BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
(SOUTHERN ZONE BENCH, CHENNAI)

ORIGINAL APPLICATION NO. 105 OF 2022 (SZ)

With

ORIGINAL APPLICATION NO. 122 OF 2022 (SZ)

In the matter of:

Sunitha, Kerala ----Applicant(s)

-VS-

Union of India and ors. ----Respondent(s)

WITH

Ajitha, Alappuzha District ----Applicant(s)

-VS-

Union of India Respresented by its
Secretary, MoEF&CC, New Delhi and ors. ----Respondent(s)

EIA, EMP REPORT FILED BY THE ADDITIONAL CHIEF SECRETARY, ENVIRONMENT DEPARTMENT/2ND RESPONDENT

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Dated at Chennai on this the 17th day of November, 2022.

M/s. E.K.KUMARESAN

Standing Counsel for State Government of Kerala - NGT(SZ) Chennai Bench

(1)

GOVERNMENT OF KERALA

Abstract

Environment Department-Vembanad lake-CRZ violation-Judgment of the Hon'ble Supreme Court and High Court-Implementation-Conduct of Environment Impact Assessment (EIA)-Sanction accorded-Orders issued.

ENVIRONMENT (A) DEPARTMENT

G.O. (Rt) No.168/2013/Envt. Dated, Thiruvananthapuram, 29.11.2013

Read: (1) Judgment dated 25.07.2013 of Hon'ble High Court in WP© No.19564/11 and connected cases.

(2) Order dated 08.08.2013 of Hon'ble Supreme Court in SLP (Civil) Nos.24390-24391 of 2013

(3) Judgment dated 16.08.2013 of the Hon'ble Supreme Court in suo motu WP© No.687/13

(4) Letter D.O.No.C4-42300/2013 dated 01.10.2013 from the District Collector, Alappuzha

(5) Minutes of the meeting convened by the Chief Secretary on 29.10.2013

(6) Letter No.DoECC/E2/3027/13 dated 06.11.2013 from the Director of Environment & Climate Change, Thiruvananthapuram

(7) Minutes of the meeting of Working Group for Environment Department held on 12.11.2013

ORDER

In the judgment read as 1st paper above the Hon'ble High Court has ordered the removal of constructions made by M/s.Kapico Kerala Resorts at Nediyathuruthu near Perumbalam islands and M/s.Vaamika Island at Vettilathuruthu in Paanavally Grama Panchayat of Alappuzha district violating the Coastal Regulation Zone (CRZ) Notification 1991 and 2011.The Hon'ble Supreme Court of India in the judgment read as 2nd paper above has upheld the above order observing that the directions given by the High Court in the demolition of illegal construction effected during the currency of CRZ notification 1991 and 2011 are perfectly in tune with the decision of Supreme Court in ***Pliedade Filomena Gonsalves v. State of Goa and others*** (2004)3 SCC 445. Further actions as per the Environment (Protection) act 1986 have been taken for implementation of the Judgments.

(2) The District Collector, Alappuzha in his letter read as 4th paper above has reported the possible environmental issues arising out of demolition of substantial structures and the impact that may impinge on the Vembanad lake Ecosystem, a Ramsar site.

(3) In the meeting convened by the Chief Secretary on 29.10.2013 to discuss the implementation of CRZ notification in the backdrop of the above judgments it was decided, inter alia to entrust an agency accredited by the Ministry of Environment & Forest, Government of India to conduct a rapid EIA on the impact of

demolition of the resorts, upon environment and ecosystem. The Working Group for Environment Department met on 12.11.2013 have recommended to engage M/s. Environmental Engineers & Consultants (P) Ltd for the Rapid EIA at a cost not exceeding ₹ 10 lakhs.

(4) Government having considered the proposal submitted by the Director of Environment & Climate Change as per the letter read as 6th paper above for arranging the EIA study and in view of the recommendation of Working Group, are pleased to accord sanction to conduct a rapid EIA on the impact of demolition of the aforesaid resorts as ordered by the Hon'ble Courts upon the environment and ecosystem through M/s. Environmental Engineers and Consultants (P) Ltd, A1-198, Janakpuri, New Delhi-110 058, an agency accredited by the Ministry of Environment & Forests limiting the expenditure to ₹ 10 lakh.

(5) Terms of Reference of the EIA shall be those appended to this order.

(6) M/s. Environmental Engineers and Consultants (P) Ltd may also identify the most suitable and economical technology for demolition of the structures at the sites by liaising with competent agencies.

(7) The report shall be submitted on or before 05.12.2013 with 10 copies and a soft copy.

(8) The expenditure for the above purpose will be debited to Head of Account '3435-60-800-99-340-C' from the current years budget.

(By Order of the Governor)

G.RAJEEV
Additional Secretary to Government

To

The Director, Directorate of Environment & Climate Change, Thiruvananthapuram
M/s. Environmental Engineers & Consultants Pvt Ltd, A1-198, Janakpuri, New Delhi-110 058
The District Collector, Alappuzha
The Ex officio Principal Secretary, Science & Technology Department, Sasthra Bhavan, Pattom, Thiruvananthapuram
The Member Secretary, Kerala Coastal Zone Management Authority, Sasthra Bhavan, Pattom, Thiruvananthapuram
The Principal Accountant General (Audit/A&E) Kerala, Thiruvananthapuram
The Secretary, Panavally Grama Panchayat, Panavally, Alappuzha
Tourism Department
Local Self Government Department
Science & Technology Department
Stock File/Office copy

Forwarded/By Order

Section Officer

Copy to:-

The Additional Secretary to Chief Secretary
P.A. to Additional Chief Secretary, Environment Department

(3)

SITE VISIT TO M/S KAPICO KERALA RESORTS PVT. LTD AT NEDIYA THURUTHU AND, M/S VAMIKA ISLAND RESORTS PVT. LTD., AT VETTILA THURUTHU, VEMBANAD LAKE, ALAPPUZHA, KERALA.

1. Introduction

The Hon'ble High Court of Kerala vide it's order dated 25.07.2013 in the WP© No.19564/11 and connected cases and Hon'ble Supreme Court in SLP © No.24390-24391 of 2013 in its order dated 08.08.2013 has ordered demolition of the illegal construction made by M/s Kapico Kerala Resorts Pvt. Ltd at Nediya Thuruthu and by M/s Vamika Island Resorts Pvt. Ltd respectively at Vettila Thuruthu, Vembanad Lake, Alappuzha, Kerala.

Ministry in its reply to the review petition filed by M/s Kapico Kerala Resorts Pvt. Ltd and another petition filed by Fishermen Association in the High Court of Kerala submitted that there shall also be a site visit by an Expert Committee constituted by the Central Government. The ToR of the expert committee suggested was:-

(i) To conduct site visit, to examine the plan of action on demolition proposed by the State Government/Local Authority including transportation and disposal of debris and
(ii) To suggest suitable EMP to mitigate adverse impacts of demolition.
(iii) To submit report within 6 weeks from the receipt of plan of action on demolition from State Government/ Local Authority.

The Department of Environment and Climate Change, Govt. of Kerala provided the copy of EIA report prepared by M/s Environmental Engineers and consultants Pvt. Ltd. for the required demolition. Accordingly, the site was visited on 4th –April, 2014 by the following:

1. Shri Amarnatha Shetty, Additional Principal Chief Conservator of Forests, Regional Office, Ministry of Environment and Forests, Bangalore.

2. Shri R. Surendira Prasad, Member, National Coastal Zone Management Authority.

3. Shri Lalit Kapur, Director (Impact Assessment Division – III), Ministry of Environment and Forests, New Delhi.

Shri. E.Thirunavukkarasu, Deputy Director, Impact Assessment Division-III, MoEF, New Delhi also accompanied the Committee.

The list of State Government and Kerala Coastal Zone Management Authority officials present during the site visit is placed at **Annexure-I** and the list of representative of M/s Kapico Kerala Resorts Pvt. Ltd and M/s Vamika Island Resorts Pvt. Ltd. is placed at **Annexure-II.**

2. Details of the Project

M/s Kapico Kerala Resorts Pvt. Ltd.: The resort is on the Nediyathuruthu Island near Perumbalam Island located in Vembanadu lake, Alappuzha District, Kerala. The entire area of about 12.5 acres of the island has been used for the construction of this resort and it's associated facilities including the construction on the lake waterfront of the berthing of the boats, the retaining wall on the periphery of the island Etc. The layout plan of the various

facilities constructed as provided by the management of M/s Kapico Kerala resorts (P) Ltd. is attached at **Annexure-III.**

M/s Vamika Island Resorts Pvt. Ltd.: The resort is on the Vettilathuruthu Island located in Vembanadu Lake near Panavally. This resort has old as well as new construction which are spread over this small island of about 6 acres. It was informed by the owner of the resort, during the visit to this site, that this Island resort is in operation since 2006. The layout plan of the various facilities constructed are marked in **Annexure IV.**

3. EIA, EMP and Analysis

The EMP suggested by the Consultant and action plan proposed by PWD have been examined.

A. Super Structure:

Methodology: An EIA has recommended the mechanical demolition of the two sites. Mechanical demolition will be suitable since the majority of construction includes villas which are on the ground floor and others are ground plus one structures. However, controlled blasting which will have minimum impact distance in terms of noise and vibration can be considered specially for the front of house structure and where ever required and possible without affecting the lake.

Material Removal: The EIA has recommended removal of the various materials like new, detachable, movable items / materials Etc. The methodology suggested for removal of the various materials like new, detachable, movable items / materials Etc. can be accepted. The removal of materials and demolition can be simultaneously carried out. The removal of materials can be carried out in unit wise and the demolition can be commenced parallelly after completing removal of fittings, fixtures and furnishing in a given unit.

Hazardous Materials: EIA has suggested that the materials be transported and be given to authorized recycles/ TSDF depending upon the waste type in compliance to HW Rules. This can be accepted. The EIA also recommended that a team of experts/officers is to be deputed by the directorate of Environment and Climate Change, Department of Environment, Govt. of Kerala to visit the sites for inspection and confirmation of completion of the removal of hazardous materials, to ensure that the demolition should result into generation of only the inert waste. It is noted from the Action Plan presented by the PWD that the demolition involves appointment of registered structural Engineer /entrust to competent agency, selected through competitive bidding process to prepare the Master Plan and to supervise executing the operation of demolition. The Master plan will take the above suggestion like periodical visit of PCB officials to ensure the demolition in compliance with the master plan approved by them.

Transportation and disposal of Debris: The estimated quantity of debris as per EIA report is attached at **Annexure IV.** All the quantity reported may not be required to be removed, as per the justification given in the forgoing paras of this report. The EIA predicted serious impacts on the biology / ecology of the lake in case of overturning of the vessels carrying the waste from island and suggested that the vessels carrying the demolition debris / materials should be suitable for the transportation of such waste and the crew members should be trained for this type of job. It is clarified by the proponent / local that the construction of the resort was done in about six years and all the construction materials were transported through lake and

(5)

hardly any incident of such overturning was reported. However, it shall be ensured that there is no spillage of waste/debris on to lake water during the loading /unloading and transportation. Suitable vessels / containers shall be used for the purpose.

B. Substructures: Regarding the demolition of subsurface structures, the EIA stated that technology to be adopted is to be explored and studied. The tools, gadgets and the machinery to be brought into the island from the main land on the available lake route with a limited depth of the lake is to be studied. Finally, the demolition of the sub surface structures, if executed, the situation anticipated is that during the removal of RCC piles numbering about 2500 and other sub surface RCC structures, retaining wall Etc., the lake water will cave in from all sides and the island will sink and perish. Further the EIA stated that the turbidity level of the lake water is expected to increase exponentially and there will be large scale deposition of demolition debris and other sediments in the lake.

It is noted from the presentation on action plan made by the PWD, Government of Kerala that only demolition of superstructure has been planned. It is noted that from the EIA report that there are 2143 numbers of 300 mm dia piles of 8 - 18 m depth, 277 piles of 450 – 550 mm dia of 45-50 m depth. Complete demolition/ removal of such huge numbers and deep sub surface pillars are not required to be done to safeguard the environment of the island and also this may not either be technically feasible or advisable because it may cause great damage to the island and lake. The Sub-structures including the treatment plants provided underground may not be demolished. Only the superstructure may be removed up to below ground level of island. The retaining wall constructed all around the island to protect the boundary may be retained as such. This will give stability to the island and the apprehensions of the petitioners that the demolition of the structures put up by M/s Kapico Kerala Resort Pvt. Ltd. will result in the disappearance of the island is also taken care of.

Dust Control: The EIA suggested for providing of wind screens, water sprinklers for the control of dust during demolition. This can be accepted, wind curtains shall be provided all around the structures prior to its demolition so as to curtail dust and debris within the site. The height of the wind curtain shall be at least 3 feet more than the structure to be demolished. Water sprinklers to be provided.

PWD Action Plan: The framework of action plan of PWD on demolition was also reviewed by the Committee. The PWD has also proposed for the demolition of only the superstructure. All the structures including the front of the house, bridges etc. are to be removed. The estimated cost of demolition worked out by PWD is Rs 256 lakhs as per 2002 SOR. The action plan involves appointment of registered structural Engineer /entrust competent agency, through competitive bidding process to prepare the Master Plan and executing the demolition. The master plan of demolition is proposed to be submitted to MoEF, Kerala State Pollution Control Board & Kerala Coastal Zone Management Authority Etc. for approval. The action plan can be executed with the approval of Master Plan by Kerala State Pollution Control Board and under the supervision of Kerala State Pollution Control Board & Kerala Coastal Zone Management Authority.

