Ref : SIDCL/GUWAHATI/EC/2021-2022/072
Date : April 22nd, 2021

To
State EIA Authority, Assam
The Office of the State EIA Authority, Assam
Ministry of Environment, Forest and Climate Change
Bamunimaidam, Guwahati-21

Dear Sir,

SUB : EXTENSION OF VALIDITY OF EC FOR THE DEVELOPMENT OF TOWNSHIP AT NOONMATI, GUWAHATI, ASSAM - REPLY TO EDS

Online proposal no. : SIA/AS/MIS/207437/2021 submitted 31.03.2021
EC Ref. No. : MoEF&CC's letter no. 21-4/2008-IA.III dated 10.08.2009 and SEIAA Assam's letter no. SEIAA.280/2014/EC/77 dated 07.07.2015

This has reference to the EDS raised on 22.04.2021 with respect to the above mentioned proposal stating :

"1. Submit Form 1 & Form 1M 2. Project proponent have to intimated the project cost. submit all document for further reconsideration."

Accordingly, point wise reply to the same is given below:

1. Submit Form 1 & Form 1M
Response : The Form 1 and Form 1A for the project was filled in December 2007 and since then the project proponents have undergone change. Accordingly the updated form 1 and Form 1A are submitted with this letter. Form 1 M is not applicable on this project since they apply on mining projects and this is a township development project on which Form 1A applies.

2. Project proponent have to intimated the project cost.
Response : The cost of the project is Rs. 103 crores.

We hope you will find the above documents in order and consider our project in subsequent meeting.

Thanking you.

Yours Sincerely
For Shristi Infrastructure Development Corporation Limited

Abhijit Basu
AVP (Project Compliance)

Enclosures : As Above

Shristi Infrastructure Development Corporation Ltd.
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E. : contact@shristicorp.com www.shristicorp.com CIN - L65922WB1990PLC049541

FORM 1
(Issue 01, Rev 0, April 2021)

(I) Basic Information

1	Name of the Project/s	Development of Township At Noonmati, Guhawati
2	S. No. in the Schedule	8(b)
3	Proposed capacity/ area/ length/ tonnage to be handled/ command area/ lease area/ number of wells to be drilled	101.28 Ha (250.16 acres). Proposal is for validity extension of environmental clearance received vide MoEF&CC's letter no. 21-4/2008-IA.III dated 10.08.2009 and SEIAA Assam's letter no. SEIAA.280/2014/EC/77 dated 07.07.2015. Project is under implementation.
4	New/ Expansion/ Modernization	New. Proposal is for validity extension
5	Existing capacity/ area, etc.	101.28 Ha (250.16 acres). Proposal is for validity extension of environmental clearance received vide MoEF&CC's letter no. 21-4/2008-IA.III dated 10.08.2009 and SEIAA Assam's letter no. SEIAA.280/2014/EC/77 dated 07.07.2015. Project is under implementation.
6	Category of Project i.e. 'A' or 'B'	"B"
7	Does it attract general condition? If yes, please specify	No. General conditions do not apply on projects that fall under 8(b) of the Schedule of the EIA Notification
8	Does it attract specific condition? If yes, please specify	No, as it is not located in any industrial complex/ estate etc.
9	Location	Location map is given in ***Annexure-I.***
	Plot/ Survey/ Khasra no.	Dag No. 1, 3 & 4 pf patta no. 1 of Village Clearance Garden; Dag no. 31 of Patta no. 1 pf Kharguli N. K. Village Rajabari
	Village	Villages Clearance Garden & Rajabari, P.O. Noonmati
	Tehsil	Guwahati
	District	Kamrup
	State	Assam
10	Nearest railway station/ airport along with distance in kms	Railway Station : Guwahati, 9 km by road Civil Airport : Lokpriya Gopinath Bordoloi International Airport, 30 km by road
11	Nearest town, city, district head	Nearest town : Guwahati Metropolitan area, 10 km District Head quarter : Office of Deputy

	quarters along with distance in kms	Commissioner, Kamrup, 6 km aerially
12	Village Panchayats, Zilla Parishad, Municipal Corporation, Local Body (complete postal addresses with telephone nos. to be given)	Guwahati Metropolitan Development Authority 3rd Floor, STATFED Building, GMC Hospital Rd, Bhangagarh, Guwahati, Assam 781005 Phone 0361 252 9824
13	Name of the applicant	Shristi Infrastructure Development Corporation Limited
14	Registered Address	Shristi Nagar, Noonmati PO, Kharguli Hills, Soonchali, Guwahati, Assam- 781020
15	Address for correspondence :	
	Name	Abhijit Basu
	Designation (Owner/ Partner/ CEO)	AVP Project Compliance
	Address	Shristi Infrastructure Development Corporation Limited Shristi Nagar, Noonmati PO, Kharguli Hills, Soonchali, Guwahati, Assam
	Pin Code	781020
	E mail	abhijitbasu1967@gmail.com
	Telephone no.	+91-98308 67743
	Fax	-
16	Details if Alternative sites examined, if any. Location of these sites should be shown in a toposheet	No alternatives under consideration. This is a proposal for EC validity extension.
17	Interlinked Projects	No
18	Whether separate application of interlinked project has been submitted?	No
19	If yes, date of submission	Not applicable
20	If no, reason	Not applicable
21	Whether the proposal involves approval/ clearance under : if yes, details of the same and their status to be gives:	Not applicable
	(a) The Forest (Conservation) Act, 1980?	No
	(b) The Wildlife (Protection) Act, 1972?	Not applicable as not within any notified Eco-senstive zone of any national park/ sanctuary nor within 10 km of Dipor Beel.

	(c) The CRZ Notification, 1991?	Not applicable as it is not near sea shore.
22	Whether there is any Government Order/ Policy relevant/ relating to the site?	No
23	Forest land involved (hectares)	Nil
24	Whether there is any litigation pending against the project and/or land in which the project is proposed to be set up?	
	(a) Name of Court	Hon'ble Gauhati High Court
	(b) Case No.	WP (C) 7397/2018 & PIL 38/2019 both the matters are being tagged and heard together by Honble High Court.
	(c) Orders/ directions of the Court, if any and its relevance with the proposed project	Dy. Commissioner, Kamrup (Metro) has issued stop construction notice to the company which was challenged by the company before the Honourable High court and the High Court was pleased to stay the stop construction order of DC Kamrup (Metro)

(II) 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.)

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (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)	Yes	Land cover will change from open, uncultivated to township with features such as residential buildings, commercial buildings, institutional buildings, recreational area etc. Land use will change from non residential to residential, commercial, public-semi public, institutional, transportation, recreation, green areas, etc. Topography will undergo change where the lad will be leveled prior to construction.
1.2	Clearance of existing land, vegetation and buildings?	Yes	Some limited and minimal clearance will be required of trees and old buildings to accommodate various features proposed in the township. Tree cutting permission is being obtained in stages.
1.3	Creation of new land uses?	Yes	New land use i.e. township comprising of residential, commercial, institutional, public-semi public, transportation, recreation, green areas, etc. shall be created. The proposed layout plan is shown in ***Annexure-II.***
1.4	Pre-construction investigations e.g. bore houses, soil testing?	Yes	Soil testing of site is being and shall be carried out prior to construction of buildings.
1.5	Construction works?	Yes	Construction of entire township will be done which

<table>
<tr><th>Sl. No.</th><th>Information/Checklist confirmation</th><th>Yes/ No</th><th>Details thereof (with approximate quantities/ rates, wherever possible) with source of information data</th></tr>
<tr><td></td><td></td><td></td><td>will include residential plots, institutional plots, recreational, commercial, road network, parking plots, green cover, parks and gardens.</td></tr>
<tr><td>1.6</td><td>Demolition works?</td><td>No</td><td>The land had no other construction before construction.</td></tr>
<tr><td>1.7</td><td>Temporary sites used for construction works housing of construction workers?</td><td>Yes</td><td>Temporary site office shall be established at site. The workers will be preferred from local population. However, construction workers housing facilities for outside workers shall be there with basic facilities such as temporary huts, toilets, bathrooms, drinking water, cooking gas, etc.</td></tr>
<tr><td>1.8</td><td>Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations</td><td>Yes</td><td>Buildings shall be constructed for various purposes such as residences, institutes, recreation, commercial, security, etc. Most buildings are envisaged above ground while few may have upto double basements. Earthwork shall be required for construction of roads also. The quantity of cut and fill estimates for the road is as follows:
<table>
<tr><th>Sl.</th><th>Road</th><th>Cutting (cum)</th><th>Filling (cum)</th></tr>
<tr><td>1</td><td>18m road</td><td>50,913</td><td>85,865</td></tr>
<tr><td>2</td><td>15m road</td><td>91,800</td><td>62,059</td></tr>
<tr><td>3</td><td>8m road</td><td>16,880</td><td>21,880</td></tr>
<tr><td>4</td><td>5m road</td><td>35,938</td><td>21,003</td></tr>
<tr><td colspan="2">Total</td><td>195,531</td><td>190,806</td></tr>
</table>
The total cut & fill management is summarised below:
<table>
<tr><td>(a)</td><td>Rocks</td><td>4,44,425 cum</td><td>Protection against erosion</td></tr>
<tr><td>(b)</td><td>Sand</td><td>1,77,770 cum</td><td>For construction</td></tr>
<tr><td>(c)</td><td>Clay</td><td>444,072 cum</td><td>Lining and Filling</td></tr>
</table></td></tr>
<tr><td>1.9</td><td>Underground works including mining or tunneling?</td><td>No</td><td>None envisaged</td></tr>
<tr><td>1.10</td><td>Reclamation works?</td><td>No</td><td>None envisaged</td></tr>
<tr><td>1.11</td><td>Dredging?</td><td>No</td><td>None envisaged</td></tr>
<tr><td>1.12</td><td>Offshore structures?</td><td>No</td><td>None envisaged</td></tr>
<tr><td>1.13</td><td>Production and manufacturing processes?</td><td>No</td><td>None envisaged. This is a township project.</td></tr>
<tr><td>1.14</td><td>Facilities for storage of goods or materials?</td><td>Yes</td><td>The storage of construction material during construction phase shall be within the plot boundaries in temporary warehouses and designated areas.</td></tr>
<tr><td>1.15</td><td>Facilities for treatment or</td><td>Yes</td><td>A policy of three way separation shall be</td></tr>
</table>

