

**KAPICO KERALA RESORTS PRIVATE LIMITED**

MUTHOOTTU MINI TECH TOWERS, 3RD FLOOR,  
KALOOR, KOCHI – 682 017, KERALA, INDIA

CIN U55101KL2006PTC020059

Dt. 04-03-2017

**The Secretary,**  
Ministry of Environment, Forests & Climate Change,  
Indira Paryavaran Bhawan,  
3<sup>rd</sup> Floor, Jor Bagh Road,  
New Delhi-110003.

**Sub.:- CRZ Clearance under CRZ Notification, 1991 – Construction of  
Resort Project at Sy. Nos. 263/1, 263/2, 263/3, 263/4, 266/1,  
Panavally Village & Panchayat, Cherthala Taluk, Alapuzha  
District, Kerala - Application – Reg.**

Respected Sir,


We are submitting herewith a copy of the application duly filled Questionnaire for CRZ clearance as per CRZ Notification, 1991 for the Resort project at Sy. Nos. 263/1, 263/2, 263/3, 263/4, 266/1, Panavally Village & Panchayat, Cherthala Taluk, Alapuzha District, Kerala. All the necessary documents as per the check list mentioned in the notification are attached.

We humbly request you to consider our application and accord CRZ Clearance to our project at the earliest.

Thanking you,

Yours respectfully,

For **Kapico Kerala Resorts Private Limited**

  
Roy M. MATHEW

#### Annexure-IV

#### Form-I for seeking clearance for project attracting CRZ notification

Basic Information:

Name of the Project :-

***“RESORT PROJECT”***

**( M/s Kapico Kerala resorts Pvt. Ltd. )**

Location or site alternative under consideration: -

**Survey Nos. 263/1, 263/2, 263/3, 263/4, 266/1,  
Panavally Village & Panchayat, Cherthala Taluk,  
Alapuzha District, Kerala.**

Size of the project ( in terms of total area ):-

**69,083 Sq. Mtr. ( 6.9083 Ha. ) ( Plot Area )  
28,795 Sq. Mtr. ( Total Built-up Area )**

CRZ classification of the area :-

**CRZ – III**

Expected cost of the project: -

**Rs. 350 Crores**

Contact Information:-

**Mr. Roy M. Mathew (Director)**

**M/s Kapico Kerala Resorts Private Limited  
Muthoottu Mini Tech Towers, 3<sup>rd</sup> Floor,  
Kaloor, Kochi, Kerala-682017.  
Tel. No. 0484-2912100 & Mob. No. 9847032251**

**E-mail: [roy@muthoottumini.com](mailto:roy@muthoottumini.com)**

#### **( 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, and the like )

<b>S. No.</b>	<b>Information / Checklist confirmation</b>	<b>Yes / No</b>	<b>Details thereof (with approximate quantities / rates, wherever possible) with source of information data</b>
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 )	<b>No</b>	<b>Due to the resort project, there is permanent change in land use of the project area.</b>  <b>The resort is on the Nedyathuruthu island near Perumbalam Island located in Vembanadu lake, Alappuzha District, Kerala.</b>  <b>The project is located at Panavally Village which is falling in Panchayat limits of Panavally Grama Panchayat, Cherthala Taluk, Alapuzha District, Kerala.</b>
1.2	Details of CRZ classification as per the approved Coastal Zone Management Plan?	<b>Yes</b>	<b>As per CRZ Status report for the proposed project site falls within CRZ – III as per CZMP.</b>
1.3	Whether located in CRZ-I area?	<b>No</b>	<b>The proposed project site falls under CRZ-III area.</b>
1.4	The distance from the CRZ-I area.	<b>Yes</b>	<b>The proposed project site falls under CRZ-III area.</b>
1.5	Whether located within the hazard zone as mapped by Ministry of Environment and Forests /	<b>No</b>	

	National Disaster Management Authority?		
1.6	Whether the area is prone to cyclone, tsunami, tidal surge, subduction, earthquake etc.?	No	
1.7	Whether the area is prone for saltwater ingress?	No	
1.8	Clearance of existing land, vegetation and buildings?	Yes	The project site has native trees and some of them will be cleared for the development of the proposed project.
1.9	Creation of new land uses?	No	The proposed project site confirms to the land use.
1.10	Pre-construction investigations e.g. bore hole, soil testing?	Yes	Pre construction soil investigation is carried out and the ground water table is found at higher level.
1.11	Construction Works?	Yes	Construction of resort project
1.12	Demolition Works?	No	No demolition work required.
1.13	Temporary sites used for construction works, or housing of construction workers?	No	All the construction activities including staking building materials will be confined within the project site only. No temporary labour hutments are proposed within the site.
1.14	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	Earthwork for the foundation of structures for buildings will be carried out to reach up to the rock level. Therefore, the excavation will be limited only for pile foundation. The top soil will be preserved for landscape excavated earth will be partially used for back filling work and the excess quantity will be used for development of internal roads.
1.15	Underground works including mining or tunneling?	No	No underground works including mining or tunneling required.
1.16	Reclamation works?	No	No reclamation work is required.
1.17	Dredging / reclamation / land filling / disposal of dredged material etc.?	No	No dredging, reclamation, land filling required.
1.18	Offshore structures?	No	No offshore structure required.
1.19	Production and manufacturing processes?	No	No production / manufacturing process involved.
1.20	Facilities for storage of goods or materials?	Yes	Separate raw material handling yard will be made within the project premises during construction phase. Cement will be separately stored under cover in bales. Sand will be stacked neatly under tarpaulin cover. Bricks and steel will be laid in open.
1.21	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	<p><b>Solid Waste:</b> The proposed project would generate about 60 Kg / Day of domestic solid waste which will be collected through by providing adequate no. of collection bins separately for Bio-degradable and Non-biodegradable waste within the premise. The Non-biodegradable waste will be sold to the recyclers. The biodegradable waste will be sent for bio-gas generation plant.</p> <p><b>Liquid Effluent:</b> The domestic sewage about 16 KL / Day will be generated which will be treated through proposed Sewage Treatment Plant to be developed within the project site.</p>
1.22	Facilities for long term housing of operational workers?	No	Operational Workers will be hired locally and hence no housing facilities for workers will be developed.

1.23	New road, rail or sea traffic during construction or operation?	No	Not Applicable
1.24	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, port airport etc.?	No	Not Applicable
1.25	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Not Applicable
1.26	New or diverted transmission lines or pipelines?	No	Not Applicable
1.27	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	No impoundment, damming, culverting, realignment or other changes to the hydrology of water courses or aquifer.
1.28	Stream and river crossings?	No	Not Applicable
1.29	Abstraction or transfers of water from ground or surface waters?	Yes	Water from wells will be used as standby source of water.
1.30	Changes in water bodies or the land surface affecting drainage or run-off?	No	Surface drainage will not be affected.
1.31	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Transportation of personnel / material during the construction and operation phases are envisaged. In the construction phase, approx. 10 trucks / day is envisaged.
1.32	Long-term dismantling or decommissioning or restoration works ?	No	Not Applicable
1.33	Ongoing activity during decommissioning which could have an impact on the environment?	No	Not Applicable
1.34	Influx of people to an area in either temporarily or permanently?	No	The proposed project is a Resort Project and the project would provide some job facilities in the operation phase and about 50 nos. of local labourers (skilled / unskilled) would be engaged during construction phase.
1.35	Introduction of alien species?	No	Not Applicable
1.36	Loss of native species or genetic diversity?	No	Not Applicable
1.37	Any other actions?	None	

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 )	Yes	Plot of 69,083 Sq. Mtr. ( 6.9083 Ha. ) for the proposed project site is the undeveloped land reserved for the development of the Resorts Project.
2.2	Water (expected source & competing users ) unit: KLD	Yes	The sources of water for the proposed project are: - 1. Roof Rain Water ( Rainy Days ). 2. Public Supply ( Non-rainy Days ). 3. Ground Water ( open well / bore well) 4. Treated Water from STP for flushing & horticulture purposes.
2.3	Minerals ( MT )	No	Not Applicable
2.4	Construction material – stone, aggregates, sand / soil ( expected source – MT )	Yes	Steel : 415 MT M-Sand: 9.220 Cu. Mtr. Cement Blocks : 8.510 Cu. Mtr. Cement : 8,000 Bags It shall be procured from local market
2.5	Forests and timber ( source – MT )	Yes	Wood shall be used for frame, however recyclable wood shall be used for doors.
2.6	Energy including electricity and fuels (source,		Power Requirement = 16,000 kWh/day

	competing users) Unit: fuel (MT), energy (MW)		<b>Power Source : State Electricity Board &amp; D.G. Sets = 1010 KVA X 2 Nos. (Standby arrangement ) Fuel – Low Sulphur HSD</b>
2.7	Any other natural resources ( use appropriate standard units )	<b>No</b>	<b>Not Applicable</b>

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.