4. Representations

The project proponent of M/s Kapico Kerala resorts (P) Ltd has submitted a representation which mainly addresses the issue of applicability of Coastal Regulation Zone Notification, 1991 to their project.

The Kayal Samrakshna Vedi, Vayalar representing the fishermen, has submitted a representation on issues like impact due demolition on island, lake, fishing activity, transport and disposal of materials including hazardous materials etc.

Though it is not part of ToR of the Committee, the Committee received the representations respecting the human sentiments. Further, the issues raised in their representations are more or less similar to those already submitted before Hon'ble Courts and the Hon'ble Court has passed its judgement on the matter.

5. Conclusion and Recommendations

(i) All the movable fixtures, fittings and furnishings should be salvaged first, which includes villa furnitures, wardrobes, joinery items and electrical and electric items and installations.

(ii) The hazardous materials should be removed and transported before commencement of physical demolition of structures by authorized recyclers/ TSDF depending upon the waste type in compliance to HW (Management, Handling and Transboundary Movement) Rules, 2008.

(iii) Mechanical demolition will be suitable for all the 54 villas since the majority of constructions are limited to Ground floor. Only the front of house is a multistory structure with strong concrete component. The option of controlled blasting which will have minimum impact distance in terms of noise and vibration can be considered where ever required including for the front of house if it is possible to be done without affecting the lake. The pile foundation may not be disturbed.

(iv) Total removal / demolition of 2143 numbers of 300 mm dia piles of 8 - 18 m depth and 277 piles of 450 – 550 mm dia of 45-50 m depth is likely to cause great damage to the island and lake. Therefore, the Sub-structures may not be removed/demolished. Only the superstructure can be removed down to 1M below the ground level of island. The level of the resort after demolition can be kept at the current level without altering the contours.

(v) The removal of materials and demolition should be simultaneously carried out. The removal of materials can be carried out unit wise simultaneously after completing the removal of fittings, fixtures and the hazardous materials in a given unit. Waste concrete should be disintegrated to small size before transportation.

(vi) Reusable materials should be salvaged and auctioned.

(vii) It should be ensured that there is no spillage of waste/ debris on to lake water during the loading, unloading and transportation. Therefore, only suitable vessels / containers should be used. The barge used for this purpose should be certified by the appropriate authority.

(viii) Demolition should be carried out during non-rainy season as per the suggestions made in the EIA report and restricted to day time.

(ix) *The demolition site should be screened upto 3 feet above the height of the structure to avoid the spread of dust and other material into the nearby environment.*

(x) *The demolition should be monitored / reviewed regularly by Collector or Sub-Collector of the District.*

(xi) *The State Government can explore possibilities for utilization of debris with proper environmental safeguards.*

(xii) *The channel made within the resort to reach the front of the house shall be blocked and the water level should be brought down prior to demolition so as to prevent entry of debris / dust to the lake through the canal.*

(xiii) *The action plan can be executed with the approval of the Master Plan by Kerala Coastal Zone Management Authority & Kerala State Pollution Control Board and their supervision.*

(xiv) *As far as possible the overnight stay of workers at the island may be kept at minimal level.*

(xv) *Safety equipments viz. helmets, earmuffs etc shall be provided to the workers and all safety measures should be followed.*

(xvi) *A small capacity mobile STP for the treatment of the waster water may be provided on the Island, in case of the M/s Kapico Kerala resorts Pvt. Ltd.*

(xvii) *Protection wall around the island is to be retained and mangrove vegetation in and around the island to be promoted.*

(xviii) *The time frame for the demolition should be set to ensure the timely completion of the demolition.*

(xix) *The cost of the demolition should also be ascertained. The cost may be recovered from the owners or could be recovered by the auction of reusable material.*

Shri Amarnatha Shetty,
Additional Principal Chief Conservator of Forests, Regional Office, Ministry of Environment and Forests, Bangalore.

Shri R. Surendra Prasad, Member, National Coastal Zone Management Authority.

Shri Lalit Kapur, Director (Impact Assessment Division – III), Ministry of Environment and Forests, New Delhi.

DEMOLITION PLAN

Prepared for the resort project

of

M/s Kapico Kerala Resorts Pvt. Ltd.

at

Survey Nos. 263/1, 263/2/2, 263/3, 263/4, 263/4/2, 263/10/3, 266/1/1, 266/1/56, 266/1/87, 266/1/88, Nediyathuruthu Island, Panavally Village, Cherthala Taluk, Alapuzha District, Kerala

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1.0 BACKGROUND :

M/s Kapico Resort project at Nediyathuruthu Island at Panavally Panchayat, Cherthala Taluk, Alappuzha, a seven star resort project in a small backwater island spread over an area of 12.5 acres. Nediyathuruthu island is located in Vembanad backwaters. The resort project consists of 54 luxuries independent villas (only ground floor level), FOH Building (ground + 1st floor level) & supporting infrastructure facilities. There is no high rise building within the resort and the maximum height of the main block is 22.45 m. (FOH Building).

Hon'ble Supreme Court of India vide its Judgment dated 10-01-2020, upheld the decision of Hon'ble High Court of Kerala dated 25-07-2013 and directed to demolish the resort project

Subsequent to the directions of the Hon'ble High Court of Kerala, Environment Department, Govt. of Kerala engaged the services of an accredited consultancy organization for the purposes of conduction of a Rapid Environment Impact Assessment (REIA) Study for demolition of the resort project. The said accredited consultancy organization submit their Rapid EIA Report to the Environment Department. The said report was accepted by Environment Department and forwarded to Ministry of Environment & Forests, Govt. of India. The copy of the Work Order issued by Environment Department, Govt. of Kerala for the REIA Study is attached as ***Annexure No. 1***. The demolition plan is prepared based on the said REIA report.

2.0 SCOPE OF WORK FOR REIA STUDY :

The scope of work of REIA study as per the Work Order by Environment Department is given below :-

(i) Identification of the possible impacts of the demolition of the two island resorts located in Vembanadu Lake at Nediya Thuruthu &

Vettila Thuruthu, Vembanad Lake, Alappuzha, Kerala;

(ii) Suggesting of possible methodology and techniques along with the mitigation measures for an environmentally sound demolition of the structures under reference; and

(iii) Preparation and submission of the rapid EIA report

3.0 INDICATIVE QUANTITY OF BULK MATERIALS AND SPECIALIZED CONSTRUCTION MATERIALS CONSUMED FOR THE CONSTRUCTION OF THE RESORT :

Major natural resources consumed which are non recoverable	
Diesel	29,34,000 Liters
Water	27 Million Liters
Cement	3,80,560 bags
Sand	38,540 cu.m
Aggregate 40 mm	44,365 cu.m
Aggregate 20mm / 12 mm	35,700 cu.m
Cement Blocks 12" x 8" x 8"	15,53,230 Nos.
Cement Blocks 12" x 8" x 4"	8,35,420 Nos.
Bricks	23,54,450 Nos.
Steel (reinforcement)	21,450 MT
Structural Steel	3,498 MT
Roof Tile	6,54,300 Nos.
Gypsum & Calcium silicate board	50,000 sq. m.
GI ducting with nitride rubber insulation	3,000 sq. m.
Rubble	36,600 cu.m.
Granite cladding	16,600 cu.m.
GI & MS pre-insulated pipes 300 mm to 50 mm	4,000 m
MS tar felt coated pipes	4,000 m
PPR Pipes	6,000 m
UPVC Pipes	4,000 m
ASTM Pipe	1,000 m
Cables	
HT cables	2,000 m
LT cables	12,000 m
ELV cables	24,000 m

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Fiber optic cables	4,000 m
Trunking	1,500 m
Copper & GI earth strips	2,000 m
Other Items	
Engine Oil – Generators	800 Lit

SPECIALIZED CONSTRUCTION MATERIALS / ADDITIVES WITH INDICATIVE QUANTITIES - NONRECOVERABLE

Anti termite treatment agent	
Concrete additives	
Conplast – Concrete Plasticizer	4,000 liters
Nitobond – construction joint bonding agent	500 liters
Brush bond – Brush applied water proofing agent	1,000 liters
Polyeurathene grout	200 liters
Tiling System	
Tile grout – Weber	1,500 Kg
Tile Pointing epoxy – Latapoxy 100	700 Kg.
Painting System – Plastered Surface	
Cementitious putty – Birla / JK	1,500 Kg
Cement based Primer – ICI Dulux	5,000 Liters
Exterior Plastic emulsion – ICI Dulux	9,000 Liters
Painting System – Wood Work	
NC Putty (Nitro Cellulose)	1,200 Kg.
NC Grade Primer	800 Liters
PU Primer	500 Liters
Polishing System – Wo od	
Impreganating agent – ICA	1,000 liters
Primer – ICA	1,000 Liters

Clear Coat – ICA	1,200 Liters
Top Coat – ICA	1,100 Liters
Linseed Oil	800 Liters
Teak Oil	1,000 Liters
Insulation Materials	
(Poly Urethane Foam) PUF Insulation Panels – under deck	5,000 sq. m.
PUF Insulation panels – Isowall for aircondition equipment enclosures	3,000 sq.m
PUF insulation on air-conditioning piping	4,000 m.
PUF insulation for cold rooms	2,000 sq.m.
Fibre glass thermal insulation for hot pipes	800 m
Calcium silicate boards	6,000 sq.m
Gipsum boards	4,000 sq.m.
Asbestos based heat isulation on Boiler & genset flue	120 sq.m.
Nitrile rubber insulation on ducts & pipes	2,000 sq.m.
50 mm Fibre cement board – V Panel for vertical partitions	1,000 sq.m.
Shellac	100 KG.
Cooling tower – wafer thin plastic fills for drip cooling	1,000 sq.m.
Pond Liner	
DuPont – Xavan pond liner	28,330 sq.m.
DuPont – typar SF40 geotextile	28,330 sq.m.

4.0 CONSTRUCTION DETAILS OF ISLAND RESORT :

Total number of under – reamed piles foundation (300 mm dia, 8m – 18 m depth)	2143 Nos.
DMC piles for FOH, STP and bridge (450 mm dia, 45 – 50 m depth)	277 Nos.
Plain cement concrete under all structures (Including mass concrete)	58,600 cu.m.
Random rubble masonary, Average 1.2 m thick (Island perimeter retaining wall, rain water harvesting pond, weir)	36,600 cu.m.
Block masonary (200 mm thickness)	23,600 cu.m.
Block masonary (500 mm thickness)	5,200 cu.m.
Brick masonary (200 -100 mm)	2,387 cu.m.
Plastering	1,50,876 sq.m.
Roof screed 50 mm	9,860 cu.m.
Roof truss	3,95,000 KG.
Roof tiling	35,400 sq. m.
Glass	44,857 sq.m.
Floor tiles	85,400 sq.m.
Wall tile and swimming pool tile	54,576 sq.m.
Granite	18,450 sq.m.
Stone	35,360 sq.m
Wood	65,489 cu.m.

False ceiling and wall cladding work (including gypsum board and calcium silicate board)	48,650 sq. m.
Painting / Polishing	85,600 sq.m.
FOH AREA	
Pile caps of average size (2m x 2m)	270 Nos.
Columns of average size 90 sq. cm. – of height 10 m	270 Nos.
Floor beams of average size 45 cm x 120 cm	2259 meter
Floor slabs of average thickness 30 cm	10,000 sq. m.
Water court base slab 500 mm thick	4,000 sq. m.
Water court wall 400 mm thick	900 sq. m.
Water tank (sump) walls 400 mm thick	1,000 sq. m.
Water tank sump base slab (400 mm thick)	700 sq. m.
Pool base slab 300 mm thick	2,000 sq. m.

5.0 BRIEF OBSERVATIONS OF THE REIA STUDY REPORT :

The brief observations of the REIA study on demolition is divided in to 3 broad categories. These observations are based on laid down best practices and on time tested scientific principles. These observations are based on the principles of conservation and protection. The broad categories of demolition activity is given below:-

- Activities to be carried out prior to the actual demolition
- Pre-demolition verification
- Demolition of superstructures

5.1 Activities to be carried out prior to the actual demolition

5.1.1 Removal of Disposal of Asbestos Items Materials

All asbestos containing materials are to be removed by mechanical means, collected, stored in separate closed containers and transported to the common Treatment, Storage & Disposal Facility (TSDF). An Intermediate storage facility is to be developed within the Island before the transportation of the same to the TSDF. The intermediate storage facility within the island should be in a manner that ensures no risk of their getting into contact with lake water and other spillages anywhere.

5.1.2 Removal of the New and Unused Movable Items / Materials

The new and unused movable items / materials such as furniture, electrical and electronic appliances, decoration items, Kitchen appliances, vehicles including pleasure boats, sealed fuel containers, sealed detergents containers, sealed boxes for POP, cement etc.

unused panels, boats, electrical cable rolls and other such items kept / stored in the premises are to be collected and to be stored in a central warehouse within the Island. The central warehouse facility should be in a manner that ensures no risk of their getting into contact with lake water and other spillages anywhere.

5.1.3 Removal of New and Unused Detachable Items

The new and unused detachable items such as modular fitting & fixtures, electrical & electronic fittings (Air conditioners, Tube lights, Fans etc.), are to be detached and to be stored in another central warehouse within the island. This storage facility should be in a manner that ensures no risk of their getting in to contact with lake water and other spillages anywhere.

