ENVIRONMENTAL MANAGEMENT PLAN

of

"Golden Sands Beach Front Resorts"

BEACH RESORTS *Proposed at*
Adavi Village,Bapatla Mandal, Guntur District, AP

Guntur District .

Submitted by

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CHAPTER 1
INTRODUCTION

1

This chapter gives an introduction about the Proponent, History of the Proponent, their activities, Site Details, Background of the proposed project, Justification of the Project, the Legal

1.0 INTRODUCTION

Tourism has been a major social phenomenon of the societies all along. It is motivated by the natural urge of every human being for new experience, adventure, education and entertainment. The motivations for tourism also include social, religious and business interests. The spread of education has fostered a desire to know more about different parts of the globe. The basic human thirst for new experience and knowledge has become stronger, as communication barriers are getting overcome by technological advances. Progress in air transport and development of tourist facilities has encouraged people to venture out to the foreign lands.

Tourism importance, as an instrument for economic development and employment generation, particularly in remote and backward areas, has been well recognized the world over. It is one of largest service industry globally in terms of gross revenue as well as foreign exchange earnings. Tourism can play an important and effective role in achieving the growth with equity objectives.

Tourism is one economic sector in India that has the potential to grow at a high rate and can ensure consequential development of the

infrastructure of the destinations. It has the capacity to capitalize on the country's success in the services sector and provide sustainable models of growth.

It has the potential to stimulate other economic sectors through its backward and forward linkages and cross-sectoral synergies with sectors like agriculture, horticulture, poultry, handicrafts, transport, construction, etc. Expenditure on tourism induces a chain of transactions requiring supply of goods and services from these related sectors. The consumption demand, emanating from tourist expenditure, induces more employment and generates a multiplier effect on the economy. As a result, additional income and employment opportunities are generated through such linkages. Thus, the expansion of the tourism sector can lead to large scale employment generation and poverty alleviation. The economic benefits that flow into the economy through growth of tourism in shape of increased national and state revenues, business receipts, employment, wages and salary income, buoyancy in Central, State and local tax receipts can contribute towards overall socio-economic improvement and accelerated growth in the economy.

Another important feature of the tourism industry, which is of particular significance to India, is its contribution to national integration and preservation of natural as well as cultural environments and enrichment of the social and cultural lives of the people. Over 382 million domestic tourists visiting different parts of the country every year return with a better understanding of the people living in different regions of the country. Tourists have a better appreciation of the cultural diversity of India. Tourism also encourages preservation of monuments and heritage properties and helps the survival of art forms, crafts and culture.

Tourism is not only a growth engine but also an generates employment. According to the Economic Survey 2011-12, the sector has the capacity to create large scale employment both direct and indirect, for diverse sections in society, from the most specialized to unskilled workforce. It provides 6-7 per cent of the world's total jobs directly and millions more indirectly through the multiplier effect as per the UN's World Tourism Organization(UNWTO). The importance of tourism as a creator

of job opportunities can be understood from the fact that in India every one million invested on tourism sector creates 47.5 jobs directly and 85-90 jobs indirectly. In comparison, agriculture creates only 44.6 jobs in manufacturing a mere 12.6 jobs. Moreover tourism is the third largest foreign exchange earner after gems and jewellery and readymade garments.

Foreign Tourist Arrivals (FTAs)

During 2013 FTAs in India were about 7 million with a growth of 5.9% over 2012. FTAs during 2014 were 7.44 (provisional) million with a growth of 11.3% in July 2015 over July 2014, as compared to the FTAs of 6.31 million during 2013.

Foreign Exchange Earnings (FEE) from Tourism

Tourism is an important sector of Indian economy and contributes substantially in the country's Foreign Exchange Earnings. FEEs from tourism, in rupees in 2013 was Rs. 1,07,671 crore, with a growth rate of 14.0%, as compared to the FEEs of Rs. 94,487 crore during 2012. During 2014, the Foreign Exchange Earnings (FEEs) from tourism registered a growth of about 6.2% till Jan- Jun month Rs. 3.85 million (provisional).

Domestic tourism

The recorded domestic tourist visits during the year 2014 were 7.64 trillion, showing a growth of 7.5% in 2015 over last year

Beach & Coastal Tourism forms the mainstay of international tourism and provides the volumes required for India's key markets.

Andhra Pradesh with second largest coastline boasts of some of the beautiful and pristine beaches like Ramakrishna beach popularly known as R.K. Beach, Lawson's Bay, Rushikonda (Vizag), Bheemunipatnam, Kakinada Uppada Road Beach, Kalingapatnam, Kottapatnam, Krishnapatnam, Machilipatnam, Moyupalle, Maipadu, Perulapalem, Suryalanka and Vodarevu. The tourism avenues are increasing in and

around Suryalanka, as this beach is about 75km from the capital city of Andhra Pradesh.

M/S. Yaganti Estates is proposes to develop **Golden Sands Beach Front Resorts** near Suryalanka Beach with a built up area of 3144.84 Sq in Land area of 10.75 acres at Survey No.517 of Adavi Village, Bapatla Mandal of Guntur District with full-fledged landscape and green belt. To meet the ever-increasing demand of the tourist for recreation purpose.

This resort is the gateway beach for individuals & families. Visitors can enjoy swimming & sunbathing without feeling squeezed.

1.2 SITE SELECTION CRITERIA

Site selection criterion plays an important role in the initiation of developmental activity such as Residential/ Commercial/ Institutional developmental project. It provides an outlook on the type of environmental compliance and management techniques/ methods to be adopted and also reduces the project costs. Overlooking environmental factors during site selection at the project inception stage will generally increase the project costs due to the increase in the compliance to environmental regulations and make the project vulnerable to opposition from the public. Site selection is generally made keeping in view the following features:

1) Air shed and the topography of the region
2) Watershed, drainage patterns and the hydrogeology of the region
3) Meteorological conditions that favor the dispersion of the emissions to air
4) Reserve forests, National parks & marine parks etc.
5) Major water bodies and the down stream users within the study area

1.2.1. Site Selection Criteria

At present, the site is sparsely covered by local variety of grass and in general a barren land.

Table-1.1 Site Selection Criteria

Criteria	Details
Latitude and Longitude	15°48'48" North Latitude 80°26'41" East Longitude
CRZ details	CRZ – III
Climate conditions as per the IMD station	Annual Max. Temp. is 43°C Annual Min. Temp. is 19°C Annual average Rainfall is 1074 mm
Land required for the activity	43503.37 m^2 (4.35 Ha)
Present land use	Non Agricultural dry land
Nearest Highway	Chennai to Vijayawada National highway (NH-214 A) at a distance of 7 km
Nearest railway station	Chirala Railway Station is at a distance of 10 Km on Howrah –Chennai – New Delhi Railway Lines.
Nearest Airport	Gannavaram at a distance of 115 Km
Nearest Habitat	Pandurangapuram , adavi – 0.5 Km
Nearest town/city	The proposed project is 10 km away from Chirala & Bapatla is 52km south of Guntur City
Water bodies	Bay of Bengal
Location advantage	The Natural pristine beauty of the beach is major attraction.
Seismicity	The study area falls under seismic Zone -2

The significance of the proposed development is studied under the following two sub divisions, i) No project scenario and ii) The proposed development scenario.

1.2.2 No project scenario:

This alternative would see the cessation of project plans and the site retained as it is. This option is not a favoured action by the developers or community. The "No Action" Alternative will invariably have the greatest implications on the socio-economic environment. This action would result in the loss of a major direct and indirect employment generating activity for local people. People who are willing to visit and stay in well planned resorts will be discouraged.

1.2.3 The proposed development scenario

This alternative would see the construction of beach resorts as proposed here under. The project shall be positive and beneficial to the society at the large shall provide employment to local people. Shall provide better recreational facilities and responsible social behavior due to tourist activities

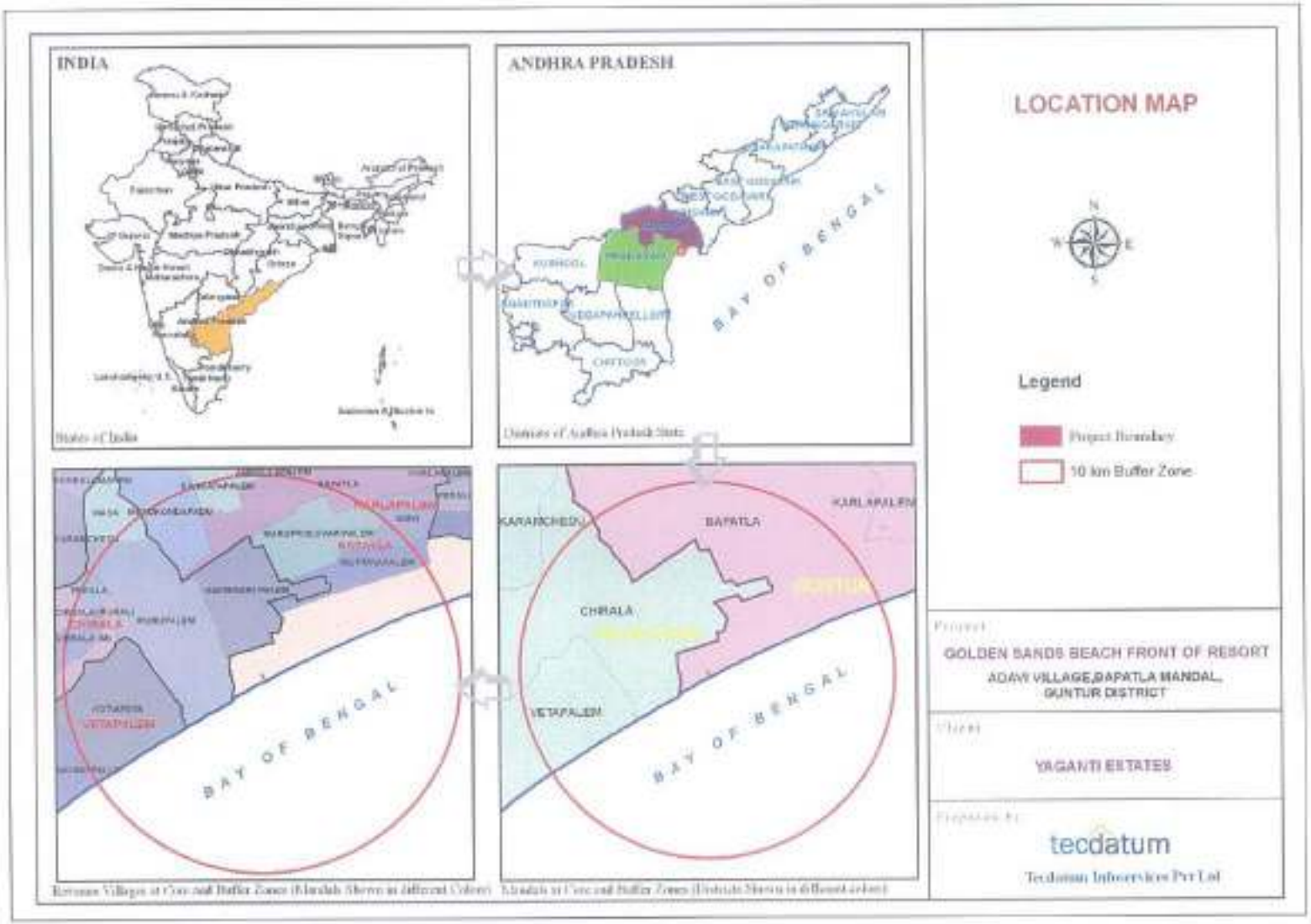

Figure No.1.1 Location Map of the study area

1.3 ENVIRONMENT MANAGEMENT PLAN:

The development activity needs to be intertwined with utilization of natural resources within the limits of permissible assimilative capacity. The Environmental Management Plan (EMP) is required to ensure sustainable development in the area of the proposed beach resort site. Hence it needs proper EMP to meet these objectives.

The management action plan aims at controlling the adverse impacts to the possible extent with the available and affordable technology followed by treatment measures before they are discharged. The following mitigation measures are recommended in order to synchronize the economic development of the study area with the environmental protection of the region.

1.4 Government Policies

a) National Water Policy, 1987 (Prioritization of Water Uses)

b) National Land-use Policy, 1988 (Protection of land under cultivation and suitable for agriculture)

c) National Forest Policy, 1988 (Protection) and Conservation of Forests)

d) Policy Statement for abatement of Pollution, 1991 (Environment Management Strategy)

e) National Conservation Strategy and Policy Statement on Environment and Development, 1992 (Sustainable Development)

f) National Rehabilitation and Resettlement Policy

g) National Mineral Policy, 1993

1.5 Rules for Prevention & Control of Environmental Pollution

For prevention and Control of Environmental Pollution, the Ministry of Environment and Forests have notified the following acts.

- The Water (Prevention and control of Pollution) Act, 1974 and its subsequent amendments
- The Air (Prevention and control of Pollution) Act, 1981 and its subsequent amendments
- The Noise Pollution (Regulation and control) Rules, 2000
- The Environment (Protection) Act 1986 and Environment (Protection) Rules, 1986
- Public Liability Insurance Act, 1991
- Forest (Conservation) Act 1980
- Manufacture, Storage and Import of Hazardous Chemicals, rules 1989 and amended 2000

The above acts are amended by MoEF from time to time through official notifications, and Environment (Protection) Act prescribes from time to time several emission and discharge standards for specific purposes such as utilization of treated waste water and discharge of treated waste water in to the sea, which has to be complied.

1.6 Applicable Standards

For the preparation of this report reference has been made to existing Indian Standards. The standards used in this report are reproduced here in the following section for ready reference.

1.6.1 Air Quality Standards

- National Ambient Air Quality Standards- Notified by the CPCB in the year 2009

1.6.2 Water Quality and Wastewater discharge Standards

- Indian Standard: Drinking Water Specifications- IS 10500:2012- Bureau of Indian Standards(BIS)
- General Standards for Discharge of Environmental Pollutants- GSR 422(E)

1.6.3 Diesel Generator Sets

- Stack height for Diesel Generator sets and emission standards, CPCB, Emission Regulations Part IV, COINDS/26/1986-87

1.7 Guidelines for development of beach resorts/hotels in the designated areas of crz-iii for temporary occupation of tourist/visitors, with prior approval of the ministry of environment & forests.

7(1) Construction of beach resorts/hotels with prior approval of MOEF in the designated areas of CRZ-III for temporary occupation of tourists/visitors shall be subject to the following conditions:

i. The project proponents shall not undertake any construction (including temporary constructions and fencing or such other barriers) within 200 metres (in the landward wide) from the High Tide Line and within the area between the Low Tide and High Tide Line;

(i a) live fencing and barbed wire fencing with vegetative cover may be allowed around private properties subject to the condition that such fencing shall in no way hamper public access to the beach;

(i b) no flattening of sand dunes shall be carried out;

(i c) no permanent structures for sports facilities shall be permitted except construction of goal posts, net posts and lamp posts.

(i d) construction of basements may be allowed subject to the condition that no objection certificate is obtained from the State Ground Water Authority to the effect that such construction will not adversely affect free flow of ground water in that area. The State Ground Water Authority shall take into consideration the guidelines issued by the Central Government before granting such no objection certificate.

Explanation:

i. Though no construction is allowed in the no development zone for the purposes of calculation of FSI, the area of entire plot including 50% of the portion which falls within the no development zone shall be taken into account.

ii. The total plot size shall not be less than 0.4 hectares and the total covered area on all floors shall not exceed 33 per cent of the plot size i.e. the FSI shall not exceed 0.33. The open area shall be suitably landscaped with appropriate vegetal cover;

iii. The construction shall be consistent with the surrounding landscape and local architectural style;

iv. The overall height of construction upto highest ridge of the roof, shall not exceed 9 metres and the construction shall not be more than 2 floors (ground floor plus one upper floor);

v. Ground water shall not be tapped within 200m of the HTL; within the 200 metre – 500 metre zone, it can be tapped only with the concurrence of the Central/State Ground Water Board;

vi. Extraction of sand, levelling or digging of sandy stretches except for structural foundation of building, swimming pool shall not be permitted within 500 metres of the High Tide Line;

vii. The quality of treated effluents, solid wastes, emissions and noise levels, etc. from the project area must conform to the standards laid down by the competent authorities including the Central/State Pollution Control Board and under the Environment (Protection) Act, 1986;

viii. Necessary arrangements for the treatment of the effluents and solid wastes must be made. It must be ensured that the untreated effluents and solid wastes are not discharged into

the water or on the beach; and no effluent/solid waste shall be discharged on the beach;

ix. To allow public access to the beach, at least a gap of 20 metres width shall be provided between any two hotels/beach resorts; and in no case shall gaps be less than 500 metres apart; and

x. If the project involves diversion of forest land for non-forest purposes, clearance as required under the Forest (Conservation) Act, 1980 shall be obtained. The requirements of other Central and State laws as applicable to the project shall be met with.

xi. Approval of the State/Union Territory Tourism Department shall be obtained.

7(2) In ecologically sensitive areas (such as marine parks, mangroves, coral reefs, breeding and spawning grounds of fish, wildlife habitats and such other areas as may notified by the Central/State Government/Union Territories) construction of beach resorts/hotels shall not be permitted.

CHAPTER 2
PROJECT DESCRIPTION

2

This chapter gives an inside picture of the project, the type and size of the buildings being constructed, the investment incurred

2.0 PROJECT DESCRIPTION:

To meet the growing needs of the tourists **M/S. Yaganti Estates** proposes to develop **Golden Sands Beach Front Resorts** to give imputes to the beach tourism in this area. While the ethnic resort would facilitate to the needs of tourists during their temporary stay, the activity will provide infrastructure for local activities. The ethnic food restaurant which will be developed as part of proposed beach resort will create demand for local produce. Creation of traditional house in a village ambience is proposed to highlight the benefits of joint family system. A separate youth activity centre is proposed to motivate the youth to adopt good old practices, such as organic farming, dairying and other eco-friendly activities.

The proposed eco-friendly activities will comply with all the regulations. The following components are proposed in this project:

a) Club House
b) Type – 1 Cottage
c) Type – 2 Cottage
d) Type – 3 Cottage

2.1 LOCATION & ACCESS TO THE SITE:

Golden Sands Beach Front Resorts is proposed at an ideal location, the area is free from pollution. which is the closest place to the new capital region of the AP State. The area is covered with virgin beaches covered with golden sand with gradual elevation of 6m (20ft). The beach resort is well connected with Railways and Roadways. Good transport facilities are available within 8km from the project site. 10 km from Bapatla railway station this is a municipal town in Guntur District. The proposed area is well connected to Vijayawada and Guntur, where capital of residuary state of AP is proposed to be located. The proposed capital "AMARAVATHI" is located at a distance of 75 Km

Golden Sands Beach Front Resorts is proposed adjacent to the coast line at adavi village, Bapatla (M), Gunter District.

The details of the project location are as follows:

Criteria	Details
Latitude and Longitude	15°48'48" North Latitude 80°26'41" East Longitude
CRZ Classification	CRZ – III
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Nearest Highway	Chennai to Vijayawada National highway (NH-214 A) at a distance of 7km
Nearest railway station	Chirala Railway Station is at a distance of 10 Km on Howrah –Chennai – New

Criteria	Details
	Delhi Railway Lines.
Nearest Airport	Gannavaram at a distance of 115 Km
Nearest Habitat	Pandurangapuram , adavi – 0.5 Km
Nearest town/city	Chirala - 10km Bapatla - 10km Guntur City - 50 km
Water bodies	Bay of Bengal sea
Location advantage	The Natural Profile of the beach
Seismicity	The study area falls under seismic Zone -2

2.2 TOPOGRAPHY / CONTOUR LAYER AROUND 100 METERS OF THE PROPOSED CONSTRUCTION SITE

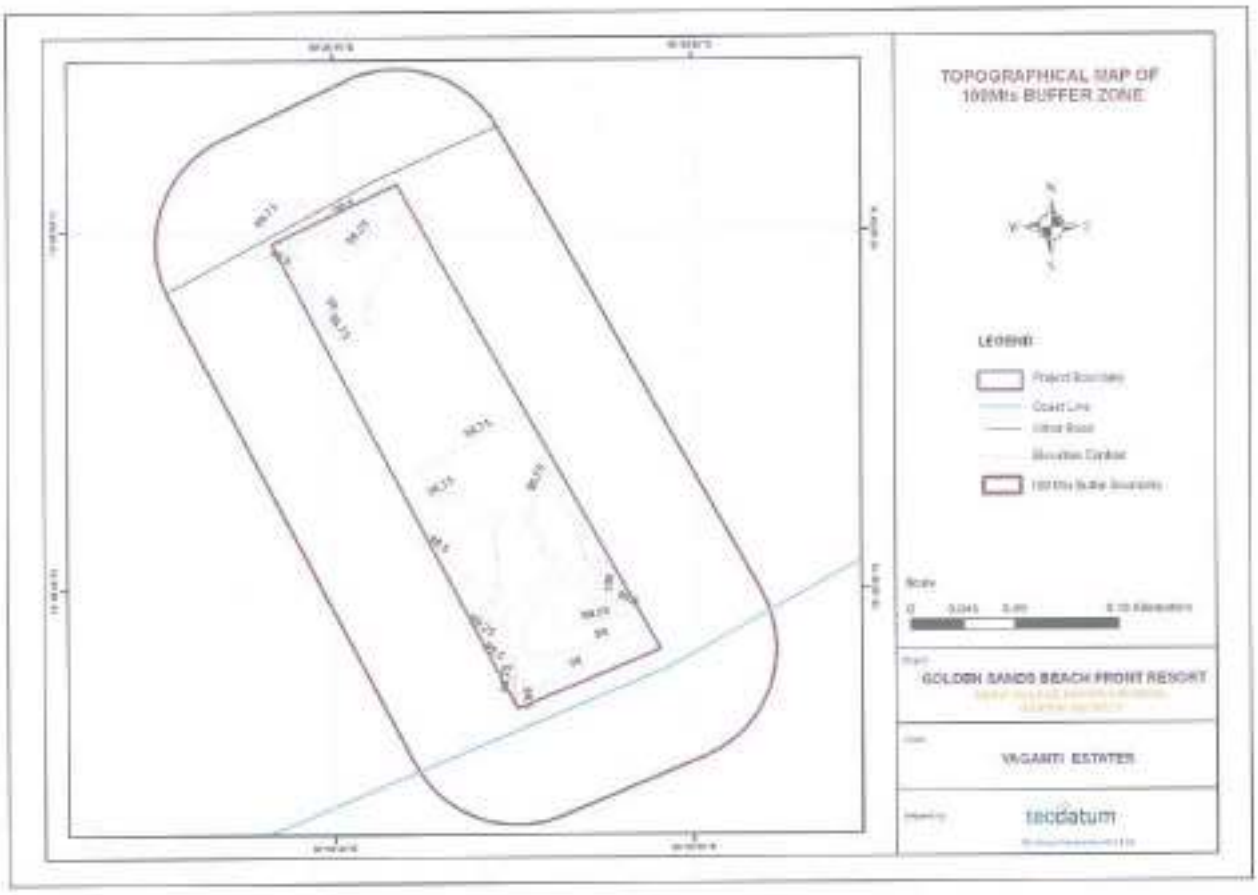


Figure 2.1 Contour map of the proposed resorts

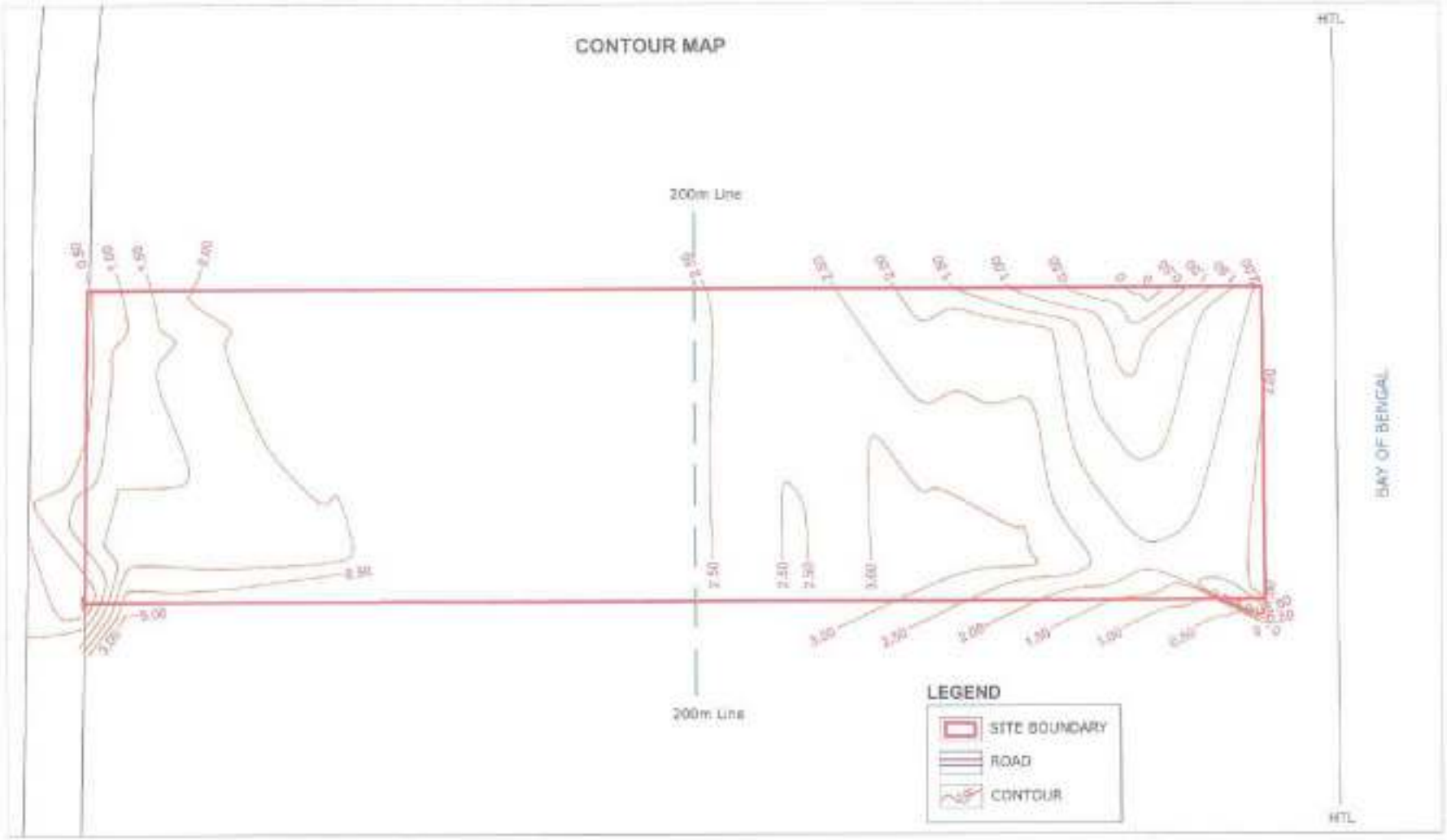


Figure 2.2 Layout plan of proposed resorts

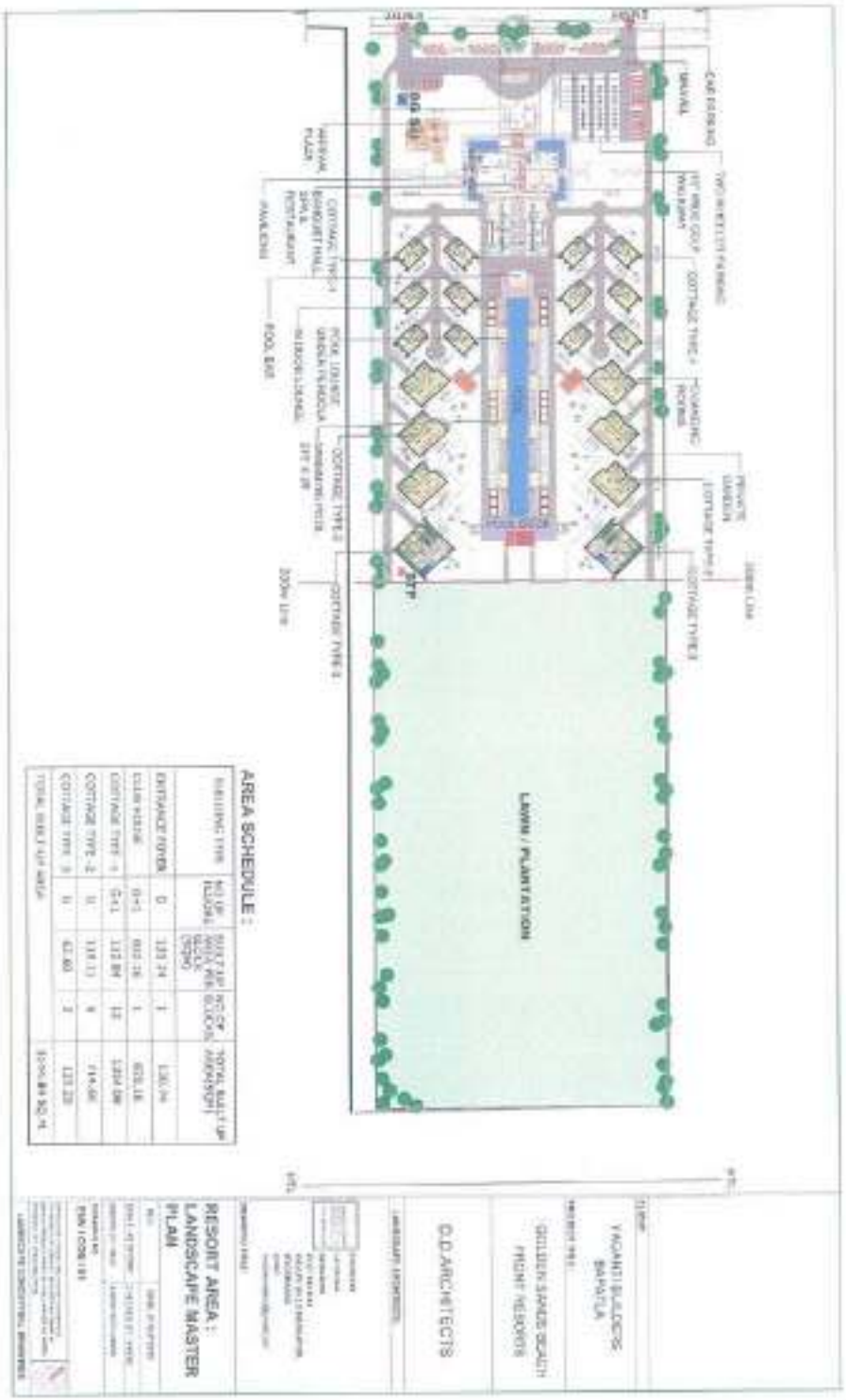


Figure 2.3 Topographical map of 10Km Buffer Zone

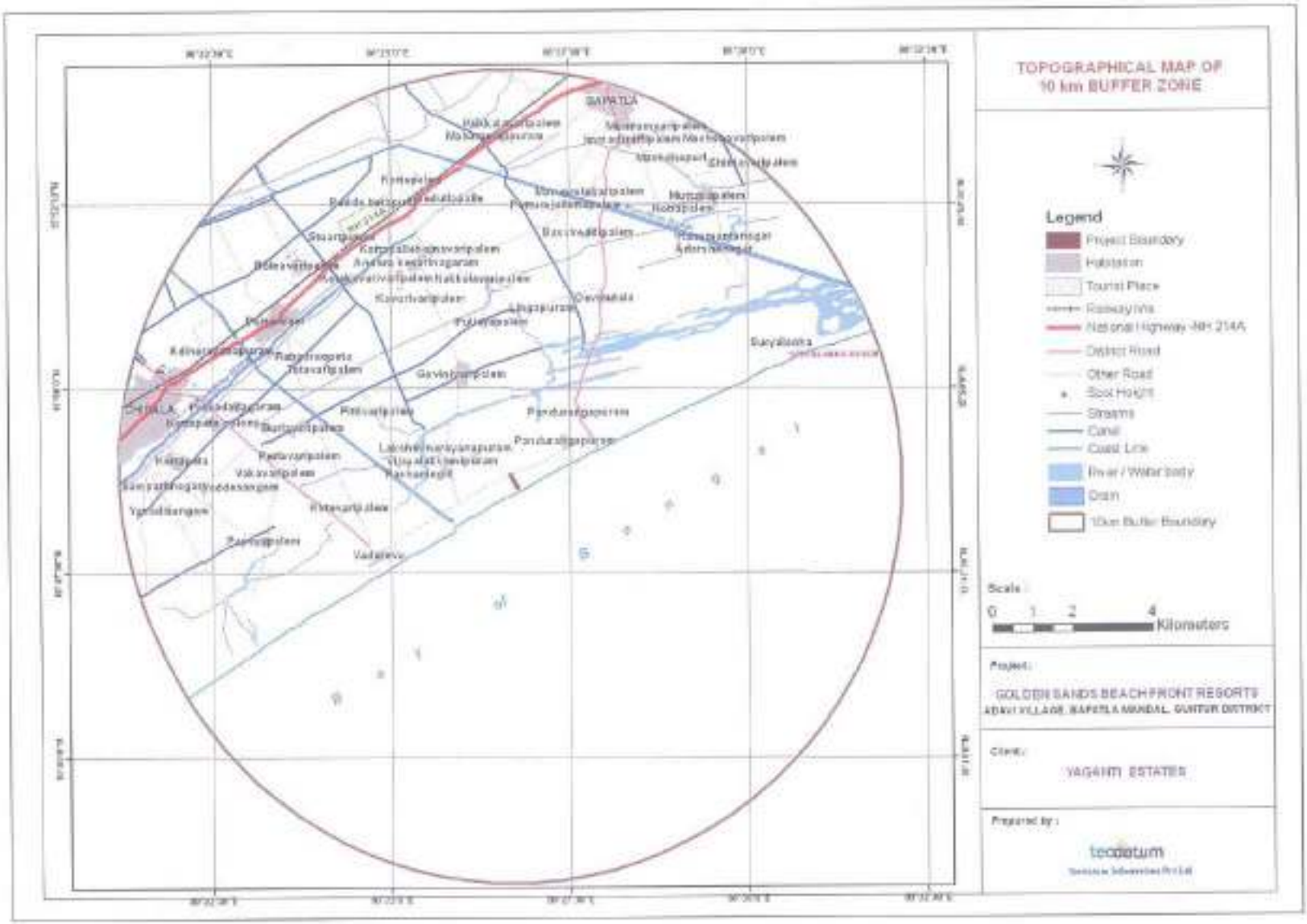


Table 2.1 Built up area statement for Proposed Resorts

Building type	No of floors	Built-up area sqm	No of blocks	Total built up
Entrance Foyer	G	130.74	1	130.74
Club house	G+1	820.16	1	820.16
Cottage type -1	G+1	112.84	12	1354.08
Cottage type -2	G	119.11	6	714.66
Cottage type -3	G	62.60	2	125.20
			TOTAL BUILT -UP AREA	3144.84