<b>S. No.</b>	<b>Information / Checklist confirmation</b>	<b>Yes / No</b>	<b>Details thereof ( with approximate quantities / rates, wherever possible ) with source of information data</b>
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	<b>Yes</b>	<b>This is a Resorts Project and no storage of hazardous chemicals. ( as per MSIHC Rules ) will be done, apart from used oil from D.G. Sets and suitable arrangement will be adopted for the same. It will be stored in HDPE drums and kept in covered rooms under lock and key and will be sold to CPCB approved vendors only.</b>
3.2	Changes in occurrence of disease or affect disease vectors ( e.g. insect or water borne diseases )	<b>No</b>	<b>Suitable drainage and waste management measures will be adopted in both the construction and operation phase which will restrict stagnation of water or accumulation of water. This will effectively restrict the reproduction and growth of disease vectors.</b>
3.3	Affect the welfare of people e.g. by changing living conditions?	<b>No</b>	<b>No use, storage, treatment, handling or production is envisaged from the proposed project. Moreover this project will provide employment to about 50 local labours in the construction phase. Thus the proposed project is supposed to have major beneficial impacts.</b>
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	<b>No</b>	<b>Not Applicable</b>
3.5	Any other causes, that would affect local communities, fisherfolk, their livelihood, dwelling units of traditional local communities etc	<b>None</b>	

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

<b>S. No.</b>	<b>Information / Checklist confirmation</b>	<b>Yes / No</b>	<b>Details thereof ( with approximate quantities / rates, wherever possible ) with source of information data</b>
4.1	Spoil, overburden or mine wastes	<b>No</b>	<b>No such spoil over burden or mine waste will be generated.</b>
4.2	Municipal waste ( domestic and or commercial wastes )	<b>Yes</b>	<b>Solid waste generation about 60 KG / Day would be generated and adequate number of collection bins separately for Bio-degradable and Non-biodegradable waste shall be provided as per the MSW Rules, 2000. The non-biodegradable and recyclable waste would be sold to the recyclers. The biodegradable waste would be sent to bio-gas plant.</b>
4.3	Hazardous wastes (as per Hazardous Waste Management Rules )	<b>Yes</b>	<b>Used Oil from the D.G. Sets will be sold to the CPCB approved recyclers. Used</b>

			oil will be stored in HDPE drums in isolated covered facility.
4.4	Other industrial process wastes	No	Not Applicable
4.5	Surplus product	No	Not Applicable
4.6	Sewage sludge or other sludge from effluent treatment	Yes	Sludge from S.T.P. will be generated and this will be used in bio-gas plant.
4.7	Construction or demolition wastes	Yes	Construction waste only.
4.8	Redundant machinery or equipment	No	Not Applicable
4.9	Contaminated soils or other materials	No	Not Applicable
4.10	Agricultural wastes	Yes	Some horticulture waste would be generated.
4.11	Other solid wastes	Yes	Some horticulture waste will be generated and which will be stored along with bio-degradable waste and would be disposed in the bio-gas plant.

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 operation of proposed project does not envisage any major air pollutant generating sources except D.G. Sets and vehicular movement.
5.2	Emissions from production processes	No	Not Applicable
5.3	Emissions from materials handling including storage or transport	Yes	This will be restricted to the construction phase and within the project site only.
5.4	Emissions from construction activities including plant and equipment	Yes	This will be restricted to the construction phase and within the project site only.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	The proposed project is a Resorts Project and during construction phase dust will be generated from the construction material. Sprinklers will be installed during construction phase to minimize the dust generation.
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	Not Applicable

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

S. No.	Information / Checklist confirmation	Yes / No	Details thereof ( with approximate quantities / rates, wherever possible ) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	During construction, the machinery used for construction will be of highest standard of reputed make and will adhere to international standards. These standards itself take care of noise pollution control. Hence insignificant impacts due to construction machinery are envisaged. Apart from this, the construction activity will be restricted to day time only. Noise shall be created from operation of D.G. Sets but all the D.G. Sets shall be acoustically treated to restrict the noise within the permissible limit.

6.2	From industrial or similar processes	No	Not Applicable
6.3	From Construction or demolition	Yes	Due to the various construction activities there will be short term noise impacts in the immediate vicinity of the project site. The construction activity will include the following noise generation activities: Operation of D.G. Sets, concreting and mixing. Excavation, jack hammer, etc.
6.4	From blasting or piling	No	No blasting or mechanized piling will be used in the construction phase.
6.5	From construction or operational traffic	Yes	Some amount of noise will be generated from vehicular movement in the construction and operation phase.
6.6	From lighting or cooling systems	No	No centralized cooling system will be proposed.
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, ground water, 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	No	Used Oil from the D.G. Sets will be stored in a separate place and sold to CPCB approved recyclers. Used oil will be stored in HDPE drums in isolated covered facility.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	Sewage will be disposed off through proposed Sewage Treatment Plant to be developed within the premises.
7.3	By deposition of pollutants emitted to air into the land or into water	No	Not Applicable
7.4	From any other sources	No	Not Applicable
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	Not Applicable

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	No	This is basically a Resort Project and does not involve major hazardous construction activity. Hence chances of explosions, spillages, fires are minimal. During Construction all the labours will be provided with suitable personal protective equipment ( PPE ) as required under the health & safety norms. Training and awareness about the safety norms will be provided to all supervisors and labours involved in construction activity. An agreement will be signed with the contractor which will clearly deals with the safety aspects during construction. No major hazardous waste is being stored within the project site. No Industrial or process activity is involved in this project

			hence chances of chemical hazards and accidents are minimal. However, suitable fire fighting measures will be provided.
8.2	From any other causes	No	Not Applicable
8.3	Could the project be affected by natural disasters causing environmental damage (e.g., floods, earthquakes, landslides, cloudburst etc)?	No	Not anticipated as yet

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 facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:		Appropriate infrastructure like roads, power supply, waste management and waste water treatment will be developed within the site so that chances of occurrence of any adverse impacts are minimized.
	Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.)	Yes	During construction skilled, unskilled and professional work force including temporary and permanent employees shall be hired locally in order to generate the employment to the local people. While during the project operation stage for the purposed of day-to-day maintenance workers will be employed. Moreover, some more employment will be created as a result of positive induced development in the immediate vicinity of project site.
	housing development	No	Proposed Resort Project
	extractive industries	No	Not Applicable
	supply industries	No	Not Applicable
	other	No	Not Applicable
9.2	Lead to after-use of the site, which could have an impact on the environment	No	Not Applicable
9.3	Set a precedent for later developments	No	Not Applicable
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.	Area	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	No	Not Applicable
2.	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Yes	The project site is located within the <b>Kaithapuzha</b> Lake on Nediyaathuruthu Island and Lakshadweep sea is about 10 km towards West side.
3.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	None	Not Applicable
4.	Inland, coastal, marine or underground waters	Yes	The project site is located within the



			<b>Kaithapuzha Lake on Nedyathuruthu Island and Lakshadweep sea is about 10 km towards West side.</b>
5.	State, National boundaries	<b>None</b>	<b>NH-47 is located at a distance of 3.50 km from the site.</b>
6.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	<b>No</b>	<b>Not Applicable</b>
7.	Defence installations	<b>No</b>	<b>Not Applicable</b>
8.	Densely populated or built-up area	<b>Yes</b>	<b>Alappuzha City is densely populated.</b>
9.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	<b>Yes</b>	<b>Several Hospitals, Schools, Temples and community centres areas are located near the project site within 15 KM radius.</b>
10.	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	<b>No</b>	
11.	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	<b>No</b>	<b>No critically polluted area is located within 15 KM radius.</b>
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)	<b>No</b>	<b>The area under study falls in Zone – III, accordingly to the Indian Standards Seismic Zoning Map. Suitable seismic coefficients in horizontal and vertical directions respectively have to be adopted while designing the structures.</b>

"I hereby give an 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.

Place: Ernakulam

M/s Kapico Kerala Resorts Pvt Ltd



*[Handwritten Signature]*  
**ROY M. MATHEW**  
 (Name & Signature)

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**QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL**  
**(FOR HOTELS/BEACH RESORTS AND OTHER PROJECTS**  
**LOCATED IN CRZ EXCEPT PORTS & HARBOURS)**

Note 1 : All information given in the form of annexures should be part of this file itself. Annexures as separate files will not be accepted.

Note2 : Please enter x in appropriate box where answer is Yes/No

**I. General Information**

A. Name of the Project : **"RESORTS PROJECT"**  
**( M/s KAPICO KERALA RESORTS PVT. LTD. )**

1. Existing project/proposed project/  
expansion project/modernization project : **Proposed Project**  
If Existing/expansion/  
modernization project, whether  
environmental clearance  
has been obtained : **N.A**

Square Metres

B. Size. (Plinth Area)

C. Location

**Plot Area = 69,083 Sq. Mtr.**  
**Built-up Area = 28,795 Sq. Mtr.**

Village	Tehsil	District	State
<b>Panavally</b>	<b>Cherthala</b>	<b>Alappuzha</b>	<b>Kerala</b>

D. Geographical Information

1. Survey no.:- **Survey Nos. 263/1, 263/2, 263/3,  
263/4, 266/1, Panavally Village &  
Panchayat, Cherthala Taluk,  
Alapuzha District, Kerala**

2. Latitude 09° 49' 33" N

3. Longitude 76° 22' 05" E

4. Elevation above Mean  
Sea Level (Metres) 1.5 m

5. Total Area envisaged for  
setting up of project (in ha.) 9.6083 Ha.

6. Nature of terrain	<div>Coastal Plain</div>	
7. Nature of Soil (permeability)	<div>Sand ( 56-105 cm/h )</div>	
8. Stability Status of the Coast ,i.e.		
(i) Is it stable?	<div>✓</div>	<div></div> No
(ii) Is it accreting?	Y <div>✓</div>	<div></div>
(iii) Is it eroding?	Y <div></div>	<div>✓</div>
(iv) Is it prone to flooding?	Ye <div></div>	<div>✓</div>
9. Nature of Coast, i.e.,		
(i) Rocky	<div></div>	
(ii) Sandy	<div>✓</div>	
(iii) Others (Please specify)	<div></div>	

## II. Current land use of the proposed project site Area (in hectares)

A. Agricultural	
1. Irrigated	<div>6.9083 Ha.</div>
2. Unirrigated	<div>N.A.</div>
B. Homestead	<div>Coconut / Mixed Plantation with Residential</div>
C. Forest	<div>N.A.</div>
D. Notified Industrial Area/Estate	<div>N.A.</div>
E. Grazing	<div>N.A.</div>
F. Fallow	<div>N.A.</div>
G. Mangroves	<div>N.A.</div>
H. Orchards	<div>N.A.</div>
I. Sand dunes	<div>N.A.</div>
J. No development zone	<div>N.A.</div>
K. Marshes	<div>N.A.</div>

L. Others(Please specify)

6.9083 Ha.

Total

6.9083 Ha.

**III. Alternate sites considered from environmental consideration.**

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_

**IV. Reason for selecting the proposed site from environmental consideration.**

**A. The resort site is on the Nediathuruthu Island near Perumbalam Island located in Vembanadu lake, Alappuzha District, Kerala. The project is located at Panavally Village which is falling in Panchayat limits of Panavally Grama Panchayat, Cherthala Taluk, Alapuzha District, Kerala. With virtually no prospects for industrial growth, the district is identified by Govt. for tourism development. Resort is meant for seasonal occupation by visitors. Resort tourism imparts an overall positive social and environmental impact.**

**V. Does the proposed project site conform to the stipulated land use as per the local land use plan ?**

Yes

☒

No

☐

**VI. What is the categorization of the area (as per approved CZMP)?**

CRZ-I

☐

CRZ-II

☐

CRZ-III

☒

CRZ-IV

☐

**VII. Does the proposed activity qualify under the category of permissible activity ?**

Yes

☒

No

☐

If yes, under what provision is it permitted ?