5.1.4 New and Unused Assembled Items

The new and unused assembled items are to be dismantled and to be stored in a storage facility within the island. This facility to be in a manner that ensures no risk of their getting in to contact with lake water and other spillages anywhere.

5.1.5 Old / Used Movable Items / Detachable

The old and used items / materials are to be collected and to be stored in a centralized warehouse:-

a) Furniture, Decoration items including floor mat etc / Kitchen appliances / machinery / Vehicles including pleasure boats.

b) Electrical & electronic items – To be handed over to registered Ewaste Recycler.

c) Empty fuel & detergent containers – To be handed over to TSDF.

5.1.6 Miscellaneous Items

The entire hotel structure being a new construction implies that all the ducts, cables, pipes, electrical wiring etc. which are buried inside the wall or buried in the ground, and items of glass, marble and other stones, wood and metals concealed or fixed in the wall can also be taken out by manually or by simple mechanical devices (such as a hand drills/ gas cutter etc.). These are therefore also to be removed and to be stored in a storage facility within the island and this facility should be in a manner that ensures no risk of their getting in to contact with lake water and spillages anywhere.

5.2 Pre-demolition verification

Pre Demolition Verification details are given below :-

- All the constructions and associated facilities to be demolished in the Island resorts should be free from any hazardous or other materials having Mercury, Lead, PCB, Asbestos, after completion of the pre demolition works actions suggested.

- The wastes resulting from the demolition of the super structures after ensuring the verification works, are not expected to have pollutants exceeding the limits prescribed in schedule 2 of the Hazardous Waste (Management Handling & Trans Boundary) Rules 2008.

- Recommended that a team of experts / officers is deputed by the

  Directorate of Environment & Climate Change, Department of Environment, Govt. of Kerala to visit the sites for inspection and verification of the completion of the actions mentioned as

  pre-demolition works above and the readiness of the civil structures for their demolition in the context that their demolition should result into generation of only the inert waste.

5.3 Demolition of superstructures

The demolition of superstructures details are given below :-

- The demolition of the super structures will start from the top of the highest building using simple tools / hammers / grinders/ hand held hydraulic drills etc. wherever required.

- The gas cutters are to be used for cutting the metallic bars. This activity is to be performed on a day to day basis during the day time only, limiting the demolition

activity to the extent that, the wastes namely metallic and inert wastes are segregated at source and put directly into separate top loading containers or dump trucks of the size which can be closed and transported with full load to the disposal places through the lake route.

- The manual demolition is to be continued till it reaches the height which is within the reach of the other machinery and equipments which can be brought to the island.

- While, the demolition from this stage onwards will involve the above mentioned machinery, the process of segregation, containerization and transport will remain unchanged. In fact this will be a mixed activity involving manual as well as machinery.

- The priority for identification of the structures from among the same height buildings will follow the criteria that the buildings which are in the center of the island are to be demolished first and those close to the periphery to the island are to be demolished in the last.

6.0 RECOMMENDATIONS BASED ON THE REIA STUDY REPORT :

Demolition of Super Structures

The environmental aspects relevant for the demolition of the super structures are given below :-

- Demolition activities to be done in non-rainy season (June – 15th October is considered to be the monsoon season for the State of Kerala) as per the suggestions made in the REIA report.

- The fugitive emissions of dust and the risks of spillages of the solid waste (Municipal / Hazardous / Inert) specially in the lake during their transportation from the islands to the re-use / disposal sites need special attention and to be done by skilled workers only.

- The manpower / workers which will be engaged in the demolition work will require the basic facilities namely drinking water supply, sanitary facilities and first aid facilities, to be made available on the bigger Island.

7.0 PROPOSED DEMOLITION ACTIVITY SCHEDULE :

Based on the instructions and guidelines contain in the Rapid EIA report, the activities of demolition will be commenced after the monsoon season.
The demolition plan schedule is as follows :-

SCHEDULE A - Activities to carried out prior to the actual demolition

Sr. No.	Activity	Timings (months)*
1	Removal of Disposal of Asbestos Items Materials	**D1 = D + One Month**
2	Removal of the New and Unused Movable Items / Materials	**D2 = D1 + One Month**
3	Removal of New and Unused Detachable Items	**D3 = D2 + One Month**
4	New and Unused Assembled Items	**D4 = D3 + One Month**
5	Old / Used Movable Items / Detachable	**D5 = D4 + 0.5 month**
6	Miscellaneous Items	**D6 = D5 + 0.5 month**

*D is the date of post monsoon i.e. 16-10-2021

SCHEDULE B - Pre-demolition verification

Sr. No.	Activity	Timings (months)*
1	**Pre-demolition verification**	**D7 =D6 + 0.5 month**

SCHEDULE C - Demolition of superstructures

Sr. No.	Activity	Timings (months)*
1	Demolition of superstructures (Demolition of one villa is expected to take one week)	**D8 = D7 + 6 months**

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ANNEXURE No. 1

GOVERNMENT OF KERALA

Abstract

Environment Department-Vembanad lake-CRZ violation-Judgment of the Hon'ble Supreme Court and High Court-Implementation-Conduct of Environment Impact Assessment (EIA)-Sanction accorded-Orders issued.

ENVIRONMENT (A) DEPARTMENT

G.O. (Rt) No. 108/2013/Envt Dated, Thiruvananthapuram, 29.11.2013

Read: (1) Judgment dated 25.07.2013 of Hon'ble High Court in WPC No 19364/11 and connected cases

(2) Order dated 08.08.2013 of Hon'ble Supreme Court in SLP (Civil) Nos 24390-24391 of 2013

(3) Judgment dated 16.08.2013 of the Hon'ble Supreme Court in suo motu WPC No 687/13

(4) Letter D.O. No. C4-42300/2013 dated 01.10.2013 from the District Collector, Alappuzha

(5) Minutes of the meeting convened by the Chief Secretary on 29.10.2013

(6) Letter No. Pol Co 12/3027/13 dated 06.11.2013 from the Director of Environment & Climate Change, Thiruvananthapuram

(7) Minutes of the meeting of Working Group for Environment Department held on [illegible]

ORDER

In the judgment read as 1st paper above the Hon'ble High Court has ordered the removal of constructions made by M/s Kapico Kerala Resorts at Nediyathuruthu near Perumbalam islands and M/s Vaarika Island at Vettilathuruthu in Paanavally Grama Panchayat of Alappuzha district violating the Coastal Regulation Zone (CRZ) Notification 1991 and 2011. The Hon'ble Supreme Court of India in the judgment read as 2nd paper above has upheld the above order observing that the directions given by the High Court in the demolition of illegal construction effected during the currency of CRZ notification 1991 and 2011 are perfectly in tune with the decision of Supreme Court in *Pleadade Filomena Gonsalves v. State of Goa and others* (2001)3 SCC 445. Further actions as per the Environment (Protection) act 1986 have been taken for implementation of the judgments.

(2) The District Collector, Alappuzha in his letter read as 4th paper above has reported the possible environmental issues arising out of demolition of substantial structures and the impact that may impinge on the Vembanad lake Ecosystem a Ramsar site.

(3) In the meeting convened by the Chief Secretary on 29.10.2013 to discuss the implementation of CRZ notification on the backdrop of the above judgments it was decided, inter alia to entrust an agency accredited by the Ministry of Environment & Forest, Government of India to conduct a rapid EIA on the impact of

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demolition of the resorts, upon environment and ecosystem. The Working Group for Environment Department met on 12.11.2013 have recommended to engage M/s Environmental Engineers & Consultants (P) Ltd for the Rapid EIA at a cost not exceeding ₹ 10 lakhs.

(4) Government having considered the proposal submitted by the Director of Environment & Climate Change as per the letter read as 6th paper above for arranging the EIA study and in view of the recommendation of Working Group, are pleased to accord sanction to conduct a rapid EIA on the impact of demolition of the aforesaid resorts as ordered by the Hon'ble Courts upon the environment and ecosystem through M/s Environmental Engineers and Consultants (P) Ltd, A1-198, Janakpuri, New Delhi 110 058, an agency accredited by the Ministry of Environment & Forests limiting the expenditure to ₹ 10 lakh.

(5) Terms of Reference of the EIA shall be those appended to this order.

(6) M/s Environmental Engineers and Consultants (P) Ltd may also identify the most suitable and economical technology for demolition of the structures at the sites by liaising with competent agencies.

(7) The report shall be submitted on or before 05.12.2013 with 10 copies and a soft copy.

(8) The expenditure for the above purpose will be debited to Head of Account 3135-00-800-00-MC-C from the current years budget.

(By Order of the Governor)

G.RAJEEV
Additional Secretary to Government

To

The Director, Directorate of Environment & Climate Change, Thiruvananthapuram
M/s Environmental Engineers & Consultants Pvt Ltd, A1-198, Janakpuri, New Delhi-110 058
The District Collector, Alappuzha
The Principal Secretary, Science & Technology Department, Sasthra Bhavan, Pattom, Thiruvananthapuram
The Member Secretary, Kerala Coastal Zone Management Authority, Sasthra Bhavan, Pattom, Thiruvananthapuram
The Principal Accountant General (Audit/A&E) Kerala, Thiruvananthapuram
The Secretary, Panavally Grama Panchayat, Panavally, Alappuzha
Tourism Department
Local Self Government Department
Science & Technology Department
Stock File/Office copy

Forwarded/By Order

Section Officer

ANNEXURE

TERMS OF REFERENCE (TOR) OF THE RAPID EIA TO BE CONDUCTED FOR AN ENVIRONMENTALLY SAFE DEMOLITION OF THE TWO RESORTS EXISTING AT THE NEDIYATHURUTHU AND THE VETTILATHURUTHU ISLANDS, VEMBANAD LAKE, ERNAKULAM

(Vide G.O.(Rt) 168/2013/Envt dated 29.11.2013)

1.0 INTRODUCTION :

- The methodology of conducting the Rapid EIA will be based on visits to the sites, the concerned areas of the lake and other nearby places, discussions with the concerned authorities, collection of data through preparation of a check list, reference to the secondary sources etc

- The data/information collected will be reviewed for compilation of all the possible information about the existing buildings at both the islands, M/s Kapico Kerala Resorts at Nediyathuruthu near Perumbalam Island and M/s Vaamika Island, at Vettilathuruthu, near Paanavally Island, Vembanad backwaters, Ernakulam (hereinafter referred as facility). The information will include the Land description- plot / survey numbers, village taluk, district State and area of the land. Centre / State / Local regulations and international standards applicable to the demolition activity litigation(s) pending against the facility and the directions or Orders passed by any court of law / any statutory authority for the demolition under reference

2.0 PROJECT DESCRIPTION :

This will include:

- Background information and overall scenario, total plot areas & built-up areas and their details, ecological sensitivity connectivity to the main land, types of building materials used etc. in regard to the demolition of the facility.

- A map of the study area 5 km radius from the boundary of the facility, delineating the major topographical features such as land use, drainage, locations of habitats major constructions and transport facility / routes, environmental sensitive areas like wetlands & water bodies

- Remote sensing satellite imagery of the site & surroundings.

- Historical data (past 10 years) on climate conditions such as wind pattern, history of cyclones storm surges, earth quakes, rainfall etc

- Detailed layout plan of the existing facility, communication facilities, access / approach, landscape, sewage disposal facilities, waste disposal etc;

- Layout plan of the existing facility & built up areas with covered construction such as DG Set rooms, Administrative buildings, Utilities such as Main and Stand By Power, Water supply installations etc:

- Involvement of natural resources

- A map and photo mosaic showing the facility in relation to existing topographic features township grids, wetlands and water bodies, proximity to local communities, proximity to sensitive surface or ground water bodies etc

3.0 DESCRIPTION OF THE ENVIRONMENT

- Existing land use with regard to demolition of the facility including (a) Land environment (b) ground & surface waters (c) air & noise environment (d) biological environment and the (e) socio economic environment

3.1 Land Environment

- Habitation, cropping pattern, environmentally sensitive places etc

3.2 Water Environment

- All possible aspects concerning the facility, the demolition and the waste disposal activities

3.3 Air Environment & Climate data

- Climatologic data is to be obtained from nearest India Meteorological Department (IMD) station Micro meteorological data consisting of wind speed wind direction, temperature cloud cover, humidity inversions, rainfall (peak and average daily rainfall).

3.4 Biological Environment

- All possible aspects concerning the facility, the demolition and the waste disposal activities

3.5 Socio Economic & Health Environment

- All possible aspects concerning the facility, the demolition and the waste disposal activities

- Information on the authorized municipal solid & hazardous waste landfills, common facilities and registered recyclers for disposal of the demolition wastes.

4.0 WASTE GENERATION (ETIMATED)

- Demolition waste, i.e mass and inert waste (material wise)
- Municipal waste, i.e , biodegradable and recyclable waste
- Hazardous waste including e-waste.

5.0 STRUCTURES INVOLVED & THE DEMOLITION METHODOLOGY

- Details of the types of structures in the facility (building envelope, sub-structure, superstructure, openings, walkways and roads and surrounding landscape) in the context of the demolition methodology and the type of the demolition technology needs / options.

6.0 DEMOLITION PLAN

- A plan including the transportation and disposal of the wastes, removal of the buried water pipes power cables etc will be suggested for the demolition of the facilities.

