical Work - STP Plant

Bar Screen, Raw Sewage Transfer Pump, Air Blower & Diffusers - Collection tank &

Aeration tank, MBBR Media, Sludge Recirculation Pump, Tube Settler Internals, Screw Pump, Filter Press unit, Hypo Dosing System, Filter feed pump, Pressure Sand Filter (PSF), Activated Carbon Filter (ACF), Interconnecting pipes & Valves and Instruments.

Electrical Work

Floor Mounted Electrical panel & cabling; Non - Compartmentalized

S.No.	Description	Unit	Qty
1	Raw Sewage Transfer Pump	No	2
	Type: Centrifugal Non clog		[1W + 1S]
	Capacity: 10 cum/hr		
	Head: 12 m		
	MOC: CI		
	Make: Kirloskar/ eq.		
2	Bar Screen	No	1
	Bar screen Size: 500 mm x 1500 mm		
	Spacing: 10 mm		
	Thickness: 6 mm		
	MCC: SS304		
	Make: HECS		
3	Anoxic Tank Agitator	No	1
	Type : Pitched Paddle		
	MOC : SS304		
	Make : HECS		
4	Air Blower - Aeration tank & Collection tank	Nos	2
	Type: Twin Lobe Rotary		[1W + 1S]
	Capacity: 320 m ³ / hr		
	Pressure: 0.4 ksc		
	MOC: CI		

	Make: Airvak / ec.		
5	Diffusers - Aeration tank	No	34
	Type: Tubular fine Bubble		
	Diameter: 90mm		
	Length: 1000mm		
	MOC: EPDM		
	Make: HECS		
6	Diffusers - Collection tank	No	10
	Type: Disk , Coarse bubble		
	Diameter: 150 mm		
	MOC: EPDM		
	Make: HECS		
7	MBBR Media	LS	1
	Type: Floating type Bio media		
	Surface area: 250 sqm / cum		
	MOC: PP		
	Make: HECS		
8	Tube Settler Media	LS	1
	Type: Inclined Settler		
	Structure: Hexagon Chevron shaped,Self supprt		
	Plan Settling Area: 12m ² /m ³ (at 60 deg slope)		
	Laying Angle: 60 deg		
	Max.Temperature : 65 deg Celcius		
	Fitting arrangement: Tongue & Grooves		
	Sheet Thickness: 1 mm		
	MOC: UV Stbilized PVC		
	Make: HECS		

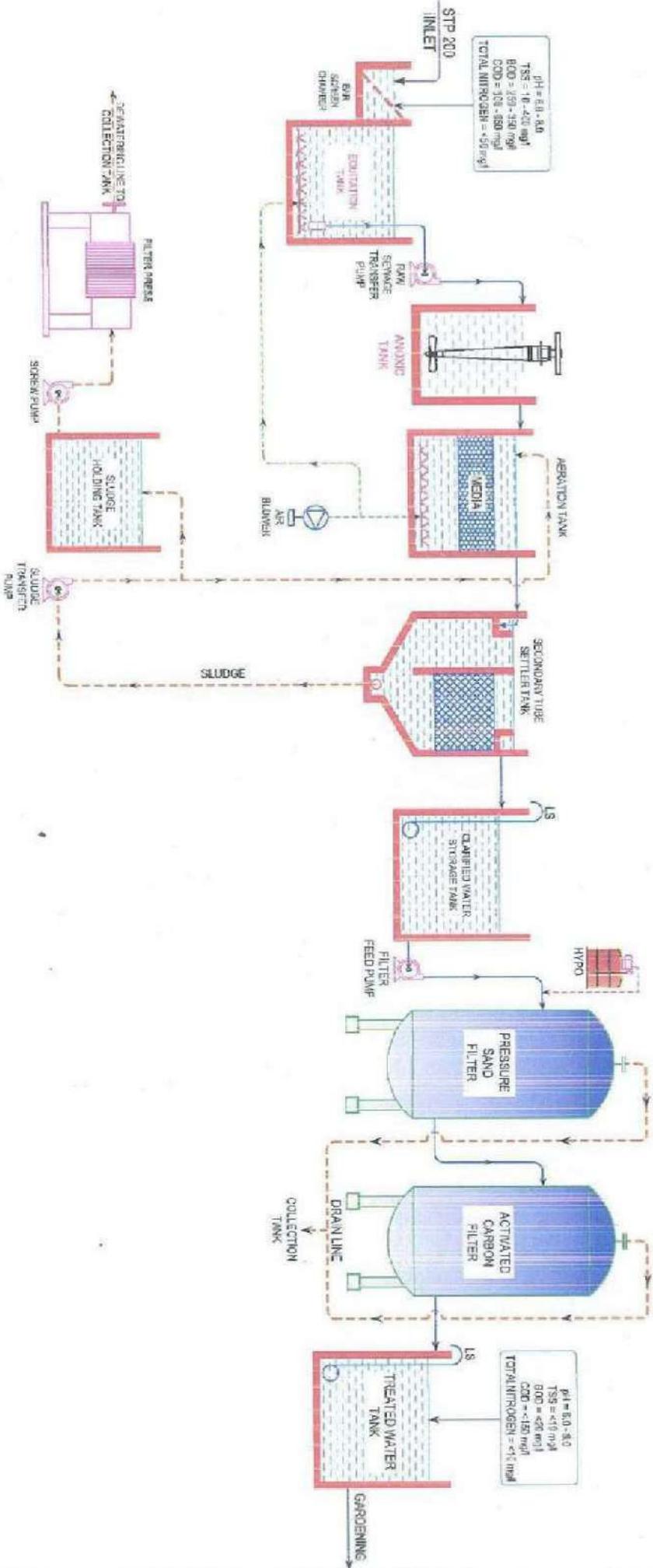
9	Sludge Transfer Pump	No	2
	Type: Centrifugal Nonclog		(1W + 1S)
	Capacity: 3 cum/hr		
	Head: 12 m		
	MOC: CI		
	Make of Pump: Kirloskar/ eq		
10	Hypo Dosing System	Set	1
	Dosing Pump		
	Type: Electronic metering type		
	Capacity: 0 - 6 lph		
	Pressure: 2 ksc		
	MOC: PP		
	Make: Edose / eq.		
	Dosing Tank	Set	1
	Type: Cylindrical Vertical		
	Capacity: 100 ltrs		
	MOC: HDPE		
	Make: Sintex / Renc		
11	Filter Feed Pump	No	2
	Type: Centrifugal Monobloc		(1W+1S)
	Capacity: 10 cum/hr		
	Head: 30 m		
	MOC: CI		
	Make: Kirloskar / Eq		
12	Pressure Sand Filter	No	1
	Type: Cylindrical vertical		
	Capacity: 10 cum/hr		
	Diameter: 1100 mm		
	HOS: 1500 mm		
	MOC: MS Epoxy		

	Shell Thickness: 6 mm		
	Dish Thickness: 8 mm		
	Media: Pebbles / Sand		
	Accessories: MS Frontal Piping with butterfly valve		
	Make of filter: HECS		
	Make of MS Piping: Jindal / Tata / eq.		
	Make of Butterfly Valves: Intervalve / L&T / Marck / eq.		
13	Activated Carbon Filter	No	1
	Type: Cylindrical vertical		
	Capacity: 10 cum/hr		
	Diameter: 1100 mm		
	HCS: 1500 mm		
	MOC: MS Epoxy		
	Shell Thickness: 6 mm		
	Dish Thickness: 8 mm		
	Media: Pebbles / Sand		
	Accessories: MS Frontal Piping with butterfly valve		
	Make of filter: HECS		
	Make of MS Piping: Jindal / Tata / eq.		
	Make of Butterfly Valves: Intervalve / L&T / Marck / eq.		
14	Screw Pump	No	1
	Type: Single Stage Single Screw		
	Capacity: 2 cum/hr		
	Head: 50 m		
	MOC: CI		
	Make: Icura / eq		
15	Filter Press Unit	No	1
	Type: Manual type		
	Capacity: 2 cum/hr		
	MOC of Plate: PP		
	Plate Size: 480mm x 480mm		

	Make: Icura / eq		
16	Interconnecting Pipes & Valves	Lot	1
	MOC of Water Pipeline: MS B Class		
	Make of MS Pipes: Astral/Supreme		
	MOC of Air Pipeline:SS304		
	Make of SS Pipes: Jindal /Tata.		
	Type of Valves: Ball / Butterfly / NRV		
	Make of Butterfly Valve: Intervalve / L&T / eq.		
	Make of NRV: Intervalve / L&T / Marck / eq.		
17	Electrical Panel & Accessories	Lot	1
	Type: Floor Mounted Non Compartmentalized Type		
	Sheet Thickness: 1.6 mm		
	MOC: CRCA Powder Coated		
	Make of Panel: HECS		
	Components: MCB/OLR/Contactor		
	Make of Switchgears: Siemens / Schneider/ ABB.		
	Make of Cables: Havells/orbit/polycab		

S.No.	Description	Unit	Qty
1	Bar Screen Chamber - 1m x 0.5m x 0.7m	No	1
2	Collection tank - 6m x 3.5m x 3m	No	1
3	Anoxic tank - 2.5m x 2.5m x 3.5m	No	1
4	Aeration tank - 8m x 4m x 3.2m	No	1
5	Clarifier tank - 4m x 4m x 2.9m	No	1
6	Filter Feed tank - 2m x 4m x 2.5m	No	1
7	Sludge Holding tank - 1m x 4m x 2.5m	No	1
8	Treated Water tank - 5m x 4m x 3m	No	1

PROCESS FLOW DRAWING



REVISION

REV	BY	DATE	DESCRIPTION	APP
1	ASH	28.10.20	ISSUED FOR PROPOSAL	

TITLE:

PROCESS FLOW DRAWING FOR
SEWAGE TREATMENT PLANT - 200 KLD

CLIENT:

M/S. RDX ARCHITECTS,
CHENNAI.

HECS(P) Ltd

APPROVAL DATE

NAME	DATE	DESIGNING OFFICER / DATE	CHECKING OFFICER / DATE
SWAMI	08.10.20	DESIGNING OFFICER / DATE	
DEBANDU	08.10.20		
KRISHNA	08.10.20		

Scale: _____

Project No: UD - HECS - RDX ARCHITECTS - STP - 200 - 001

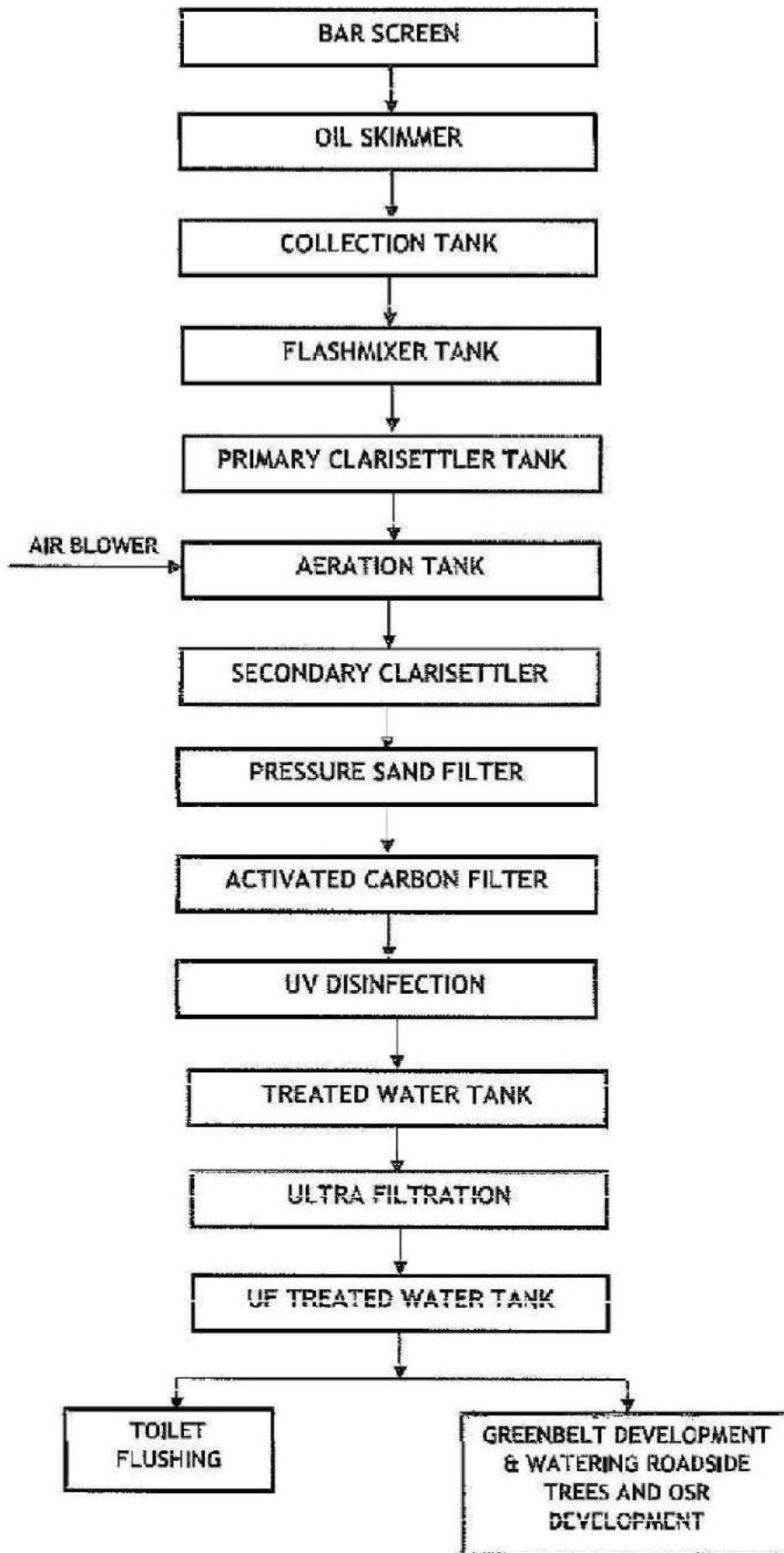


FIGURE 2.2b GREY WATER TREATMENT PLANT PROCESS FLOW DIAGRAM

Grey Water Treatment Plant - 280 KLD

Scope of Work

- Concept development, Design & Detailed Engineering.
- Fabrication & supply of all equipments.
- Erection of all equipments.
- Testing, pre commissioning and commissioning of the plant.

Flow Logistics – Grey Water Treatment Plant

Plant Capacity	: 280 KLD
Operating hour	: 20 hrs
Plant flow rate	: 14 cum/hr
Design flow rate	: 14 cum/hr

QUALITY LOGISTICS

S.No.	Parameters	Units	ETP Inlet	ETP Outlet
1	pH	-	6.5 - 8.5	6.5 - 8.5
2	TSS	Mg/l	< 100	< 20
4	BOD	Mg/l	40 - 60	< 20
5	COD	Mg/l	80 - 100	< 50
6	O&G	Mg/l	50	< 5

Codes & Standards

All design, fabrication, inspection, and testing of the plant will be done with respect to the latest Indian Standards. In case of non-availability of standards, good engineering practice will be adopted.

Standards to be followed

Plain & reinforced cement concrete	- IS 456: 2000
Concrete structure for the storage of liquids	- IS 3370: 1981-88
Pressure vessels	- ASME SEC VIII
Pumps	- IS 5120
Others	- Available IS standards.

In case of non-availability of standards, good engineering practice will be adopted

Process Description

- The effluent is then passed to bar screen chamber unit to remove the floating solids then it sent to oil skimmer to remove oily substances and gets collected in the collection tank from where it is pumped to the flash mixer tank through individual raw effluent transfer pump.
- The effluent is then pumped to the Flash Mixer unit provided with agitator mechanism for neutralization. Acid / Alkali & Coagulant, Flocculant dosing is done in the flash mixer tank.
- The overflow from flash mixer unit is sent to the Primary clarisettler tank provided with Tube Settler media where the sludge settles at the bottom of the tank.
- The overflow from the Primary Clarisettler tank is sent to the oxidation tank provided with air diffusion through air blower & diffuser arrangement.
- The overflow from the oxidation tank is sent to the secondary clarisettler tank provided with Tube Settler media where again the sludge settles at the bottom of the tank.
- The over flow from Secondary clarisettler tank will be sent to the clarified water tank.
- The settled sludge at the bottom of the Primary & Secondary clarisettler tank is sent to the Filter press unit through sludge screw pumps for dewatering purpose.
- The water from the clarified water tank is fed to Pressure sand filter & Activated carbon filter for the removal of suspended solids, colour & odour.
- The treated water is stored in ETP Treated water Tank

Equipments List

Civil Works

All Civil tanks, Pedestals for Mechanical equipments

GWTP Electro Mech Equipments

Effluent Transfer Pump, Dosing System, Bar screen, Oil Skimmer unit with Oil Collection tank, Flash Mixer agitator, Primary Tube Settler tank, Aeration tank, Secondary Settler tank, Primary & Secondary Tube Settler media, Air Blower, Primary & Secondary sludge Pump, Filter feed Pump, Pressure Sand Filter, Activated carbon filter, Instruments, Interconnecting Pipes & Valves, Screw Pump, Filter Press Unit

Electrical Works:**Floor mounted Non - compartmentalized Electrical Panel & Cabling**

S.No	Description	Unit	Qty
1	Bar Screen Size: 600 x 1700 mm Thickness: 5 mm Spacing: 6 mm MOC: SS 304 Make: HECS	No	1
2	Oil Skimmer Unit Type: Belt type Size: 100mm W x 1m ht MOC of belt: PU White MOC of Structure: MS Powder coated Rating: 0.5 HP Make: HECS	No	1
	Oil Collection Tank Type: Cylindrical Vertical Capacity: 100 ltrs MOC: HDPE Make: Sintex / Reno		
3	Raw Effluent Transfer Pump Type: Centrifugal nonclog Capacity: 14 cum/hr Head: 12 m MOC: CI Make: Kirloskar / eq	No	2 (1W + 1S)
4	Flash Mixer Drives Type: Geared motor type Speed: 90 RPM Rating: 0.25 HP	No	1

	MOC of Geared Motor: CI		
	Make: Greaves / Transtech / eq		
	Flash Mixer Agitator		
	Type: Impeller type		
	Shaft dia: 32 mm		
	Shaft Length: Suitable to the tank size		
	MOC: SS 304		
	Make: HECS		
5	Dosing Pump (Alum, Poly & Lime)	No	3
	Type: Electronic Metering type		
	Capacity: 0 - 50 lph		
	Pressure: 2 Ksc		
	MOC: PP		
	Make: Anala / eq.		
	Dosing Tank	No	3
	Capacity: 200 ltrs		
	MOC: HDPE		
	Make: Sintex / Reno / eq		
	Agitator Mechanism	No	3
	Type: Impeller type		
	Rating: 0.25 HP		
	Make: HECS		
6	Primary Tube Settler Media	LS	1
	Type: Inclined Settler		
	Structure: Hexagon Chevron shaped, Self supprt		
	Straight ht: 750 mm		
	Plan Settling Area: 12m ² /m ³ (at 60 deg slope)		
	Laying Angle: 60 deg		
	Max. Temperature : 65 deg Celcius		
	Fitting arrangement: Tongue & Grooves		
	Sheet Thickness: 1 mm		
	MOC: UV Stbilized PVC		
	Make: HECS		

7	Air Blower for Aeration	No	2
	Type: Twin Lobe Rotary		(1W + 1S)
	Capacity: 300 m ³ / hr		
	Pressure: 0.4 ksc		
	MOC: CI		
	Make: Airvak / eq		
	Motar Rating: 7.5 HP	No	2
	Make: Kirloskar /CGL/ eq		
8	Diffusers - Aeration Tank	Nos	38
	Type : Tubular Fine Bubble		
	Size : 90mm dia x 1000mm Length		
	MOC : EDPM		
	Make : HECS		
9	Secondary Tube Settler Media	LS	1
	Type: Inclined Settler		
	Structure: Hexagon Chevron shaped,Self supprt		
	Straight ht: 1500 mm		
	Plan Settling Area: 12m ² /m ³ (at 60 deg slope)		
	Laying Angle: 60 deg		
	Max.Temperature : 65 deg Celcius		
	Fitting arrangement: Tongue & Grooves		
	Sheet Thickness: 1 mm		
	MOC: UV Stbilized PVC		
	Make: HECS		
10	Pri. & Sec. Sludge Pump	No	2
	Type: Centrifugal non clog		(1W + 1S)
	Capacity: 3 cum/hr		
	Head: 1.5 m		
	MOC: CI		
	Make: Kirloskar / CGL / eq		

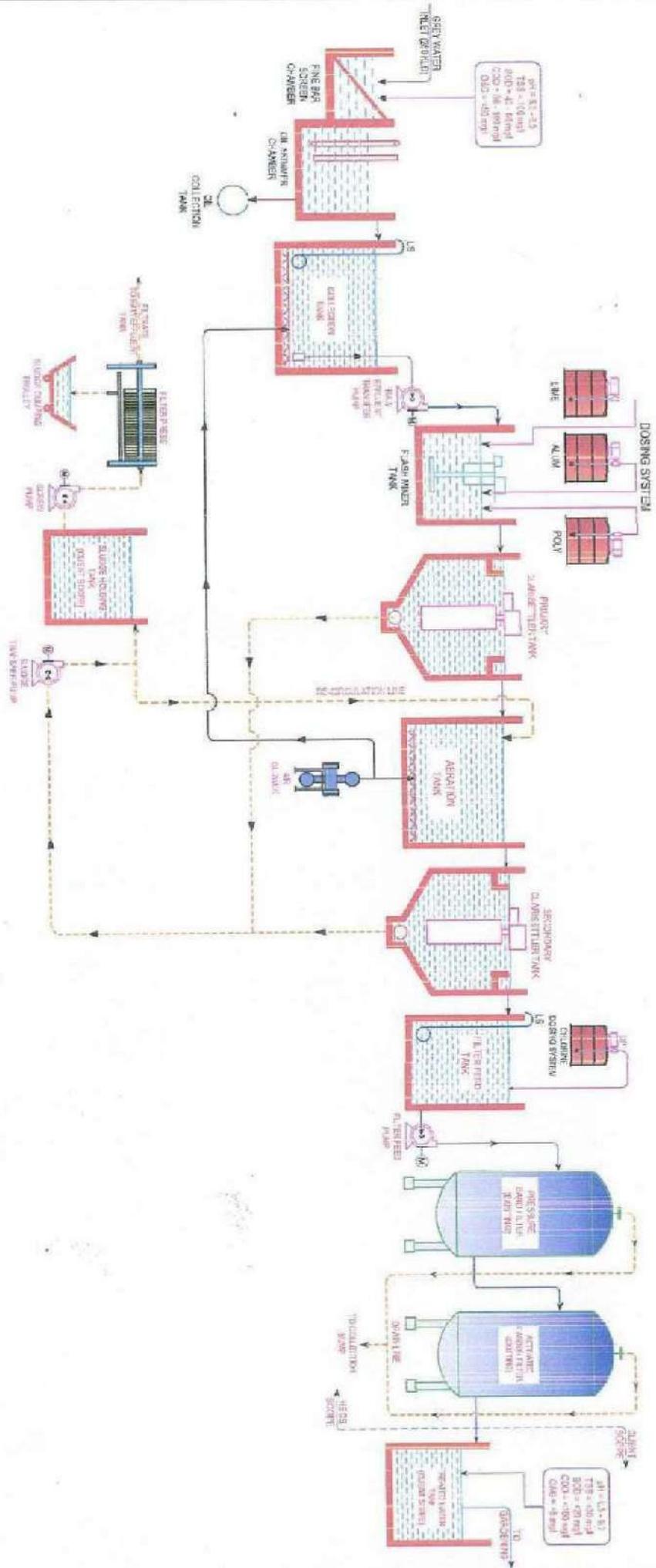
11	Filter Feed Pump	Nos	2
	Flow : 14 cum/hr		(1W + 1S)
	Head : 30 meters		
	Type : Centrifugal Monobloc		
	MOC : CI		
	Make : Kirloskar / CGL / Eq		
12	Chlorine Dosing System		
	Dosing System		
	Capacity: 0 - 6 lph	No	1
	Pressure: 3 ksc		
	Type: Electronic Metering Pump		
	MOC: PP		
	Make: Edose / Eq.		
	Dosing Tank	No	1
	Type: Cylindrical Vertical		
	Capacity: 100 ltrs		
	MOC: HDPE		
	Make: Sintex / Reno		
13	Screw Pump	No	1
	Type: Single Stage Single Screw		
	Capacity: 2 cum/hr		
	Head: 50 m		
	MOC: CI		
	Make: Icura / eq		
14	Filter Press Unit	No	1
	Type: Manual type		
	Capacity: 2 cum/hr		
	MOC of Plate: PP		
	Plate Size: 480mm x 480mm		
	Make: Icura / eq		
15	Pressure Sand Filter	No	1

	Type: Cylindrical vertical		
	Capacity: 14 cum/hr		
	Diameter: 1250 mm		
	HOS: 1800 mm		
	MOC: MS Epoxy		
	Shell Thickness: 6 mm		
	Dish Thickness: 8 mm		
	Media: Pebbles / Sand		
	Accessories: MS Frontal Piping with butterfly valve		
	Make of filter: HECS		
	Make of MS Piping: Jindal / Tata / eq.		
	Make of Butterfly Valves: Intervalve / L&T / Marck / eq.		
16	Activated Carbon Filter	No	1
	Type: Cylindrical vertical		
	Capacity: 14 cum/hr		
	Diameter: 1250 mm		
	HOS: 1800 mm		
	MOC: MS Epoxy		
	Shell Thickness: 6 mm		
	Dish Thickness: 8 mm		
	Media: Pebbles / Sand		
	Accessories: MS Frontal Piping with butterfly valve		
	Make of filter: HECS		
	Make of MS Piping: jindal / Tata / eq.		
	Make of Butterfly Valves: Intervalve / L&T / Marck / eq.		
17	Interconnecting Pipes & Valves	LS	1
	MOC of Effluent Line : UPVC Sch 40		
	Make of UPVC : Finolex / Supreme / Astral / eq.		
	MOC of Air Line : MS B Class		
	Make of MS Pipes: jindal / TATA / Eq		
	Type of Valves: Butterfly Valves		
	Make of Butterfly Valves: L&T / Intervalve / eq.		

18	Electrical Panel & Accessories	LS	1
	Type: Floor Mounted Non compartmentalized		
	Sheet Thickness: 1.6 mm		
	MCC: CRCA Powder Coated		
	Make of Panel: HECS		
	Components: MCB/OLR/Contactor		
	Make of Switchgears: Siemens/Schneider/ABB.		
	Make of Cables: Polycab / Orbit / Finolex / eq.	LS	1

S.No.	Description	Unit	Qty
1	Bar Screen Chamber - 1m x 0.5m x 0.7m	No	1
2	Oil Skimmer tank - 3m x 2m x 1.2m	No	1
3	Collection tank - 6m x 5m x 3m	No	1
4	Flash Mixer tank - 2m x 2m x 1.2m	No	1
5	Primary settler tank - 2.8m x 5m x 3.5m	No	1
6	Aeration tank - 7m x 5m x 3.2m	No	1
7	Secondary Settler tank - 3m x 5m x 2.9m	No	1
8	Filter Feed tank - 2m x 5m x 2.5m	No	1
9	Sludge Holding tank - 1m x 5m x 2.5m	No	1
10	Treated Water tank - 6m x 5m x 3m	No	1

PROCESS FLOW DIAGRAM



REVISION

REV	BY	DATE	DESCRIPTION	EDIT
0	CSH	09.10.20	ISSUED FOR PROPOSED	

TITLE :

PROCESS FLOW DRAWING FOR
GREY WATER TREATMENT PLANT - 280 KLD

CLIENT :

M/S. RDX ARCHITECTS,
CHENNAI

HECS/PLtd

ATHYANALO JAYNE

NO.	NAME	DATE	ENGINEER/DESIGNED DATE
DRAWN	CSH	06.10.20	
DESIGNED	CHENGAL	06.10.20	06.10.20
CHECKED	CEO	06.10.20	

NO.	NAME	DATE	SCALE	REV

2.6 SOLID WASTE GENERATION, COLLECTION, TRANSPORT AND DISPOSAL

Solid waste would be generated both during construction as well as during operation phase. Solid waste expected to be generated during construction phase will comprise of excavated materials, used bags, bricks, concrete, MS rods, tiles, wood etc. Table 2.9 details the solid waste management plan during construction phase.

TABLE 2.9 SOLID WASTE MANAGEMENT PLAN DURING CONSTRUCTION PHASE

S.No.	Solid Waste	Solid Waste Management
1	Waste materials like MS Rods, bricks, concrete, broken tiles, wood pieces, cement bags etc.	Material would be segregated. Recyclable material will be sold to authorize dealers. Rest will be used within project site for filling & levelling purpose. Remaining will be sent for disposal through government authorized vendors. Cement bags will be used for road making.
2	Excavated Soil	Top soil will be stored in covered areas and will be later used for landscaping purpose. Remaining soil will be used for back filling & levelling of site. Unused soil will be disposed off to designated site through authorized vendors on payment basis.

The Solid Waste generated from the proposed project site is about 2,239kg/day. The solid waste generation calculations are tabulated below.

TABLE - 2.10 SOLID WASTE GENERATION DETAIL

Description	Population (Nos.)	Waste Generation/ day
Block I - Commercial	5540	1108
Block II - Residential	912	547
Block III - Residential	912	547
Visitors	182	36
Total	7,546	2,239

Note: Quantity of per capita per day waste generation - 0.6 kg per capita for residents / 0.2 kg per capita for visitors.

TABLE - 2.11 SOLID WASTE MANAGEMENT

S.No	Description	Quantity(kg/day)	Method of Treatment/Disposal
1	Biodegradable	896	Organic Waste Converter
2	Non-Biodegradable	1,343	Authorized Recyclers
3	STP Sludge	23	Used as manure for greenbelt development

Note: As per NBC 2016, out of total solid waste generated 40% - organic and 60% - Inorganic

2.6.1 HAZARDOUS WASTE

During the operation phase the used oil, DG filters, oil mixed cotton waste and oil containers from the DG sets will be collected in separate place. Generation and disposal of Hazardous waste Quantity per annum is given in *Table 2.12*.

TABLE - 2.12 HAZARDOUS WASTE GENERATIONS AND DISPOSAL

S. No	Waste category	Description of waste	Quantity (TPA)	Collection & storage	Transport & disposal
1.	5.1	Used oil	0.2	MS drums within the premises	Disposed to TNPCB authorized re-processors

2.7 RAINWATER HARVESTING

Rainwater harvesting trenches will be constructed all around the compound wall to collect rainwater. The path ways around the harvesting lines will be graded to facilitate drainage into trenches proposed around the compound. Recharge pits will be envisaged along the path of the storm water drains for rainwater recharging & surplus water from the recharge pits shall be diverted to the storm water drainage network. Excess storm water will be allowed to drain into the external storm drain. The depth of the trench will be 1.5 m and the width will be 1 m. The trench will be filled with rounded pebble 50 to 75 mm size. The sectional detail of the rain water recharge pit is provided in *Figure 2.2*.

The collected storm water will be allowed to percolate to the sub-soil by suitably designed percolation pits. The pits are designed based on the soil's percolation capability. Percolation pits of suitable numbers will be provided for recharge of ground water potential. A total of 29 rain water harvesting pits and a 2 sump of 100cu.m capacity (50 cu.m each) will be constructed. The quantity of run-off water potential for the construction project is given below. The rainwater harvesting arrangement helps in replenishing the underground water column and soil lithography is given in *Table 2.13*.

TABLE 2.13 SOIL LITHOGRAPHY

S. No	Depth Below G.L. (m)	Soil Classification
1	GL to 5.8 m	Brick pats & soil mixture
2	5.8 m to 7.0 m	Brownish Grey, Moist, Poorly Graded, Fine to Medium Grains, Medium Dense, Clayey Silty Sand (SC)
3	7.0 m to 10.0 m	Greyish Brown, Grey, Moist, Poorly Graded, Fine to Medium Grains, Dense to Very Dense, SAND - Silty SAND (SP/SP-SM) to Silty SAND (SM)
4	10 m to 11.5 m	Grey, Moist, Stiff, Silty CLAY (CI) Lean clay of Medium Plasticity

5	11.5 m to 13.0 m	Grey, Moist, Poorly Graded, Fine to Medium Grans, Loose, Clayey Silty Sand (SC)
6	13.0 m to 17.5 m	Grey, Moist, Poorly Graded, Fine to Medium Grains, Medium Dense to Dense, Clayey Silty Sand (SC) to Silty Sand (SM)
7	17.5 m to 19.0 m	Brownish Grey, Moist, Hard, Compacted Clay (CH) clays of High Plasticity
8	19.0 m to 23.0 m	Brownish Grey, Hard, Compacted Clay (CH) clays of Plasticity
9	23.0 to 25.0 m	Brownish Grey, Moist, Poorly Graded, Fine Grains, Very Dense, Clayey Silty Sand (SC)
10	25.0 m to 27.5 m	Brownish Grey, Moist, Hard, Compacted Clay (CI to CL) clays or Medium to Low Plasticity

Source: Soil Test report

TABLE 2.14 RUNOFF CO-EFFICIENT OF VARIOUS SURFACES AS PER CPWD

S.No	Various Surface Area	Co-Efficient
1	Roof Catchment	
1.1	Tiles	0.8 - 0.9
1.2	Corrugated Metal Sheets	0.7 - 0.9
2	Ground Surface Covering	
2.1	Rocky material catchment	0.2 - 0.5
2.2	residential complex in suburban areas apartment	0.5 - 0.7
2.3	Parks, cemeteries	0.10 - 0.25
2.4	Unimproved land areas	0.10 - 0.30
2.5	Asphaltic or concrete pavement	0.7 - 0.95
2.6	Brick pavement	0.7 - 0.85
2.7	Play ground	0.2 - 0.35

Average annual rainfall in Chennai = 1,333 mm

Total area = 33,157Sq.m

In Chennai peak hourly rainfall 90 mm. The capacity of tank recharge tank is designed to retain runoff for at least 15 minutes of rainfall of the peak intensity (for Chennai 22.5 mm/per 15 minutes say 25 mm per 15 minutes).

Total run off available for recharging the ground water = 24,335 cubic meter per annum.

TABLE 2.15 - RAINFALL RUN OFF CALCULATION

Description	Area in Sq.m	Normal rainfall in m. year	Runoff Co-efficient	Total runoff available in m ³ /annum	Total runoff, m ³ /15 min
Roof Area	5,192.39	1.3	0.85	5,738	99
Paved Area	16,851.61	1.3	0.75	16,430	284
Unpaved Area	11,113	1.3	0.15	2,167	37
Total Run-off	33,157			24,335	421

As per the CPWD rain water harvesting calculation, the maximum Volume of Rainwater derived is 421 m³/15 min.

2.8 POWER DETAILS

Power will be availed from Tamil Nadu Generation and Distribution Corporation (TANGEDCO). Total Electric load for the proposed project is 6,500KVA. Power back up details for lift, STP and common lightings are given below. The required diesel will be purchased on daily basis in nearby petrol bunk. Hence there is no storage facility for storing high speed diesel.

TABLE 2.16 DG SET DETAILS

S.NO.	DESCRIPTION	DETAILS
1	DG Set Capacity	4 x 250 KVA
2	Type of Fuel	High Speed Diesel
3	Material of the stack	Mild Steel
4	Diameter of the stack	0.15 m (Each)
5	Height of the stack	Will be provided as per CPCB norms

2.9 PARKING AREA DETAILS

Proposed project will consist of stilt parking, open parking and basement parking over an area of 2,260.56 m², 4,769.70m² and 32,344m² respectively. Thus, a total parking area of 39,374.26m² will be provided. The parking space criteria and area requirement provided are summarized in the Table 2.17a & b.

TABLE 2.17a PARKING DETAILS REQUIRED AS PER CMDA NORMS

Description	Four-Wheeler	Two-Wheeler
Block 1	415	1,658
Block 2	152	-
Block 3	152	-
Visitors	144	332
	863	1,990

TABLE 2.17b PARKING DETAILS PROVIDED AS PER CMDA NORMS

Description	Four-Wheeler	Two-Wheeler
Total number of Parking provided	1,062 Nos.	2,212 Nos.

3. IMPACT ASSESSMENT & MITIGATION MEASURES

3.1 IMPACT ASSESSMENT

This chapter presents the assessment of various impacts due to the proposed construction project in the study area. Generally, the environmental impacts can be categorized as either primary or secondary. Primary impacts are those, which are attributed directly by the project and secondary impacts are those, which are indirectly induced and typically include the changed patterns of social and economic activities by the proposed project. The Proposed construction project would create impact on the environment in two distinct phases:

- During the construction phase (temporary or short term)
- During operational phase (long term)

The construction and operational phase of the proposed construction project comprises of various activities each of which will have impact on some or other environmental parameters. Various impacts during the construction or operational phase and the environmental parameters have been studied to estimate the impacts on environment. The identification and details on impact of the project activity on each of the above environmental attributes are discussed below.

TABLE 3.1 - CONSTRUCTION PHASE - POTENTIAL IMPACTS AND MITIGATION MEASURES

S.No	Environmental components	Potential Impacts	Source of Impacts	Mitigation Measures	Remarks
1	Air quality	Temporary negative impact	Construction operation of DG sets for power requirement; vehicular traffic; concreting; etc.,	Carrying out construction activity in temporary enclosures, where feasible; water sprinkling for dust suppression; regular maintenance of construction equipment & vehicles; use of fuel of proper quality; use of state-of-the-art construction equipment & methods	-
2	Noise	Medium negative & temporary	Various construction activities; material and vehicular movement	Use of low noise generating construction equipment and techniques; providing personnel protective equipment to workers; providing temporary enclosure for DG set and other construction activities, where feasible; avoiding construction work in the night time	-
3	Water quality	No impact	Discharge of wastewater, construction as well as domestic.	Providing adequate sanitation facilities for workers at site; avoiding discharge of untreated wastewater in the area.	Water will be sourced through tankers and the sewage will be received in septic tanks with adequate capacity.
4	Land Geology & Seismicity (i) (ii) Solid wastes & land pollution	No impact Temporary minor negative impact	Construction of residential building Construction material handling; construction wastes handling and disposal	No heavy structure planned as part of the project Maintaining proper inventory control for reduced waste generation; providing proper facility for storage and handling of fuel oils; disposal of spent oils, classified as hazardous waste by	All civil structures shall be constructed as per earthquake zone classification

				<p>sale to authorized third party; proper handling and disposal of construction wastes.</p>	
5	Ecology	Minor negative impact	Construction activity causing impact on existing ecosystem onsite and top soil;	<p>The top soil excavated will be stored separately and utilized for green belt development. Water sprinkling during dust generation activities; erosion and sediment control; noise and fugitive dust control; restricting construction activity during night time</p>	
6	<p>Socio-Economic: 1. Employment 2. Amenities 3. Transportation</p>	<p>Minor positive & temporary impact No impact Temporary negative impact</p>	<p>Availability of construction jobs Needs of construction workers; Increased traffic load due to transportation of construction materials and workers</p>	<p>Employing local people to the maximum extent possible Employing local people to the extent possible for construction work; making adequate provision through the contractors to handle water, sanitary, medical and fuel requirement of construction workers to ensure that the existing infrastructure is not strained. Ensuring that traffic is well regulated. Use of non-peak hours for material transportation.</p>	<p>About 320 construction workers are expected to be employed</p>

TABLE 3.2 - OPERATION PHASE - POTENTIAL IMPACTS AND MITIGATION MEASURES

S.No.	Environmental components	Potential Impacts	Source of Impacts	Mitigation measures	Remarks
1	Air quality	Minor negative impact (for SO ₂ , NOX & HC emissions)	Fuel combustion in DG sets	All emissions will be well within the specified emissions standards; adequate stack height will be provided for safe disposal of pollutants; HSD with 0.25% sulfur content in DG sets; periodic maintenance of DG sets for reduced emissions	All emissions well within the specified limits
2	Noise	Minor negative impact	Noise generating rotating/moving equipment	Proper equipment selection; mandatory acoustic enclosure for DG sets; regular maintenance of noise generating equipment; providing personnel protective equipment to persons working in noisy areas; suitable design and location of utility block; development of suitable green belt and landscaping	
3	Water quality	No impact	Depletion of ground / surface water & Discharge of sewage and waste water from utilities	Fresh water will be sourced from CMWSSB and the treated waste water will be reused for toilet flushing, gardening and excess for watering road side trees and OSR development.	Rainwater from the rainwater harvesting will be used to recharge ground water
4	Land (i) Geology & Seismicity (ii) Solid wastes & land pollution	No impact Minor negative impact	Improper building design not adhering to specified codes; improper building maintenance Handling and disposal of hazardous and solid wastes	Regular maintenance of the structures to withstand natural phenomena; carrying out the structural integrity testing Segregation of bio and non-biodegradable waste and the biodegradable waste will be treated in the organic waste converter and the non-biodegradable waste will be disposed to	 Though no solid/hazardous waste will be disposed off on land, chances of inadvertent occasional spillage on land cannot

				Authorized recyclers; disposal of waste tube oils by sale to authorized third party; buyback arrangement for waste lead acid batteries	be ruled out
5	Ecology	No impact	Emissions and discharges from project operations; noise generation; improper disposal of wastes	All emissions and discharges including noise will be within specified standards; all solid/ hazardous waste will be disposed off in environmentally sound manner.	A thick green belt will be developed all along the boundary to enhance the ecology of the site
6	Socio-Economic 1. Employment 2. Transportation	Medium positive impact	Direct employment of personnel for proposed project.	Employing personnel from within the study area to the extent possible, subject to availability of skilled manpower requisite to the job requirement	Approximately 650 persons employment and indirect employment are expected to be employed for the project
		Negative impact	Burden on the existing road infrastructure due to the increased traffic from the proposed project	Ensuring that vehicular movement is controlled during peak traffic hours; providing bus services from the site to the nearest railway station; encouraging car-pools for employees	

4. ENVIRONMENTAL MANAGEMENT PLAN

4.1 INTRODUCTION

The Environmental Management Plan (EMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner where all contractors and subcontractors, including consultants, understand the potential environmental risks arising from the proposed project and take appropriate actions to properly manage that risk. EMP also ensures the project implementation is carried out in accordance with the design by taking appropriate mitigative actions to reduce adverse environmental impacts during its life cycle.