S.No.	Provision No.
<b>S.O. 114 (E)</b>	<b>Annexure 117 (I) Construction of resorts / hotels with prior approval of MoEF in the designated areas of CRZ III for temporary occupation of tourists / visitors subject to conditions (i) – (xi).</b>

**VIII. Does the proposed project site involve any breeding or nesting ground ?**

Yes ☐ ☒

If yes, provide the following details:

- A. Name of the aquatic organism
- B. Type of habitat
- C. Period of year in which activity takes place

**IX. Site preparation.**

- A. Is the proposed site located in low-lying area ?

Yes ☐ No ☒

- B. Level before filling (above MSL, in m)
- C. Level after filling (above MSL, in m)
- D. Details of fill material

Quantity of Fill Material required (in cu. m.)	Source
<b>The excavated soil for building structures will be used for site leveling.</b>	<b>Site development work</b>

- E. Does the site preparation require cutting of trees ?

Yes ☒ No ☐

**About 40 native trees will be felled. This will be offset by planting 250 new native trees.**

- F. If yes, how many trees are proposed to be cut ?

1. Does it include any protected/endangered species (as per BSI list) ?

Yes ☐ No ☒

2. If yes, provide detail.

G. Does the project involve construction on any sandy stretch ?

Yes ☐ No ☒

If yes, please furnish detail.

H. Height (above MSL in m.)

1.50 m to 5.0m MSL

I. Does the project involve extraction of sand, leveling or digging of sandy stretches within 500 mts of high tide line

Yes ☐ No ☒

If yes, mention the activity involved and area.

1. Activity

N.A.

2. Area (sq. metre)

N.A.

J. Does the project involve any land reclamation ?

Yes ☐ No ☒

If yes, pl. provide the following details.

1. Activity for which land to be reclaimed

N.A.

2. Area of land to be reclaimed (ha)

N.A.

K. Does the project involve any dredging ?

Yes ☐ No ☒

If yes, provide details (capital/maintenance,

Extent of dredging, disposal of dredged material etc)

L. Is any sand proposed to be removed from sand dunes?

Yes ☐ No ☒

- M. Whether there will be any change in the drainage pattern after the proposed activity ?

Yes ☐ No ☒

If yes, what are the changes ?

- N. Does the project involve cutting/clearing of mangroves ?

Yes ☐ No ☒

If yes, give detail

Area (ha)

Species

Existing health

- O. Whether there will be any ingress of saline water into ground/surface water/soil due to project ?

Yes ☐ No ☒

**X. Please indicate area earmarked for each of the following (in Square meters)**

S.No.		0-200 mt	200-500 mt	Beyond 500 mt
1	Area of all buildings	<b>28,975</b>	<b>Nil</b>	-----
2	Courts	<b>Nil</b>	<b>Nil</b>	-----
3	Playground	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
4	Swimming pool	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
5	Lawns	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
6	Amusement park	<b>Nil</b>	<b>Nil</b>	-----
7	Landscaping	<b>17,270.75</b>	<b>Nil</b>	-----
8	Approach Road	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
9	Tree plantation	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
10	Waste water treatment	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
11	Solid waste disposal	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
12	Others	<b>Included in Item No. 7</b>	<b>Nil</b>	-----
<b>TOTAL</b>		<b>28,795</b>	<b>Nil</b>	<b>NIL</b>

## XI. Project Details.

A. Total Area of the plot (in square metres)

1. Area within 200 mts of HTL	28,795 sq.mtr.
2. Area between 200-500 mts of HTL	Nil
3. Area beyond 500 mts of HTL	N.A.

B. Width of the plot along the coastline (in metres) N.A.

C. Width of access road to the beach through the property on either side of the Hotel/Beach Resort left for public access (in metres )

1. Left side	N.A.
2. Right side	N.A.

D. If the width of the plot along the coast is more than 500 metres , whether additional public access to the beach has been provided through the property ?

Yes  No ✓

If yes,

1. Width of public access road (in metres)	N.A.
2. Area of public access road (in metres)	N.A.
3. Distance along the coastline between two public access roads to the beach(in metres)	N.A.

E. Details of Buildings to be constructed (layout to be provided) – Layout Attached

No. of buildings	Area of each building (Sq.metres)	Distance from HTL (metres)	Height of each building (metres)
54 Resort Villa with supporting infrastructure facilities	28,795 sq. m. (Total Built-up area of all resort villas)	N.A.	22.45 m.

F. Floor space index / Floor space area.  
Hotels/Beach Resorts and Other Projects

In metres



1. Ground coverage between 200-500 metres of HTL	28,795 sq.mtr
2. Coverage of First floor	N.A.
3. Total floor area (1+2)	N.A.
4. 50% of plot area within 200 metres of HTL	N.A.
5. Plot area between 200-500 metres of HTL	N.A.
6. Total (4+5)	6.9083 Ha.
7. Floor space index (3/6)	N.A.

G. Is it proposed to construct any basement ?

Yes ☐

No ☒

If yes,

1. Depth of Semi basement (meters)	N.A.
2. Area of basement (Sq. meters)	N.A.
3. Activity/Purpose	N.A.
4. Maximum Ground water Table (metre)	1.50 M

5. Has the approval of Ground Yes ☐ No ☒

Water Board been obtained? - **Applied for**

H. Whether construction would be consistent with the surrounding landscape and local architecture ?

Yes ☒

☐

If no, reason for adopting different architectural style may be specified.

I. Number of rooms to be constructed :- **54 Resort Villas**

1. Ground floor	N.A.
2. First floor	N.A.

**XII. Details of the location:**

	Sea*	Other Water bodies Rivers/creek/lake etc*. (Please specify)
Distance of seaward boundary of the plot (in m)	<b>Zero</b>	<b>The project site is located in Nedyathuruthu Island near Perumbalam island.</b>
Distance of seaward boundary of construction (in m.)	<b>N.A.</b>	NOT APPLICABLE

\* From high tide line

**XIII. Surroundings.**

- A. Whether there are any structures existing within 1 km of the periphery along shore of the proposed site ?

Yes

☒

No

☐

- B. If yes, please provide details along with a layout plan:- **Satellite Map showing surrounding features is attached.**

Distance of each structure from the boundary of the proposed site

**Many houses existing within 1 Km from the periphery of the proposed site. These are located from 500 mtr. of HTL.**

1. Distance of each structure from the HTL

2. CRZ classification as per approved CZMP

**CRZ –III**

**XIV. Whether any of the following exist within 7 km. of the periphery of the project site. If so, please indicate aerial distance and the name of the site.**

S.No		Name	Aerial Distance (in km)
1	National Park	<b>No</b>	
2	Marine Park	<b>No</b>	
3	Sanctuary/Tiger Reserve/Elephant Reserve/ Turtle Nesting Ground	<b>No</b>	
4	Core Zone of Biosphere Reserve	<b>No</b>	
5	Reserved Forest	<b>No</b>	

6	Wildlife Habitat	No	
7	Habitat of endangered/exotic species	No	
8	Coral Reef	No	
9	Mangroves	No	
10	Lakes/Reservoirs/Dams	No	
11	Breeding Site	No	
12	Nesting Site	No	

## XV. Transportation system

### Type

Transportation System      Road      Rail      Island Water Way      Airport

#### A. Existing

1.	<p>The resort is on the Nediyaathuruthu island near Perumbalam Island located in Vembanadu lake, Alappuzha District, Kerala. The Nediyaathuruthu island is well connect to the main land through boat jetty.</p> <p>The nearest railway station (<i>Ezhupunna</i> Railway Station) is about 7.5 km. and Cochin Int. Airport, <i>Nedumbassery</i> is about 36 Km. away from the project site.</p>
----	--

B. After the proposed activity      X      X

C. Whether existing network is adequate

Yes ☒      No ☐

D. If not, provide details of alternative proposal

## XVI. Raw material transportation to the site , (Quantity in tonnes per day)

### A. During construction

S.No	Item	Quantity	Mode of Transportation
1	Brick	40,600 Cu. m.	By water ways
2	Sand	38,500 cu. m.	By water ways

3	Steel	21,000 MT	By water ways
4	Others (Please Specify)	70,000 Cement bags	By water ways

#### B. After construction

	No of trips/day	Mode
Material	10	Water ways
Manpower	50	Water ways / Temporary sheds

#### XVII. Whether the area is affected by cyclone

Yes ☐ ☒

If yes provide

- A. Maximum wind speed reached
- B. Frequency of cyclone
- C. Distance affected from high tide line

#### XVIII. Ambient Air Quality (for RPM,SPM, SO<sub>2</sub>, NO<sub>x</sub>, CO)

Procedures adopted should be as per guidelines of CPCB and should cover one full season excluding monsoon.