7.0 ANTICIPATED ENVIRONMENTAL IMPACTS

- Land Environment
- Water Environment
- Air & Noise Environment.
- Biological Environment
- Socio Economic Environment

8.0 ENVIRONMENTAL MITIGATION MEASURES

- Appropriate measures will be suggested for the mitigation of the environmental and other impacts

Section Officer

Annexure - 2

List of items - debries

Sl. No	Item Description	Quantity	Unit
1	Filling Sand	4161	M^3
2	Buggy path stone	2200	M^2
3	Red earth filling	2985	M^3
4	Pcc	538	M^3
5	Rcc	10757	M^3
6	RR masonry	6160	M^3
7	Block masonry 200 mm	1325	M^3
8	Block masonry 100 mm	213	M^3
9	Brick masonry 200 /100 mm	2387	M^3
10	Plastering	53157	M^2
11	Roof screed	137	M^2
12	Tiles	14487	M^2
13	Granite	3664	M^2
14	Marble	245	M^2
15	Gypsum and calcium cilicate	1800	M^2

Annexure - 3

List of Movable Items

No.	Items / Description	Quantity	Unit
	Gym Equipments		
1	Technogym - JOG NOW 700 VISIOWEB iPod+USB	3	Nos.
2	Technogym - VARIO 700 VISIOWEB iPod+USB	1	Nos.
3	Technogym - RECLINE 700 VISIOWEB iPod+USB	1	Nos.
4	Technogym - BIKE 700 VISIOWEB iPod+USB	1	Nos.
5	Technogym - CHEST PRESS	1	Nos.
6	Technogym - SHOULDER PRESS	1	Nos.
7	Technogym - LAT MACHINE	1	Nos.
8	Technogym - LEG EXTENSION	1	Nos.
9	Technogym - LEG CURL	1	Nos.
10	Technogym - TOTAL ABDOMINAL	1	Nos.
11	Technogym - 4 USES BENCH	1	Nos.
12	Technogym - KIT URETHANE ENCASED SET 6 PAIRS 4-14 KG	1	Nos.
13	Technogym - URETHANE ENCASED DUMBBELL RACK	1	Nos.
14	Technogym - KINESIS ONE	1	Nos.
15	Technogym - STRETCHING MAT	2	Nos.
	Plumbing equipments		
16	Pumps	73	Nos.
17	Bath tub	57	Nos.

18	Jacuzzi	22	Nos.
19	Rain mist shower	120	Nos.
20	Water Closet & Accessories	92	Nos.
21	Pool shower & elephant shower	53	Nos.
22	Vanity counter fittings including copper bowl	155	Nos.
23	Air Release Valve	252	Nos.
24	Hydro pneumatic pump with panel	2	Set
	Electrical EQUIPMENTS		
25	11KV Load breaker switch(LBS) - Intrans	2	Nos.
26	11KV Vacuum circuit breaker(VCB) - Sterling	1	Nos.
27	1600 KVA Transformer(6160Kg each) - Voltamp	2	Nos.
28	On load tap changer panel(OLTC)	2	Nos.
29	1010 KVA Diesel Generators (8880Kg each) - Caterpillar	2	Nos.
30	Diesel tank for DG 900Ltr	2	Nos.
31	Generator control panel	2	Nos.
32	Synchronizing panel	1	Nos.
33	24V DC Supply panel	1	Nos.
34	Main low voltage panel (MLVP)	1	Nos.
35	Sub panels	7	Nos.
36	Auto power factor control panel(APFC)	2	Nos.
37	SPA sub panel	1	Nos.
38	Kitchen sub panel	2	Nos.

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39	AHU panel	2	Nos.
40	Chiller pump panel	4	Nos.
41	Boat charger panel	1	Nos.
42	Water SPA panel	1	Nos.
43	Vertical distribution board(VDB)	16	Nos.
44	Distribution board(DB)	54	Nos.
45	Lighting distribution board(LDB)	5	Nos.
46	Distribution boards(VDB, LDB, PDB)	1	set
47	Feeder pillar	8	Nos.
48	Lightning arrester	9	Nos.
	Fire Fighting EQUIPMENTS		
49	Fire Pumps 60HP Crompton greeves	3	Nos.
50	Jockey pumps 15HP	1	Nos.
51	Fire concealed Sprigler	700	Nos.
52	Fire Hydrant single valves	15	Nos.
53	Fire hydrant double valve	6	Nos.
54	Air release valve	5	Nos.
55	Butterfly valve 150mm	20	Nos.
56	Butterfly valve 100mm	8	Nos.
57	Butterfly valve 50mm	40	Nos.
58	Butterfly valve 40mm	30	Nos.
59	Butterfly valve 40mm	22	Nos.

60	Non return valve	5	Nos.
61	Fire Detector	500	Nos.
62	Fire alarm speaker	64	Nos.
63	Manuel call point	79	Nos
64	Brass ball valve	6	Nos.
65	200mm foot valve	3	Nos.
	HVAC EQUIPMENTS		
66	Chiller 250 Tonn, - Trane (7830Kg each)	3	Nos.
67	Primary Pumps 15HP Grundfos	4	Nos.
68	Secondary Pumps 25HP Grundfos	4	Nos.
69	Condenser pumps 25HP Grundfos	4	Nos.
70	Cooling tower BAC 750 (erected as single unit)	3	Set
71	Air handling unit (AHU) -VTS	236	Tonn
72	Treated fresh air(TFA) - VTS	3	Nos.
73	Fan coil unit(FCU) - Midea	179	Nos.
74	Scrubber - Humidin (12500 CFM each)	3	Nos.
75	Exhaust fan 7000 CFM	4	Nos.
76	Exhaust fan 4000 CFM	10	Nos.
77	Exhaust fan 100 CFM	71	Nos.
78	Fresh air fan 5000CFM	5	Nos.
79	Cassette unit - Midea	43	Nos.
80	Butterfly valve 200mm	23	Nos.

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81	Non return valve 200mm	4	Nos.
82	Suction guide valve 200mm	4	Nos.
83	Balancing valve 200mm	2	Nos.
84	Balancing valve 200mm	5	Nos.
85	Deferential pressure sensor	2	Nos.
86	Butterfly valve 150mm -40mm	59	Nos.
87	Strainer 50mm - 25mm	29	Nos.
88	Motorized valve(Oven trap)	252	Nos.
89	Diffusers	267	Mtr
90	Dampers	60	Nos.
91	Thermostat	179	Nos.
92	Exhaust fan 200CFM	2	Nos.
	Swimming pool EQUIPMENTS		
93	Filter 600mm	53	Nos.
94	Multiport Valve 1.5"	53	Nos.
95	Filter 800mm	1	Nos.
96	Filter 900mm	1	Nos.
97	Multiport Valve 2"	1	Set
98	Multiport Valve 2.5"	3	Nos.
99	Pump Astral 1Hp	53	Nos.
100	Duck box with IP65 cover	317	Nos.
101	Floor inlet	164	Nos.

102	Drain over flow channel	98	Nos.
103	Suction inlet	80	Nos.
104	Wall inlet	73	Nos.
105	Blower nozzle	48	Nos.
106	Under water lights	262	Nos.
107	SPA Drain	30	Nos.
108	SPA jet	16	Nos.
	Rain water harvesting pond EQUIPMENTS		
109	Submersible pumps Texmo 4Hp	4	Nos.
110	Do-Pond imported pond liner with geotextile underlay	9849	Sq.m
111	STP Pressure pump and control panel	1	Nos.
	Cold room EQUIPMENTS		
i	Condenser Units		
112	100000065 units, air-cooled LH33 SKZ LH33/2GC-2.2Y-40S	10	Nos.
113	100000066 units, air-cooled LH44 LH53/2DC-2.2Y-40S	1	Nos.
114	100000067 units, air-cooled LH53 LH53/2DC-2.2Y-40S	3	Nos.
ii	Siraco/Zanotti Italy Evaporators		
115	AEROVAP SLIM S2 FUM(NO ACC)	10	Nos.
116	AEROVAP SLIM S3 FUM(NO ACC)	1	Nos.
117	AEROVAP KM 3021 FUM(NO ACC)	3	Nos.
ii	Cold room panels 50mm thick, puff with ss cladding and electronic sensors		
118	Refrigeration and Freezer Room Panels	37.395	sq.m

119	Refrigeration and Freezer Room Panels	44.715	sq.m
120	Refrigeration and Freezer Room Panels	41.94	sq.m
121	Refrigeration and Freezer Room Panels	33.03	sq.m
122	Refrigeration and Freezer Room Panels	38.61	sq.m
123	Refrigeration and Freezer Room Panels	33.03	sq.m
124	Refrigeration and Freezer Room Panels	38.61	sq.m
125	Refrigeration and Freezer Room Panels	33.03	sq.m
126	Refrigeration and Freezer Room Panels	28.825	sq.m
127	Refrigeration and Freezer Room Panels	36.945	sq.m
128	Refrigeration and Freezer Room Panels	29.745	sq.m
	Kitchen Equipments(Partially kept at Vaduthala stores)		
129	ZIP - FILTERED BOILING & CHILLED WATER UNIT W/HYDRO TAP	1	Nos.
130	NAYATI - DOUBLE HIGH PRESSURE WOK	1	Nos.
131	3 DECK BAKING OVEN W/BASE	1	Nos.
132	TWO DOOR REFRIGERATOR WITH LOCKS	3	Nos.
133	UNDER COUNTER REFRIGERATOR W/DRAWERS&LOCKS	2	Nos.
134	FOUR DOOR REFRIGERATOR WITH LOCKS(FLOWER ARRANGEMENT)	1	Nos.
135	UC REFER WITH DRAWERS	2	Nos.
136	TWO DOOR REFRIGERATOR WITH LOCKS	13	Nos.
137	UNDER COUNTER REFRIGERATOR W/DRAWERS&LOCKS	4	Nos.
138	UNDER COUNTER REFRIGERATOR W/DOORS&LOCKS	1	Nos.

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139	UNDER COUNTER REFRIGERATOR W/DRAWERS&LOCKS	1	Nos.
140	TWO DOOR FREEZER WITH LOCKS`	1	Nos.
141	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
142	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
143	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
144	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
145	Channels· 1050mm x 350mm:DSC-1000L-70D	1	Nos.
146	Gratings. 500mm x 300mm x 25mm:DSG-300L	2	Nos.
147	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
148	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
149	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
150	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
151	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
152	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
153	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
154	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
155	Channels: 1550mm x 350mm:DSC-1500L-70D	1	Nos.
156	Gratings: 500mm x 300mm x 25mm:DSG-300L	3	Nos.
157	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
158	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
159	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
160	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.

161	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
162	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
163	Channels. 1050mm x 350mm:DSC-1000L-70D	1	Nos.
164	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
165	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
166	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
167	Channels: 1550mm x 350mm:DSC-1500L-70D	1	Nos.
168	Gratings: 500mm x 300mm x 25mm:DSG-300L	3	Nos.
169	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
170	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
171	Channels:1050mm x 550mm DSC-500SLC-150D	1	Nos.
172	Gratings. 500mm x 500mm x 25mm:DSG-500S	2	Nos.
173	Channels:1050mm x 550mm DSC-500SLC-150D	1	Nos.
174	Gratings: 500mm x 500mm x 25mm:DSG-500S	2	Nos.
175	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
176	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
177	Channels: 850mm x 350mm:DSC-800L-70D	1	Nos.
178	Gratings: 300mm x 300mm x 25mm:DSG-300S	1	Nos.
179	Gratings: 500mm x 300mm x 25mm:DSG-300L	1	Nos.
180	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
181	Gratings: 500mm x 300mm x 25mm.DSG-300L	2	Nos.
182	Channels: 1550mm x 350mm:DSC-1500L-70D	1	Nos.

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183	Gratings: 500mm x 300mm x 25mm:DSG-300L	3	Nos.
184	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
185	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
186	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
187	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
188	Channels: 850mm x 350mm:DSC-800L-70D	3	Nos.
189	Gratings: 300mm x 300mm x 25mm:DSG-300S	3	Nos.
190	Gratings: 500mm x 300mm x 25mm:DSG-300L	3	Nos.
191	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
192	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
193	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
194	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
195	Channels: 1050mm x 350mm:DSC-1000L-70D	1	Nos.
196	Gratings: 500mm x 300mm x 25mm:DSG-300L	2	Nos.
197	Channels: 1550mm x 350mm:DSC-1500L-70D	1	Nos.
198	Gratings: 500mm x 300mm x 25mm:DSG-300L	3	Nos.
199	UNDER COUNTER ICE CUBER	2	Nos.
200	ICE CUBE MACHINE WITH SINGLE BIN	6	Nos.
201	FOUR BURNER RANGE WITH SPLASH	1	Nos.
202	SPREADER PLATE WITH SPLASH	2	Nos.
203	GRIDDLE PLATE WITH SPLASH	1	Nos.
204	SALAMANDER(WALL MOUNTED)	1	Nos.