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
	disposal of solid waste or liquid effluents?		implemented by the promoters, where the solid waste shall be segregated at source by users. Organic waste shall be composted on site in large areas provided in afforested greens and recreational areas. Recyclable waste shall be sold. Landfill shall be sought for remaining waste. The liquid effluents i.e. sewage and sullage shall be treated in STPs and the treated water reused for green area watering and rest discharged in river.
1.16	Facilities for long term housing of operational workers?	Yes	15% EWS facility will be provided. Hence, some of the operational workers may find accommodation in that.
1.17	New road, rail or sea traffic during construction or operation?	Yes	Trucks shall bring the construction material to the site. During operation, people will use buses, cars, two wheelers, cycles and boats to reach the township
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	Yes	New roads will be constructed within the project for movement within the township. There is one upcoming road under planning by the Guwahati Government along the river side through Khargulli hills towards site which will be operational later. The river Brahmaputra is being considered as a future waterway access to the site.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	None envisaged
1.20	New or diverted transmission lines or pipelines?	Yes	There shall be new transmission lines drawn within the project site. Some infrastructure is also existing, which will be used and supplemented, as required. Pipelines shall shall be laid within the project site for water supply, rain water drainage and also sewage conveyance.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	Yes	The major water courses (seasonal streams) throughout the site shall remain undisturbed. There will be extraction of ground water for supply to the township, hence, there changes will occur over time in the aquifer. However, this project is on the bank of water rich Brahmaputra river, therefore, no obstacle is envisaged in the recharge of the ground water table. Procurement of water through municipal supply is also being envisaged.
1.22	Stream crossings?	Yes	Culverts will be constructed wherever the roads are crossing the path of the seasonal streams.
1.23	Abstraction or transfers of water from ground or surface	Yes	Ground water is the source of potable water supply and will be tapped for uninterrupted drinking water

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
	waters?		supply. Tube wells will be provided to meet this water supply. Procurement of water through municipal supply is also being envisaged.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	Natural drainage of the site will be maintained. Hence, the runoff and the drainage will not be affected. No water body exists on site at present and the project envisages creation of same in future.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Transportation of building materials for construction of infrastructure and buildings will take place initially. Thereafter, during operation phase there will be traffic due to movement of the residents and visitors
1.26	Long-term dismantling or decommissioning or restoration works?	No	No long-term dismantling or decommissioning or restoration works will be there
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	Since there will be no decommissioning, hence, there will not be any activities related to the same
1.28	Influx of people to an area in either temporarily or permanently?	Yes	There will be permanent increase of around 28,000 persons who will live in the township
1.29	Introduction of alien species?	No	Native species are proposed for plantation
1.30	Loss of native species or genetic diversity?	No	Existing trees will be preserved to the extent possible
1.31	Any other actions?	No	

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)

Sl. 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)	Yes	Land is presently undeveloped and will change into a township. The construction as on April 2021 is partial in part of the project area.
2.2	Water (expected source & competing users) unit: KLD	Yes	Ground water (through Tube-wells) and municipal supply. Total fresh water requirement for entire project shall be 4,454 KLD. Water balance diagram is given in ***Annexure III***. Water shall be sourced from ground water, which is expected to maintain its levels due to recharge from adjoining Brahmaputra river. Procurement of water through municipal supply is also being envisaged.
2.3	Minerals (MT)	No	Not applicable. Construction material will be required as explained in next question.

<table>
<tr><th>Sl. No.</th><th>Information/checklist confirmation</th><th>Yes / No</th><th>Details thereof (with approximate quantities/ rates, wherever possible) with source of information data</th></tr>
<tr><td>2.4</td><td>Construction material – stone, aggregates, sand / soil (expected source – MT)</td><td>Yes</td><td>The construction material requirement is estimated as follows:<table><tr><td>Steel</td><td>54,368</td><td>Tonnes</td></tr><tr><td>Cement</td><td>5,572,692</td><td>Bags</td></tr><tr><td>Aggregate</td><td>458,512</td><td>Cum</td></tr><tr><td>sand</td><td>595,148</td><td>Cum</td></tr><tr><td>Masonry blocks</td><td>517,788</td><td>Cum</td></tr></table>The material will be source from:
Cement- dealers in Guwahati,
local steel mills & steel yards,
aggregate- Licensed quarries within a radius of 50 km of Guwahati,
Sand- licensed sand traders in Guwahati,
bricks- kilns in 100 km radius.
Fly ash bricks - manufacturers within 100 km radius.</td></tr>
<tr><td>2.5</td><td>Forests and timber (source – MT)</td><td>Yes</td><td>Wood requirement (for residential area) has been estimated as 13,500 cum, to be imported or sourced from auction locally or local vendors. The estimated requirement of timber will be reduced by opting for composite and recycled materials such as aluminum, aluminum-plastics, ferrocement boards, recycled plastic boards, etc</td></tr>
<tr><td>2.6</td><td>Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)</td><td>Yes</td><td>Total power requirement is estimated at 43 MW and will be met through the grid. The north eastern grid has adequate resources and large hydro component, making it one of the most environmental friendly grids in the country.
Fuel required in township will be LPG for cooking and petrol/ diesel for vehicles and generators, which shall be sourced from local vendors.</td></tr>
<tr><td>2.7</td><td>Any other natural resources (use appropriate standard units)</td><td>No</td><td></td></tr>
</table>

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.

Sl. No.	Information/Checklist confirmation	Yes / No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are	Yes	Chlorine bearing chemicals will be used in STP for tertiary treatment, the storage and handling of

Sl. No.	Information/Checklist confirmation	Yes / No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
	hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)		which will have to be carried out carefully in order to prevent any hazard. The dosage shall be regulated through automatic dosing units.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	No changes in occurrence of disease due to this township is anticipated. Improved vector control mechanisms during maintenance activities will lead to reduction in incidences of diseases.
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	There will be number of job opportunities after development of township such as cleaners, gardeners, drivers, etc. which will bring income from this presently unproductive land and improve living conditions
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	The ambient air will be clean, water will be treated and solid waste will be managed, so no effect anticipated. A hospital is also envisaged in the project, hence, the township will provide treatment facilities to patients.
3.5	Any other causes	No	

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	Yes	There will not be any overburden or mine wastes. However, cutting shall be there, all of which will be reutilised as explained in point 1.8 earlier.
4.2	Municipal waste (domestic and/ or commercial wastes)	Yes	The total anticipated solid waste generation will be 11.89 tonnes/day which is the total of organic, inorganic and recyclable waste.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	Used oils from transformers and DG sets shall get generated periodically during maintenance and shall be sent back to authorised recycler directly or by the maintenance agency.
4.4	Other industrial process wastes	No	No industrial processes are there
4.5	Surplus product	No	Nil
4.6	Sewage sludge or other sludge from effluent treatment	Yes	The sewage sludge expected from the project will be 1.2 tonnes/day.
4.7	Construction or demolition wastes	Yes	Marginal construction waste will be there which will be used for filling low lying areas or recycled, as the case may be
4.8	Redundant machinery or equipment	No	
4.9	Contaminated soils or other materials	No	

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.10	Agricultural wastes	No	
4.11	Other solid wastes	No	

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

Sl. 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	During construction, there will be emissions from vehicles bringing in manpower and material, operation of JCBs and other earth moving machinery, shall be there. During operation, emission shall be there from vehicle movement and cooking fuel.
5.2	Emissions from production processes	No	No production process shall be there. This is a township construction project.
5.3	Emissions from materials handling including storage or transport	Yes	During construction, dust emission may be there due to handling of construction material, excavation etc which can be minimized by water sprinkling. During storage, precautions shall be taken to store in covered shed (cement) or cover with tarpaulins (sand), in order to prevent airborne dust.
5.4	Emissions from construction activities including plant and equipment	Yes	Dust, SO_2, NOx and CO will be generated temporarily from excavators, graders, etc and effects shall be temporary and reversible.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Dust will be produced from loading and unloading of construction material. Water spraying during construction phase will control dust. Proper collection and disposal for solid waste shall prevent odor.
5.6	Emissions from incineration of waste	No	Incineration of waste is not proposed
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Burning of waste in open air will not be permitted
5.8	Emissions from any other sources	No	

