CONTENT FOR CONCEPT DESIGN FOR POWER SYSTEMS

The following gives an overview of the minimum content requirements for a Concept Design document to be submitted to the URA. The concept design should also be reviewed/endorsed by a URA Licensed Engineer, who may also carry out design/endorsement for the Detailed System Design, since the Detailed System Design will be based on the Concept Design.

The following are to be noted for the purpose of producing the Concept Design:

- For the purpose of URA, the concept design submission is for information only, where URA may give optional feedback to Project Proponent or relevant government agency. The submission of this Concept Design is not an endorsement from URA.
- Proponent is required, at a later stage, to produce a Detailed Design, broadly in line with the Concept Design and in compliance with the URA regulations. Where technical standards are not specified, design engineer may adopt a relevant IEC standards.

The following gives a breakdown of key content to be included in the Concept Design document. It should provide key locations on maps, and descriptions where applicable, in accordance with key information outlined in this guideline.

1. **Introduction**
   - 1.1. Project Background
   - 1.2. Description of island or geographic area
   - 1.3. Scope of work
2. **Power House**
   - 2.1. Power House Location on map
   - 2.2. Distance from residential/guest/accommodation areas
   - 2.3. Approximate area indicating rough layout plan that include at a minimum, power generation area, panel room, duty room, fuel storage.
   - 2.4. Exhaust location and method of emission mitigation
3. **Generation**
   - 3.1. Total capacity – Prime and Backup. Full breakdown of Sizes if known
   - 3.2. Sizes and locations of back-up generators (should it be outside the power house location).
4. **Distribution Network Layout (marked on map)**
   - 4.1. Layout of electricity distribution network on map (approximate).
   - 4.2. Proposed number of feeders (approximate).
   - 4.3. Key locations/areas based on type of load (guest, residential/accommodation, water villas, restaurants/kitchens, recreation, shops, etc.)

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5. **Renewables (where applicable)**
   5.1. Renewable Energy Targets & Coverage (total and breakdown by requirements)
   5.2. Renewable generation locations (solar, wind, etc.), whether it is located in the power house area or distributed across network
   5.3. Indicate expected connection points of RE systems into the grid
   5.4. Energy Storage Systems' location (if applicable)
   5.5. Include test beds/pilot installations as well as long as they are connected to the grid.

6. **Fuel storage, transport and handling**
   6.1. Type of vessel transporting diesel, petrol and other
   6.2. Method of handling from point of unloading up to transfer into main (bulk) storage.
   6.3. Location of fuel unloading areas, handling areas, fuel pipeline, etc.
   6.4. Method of handling from point of unloading up to transfer into main (bulk) storage.

7. **Safety measures**
   7.1. Fire-fighting methods for different areas of power system (generation room, fuel storage, handling areas, etc.)
   7.2. Evacuation plans outline (for different high-risk locations)
   7.3. Emergency response plan outline
   7.4. Disaster response plan outline

8. **Description of methods for data collection and reporting**
   8.1. Load forecast for 5 years
   8.2. Method for electricity generation & consumption logging. (ie- Manual record keeping, automatic, hybrid)
   8.3. Service outages
   8.4. Accidents and incidences

9. **Expected construction timelines**
   9.1. Provide an indicate key approximate periods and milestone dates (detailed breakdown is in not required)
   9.2. At a minimum to indicated the period (at least month and year) for the following.
      i. Concept Design submission
      ii. Environmental Assessment and clearances
      iii. Detailed Design development
      iv. Detailed Design Approval submission to URA
      v. Procurement
      vi. Construction
      vii. Pre-commissioning
      viii. Fire Safety inspections
      ix. Compliance clearance on petroleum productions transportation, storage and handling
      x. Commissioning
      xi. Design Inspection by URA
      xii. System handover to Client
      xiii. Test period (Post commissioning)
      xiv. Operational Inspection by URA

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