205	DEEP FAT FRYER WITH SPLASH	2	Nos.
206	FOOD BLENDER	1	Nos
207	SLICER	1	Nos.
208	HOOD TYPE DISH WASHING MACHINE	1	Nos.
209	WALL MOUNTED SALAMANDER	1	Nos.
210	FOUR BURNER RANGE WITH SPLASH	1	Nos.
211	SPREADER PLATE WITH SPLASH	2	Nos.
212	COMBI OVEN W/STAND AND EXHAUST HOOD	1	Nos.
213	DEEP FAT FRYER WITH SPLASH	2	Nos.
214	GRIDDLE PLATE WITH SPLASH	1	Nos.
215	UNDER COUNTER WASHER	1	Nos.
216	CONVEYOR TYPE DISH WASHER (R-L)	1	Nos.
217	VACCUM PACKING MACHINE	1	Nos.
218	FOOD PROCESSOR	1	Nos.
219	VACCUM PACKING MACHINE	1	Nos.
220	TWO DOOR FISH FILE FREEZER WITH LOCKS & BASKETS	1	Nos.
221	PLANETARY MIXER(TABLE TOP)	1	Nos.
222	SPIRAL MIXER	1	Nos.
223	DOUGH SHEETER	1	Nos.
224	TWO BURNER RANGE WITH REAR SPLASH	1	Nos.
225	DEEP FAT FRYER WITH REAR SPLASH	1	Nos.
226	HOOD TYPE DISH WASHING MACHINE	1	Nos.

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227	DEEP FAT FRYER WITH REAR SPLASH	2	Nos.
228	FOUR BURNER RANGE WITH REAR SPLASH	1	Nos.
229	GAS GRILL 800 MM	1	Nos.
230	GRIDDLE PLATE WITH REAR SPLASH	1	Nos.
231	SALAMANDER WALL MOUNTED	1	Nos.
232	TILTING KETTLE WITH FAUCET	1	Nos.
233	TILTING BRAISING PAN WITH FAUCET	1	Nos.
234	COMBI OVEN WITH STAND	1	Nos.
235	SPREADER PLATE WITH SPLASH	1	Nos.
236	INDUCTION PLATE	1	Nos.
237	SLICER	1	Nos.
238	SPREADER PLATE WITH REAR SPLASH	1	Nos.
239	FOUR BURNER RANGE WITH REAR SPLASH	1	Nos.
240	GRIDDLE PLATE	1	Nos.
241	GAS GRILL 800 MM	1	Nos.
242	DEEP FAT FRYER WITH REAR SPLASH	2	Nos.
243	WINE REFRIGERATOR WITH LOCKS	2	Nos.
244	HOOD TYPE DISH WASHING MACHINE	1	Nos.
245	GLASS DOOR REFRIGERATOR WITH LOCKS	4	Nos.
246	REFR. COUNTER 290 LT, 2 DOORS, SALADETTE	1	Nos.
247	GRAVITY SLICER 300 MM BELT TRANSMISSION	1	Nos.
248	HOOD TYPE DISHW.-WASH SAFE,67 R/H-ROW	1	Nos.

249	GAS GRILL 400 MM	1	Nos.
250	2-BURNER (10KW) GAS BOILING TOP 400 MM	1	Nos.
251	GAS FRYTOP SMOOTH+RIBB.SLOPED+OVEN 800MM	1	Nos.
252	WORKTOP 400 MM / Spreader Plate	1	Nos.
253	WALL MOUNTED SALAMANDER	1	Nos.
254	ELECTR.COMBI OVEN (T) 10 GN 1/1 LW	1	Nos.
255	WALL MOUNTED GLASS REFERIGERATOR	1	Nos.
256	DROP IN COLD PAN WITH COMPRESSOR	3	Nos.
257	ICE CREAM FREEZER	1	Nos.
258	WORK TABLE W/HAND WASH SINK	1	Nos.
259	REFRIGERATED WINE DISPLAY RACK	2	Nos.
260	COLD FOOD CART	4	Nos.
261	HOT FOOD CART	4	Nos.
262	INFRA RED FOOD WARMER	6	Nos.
263	DRINK MIXER	5	Nos.
264	BAR BLENDER	3	Nos.
265	PRE-RINSE UNIT	10	Nos.
266	INDUCTION WARMING PLATES	8	Nos.
267	SNEEZE GUARD	1	Nos.
268	ICE CREAM CABINET	1	Nos.
269	GLASS FROSTER	2	Nos.
270	BAR BLENDER	1	Nos.

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271	FOOD CUTTER	1	Nos.
272	ROOM SERVICE HOT CASE	9	Nos.
273	ICE CRUSHER	2	Nos.
274	GLASS WASHER W/GLASS RACK	1	Nos.
275	COCKTAIL STATION W/SINK STATION	2	Nos.
276	BLENDER STATION	1	Nos.
277	KNIFE STERLIZING CABINET	6	Nos.
278	HAND WASH SINK UNIT	20	Nos.
279	WATER BOILER	4	Nos.
280	MILK BOILER	6	Nos.
281	DROP IN HEATED LOWREATOR	1	Nos.
282	DROP IN PLATE LOWREATOR	1	Nos.
283	GLASS DOOR REFRIGERATOR WITH LOCKS	4	Nos.
284	POTATO PEELER	1	Nos.
285	MEAT SAW WITH STAND	1	Nos.
286	MEAT MINCER	1	Nos.
287	ICE CREAM & SORBET MAKING MACHINE	1	Nos.
288	CHOCOLATE BAIN MARIE	1	Nos.
289	PLANETARY MIXER	1	Nos.
290	BREAD SLICER WITH STAND	1	Nos.
291	WATER CHILLER W/WATER METER	1	Nos.
292	CITRUS JUICER	1	Nos.

293	VEG.JUICER	1	Nos.
294	JUICE EXTRACTOR	1	Nos.
295	SANDWICH GRILLER	1	Nos.
296	GLASS DOOR REFRIGERATOR WITH LOCKS	1	Nos.
297	EXHAUST HOOD - HALTEN	1	Nos.
298	EXHAUST HOOD - HALTEN	1	Nos.
299	EXHAUST HOOD - HALTEN	1	Nos.
300	EXHAUST HOOD - HALTEN	1	Nos.
301	EXHAUST HOOD - HALTEN	1	Nos.
302	EXHAUST HOOD - HALTEN	1	Nos.
303	EXHAUST HOOD - HALTEN	1	Nos.
304	EXHAUST HOOD - HALTEN	1	Nos.
305	EXHAUST HOOD - HALTEN	1	Nos.
	Laundry EQUIPMENTS		
306	Flat Work Ironer	1	Nos.
307	Vacuum Driest	1	Nos.
308	Ironing Board	1	Nos.
309	Legger utility press	1	Nos.
310	Form Finisher	1	Nos.
311	Dry cleaning press	1	Nos.
312	Vacuum spotting board	1	Nos.
313	Dry cleaning machine	1	Nos.

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314	Tumbler Dryer	2	Nos.
315	Washing Machine	2	Nos.
316	Temporary labeling system	1	Nos.
317	Compressor 10 HP	1	Nos.
318	Boiler Thermax(Conn. load 2.75KW 10.34 Bar Pressure)	1	Nos.
	Other Items		
319	Allumunium doors	7	M^3
320	Roof truss	261950	Kg
321	Roof tiling	15320	M^3
322	Reinforcement Steel	741	MT
323	Clading Stone	11594	M^2
324	Plywood	8850	M^2
325	Wood	1065	M3
326	Plumbing pipes	46087	Mtr
327	Electric Cables	35698	Mtr
328	OFC and Cat 6 cables	84480	Mtr
329	Exhaust MS pipes	3132	Kg
330	MS cable tray	6400	Kg
331	Earthing GI pipe	631	Kg
332	10SWG bare copper earthing	3240	Mtr
333	Aluminium Bus bar with 65KA	30	Mtr
334	Sandwich bus ducts 2500Amp capacity	44	Mtr

335	1.5,2.5,4mm2 wires	400000	Mtr
336	GI pipe with 6mm thk bitumen wrapping	78651	Kg
337	Firefighting cables	18700	Mtr
338	Ducts	5310	Sqm
339	HDPE Pipe 32mm	24000	Mtr
340	HDPE Pipe 85mm	2000	Mtr
341	MDF	320	M^2
342	Glass	4572	M^2
343	Mirror	685	M^2
344	GI pipes with thermal insulation	8568	KG
345	MS Pieps with thermal insulation	63205	KG
346	Glass wool	350	Sqm
347	Nitrile rubber	5040	Sqm
348	Isowall	2100	Sqm
349	20mm Thick π- Pal pre-insulated boards	18900	Sqm

Mode of disposal from the Island

a) Junkar which was used during construction to bring bulk materials and heavy equipment in the night will be used with required number of JCB & Trucks to remove items from the island.

b) Mode of disposal: Concrete related debris will be used to fill the swimming pools and other areas which requires leveling.

Details of the location for the disposal of Items

Following are the areas belonging to Kapico located nearby to our Resorts Project which will be used to store the removed items and for further disposal depending upon the nature of items

i) Perumbalam – 4.59 acres, two locations just opposite to our Project Island

ii) Vaduthala – 2.383 acres

iii) Muruijapuzha – 77.34 cents.

iv) Perumbalam Kavala – 95.35 cents.

v) Kollamkombu – 17.5 cents

vi) Mararri Beach Resort– 3.355 acres.

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: 9496043607

Welcome

The Hon'ble Expert Team

from

Ministry of Environment & Forests, Govt. of India.

to

The presentation

of

Rapid Environmental Impact Assessment Report

for

Demolition of the Two Island Resorts

at

Nediya thuruthu and *Vettila thuruthu*,
Vembanad lake, Alappuzha, Kerala

PREPARED FOR:-

The Directorate of Environment &
Climate Change, Department of
Environment, Govt. of Kerala.

PREPARED BY:-

M/s Environmental Engineers
Consultants Pvt. Ltd,
A1-198, Janakpuri,
New Delhi – 110058.

INTRODUCTION

The Directorate of Environment and Climate Change, Govt. of Kerala has engaged the services of M/s Environmental Engineers & Consultants Pvt. Ltd. for conducting the Rapid Environment Impact Assessment (REIA) for the required demolition of the Island resorts.

The scope of work as per the TOR assigned to us was :-

- ✓ Identification of the possible impacts of the demolition of the two island resorts located in *Vembanadu* Lake at *Nediya Thuruthu* & *Vettila Thuruthu*, Alappuzha.
- ✓ Suggesting of possible methodology and techniques along with the mitigation measures for an environmentally sound demolition of the structures, and
- ✓ Preparation and submission of the rapid EIA report.

STUDY TEAM

EIA COORDINATOR
Mr. P. Z. THOMAS

In-house Experts

Area of Expertise	Name of Functional Area Expert
Air Pollution Monitoring, Prevention & Control	1.Mr. P. Z. Thomas 2.Ms. Megha C. Parmar
Water Pollution Monitoring, Prevention & Control	1.Mr. P. Z. Thomas 2.Mr. Sreejith Paraprambil Neelambaran 3.Ms. Megha C. Parmar
Solid & Hazardous Waste Management	1.Mr. P.Z. Thomas 2.Ms. Megha C. Parmar
Noise & Vibration	Mr. P. Z. Thomas
Risk & Hazards Management	Ms. Megha C. Parmar
Socio Economic Aspects	Dr. Jacob John
Ecology & Biodiversity	Mr. Sreejith Paraprambil Neelambaran

Empanelled Experts

Area of Expertise	Name of Functional Area Expert
Land Use	Ar. Sumere Dar
Noise & Vibration	Dr. V. Mohanan
HG & Geo.	Mr. Mukesh Suroliya
Ecology & Biodiversity	Mr. Sameer V. Deshpande
Soil Conservation	Dr. M.K. Dwivedi
Air Pollution Monitoring, Prevention & Control and Air Quality Modeling	Mr. Mohan A. Patil

SPECIAL ADVISORY SERVICES TAKEN

1. **Dr. R.S. Mahwar,** Environment Adviser, who was formerly also,
   - Additional Director, Central Pollution Control Board, Delhi,
   - Member, Expert Appraisal Committee on CRZ, Infrastructure & Miscellaneous Projects and New Construction and Industrial Estates Projects at Ministry of Environment & Forests, Govt. Of India
   - Environmental Health Toxicologist, IAEA, Vienna, Austria,
   - Environment Adviser, Mauritius Ports Authority, Mauritius.

2. **Dr. Y. Basavaraju,** Director of Extension, Karnataka Veterinary, Animal & Fisheries Sciences University, Karnataka, who was formerly also
   - Member, Expert Appraisal Committee on CRZ, Infrastructure & Miscellaneous Projects and New Construction and Industrial Estates Projects at Ministry of Environment & Forests, Govt. Of India

STUDY PERIOD AND METHODOLOGY

STUDY PERIOD

- The impact assessment study, though mentioned as Rapid Environment Impact Assessment (REIA), it was done during **the period of about two weeks starting from 15-11-2013 till 30-11-2013 (18 days) that was made available for this study.**

METHODOLOGY ADOPTED

- The study was limited to:-
- Making of few quick visits to the two sites and their surroundings, -
- ✓ Visit to the site were made to get an overall status of the constructions in the context of conducting a representative impact assessment study within the limited period of 18 days with regard to the environmentally sound demolition of the Island resorts.
- ✓ Constructions that are required to be demolished are new constructions and have the scope enabling the best possible uses of the movable, detachable, dis-mantable items which is kept in mind during our study. In other words, the best possible use / reuse / recycle of the items / materials have been kept in mind with the objective of minimum waste to land fill site.

STUDY PERIOD AND METHODOLOGY Contd...

- Discussions with the owners of the structures and obtaining of detailed information in the form a questionnaire.

- ✓ A very detailed questionnaire was prepared for inventerization / assessment of the facilities in the context of making the best possible use / reuse / recycle of new materials and the structures that will require the actual demolition activities in the context of the minimizing generation of the inert waste.