The plan outlines existing and potential problems that may adversely impact the environment and recommends corrective measures where required. Also, the plan outlines roles and responsibility of the key personnel and contractors who are charged with the responsibility to manage the site. The main objectives of EMP are:

- To ensure that the component of facility is operated in accordance with the proposal;
- Process that confirms proper operation through supervision and monitoring;
- System that addresses public inconvenience during construction and operation of the facility; and
- Plan that ensure remedial measures are implemented immediately.

The key benefits of the EMP are that it provides the organization with means of managing its environmental performance thereby allowing it to contribute to improved environmental quality.

4.2 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) will be required to mitigate the adverse environmental impacts during construction and operation phase of the project.

4.2.1 CONSTRUCTION PHASE

↓ Air Environment

To mitigate the impact of PM (dust) during the construction phase of the proposed project, the following measures are recommended for implementation:

- a dust control plan; and
- *Procedural changes to construction activities.*

DUST CONTROL PLAN:

TABLE 4.1 - DUST CONTROL PLAN

S. NO.	FUGITIVE DUST SOURCE CATEGORY	DUST CONTROL ACTIONS
1.	Earth-moving	For any earth moving which is more than 30m from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100m in length in any direction.
2.	Disturbed surface areas (except completed grading areas)	- Apply dust suppression in a sufficient quantity and frequency to maintain a stabilized surface; - Areas, which cannot be stabilized, as evidenced by wind driven dust, must have an application of water at the unstabilized area.
	Disturbed surface areas (completed grading areas)	Apply water to all inactive accessible disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust.
3.	Inactive disturbed surface areas	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface.
4.	Unpaved roads	Water all roads used for any vehicular traffic once daily and restrict vehicle speed to 30kmph.
5.	Open storage piles	Apply water to the surface areas of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust.
6.	Track-out control	Downwash of trucks (especially tyres) prior to departure from site.

The most cost-effective dust suppressant is water and can be applied using water trucks, handheld sprays and automatic sprinkler systems. Furthermore, incoming loads could be covered to avoid loss of material in transport, especially if material is transported off-site.

PROCEDURAL CHANGES TO CONSTRUCTION ACTIVITIES

- **Material Production** - Setting up temporary portable concrete plants and/or asphalt plants at construction sites can eliminate haulage of materials.
- **Emission Control for Equipment**- Control equipment such as particle filters can be used to reduce diesel particulate matter emissions.
- **Improved Maintenance** - Recognizing that significant emission reductions can be achieved through regular equipment maintenance,
- **Reduction of On-site Construction Time** - Rapid on-site construction would reduce the duration of traffic interference and therefore, reduce emissions from traffic delay.

↓ Noise Environment

To mitigate the impact of noise from construction equipment during the construction phase of the site the following measures are recommended for implementation:

- Noise Shields - Construction equipment producing the most amount of noise should be fitted with noise shields. This shield is a physical barrier (composed of brick and mud, with a non reflective internal plastering), approximately 3 meters in height, which will provide adequate noise attenuation.
- Time of Operation - Noisy construction equipment should not be permitted during night hours.
- Job Rotation and Hearing Protection - Workers 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.

↓ Water Environment

To prevent degradation and maintain the quality of the water source, adequate control measures have been proposed to check the surface run-off, as well as uncontrolled flow of water into any water body. Following management measures are suggested to protect the water quality during the construction phase.

- Ground water table is about 3.6 m below ground level during the time of investigation and there will be monitoring of ground water near the project site periodically during and after construction.
- No discharge of wastewater to soil and ground water body.
- Waste water channels from the site would be connected to septic tank during construction to prevent wastewater from entering the water bodies.
- To prevent surface and ground water contamination by oil/grease, leak proof containers should be used for storage and transportation of oil/grease. The floors of oil/grease handling area should be kept effectively impervious.
- Construction activities generate disturbed soil, concrete fines, fertilizer, oils and other wastes. On-site collection and settling of storm water, prohibition of equipment wash downs, and prevention of soil loss and toxic releases from the construction site are necessary to minimize water pollution.
- All stacking and loading areas should be provided with proper gartland drains equipped with baffles to prevent run off from the site to enter any water body.

↓ Land Environment

Waste generated from construction activity includes construction debris, biomass from land clearing activities (if any), waste from the labour camp, and other waste. The following section discusses management of each type of waste. Besides management of topsoil is an important area for which management measures are required.

- **Construction Debris** - As concrete and masonry constitute the majority of waste generated, recycling of this waste by conversion to aggregate can offer benefits of reduced landfill space and reduced extraction of raw material for new construction activity. This is particularly applicable to shopping mall project as the construction is to be completed in a phased manner. Recycled aggregate will be used for filler application, and as a sub-base for internal road construction. Recyclable wastes such as plastics, glass fibre insulation, roofing etc shall be sold to recyclers.
- **Solid and other wastes** - Construction sites are sources of many toxic substances, such as paints, solvents, wood preservatives, pesticides, adhesives and sealants. Such wastes generated during construction phase shall be stored in sealed containers, labelled, and disposed of as required by the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

The project site is selected for mixed use development buildings. The site is categorized as Mixed residential use zone by Chennai Metropolitan Development Authority. The copy of the master plan showing land use classification of the project site is enclosed as *Annexure I*. Since the proposed project is development of commercial and residential buildings, there will not be any alteration to the project land and surrounding locations.

↓ Biological Environment

Construction activities change the natural environment. But it also creates a built environment for the surrounding. The project requires the implementation of following choices exclusively or in combination.

- Restriction of construction activities to defined project areas, which are ecologically less sensitive.
- Restrictions on location of labour camps and offices for project staff near the project area to avoid human induced secondary additional impacts on the flora and fauna species.

- Along the major construction work the peripheral greenbelt should be developed, so that; it will grow to become a full-fledged green cover by the time the construction is over.

4.2.2 OPERATION PHASE

↓ Air Environment

To mitigate the impact of pollutants from diesel generator sets during the operational phase of the site the following measures are recommended for implementation:

- Diesel generator set emission control measures - The most important pollutant requiring further control is NO_x, as the impact of SO₂ emission is minimal because of the use of low (-0.05%) Sulphur in diesel as fuel. The mitigation measures proposed for NO_x reduction is NO_x retarder and better dilution through higher stack are preferred cost-effective mitigation measures.
- Greenbelt development - Increasing vegetation in the form of greenbelt is one of the preferred methods to mitigate air pollution. Plants serve as a sink for pollutants, reduce the flow of dust and reduce noise pollution.

↓ Noise Environment

To mitigate the impact of noise from diesel generator sets during the operational phase the following measures are recommended for implementation:

- Noise emissions control technologies - Noise Emissions Control Technologies: All the diesel generators will be housed in a suitable acoustic enclosure so that noise levels at a distance of one meter do not exceed 75 dB(A) at 75% load (as per CPCB norms). The diesel generator set housing will be equipped with walls and ceilings lined with glass wool to acoustically treat the noise levels. This acoustic insulation shall be designed to meet the mandatory standards based on a 25 dB(A) insertion loss.
- Greenbelt development.

↓ Water Environment

In the operation phase of the project, water conservation and development measures need to be taken including all possible potential for conservation of water, reuse, rainwater collection in reservoirs, and recycling of waste water.

These could be in the form of the following:

- Water source Development
- Minimizing water consumption
- Promoting reuse of water after treatment and development of closed loop systems for different water streams.
- Storm water drainage and Rainwater harvesting pits will be proposed

↓ Land Environment

The main aim of solid waste management will be to encourage the four R's of waste i.e. waste reduction, reuse, recycling, and recovery (materials & energy). This will reduce in lesser reliance on land filling. Regular public awareness meetings will be conducted to involve the occupants and the employees to ensure proper segregation, storage and collection of waste as per the Solid Waste Management Rules 2016.

The Environmental Management Plan for the solid waste focuses on the Segregation, Storage at source and Collection of the waste management system.

- Segregation and storage at source - Segregation of waste at source should be made mandatory for the activity. Segregation or sorting waste at its source should be practiced in order to encourage reuse/recycling. With segregation at source recyclables do not lose their commercial value due to cross contamination. Waste generated at the residential activity should be segregated as: bio degradable, non biodegradable and waste from changing oil. The entire waste stream from the activity should be stored and collected separately.

↓ Biological Environment

Enhancement of current ecology at the proposed project site will entail the following measures:

- Green Belt Development - Selection of the plant species will be based on their adaptability to the existing geographical conditions and the vegetation composition of the forest type of the region. During the development of the green belt within the project area, it has to be emphasized that those native plant species should be planted which are having good values and fast growing with excellent canopy cover.

TABLE 4.2 - RECOMMENDED SPECIES FOR GREEN BELT DEVELOPMENT

S. NO.	SCIENTIFIC NAME	COMMON NAME
1	<i>Mimusopselengi</i>	Magilam
2	<i>Thespesia populnea</i>	Poovarsu
3	<i>Pongamia pinnata</i>	Pungam tree
4	<i>Syzygiumcumini</i>	Nagai
5	<i>Calophylluminophyllum</i>	Punnai
6	<i>Azadirachta indica</i>	Neem
7	<i>Ficus retusta</i>	Athi
8	<i>Ficus religiosa</i>	Arasamaram
9	<i>Madhuca longifolia</i>	Illuppai
10	<i>Swietenia mahagoni</i>	Mahakani

4.3 SOCIO-ECONOMIC STATUS

Proposed project would provide employment opportunity during construction and operation phase. There would also be a wider economic impact in terms of generating opportunities for secondary occupation within and around the activity.

Review of secondary data (District Census Statistical Handbooks - 2011) with respect to population, occupation structure and infrastructure facilities available for 10 km radius study area. The proposed activities will have its share of socio-economic influence in the study area. The section delineates the overall appraisal of society relevant attributes.

TABLE 4.3 SOCIO - ECONOMIC STATUS OF THE PROJECT SITE

VILLAGES	ARUMBAKKAM	ANNA NAGAR EAST	ANNA NAGAR WEST	SALIGRAMAM
No. of house holds	4,519	8,456	12,896	15,647
Total population	20,023	32,999	50,926	59,322
Male	9,674	16,333	25,217	29,937
Female	10,349	16,666	25,709	29,385
Literate	16,905	27,353	41,197	50,121
Illiterate	3,118	41,197	9,729	9,201
Total workers	8,085	12,782	20,559	24,813

4.4 ENERGY CONSERVATION

- Purchase of energy efficient appliances
- Constant monitoring of energy consumption and defining targets for energy conservation
- Adjusting the settings and illumination levels to ensure minimum energy used for desired comfort levels
- Installing programmable on/off timers and sensors for low occupancy areas
- Use of compact fluorescent lamps and low voltage lighting.
- Sunscreen films on windows to reduce heating inside the buildings
- Installation of 150 Nos of solar street lights.

TABLE 4.4 DESIGN CALCULATIONS OF ENERGY CONSERVATION

S.No	Description	Power Consumption		Saving in KW
		Conventional equipment power consumption in KW	Energy Efficient equipment power consumption in KW	
1	Basement area light	145 Nos X 175 W FTL X 8hrs = 203 KW	LED (45 watts) X 145 Nos X 8 hrs = 52KW	151
2	Staircase & headroom lighting	260 Nos X 40 W X 8hrs = 83 KW	LED 20 watts X 260 Nos X 8 hrs = 42KW	41
3	Metering room & Carbageroom	60 Nos X 40 W X 8hrs = 19 KW	LED 60 watts X 20 Nos X 8 hrs = 10 KW	9
4	Basement / Stilt / Podium Floor Car parking lighting	150 Nos X 40 W X 8hrs = 48 KW	LED 20 watts X 150 Nos X 8 hrs = 24 KW	24
5	Solar Street Lights	.	150 Nos Street Lights x 25 W x 10 hrs = 37 kWh	37
Total				262

4.5 ENVIRONMENTAL MONITORING PLAN

The purpose of environmental monitoring is to evaluate the effectiveness of implementation of Environmental Management Plan (EMP) by periodically monitoring the important environmental parameters within the impact area, so that any adverse effects are detected and timely action can be taken. The following areas will be monitored regularly;

TABLE 4.5 ENVIRONMENTAL MONITORING SCHEDULE

S. No	Particulars	Monitoring Frequency	Duration of Sampling	Important Monitoring Parameters
1	Ambient Air Quality Monitoring			
	Project site	Once in a Months	24 hr continuously	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x & CO
2	Stack Monitoring			
	DG Set - Stack	Once in a Months	60 min	SO ₂ , NO _x , PM, CO, Temperature, Flow rate & Velocity
3	Ambient Noise Level			
	Near DG set, STP, Pump house	Once in a Months	8 hr continuous with 1 hr interval	Noise level in dB(A)
4	Waste water sample Monitoring			
	STP Inlet/outlet	Once in 3 Months	Grab Sampling	pH, TSS & BOD
	GTP Inlet/outlet	Once in 3 Months	Grab Sampling	pH, TSS & BOD
5	Ground/Drinking Water Quality Monitoring			
	Ground Water - at project site	Once in 6 Months	Grab Sampling	Parameters specified under IS:10500, 1993
6	Soil Quality			
	At the green belt area	Once in a year	Samples were collected from three different depths	Agriculture potential parameters

4.6 FIRE FIGHTING SYSTEM

Fire protection is one of the most essential services to be provided. The principal objective of the rescue and firefighting services is to save lives. For this reason, the provision for means of quick dealing with an accident or incident occurring at, or in the immediate vicinity of, any building, assumes primary importance because it is within this area that there is the greatest opportunity of saving lives. This must assume at all times the possibility of, and need for, extinguishing a fire which may occur either immediately following an accident or incident, or at any time during rescue operations. In the design

component of the project, adequate measure is being taken as per the provisions of the *National Building Code, 2005*. The firefighting system will comprise the following.

➤ **Fire hydrant system**

The buildings will be provided with adequate nos. of external and internal fire hydrants with fire hose cabinet.

➤ **Portable fire extinguishers**

Selection, installation and maintained of first aid extinguishers will be done as per IS: 2190 - 1992 and among different types of portable fire extinguishers generally followed types will be provided.

➤ **Water fire extinguishers**

Two extinguishers per floor of building will be provided and firefighting sump will be installed for water storage.

➤ **Nearby fire station Address: No.2, Omni Bus Stop Omni Bus Stand No.71, Koyambedu Market Road, Virugambakkam, Koyambedu Chennai, Tamil Nadu 600107**

5. BUDGET FOR IMPLEMENTATION OF EMP

The cost to be implemented on environmental management plan for both capital and recurring phase.

TABLE 5.1 ENVIRONMENTAL MANAGEMENT PLAN - CAPITAL COST

S. No	Description	Quantity	Rate	Cost (lakhs)
1	Solid Waste Management			42.3
	Organic waste convertor	2 Nos		36
	Civil			3
	Dumper Bins			1
	i) Bins of 50 lts with wheels (1 no/50 dwellings)	-	-	2.1
	ii) Dumper Bins with wheel of 2 cum capacity	6 Nos	0.05	0.3
2	Greenbelt Development			3.2
	i) Saplings and Associated works	420 Nos	400	1.6
	ii) Tree Guards	420 Nos	400	1.6
3	Energy Conservation measures			51
	i) Solar street light	150 Nos	0.12	18
	ii) Solar Rooftop PV			31.5
	iii) Installation Cost	-	-	1.5
4	Rain water harvesting			79.45
	RWH Sumps & Storm water drains	-	-	78
	RWH Pits	29 Nos	0.05	1.45
5	Grey water treatment plant (280 KLD)	1	-	78
6	Sewage Treatment Plant (200 KLD)	1	-	65
	Total			319

TABLE 5.2 ENVIRONMENTAL MANAGEMENT PLAN - BUDGET (OPERATION)

S. No	Description	Qty	Rate (Rs.)	Cost (Lakhs)
1	Solid Waste Management			4
	Organic waste Converter	-	-	1.0
	Door to Door Collection -Garbage	-	-	1.0
	Maintenance	-	-	2.1
2	Greenbelt developments			3
	Gardener & maintenance (1 No for every 2500sq. mts)	2	12000	2.88
3	Sewage Treatment Plant (200 KLD)			12
	Power consumption cost	8 KW x 22 hrs x 365 days	8	5.1
	Man power cost	2 x 12 months	16,500	3.9
	Consumables / Chemicals			2
	Miscellaneous			1

4	Grey water Treatment Plant (280 KLD)			14
	Power consumption cost	10 KW x 22 hrs x 365 days	8	6.5
	Man power cost	2 x 12 months	16,500	3.9
	Consumables / Chemicals			3
	Miscellaneous			1
5	Env. Monitoring			1.8
	Sampling - waste water (once in month)	24	1250	0.3
	Water - once in 3 months (3 Nos x 4)	12	5000	0.6
	Air - once in 3 months (4 Nos x 4)	16	3000	0.5
	Noise - once in 3 months (4 Nos x 4)	16	1000	0.1
	DG Set (once in month)	24	1400	0.3
6	Rain water harvesting (maintenance)			1.6
7	Disposal of treated waste water			2.1
	Cost for disposal			2.1
Total per Annum				39

6. BENEFITS OF THE PROJECT

The project would benefit the project area in many aspects detailed below.

- The improvements in the physical infrastructure of the project result in the development of social activities in the surroundings.
- The implementation of project contributes to improvements in the social infrastructure like roads, water supply, electrical power, drainage, etc., in the locality.
- The project would create employment potential for skilled, semi-skilled and unskilled labour both during construction and during operational phases of the project to local population.
- Also for imparting any specialized skills to them to be eligible for such employment in the project on a long-term basis i.e., during operational and maintenance stages of the project.

7. CONCLUSION

The proposed project is construction of mixed use development in Arumbakkam Village, Egmore - Nungambakkam Taluk, Chennai District, Tamil Nadu. Fresh water will be supplied through CMWSSB and hence there will be no drawl of ground water within the site. The waste water is proposed to be treated in ecologically friendly treatment methodology and re-use back. Further rain water harvesting structures proposed to enhance the ground water of area. The solid waste generated will be properly segregated and the biodegradable waste will be treated in organic waste converter and the non-biodegradable waste will be disposed to Authorized recyclers.

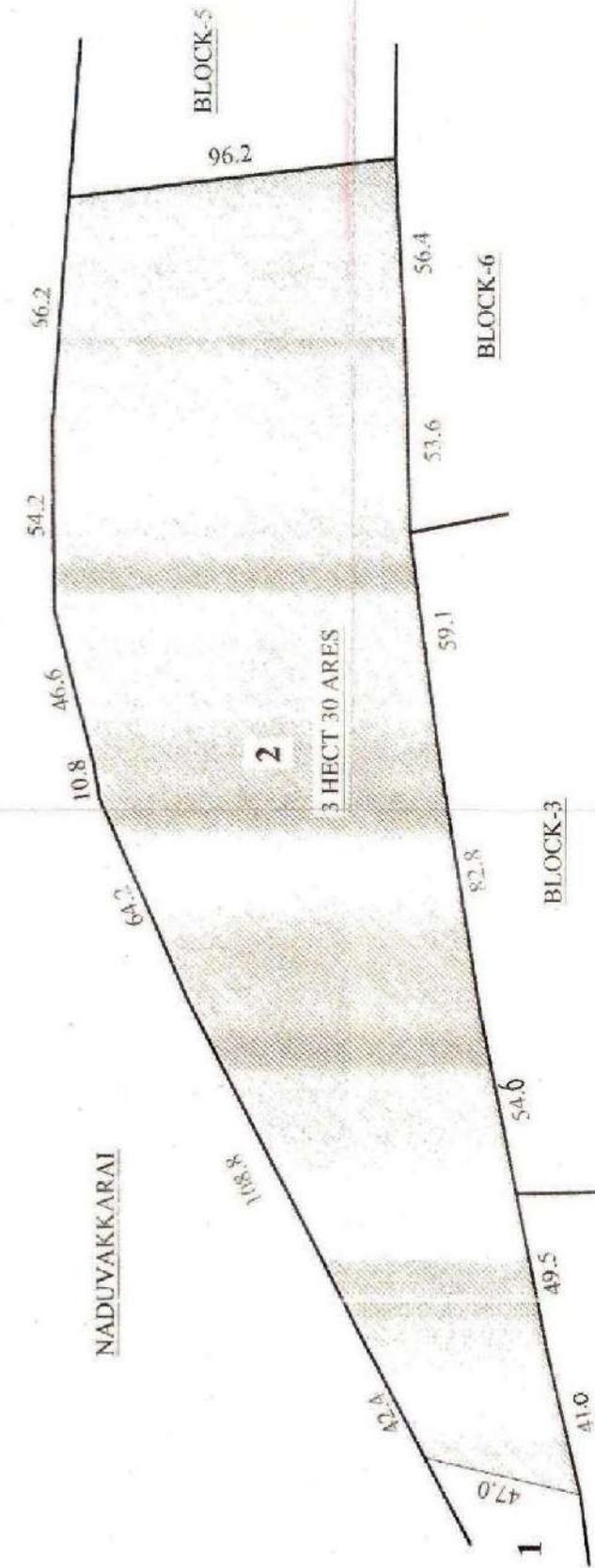
Adequate care is taken to protect, preserve and improve the environment around the site. About 5,050 Sq.mts of the area earmarked for development of greenery thereby enhancing the scenic beauty of the site. As the site is well connected with existing road network and outer ring road no additional impact will be there on existing roads. Enough parking place is proposed to be developed for vehicles within the residential building. Thus, the project is environmentally viable and sustainable.

DISTRICT : CHENNAI

TALUK : AMINJIKARAI

TOWN : ARUMBAKKAM

BLOCK NO-4 TS NO-2



BLOCK-1

BLOCK-3

BLOCK-6

BLOCK-5

DEPUTY INSPECTOR OF SURVEY
 AMINJIKARAI TALUK
 14/9/2000

12/10/2000
 DEPUTY INSPECTOR OF SURVEY
 AMINJIKARAI TALUK

Signature

அனுப்புநர்:

திரு வ. சரவணன்,
உதவி இயக்குநர் மற்றும்
மாவட்டஆட்சியரின் நேர்முகஉதவியர் (நி.அ)
மாவட்ட நிலஅளவை அலுவலகம்,
சென்னை -1.

பெறுநர்:

செயற்பொறியாளர்
அண்ணாநகர் கோட்டம்
தமிழ்நாடு வீட்டுவசதி வாரியம்
திருமங்கலம்
சென்னை 101

ந.க.ஈ/2333/2020 நாள்: 11.9.2020

அய்யா,

பொருள்: தமிழ்நாடு வீட்டு வசதி வாரியம் -- அண்ணாநகர் கோட்டம் -- சென்னை மாவட்டம் அமைந்தகரை வட்டம் அரும்பாக்கம் கிராமம் -- பிளாக் எண் 4 நகர புல எண் 2 -- தமிழ்நாடு வீட்டு வசதி வாரியத்திற்கு சொந்தமான நிலம் -- வருவாய் ஆவணங்களின் அடிப்படையில் அளவீடு செய்து எல்லை நிர்ணயம் செய்யக்கோருதல் தொடர்பாக

பார்வை: 1.தமிழ்நாடு வீட்டு வசதி வாரியம் அண்ணாநகர் கோட்டம் திருமங்கலம் செயற்பொறியாளர் அவர்களின் கடிதம் எண் AND/Sur/092/1975 நாள் 02.09.2020
2. கோட்ட ஆய்வாளர் (முத்திய சென்னை கோட்டம் அவர்களின் அறிக்கை நாள் 10.9.2020

பார்வையில் காணும் கடிதத்தில் கேட்டுள்ளபடி. சென்னை மாவட்டம், அமைந்தகரை வட்டம், அரும்பாக்கம் நகரம், பிளாக் எண் 4, நகர புல எண் 2ல் நகர அளவை ஆவணங்கள் பரிசீலித்து, வருவாய் ஆவணங்களின் அடிப்படையில் அமைந்தகரை வட்ட அலுவலக நிலஅளவை பணியாளர்கள், தமிழ்நாடு வீட்டுவசதி வாரியம் பணியாளர்கள் மற்றும் பொதுப்பணித்துறை பணியாளர்களின் முன்னிலையில் அரும்பாக்கம் நகரம், பிளாக் எண் 4 நகர புல எண் 2ன் புலஎல்லை நிர்ணயம் செய்து குறியீடு செய்யப்பட்டு தமிழ் நாடு வீட்டு வசதிவாரியம் பணியாளர்களின் ஒப்புதல் பெறப்பட்டுள்ளது. அப்புலத்திற்கான சான்றொப்பமிட்ட வரைபடத்தினை இத்துடன் இணைத்து அனுப்புகிறேன் என்பதை தெரிவித்துக்கொள்கிறேன்
இணைப்பு : வரைபடம்

ஓம்/- வ.சரவணன்
உதவி இயக்குநர்

//உண்மை நகல் // உத்தரவுபடி//

11/9/2020
தொழில்நுட்பமேலாளருக்காக

11/9/2020

From:-
 Thiru. V. Saravanan,
 Assistant Director and Personal
 Assistant to District Collector
 Chennai (Survey), District
 Survey Office,
 Chennai - 600 001.

To:-
 Executive Engineer & Ado,
 Anna Nagar Division,
 Tamil Nadu Housing Board,
 Thirumangalam,
 Chennai - 600 101.

Na.Ka.E.1 / 2333 / 2020 Dated. 11.09.2020

Sir,

Sub:- Tamil Nadu Housing Board - Anna Nagar Division - Chennai District,
 Aminjikarai Taluk, Arumbakkam Village - Block No. 4, TS No. 2 -
 Land belongs to Tamil Nadu Housing Board - Request for
 Demarcation of site boundary based on the revenue records -
 Regarding.

Ref:- 1. Tamil Nadu Housing Board, Anna Nagar Division, Executive
 Engineer, Letter No. AND / Sur / 092 / 1975 Dated. 02.09.2020.
 2. Inspector of Survey (Central Zone Report Dated. 10.09.2020).

As requested in the letter 1st cited above, the Chennai District, Aminjikarai Taluk, Arumbakkam Town, Block No. 4, Town Survey No. 2, Town Survey Document are reviewed based on the revenue records, and in presence of the staff of Aminjikarai Taluk, Staff of Land Survey, Staff of Tamil Nadu Housing Board and Public Works Department staff, the T.S.No. 2, Block No. 4 of Arumbakkam Town's boundary had been confirmed and earmarked. Also got the approval from the Tamil Nadu Housing Board staff and attested filed measurement drawings for the said survey lands is enclosed and send herewith.

Encl:-Field measurement drawings.

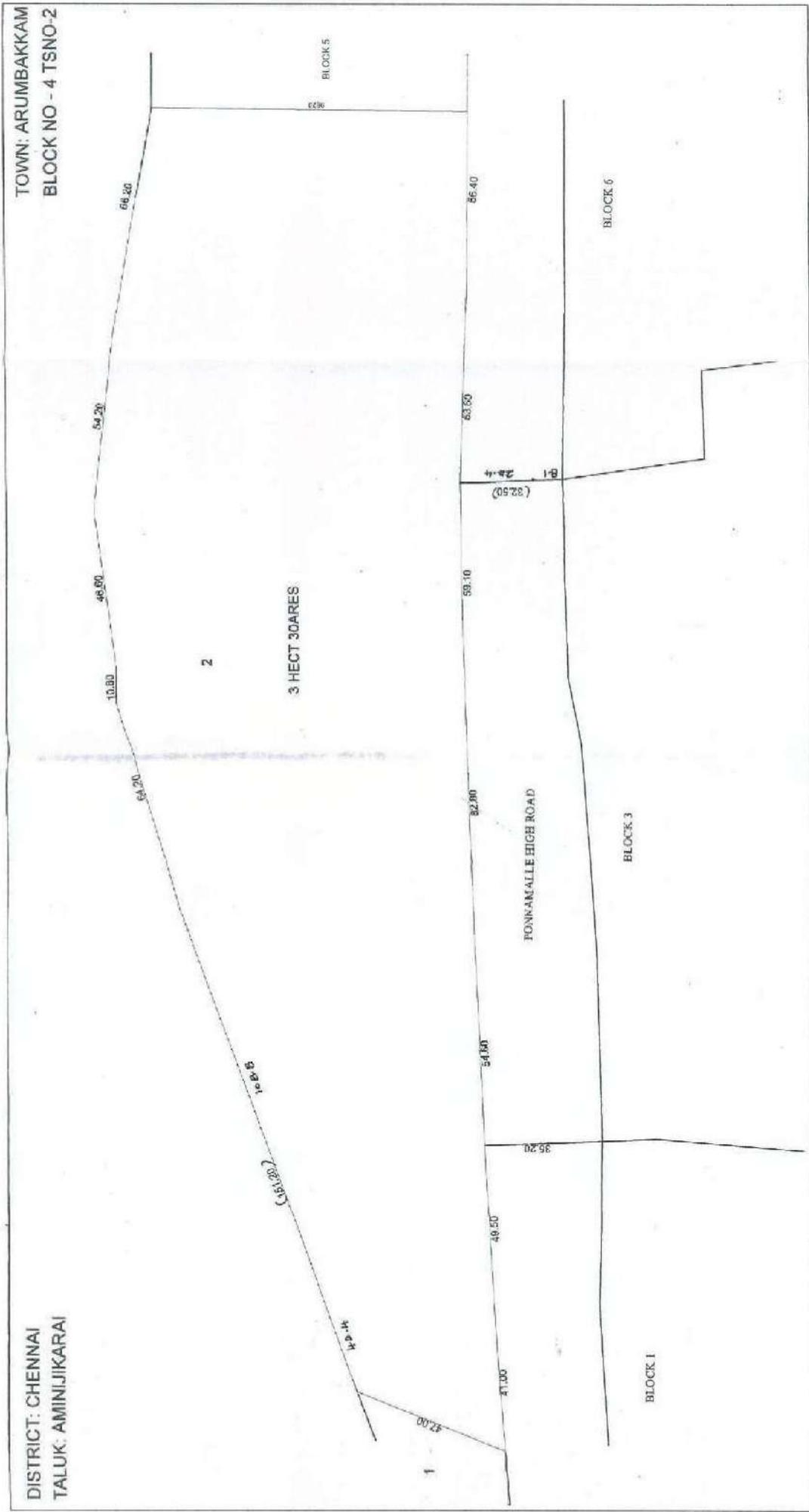
Sd/- V. Saravanan
 Assistant Director

// True Copy // Forwarded by Order //

Technical Manager

DISTRICT: CHENNAI
TALUK: AMINJIKARAI

TOWN: ARUMBAKKAM
BLOCK NO - 4 TSNO-2



D. Subramanian
 DEPUTY INSPECTOR OF
 SURVEY
 AMINJIKARAI TALUK
 CHENNAI-600 030
 6/10/20

SUB INSPECTOR OF SURVEY
 Aminjikarai Taluk
 Chennai - 600 030

STATE EXPERT APPRAISAL COMMITTEE – TAMIL NADU

Minutes of the 182nd Meeting of the State Expert Appraisal Committee (SEAC) held on 17th October 2020 (Saturday) for Appraisal of Building and Construction Projects, Townships and Area Development projects, Synthetic Organic Chemicals Industry & Mining projects conducted through video conference.

Agenda No: 182-01

(File No: 7770/2020)

Proposed Rough Stone & Gravel quarry lease over an extent of 2.00.0 Ha at S.F.No. 1(Part -2) Mekalanayakanahalli Village, Pappireddipatti Taluk, Dharmapuri District, Tamil Nadu by M/s. Golden Blue Metals –For Environmental Clearance (SIA/TN/MIN/166853/2020, dated: 06.08.2020)

The proposal was placed in this 182nd SEAC Meeting held on 17.10.2020. The details furnished by the Proponent are given in the Parivesh website. (parivesh.nic.in)

The SEAC noted the following:

1. The project Proponent M/s. Golden Blue Metals has applied for Environment Clearance for the proposed Rough Stone & Gravel quarry lease over an extent of 2.00.0 Ha at S.F.No.1 (Part -2) Mekalanayakanahalli Village, Pappireddipatti Taluk, Dharmapuri District, Tamil Nadu.
2. The project/activity is covered under Category "B2" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.

Based on the presentation made by the proponent and the documents furnished, the committee decided to recommend the proposal for grant of Environmental Clearance to SEIAA with restricted to a ultimate depth of mining of 57.5 m from the above ground level and leaving the minerals which are available below ground level, the same was accepted by the project proponent and accordingly the production quantity

**Member Secretary
SEAC-TN**



**Chairman
SEAC-TN**

area.

11. The project proponent has to provide separate standby D.G set for the STP & ETP proposed for the continuous operation of the STP & ETP in case of power failure respectively.
12. No waste of any type to be disposed off in any other way other than the approved one.
13. The proponent shall not use the laundry for discarded linen, mattresses, beddings Contaminated with blood fluid and soiled waste. Materials other than the materials listed above can be washed and cleaned in the laundry attached to the hospital.
14. The project proponent shall obtain the necessary authorization from TNPCB and strictly follow the E-Waste Management Rules 2016, as amended for the generation of E-waste within the premises.
15. The project proponent shall obtain the necessary authorization from TNPCB and strictly follow the Bio-medical Waste Management Rules, 2016, as amended for the generation of Bio medical waste within the premises.
16. The project proponent shall obtain the necessary authorization from TNPCB and strictly follow the Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2015, as amended for the generation of Hazardous waste within the premises.
17. The project proponent shall submit the CER proposal as per the MoEF& CC guidelines before placing the subject to SEIAA.

Agenda No: 182-06

File No: 7627/2020

Proposed construction of mixed development at S. No. 2, Block No. 4 of Arumbakkam Village, Aminjikkarai Taluk (Previously Egmore – Nungambakkam Taluk), Chennai District by M/s. Tamil Nadu Housing Board – Anna Nagar Division- For Environmental Clearance

(SIA/TN/MIS/161937/2020, dated: 11.10.2020)

**Member Secretary
SEAC-TN**



**Chairman
SEAC-TN**

The proposal was placed in this 182nd SEAC Meeting held on 17.10.2020. The project proponent gave detailed presentation. The details of the project furnished by the proponent are available in the website (parivesh.nic.in). The SEAC noted the following:

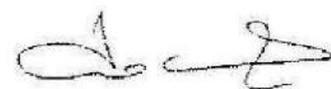
The SEAC noted the following:

1. The Proponent, M/s. Tamil Nadu Housing Board has applied for Environmental Clearance for the Construction project in Proposed construction of mixed development at S. No. 2, Block No. 4 of Arumbakkam Village, Aminjikkarai Taluk (Previously Egmore – Nungambakkam Taluk), Chennai District.
2. The project/activity is covered under Category "B" of item 8(a) "Building and Construction projects" of the Schedule to the EIA Notification, 2006.
3. The total land area is 33,157 Sq.m, the total built up area of 1, 35,031.13 Sq.m. The project will comprise of Commercial Block (B+G+19 Floors), 2 Blocks of HIG (B+S+19 Floors – each 152 units) with a total dwelling unit of 304 units

Based on the documents furnished and the presentation made by the proponent, the SEAC decided to direct the project proponent to furnish the following details;

1. The proponent shall submit the compliance/action taken for all the conditions stipulated in the FWD inundation certificate Letter No.DB/T5 (3)/F-NOC-Arumbakkam/2020 dated 03.10.2020 with necessary documents/photographs.
2. The proponent shall submit the Village Map, 'A' Register & FMB sketch for the proposed project site.
3. The project site is abutting to River Cooum, hence the project proponent shall submit the detailed disaster management plan.
4. The project proponent shall furnish the land use classification obtained from CMDA.
5. The project proponent shall revise the water balance as per the MoEF& CC guidelines for the building project.
6. The project proponent shall submit the details of STP & GWTP system and the

Member Secretary
SEAC-TN



Chairman
SEAC-TN

- design details based on the characteristics of the sewage & grey water.
7. The project proponent shall furnish the necessary permission from the CMWSSB for supply of fresh water.
 8. The project proponent shall furnish the necessary permission from the competent authority for the disposal of excess treated sewage for avenue plantation along with the revised EMP.
 9. The proponent shall submit the revised solid waste management plan as per the National Building Code (NBC) Guidelines for the residential buildings.
 10. The proponent planned the children's park near to the RiverCooum and OSR in two different places. Hence the proponent shall furnish the revised lay out providing the Children's park in other side of the project site and OSR in one compact place with entry/exit. The revised layout shall be submitted accordingly.
 11. The proponent shall revise proposal of rain water harvesting system by providing a greater number of rainwater collection sump instead of more numbers of rain water collection pits.
 12. The contour levels of the proposed site shall be marked in the layout. Based on contour map, a detailed storm water drainage plan shall be prepared considering the flood occurred in the year 2015 and also considering the surrounding developments.
 13. The proponent shall calculate & furnish the height of the stack to be provided for the proposed DG set as per the MoEF& CC norms.

On receipt of the above details, the SEAC decided to take further course of action on the proposal.

Agenda No: 182- 07

File No.7744/2020

Proposed Rough stone & Gravel quarry over an extent of 1.00.0Ha in S.F.No. 27/1A (Block-5) of Elambalur Village, Perambalur Taluk, Perambalur District, Tamil Nadu by Thiru. M.Kumar- For Environmental Clearance.

(SIA/TN/MIN/168000/2020, dated: 17.08.2020)

**Member Secretary
SEAC-TN**



**Chairman
SEAC-TN**

From
K.Ravichandran, B.E.,
Executive Engineer & Ad.o,
Anna Nagar Division,
Tamil Nadu Housing Board,
Thirumangalam,
Chennai - 600 101.



To
The Member Secretary,
State Environment Impact
Assessment Authority, Tamil Nadu,
3rd Floor, Panagal Maligai,
No.1, Jennis Road, Saidapet,
Chennai - 600 015

Letter No. AND / Plg / 869 / 2018

Dated: 18.11.2020

Sir,

Sub: Tamil Nadu Housing - Anna Nagar Division - Planning - Environmental Clearance - Proposed construction of Mixed use Development (residential & commercial) project at S. No.2, Block No.4 of Arumbakkam Village, Aminjikarai Taluk (Formerly Egmore-Nungambakkam), Chennai District, Tamil Nadu under project category - B1 and schedule S.No. 8(a) - Additional Details - Reg.

Ref: 1. Our online proposal no.SIA/TN/MIS/161937/2020 dated 11/10/2020
2. Our Letter No. AND/PLG/849/2016 dated 10/10/2020 submitted on 12/10/2020
3. Minutes of 182nd SEAC meeting held on 17/10/2020

With reference to the 3rd cited above, we were requested to furnish the following details to consider our request to grant environmental clearance for our project. Kindly find the below details:

1. The proponent shall submit the compliance/action taken for all the conditions stipulated in the PWD inundation certificate Letter No. DB/T5 (3)/F-NOC-Arumbakkam/2020 dated 03.10.2020 with necessary documents/photographs.

The detailed compliance report for the conditions stipulated in the PWD Inundation letter is enclosed as Annexure I.

2. The proponent shall submit the Village Map, 'A' Register & FMB Sketch for the proposed project site.

The Village Map, 'A' Register and FMB Sketch for the proposed project site is enclosed as Annexure II A, II B and II C.

The project site is abutting to River Cooum, hence the project proponent shall submit the detailed Disaster Management Plan.

Detailed disaster Management Plan for the proposed project is enclosed as Annexure III.

3. The project proponent shall furnish the land use classification obtained from CMDA.



5. The project proponent shall revise the water balance as per the MoEF& CC guidelines for the building project.

Revised water balance as per the MoEF& CC guidelines for the proposed project is enclosed as Annexure V.

6. The project proponent shall submit the details of STP & GWTP system and the design details based on the characteristics of the sewage & grey water.

Detailed design proposal for STP & GWTP system is enclosed as Annexure VI

7. The project proponent shall furnish the necessary permission from the CMWSSB for supply of fresh water.

Permission letter from CMWSSB for supply of fresh water is enclosed as Annexure VII

8. The project proponent shall furnish the necessary permission from the competent authority for the disposal of excess treated sewage for avenue plantation along with the revised EMP.

Letter from greater Chennai Corporation for disposal of excess treated sewage for avenue plantation along with the revised EMP is enclosed as Annexure VIII

9. The proponent shall submit the revised solid waste management plan as per the National Building Code (NBC) Guidelines for the residential buildings.

Solid waste generation for the proposed project is calculated as per the NBC guidelines for the residential buildings. The detailed solid waste management plan along with the NBC guidelines reference is enclosed herewith as Annexure IX.

10. The proponent planned the children's park near to the River Cooum and OSR in two different places. Hence the proponent shall furnish the revised lay out providing the Children's park in other side of the project site and OSR in one compact place with entry/exit. The revised layout shall be submitted accordingly.

The revised layout plan showing revised location of Children's park area and OSR area is enclosed herewith as Annexure X. We also would like to inform you that proposal of OSR at two locations is accepted by CMDA and copy of their letter demanding fee payment is enclosed for your reference as Annexure X A

11. The proponent shall revise proposal of rain water harvesting system by providing a greater number of rainwater collection sump instead of more numbers of rain water collection pits.

As suggested by SEAC we have increased the number of RWH sumps from 3 to 7 each of capacity 95 KL. The detailed write up collection and plan showing sump locations along with its dimensions is enclosed as Annexure XI.

12. The contour levels of the proposed site shall be marked in the layout. Based on contour map, a detailed storm water drainage plan shall be prepared considering the flood occurred in the year 2015 and also considering the surrounding developments.

Detailed storm water management plan based on the contour map is enclosed as Annexure XII.

13. The proponent shall calculate & furnish the height of the stack to be provided for the proposed DG set as per the MoEF & CC norms.

It is proposed to install D.G. sets of capacity 1500 kVA (2 nos) and 2000KVA (2 nos.) which will be operated only during TNEB power failure. The location of the DG sets will be near compound wall which (59.50m height). Stack height calculations as will be as follows;

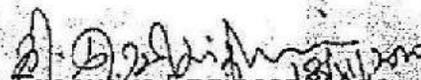
$$\begin{aligned} H &= h + (0.2) (\text{kVA})^{0.5} \\ &= 59.50 + 0.2 (2000)^{0.5} \\ &= 59.50 + 8.94 \\ &= 68.44 \end{aligned}$$

$$\begin{aligned} H &= h + (0.2) (\text{kVA})^{0.5} \\ &= 59.50 + 0.2 (1500)^{0.5} \\ &= 59.50 + 7.74 \\ &= 67.24 \end{aligned}$$

Where, H = Total height of stack in meters from ground level
h = height of the building in meters

Maximum stack height required as per CPCB norms is 68.44m and we will provide stack to a height of 70 m from ground level which will meet CPCB norms.