Date, Time & Location	Concentration as monitored (in g/cu.m.) SPM,SO <sub>2</sub> ,Nox,CO	Permissible Standard(As per SPCB guidelines)	Remarks (Name of the instrument and sensitivity)
Project Site	Air quality meeting the National Standards	PM <sub>10</sub> –100 µg/m <sup>3</sup> PM <sub>2.5</sub> –60 µg/m <sup>3</sup> SO <sub>2</sub> –60 µg/m <sup>3</sup> NO <sub>x</sub> –60 µg/m <sup>3</sup> CO – 4000 µg/m <sup>3</sup>	

**XIX. Water Requirements (cum./day)**

**All the details are provided in Activity wise Water Consumption Chart & Daily Water Balance Chart.**

Purpose	Avg. Demand	Peak Demand	Source	Type Treated / untreated/Fresh/ Recycled	Remarks
<b>A) <u>Project Area</u></b> 1. Washing 2. Dust suppression 3. Drinking 4. Green Belt 5. Fire Service 6. Others (Pl. Specify)	<b>The total daily domestic water consumption for the project would be about 20 KLD. The sources of water during operation phase for the project are :-</b>  <b>1. Stored Rain water in tank / pond (Non-flushing req.) (Rainy days &amp; Non-rainy days).</b> <b>2. Kerala Water Authority (Non-flushing req.) (Non-rainy days)</b> <b>3. Treated waste water from STP (Flushing Req.) (Entire year).</b>				
<b>B) <u>Township Area</u></b> 1. Green Belt 2. Drinking 3. Other(Please Specify)  <b>TOTAL</b>					

**XX. Source of Raw Water Supply (Net) -**

S.No.	Source	Cu.m./hr	Cu.m./day
1	Sea	0	0
2	River	0	0
3	Groundwater	0	0
4	Rain water harvesting	1	20 KLD
5	Municipal water supply	1	20 KLD
6	Others (Pl. specify)	Nil	

**XXI. In case of groundwater from Dug wells in the CRZ area**

A. No. of wells (existing) within	No.	Yield (kl/day)
1. 0-200 metres	Nil	
2. 200-500 metres	Nil	
B. New wells (proposed) within		
a) 0-200 metres	Nil	
b) 200-500 metres	Nil	

**XXII. Lean Season flow in case of surface water (cum./sec) N.A.****XXIII. Groundwater**

A. Recharge Rate (cubic meters)

N.A.

B. Withdrawal rate (cubic meters)

Groundwater Table:

A. Pre monsoon (metres BGL)

1.5 mtr.

B. Post monsoon (meters BGL)

0.50 mtr.

**XXIV. Competing Users of the Water Source - Nil**

S.No.	Usage	Present Consumption (cu.m/day)		Addition Proposed as per local plan		Total	
		Surface	Ground	Surface	Ground	Surface	Ground
1	Irrigation					NA.	
2	Industry					NA.	
3	Drinking					NA.	
4	Others (Please specify)					NA.	
Total						NA.	

**XXV. Physico chemical analysis of Raw Water at intake point.****N.A.**

**XXVI. Physico chemical analysis of treated water to be used in the Project/Township (Envisaged Standards).**

**As per IS 10500 drinking water standards.**

**XXVII. Waste Water Management**

A. Waste water and /or sewage treatment plant

**Proposed Sewage Treatment Plant ( S.T.P. ) to be constructed within the premises to treat the complete waste water to be generated from the project and recycled the same.**

B. Composition/characteristics of discharge before and after treatment

Item	Characteristics	
	Before	After
pH	7.5 – 8.5	6 – 8
BOD <sub>3</sub> at 27 <sup>0</sup> C (mg/l)	200 – 250	< 3
COD (mg/l)	400 – 500	< 20
Suspended Solids (mg/l)	250 – 450	< 5
Total Dissolved Solids (mg/l)	400-500	400-500
Oil & Grease (mg/l)	30	< 1

C. Daily discharge (cu.m./day) from different sources

1. Toilet/sewage

2. kitchen

3. Workshop

4. Other

Total

**20 KL/day**

**All the details are provided  
in Water balance Chart**

D. Quantity of water recycled

1. (in %)

**100%**

2. (in cu.m/day)

**16 KL / day**

E. Details of recycling mechanism

**The details are provided at Water balance Chart .**

1. During monsoon season
2. Other than monsoon season

**The total waste water will be treated and the treated water will be recycled for flushing requirement and horticulture purposes.**

F. Mode of final discharge/disposal –

**The treated waste water will be used for flushing requirement and horticulture requirement.**

S. No.	Mode	Length (in m.)	Quantity(in cu.m./day)
1	Open Channel		
2	Pipeline		
3	Others (Please specify)		

G. Point of final discharge : **Recycled**

S.No.	Final Point (please specify the location)	Quantity discharged (in cum.)/day
1	Agricultural land	
2	Fallow Land	
3	Forest Land	
4	Green Belt	
5	River	
6	Lake	
7	Estuary	
8	Sea	
Total		<b>Nil</b>

H. Lean season flow rate in case of  
river/stream/creek (cumecs)

**N.A.**

I. Downstream users of water (cusecs/cumecs)

1. Domestic

2. Irrigation



3. Fisheries

4. Others (Please specify)

Total

J. Analysis of river water 100 metres upstream of discharge point and 100 metres downstream of discharge point and details of aquatic life in case of discharge into water bodies. - **N.A.**

## XXVIII. Solid Waste

A. Details

The total solid waste generation is about 60 Kgs / day. Adequate number of collection bins separately for bio-degradable and non-biodegradable waste shall be provided as per MSW Rules, 2000. The non-biodegradable and recyclable waste would be sold to the recyclers. The bio-degradable waste would be sent to bio –gas generation plant.

S.No.	Source	Qty (TPM)	Form	Composition
1	Raw Water treatment	<b>N.A.</b>		
2	ETP ( S.T.P. )	<b>18 KL/day</b>	<b>S.T.P. sludge</b>	<b>As manure for horticulture purposes.</b>
3	Others			

B. What are the possibilities of recovery and recycling of wastes?

C. Possible users of Solid Waste. :- **Recyclable waste sold to vendors.**

D. Method of disposal of solid waste

Method

Qty (TPM)

E. Landfill

**N.A.**

F. Incineration

**N.A.**

G. Other (pl. specify)

**Bio-gas generation plant**

H. In case of landfill :- **N.A.**

1. Is solid suitable for landfill

Yes

No

2. Dimensions
3. Life of landfill (years)
4. Proposed precautionary and mitigation measures

I. In case of incineration :- **N.A.**

Details of incinerator

1. Size
2. Capacity
3. Fuel

J. Likely composition and quantum of emissions :- **N.A.**

S.No.	Components	Quantity (in cu.m/hr)

K. Frequency of incineration/annum :-

L. Others alternative proposed along with details :-

**XXIX. Noise level (dB)**

- A. Source
- B. Level at Source (db)
- C. Level at project boundary (dB)
- D. Abatement measures : **Acoustic enclosure to the D.G. sets**

**XXX. Fuel/Energy Requirements**

A. Total Power Requirement (MW)

S.No.		Project	Other(please specify)
	Present (in existing)	--	
	Proposed	<b>16,000 kWh / day</b>	
	Total	<b>16,000 kWh / day</b>	

B. Source of Power (MW)

S.No.		SEB/Grid	Captive power plant	DG Sets
1	Present	<b>NA.</b>	--	--

2	Proposed	<b>16,000 kWh / day</b>	--	<b>1010 KVA x 2 Nos.</b>
	Total	<b>16,000 kWh / day</b>	--	<b>1010 KVA x 2 Nos.</b>

#### C. Details of Fuel used

S.N o.	Fuel	Daily Consumption (TPD)		Calorific value (Kcals/kg)	% Ash	% Sulphur
		Existing	Proposed			
1	Naphtha		<b>Nil</b>			
2	HSD =		<b>90 Ltr. / hr. (low sulphur content )</b>			
3	LSHS					
4	Furnace Oil					
5	Coal		<b>Nil</b>			
6	Lignite		<b>Nil</b>			
7	Other (Please specify)					

#### XXXI. Occupational Health

- A. What are the major occupational health and safety hazards anticipated  
**Cuts, broken bones, sprains and strains, hearing problem caused by exposure to noise, illness caused by exposure to radiation, illness caused by breathing toughing or ingesting unsafe substance.**  
**Better job safety and prevention process can reduce the risk due to these problems**
- B. What provisions have been made/propose to be made to conform to health/safety requirements.  
**Safety measures such as fire extinguisher and first aid medicine will be made available at the construction site. A person will be employed to taken care of supervising the safety measures in the site alternatively. The status and condition of all equipment will be documented once in 3 days at the site. All equipments and machinery used within the site will be under norms and stipulations of pollution control board.**
- C. Details of personal protective equipment provided/to be provided to the workers  
**Ear plugs will be provided to the workers who are working with noise, emissions machines like drilling and cutting equipment.**  
**Goggles will be provided to the workers who are working with light**

emitting machines like electric arc welding, x-ray welding etc.

**XXXII. Green Belt**

A.	Total area of project / township (in ha.)	6.9083 Ha.
B.	Area already afforested (for existing projects), in ha.	NA.
C.	Area proposed to be afforested (in ha.)	N.A.
D.	Width of green belt (minimum, in m.)	3.0 mtr.
E.	Trees planted & proposed	
	Nos.	Survival Rate
	Species	
Planted	NIL	
Proposed	500	
Major species		

**Major species will be planted of Mangifera indica, Artocarpus hetrophillus, Cassia fistula, Cassia Simea, Terminalia Arjun, Azaridacta indica, Saraacha indica etc.**

**XXXIII. Construction Phase**

- A. Estimated duration of construction :- **24 months**
- B. Number of persons to be employed for construction
- |    |         |     |
|----|---------|-----|
| a) | Peak    | 100 |
| b) | Average | 50  |
- C. What provision has been made for the sewage treatment for the construction workers?
- Mobile toilets will be provided.**
- D. How the fuel (kerosene/wood, etc.) requirement of labour force will be met to avoid cutting of trees from the adjoining areas
- No labour camp at site .**

- E. Measure for Health care with emphasis on protection from endemic diseases.