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

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	There will be noise and vibration from diesel generator engines, whenever they will operate during power failure. The operation of these shall

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data with source of information data
			be temporary and impact will be reversible.
6.2	From industrial or similar processes	No	This is a township construction project.
6.3	From construction or demolition	Yes	Noise from construction equipment during construction phase will be there, which will be short term and reversible.
6.4	From blasting or piling	No	Not envisaged
6.5	From construction or operational traffic	Yes	Marginal increase shall be there. The construction traffic noise will be temporary, short term and reversible while the operational traffic will occur daily with hourly variations according to peak hours. To absorb noise, avenue plantation shall be carried out since trees act as natural noise absorbers as well as pollutant sink.
6.6	From lighting or cooling systems	Yes	Air conditioner operations can be noisy and also generate heat, effect of which will be localised around the source. The lighting systems such as masts may generate heat in the immediate vicinity of the luminaire. In order to avoid the same, LED based luminaires will be preferred which generate low or negligible heat.
6.7	From any other sources	No	

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:

Sl. 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	No	Chemicals handling, storage and use shall be required at the tertiary treatment stage of the STP. Storage & handling shall be done with precautions, at designated place and with automatic dosing so that spillage does not occur.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	Sewage will be treated to prescribed standards before disposal and partially reused. The discharge will be into Brahmaputra river, at the predertimned discharge point.
7.3	By deposition of pollutants emitted to air, into the land or into water	Yes	Air pollutants such as dust can get airborne and deposited on surfaces. However, since the roads will be maintained and water sprinkling will be carried out on construction site, the dust getting airborne will be reduced. Also, rainfall will help in washing the dust from surfaces of leaves and land.
7.4	From any other sources	No	
7.5	Is there a risk of long term build up of pollutants in the environment from these	No	

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
	sources?		

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

Sl. 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	Fire is a potential hazard. The Developer Company will provide fire fighting arrangement in the township as per GMDA norms.
8.2	From any other causes	No	
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	Yes	Floods may effect low lying areas partially due to the the proximity to Brahmaputra river, small land slide may occur in destabilised slopes and the earthquake zone is V (Mercalli scale IX), hence, at the time of designing and construction of the buildings, the design parameters shall be considered in compliance with IS 1893:1984 (Criteria for Earthquake Resistant Design of Structures).

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

Sl. 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.:		
	• supporting infrastructure (roads, power supply, waste or waste water treatment, etc.)	Yes	A new road though Khargulli hills is proposed , which will contribute to the development. Power lines will be establish to bring power. Township will have its own STP for waste treatment
	• housing development	Yes	The land and building prices shall go up in the surrounding areas and lead to development of housing in surrounding areas also
	• extractive industries	No	
	• supply industries	Yes	Industries supplying house hold goods and services shall be required and will come up
	• other	No	

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.2	Lead to after-use of the site, which could have an impact on the environment	No	
9.3	Set a precedent for later developments	Yes	It may be a precursor to the development of Guwahati city in this direction
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	Other big projects are not planned in this area

(III) Environmental Sensitivity

Sl. No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
1.	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Kamakhya Temple Amchang Wildlife Sanctuary Amchange WLS ESZ Dipor Beel Pobitara Wildlife Sanctuary	11 km 3.4 km approximately 2.6 km approximately Outside 15 km of Aerial distance (i.e. at 15.5 SW& 20 km, respectively).
2.	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Brahmaputra river	Adjoining the site
3.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	None observed	
4.	Inland, coastal, marine or underground waters	Brahmaputra river	Adjoining the site
5.	State, National boundaries	-	None within 15 km
6.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nearest National Highway	2 km
7.	Defence installations	Nil	
8.	Densely populated or built-up area	Guwahati Metropolitan Area	10 km
9.	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*	There are several schools, hospitals, places of worship and community facilities in the city of Guwahati	Within 15 km radius
10.	Areas containing important, high quality or scarce resources *(ground water*	Nil	

Sl. No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
	resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)		
11.	Areas already subjected to pollution or environmental damage. *(those where existing legal environmental standards are exceeded)*	No critically polluted area observed within 15 km	-
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*)	● Present in Seismic zone V ● Brahmaputra river is	● Within ● adjoining

(IV) Proposed Terms of Reference for EIA studies

No terms of reference are proposed since this is as application for EC validity extension.

I hereby give undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and 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 given, if any to the project will be revoked at our risk and cost.

Date: 24.04.2021
Place: Kolkata

(Project Proponent / Authorized Signatory)

Name Abhijit Basu
Designation AVP Project Compliance
Address Shristi Infrastructure Development Corporation Limited
Shristi Nagar, Noonmati PO, Kharguli Hills, Soonchali, Guwahati , Assam 781020

Submit document supporting claim of authorized signatory for the specific project- ***Uploaded at question no. 15(e) of Form 6.***

FORM-1 A

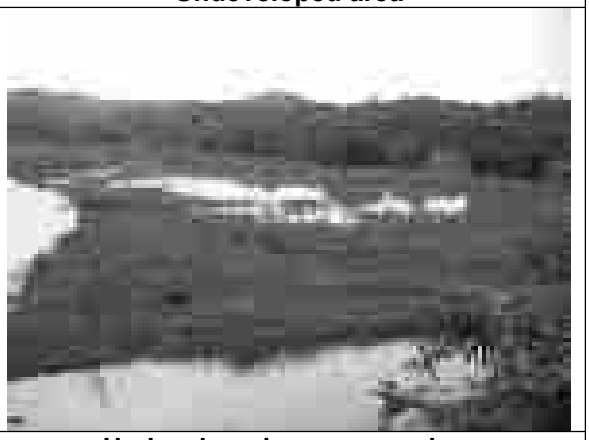
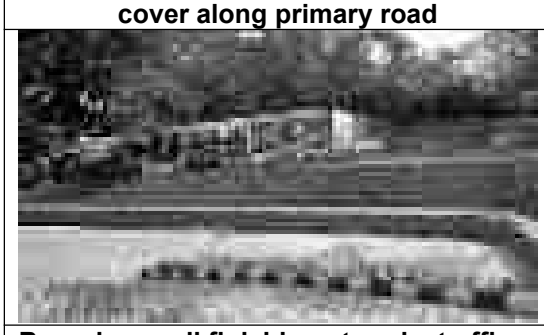
CHECK LIST OF ENVIRONMENTAL IMPACTS

(Issue 01, Rev 0, April 2021)

Project : Development of Township At Noonmati, Guhawati

1. LAND ENVIRONMENT

(Attach panoramic view of the project site and the vicinity)

		
Undeveloped area		**Undeveloped area**
		
Abandoned poultry farm		**Undeveloped areas near river**
		
Brickwork for stamp concrete of drain cover along primary road		**Kerb stone fixing along secondary road**
		
Boundary wall finishing at project office		**Avenue plantation along secondary road**

Undeveloped area view from site to Brahmaputra river

Developed area

1.1 Will the existing landuse get significantly altered from the project that is not consistent with the surroundings? (Proposed landuse must conform to the approved Master Plan / Development Plan of the area. Change of landuse if any and the statutory approval from the competent authority be submitted). 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.

ANS: The land use plan has been made in conformity with the latest building bye laws for Guwahati.

Refer ***Annexure I*** for location map.

Refer ***Annexure IV*** for surrounding features of the proposed site (within 500 mts).

Refer ***Annexure V*** for the contour map of the site.

1.2 List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.

a) Land Requirement is 101.16 ha

b) Proposed Land Use in Residential Complex

	LAND			FAR	
LAND USE	**Acres**	**Hac**	**%**	**FAR %**	**sq.m.**
Roads/Infrastructure	26.05	10.54	10.4%	2.5%	2,636
Residential, including community	101.38	41.03	40.5%	165%	676,222
Plotted	*30.56*	*12.37*	*30.1%*	120%	*148,422*
Low rise built-up	*28.00*	*11.33*	*27.6%*	150%	*169,972*
Apartments	*28.00*	*11.33*	*27.6%*	250%	*283,286*
EWS	*7.21*	*2.92*	*7.1%*	150%	*43,784*
Community	*7.60*	*3.08*	*7.5%*	100%	*30,759*
Institutions	34.08	13.79	13.6%	100%	137,903
Hospitality/leisure	20.51	8.30	8.2%	150%	124,475
Riverfront leisure/sports	8.77	3.55	3.5%	25%	8,873
Retail/commercial	21.27	8.61	8.5%	200%	172,166

	LAND			FAR	
LAND USE	**Acres**	**Hac**	**%**	**FAR %**	**sq.m.**
Golf course	33.12	13.40	13.2%	2.5%	3,351
Open land, nalas, etc.	4.99	2.02	2.0%	0%	-
Total	250.16	101.24	100.0%		1,125,626

= 12,116,135 sq. ft.

c) Power

The requirement of power by the township will be 43 MW, which will be supplied from the grid. It is proposed to receive electricity at 33000 KV at one point from where it will be distributed to the township at 11000 KV to local transformers. These transformers, in turn, will distribute electricity through underground cables in their respective localities at 440 KV,

d) Water Requirement

PROJECTED WATER REQUIREMENT

Land use	**Person**	**Water Consumption (lpd/capita)**	**Average Consumption (KLD)**
1. Residential			
1.1 Plotted House	1032	135	140
1.2 Apartments and Hostels	26,827	135	3622
2. Non Residential			
2.1 Commercial/ Institutional	12,398	45	558
2.2 Guests in Hospitality			
(a) Hotel	550 beds	180	99
(b) Restaurant	215 seats	70	15
2.3 Health facilities	120 beds	170	20
TOTAL			**4,454**

e) The parking facility will be provided for 6900 cars for both residential and non-residential population.

f) Connectivity

The site is presently accessible from Guwahati City through Noonmati Sector-I Road and GNB Road (Gopi Nath Bordoloi Road). It takes 11 kms to reach the site from the heart of the city. An alternate route, which is 8.5 kms along the bank of the river through the Kharghuli hills, is under construction. Guwahati, the nearest major Railway Station, is about 9 km by road from the site. It is the gateway to north east of India. The Gopinath Bordoloi International Airport, situated west of Jalukbari, is the only airport in the city, approximately 15 km away from city centre & 30 km by road form the township.