With the above detail submission, we request the SEAC to consider our reply and process our application seeking Environmental clearance and issue the same as early as possible.

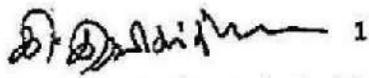

Executive Engineer & Ado
Anna Nagar Division

Encl: As above.

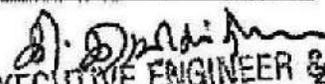
Sub: Compliance letter to the conditions received from PWD letter no. DB/ T5(3)/ F- NOC
 - Arumbakkam/ 2020 / dated 03.10.2020- Regd.

Ref: i. Our online proposal no.SIA/TN/MIS/161937/2020 dated 11/10/2020
 iii. Minutes of 182nd SEAC meeting held on 17/10/2020

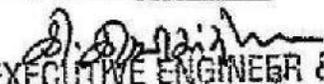
S. No.	Conditions	Reply
1.	<p>The applicants' land should be filled with earth filling with proper compaction to the minimum level of (+)13.475 m i.e. 1.11 m above the TBM on Inner Ring Road bridge road top level (+)12.370 m MSL on southern side to protect the site from inundation during floods. The process of earth filling and compaction should be done in layers of not more than 0.30m depth to achieve the required degree of compaction for the depth varying from 1.59m to 5.61m depending upon the existing field levels. Hence the stilt floor should be kept above the level of (+)13.475 MSL to safeguard against inundation in any form. The TNHB shall allocate the stilt floor/basement floor exclusively for parking amenities to avoid human casualties. The resident should reside only in the first floor. Also, the applicant should provide emergency pumping operation for the seepage water, if it is proposed to have basement floor and as well as dewatering arrangement during flood period.</p>	Noted and Agreed
2.	<p>The TNHB should construct an all round RCC flood protection wall for their premises with the top level of the wall fixed at (+)13.475 m on the Northern side leaving 15m width of buffer zone along the river</p>	Noted and Agreed


 EXECUTIVE ENGINEER & ADO
 ANNA NAGAR DIVISION

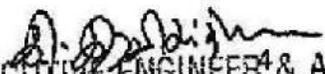
	stretch boundary.	
3.	<p>A minimum offset of 15metre (circular issued by the office of the Commissioner of Town and Country Planning, Chennai – 2 vide ROC No. 4367/2019-BA2/13.03.2019) should be kept devoid of any construction activities and the site should be as it is in conditions before filling the earth and the Coovum river width of about 118m should be permanently provided excluding the width of buffer zone otherwise the technical opinion along with NOC of this department will be deferred without any correspondence and PWD/WRD will not be held responsible. The width of the river earmarked in this sketch should never be altered and must be maintained at all time as per Revenue records. This is mandatory and no permanent structure should be constructed to allow water to drain without causing inundation or afflux on the upstream side of the river.</p>	<p>On joint inspection by Revenue, PWD, & TNHB officials, the boundary of the TNHB land is fixed and FMB sketch has been issued by the Assistant Director of Land & Survey recods vide Lr.No 4367/2333/2020 dt:11.09.2020 for an extent of 3 Hectares & 30 ares and for that patta is also available in the name of the TNHB for an extent of 3 Hectares & 30 ares(FMB & TSLR copy enclosed)</p> <p>Accordingly to the FMB sketch the width of the coovum river is only 78.80m instead of 118m as stated by PWD, But on considering the river flow the TNHB scheme has been redesigned so that 39.2m of land along the coovum river side is left over so that the width of the coovum river is off 118m on the northern side of the TNHB boundary and the offset of 15m buffer zone is also provided.</p>
4.	<p>The applicant should prepare the layout proposal by considering the suitable internal storm water drainage network of suitable size not less than (peripheral – 1.50 m x 1.50m & lateral -0.90m x 0.75m), rain water harvesting, roads along with road side drain</p>	<p>Noted and Agreed Layout enclosed.</p>


 EXECUTIVE ENGINEER & ADO
 ANNA NAGAR DIVISION
 Tamil Nadu Housing Board,
 Tirumangalam, Chennai - 600 101.

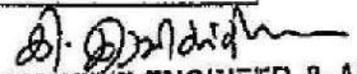
	<p>on both sides and sewerage alignment and its disposal &garbages/ debris and other solid waste management as per norms in existence with the applicants' land according to the existing rules in force and should get proper approval from the competent authority without fail.</p> <p>The sewage or any unhygienic drainage (I,e, treated or untreated) should not be let into the drain/ river course at any cost and the debris and the other materials should not be dumped into the drain /river course obstructing free flow of water. The applicant should make drain networks at their own cost and the same is to be connected to the natural storm water drainage or river. There should not be any hindrance to the free flow of internal drain to the downside area. It must be ensured that any treated /untreated sewage from the TNHB property shall never be let into the river at any event of time.</p>	
5.	<p>At present the applicant fixing their northern boundary with available latest documents as FMB, Block map &Patta which lies along the middle portion of the existing Cooum river where the baby canal recently formed during the restoration works by CRRT which seems to be an encroachment in S.F. No. 253 of Arumbakkam and S.F. No. 97 of Naduvankarai village. Originally the baby canal width formed for about 14m along the middle portion of Cooum river reduced to 4m wide at this stretch due to dumping of earth</p>	<p>On joint inspection by Revenue, PWD, & TNHB officials, the boundary of the TNHB land is fixed and FMB sketch has been issued by the Assistant Director of Land & Survey records vide Lr.No 17/2333/2020 dt:11.09.2020 for an extent of 3 Hectares & 30 ares and for that patta is also available in the name of the TNHB for an extent of 3 Hectares & 30 ares(FMB</p>


EXECUTIVE ENGINEER & ADD
 ANNA NAGAR DIVISION
 Tamil Nadu Housing Board,
 Tirumangalam, Chennai - 600 101.

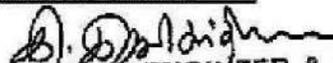
	<p>by TNHB without concurrence and prior permission from PWD/WRD. In case of any legal proceedings in respect of the developmental activities in the said water course poromboke, since it is violation against prevailing Government orders, Circulars, Hon'ble Supreme court & High Court, NGT judgments, Tank Protection Act 2007 and Go MS No. 78/ H & UD (UD4 (3) D /04.05.2017 etc. This was already brought to the notice of TNHB officials during marking. Hence the PWD/WRD will not be held responsible if any litigation arises. The above proposal is to be deferred due to the above said reasons. Also, if there is any discrepancy in the revenue records produced by the applicant, and the applicant will be held responsible. Hence, the applicant should immediately restore the Coovum river with sby canal to its original standards as per G.O. Ms. No. 78/ H & UD (UD 4(3)D/ 04.05.2017 or otherwise upper reaches will out flank and leads to inundation and affect public and property and this could create flood surge and afflux during heavy flood and inundate the adjoining areas. It should be restored before the ensuring North east monsoon which will set in by first week of October 2020.</p>	<p>& TSLR copy enclosed) Accordingly to the FMB sketch the width of the coovum river is only 78.80m instead of 118m as stated by PWD, But on considering the river flow the TNHB scheme has been redesigned so that 39.2m of land along the coovum river side is left over so that the width of the coovum river is off 118m on the northern side of the TNHB boundary. Hence the earth dumped on the baby canal was removed (photos enclosed).</p>
6.	The TNHB should not carry out any other cross masonry structures across the river without prior permission from PWD/WRD.	Noted and Agreed
7.	The TNHB must get the clearances from relevant departments such as MoEF, Pollution	Noted and Agreed. As our site does not fall under CRZ criteria we would be proceeding for


 EXECUTIVE ENGINEER & ADO
 ANNA NAGAR DIVISION
 Tamil Nadu Housing Board,
 Tirumangalam, Chennai - 600 101.

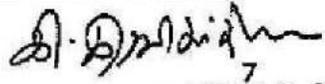
	Control Board and CRZ, CRRT, etc. if mandatory, before executing the project including NHAI alignment clearance in court case and which is pending in Honb'le Supreme court.	obtaining Environmental Clearance from SEIAA, Tamil Nadu and respective consent from Tamil Nadu Pollution Control Board. A total extent of 8826 Sqm is reserve for CRRT & NHAI Alignment proposed.
8.	The applicant should do proper soil test, and suitable foundation should be selected depending upon the soil condition and the structural design should be obtained from the approved and qualified Structural Engineer.	Noted and Agreed
9.	The PWD/WRD, will not be held responsible for the structural stability, safety and soundness of the building proposed by the applicant and PWD/WRD specifically recommend only for inundation point of view. The applicant is solely responsible for the structural safety and stability of the proposed building and at any cost PWD/WRD will not be held responsible for design and drawing adopted for proposed construction.	Noted and Agreed
10.	The applicant should obtain clearance for the dry lands are to be converted into other zone from the agricultural zone by the competent authority. The applicant should get clearance certificate for their site from the Revenue Department to make sure that the site is not an encroached property from the water body as well as confirming this proposed site boundaries.	Noted and Agreed
11.	The PWD/WRD officers should be allowed to inspect the site at any time during execution and thereafter, if necessary. Advance	Noted and Agreed


EXECUTIVE ENGINEER & ADO
 ANNA NAGAR DIVISION
 Tamil Nadu Housing Board,
 Tirumangalam, Chennai - 600 101.

	intimation should be given to the PWD/WRD officers concerned before commencement of work. PWD/WRD is giving opinion only in connection with inundation aspects and does not deliver any rights to the applicants to encroach the PWD/ Government Lands.	
12.	The permission granted to the applicant, should not be altered/modified/changed to any others. Based on the records submitted by the applicant, the inundation as well as permission is granted. If any documents seem to be fake/manipulated/fabricated, in future the above inundation NOC along with permission will be cancelled without any correspondence and deposited amount for caution deposit will not be refunded. Hence the applicant is solely responsible of genuineness of the documents submitted.	Noted and Agreed
13.	The applicant should abide by the rules and regulation of the PWD/WRD from time to time. The applicant should also abide court of law in both state & Central level from time to time.	Noted and Agreed
14.	PWD/WRD is giving opinion only in connection with the inundation aspect and does not deliver any rights to the applicants to encroach the PWD/ Government lands. The NOC for their site issued from PWD/WRD is purely issued on the basis of inundation point of view.	Noted.
15.	The applicant should provide adequate passage along the Cooura river course which is necessary for accessing the heavy	Noted and Agreed. Revenue record enclosed.


EXECUTIVE ENGINEER & ADO
 ANNA NAGAR DIVISION
 Tamil Nadu Housing Board,
 Tirumangalam, Chennai - 600 101.

	<p>machinery for maintenance work improvements work of the river to be carried out by PWD/WRD. The applicant should not object at any time for the maintenance work/ improvement work of the Cooum river to be carried out by PWD/WRD. The applicant should give an undertaking in writing to the effect that the above proposal will not obstruct in case any maintenance/improvement/development works in Cooum river lies hands as per Revenue records [FMB] which are to be carried out by PWD/WRD in future periodically.</p>	
16.	<p>And it is found that the TNHB also encroached in S.F. No. 127, 12B and 129 as well as TNSCB in S.F. No. 117 in Naduvankarai village i.e. left bank on the northern side of river of the proposed site. Cooum River should be wider and the river width restored with respect to the old year 1906 Revenue Record measurement as per the G.O. Ms. No. 78/H & UD (UD (3) D/ 04.05.2017 immediately.</p> <p>The owner of the document received from the applicants in respect to the ownership is purely of applicant's responsibility and it is only for reference purpose to this department. The legal validity of this document should be verified by the Development/ Revenue authorities/ CMDA. The specific remarks on inundation are purely issued on technical grounds in respect to the physical location of</p>	Noted and Agreed

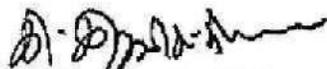

 EXECUTIVE ENGINEER & ADD
 ANNA NAGAR DIVISION
 Tamil Nadu Housing Board.

With the above submission of the compliance letter to the PWD conditions, we request the SEIAA to consider our reply and process our application seeking Environmental clearance and issue the same as early as possible.

Thanking you

Yours sincerely,

For M/s. Tamil Nadu Housing Board



Executive Engineer & ADO
Anna Nagar Division, Chennai,
Tamil Nadu - 600 101

No. 107
ARUMBAKKAM
SALDAPET TALUK
CHINDELUR DISTRICT
 Area 470.50 Acres
 Scale 1:25,000 = 1 inch = 2 miles

Scale 1:25,000 = 1 inch = 2 miles



Notes: 1. This map is the Official Map of the Government of India. 2. No other map is to be used in connection with this map. 3. The Government is not responsible for any error or omission in this map.

FOR OFFICIAL USE ONLY

Proposed Site

No. 76
NADUVAKKARAI

No. 75
PERIYAKUDAL

No. 77
OHINNAKUDAL
TAN

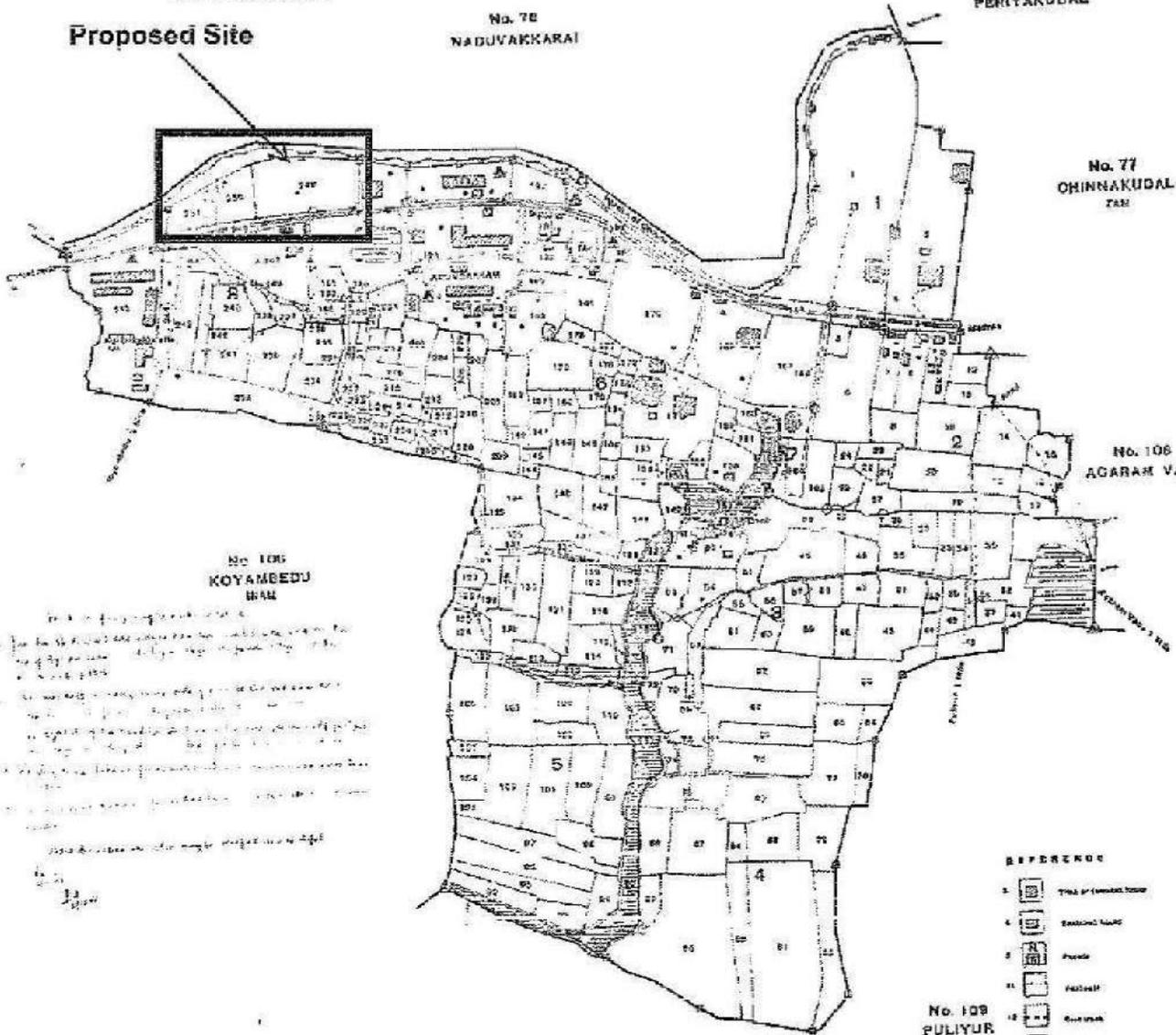
No. 106
AGARAM VADA

No. 105
KOYAMBEDU
IRAM

No. 109
PULIYUR

1. This map is the Official Map of the Government of India. 2. No other map is to be used in connection with this map. 3. The Government is not responsible for any error or omission in this map.

1. This map is the Official Map of the Government of India. 2. No other map is to be used in connection with this map. 3. The Government is not responsible for any error or omission in this map.



REFERENCE

- 1. This or (small) house
- 2. Enclosed land
- 3. Pond
- 4. Field
- 5. Orchard
- 6. Dry and open area
- 7. Proposed railway
- 8. Railway
- 9. Canal
- 10. Well
- 11. Village boundary
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**CERTIFICATE
EXTRACT FROM THE TOWN SURVEY LAND REGISTER**

District: Chennai Taluk: Aminjikarai Town: Arumbakkam Ward: 601

S.No	Block Code and Name or Locality	Number		D.Sur No and Letter	Municipal Door No.	Govt. Mills, Zamindari, Inam	Dry, Wet, Unassessed, Preamble, House-ite	S.W. or Irrigation and Class	If Double Crop, Rate of Composition	Clear and Sort of Soils	Tareha	Area / Hectare per Rate			Extent By Town Survey			Assessment		Municipal Register	Adanga	New Line holding is utilized	Remarks
		Sub Field	Div.									Rs.	Paise	Hectare	Ares	Sq. Meter	Municipal	Govt.					
1	Block: UDUKAL	2	0	249 / 1,2,3,5,250 / 1,2,3,4,5-6,251,252 / 2A -		Ravaluvar	Land		-	0-		0.00	3	30	0.0	-	76.25	-		State Polishing Board	Kalidam	TR DT: 02-03-2016	

Certified that the above is a true extract from the Town Survey Land Register maintained in Taluk.

E Signature / Digital Signature: 02-08-2016

Name / Name: Sekar S

Designation / Designation: Tahsilidar

Location / Place: Sindagarai Circle / Aminjikarai, Chennai District / Chennai

Reference / Remarks:

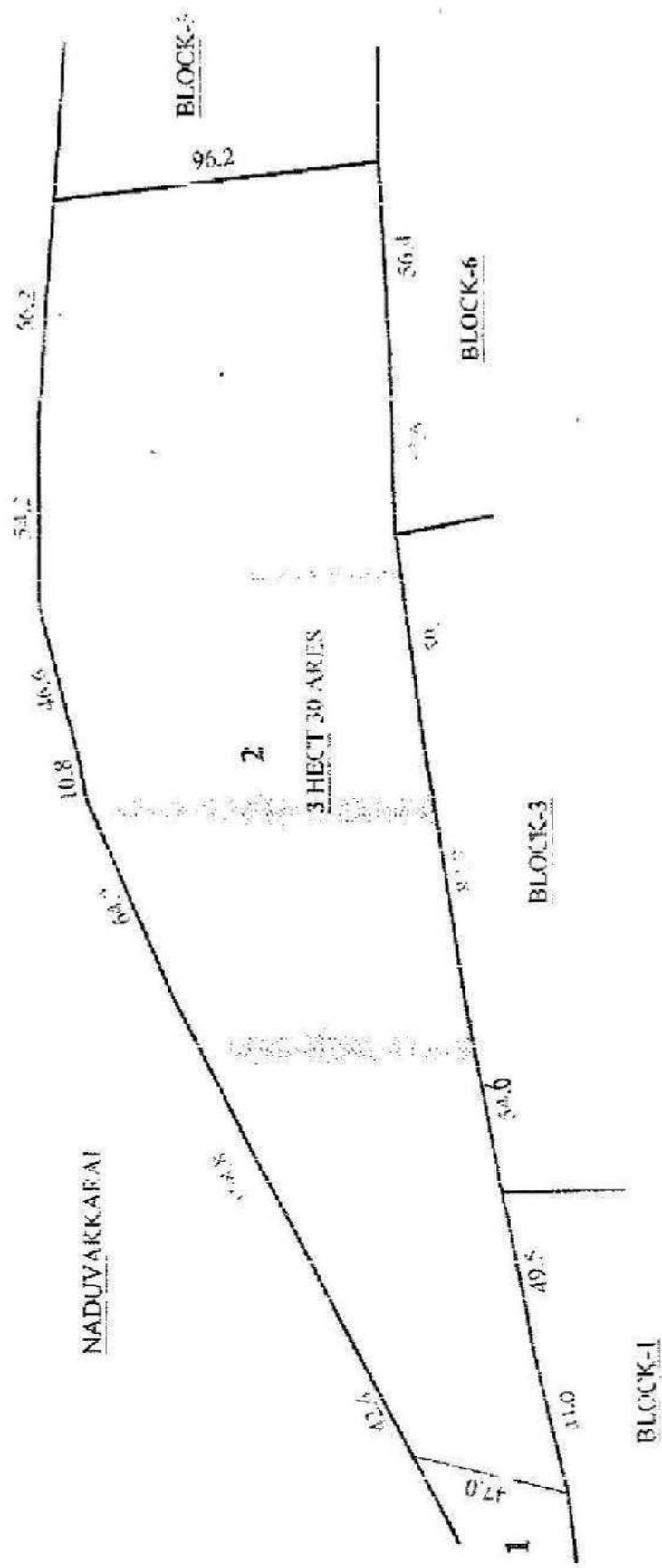
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The certificate was printed on 09-06-2020 at 03:41:11 PM.

2. If you wish to confirm the document details, please make sure you contact the Office of the Secretary of State.
Further Certificate Confirmation and Details, You may approve Tahsilidar contents.

Note:	
	1. The above information / certificate duplicate details are from the e-register. Make sure they enter the reference number URS / 02/08/001/001/0004/270 on their website at http://eservices.tn.gov.in .
	2. This information was printed on 09-06-2020 at 03:41:11 PM.
	3. Read through the 3D barcode reader of the handset or here and check the website for 3G / GPRS route.

DISTRICT : CHENNAI
TALUK : AMINJIKARAI

TOWN : ARUMBAKKAM
BLOCK NO-4 TS NO-2

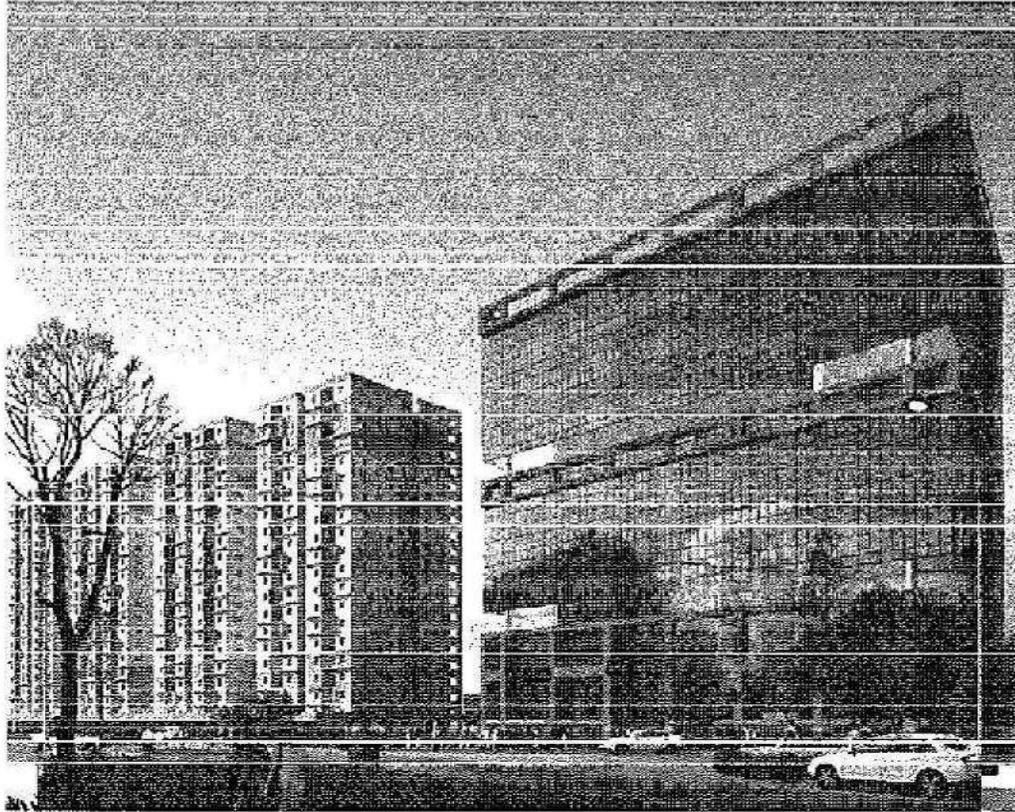


DEPUTY INSPECTOR OF SURVEY
TAMIL NADU
CHENNAI



Tamil Nadu Housing Board
தமிழ்நாடு வீட்டு வசதி வாரியம்

DISASTER MANAGEMENT PLAN
FOR
MIXED USE DEVELOPMENT AT ARUMBAKKAM



Submitted by

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DISASTER MANAGEMENT PLAN (DMP)

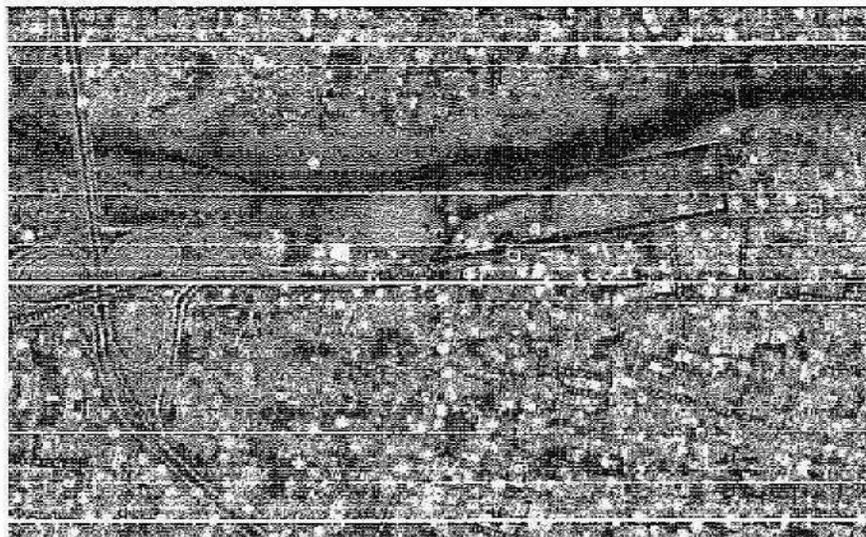
Disaster Management is the creation of the plans or through which communities reduce vulnerability to hazards & cope with disaster. Disaster Management Plan is prepared from guidelines received from Disaster management cell under respective Municipal Corporation, which will be helpful to occupant in case of disasters. It shall advice role players how to lead in case of disaster to prevent or to at least mitigate negative impacts and it shall be updated based on practical experience and /or actual site requirements.

1 INTRODUCTION

The Government of Tamil Nadu, Tamil Nadu Housing Board (TNHB) has proposed the construction of Mixed use development comprising of Commercial cum Residential complex in S.No.2 and Block No: 4 of Arumbakkam village, Aminjikkarai Taluk (previously Egmore - Nungambakkam Taluk), Chennai District, Tamil Nadu.

The total plot area acquired for the project is about 33,000 sqm. Moreover, will have a total built up area of 1,35,031.13 sqm.

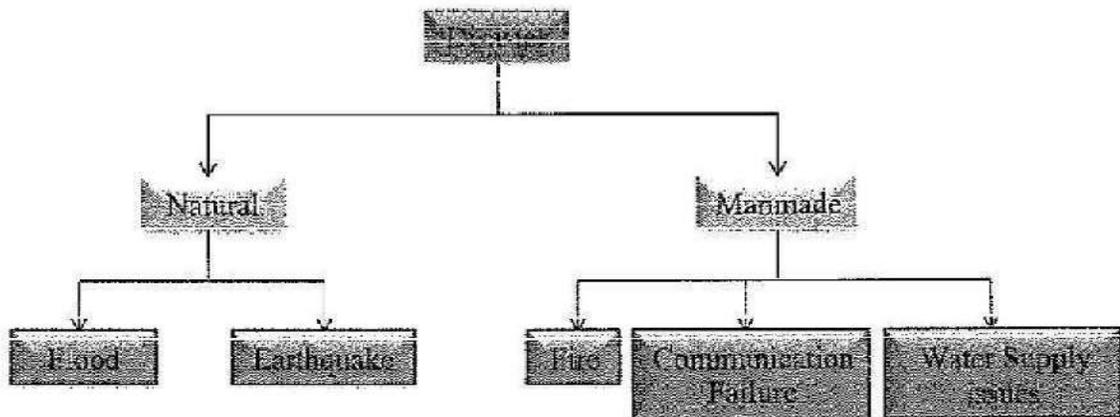
The detail location is given in Figure 1.1.



As per Disaster Management Act 2005, "DISASTER MANAGEMENT" means a continuous and integrated process of planning, organizing, coordinating, and implementing measures, which are necessary or expedient for

- Prevention of danger or threat of any disaster;
- Mitigation or reduction of risk of any disaster or its severity or consequences;
- Capacity - building;
- Preparedness to deal with any disaster;
- Prompt response to any threatening disaster situation or disaster;
- Assessing the severity or magnitude of effects of any disaster;
- Evacuation; rescue and relief;
- Rehabilitation & reconstruction.

Disaster is a sudden, calamitous event bringing great damage, loss, and destruction and devastation to life and property. The damage caused by disasters is immeasurable and varies with the geographical location, climate, and the type of the earth surface / degree of vulnerability. This influences the mental, socio-economic, political, and cultural state of the affected area.



Different categories of Disasters

2 RISK ASSESSMENT AND VULNERABILITY ANALYSIS

Without Vulnerability, there is no disaster. The process of Risk assessment starts with the assessment of potential disasters through a combination of hazards mapping and vulnerability analysis. Risk assessment was carried out by:

- i. Hazard mapping i.e. gathering information regarding location
- ii. Frequency
- iii. Duration of the hazard in an area

Risk Analysis

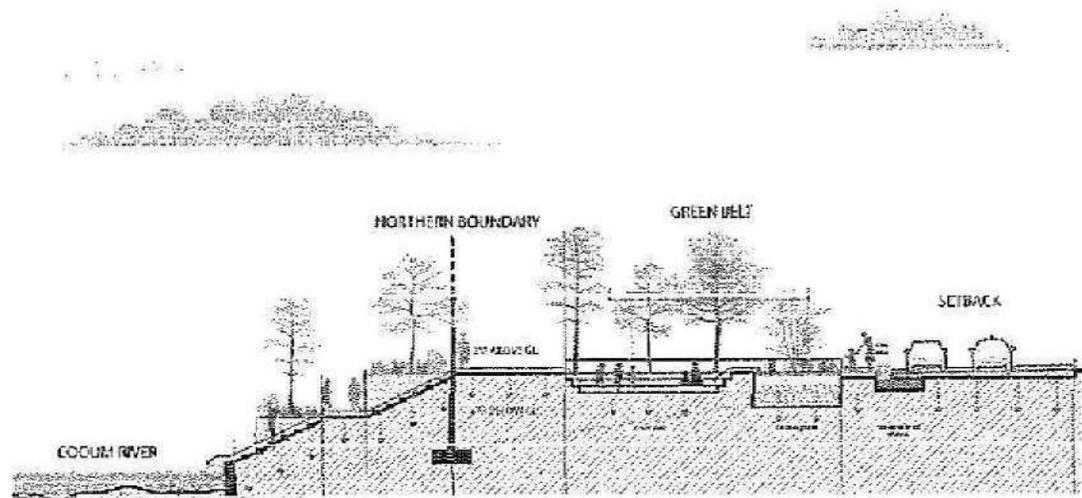
Risk assessment for disasters depends on the following conditions and they were considered for this study:

Table 1.1: Risk assessment and vulnerability mapping of various disasters

Name	Vulnerability Mapping	Risk Assessment	Remark
Flood	The vulnerability of floods at the proposed site would depend on flooding of coom river the drainage pattern, sewerage system, and heavy rainfall and others.	It is natural made disaster. If it is not dealt professionally, it can cause health hazard to the occupant, and it can affect the structural design on the building.	<p>Proper drainage strategy has been already adopted for the proposed building.</p> <p>The storm water and drainage will be checked and clean regularly by the society.</p> <p>Special effort would be taken prior to monsoon period for cleaning the drainage and nearby sewer lines. If needed, developer would assist in this activity.</p> <p>In order to avoid medical emergency, overhead and underground tank must be cleaned regularly, especially prior and after monsoon.</p> <p>Society manager will appoint professional organization who is involved in such activity.</p>

Earthquake	Proposed site of the high rise is located in Chennai which falls under Earthquake Zone III, moderate risk zone, as per the map showing seismic zones of India IS 1893 (Part I) : 2002.	It can happen any time of the year. It can damage the property as well as life. After effect of earthquake could lead to various effect like rain, flood, power failure, fire, etc.	Developer would use appropriate structural codes for construction of this building. If earthquake happens evacuation plan would be highlighted during mock drills and resident would be advised to follow the same to avoid any consequences.
Fire	Fire accidents could take place due to improper maintenance of electrical wiring, faulty wiring, and gas leakage etc.	It can happen due to man made errors like gas leak, failure of electrical appliances, or any other reason.	Developer would install sprinklers, smoke detectors, wet raiser etc. to prevent fire. Fire extinguisher would also be placed and resident would be made aware about the use of it. Resident would be made aware of gas leak and dealing with the same.

Flood:



Flood Retaining Wall on Northern Boundary

Cooum River is one of the major flood carriers in Chennai city, which drains the surplus water and discharge the flood into Bay of Bengal at Chepauk. The proposed site lies in close proximity with riverfront so flood retaining wall (2m above ground level) has been proposed throughout the site along the Cooum river and the proposed building has 0.6 m high plinth from the existing ground level / existing road level to avoid flooding.

3 MITIGATION AND PREPAREDNESS.

INVENTORY RESOURCES

Rescue Equipment's – Torch, batteries, Solar power, Battery operated radio; Candles and matches in waterproof container, Knife, Chlorine tablets or powdered water purifiers, Can opener, Essential medicines, Thick ropes and cords, Life jacket and Ladder to be stored at society manager office.

First Aid Materials - Disinfectant (dettol), Dressing material, soap, Band-Aid, antiseptic cream, medicines, antibiotics, scissor, bandages, burnol, crocin.

Ambulance and hospitals, Fire Brigades, Warning system, Direct to home (DTH), Battery-Less Hand Radio, Internet, Communication System and Training.

All these warning systems would be utilized by the proposed building for acquiring warning data and thus plan adequately for the disasters.

CONDUCT REGULAR MOCK DRILL & REPORT TO DMC:

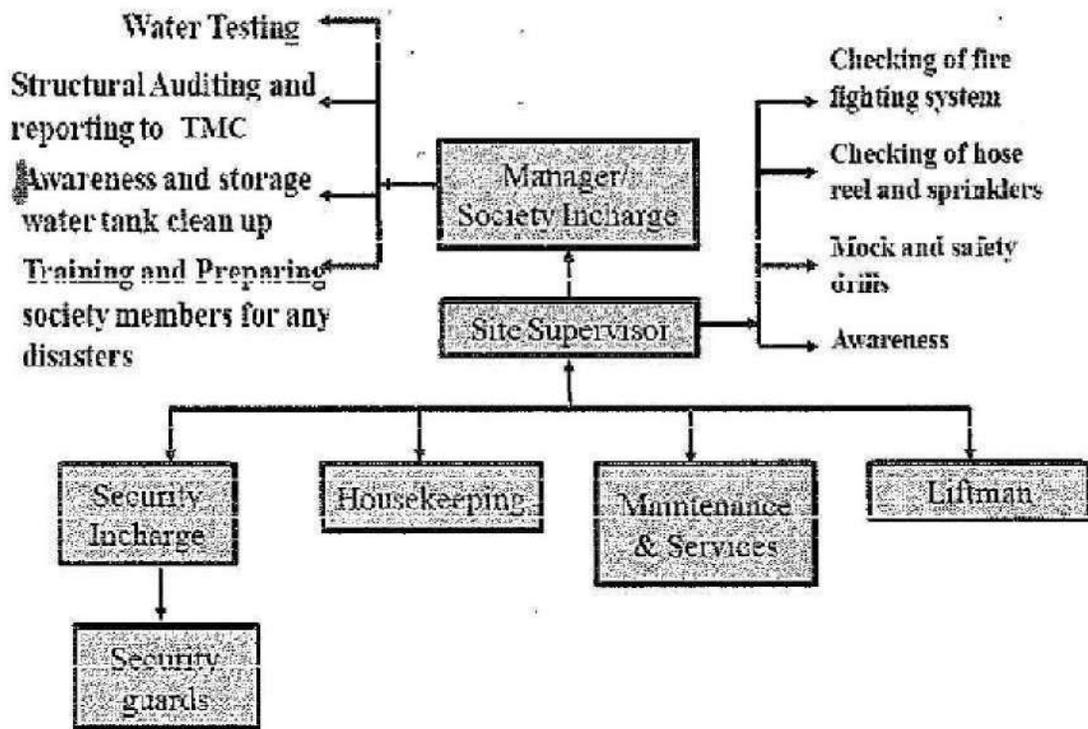
Regular mock drills will be conducted and proper records are maintained with DMP office. This will aid execution plans for emergencies avoiding confusion amongst occupants during such emergencies.

Table 1.2: Mock drills Plans

S. No.	Type of Drill	Frequency of drill	Who must attend
1	Earthquake safety	12 months	All occupants
2	Fire safety	Quarterly	All occupants
3	Fire and any other equipment maintenance	Quarterly	Security
4	Lift security	Monthly	Security, Maintenance & Service manager
5	Water management	Monthly	Security, Maintenance & Service manager
6	Safety kit check	Half Yearly	Security, Safety manager and volunteers
7	Overall safety awareness program	15 th August and 26 th January (every year)	All occupants

4 RESPONSE PLAN

The detail of disaster management cell (DMC) is given below in Figure 1.2



5 CONTROL ROOM

Society office will act as control room during a disaster and manager will take charge through PA system for proper evacuation process.

Fire Water Tank Capacity	OHT Tank – Commercial Block 1 : 20 KLD Residential Block 2 : 25.80 KLD Residential Block 3 : 27.10 KLD		
	UGT Tank – 502.4 KLD		
Refuge floors	Commercial Block 1- 6, 9, 12, 15,18th floor.		
Refuge Areas	Refuge floor	At the height of the refuge area from ground level in meter	Distance in between two refuge areas in meter.
	6 th floor	22.80 m	11.40 m

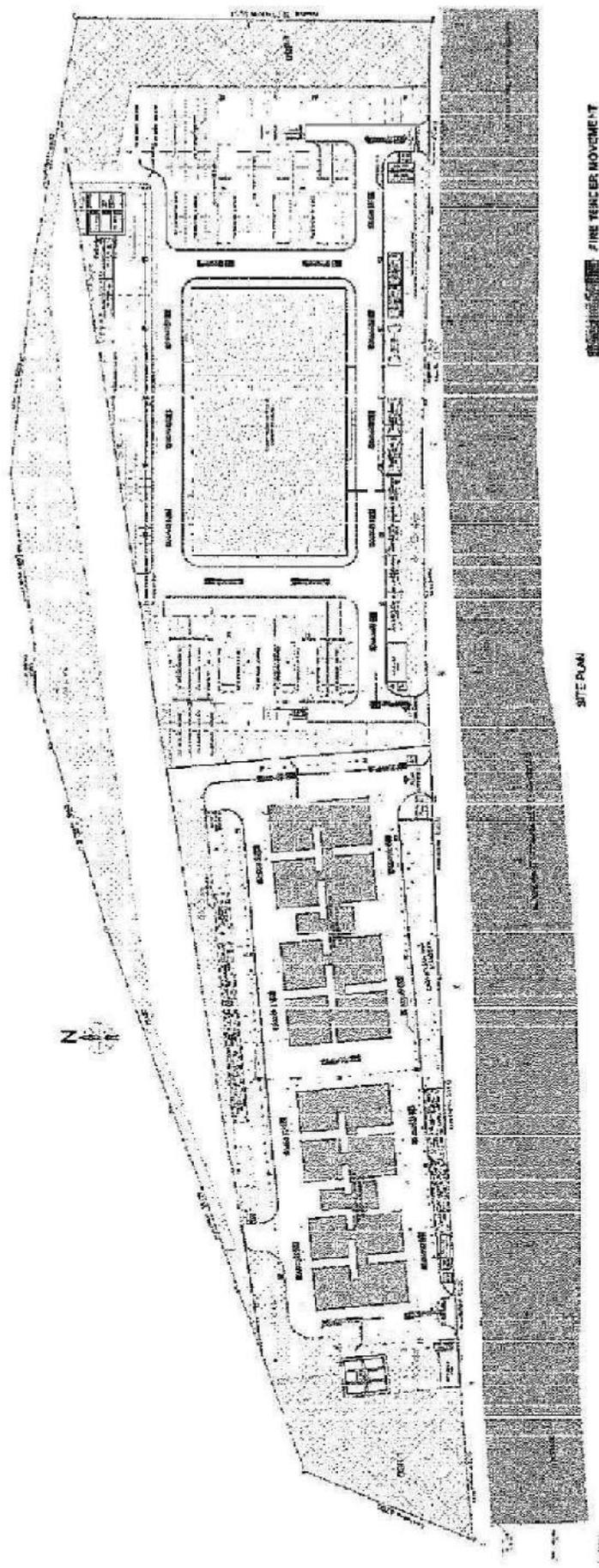
	9 th floor	34.20 m	
	12 th floor	45.60 m	11.40 m
	15 th floor *	57.00 m	
	18 th floor	68.40 m	

Resource mapping of all the Emergencies Material available in the building are shown

- i. First aid boxes
- ii. Sprinklers
- iii. Equipment's to be handled during various emergencies has been enlisted in the given Table 1.4 . These assets are fixed, i.e. non-movable assets.