**Provision will be made for health care and periodically medical check for the construction laboureres.**

#### **XXXIV. Socio economic profile**

- A. Human Settlement :- **The resort is on the Nedyathuruthu island near Perumbalam Island located in Vembanadu lake, Alappuzha District, Kerala. The Nedyathuruthu island is well connect to the main land through boat jetty.**

S.No.		Aerial distance from the periphery of the site		
		Upto 500m from periphery	500m to 3000 m from the periphery	3000m to 7000m from the periphery
1.	Population			
2.	Number of Houses			
3.	Present Occupational Pattern			

- B. Economic activity :- **The area is a cosmopolitan one.**

S. No.	Population	Occupation (Agriculture/horticulture/ fishing/ tourism/transport/ construction)	Average Income per annum

#### **XXXV. Rehabilitation & Resettlement Plan :- N.A.**

- A. Population to be displaced

S.No.	Name of Village	Population		
		Land oustees only	Homestead Ousteas only	Land and Homestead Ousteas
1				

- B. Rehabilitation Plan for oustees  
 C. Site where the people are proposed to be resettled and the facilities to be provided at the new site  
 D. Compensation package  
 E. Agency/Authority responsible for their resettlement.  
 F. Approval/comments of competent authority

**XXXVI. Pollution Control EMP.**

---- Details are provided in attached

A. Details of Pollution Control Measures/Environmental safeguards:

S.No.	Existing	Proposed to be Installed
1.	Air	<b>Exhaust pipe for D.G. sets emissions as per CPCB norms</b>
2.	Water	<b>Sewage Treatment Plant for waste water treatment</b>
3.	Noise	<b>Noise barricade for construction site and acoustic enclosure for D.G. sets</b>
4.	Solid Waste	<b>Safe disposal of Non-bio-degradable solid waste and bio-gas generation plant) for bio-degradable solid waste</b>

B. Protection of

1. Forest	N.A
2. Agricultural land	N.A
3. Grazing land	N.A
4. Top soil	N.A
5. Natural resources	N.A
6. Sand dune	<b>N.A</b>
7. Hill feature	N.A
8. Reclaiming borrow lists	N.A
9. Low lying list	N.A
10. Soil and slope stabilization	N.A

C. Preventing siltation  
**The project will not affect any existing drainage system, therefore, there will not arise any siltation due to this project development.**

D. For Existing Units Only – **N.A.**

- Difficulties encountered in implementing pollution control measures.
- Efficiency of each pollution control equipment/system installed.

S.No.	Name of the System Equipment	Design Efficiency %	Present Working efficiency %
1	N.A	N.A	N.A
2			
3			

**Proposed Units**

S. No.	Name of the System Equipment	Design Efficiency %	Present Working efficiency %
1.	<b>Bio-gas generation plant</b>	<b>95%</b>	N.A
2.	<b>STP</b>	<b>85%</b>	N.A
3.	<b>Acoustic enclosures</b>	<b>95%</b>	N.A

### XXXVII. Expenditure on Environmental Measures

- A. Capital cost of the project (as proposed to the funding agency/financial institutions)

(Rs. Lakhs)

**Rs. 350 Crores**

- B. Cost of environmental protection measures (Rs. Lakhs)

S.No.		Recurring Cost per annum	Capital Cost
1	Pollution Control	<b>Complete details are provided in attached Environment Management Plan.</b>	
2	Pollution Monitoring		
3	Solid Waste Management		
4	Occupational Health		
5.	Green Belt		
6	Others ( Pl. Specify)		
Total			

### XXXVIII. Public Hearing : **N.A.**

- A. Date of Advertisement:

- B. Newspapers in which the advertisement appeared

- C. Date of Hearing

- D. Panel Present


- E. List of Public present along with addresses and occupation

- E. Summary/details of public hearing

Issues raised	Recommendation of panel	Response of Project Proponents

The data and information given in this Performa are true to the best of my knowledge and belief:

**Mr. Roy M. Mathew (Director)**  
**M/s KAPICO KERALA RESORTS PVT. LTD.**



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**Date: 06-03-2017**

Signature of the Applicant with  
full name & address.

**Place: KOCHI**

Given under the seal of organisation  
on behalf of whom the applicant is signing.



**A**  
**REPORT**  
**ON**  
**ENVIRONMENT MANAGEMENT**  
**PLAN**

## **INDEX**

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**ENVIRONMENT MANAGEMENT PLAN**  
**CONSTRUCTION PROJECT (RESORT PROJECT)**  
**by M/s KAPICO KERALA RESORTS PRIVATE LIMITED**

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## **1. INTRODUCTION**

M/s KAPICO KERALA RESORTS PRIVATE LIMITED intending to develop a resort project which is located at Nedyathuruthu island in Sy. Nos. 263/1, 263/2, 263/3, 263/4, 266/1, Panavally Village & Panchayat, Cherthala Taluk, Alapuzha District, Kerala. The project is spread over an area of 6.9083 ha. (69,083 sq.m.). The total built-up area for the project is about 28,795 sq.m. The project have consists of 54 resort villa with supporting infrastructure facilities.

The population calculation for the project during the operation phase of the project is made based on the specifications provided in National Building Code (NBC). The maximum expected population in a day during operation phase of the project is worked out. The specifications as per NBC and the expected population for the project is given below:-

ACTIVITY	VILLAS	POPULATION
Resort Villa	54 nos.	108 Persons ( 54 Apts. x 2 Persons)
Staff	--	108 Persons (10% of 108)
	TOTAL	216 Persons

One of the main criteria for quantifying the environment impacts related to the project during the operation phase for the project is the maximum population expected in a day. Based on which the requirement of daily water consumption, waste water generation, solid waste generation etc. is calculated.

The Environment Management Plan (EMP) is a site specific plan developed to ensure that the project is implemented in an environmentally sustainable manner and to understand the potential environmental risks arising from the project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigation measures to reduce adverse environmental impacts during the project's life cycle.

## **2. AREAS FOR IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS**

The environmental parameters likely to be affected by a construction project are related to many factors, i.e. physical, social, economic etc. The operations may disturb environment of the project area and its surroundings in various ways, such as removal of mass / earth, change of landscape, clearing of flora and displacement of fauna of the area, surface drainage, and likely change in air quality, water quality and soil quality. While for the purpose of development and economic up-liftment of people, there is need for establishment of the project, but these should be environment friendly. Then only a sustainable development can be ensure. Therefore, it is essential to assess the impacts of project on different environmental parameters, before starting the construction activities as well as the operational activities, so that abatement measures could be planned in advance for the area.

## **3. ENVIRONMENT MANAGEMENT PLAN (EMP)**

The Environment Management Plan (EMP) for a development project prescribes the mitigation measures to be adopted to nullify or to minimize various anticipated environment impacts so as to ensure nil / low impact due to the project to the surrounding environment. This will ensure sustainable and environment friendly development. The Environment Management Plan for various facets of environment are given below : -

### **A. ANTICIPATED IMPACTS & MITIGATION MEASURES DURING OPERATION PHASE**

Anticipated impacts on Environment during Operation phase are given below:-

- 1 Air environment
- 2 Water environment
- 3 Noise environment
- 4 Land environment
- 5 Biological environment
- 6 Socio-economic environment
- 7 Energy Conservation

**ENVIRONMENT MANAGEMENT PLAN**  
**CONSTRUCTION PROJECT (RESORT PROJECT)**  
**by M/s KAPICO KERALA RESORTS PRIVATE LIMITED**

---

The detailed description of Impacts & mitigation measures during Operation phase are given below :-

**1. AIR ENVIRONMENT**

**Anticipated Impacts :-**

- a. Particulate Matter & Gaseous emissions (including worst condition of operating all DG sets (1010 kVA x 2 nos.) during power failure.

**Mitigation Measures :-**

- ✓ Stack height as per CPCB Standards.
- ✓ Development of a green belt (vegetation buffer) around the project site.
- ✓ Promotion of use of cleaner fuel
- ✓ All DG set should comply emissions norms notified by MoEF / CPCB.

**2. WATER ENVIRONMENT**

**Anticipated Impacts :-**

- a. Impact on competing users due to consumption of public supply / ground water (resource loss) for domestic consumption in the project site.
- b. Impact on competing users due to consumption of public supply / ground water as make-up water for HVAC in the project (resource loss)
- c. Improper discharge of untreated sewage may lead to impact on surface / ground water quality.
- d. Improper storage & disposal may lead to leaching of hazardous waste leading to contamination.
- f. The daily water requirement for domestic purposes is expected to be about 20 KL.

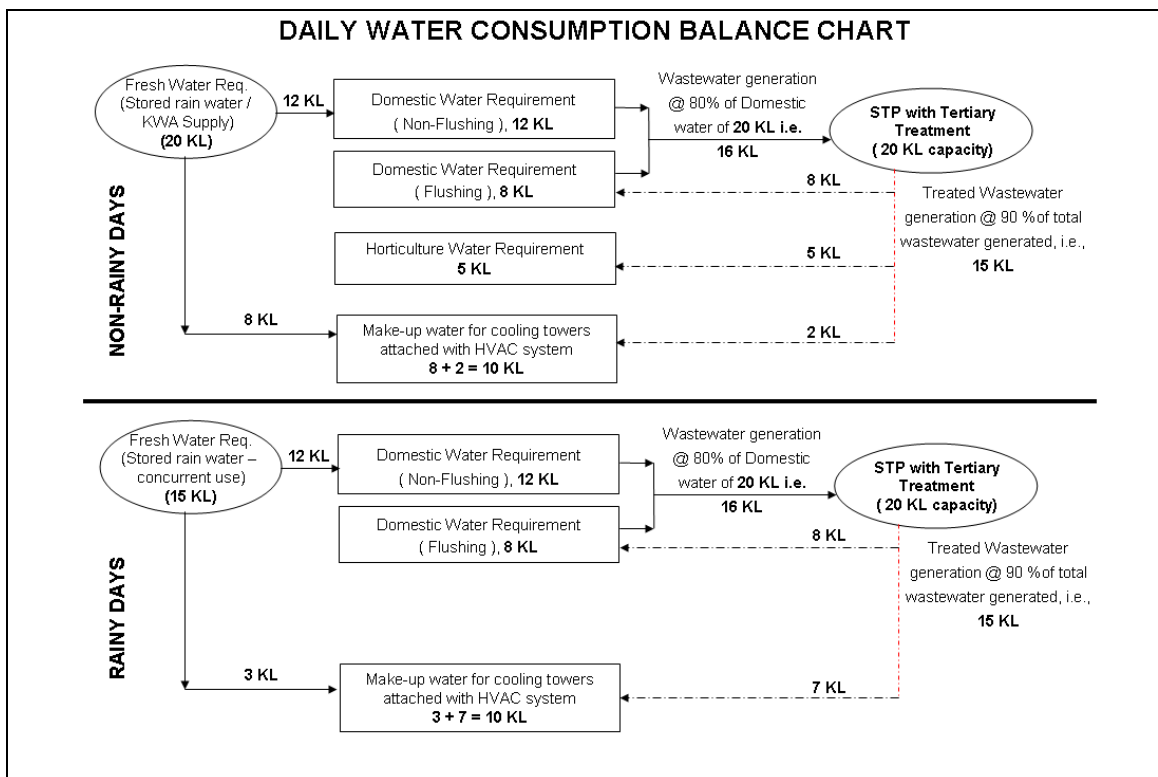
**Mitigation Measures :-**

- ✓ Monitoring water use: Use of water meter conforming to ISO Standards would be installed at the inlet point of water uptake and at the discharge point to monitor the daily water consumption.
- ✓ Use of water saving devices / fixtures: Low water consumption fixtures like low flow flushing systems, sensor based fixtures, waterless urinals, tap aerators etc. to reduce the water usage.
- ✓ Installation of dual plumbing for using the treated water from STP for flushing purposes.
- ✓ Use of stored rain water
- ✓ Sewage treatment plant (about 20 KLD capacity).