Table 2.2 Land use statement for Resorts

S.No	Description	Area(m^2)
1	Ground Coverage	2065.51
2	Parking	1071.27
3	Recreation, greenbelt area, roads and open spaces	40367.10
	Total	**43503.88**

2.3 Infrastructure Requirement

The infrastructure requirement for the proposed construction project can be broadly classified into the following four heads:

- Basic Infrastructure
- Environmental Infrastructure
- Other Infrastructure – Project Specific and
- Social Infrastructure

The basic infrastructure covers the main requirements like

- Construction material (steel, cement, bricks, etc)
- Water
- Power
- Roads, Street lights
- Sewerage system

The environment infrastructure covers:

- Solid waste collection & disposal
- Effluent collection & disposal
- Air pollution – from DG sets and their correction

ISI branded items are proposed to be used as far as possible

2.4. BASIC INFRASTRUCTURE

2.4.1. Construction Material

The major material required for the construction projects are steel, cement, bricks, metal, flooring tiles/stones, wood, sanitary and hardware items, electrical fittings, water, etc. All the items to be used in the proposed project shall be of good quality as much as possible ISI brand items will be used by procuring directly from the dealers or manufacturers. Local items include sand, metal, bricks, etc will be procured through standard suppliers in the market. Some of the important raw material and machinery required for the proposed project during the construction activity are listed in **Table 2.3** and **Table 2.4** respectively.

Table 2.3 Details of the Important Raw Material Required

Sl No.	Material	Consumption	Unit
1	Cement	4000	m^3
2	Sand	10000	m^3
3	Bricks	400000	Nos
4	Steel	1000	Tonnes

Required Quantity of water supply will be obtained from the near by Gram Panchayath supply system

i) Source of water to meet the required demand:

Water supply is augmented from nearby Panchayath supply by way of payment for water supply charges

ii) Water Requirement:

The total water requirement of the project after completion will be about 27.3 KLD (Fresh water:14.1 KLD +Treated water: 13.2 KLD) The total water (peak demand) required for post construction is furnished in **Table 2.5.**

Table 2.5 Water Requirement in KLD for the proposed Resort

Details	Water requirement				
	Population	Area in Sqm	Capacity	Demand (Liters)	Total Water Requirement (KLD)
Domestic	62			180/Person	11
Club House	60			70/Person	4.2
Staff	20			45/person	0.9
Greenbelt		26992		0.42 l/sqm	11
DG set cooling			250 KVA	0.9/KVA/Hr	0.2
				Total	**27.3**

Details	Fresh	Treated	Total	Wastewater
Domestic	7.7	3.3	11	9.9
Club House	2.94	1.26	4.2	3.78
Staff	0.63	0.27	0.9	0.81
Greenbelt	2.83	8.17	11	--

DG Set Cooling	–	0.2	0.2	–
Total	14.1	13.2	27.3	14.49

Table No 3.1.2
Wastewater Calculations

Domestic Water Requirement	16.1 KLD
• Potable	11.27 KLD
• Flushing	4.83 KLD
Wastewater Generated (80% potable + 100% flushing)	13.85 KLD
Treated Water	13.2 KLD
STP Capacity	20 KLD

Water Balance

Input	KLD	Output	KLD
Domestic water supply from Ground Water	11.27	Consumption	11.27
Flushing	4.83	Recycled Water (Green Belt + Flushing + DG Set Cooling)	13.2
Greenbelt & DG Cooling	11.2	Losses (Utility + Treated)	2.83
Total	27.3		27.3

iii) STORM WATER

The storm water or the rain water in and around the site is mostly for 3 months duration from July month to September month of the year. The peak rainfall is approximately 43.00 mm per hour. The rain water will be collected and the drains are connected to the Rain Water harvesting pits for percolation. The excess water will be channelised and collected for storage. In case of excess water available in storm conditions, the water will be channelised into the sea.

iv) Storm water drainage system:

Rain water falling from the roofs, paved areas and other open areas will be canalized through the storm water drainage system formed along the road as per the gradient conditions. It is proposed to construct rain water harvesting pits at various points all along the storm water and drain. The internal driveways will be provided with storm water drains, which at intervals are intercepted by building perimeter drains.

Care will be exercised to utilize the drained water to provide ground water replenishment, by means of providing 15 – 20 numbers of Rain water Harvesting Pits at designated locations and also making the storm water drains as Rain water harvesting trenches wherever the ground water conditions permits. The most of the surface run-off water is intercepted all along the length of the drain for ground water recharging.

v) Rain water harvesting:

Rain water harvesting pits will be provided at respective buildings sites and all the rain from roof will be diverted to rain water harvesting pits. An efficient storm water drain network will be designed to see that no rain water gets accumulated in the office resorts.

2.5. POWER

2.5.1 Sources of power and power supply:

The total demand load of the project is about 400 KW. The power is sourced from the APSPDCL through a transformer. The power requirement will be met from the APSPDCL Substation. The underground electrical lines will be laid to meet the requirement of power.

The 11 KV/ 433 V Transformers connected by 11 KV ring main units at different locations. Secondary each transformer is connected to power control centre from which pillar located at different groups of houses individual houses/ apartments are fed through energy meters from these feeder pillars. Standby power supply by installation of diesel generators will be installed to meet minimum requirement

2.5.1.1. Power distribution system:

The distribution system details are as follows:

1. Bapatla is connected to APSPDCL 132/33 KV substation with an outdoor switchyard of 132/11 KV, 216/20 MVA transformers
2. APSPDCL the distribution of energy supply the power at 11 kv
3. The power from this switchyard would be distributed at all 11 KV to various load centers

2.5.2.Alternate supply for essential services and power backup:

For emergency purposes back up power is proposed by using DG sets of 250 KVA capacity

The power supply from the DG sets will be provided for common areas lighting / water pumps/ STP etc The noise levels measured at a distance of about 1m from the DG set is about 75 dB(A) and for this an acoustic treatment designed for about 25 dB(A) insertion loss is being planned. An acoustic enclosure will be provided for all the DG sets.

A separate enclosure/ building for the DG sets will be provided, which in marked clearly on the layout plan. These DG Sets will be provided with separate acoustic enclosures to reduce the noise pollution as per Pollution Control Board norms.

2.6. TRANSPORTATION AND ROADS:

Transportation is a basic infrastructure, which is usually a pre-requisite for economic growth of any region. In addition to Main sector road as developed by Government, it is proposed to lay well planed roads. Street lights will be provided all along the roads and junctions. BT roads shall be laid along the perimeter and minor roads connecting all the buildings.

2.6.1. Parking

Parking is a major facility in a multi-storied/ commercial development project. About 20 PCUs from resorts are envisaged to be added to the existing traffic once the construction activity is completed and the buildings are occupied. **M/s Golden Sands Beach Front Resorts** will provide 40 car parking slots and 50 two wheeler parking slots with a total parking area of 1071.27 sq m.

2.7 MAN POWER

The maximum peak man power required for the development of proposed project during construction phase is 20 persons. For post construction purposes for day to day maintenance works around 20 persons will be required. The duration of the project is about 24 months.

2.8 ENVIRONMENTAL INFRASTRUCTURE

2.8.1. Liquid waste collection & disposal

The domestic wastewater will be collected through vertical pipe in building and conveyed to disposal point by underground pipe drain. M/s **Golden Sands Beach Front Resorts** shall provide a waste water treatment - sewage treatment plant to treat the

domestic sewage generated from the buildings and is proposing to use the treated water for domestic and gardening applications. The total wastewater generated from the complex is about 14.49 m^3/day.

Necessary precautions will be taken to see that no rain water enters into the sewerage system. A detailed storm water drainage plan along with the rain water harvesting plan is given in the subsequent chapters.

2.8.2. Solid waste collection & disposal

The present section presents an assessment of solid waste impacts associated with the construction (qualitative) and operation (quantitative) of the recreational, commercial and residential development proposed at proposed project. Worst case impacts (based on preliminary preferred development option) on the representative receivers have been assessed. Three major sources of solid waste generation routes have been identified namely construction waste and residential wastes. The sources of solid waste generation at the different phases of the development are categorized as follows.

i. **Construction phase:** Construction and demolition waste is generated during the construction activity. Activities such as site clearance, site formation, building works, infrastructure provision and any other infrastructure activities. It consists mostly of inert and non-biodegradable materials such as concrete, plaster, metal, wood, plastics etc.

ii. **Operational phase:**
During the operation of the resort the type of waste generated will be mainly domestic in nature which mostly consists of biodegradable non-biodegradable waste.

Solid waste assessment criteria:

The principal guideline for the identification and quantification of solid waste from the construction and operation of the project is the studies carried out by NEERI. National Environmental Engineering Research Institute has carried out studies on characterization of solid waste from 43

cities during 1970 – 1994. the average characteristics are used for the waste load calculation.

While per capita waste generation is static, which is necessary for indicating trends in consumption and production, the total weight and volumes of waste generated by the community served by the management are of greater importance in planning and design. The quantity of waste produced is lesser than that in developed countries and is normally observed to vary between 0.2 – 0.6 kg/capita/day.

Construction wastes:

This category of waste is complex due to different types of building materials being used in general may comprise the following.

i) cement concrete
ii) bricks
iii) cement plaster
iv) steel (from RCC, door/ window frames, roofing support, railings of staircase etc)
v) rubble
vi) stone (Marble, granite, sand stone)
vii) timber/wood

Besides above major components the minor components namely conduits, pipes, electrical fixtures, panels and others also constitute the solid waste. Being predominantly inert in nature, construction and demolition waste does not create chemical or biochemical pollution. Hence maximum effort should be made to reuse and recycle them. The material can be used for filing/ leveling of low-laying areas.

These wastes are best stored at source i.e., at the point of generation. If they are scattered around or thrown on the road, they not only cause obstruction to traffic but also to the workload of the local body. All attempts will be made to stick to the following measures.

1) All construction waste will be stored within the site itself. A proper screen will be provided so that the waste does not get scattered.
2) Attempts will be made to keep the waste segregated into different heaps as far as possible so that their further gradation and reuse is facilitated.
3) Materials, which can be reused for purpose of construction, leveling, making roads/ pavement will also be kept in separate heaps from those which are to be sold or land filled.
4) The local body or a private company may be arranged to provide appropriate number of skip containers/ trolleys on hire.

The use of these materials basically depends on their separation and conditions of the separated material. A majority of these materials are durable and therefore, have a high potential for reuse. It would, however, be desirable to have quality standards for the recycled materials. Construction waste can be used in the following manner.

i) Reuse of bricks, stone slabs, timber, and conduits, piping railings etc to the extent possible and depending upon their conditions.
ii) Sale/ auction of materials which cannot be used at the site due to design constraint
iii) Plastics, broken glass, scrap metal etc can be used for recycling industries.
iv) Rubble/ brick bats can be used for building activity, such as leveling, under coat of lanes where the traffic does not constitute heavy moving loads.
v) Larger unusable pieces can be sent for filing up low laying areas.
vi) Fine material such as sand, dust, etc can be used as cover material

Solid waste generation during Operational of the project

Domestic waste will be generated at the proposed project The people visiting resort may discard packing materials, spoiled and half eaten foods and almost every member visiting the activities may create waste one time or other.

For the purpose of project identification, where an indication of service level must be estimated and data from the project preparation stage has

not yet been developed, the following municipal refuse generation rates are used.

Residential refuse : 0.3 – 0.6 Kg/cap/day
Commercial refuse. : 0.1 – 0.2 Kg/cap/day
Street Sweepings : 0.05 – 0.2 Kg/cap/day
Institutional refuse : 0.05 – 0.2 Kg/cap/day

It may be noted that the prediction of solid waste generated is for the dry season only, during wet season the quantities of solid waste may increase due to wet conditions. Quantities of solid waste may also increase during cultural and religious festival. Climate affects the generation of vegetative waste or plant growth responds to favorable temperatures and soil to autumn while in tropical areas, where temperatures are always favorable, maximum growth is in the season of rainfall.

Expected solid waste generation at proposed project:

Expected solid waste generation due to the proposed activities at proposed project is due to operation of residential, commercial and recreation centers. The expected total solid waste generated from the site will be 42.8 kg/day taking the average generation rates given above. The expected solid waste generation due to proposed project is shown below.

Expected solid waste generation due to proposed project

Particulars	No of persons	Quantity (Kg/ day)	Remarks
Cottage Type	62	24.8	0.4 kg/person/day
Club House	60	15	0.25 kg/person/day
Staff	20	3	0.15 kg/person/day
Total	**142**	**42.8**	
	%		**After segregation at site**
Recyclable	10	4.2	**Sold to authorized dealers**
Biodegradable	60	25.68	**Used as Manure**
Inert material	30	12.8	**Sent to municipal bin**

Solid waste generated due to the proposed project will be mostly domestic in nature so the recyclable waste will be sold to Authorized dealers. Biodegradable waste will be used as manure whereas the inert material will be send to municipal bin.

2.9. OTHER INFRASTRUCTURE

In addition to the above the following infrastructure will be developed side by side with project depending upon the requirement.

- Communication facilities.
- Security etc.
- First aid centre
- Parking bays
- Tot lots and open spaces
- Transportation facility & Food courts

CHAPTER 3

ENVIRONMENTAL MANAGEMENT PLAN

3

The potential impacts on the environment from the project are identified based on the nature of the various activities associated with the operation and on the status of the environmental quality at the proposed area.

3.1 INTRODUCTION

M/S. Yaganti Estates is proposes a Golden Sands Beach Front Resorts with a built up area of 3144.84 Sq.m in Land area of 10.75 acres at Survey No.517 of Adavi Village, Bapatla Mandal of Guntur District with full-fledged landscape and green belt. The various details of the proposed project as follows in **Table 3.1**.

Table 3.1
Project Details

Building type	No of floors	Built-up area sqm	No of blocks	Total built up
Entrance Foyer	G	130.74	1	130.74
Club house	G+1	820.16	1	820.16
Cottage type -1	G+1	112.84	12	1354.08
Cottage type -2	G	119.11	6	714.66
Cottage type -3	G	62.60	2	125.20
TOTAL BUILT -UP AREA				**3144.84 Sq.m**

All developmental activities will bring some impacts associated with its origin, which can be broadly classified as reversible, irreversible, long and short-term impacts. In this report an endeavour has been made to identify various Environmental Impacts associated with the proposed project both during construction and use of the premises and other activities wherein, there may be a chance of pollution.

3.2 Potential Impacts

The potential impacts on the environment from the proposed project are identified based on the nature of the various activities associated not only with the project implementation and operation, but also on the current status of the environmental quality at the project site.

All the potentially significant environmental impacts from the project are grouped as below.

Air Environment

- Impacts on ambient air quality
- Impacts on ambient odour
- Impacts on ambient noise

Water Environment

- Impacts on surface water quality
- Impacts on ground water

Land Environment

- Impacts on land use
- Impacts on agriculture

Socio Economics

- Impacts on infrastructure
- Impacts on employment

Indirect Impacts

- Impacts on public health and safety
- Impacts on cultural resources
- Impacts on aesthetics

3.3 Construction Related Impacts and its Management Measures

As the proposed project is Greenfield project, construction is the primary activity and consequent impact on environment is summarized

below. The most likely changes, if any, on the environment during the construction phase of the proposed project are as given under:

a) Air Environment

Construction activities, excavation of earth and filling etc. Require movement of vehicles which intimately contributes to the increased SPM concentration of particulate matter in the air temporarily. In order to circumvent this, the road surfaces near the proposed site will be sprinkled with water to reduce dust generation. Ambient air levels of SO_2 and NO_x are likewise expected to increase due to operation of construction equipment's such as generators, bulldozers, pay loaders, trucks, concrete mixtures, etc. However this will be temporary in nature only during construction period.

b) Noise Environment

Generation of noise is due to operation of heavy equipment's and increased frequency of vehicular traffic in the area. Vibration levels will also increase due to these activities. However, these impacts are short term, intermittent and temporary in nature. To control noise during construction noise obstruction barriers in form sheets will be erected around the project site, and all noise generating equipment will be placed in closed locations, and regular maintenance schedule will be maintained. All the noise generating equipment will be used during day time only

c) Land Environment

Generally construction activities will attract sizeable labourers and the influx of population is also likely to be associated with construction of temporary habitation. The construction activities will result in loss of vegetation and topsoil to some extent in the plant as well as in the village areas. However in present case it will be quite minimal as most of the construction labourers are from local area . Apart from much localized construction impacts at the project site, no significant adverse impact on land in the surrounding area is anticipated.

d) Water Environment

The water required during construction period will be drawn till a new pipeline is laid to the point or procured by tankers from local suppliers. The wastewater generated will be treated in septic tank followed by soak pit. Proper care will be taken to avoid the mixing of the untreated sewage water joining the sea.

3.4 Operation Related Impacts and its Management Measures

3.4.1 Air Environment

The main sources of pollution envisaged are:

- Point source emissions – DG sets
- Non Point source emissions – Vehicular traffic

As the proposed project being a construction project for resorts, the main point source emissions are from operation of DG sets during interruption of power. The details of the air pollution expected from the DG set stacks are given **Table 3.2**. The stack proposed for the DG set meets the MoEF/CPCB norms.

Table 3.2
Stack Details and Emissions

DG Set Capacity	250 KVA
No of DG sets	1
Stack Height formula	Ht of Building + $0.2\sqrt{KVA}$
Height of the stack	9 m (Minimum height of the stack should be atleast one meter higher than nearest building)
Fuel (Diesel)	15 L/hour

Source	Height (m)	Dia. (m)	Temp. in ^{o}K	Gas Vel. (m/sec)	SO_2 gm/sec	NO_x gm/sec
250 KVA	9	0.25	423	15	0.1	0.05

a) Air Pollution Control

The mitigation measures envisaged to control air pollution are listed in Table 3.3.

Table 3.3
Air Pollution Control Measures

Sources	Air pollutant	Control
DG set	SO_2, NO_x	Adequate stack height of 9m, acoustic enclosure to prevent noise generation during the operation
Vehicles	PM_{10},$PM_{2.5}$, SO_2, NO_x, CO, HC	Regular maintenance of internal roads with sprinkling of water mechanically and manual system to reduce the fugitive dust.

The air pollution control measures proposed by project proponents are as follows:

- Emissions are controlled by the installation of stack with height ranging from 9m and above as stipulated by MoEF & CC.

- Suspended Particulate Matter will be controlled by regular maintenance of internal roads and sprinkling of water. Extensive green belt with local evergreen species will be developed and all open places, where plants cannot be grown will be covered by lawns.

3.4.2 Noise Environment

The sound pressure level generated by noise sources decreases with increasing distance from the source due to wave divergence.

An additional decrease in noise intensity level with distance from the source is expected, due to atmospheric effect or its interaction with objects in the transmission path.

For hemispherical sound wave propagation thorough homogeneous loss free medium, cone can estimate noise levels at various locations, due to different sources using model based of first principle as per the following equation:

$Lp_2 = Lp_1 - 20 \text{ Log } (r_2/r_1) - Ae_{1,2}$ .... (1)

Where Lp_1 and Lp_2 are sound pressure levels at points located at distances r_1 and r_2, from the source and $Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all the sources can then be determined at various locations by logarithmic addition.

In the first approximation one can assume that for all general population in the villages, every noise source in the plant is a point source. The average equivalent sound power level of such a point source can be estimated for different distances and directions from hypothetical source by applying equation:

$L_p = L_w - 20 \text{ Log } r - A_e - 8$ .... (2)

Where L_w is the sound power level of the source, L_p is the sound pressure level at a distance of r and A_e is environmental attenuation factor. A combined noise level Lp(Total) of all the sources at a particulate place is given by:

$L_p(\text{Total}) = 10 \text{ Log } (10^{(Lp_1/10)} + 10^{(Lp_2/10)} + \ldots\ldots)$ ..... (3)

Important noise sources and noise levels from the proposed project site are:

- Generators - 85 dB(A)
- Pumps - 75 dB(A)

DG set is only likely to be used during power failure and shall be used as emergency power only. Predictions have been made taking into account DG sets are in operation and thus reflecting the worst case scenario. Noise level at a distance of 0.25 km radius is predicted less

than 50 dBA which is well within the Ambient Noise Standards of CPCB / MOEF.

a) Noise Control Measure

- Adequate protective measures in the form of ear muffs/ earplugs to the workers working in high noise areas would be provided.
- The proposed greenbelt within the project will attenuate the noise generated from the respective sources.
- The green belt planted around the perimeter of the proposed project and along the corridors of the internal roads will further soothe the noise emitted.
- The noise levels in the proposed project will be monitored periodically and if necessary corrective action will be taken.
- All necessary modern noise reducing gadgets like acoustic silencers, anti-vibration pads, closed room enclosures will be provided.

The proponent would monitor the noise levels within and outside the proposed project on a regular basis to ascertain that the National Standards for air quality with respect to noise levels are strictly adhered to. Corrective action would be initiated immediately in-case if any deviations are found during the course of monitoring.

3.4.3 Water Environment

The source of water for the proposed project is nearby gram panchayat . The details the water required during construction period is assumed as peak labor to be employed as 20 and some amount for construction needs. Since drip and sprinklers with timers and rain sensors are used for green belt development, the water requirement for greenbelt will be halved. The details of the water required during operation period is given in **Table 3.4.**

The wastewater generated will be collected and treated in Sewage Treatment Plant (STP) of capacity 20 m^3/day. The wastewater characteristics before and after treatment are given in **Table 3.5.**

Table 3.5
Wastewater Characteristics

S. No	Parameters	Units	Before Treatment	After Treatment
1	pH	-	6.5 - 8.5	7.0 – 8.5
2	BOD	Mg / l	150-175	<30
3	COD	Mg / l	250-300	-
4	TSS	Mg / l	100-150	<100
5	Oil & Grease	Mg / l	10 – 20	<10

a) Prediction of Impacts on Water Environment

Impacts on water environment in the project impact zone would be classified into 2 groups viz. the sea impacts and ground water impacts. Bay of Bengal is in the immediate vicinity of project and the project does not draw water from the sea or discharge on it, except treated water used for greenbelt; hence no impacts on sea water quality are felt.

Groundwater in the project area and study area is available at a depth of 0.89 m below ground level during post monsoon season and 3.21 m below the ground level during pre monsoon season. The major water water is reused for greenbelt development hence the impacts on the ground water are minimal.

Based on the quantity & quality of wastewater & also to substantiate the State Pollution Control Board requirements, it is proposed to treat the wastewater under biological process.

The design of a sewage treatment work will be dependent on the quality and quantity of the waste to be treated. The following are some of the important characteristics of domestic sewage:

Organic Matter: Organic matter is the most important polluting constituent of sewage in respect of its effects on receiving water bodies. It is mainly composed of proteins, carbohydrates and fats. Organic matter is commonly measured in terms of BOD and COD. If untreated

sewage is discharged into natural water bodies, biological stabilization of organic matter leads to depletion of oxygen in water bodies.

Nitrogen & Phosphorus: Nitrogen and phosphorus are also very important polluting constituents of sewage because of their role in algal growth and eutrophication of water bodies. Nitrogen is present in fresh domestic sewage in the form of proteinaceous matter urea (i.e. organic nitrogen). Its decomposition by bacteria readily changes it into ammonia. In aerobic environments ammonia nitrogen is oxidized into nitrites and nitrates. Nitrates can be used by algae to form plant proteins. Nitrogen is commonly measured as TKN (organic + ammonical) as sewage characteristics. Nitrate and nitrite forms of nitrogen are also measured when quality of receiving/affected water (streams, underground water) is monitored.

Phosphorus is usually present in orthophosphate, polyphosphate and organic phosphate forms. Organically bound phosphorus is of little importance in domestic sewage whereas polyphosphate forms undergo hydrolysis to revert into the orthophosphate forms, although this conversion is quite slow.

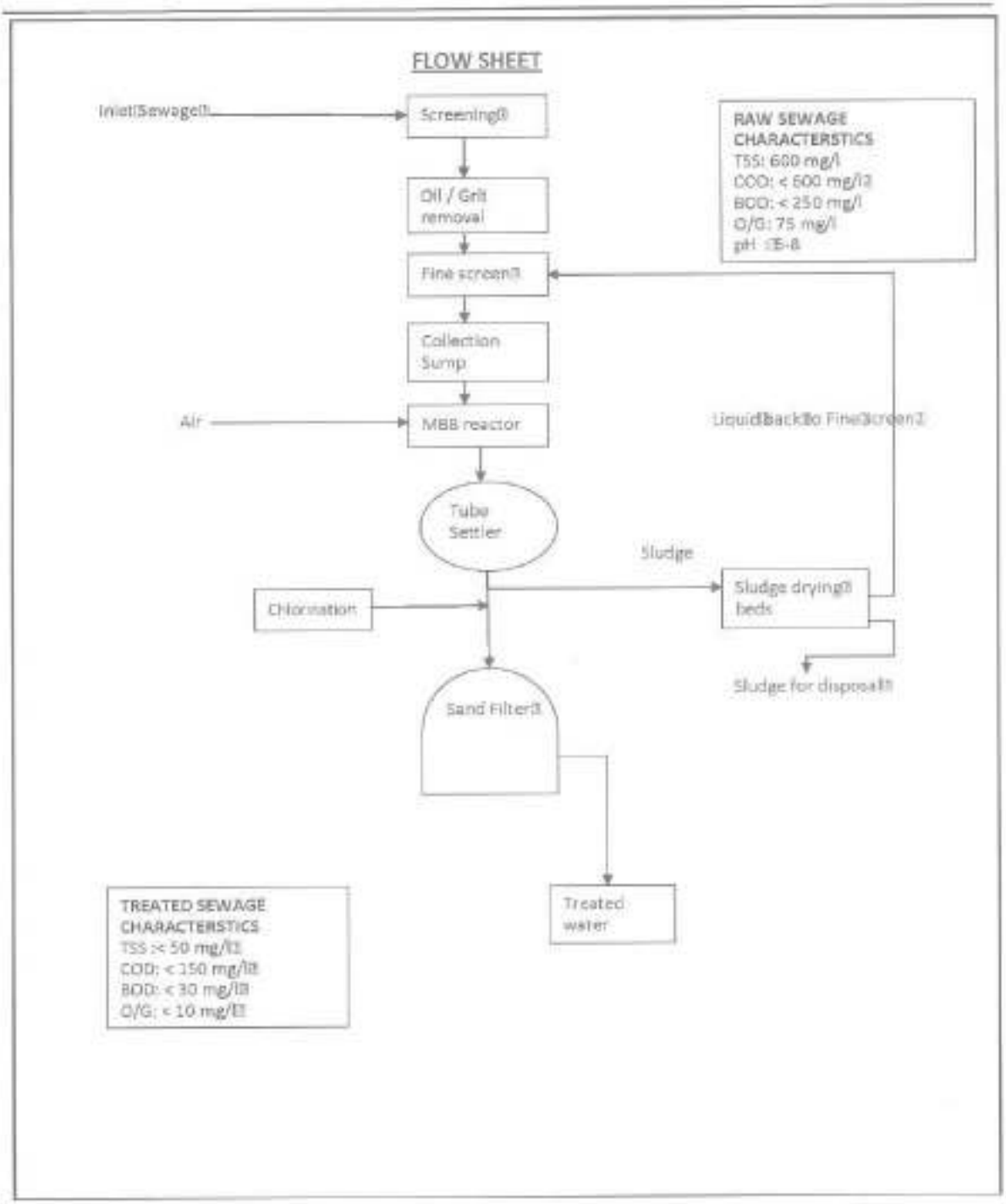
Suspended Solids : Suspended solids represent that fraction of total solids in any wastewater that can be settled gravitationally. Suspended solids can further be classified into organic (volatile) and inorganic (fixed) fractions. Organic matter is present in the form of either settleable form or non-settleable (dissolved or colloidal) form. If the organic fraction of suspended solids present in sewage is discharged untreated into streams, it leads to sludge deposits and subsequently to anaerobic conditions.