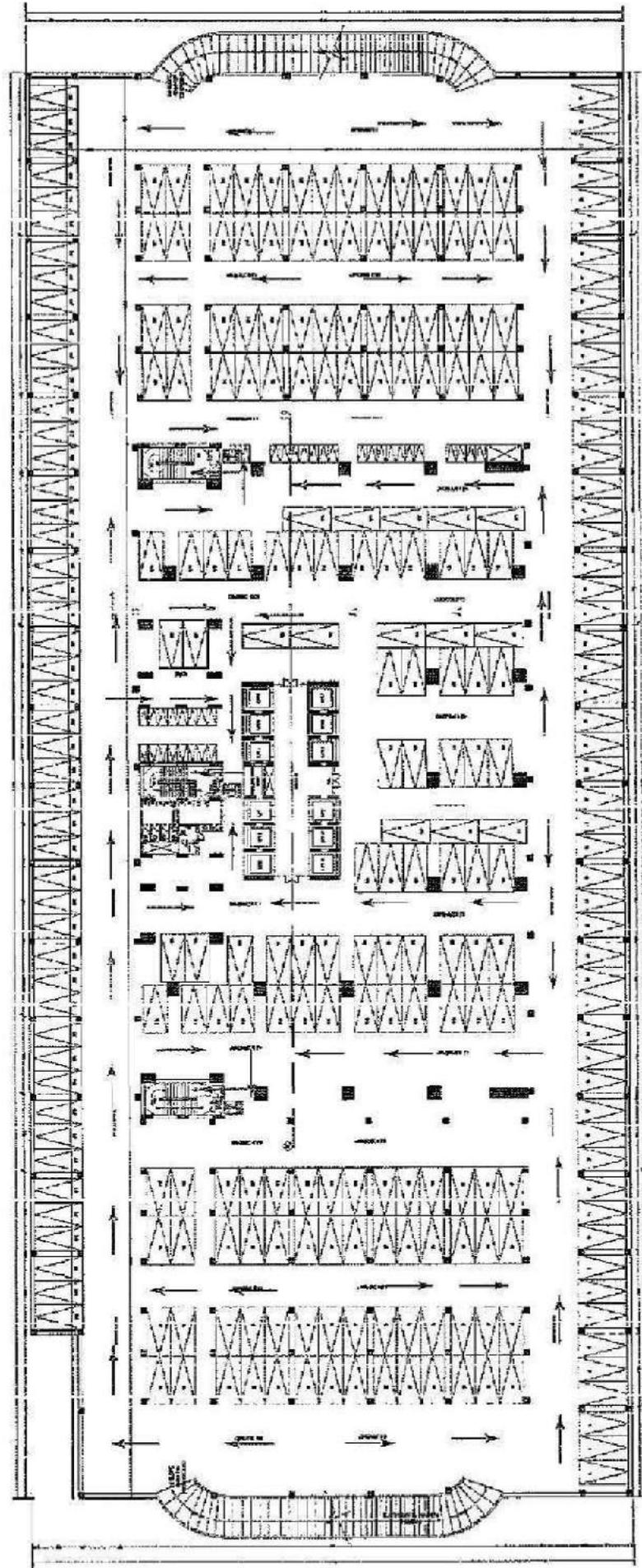
Table 1.3: List of Various Fixed Emergency Assets / Equipment's

Emergencies	Description	Nos. / Capacity
Overall	First Aid Kit	One at each floor
Fire & Fire Alarm	Firefighting water tank	Underground firefighting Tank of total cum capacities below ground. Overhead fire tank at terrace floor of each Building.
Fire & Fire Alarm	Fire Hydrant System	External Hydrant pipe is buried at Ground level & internal Fire hydrants are provided on each floor.
Fire & Fire Alarm	Portable Fire Extinguisher	On each floor, 2 Portable fire extinguishers are proposed; Also provided at parking slot, refuge area & Meter room.
Power Failure	Diesel generator	Four DG Sets of capacity



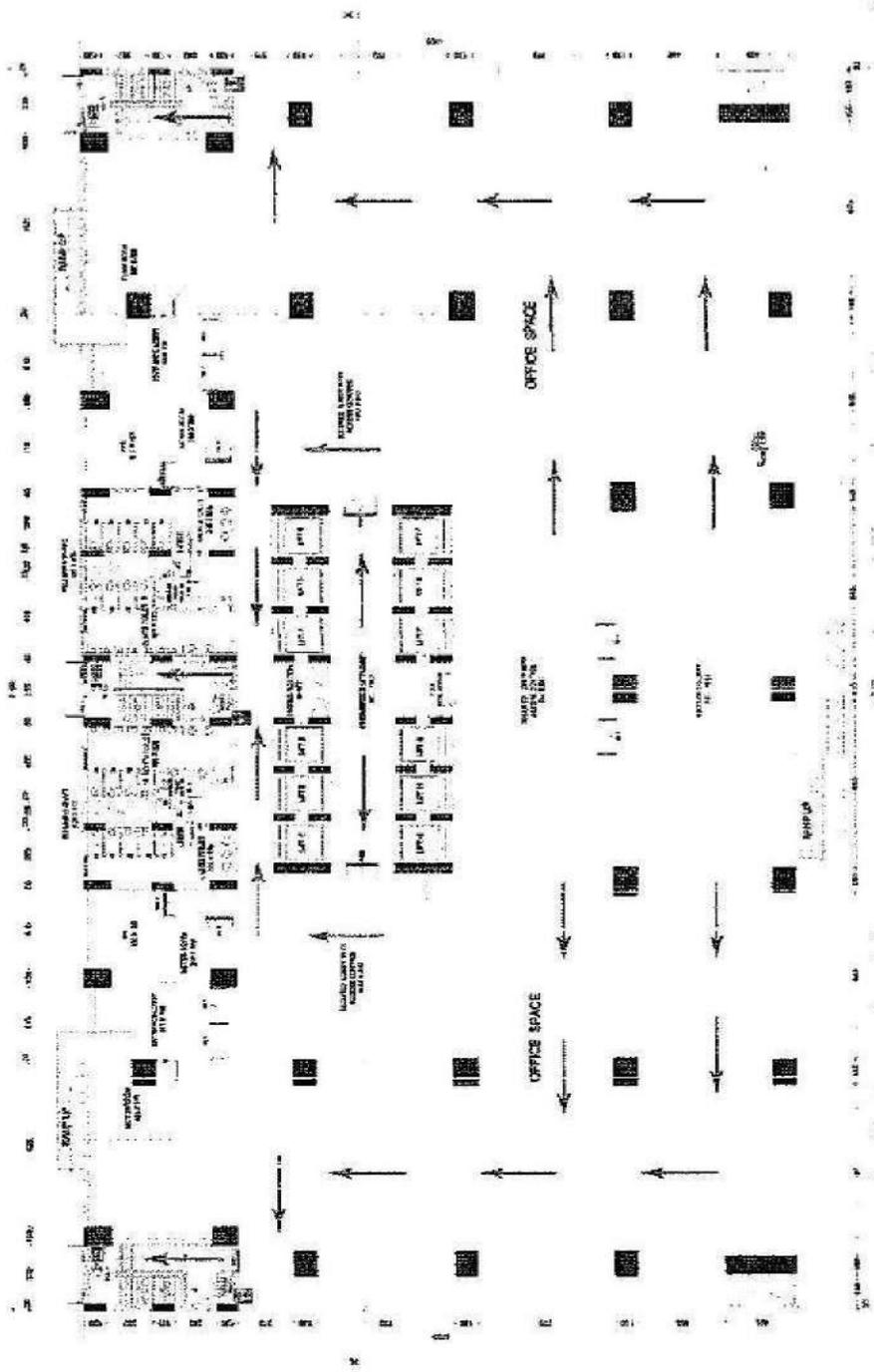
Fire Engine Movement plan is given in Figure 1.3

All the evacuation maps would be displayed at the corridor and record would be maintained at society office.



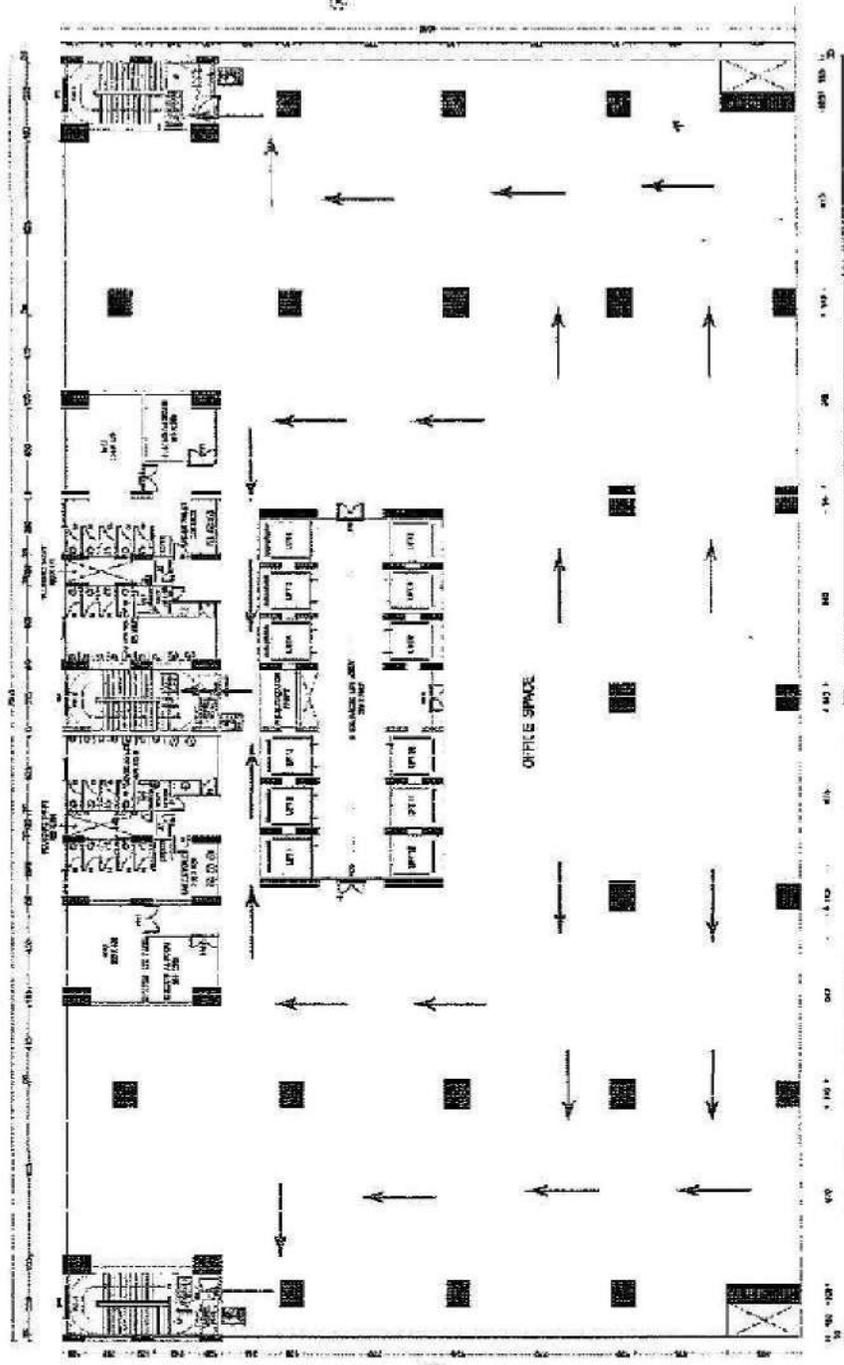
OFFICE BLOCK BASEMENT 1&2 (213+253 = 556 CARS)

-  Fire Exit Door
-  Fire Extinguisher
-  Fire Call Point
-  Fire Exit Route
-  Fire Resistant Door
-  Fire Escape Staircase



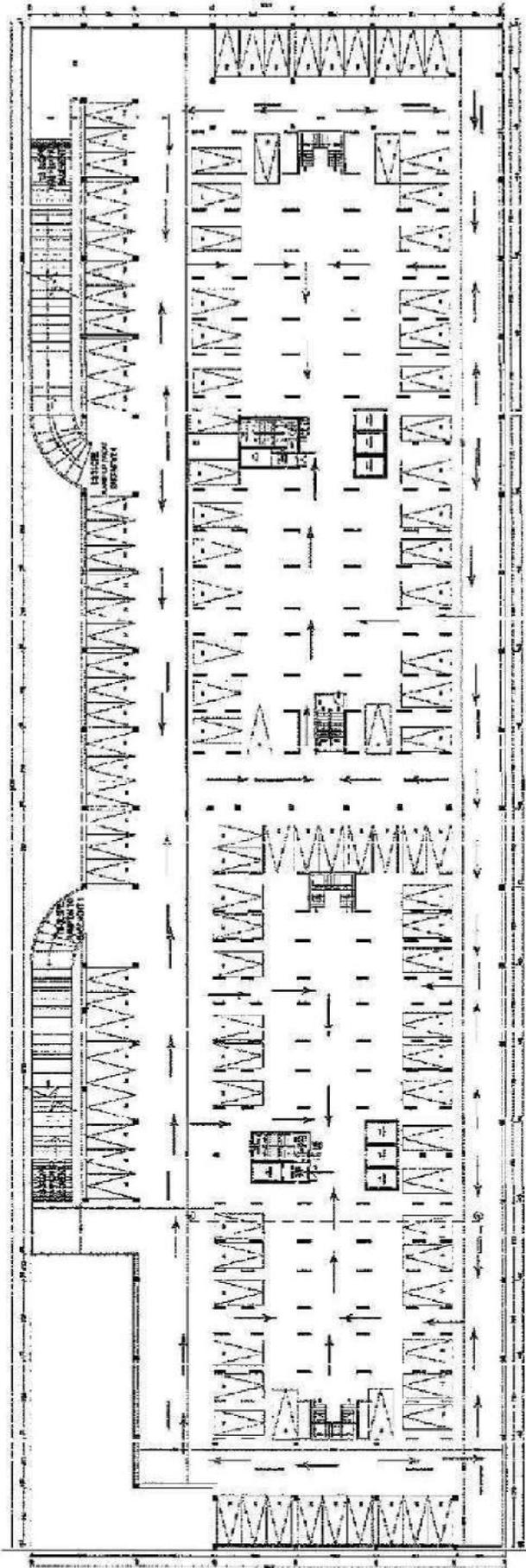
OFFICE BLOCK - GROUND FLOOR PLAN

-  Fire Exit Door
-  Fire Extinguisher
-  Fire Call Point
-  Fire Exit Route
-  Fire Resistant Door
-  Fire Escape Staircase



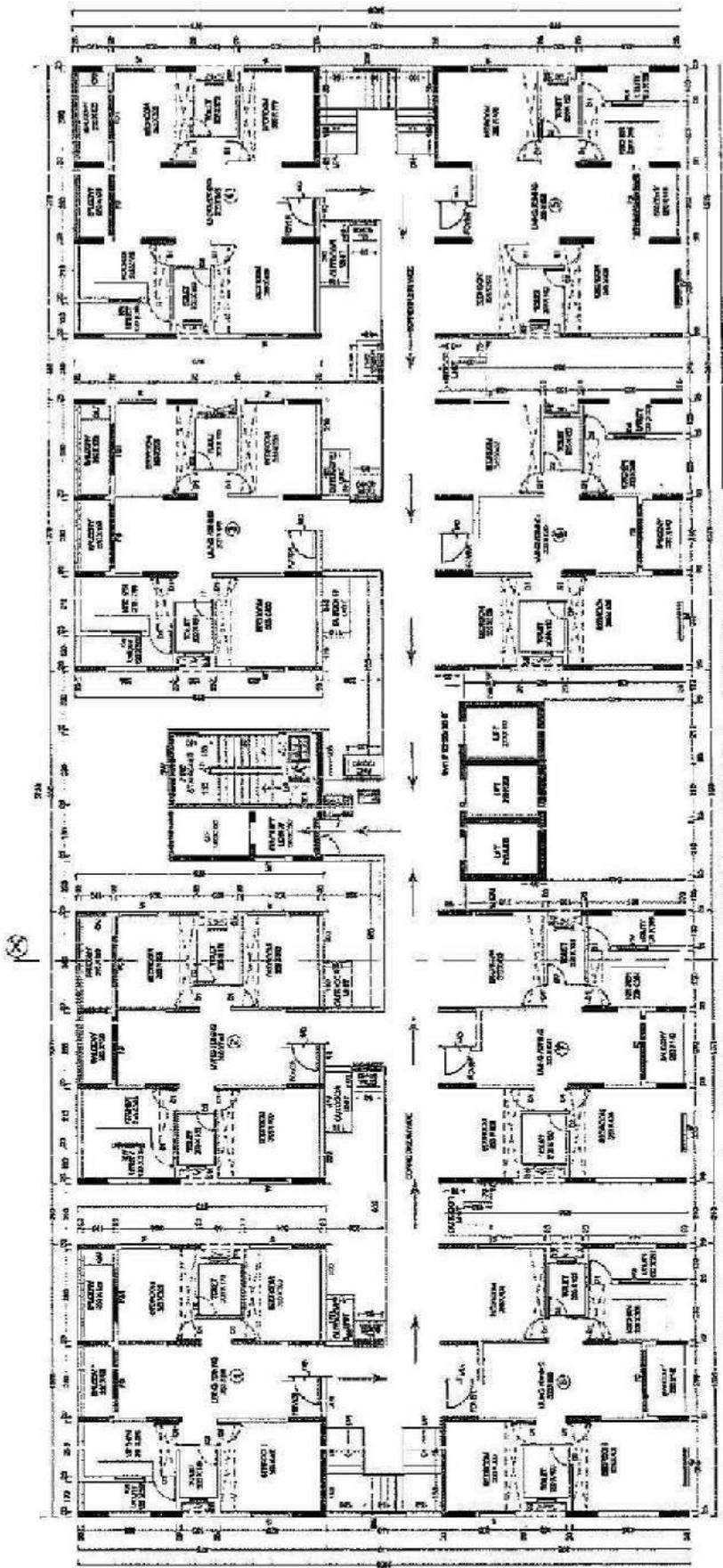
OFFICE BLOCK - TYPICAL FLOOR PLAN
 1,2,3,4,5,7,8,10,11,13,14,16,17&19

-  Fire Exit Door
-  Fire Exit Route
-  Fire Extinguisher
-  Fire Extinguisher
-  Fire Call Point
-  Fire Call Point
-  Fire Resistant Door
-  Fire Resistant Door
-  Fire Escape Staircase



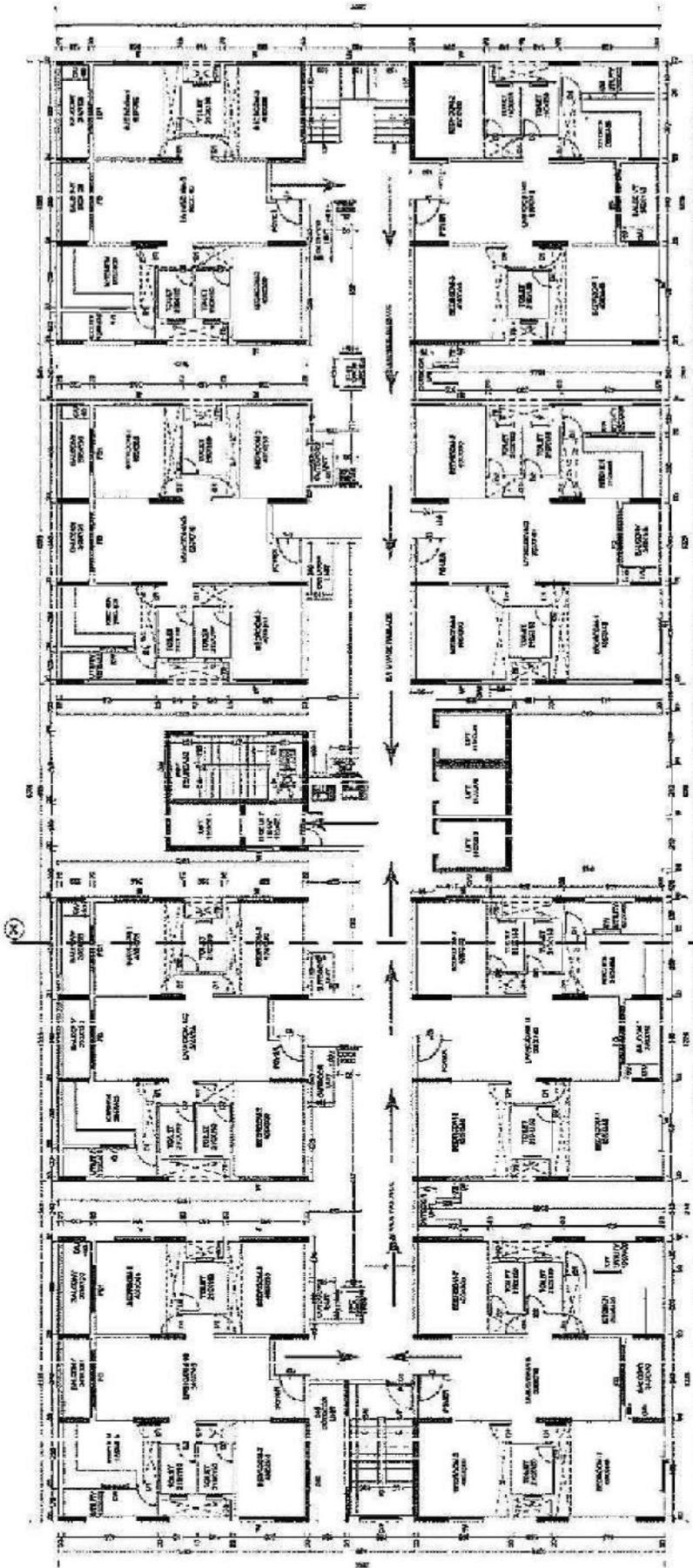
BLOCK - 2 & BLOCK - 3
RESIDENTIAL - BASEMENT 102 FLOOR PLAN

-  Fire Exit Door
-  Fire Extinguisher
-  Fire Call Point
-  Fire Exit Route
-  Fire Resistant Door
-  Fire Escape Staircase



RESIDENTIAL BLOCK - 2
 TYPICAL FLOOR PLAN
 1ST FLOOR TO 19TH FLOOR

-  Fire Exit Door
-  Fire Extinguisher
-  Fire Call Point
-  Fire Exit Route
-  Fire Resistant Door
-  Fire Escape Staircase



RESIDENTIAL BLOCK - 3
TYPICAL FLOOR PLAN (1ST FLOOR TO 19TH FLOOR)

-  Fire Exit Door
-  Fire Extinguisher
-  Fire Call Point
-  Fire Exit Route
-  Fire Resistant Door
-  Fire Escape Staircase

Safety Rules (Policy) at proposed mixed use development project

1. Consuming or using alcohol or illegal drugs in the workplace is prohibited. Occupants will not be allowed to work or to continue their shift if their ability to work is impaired
2. Where required, you must wear protective equipment appropriate to the task.
3. Maintain floor coverings in good condition to avoid tripping hazards caused by loose tile and frayed carpet edging.
4. Keep designated walkways and doorways clear, unobstructed, and free of electrical cords, boxes, and office equipment.

Table 1.4: Codes to be followed by developer during construction phase

Publication	Code no
Safety code for handling and storage of building material	IS 7969-1975
Safety code for scaffolds and ladders	IS 3696 (Part-I & II)- 1987 & 1991
Safety code for working with construction machinery	IS 7293-1974
Safety code for excavation work	IS 3764-1992
Safety requirements for floor and wall openings, railings and toe boards	IS 4912-1978
Safety code for demolition of building	IS 4130-1991
National building code of India, 1983	Part-VII
Safety code for erection of structural steel work	IS 7205-1974
Steel scaffoldings	IS 2750-1964
Code of practice for structural use of unreinforced masonry	IS 1905-1987
Code of practice for design and construction of foundations in soils: General Requirements	IS 1904-1986

7 PREVENTIVE MEASURES

Parameters	Actionable Points	Remarks
Fire Evacuation Plan	TNHB has already prepared fire Evacuation Plan.	It would be displayed at the corridors.
Mock drills	It would be carried out in every 3 months and the report for the same is submitted to CFO and through compliance monitoring to Environment Department.	Developer would assist in arranging such mock drills in association with Fire Officers.

Structural Audit	TNHB will carry it out on every 6 months.	If any damage is found, developer at low cost would rectify it.
Sprinklers and firefighting Equipment's	TNHB as per the direction of CFO will install sprinklers and firefighting Equipment's.	The TNHB will assist maintenance of the same even after formation of society.
Safety Trainings and Awareness among residents	This will be carried out in every 3 months and report for the same is submitted to CFO.	TNHB would assist in this activity.
First Aid Kit Box	It is already listed by the developer.	Developer would assist in maintain the same in near future.
Earthquake Planning	TNHB would follow requisite codes for earthquake resistant buildings	Requisite codes would be followed and provided to the residents for maintaining the same.
Fire Proof Materials	TNHB would provide all safety doors and materials two hours of fire rating.	Requisite codes would be followed and provided to the residents for maintaining the same.
Drinking water check up	This will be carried out in every 3 months and report would be submitted to Environment department compliance monitoring.	TNHB would assist in this activity during operation phase.
Cleaning of overhead and underground tanks	This will be carried out in every 3 months and report would be submitted to Environment department compliance monitoring.	TNHB would assist in this activity during operation phase.
Drainage Check up	It would be carried out in every 6 months; especially once before onset of monsoon season	TNHB would assist in this activity and report the same to the drainage department of local municipality.
Air, Water, Noise Assessment	It would be carried out as per EC direction.	TNHB would carry out this activity as per EC direction.

Compliance monitoring and reporting	It would be carried out as per EC direction.	TNHB would carry out this activity as per EC direction.
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DMP cost:

Table 1.5: DMP cost - Operational Phase

S r. N o.	Parameters	Capital Cost (crore)	O & M Cost (Lakh)
1	Fire Fighting measures (Sprinkling System, Fire alarm, Portable fire extinguishers, Fire Tanks, Water lift pumps, Fire Hydrant Cabinets with hose reels, Fire Hydrants pumps, Fire Lifts, Fire alarm, fire Curtains)	16.97	12.86
2	Disaster Management Kit (First Aid Facility, Stretcher, A portable battery-powered radio, Flashlight and extra batteries, First aid kit and first aid manual, Safety shoes, helmets, Hand gloves, fire mask, fire blanket, Axe, Cutter)	0.02	0.20
3	Well-equipped Control Room , CCTV	1.04	0.15
4	2 way Public announcement system	0.05	0.03
5	Disaster management training to Residents and Security staff, Mock Exercise.	-	0.20
6	Lightening Arrestor	0.10	0.48
7	Alternate source of power supply / D.G sets	1.78	1.88
8	Flood Retaining Wall	6.7	-
	Total	26.66	13.92

CMDA - Web Enabled LandUse Information System

18-11-2020

District :Chennai Taluk :Egmore-Nargambakkam

Chennai Corporation -->Arumbakkam--> Block No: 4 --> Mixed Residential

Total : 2

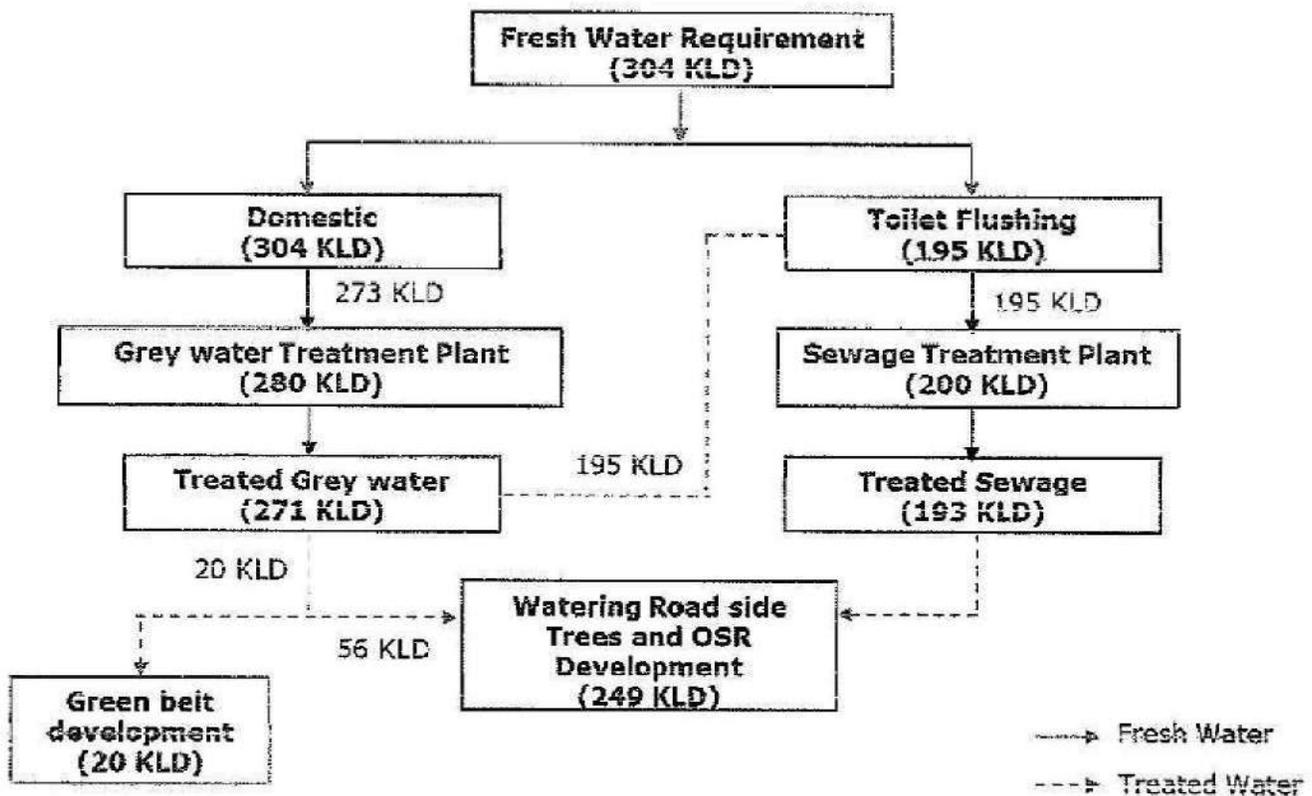
S No	Village	Block No	Survey No	Specific Category	Street alignment	Remarks
1	Arumbakkam	4	1	Mixed Residential	S.A 30.5 m	
2	Arumbakkam	4	2	Mixed Residential	S.A 30.5 m	

Disclaimer: In the Land use others' classification has to be checked from CMDA records for its classification. This is only an information on Land use and can not be used for any legal purposes.

WATER REQUIREMENT CALCULATION DURING OPERATIONAL PHASE

Description	Population	Water Demand as per norms (LPCD)		Water Requirement (LPCD)	
		Domestic	Flushing	Domestic	Flushing
Block I - Commercial	5540	25	20	138500	110800
Block II - Residential	912	90	45	82080	41040
Block III - Residential	912	90	45	82080	41040
Visitors	182	5	10	910	1820
Total	7906			303570	194700
Total (KLD)				304	195

*Source: National Building Code 2016



Source - CMWSSB

WATER BALANCE CHART

WASTEWATER DISPOSAL DURING OPERATION PHASE

The waste water generated will be separately collected and treated in the Grey Water Treatment Plant and Sewage Treatment Plant. Quantity of grey water and sewage generated during operational phase shall be 273 KLD and 195 KLD respectively. The grey water generated will be treated through Grey Water Treatment Plant of 280 KLD capacity and the sewage generated will be treated through Sewage Treatment Plant of capacity 200 KLD. The treated grey water of 271 KLD will be utilized for Toilet Flushing (195 KLD) and Greenbelt Development (70 KLD). The excess treated grey water of 56 KLD and sewage of 193 KLD totalling 249 KLD will be utilised for watering Road Side Trees, Parks and OSR Development. The commitment letter from Greater Chennai Corporation for treated wastewater disposal is also enclosed.

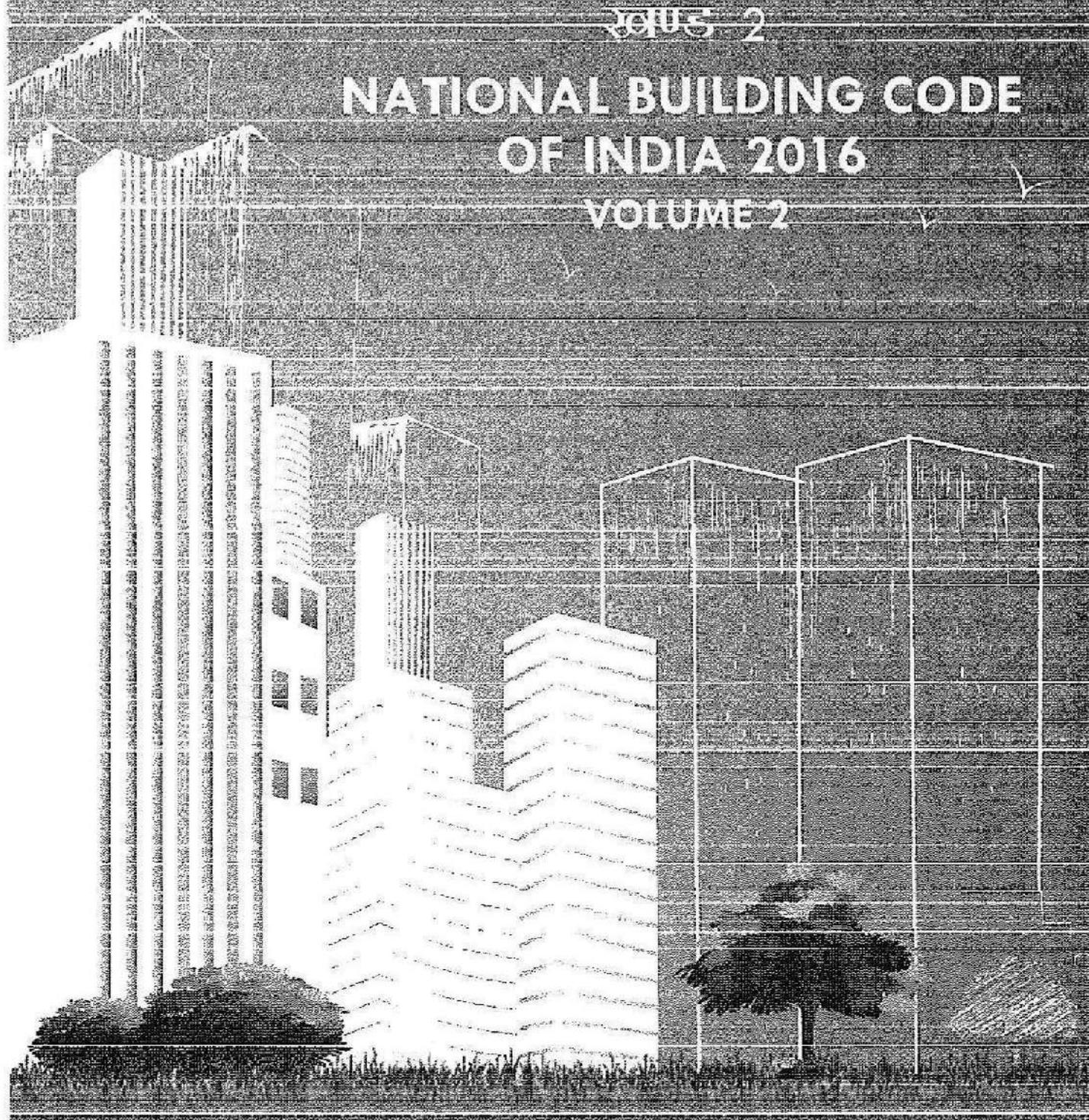
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भारत की राष्ट्रीय भवन निर्माण संहिता 2016

खण्ड 2

NATIONAL BUILDING CODE OF INDIA 2016

VOLUME 2



भारतीय मानक बोर्ड

भारत

- c) For communities with population: 150 to 200 lphd above 100 000 together with full flushing system

NOTE — The value of water supply given as 150 to 200 litre per head per day may be reduced to 135 litre per head per day for houses for Medium Income Group (MIG) and Lower Income Groups (LIG) and Economically Weaker Section of Society (EWS), depending upon prevailing conditions and availability of water.

4.1.1.1 Out of the 150 to 200 litre per head per day, 45 litre per head per day may be taken for flushing requirements and the remaining quantity for other domestic purposes.

4.1.2 Water Supply for Buildings Other than Residences

Minimum requirements for water supply for buildings other than residences shall be in accordance with Table 1.

Table 1 Water Requirements for Buildings Other than Residences
(Clause 4.1.2)

Sl No.	Type of Building	Domestic Per Day litre	Flushing Per Day litre	Total Consumption Per Day litre
(1)	(2)	(3)	(4)	(5)
i)	Factories including canteen where bath rooms are required to be provided	30 per head	15 per head	45 per head
ii)	Factories including canteen where no bath rooms are required to be provided	20 per head	10 per head	30 per head
iii)	Hospital (excluding laundry and kitchen) (see Note 2)			
	a) Number of beds not exceeding 100	230 per head	110 per head	340 per head
	b) Number of beds exceeding 100	300 per head	150 per head	450 per head
	c) Out patient department (OPD)	10 per head	5 per head	15 per head
iv)	Nurses' homes and medical quarters	90 per head	45 per head	135 per head
v)	Hostels	90 per head	45 per head	135 per head
vi)	Hotels (up to 3 star) excluding laundry, kitchen, staff and water bodies	120 per head	60 per head	180 per head
vii)	Hotels (4 star and above) excluding laundry, kitchen, staff and water bodies	260 per head	60 per head	320 per head
viii)	Offices (including canteen)	35 per head	20 per head	45 per head
ix)	Restaurants and food court including water requirement for kitchen:			
	a) Restaurants	55 per seat	15 per seat	70 per seat
	b) Food court	25 per seat	10 per seat	35 per seat
x)	Clubhouse	25 per head	20 per head	45 per head
xi)	Stadiums	5 per head	6 per head	10 per head
xii)	Cinemas, concert halls and theatres and multiplex	5 per seat	10 per seat	15 per seat
xiii)	School/Educational institutions:			
	a) Without boarding facilities	25 per head	20 per head	45 per head
	b) With boarding facilities	90 per head	45 per head	135 per head
xiv)	Shopping and retail (mall)			
	a) Staff	25 per head	20 per head	45 per head
	b) Visitors	5 per head	10 per head	15 per head
xv)	Traffic terminal stations (see Note 3 and 4)			
	a) Airports	40 per head	30 per head	70 per head
	b) Railway stations (Junctions) with bathing facility	40 per head	30 per head	70 per head
	c) Railway stations (Junctions) without bathing facility	30 per head	15 per head	45 per head
	d) Railway Stations (Intermediate) with bathing facility	25 per head	20 per head	45 per head
	e) Railway Stations (Intermediate) without bathing facility	15 per head	10 per head	25 per head
	f) Interstate bus terminals	25 per head	20 per head	45 per head
	g) Intrastate Bus Terminals/Metro Stations	10 per head	5 per head	15 per head

NOTES

1 For calculating water demand for visitors, consumption of 15 litre per head per day may be taken.

2 The water demand includes requirement of patients, attendants, visitors and staff. Additional water demand for kitchen, laundry and clinical water shall be computed as per actual requirements.

3 The number of persons shall be determined by average number of passengers handled by stations, with due considerations given to the staff and vendors who are using these facilities.

4 Consideration should be given for seasonal average peak requirements.

5 The hospitals may be categorized as Category A (25 to 50 beds), Category B (51 to 100 beds), Category C (101 to 300 beds), Category D (301 to 500) and Category E (501 to 750 beds).



ANNEXURE - I

DESIGN BASIS & TREATED WATER QUALITY

CHARACTERISTICS OF GREY WATER:

We have considered the following parameters to design the above system based on the information provided by you. Any changes in the water quality will affect the plant performance.

SI No	Parameters	Unit	Design Considerations
1	Biological Oxygen Demand, BOD	mg/l	45 - 330
2	Total Suspended Solids, TSS	mg/l	40 - 340
3	pH	mg/l	6.5 - 8.5

INFLUENT FLOW DATA

Flow rate, pressure and temperature required at the inlet of the equipment

SI No	Parameters	Unit	Design Considerations
1	Average Design flow rate	m ³ /day	280
2	No of Reactors / Basins		2
3	No of Batches		3
4	Average Flow rate Per Basin	m ³ /hr	50(Rounded off)
5	Inlet Pressure	Bar	By Gravity to Screening
6	Temperature	Deg C	22 - 35*
7	Design Bioreactor Temperature	Deg C	22 - 35*

* Client shall conform the Assumed Values

TREATED WATER QUALITY

SI No	Parameters	Unit	Design Concentration
1	Biological Oxygen Demand, BOD	mg/l	< 20
2	Total Suspended Solids, TSS	mg/l	< 30
3	pH		6.5 - 8.5

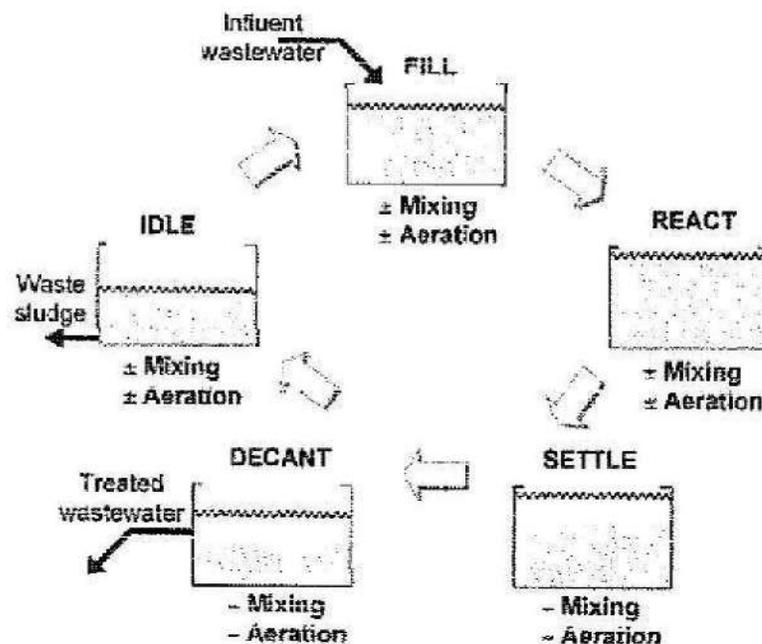
- The Water analysis is no worse than that provided for design the system.
- The Plant is operated strictly in accordance with the operating instructions being furnished by us.