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- ✓ Treatment of sewage (about 16 KLD) and recycling of the treated sewage and ensuring zero discharge.
- ✓ Use of treated water for STP as make-up water in HVAC system requirement.
- ✓ Treatment unit with primary, secondary and tertiary treatment.
- ✓ No use of ground water.
- ✓ Estimation of daily water consumption based on the HVAC losses, reuse and recycled options.
- ✓ Monitoring water use: Use of water meter conforming to ISO Standards would be installed at the inlet point of water uptake and at the discharge point to monitor the daily water consumption in HVAC unit.
- ✓ Development of a leachate proof intermediate hazardous storage facility.
- ✓ Building design incorporate in the project w.r.t. HFL of the water body.



### 3. NOISE ENVIRONMENT

#### Anticipated Impacts :-

- a. Noise due to the operation of D.G. sets during power failure

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- b. Noise due to the operation of cooling towers attached with the HVAC system.

**Mitigation Measures :-**

- ✓ D.G. set with acoustic enclosures.
- ✓ A noise barrier will be made all around the cooling tower to prevent the noise.
- ✓ Also, an environmental barrier by way of tree plantation can be created around the project site to prevent the noise.

**4. LAND ENVIRONMENT**

**Anticipated Impacts :-**

- a. Improper disposal of municipal solid waste (about 60 kg/day) may lead to impact on land.
- b. Improper discharge of untreated sewage may lead to impact on land.
- c. Improper storage & disposal of hazardous waste may lead to leaching of waste leading to contamination.

**Mitigation Measures :-**

- ✓ Segregation of waste at source into biodegradable and non biodegradable waste by providing colored bins.
- ✓ Disposal of biodegradable Municipal Solid Waste by bio-gas plant.
- ✓ Disposal of non biodegradable recyclable waste to vendors.
- ✓ Disposal of inert waste by land filling / back filling.
- ✓ Disposal of sewage through the STP within the site and re-use the treated sewage within the site.

Development of a leachate proof intermediate hazardous storage facility.

- ✓ Disposal of the hazardous waste to the State Pollution Control Board approved agency & MoU to be made with the concerned agency.

**5. BIOLOGICAL ENVIRONMENT**

**Anticipated Impacts :-**

- a. Improper disposal of MSW may attract scavenger avifauna which may lead to dissertations of native avifauna.

**Mitigation Measures :-**

- ✓ An appropriate landscape plan developed for the loss of vegetation.

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- ✓ The native species of flowering, fruit bearing & medicinal plants proposed in the green area development plan.
- ✓ Segregation of waste at source into biodegradable and non biodegradable waste by providing colored bins.
- ✓ Storage & segregation of biodegradable municipal solid waste in appropriate places & disposal of biodegradable Municipal Solid Waste by bio-gas generation plant.
- ✓ Disposal of non biodegradable recyclable waste to vendors.
- ✓ Disposal of inert waste by land filling / back filling.
- ✓ Plantation of native species of trees / shrubs / herbs / grass for enhancement of avifauna
- ✓ Conservation of the existing trees wherever possible.
- ✓ Plantation of fruit bearing trees to enhance the avifauna

## **6. ENERGY CONSERVATION**

### **Anticipated Impacts :-**

- a. Adoption of energy in-efficient vehicles, HVAC system, appliances, lights etc. may lead to wastage of energy.
- b. Non adoption of renewable sources of energy like solar energy may lead to increase dependency on public supply may lead to consumption of energy by competing users.
- c. It is expected to be about 16,000 kWh/day of power requirement for the project.

### **Mitigation Measures :-**

- ✓ Appropriate setbacks in resort buildings for getting natural lighting to the interior areas of the building.
- ✓ HVAC system and appliances with 5 Star rating as per BEE.
- ✓ Savings in energy by the use of LED lamps.
- ✓ Use of water cooled HVAC system in place of air cooled system which is energy intensive.
- ✓ Use of solar energy for common area lighting in pathways.
- ✓ Use of LED lights
- ✓ Use of solar power plant for common area lighting in the project site.
- ✓ By the use of above measures, it is expected to be about 24% energy saving.



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**B. ENVIRONMENT MANAGEMENT PLAN (BUDGETARY ALLOCATION)**

The details regarding Environment Management Plan (Expected Budgetary Allocation) during operation phase are given below :-

Sr. No.	Particulars	Approx. Recurring Cost/Annum	Approx. Capital Cost	Basis for Cost Estimate
		Rs. In Lacs		
1.	Sewage Treatment Plant	2.0	10.0	Capital Cost of STP & recurring cost would include operational cost (energy & manpower)
2.	Water Treatment plant	3.0	8.0	Capital Cost of WTP & recurring cost would include operational cost (energy & manpower)
3.	Solid Waste Management Plan	1.0	8.0	Capital cost of Coloured bins at appropriate locations & bio-gas plant/bio bin & its recurring cost.
4.	Noise Control for D.G. Sets through acoustic enclosures	1.5	4.0	D.G. Sets will be new and will be fitted with acoustic enclosures & hence no separate capital cost & the recurring cost would include minor repair works
5.	Chimney for D.G. Sets Emission	0.75	3.0	The capital cost would include cost of providing adequate height of stack, ladder and platform and recurring cost would include cost of painting
6.	Green Area development including Grass Coverage	3.0	20.0	Green Area Development Plan
7.	Rain Water Storage tank / pond	2.0	30.0	Capital cost on construction of rain water collection tanks
8.	Solar energy operated lights	4.0	20.0	Capital cost on procurement & installation of solar street lights
TOTAL		17.25	103	

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**C. ENVIRONMENT MONITORING PLAN (BUDGETARY ALLOCATION) DURING OPERATION PHASE**

The environmental monitoring programmed is a vital process in the management Plan for any project. This helps in signaling the potential problems that would result from the project and will allow for prompt implementation of effective corrective measures. The environmental monitoring will be required for the project.

The following routine monitoring programme as detailed below shall be implemented at site. Besides to this monitoring, the compliances to all environmental clearance conditions and consents / approvals from KSPCB / MoEF&CC / SEIAA will be monitored and reported periodically.

The details regarding Environment Monitoring Plan (Budgetary Allocation) during operation phase are given below :-

<b>OPERATION PHASE</b>				
Sr. No.	Particulars	Parameters	Frequency	Approx. Recurring Cost / Annum (Rs. In Lacs)
1.	Ambient Air	PM <sub>10</sub> & PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub>	Once in a season	1.25
2.	Stack Emission of D.G. sets	SPM, SO <sub>2</sub> , NO <sub>x</sub>	Once in a year	0.75
3.	Treated Water from Sewage Treatment Plants	pH, BOD, COD, Oil & Grease, TSS, bacteriological parameters	Once in a month	0.75
4.	Stored Rain water / KWA supply	As per IS : 10500	Once in a season	2.0
5.	Noise Level	24 Hrs. Noise Level	Once in a season	0.50
<b>TOTAL</b>				<b>5.25</b>

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**D. ENVIRONMENT MANAGEMENT / MONITORING CELL**

An environmental monitoring cell will be established for monitoring of important and crucial environmental parameters which are of immense importance to assess the status of environment.

The details regarding Environment Monitoring Cell are given below :-

Sr. No.	Members	Role
1.	Executive Director	Chairman
2.	Project Manager	Member
3.	Health & Safety Officer	Member
4.	Representative of NABL accredited laboratory	Member
5.	Representative of NABET accredited Environmental Consultant	Member
6.	Representative of STP & Municipal waste disposal unit suppliers	Member
7.	Project Engineer	Member & Convener
Frequency of Meeting – Once In three months		

**E. RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN**

**1.1 Introduction**

This chapter broadly looks at various aspects related to risk & disaster management and resource conservation.

**1.2 Risk Assessment and Disaster Management Plan**

**1.2.1 Need and Plans**

The project encompasses the lives of a large number of people. It also involves installation of various structures and machineries that meet the comfort and needs of its population but may also pose serious threat to the occupants in case of accident. It is thus considered necessary to carry out a risk assessment and prepare a disaster management plan for the project.

Follow all the safety norms, it may not be always possible to totally eliminate the risks of eventualities and failures of equipment or human errors. An essential part of major hazard control has therefore will be concerned with mitigating the effects of such emergency and restoration of normalcy at the earliest.

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The overall objective of an Emergency Response Plan (ERP) is to make use of combined resources at the site and outside services to achieve the following:

1. To localize the emergency and if possible eliminate it;
2. To minimize the effects of the accident on people and property;
3. Effectively rescue and medical treatment of casualties;
4. Safeguard to other people;
5. Evacuate people to safe areas;
6. Informing and collaborating with statutory authorities;
7. Initially contain and ultimately bring the incident under control;
8. Preserve relevant records and equipment for the subsequent enquiry into the cause and circumstances of the emergency;
9. Investigating and taking steps to prevent reoccurrence

The ERP is therefore related to identification of sources from which hazards can arise and the maximum credible loss scenario that can take place in the concerned area. The response plan takes into account the maximum credible loss scenario - actions that can successfully mitigate the effects of losses/emergency need to be well planned so that they would require less effort and resources to control and terminate emergencies, should the same occur. Main hazards identified for the project include hazards pertaining to fires in buildings and fire in diesel storage areas, earthquake and LPG leakage and an ERP pertaining to these conditions is described in the following sections.

#### **1.2.2 Response in Case of Earthquake**

##### **Response Procedures for Occupants**

###### ***If indoors:***

1. Take cover under a piece of heavy furniture or against an inside wall and hold on.
2. Stay inside: The most dangerous thing to do during the shaking of an earthquake is to try to leave the building because objects can fall on you.