1.3 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 landuse and disturbance to the local ecology).

ANS: The Township is 10 kms from the main Guhawati city and will support the population of around 28,000. Thus, there will be routine movement of the vehicles

and generation of various types of waste and disturbance to natural flora and fauna of the area. The construction along the river bank will affect the areas natural appearance.

Impact on ecology

The project area is covered with grass, shrubs, trees, structures and a few old buildings. During construction, the grass, shrubs & some trees will be cleared for accommodating the different facilities. Minimum number of trees will be cut, if at all required, for which permission is being obtained in stages. Detailed designing and planning will be done in such a way that tree cutting is avoided. Thus, a marginal negative impact is envisaged within the project area. Large resident fauna is absent in the core zone but avifauna and small mammals are present. Impact of fauna due to land clearing will kept minimal by disturbing minimum flora.

Dust generated during construction activities will have some negative impact on flora and fauna which will be reversible and for a short period.

There is Amchang Wildlife Sanctuary within the study area. Hence, adverse impact on the sanctuary due to the project will not be there due to the distance of approximately 2.6 km of the project from the Eco-sensitive zone of the sanctuary and approximately 3.4 km from the sanctuary itself.

Operational phase

Substantial amount of the project area will be green area and shall be available for tree plantation, lawns, gardens and kitchen gardens. Also, areas on sides of all roads within the layout shall be used for plantation of trees wherever topography permits. Treated sewage, in adequate quantity and suitable quality, will be available for watering the planted vegetation. The climate of the area is conducive to plant growth due to ample rains and moderate temperatures. Fast growing, native shady and fruit-bearing species will be developed. This will impart a significant positive impact on the ecology.

Impact on land use

Land use of the entire project area, identified for the township, will be changed during the construction phase. On completion of the construction phase, the site will be converted into a well-planned modern township with roads, planned residential plots and apartments, institutional, commercial, resort, and recreational facilities

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).

ANS: No, there will be not be any disturbance resulting in subsidence and instability. However, erosion can occur due to the construction activities on slopes, which will be stabilised by proper contouring, plantation and if required, use of geotextiles.

Characteristics of soil : The soil present in the area is Loamy sandy, light brown

and gray colored in appearance. It is rich in in sodium, potassium, moisture content, hence, forming a supportive feature for growth of plants.

b) Seismicity Lies in seismic zone V (Mercalli scale IX)

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)

ANS: The site has seasonal drains flowing at few places to carry the rain water that falls in the site to the river Bramputra. Keeping in view of the topography and drainage of the area the construction will be done in such a way that natural drainage may not get altered. ***Annexure V*** shows the contour map while the drainage is visible on the layout plan in ***Annexure II***.

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.)

ANS: Buildings shall be constructed for various purposes such as residences, institutes, recreation, commercial, security, etc. Most buildings are envisaged above ground while few may have upto double basements. Earthwork shall be required for construction of roads also. The quantity of cut and fill estimates for the road is as follows:

Sl.	Road	Cutting (cum)	Filling (cum)
1	18m road	50,913	85,865
2	15m road	91,800	62,059
3	8m road	16,880	21,880
4	5m road	35,938	21,003
Total		**195,531**	**190,806**

The total cut & fill management is summarised below:

(a)	Rocks	4,44,425 cum	Protection against erosion
(b)	Sand	1,77,770 cum	For construction
(c)	Clay	444,072 cum	Lining and Filling, sale

1.7 Give details regarding water supply, waste handling etc during the construction period.

ANS: **<u>Construction Phase:</u>**

a) Water supply : To meet the water requirements during the construction phase, water shall be drawn from tube-wells within the project area. Ground water, which is of potable quality and is available in plenty at this location, will be tapped for uninterrupted drinking water supply. Procurement of water through municipal supply is also being envisaged and the water that shall be supplied by municipality shall be treated by them and then supplied.

b) **Solid wastes :** During site clearance and digging, soil and boulders will be excavated. The soil will be used as fill material in the construction of buildings and their foundations. The boulders may either be used as building materials or sold to interested building material suppliers. Cutting material will be used for filling the low lying areas in the eastern part of the site along the banks. Therefore, no

impact of solid wastes on soil quality, drainage pattern or topography is envisage

The construction activity will be carried out compactly around the building area and construction techniques followed in order to minimize waste generation.

c) **Sewage generation :** Their will be generation of wastewater due to construction workers. Since site offices will be created first, proper sanitation facilities will be available to majority of the managers and workers. Traditionally, entire families of labourers set up temporary shelters on or near the site which are dismantled when the construction gets over. Thus, to manage waste generation from these shelters septic tanks will be provided.

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

ANS: No notified wetland is there in the project area nor is proposed for alteration. There is low lying area on the river bank in the eastern part of the project. It is not planned to be altered in entirety. Only a small portion which overlaps with the area earmarked for river front recreation zone will be be leveled using the soil generated during cutting, from within the 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)

ANS: No, construction debris & waste will not cause any kind of health Hazard.
The wastes generated during construction will be s municipal soild waste from the labour which will be segregated. The organic component will be composted, recyclable sold to recycling vendors and the non bodegradable non recyclable sent to land fill site. The other waste will be the cutting material generated during construction, which will be managed as explained in point 1.6 earlier. Marginal construction waste will also be there which will be used for filling low lying areas or recycled, as the case may be.

2 WATER ENVIRONMENT

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.

ANS: The fresh water requirement for the proposed project is given below:

Land use	Person	Water Consumption (lpd/capita)	Average Consumption (KLD)
3. Residential			
1.1 Plotted House	1032	135	140
1.2 Apartments and Hostels	26,827	135	3622
4. Non Residential			
2.1 Commercial/ Institutional	12,398	45	558
2.2 Guests in Hospitality			
(c) Hotel	550 beds	180	99
(d) Restaurant	215 seats	70	15
2.3 Health facilities	120 beds	170	20
TOTAL			**4,454**

In addition to above, treated waste water will be required for :
Irrigation Demand (common & local) - 1650 KLD
Cooling tower demand - 1350 KLD

The water balance diagram can be seen in ***Annexure III.***

Ground water from borewells will be used to cater the water demand of the site. The water is potable and will not require much treatment. Procurement of water through municipal supply is also being envisaged and the water that shall be supplied by municipality shall be treated by them and then supplied.

2.2 What is the capacity (dependable flow or yield) of the proposed source of water?

ANS: The discharge of water through the wells varies from 45 m^3/hour to 144 m^3/hour.

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)

ANS: Ground water will be the source of water and it is of potable quality. Procurement of water through municipal supply is also being envisaged and the water that shall be supplied by municipality shall be treated by them and then supplied.

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)

ANS: Around 1350 KLD can be reused in cooling towers and 1650 KLD KLD can be used for common and local irrigation.

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)

ANS: No, there will be no diversions or any other competing users. There will be extraction of ground water for supply to the township. However, this project is on the bank of water rich Brahmaputra river, therefore, no obstacle is envisaged in the recharge of the ground water table nor any impact is envisaged on other users dependent on ground water. Procurement of water through municipal supply is also being envisaged and the water that shall be supplied by municipality shall be treated by them and then supplied.

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)

ANS: The township will generate domestic sewage predominantly which will be containing high BOD and suspended solids. The anticipated characteristics of the wastewater will be that of a typical weak to medium untreated domestic wastewater. The anticipated characteristics are given in Table given below

ANTICIPATED CHARACTERISTICS OF WASTE WATER

Sl. No.	Parameter	Anticipated Range of Concentration (mg/l)
1	Total solids	300-720

2	Suspended solids	100-220
3	Settleable solids	5-10
4	BOD (5 day)	110-220
5	COD	250-500
6	Total Nitrogen	20-40
7	Total Phosphorous	4-8
8	Alkalinity	50-100
9	Oil and Grease	50-100

Source : Wastewater engineering- treatment, disposal, reuse by Metcalf & Eddy, Inc.

2.7 Give details of the water requirements met from water harvesting? Furnish details of the facilities created.

ANS:
- No artificial rain water harvesting structures shall be built , due to shallow water table.
- Rainwater drainage from natural slopes and road sides shall be passive and natural i.e there will be practically no civil construction and definitely no pumping for conveying rainwater on the site (passive) and the surface of the swales and valleys used to convey water shall be soft, with the check dams and the soft areas to optimise recharge of rain water into ground (natural).

