

ANNEX VI

LE PALMISTE BOUTIQUE HOTEL

AT TROU AUX BICHES

MECHANICAL, ELECTRICAL & PLUMBING

CONCEPT REPORT FOR EIA SUBMISSION

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1.0 INTRODUCTION

1.1 General

This report for EIA outlines the preliminary design concept for the Mechanical, Electrical and Plumbing services installations of the Le Palmiste Boutique Hotel at Trou aux Biches consisting of 20 luxury Villas and related amenities and leisure facilities overlooking the magnificent sea side.

1.2 Regulations and Standards

The design of the building Mechanical, Electrical and Plumbing services installations will take account of British Standards, EN Codes of practice or equivalent and the requirements and regulations of Local Authorities and Statutory undertakings such as:

- The Central Electricity Board
- The Central Water Authority
- The Mauritius Telecom,
- The Waste Water Management Authority

The design will also consider the recommendations of the Chartered Institute of Building Services Engineers (CIBSE), ASHRAE documentation, BS 6700 for plumbing services, Plumbing Engineering Services Design Guide by Institute of Plumbing, UK, Fire Engineering CIBSE Guide, BS7671: 16th Edition of Wiring Regulations as issued by the Institute of Electrical Engineers, Electricity Act 2004, MS 63, and other International Standards Design Guide, PPG Guidelines.

2.0 DESIGN CRITERIA ELECTRICAL SERVICES

2.1 Incoming Supply and Load Calculation

Total Load

The total maximum diversified load for the project is anticipated to be 188 kVA. A transformer room will be provided to house the transformer. Low voltage Control Cabin and metering cubicle will be located adjacent to the transformer room

2.2 Low Voltage Distribution

3 phase 415 Volt supply will be available on site. At define location, distribution boards, sub distribution boards and terminal distribution boards will be located. All distribution board will be equipped with RCD's and associated switch gears to meet CEB act 2004, Occupational Health and Safety regulation 2005 as well as BS 7671: 2008

2.3 Stand-by Canopy Generator Sets

A 250 kVA synchronized Generator Sets will be installed to provide essential load backup system to the electrical installations. The canopy weather proof and sound proof generator sets shall be installed on ground floor near each transformer room.

The canopy generator sets is expected to have a sound level of 69.5 dB (A) @ 7 meters. The base fuel tank of the Generator shall cater for about 11 hours at 75% load.

2.4 Lighting System

An energy-efficient lighting system is designed as per requirements of the CIBSE Code for lighting and provisions of the local Energy Efficiency Act (2011) under the new building control act 2012.

Decorative and functional luminaires shall be provided in the residential blocks. Lighting for the residential block shall be controlled by switches and detectors. LED luminaires will be used extensively in the residential blocks.

External lighting shall comprise mainly LED bollards or Solar Powered Street Lighting.

3.0 DESIGN CRITERIA MECHANICAL SERVICES

3.1 Air Conditioning System & Ventilation

Variable Refrigerant Volume (VRV) System shall be used as the air conditioning equipment. The VRV system shall have, mostly, wall mounted type units, for all bedrooms only. The VRV outdoor units system shall be located on the roof of the technical building. The refrigerant used for the air con system shall be R410A, with a zero-ozone depletion potential (ODP).

a) Fresh Air

Natural outside fresh air will have preference for re-newing stale air in the villas/bathroom at different locations through windows and doors.

b) Kitchen Extraction

i) All villas kitchen will be equipped with residential kitchen hood extraction system with carbon filters to be supplied under the kitchen appliances procurement.

ii) The restaurant will be equipped with industrial type mechanical extraction system consisting of stainless steel canopy with baffle filters, ducting, silencers and extractor

fan. The fan shall have double skin cabinet which shall control the noise level generated. Fans shall be located at roof level of the restaurant.

4.0 DESIGN CRITERIA PLUMBING SERVICES

4.1 Domestic/Potable Water

Water will be supplied by the local Central Water Authority through CWA Water meter and stored in water tank of capacity 75 m³ (2 days autonomy as recommended by CWA). Daily domestic water consumption is anticipated to be 30 m³.