ANNEXURE - II

PROCESS DESCRIPTION

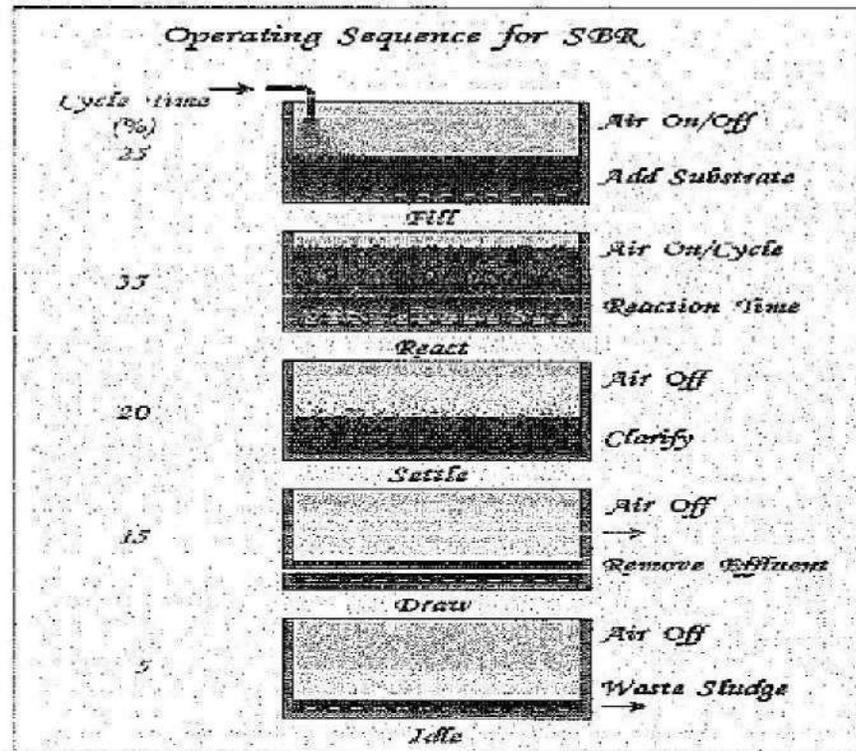
The raw Effluent is collected in the collection sump. Then it is pumped to the aeration tank. The aeration tank is provided with the fine bubble diffusers which will produce fine bubble through an air blower. Effective oxidation of BOD/COD happens. The Effluent is treated in batched and has the necessary instruments for the sequential operation. The process is as explained below;



Major Phases of the SBR operational cycle

BASIC TREATMENT PROCESS

The operation of an SBR is based on a fill-and-draw principle, which consists of five steps—fills, react, settle, decant, and idle. These steps can be altered for different operational applications.



FILL

During the fill phase, the basin receives influent wastewater. The influent brings food to the microbes in the activated sludge, creating an environment for biochemical reactions to take place.

REACT

This phase allows for further reduction or "polishing" of wastewater parameters. During this phase, no wastewater enters the basin and the mechanical mixing and aeration units are on. Because there are no additional volume and organic loadings, the rate of organic removal increases dramatically. Most of the carbonaceous BOD removal occurs in the react phase.



SETTLE

During this phase, activated sludge is allowed to settle under quiescent conditions—no flow enters the basin and no aeration and mixing takes place. The activated sludge tends to settle as a flocculent mass, forming a distinctive interface with the clear supernatant. The sludge mass is called the sludge blanket. This phase is a critical part of the cycle, because if the solids do not settle rapidly, some sludge can be drawn off during the subsequent decant phase and thereby degrade effluent quality.

DECANT / DRAW

During this phase, a decanter is used to remove the clear supernatant effluent. Once the settle phase is complete, a signal is sent to the decanter to initiate the opening of an effluent-discharge valve. There are floating and fixed-arm decanters. Floating decanters maintain the inlet orifice slightly below the water surface to minimize the removal of solids in the effluent removed during the decant phase. Floating decanters offer the operator flexibility to vary fill and draw volumes. Fixed-arm decanters are less expensive and can be designed to allow the operator to lower or raise the level of the decanter. It is optimal that the decanted volume is the same as the volume that enters the basin during the fill phase. It is also important that no surface foam or scum is decanted. The vertical distance from the decanter to the bottom of the tank should be maximized to avoid disturbing the settled biomass.

IDLE

This step occurs between the decant and the fill phases. The time varies, based on the influent flow rate and the operating strategy. During this phase, a small amount of activated sludge at the bottom of the SBR basin is pumped out—a process called wasting.

**TERTIARY TREATMENT:**

The clear water overflowing from the secondary treated sewage is collected in a tank called clarified water Tank. This water is generally have desired characteristics required for water to be used on irrigation land with 92-95% of BOD5 removed.

However, for reuse and reclamation of treated water for landscaping, gardening, A/c- make up and toilet flushing the tertiary treatment is carried out with the following units, for farther reduction in TSS, BOD5, odour and colour.

PRESSURE SAND FILTER (PSF):

The treated effluent from the sump is pumped to pressure sand filter. This is a pressure vessel equipped with a perforated under drain plated, filtered with polystyrene strainers filled with filter media comprising of graded gravel / sand. The suspended particulars are arrested and the clean filtered water coming out form pressure sand filter is led to ACF filter for further treatment.

ACTIVATED CARBON FILTER (ACF):

The filter water from the PSF passes through the activated carbon filter, which is again a vertical pressure vessel equipped with perforated plate with polystyrene strainers at the bottom and top perforated brass strainers. In between is the filter media comprising of 900-1000 mm activated carbon granules over a bed of graded gravel.

In ACF any odour and to certain extent colour in the wastewater is absorbed by the carbon and the filter water is absolutely sparklingly clear.

CHLORINATION:

A on line chlorinator is provided at the outlet of the ACF, on switching it on it automatically injects the hypochlorite solution into the filter water coming out of ACF at desired rate, this hypochlorite solution acts as a disinfectant in the filter water and thus ensuring filtered water is harmless for skin of the persons who come in contact with it.

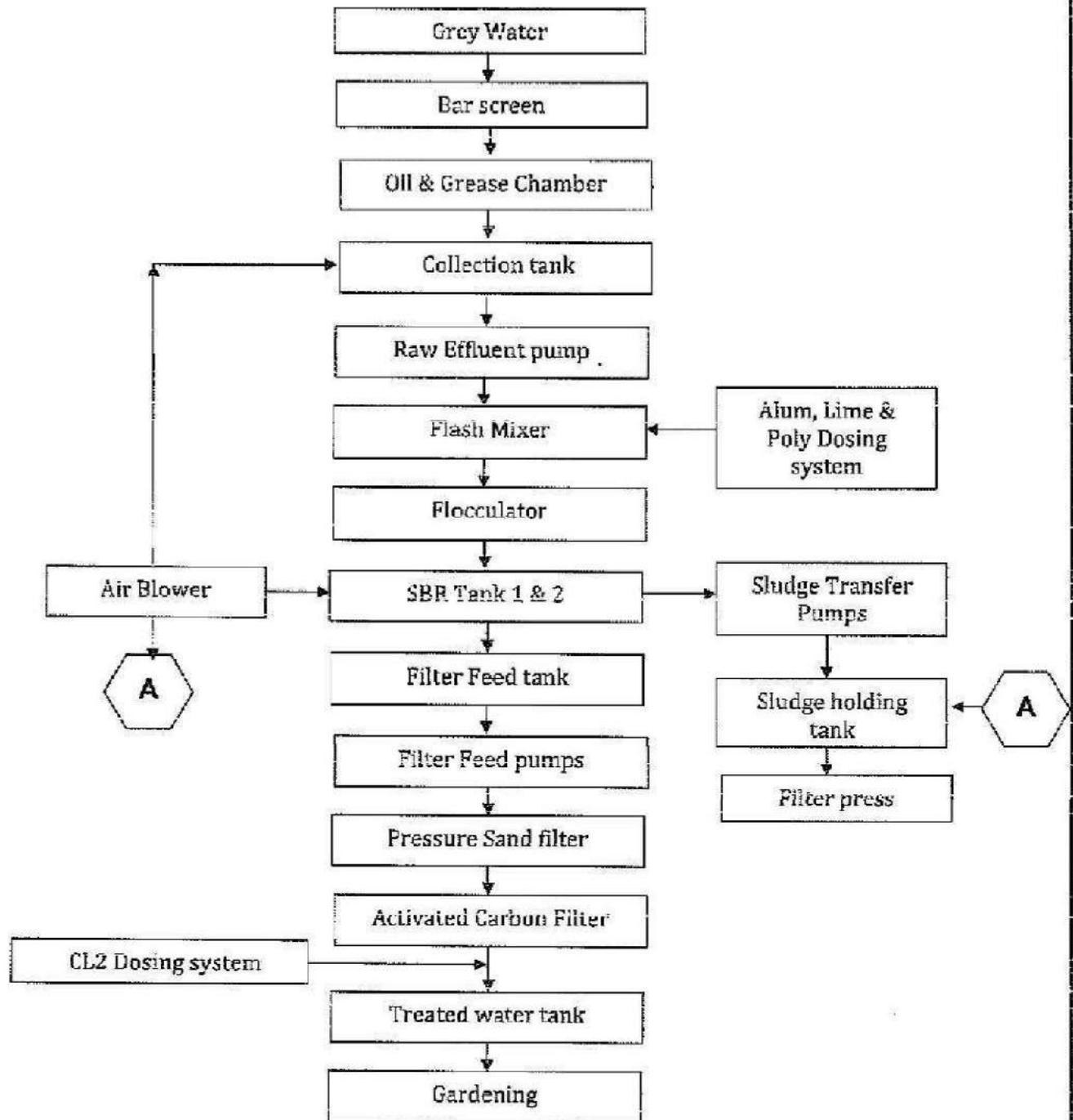
**EXCESS SLUDGE DISPOSAL:**

The settled activated sludge from SBR Tank is sent to Sludge holding tank / Sludge drying bed.

The excess sludge generated is sent to filter press /sludge drying beds where dried sludge is produced. Such dried sludge is good manure and used for plant and trees.

TREATED WATER TANK:

After chlorination the treated and filtered water is collected in Treated water Storage Tank (TWST) and further pumped to Gardening.


ANNEXURE - III
STP - PROCESS FLOW DIAGRAM




ANNEXURE - IV
TECHNICAL SPECIFICATIONS

Detailed Specification for Equipment:
1. Bar Screen

DESCRIPTION	
Quantity	1 No.
Size	900 x 900 mm
Type	Flat screen
M.O.C	SS 304

2. Oil Skimmer Mechanism for Kitchen Waste Water

Description	
Quantity	1 No.
Oil Removal	10 LPH
Type	Belt type
Belt Size	100 mm (W) x2500 mm(D)
Phase	Three
MOC of Top & Bottom Roller	MS Powder Coated
MOC of Belt	Oleophillic Polymer

3. Raw Effluent transfer pump

DESCRIPTION	
Quantity	2 Nos. (1W+1S)
Capacity	50 m ³ /Hr
Head	8 - 10 M
Type	Vertical Submersible Non cutter pump
MOC of Collection tank	RCC (Client Scope)

4. Agitator for Flash mixer

DESCRIPTION	
Quantity	1 No.
MOC of tank	RCC (Client Scope)
Agitator	
Qty	1 No
MOC of agitator	MSFRP / SS 304


5. Agitator for Flocculator

DESCRIPTION	
Quantity	1 No.
MOC of tank	RCC (Client Scope)
Agitator	
Qty	1 No
MOC of agitator	MSFRP / SS 304

6. Alum dosing pump & tank

Description	
Quantity of Pump	1 No.
Dosing flow range	0 - 25 LPH
Type of Pump	Mechanical Diaphragm Pump
Working pressure	3.5 Kg/cm ²
MOC of Dosing Pump	PP
Qty. of Dosing Tank	1 No.
Capacity of Dosing Tank	100 Ltrs.
MOC of Dosing Tank	HDPE

7. Lime dosing pump & tank

Description	
Quantity of Pump	1 No.
Dosing flow range	0 - 50 LPH
Type of Pump	Mechanical Diaphragm Pump
Working pressure	3.5 Kg/cm ²
MOC of Dosing Pump	PP
Qty. of Dosing Tank	1 No.
Capacity of Dosing Tank	100 Ltrs.
MOC of Dosing Tank	HDPE

8. Poly dosing pump & tank

Description	
Quantity of Pump	1 No.
Dosing flow range	0 - 25 LPH
Type of Pump	Mechanical Diaphragm Pump
Working pressure	3.5 Kg/cm ²
MOC of Dosing Pump	PP
Qty. of Dosing Tank	1 No.
Capacity of Dosing Tank	100 Ltrs.
MOC of Dosing Tank	HDPE


9. Air Blower for CT, SBR & SHT Tank

DESCRIPTION	
Quantity	2 Nos. (1W+1S)
Capacity	300 m ³ /hr
Head	5 M
Type	Rotary twin lobe
Type of Drive	V Belt Drive
Type of Motor	Squirrel Cage Induction Motor
MOC	CI

10. Diffused Air System for Aeration Tank
a. Coarse Bubble Diffuser for CT & SHT

DESCRIPTION	
Quantity	1 Lot.
Size	90 Dia x 800 mm long
Type	Fixed

b. Fine Pore Diffusers for SBR Tank

DESCRIPTION	
Quantity	1 Lot.
Size	90 Dia x 1000 mm long
Type	Fixed

11. Decanter Mechanism (Motorized Actuated Butterfly Valve)

DESCRIPTION	
Quantity	2 Nos.
Capacity	50 m ³ /Hr
MOC	CI
Type	Motorized Actuated

12. Return Sludge Pump

DESCRIPTION	
Quantity	4 Nos. (2W+2S)
Capacity	15 m ³ /Hr
Head	9 - 10 mtrs
MOC	CI
Type	Submersible pump, Non Cutter



13. Chlorine Dosing System

DESCRIPTION	
Dosing flow range	0 to 6 LPH
Qty	1 No.
Min. Actuating Pressure	0.3Kg/cm ²
Max. Working pressure	5 Kg/cm ²
Max. Temperature	50 C
Dosing Tank	100 Ltrs. - 1 No. HDPE

14. Filter Feed Pump

DESCRIPTION	
Quantity	2 Nos. (1W+1S)
Capacity	17 m ³ /Hr
Head	30 - 35 M
Type	Horizontal Monobloc pump
MOC	Cast Iron

15. Pressure Sand Filter

DESCRIPTION	
Quantity	1 No.
Flow	17 m ³ /Hr
Dia	1500 mm
HOS	1500 mm
Butterfly Valve	2.5 Inch, MOC: CI
Backwash Duration	Once in 4 hours
Filtering Media	Pebbles & Sand
M.O.C	Mild Steel Enamel Painted

16. Activated Carbon Filter

DESCRIPTION	
Quantity	1 No.
Flow	17 m ³ /Hr
Dia	1500 mm
HOS	1500 mm
Butterfly Valve	2.5 Inch, MOC: CI
Backwash Duration	Once in 4 hours
Filtering Media	Pebbles & Activated Carbon
M.O.C	Mild Steel Enamel Painted


17. Filter Press

DESCRIPTION	
Type of Element	P.P. Recessed
Type of Delivery	Close
Closing Device	Power Pack
Plate size	610 X 610 mm
No. of Plates	12 Plates
No. of Chambers	11 Chambers

18. Single Stage Helical Screw Pump

DESCRIPTION	
Quantity	1 No.
Capacity	5000 LPH
Head	60 M

19. Polymer Dosing (Gravity)

DESCRIPTION	
Dosing Tank	100 Ltrs.
MOC	HDPE
Type	Gravity

20. Electromagnetic Flow meter (EMF)

DESCRIPTION	
Size	80 NB - At Raw Sewage pump outlet - 1 No & 50 NB - At ACF Outlet - 1 No
Type	Full bore
Flange	Mild steel
Electrode	SS 316
Lining	Rubber
Output	RS 485
Raw sewage flow rate	60 m ³ /hr
ACF outlet flow rate	30 m ³ /hr
Make	Aster

21. Drain Pit Pump

DESCRIPTION	
Quantity	2 Nos. (1W + 1S)
Capacity	30000 LPH
Head	8 - 10 M
MOC	CI
Type	Vertical Submersible Pump


ANNEXURE - V
GWTP - INTERCONNECTING PIPINGS, ELECTRICAL & INSTRUMENTATION LIST
INTERCONNECTING PIPING & FITTINGS

S NO	DESCRIPTION	QTY
1	UPVC Piping & Fittings for All Water Lines	1 Lot
2	MS Class 'B' Piping & Fittings for Air line	1 Lot

ELECTRICALS

S.NO.	ELECTRICALS	DESCRIPTION	QTY
1	Cables & Cable Tray	All interconnecting cables and cable tray Within the plant room area	1 Lot
2	Electrical Control Panel - STP	Floor standing, Non Compartmentalized PLC Based Panel for all pumps, blowers with in the Plant room area	1 No

INSTRUMENTATION LIST

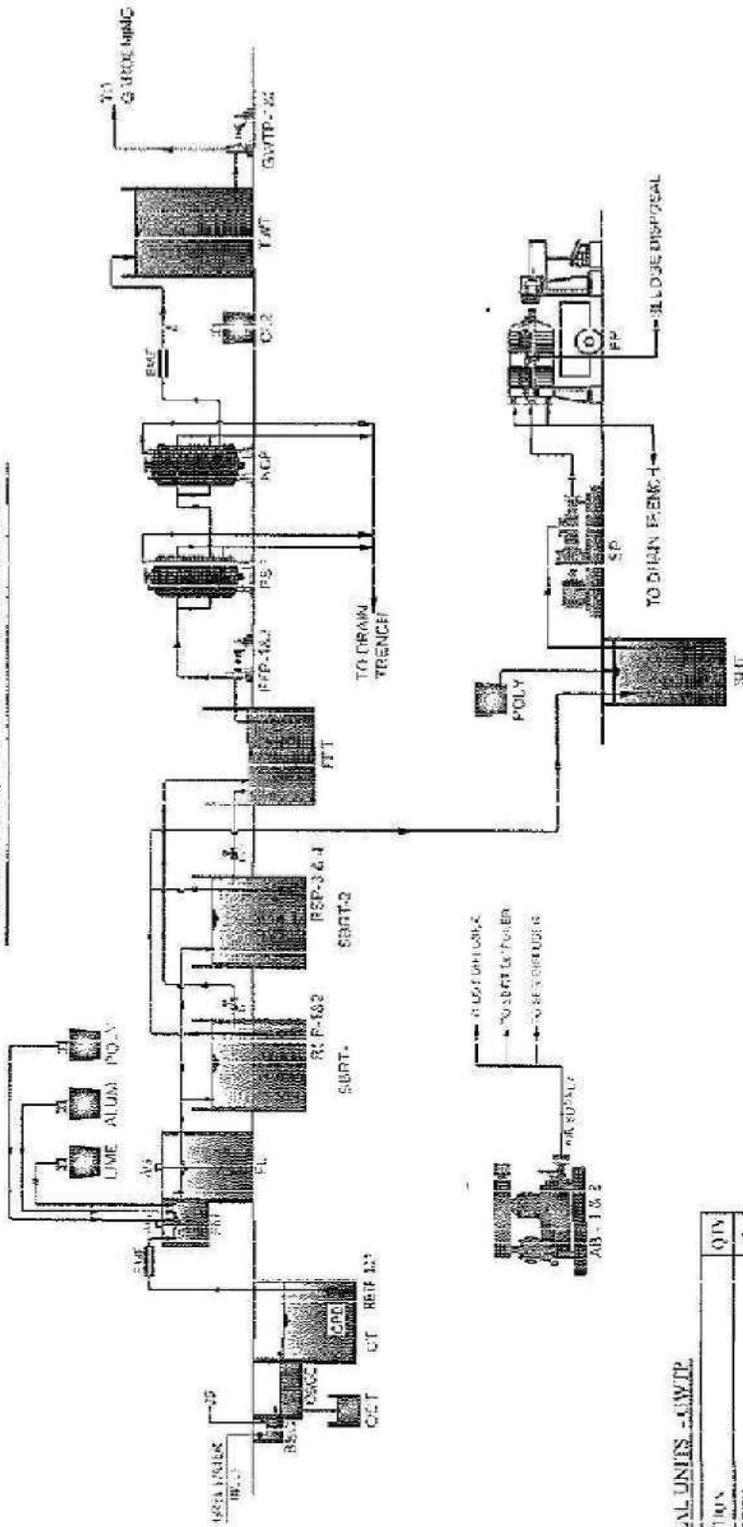
S NO	DESCRIPTION	QTY
1	Level switch for Collection Tank, Filter feed tank and Treated water tank	3 Nos.
2	Pressure Gauges for all pumps & Blowers	1 Lot


ANNEXURE - VI
CIVIL WORKS

The following civil works shall be in Client Scope. (Tentative)

Sl. No	Unit Size	280 m ³ /day capacity	Quantity
1.	Bar Screen Chamber	0.90 Cum	1No.
2.	Oil & Grease Chamber	72.00 Cum	1No.
3.	Collection Tank	140.00 Cum	1No.
4.	Flash Mixer Tank	5.00 Cum	1No.
5.	Floculator Tank	20.00 Cum	1No.
6.	SBR Tank - I	115 Cum	1No.
7.	SBR Tank - II	115 Cum	1No.
8.	Filter Feed Tank	100 Cum	1 No.
9.	Sludge Holding Tank	50 Cum	1 No.
10.	Treated Water tank	160 Cum	1 No.
11.	Civil Platform for Pumps, Blowers, Filters & Panel	-	1 No.

PROCESS FLOW DIAGRAM



LIST OF MECHANICAL UNITS - GWTP

S.NO	MARKS	DESCRIPTION	QTY
1	BS	BAR SCREEN	1
2	CC	OIL COLLECTION TANK	1
3	AG	AGITATOR	2
4	RETP	RAW EFFLUENT TRANSFER PUMP	2
5	LDPS	LIME DOSING SYSTEM	1
6	ADPS	ALUM DOSING SYSTEM	1
7	PDP	POLY DOSING SYSTEM FOR PM	1
8	AB	AIR BLOWER	1
9	RSP	RETURN SLUDGE PUMP	4
10	FFP	FILTER FEED PUMP	2
11	PSF	PRESSURE SENSITIVE FILTER	1
12	ACF	ACTIVATED CARBON FILTER	1
13	HYD	HYDRO DOSING PUMP & TANK	1
14	SP	GOREWIUMP	1
15	POLY	POLY DOSING TANK FOR SHY	1
16	FP	FILTER PRESS	1
17	GWTP	GARDEN RIG WATER TRANSFER PUMP	1
18	MW	MOTORIZED ACTUATED BUTTERFLY VALVE	4

LIST OF CIVIL UNITS - GWTP

S.NO	MARKS	DESCRIPTION	VOLUME IN M ³	EXCLUDING FREEBOARD
1	BSC	BAR SCREEN CHAMBER	85.00	
2	CAC	C/A CREASE CHAMBER	75.00	
3	CT	COLLECTION TANK	140.00	
4	FM	FLASH MIXER	160.00	
5	FL	FLOCCULATOR	20.00	
6	SBR-1	SBR TANK-1	113.00	
7	SBR-2	SBR TANK-2	113.00	
8	SFT	FILTER FEED TANK	100.00	
9	SHT	SLUDGE HOLDING TANK	50.00	
10	TWT	TREATED WATER TANK	160.00	

REL. NO.	DATE	BY	CHKD BY	APPD BY	SCALE	TITLE
	01.10.2018				1:1	PROCESS FLOW DIAGRAM
DESIGN	VEENA	18.11.18	VEENA	18.11.18	VEENA	18.11.18
DRAWN	VEENA	18.11.18	VEENA	18.11.18	VEENA	18.11.18
CHECKED	VEENA	18.11.18	VEENA	18.11.18	VEENA	18.11.18
APPROVED	VEENA	18.11.18	VEENA	18.11.18	VEENA	18.11.18
CLIENT	TEHS - (ANNA NAGAR DIVISION)					
PROJECT	PROJECT FOR THE CONSTRUCTION OF WWTPL					
PLANT	DEVELOPMENT (RESIDENTIAL & COMM. ZONE)					
SCALE	GREY WATER TREATMENT PLANT - 280 KLD					
TITLE	PROCESS FLOW DIAGRAM					
DATE	01.10.2018					
BY	VEENA					
CHKD	VEENA					
APPD	VEENA					
SCALE	1:1					
TITLE	PROCESS FLOW DIAGRAM					
DATE	01.10.2018					
BY	VEENA					
CHKD	VEENA					
APPD	VEENA					
SCALE	1:1					
TITLE	PROCESS FLOW DIAGRAM					

AQUA ECO GREEN TECHNOLOGY PVT. LTD.
 Plot No. 42, B. G. Mohan Road, 7th Floor, 7th Stage, 1st Block,
 Anandapur, Chennai - 600 088
 Email: aquaeco@aquagreen.com, URL: www.aquagreen.com



ANNEXURE - I

DESIGN BASIS & TREATED WATER QUALITY

CHARACTERISTICS OF RAW SEWAGE:

We have considered the following parameters to design the above system based on the information provided by you. Any changes in the water quality will affect the plant performance.

Sl No	Parameters	Unit	Design Considerations
1	Biological Oxygen Demand, BOD	mg/l	350
2	Chemical Oxygen Demand, COD	mg/l	450
3	Total Suspended Solids, TSS	mg/l	200
4	pH	mg/l	6.5 - 8.5

INFLUENT FLOW DATA

Flow rate, pressure and temperature required at the inlet of the equipment

Sl No	Parameters	Unit	Design Considerations
1	Average Design flow rate	m ³ /day	200
2	No of Reactors / Basins		2
3	No of Batches		3
4	Average Flow rate Per Basin	m ³ /hr	35(Rounded Off)
5	Inlet Pressure	Bar	By Gravity to Screening
6	Temperature	Deg C	22 - 35*
7	Design Bioreactor Temperature	Deg C	22 - 35*

* Client shall be conform the Assumed Values

TREATED WATER QUALITY

Sl No	Parameters	Unit	Design Concentration
1	Biological Oxygen Demand, BOD	mg/l	< 20
2	Chemical Oxygen Demand, COD	mg/l	< 100
3	Total Suspended Solids, TSS	mg/l	< 30
4	pH		6.5 - 8.5

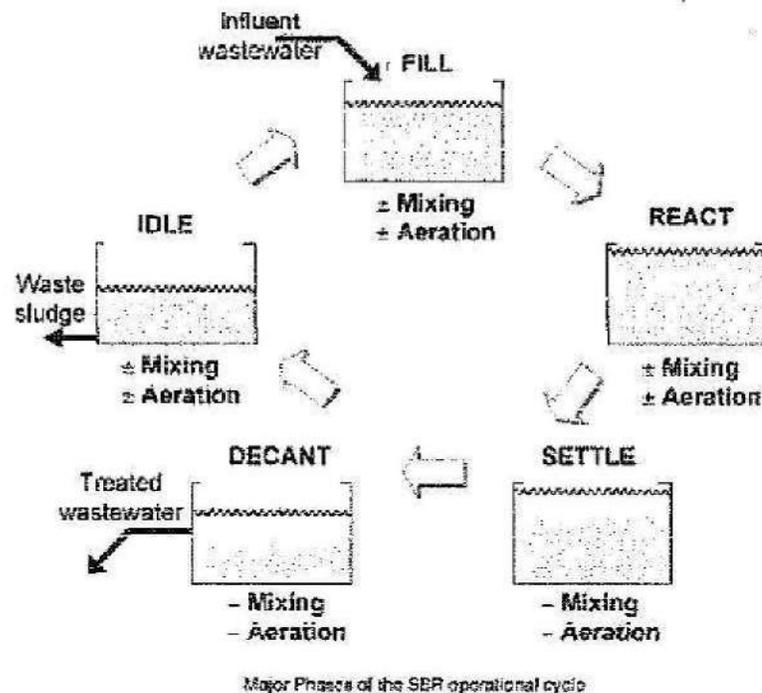
- The Water analysis is no worse than that provided for design the system.
- The Plant is operated strictly in accordance with the operating instructions being furnished by us.



ANNEXURE - II

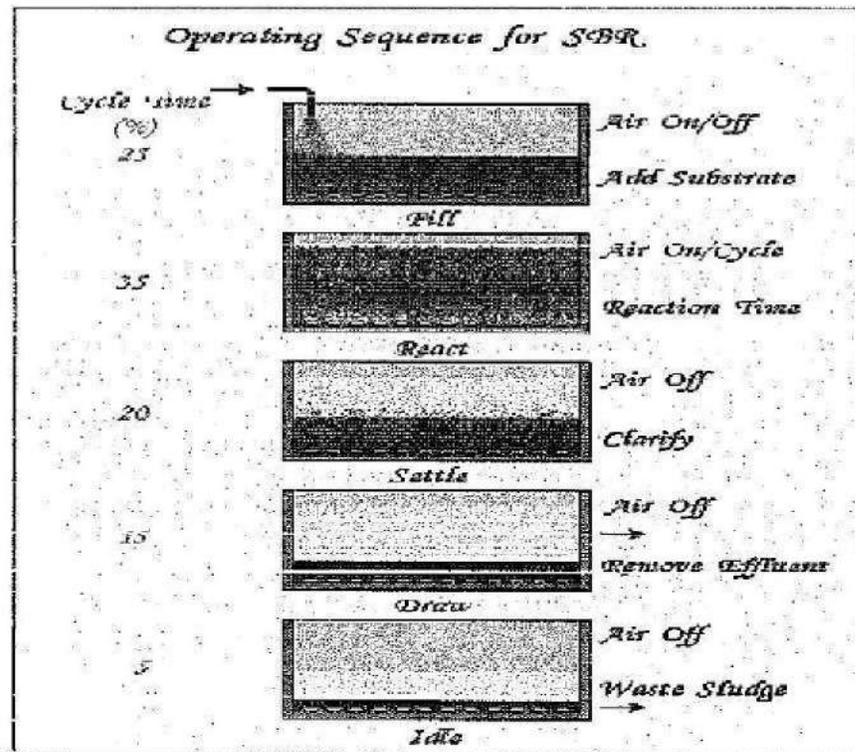
PROCESS DESCRIPTION

The raw sewage is collected in the collection sump. Then it is pumped to the aeration tank. The aeration tank is provided with the fine bubble diffusers which will produce fine bubble through an air blower. Effective oxidation of BOD/COD happens. The sewage is treated in batched and has the necessary instruments for the sequential operation. The process is as explained below:



BASIC TREATMENT PROCESS

The operation of an SBR is based on a fill-and-draw principle, which consists of five steps—fills, react, settle, decant, and idle. These steps can be altered for different operational applications.



FILL

During the fill phase, the basin receives influent wastewater. The influent brings food to the microbes in the activated sludge, creating an environment for biochemical reactions to take place.

REACT

This phase allows for further reduction or "polishing" of wastewater parameters. During this phase, no wastewater enters the basin and the mechanical mixing and aeration units are on. Because there are no additional volume and organic loadings, the rate of organic removal increases dramatically. Most of the carbonaceous BOD removal occurs in the react phase.



SETTLE

During this phase, activated sludge is allowed to settle under quiescent conditions—no flow enters the basin and no aeration and mixing takes place. The activated sludge tends to settle as a flocculent mass, forming a distinctive interface with the clear supernatant. The sludge mass is called the sludge blanket. This phase is a critical part of the cycle, because if the solids do not settle rapidly, some sludge can be drawn off during the subsequent decant phase and thereby degrade effluent quality.

DECANT / DRAW

During this phase, a decanter is used to remove the clear supernatant effluent. Once the settle phase is complete, a signal is sent to the decanter to initiate the opening of an effluent-discharge valve. There are floating and fixed-arm decanters. Floating decanters maintain the inlet orifice slightly below the water surface to minimize the removal of solids in the effluent removed during the decant phase. Floating decanters offer the operator flexibility to vary fill and draw volumes. Fixed-arm decanters are less expensive and can be designed to allow the operator to lower or raise the level of the decanter. It is optimal that the decanted volume is the same as the volume that enters the basin during the fill phase. It is also important that no surface foam or scum is decanted. The vertical distance from the decanter to the bottom of the tank should be maximized to avoid disturbing the settled biomass.

IDLE

This step occurs between the decant and the fill phases. *The time varies, based on the influent flow rate and the operating strategy.* During this phase, a small amount of activated sludge at the bottom of the SBR basin is pumped out—a process called wasting.

**TERTIARY TREATMENT:**

The clear water overflowing from the secondary treated sewage is collected in a tank called clarified water Tank. This water is generally have desired characteristics required for water to be used on irrigation land with 92-95% of BOD5 removed.

However, for reuse and reclamation of treated water for landscaping, gardening, A/c- make up and toilet flushing the tertiary treatment is carried out with the following units, for further reduction in TSS, BOD5, odour and colour.

PRESSURE SAND FILTER (PSF):

The treated effluent from the sump is pumped to pressure sand filter. This is a pressure vessel equipped with a perforated under drain plated, filtered with polystyrene strainers filled with filter media comprising of graded gravel / sand. The suspended particulars are arrested and the clean filtered water coming out form pressure sand filter is led to ACF filter for further treatment.

ACTIVATED CARBON FILTER (ACF):

The filter water from the PSF passes through the activated carbon filter, which is again a vertical pressure vessel equipped with perforated plate with polystyrene strainers at the bottom and top perforated brass strainers. In between is the filter media comprising of 900-1000 mm activated carbon granules over a bed of graded gravel.

In ACF any odour and to certain extent colour in the wastewater is absorbed by the carbon and the filter water is absolutely sparklingly clear.

CHLORINATION:

A on line chlorinator is provided at the outlet of the ACF, on switching it on it automatically injects the hypochlorite solution into the filter water coming out of ACF at desired rate, this hypochlorite solution acts as a disinfectant in the filter water and thus ensuring filtered water is harmless for skin of the persons who come in contact with it.



**AQUA ECO GREEN
TECHNOLOGY PVT. LTD.**

UV SYSTEM:

UV technology has been trusted as a safe, cost-effective way to purify water and eliminate harmful microorganisms. It is a proven EPA endorsed technology that is currently being used by thousands of cities, bottled water manufacturers and homeowners around the world.

Chemical free: UV provides water purification without the addition of harmful chemicals such as chlorine. It also avoids the potential of generating harmful chemical disinfection by products. Recent EPA guidelines are forcing cities across the United States to reduce or eliminate the use of chlorine for exactly this reason.

Taste & odor free: UV does not change the taste, odor or color of the water.

More effective than chlorine: Unlike chlorine, UV systems are effective against both Cryptosporidium and Giardia.

Compact and easy to maintain: UV systems will occupy minimal amount of space with the only maintenance being replacement of lamp after prescribed running hours.

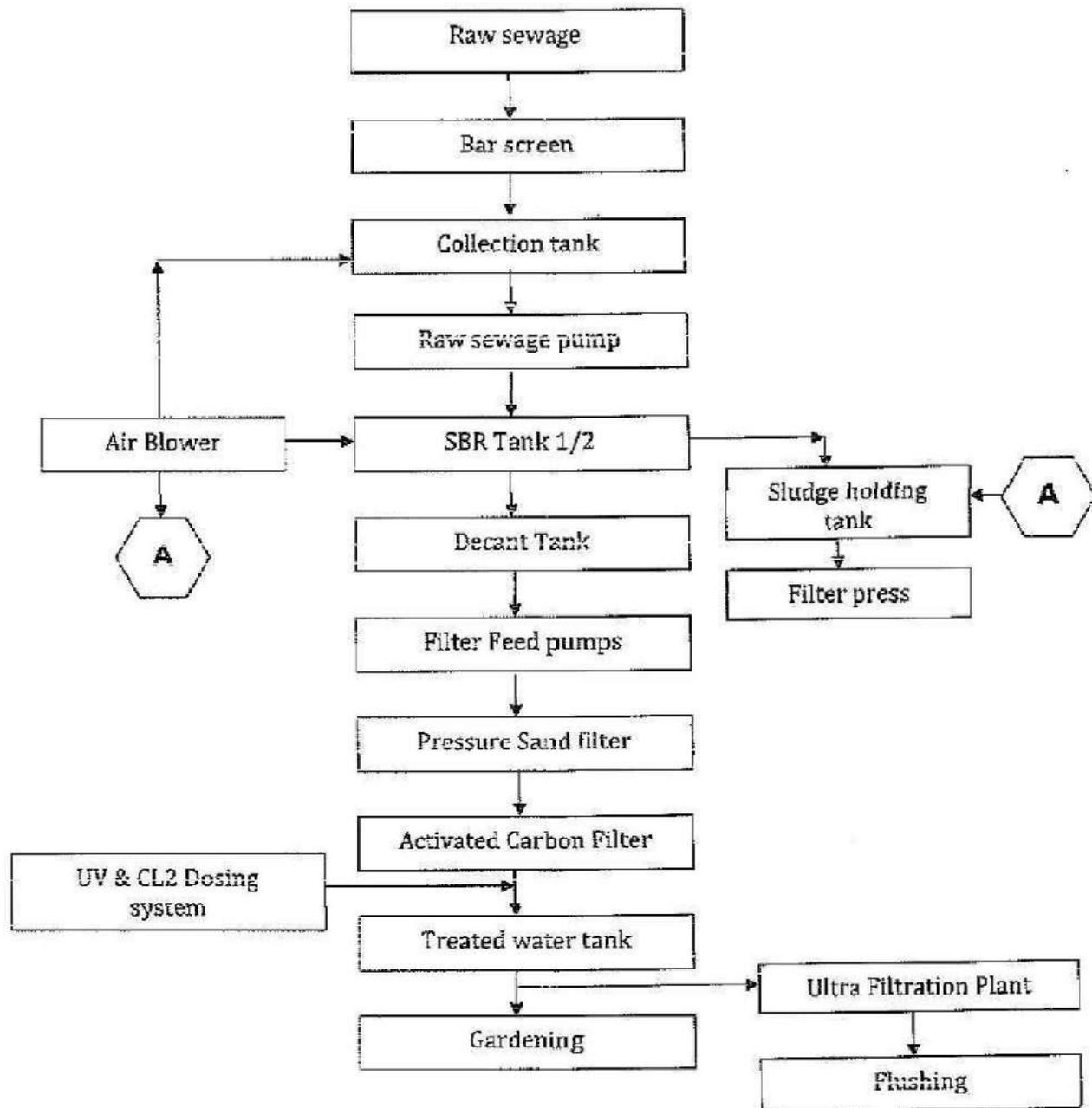
EXCESS SLUDGE DISPOSAL:

The settled activated sludge from SBR Tank is sent to Sludge holding tank / Sludge drying bed.

The excess sludge generated is sent to filter press /sludge drying beds where dried sludge is produced. Such dried sludge is good manure and used for plant and trees.

TREATED WATER TANK:

After chlorination and UV disinfection the treated and filtered water is collected in Treated water Storage Tank (TWST) and further pumped to Ultra Filtration Plant.