###### ***If outdoors:***

Move into the open, away from buildings, streetlights and utility wires. Once in the open, stay there until the shaking stops.

###### ***If in a moving vehicle:***

Stop quickly and stay in the vehicle. Move to a clear / safe area away from buildings, trees, overpasses or utility wires. Once the shaking has stopped,

proceed with caution. Avoid bridges or ramps that might have been damaged by the quake.

***After the quake***

1. After the quake be prepared for aftershocks.
2. Although smaller than the main shock, aftershocks cause additional damage and may bring weakened structures down. Aftershocks can occur in the first hours, days, weeks, or even months after the quake.

***Help injured or trapped persons.***

1. Give first aid where appropriate. Do not move seriously injured persons unless they are in immediate danger of further injury. Call for help.
2. Remember to help those who may require special assistance, like infants, the elderly and people with disabilities.
3. Stay out of damaged buildings.
4. Use the telephone only for emergency calls.

**Response Procedure for Emergency Team**

1. Formulate an Emergency Response Team for earthquake response
2. Using the public address system, inform occupiers about response procedures discussed above.
3. Inform the necessary authorities for aid
4. Ensure no occupiers are stuck beneath any debris, in case of a structural failure.
5. Ensure that all occupiers standing outside near the buildings are taken to open areas.
6. Ensure that the first aid ambulance and fire tender vehicles (at main land) are summoned, if necessary.
7. Inform the nearby hospitals if there are any injuries.
8. Check the utilities and storage tanks for any damage.

**1.2.3 Status on natural disasters w.r.t. site and surroundings**

There are no reported incidents of any landslide, earthquake, cloud burst in the project vicinity in the last 100 years.

**1.2.4 Response for LPG Leakage**

1. The affected area should be evacuated and cordoned off immediately
2. Initiate an Emergency Response Team for LPG leakage.
3. Shut down the main valves in the gas bank, if any in the kitchen.

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4. Ensure that only concerned personnel are present in the affected area and all other personnel and visitors are moved to the nearest assembly points.
5. Rescue trapped personnel, also check if any personnel are unconscious in the area and immediately move them outside and provide first aid. Ambulance (at main land) should be summoned to take injured personnel to the nearest hospital.
6. Personnel in the buildings to close all doors and windows to prevent entry of the leaked gas.
7. Source of leakage to be traced and isolated from all the other areas. And if required use pedestal fans to bring down the gas concentration.
8. In case of fire follow the instructions mentioned below:

**1.2.5 Response in case of Fire**

1. Required response during in the event of a fire should be described in sign boards located in the lobby.
2. On sighting a fire, it should be immediately informed to the environment manager / management giving the exact location and type of fire in detail.
3. Initiate the Emergency Response Team for fires.
4. If the fire is small, engage in extinguishing the fire using the nearest fire extinguisher.
5. Guide the Emergency Response Team staff to the emergency assembly point.
6. The Emergency Response Team should immediately inform the nearest dispensary (at main land) and security force. If required a fire tender should be summoned (from the main land).
7. The response team should immediately move to the point of fire and take all necessary steps to stop the fire. If the fire is not controllable and spreads then the manager in charge should inform the district authorities and call for external help.
8. The Emergency Response Team will provide immediate relief to the injured person at the scene of incident. Any injured persons should be evacuated on priority to the dispensary or one of the nearest hospitals based on their condition (at main land).

**Instructions for Occupants**

1. Get out of buildings quickly and as safely as possible.
2. Use the stairs to escape. When evacuating, stay low to the ground.
3. If possible, cover mouth with a cloth to avoid inhaling smoke and gases.

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4. Close doors in each room after escaping to delay the spread of the fire, if in a room with a closed door.
5. If smoke is pouring in around the bottom of the door or if it feels hot, keep the door closed.
6. Open a window to escape or for fresh air while awaiting rescue.
7. If there is no smoke at the bottom or top and the door is not hot, then open the door slowly.
8. If there is too much smoke or fire in the hall, slam the door shut.
9. Stay out of damaged buildings.
10. Check that all wiring and utilities are safe.

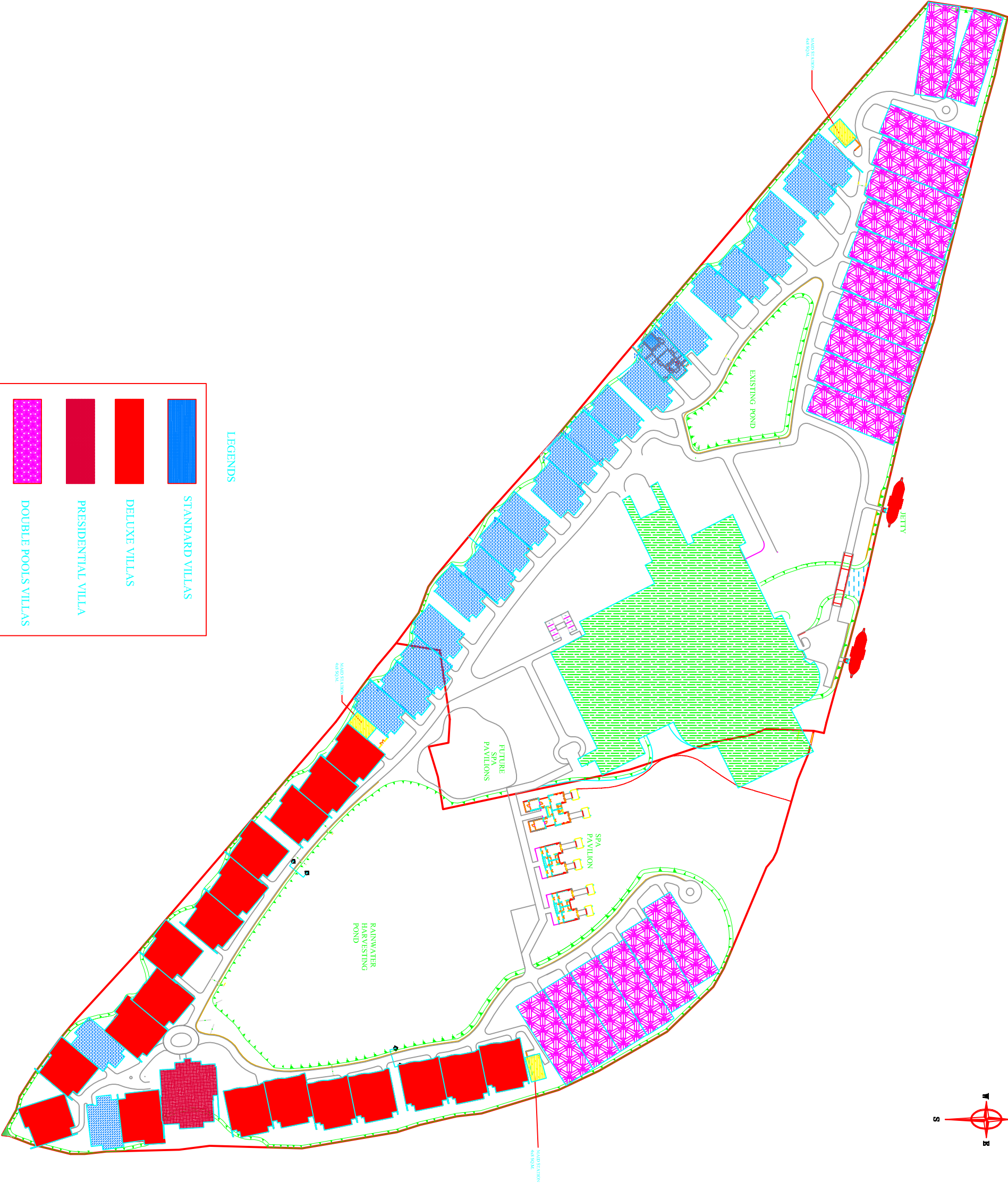
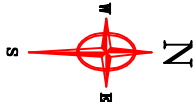
A state of the art fire fighting system is provided for the project to prevent and control fire outbreaks. The fire fighting system will consist of portable fire extinguishers, hose reel, wet riser, yard hydrant, automatic sprinkler system and manual fire alarm system. The buildings will also be provided with automatic fire detection and alarm system as per National Building Code guidelines for Fire & Safety.

## **F. CONCLUSION**




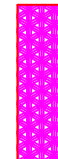
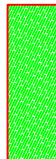
It is predicted that socio-economic impact due to this project will positively increase the chance of more employment opportunities for local inhabitants. There are no Resettlement and Rehabilitation issues involved in this project. The project infrastructures will be of use to people of the area. The revenue of the State Govt. will be definitely increased due to the project activity. **As part of the eco restoration with native species to a maximum possible extent. Also, rain water pond / tank for storage of rain water and for its subsequent use so as to conserve fresh water consumption. The municipal solid waste will be handled and disposed as per norms.** Thus the resort project is not likely to affect the environment or adjacent ecosystem adversely and will ensure a sustainable development.