Dissolved Oxygen : Dissolved oxygen, as such, does not have any significance as a sewage characteristics. However, it is the most important pollution assessment parameter of the receiving water bodies. Stabilization of organic matter, when discharged untreated or partially treated in receiving waters, leads to depletion of their dissolved oxygen. Nutrients (nitrogen and phosphorus) addition due to discharge of untreated or treated sewage may lead to algal growth in streams. During day time, algae undergo photosynthesis process and the oxygen released by this process is much more than their respiration

requirements resulting in a net addition of dissolved oxygen to water. However, during night time photosynthesis process is stopped whereas respiration requirement continues. This leads to depletion of dissolved oxygen in waters. Thus, it is observed that all the polluting constituents of sewage explained above have their direct or indirect effect on dissolved oxygen of receiving waters.

Bacterial Parameter (Fecal Coli form) : Although organic matter, in dissolved as well as suspended form, is the most important parameter of sewage as far as ecology of receiving water bodies is concerned, Bacterial parameters, such as Fecal Coli form (FC), which serve as indicators of fecal pollution are also very important when human health is the prime concern. Sewage is discharged either into a water body, which is used for various purposes such as source of drinking water supply and bathing or discharged on land for irrigation, where human beings come in contact with it. Population consuming water from such sources which receive sewage discharges and persons involved in agricultural activities where sewage is applied become vulnerable to infection from pathogenic organisms (mainly bacteria and viruses) which are discharged by human beings who are infected with disease or who are carriers of a particular disease. Thus, to check quality of receiving waters for various uses and to assess acceptability of degree of treatment given to sewage, assessment of bacterial quality also becomes important. Because specific identification of pathogenic bacteria is extremely difficult, the coli form group of organisms is used as an indicator of the presence in wastewater of pathogenic organisms. Coli form bacteria are found in intestinal tract of human beings. Each person discharges about 100 to 400 billion coli form bacteria per day. Presence of coli form organisms is taken as an indication of presence of pathogenic organisms and absence of coli form organism is taken as an indication that water is free from disease producing organisms.

A detailed study on the sewage from various sources of study area is to be carried out and hence average characteristics of raw sewage can be obtained to design the treatment system.


FLOW SHEET
Inlet/Sewage
Screening
Oil / Grit removal
Fine screen
Collection Sump
Air
MBB reactor
Tube Settler
Chlorination
Sludge
Sludge drying beds
Sludge for disposal
Sand Filter
Treated water
RAW SEWAGE CHARACTERSTICS
TSS: 600 mg/l
COD: < 600 mg/l
BOD: < 250 mg/l
O/G: 75 mg/l
pH : 6-8
TREATED SEWAGE CHARACTERSTICS
TSS :< 50 mg/l
COD: < 150 mg/l
BOD: < 30 mg/l
O/G: < 10 mg/l

Process Description:

Screening:

Fine suspended particles present in the raw sewage are removed by providing screen chamber with bar rack mechanical Screens operated manually. Screening is done to retain the large, floating matter before collection in the collection tank. The collected screenings are disposed off manually.

Oil & Grit Removal System:

Oil & Grit removal shall be effected by velocity-controlled grit channel with manual removal of grit and the unit shall be designed and constructed for the full design capacity.

Collection Sump

The collection tank is designed for a retention time of 5 hrs. The characteristics of the sewage gets equalised in the collection tank before pumping to the aeration tank.

Moving Bed Bio Reactor

The base scheme comprising screening, equalization, biological treatment, separation and disinfection will be common to all the plants. The BOD and SS of the treated sewage at this stage will be 20 & 100 mg/1 respectively. This will meet PCB requirements of treated sewage for disposal. Flocculants may be required before the separation unit to enhance the setting characteristics.

For the small capacity it is considered floatation unit for separation instead of setting units as these floatation units compact and efficient.

We have considered that all the plants are for outdoor location and have sized the MBBR tank with a liquid height of 5.5 M. Total height including freeboard will be 6 M. For the smaller systems (0.1 to 0.3

MLD) we have considered 3.5 M liquid depth to have practical working area inside the tank. Aeration grid is specially designed.

Tank heights will be designed to suit layout considerations. The total volume of the tank will remain the same.

Air requirement for the biological stage (MBBR) has been summarized in the enclosed worksheet. A Dissolved Oxygen content of 2 ppm will be maintained in the MBBR tank. This can be monitored either with a handheld DO sensor or an online sensor linked to the blower. The Blower is sized only for the biological chamber.

Sludge from the separation unit will be led into a sludge drying bed. The liquid is put back to fine screen. Sludge after drying will be sent for disposal /reuse as manure.

Tube Settler:

Tube settlers use multiple tubular channels sloped at an angle of 60° and adjacent to each other, which combine to form an increased effective settling area. This provides for a particle settling depth that is significantly less than the settling depth of a conventional clarifier, reducing settling times.

Sludge Removal

The sludge deposited in the tube settler shall be pumped by means of sludge transfer pump to sludge drying beds. The dried sludge is then removed periodically for disposal/reuse as manure.

Chlorination:

Hypochlorite-dosing is provided in the feed line of Clarified Water for purification, bleaching, odour removal and water disinfection. Sodium hypochlorite produces residual disinfectant. It is best to take care of any organics present, in the water and any oxidation of any heavy metal that may be present in the water.

Sand Filter

This comprises off sand as filtering media. Sand is used for removing the suspended particles. This filter is to be backwashed after accumulation of suspended solids.

Sludge drying Bed

The Sludge generated from the clarifier is collected in the Sludge Drying Bed before further safe disposal/Reuse as manure. The leachate liquid is sent to fine screens.

Treated Water:

The treated water is sent for disposal

Civil Units:

S.No	Describtion of Structure	Size	MOC
1	Screen Chamber	0.5m X 0.5m X 0.5 m +1.0m FB	RCC/BW
2	Oil/Grid Chamber	1.5 m X 1.5m X 1.2m + 0.3m FB	RCC/BW
3	Collection Cum Eqt.Tank	4 m X 3m X 3.0m + 0.3m FB	RCC
4	FAB/aeration tank	1.54m X 0.77m X 3.5m + 0.5m FB (+30%)	RCC
5	SDB	15m2	RCC/BW
6	Filter Feed tank	3m X 2m X 2.5 + 0.5m FB	RCC/BW
7	Misc Foundation		RCC

Mechanical Units

S.No	ITEM	DESCRIPTION / CAPACITY	MOC	QTY	UNIT
1	**Screening**				
	Bar Screen	5m3/hr	MSEP	1	NO
2	**Degritting Chamber**				

	Oil Skimmer	5 m3/hr	MSEP	1	NO
3	**Collection/Equalisation Tank**				
	Blower With Motor	25m3/hr @0.35kg/m2	CI	2	Nos
	Diffusers	*6.5 M 3/HR*	EPDM	4	NOS
	Blower Pipeline	100 MM	MS	12	M
	Diffuser Pipeline	63 MM	UPVC	15	M
4	**Fab Feed Pump**				
	Pump	5 M3/HR @ 12 M HEAD	CI/SS	2	NOS
	Motor	1.1 KW @ 2900 RPM	TEFC	2	NOS
	Pressure Gauge With Isolation Valve	0 - 7 KG/CM2		2	NO
	Suction Valve	100 MM	CI	2	NOS
	Discharge Valve	65MM	CI	2	NOS
	Strainer	65MM	SS	2	NOS
	Nrv	65MM	SS	2	NOS
	Suction Pipeline	100MM	UPVC	4	M
	Discharge Pipeline	65 MM	UPVC	5	M
	Fittings			1	LOT
	Puddle Pipes With Flanges	85 MM		2	NOS
5	**Fab System**				
	Fab Media		PVC	2.58	LOT
	Process Blower	35cum/hr@ 0.45ksc			
	Motor For Blower	1450 RPM @ 3.2 KW	CI	2	NOS
	Diffusers	*10M3/HR*	EPDM	6	NOS
	Blower Pipeline	100 MM	MS	12	M
	Diffuser Pipeline	50 MM	UPVC	15	M
	Puddle Pipe & Flanges	25 MM	CI	2	M
	Fittings			1	LOT
6	**Tube Settler**	2.5mx2mx2.5m +0.3 FB	MSEP	1	lot
7	**NaOCl DOSING**				

	SYSTEM				
	Dosing Tank	200 LITRES	LDPE	1	NO
	Dosing Pump	0-10 LPH	PP	2	NOS
	Dosing Pipeline	32 MM		5	M
8	**Filter Feed Pump**				
	Pump	5 M3/HR @ 30 M HEAD	CI/SS	2	NOS
	Motor	2.7KW @ 2900 RPM	TEFC	2	NOS
	Pressure Gauge With Isolation Valve	0 – 7 KG/CM2		2	NO
	Suction Valve	125 MM	CI	2	NOS
	Discharge Valve	85MM	CI	2	NOS
	Strainer	85 MM	SS	2	NOS
	Nrv	85 MM	SS	2	NOS
	Suction Pipeline	125MM	UPVC	4	M
	Discharge Pipeline	85 MM	UPVC	5	M
	Fittings			1	LOT
	Puddle Pipes With Flanges	85 MM		2	NOS
9	**DMF Filter With Media**	0.8m Dia x 1.2 M ht	MSEP	1	No
10	**Sludge Transfer Pump**				
	Pump	0.5 M3/HR @ 30 M HEAD	CI/SS	1	NOS
	Motor	1.2 KW @ 2900 RPM	TEFC	1	NOS
	Pressure Gauge With Isolation Valve	0 - 50 KG/CM2		1	NO
	Suction Valve	125 MM	CI	1	NOS
	Discharge Valve	85MM	CI	1	NOS
	Strainer	85 MM	SS	1	NOS
	NRV	85 MM	SS	1	NOS
	Suction Pipeline	125MM	UPVC	4	M
	Discharge Pipeline	85 MM	UPVC	5	M
	Fittings			1	LOT
	Puddle Pipes With Flanges	85 MM		2	NOS

11	**Piping & Fabrication**				Lot
12	**Instruments**				
	pH Meter			1	NO
	Flow Meter			2	NO

b) Storm Water Management

Based on the rainfall intensity of the plant area, storm water drainage system will be designed. Storm water drainage system consists of well-designed network of open surface drains and rainwater harvesting pits at regular intervals (200 to 300 m) along the drains so that all the storm water is efficiently drained off without any water logging.

c) Rain Water Harvesting System

It is proposed utilize the rainwater by adopting appropriate rain water-harvesting mechanism. Rainwater harvesting is done by the construction of harvesting pits all along the storm water drainage network at a definite pitch. Necessary expert advice will be obtained in this regard. Artificial recharge measures like rain water-harvesting helps in reducing the urban run-off, decrease pollution of ground water and improve the ground water table, which augments the yields of, bore wells.

The rain water collected over the civil structures (main building) will be diverted to rain water harvesting pit.

3.4.4 Solid Waste Management

The solid waste generated during construction phase will be segregated into domestic waste and rubble / construction waste. The domestic waste will be disposed off through the municipal bins / dump area on daily basis, the construction waste will be sold to the contractors for filling of low lying areas. The recyclable material will be sold to registered recyclers.

As the proposed project is a construction project (resorts), the nature of solid waste general nature and biomedical waste. The general nature

waste will be in from stationery in origin, which includes paper, cardboard, packets, files, plastic bags, files, etc will be segregated and sold to local dealers. Apart from this, solid waste from canteen and litter from the green belt are the main constituents of the solid waste will be sent to organic waste converter.

The STP Sludge from the Sewage Treatment Plant would be transferred to filter press and sludge digester. This sludge is used as manure with in the premises.

3.5 Green Belt Area

Green belt development is the most effective in controlling the transfer of sand and reducing the erosion of soil.Trees play vital role in keeping the ground level concentrations in control within the project and its surrounding premises and also in preventing the horizontal dispersion of the pollutants to the surrounding areas. They are very effective in trapping the pollution causing agents viz. dust and gaseous pollutants. They are also considered to be excellent indicators of excessive ground level concentrations. The green belt is being proposed for the following objectives.

- Mitigation of fugitive dust emissions including any odour problems
- Noise pollution control
- Prevention of soil erosion
- Balancing eco environment
- Aesthetics

The development of the green belt in the proposed project. The details of the land utilization pattern is as follows:

The area proposed under green belt cover is 27031.47m^2. It is proposed to cover the boundary area of minimum of 2 m all round the proposed project. Apart from the above plantation in open space in front of the project area, around the boundaries, roadside avenue plantations will also be taken up.

Based on the agro-climatic conditions of the region, location of the proposed project and the physico-bio-chemical properties of the soil strata in addition to the nature of the pollutants and their rate of dispersion, it is proposed to develop greenbelt around the beach resort. Plants suitable for the plantation will be identified from the **Table 3.7.** The Greenbelt /landscape layout of the proposed project is shown as **Figure 3.3.**

a) Design of Green Belt

As far possible the following guidelines will be considered in green belt development.

- ⇨ The spacing between the trees will be maintained slightly less than the normal spaces, so that the trees may grow vertically and slightly increase the effective height of the green belt.
- ⇨ Planting of trees in each row will be in staggered orientation.
- ⇨ Shrubs and trees will be planted in encircling rows around the project site
- ⇨ The short trees (< 10 m height) will be planted in the first two rows (towards plant side) of the green belt. The tall trees (> 10 m height) will be planted in the outer three rows (away from plant side).
- ⇨ High speed cyclonic winds are experienced in this part during the monsoon season, it is proposed to develop shelter belt with casuarina equisetifolia followed by cashew plants to act as soil binders

⇨ *Table 3.7*

Plant Species For Green Belt Development

Botanical name of the plant	Telugu/ Hindi name	Size of the grown up tree	Type and suitable site, where the plants are to be plotted
Acacia auriculaeformis	Vilaiti babool	Medium	Semi-evergreen fragrant white flowers suitable in green belts and on road sides
Adina corodifolia	Pasupukadamba / Bandaru	Large	Deciduous, a light demander, suitable on open areas and near flares
Aegle marmelos	Bilvamu	Medium	Deciduous, good for green belts near temples.
Anogeissus latifolia	Chirimanu	Medium	Deciduous, Suitable for green belts
Artabotrys hexapetaius	Monaranjani	Small	Evergreen shrub with fragrant flowers good for gardens and inside boundary wall and long canals
Averrhoa carambola	Kamaarakkarmel	Small	Semi evergreen, good in narrow green belts along the ash pond
Azadirachta indica	Vepa	Large	Evergreen, suitable in green belts along the boundary and outside office & sensitive buildings like hospitals.
Bauhinia variegate	Devakanchanamu	Medium	Deciduous, good in green belts in garden and as a second row avenue tree
Borassus flabellifer	Taadi	Large	A tall deciduous palm can be used as wind break when of different age.

Boswellia serrata	Phirangi saambraani/ Anduku	Medium	Deciduous suitable on green belt on shallow soils
Bursera serrata	Chitreka	Medium	Evergreen, suitable on shallow soils as a green belt or avenue tree
Butea monosperma	Moduga	Medium	Deciduous for green belt and as a second row avenue tree
Caesalpinia pulcherrima	Pamiditanged u	Small	A large shrub, suitable for gardens outside offices and along channels
Callistemon lanceolatus	Bottle brush	Medium	Deciduous for some time, ornamental plant in garden
Careva aroborea	Araya	Large	Deciduous, good in green belts
Carrisa Carandas	Vaka	Small	Semi evergreen large bushy shrub good as a hedge to protect against noise.
Carhota urents	Jilugu	Large	A lofty palm, good as a wind break
Cassia fistula	Rela	Medium	Deciduous, good ornamental tree in green belts.
C.siamea	Sima tangeda	Large	Evergreen, good as an avenue tree.
Casuarina equisetifolia	Sarugudu	Medium	Evergreen suitable for covering low lying area and in green belts and along ponds.
Cedrela toona	Nandichettu	Large	Deciduous, good in open spaces, in green belts and along ponds.
Ficus bengalensis	Marri	Large	Deciduous, widely spaced avenue tree (15 m apart)
Ficus religiosa	Bodhi	Large	Deciduous, widely spaced avenue tree also as a single

			tree in isolated sites.
Meduca indica	Ippa	Medium	Deciduous, good in green belts.
Peltophorum inerme	Kondachinta	Medium	Semi-evergreen, suitable on road sides, in gardens and outside office buildings.
Saraca indica	Asoka	Medium	Evergreen tree good on road sides within campus
Terminalia catappa	Badamchettu	Large	Deciduous tree
Terminalia arjuna	Tellamaddi	Large	Evergreen tree for road sides and in green belts
Zanthoxyium	Phetsamaramu	Medium	Deciduous in green belts

3.6 Fire Protection Services

Project management is proposing seven storage tanks exclusively for meeting the fire demand, 2 below the ground and 2 are above the terrace.

In addition to the above the following fire fighting facilities will be made available with-in the resorts:-

1) Project management strictly adheres to all fire protection and safety

2) Safety training will be provided to all the employees.

3) No open fire will be allowed and also smoking strictly prohibited within the premises.

4) Sign boards will be placed in restricted areas.

5) Fire hydrant system covering all strategic locations in the premises.

3.7 Post Project Monitoring

A well-defined environmental monitoring program will be followed with trained and qualified staff or utilizing the services of professional third party organizations to monitor the ambient air, stack gases, effluents, noise, etc. to see that prescribed standards laid down in the consent are followed. The post project monitoring works proposed by the proponents is summarized in the **Table 3.8**.

Table 3.8
Environmental Management Plan

Component	Frequency	Parameters
Ambient Air Quality Monitoring will be carried at three AAQ stations located at 120 ° angle between each station	Once in a Quarter	SPM, SO_2, NO_x and CO
Stack emissions - DG set		SPM, SO_2, NO_x
Noise levels in work room		Noise levels
Noise levels at AAQ stations proposed		Day and Night Equivalents
Wastewater quality	Daily	pH, O&G, BOD, TSS, (Parameters mentioned in the consent)
Ground water quality	Once in 6 months	As Per IS : 10500 drinking water standards
Solid waste	Once in month / at the time of disposal	Moisture, Organic content, inorganic content (Specific metals)

The management is proposing Rs.20 Lakhs for capital cost of environmental control and safety equipment with an recurring cost of Rs.1 lakhs. The details of the same are given in **Table 3.9**

Table 3.9
Cost provision for Environmental mitigation measures

S.No	Particulars	Rs. Lakhs	Remarks
1	Sewage Treatment Plant	4	Capital cost for EMP
2	Solid Waste management		
3	Plantation & Landscaping		
4	DG set - Acoustic Enclosure & Stack		
5	Rain water harvesting & storm water drain network,		
1	Monitoring of Air, water, wastewater, soil, etc	1.0	Recurring cost during operation
2	Annual Maintenance of STP, DG sets, Greenbelt, landscapes, etc.,		
	Total	5.0	
Capital Cost for EMP is Rs. 4 Lakhs Total Project cost is 1.5 crores			

QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL

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

of

"Golden Sands Beach Front Resorts"

BEACH RESORTS *Proposed at*
Adavi Village,Bapatla Mandal, Guntur District, AP

Guntur District .

Submitted by

YAGANTI
ESTATES
5-88-1, 3 Lane, Lakshmipuram,Guntur, AP
Ph: 0863 - 22 33 581

QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL

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

Note 1 :	All information given in the form of annexures should be part of this file itself. Annexures as separate files will not be accepted.
Note2 :	Please enter x in appropriate box where answer is Yes/No

I. General Information

A. Name of the Project: **GOLDEN SANDS BEACH FRONT RESORTS**

1. Existing project/proposed project/ expansion project/modernization project : *Proposed project*
2. If Existing/expansion/ modernization project, whether environmental clearance has been obtained : *-NA-*

B. Size. (Plinth Area) — Square Metres: **3144.84**

C. Location

Village	Tehsil	District	State
Adavi Village	Bapatla	Guntur	Andhra Pradesh

D. Geographical Information

1.	Survey no.	517
2.	Latitude	15°48'48" N
3.	Longitude	80°26'41" E
4.	Elevation above Mean Sea Level (Metres)	6 m
5.	Total Area envisaged for setting up of project (in Acre.)	10.75 Acres

6.	Nature of terrain	Plan
7.	Nature of Soil (permeability)	Beach Sandy soil

8. Stability Status of the Coast, i.e

(i) Is it stable?	Yes	X	No	
(ii) Is it accreding?	Yes	X	No	
(iii) Is it eroding?	Yes		No	X
(iv) Is it prone to flooding?	Yes		No	X

9. Nature of Coast, i.e.,

(i) Rocky	
(ii) Sandy	X
(iii) Others (Please specify)	

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

A.	Agricultural	
	1. Irrigated	-Nil-
	2. Unirrigated	-Nil-
B.	Homestead	-Nil-
C.	Forest	-Nil-
D.	Notified Industrial Area/Estate	-No-
E.	Grazing	-Nil-
F.	Fallow	-Nil-
G.	Mangroves	--No-

H.	Orchards	--No-
I.	Sand dunes	--No-
J.	No development zone	--No-
K.	Marshes	--No-
L.	Others (Please specify)	Non-Agriculture
		(Land conversion documents enclosed in Annexure 9)
	Total	10.75 Acres

III. Alternate sites considered from environmental consideration

A. No alternative sites- Suitable for recreation and accessible

B. _____

C. _____

D. _____

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

Site is located in CRZ3 and fulfilling other environmental considerations also.

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

Yes [X] No [ ]

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

CRZ-I [ ] CRZ-II [ ] CRZ-III [X]

CRZ-IV [ ]

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

Yes [X] No [ ]

If yes, under what provision is it permitted?

S.No.	Provision No.
1	Under category CRZ – III Para 8. III .B.(i) & Annexure –III of CRZ notification 2011

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

Yes [ ] No [X]

If yes, provide the following details:

A. Name of the aquatic organism

B. Type of habitat

C. Period of year in which activity takes place

IX. Site preparation.

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

Yes [ ] No [X]

B. Level before filling (above MSL, in m) 4.3

C. Level after filling (above MSL, in m) 4.3

D. Details of fill material

Quantity of Fill Material required (in cu. m.)	Source
Approximately 1,000 CUM	Excavated soil in same site will be used for fillings.

E. Does the site preparation require cutting of trees?

Yes [ ] No [X]

F. If yes, how many trees are proposed to be cut ? [NA]

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

Yes [ ] No [X]

2. If yes, provide detail.

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

Yes [ ] No [X]

If yes, please furnish detail.

H. Height (above MSL in m.) [4.3m]

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

Yes [ ] No [X]

If yes, mention the activity involved and area.

1. Activity [ ]

2. Area (sq. metre) [ ]

J. Does the project involve any land reclamation?

Yes [ ] No [X]

If yes, pl. provide the following details.

1. Activity for which land to be reclaimed
2. Area of land to be reclaimed (ha)

K. Does the project involve any dredging?

Yes [ ] No [X]

If yes, provide details (capital/maintenance,

Extent of dredging, disposal of dredged material etc)

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

Yes [ ] No [X]

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

Yes [ ] No [X]

If yes, what are the changes?

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

Yes [ ] No [X]

If yes, give detail

Area (ha) [ ]

Species [ ]

Existing health [ ]

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

Yes [ ] No [X]

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

S.No.		0-200 mt	200-500 mt	Beyond 500 mt
1	Area of all buildings	-	2065.51	-
2	Courts		-	-
3	Playground		-	-
4	Swimming pool		2413.31	-
5	Lawns	21499.02	5532.45	-
6	Amusement park			
7	Landscaping		636.10	-
8	Approach Road		3972.28	
9	Tree plantation			
10	Waste water treatment	-		-
11	Solid waste disposal	-		-
12	Others (Parking)	-	7385.21	
TOTAL			**43503.88**	

Ground coverage is 1665 m^2

Built up area is 3144.84 m^2

XI. Project Details.

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

1. Area within 200 mts of HTL	21163.94
2. Area between 200-500 mts of HTL	22339.94
3. Area beyond 500 mts of HTL	

B. Width of the plot along the coastline (in metres) | 108.57 |

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

1. Left side | 6.2 m |
2. Right side |

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

Yes | | No | X |

If yes,

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

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

No. of buildings	Area of each building (Sq.metres)	Distance from HTL (metres)	Height of each building (metres)
20	As per drawing submitted		

F. Floor space index / Floor space area. In metres

1. Ground coverage between 200-500 metres of HTL. | 2065.51 |
2. Coverage of first floor | 1087.12 |
3. Total floor area (1+2) | 3144.84 |
4. 50% of plot area within 200 metres of HTL | 10683 |
5. Plot area between 200-500 metres of HTL | 22137 |
6. Total (4+5) | 32820 |

7. Floor space index (3/6) | 0.095

G. Is it proposed to construct any basement?

Yes [ ] No [X]

If yes,.

1. Depth of Basement (meters) [ ]
2. Area of basement (Sq. meters) [ ]
3. Activity/Purpose [ ]
4. Maximum Ground water Table (metres) | 3.21
5. Has the approval of Ground Water Board been obtained? Yes [X] No [ ]

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

Yes [X] No [ ]

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

I. Number of rooms to be constructed

1. Ground floor | 21
2. First floor | 15

XII. Details of the location:

	Sea*	Other Water bodies Rivers/creek/lake etc*. (Please specify)
Distance of seaward boundary of the plot (in m)	35 m	NA
Distance of seaward boundary of construction (in m.)	236.5 m	NA

* *From high tide line*

XIII. Surroundings.

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

Yes [ ] No [X]

B. If yes, please provide details along with a layout plan:

1. Distance of each structure from the boundary of the proposed site [ ]
2. Distance of each structure from the HTL [ ]
3. CRZ classification as per approved CZMP [CRZ-III]

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

S.No.		Name	Aerial Distance (in km)
1	National Park	No	Na
2	Marine Park	No	Na
3	Sanctuary/Tiger Reserve/Elephant Reserve/ Turtle Nesting Ground	No	Na
4	Core Zone of Biosphere Reserve	No	Na
5	Reserved Forest	No	Na
6	Wildlife Habitat	No	Na
7	Habitat of endangered/exotic species	No	Na
8	Coral Reef	No	Na
9	Mangroves	No	Na
10	Lakes/Reservoirs/Dams	No	Na
11	Breeding Site	No	Na
12	Nesting Site	No	Na

XV. **Transportation system**

Type

Transportation System	**Road**	**Rail**	**Airport**
A. Existing	X	X	
B. After the proposed activity	X		

C. Whether existing network is adequate

Yes [X] No [ ]

D. If not, provide details of alternative proposal: Not Applicable

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

A. During construction

S.No.	Item	Quantity	Mode of Transportation
1	Brick	400000 No.s	Road
2	Sand	10000 m^3	Road
3	Steel	1000 Tonnes	Road
4	Others (Please Specify) Cement Bags	4,000 m^3	Road

B. After construction

	No of trips/day	Mode
Material	1	Road
Manpower	3	Road

XVII. Whether the area is affected by cyclone

Yes		No	X

If yes provide

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

XVIII. Ambient Air Quality (for RPM,SPM, SO_2, NO_x, CO)

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

Date, Time & Location	Concentration as monitored (in g/cu.m.) SPM,SO_2,NO_X,CO	Permissible Standard(As per SPCB guidelines)	Remarks (Name of the instrument and sensitivity)
	SPM - $7.9X10^{-5}$ SO_2 – $1.0X10^{-5}$ NO_X – $7.9X10^{-3}$ CO – 0.001	0.2 0.08 0.08 0.002	

XVIII. Water Requirements (cum./day)

Details	Water requirement				
	Population	Area in Sqm	Capacity	Demand (Liters)	Total Water Requirement (KLD)
Domestic	62	-		180/Person	11
Club House	60			70/Person	4.2
Staff	20			45/person	0.9
Greenbelt		26992		0.42 l/sqm	11
DG set cooling			250 KVA	0.9/KVA/Hr	0.2
				Total	27.3

Details	Fresh	Treated	Total	Wastewater
Domestic	7.7	3.3	11	9.9
Club House	2.94	1.26	4.2	3.78
Staff	0.63	0.27	0.9	0.81
Greenbelt	2.83	8.17	11	–
DG Set Cooling	–	0.2	0.2	–
Total	14.1	13.2	27.3	14.49

Wastewater Calculations

Domestic Water Requirement	16.1 KLD
• Potable	11.27 KLD
• Flushing	4.83 KLD
Wastewater Generated (80% potable + 100% flushing)	13.85 KLD
Treated Water	13.2 KLD
STP Capacity	20 KLD

Water Balance

Input	KLD	Output	KLD
Domestic water supply from Ground Water	11.27	Consumption	11.27
Flushing	4.83	Recycled Water (Green Belt + Flushing + DG Set Cooling)	13.2
Greenbelt & DG Cooling	11.2	Losses (Utility + Treated)	2.83
Total	27.3		27.3

XX. Source of Raw Water Supply (Net)

S No.	Source	Cu.m./hr	Cu.m./day
1	Sea	-Nil-	-Nil-
2	River	-Nil-	-Nil-
3	Groundwater		
4	Rain water harvesting		-Nil-

5	Municipal water supply		
6	Others (Pl. specify)		Private Source

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

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

XXII. Lean Season flow in case of surface water (cum./sec) NA

XXIII. Groundwater

	A. Recharge Rate (cubic meters)	4000
	B. Withdrawal rate (cubic meters)	3000
Groundwater Table:	A. Pre monsoon (metres BGL)	3.94
	B. Post monsoon (meters BGL)	2.83

XXIV. Competing Users of the Water Source

S.No.	Usage	Present Consumption (cu.m/day)		Addition Proposed as per local plan		Total	
		Surface	Ground	Surface	Ground	Surface	Ground
1	Irrigation						
2	Industry						
3	Drinking			10		10	
4	Others (Please specify)flushing, washing,			30		30	

	bathing			
Total			40	40

XXV. Physico chemical analysis of Raw Water at intake point: Enclosed as **Annexure-11**

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

XXVII. Waste Water Management

A. Waste water and /or sewage treatment plan : Enclosed as **Annexure - II**

B. Composition/characteristics of discharge before and after treatment

Item	Characteristics	
	Before	After
pH	6.5-8.0	6.5-7.5
Total Suspended Solids	350	20
Chemical Oxygen Demand	450	100
Bio Chemical Oxygen Demand	300	30
Oil & Grease	10	<1

C. Daily discharge (cu.m./day) from different sources: 14.49 KLD

1. Toilet/sewage	
2. kitchen	
3. Workshop	
4. Other	
Total	14.49

D. Quantity of water recycled

1. (in %)	100

2. (in cu.m/day) | 13.2 |

E. Details of recycling mechanism

1. During monsoon season For Green belt

2. Other than monsoon season For Green belt

E. Mode of final discharge/disposal: Not applicable. Entire sewage recycled after treatment.

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

G. Point of final discharge : On land discharge after treatment

S.No.	Final Point (please specify the location)	Quantity discharged (in cum.)/day
1	Agricultural land	-Nil-
2	Fallow Land	-Nil-
3	Forest Land	-Nil-
4	Green Belt	10.9
5	River	-Nil-
6	Lake	-Nil-
7	Estuary	-Nil-
8	Sea	
Total		10.9

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

I. Downstream users of water (cusecs/cumecs)

1. Domestic | None |

Hotels/Beach Resorts and Other Projects 17 | None |

2. Irrigation

3. Fisheries — None

4. Others (Please specify)

Total

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

XXVIII. Solid Waste

A. Details

Particulars	No of persons	Quantity (Kg/ day)	Remarks
Cottage Type	62	24.8	0.4 kg/person/day
Club House	60	15	0.25 kg/person/day
Staff	20	3	0.15 kg/person/day
Total	**142**	**42.8**	
	%		**After segregation at site**
Recyclable	10	4.2	**Sold to authorized dealers**
Biodegradable	60	25.68	**Used as Manure**
Inert material	30	12.8	**Sent to municipal bin**

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

C. Possible users of Solid Waste. Manure, Recycling

D. Method of disposal of solid waste

Method	Qty (TPM)
E. Landfill	
F. Incineration	--
G. Other (pl. specify)	

H. In case of landfill

1. Is solid suitable for landfill — Yes [X] No [ ]
2. Dimensions [ ]
3. Life of landfill (years) [ ]
4. Proposed precautionary and mitigation measures

I. In case of incineration:

Details of incinerator

1. Size [----]
2. Capacity [----]
3. Fuel [----]

J. Likely composition and quantum of emissions

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

K. Frequency of incineration/annum [-Nil-]

L. Others alternative proposed along with details [ ]

XXIX. Noise level (dB) [DG set]

A. Source

B. Level at Source (db) [42]

C. Level at project boundary (dB) [50]

D. Abatement measures — Acoustic Enclosure

XXX. Fuel/Energy Requirements

A. Total Power Requirement (KV)

S.No.		Project	Other(please specify)
	Present (in existing)	-Nil-	
	Proposed	400	
	Total	400	

B. Source of Power (KV)

S.No.		APSPDCL/Grid	Captive power plant	DG Sets
1	Present	Nil		
2	Proposed	(APSPDCL)		250 KVA(Stand by)
	Total	400		250 KVA(Stand by)

C. Details of Fuel used

S.No.	Fuel	Daily Consumption (TPD)		Calorific value (Kcals/kg)	% Ash	% Sulphur
		Existing	Proposed			
1	Naphtha					
2	HSD	--	--		Stand by purposely for diesel generator sets	
3	LSHS					
4	Furnace Oil	--				
5	Coal					
6	Lignite	--				
7	Other (Please specify)					

XXXI. Occupational Health

A. What are the major occupational health and safety hazards anticipated: Nil

B. What provisions have been made/propose to be made to conform to health/safety requirements.

C. Details of personal protective equipment provided/to be provided to the workers Nose masks and hand gloves for Kitchen staff.