- ✓ Detailed discussions were held with the owners and their respective concerned technical persons.

- Gathering information from the Indian Meteorological Department (IMD),

STUDY PERIOD AND METHODOLOGY Contd...

- ☐ Published materials, National/International documents in regard to the guidelines / safety codes on demolition of the buildings etc..
- ✓ An intensive web search was conducted for :-
  - Obtaining the best possible information about the status of the *Vembanad* lake in the context of the possible impacts of the demolition on this lake as well as it's use / involvement in transportation of the materials (demolition debris) from the Islands to the use / disposal locations.
  - Available national / international guidelines and safety codes on demolition of buildings and an environmentally sound management and disposal of the wastes. The documents downloaded were studied and made use of in conducting the project study.
  - EIA reports of the world wide building demolition projects.

EXISTING STRUCTURES IN THE ISLAND RESORTS

M/S KAPICO KERALA RESORT (P) LTD.

- The total land area is about 50,585 sq.m. (12.5 Acres) with a total built-up area of about 13,351 sq.m.
- The constructions in this Island resort are new.
- The major structures are :- Villas (54 Nos.), boiler room, the central power control room, electrical sub-station, sewage treatment system, water treatment plant, laundry, FOH area, restaurant, conference hall, gym, spa, water court, rain water collection pond (72 ML capacity), DG set, water storage tank (400 KL capacity) etc.
- Period of construction phase was 2006 – 2013.
- Total Man days (Manpower) involved - 23,55,350 man days
- The entire structures in this Island resort is to be demolished.
- The structures in the Island resort is not a make shift arrangement but all are permanent civil structures.

INDICATIVE QUANTITY OF BULK MATERIALS CONSUMED

M/s KAPICO KERALA RESORT (P) Ltd.

MAJOR NATURAL RESOURCES CONSUMED WHICH ARE NON RECOVERABLE	
Diesel	29,34,000 Liters
Water	27 Million Liters
Cement	3,80,560 bags (19,028 MT)
Sand	38,540 cu.m
Aggregate 40 mm	44,365 cu.m
Aggregate 20mm / 12 mm	35,700 cu.m
Cement Blocks 12" x 8" x 8"	15,53,230 Nos.
Cement Blocks 12" x 8" x 4"	8,35,420 Nos.
Bricks	23,54,450 Nos.
Steel (reinforcement)	21,450 MT
Structural Steel	3,498 MT
Roof Tile	6,54,300 Nos.
Gypsum & Calcium silicate board	50,000 sq. m.
GI ducting with nitride rubber insulation	3,000 sq. m.
Rubble	36,600 cu.m.
Granite cladding	16,600 cu.m

INDICATIVE QUANTITY OF BULK MATERIALS CONSUMED Contd..

GI & MS pre-insulated pipes 300 mm to 50 mm	4,000 m
MS tar felt coated pipes	4,000 m
PPR Pipes	6,000 m
UPVC Pipes	4,000 m
ASTM Pipe	1,000 m
CABLES	
HT cables	2,000 m
LT cables	12,000 m
ELV cables	24,000 m
Fiber optic cables	4,000 m
Trunking	1,500 m
Copper & GI earth strips	2,000 m
OTHER ITEMS	
Engine Oil – Generators	800 Lit

SPECIALIZED CONSTRUCTION MATERIALS / ADDITIVES WITH INDICATIVE QUANTITIES - NON-RECOVERABLE

M/s KAPICO KERALA RESORT (P) Ltd.

ANTI TERMITE TREATMENT AGENT	
CONCRETE ADDITIVES	
Conplast – Concrete Plasticizer	4,000 liters
Nitobond – construction joint bonding agent	500 liters
Brush bond – Brush applied water proofing agent	1,000 liters
Polyeurathene grout	200 liters
TILING SYSTEM	
Tile grout – Weber	1,500 Kg
Tile Pointing epoxy – Latapoxy 100	700 Kg.
PAINTING SYSTEM – PLASTERED SURFACE	
Cementitious putty – Birla / JK	1,500 Kg
Cement based Primer – ICI Dulux	5,000 Liters
Exterior Plastic emulsion – ICI Dulux	9,000 Liters
PAINTING SYSTEM – WOOD WORK	
NC Putty (Nitro Cellulose)	1,200 Kg.
NC Grade Primer	800 Liters
PU Primer	500 Liters

SPECIALIZED CONSTRUCTION MATERIALS / ADDITIVES WITH INDICATIVE QUANTITIES - NON-RECOVERABLE Contd...

POLISHING SYSTEM – WOOD	
Impregnating agent – ICA	1,000 liters
Primer – ICA	1,000 Liters
Clear Coat – ICA	1,200 Liters
Top Coat – ICA	1,100 Liters
Linseed Oil	800 Liters
Teak Oil	1,000 Liters
INSULATION MATERIALS	
(Poly Urethane Foam) PUF Insulation Panels – under deck	5,000 sq. m.
PUF Insulation panels – Isowall for air-condition equipment enclosures	3,000 sq.m
PUF insulation on air-conditioning piping	4,000 m.
PUF insulation for cold rooms	2,000 sq.m.
Fibre glass thermal insulation for hot pipes	800 m
Calcium silicate boards	6,000 sq.m.
Gipsum boards	4,000 sq.m.
Asbestos based heat isulation on Boiler & genset flue	120 sq.m.
Nitrile rubber insulation on ducts & pipes	2,000 sq.m.

SPECIALIZED CONSTRUCTION MATERIALS / ADDITIVES WITH INDICATIVE QUANTITIES - NON-RECOVERABLE Contd...

INSULATION MATERIALS Contd.....	
50 mm Fibre cement board – V Panel for vertical partitions	1,000 sq.m.
Shellac	100 KG.
Cooling tower – wafer thin plastic fills for drip cooling	1,000 sq.m.
POND LINER	
DuPont – Xavan pond liner	28,330 sq.m.
DuPont – typar SF40 geotextile	28,330 sq.m.

CONSTRUCTION DETAILS OF ISLAND RESORT

M/s KAPICO KERALA RESORT (P) Ltd.

Total number of under – reamed piles foundation (300 mm dia, 8m – 18 m depth)	2143 Nos.
DMC piles for FOH, STP and bridge (450 mm dia, 45 – 50 m depth :	277 Nos.
Plain cement concrete under all structures (Including mass concrete)	58,600 cu.m.
Random rubble masonary, Average 1.2 m thick (Island perimeter retaining wall, rain water harvesting pond, weir)	36,600 cu.m.
Block masonary (200 mm thickness)	23,600 cu.m.
Block masonary (500 mm thickness)	5,200 cu.m.
Brick masonary (200 -100 mm)	2,387 cu.m.
Plastering	1,50,876 sq.m.
Roof screed 50 mm	9,860 cu.m.
Roof truss	3,95,000 KG.
Roof tiling	35,400 sq. m.
Glass	44,857 sq.m.
Floor tiles	85,400 sq.m.

CONSTRUCTION DETAILS OF ISLAND RESORT Contd...

Wall tile and swimming pool tile	54,576 sq.m.
Granite	18,450 sq.m.
Stone	35,360 sq.m
Wood	65,489 cu.m.
False ceiling and wall cladding work (including gypsum board and calcium silicate board)	48,650 sq. m.
Painting / Polishing	85,600 sq.m.
FOH AREA	
Pile caps of average size (2m x 2m)	270 Nos.
Columns of average size 90 sq. cm. – of height 10 m	270 Nos.
Floor beams of average size 45 cm x 120 cm	2259 meter
Floor slabs of average thickness 30 cm	10,000 sq. m.
Water court base slab 500 mm thick	4,000 sq. m.
Water court wall 400 mm thick	900 sq. m.
Water tank (sump) walls 400 mm thick	1,000 sq. m.
Water tank sump base slab (400 mm thick)	700 sq. m.
Pool base slab 300 mm thick	2,000 sq. m.

CONSTRUCTION DETAILS OF ISLAND RESORT Contd...

Pool wall 300 mm thick + gutter	1,800 sq. m.
Balancing tank (sump) walls 300 mm thick	1,800 sq. m.
Balancing tank sump base slab (300 thick)	2,000 sq. m.
VILLAS	
Pile caps of average size (12.2 m x 1.2m)	3,000 Nos.
Columns of average size 35 sq. cm. – of height 4 m	3,000 Nos.
Floor beams of average size 30 cm x 120 cm	4,000 meter.
Floor slabs of average thickness 25 cm	30,000 sq.m.
Pool bases lab 300 mm thick	3,000 sq.m.
Pool wall 300 mm thick + gutter	3,000 sq.m.
Balancing tank (sump)walls 300 mm thick	1,800 sq.m.
Balancing tank sump base slab (300 mm thick)	2,000 sq.m.

EXISTING STRUCTURES IN THE ISLAND RESORTS

M/s VAMIKA RESORT ISLAND PVT. LTD.

- The total land area is about 25,000 sq.m. (about 6 Acres) with a total built-up area of about 3,000 sq.m.
- The construction in this Island resort is have some old structures as well as some new structures.
- The Island resort is in operation since 2006
- Villas bearing no. 93-D and 93-E are to be demolished as per the Orders of Hon'ble High Court.

CONSTRUCTION DETAILS OF VILLA 93-D & 93-E	
Plain cement concrete.	62.99 cu.m.
Rubble work	112.4 cu.m.
RCC Coping	38.4 cum.
Foundation slab	76.09 cu.m
Footing concrete	40.7 cu.m
Roof beam	24.79 cu.m
Roof Slab	62.81 cu.m

EXISTING STRUCTURES IN THE ISLAND RESORTS Contd...

M/s VAMIKA RESORT ISLAND PVT. LTD.

CONSTRUCTION DETAILS OF VILLA 93-D & 93-E Contd.....	
Cement Block work	65.81 cum
External Plaster	1422.11 sq.m.
Water proofing	23.95 sq.m.
Ply work	483.27 sq.m.
Calcium Board work	386.62 sq.m.
Tar sheet	386.62 sq.m.
Granite work	133.57 sq.m.
Stone work	518.46 sq.m.
Grouting material	27 KG
MAJOR NATURAL RESOURCES CONSUMED WHICH ARE NON RECOVERABLE	
Cement	2,700 bags (135 MT)
Steel	28.55 MT

ABOUT *VEMBANAD* LAKE Contd...

- ✓ *Thanneermukkom* salinity exclusion barrage (a bund) was constructed in the lake in 1975 to prevent salt water intrusion and promote double cropping of paddy in about 5,000 hectors of low lying fields in the area.
- ✓ Manimala, Meenachil, Pamba and Achen kovil flow into the lake south of *Thannermukkom* (bund) and Muvattupzuzha river flows into the Cochin backwaters north of *Thannermukkom* barrage.
- ✓ The lake has thus a fresh water dominate southern zone and a salt water dominate northern zone, both separated by the bund.
- ✓ Being in confluence with the coastal seas, this vast estuarine expanse has also been the favoured nursery areas for the rich coastal fisheries and fishing has been an important occupation of the lower echelons of the society in these places. In effect, agriculture and fisheries have been the two most important attributes of these wetlands.
- ✓ Just as Kuttanad is described as the 'rice bowl' of Kerala, *Vembanad* wetlands have been acclaimed as the 'Inland fish basket' of the State.

CURRENT STATUS OF *VEMBANAD* LAKE

- According to a report by Govt. of Kerala, the lake is already having ecological backlashes, decline of fish species giant prawns ("*Kuttanadu Konchu*"), decline of clumps, disappearance of mangroves and fish diversity, as a result of human interventions.
- There is a sharp decline in the fish yield from the lake. The realized fish yield in the region of the lake is 36% of the potential production.
- The ecological backlash due to the anthropogenical interventions have all been catastrophic to the commercial fisheries in the region.
- There is sharp decline in the Zoo plankton and Phyto plankton in the lake water which also caused the sharp decline of the fishery in the region.
- Discharge of wastes containing oil, paint and also the construction / demolition debris are the main reasons for the decline of aquatic life.
- Due to the construction of the bund, the tidal oscillations are very less.

Giant Prawns (*Kuttanadu Konchu*)

- The lake in the vicinity of the island resorts is the breeding ground for the giant prawns (migration of these fresh water species from *Kuttanadu* for breeding in the lake in the vicinity and reverse migration of the post larvae back to their home grounds in *Kuttanadu*) due to favorable salinity.
- This is a filter feed species and increase in turbidity of the lake water due to the anthropogenic activity is one of the main cause for the sharp decline of these species.
- The breading ground for the giant prawns is on the sediments of the lake. The construction / demolition debris & other foreign materials which gets deposited over the sediments disturbed the breading ground for the prawns and hence a sharp decline of this species.

CURRENT STATUS OF *VEMBANAD* LAKE

Clumps (*Kakka*)

- The salinity of the lake water in the vicinity to the island resorts is favorable for the clumps species, a benthic organism lives in the sediments of the *Vembanad* Lake.
- This is a filter feed species and increase in turbidity in the lake water due to any anthropogenic activity is one of the main reason for the sharp decline of clumps.
- The construction / demolition debris & other foreign materials deposit over the sediments disturbed the benthic organisms including the clumps and hence a sharp decline of this species.

Mangroves (*Kandal*)

- Disappearance of mangroves due to the human interventions has caused decline of fish diversity in the region.
- The discharge of waste materials containing oil and paint into the lake due to various anthropogenic activities affected the mangroves. These materials in the lake water forms a layer over the *pneumatio phore* (breathing roots) of the mangroves which causes it's destruction.