The water tank shall be dedicated for the domestic/potable water supply & fire-fighting system and shall feed the booster pump set.

From the booster pumps potable water shall be distributed to the draw off points of the building through plumbing ducts.

The main cold water pipes shall as follows

- a. UPVC PN16, main feeder pipes in pump room, ducts.
- b. HDPE/LDPE pipe for underground runs, incoming CWA mains
- c. PEX (A) pipe for all concealed runs in floor, blockwall, concrete screed inside residential block.

4.1.1 Cold Water Pumps

A pump set, consisting of booster pumps at 415V, 50Hz each, will supply pressurized domestic water to the toilet, wash basins and showers of the Hotel rooms. The pump arrangement shall be housed in a pump room to mitigate the noise level generated by the pumps.

Pump set shall be compact module factory pre-set and pre-tested mounted on skid complete with electro-mechanical control panel and associated control switches which ensure a complete automatic, safe controlled and functional system. Pump shall be efficient, reliable with optimum performance, life time of more than 10 years and CE or equivalent international standard approved. The pump arrangement shall be housed in a pump room.

4.2 Hot Water System.

Solar water heaters of different capacities shall be provided for each villas for the production of hot water for the showers and wash hand basins. Solar water heaters shall also be provided in the Main restaurant and common areas. The capacity of the solar water heater shall be as per the hot water requirement. The solar heaters shall be located on the roof having flat slabs.

4.3 Sewage and Waste Drainage System

All WCs (black water) and wastes (grey water) will be disposed in the sewage pipework system through sewage pipes and manholes at the rear side of the villas. The waste water shall originate from the wash hand basins & shower.

The sewage pipes will run separately from the waste pipes in the villas and passing through gully traps and underground sewage pipe network. Separate venting system shall be provided for the sewage pipe in the various draw off points which shall terminate with vent cowls/grilles.

Kitchen waste shall be disposed through grease interceptors and directed to main sewer pipe through underground pipe network.

The pipework materials used will be:

- a. UPVC PN6, gravity drain pipes for waste & sewage disposal.
- b. UPVC PN16 for kitchen disposal.
- c. UPVC PN16/PN10 for all underground site disposal running in concrete slab.

5.0 SWIMMING POOL INSTALLATIONS

The swimming pool installation in each villas and main swimming pool shall consist of circulation pumps, sand filters, etc. & associated pipe works and accessories. The filter shall be backwashed at least once per week or until backwash water is noted clear. Backwash water will be stored in retention tank to allow free chlorine to fall to allowable limit which shall comply with local irrigation standards before being re-used for landscape irrigation.

6.0 RAINWATER HARVESTING SYSTEMS

Rain water shall be collected from roof of villas and stored in retention tank of the respective villas. The rain water shall run through filtration and sanitization process which

shall comply with local irrigation standards prior to be re-used for irrigation of the landscape areas for each villa.

7.0 LPG INSTALLATION

LPG system will be provided for connecting to the cooking appliances in the kitchen of each villas. Two gas cylinders (capacity 12 kg) will be dedicated for each villa. LPG system will also be provided for the main restaurant for cooking purposes.

8.0 ENERGY EFFICIENT & ENVIRONMENTAL FRIENDLY PRACTICES

Below is the list of Energy Efficient measures taken for the above project.

- Rain water shall be collected in each villa & shall be re-used for landscape irrigation in respective villa.
- Swimming pool backwash in each garden villa shall be reused for landscape irrigation in respective villa
- Booster pump for domestic water shall have variable frequency drive.
- Air conditioning equipment shall be energy saving VRF system having Energy Rating Grade A.
- Double glazing windows is being used to minimize heat gain in hotel.
- All light fixtures internal to each room and villa shall be LED.
- In each Villa/Room, PIR switching will be favoured in order to ensure functional lightings to be ON only when required.
- External lighting shall comprise mainly LED bollards or Solar Powered Street Lighting.
- All electrical appliances inside villa will be procured with Energy Label A
- Solar water heaters shall be used for the production of hot water requirement in the villas & main restaurant.