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?

ANS: It can be observed that three drains are distinctly visible draining into the Brahmputra. The construction on the site will be done in such way that it will cause minimum hindrance to natural flow of runoff water. The run off is anticipated to increase due to construction. However, the water flows into the river Brahmaputra quite rapidly, hence, no flooding or water logging is anticipated.

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 any)

ANS: The impact due to water consumption during construction will be short term and reversible. And during operation phase water for residential and other purposes will be extracted from ground only. Being on the banks of Brahmaputra, ground water would be getting rapidly recharged and the recharging capacity as per calculations will be more than the rate of extraction. Thus, there will not be any significant impact on ground water. Permission shall be taken from the authroity for the same when the consumption will begin. Currently, part of the township is under consumption and operational water demand is not there. Procurement of water through municipal supply is also being envisaged and the water that shall be supplied by municipality shall be treated by them and then supplied.

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)

ANS: Following measures are adopted to avoid land degradation and soil erosion:

i) Side drains will be provided on both sides of the roads to facilitate drainage, which will, in turn, minimize soil erosion. The drains will have gentle gradient and side slopes to carry rainwater without erosion.

ii) Surplus excavated material shall not be dumped haphazardly, but will be utilized for making roads and for filling in the built-up areas.

iii) Wherever possible, vegetative cover shall be immediately established on open space. The activity of establishing vegetation on open spaces should be considered as part of construction/ maintenance operation.

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)

ANS: Natural Drainage system of the sites will be maintained to the maximum extent possible. Where required, culverts shall be provided for stream crossing. Flooding is not anticipated since the site is at a higher level than the River Brahmaputra and the rainwater will flow directly into the river. The natural streams can be seen in the proposed layout plan in ***Annexure II***.

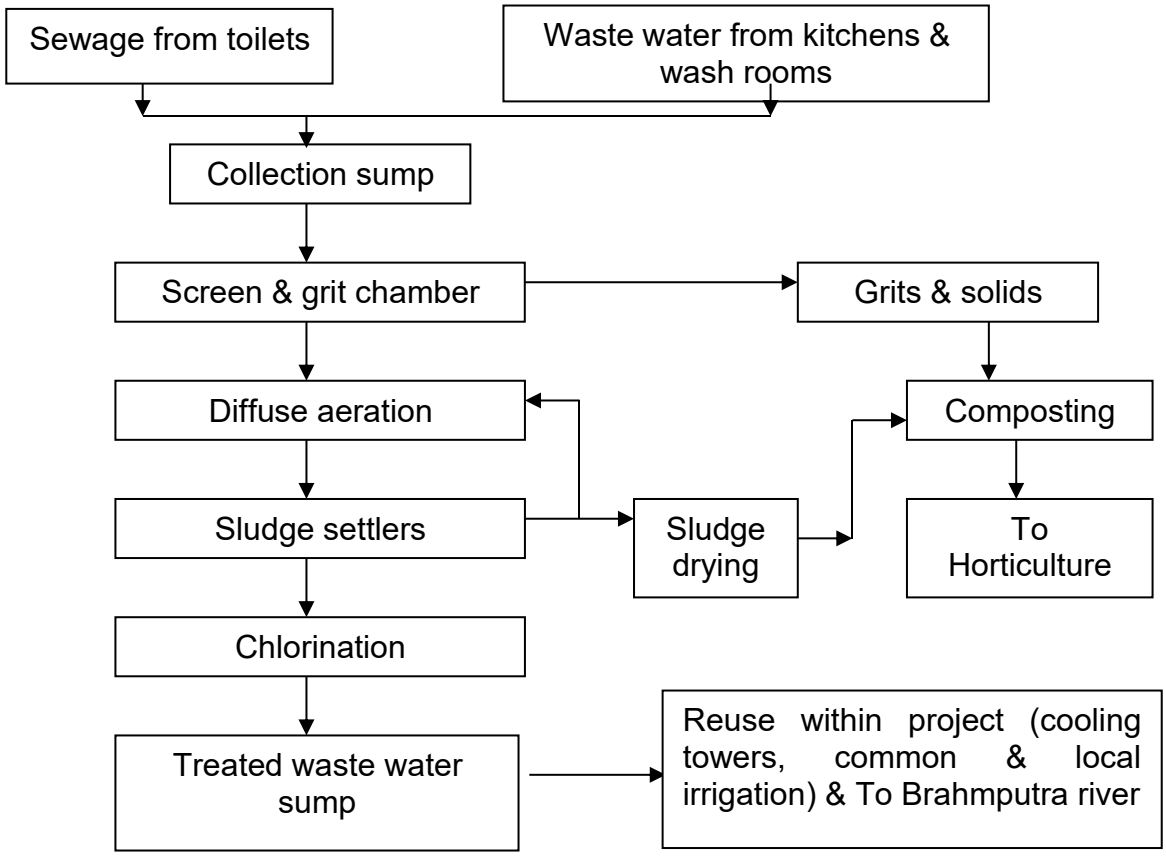
2.12 Will the deployment of construction labourers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)

ANS: No, deployment of construction labourers will not lead to unsanitary conditions as septic tanks will be provided to the labour to prevent unhygienic condition.

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)

ANS: Separate collection of Grey water (sullage) and Black water (sewage) will be there. Common treatment plant (aeration + filtration) for treating grey water will be installed and for treatment of black water onsite STP will be installed. Black water will then be taken to reed beds, polishing lagoons and finally will be disposed into Bramhputra. 100% reuse of grey water will be done for local and onsite irrigation.

The design of STP shall be as follows:



2.14 Give details of dual plumbing system if treated wastewater used is used for flushing of toilets or any other use.

ANS: Not applicable as treated wastewater is not used for flushing of toilets.

3.0 VEGETATION

3.1 Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with it's unique features, if any)

ANS: No, there will be no threat to the biodiversity since the species that are there in the project are native species and found in the region. The project area is covered with grass, shrubs, trees, structures and a few old buildings. During construction, the grass, shrubs & some trees will be cleared for accommodating the different facilities. Minimum number of trees will be cut, if at all required, for which permission is being obtained in stages. Detailed designing and planning will be done in such a way that tree cutting is avoided. Thus, a marginal negative impact is envisaged within the project area. Large resident fauna is absent in the core zone but avifauna and small mammals are present. Impact of fauna due to land clearing will kept minimal by disturbing minimum flora.

Dust generated during construction activities will have some negative impact on flora and fauna which will be reversible and for a short period.

Further, new plantations shall be made for gardens, parks, slope stabilisation and native species shall be used in addition to chemical and pesticide free management.

3.2 Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)

ANS: Clearing of certain grasses, shrubs and trees will take place since the project area consist of natural vegetation. Minimum cutting of trees will be done to retain the natural greenery of the area.

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)

ANS: Various measure to reduce the impact are as follows

- Where vegetative cover on steep slopes is scanty at present, these are to be further protected by indigenous plantation.
- All new plantations for gardens, parks on natural slopes shall be subject to check for invasive species and have chemical and pesticide-free management
- The roads layout is devised to ensure least hill cutting.
- Accessible edge of the river will be reserved as public open recreational space

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

ANS: No, there will be no such displacement at project level nor any barrier will be created. When a tree is cut, there will be localised displacement of the avifauna and small mammals dependent on them. However, due to availability of trees in immediate surrounding, the fauna can relocate after the initial disturbance.

4.2 Any direct or indirect impacts on the avifauna of the area? Provide details

ANS: Dust generated during construction activities will have some negative impact on these flora species in immediate vicinity, which will have secondary impact on terrestrial and avi-fauna. However, these impacts on flora and fauna will be reversible and for a short period. Due to retention of natural greens and also the provision of additional green areas and plantation on the project site, it is expected that the project site will continue to serve as a micro habitat for small fauna such as squirrels and birds.

4.3 Prescribe measures such as corridors, fish ladders etc to mitigate adverse impacts on fauna

ANS: Not applicable since no water bodies involved where movement of fish is occurring.

5. AIR ENVIRONMENT

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 constructions)

ANS: No, the project will not lead to creation of any significant heat islands in view of the

greenery that will be maintained at site. There will be minor increase in emissions into air due to activities of the the population in township. Movement of vehicles, commercial activities, cooking, etc., associated with day-to-day life of the residential population of 28,000 at full capacity will affect the air quality. Around 13,000 visitors will be associated with the amenities provided in the project proposal include educational and medical facilities, shopping centres, community centre, roads of adequate capacities, etc.

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

ANS: **Construction Phase:**

- Adverse impact due to dust, SO_2, NOx and CO generated by construction machines and handling of building material.
- Impacts limited to the construction period will be short-lived and reversible.

Operation Phase:

This is a township project. Hence, the dust loading and gaseous emissions due to vehicular movement, cooking (LPG based) & other commercial activities will be too low to cause impairment of visibility or significant impact.

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.

ANS: No, there will not be any shortage of parking as the project is providing parking facility for residential and non-residential population a follows:

- Plotted development - 688 ECS (surface)
- Low rise apartments - 2268 ECS (surface + stilt)
- High rise apartments - 3276 ECS (surface - 328, stilt - 490, basement 1 - 1229, basement 2 - 1229)
- EWS - 649 ECS
- Institutions - 480 cars & 36 buses
- Commercial - 2609 ECS
- Hospitality - 1245 ECS
- Golf courts - 102 ECS and
- Riverfront laser sports - 269 ECS
- Total 11,586 ECS & 36 buses

5.4 Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.