XXXII. Green Belt

A.	Total area of project / township (in acre.)	10.75
B.	Area already afforested (for existing projects), in ha.	
C.	Area proposed to be afforested (in ha.)	6.67
D.	Width of green belt (minimum, in m.)	3

E. Trees planted & proposed

	Nos.	Survival Rate	Species
Planted	Nil		
Proposed	1100		
Major species	Mixed local		Cashew , Palm

XXXIII. Construction Phase

A. Estimated duration of construction: 2 years

B. Number of persons to be employed for construction

a)	Peak	30
b)	Average	20

C. What provision has been made for the sewage treatment for the construction workers?
Mobile STP

D. How the fuel (kerosene/wood, etc.) requirement of labour force will be met to avoid cutting of trees from the adjoining areas: Labour will be hired from near by villages. Hence no fuel is required for labour force.

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

XXXIV. Socio economic profile

A. Human Settlement

S.No.		Aerial distance from the periphery of the site		
		Upto 500m from periphery	500m to 3000 m from the periphery	3000m to 7000m from the periphery
1.	Population	70	3158	24589
2.	Number of Houses	15	700	4900
3.	Present Occupational Pattern	Agricultural, Fishing	Agricultural, Fishing	Agricultural, Fishing

B. Economic activity

S. No.	Population	Occupation (Agriculture/horticulture/ fishing/ tourism/transport/ construction)	Average Income per annum
1	22458	Agriculture	
2	600	Fishing	

XXXV. Rehabilitation & Resettlement plan: Not applicable

A. Population to be displaced: None

S.No.	Name of Village	Population		
		Land oustees only	Homestead Oustees only	Land and Homestead Oustees
1				
2				
3				

B. Rehabilitation Plan for oustees: Not applicable

C. Site where the people are proposed to be resettled and the facilities to be provided at the new site

D. Compensation package

E. Agency/Authority responsible for their resettlement.

F. Approval/comments of competent authority

XXXVI. Pollution Control

A. Details of Pollution Control Measures/Environmental safeguards:

S.No.	Existing	Proposed to be Installed
1.	Air	Stack
2.	Water	Sewage treatment Plant
3.	Noise	Acoustic enclosure
4.	Solid Waste	To recyclers

C. Protection of

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

D. Preventing siltation

D. For Existing Units Only

1. Difficulties encountered in implementing pollution control measures.

2. Efficiency of each pollution control equipment/system installed.

S.No.	Name of the System Equipment	Design Efficiency %	Present Working efficiency %
1	Sewage treatment plant	90%	-Nil-
2			
3			

Proposed Units

S.No.	Name of the System Equipment	Design Efficiency %	Present Working efficiency %
	Water treatment plant	95%	

XXXVII. Expenditure on Environmental Measures

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

(Rs. Lakhs)

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

S.No	Particulars	Rs. Lakhs	Remarks
1	Sewage Treatment Plant	4	Capital cost for EMP
2	Solid Waste management		
3	Plantation & Landscaping		
4	DG set - Acoustic Enclosure & Stack		
5	Rain water harvesting & storm water drain network,		
1	Monitoring of Air, water, wastewater, soil, etc	1.0	Recurring cost during operation
2	Annual Maintenance of STP, DG sets, Greenbelt, landscapes, etc.,		
	Total	**5.0**	

Capital Cost for EMP is Rs. 4 Lakhs Total Project cost is 1.5 crores

XXXVIII. Public Hearing Not applicable

A. Date of Advertisement:

B. Newspapers in which the advertisement appeared

C. Date of Hearing

D. Panel Present

E. List of Public present along with addresses and occupation

F. Summary/details of public hearing

Issues raised	Recommendation of panel	Response of Project Proponents

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

Signature of the Applicant with full name & address.

for GOLDEN SANDS BEACH FRONT RESORTS

For YAGANTI ESTATES

Director

Date: 26 Dec 2014
Place: Hyderabad

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

LIST OF DOCUMENTS TO BE ATTACHED IN RESPECT OF PROJECTS FALLING WITHIN COASTAL REGULATION ZONE

S. No	Document to be attached	Remarks
1	Location Map delineating LTL HTL,200 metre line, 500 metre line, and extent of Coastal Regulation Zone as per Naval Hydrographer Chart / Chief Hydrographer demarcation duly certified by the competent authority	Enclosed in Annexure No.1
2	Topographic map of the site (1:2500 scale) indicating contours sand dunes and ecologically sensitive features.	Enclosed Annexure No.2
3	Confirmation from the Department of Environment of the State Government/ Union Territory Administration indicating the classification of the area, their observation/ recommendation on the proposal and confirmation that the proposal is as per the approved Coastal Zone Management Plan	
4	Topographic map covering 10 kilometres radius from the periphery of the site indicating mangroves, mudflats, nesting grounds for aquatic animals, migration path of turtles and other ecologically sensitive areas.	Enclosed Annexure No 3
5	General Lay out of the site (1:2500 Scale) showing installations already developed, approach roads and other infrastructure facilities constructed/Planned for the project, location of dug wells, sand dunes, effluent treatment facilities/Septic tank, courts, Lawns, tree plantation, Swimming pool etc and their distance from High Tide Line.	Enclosed Annexure No 4
6	Comments/observation of the Chief Wildlife Warden	Not applicable
7	Plan of the area showing existing structure within one kilometre	Enclosed Annexure No 5
8	Plan /Elevation of the buildings proposed clearly demarcating the access road to the public on either side of the proposed construction if it is a beach resort/ hotel in accordance with the provisions of the guidelines given in CRZ notification.	Enclosed Annexure No 6
9	Approval of Electricity connection and certificate of supply of electricity	Enclosed Annexure No 7
10	Lay out of green belt clearly indicating the width on all side's trees, lawns, bushes etc.	Enclosed shown in Annexure No 4
11	Approval of Tourism Department	Applying
12	No objection certificate from the State Pollution Control Board	Applying
13	No objection certificate from the State Ground water Board	Enclosed Annexure No 8
14	A certificate from water supplies authority regarding its availability in case water from other sources is to be obtained.	Not Applicable

FORM -1
For
PROPOSED BEACH RESORT PROJECT
At

Sy.no 517
Adavi Village, Bapatla Mandal,
Guntur District

Prepared by

Yaganti Estates

Form - 1

Appendix- I

(See Paragraph-6)

(I) Basic Information

S. No	Item	Details
1	Name of the Project	Golden Sands Beach front Resorts
2	S.No. in the Schedule	Not applicable as the built up area is less than 20,000 Sqm.
3	Proposed capacity / area / length / tonnage to be handled /command area / lease area / number of wells to be drilled	Total Area: 10.75 Acres (4.35 Ha) Built up area- 3144.84 Sqm Land Break up details- **Annexure-1**
4	New / Expansion / Modernization	New
5	Existing Capacity / Area etc.	10.75 Acres (4.35 Ha)
6	Category of Project i.e. 'A' or 'B'	Not applicable as the built up area is less than 20,000 Sqm.
7	Does it attract the general conditions? If yes, please specify	Not Applicable
8	Does it attract the Specific conditions? If yes, please specify.	Not Applicable
9	Location	Latitude 15°48'48 N Longitude 80°26'41"
	Plot / Survey / Khasra No	517
	Village	Adavi
	Mandal	Bapatla
	District	Guntur
	State	Andhra Pradesh
10	Nearest railway station / airport along with distance in km	• Chirala Railway Station is at a distance of 10 Km on Howrah –Chennai – New Delhi Railway Lines. • Gannavaram Airport at a distance of 115 Km
11	Nearest town, city, district headquarters along with distance in km	Pandurangapuram , adavi – 0.5 Km
13	Name of the applicant	Yaganti Estates
14	Registered Address	Golden sands beach front resorts # 5-88-1, 3rd Lane,

S. No	Item	Details
		Lakshmipuram,Guntur Andhra Pradesh
15	Address for Correspondence	
	Name	Ch. Bhavani Prasad
	Designation (Owner/Partner/CEO)	Partner
	Address	Golden sands beach front resorts # 5-88-1, 3rd Lane, Lakshmipuram, Guntur , Andhra Pradesh
	Pincode	522004
	E-mail	yagantiestatesguntur@gmail.com
	Telephone no.	0863-2233581
	Fax no.	
16	Details of Alternate Sites examined, if any. Location of these sites should be shown on a toposheet.	Not Applicable
17	Interlinked Projects	Not Applicable
18	Whether separate application of interlinked project has been submitted.	Not Applicable
19	If yes, date of submission	Not Applicable
20	If no, reason	Not Applicable
21	Whether the proposal involves approval / clearance under: if yes, details of the same and their status to be given (a) The Forest (Conservation) Act, 1980? (b) The Wildlife (Protection) Act, 1972? (c) The C.R.Z. Notification, 1991?	The C.R.Z. Notification, 1991- Minutes Enclosed as **Annexure-2**
22	Whether there is any Government Order / Policy relevant / relating to the site	No, Government Order / Policy relevant / relating to the site are applicable.
23	Forest Land involved (hectares)	No Forest land is involved in the project

S. No	Item	Details
24	Whether there is any litigation pending against the project and / or land in which the project is proposed to set up? (a) Name of the Court (b) Case No. (c) Orders / directions of the court, if any and its relevance with the proposed project.	No litigations pending against the project.

(II) Activity

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

S. No.	Information / Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	Permanent change in land use will occur due to Construction of Beach Resort
1.2	Clearance of existing land, vegetation and buildings?	Yes	Existing vegetation will be cleared (grass, bushes and few trees) and proper greenbelt will be developed.
1.3	Creation of new land uses?	Yes	The proposed site is used for construction of Beach Resort. No new land-use will be created
1.4	Pre-construction investigations e.g. bore holes, soil testing?	Yes	Contour Map is presented in the **Annexure 3**
1.5	Construction works?	Yes	Construction of Beach Resorts
1.6	Demolition works?	No	No Demolition works are envisaged as there are no old structures in the proposed site.
1.7	Temporary sites used for construction works or housing of construction works?	No	Most of the workers will be hired from the nearby areas. Temporary sheds will be provided for security persons and outside laborers.
1.8	Above ground buildings, structures or earthworks including linear	No	The proposed construction involves development of Beach Resort which

S. No.	Information / Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
	structures, cut and fill or excavations		requires adequate engineered earthworks. Excavation will be done for construction of footing & foundations. The excavated soil would be used for leveling of the low lying areas. • Cutting- 30 lakh cft • Filling -25.5 Lakh cft • Reclamation- Not Applicable
1.9	Underground works including mining or funneling?	No	Not Applicable
1.10	Reclamation Works?	No	Not Applicable
1.11	Dredging?	No	Not Applicable
1.12	Offshore structures?	No	Not Applicable
1.13	Production and manufacturing processes?	No	Not Applicable
1.14	Facilities for storage of goods or materials?	Yes	Temporary site office/Room/Shed at site.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	• Treated in Sewage treatment plant. • Salt glazed vitrified pipes or HDPE pipes for sewage collection. • It will be seen that there is no leakage or mixing of sewage with drinking or ground water sources.
1.16	Facilities for long term housing of operational workers?	Yes	Temporary site office/Room/Shed at site.
1.17	New road, rail or sea traffic during construction or operation?	No	Not Applicable
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	None

S. No.	Information / Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Not Applicable
1.20	New or diverted transmission lines or pipelines?	No	None envisaged
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	None envisaged
1.22	Stream crossings?	No	None envisaged. There is no stream crossing in the proposed site.
1.23	Abstraction or transfers of water from ground or surface waters?	No	Not Applicable
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	Due to proposed project there will not be any changes in water bodies, drainage pattern etc.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Transfer of material will be done by vehicles to the construction site.
1.26	Long-term dismantling or decommissioning which could have an impact on the environment?	No	None envisaged
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	None envisaged
1.28	Influx of people to an area in either temporarily or permanently?	Yes	Temporary Visitors will be visiting to the proposed Resort
1.29	Introduction of alien species?	No	None envisaged
1.30	Loss of native species or genetic diversity?	No	None envisaged
1.31	Any other actions?	No	None envisaged

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

S.No	Information /Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
2.1	Land especially undeveloped or agricultural land (ha)	Yes	Undeveloped land -10.75 Acres (4.35 Ha)
2.2	Water (expected source & competing users) Unit : KLD	Yes	Water supply is augmented from nearby Panchayath supply by way of payment for water supply charges , Water requirement enclosed as **Annexure-4**
2.3	Minerals (MT)	No	Not Applicable
2.4	Construction material – stone, aggregates, and / soil (expected source- MT)	Yes	Coarse & Fine Aggregate, Granite, Kota stone, marble bricks, sand, cement, steel. From local traders or nearby sites.
2.5	Forests and timber (source-MT)	Yes	Timber for Doors
2.6	Energy including electricity and fuels (source, competing users) Unit : fuel (MT), energy (MW)	Yes	400 KW 250 KVA, Fuel: 15 lph/per DG Set Diesel will be purchased from local vendors
2.7	Any other natural resources (use appropriate standard units)	No	Not Applicable

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

S. No	Information /Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
3.1	Use of substance or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna and water supplies)	No	No hazardous substances(as per MSIHC rules) are used in the proposed beach resort project therefore no hazardous waste is generated
3.2	Changes in occurrence of disease	No	None envisaged

	or affect disease vectors (e.g. insect or water borne diseases)		
3.3	Affect the welfare or people e.g. by changing living conditions?	No	Socio Economic conditions will be improved in the nearby areas as people from various community will be visiting the resort
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patient's, children, the elderly etc.,	No	Not Applicable
3.5	Any other causes	No	None

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

S. No	Information / Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
4.1	Spoil, overburden or mine wastes	No	Not Applicable
4.2	Municipal waste (domestic and or commercial wastes)	Yes	The total municipal waste generated from the proposed Beach Resort Project is 42.8 kg/day. Details enclosed as **Annexure-5**
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	No	Not Applicable
4.4	Other industrial process wastes	No	Not Applicable
4.5	Surplus product	No	Not Applicable
4.6	Sewage sludge or other sludge from effluent treatment	Yes	The sludge from anaerobic sludge digester is sent to filter press, and the sludge from here sent to greenbelt.
4.7	Construction or demolition wastes	Yes	• Bio-degradable/Non bio-degradable waste will be sent to municipal solid waste management facility. • Recyclable waste is sold to local vendors.
4.8	Redundant machinery or equipment	No	Most of the equipment used for the construction will be hired and any surplus equipment and material that is found will be

S. No	Information / Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
			sold off to the appropriate agencies.
4.9	Contaminated soils or other materials	No	No soil Contamination is anticipated as the proposed project being a construction project all the waste generated will be recyclable in nature (Domestic in nature).
4.10	Agricultural wastes	No	Not Applicable
4.11	Other solid wastes	Yes	Solid Waste like rubbles, used up cement, broken bricks etc which shall be used for filling up of low lying areas during development stage.

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

S.No.	Information /Checklist confirmation	Yes/ No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	Emissions will be mainly from vehicles running at the project site during construction and operation period and secondly from the DG set used for backup power source (during power failures only for a short duration). High Speed Diesel (HSD) will be used for the DG sets. The main emissions will be SO_2 and NO, The D.G Set will be acoustically enclosed so as to meet the norms laid down by CPCB. Moreover proper stack height will also be provided as per CPCB Norms to ensure proper dispersion of these pollutants. Details enclosed as **Annexure-6**
5.2	Emissions from production processes	No	Not Applicable as this is a construction project
5.3	Emissions from handling including storage and transport	Yes	The main emissions during the construction will be PM (Particulate Matter) from loading and unloading of material on the site. SO_2 and NO, from the combustion of fossil fuels and from the vehicles. The particulate matter will be controlled by sprinkling water at regular intervals on paved roads. The SO_2 and NO_x

S.No.	Information /Checklist confirmation	Yes/ No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
			will be controlled by proper maintenance of the vehicles.
5.4	Emissions from construction activities including plant and equipment	Yes	Fugitive emissions are likely during the construction activities due to use of construction equipment. These are temporary in nature. The main emissions during the construction will be PM from the loading and unloading of materials on the site. SO_2 and NO_x from the combustion of fuels in construction equipment used which would be controlled.
5.5	Dust or odors from handling of materials including construction materials, sewage and waste.	Yes	Fugitive emissions are likely during the construction activities due to use of construction equipment. These are temporary in nature. The main emissions during the construction will be PM from the loading and unloading of materials on the site. SO_2 and NO_x from the combustion of fuels in construction equipment used which would be controlled.
5.6	Emissions from incineration of waste	No	Not Applicable
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Not Applicable
5.8	Emissions from any other sources	No	Not Applicable

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

S.No.	Information /Checklist confirmation	Yes/ No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	Noise level of 75 dB (A) is anticipated during activities such as drilling, concrete mixing and crushing etc. These are temporary in nature

S.No.	Information /Checklist confirmation	Yes/ No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
			and will be minimized by adopting proper maintenance such as greasing oiling and insulations (enclosures) for noise abatement.
6.2	From industrials or similar processes	No	Not Applicable as this is a construction project.
6.3	From construction or demolition	Yes	Construction activities such as: Site Formation, Laying of roads, Drilling, Crushing
6.4	From blasting or piling	No	Not Applicable as no blasting involved
6.5	From construction or operational traffic	yes	Vehicles or Trucks shifting the load from one place to another
6.6	From lighting or cooling systems	yes	Usually Split AC will be provided in the rooms
6.7	From any other sources	Yes	From DG set noise is anticipated but this will be for a very short period of time during power failures.

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

S.No.	Information /Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
7.1	From handling, storage, use or spillage of hazardous materials	No	No hazardous substances are used in the proposed project as this is a construction project
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	The domestic wastewater will be passed through the closed conduits/sewer lines to the STP for the treatment, treated water is reused for flushing and green belt.
7.3	By deposition of pollutants emitted to air into the land or into water	No	In this project the air pollutants are minimal; to minimize the same greenbelt will be developed along the boundary and roads.
7.4	From any other sources	No	None envisaged
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	Proper Environmental Management Plan will be followed for air, water, noise pollution and solid waste management. Hence no long term impacts are envisaged and this being a

			construction project the impact felt on the area will be temporary in nature as most of the impacts are all construction impacts.

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

S.No.	Information /Checklist confirmation	Yes/ No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	No	This being construction project no explosion, spillage, fire etc from storage, handling, use or production of hazardous substances will be take place. Fire Fighting systems will be installed and safety precautions will be followed as per the safety rules. Details Enclosed as **Annexure-7**
8.2	From any other causes	No	Not Applicable
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	None envisaged. The project site falls in the seismic zone-II and is seismically least exposed to earthquakes.

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

S.No.	Information /Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
9.1	Lead to development of supporting, facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:	yes	Yes both construction and operation phase will enhance the supporting, utilities, ancillary development in the area around. Improved aesthetic look by avenue plantation and landscape development.

S.No.	Information /Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with sources of information data
	• Supporting infrastructure (roads, power supply, waste or waste-water treatment etc.) • Housing development • Extractive industries • Supply industries • Other		
9.2	Lead to after use of the site, which could have an impact on the environment	Yes	A positive impact on the environment in the area is anticipated due to the development of green belt.
9.3	Set a precedent for later developments	yes	The proposed development will facilitate further sustainable development
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects)	No	None envisaged as the proposed development is a construction project

III) Environment Sensitivity

S.No.	Areas	Yes /No	Aerial distances (within 15 km.) Proposed project location boundary.
1.	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related values.	Yes	• Bay of Bengal- 30m from boundary
2.	Areas which are important or sensitive for ecological reasons- Wetlands, water courses or other water bodies, coastal zone, biospheres. Mountains,	Yes	• Bay of Bengal - 50m from boundary • From HTL to Project Boundary is 24m • 26m from HTL to LTL

III) Environment Sensitivity

S.No.	Areas	Yes /No	Aerial distances (within 15 km.) Proposed project location boundary.
1.	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related values.	Yes	• Bay of Bengal- 30m from boundary
2.	Areas which are important or sensitive for ecological reasons- Wetlands, water courses or other water bodies, coastal zone, biospheres. Mountains, forests	Yes	• Bay of Bengal - 50m from boundary • From HTL to Project Boundary is 24m • 26m from HTL to LTL
3.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration.	No	There is no notified area which is protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration.
4.	Inland, coastal, marine or underground waters	No	Not applicable
5.	State, National boundaries	No	No State Boundary within 15km,
6.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	No	Not Applicable
7.	Defense installations	No	Not Applicable
8.	Densely populated or built-up area	Yes	Pandurangapuram , Adavi – 0.5 Km
9.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	Hospitals, Schools, Places of worship and Community Facilities are present in the nearby colonies.

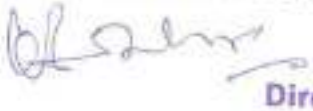
S.No.	Areas	Yes /No	Aerial distances (within 15 km.) Proposed project location boundary.
10.	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	No	Not Applicable
11.	Areas susceptible to natural hazard which could cause the project to present environmental problems (Earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No	Not Applicable

IV: Proposed Terms of Reference for EIA Studies: Not Applicable

As the Project is falling under Project Activity 8a-Category–B2–Building & Construction Projects.- Not Applicable as the built up area is less than 20, 000 Sqm.

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

Date: 26-Dec-2014
Place: Hyderabad

Signature of the applicant with Name and Full Address	GOLDEN SANDS BEACH FRONT RESORTS #5-88-1, 3rd Lane,Lakshmipuram, Guntur, Andhrapradesh. Ph:0863-2233581
(Project Proponent /Authorized Signatory)	**For YAGANTI ESTATES**  **Director**

Annexure 1

Land Breakup & Built up area breakup

Details	Area		
	Sqm	Acre	%
Cover Area	2065.51	0.51	4.7
Roads	3972.28	0.98	9.1
Open space	6816.80	1.68	15.6
Greenbelt (Boundary)	27667.57	6.83	63.5
Pool	2413.31	0.59	5.4
Parking	568.41	0.14	1.3
Total	**43503.88**	**10.75**	**100**

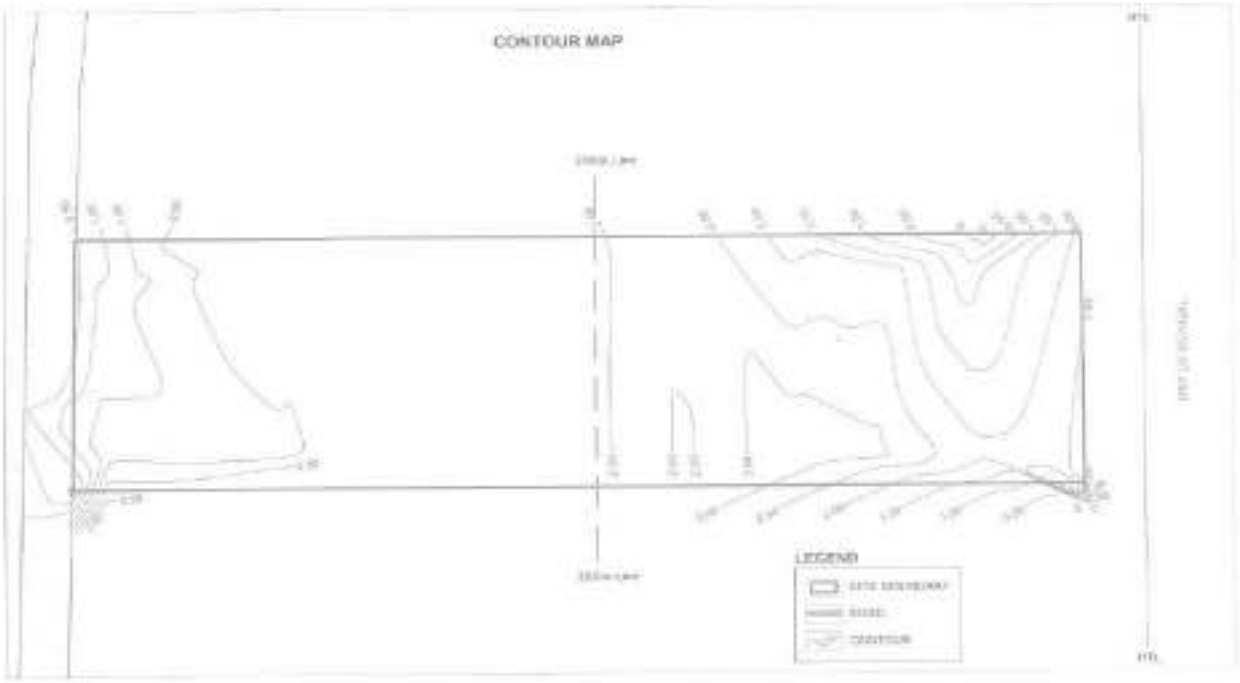
Building Types	No of Floors	Built up area in Sqm	No of Blocks	Total Built-up Area in Sqm
Entrance Foyer	G	130.74	1	130.74
Club House	G+1	820.16	1	820.16
Cottage Type-1	G+1	112.84	12	1354.08
Cottage Type-2	G	119.11	6	714.66
Cottage Type-3	G	62.60	2	125.20
			Total Built up area	**3144.84**

Annexure 2

Minutes of Meeting

Annuxure-3

Contour Map of the Study Area



Annexure- 4

Water Balance in KLD

Details	Water requirement				
	Population	Area in Sqm	Capacity	Demand (Liters)	Total Water Requirement (KLD)
Domestic	62	--	--	180/Person	11
Club House	60	--	--	70/Person	4.2
Staff	20	--	--	45/person	0.9
Greenbelt		26992	--	0.42 l/sqm	11
DG set cooling			250 KVA	0.9/KVA/Hr	0.2
				Total	27.3

Details	Fresh	Treated	Total	Wastewater
Domestic	7.7	3.3	11	9.9
Club House	2.94	1.26	4.2	3.78
Staff	0.63	0.27	0.9	0.81
Greenbelt	2.83	8.17	11	--
DG Set Cooling	--	0.2	0.2	--
Total	14.1	13.2	27.3	14.49

Domestic Water Requirement	16.1 KLD
• Potable	11.27 KLD
• Flushing	4.83 KLD
Wastewater Generated (80% potable + 100% flushing)	13.85 KLD
Treated Water	13.2 KLD
STP Capacity	20 KLD

Input	KLD	Output	KLD
Domestic water	11.27	Consumption	11.27
Flushing	4.83	Recycled Water (Green Belt + Flushing + DG Set Cooling)	13.2
Greenbelt & DG Cooling	11.2	Losses (Utility + Treated)	2.83
Total	27.3		27.3

Annexure 5

Solid Waste Generation details

Particulars	No of persons	Quantity(Kg/ day)	Remarks
Cottage Type	62	24.8	0.4 kg/person/day
Club House	60	15	0.25 kg/person/day
Staff	20	3	0.15 kg/person/day
Total	142	42.8	
	%		After segregation at site
Recyclable	10	4.2	Sold to authorized dealers
Biodegradable	60	25.68	Used as Manure
Inert material	30	12.8	Sent to municipal bin

Annexure-6

Stack and Emissions Details

DG Set Capacity		250 KVA				
No of DG sets		1				
Stack Height formula		(Ht of Building + 0.2√KVA) m				
Height of the stack		9m				
Fuel (Diesel)		15 LPH/per DG set				
Sulpur content		0.05% max				
NO_x		5.6				
Density		0.86				
Stack Height as per CPCB/MOEF.		The stack height should be 1m above the nearest building				
Source	Height (m)	Dia. (m)	Temp. In ^{o}C	Gas Vel. (m/sec)	SO_2 gm/sec	NO_x gm/sec
250 KVA DG Set	9	0.3	215	15	0.018	0.095

Annexure 7

Fire & Safety Measures

Fire safety is a major cause for concern as buildings are mushrooming in the urban cities. The project is being planned, designed and constructed to ensure adequate fire safety to the property and inhabitants and this shall be carried out, in accordance with Fire Protection of norms of the National Building Code of India. The fire fighting requirements, arrangements and installations required in building shall also conform to the provisions of Fire Protection of National Building Code of India.

- Automatic detection and Alarm System
- Manually Operated Electric Fire Alarm System
- Automatic Sprinkler System
- External Yard Hydrant
- Wet Riser/ Hydrant
- Fire Extinguisher
- Hose Reel

ANNEXURE 1

Location Map delineating LTL HTL, 200 metre line and extent of Coastal Regulation Zone as per Naval Hydrographer Chart / Chief Hydrographer demarcation duly certified by the competent authority

REPORT FROM

INSTITUTE OF REMOTE SENSING
ANNA UNIVERSITY, CHENNAI

DEMARCATION OF HIGH TIDE LINE AND LOW TIDE LINE FOR THE RPOPOSED PROJECT SITE IN SURVEY No. 517 OF ADAVI VILLAGE, BAPATLA TALUK, GUNTUR DISTRICT, ANDHRA PRADESH

SPONSORED BY

Mr.Ch.Bhavani Prasad
S/o Venkataeswara Rao
Guntur 522 007

INSTITUTE OF REMOTE SENSING
ANNA UNIVERSITY, CHENNAI-25

MARCH 2014

DEMARCATION OF HIGH TIDE LINE AND LOW TIDE LINE FOR THE RPOPOSED PROJECT SITE IN SURVEY No. 517 OF ADAVI VILLAGE, BAPATLA TALUK, GUNTUR DISTRICT, ANDHRA PRADESH

ABSTRACT

On the request of Mr.Ch.Bhavani Prasad, S/o Venkataeswara Rao, Guntur 522 007 a survey was carried out to demarcate the High Tide Line and Low Tide Line for Bay of Bengal in Adavi Village, Bapatla Taluk, Guntur District for the project site. The satellite imagery of the study area were interpreted for geomorphic features in the vicinity of the survey site. The proposed site falls near Bay of Bengal. The village map of the Adavi Village, Bapatla Taluk provided by client was used as the Base Map. Based on topography, High Tide Line has been identified and traced in the field by Kinematic GPS survey. The High Tide Line was superimposed on to georeferenced cadastral map to prepare a local level HTL map. The Project site boundary provided by the client was superimposed on to HTL map and enclosed. The spherical co-ordinates of the High Tide Line in WGS84 system are presented in the Annexure.

DEMARCATION OF HIGH TIDE LINE AND LOW TIDE LINE FOR THE RPOPOSED PROJECT SITE IN SURVEY No. 517 OF ADAVI VILLAGE, BAPATLA TALUK, GUNTUR DISTRICT, ANDHRA PRADESH

1. INTRODUCTION

The coastal zone is the area of interaction between land and sea. The coastal Zone of Andhra Pradesh has a very high concentration of population along with ecologically sensitive areas like mangroves. There is a spurt of developmental activities arising from huge residential colonies, new industries and tourism centres along the coast and in coastal zone. There is a need to protect the coastal environment while ensuring continuing production and development. This zone is extremely vulnerable and has to be managed judiciously striking a balance between ecological and developmental needs.

Government of India has issued a notification during February 1991 for regulating the developments along the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action. The land between 500 meters from the High Tide Line (HTL) and the Low Tide Line (LTL) is identified as Coastal Regulation Zone (CRZ). The coastal stretches within CRZ are classified into four categories, namely, Category I (CRZ-I), Category II (CRZ-II), Category III (CRZ-III) and Category IV (CRZ-IV). The notification has also laid down regulations to regulate the various activities in the coastal zone. The Ministry of Environment and Forests, Government of India, has approved a set of CRZ maps on 1:25,000 scale

prepared from SPOT satellite imagery. On these maps, zones are demarcated as CRZ I, CRZ II and CRZ III, by APCZMA.

Coastal Regulation Zone I includes the zone between High Tide Line and Low Tide Line. It also includes the areas that are ecologically sensitive and important, such as national parks/marine parks, sanctuaries, reserve forests, wildlife habitats, mangroves, corals/coral reefs, areas close to breeding and spawning grounds of fish and other marine life, areas of outstanding natural beauty/historically/heritage areas, areas rich in genetic diversity, areas likely to be inundated due to rise in sea level consequent upon global warming and such other areas as may be declared by the Central Government or the concerned authorities at the State/Union Territory level from time to time.

CRZ-II covers the areas that have already been developed up to or close to the shoreline. For this purpose, the "developed area" is referred to as that area within the municipal limits or in other legally designated urban areas which are already substantially built up and have been provided with drainage and approach roads and other infrastructural facilities, such as water supply and sewerage mains. CRZ-III covers the areas that are relatively undisturbed and those which do not belong to either Category-I or II. These include the coastal zone in the rural areas (developed and undeveloped) and also areas within municipal limits or in other legally designated urban areas which are not substantially built up. CRZ-IV refers to the coastal stretches in the Andaman and Nicobar, Lakshadweep and small islands other than those designated as CRZ-I, CRZ-II or CRZ-III.

The Ministry of Environment and Forest in the CRZ Notification, 2011 declared the following areas as CRZ and imposed with effect from the date of the notification the restrictions on the setting up and expansion of industries, operations or processes and the like in the CRZ. The areas that are defined as CRZ as per CRZ Notification, 2011 are

(i) The land area from High Tide Line (HTL) to 500mts on the landward side along the sea front.

(ii) CRZ shall apply to the land area between HTL to 100 meters or width of the creek whichever is less on the landward side along the tidal influenced water bodies that are connected to the sea and the distance upto which development along such tidal influenced water bodies is to be regulated shall be governed by the distance upto which the tidal effects are experienced which shall be determined based on salinity concentration of 5 parts per thousand (ppt) measured during the driest period of the year and distance upto which tidal effects are experienced shall be clearly identified and demarcated accordingly in the Coastal Zone Management Plans.

(iii) The land area falling between the hazard line and 500mts from HTL on the landward side, in case of seafront and between the hazard line and 100mts line in case of tidal influenced water body the word 'hazard line' denotes the line demarcated by Ministry of Environment and through the Survey of India taking into account tides, waves, sea level rise and shoreline changes.

(iv) Land area between HTL and Low Tide Line (LTL) which will be termed as the intertidal zone.

(v) The water and the bed area between the LTL to the territorial water limit (12 Nm) in case of sea and the water and the bed area between LTL at the bank to the LTL on the opposite side of the bank, of tidal influenced water bodies.

The Classification of the CRZ is also modified for the purpose of conserving and protecting the coastal areas and marine waters as CRZ – I, CRZ – II, CRZ – III and CRZ – IV. The CRZ – I include the areas that are ecologically sensitive and the geomorphological features which play a role in the maintaining the integrity of the coast like (a) Mangroves(b) Corals and coral reefs and associated biodiversity (c) Sand Dunes (d) Mudflats which are biologically active (e) National parks, marine parks, sanctuaries, reserve forests, wildlife habitats and other protected areas (f) Salt Marshes (g) Turtle nesting grounds (h) Horse shoe crabs habitats (i) Sea grass beds (j) Nesting grounds of birds (k) Areas or structures of archaeological importance and heritage sites and the area between Low Tide Line and High Tide Line. The CRZ-II includes areas that have been developed upto or close to the shoreline. The CRZ-III includes areas that are relatively undisturbed and those do not belong to either CRZ-I or II, which include coastal zone in the rural areas (developed and undeveloped) and also areas within municipal limits or in other legally designated urban areas, which are not substantially built up. The CRZ-IV includes the water area from the Low Tide Line to twelve nautical miles on the seaward side and the water area of the tidal influenced water body from the mouth of the water body at the sea upto the influence of tide which is measured as five parts per thousand during the driest season of the year.

The Ministry of Environment and Forest has also provided guidelines for demarcation of High Tide Line in the CRZ Notification, 2011. As per the guidelines, Cadastral (village) maps in 1:3960 or the nearest scale shall be used as the base maps. HTL and LTL will be demarcated in the cadastral map based on detailed physical verification using coastal geomorphological signatures or features in accordance with the CZM Maps approved by the Central Government. 500metre and 200metre lines shall be demarcated with respect to the HTL.

In order to facilitate classification of Coastal Regulation Zones Government of India has approved few agencies/institutions across the Country vide Lr. No. J17011/8/92-1A III, dated 10.05.1999 of Ministry of Environment and Forests. Institute of Remote Sensing, Anna University being one of them, has been carrying out HTL and LTL mapping following the guidelines issued by Ministry of Environment and Forests, Government of India.

2. BACKGROUND OF THE STUDY

Mr.Ch.Bhavani Prasad, S/o Venkataeswara Rao, Guntur 522 007 has requested Institute of Remote Sensing, Anna University to demarcate High Tide Line on 1:4,000 scale for the property in Adavi Village. The Project site is located near Bay of Bengal, hence this study was carried out to demarcate the HTL for Bay of Bengal and 200m, 500m setback lines for Bay of Bengal near the project site.

3. STUDY AREA AND EXTENT

The aforesaid site is located in Adavi Village in Bapatla Taluk of Guntur District. The site is located in the survey number 517 of Adavi Village. The

study area has flat topography. No developments exist in the neighbourhood of the project site except aquaculture ponds and prawn seed farm. The project site is located at an approximate distance of 10km from Bapatla Town.

4. NEED FOR THE STUDY

The property of Mr.Ch.Bhavani Prasad, S/o Venkataeswara Rao, Guntur 522 007 has proximity to the Bay of Bengal. It is in this context, the proposed site needs to be evaluated to assess whether the proposed site is falls under regulations of CRZ Notification, 2011. The objective of the present study is to examine the property of Mr.Ch.Bhavani Prasad, S/o Venkataeswara Rao, Guntur 522 007 with reference to Coastal Regulation Zone Notification, 2011. Keeping in view of the requirements of notification, Institute of Remote Sensing, Anna University under took the project with following agreed scope of work:

- Demarcation of HTL near project site along the stretch of Bay of Bengal by conducting field survey using DGPS survey.
- Demarcation of ecologically sensitive entities such as Mangroves, Sand dunes, Turtle breeding grounds if any in the vicinity of project site etc.
- Superimposition of Project Boundary, HTL,LTL and ecologically sensitive areas if any on cadastral map at 1:4,000 scale

5. DEMARCATION OF HTL ON THE LOCAL LEVEL MAP

5.1 Methodology adopted

The village map of Adavi Village was used as the base map. The Geomorphology of the Coastal Zone has been studied from the temporal medium resolution satellite data. In order to prepare the local level map on 1:4,000 scale, the site has been inspected by IRS Scientists. Based on the

geomorphic units, the high tide line has been identified in the field and traced by field survey. The tide level observations were collected from the Tide Tables for Kakinada and Krishnapatnam Ports, which are the nearest ports to the site. The highest high tide level and lowest low tide level for the past 19 years was determined from the tide tables.

As per the definition of high tide line, "The High Tide Line means the line on the land up to which the highest water line reaches during the spring tide". On the other hand LTL is defined as the seaward limit to which the waves recede during low tide.

In case of inland waters such as creeks and backwaters, the CRZ guidelines indicates that the development along rivers, creeks, creek lets and backwaters has to be regulated up to a distance where the tidal effects are experienced which has to be determined based on salinity concentration of 5 parts per thousand (ppt). Insitu observations of the salinity were used to delineate the HTL for backwaters, creeks, channels.

6. GPS SURVEYING

The Trimble 5700 and 4000 SSE (Geodetic Surveyor Series) GPS receivers were used to conduct the surveying at the project site. The survey involves three components namely, 1. Establishing Base Station, 2. Control Survey for Village Maps and 3. Real Time Kinematic Survey for HTL Demarcation.

6.1 Establishing Base Station

The survey involves establishing one base station for Static Survey. The base stations were identified on stable locations with clear view of sky for uninterrupted access to GPS satellite signals. The control point with known

elevation was used as initial reference station. The base station for the project site was established on firm ground and observed with static GPS survey from the known coordinates of the control point. The observations times were fixed based on the length of base lines to obtain highest possible accuracies.

6.2 Static Survey

The conduct of Static Survey using GPS requires two GPS receivers, one to be setup over the control point (with known co-ordinate) and another one over a reference station whose coordinates and distance from the control point are to be determined. Both these receivers must record data simultaneously. These known co-ordinates of the control point were fed and fixed for processing of the logged data to accurately determine the co-ordinates of the base stations.

6.3 Control Survey for Georeferencing Village Maps

The cadastral map pertaining to the project site was provided by the client. The hard copy cadastral map was scanned and georeferenced with the help of GPS coordinates of boundary points provided by the client and used for the preparation of local level HTL Maps.

6.4 Real Kinematic Survey for HTL Demarcation

Kinematic Surveying enables a very rapid survey of a number of base lines in areas where there is good satellite visibility. At least, two GPS receivers are required to perform a kinematic survey. One receiver is designated as the reference receiver and is set up over the Base Station. All baselines are measured relative to this station. The other receivers, called rovers, are moved in succession to trace and record the HTL on ground through ground profiling.

7. DEMARCATION OF HTL

Surrogate data such as Coastal Geomorphologic features identified from the satellite imagery, indicators available on the ground and Tidal data obtained from Survey of India for the Kakinada and Krishnapatnam Ports were used to verify the HTL demarcated by Kinematic Survey.

8. OUTPUT

The observed baselines were processed using TGO software. The same were plotted at large scale using the ArcGIS 9.3 software and the same was superimposed in the georeferenced village map of Adavi Village, Bapatla Taluk, Guntur District. In the map of 1:4,000 scale, the HTL for Bay of Bengal and 200m, 500m setback lines from HTL for Bay of Bengal are marked (Map enclosed). The HTL co-ordinates in WGS 84 system are presented in annexure. The satellite imagery of project site is presented below.

Satellite Imagery of the proposed project site (Source: Google Earth)

Photo showing the Coastal topography and Geomorphology near the project site

ANNEXURE I

DEMARCATION OF HIGH TIDE LINE AND LOW TIDE LINE FOR THE RPOPOSED PROJECT SITE IN SURVEY No. 517 OF ADAVI VILLAGE, BAPATLA TALUK, GUNTUR DISTRICT, ANDHRA PRADESH

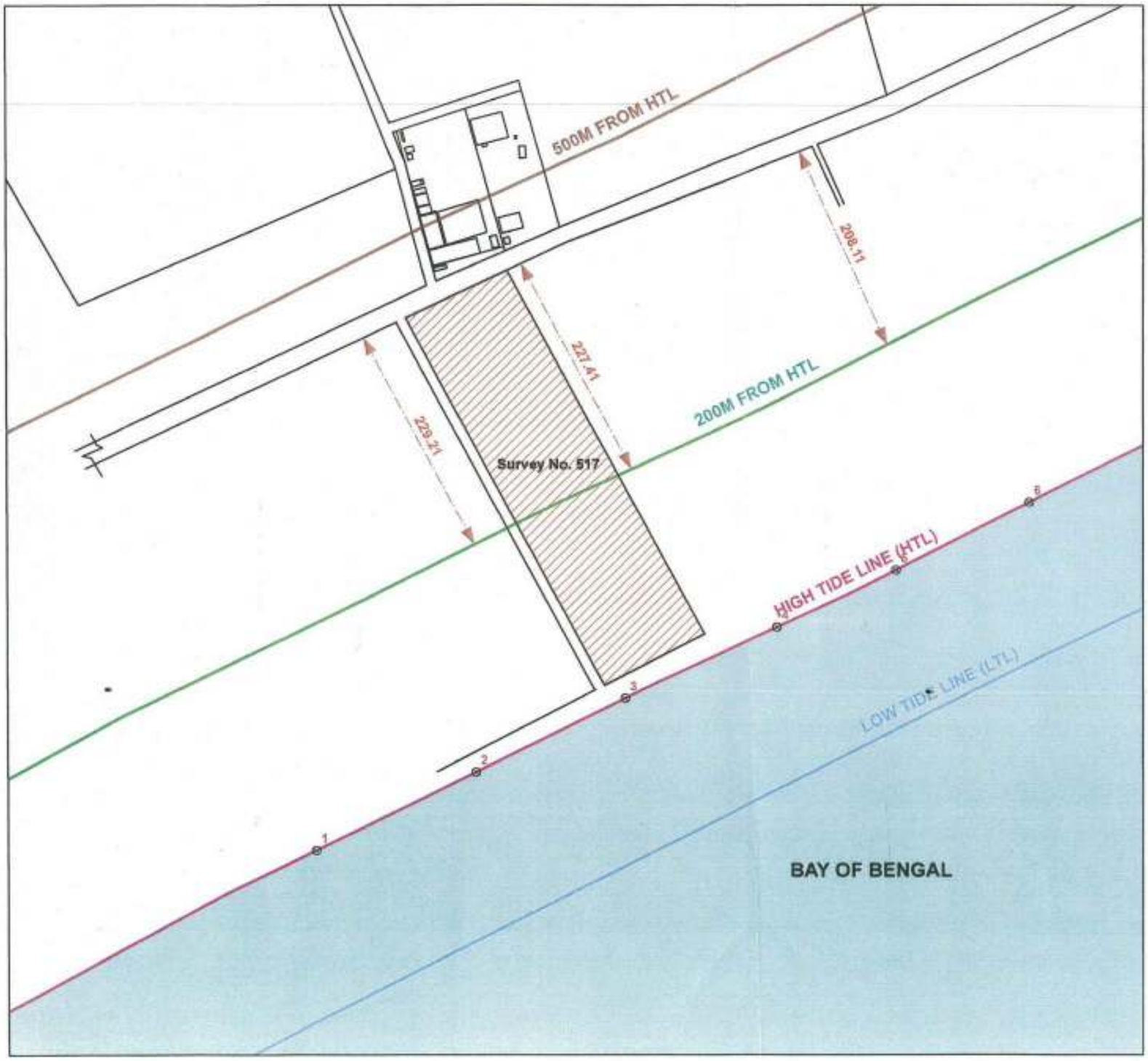
COORDINATES OF HTL POINTS

Point No	Latitude	Longitude
1	15° 48' 38.16"	80° 26' 33.00"
2	15° 48' 40.68"	80° 26' 38.04"
3	15° 48' 42.84"	80° 26' 42.72"
4	15° 48' 45.36"	80° 26' 47.76"
5	15° 48' 47.16"	80° 26' 51.72"
6	15° 48' 49.32"	80° 26' 55.68"

DIRECTOR, IRS

Director
Institute of Remote Sensing
Anna University, Chennai-600 025

DEMARCATION OF HIGH TIDE LINE AND LOW TIDE LINE FOR THE PROPOSED PROJECT SITE IN SURVEY NO. 517 OF ADAVI VILLAGE, BAPATLA TALUK, GUNTUR DISTRICT, ANDHRA PRADESH



LEGEND

- HTL REFERENCE POINTS
- LOW TIDE LINE (LTL)
- HIGH TIDE LINE (HTL)
- 200M FROM HTL
- 500M FROM HTL

SOURCE: CLIENT

- SURVEY BOUNDARY
- PROPOSED SITE BOUNDARY

SCALE 1:4,000

0 37.5 75 150 225 300 Meters

PREPARED BY

INSTITUTE OF REMOTE SENSING
ANNA UNIVERSITY
CHENNAI 600 025

FOR

Mr. Ch. Bhavani Prasad,
S/o Venkataeswara Rao,
Guntur-522 007

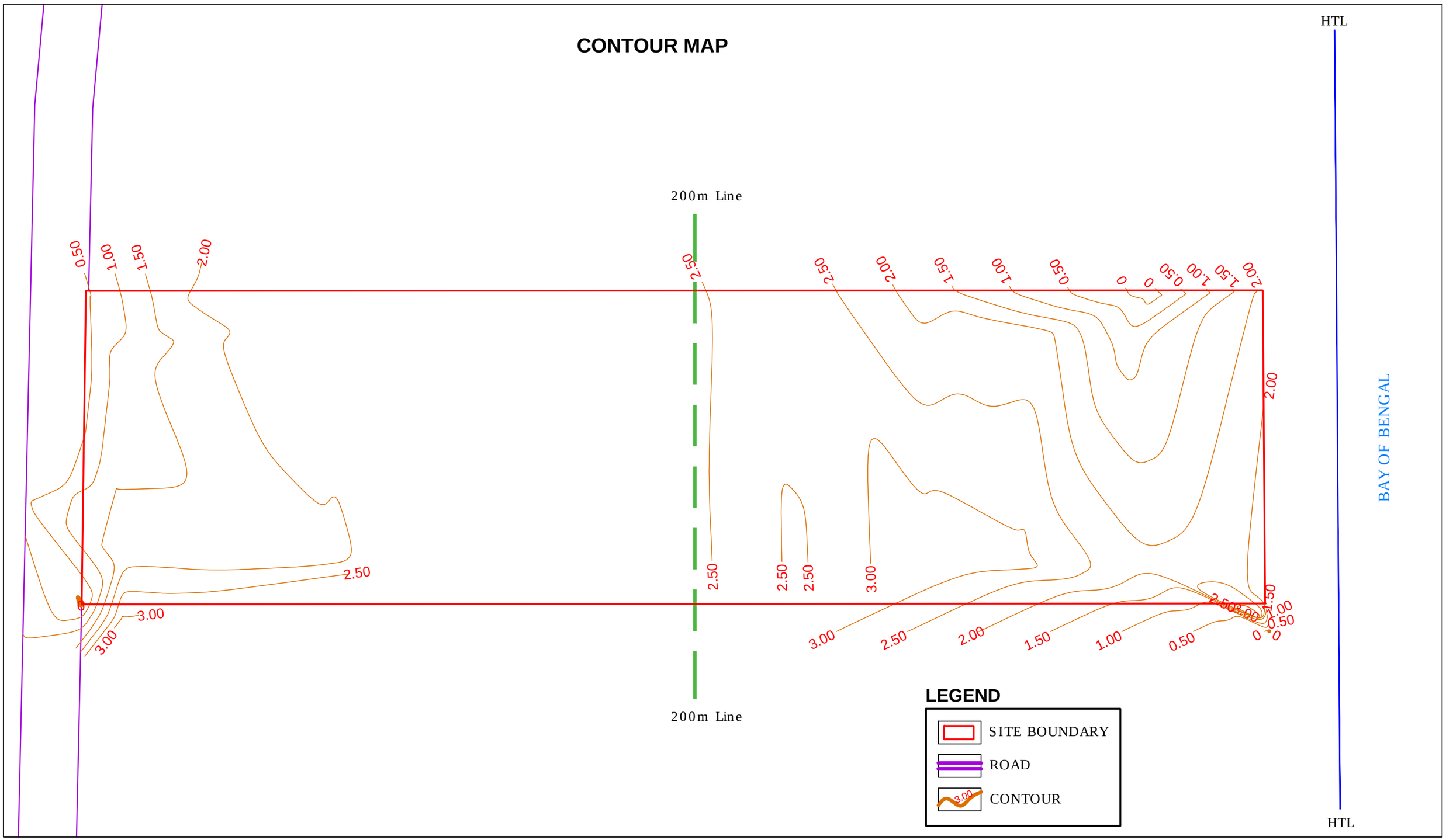
PREPARED BY	
VERIFIED BY	
APPROVED BY	Dr. M.RAMALINGAM, BE,MS Ph.D Director Institute of Remote Sensing Anna University Chennai-600 025

MAP SHOWING PROJECT BOUNDARY ON GOOGLE IMAGE

ANNEXURE 2

Topographic map of the site (1:2500 scale) indicating contours sand dunes and ecologically sensitive features.

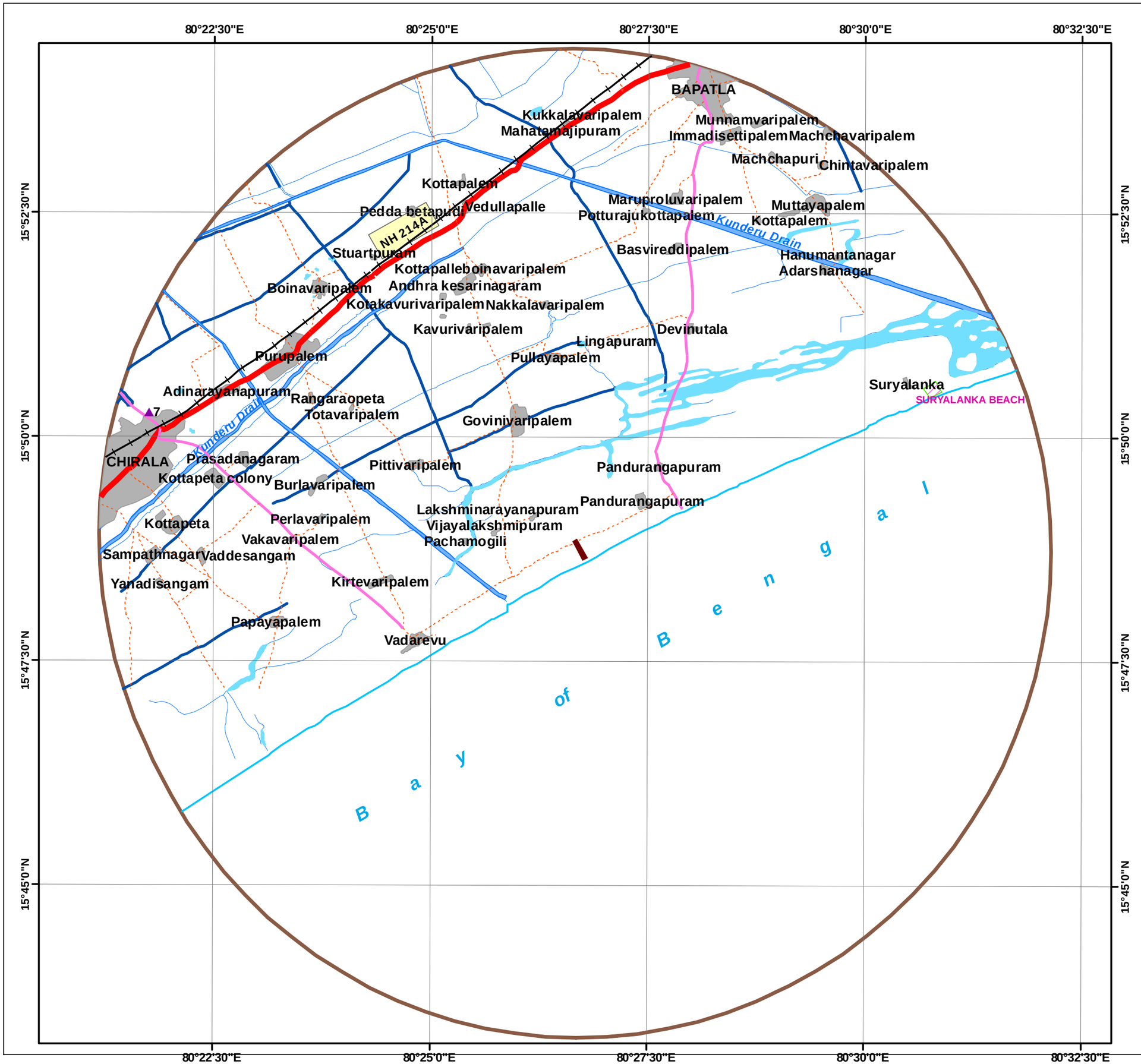
CONTOUR MAP


HTL
200m Line
0.50
1.00
1.50
2.00
2.50
3.00
0
BAY OF BENGAL
LEGEND
SITE BOUNDARY
ROAD
CONTOUR
3.00
HTL

ANNEXURE 3

Topographic map covering 10 kilometres radius from the periphery of the site indicating mangroves, mudflats, nesting grounds for aquatic animals, migration path of turtles and other ecologically sensitive areas.

TOPOGRAPHICAL MAP OF 10 km BUFFER ZONE



Legend

- Project Boundary
- Habitation
- Tourist Place
- Railway line
- National Highway -NH 214A
- District Road
- Other Road
- Spot Height
- Streams
- Canal
- Coast Line
- River / Water body
- Drain
- 10km Buffer Boundary

Scale :

0 1 2 4 Kilometers

Project :

GOLDEN SANDS BEACH FRONT RESORTS

ADAVI VILLAGE, BAPATLA MANDAL, GUNTUR DISTRICT

Client :

YAGANTI ESTATES

Prepared by :

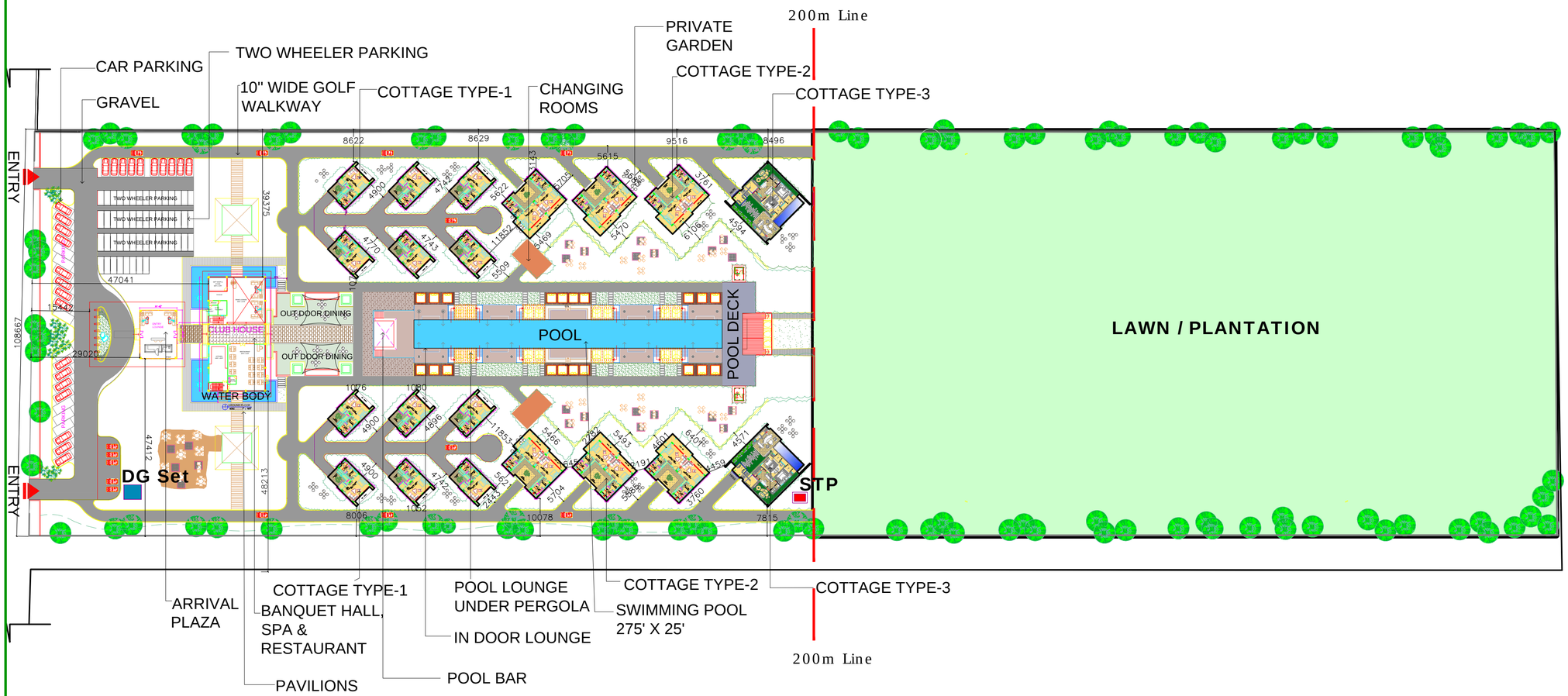
tecdatum

Tecdatum Infoservices Pvt Ltd

ANNEXURE 4

General Lay out of the site (1:2500 Scale) showing installations already developed, approach roads and other infrastructure facilities constructed/Planned for the project, location of dug wells, sand dunes, effluent treatment facilities/Septic tank, courts, Lawns, tree plantation, Swimming pool etc and their distance from High Tide Line.

Lay out of green belt clearly indicating the width on all side's trees, lawns, bushes etc.



AREA SCHEDULE :

BUILDING TYPE	NO OF FLOORS	BUILT-UP AREA PER BLOCK (SQM)	NO OF BLOCKS	TOTAL BUILT UP AREA(SQM)
ENTRANCE FOYER	G	130.74	1	130.74
CLUB HOUSE	G+1	820.16	1	820.16
COTTAGE TYPE -1	G+1	112.84	12	1354.08
COTTAGE TYPE -2	G	119.11	6	714.66
COTTAGE TYPE -3	G	62.60	2	125.20
TOTAL BUILT-UP AREA				3144.84 SQ.M.

CLIENT:

YAGANTI BUILDERS
BAPATLA

PROJECT TITLE :

GOLDEN SANDS BEACH FRONT RESORTS

D.D.ARCHITECTS

LANDSCAPE ARCHITECTS:

ENVISION
Landscape
consultants
PLOT NO # 43,
KAVURI HILLS,MADHAPUR,
HYDERABAD.
email:
vinodenvision@gmail.com

DRAWING TITLE:

RESORT AREA : LANDSCAPE MASTER PLAN

REV-	DATE: 21 SEP 2013
SCALE: AS SHOWN	CHECKED BY : VINOD.
DRAWN BY: RAVI.	ARCHITECT: VINOD.

DRAWING NO.

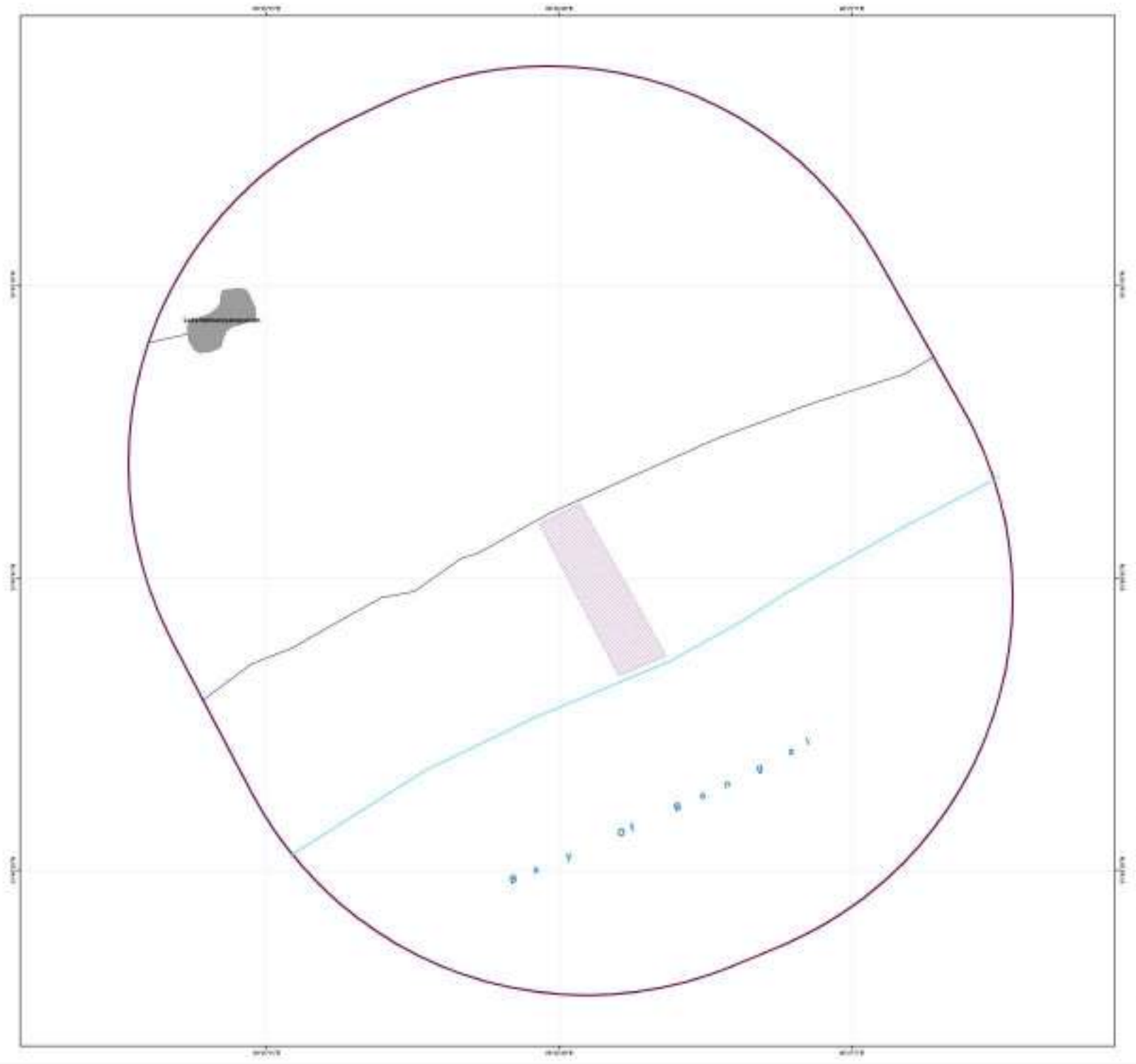
ENV / CON / 01

LANDSCAPE CONCEPTUAL DRAWINGS

ANNEXURE 5

Plan of the area showing existing structure within one kilometre

TOPOGRAPHICAL MAP OF 1Km BUFFER ZONE



N
W E
S

LEGEND

- Project Boundary
- Habitation
- Other Road
- Coast Line
- 1 Km Buffer Boundary

Scale

0 0.2 0.4 0.8 Kilometers

Project :

GOLDEN SANDS BEACH FRONT RESORT

ADAVI VILLAGE,BAPATLA MANDAL
GUNTUR DISTRICT

Client :

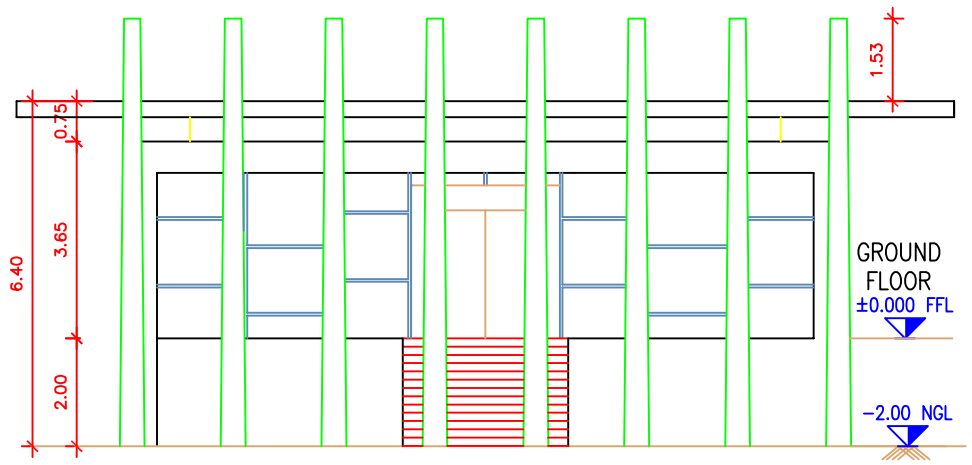
YAGANTI ESTATES

Prepared by :

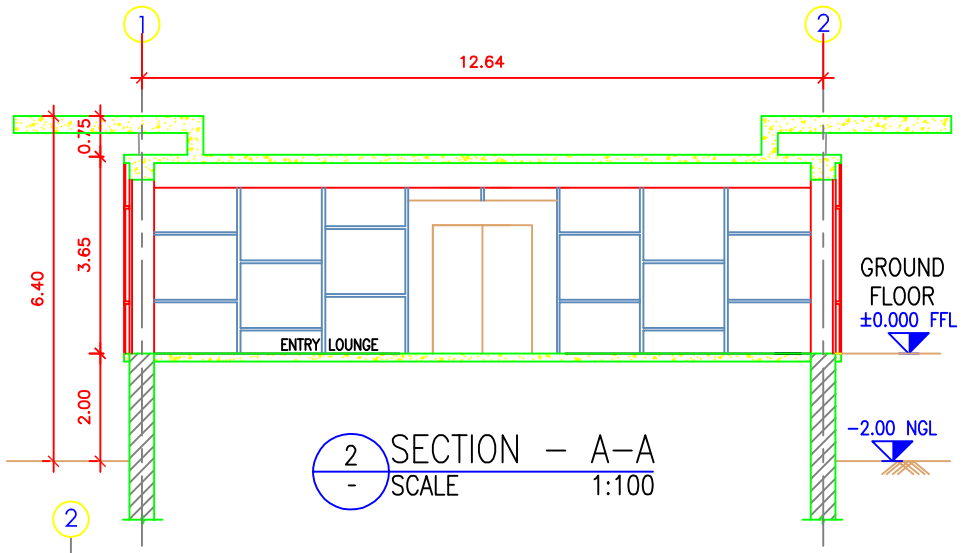
tecdatum

ANNEXURE 6

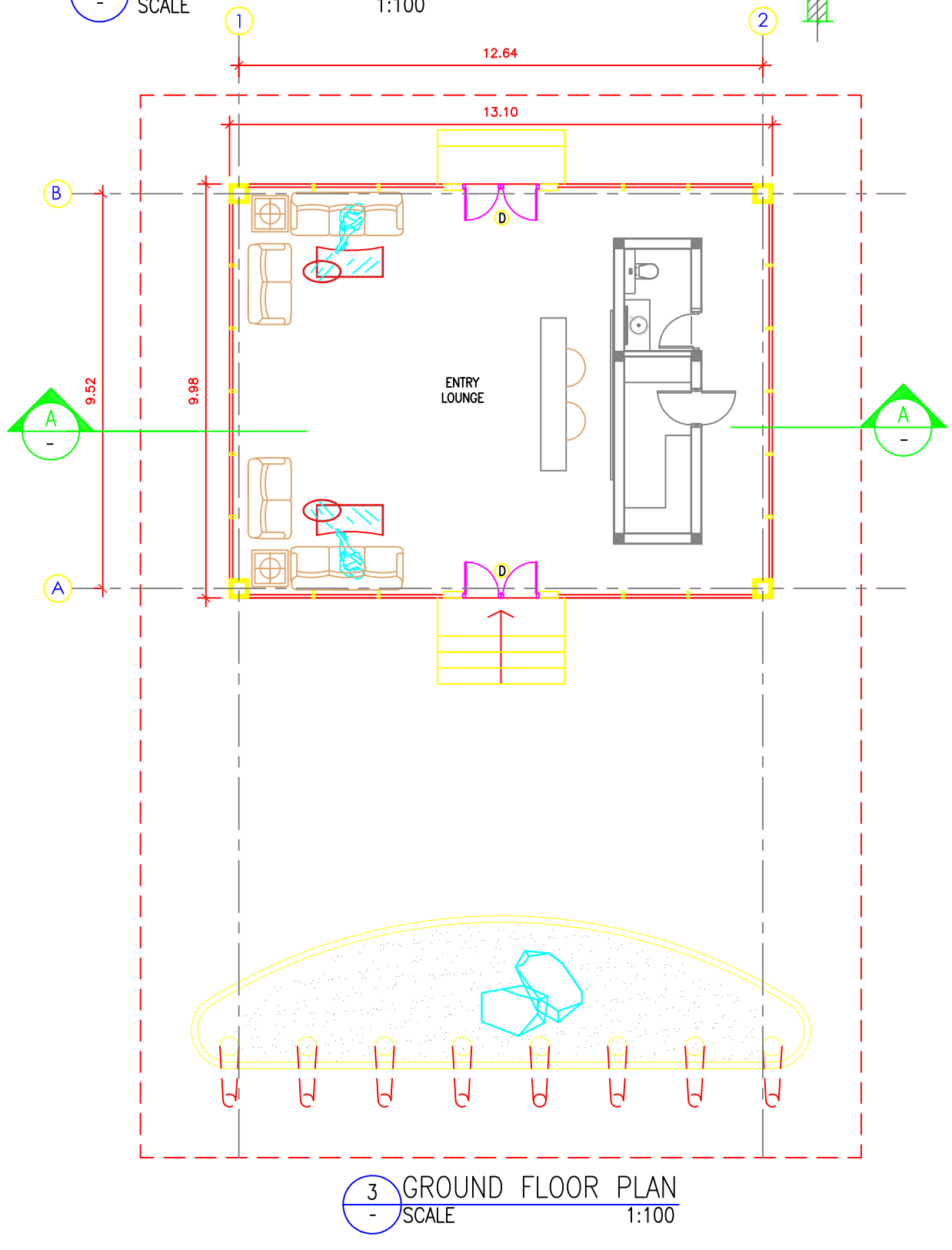
Plan /Elevation of the buildings proposed clearly demarcating the access road to the public on either side of the proposed construction if it is a beach resort/ hotel in accordance with the provisions of the guidelines given in CRZ notification.



1 - FRONT SIDE ELEVATION
SCALE 1:100



2 - SECTION – A–A
SCALE 1:100



3 - GROUND FLOOR PLAN
SCALE 1:100

GENERAL NOTES:

1. DO NOT SCALE FROM THE DRAWINGS.
2. ALL DIMENSIONS ARE METERS UNLESS NOTED OTHERWISE. ALL DIMENSIONS TO BE VERIFIED ON SITE & APPROVED BY THE ENGINEER.
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH OTHER RELEVANT ARCHITECTURAL, STRUCTURAL, PUBLIC HEALTH, ELECTRICAL, CIVIL DRAWINGS AND ALL RELEVANT SECTIONS OF THE SPECIFICATIONS.

AREA STATEMENT:

GROUND FLOOR AREA = 130.74 Smt.

Rev	Description	Date	Drawn	Checked
1	RE-ISSUED FOR APPROVAL	26-02-16	V.R. MANI	RN
0	ISSUED FOR APPROVAL	28-05-14	V.R. MANI	RN

Project:

GOLDEN SANDS BEACH FRONT RESORTS

Client:

YAGANTI ESTATES

Consultants:

D+D Architecture
D. No. 1-112-12/1, Plot No. 11,
SECTOR 8, II FLOOR,
NEAR USHODAYA JUNCTION,
M V P COLONY, VISAKHAPATNAM.
TEL : +91-78935 96626
EMAIL: office.architecture@gmail.com

in association with

Design Collaborative
III Floor, S V Complex,
No. 179, Eswaran Koil Street,
Pondicherry.
TEL : +91-413-2227203
EMAIL: info@designcollaborative.co.in

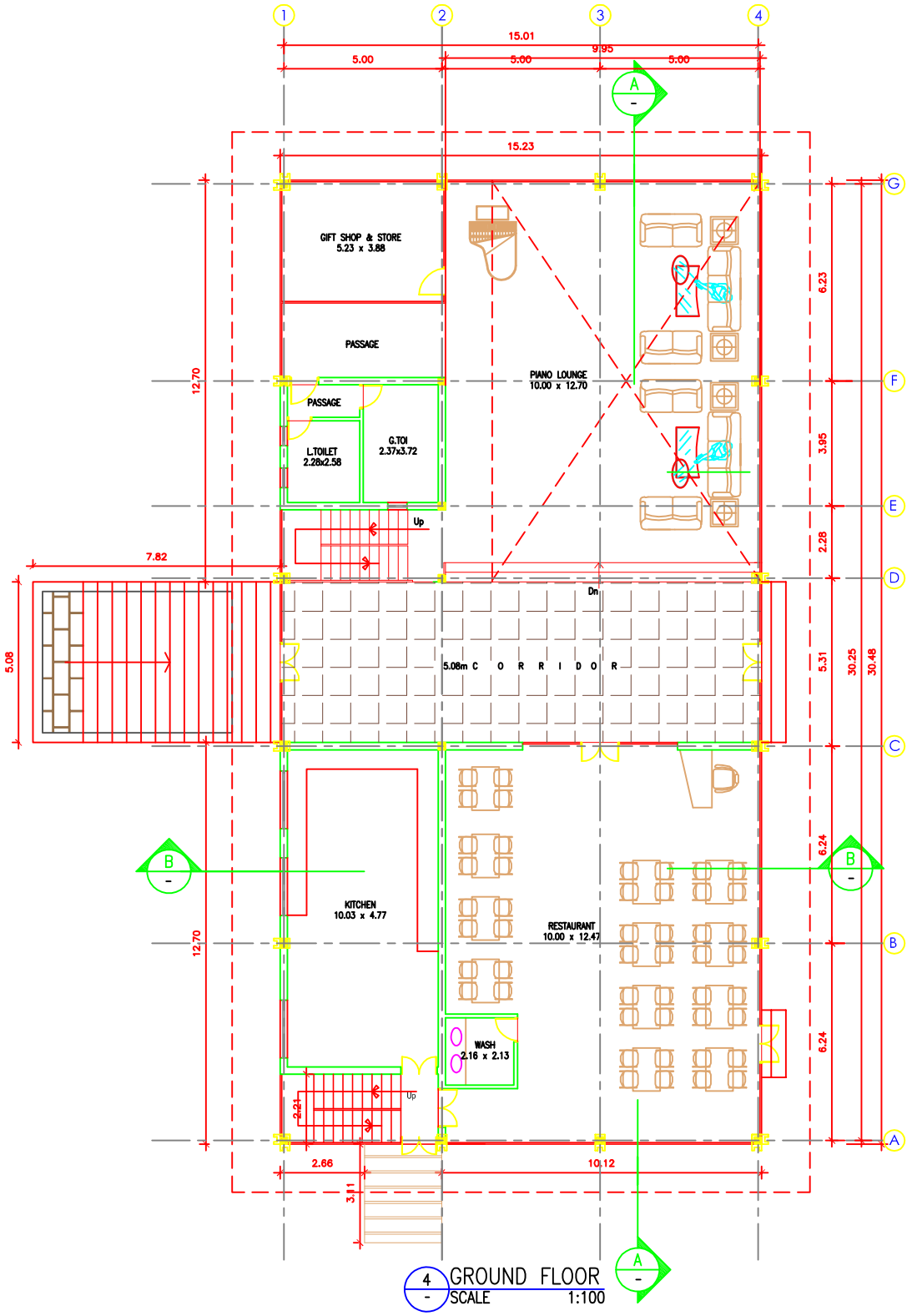
Drawing title:

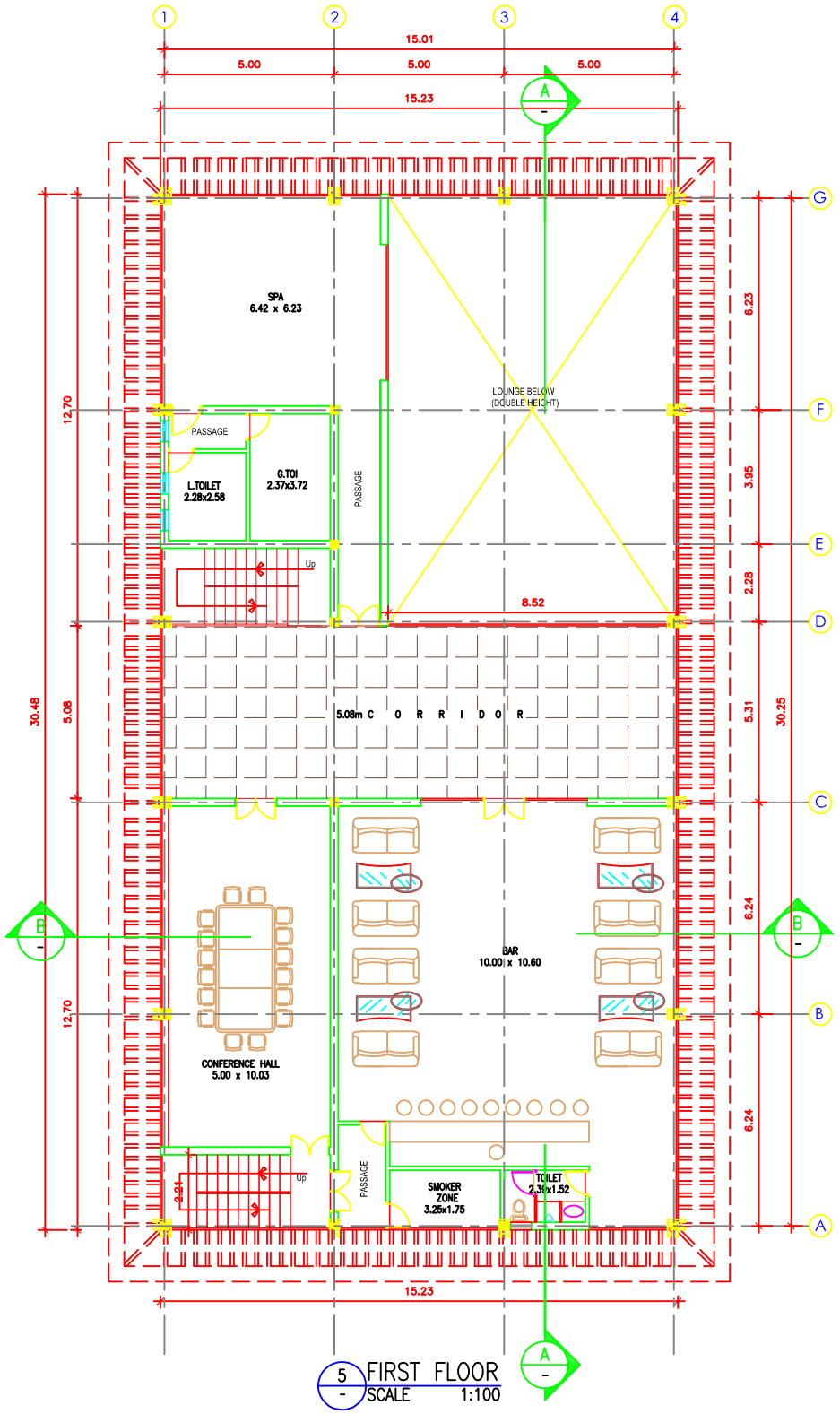
ENTRY LOUNGE PLAN,ELEVATION & SECTION

Original Scale	Drawn	Checked	Approved	Original Sheet Size
1:500	V. R. MANI Date: 28-05-14	RN Date:28-05-14	RN Date: 28-05-14	A2

Drawing Number: **BBFD-CRZ-001**

Rev: 1





GENERAL NOTES:

1. DO NOT SCALE FROM THE DRAWINGS.
2. ALL DIMENSIONS ARE METERS UNLESS NOTED OTHERWISE. ALL DIMENSIONS TO BE VERIFIED ON SITE & APPROVED BY THE ENGINEER.
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH OTHER RELEVANT ARCHITECTURAL, STRUCTURAL, PUBLIC HEALTH, ELECTRICAL, CIVIL DRAWINGS AND ALL RELEVANT SECTIONS OF THE SPECIFICATIONS.

N

AREA STATEMENT:

GROUND FLOOR AREA	= 464.21 Smt.
FIRST FLOOR AREA	= 355.95 Smt.
TOTAL FLOOR AREA	= 820.16 Smt.

Rev	Description	Date	Drawn	Checked
1	RE-ISSUED FOR APPROVAL	26-02-16	V.R. MANI	RN
0	ISSUED FOR APPROVAL	27/05/14	V.R. MANI	RN

Project:

GOLDEN SANDS
BEACH FRONT RESORTS

Client:

YAGANTI ESTATES

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D. No. 1-112-12/1, Plot No. 11,
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M V P COLONY, VISAKHAPATNAM.
TEL : +91-78935 96626
EMAIL: office.architecture@gmail.com
in association with
Design Collaborative
III Floor, S V Complex,
No. 179, Eswaran Koil Street,
Pondicherry.
TEL : +91-413-2227203
EMAIL: info@designcollaborative.co.in

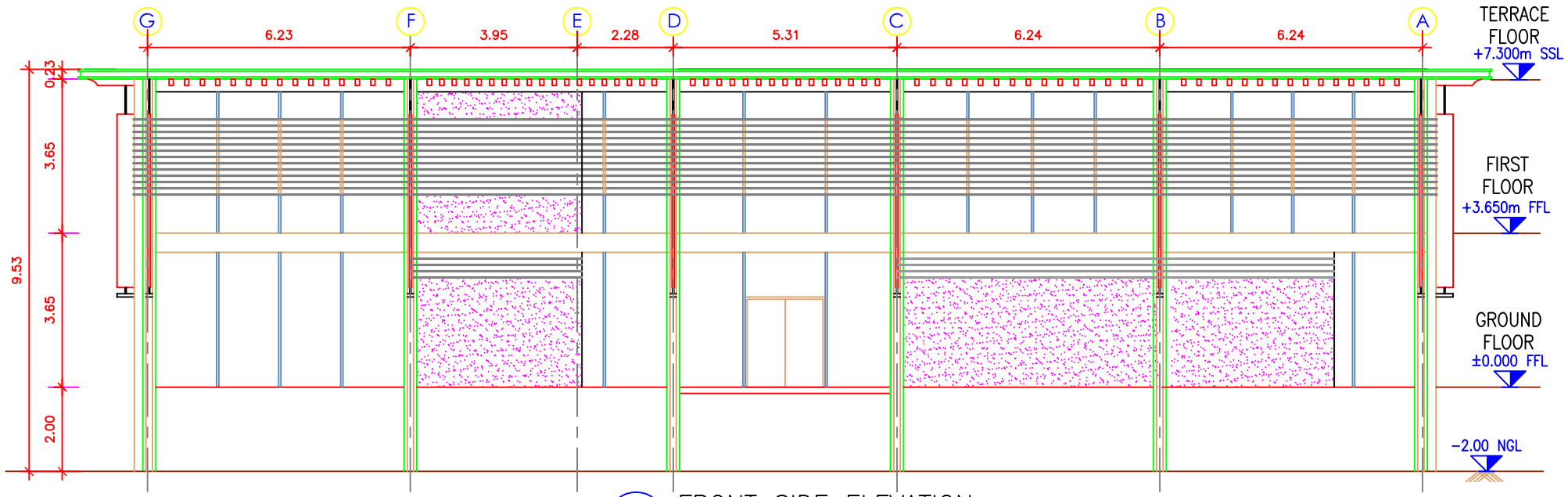
Drawing title:

CLUB HOUSE
FLOOR PLANS

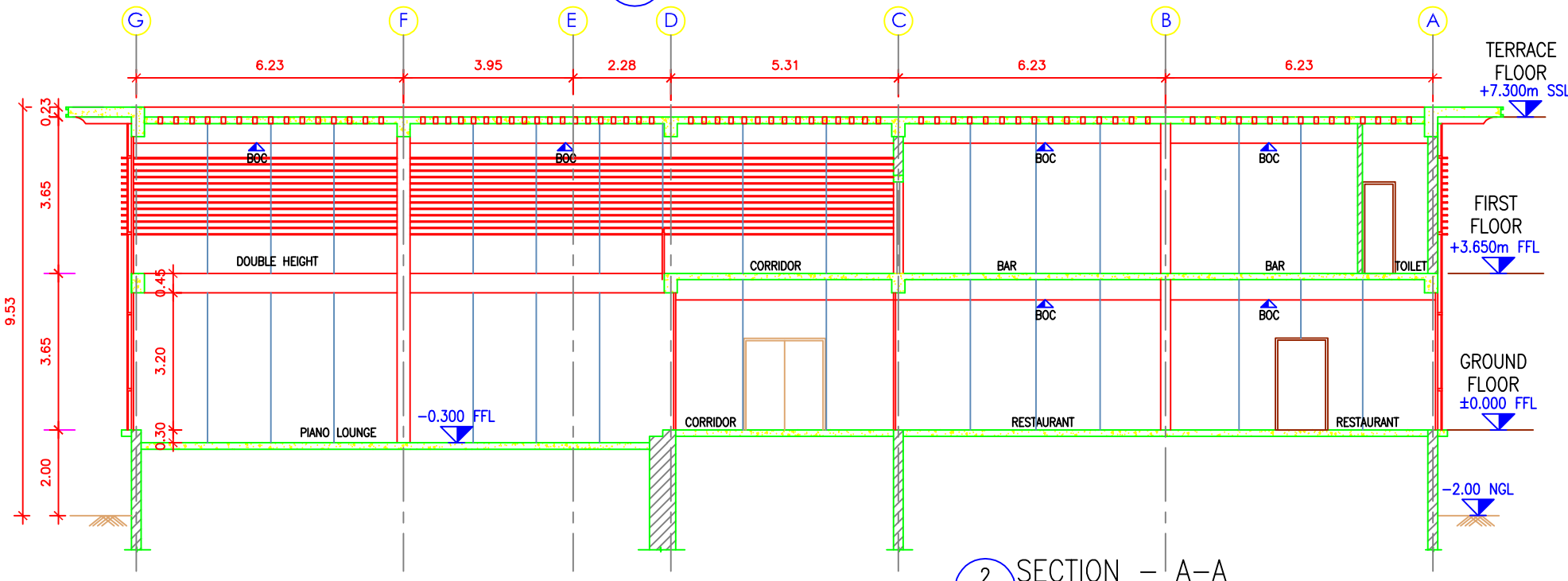
Original Scale	Drawn	Checked	Approved	Original Sheet Size
1:500	V. R. MANI	RN	RN	A1
	Date: 27/05/14	Date:27/05/14	Date: 27/05/14	

Drawing Number: **BBFD-CRZ-002**

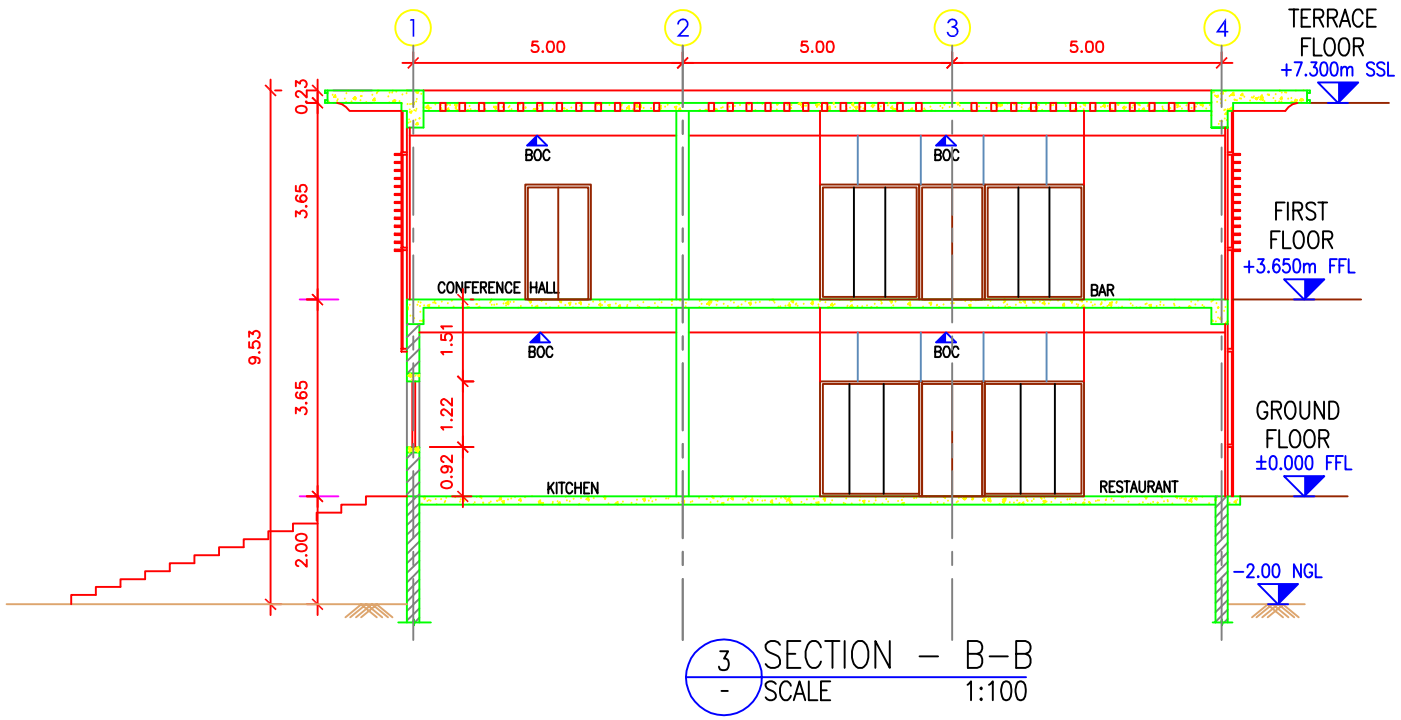
Rev: 1



1 - FRONT SIDE ELEVATION
SCALE 1:100



2 - SECTION – A–A
SCALE 1:100



3 - SECTION – B–B
SCALE 1:100

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Rev	Description	Date	Drawn	Checked
1	RE-ISSUED FOR APPROVAL	26-02-16	V.R. MANI	RN
0	ISSUED FOR APPROVAL	27-05-14	V.R. MANI	RN

Project:

GOLDEN SANDS BEACH FRONT RESORTS

Client:

YAGANTI ESTATES

Consultants:

D+D Architecture
D. No. 1-112-12/1, Plot No. 11,
SECTOR 8, II FLOOR,
NEAR USHODAYA JUNCTION,
M V P COLONY, VISAKHAPATNAM.
TEL : +91-78935 96626
EMAIL: office.architecture@gmail.com

in association with

Design Collaborative
III Floor, S V Complex,
No. 179, Eswaran Koil Street,
Pondicherry.
TEL : +91-413-2227203
EMAIL: info@designcollaborative.co.in

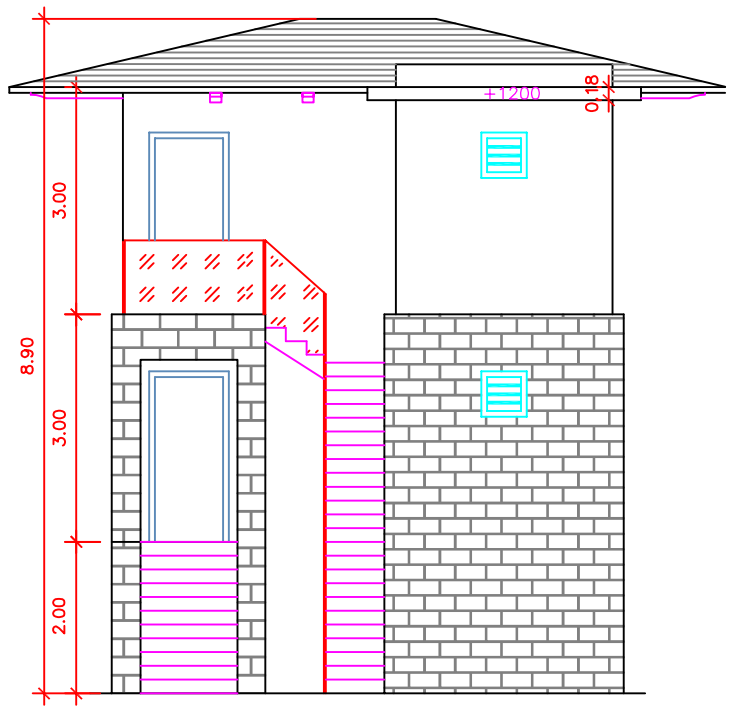
Drawing title:

CLUB HOUSE ELEVATION & SECTIONS

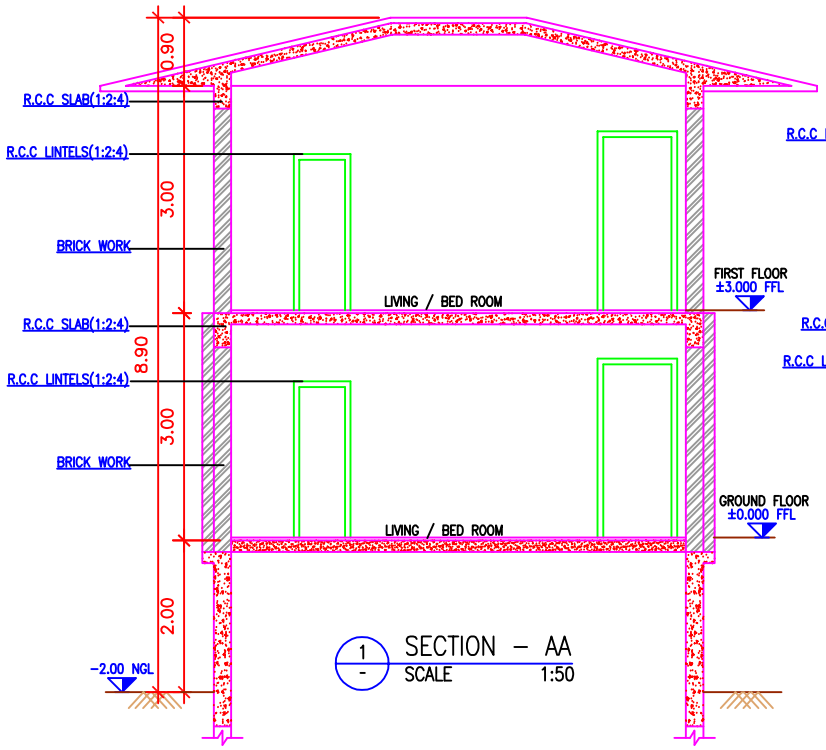
Original Scale	Drawn	Checked	Approved	Original Sheet Size
1:500	V. R. MANI Date: 27/05/14	RN Date:27/05/14	RN Date: 27/05/14	A2

Drawing Number: **BBFD-CRZ-003**

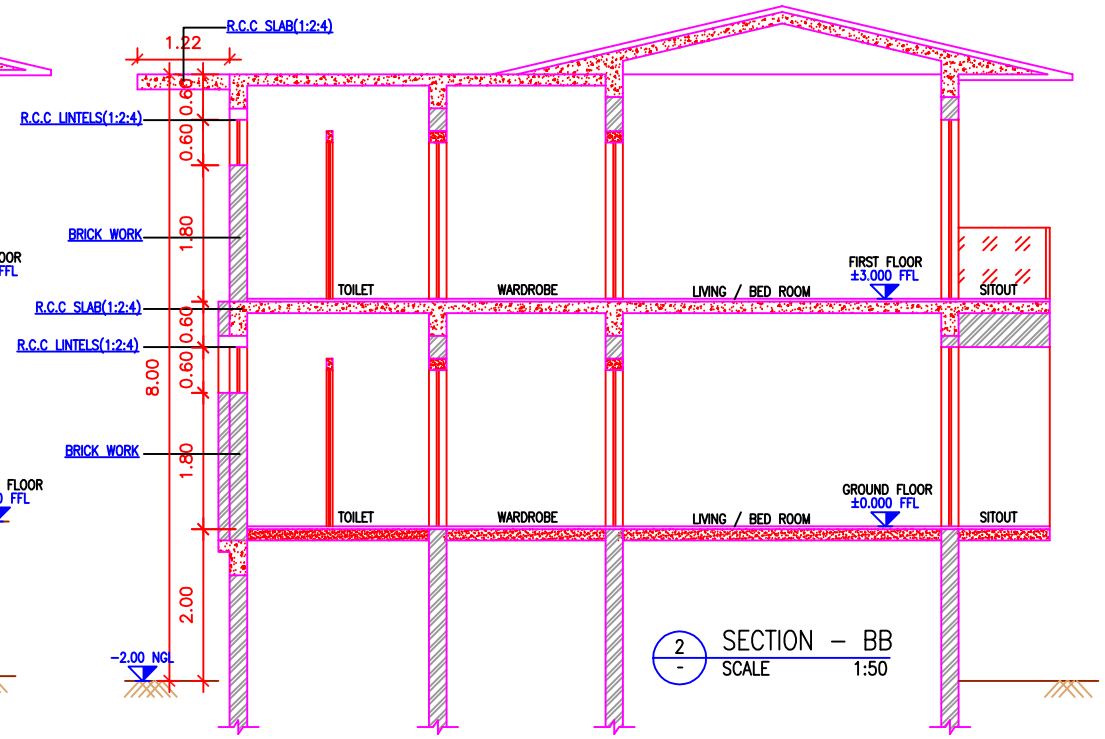
Rev: 1



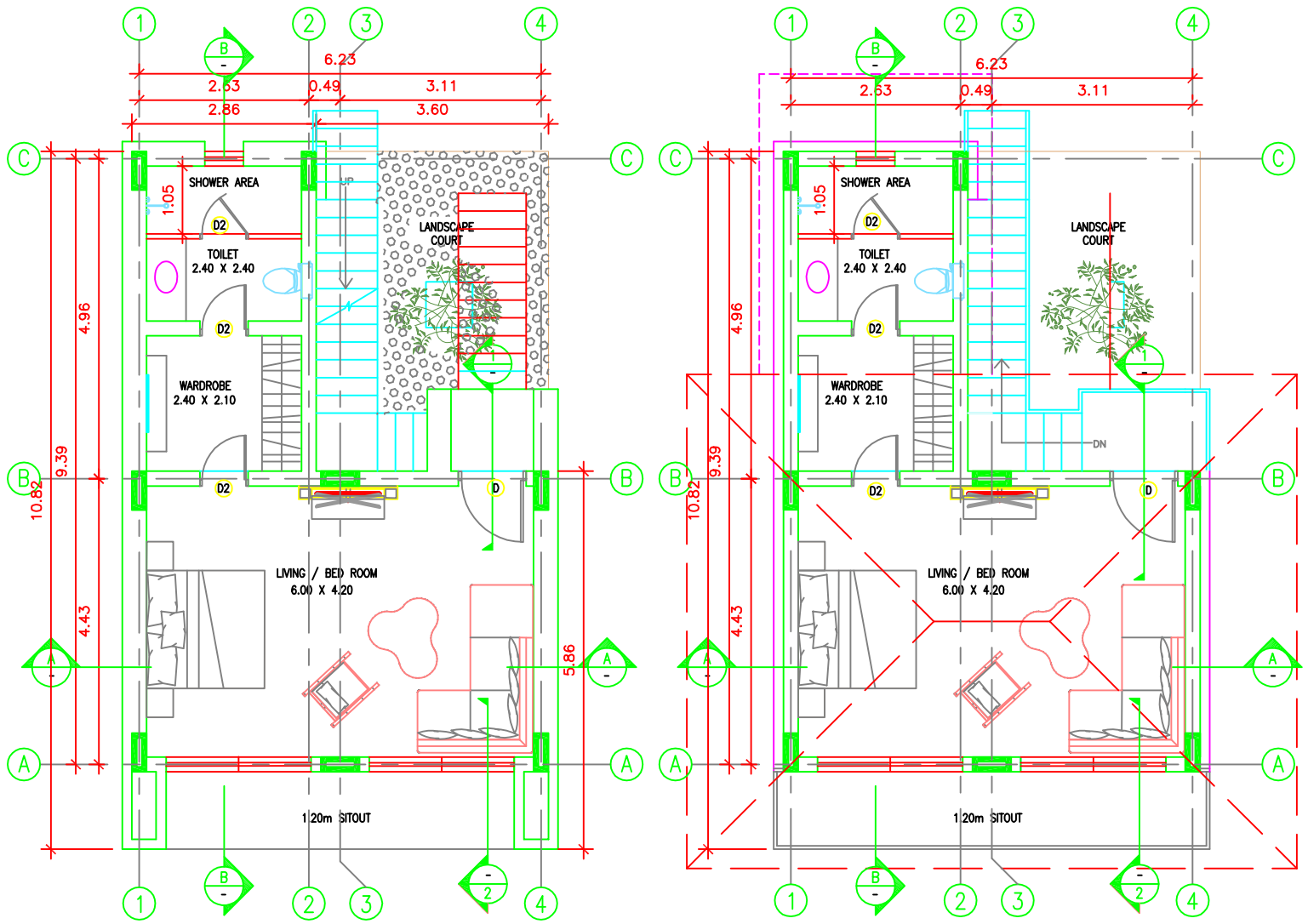
3 FRONT ELEVATION
SCALE 1:50



1 SECTION – AA
SCALE 1:50



2 SECTION – BB
SCALE 1:50



1 GROUND FLOOR PLAN
SCALE 1:50

2 FIRST FLOOR PLAN
SCALE 1:50

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AREA STATEMENT:

GROUND FLOOR AREA	= 57.72 Smt.
FIRST FLOOR AREA	= 55.12 Smt.
TOTAL FLOOR AREA	= 112.84 Smt.

Rev	Description	Date	Drawn	Checked
1	RE-ISSUED FOR APPROVAL	26/02/16	V.R. MANI	RN
0	ISSUED FOR APPROVAL	27/05/14	V.R. MANI	RN

Project:

GOLDEN SANDS
BEACH FRONT RESORTS

Client:

YAGANTI ESTATES

Consultants:

D+D Architecture
D. No. 1-112-12/1, Plot No. 11,
SECTOR 8, II FLOOR,
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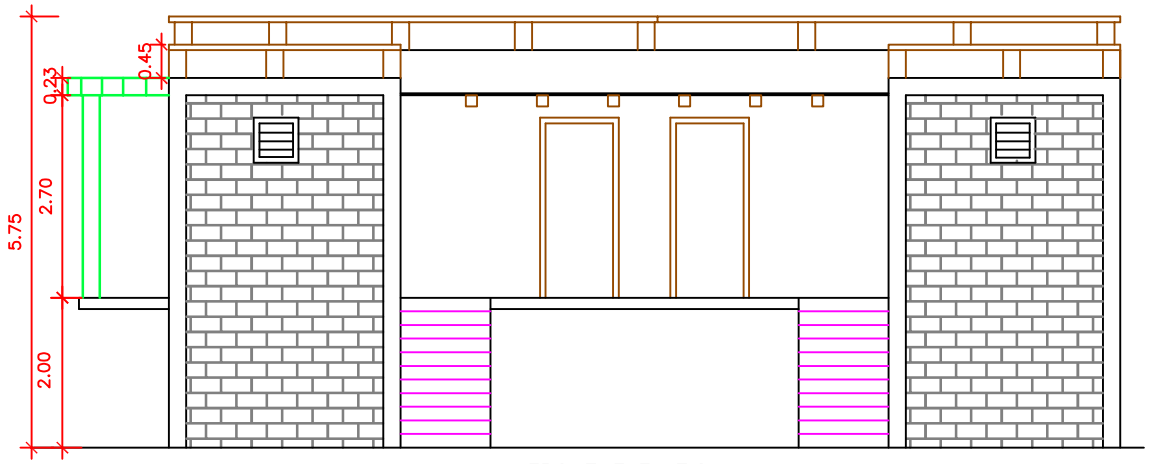
Pondicherry.
TEL : +91-413-2227203
EMAIL: info@designcollaborative.co.in

Drawing title:

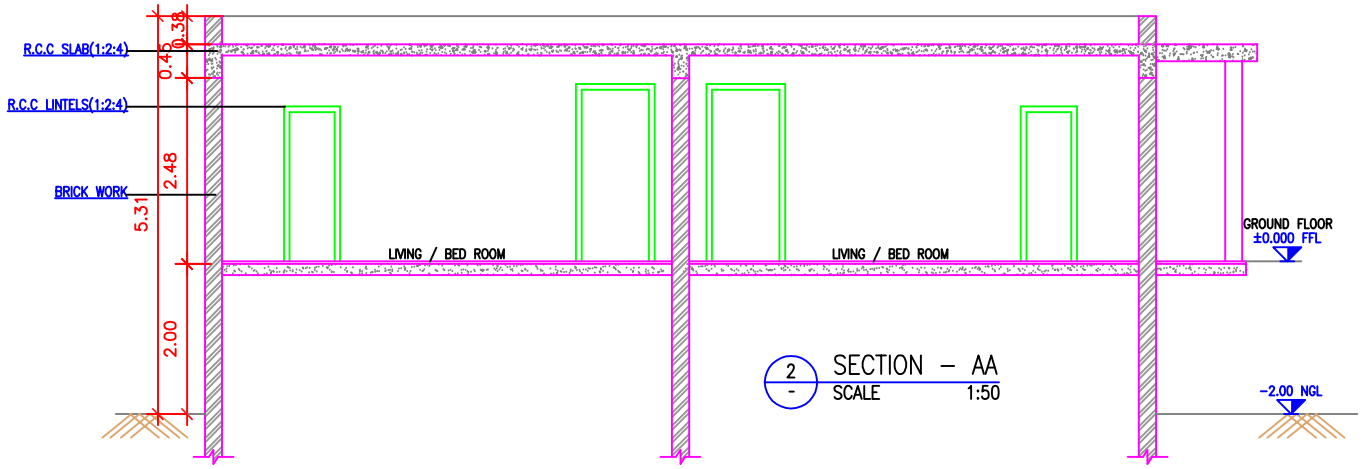
COTTAGE TYPE - 1
FLOOR PLAN
ELEVATION & SECTIONS

Original Scale	Drawn	Checked	Approved	Original Sheet Size
1:500	V. R. MANI	RN	RN	A1
	Date: 27/05/14	Date:27/05/14	Date: 27/05/14	

Drawing Number: **BBFD-CRZ-004**
Rev: 1



1 / - FRONT ELEVATION
SCALE 1:50



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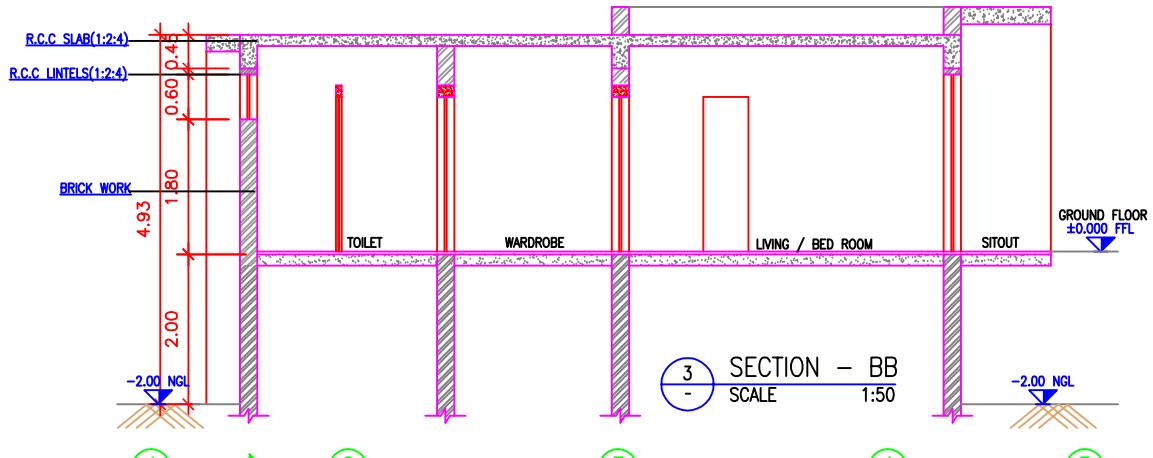
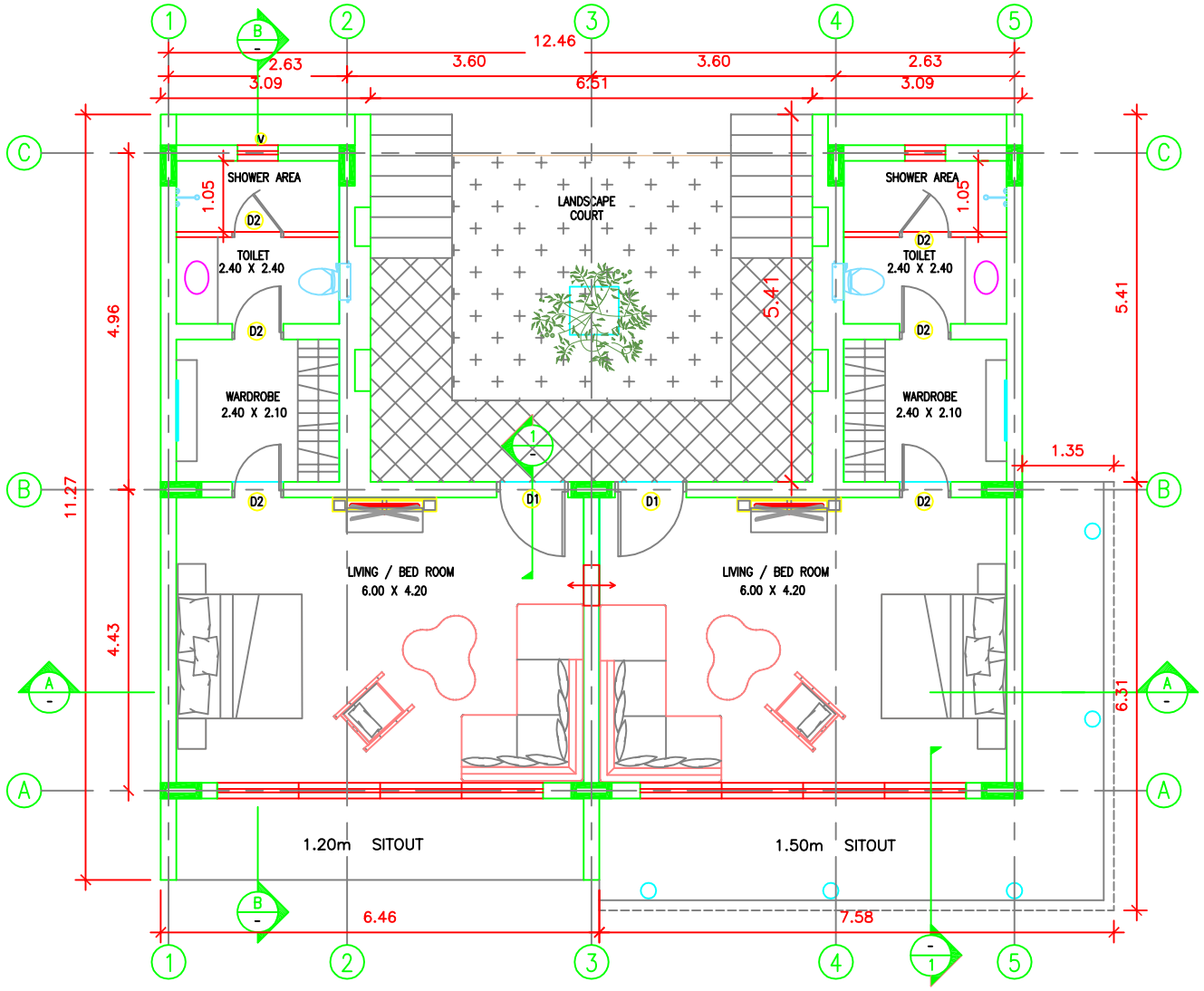
SCALE 1:50



3 / - SECTION – BB
SCALE 1:50



4 / - FLOOR PLAN
SCALE 1:50

GENERAL NOTES:

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AREA STATEMENT:

FLOOR AREA = 119.11 Smt.

Rev	Description	Date	Drawn	Checked
1	RE-ISSUED FOR APPROVAL	26-02-16	V.R. MANI	RN
0	ISSUED FOR APPROVAL	27/05/14	V.R. MANI	RN

Project:

GOLDEN SANDS
BEACH FRONT RESORTS

Client:

YAGANTI ESTATES

Consultants:

D+D Architecture
D. No. 1-112-12/1, Plot No. 11,
SECTOR 8, II FLOOR,
NEAR USHODAYA JUNCTION,
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No. 179, Eswaran Koil Street,
Pondicherry.
TEL : +91-413-2227203
EMAIL: info@designcollaborative.co.in

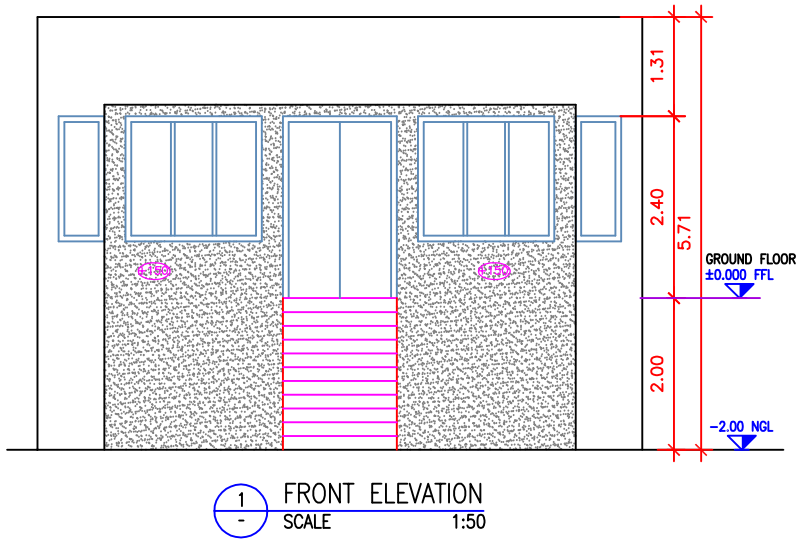
Drawing title:

COTTAGE TYPE - 2
FLOOR PLAN
ELEVATION & SECTIONS

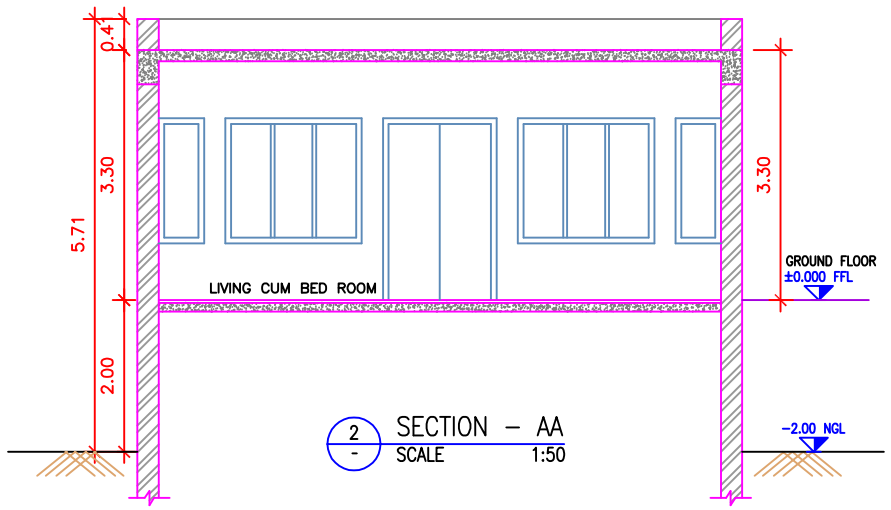
Original Scale	Drawn	Checked	Approved	Original Sheet Size
1:500	V. R. MANI	RN	RN	A1
	Date: 27/05/14	Date:27/05/14	Date: 27/05/14	

Drawing Number: **BBFD-CRZ-005**

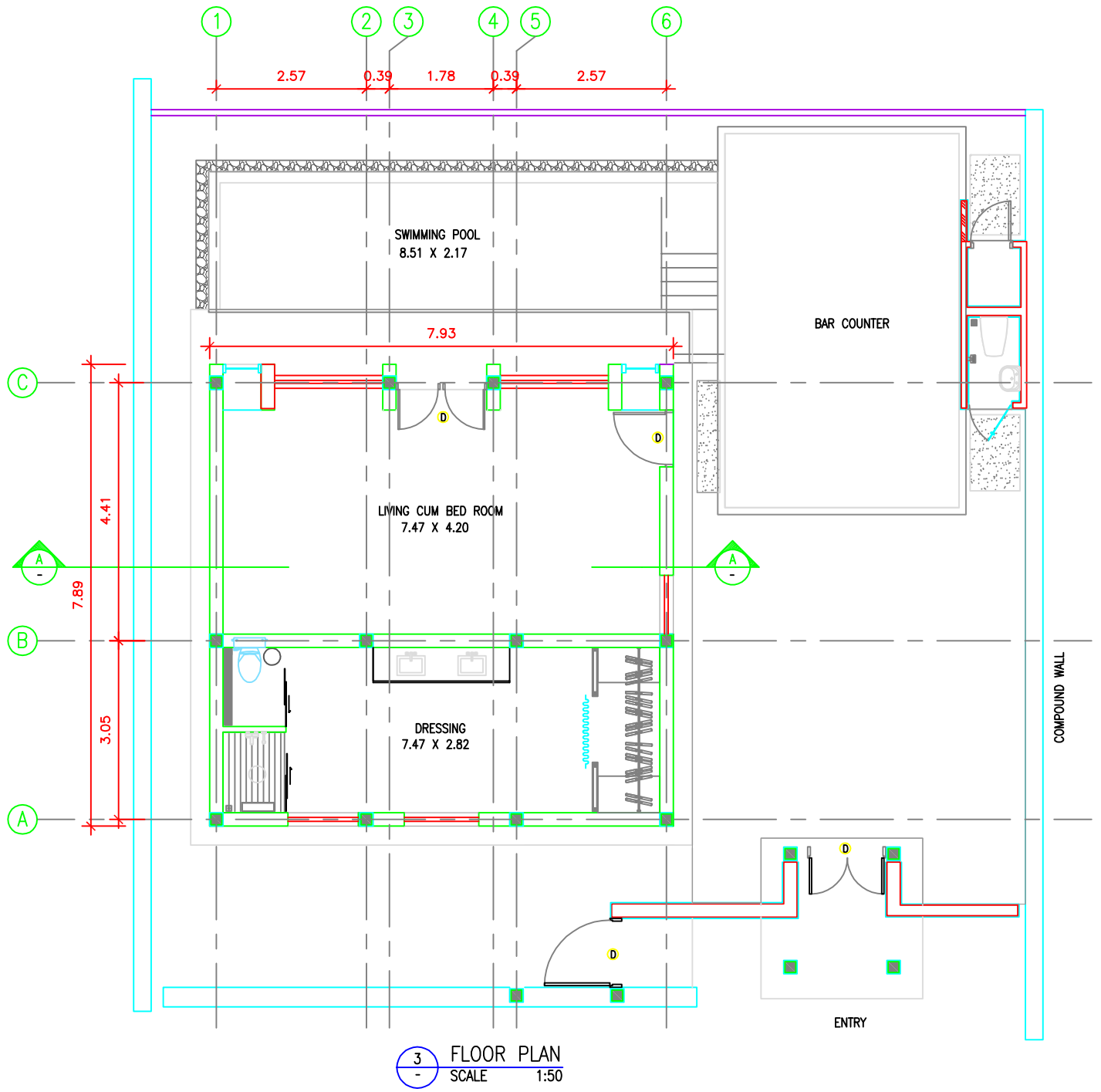
Rev: 1



1 / - FRONT ELEVATION
SCALE 1:50



2 / - SECTION – AA
SCALE 1:50



3 / - FLOOR PLAN
SCALE 1:50

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AREA STATEMENT:

FLOOR AREA = 62.60 Smt.

Rev	Description	Date	Drawn	Checked
1	RE-ISSUED FOR APPROVAL	26-02-16	V.R. MANI	RN
0	ISSUED FOR APPROVAL	28/05/14	V.R. MANI	RN

Project:

GOLDEN SANDS
BEACH FRONT RESORTS

Client:

YAGANTI ESTATES

Consultants:

D+D Architecture
D. No. 1-112-12/1, Plot No. 11,
SECTOR 8, II FLOOR,
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EMAIL: info@designcollaborative.co.in

Drawing title:

COTTAGE TYPE - 3
FLOOR PLAN
ELEVATION & SECTIONS

Original Scale	Drawn V. R. MANI	Checked RN	Approved RN	Original Sheet Size
1:500	Date: 28/05/14	Date:28/05/14	Date: 28/05/14	A1

Drawing Number: **BBFD-CRZ-006**

Rev: 1

ANNEXURE 7

Approval of Electricity connection and certificate of supply of electricity

SOUTHERN POWER DISTRIBUTION COMPANY OF AP LIMITED

From
Asst Divisional Engineer,
Operation Bapatla :: APSPDCL,
GUNTUR.

To,
GOLDEN SANDS BEACH FRONT RESORTS,
(Ch.Bhavani Prasad, S/o: Venkateswara Rao,
S.No: 5/17, Adavi (V), Bapatla (M),
Guntur(Dt).

Sir,

Sub: ~~Approval~~ Extension of electricity connection – Regarding

XXXXX

With reference to the above, we can give electricity connections and supply of electricity as per the required capacity to the proposed GOLDEN SANDS BEACH FRONT RESORTS, Ch.Bhavani Prasad, S/o: Venkateswara Rao S.No: 5/17, Adavi (V), Bapatla (M), Guntur(Dt), after payment of estimate charges as per departmental Procedure.

Asst Divisional Engineer,
Operation Bapatla :: APSPDCL,
Guntur(Dt).

ANNEXURE 8

No objection certificate from the State Ground water Board

GOVERNMENT OF ANDHRA PREADESH
GROUND WATER DEPARTMENT

From
Sri A. Ramakrishna Reddy, B.E.,
Deputy Director,
Ground Water Department,
¼ Ramannapet,
GUNTUR.

To
Sri K. Ravindra Babu.,
Flot No.302,
Yaganti Style Apartment,
4/3, Navabharat Nagar,
GUNTUR – 7.

Letter No. 01/T/AP TOURISIM/2014-'15 Dated:-24-09-2014.

Sir,

Sub:- Ground Water Department, Guntur – Ground Water Feasibility Report in the lands of Sri K. Ravindra Babu, Adavi (V), Bapatla (M) -Regarding.

Ref:- Your Letter. Dated:18.07.2014.

****

I am herewith enclosing **"A REPORT ON GROUND WATER INVESTIGATIONS CONDUCTED IN THE PROPOSED SITE FOR CONSTRUCTION OF BEACH RESORTS IN ADAVI VILLAGE, BAPATLA MANDAL, GUNTUR DISTRICT"** for favour of information and necessary action.

Yours Truly,

24/9/14

DEPUTY DIRECTOR
GWD, GUNTUR

Copy submitted to the Director, Ground Water Department, Hyderabad for favour of information.

GOVERNMENT OF ANDHRA PRADESH
GROUND WATER DEPARTMENT

A REPORT ON CONSTRUCTION OF BEACH RESORTS IN ADAVI VILLAGE, BAPATLA MANDAL, OF GUNTUR DISTRICT

September – 2014

DEPUTY DIRECTOR
GROUND WATER DEPARTMENT
¼, RAMANNAPET, GUNTUR
Cell.No.9393148049

A REPORT ON GROUND WATER INVESTIGATIONS CONDUCTED IN THE PROPOSED SITE FOR CONSTRUCTION OF BEACH RESORTS IN ADAVI VILLAGE, BAPATLA MANDAL, GUNTUR DISTRICT

1. INTRODUCTION

Sri K. Ravindra Babu, resident of Navabharath Nagar, Guntur has requested to identity feasible sites for construction of filter points to cater the ground water needs of proposed beach resorts at un inhabited village of Adavi in Bapatla Mandal. Integrated surveys which include Hydrogeological and Geophysical surveys were conducted by **Sri A. Sambasiva Rao, Assistant Hydrogeologist, and Sri K.Koteswara Rao, Assistant Geophysicist** on **4.9.2014 & 5.9.2014** to pin point the feasible locations.

2. LOCATION: The referred land is situated at a distance of 9.50 km from Bapatla and falls in survey of India toposheet no 66 A/5. The land lies in between latitude N15^{0}49'04", N 15^0 48' 56" and E 80^0 26' 40.6" E 80^0 26' 31" covering an area of about 27.63 Acres in survey No-466 **(Plate – I)**

3. PHYSIOGRAPHY & DRAINAGE: The area is a part of sea coast, comprises of marine deposits formed as Beach ridges. But most of the ridges were levelled for cultivation. As the area is covered with sandy soils no well defined drainage is observed.

4. SOIL & VEGETATION: The area is covered with loamy soils mixed with sand, silt and clay. Ground nut and cashew nut are the main crops in the area. Eucalyptus crop is also grown in the area.

5. CLIMATE & RAIN FALL: The climate of the area is very pleasant, maximum temperature of the area is 39^{0}c and minimum temperature of the area is 17^{0}c. The normal rainfall of the area is 987 mm. 52% of total rainfall occurs during SW monsoon and 35% occurs during NE monsoon. The remaining 13% occurs in summer and winter seasons.

6. GEOLOGY & HYDROGEOLOGY: Three Dug wells and two filter points were inventoried in the adjacent fields **(Table – I)**. But these wells are in use for non agriculture purpose. The total depth of dug wells ranging between 1.88 mts to 3.1mts.

Depth to water level varying between 1,43 mts to 2,55 mts. The yield of filter points ranges from 1500 to 2000 lph. Fresh water aquifer is extended down to a depth of 5-6mts bgl and the thickness of fresh water aquifer is 1.50 to 2.0 mts only. Well inventory data indicates that silt is dominating constituent in the area. The formation is of silty clay with low permeability, discharges will not sustain if pumped with more than 1 HP Motors. The pumping with discharges more than 1500 to 2000 Lph will lead to saline water intrusion in to the fresh water aquifer.

The nearest Piezometers is located at Bapatla town. The pre and post monsoon water levels of the Piezometer for the last 10 years from 2004-14 are shown in **TABLE – II**. The premonsoon water level ranging between 1.97 - 3.94mts and the post monsoon water level ranging between 0.78 – 2.83 mts. The fluctuations of water levels during pre and post monsoon period ranges from –0.37 mts(2004) to 2.43mts (2010) and that of during Post and Pre monsoon period ranges from –1.48 mts (2013) to –0.38 mts (2009). Hydrograph with decadal water levels showing 0.50 mts raising trend is observed **(Plate – II).**

7. GROUND WATER RESOURCES: The area falls in **GNT-C-55-Nallama-Pedanandipadu** basin and is in safe category with a stage of development of 10%. As per 2010 – '11, the ground water availability in Adavi village is 425 ha.m, the ground water draft for all uses is 43 ha.m and balance of ground water is 382 ha.m. Hence the stage of development is 10%. The requirement of water per annum is 1.44ha.m only. Even if we extract this quantity of water from the ground it will not effect the category of the basin.

8. GEOPHYSICAL INVESTIGATIONS:

A total number of 9 Vertical Electrical Soundings (VES) **Plate – III** applying schlumberger electrode configuration with current electrodes separation (AB Separation) of 100 to 320 m and potential electrode separation (MN Separation) of 1 to 20m respectively were conducted in the lands of Sri K. Ravindra Babu, Adavi (V), Bapatla (M), Guntur district to know the subsurface nature of the area. The VES data was interpreted in terms of Resistivity (Ohm-m) and thickness(m) of individual layers by adopting Partial Curve Matching Techniques with the help of Auxiliary Graphs and the results were presented in **TABLE - III**.

The area under investigation is covered by 1 to 3m thick red sandy soil with resistivity values varying from 215 to 930 ohm-m. This top layer is underlain by 2.2 to 4.0 m thick second layer with resistivity values ranging from 10.8 to 37.0 ohm-m charecterised by loamy soils (Sands mixed with silt and clay). This 2nd layer is underlained by 3rd layer with resistivity varying from 0.4 to 2.4 ohm-m characterized by marine clays.

It is observed from the VES results and the nature & trend of the field curves, the area is favourable for development of ground water and fresh water occurs in the top layers i.e., in the depth range of 4.2 to 5.7m only. The location at V5, V2, V9, V8, V4, V1, V3, V6 and V7 are feasible for construction of collector wells *. The expected yields are limited in quantity and the quality of water is monitored during construction of collector well.

* Collector well means a well with 4m dia and 5-6m depth connected with two PVC Pipes of 100 mm dia and 12mm length on each side. The PVC pipes are perforated and packed with plastic rope and laid horizontally at a depth of 3 to 4m with gentle slope towards collector wells.

9. WATER QUALITY: Four water samples collected from two open wells and two filter points and detailed chemical analysis was done and the data presented in **TABLE – IV**. The pH of the water samples range from 7.1 to 7.35 indicates potable in nature. EC values ranging between 360 m. mho to 885 m. mho indicating good to permissible class. All the anions and cations are also with in range of ICAR classification except one sample colleted from filter point located in adjacent filed. Chemical quality of ground water collected from open wells is relectively good when compared with that of filter points which are penetrated to a depth of 4.5 to 6 mts.

10. CONCLUSIONS & RECOMMENDATIONS: The area is covered with loamy soil composed of sand silt and clay. The formation is homogenous in nature with moderate permeability. The well inventory data indicated that the fresh water occurs within a depth range of 4.5 to 5.5 mts from bgl. The depth to water level varying between 0.78 and 2.70 mts. The Vertical Electrical Soundings (VES) data conducted at nine locations also indicating more or less homogeneous nature of formation.

Based on above observations it is concluded that the area is feasible for low yielding wells preferably shallow dug wells (i.e., collector wells) of 5 mts depth. However, based on minute variations observed in field conditions and resistivity data, the locations were prioritized in the following order. i.e., V5, V2, V9, V8, V4, V1, V3, V6 & V7 for construction of collector wells.

The collector wells canbe constructed to a depth of 5.0 mts with a dia of 3 mts as shown in **Plate – IV**. The depth to water level in the region is around 2.50 mts and the depth recommended depth is 5.0 mts. The volume of water that can be with drawn from each well is estimated around 15,000 – 17,500 Lpd. Hence four collector wells can be constructed in first phase at V5, V2, V9 and V8 to meet daily requirement of 40,000 Lpd. If in case of additional requirement, collector wells may be constructed at the other locations i.e., V4, V1, V3, V6 and V7 as shown in **Table - V**.

Sd/-
K.KOTESWARA RAO
ASST. GEOPHYSICIST

Sd/-
A. SAMBASIVA RAO
ASST. HYDROGEOLOGIST

Sd/-
ASSISTANT DIRECTOR(FAC)

DEPUTY DIRECTOR
GROUND WATER DEPARTMENT
GUNTUR

TABLE - I

STATEMENT SHOW THE WELL INVENTORY DATA BEACH RESORTS ADAVI VILLAGE, BAPATLA MANDAL, GUNTUR DISTRICT

SI.No	Location	Latitude	Longitude	Type of Well	Depth (m)	Dia (m)	DTW (m)	Mode of lift	Geology	Remarks
1	Adjacent to Beach Road North of the Land	N 15.81802	E 80.44377	DW	2.72	1.76	2.32	No Lift	Alluvium	
2	Adjacent land on North west corner	N 15.81707	E 80.44127	DW	3.19	1.76	2.55	No Lift	Alluvium	
3	Adjacent Land Western Side	N 15.81459	E 80.44111	DW	1.88	1.76	1.43	No Lift	Alluvium	
4	Hallow bricks unit	N 15.81644	E 80.44455	FP	5.5	1.1	2.45	1 HP	Alluvium	
5	Adjacent land (Eastern side)	N 15.81624	E 80.44516	FP	5.5	1.1	2.30	1 HP	Alluvium	

TABLE - II

YEAR	Pre Monsoon	Post Monsoon	FLUCTUATION	
	May	Nov	May-Nov	Nov-May
2004	2.33	2.70	-0.37	-1.24
2005	3.94	1.85	2.09	-0.78
2006	2.63	1.31	1.32	-1.32
2007	2.63	1.45	1.18	-0.86
2008	2.31	2.46	-0.15	-0.44
2009	2.90	2.83	0.07	-0.38
2010	3.21	0.78	2.43	-1.19
2011	1.97	2.30	-0.33	-0.54
2012	2.84	1.89	0.95	-1
2013	2.89	0.89	2	-1.48
2014	2.37	--	--	--

TABLE - III

INTERPRETED VES RESULTS

Scheme: Deposit Works **Mandal: Bapatla**

Village: Adavi **District: GUNTUR**

Sl.No	Name of the Land Owner	Survey No.	Latitude/Longitude.	VES No.	ρ_1	h_1	ρ_2	h_2	ρ_3	h_3	H	Remarks
1	M/s Yaanti Estates	466	N - 15° 48' 56.7" E - 80° 26' 40.6"	V 1	370	1.7	18.5	3.2	1.1	α	4.9	Feasible for Collector Well
2	- do -	- do -	N -15° 49' 01.0" E - 80° 26' 39"	V2	930	1.9	23	3.8	0.9	α	5.7	- do -
3	- do -	- do -	N -15° 49' 04" E - 80° 26' 35"	V3	215	1.8	10.8	4	0.4	α	5	- do -
4	- do -	- do -	N -15° 49' 02" E - 80° 26' 30"	V4	740	1.0	37	3.6	2.4	α	4.6	- do -
5	- do -	- do -	N -15° 48' 58" E - 80° 26' 29"	V5	240	3.0	12	2.2	0.6	α	5.2	- do -
6	- do -	- do -	N -15° 48' 53" E - 80° 26' 31"	V6	400	1.0	20	3.2	0.7	α	4.2	- do -
7	- do -	- do -	N -15° 48' 59" E - 80° 26' 30"	V7	780	1.2	19.5	3.3	1.1	α	4.5	- do -
8	- do -	- do -	N -15° 48' 57" E - 80° 26' 35"	V8	600	1.4	15	2.8	1.6	α	4.2	- do -
9	- do -	- do -	N -15° 49' 00" E - 80° 26' 35"	V9	235	1.1	23.5	3.4	0.6	α	4.5	- do -

Where ρ_1, ρ_2, ρ_3 and h1, h2, h3 are resistivity (ohm-m) and thickness (m) of 1,2,3 layers respectively

H = Depth of fresh water zone from bgl

TABLE - IV

WATER ANALYSIS REPOSRT

MANDAL: BAPATLA **Sub-Division:** **District: Guntur** **Date of Receipt:**

Sl.No	Village/Habitation	Lab Ref. No	Type of source	Ph	IRON (as Fe)	Turbidity	FLUORIDE (as F)	Total Solids	CONDUCTIVITY	Total Hardness (as CaCo3)	Total Alkanity	Carbonate Hardness (as CaCo3)	Calcium Hardness (as CaCo3)	Nitrates (as NO3)	Nitrites (as N)	Chlorides (as Cl)	Sulphates (as S04)	Magnesium (as Mg)	Remarks
					Mg/L	N.T.U	Mg/L	Mg/L	MI/ mho	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	
1	Open Well -1	1312	O.W	7.2	NIL	NIL	0.38	490	774	188	248	-	80	60	-	90	28	120	
2	Open Well -2	1313	O.W	7.19	NIL	NIL	0.38	230	360	80	256	-	40	20	-	30	12	32	Potable
3	Pump -1	1314	HP	7.1	NIL	NIL	0.41	1532	2410	532	218	-	188	NIL	NIL	280	72	296	Potable
4	Pump -2	1315	HP	7.35	NIL	NIL	0.41	564	885	212	244	-	92	NIL	NIL	90	32	112	Potable

NOTE: All sources are suitable for civil constructions.

TABLE - V

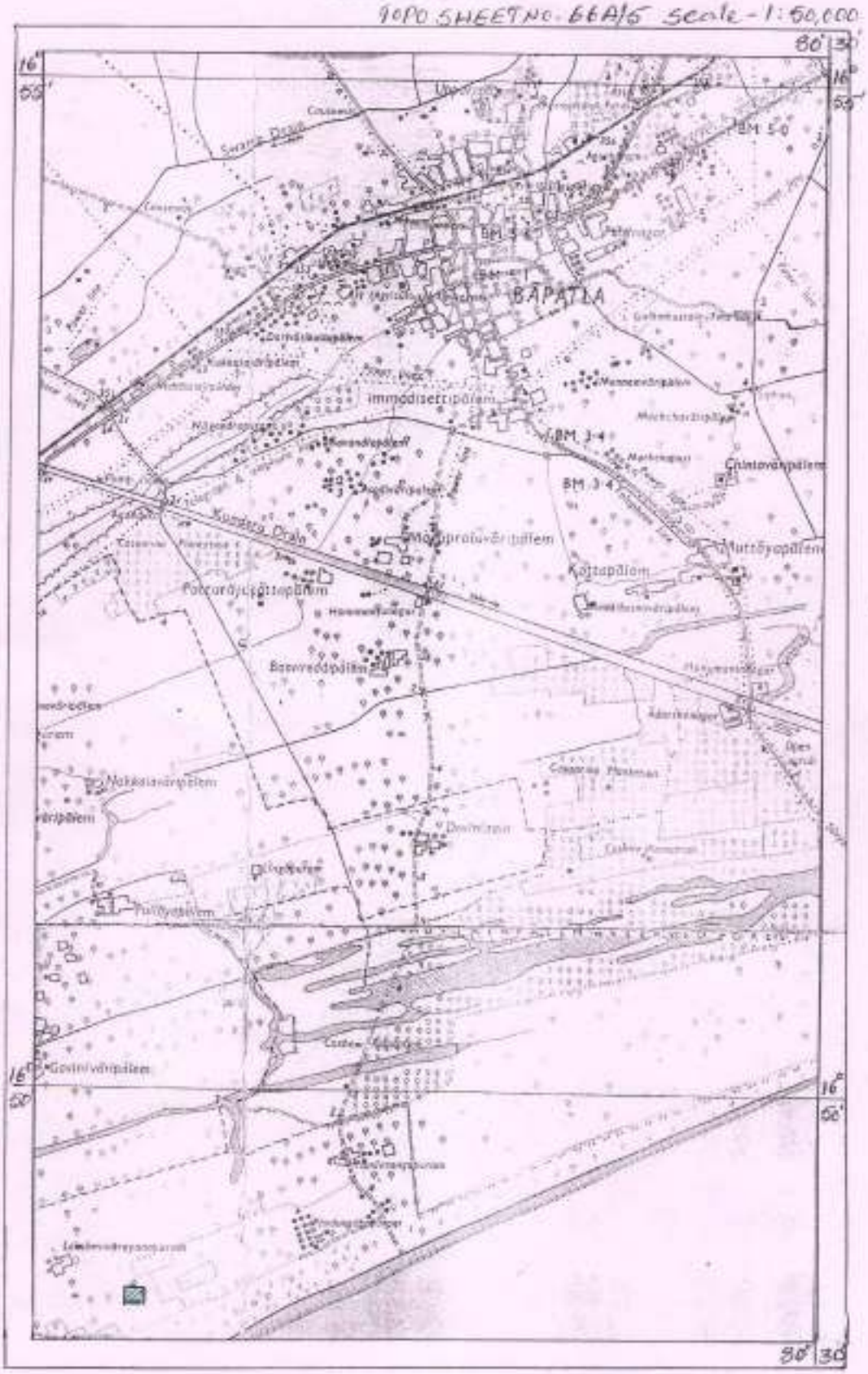
STATEMENT SHOWING THE DETAILS OF SITES RECOMMENDED FOR CONSTRUCTION OF COLLECTORS WELLS IN THE LANDS PROPOSED FOR BEACH RESORTS , ADAVI VILLAGGE, BAPATLA MANDAL.

S.No	Location	VES.No	Geo Coordinates		Type of Well	Diameter in mts	Depth in mts	Remarks
			Latitude	Longitude				
1	50 mts from Western boundry and 100 mts from Northern boundary of the land	V5	N 15.81689	E 80.44041	Collector Well	3 mts	5 mts	1st Phase
2	50 mts from Northern boundry and 5 mts from Eastern boundary	V2	N 15.81689	E 80.44419	-DO-	3 mts	5 mts	-do-
3	100 mts from East and North boundaries	V9	N 15.81656	E 80.44304	-DO-	3 mts	5 mts	-do-
4	Centre of the land 150 mts from all boundaries	V8	N 15.81593	E 80.44294	-DO-	3 mts	5 mts	-do-
5	7 mts from Northern boundary and 35 mts from the point opposite to Dug Well	V4	N 15.81713^{0}	E 80.44159^{0}	Collector Well	3 mts	5 mts	IInd Phase
6	5 mts from Eastern boundary and 35 mts from Southern boundary	V1	N 15.81578^{0}	E 80.44459^{0}	-DO-	3 mts	5 mts	-do-
7	7 mts from Northern boundary and 90 mts from Eastern boundary	V3	N 15.81764^{0}	E 80.44299^{0}	-DO-	3 mts	5 mts	-do-
8	22 mts from Western boundary and 50 mts from Southern boundary	V6	N 15.81469^{0}	E 80.44186^{0}	-DO-	3 mts	5 mts	-do-
9	15 mts fro southern boundary and 150 mts from Western boundary	V7	N 15.81480^{0}	E 80.44322^{0}	-DO-	3 mts	5 mts	-do-

DEPUTY DIRECTOR
GROUND WATER DEPARTMENT
GUNTUR

MAP SHOWING THE PROPOSED BEACH RESORTS AT ADAVI (V), BAPATLA (M) IN GUNTUR DISTRICT.

TOPO SHEET NO. 66A/6 Scale - 1:50,000



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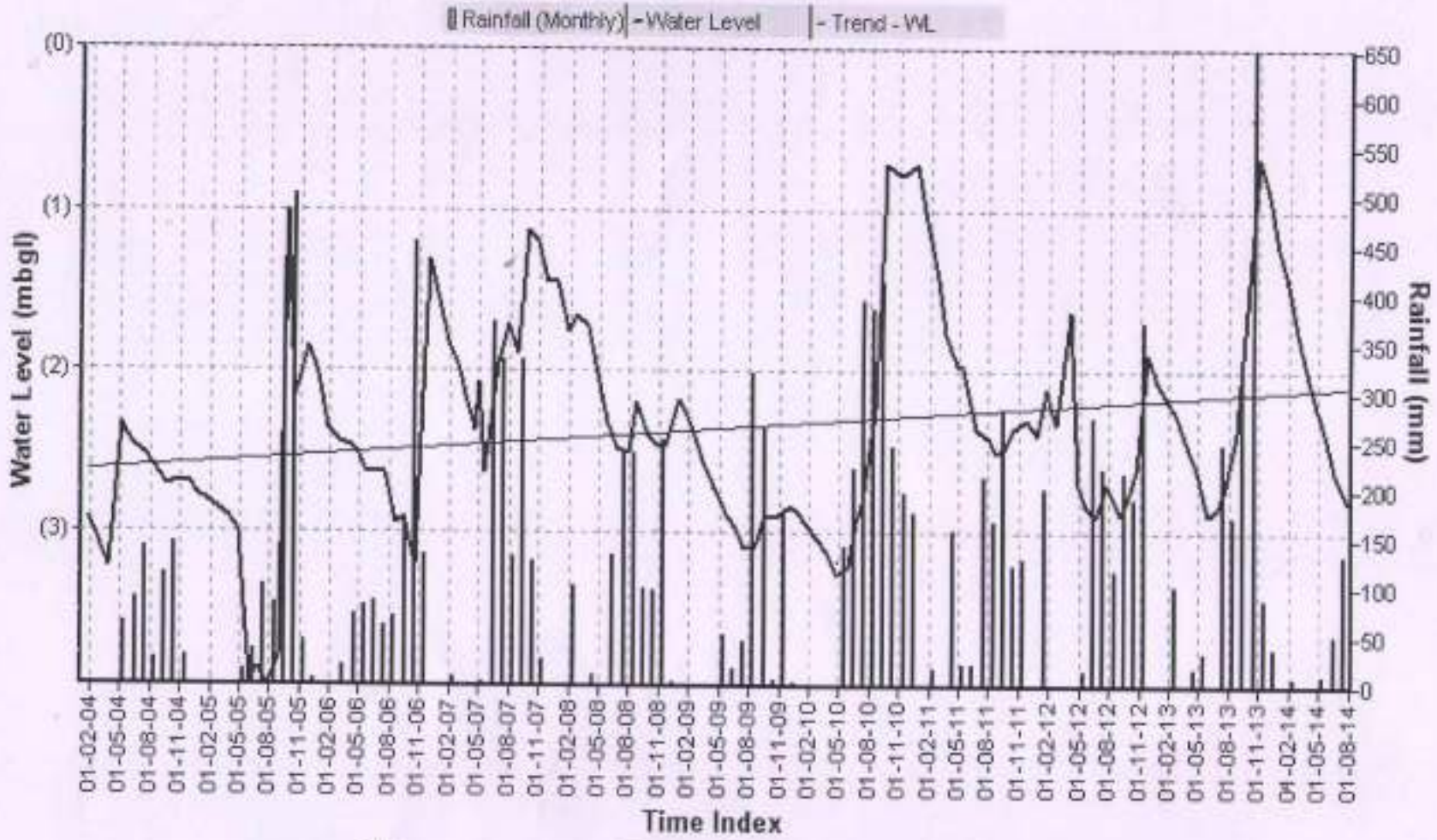
STUDY AREA

PLATE-1

Hydrograph of Bapatla Piezometer



All : Slope= 0.050 Intercept= -2.62

PLATE - II

MAP SHOWING THE RECOMMENDED LOCATIONS FOR COLLECTOR WELLS AT PROPOSED BEACH RESORTS, ADAVI VILLAGE, BAPATLA MANDAL

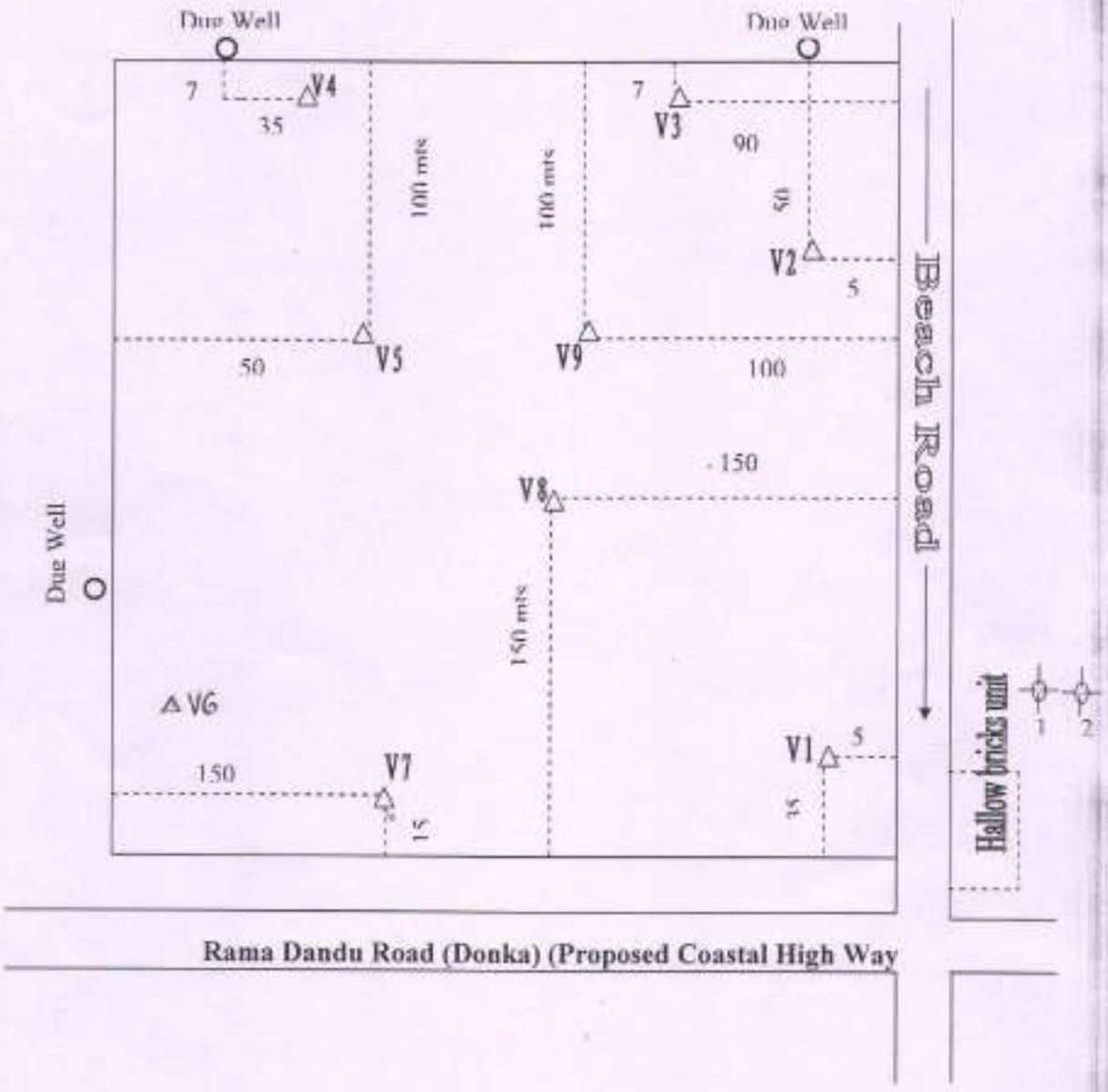


PLATE - III

DIAGRAM SHOWING THE COLLECTOR WELL

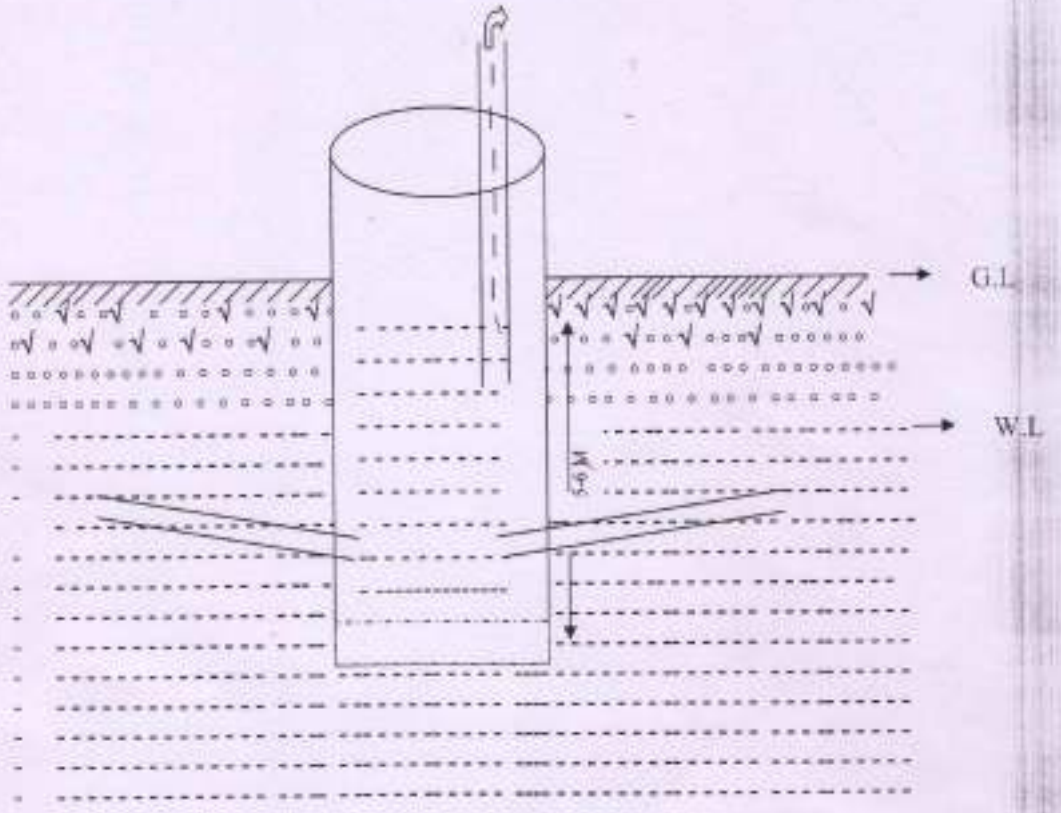


PLATE - IV

Public Hearing Not Required for this Project