ANNEXURE - III
STP - PROCESS FLOW DIAGRAM




ANNEXURE - IV

TECHNICAL SPECIFICATIONS

Detailed Specification for Equipment:

1. Bar Screen

DESCRIPTION	
Quantity	1 No.
Size	900 x 900 mm
Type	Flat screen
M.O.C	SS 304

2. Raw Sewage Transfer Pump

DESCRIPTION	
Qty.	2 Nos. (1W +1S)
Each Flow	35 m ³ /Hr
Head	8 - 10 M
MOC	Cast Iron
Type	Submersible pump

3. Air Blower for EQT, SBR & SHT Tank

DESCRIPTION	
Quantity	2 Nos. (1W +1S)
Capacity	220 m ³ /Hr
Head	5 M
Type	Rotary twin lobe
Type of Drive	V Belt Drive
Type of Motor	Squirrel Cage Induction Motor
MOC	CI

4. Diffused Air System for Aeration Tank

a. Coarse Bubble Diffuser for EQT & SHT

DESCRIPTION	
Quantity	1 Lot
Size	90 Dia x 800 mm long
Type	Fixed


b. Fine Pore Diffusers for SBR Tank

DESCRIPTION	
Quantity	1 Lot.
Size	90 Dia x 1000 mm long
Type	Fixed

5. Decanter Mechanism (Motorized Actuated Butterfly Valve)

DESCRIPTION	
Quantity	2 Nos.
Capacity	35 m ³ /Hr
MOC	CI
Type	Motorized Actuated

6. Return Sludge Pump

DESCRIPTION	
Quantity	4 Nos. (2W + 2S)
Capacity	10 m ³ /Hr
Head	8 - 10 mtrs
MOC	CI
Type	Submersible pump

7. Chlorine Dosing System

DESCRIPTION	
Dosing flow range	0 to 4 LPH
Qty	1 No.
Min. Actuating Pressure	0.3Kg/cm ²
Max. Working pressure	5 Kg/cm ²
Max. Temperature	50 C
Dosing Tank	100 Ltrs. - 1 No. HDPE

8. Filter Feed Pump

DESCRIPTION	
Quantity	2 Nos. (1W + 1S)
Capacity	12 m ³ /Hr
Head	30 - 35 M
Type	Horizontal Monobloc pump
MOC	Cast Iron



**AQUA ECO GREEN
TECHNOLOGY PVT. LTD.**

9. Pressure Sand Filter

DESCRIPTION	
Quantity	1 No.
Flow	12 m ³ /Hr
Dia	1300 mm
HOS	1500 mm
Butterfly Valve	2 Inch, MOC: CI
Backwash Duration	Once in 4 hours
Filtering Media	Pebbles & Sand
M.O.C	Mild Steel Enamel Painted

10. Activated Carbon Filter

DESCRIPTION	
Quantity	1 No.
Flow	12 m ³ /Hr
Dia	1300 mm
HOS	1500 mm
Butterfly Valve	2 Inch, MOC: CI
Backwash Duration	Once in 4 hours
Filtering Media	Pebbles & Activated Carbon
M.O.C	Mild Steel Enamel Painted

11. Filter Press

DESCRIPTION	
Type of Element	F.P. Recessed
Type of Delivery	Close
Closing Device	Power pack
Plate size	610 X 610 mm
No. of Plates	9 Plates
No. of Chambers	8 Chambers

12. Single Stage Helical Screw Pump

DESCRIPTION	
Quantity	1 No.
Capacity	3000 LPH
Head	60 M

13. Polymer Dosing (Gravity)

DESCRIPTION	
Dosing Tank	100 Ltrs.
MOC	HDPE
Type	Gravity


14. Electromagnetic Flow meter (EMF)

DESCRIPTION	
Size	65 NB & 50 NB
Type	Full bore
Flange	Mild steel
Electrode	SS 316
Lining	Rubber
Output	RS 485
Location	At Raw Sewage pump outlet - 1 No and ACF Outlet - 1 No
Raw sewage flow rate	35 m ³ /hr
ACF outlet flow rate	12 m ³ /hr
Make	Aster

15. UV System

DESCRIPTION	
Quantity	1 No.
Capacity	12 m ³ /Hr
MOC	SS 304
Power	1 Phase, 240 V, 50 Hz

16. Drain Pit Pump

DESCRIPTION	
Quantity	2 Nos. (1W + 1S)
Capacity	20000 LPH
Head	3 - 10 M
MOC	CI
Type	Submersible Pump



UF - PROCESS DESCRIPTION

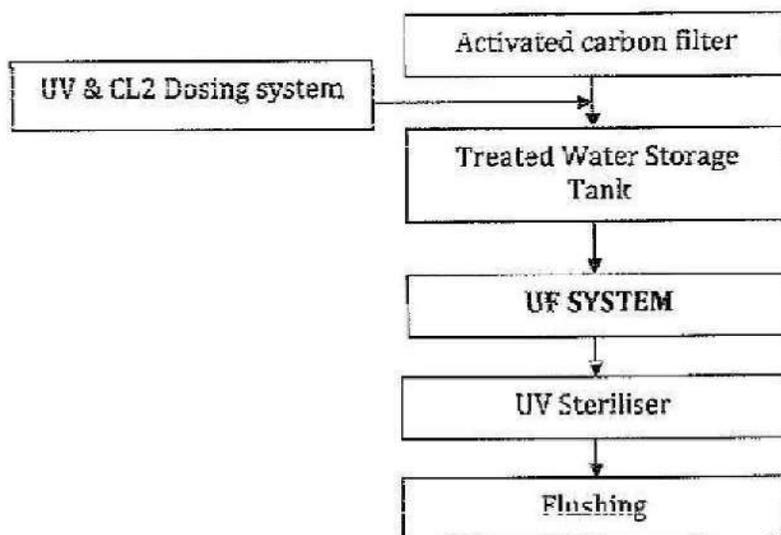
TREATED WATER TANK:

After chlorination the treated and filtered water is collected in Treated water Storage Tank (TWST) and further pumped to Ultra Filtration System.

UF SYSTEM PROCESS DESCRIPTION:

The filtered water from Treated water Storage Tank (TWST) is then passed through the latest state of the art ultra filtration membranes for the reduction of SDI, colloidal particles and then bacteriological contamination. The UF membranes selected are the unique Multi bore Membranes which has the highest mechanical strength than the single bore membranes. UF membranes are designed with a flux of 40 - 45 LMH and the membranes are operated in Dead End mode or Cross Flow. The backwash and the forward flush are let into the inlet of STP plant for further treatment. The unit is automatic operated through a **PLC based control panel**. This unit consists of Separate Chemical cleaning system where Caustic and HCl chemical are used for cleaning of UF membranes.

UF - PROCESS FLOW DIAGRAM





UF PLANT - 150 KLD (12.50 M3/HR OPERATING FOR 12 HOURS)

UF DESIGN BASIS

UF Feed flow	-	14.00 m ³ /hr (Rounded off)
UF Permeate flow	-	12.50 m ³ /hr
UF System recovery	-	90%
UF Operating flux	-	43 LMH
UF Membrane surface area	-	324 M ²
No of UF Membranes	-	Depends on UF membrane manufacturers.
Type of Operation	-	Cross Flow type

1. UF Feed Pump

DESCRIPTION	
Quantity	2 Nos. (1W+1S)
Capacity	14 m ³ /Hr
Head	30 M
Type	Horizontal Centrifugal, Monobloc
MOC	Cast Iron
Make	Kirloskar
Power	3.0 HP / 2.2 KW

2. Bag Filter for UF Feed

DESCRIPTION	
Quantity	1 No.
Capacity	15 m ³ /Hr
Type	Bag Filter - 100 Microns
MOC of Housing	SS 304

3. UF Membrane

DESCRIPTION	
Quantity	4Nos
Type	In to Out
Membrane Flux	43 LMH
Total Membrane Area	324 m ²
MOC	Modified Polyether Sulphone


4. UF Backwash Pump

DESCRIPTION	
Quantity	2 Nos. (1W +1S)
Capacity	56.00 m ³ /Hr
Head	30 M.
Type	Horizontal Centrifugal, Monobloc
MOC	Cast Iron
Make	Kirloskar
Power	10.00 HP / 7.5 KW

5. Caustic / Hypo Dosing System

DESCRIPTION	
Dosing flow range	0 to 65 LPH
Qty	1 No. (1W)
Working pressure	3.5 Kg/cm ²
Max. Temperature	50 C
Dosing Tank	100 Ltrs. - 1 No.
MOC of Dosing Tank	HDPE

6. HCL Dosing System

DESCRIPTION	
Dosing flow range	0 to 85 LPH
Qty	1 No. (1W)
Working pressure	3.5 Kg/cm ²
Max. Temperature	50 C
Dosing Tank	100 Ltrs. - 1 No.
MOC of Dosing Tank	HDPE

7. UF Cleaning Pump

DESCRIPTION	
Quantity	1 No. (1W)
Capacity	14 m ³ /Hr
Head	35 M
Type	Horizontal Centrifugal, Monobloc
MOC of Pump	SS 316
Cleaning Tank	500 Ltrs.
MOC of cleaning tank	HDPE



**AQUA ECO GREEN
TECHNOLOGY PVT. LTD.**

8. UF Skid

DESCRIPTION	
MS Fabricated skid Powder coated with required support, Pneumatically Operated Butterfly Valves, Flow meters and accessories of Ultra Filtration unit complete	1 Set.

9. Air Compressor

DESCRIPTION	
Quantity	1 No.
Type	Suitable for providing air for Pneumatic operation

10. UV System

DESCRIPTION	
Quantity	1 No.
Capacity	12.50 m ³ /Hr
MOC	SS 304
Power	1 Phase, 240 V, 50 Hz



ANNEXURE - V

UF - INTERCONNECTING PIPINGS, ELECTRICAL & INSTRUMENTATION LIST

INTERCONNECTING PIPING & FITTINGS

S NO	DESCRIPTION	QTY
1	UPVC Piping & Fittings for All Water Lines	1 Lot

ELECTRICALS & INSTRUMENTATION LIST

S.NO.	ELECTRICALS	DESCRIPTION	QTY
1	Cables & Cable Tray	All interconnecting cables and cable tray Within the plant room area	1 Lot
2	Electrical Control Panel - UF	Non Compartmentalized, PLC Based Panel for UF	1 No
3		Pressure Gauges for all pumps	1 Lot
4		Rota meter at UF Permeate, Backwash & Cross flow	3 Nos

INSTRUMENTATION LIST

SNO	DESCRIPTION	QTY
1	Level switch for Equalization Tank and Treated water tank	2 Nos.
2	Pressure Gauges for all pumps & Blowers	1 Lot


STP -INTERCONNECTING PIPINGS, ELECTRICAL & INSTRUMENTATION LIST
INTERCONNECTING PIPING & FITTINGS

S NO	DESCRIPTION	QTY
1	UPVC Piping & Fittings for All Water Lines	1 Lot
2	MS Class 'B' Piping & Fittings for Air line	1 Lot

ELECTRICALS

S.NO.	ELECTRICALS	DESCRIPTION	QTY
1	Cables & Cable Tray	All interconnecting cables and cable tray Within the plant room area	1 Lot
2	Electrical Control Panel - STP	Floor standing, Non Compartmentalized PLC Based Panel for all pumps, blowers with in the Plant room area	1 No

INSTRUMENTATION LIST

S NO	DESCRIPTION	QTY
1	Level switch for Equalization Tank and Treated water tank	4 Nos.
2	Pressure Gauges for all pumps & Blowers	1 Lot



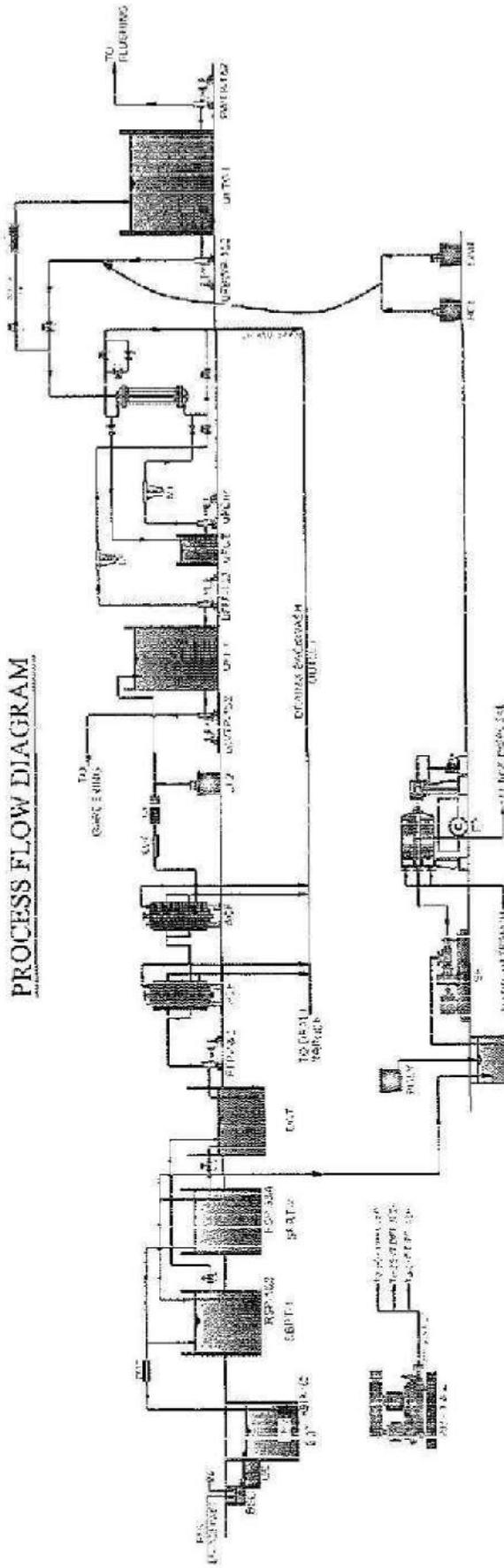
ANNEXURE - VI

CIVIL WORKS

The following civil works shall be in Client Scope. (Tentative)

Sl. No	Unit Size	200 m ³ /day capacity	Quantity
1.	Screen Chamber	0.90 Cum	1No.
2.	Grit Chamber	21 Cum	1No.
3.	Equalization Tank	100 Cum	1No.
4.	SBR Tank - I	95 Cum	1No.
5.	SBR Tank - II	95 Cum	1No.
6.	Decanting Water Tank	70 Cum	1 No.
7.	Sludge Holding Tank	35 Cum	1 No.
8.	UF Feed tank	75 Cum	1 No.
9.	UF Treated Water tank	100 Cum	1 No.
10.	Civil Platform for Pumps, Blowers, Filters & Panel	-	1 No.

PROCESS FLOW DIAGRAM



LIST OF MECHANICAL UNITS - STEP 2 & UF

SNO	MARKS	DESCRIPTION	QTY
1	BS	BAR SCREEN	1
2	RSTP	RAW SEWAGE TRANSFER PUMP	2
3	AB	AIR BLOWER	2
4	RSP	RETURN SLUDGE PUMP	4
5	FFP	FILTER FEED PUMP	2
6	PSF	PRESSURIZED SAND FILTER	1
7	ACF	ACTIVATED CARBON FILTER	1
8	HYPD	HYPPOCHLORITE DOSING PUMP & TANK	1
9	SP	SCREW PUMP	1
10	POLY	POLY DOSING TANK	1
11	FP	FILTER PRESS	1
12	UFEP	UF FEED PUMP	2
13	UBWP	UF BACKWASH PUMP	2
14	BF	UF FEED BAG FILTER	1
15	MF	CIP FEED MICRON FILTER	1
16	HCL	HCL DOSING PUMP & TANK	1
17	CAU	CAUSTIC DOSING PUMP & TANK	1
18	UF	ULTRA FILTRATION	1
19	UCP	UF CLEANING PUMP	1
20	UV	ULTRA VIOLET STERILIZER	2
21	FWTP	FLUSHING WATER TRANSFER PUMP	2
22	MV	MOTORIZED ACTUATED BUTTERFLY VALVE	2
23	GWTP	GARDENING WATER TRANSFER PUMP	2

LIST OF CIVIL UNITS - STEP 2 & UF

SNO	MARKS	DESCRIPTION	VOLUME IN ML (EXT. USING WATER TANK)
1	USC	BAR SCREEN CHAMBER	2000
2	GC	GRIT CHAMBER	2000
3	EC	EQUALIZATION TANK	18000
4	SRT-1	SBR TANK-1	9500
5	SBR-2	SBR TANK-2	9500
6	DCT	DECANTING WATER TANK	7000
7	SHT	S LUDGE HOLDING TANK	3500
8	UFFT	UF FEED TANK	7500
9	UFTWT	UF TREATED WATER TANK	10000

FIG. NO. DATE: 01/08/2018
 WORKS NO. 18/2018/01/01
 SHEETS: 01 OF 01
 PROJECT: TREATMENT PLANT FOR INDUSTRIAL EFFLUENT
 CLIENT: TATA (IN A RAGMIP APPROVAL)
 PROJECT: PROPOSED CONSTRUCTION OF LINE 3 USE DEVELOPMENT INDUSTRIAL & COMMERCIAL
 PLANT: STP (SBR) - 200 RLD & UF - 180 RLD
 TITLE: PROCESS FLOW DIAGRAM
 SCALE: 1:1
 SHEET NO. 01 OF 01

AQUA ECO GREEN TECHNOLOGY PVT. LTD.
 No. 53/44, Malviya Circle Road, Vasant Vihar, New Delhi - 110017
 Phone: 011-26100000, 011-26100001, 011-26100002
 Fax: 011-26100003, 011-26100004, 011-26100005
 Email: aquaeco@aquatechpvt.com, aquaeco@aquatechpvt.co.in



CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD
No. 1, Pumping Station Road, Chintadripet, Chennai-600 002.

New No.227, II Avenue, Near 12th Main Road,
Anna Nagar, Chennai-40.

Lr.No. CMWSSB/Area VIII/SPL /2020

Dated: 17.11.2020

To
K. Ravichandran, B.E.,
The Executive Engineer & ADO,
Tamil Nadu Housing Board,
Anna Nagar Division,
Thirumangalam Shopping Complex
Chennai – 600 101.

Respected Sir,

Sub: CMWSSB – Area-VIII – Depot-100 – Providing water and sewer facility to proposed Construction of mixed use residential building at s.no:2, Block no:4 of Arumbakkam Village – Egmore – Nungambakkam Taluk- Chennai District – Requisition of water supply and disposal of sewage – In Principal approval obtained from Management Committee -Reg.

- Ref: 1.Lr no: AND/PLO/849/2016 Date 26.6.2020
2. CMWSSB/ Area VIII / Depot- 100/2020 Date. 07.08.2020
3. DDNO: 516591 Date. 27/08/2020 for Rs.1,18,000/-
4.MD approval copy, dated.17.11.2020

With reference to the 1st cited, the Management Committee has approved the proposal of Tamil Nadu Housing board has proposed to construct the mixed use development consisting of a commercial block (2B+G+22 floors) 2 Residential dwelling units totalling blocks (2B+P+19 floors each) with each 152 residential dwelling units totalling of 304 units at s.no:2 block no: 4 of Arumbakkam village, Egmore – Nungambakkam Taluk Chennai District. For the above proposed residential building TNHB has requested consent letter for water supply of 350KLD and for the disposal of 290KLD sewage in the CMWSSB sewer system.

Hence, you are hereby requested to deposit of Rs. 4,70,05,460/- (Rupees Four Crores Seventy Lakhs Five thousand four hundred and sixty only) to CMWSSB at the earliest so as to take up the work of providing water and sewer facility to proposed Construction of mixed use residential building at s.no:2, Block no:4 of Arumbakkam Village – Egmore – Nungambakkam Taluk- Chennai District.

PCU/-
17/11/2020
AREA ENGINEER-VIII

AGENDA FOR MANAGEMENT COMMITTEE BY CIRCULATION

CMWSSB – CE(O&M) Area-VIII –DAE -22 –Depot 100 – proposed- construction of mixed use residential building at s.no.2 ,Block no:4 of Arumbakkam Village – Egmore – Nungambakkam Taluk- Chennai District – Requisition of water supply and disposal of sewage – In principal approval called for – furnished - approval – requested regarding.

-o0o-

The Tamil Nadu Housing board (TNHB), Chennai - 101 has proposed to construct the mixed use development consisting of a commercial block (2B+G+22 floors) 2 Residential dwelling units totalling blocks (2B+P+19 floors each) with each 152 residential dwelling units totalling of 304 units at s.no:2 block no:4 of Arumbakkam village, Egmore – Nungambakkam Taluk Chennai District . For the above proposed residential building TNHB has requested consent letter for water supply of 350KLD and for the disposal of 290KLD sewage in the CMWSSB sewer system.

Based on the above, it has been requested to remit an amount of Rs 1,00,000/- plus 18% GST to CMWSSB towards the processing fee scrutinising the proposal vide reference 2nd cited above. Accordingly the TNHB accepted and paid an amount of Rs 1,18,000/- (Rs 1,00,000 +18000 for GST) vide D.D.no 516591 Date: 27/08/2020. ICICI Bank and the same has been remitted in to the CMWSSB Account

Accordingly it is proposed to supply a 350KLD of treated water supply through the 100mm dedicated main tapped from the 750mm Dia feeder main available at the poonamailee High Road by providing AMR water meter to monitor the supply of water to the consumer.

Regarding the disposal of sewage, the total expected quantity of sewage generated from the 3 blocks of the proposed construction apartments is 290 KLD. Hence it is proposed to provide the 200mm Dia dedicated sewer pumping main from the proposed site to the koyambedu sewage treatment plant inlet chamber.

The above two process are to be carried out as deposit work. The amount will be deposited by TNHB to the CMWSSB to meet the expenditure.

The board in its resolution no 26/2013 dated 13.3.2013 has authorized the management committee for giving IN PRINCIPLE approval for the proposed construction seeking approval from CMDA.

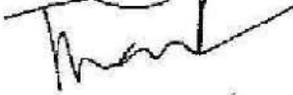
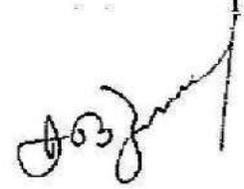
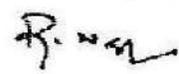
In these case, the "In principal approval" request his

1. To supply 350KLD of water through the dedicated water main of 100mm Dia tapping from 750mm Dia water main available at poonamallee high road.
2. To disposal of 290KLD of sewage generated from proposed residential site of TNHB pumped through 200mm Dia dedicated pumping main from proposed residential site to the koyambedu sewage treatment plant.

The subject is placed before the management committee under circulation for approval.

by
Secy-cum-G.M.
1/2


MANAGING DIRECTOR
1/2

S.No	Name of the Director	Signature
1	Thiru.T.N.Harinaran.I.A.S., Managing Director, CMWSSB.	 1/2
2	Dr T Prabhushanker, I A.S., Executive Director, CMWSSB.	 2
3	Thiru.K.Muthukumaraswamy, M.A.,M.L., M.Sc.,M.Com.,MBA,PGDLA, PGDCA Addl. Secretary to Govt., / Finance Director / Chief Controller of Finance i/c., CMWSSB.	 2
4	Thiru K.Maduraiayagam, B.E., Engineering Director, CMWSSB.	 2
5	Thiru R Narasimhan, Chief Engineer (O&M-I), CMWSSB.	 2
6	Thiru R Govindarajalu, M.Sc., B.Ed., District Revenue Officer / Secy cum General Manager, CMWSSB	 2

CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD							
ABSTRACT OF THE FOREGOING ESTIMATE							
Name of Work: Providing water and sewer facility to proposed TNHB mixed construction Apartments In Depot-100, Area-VIII							
S.No.	Description of works	No. or Qty	Rate		Per	Amount	
			Rs	.p		Rs	.p
1	Providing 200mm dia sewer pumping main to proposed TNHB mixed construction Apartments from P.H road to Koyambedu Sewage Treatment Plant (A)					10443000.00	
2	Providing Water Supply to proposed TNHB Mixed Construction Apartment at Poonamallee High Road (B)					557000.00	
3	Sub-Total (A+B)					11000000.00	
4	Contingencies at 2.5% (approx)					275000.00	
5	Sub-Total					11275000.00	
6	Tools & Plants @ 1%					112750.00	
7	TNLWF @1%					112750.00	
8	Preparation of Estimate @ 2.5%					281375.00	
9	Supervision Charges @ 15%					1691250.00	
10	Total					13473625.00	
11	CGST @ 6%					808417.50	
12	SGST @ 6%					808417.50	
13	Grand Total					15090460.00	
14	Road Cut Restoration Charges					3150000.00	
15	Unforeseen Items					415000.00	
	TOTAL					47005460.00	

(Rupees Four Crores Seventy Lakhs Five Thousand Four Hundred and Sixty Only)

Handwritten signature
5/11/2020

DAE-22

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5/11/2020
AREA ENGR-VIII

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11/21/2020

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From
 Executive Engineer
 Zone- VIII
 Greater Chennai Corporation
 50B Pulla Avenue
 Shenoy Nagar
 Chennai - 600 030
 Zc VIII C NO SPL 2020

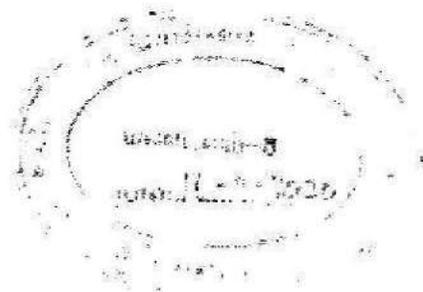
To
 The Executive Engineer & ADO
 TNHB Anna Nagar Division
 Thirumangalam
 Chennai - 600 101

Dated 16 11 2020

Sub Greater Chennai Corporation - Zone VIII, Division- 100 - Proposed Construction of mixed use development at S No. 2, Block No. 4 of Arumbakkam Village - Treated Grey Water to be used in the Division 100 Parks and nearby Anna Nagar - Consent Letter Furnished Reg

Ref EE&ADO/ Anna Nagar Division Letter No. AND/plg/659/2018, Dated 16 11 2020

In the reference cited letter, EE&ADO/Anna Nagar Division has requested consent letter for the utilization of excess 290KLD Treated Grey Water towards the usage in the plantation of plants in the division 100 parks and nearby areas (park of Anna Nagar which is maintained by the Greater Chennai Corporation. In this regard, it is informed that Greater Chennai Corporation is accepting the utilization of Excess 290KLD Treated Grey Water to the respective adjacent Division 100 and nearby areas from the 304 residential building at Arumbakkam Village and necessary consent is hereby issued as requested. The treated grey water should meet the requirement and specifications as per norms in order to make it fit for the plantation usage. TNHB should abide to the rules as mentioned in the reference letter.



Executive Engineer/Zone - 08
 Greater Chennai Corporation

Handwritten signature and initials: A. E. L. O. C.

BUDGET FOR IMPLEMENTATION OF EMP

The cost to be implemented on environmental management plan for both capital and recurring phase.

Table - Environmental Management Plan - Capital Cost

S. No	Description	Quantity	Rate	Cost (lakhs)
1	Solid Waste Management			42.3
	Organic waste convertor	2 Nos		36
	Civil			3
	Dumper Bins			1
	i) Bins of 50 lits with wheels (1 no/50 dwellings)	-	-	2.1
	ii) Dumper Bins with wheel of 2 cum capacity	6 Nos	0.05	0.3
2	Greenbelt Development			3.2
	i) Saplings and Associated works	420 Nos	400	1.6
	ii) Tree Guards	420 Nos	400	1.6
3	Energy Conservation measures			51
	i) Solar street light	150 Nos	0.12	18
	ii) Solar Rooftop PV			31.5
	iii) Installation Cost	-	-	1.5
4	Rain water harvesting			79.45
	RWH Sumps & Storm water drains	-	-	78
	RWH Pits	29 Nos	0.05	1.45
5	Grey water treatment plant (280 KLD)	1	-	170
6	Sewage Treatment Plant (200 KLD)	1	-	150
7	Diesel Generator			46
	4 Nos. of DG Set (1500, 2000 KVA each 2 Nos.)	4 Nos.	10	40
	Stack with acoustic enclosure	4 Nos.	1.5	6
	Total			541.95

Table - Environmental Management Plan - Budget (Operation)

S. No	Description	Qty	Rate (Rs.)	Cost (Lakhs)
1	Solid Waste Management			4
	Organic waste Converter	-	-	1.0
	Door to Door Collection -Garbage	-	-	1.0
	Maintenance	-	-	2.1
2	Greenbelt developments			3
	Gardener & maintenance (1 No for every 2500sq. mts)	2	12000	2.88
3	Sewage Treatment Plant (200 KLD)			12
	Power consumption cost	8 KW x 22 hrs x 365 days	8	5.1

	Man power cost	2 x 12 months	16,500	3.9
	Consumables / Chemicals			2
	Miscellaneous			1
4	Grey water Treatment Plant (280 KLD)			14
	Power consumption cost	10 KW x 22 hrs x 365 days	8	6.5
	Man power cost	2 x 12 months	16,500	3.9
	Consumables / Chemicals			3
	Miscellaneous			1
5	Env. Monitoring			1.8
	Sampling - waste water (once in month)	24	1250	0.3
	Water - once in 3 months (3 Nos x 4)	12	5000	0.6
	Air - once in 3 months (4 Nos x 4)	16	3000	0.5
	Noise - once in 3 months (4 Nos x 4)	16	1000	0.1
	DG Set (once in month)	24	1400	0.3
6	Rain water harvesting (maintenance)			1.6
7	Disposal of treated waste water			36
	Cost for disposal			36
8	DG Sets (maintenance)			19.32
	Diesel Cost (During power off)			11.52
	Maintenance	4	10000 per month	4.80
	Man power cost	2 x 12 months	12,500	3.0
Total per Annum				91.72

SOLID WASTE MANAGEMENT PLAN

SOLID WASTE GENERATION DETAIL

Description	Population (Nos.)	Per Capita Waste Generation Kg/day	Total Waste Generation kg / day
Block I - Commercial	5540	0.2	1108
Block II - Residential	912	0.6	547
Block III - Residential	912	0.6	547
Visitors	182	0.2	36
Total	7,546		2,239

*Note: Quantity of per capita per day waste generation
 0.3 - 0.6 kg for residential development
 0.05 - 0.2 kg for visitors.*

SOLID WASTE MANAGEMENT

S. No.	Description	Quantity (kg/day)	Method of Treatment /Disposal
1	Biodegradable	896	Organic Waste Converter
2	Non-Biodegradable	1,343	Authorized Recyclers
3	STP Sludge	23	Dried & Used as manure for greenbelt development

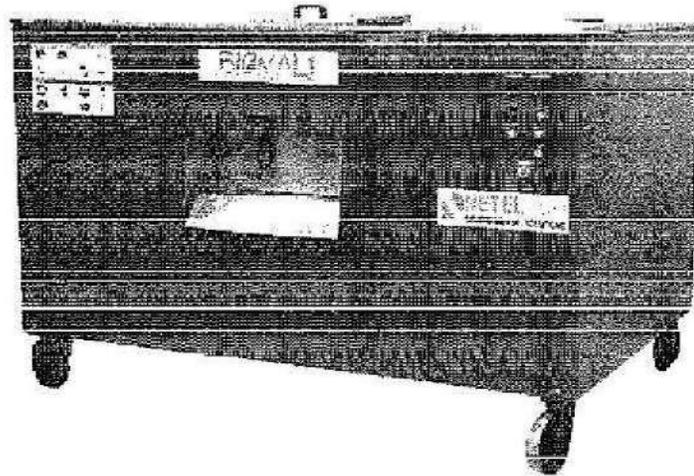
Note: As per NBC 2016, out of total solid waste generated 40% - organic and 60% - inorganic

Wastes generated from the households will be segregated into Bio degradable waste and non- bio degradable waste in the source itself (by the occupants) in separate bins. The wastes from such bins are collected separately on daily basis by the agency dealing in collection and disposal of garbage. The Bio degradable waste will be converted into manure using OWC & utilized for greenbelt development. The non bio degradable waste will be

handed over to authorized recyclers and STP Sludge will be dried and utilized as manure for greenbelt development.

Organic Waste Converter:

Organic Waste Converter (OWC) is a composting machine which is used to effectively dispose of organic wastes (food waste and other biodegradable wastes) resulting in volume reduction and convert the organic waste into high quality compost. The end product is organic manure which can be used instead of chemical fertilizer to gardening, landscaping and agriculture purposes.



Model	Capacity	Dimension, mm	Power
Compost 24-400	400 - 450 kgs/day	3300 x 1500 x 1500	17 KW

Process of semi-automatic composting machine is as under:

- Segregation of waste.
- Feeding of segregated organic waste into composting machine.
- Shredding of waste and adding Bio-culture as Suggested.
- Processing of waste into compost machine
- Ready compost for use.

Salient features and advantages:

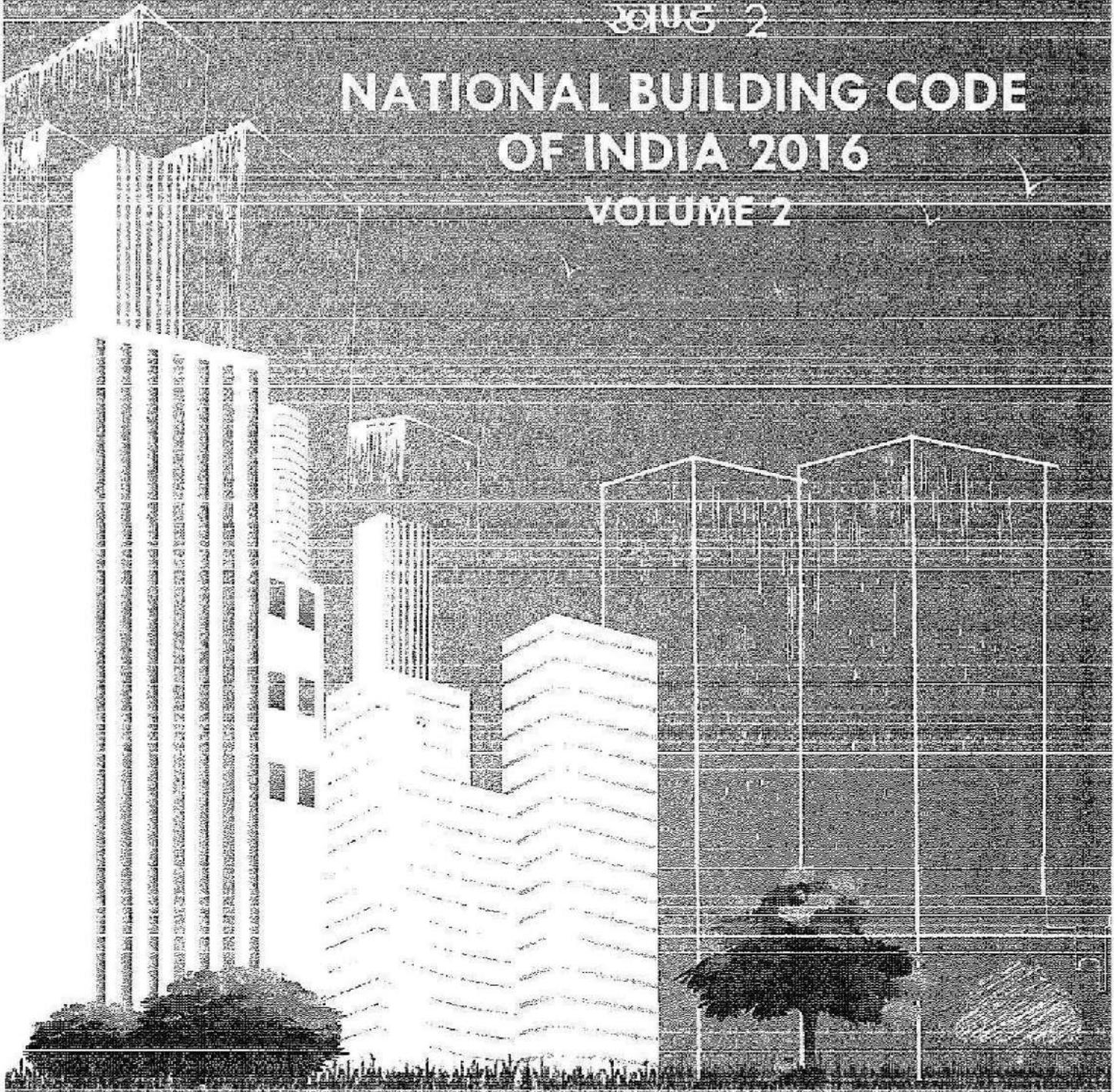
- Fully Automatic and compact in size.

- Processes all types of organic waste (kitchen waste, paper waste & garden waste).
- Volume reduction of organic waste into high quality compost.
- Ready compost in 24 hours
- Noiseless, Odorless, Maintenance-free.
- No harmful gases & pathogens.
- Reduces large amounts spent on transportation to landfill sites
- In-house waste management reducing dependence on any outside agency.

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भारत की राष्ट्रीय भवन निर्माण संहिता 2016 खण्ड 2

NATIONAL BUILDING CODE OF INDIA 2016 VOLUME 2



भारतीय मानक ब्यूरो

ISIRI, 11, Block 1, Indian Road, Connaught Place, New Delhi - 110028

- a) Sanitation system for internal cleaning of chutes, with sprinklers at every floor intake level, with disinfectant cleaning, which may preferably be automatic in operation;
- b) Exhaust system with 25 to 35 air changes per hour;
- c) Discharge end fire resistant door;
- d) Chute may be of masonry, R.C.C. pipe, asbestos cement pipe or suitable non-corrosive material, preferably stainless steel. It should be rigid with smooth internal finish, high ductility and alkali/acid resistant properties (see also good practice [9-3(2)]);
- e) Fire rating shall comply with 3.4.8.3 of Part 4 'Fire and Life Safety' of the Code;
- f) Fire sprinklers shall be provided inside chute;
- g) Vent shall be installed at roof level to remove foul smell and gases generated;
- h) Chute should discharge to trolley directly;
- j) Necessary automation of the system may be planned to avoid malfunction by manual operation; and
- k) All care shall be taken for ensuring accessibility to the chute for persons with disabilities. The opening of the chute shall not be higher than 700 mm and there shall be a clear space of minimum 1 500 mm × 1 500 mm in front of the chute opening to gain easy access even for persons using wheelchairs. There may be high colour contrast provided around the chute opening to make it easy to identify it. The flooring in front of the chute opening may be texturally highly different from the rest of the floor.

4.3.3 Refuse Collection Chamber

The collection chamber may be located in ground floor or basement level, provided appropriate arrangement is made for drainage of the collection pit by gravity flow to ensure its dryness, an appropriate ramp access is provided for convenient removal of garbage from the collection pit, and satisfactory ventilation is provided for escape of gas and odour.

The floor of the chamber shall be provided with drainage through a 100 mm diameter trap and screen to prevent any solid matters flowing into the drain and the drain shall be connected to the sewer line. The floor shall be finished with smooth hard surface for convenient cleaning.

The height of the collection chamber and vertical clearance under the bottom level of garbage chute shall be such that the garbage trolley can be conveniently placed.

The collection chamber shall be provided with appropriate shutter to prevent access of scavenging animals like cattle, dogs, cats and rats.

4.3.4 Refuse Collection Room

The refuse collection room should be planned in ground or basement level with appropriate ventilation and proper drainage. The room should have access for vehicle or trolley transfer of garbage.

4.3.5 See also accepted standards [9-3(3)].

4.4 Dumb-Waiter or Service Lift

In high rise buildings with more than 5 storeys, electrically operated dumb-waiters may be used for carrying domestic garbage in packets or closed containers. For handling of garbage by dumb-waiters in a building, a garbage chamber shall have to be provided either at ground floor or basement level and the provisions of garbage collection chamber for chute as given in 4.3 shall apply.

5 ASSESSMENT OF PER CAPITA WASTE QUANTITY

5.1 For purposes of this Section, the following municipal refuse generation rates are recommended:

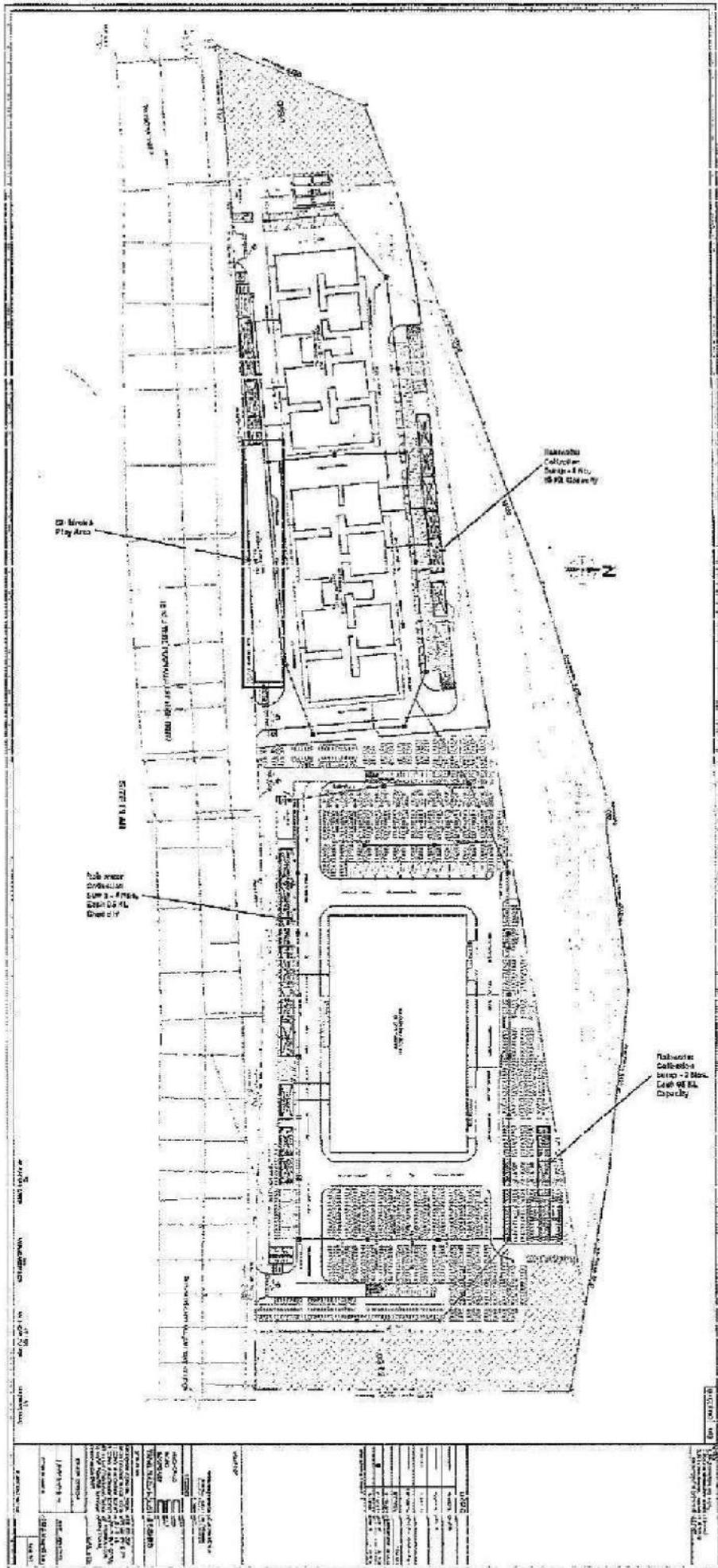
- | | |
|-------------------------|-----------------------------|
| a) Residential refuse | : 0.3 to 0.6 kg/capita/day |
| b) Commercial refuse | : 0.1 to 0.2 kg/capita/day |
| c) Street sweepings | : 0.05 to 0.2 kg/capita/day |
| d) Institutional refuse | : 0.05 to 0.2 kg/capita/day |

Out of the total solid waste generated, 40 percent may be taken as organic waste and 60 percent as inorganic waste. The knowledge of chemical characteristics of waste is important for selecting and designing the waste processing and disposal facilities.

5.2 These generation rates are subject to considerable site-specific factors and are required to be supported by field data. The waste contains a high percentage of ash and fine earth. The calorific value of Indian solid waste varies between 800 and 1 000 kcal/kg and the density varies between 300 and 500 kg/m³.

5.3 Other than municipal solid waste, the following types of waste may also be generated in urban centers:

- a) *Industrial waste* — Hazardous and non-hazardous waste from industrial areas within municipal limits.
- b) *Bio-medical waste* — Waste from hospitals, slaughter houses, etc.
- c) *Thermal power plant waste* — Fly ash from coal-based electricity generating plant within municipal limits.





CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
Thalamuthu Natarajan Building, No.1, Gandhi Irwin Road, Egmore,
Chennai - 600 098

Phone : 28414855 Fax: 91-044-28548416

E-mail: mscmda@tn.gov.in

Web site: www.cmdachennai.gov.in

(Development Charges Letter)

File No. : CMDA/PP/HRB/N/0296/2020

Date : 09 October, 2020

To

The Executive Engineer,
Tamil Nadu Housing Board,
Anna Nagar Division, TNHB Complex Building,
Thirumangalam, Chennai - 40.

Sir,

Sub: CMDA – Area Plans Unit – MSB (North) Division – Planning Permission Application is for the construction of High Rise Commercial cum Residential Group Development viz., Block – 1 : Double Basement floor + Ground floor + 19 floors – Commercial Office Building; Combined Double Basement floor for Tower – 2 & 3; Tower – 2 : 1st floor to 19th floor – Residential Tower with 152 Dwelling units; Tower – 3 : 1st floor to 19th floor – Residential Tower with 152 Dwelling units (Totally 304 Dwelling units) at Old S.Nos. 249/1, 2, 3, 5, 250/1, 2, 3, 4, 5, 6, 251, 252/2A, T.S.No.2, Block No. 4 of Arumbakkam Village, Aminjikarai Taluk, Poonamallee High Road, Greater Chennai Corporation, Chennai applied by The Executive Engineer & ADO, Tamil Nadu Housing Board, Anna Nagar Division – Remittance of DC & Other Charges - Advice sent - Reg.

- Ref:**
- 1) Planning Permission Application received in SCB No. CMDA/PP/HRB/N/ 0296/2020 dt.03.06.2020.
 - 2) Agenda and Minutes of 265th MSB Panel meeting held on 24.06.2020.
 - 3) AAI NOC received in NOC ID: CHEN/SOUTH/B/061320/ 467308 dt.26.06.2020 valid upto 24.06.2028 (Requested Height: 95.95m).
 - 4) This office letter even No. dt. 01.07.2020.
 - 5) Applicant letter dt. 31.07.2020.
 - 6) This office letter even No. dt.07.08.2020 addressed to the Government.
 - 7) Government Letter (Ms) No. 124, H&UD Department dt.19.08.2020.
 - 8) Applicant Letter No. AND/P1g/869/2018 dt.21.09.2020 & 26.09.2020 enclosing revised plans and other required particulars.
 - 9) Deputy Director, District Survey Department Letter No. E1/2333/2020 dt.11.09.2020 enclosing FMB Sketch for T.S. No. 2, Block No. 4 of Arumbakkam Village.
 - 10) Minutes of Meeting taken by Chief Secretary to Government of Tamil Nadu on 08.09.2020.

The Planning Permission application received for the Building – proposed construction of 1 Ground Floor + 2 Floor Assembly 1 Parking + 3 Floor Residential building with 304 dwelling units at Door No:0, Plot No:0, Address: Poonamallee High Road, Locality: Arumbakkam City/Town: Chennai in S.No. 249,250 TS.No.2,2 of Arumbakkam village within the limit of Greater Chennai Corporation Remittance of DC & Other charges – DC advice Sant - Reg is under process. To process the application you are requested to remit the following charges by separate Demand Drafts of a Nationalized Bank in Chennai City drawn in favour of Member-Secretary, CMDA, Chennai- 600 008, at Cash Counter (between 10.00 A.M and 4.00 P.M) in CMDA and produce the duplicate receipt to the Area Plans Unit, CMDA, Chennai-8 (or) Payment can also be made through online Gateway payment of IndusInd Bank in A/c No.100034132198 (IFSC Code No. INDB0000328); was examined and layout plan has been prepared to satisfy the Development Regulation requirements and approved

Sl. No.	Charges	Charges/Deposits already paid	Amount to be remitted
I	Scrutiny Fees	Rs.2,85,931.00 R.t No CMDA/FP/Ch/3173/2020, dt 30 September, 2020	
II	IDC - CMWSSB (For sewerage area only)		Rs.2,48,25,000.00
III	I & A Charge		Rs.5,85,00,000.00
IV	Shelter Charges		Rs.12,18,50,000.00
V	Flag Day Charge		Rs.500.00
VI	Balance Scrutiny Fees		Rs.15,000.00
VII	Development charges for land per Sq. m. And Development charges for building per Sq. m.		Rs.30,00,000.00

The security deposit is also acceptable in the form of Bank Guarantee from any Scheduled bank having branch in Chennai Metropolitan Area, in the prescribed format for the entire period of Planning Permission.

Security Deposit is refundable amounts without interest on claim, after issue of completion certificate by CMDA. If there is any deviation/violation/change of use of any part of /whole of the building/site to the approved plan security deposit will be forfeited. Further, if the security deposit paid is not claimed before the expiry of five years from the date of payment, the amount will stand forfeited.

Security Deposit for Display Board is refundable when the display board as prescribed with format is put up in the site under reference. In case of default Security Deposit will be forfeited and action will be taken to put up the display board.

- a. No interest shall be collected on payment received within one month (30 days) from the date of issue of the advise for such payment.
- b. Payment received after 30 days from the date of issue of this letter attracts interest at the rate of 12% per annum (i.e. 1% per month) for every completed month from the date of issue of this letter. This amount of interest shall be remitted along with the charges.
- c. Infrastructure and Amenities Charges shall be paid by the applicant within 30 days from the date of receipt of this demand letter, failing which in addition to the Infrastructure and Amenities Charges due, an interest at the rate of 15% per annum for the amount due shall be paid for each day beyond the said 30 days upto a period of 90 days and beyond that period of 90 days, an interest at the rate of 18% per annum for the amount due shall be paid by the applicant.
- d. Accounts Division shall work out the interest and collect the same along with the charges due.
- e. No interest is collectable for security deposit.
- f. No penal interest shall be collected on the interest amount levied for the belated payment of DC, OSR, Reg. Charges, Demolition Charges and Parking Charges within 15 days from the date of remittance of DC, OSR charges etc.

- g. For payments of interest received after 15 days, penal interest shall be collected at the rate of 12% p.a

The papers would be returned unapproved, if the payment is not made within 60 days from the date of issue of this letter.

You are also requested to comply the following:

A. Furnish the letter of your acceptance for the following conditions stipulated by virtue of provisions available under TNCD&BR - 2019 :-

- I. The construction shall be undertaken as per sanctioned plan only and no deviation from the plans should be made without prior sanction. Construction done in deviation is liable to be demolished.
- II. In cases of High Rise Building, Registered Developers (RD), Registered Architects (RA), Registered Engineers (RE), Registered Structural Engineers (RSE), Registered Construction Engineers (RCE) and Registered Quality Auditor (ROA) shall be associated with the construction work till it is completed.
- III. The Owner or Developer shall compulsorily appoint a Construction Engineer for over all constant supervision of construction work on site and such person appointed shall not be allowed to supervise more than one such site at a time.
- IV. The Registered Architect or Registered Engineer and the structural engineer shall be responsible for adhering to the provisions of the relevant and prevailing Indian Standard Specifications including the National Building Code. However they will not be held responsible for the severe damage or collapse that may occur under any natural force going beyond their design courses provided in the above said Standards or National Building Code.
- V. The Registered Architect or Engineer is solely responsible for obtaining the certificate required under this rule from the registered professionals.
- VI. In the event of any deviations the Registered Architect or Engineer is the solely responsible to bring it to the notice of CMDA.
- VII. The owner or developer shall submit an application to CMDA in the first stage after completion of work up to plinth level requesting for issue of order for continuance of work.
- VIII. The owner or developer through the registered professional shall submit to the designated officer of CMDA a progress certificate in the given format at the stage of Plinth and last storey level along with structural inspection report as provided.
- IX. If the services of the Registered Architect or Engineer on record are terminated he shall immediately inform CMDA about his termination and the stage of work at which his services have been terminated. The Registered Architect or Engineer appointed as replacement of the preceding Registered Architect or Engineer shall inform about his

appointment on the job and inform CMDA of any deviation that might have occurred on the site with reference to the approved plan and the stage at which he is taking over the charge.

- X. The Registered Architect or Engineer appointed shall inform CMDA immediately on termination of the services of the registered structural engineer on record, registered construction engineer on record, or any change of owner or registered developer.
- XI. If during the construction of the building the owner or registered developer (RD) or Registered Architect on Record (AR) or Registered Engineer on record (ER) / Registered Structural Engineer on Record (SER) or Registered Geo Technical Engineer on record (GER) or Registered Construction Engineer on Record (CER) and Registered Quality Auditor (QA) is changed, he shall intimate to CMDA by a registered letter that he was no longer responsible for the project, and the construction shall have to be suspended until the new Owner or Registered Developer or Registered Architect on Record (AR) etc., undertakes the full responsibility for the project as prescribed in these rules and also in the forms.
- XII. A new owner or registered developer (RD) or Registered Architect on Record (AR) or Registered Engineer on Record (ER) or Registered Structural Engineer on Record (SER) or Registered Geo Technical Engineer on record (GER) and Registered Construction Engineer on Record (CER) and Registered Quality Auditor (QA) shall inform the change to CMDA, and before taking responsibility as stated above, check as to whether the work already executed is in accordance with the Building Permit granted by the competent authority. He or She may go ahead with the remaining works only after obtaining permission with CMDA.
- XIII. The owner or Power of Attorney holder or registered developer or any other person who has acquired interest shall submit application in complete shape for issue of completion certificate according to the norms prescribed in TNCDBR Annexure - XXIII.
- XIV. The completion certificate shall not be issued unless the information is supplied by the owner, developer, the registered professionals concerned in the schedule as prescribed by the competent authority from time to time.
- XV.
- a) Temporary connection for water, electricity or sewer, permitted for the purpose of facilitating the construction, shall not be allowed to continue in the premises after completion of the building construction.
 - b) No connection to the water main or sewer line or electricity distribution line with a building shall be made without the prior permission of the authority and without obtaining completion certificate.
 - c) In case, the use is changed or unauthorised construction is made, the authority is authorised to discontinue such services or cause discontinuance of such service.
- XVI. On completion of the construction the applicant shall intimate CMDA and shall not occupy the building or permit it to be occupied until a completion certificate is obtained from CMDA .
- XVII. While the applicant makes application for service connection such as Electricity, Water Supply, Sewerage he should enclose a copy of the completion certificate issued by CMDA along with his application to the concerned Department/Board/Agency.
- XVIII. When the site under reference is transferred by way of sale/lease or any other means to any person before completion of the construction, the party shall inform CMDA of such transaction and also the name and address of the persons to whom the site is transferred immediately after such transaction and shall bind the purchaser to those conditions to the Planning Permission.
- XIX. In the Open space within the site, trees should be planted and the existing trees preserved to the extent possible;
- XX. If there is any false statement, suppression or any misrepresentations of facts in the applicant, planning permission will be liable for cancellation and the development made, if any will be treated as unauthorized.
- XXI. The new building should have mosquito proof overhead tanks and wells.

XXII. The sanction will be revoked, if the conditions mentioned above are not complied with.

XXIII. Rainwater conservation measures notified by CMDA should be adhered to strictly.

- a) An Undertaking to abide the terms and conditions put forth by Police (Traffic), DF&RS, AAI, IAF & PWD in Rs.20/- Stamp Paper duly notarized
- b) Details of the proposed development duly filled in the format enclosed for display at the site in cases of High Rise Buildings.

The issue of Planning Permission depends on the compliance/fulfillment of the conditions/payments stated above. The acceptance by the Authority of the pre-payment of the Development charge and other charges etc. shall not entitle the person to the Planning Permission but only refund of the Development Charge and other charges (excluding Scrutiny Fee) in cases of refusal of the permission for non-compliance of the conditions stated above or any of the provisions of TNCB&DR - 2019, which has to be complied before getting the Planning permission or any other reason provided the construction is not commenced and claim for refund is made by the applicant.

You are also requested to furnish the following particulars:

- Boundary as per Site and as per FMB to be superimposed and the difference in area has to be distinguished with proper hatching.
 - Genset in setback space is not permissible.
 - Basement line to be clearly shown in the site plan and setback to be shown from the Basement line.
 - Existing width of Poonamallee High Road to be mentioned in the site plan.
 - Site levels are to be properly indicated and filling up details as per PWD to be mentioned clearly in the site plan, Section & Elevation.
 - Clear height of Still floor to be mentioned in both section & elevation of High Rise Buildings.
 - Car & TW parking are to be re-arranged with required aisle width.
 - Car & TW parking reserved for Physically challenged are to be properly indicated.
 - Both Car and TW parking are to be numbered properly.
 - Fire Escape Staircase to be mentioned properly in all the High Rise Buildings.
 - Unwanted Block Images to be removed.
 - Building dimensions to be mentioned in the site plan.
 - Usages of OHT's in Terrace floor plan are to be mentioned properly.
 - Section along Ramp to Basement floor to be shown for both Commercial & Residential Blocks.
 - Section & Elevation requires correction with respect to individual floor plans.
 - The term future development to be removed in the site plan.
 - Area statement and Proposal title requires correction.
 - Plans to be colored and signed by Structural Engineer.
- NOCs from Traffic Police, DF&RS, IAF, PWD from Inundation point of view are to be furnished for the revised plans.
 - Environmental Clearance for the proposal to be furnished.
 - OSR area 1 & 2 to be Gifted to CMDA through registered Gift Deed before Issue of Planning Permission.
 - As the height of the building exceeds 60.00m, Structural design report vetted by IIT(Madras)/Anna University to be furnished.
 - Undertaking in Rs.20/- Stamp paper to avail Premium FSI to be furnished.
 - Duly filled in Form - B and Form - C and notarized to be furnished.
 - All plans duly signed by Architect & Structural Engineer to be furnished.
 - The extended basement top slab below the external circulation at Ground level should be designed to withstand the fire fighting vehicular loads. An undertaking to this effect to be furnished by both Applicant and Structural Engineer.
 - CCTV Camera to be installed at regular interval of 50.00m along the abutting road on the site boundary before Issue of Completion Certificate. To this effect an undertaking to be furnished before issue of Planning Permission.

Yours faithfully,

Name :
Elangovan G
Designation :
Channel
Assistant
Planner
Date : 09-Oct-
2020 14:

Name: ELANGOVAN G

Designation: Assistant Planner

Date: 09 October, 2020

For

Member Secretary

CMDA

Copy to:

1. The Senior Accounts Officer,
Accounts (Main), CMDA, Chennai-8.
2. The Commissioner
Greater Chennai Corporation,
Chennai- 600 003.

RAINWATER HARVESTING SYSTEM

It is proposed to recharge the roof runoff and surface runoff from the landscape areas and other lined & unlined areas in rainwater collection sump. The flow chart of rainwater harvesting for the proposed project is given below;

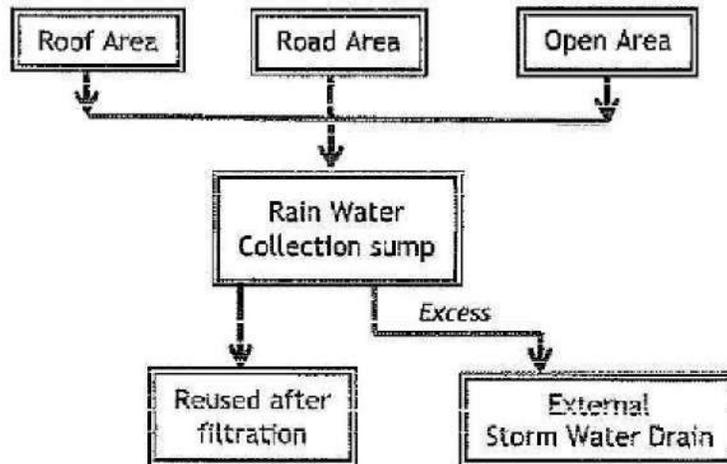


Figure - Flow Chart of Rainwater Harvesting

Design Parameters:

Quantity of rainfall run-off will be: $q = a \times p \times r$ in cu. m / hr.
 a = area of catchments in Sq. mt.
 p = permeability factor
 r = rainfall intensity in m / yr.

TABLE - RUNOFF CALCULATION

S. No.	Description	Area in Sq.m	Annual rainfall in m	Runoff Co-efficient	Total runoff available in m ³ /annum	Total runoff, m ³ /hour
1	Roof Area	5,197.39	1.33	0.85	5,870	770
2	Paved Area	15,730.61	1.33	0.75	15,691	590
3	Unpaved Area	12,077	1.33	0.15	2,409	90
Total Run-off		33,000			23,970	900

Based on the climatological observations in India by Indian Metrological Department, rainfall data for Major cities have been computed in which for Chennai the annual rainfall is 1333.8 mm. Chennai recorded peak rainfall of 50 mm per hour and 265 mm in 24 hrs during November 2015.

Rain Water Collection Sump:

7 nos. of Rain water collection sumps of each 95 KL capacity (10.00 x 3.50 x 2.70 m) are proposed to collect rainwater from roof of Apartments & Commercial Block and surface runoff. The sump will be adequate to store 70 % of the runoff rainwater (peak rainfall per hour). Excess runoff will be drained into the external storm water drain which is available outside the site. The plan showing the location of rainwater collection sump & its dimensions is enclosed.

STORM WATER MANAGEMENT

Storm water is rainwater that runs off streets and other sites. When stormwater is absorbed into soil, it is filtered and ultimately replenishes aquifers or flows into streams and rivers.

In developed areas, impervious surfaces such as pavement and roofs prevent precipitation from naturally soaking into the ground. Instead, water runs rapidly into storm drains, sewer systems and drainage ditches and can cause:

- Downstream flooding
- Stream bank erosion
- Increased turbidity from erosion
- Habitat destruction
- Combined storm and sanitary sewer system overflows
- Infrastructure damage
- Contaminated streams, rivers and coastal water

Because impervious surfaces do not allow rain to infiltrate into the ground, more runoff is generated than in the undeveloped condition. Due to this reduction of level of water table advances and depletion of ground water resource occurs which is a key factor to severe drought and scarcity conditions. To avoid flooding in transportation corridors and to control damage to properties. Both cases cause severe damage and contamination of the environment if sanitation facilities are flooded. This results in high costs and notably massive suffering for the local communities.

Stormwater management is based on

- the need to protect the health, welfare and safety of the public, and to protect property from flood hazards by safely routing and discharging stormwater from developments;
- the quest to improve the quality of life of affected communities;
- the opportunity to conserve water and make it available to the public for beneficial uses;
- the responsibility to preserve the natural environment;

- the need to strive for a sustainable environment while pursuing economic development; and
- the desire to provide the optimum methods of controlling runoff in such a way that the main beneficiaries pay in accordance with their potential benefits.

Contour Details

The contour considering the buffer zone of 1km around the project site as well as the site contour is given below. The topography of the Project site is predominantly an undulating terrain. The elevation at the centre of the proposed site is 7.5 m AMSL. The terrain gradually slopes towards North while the south of the site is around 17 m AMSL. There is no alternation in the drainage pattern and natural slope exists.

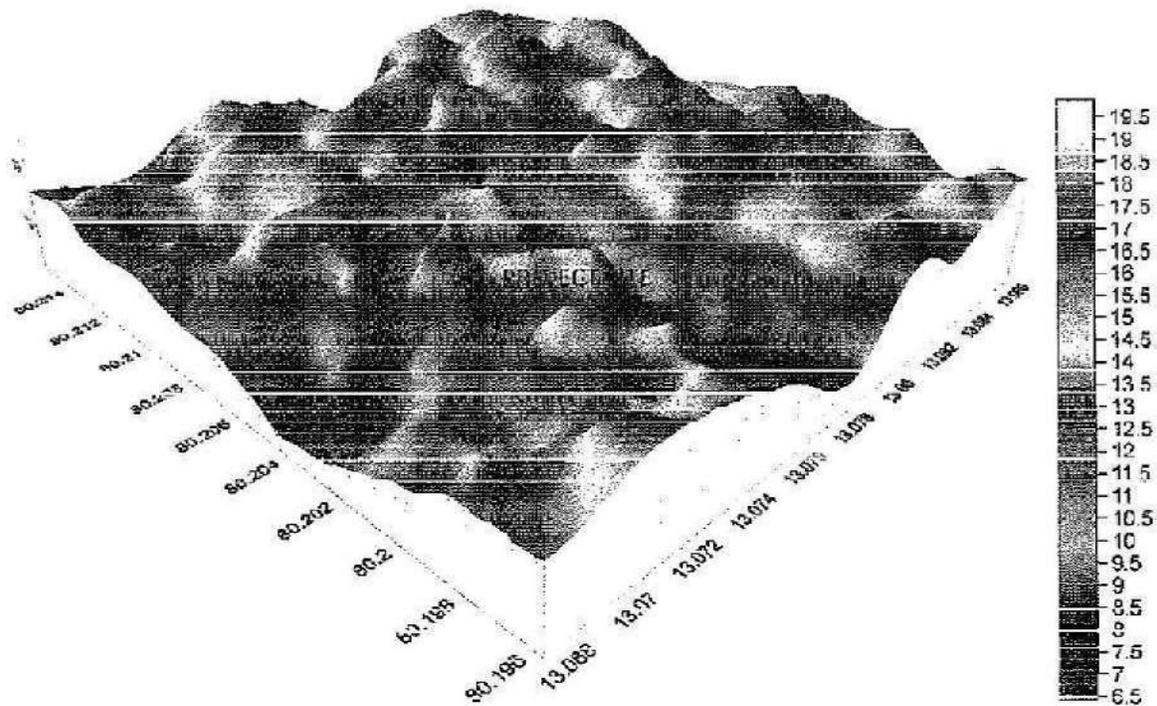


Figure - Contour considering 1 Km radius around the Project Site

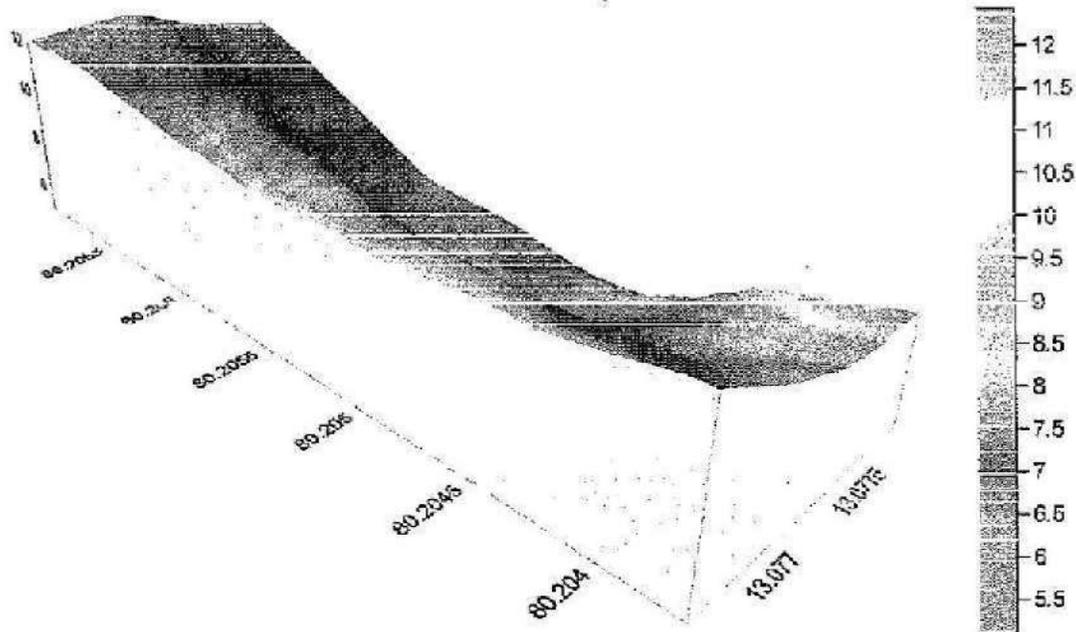


Figure - Project Site Contour

STORM WATER MANAGEMENT

The objective of proper storm water drainage is to provide:

- Safety of the public within the proposed area and outside the project are
- To minimize and control flooding and to provide for the safe passage of less frequent flood events
- To protect property
- Enhance urban landscape and optimize land available and
- Minimize the environmental impact of urban runoff

In urban storm water management, there are two techniques of managing the surface runoff and are storage and infiltration.

The flow chart of storm water management for the proposed project is given below.

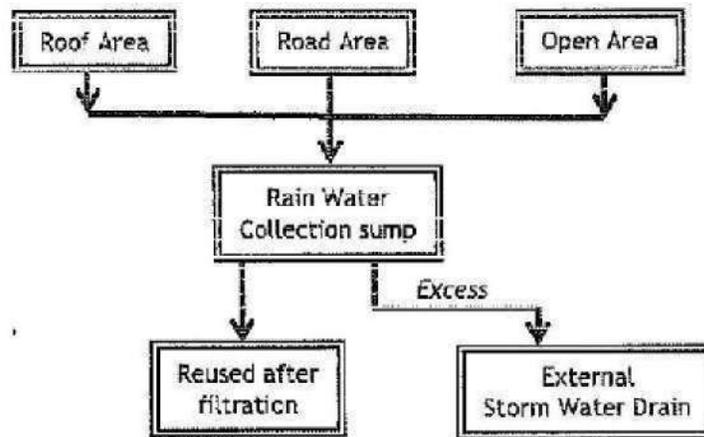


Figure - Flow Chart of Storm Water Management

The proposed project site will be constructed with rainwater collection trenches all along the boundary. Excess storm water will be allowed to drain into the public (external) storm water drain. The main public storm water drain system is situated south of the project site and dimensions are 1.5m wide and 2.5m depth.

The images of the existing storm water drain adjacent to the project site is given below;

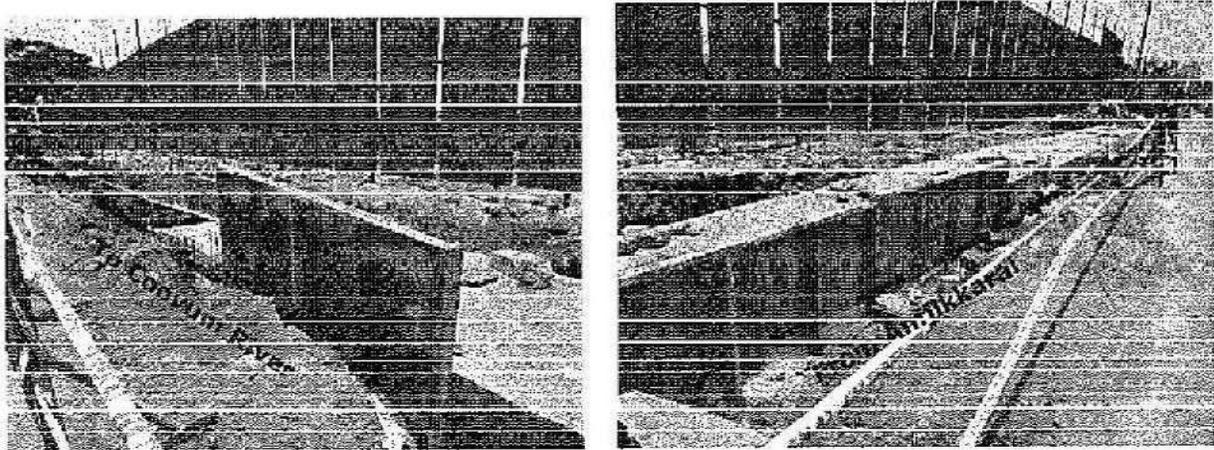


Figure - Public Storm Water Drain adjacent to the Project Site

The public storm water drain flows from eastern side of the site to Coovum River and a Satellite Imagery on the public drain is given below;

STATE EXPERT APPRAISAL COMMITTEE – TAMIL NADU

Minutes of 188th Meeting of State Expert Appraisal Committee (SEAC)- TN held on 19th December 2020 for Appraisal of Building and Construction Projects, Townships and Area Development projects, Synthetic Organic Chemicals Industry Projects & Mining projects conducted through video conference.

Agenda No: 188 -01

(File No: 7727/2020)

Proposed Construction of High Rise Buildings at S.F.No. 343/2 Block No.11, Peters Road Triplicane Village, Mylapore – Triplicane Taluk, Chennai District, Tamil Nadu by M/s.Tamil Nadu Housing Board - For Environmental Clearance (SIA/TN/MIS/166360/2020)

The proposal was earlier placed in the 179th meeting of SEAC. Based on the documents furnished and presentation made by the Proponent, certain additional details were sought. On receipt of the said details from the Proponent, the subject was placed for appraisal in this 188th meeting of SEAC held on 18.12.2020. The details of the project furnished by the proponent are available on the website (parivesh.nic.in).

The SEAC noted the following:

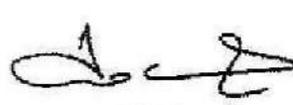
1. The Proponent, M/s. Tamil Nadu Housing Board has applied seeking Environmental Clearance for the proposed construction of High Rise Buildings at S.F.No. 343/2, Block No.11, Peters Road, Triplicane Village, Mylapore-Triplicane Taluk, Chennai District, Tamil Nadu.
2. The project/activity is covered under Category "B" of Item 8(a) "Building and Construction projects" of the Schedule in EIA Notification, 2006.
3. The proposed project site has 21 nos. of existing old residential blocks and same will be demolished by the project proponent.

After detailed deliberations, SEAC decided to recommend the proposal to SEIAA for the grant of Environmental Clearance subject to the following conditions in addition to the standard conditions stipulated by the MoEF& CC:

1. The proponent shall comply with all the conditions imposed in the NOC on inundation point of view issued by PWD/WRD vide Lr. No. DB/T5(3)/F-Mylapore TNHB Peters/2020/dated 08.12.2020.


Member Secretary
SEAC -TN

1/54


Chairman
SEAC- TN

11. The recommendation for the issue of environmental clearance is subject to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A.No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981 /2016, M.A.No.982/2016 & M.A.No.384/2017).
12. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance.
13. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of mining operation.
14. The mine closure plan submitted by the project proponent shall be strictly followed after the lapse of the mine.
15. As per the MoEF&CC Office Memorandum F.No. 22-65/2017-IA/III dated: 30.09.2020, and 20/10/2020 the proponent shall furnish the detailed EMP mentioning all the activities as proposed in the CER and furnish the same before placing the subject to SEIAA.

Agenda No: 188 -04

(File No. 7627/2020)

Proposed Construction of Mixed Use Development (Residential & Commercial) at S.F.No.2, Block No.4 of Arumbakkam Village, Aminjikkarai Taluk (Earlier Egmore - Nungambakkam Taluk), Chennai District by M/s. Tamil Nadu Housing Board - Anna Nagar Division - For Environmental Clearance (SIA/TN/MIS/161937/2020)

The proposal was earlier placed in the 182th meeting of SEAC. Based on the documents furnished by the proponent and presentation made by the Proponent, certain additional details were sought. On receipt of said details from the Proponent, the subject was placed for appraisal in this 188th meeting of SEAC held on 18.12.2020. The details of the project furnished by the proponent are available on the website (parivesh.nic.in).


Member Secretary
SEAC -TN 815A


Chairman
SEAC- TN

The SEAC noted the following:

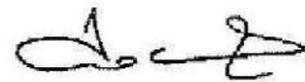
1. The Proponent, M/s. Tamil Nadu Housing Board has applied seeking Environmental Clearance for the Construction project in Proposed construction of mixed development at S.F.No.2,Block No.4 of Arumbakkam Village, Aminjikkarai Taluk (Earlier Egmore – Nungambakkam Taluk), Chennai District.
2. The project/activity is covered under Category "B2" of Item 8(a) "Building and Construction projects" of the Schedule in EIA Notification, 2006.

After detailed deliberations, SEAC decided to recommend the proposal for the grant of Environmental Clearance to SEIAA subject to the following conditions in addition to standard conditions stipulated by the MoEF&CC:

1. The proponent shall comply with all the conditions imposed in the NOC on inundation point of view issued by PWD/AWRD vide Lr. No. DB/T5(3)/F-NOC-Arumbakkam/2020/dated 03.10.2020.
2. The project proponent shall provide Sewage treatment plant & Grey water treatment system as reported and continuously operate and maintain Sewage treatment plant & Grey water treatment system to achieve the standards prescribed by the TNPCB/CPCB.
3. The sludge generated from the Sewage Treatment plant shall be collected and dewatered using filter press and the same shall be utilized as manure for green belt development after composting.
4. The proponent shall make proper arrangements for the disposal of the excess treated grey water from the proposed site in Division 100 parks and nearby areas as detailed in the EE/Zone VIII/ GCC Lr. No.Zo.VIII No SPL 2020 dated 16.11.2020 subject to the conditions stated therein.
5. The project proponent shall provide entry and exit points for the OSR area Community Hall, play area as per the norms for the public usage as committed.
6. The project proponent shall necessarily comply with the provisions given under Construction & Demolition Waste Management Rules, 2016.



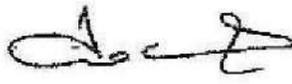
Member Secretary
SEAC-TN 9/24



Chairman
SEAC-TN

7. As reported, the proponent shall treat the Bio-degradable waste generated through Bio-methanation plant/ Organic Waste Converter & Non-Biodegradable waste shall be disposed to Authorized Recyclers.
8. The Proponent shall provide the dispenser for the disposal of Sanitary Napkins.
9. The proponent shall always ensure no waste of any type shall be disposed of in any other way than the approved one.
10. The height of the stacks of DG sets shall be provided as per the CPCB norms.
11. The proponent shall earmark the greenbelt area with dimension and GPS coordinates all along the boundary of the project site with at least 3 meters wide and the same shall be included in the layout out plan to be submitted for CMDA/DTCP approval. The total green belt area should be minimum 15% of the total area and the same shall not be used for car parking.
12. Proper drainage facility should be provided for the entire above mentioned survey fields.
13. The Proponent shall provide rain water harvesting sump of adequate capacity for collecting the rooftop, paved and unpaved road runoff as committed.
14. The proponent shall ensure that, the storm water flows from the upstream side without any hindrance by designing the storm water drainage arrangement in accordance with the contour levels of the proposed project area and considering the surrounding development to avoid the future flood inundation at the project site.
15. Tapping of solar energy should be at least 10% of total energy consumption Solar energy usage mainly for the illumination of common areas, street lighting etc.,
16. Adequate fire protection facilities shall be installed including fire detectors, fire alarm and fire fighting system to guard the building against fire. All fire protection facilities shall be designed as per the National Building Code 2016. According to prospective plans, fire-fighting arrangements such as fire extinguisher, hose reel, wet riser, yard hydrant, automatic sprinkler system, manually operated electric fire alarm system, underground water storage tank, terrace tank, pumps shall be provided considering maximum building height as per NBC of India, 2016.


 Member Secretary
 SEAC -TN 19/5/24


 Chairman
 SEAC- TN

17. All the mitigation measures committed by the proponent for the flood management, Evacuation plan, Solid waste disposal, Sewage treatment & disposal etc., shall be followed strictly.

18. As per the MoEF&CC Office Memorandum F.No. 22-65/2017-IA.III dated: 30.09.2020, and 20/10/2020 the proponent shall furnish the detailed EMP mentioning all the activities as proposed in the CER and furnish the same before placing the subject to SEIAA.

Agenda No: 188-05

File No: (7437/2020)

Environmental Clearance for the proposed Reconstruction of 240 nos. of residential flats at Block No.08, TS No. 6pt, 7pt, 8pt, 9pt and 10pt of Shenoy nagar, Perambur-Purasavakkam Taluk, Chennai District by M/s. Tamil Nadu Housing Board – For Environmental Clearance
(SIA/TN/MIS/140988/2020)

The proposal was earlier placed in the 152nd and 175th meetings of SEAC. Based on the documents furnished and presentation made by the Proponent, certain additional details were sought. On receipt of the said details from the Proponent, the subject was placed for appraisal in this 188th meeting of SEAC held on 18.12.2020. The details of the project furnished by the proponent are available on the website (parivesh.nic.in).

The SEAC noted the following:

1. The Proponent, M/s. Tamil Nadu Housing Board has applied seeking Environmental Clearance for the proposed reconstruction of 240 residential flats located at Block No.08, TS No. 6pt, 7pt, 8pt, 9pt and 10pt of Shenoy Nagar, Perambur - Purasavakkam Taluk, Chennai District.
2. The project/activity is covered under Category "B2" of Item 8(a) "Building and Construction Projects" of the Schedule of EIA Notification, 2006

After detailed deliberations, SEAC decided to recommend the proposal for the grant of Environmental Clearance to SEIAA subject to the following conditions in addition to standard conditions stipulated by the MoEF&CC:


Member Secretary
SEAC -TN 11/54


Chairman
SEAC- TN

From
K. Ravjchandran, B.E.,
Executive Engineer and ADO,
Anna Nagar Division,
Tamil Nadu Housing Board,
Thirumangalam Shopping Complex,
Chennai - 600101



To
The Member Secretary,
State Environment Impact
Assessment Authority, Tamil Nadu,
3rd Floor, Panagal Maligai,
No.1, Jennis Road, Saidapet,
Chennai - 600 015

Letter No.

Date: 08.01.2021

Sir,

Sub: Environmental Clearance - Proposed construction of Mixed use Development (residential & commercial) project at S. No. 2, Block No.4 of Arumbakkam Village, Egmore - Nungambakkam Taluk, Chennai District, Tamil Nadu; under project category - B1 and schedule S. No. 8(a) - Additional Details - Regd.

Ref: i. Our online proposal to SIA/TN/MIS/161937/2020 dated 11/10/2020
ii. Letter No. SEIAA-TN/E No.7627/2020 dated 11/10/2020
iii. Minutes of 182nd SEAC meeting held on 17/10/2020
iv. Minutes of 188th SEAC meeting held on 18/12/2020

With reference to the 4th cited above, also as per the MOEF&CC OM dated 30/09/2020 & 20/10/2020 we were requested to furnish the detailed EMP mentioning all the activities as proposed in CER to consider our request to grant environmental clearance for our project.

As suggested by SEAC, please find below detailed activity-incorporating CER as part of our EMP proposal. We also would like to inform you that separate affidavit has been already submitted to SEIAA for the proposed CER activities.

Environmental Management Plan - Capital Cost.

S. No.	Description	Quantity	Rate	Cost (lakhs)
1	Solid Waste Management			42.3
	Organic waste converter	2 Nos		36
	Civil			3
	Dumper Bins			1
	i) Bins of 50 lits with wheels (1 no/50 dwellings)			2
	ii) Dumper Bins with wheel of 2 cum capacity	6 Nos	0.05	0.3
2	Greenbelt Development			3.2
	i) Saplings and Associated works	420 Nos	400	1.6
	ii) Tree Guards	420 Nos	400	1.6



3	Energy Conservation measures			51
	i) Solar street light	150 Nos	0.12	18
	ii) Solar Rooftop PV			31.5
	iii) Installation Cost			1.5
4	Rain water harvesting			79.45
	RWH Sumps & Storm water drains			78
	RWH Pits	29 Nos	0.05	1.45
5	Grey water treatment plant (280 KLD)	1		170
6	Sewage Treatment Plant (200 KLD)	1		150
7	Diesel Generator			46
	4 Nos. of DG Set (1500, 2000 KVA each 2 Nos.)	4 Nos.	10	40
	Stack with acoustic enclosure	4 Nos.	1.5	6
			Sub Total	541.95
GER Activities				
1	Municipal Corporation School (Arumbakkam)			
	Providing water supply, books, journals & furniture for library, sanitary facilities, computer & tree plantation			125.70
2	Chennai Corporation Government School (Koyambedu)			
	Providing water supply, books, journals & furniture for library, sanitary facilities, computer & tree plantation			125
3	Maintenance & Beautification of Coovum River			
	Bund Strengthening & Tree Plantation along the bund			349
			Sub Total	599.70
Total Cost allotted for EMP & GER Activities				1141.65

Environmental Management Plan - Budget (Operation)

S. No	Description	Qty	Rate (Rs.)	Cost (Lakhs)
1	Solid Waste Management			4
	Organic waste Converter			1.0
	Door to Door Collection - Garbage			1.0
	Maintenance			2.1
2	Greenbelt developments			3
	Gardener & maintenance (1 No for every 2500sq. mts)	2	12000	2.88
3	Sewage Treatment Plant (200 KLD)			12
	Power consumption cost	8 KW x 22 hrs x 365 days	8	5.1
	Man power cost	2 x 12 months	16,500	3.9

	Consumables / Chemicals			2
	Miscellaneous			1
4	Grey water Treatment Plant (280 KLD)			14
	Power consumption cost	10 KW x 22 hrs x 365 days	8	6.5
	Man power cost	2 x 12 months	16,500	3.9
	Consumables / Chemicals			3
	Miscellaneous			1
5	Env. Monitoring			1.8
	Sampling - waste water (once in month)	24	1250	0.3
	Water - once in 3 months (3 Nos x 4)	12	5000	0.6
	Air - once in 3 months (4 Nos x 4)	16	3000	0.5
	Noise - once in 3 months (4 Nos x 4)	16	1000	0.1
	DG Set (once in month)	24	1400	0.3
6	Rain water harvesting (maintenance)			1.6
7	Disposal of treated waste water			36
	Cost for disposal			36
8	DG Sets (maintenance)			19.32
	Diesel Cost (During power off)			11.52
	Maintenance	4	10000 per month	4.80
	Man power cost	2 x 12 months	12,500	3.0
Total per Annum				91.72

With the above details submission, we request SEIAA to consider our reply and process our application seeking Environmental clearance and issue the same as early as possible.