ANS: The road pattern for the development of the township will comprise of three types of roads- main roads with considerable mixed traffic like main city streets, arterial roads, etc., secondary roads of considerable traffic such as principal local traffic routes, shopping streets, etc. and thirdly- the residential roads. A limited steep gradients of roads to feeder roads of short length.

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.

ANS: There will be temporary increase in traffic during construction phase which will be phased out after completion of construction. During operation phase, minor increase may be there in traffic noise and vibrations which will be easily minimized by:

1. Provision of well maintained roads
2. Provision of one way flow pattern to eliminate two-way traffic interference
3. Blowing of horns to be discouraged within the residential complex
4. Encouragement to residents to ensure PUC certification of their vehicles.
5. Provision of avenue plantation on road side

5.6 What will be the impact of by the developers sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details.

ANS: Provision of power backup will not be provided by the developers. Individual DG sets may be installed with encouragement given to parcel wise generators. Further preference may be given to parcels and batteries rather than generators.

6.0 AESTHETICS

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?

ANS: Since the town ship is along the bank of river Brahmaputra and already on higher land, it will not cause any obstruction from the river. The landscape will be altered as buildings will get constructed in an area that looks green from the river. Further, the town ship exists in the hilly terrain so there will not be any hindrance from the township to the river view.

6.2 Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account

ANS: The project site is present at a considerable distance of about 10 Km from main Guwahati city. So there will not be any adverse impact. The existing buildings within the project site are old and dilipitated or abandoned and shall be dismantled/ demolished as needed.

6.3 Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

ANS: Urban Design Guidelines shall be prepared for all commercial areas, including local shopping. Apart from giving these developments a unified character that would give the township its distinctive identity, the urban design guidelines will ensure the provision of public space, leisure activities, parking, access to public transport and inclusion of civic functions such as post or police chowki. They would also include appropriate provisions for participation in local traders and services by the informal sector.

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

ANS: The places of interest near Guwahati are Umananda temple situated on the 'peocock' island in the middle of Brahmaputra , Janardan temple, Chanddubi lake which is a natural lagoon approx 60 kms from Guwahati, Momaikatagarh is 5 kms from Guwahati. Chaygaon Merghar which is located south of Guwahati has stone structure called as Chand Sadagor Merghar. Ruins of Shiva temple are also there, Sakrasila Boko, was the capital of king Arimatta, Sonapur orange growing and export center, Rudreswar temple Hajo is known for its group of temples and brass, bell metal and other cottage industry. There are some important temples as Kamakhya Devi Temple, Kamleshwar Siva Temple, Ganeshwar temple, Kameshwar Devalaya, and Kedarnath Devalaya. Manas Tigar Reserve, 150 kms north west of Guwahati and Kaziranga National Park, famous for the one horned rhinoceros, located about 200 kms east of Guwahati are popular tourist destinations. The nearby sanctuaries/ protected areas are Amchang WLS (about 4.6 km, SE), Amchang WLS ESZ (about 2.6 km), Dipor Beel (15.5 km, SW) and Pobitara WLS (20 km, SE).

7.0 SOCIO-ECONOMIC ASPECTS

7.1 Will the proposal result in any changes to the demographic structure of local population? Provide the details

ANS: Yes, there will be increase in population in terms of residents and persons providing service to them. The population will increase by 28,000 persons permanently. And 13,000 will be an increment due to non-residential (floating) population. The service providers may however be from the existing population in the surrounding areas.

7.2 Give details of the existing social infrastructure around the proposed project.

ANS: The surrounding area of the project consist of all the basic amenities such as schools, hospitals, institutions, etc.

Guwahati is a center of learning. Among the important educational institutes located in and around Guwahati are the Cottage College (estd. In 1901), the Collegiate School, the Guwahati University at Jalukbari, the Engineering College at Jalukbari, the Veterinary College at Khanapara, Ayurvedic college at Jalukbari, Homeopathic college at Khanapara, Sanskrit college at Jalukbari, the Assam Textile Institute, the School for Deaf and Dumb, the School for Blind, the School for Mentally Handicapped, B. Barua Cancer Institute, the Institute of Historical and Antiquarian Studies.

There is a Medical College of Guwahati and a recognized Health Training Center there are many private hospitals and nursing homes available in Guwahati.

40% of the Guwahati Municipal Corporation area is served by the piped water supply system. The rest of the water demand is fed by GMC deep tube wells and hand-pumps, private ring wells and shallow hand-pumps. There are 3 agencies,

which supply water to different areas of the city. These are GMC, PHED and Assam Urban Water Supply & Sewerage Board (AUWS & SB). Besides these, OIL and Defense areas have their separate treatment plants and shallow hand-pumps. There are 6 treatment plants in the city.

There exists good connectivity between Guwahati and the rest of the country, and the world through a well-laid out road, rail network systems and by air; the road network system being the life-line.

Educational facilities in the rural villages of the study area comprise of primary schools, middle schools, secondary schools, Graduate college, etc.

Medical facilities in the rural villages of the study area comprise of Allopathic dispensaries, Child welfare centers, Primary health centers, Primary health sub-centres, Family welfare centres, Community health workers, etc.

For drinking water in rural villages, tap water supply is there in addition to well water, tank water, tube well water, hand pumps, river water and Spring water.

Power supply is available for domestic, agriculture & other purposes. Post offices and telephones exist for communication. Approach roads to villages are pucca as well as kuchha and villages are accessible by footpath as well as through river also.

7.3 Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?

ANS: No, there will be no adverse impact, infact it will create employment opportunity for near by natives, which will help in increasing the economic standard.

8.0 BUILDING MATERIALS

8.1 May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

ANS: As given below two of the building materials have high embodied energy and others have medium.

- Steel- Very High Energy
- Cement-High Energy
- Aggregate -Medium
- Masonry Blocks-Medium
- Sand-Medium

These are conventional materials, easily and economically available locally, hence no additional energy conservation measures for building materials are proposed.

8.2 Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?

ANS: During construction phase much emphasis is laid on the planning, in which due

care has been taken to prevent any pollution during transportation and handling. Following will be the measures adopted:

1) Due care is being and will be taken during loading and unloading of material.
2) Proper traffic management is done and will be done to avoid any kind of congestion on the site during transportation of material
3) Sprinkling of water during construction for dust suppression

8.3 Are recycled materials used in roads and structures? State the extent of savings achieved?

ANS: Cutting material will be reused for filling wherever required during construction of roads and structures. The entire cutting material is envisaged for reuse as explained in point 1.6.

8.4 Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.

ANS:
1. Segregating organic and Inorganic waste in separate bags will be implemented.
2. Disposal in common bins which are provided at suitable distance in the complex.
3. Transportation by tipper up to final disposal site shall be ensured day-to-day.
4. Composting / vermicompositing shall be implemented for organic waste and landfilling for the inorganic waste. Recyclables shall be sold to recyclers.

9 ENERGY CONSERVATION

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?

ANS: The site is located favorably with respect to grid power. The 43 MW power requirement at full capacity would be sourced from grid. Inverters and batteries will be used for the providing power back up. Individual pockets or household may have their own DG sets.

Energy consumption assumed per square foot of built-up area 3.55 watts/sq.ft.

The various energy saving techniques used are

- **Services infrastructure –**
  Automation of street lighting, minimizing conveyance against gravity, using passive directions of flow and natural biological system of waste treatment, together constitute substantial energy savings.

- **Operation of buildings –**
  The first strategy is to inculcate building design methods to be climatically appropriate so as to reduce the need for electrically assisted cooling and ventilation. The second strategy is to encourage efficient design of mechanical systems where air conditioning is necessary. Direct solar radiation can be used for heating water.

- **Transportation system** –
  The township plan and transportation network should minimize travel by

motor vehicles that consume fossil fuels. This requires an efficient public transportation system for local as well as commuter travel integrated with convenient pedestrian.

- **Trading Carbon Credits**
  The overall demand for electricity and transportation fuels for the township is of a scale suitable for trading carbon credits in the international market. It is possible for the township to set up a carbon trading bank that can offer incentives to the town utilities and individual development for commercial and hospitality functions to encash the potential for energy savings compared with "business as usual" base figures. This aspect shall be explored

9.2 What type of, and capacity of, power back-up do you plan to provide?

ANS: Inverters and batteries shall be provided as stand by to the main. Parcel wise generators will be encouraged instead of individual DG sets to reduce emissions for high energy buildings.

9.3 What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

ANS: The proposal, at this time, is only for development and not buildings hence detailed information on glass cannot be provided. However, ECBC characteristics of glass shall be proposed for all a/c building designers (U <= 3.2, SHGC other than for high daylight windows <= 0.25).

9.4 What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.

ANS: Urban design guidelines and the shaping of property lots would encourage building forms to favour a North-South orientation, thereby reducing solar gain substantially. This would, in turn, reduce the potential demand for air-conditioning.

9.5 Does the layout of streets & buildings maximise 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.

ANS: For easy transition of small quantities of electricity can be done through solar photovoltaic panels (SPV). Street and garden lights are proposed to be 50% SPV.

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?