VEMBANAD LAKE – HIGHLY POLLUTED

- The *Vembanad* lake is highly polluted.
- The Lake is facing serious environmental pollution especially due to heavy metals with increased rate of deposition with time due to various industrial activities along the lake.
- The contamination of the lake due to heavy metals is confirmed by studying the chemical forms of different metals present in the sediments.
- The major source for the heavy metal contamination is the discharge of industrial effluents along the *Vembanad* lake and due to other anthropogenic activities.
- It is observed that high level of lead, copper, nickel, zinc, chromium and cadmium in the lake water both during dry season and wet season.

DESCRIPTION OF BASELINE ENVIRONMENT

Data Relevance to the Demolition

Meteorological data

- The relevance of IMD data to the demolition activity is limited to the aspects that the demolition activities are not preferred in rainy season & high windy conditions.

Ambient Air Quality

- The ambient air quality norms are applicable outside the project boundaries.
- This coupled with the fact that both the Islands under reference are surrounded by the lake water from all sides, the air quality has relevance only to the control of dust emissions during the demolition process to the extent that the emissions are not carried by the winds to the lake surrounding lake water.
- The activity will be limited to the period from start to the completion of demolition (demolition phase).

Noise Environment

- The relevance of the noise is also limited to the demolition period.
- There are no noise sources otherwise in the area except the noise of passing boats.
- Demolition has to be carried out only during the day time in controlled noise conditions just like any demolition activity within an existing project boundary.

Demolition Waste

- The best sites for the disposal of the demolition debris are for filling of the low lying areas on the main land (to be indicated by the authorities) where there is no scope of the debris to come in contact with the ground water, rain water or with surface water.
- The hazardous waste disposal facilities are available with the Kerala Pollution Control Board's approved agency viz. M/s Kerala Enviro Infrastructure Ltd. (KEIL) (TSDF facility).

DEMOLITION TECHNOLOGY / PROCEDURES

General Aspects

- The literature survey on the subject has revealed that the technology / procedure that are adopted vary from location to location even within the same area depending upon a number of factors including the land use pattern, existence of ecological sensitive water body or other area etc in the surroundings.
- The demolition procedures adopted cover a wide variety of machines and tools starting from a simple manual demolition with use of handworks to controlled blasting using detonators.
- The demolition methods can be grouped under three category namely mechanical, implosion and special as per the *American Institute of Architects* (AIA) document / hand book.

Mechanical

- This is the most widely used method of building demolition today and it involves the use of various specialized mechanized equipments and tools.

DEMOLITION TECHNOLOGY / PROCEDURES Contd...

Implosion

- Implosion methods are very effective for bringing down high structures that would be difficult to reach with equipments or too expensive to demolish one floor at a time.
- These methods use highly specialized explosives to undermine the supports of a structure so it collapses either within its own footprint or in a predetermined path.

Special

- Certain types of demolition require specialized hand held tools for cutting, chipping, drilling, and breaking small amounts of materials. The tools for these tasks are mostly powered by hydraulic or pneumatic systems and can usually be moved by two men.

Technology / Procedures / Choice

- The demolitions of the structures required on these island resorts come under the mechanical demolition.
- The actual selection of the mechanized equipments / tools etc. will be limited to those which can be transported through vessels which can sail through the shallow *Vembanadu* Lake water body surrounding these islands.

PRE DEMOLITION WORKS

M/s Kapico Kerala Resorts (P) Ltd.

Removal of Disposal of Asbestos Items Materials

- All asbestos containing materials are to be removed by mechanical means, collected, stored in separate closed containers and transported to the common Treatment, Storage & Disposal Facility (TSDF).

Removal of the New & Unused Movable Items / Materials

- The new and unused movable items / materials such as furniture, electrical and electronic appliances, decoration items, Kitchen appliances, vehicles including pleasure boats, sealed fuel containers , sealed detergents containers, sealed boxes for POP, cement etc, unused panels, boats, electrical cable rolls and other such items kept / stored in the premises are to be collected and transported by the owner to a location of their use / storage in a manner that ensures no risk of their getting in to contact with lake water and other spillages anywhere and en-route.

PRE DEMOLITION WORKS Contd....

Removal of New and Unused Detachable Items

The new and unused detachable items such as modular fitting & fixtures, electrical & electronic fittings (Air conditioners, Tube lights, Fans etc.), are to be detached and transported by the owner to a location of their use / storage in a manner that ensures no risk of their getting in to contact with lake water and other spillages anywhere and en route.

New and Unused Assembled Items

The new and unused assembled items are to be dismantled and transported by the owner to a location of their use / storage in a manner that ensures no risk of their getting in to contact with lake water and other spillages anywhere and en route.

Old / Used Movable Items / Detachable

The old and used items / materials listed of the filled questionnaire are to be collected and disposed by the owner in the following manner:-

- Furniture, decoration items including floor mat etc. / Kitchen appliances / machinery / Vehicles including pleasure boats – To be auctioned or used elsewhere.
- Electrical & electronic items – To be given to registered e-waste recycler.
- Empty fuel & detergent containers – To be given to TSDF.

PRE DEMOLITION WORKS Contd....

Miscellaneous Items

- The entire resort structure being a new construction implies that all the ducts, cables, pipes, electrical wiring etc. which are buried inside the wall or buried in the ground, and items of glass, marble and other stones, wood and metals concealed or fixed in the wall can also be taken out by manually or by simple mechanical devices (such as a hand drills / gas cutter etc.).
- These are therefore to be removed and transported by the owner to a location of their use / storage in a manner that ensures no risk of their getting in to contact with lake water and spillages anywhere and en-route.

PRE DEMOLITION WORKS Contd....

M/s Vamika Island Resorts Pvt. Ltd.

- The asbestos containing material or hazardous waste generated should be collected in closed containers and transported to TSDF.
- The storage of the asbestos containing materials should be in separate closed containers for transportation to the TSDF.
- This resort is very small and the facilities are limited to very old villas and some new additional structures.
- There is a good scope for this resort to make use of the new items / materials in their old villas and facilities.
- The items / materials left after checking for use in the old villas and facilities, are required to follow the same sequence as mentioned in the case of M/s Kapico Kerala Resorts (P) Ltd.

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DEMOLITION OF SUPER STRUCTURES

Pre Demolition Verification

- All pre demolition works suggested in Slide No. 31, 32 & 33 is to be completed and to be verified.
- All the structures and associated facilities to be demolished in the Island resorts to be ensured for it's status being free from any hazardous or other materials having Mercury, Lead, other heavy metals, PCB, Asbestos etc.
- The wastes resulting from the demolition of the super structures after ensuring the verification works are not expected to have pollutants exceeding the limits prescribed in Schedule 2 of the Hazardous Waste (Management Handling & Trans Boundary) Rules 2008.
- Recommended that a team of experts / officers is deputed by the Directorate of Environment & Climate Change, Department of Environment, Govt. of Kerala to visit the sites for inspection and verification of the completion of the actions mentioned as pre-demolition works above and the readiness of the civil structures for their demolition in the context that their demolition should result into generation of only the inert waste.

DEMOLITION OF SUPER STRUCTURES Contd...

Demolition Method for Super Structures

- The demolition of the super structures will start from the top of the highest building using simple tools / hammers / grinders/ hand held hydraulic drills etc. wherever required.
- The gas cutters are to be used for cutting the metallic bars. This activity is to be performed on a day to day basis during the day time only limiting the demolition activity to the extent that the wastes namely metallic and inert wastes are segregated at source and put directly into separate top loading containers or dump trucks of the size which can be closed and transported with full load to the disposal places through the lake route.
- The manual demolition is to be continued till it reaches the height which is within the reach of the other machinery and equipments which can be brought to the island from the main land.
- While, the demolition from this stage onwards will involve the above mentioned machinery, the process of segregation, containerization and transport will remain unchanged. In fact this will be a mixed activity involving manual as well as machinery.
- The priority for identification of the structures from among the same height buildings will follow the criteria that the buildings which are in the center of the island are to be demolished first and those close to the periphery to the island are to be demolished in the last.

ANTICIPATED MAJOR ISSUES IN DEMOLITION OF SUPERSTRUCTURES

- Strong rugged RCC construction, cannot be broken by manual hammering and cutting, may take several years of manpower.
- May require heavy machinery (like drilling, cutting, chiseling machines, heavy duty hammering machines, etc.)
- Bringing in the heavy machinery through the only way of lake route with limited depth has limitations.
- Electricity supply for operating the heavy machinery.
- Some debris may fall in water body directly during the demolition of the superstructures which are located very near to lake, else special structures need to be build for debris collection.

DISPOSAL OF HUGE QUANTITY OF DEBRIS TO BE GENERATED BY THE DEMOLITION OF SUPER STRUCTURES

- The quantity of demolition debris may be several lakhs metric tonnes i.e. several thousands of truck loads or containers.
- Material has to be carried by the lake route through appropriate water transport resulting in substantial traffic movement for several years.
- The disposal site of demolition debris to be identified in the main land is not known.
- The landfill site, the debris disposal location site, to be selected in a manner which ensures no risk of the inert waste getting into contact with lake water and other spillages anywhere and en route.
- The landfill site is to be identified by the authorities and to be notified and all the mandatory procedures required in the selection of landfill site to be followed as per the provisions of Environment Protection Act before the initiation of demolition activity.

ANTICIPATED MAJOR ENVIRONMENTAL IMPACTS TO THE ECO-SYSTEM OF THE FRAGILE *VEMBANAD* LAKE BY THE DEMOLITION OF THE SUPERSTRUCTURES

- Increased transportation to ferry machinery, people and demolition debris for a longer duration may disturb the eco-system of the already fragile *Vembanad* lake.

- Risks of inert wastes / hazardous wastes falling into the lake during the demolition and also during the transportation of the waste.

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DEMOLITION OF SUB SURFACE STRUCTURES

- The demolition of the sub surface structures involve major environmental and ecological aspects specially with regard to the restoration of the island's soil and protection of the environment / ecology of the lake.
- The preparation of the plans for demolition of these structures therefore requires conducting of :-

1. A detailed Impact Assessment study including :-
   - ✓ The profiling of the ground water in the islands
   - ✓ The current status of the lake ecology and its seasonal variations in the context of it's fish resources and other aquatic life, in rainy as well as non rainy (dry) seasons.
2. A detailed survey of sub surface demolition technology and identification of the technology / machinery required for this purpose.
3. A survey of the availability and capacity of the vessels which can be used for the purpose of brining such a technology to these islands.
4. Identification of the technology which can be brought to these islands through the only available lake route within the technical and environmental choices that could be available on the basis of the findings of the study under (1) to (3) above.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Demolition of Super Structures

The matrix of the anticipated impacts and the mitigation measures to be taken for the demolition of **super structures** is given in following table.

Sr. No.	ENV. ASPECTS	ANTICIPATED IMPACTS	MITIGIATION MEASURES
1.	Aesthetics	No impact anticipated in the demolition of super structures	Not Applicable (NA)
2.	Agriculture Resources	No impact anticipated in the demolition of super structures	NA
3.	Air Quality	i. Emission of fugitive dust (demolition) ii. Emission at disposal sites	Dust - Providing of wind screens - Use of water sprinklers - No demolition activity during highly windy conditions. - The workers engaged in the demolition to be provided with mask and other Personnel Protective Equipments (PPE). - Use of water sprinklers - No disposal in windy condition.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES Contd..

Sr. No.	ENV. ASPECTS	ANTICIPATED IMPACTS	MITIGATION MEASURES
6.	Biological Resources	Serious impacts on the biology/ ecology of the lake in case of overturning of the vessels carrying the waste containers / trucks and other hazardous / toxic containing materials.	- The containers, the trucks and the vessels to be used should be suitable for the transportation of such wastes - The crew members should be trained for this type of job.
5.	Cultural Resources	No impact anticipated in the demolition of super structures	NA
6.	Geology & Soils	No impact anticipated in the demolition of super structures	NA
7.	Hazards & Hazardous Materials	Serious impacts on the biology/ ecology of the lake in case of the overturning of the vessels carrying the waste containers / trucks and other hazardous / toxic containing materials and improper disposal of these wastes.	- The vessels, its crew and the containers to be used for the transportation should be skilled and trained and meant for transportation of such a wastes. - To be given to authorized recyclers / TSDF depending upon the waste type in compliance to HW Rules

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES Contd..

	ENV. ASPECTS	ANTICIPATED IMPACTS	MITIGATION MEASURES
8.	Inert Waste	Serious impacts on the biology/ ecology of the lake in case of the overturning of the vessels carrying the waste containers / trucks and improper disposal of these wastes.	- The vessels, its crew and the containers to be used for the transportation should be skilled and trained and meant for transportation of such a wastes. - Disposal at locations in a manner that ensures no risk of the inert waste getting into contact with lake water and other spillages anywhere and en route.
9.	Hydrology & Water Quality	As mentioned at Sr. No. 6 & 7 above	- As mentioned at Sr. No. 6 & 7 above. - Modular STP for the treatment of sewage and other waste water generated from the facilities provided for the demolition workers. - No demolition or transportation in the rainy season.
10.	Land Use & Planning	No impact anticipated in the demolition of super structures	NA
11.	Mineral Resources	No impact anticipated in the demolition of super structures	NA
12.	Noise	1. Exposure to demolition workers. 2. Transportation of all required machinery and gadgets & tools with the spare parts of material items and trained machinery for it's repair in with minimum trip. 3. Transport the debris only through top loading centeres, seal if at site, ensure it before the same is loaded into the water transport vehicles with trained machinery.	- The demolition to be done only during day time - Workers exposed to be provided with protective gadgets (PPE) like earplugs.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES Contd..