Thanking you

Yours sincerely,

For M/s. Tamil Nadu Housing Board

A. S. S. S. S.
Executive Engineer & ADO

Anna Nagar Division, Chennai,

Tamil Nadu - 600 101

MINUTES**418th MEETING****STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMIL NADU****Date: 11.01.2021&12.01.2021**

			and 20.10.2020 the proponent shall furnish the detailed EMP to TNPCB, mentioning CER activities as committed. The CER activities shall be carried out before obtaining CTO from TNPCB.
8.	To consider the proposal for the grant of Environmental Clearance for the Proposed Rough stone quarry lease over an extent of 2.02.5Ha at S.F.No.117/6 in Neikulam Village, Lalgudi Taluk Tiruchirappalli District, Tamil Nadu by Thiru. R.Manivannan.	7318	After detailed discussion, the Authority unanimously accept the recommendation of SEAC and decided to grant Environmental Clearance subject to the conditions as recommended by SEAC & normal condition in addition to the following condition. 1. As per the MoEF & CC office memorandum K.No.32-55/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall furnish the detailed EMP to TNPCB, mentioning CER activities as committed. The CER activities shall be carried out before obtaining CTO from TNPCB.
9.	To consider for the grant of Environmental Clearance for the Proposed Construction of Mixed Use Development (Residential & Commercial) by M/s. Tamil Nadu Housing Board at T.S.No.2, Block No.4 of Arumbakkam Village, Aminjikkarai Taluk (Earlier Egmore - Nungambakkam Taluk), Chennai District, Tamil Nadu under Category "D2" and Schedule Si. No. 8 (a) -	7627	After detailed discussion the Authority unanimously accept the recommendation of SEAC and decided to grant Environmental Clearance subject to the conditions as recommended by SEAC & normal condition in addition to the following condition. 1. The proponent shall ensure that the treated/untreated sewage/gray water should not be disposed directly or indirectly to the nearby Coovum or

MEMBER SECRETARY

MEMBER

CHAIRMAN
SEIAA-TN

Building and Construction Projects	inside/outside their premises
	<p>2. The proponent shall necessarily obtain the Stability Certificate from the reputed institution/Government Institution before starting construction activity as the proposal is abutting the River Coovum.</p>
	<p>3. The proponent shall ensure that the Solid waste generated should not be dumped in the Coovum River.</p>
	<p>4. The proponent shall ensure that no material should be stored or dumped near the Coovum during constructional/operational phase.</p>
	<p>5. As per the MoEF & CC office memorandum F.No.22-63/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall furnish the detailed EMP to TNPCB, mentioning CER activities for Rs.599.70 lakhs as committed and the CER activities shall be carried out before obtaining CTO from TNPCB.</p>
<p>10. To consider for the grant of Environmental Clearance for the Proposed Reconstruction of 240 nos. of residential flats by M/s. Tamil Nadu Housing Board at Block No.08, TS No. 6pt. 7pt. 8pt. 9pt and 10pt of Shenoyanagar, Aminjikarai Village, Perambur-Purasavakkam Taluk, Chennai District, Tamil Nadu under</p>	<p>7437 After detailed discussion the Authority unanimously accept the recommendation of SEAC and decided to grant Environmental Clearance subject to the conditions as recommended by SEAC & normal condition in addition to the following condition.</p> <p>1. The proponent shall ensure that the treated/untreated sewage/Grey water</p>

MEMBER SECRETARY

MEMBER

CHAIRMAN
SEIAA-TN



Thiru. K.V. GIRIDHAR, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1, Jeemis Road, Saidapet,
Chennai-15.
Phone No. 044-24359973
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE (EC)

Letter No. SEIAA-TN/F.No.7627/EC/8(a)/739/2020 dated: 23.01.2021

To

The Executive Engineer & ADO,
M/s.Tamil Nadu Housing Board,
Anna Nagar Division - Tamil Nadu Housing Board,
Thirumangalam Shopping Complex, Ambattur,
Chennai - 600 101.

Sir,

Sub: SEIAA, TN - Environmental Clearance - Proposed Construction of Mixed Use Development (Residential & Commercial) at T.S.No.2, Block No.4 of Arumbakkam Village, Aminjikkarai Taluk (Earlier Egmore - Nungambakkam Taluk), Chennai District, Tamil Nadu by M/s. Tamil Nadu Housing Board - Issued - Regarding.

- Ref: 1. Online Proposal No. SIA/TN/MIS/161937/2020 dated 06.07.2020
2. Your application for Environmental Clearance dated: 10.07.2020
3. Minutes of the 182nd SEAC meeting held on 17.10.2020
4. Proponent reply dated 19.11.2020
5. Minutes of the 188th SEAC meeting held on 18.12.2020
6. Proponent reply dated 08.01.2021
7. Minutes of the 418th SEIAA meeting held on 11.01.2021 & 12.01.2021

This has reference to your application 1st cited, the proposal is for obtaining Environmental Clearance to establish a Building and Construction projects under Category B2 and Schedule III, Part B under the Environment Impact Assessment Notification, 2006, as amended.




MEMBER SECRETARY
SEIAA-TN

The Competent Authority and Authorized Signatory furnished the detailed information in Form I, Form 1A and liquidate enclosures are as Annexures:

Annexure I

PROJECT DETAILS														
SL No	Description	Details												
1)	Name of the Project proponent and address	The Executive Engineer & ADO, M/s Tamil Nadu Housing Board, Anna Nagar Division - Tamil Nadu Housing Board, Thirumangalam Shopping Complex, Ambattur, Chennai - 600 101.												
2)	Proposed Activity	Proposed Construction of Mixed Use Development (Residential & Commercial)												
3)	Schedule No.	8(a)												
4)	Project Location													
	i) Survey No	T.S.No.2, Block No.4												
	ii) Revenue Village	Arumbakkam												
	iii) Taluk	Aminjikkarai (Earlier Egnore - Nungambakkam Taluk)												
	iv) District	Chennai												
	V) Latitude & Longitude	<table border="1"> <tr> <td>13°4'35.98"N</td> <td>13°4'37.74"N</td> </tr> <tr> <td>80°12'13.29"E</td> <td>80°12'14.53"E</td> </tr> <tr> <td>13°4'40.14"N</td> <td>13°4'40.32"N</td> </tr> <tr> <td>80°12'21.51"E</td> <td>80°12'24.78"E</td> </tr> <tr> <td>13°4'37.91"N</td> <td></td> </tr> <tr> <td>80°12'24.93"E</td> <td></td> </tr> </table>	13°4'35.98"N	13°4'37.74"N	80°12'13.29"E	80°12'14.53"E	13°4'40.14"N	13°4'40.32"N	80°12'21.51"E	80°12'24.78"E	13°4'37.91"N		80°12'24.93"E	
13°4'35.98"N	13°4'37.74"N													
80°12'13.29"E	80°12'14.53"E													
13°4'40.14"N	13°4'40.32"N													
80°12'21.51"E	80°12'24.78"E													
13°4'37.91"N														
80°12'24.93"E														
5)	Area of the Land	33,000 Sq.m												
6)	Built up Area	1,35,031.13 Sq.m												
7)	Brief description of the project	The project comprises of Commercial Block (Block I) & 2 Residential Blocks (Block II & Block III) with a total dwelling units of 304 units with total												



[Signature]
MEMBER SECRETARY
SEIAA-TN

		built up area of 1,35,031.13 Sq.m and total land area of 33,000 Sq.m
	Block	No. of Floors
	I	2 Basement + Ground + 19 Floors
	II	2 Basement + Stilt + 19 Floors
	III	2 Basement + Stilt + 19 Floors
	Dwelling units	Commercial Block
		152
		152
8)	Expected Occupancies (including Visitors)	7,546 Nos.
9)	Green Belt	5060 Sq.m
10)	Parking facilities	4769.70 Sq.m. (Surface Parking) Stilt & Basement Parking – 34,604.56 Sq.m.
11)	UTILITIES-WATER	
	Total Water Requirement	519 KLD
	a) Source from where the water is proposed to be drawn	CMWSSB
	i) Domestic Purposes	304 KLD
	ii) Toilet Flushing (Recycled Water)	195 KLD
12)	Waste Water	
	i) Sewage	Grey Water Generation – 273 KLD Sewage Generation – 195 KLD
	ii) Details of Treatment	Grey Water Treatment Plant – 280 KLD 1. Bar screen 2. Collection tank 3. Aeration tank Secondary settling tank



[Signature]
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SEIAA-TN

	<ol style="list-style-type: none"> 5. Clear water tank 6. Pressure sand filter 7. Activated carbon filter 8. UV disinfection 9. Treated water tank 10. Watering roadside trees and OSR development
	<p>Sewage Treatment Plant - 200 KLD</p> <ol style="list-style-type: none"> 1. Bar screen 2. Oil skimmer 3. Collection tank 4. Neutralization tank 5. Pressure sand filter 6. Activated carbon filter 7. UV disinfection 8. Treated water tank 9. Ultra filtration 10. UF treated water tank
<p>ii) Mode of Disposal with quantity</p>	<p>Treated Grey Water - 271 KLD</p> <p>Treated Sewage - 193 KLD</p> <p>Toilet Flushing - 195 KLD</p> <p>Green Belt Development & OSR Area Maintenance - 20 KLD</p> <p>Watering roadside trees, Avenue Plantation & OSR development - excess treated grey water (56 KLD) along with sewage generation (193 KLD)</p>
13)	SOLID WASTE
	<p>J) Municipal Solid Waste</p> <p>i) Bio degradable - 896 Kg /day</p> <p>ii) Non Bio degradable</p>
	<p>2239 Kg/day</p> <p>Organic Waste Converter (2 Nos)</p> <p>Authorized Recyclers</p>



[Signature]
MEMBER SECRETARY
SEIAA-TN

Letter No. SEIAA-TN/F.No.7627/EC/8(a)/739/2020 dated: 23.01.2021

SEIAA-TN

	1343 Kg/day	
	iii) STP sludge - 5 kg/day	Manure for Gardening
14)	POWER REQUIREMENT	
	i) Electricity Board	6500 kVA
	ii) Details of DG set with capacity	2 Nos of 1500 kVA & 2 Nos of 2000 kVA
	iii) Air Pollution Control Measures (Stack)	70 m from GL
15)	Project Cost	Rs. 399.84 Crores
16)	EMP Cost	<u>For Operation Phase:</u> Capital Cost - Rs. 1141.65 Lakhs (including CER) Operation cost - Rs 39 Lakhs

Annexure 2- Affidavit

The proponent has furnished affidavit in hundred Rupees stamp paper attested by the Notary stating that

I, K. Ravichandran, Executive Engineer & ADO representing M/s. Tamil Nadu Housing Board - Anna Nagar Division, having office at Thirumangalam Shopping Complex, Chennai - 600191, proposed to construct a Mixed Use Development (Residential & Commercial) project at T.S.No. 2, Block No. 4 of Arumbakkam Village, Aminjikarai Taluk (previously Egmore - Nungambakkam Taluk) Chennai District.

An application submitted by us seeking Environmental Clearance under the EIA Notification, 2006 is under scrutiny in the Authority. I'm furnishing the following undertaking to the Authority.

CMWSSB has given a letter of commitment to supply fresh water (330 KLD) for our project and Chennai Corporation has agreed to utilize our excess treated STP water of 290 KLD for watering nearby Parks & Avenue Plantation.

Based on the above commitment we commit to SEIAA that the daily fresh water requirement for our proposed development will be met from CMWSSB Supply and




MEMBER SECRETARY
SEIAA-TN

necessary provision in this regard will be done by us before handing over of the flats or before obtaining completion certificate from the competent authority, whichever is earlier.

The Total quantity of treated greywater generated from the above development is 271 KLD; out of which 195 KLD will be utilized for flushing, 20 KLD utilized for greenbelt development, and for OSR Area maintenance for the entire period of operation (*The treated water used for greenbelt development inside the project premises will not pollute the soil/ground water/adjacent canals/lakes/ponds etc*). The remaining treated grey water 56 KLD and generated treated sewage of 193 KLD will be utilised for watering Parks, Avenue Plantation and OSR Development.

The total quantity of solid waste generated from the residential development is 2239 Kg/Day out of which 896 Kg/Day Bio-Degradable waste which will be converted into manure using 2 nos of Organic Waste Converter (OWC) & utilized for greenbelt development, and 1343 Kg/Day Non Bio-Degradable waste will be disposed to authorized recyclers. STP Sludge of 5 Kg/Day will be dried & used as manure for greenbelt area within the premises.

Greenbelt development of our proposed residential development will be 5060.00 Sqm, which covers 15.33% of the total land area.

Common facilities including Greenbelt Development, Rain Water Harvesting, Sewage Treatment Plant, Treated Sewage Disposal, Solid Waste Disposal and Environmental Monitoring will be maintained & monitored for an initial period of ten years by us.

The excess storm water disposed through external storm drain which will not carry any untreated/treated sewage.

We will allocate Rs. 599.70 Lakhs (1.5% of the Total Project Cost) towards the below CER activity.

CER Activities	Cost (in Lakhs)
1. Municipal Corporation School (Arumbakkam)	
Providing water supply, books, journals & furniture for library, sanitary facilities, computer & internet facility	125.70



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MEMBER SECRETARY
SEIAA-TN

2. Chennai Corporation Government School (Koyambedu)	
Providing water supply, books, journals & furniture for library, sanitary facilities, computer & tree plantation	125
3. Maintenance & Beautification of Coovum River	
Bund Strengthening & Tree Plantation along the bund	349
Total	599.70

We are aware that we can be prosecuted under the relevant Act and Rules if we are not ensuring the adherence of the above commitment.

Commitment signed by me on Friday the day of 16th October, 2020 as the project proponent before the SEIAA, Tamil Nadu.

SEAC Recommendations:

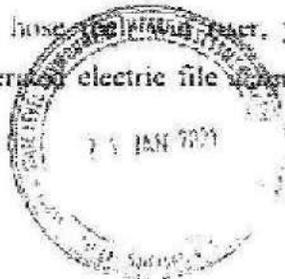
The proposal was placed in the 188th SEAC Meeting held on 18.12.2020. After detailed deliberations, SEAC decided to recommend the proposal for the grant of Environmental Clearance to SEIAA subject to the following conditions in addition to standard conditions stipulated by the MoEF&CC:

1. The proponent shall comply with all the conditions imposed in the NOC on inundation point of view issued by PWD/WRD vide Lr. No. DB/T5(3)/F-NOC-Arumbakkam/2020/dated 05.10.2020.
2. The project proponent shall provide Sewage treatment plant & Grey water treatment system as reported and continuously operate and maintain Sewage treatment plant & Grey water treatment system to achieve the standards prescribed by the TNPCC/CPCB.
3. The sludge generated from the Sewage Treatment plant shall be collected and dewatered using filter press and the same shall be utilized as manure for green belt development after composting.
4. The proponent shall make proper arrangements for the disposal of the excess treated grey water from the proposed site in Division 100 parks and nearby areas as detailed in the EE/Zone VIII/ GCC Lr No.Zo.VIII No SPL 2020 dated 16.11.2020 subject to the conditions stated therein.
5. The project proponent shall provide entry and exit points for the OSR area Community Hall, [redacted] area as per the norms for the public usage as committed.




MEMBER SECRETARY
SEIAA-TN

6. The project proponent shall necessarily comply with the provisions given under Construction & Demolition Waste Management Rules, 2016
7. As reported, the proponent shall treat the Bio-degradable waste generated through Bio-methanation plant/ Organic Waste Converter & Non-Biodegradable waste shall be disposed to Authorized Recyclers.
8. The Proponent shall provide the dispenser for the disposal of Sanitary Napkins.
9. The proponent shall always ensure no waste of any type shall be disposed of in any other way than the approved one
10. The height of the stacks of DG sets shall be provided as per the CPCB norms.
11. The proponent shall earmark the greenbelt area with dimension and GPS coordinates all along the boundary of the project site with at least 3 meters wide and the same shall be included in the layout out plan to be submitted for CMDA/DTCP approval. The total green belt area should be minimum 15% of the total area and the same shall not be used for car parking.
12. Proper drainage facility should be provided for the entire above mentioned survey fields.
13. The Proponent shall provide rain water harvesting sump of adequate capacity for collecting the rooftop, paved and unpaved road runoff as committed.
14. The proponent shall ensure that, the storm water flows from the upstream side without any hindrance by designing the storm water drainage arrangement in accordance with the contour levels of the proposed project area and considering the surrounding development to avoid the future flood inundation at the project site.
15. Tapping of solar energy should be at least 10% of total energy consumption Solar energy usage mainly for the illumination of common areas, street lighting etc.,
16. Adequate fire protection facilities shall be installed including fire detectors, fire alarm and fire fighting system to guard the building against fire. All fire protection facilities shall be designed as per the National Building Code 2016. According to prospective plans, fire-fighting arrangements such as fire extinguisher, hose reel, fire hydrant, yard hydrant, automatic sprinkler system, manually operated electric fire alarm system, underground water storage tank,



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MEMBER SECRETARY
SEIAA-TN

terrace tank, pumps shall be provided considering maximum building height as per NBC of India, 2016.

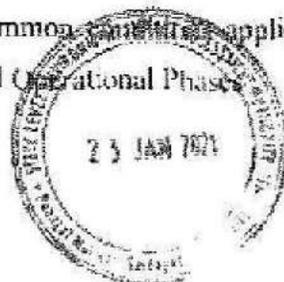
- 17 All the mitigation measures committed by the proponent for the flood management, Evacuation plan, Solid waste disposal, Sewage treatment & disposal etc., shall be followed strictly.
18. As per the MoEF&CC Office Memorandum F.No. 22-65/2017-IA.III dated: 30.09.2020, and 20/10/2020 the proponent shall furnish the detailed EMP mentioning all the activities as proposed in the CER and furnish the same before placing the subject to SEIAA

SEIAA Recommendations

The proposal was placed in the 418th Authority meeting held on 11.01.2021 & 12.01.2021. After detailed discussion the Authority unanimously accept the recommendation of SEAC and decided to grant Environmental Clearance subject to the conditions as recommended by SEAC & normal condition in addition to the following condition.

1. The proponent shall ensure that the treated/untreated sewage/Grey water should not be disposed directly or indirectly to the nearby Coovum or inside / outside their premises.
- 2 The proponent shall necessarily obtain the Stability Certificate from the reputed institution/Government Institution before starting construction activity as the proposal is abutting the River Coovum.
3. The proponent shall ensure that the Solid waste generated should not be dumped in the Coovum River.
4. The proponent shall ensure that no material should be stored or dumped near the Coovum during constructional/operational phase.
5. As per the MoEF & CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall furnish the detailed EMP to TNPCB, mentioning CER activities for Rs.599 70 lakhs as committed and the CER activities shall be carried out before obtaining CTO from TNPCB.

Part - A - Common conditions applicable for Pre-construction, Construction and Operational Phases




MEMBER SECRETARY
SEIAA-TN

Part - B – Specific Conditions – Pre construction phase

Part - C – Specific Conditions – Construction phase

Part - D – Specific Conditions – Operational Phase / Post constructional Phase /
Entire life of the project.

Validity:

The SEIAA hereby accords Environmental Clearance to the above project under the provisions of EIA Notification dated 14th September, 2006 as amended, with validity for Seven years from the date of issue of EC, subject to the compliance of the terms and conditions stipulated below:

Part - A – Common conditions applicable for Pre-construction, Construction and Operational Phases:

1. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
2. The construction of STP, Solid Waste Management facility, E-waste management facility, DG sets, etc., should be made in the earmarked area only. In any case, the location of these utilities should not be changed later on.
3. The Environmental safeguards contained in the application of the proponent /mentioned during the presentation before the State Level Environment Impact Assessment Authority / State Level Expert Appraisal Committee should be implemented in the letter and spirit.
4. All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire and Rescue Services Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wild Life (Protection) Act, 1972, State / Central Ground Water Authority, Coastal Regulatory Zone Authority, other statutory and other authorities as applicable to the project shall be obtained by project proponent from the concerned competent authorities.
5. The SEIAA reserves the right to add additional safeguard measures subsequently, if non-compliance of any of the EC conditions is found and to take action, including revoking of this Environmental Clearance as the case may be.




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6. A proper record showing compliance of all the conditions of Environmental Clearance shall be maintained and made available at all the times.
7. The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company. The status of compliance of environmental clearance conditions shall also be sent to the Regional Office of the Ministry of Environment and Forests, Chennai by e-mail.
8. The Regional Office of the Ministry located at Chennai shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.
9. "Consent for Establishment" shall be obtained from the Tamil Nadu Pollution Control Board and a copy shall be submitted to the SEIAA, Tamil Nadu.
10. In the case of any change(s) in the scope of the project, a fresh appraisal by the SEAC/SEIAA shall be obtained before implementation.
11. The conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law, including the Hon'ble National Green Tribunal relating to the subject matter.
12. The Environmental Clearance shall not be cited for relaxing the other applicable rules to this project.
13. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.




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14. 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, Chennai, the respective Zonal Office of CPCB, Bengaluru and the TNPCB. The criteria pollutant levels namely; PM10, PM2.5, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored.
15. The SEIAA, TN may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, if, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
16. The Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
17. The SEIAA, TN may alter/modify the above conditions or stipulate any further condition in the interest of environment protection, even during the subsequent period.
18. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
19. Where the trees need to be cut, compensation plantation in the ratio of 1:10 (i.e. planting of 10 trees for every one tree that is cut) should be done with the obligation to continue maintenance.
20. A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive who will report directly to the Head of the Organization and the shortfall shall be strictly reviewed and addressed.




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21. The EMP cost shall be deposited in a nationalized bank by opening separate account and the head wise expenses statement shall be submitted to TNPCB with a copy to SEIAA annually.
22. The Project Proponent has to provide 29 nos (size 1.2 dia x 3m depth) of percolation pits and rain water collection sump capacity of 3 sump of 100 cu.m capacity to recover and reuse the rain water during normal rains as reported.
23. The project activity should not cause any disturbance & deterioration of the local bio diversity.
24. The project activity should not impact the water bodies. A detailed inventory of the water bodies and forest should be evaluated and fact reported to the Forest Department & PWD for monitoring.
25. All the assessed flora & fauna should be conserved and protected.
26. The proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throwaway plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986.
27. Necessary permission shall be obtained from the competent authority for the drawl / outsourcing of fresh water before obtaining consent from TNPCB.
28. The proponent shall appoint an Environmental Engineer with necessary qualification for the operation and maintenance of STP (Sewage Treatment Plant).
29. The Proponent shall provide the dispenser for the disposal of Sanitary Napkins.
30. All the mitigation measures committed by the proponent for the flood management, Solid waste disposal, Sewage treatment & disposal etc., shall be followed strictly.
31. No waste of any type to be disposed of in any watercourse including drains, canals and the surrounding environment.
32. Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided.
33. The safety measures proposed in the report should be strictly followed.
34. Environment Clearance of the project to the outcome of the Hon'ble High Court in the W.P.(C) 12517/2018 & CM APPL. 48579/2018 and W.P.(C)




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12570/2018 & CM Appl. 48897/2018.

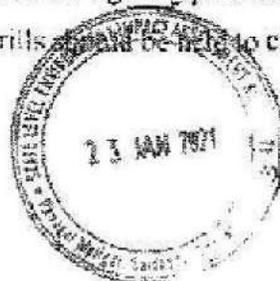
Part - B – Specific Conditions – Pre construction phase:

1. The project authorities should advertise with basic details at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of clearance. The press releases also mention that a copy of the clearance letter is available with the State Pollution Control Board and also at website of SEIAA, TN. The copy of the press release should be forwarded to the Regional Office of the Ministry of Environment and Forests located at Chennai and SEIAA-TN.
2. In the case of any change(s) in the scope of the project, a fresh appraisal by the SEAC/SEIAA shall be obtained before implementation.
3. A copy of the clearance letter shall be sent by the proponent to the Local Body. The clearance letter shall also be put on the website of the Proponent.
4. The approval of the competent authority shall be obtained for structural safety of the buildings during earthquake, adequacy of fire fighting equipments, etc as per National Building Code including protection measures from lightning etc before commencement of the work.
5. All required sanitary and hygienic measures for the workers should be in place before starting construction activities and they have to be maintained throughout the construction phase.
6. Design of buildings should be in conformity with the Seismic Zone Classifications.
7. The Construction of the structures should be undertaken as per the plans approved by the concerned local authorities/local administration.
8. No construction activity of any kind shall be taken up in the OSR area.
9. Consent of the local body concerned should be obtained for using the treated sewage in the OSR area for gardening purpose. The quality of treated sewage shall satisfy the bathing quality prescribed by the CPCB.
10. The height and coverage of the constructions shall be in accordance with the existing FSI/FAR norms as per Coastal Regulation Zone Notification, 2011.




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11. The Project Proponent shall provide car parking exclusively for the visiting guest in the proposed residential apartments as per CMDA norms.
12. The project proponent shall ensure the entry of basement shall be above maximum flood level.
13. The proponent shall prepare completion plans showing Separate pipelines marked with different colours with the following details
 - i. Location of STP, compost system, underground sewer line
 - ii. Pipe Line conveying the treated effluent for green belt development.
 - iii. Pipe Line conveying the treated effluent for toilet flushing
 - iv. Water supply pipeline
 - v. Gas supply pipe line, if proposed
 - vi. Telephone cable
 - vii. Power cable
 - viii. Storm water drains, and
 - ix. Rain water harvesting system, etc., and it shall be made available to the owners
14. A First Aid Room shall be provided in the project site during the entire construction and operation phases of the project.
15. The present land use surrounding the project site shall not be disturbed at any point of time.
16. The green belt area shall be planted with indigenous native trees.
17. Natural vegetation listed particularly the trees shall not be removed during the construction/operation phase. In case any trees are likely to be disturbed, shall be replanted.
18. During the construction and operation phase, there should be no disturbance to the aquatic eco-system within and outside the area.
19. The Provisions of Forest conservation Act 1980, Wild Life Protection Act 1972 & Bio diversity Act 2002 should not be violated
20. There should be Fire fighting plan and all required safety plan.
21. Regular fire drills should be held to create awareness among owners/ residents.




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Part - C - Specific Conditions – Construction phase:**1. Construction Schedule:**

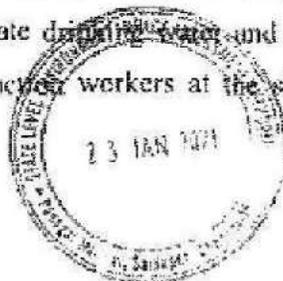
- i) The Project proponent shall have to furnish the probable date of commissioning of the project supported with necessary bar charts to SEIAA-TN.

2. Labour Welfare:

- i) All the labourers to be engaged for construction should be screened for health and adequately treated before and during their employment on the work at the site.
- ii) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contradictions due to exposure to dust and take corrective measures, if needed.
- iii) Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.

3. Water Supply:

- i) The entire water requirement during construction phase may be met from ground water source from the source with approval of the PWD Department of water resources/ may be out sourced.
- ii) Provision shall be made for the housing labour within the site with all necessary infrastructures and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
- iii) Adequate drinking water and sanitary facilities should be provided for construction workers at the site. The treatment and disposal of waste




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water shall be through dispersion trench after treatment through septic tank. The MSW generated shall be disposed through Local Body and the identified dumpsite only.

- iv) Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices prevalent.
- v) Fixtures for showers, toilet flushing and drinking water should be of low flow type by adopting the use of aerators / pressure reducing devices / sensor based control.

4. Solid Waste Management:

- i) In the solid waste management plan, the STP sludge management plan for direct use as manure for gardens is not acceptable; it must be co-composted with biodegradables.
- ii) House hold hazardous waste such as batteries, small electronics, CFL bulbs, expired medicines and used cleaning solvent bottles should be segregated at source, collected once in a month from residences and disposed as per the SWM Rules 2016.
- iii) Domestic solid wastes to be regularly collected in bins or waste handling receptacles and disposed as per the solid waste management rules 2016.
- iv) No waste of any type to be disposed of in any watercourse including drains, canals and the surrounding environment.
- v) E-waste shall be disposed through Authorized vendor as per E-waste (Management and Handling) Rules, 2016 and subsequent amendment.

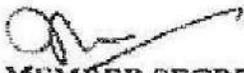
5. Top Soil Management:

- i) All the top soil excavated during construction activities should be stored for use in horticulture/ landscape development within the project site.

6. Construction Debris disposal:

- i) Disposal of construction debris during construction phase should not create any adverse effect on the neighboring communities and be disposed off only in approved sites, with the approval of Competent Authority with necessary precautions for general safety and health aspects of the community. Construction and demolition waste shall be




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managed as per Construction & Demolition Waste Management Rules, 2016.

- ii) Construction spoils, including bituminous materials and other hazardous materials, must not be allowed to contaminate watercourses. The dump sites for such materials must be secured so that they should not leach into the adjacent land/ lake/ stream etc.

7. Diesel Generator sets:

- i) Low Sulphur Diesel shall be used for operating diesel generator sets to be used during construction phase. The air and noise emission shall conform to the standards prescribed in the Rules under the Environment (Protection) Act, 1986, and the Rules framed thereon.
- ii) The diesel required for operating stand by DG sets shall be stored in underground tanks fulfilling the safety norms and if required, clearance from Chief Controller of Explosives shall be taken.
- iii) The acoustic enclosures shall be installed at all noise generating equipments such as DG sets, air conditioning systems, cooling water tower etc.

8. Air & Noise Pollution Control:

- i) Vehicles hired for bringing construction materials to the site should be in good condition and should conform to air and noise emission standards, prescribed by TNPCB/CPCB. The vehicles should be operated only during non-peak hours.
- ii) Ambient air and noise levels should conform to residential standards prescribed by the TNPCB, both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during the construction phase. The pollution abatement measures shall be strictly implemented
- iii) Traffic congestion near the entry and exit points from the roads adjoining the proposed project site shall be avoided. Parking shall be fully internalized and no public space should be utilized. Parking plan to be as per EIA norms. The traffic department shall be consulted and




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any cost effective traffic regulative facility shall be met before commissioning.

- iv) The buildings should have adequate distance between them to allow free movement of fresh air and passage of natural light, air and ventilation.
- v) The project proponent should ensure that adequate Air Pollution Control measures shall be provided from buses and other vehicles, which will be entering the bus terminal. Further, water sprinkling system shall be provided and same shall be used at regular interval to control the dust emission within the project site.

9. Building material:

- i) Fly-ash blocks should be used as building material in the construction as per the provision of Fly ash Notification of September, 1999 and amended as on 27th August, 2003 and Notification No. S.O. 2807 (E) dated: 03.11.2009.
- ii) Ready-mix concrete shall alone be used in building construction and necessary cube-tests should be conducted to ascertain their quality.
- iii) Use of glass shall be reduced up to 40% to reduce the electricity consumption and load on air conditioning. If necessary, high quality double glass with special reflecting coating shall be used in windows.

10. Storm Water Drainage:

- i) Storm water management around the site and on site shall be established by following the guidelines laid down by the storm water manual.
- ii) Storm water management plan shall be obtained by engaging the services of Anna University/IIT.

11. Energy Conservation Measures:

- i) Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material, to fulfill the requirement.
- ii) Opaque wall should meet prescribed requirement as per Energy Conservation Building Code which is mandatory for all air conditioned




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spaces by use of appropriate thermal insulation material to fulfill the requirement.

- iii) All norms of Energy Conservation Building Code (ECBC) and National Building Code, 2005 as energy conservation have to be adopted Solar lights shall be provided for illumination of common areas
- iv) Application of solar energy should be incorporated for illumination of common areas, lighting for gardens and street lighting. A hybrids system or fully solar system for a portion of the apartments shall be provided.
- v) A report on the energy conservation measures conforming to energy conservation norms prescribed by the Bureau of Energy Efficiency shall be prepared incorporating details about building materials & technology: R & U factors etc and submitted to the SEIAA in three month's time.
- vi) Energy conservation measures like installation of CFLs/TFLs for lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning

12. Fire Safety:

- i) Adequate fire protection equipments and rescue arrangements should be made as per the prescribed standards.
- ii) Proper and free approach road for fire-fighting vehicles upto the buildings and for rescue operations in the event of emergency shall be made.

13. Green Belt Development:

- i) The Project Proponent shall plant tree species with large potential for carbon capture in the proposed green belt area based on the recommendation of the Forest department well before the project is completed.
- ii) The proponent has to earmark the greenbelt area with dimension and GPS coordinates for the green belt area all along the boundary of the project site with at least 3 meter wide and the same shall be included in the layout plan to be submitted for CMDA/DTCP approval.




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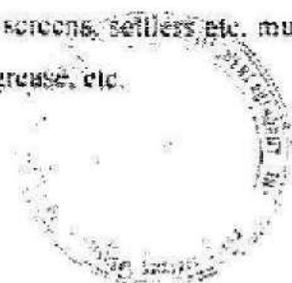
- iii) The proponent shall develop the green belt as per the plan furnished and area earmarked for the greenbelt shall not be alter at any point of time for any other purpose.

14. Sewage Treatment Plant:

- i) The Sewage Treatment Plant (STP) installed should be certified by an independent expert/ reputed Academic institutions for its adequacy and a report in this regard should be submitted to the SEIAA, TN before the project is commissioned for operation. Explore the less power consuming systems viz baffle reactor, etc., for the treatment of sewage.
- ii) The Proponent shall install STP as furnished. Any alteration to satisfy the bathing quality shall be informed to SEIAA-TN.
- iii) The project proponent shall operate and maintain the Sewage treatment Plant and grey water treatment plant effectively to meet out the standards prescribed by the CPCB.
- iv) The project proponent shall continuously operate and maintain the Sewage treatment plant and Grey water treatment plant to achieve the standards prescribed by the CPCB.
- v) The project proponent has to ensure the complete recycling of treated sewage & Grey water after achieving the standards prescribed by the CPCB.
- vi) The project proponent has to provide separate standby D.G set for the STP for the continuous operation of the STP in case of power failure.

15. Rain Water Harvesting:

- i) The proponent/ Owner of the Flats shall ensure that roof rain water collected from the covered roof of the buildings, etc shall be harvested so as to ensure the maximum beneficiation of rain water harvesting by constructing adequate sumps so that 100% of the harvested water shall be reused.
- ii) Rain water harvesting for surface run-off, as per plan submitted should be implemented. Before recharging the surface run off, pre-treatment with screens, settlers etc. must be done to remove suspended matter, oil and grease, etc.




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- iii) The Project Proponent has to provide 29 nos (size 1.2 dia x 3m depth) of percolation pits and rain water collection sump capacity of 3 sump of 100 cu.m capacity to recover and reuse the rain water during normal rains as reported.
- iv) The project activity should not cause any disturbance & deterioration of the local bio diversity.

16. Building Safety:

Lightning arrester shall be properly designed and installed at top of the building and where ever is necessary.

Part - D - Specific Conditions - Operational Phase/Post constructional phase/Entire life of the project:

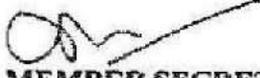
1. There should be Fire fighting plan and all required safety plan.
2. Regular fire drills should be held to create awareness among owners/ residents.
3. House hold hazardous waste such as batteries, small electronics, CFL bulbs, expired medicines and used cleaning solvent bottles should be segregated at source, collected once in a month from residences and disposed as per the SWM Rules 2016.
4. The building should not spoil the green views and aesthetics of surroundings and should provide enough clean air space.
5. Solar energy saving shall be increased to atleast 10% of total energy utilization
6. The Project proponent has to spend the CER as committed in the affidavit. The above activity shall be carried out before obtaining CTO from TNPCB.
7. The EMP cost shall be deposited in a nationalized bank by opening separate account and the head wise expenses statement shall be submitted to TNPCB with a copy to SEIAA annually
8. The EMP cost shall be printed in the Brochure / Pamphlet for the preparation of the sale of the property and should also mention the component involved.
9. The Project proponent shall get due permission from the wetland Authority before the commencement of the work, if applicable.
10. The Project proponent should discuss with the wet land Authority, Tamil Nadu Forest Department, PWD for support lake restoration cum improvement, awareness and conservation programs.



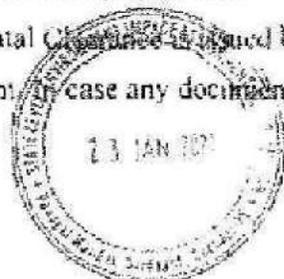
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11. The project activities should in no way disturb the manmade structures.
12. The Proponent shall do afforestation/ restoration programme contemplated to strengthen the open spaces shall preferably include native species along with the financial forecast for planting and maintenance for 5 years.
13. "Consent to Operate" should be obtained from the Tamil Nadu pollution Control Board before the start of the operation of the project and copy shall be submitted to the SEIAA-TN.
14. Raw water quality to be checked for portability and if necessary RO plant shall be provided.
15. The Proponent should be responsible for the maintenance of common facilities including greening, rain water harvesting, sewage treatment and disposal, solid waste disposal and environmental monitoring including terrace gardening for a period of 3 years. Within one year after handing over the flats to all allottees a viable society or an association among the allottees shall be formed to take responsibility of continuous maintenance of all facilities with required agreements for compliance of all conditions furnished in Environment Clearance (EC) order issued by the SEIAA-TN or the Proponent himself shall maintain all the above facilities for the entire period. The copy of MOU between the buyers Association and proponent shall be communicated to SEIAA-TN.
16. The ground water level and its quality should be monitored and recorded regularly in consultation with Ground Water Authority.
17. Treated effluent emanating from STP shall be recycled / reused to the maximum extent possible. The treated sewage shall conform to the norms and standards for bathing quality laid down by CPCB irrespective of any use. Necessary measures should be made to mitigate the odour and mosquito problem from STP.
18. The Proponent shall operate STP continuously by providing stand by DG set in case of power failure.
19. It is the sole responsibility of the proponent that the treated sewage water disposed for green belt development/ avenue plantation should not pollute the soil/ ground water/ adjacent canals/ lakes/ ponds, etc




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20. Adequate measures should be taken to prevent odour emanating from solid waste processing plant and STP.
21. The e - waste generated should be collected and disposed to a nearby authorized e-waste centre as per E- waste (Management & Handling), Rules 2016 as amended.
22. Diesel power generating sets proposed as source of back-up power 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.
23. The noise level shall be maintained as per MoEF/CPCB/TNPCB guidelines/norms both during day and night time.
24. Spent oil from D.G sets should be stored in HDPE drums in an isolated covered facility and disposed as per the Hazardous & other Wastes (Management & Transboundary Movement) Rules 2016. Spent oil from D G sets should be disposed off through registered recyclers.
25. The proponent is required to provide a house hold hazardous waste / E-waste collection and disposal mechanism.
26. The proponent/ Owner of the Flats shall ensure that storm water drain provided at the project site shall be maintained without choking or without causing stagnation and should also ensure that the storm water shall be properly disposed off in the natural drainage / channels without disrupting the adjacent public. Adequate harvesting of the storm water should also be ensured.
27. Used 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.
28. A copy of the Environmental clearance (EC) letter shall be made available to all the allottees along with the allotment order / sale deed.
29. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
30. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at



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later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Dept,
Govt. of Tamil Nadu, Fort St. George, Chennai - 9.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan,
CBD Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
3. The Member Secretary, Tamil Nadu Pollution Control Board,
76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, Ministry of Environment & Forest (SZ),
34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam,
Chennai - 34.
5. Monitoring Cell, I A Division, Ministry of Environment & Forests,
Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The Commissioner, Chennai Metropolitan Development Authority, Chennai
7. Stock File.

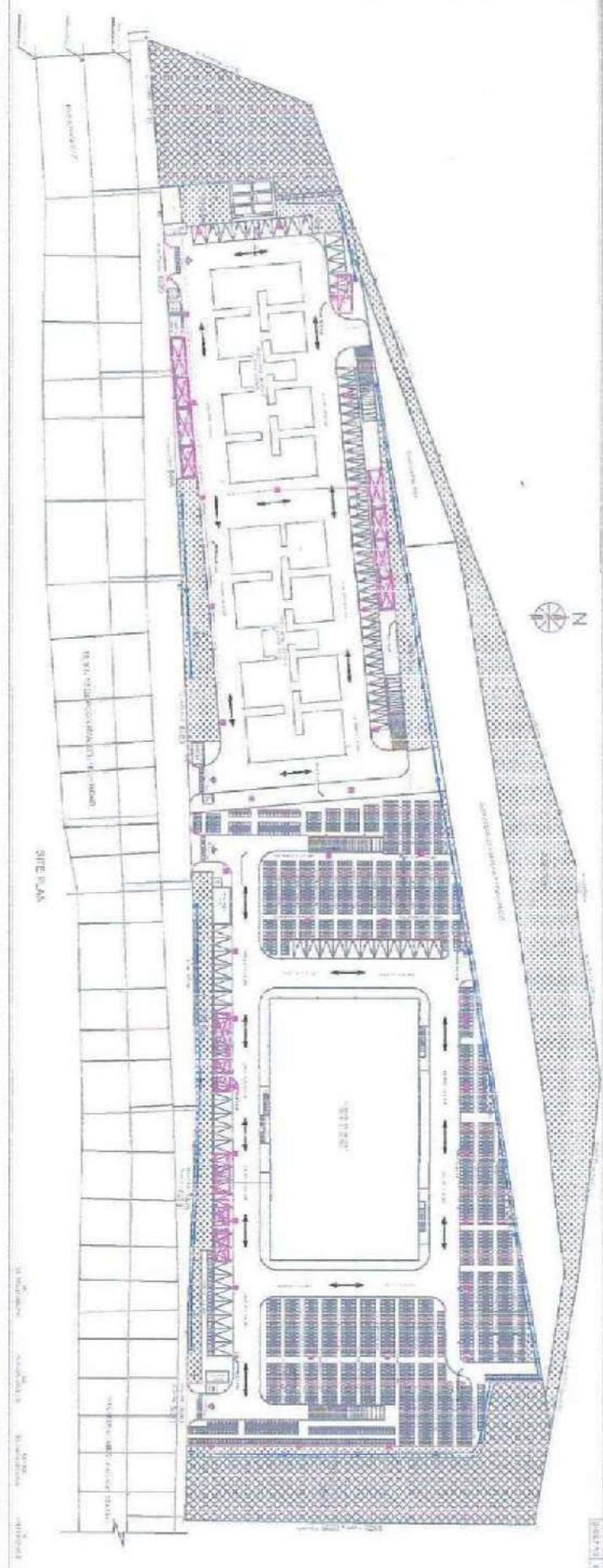


ANNEXURE

ANNEXURE I

PROJECT LAYOUTS

- I. SITE LAYOUT**
- II. WATER SUPPLY AND SEWER LINE LAYOUT**
- III. RAIN WATER HARVESTING LAYOUT**
- IV. GREEN BELT LAYOUT**
- V. CMDA LAND USE MAP**
- VI. VILLAGE MAP**



SITE PLAN



<p>PROJECT: [Illegible]</p> <p>DATE: [Illegible]</p> <p>SCALE: [Illegible]</p>	
<p>DESIGNED BY: [Illegible]</p> <p>DRAWN BY: [Illegible]</p> <p>CHECKED BY: [Illegible]</p>	<p>APPROVED BY: [Illegible]</p>
<p>NOTES: [Illegible]</p>	
<p>LEGEND: [Illegible]</p>	
<p>REVISIONS: [Illegible]</p>	