ANS: In order to reduce energy demand for ventilation and air-conditioning the layout plan encourage orientation of buildings so as to reduce harsh heat loads and allow good natural cross ventilation (from N – NE).

For high income or high value projects where air-conditioning is expected, the bye-laws would prescribe thermal performance of the building envelop - requiring shading, light external colouring, and insulation of walls, windows and roofs.

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.

ANS:
- Backup diesel generators will be discouraged in preference to inverter and battery type backups to reduce emissions for low-energy (non a/c) buildings.
- Parcel-wise generators will be encouraged instead of individual DG sets to reduce emissions for high-energy (a/c) buildings.
- Other than water supply systems, no pumping is proposed for waste treatment or drainage.
- The FAR/Ground Coverage proposed would be a mix of plotted, low rise and high rise. This would maintain a reasonable level of the energy cost for conveyance of persons, goods and water by lifts and pumps by having a overall low height of structures.

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?

ANS: The construction will not alter the micro climate or create any significant heat island effect or inversion effect due to the large greenery and well developed trees in the project.

9.9 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.

ANS: The proposal currently is for development and not buildings, hence, detailed information of building cannot be provided. However, the architects & designers of the buildings will be asked to conform to the following factors while designing or achieve an overall building envelope compliance as per latest ECBC norms.

	Max U-Factor	Min R-factor
Roof design	U-0.261	R-3.5
Opaque	U-0.352	R-2.35
Vertical fenestration	U-3.177	R-0.25

9.10 What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.

ANS: Fire safety measures such as fire fighting water reservoir, jockey pump, back up power, fire hydrant and sprinkler system and smoke detectors are proposed in all the high rise buildings of the township. The planning shall be as per the bye laws and requirements of the safety norms. Further, the Fire station of the Guwahati city is present at a approachable distance.

9.11 If you are using glass as wall material provides details and specifications including emissivity and thermal characteristics.

ANS: Not using glass as wall material (will be discouraged for the buyers of the individual parcels)

9.12 What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.

ANS: To be given by architect

For non a/c buildings, proper cross ventilation will be maintained.
For a/c buildings, all cooling & heating equipment shall meet or exceed the minimum efficiency requirements as per latest Energy Conservation Building Code.

9.13 To what extent the non-conventional energy technologies are utilised in the overall energy consumption? Provide details of the renewable energy technologies used.

ANS: While the proposal is for development of land and not the individual buildings, it is proposed to conserve electricity use and limit it to specified functions. The demand for all hot water shall be encouraged to be met through solar. Since diesel gensets shall be discouraged in non-a/c buildings, inverters and batteries shall be installed. This will enable an easier transition to small quantities of electricity through solar photovoltaic panels (SPV). Street and garden lights are proposed to be 15% SPV.

10. Environment Management Plan

The Environment Management Plan would consist of all mitigation measures for each item wise activity to be undertaken during the construction, operation and the entire life cycle to minimize adverse environmental impacts as a result of the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the site including fire.

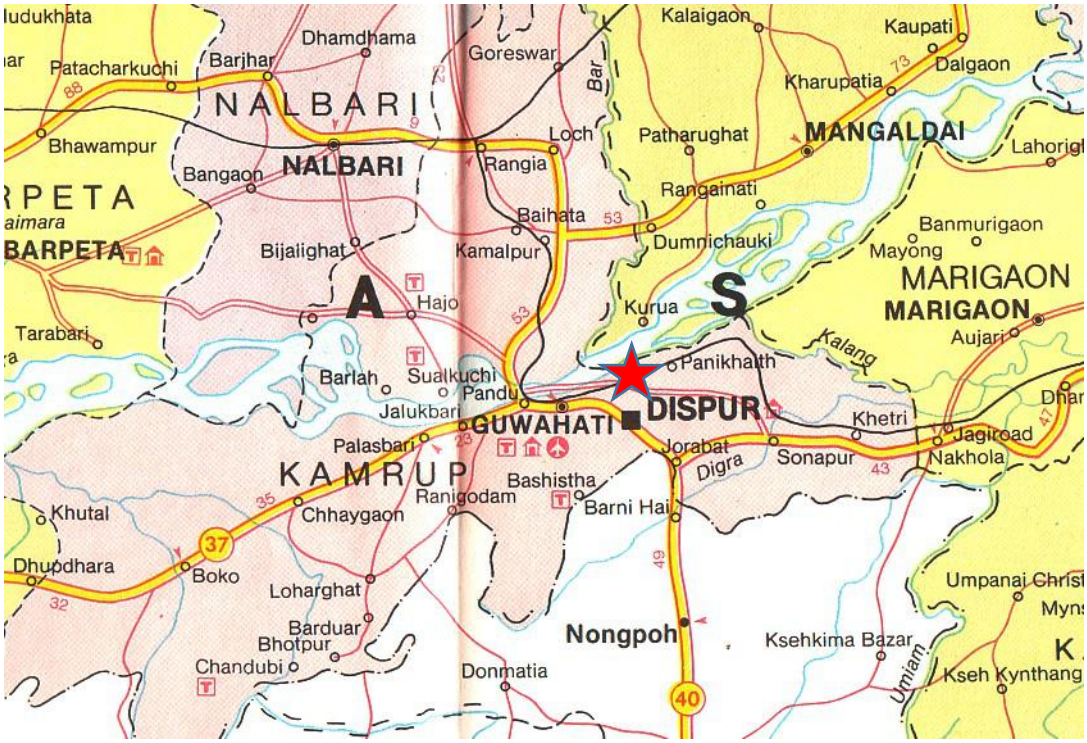
ANS: An EIA/ EMP report was prepared at the time of environment clearance.

LIST OF ANNEXURES TO FORM 1 and 1A

Annexure No.	Description
I	Location Map
II	Layout plan
III	Water balance
IV	Surrounding features of proposed site
V	Site indicating levels and contours

ANNEXURE : I

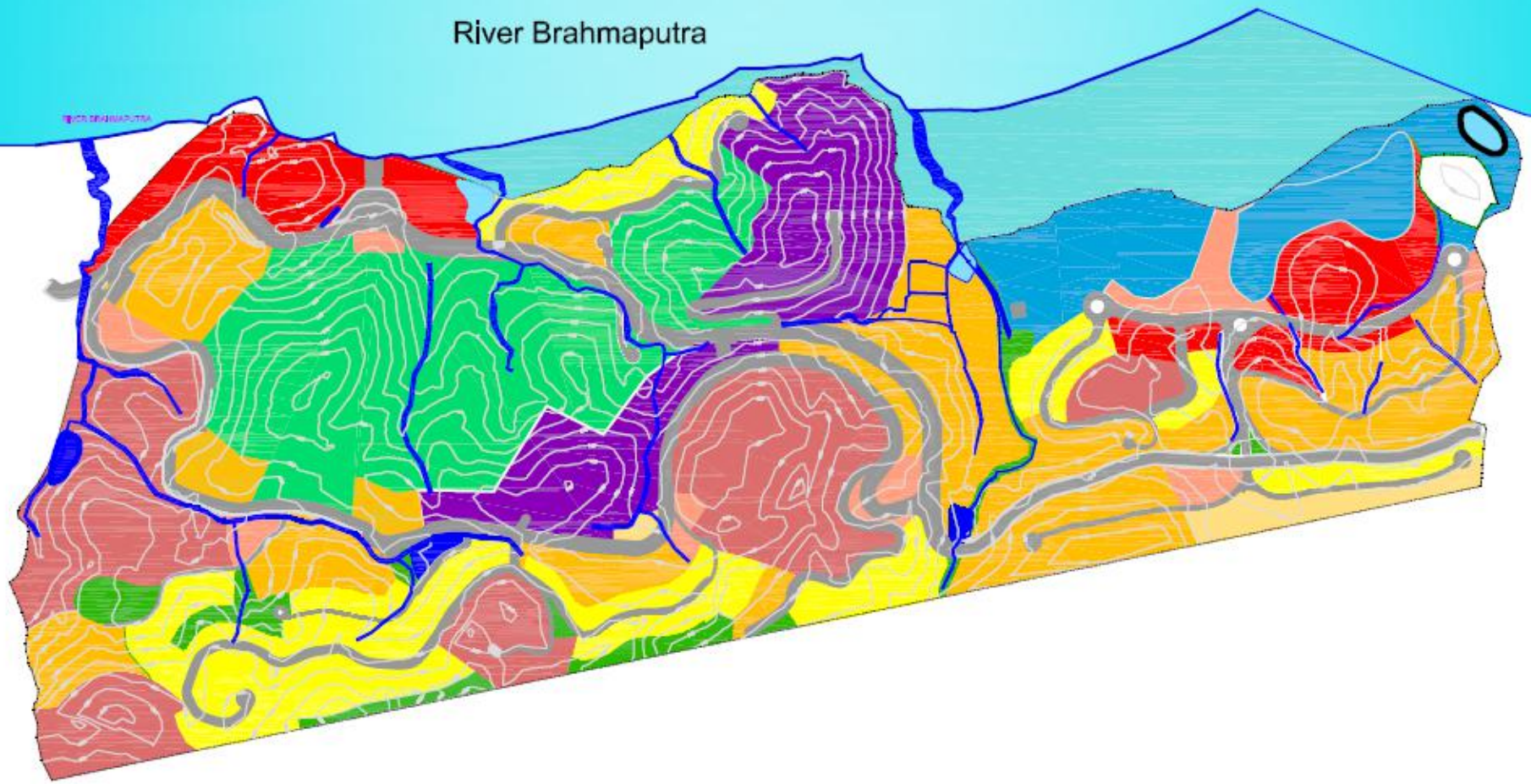
LOCATION MAP
(not to scale)