	ENV. ASPECTS	ANTICIPATED IMPACTS	MITIGATION MEASURES
13.	Population & Housing	No impact anticipated in the demolition of super structures	NA
14.	Public Services	No impact anticipated in the demolition of super structures	NA
15.	Recreation	No impact anticipated in the demolition of super structures	NA Emergency medical care
16.	Transportation / Traffic	Transportation of manpower for demolition for a long duration.	Accommodation for all required manpower within the island resorts for demolition phase to avoid their daily commutation. Provide all facilities in the island resort (accommodation, food, potable water, sanitation facility, treatment of sewage, fuel for cooking etc.)
		Transportation of machinery for demolition for a long duration.	Transportation of all required machinery, gadgets & tools with their spare parts, consumables, maintenance items in the inventory at the island resorts and it's mechanic for repair.
		Transportation of huge debris from the island resorts to the main land	Transport the debris only through top loading containers, seal it at site, ensure it before the same is loaded into the water transport vehicles.

CONCLUSIONS AND RECOMMENDATIONS

Demolition of Super Structures

The environmental aspects relevant for the demolition of the super structures are in :-

- Demolition to be done in non-rainy season as per the suggestions discussed and made in the REIA report.
- The fugitive emissions of dust and the risks of spillages of the solid waste (Municipal / Hazardous / Inert) specially in the lake during their transportation from the islands to the re-use / disposal sites need special attention and to be done by skilled workers only.
- The manpower / workers which will be engaged in the demolition work will require the basic facilities namely drinking water supply, sanitary facilities and first aid facilities, to be made available on the bigger Island. A small capacity modular plant for the treatment of the waste water (including the sewage) is therefore required to be provided on the island, in case of the M/s Kapico Kerala Resorts (P) Ltd.

Demolition of Subsurface structures

The demolition of the subsurface structures requires conducting of a detailed study.

SCENARIO - I

DEMOLITION OF SUPER STRUCTURES & SUBSURFACE STRUCTURES

M/s KAPICO KERALA RESORT (P) Ltd.

SUPERSTRUCTURES

- The demolition of super structures if executed after following the guidelines mentioned including the pre-demolition verification for ensuring the segregation of materials containing asbestos, heavy metals, toxic & other hazardous items and in suitable weather conditions.
- The disposal of the inert waste to a place in a manner that ensures no risk of the inert waste getting into contact with lake water and other spillages anywhere and en route
- Ensuring trained crew and the work force for it's environmental sound transportation
- Availability of top loading containers and safe transportation of thousands of truck loads of demolition debris.

SUB-SURFACE STRUCTURES

- Regarding the demolition of subsurface structures, the technology to be adopted is to be explored and studied. The tools, gadgets and the machinery to be brought into the Island from the main land with the available lake route with a limited depth of the lake is to studied.
- Finally, the demolition of the subsurface structures if executed, the situation anticipated is that during the removal of RCC piles (about 2,500 nos.) and other sub-surface RCC structures, retaining wall etc., the lake water will cave in from all sides and the island will be no more.
- It is expected that the turbidity level of the lake water will increase exponentially and there will be large scale deposition of demolition debris and other sediments in the lake.

SCENARIO - II

DEMOLITION OF SUPER STRUCTURES ALONE

M/s KAPICO KERALA RESORT (P) Ltd.

- It was told that the Island was part of about 130 Acres of a land parcel.
- Majority of this land parcel got submerged and the remaining land parcel is only about 10% of the total land parcel.
- Executing the demolition of the super structures alone and abandoning the subsurface structures and the Island, the land will get submerged over a period of time and it will be disintegrated leaving the RCC pillars and other subsurface RCC structures exposed and the area will become a point of high risk.
- As mentioned, the lake being part of National water way, the submerged RCC pillars and other submerged subsurface RCC structures can cause a major water transport accident.

SCENARIO - III

LEAVING THE SUPER STRUCTURE & SUBSTRUCTURE ABANDONED

- The project site has average annual rain fall of about 3,500 mm with peak daily rain fall of about 200 mm.

- The structures (both super structures & sub-structures) with lot of hazardous and toxic materials including the lead bearing paints, other heavy metal containing materials, asbestos containing materials, Gypsum etc. are left abandoned, the structures will erode and corrode and all these materials will reach the highly fragile *Vembanad* lake and may result in further contamination of the lake water with heavy metals and turbid materials.

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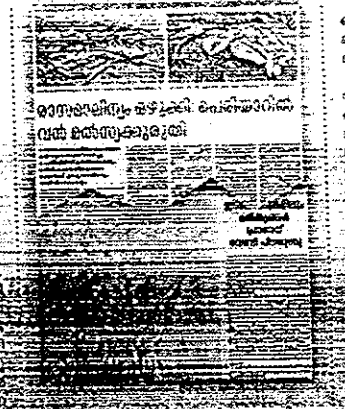

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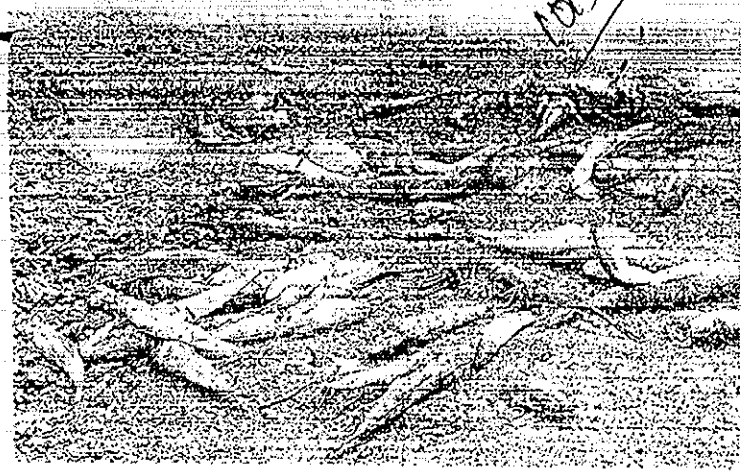

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- ലക്ഷക്കണക്കിനു രൂപയുടെ മൽസ്യസമ്പത്ത് നശിച്ചു
- പരിസ്ഥിതി പ്രവർത്തകരും മലിനീകരണ നിയന്ത്രണ ബോർഡ് ഉദ്യോഗസ്ഥരും തമ്മിൽ വാക്കേറ്റം

കളമശേരി ◆ രാസമാലിന്യം മൂലം പെരിയാറിൽ കഴിഞ്ഞ പത്തുവർഷത്തിനിടെയുണ്ടായ ഏറ്റവും വലിയ മൽസ്യക്കുരുതിക്ക് വ്യവസായ മേഖല ഇന്നലെ സാക്ഷിയായി. ലക്ഷക്കണക്കിനു രൂപയുടെ മൽസ്യസമ്പത്താണ് പുഴയുടെ ഇരുതീരങ്ങളിലും ചത്തുപൊങ്ങിയത്. പെരിയാറിൽ പാതാളം ബണ്ടിനു താഴോട്ടുള്ള ഭാഗത്താണ് നാടിനെ നടുക്കിയ മൽസ്യക്കുരുതി നടന്നത്.

പുഴയുടെ അടിത്തട്ടിൽ വസിക്കുന്ന വമ്പൻ ഉൾപ്പെടെ വിവിധ ഇനങ്ങളിലുള്ള മൽസ്യങ്ങളാണ് ചത്തുപൊങ്ങിയത്. ചൂരൽ, കരിമീൻ, കൊഞ്ച്, നക്ക്, കൊഴുവ, പെമ്പിൽ, കണമ്പ് തുടങ്ങിയ മൽസ്യങ്ങൾ കൂട്ടത്തോടെ ചത്തുപൊങ്ങി. വംശനാശ ഭീഷണി നേരിടുന്ന ആരോൻ പോലുള്ള മൽസ്യങ്ങ

ളും ഇതിൽ പെ
പരാതിപ്പെട്ടതാ
ലക്ടർ വിശദ്ധ
റിപ്പോർട്ട് ആവ
പെരിയാറിൽ
പരിശോധനാ
ട്ടേഴ്സ് ഓഫീസ
ങ്ങൾ ചത്ത
ന്നും പുഴയിലെ
ക്ഷമായ ദുർഗ
ന്നുണ്ടെന്നും
ന്റെ ഉറവിടം ക
ന്നും ജില്ലാ ക
ട്ടു നൽകി.

മൽസ്യക്കു
ണം കണ്ടെത്ത
ട്ട് മലിനീ
ബോർഡ് ഓഫ
സ്ഥിതി പ്രവ
സ്ഥരും തമ്മി
യി.

പിസിബി ഉ
മാതിയിൻമേ

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[illegible]

• ഇന്നു പൊലീസ് സ്റ്റേഷൻ മാർച്ച്

[illegible]

പെരിയാറിൽ ചത്തുപൊങ്ങിയ ... മത്സ്യം.

പെരിയാറിലെ ജല ഗുണനിലവാരം പൊതുജനങ്ങളെ അറിയിക്കുന്നതിനു സ്ഥാപിച്ച ഓൺലൈൻ സംവിധാനം പ്രവർത്തിക്കുന്ന ... ഭാഗത്തും മത്സ്യങ്ങൾ ചത്തുപൊങ്ങി. ഓൺലൈൻ സംവിധാനം നദിയിലെ ജലഗുണനിലവാരം സാധാരണ നിലയിലാണെന്നാണു കാണിച്ചത്. ജലത്തിൽ ഓക്സിജൻ തീരെയില്ലാത്ത പോയതാണു മത്സ്യക്കുരുതിക്കു കാരണമായി മലിനീകരണ നിയന്ത്രണ ബോർഡ് ഉദ്യോഗസ്ഥർ പറയുന്നത്. മലിനീകരണ നിയന്ത്രണ ബോർഡിന്റെ അനാസ്ഥയ്ക്കെതിരെ വ്യവസായശാലകൾ പ്രതിഷേധം ശക്തമാണ്.

പെരിയാർ മലിനീകരണത്തിനെതിരെ പരാതിയുമായെത്തുന്നവരെ ശത്രുപക്ഷത്തു നിർത്തുകയും കേസിൽ കുടുക്കുകയും ചെയ്യുന്ന അധികൃതരുടെ നടപടിക്കെതിരെയും പ്രതിഷേധം ശക്തമാണ്. മലിനീകരണ നിയന്ത്രണ ബോർഡിന്റെയും പൊലീസിന്റെയും നിലപാടുകളിൽ പ്രതിഷേധിച്ച് ഇന്നു വൈകിട്ട് നാലുമണിക്ക് ഏലൂർ പൊലീസ് സ്റ്റേഷനിലേക്ക് ജനജാഗ്രതാ സമിതിയുടെ നേതൃത്വത്തിൽ മാർച്ചും ധർണയും നടത്തുമെന്നു സമിതി ചെയർമാൻ സുബൈദ ഹംസ അറിയിച്ചു. പരിസ്ഥിതി പ്രവർത്തകരെ ഭീഷണിപ്പെടുത്തിയ ഉദ്യോഗസ്ഥർക്കെതിരെ ശക്തമായ നടപടിയെടുക്കണമെന്നും ഇക്കാര്യം ചൂണ്ടിക്കാട്ടി മുഖ്യമന്ത്രിക്കും മറ്റും പരാതി നൽകുമെന്നും അവർ അറിയിച്ചു.

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മത്സ്യക്കുരുതി: ജനജാഗ്രതാ സമിതി പൊലീസ് സ്റ്റേഷൻ മാർച്ച് നടത്തി

[illegible]

... ഏലൂർ ... നീലകണ്ഠൻ മാർച്ച് ഉദ്ഘാടനം ചെയ്തു. ... കൗൺസിലർ ...

... സുബൈദ ഹംസ, ജനജാഗ്രത സമിതി ചെയർമാൻ പി. ... കെ.ജി. ... വട്ടോളി, ഏലൂർ ..., എൻ. രാമചന്ദ്രൻ, പെരിയാർ മലിനീകരണ വിരുദ്ധ സമിതി നേതാക്കളായ എം.കെ. ..., പുരുഷൻ ഏലൂർ, ... നേതാവ്, പി.ഡി. ... എന്നിവർ പ്രസംഗിച്ചു.

മാർച്ചിനു ... മലയിൽ, ... നേതൃത്വം നൽകി.

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL (SOUTHERN ZONE BENCH, CHENNAI)

ORIGINAL APPLICATION NO. 105 OF 2022 (SZ)

With

ORIGINAL APPLICATION NO. 122 OF 2022 (SZ)

In the matter of:
Sunitha, Kerala
----Applicant(s)
-VS-
Union of India and ors.
----Respondent(s)
WITH
Ajitha, Alappuzha District
----Applicant(s)
-VS-
Union of India Respresented by its Secretary, MoEF&CC, New Delhi and ors. ----Respondent(s)

EIA, EMP REPORT FILED BY THE ADDITIONAL CHIEF SECRETARY, ENVIRONMENT DEPARTMENT/2ND RESPONDENT

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