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# CONCEPTUAL PLAN

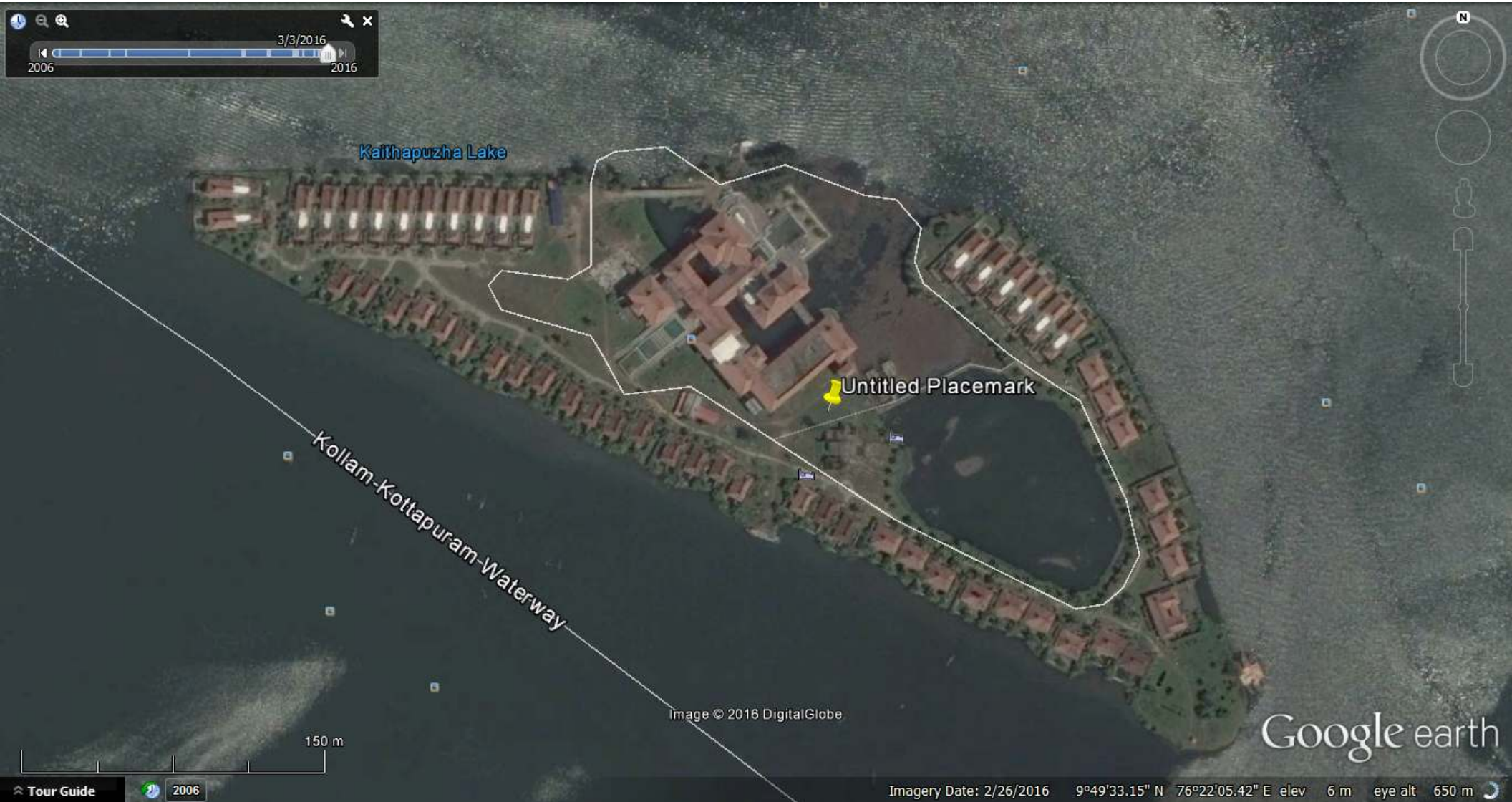


## LEGENDS

	STANDARD VILLAS
	DELUXE VILLAS
	PRESIDENTIAL VILLA
	DOUBLE POOLS VILLAS
	FOH

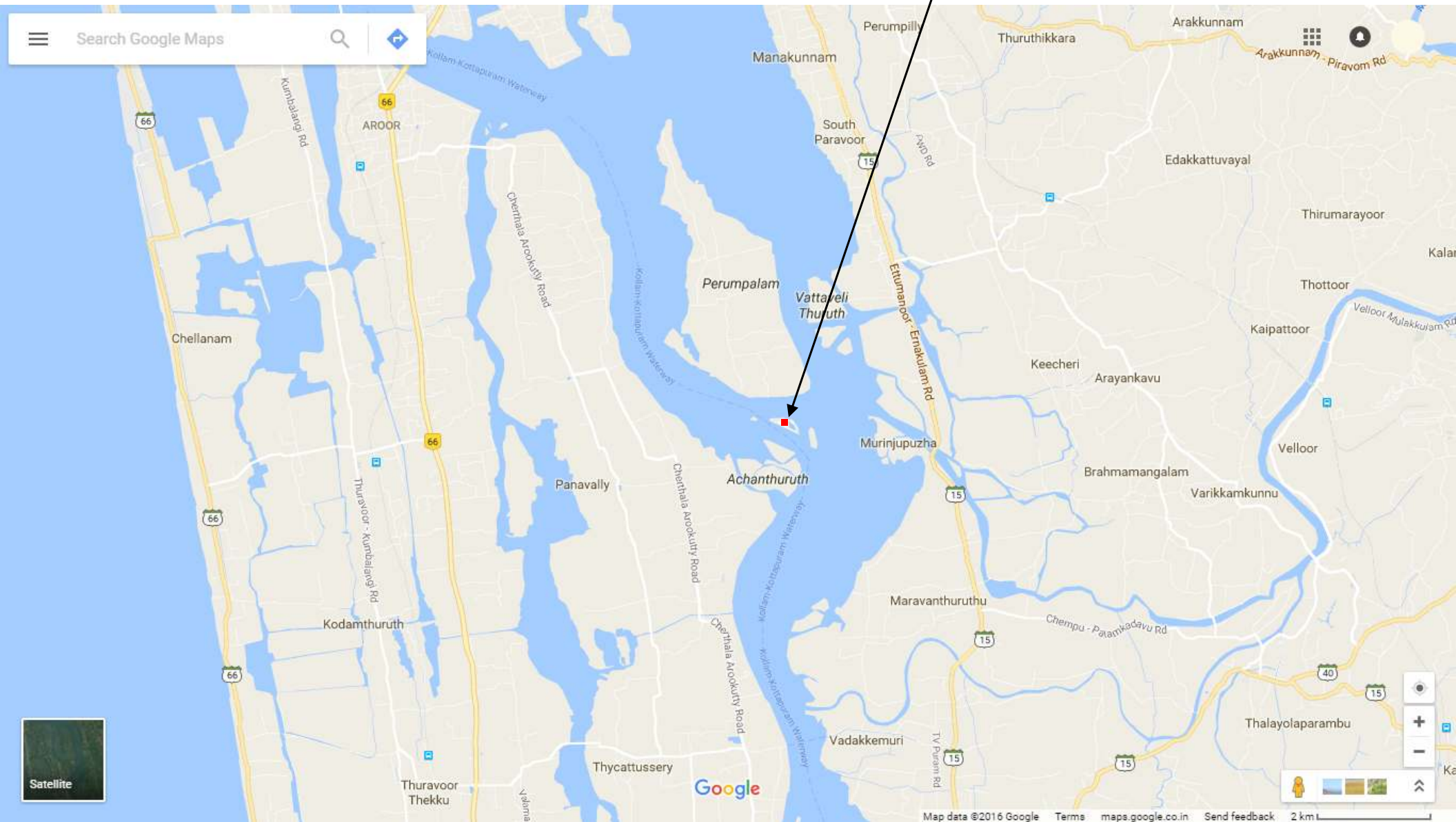


# SATELLITE IMAGE OF M/s KAPICO KERALA RESORTS (P) LTD.



# VICINITY MAP OF THE SITE & SURROUNDINGS

**Project Site**

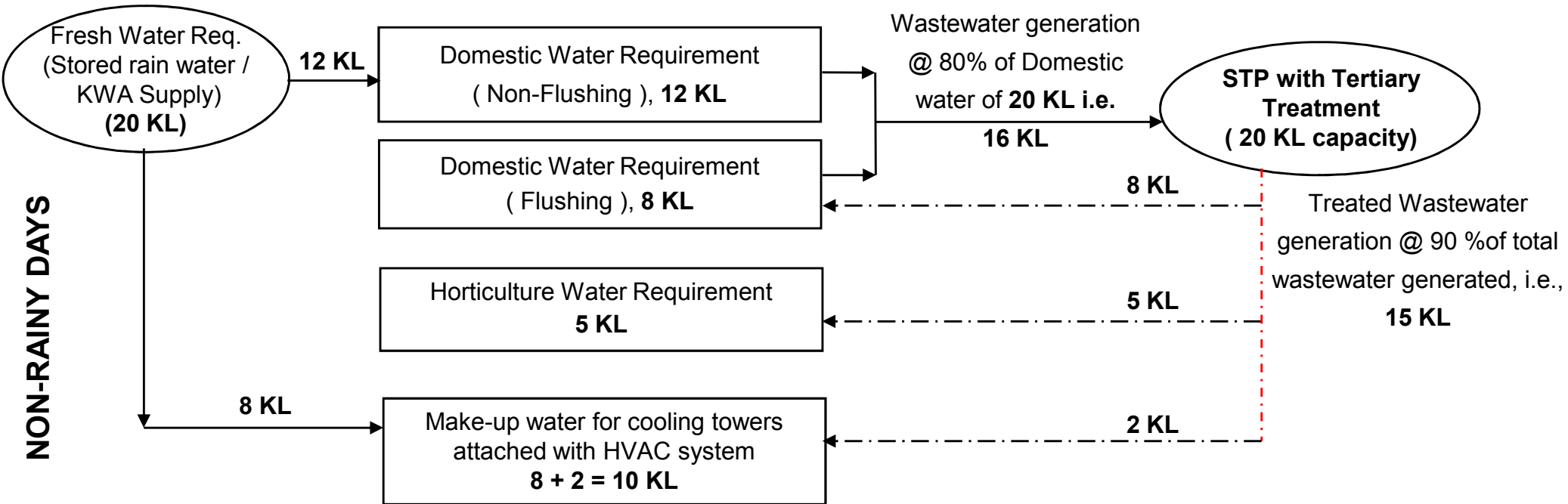


## ACTIVITY WISE POPULATION & DAILY WATER CONSUMPTION DETAILS

ACTIVITY	VILLAS	POPULATION	NON- FLUSHING REQ. ( in KLD )	FLUSHING REQ. ( in KLD)	TOTAL ( in KLD )
Resort Villa	54 nos.	108 Persons ( 54 Apts. x 2 Persons)	108 x 90 Ltr. = 9.72	108 x 45 Ltr. = 4.86	14.58
Staff	--	108 Persons (10% of 108)	108 x 15 Ltr. = 1.62	108 x 30 Ltr. = 3.24	4.86
TOTAL			11.34 say 12 KLD	8.10 say 8 KLD	19.44 Say 20 KLD

# DAILY WATER CONSUMPTION BALANCE CHART

NON-RAINY DAYS



RAINY DAYS