Project location

ANNEXURE : II

PROPOSED LAYOUT PLAN



LEGEND

- Roads & Infrastructure
- Residential (Plotted)
- Residential (Apartments)
- Residential (EWS)
- Community
- Institutional
- Hospitality/ Leisure
- Riverfront leisure/ Sports
- Retail/ Commercial
- Golf Course
- Open Lands/ Nalas etc.
- Flood prone area
- River Brahmaputra
- Proposed STPs

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MINI TOWNSHIP AT NOONMATI, GUWAHATI

TITLE:-
LAND USE PLAN

Sheet No.	Scale	Dwg. No.
2/3	As shown	A-02

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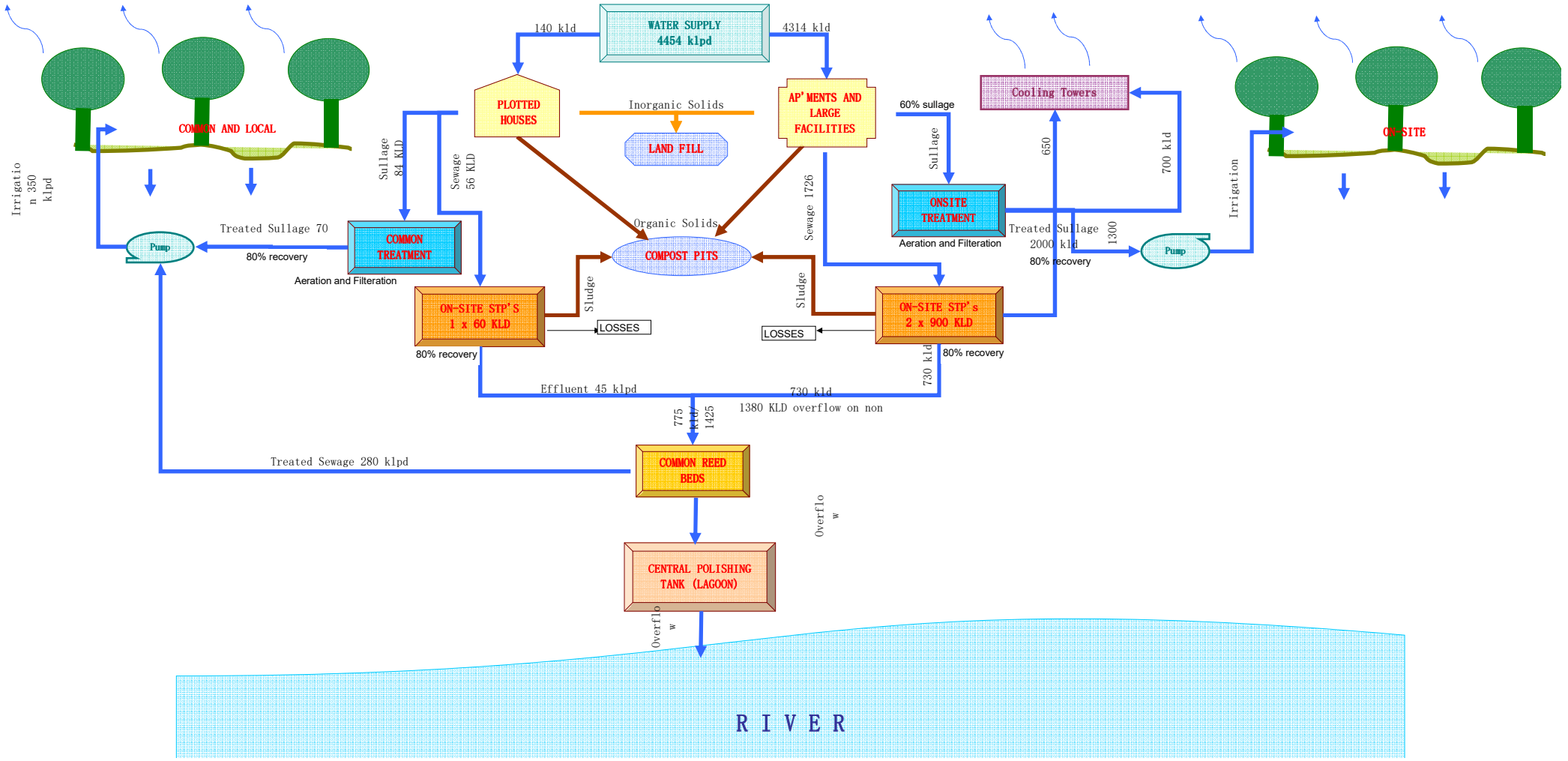
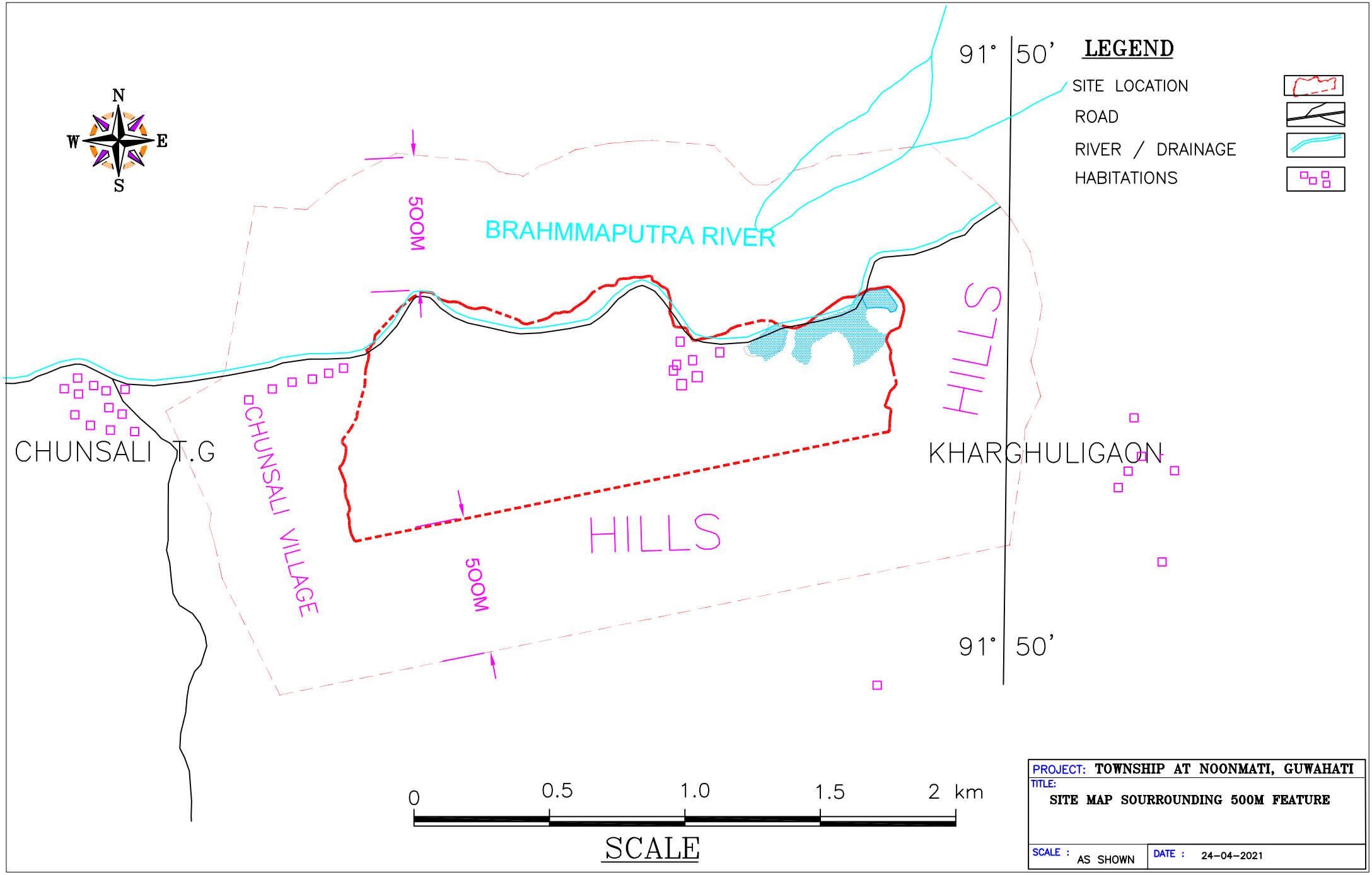
ANNEXURE : III

PROPOSED WATER BALANCE OF NOONMATI TOWNSHIP, GUWAHATI AT FULL OCCUPATION



ANNEXURE : IV



PROJECT:	TOWNSHIP AT NOONMATI, GUWAHATI
TITLE:	SITE MAP SOURROUNDING 500M FEATURE
SCALE : AS SHOWN	DATE : 24-04-2021

ANNEXURE : V

Due to restriction in file size to 1 MB, high resolution image is not getting uploaded

CONTOUR MAP