Repurposing Thermal Power Projects

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Why Repurpose Old Thermal Plants?

- Aging coal fleet
- Higher emissions (CO_2, SOx, NOx etc.)
- Stringent environmental norms
- Land, water & infra already available
- Opportunity for clean energy transition

Repurposing Pathways

- Nuclear Power Plant
- Solar PV & Hybrid RE parks
- Battery Energy Storage Systems
- Biomass co-firing
- Synchronous Condenser

Nuclear Repurposing

Thermal plant sites offer:

- ✓Land availability
- ✓Water availability
- ✓Grid connectivity
- ✓Skilled workforce

Sub-Committee of the Standing Site Selection Committee

- Sub-Committee constituted by NPCIL (Jan 2025)
- Comprising officers from CEA, NPCIL, and AERB

Terms of Reference :

- To evaluate the suitability of existing sites of thermal power plants which are to be retired for locating Nuclear Power Plants.

- Study the possibility of converting at least two TPPs, which are to be retired, to nuclear power plant and submit the study report.

Sub-Committee Activity

- **Preliminary Shortlisting Criteria**

  - Unit Age & Status: Identifying TPPs having either retired units or units older than 40 years.

  - 28 sites shortlisted

- **Comprehensive Data Gathering**: 17 point checklist

Comprising of details about Location, Site accessibility, Land & Water availability, Seismo-Techtonics , site meteorology, surrounding population details etc.

Sub-Committee Activity

- Data Scrutiny and Deliberations : 10 sites Shortlisted for site visits based on the following major Criteria

  - Rejection Criteria: Mandatory disqualification if the site is in Earthquake Zone V or has active faults within a 5 km radius.

  - Exclusion Zone of 1 km

  - