

FORM - 1A
APPENDIX II
(See paragraph 6)

SECTION 1- LAND ENVIRONMENT

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

Photography of the project site is mentioned in EMP.

1.1 Will the existing land use get significantly altered from the project that is not consistent with the surroundings? (Proposed Land use must conform to the approved Master Plan/ Development Plan of the area. Change of land use if any and the statutory approval from the competent authority are submitted). Attach Maps of (i) site location (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual Plans.

The ground profile of the existing land will not be changed due to the construction of building. The expansion of building construction covers plot area of 14,182.00 Sqm. Location Map, Google map of the project site & Topo map are enclosed along with EMP report

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

Yes. The Details are given in below table.

Sl. No.	Particulars	Details
1	Total Land Area	14,182.00 Sqm
2	Height of the Building	49.79m
3	Total Built up area	49,809.21 Sqm
4	FAR area	28,364.00 Sqm
5	No. of Floors	BLOCK A-1B+G+8 Upper floors BLOCK B-1B+G+8 Upper floors BLOCK C-1B+G+8 Upper floors BLOCK D-1B+G+8 Upper floors BLOCK E-1B+G+8 Upper floors

		HOTEL BLOCK-1B+G+6 Upper floors
6	Total Water Consumption	252 KLD
7	Power Requirement	1030KVA
8	Accessibility	NH17B
9	Parking Requirement	Total Car parking required = 334 Total Car parking provided=384

LAND USE PATTERN
(All area in Ha.)

Sr. No.	Description	Total Area	Forest	Non-forest
1	Area of the Plot	1.4812	1.0870	0.3942
2	Road widening & ODP road	0.1100	0.0803	0.0297
3	Effective area of the Plot	1.3082	0.9558	0.3524
4	Covered area of the proposed building	0.5013	0.3660	0.1353
5	Compulsory open space provided	0.2000	0.1460	0.0540
6	Area under Internal road	0.1650	0.1205	0.04450
7	Area under parking	0.1000	0.0730	0.02700
8	Balance open area	0.3419	0.2496	0.0923

1.3 What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facility, details of the existing land use, disturbance to the local ecology).

The probable impacts due to this proposed activity will be both short term and long term in nature. Due to this project the ground profile will be changed. And also it will disturb the top soil but later on this top soil will be used in green belt development. About 4,680.06 Sqm (33%) will be developed as green area and will have positive impact on the surrounding.

1.4 Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of Soil type analysis, vulnerability to subsidence, seismicity etc may be given).

No. Due to the construction activity there will be only change in ground profile in the form of pits. It is proposed to develop professionally designed landscaping to avoid the erosion of the texturally disturbed soil.

Soil type: Sandy silt clay

Vulnerability to subsidence: The soil is not vulnerable to subsidence.

Seismicity: The project site is located in the Seismic Zone - III.

1.5 Will the proposal involve alteration of natural drainage system? (Give details on a contour map showing the natural drainage near the proposed project site)

The proposed project activity does not involve any alteration of natural drainage system, since the site is a barren land. Site Plan / Contour Plan are enclosed as **Drawing**.

1.6 What are the quantities of earthwork involved in the construction activity cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc.)

The demolition waste/debris arising from the site will be reused as filters for internal roads and pavements and remaining excess will be used to back fill low-lying areas within the project site. Rocks arising from the project site will be given to nearby crushers, Steel from the debris will be recycled.

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

Water requirement and domestic water needs for the labourers during construction phase are met by the bore well within the project site. The water used for construction gets consumed into chemical reactions with cement and also partly gets evaporated. Hence, there will be no wastewater generation. However, there will be discharge of domestic wastewater to the tune and will be collected in collection tank.

1.8 Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)

There are no low-lying areas or wetlands around the proposed project site. The excavated Earth during Construction will be used for filling the low-lying areas within the site but no alteration will be done outside the project site.

1.9 Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labor and the means of disposal).

The construction waste will not cause any health hazard. Solid waste during the construction phase will comprise mainly of excavated, concrete debris, steel scrap etc. Top soil is reclaimed, temporarily stored and further used for green belt development. Cement bags, waste paper, unusable steel scrap will be collected at site and sold to authorized recyclers or vendors.

SECTION 2 - WATER ENVIRONMENT

2.1 Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.

The total quantity of water required for Proposed Project is 252 KLD. **Water requirement:**

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

Bore well water will be utilized during operation phase and the approval was obtained to withdraw ground water from Goa Ground water Department vide letter no.: WRD/WDXIII/Per/Sink/Mormugao/30/F.85/16-17/554 dated 5th October 2016.

2.3 What is the quality of water required, in case the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality).

Drinking water supply shall be mainly from the bore well present in the site. Water quality reports are attached as Annexure. Treated water will be utilized for non-potable use such as Green belt, Flushing & HVAC.

2.4 How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)

231 KLD of treated water will be used for flushing, gardening and HVAC etc.

2.5 Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)

Since the water requirement is met through bore well within the project site. Hence, there will be no diversion of water from other users.

2.6 What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity)

The domestic sewage and wastewater will be treated in 2 STPs of capacity 45 KLD & 200KLD

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

Details of Storm water management including Rain Water Harvesting is given in EMP attaching drawing.

2.8 What would be impact of the land use change occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long-term basis? Would it aggravate the problems of flooding or water logging in any way?

There will be no impact on the runoff characteristics from the proposed project. The terrace rainwater will be collected in the roof rainwater collection tank of suitable capacity and the same will be used after prior treatment. Internal storm water drain will be provided within the site in order to carry out the storm water from landscape and landscaped areas into the recharge pits, to recharge the ground water which will be provided with perforated pre-cast cover all along the site boundary as well as in walk way & pavements. Excess will be routed to existing external storm water drain on the northern side of the project site. Hence it won't cause any flooding or water logging problems.

2.9 What are the impacts of the proposal on the ground water? (Will there be tapping of ground Water gives the details of ground water table, recharging capacity, and approvals obtained from competent authority, if any)

Bore well water will be utilized during construction & operation phase(washing purpose only) and the approval was obtained to withdraw ground water from Goa Ground Water Department vide letter no.: WRD/WDXIII/Per/Sink/Mormugao/30/F.85/16-17/554 dated 5th October 2016. During operation phase for drinking and other purpose water from PWD will be used.

2.10 What are the precaution/measure taken to prevent the run-off from construction activities pollution land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)

During construction phase, onsite sanitation facilities will be provided and disposed off into Vermi compost pit. Also, no surface water bodies are present within the project site. Care shall be taken during mortar preparation and curing to avoid runoff. However, if found necessary, during construction, separate ground water recharge pits shall be constructed to collect runoff. This shall be allowed to settle; clear water shall be reused for construction purposes.

2.11 How is the storm water from within the site managed? (State the provision made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels).

Detailed Storm Water Management plan prepared.

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

The construction laborers will be hired from local areas. During construction phase on-site sanitation and all the basic facilities will be provided. Safety measures like PPE (Personal Protective Equipments) – Helmets, Safety shoes, Nose Mask, Hand gloves, Goggles and Safety Belts, etc will be provided for the construction, depending on the nature of their work.

2.13 What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)

During the construction phase onsite sanitation facilities will be provided. During the operation phase Sewage generated shall be treated in full fledged 2STPs of capacity 45KLD & 250 KLD The treated water will be reused and recycled in flushing, gardening. The sewage shall be treated to the stipulated GSPCB standards. The STP feasibility reports are enclosed as Annexure and is mentioned in EMP.

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

Dual plumbing system Drawing is enclosed. It will be implemented separately to domestic water supply treated water supply. Treated water will be used for gardening and Flushing.

SECTION 3 -VEGETATION

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

No, the project will not pose any threat to the bio-diversity of the locality. Also project site does not have any water body, there for no chance to disturb the aquatic flora. And at the later stage of the construction period trees are also going to be planted.

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

The proposed construction area is devoid of vegetation except the scattered growth of herbs. Hence the clearing or modification of vegetation does not involve.

3.3 What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale?)

There are no important site features such as vegetation in the proposed site. So the impacts are not visualized. However 33% of the area will be developed as green belt in order to minimize the impact on the site.

SECTION 4 - FAUNA

4.1 Is there likely to be any displacement of fauna - both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

There is no unique faunal community within the core and buffer zone of the proposed project area, except most common ones like toad, frog, crow, sparrow, snakes, rats etc.

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

No direct and indirect adverse impact is envisaged to fauna due to the project.

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

Not Applicable.

SECTION 5- AIR ENVIRONMENT

5.1 Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as result of the proposed constructions).

During construction & operation phases, the concentration of SO₂ and NO_x in the atmosphere are likely to change due to increase in traffic, DG Set operation, cutting & welding, and operation of earth moving machineries. It is expected that there will be a marginal increase in the pollutant levels. Air quality monitoring data is attached as annexure and is mentioned in EMP.

5.2 What are the impacts on generation of dust, smoke, odorous or other hazardous gases? Give Details in relation to all the meteorological parameters.

During construction phase dust generated will be mainly of dumping. The Only source for generation of dust will be construction activity, which is a temporary phenomena for which barricades will be put up around the site and water will be sprinkled at regular intervals, covering building materials with tarpaulin.

5.3 Will proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for important including the traffic management at the entry & exit to the project site.

Sufficient parking space is provided within the campus for the number of vehicles anticipated. Transport infrastructure is adequate. Detailed Traffic Density Survey has been carried out to know the impact.

Car Parking Details:

a. Car Parking Required: 334

b. Car Parking Provided: 384

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

Major roads are provided with provisions for footpath, pedestrian pathways for hassle-free movement of all users of the project, as shown in the Site Plan/ Conceptual plan.

5.5 Will there be significant increase in traffic noise & vibration? Give details of the sources and the measures proposed for mitigation of the above.

All precautionary measures are ensured for the safety of construction laborers while working at the site. Minimum increase of noise level due to vehicular movement and operational phase of DG sets. Trained staff will be used to control the traffic flow.

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

Noise will be generated during construction phase due to operation of construction machinery like concrete pumps, tower cranes etc. Impact on the onsite workers is expected to be highest but it can be reduced by the use of earplugs and earmuffs.

The major source of noise during operational phase will also be the diesel based generator required for power backup. The DG set will be housed in the basement. As per regulatory norms all DG sets will be provided with acoustic enclosures and emit noise within permissible limits as per CPCB.

SECTION 6 - AESTHETIC

6.1 Will the proposed construction in any way result in the obstruction of a view, scenic amenity or landscape? Are these consideration taken into account by the proponents.

The area proposed for the construction purpose is as good as vacant/open space land where there is no scenic amenity or landscape however proponent has taken into account to create Architectural view, landscape, within the project site which will enhance the aesthetic beauty of the area.

6.2 Will there be any adverse impacts from new construction on the existing structures what are the considerations taken into account.

There are no existing structures within the proposed area of construction, hence there will not be any adverse impact from the new construction.

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

The upcoming project is a commercial cum residential project covering an area of 14,182 Sqm. While constructing of said project, the design criteria's, urban form and urban design laid down by the governing agency has been taken into account. Land use and design as per Local Development Plan.

6.4 Are there any anthropological or archaeological sites or artifacts nearby? State if any other significant features in the vicinity of the proposed site have been considered.

There is no anthropological or archeological site or artifacts surrounding the Project site.

SECTION 7 – SOCIO ECONOMIC ASPECTS

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

Since the said project is commercial cum residential building project, hence the changes are mainly migration of population, change in lifestyle, job opportunities. The project site falls under Dabolim village & the local population income of local people will be increased.

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

There are basic social infrastructure like roads, rail, metro rail, schools, hospitals and human settlements available around the proposed project.

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

The proposed project will not result in any adverse effects on local communities, disturbance to sacred sites or the other cultural values. However due to this upcoming project there will be positive impact to the local communities by job opportunities, increase in income and standard of living.

SECTION 8 - BUILDING MATERIALS

8.1 May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of

energy conservation measures in the selection of building materials and their energy efficiency).

Construction materials are specified based on life-cycle assessment and use of materials that are extracted or recovered in the region emphasizes. Whenever possible, materials such as carpets, paints, wall coverings and adhesives have been used that carry the Green Seal Label, reducing emission of potentially harmful organic compounds or gases.

Yes, General energy efficient processes were adopted in production of construction materials. Some of the embodied energy materials used in proposed project is aluminum, stainless steel, copper, steel, glass, cement, plaster board, lime, gypsum plaster, concrete Insitu, concrete blocks, sand, aggregates & precast lintels.

- Maximum use of local resources and skills for the production of construction materials
- Recycling of solid wastes into the building construction and for building products
- Reduced transportation
- Used renewable energy resources
- Used energy efficient process

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

Transportation of raw material will cause impacts for short-term only. The air pollution will be minimized by water sprinklers and by covering the vehicles during transport. The trucks used for the transport will be thoroughly checked for emission parameters and will be properly maintained.

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

Construction debris & waste during construction will be minimized & handled in an eco-friendly manner. It is not possible to project the quantity of wastes accurately at present

time. All left over concrete, rejection due to change in design or wrong workmanship shall be used for leveling ground area and road pavement. Other wastes will be segregated and shall be handed over to GSPCB authorized recyclers for recycling the waste materials.

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

Solid wastes shall be collected separately as biodegradable (organic) and non biodegradable (recyclable waste) in separate bins from each floor and also door to door collection shall be done from each unit to collect the solid wastes. The organic waste will be processed in organic waste converter and recyclable waste will be handed over to the authorized vendors for further processing. E-Wastes shall be collectively handed over to the authorized E-Waste recyclers for component recovery. Around 1.15MT/Day (Inorganic & Organic) will be generated during the operation phase.

Collection: The households will be provided with individual waste collectors for dry and wet waste. The solid waste will be collected manually from each house hold and segregated in a centralized area. Organic waste will be taken to organic waste convertors and used as manure for gardening.

Disposal: Organic waste will be converted in to manure through Organic Converter. Inorganic waste will be disposed by authorized recyclers.

SECTION 9- ENERGY CONSERVATION

9.1 Give details of the power requirements, sources of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

The electricity will be sourced by Goa Electricity Department. It is proposed to install 4 DG sets of 2×250 KVA and 2×180 KVA capacity for backup power supply. Adequate measures have been taken in the design of the structure to utilize the natural light to the maximum extent possible.

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

DG sets of capacity 2×250 KVA and 2×180 KVA are proposed for Commercial units to meet the demand. However, all essential service like external lighting and landscape lighting, ventilation, water supply and others will be fully linked with the DG sets.

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

The proposed project will provide heat reflected glass wherever required-having properties, which will make it energy saving element in the building and will provide safety and transparency of the desired level.

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

The proposed project will be provided with enough daylight factors in the building to permit maximum daylight to interior to minimize overall energy consumption. These features will also minimize the impact of climate both in summer and in winter and as a result, the use of electricity will likely to be reduced.

9.5 Does the layout streets & buildings maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in building complex? Substantiate with details.

The layout on the proposed plot has been designed in such a fashion that maximum daylight could be utilized. However use of solar equipments has been proposed for water heaters, external lighting and landscape lighting.

9.6 Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of walls on the East & the West & the roof? How much energy saving has been effected?

The overall design of the proposed project layout has adequately taken care of shading factor into consideration as per ECBC 2006 and will result in significant saving in energy consumption.

9.7 Do the structure use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of transformers and motor efficiencies, lighting intensity and air conditioning load assumptions? Are you using CFC & HCFC free chillers? Provide specifications.

- CFL lighting fixtures in the common areas
- Use of solar energy in external lighting
- Maximum utilization of natural light
- Energy efficient lamps
- Natural ventilation of building

9.8 What are the likely effects of the building activity in altering the micro-climates? Provide a self-assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?

Sufficient space will be provided between the building blocks for the wind movement according to the prevailing wind direction and also sufficient set back will be provided in accordance with the height of the building. There will also be sufficient green over at the site to reduce the formation of heat island effect.

9.9 What are the thermal characteristics of the building envelope? (a) Roof (b) external walls and (c) fenestration? Give details of the materials used and the U - values or the R values of the individual components.

Thermal insulation for the building.

Data for Brick Walls External: - According to DS: 3792-1966.

Thermal conductivity (k) for different building materials & insulation materials are K cal cm/m²h deg c.

K1 = k3 = 81.8 (cement mortar)

K2 = 69.7 (Brick work common) &

L1, L2, L3 are the thickness of the plastering with cement mortar & Brick wall thickness.

$$L1 = L3 = 1.2 \text{ cm}$$

$$L2 = 20 \text{ cm}$$

$$R1 = (L1/K1) = 1.2/81.8 = 0.0146$$

$$R2 = (L2/K2) = 20.0/69.7 = 0.2869$$

$$R3 = (L3/K3) = 1.2/81.8 = 0.0146$$

FOR WALLS

$$1/f_i = 0.125 \text{ \& } 1/F_o = 0.0151$$

Total Thermal resistance.

$$RT = 1/f_1 + 1/f_o + R1 + R2 + R3$$

$$= (0.125 + 0.0151 + 0.0146 + 0.2869 + 0.0146)$$

$$= 0.4926$$

Thermal Conductivity (U) is the reciprocal of thermal resistance.

$$U = 1/RT = 1/0.4926 = 2.03$$

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

The proposed commercial cum residential project is a development Project & the height of the BLOCK A- 49.79m

BLOCK B- 34m

BLOCK C-49.75m

BLOCK D-40.47m

BLOCK E-40.47m

The project has been designed based on all the relevant fire safety as per NBC norms.

- Fire water storage
- Fire hydrant system
- Fire department connection
- Sprinkler system
- Hand held fire extinguisher
- Frequently Fire Mock Up drills will be conducted.

Precautions & safety measures proposed are:

- Fire Extinguishers for common areas and Signage.

- Wet Risers through the dedicated shafts till terrace with valves as required.
- Electrical Fire Alarm system for Entire Building.
- Public Address system.
- Sprinkler system for entire building including upper and lower basement which will be used for Parking of two and four wheelers.

9.11 If you are using glass as wall material, provide details and specifications including emissive and thermal characteristics.

The project proponent will provide heat reflecting glass, wherever required, as a measure towards energy saving element in the building.

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

The proposed project encompasses the usage of non-conventional energy source i.e. use of solar energy. The proposed project will comprise of solar water heating, solar street lighting, hence utilizing maximum solar energy. Apart from this, other alternative energy efficient devices will be used to promote use of alternative / renewable energy.

Date: 26/05/2018

Place: GOA

for M/s. Prabhu Realtors

For PRABHU REALTORS

Partner

Amit Chandrakant Prabhu
Authorized Signatory

For PRABHU REALTORS

Partner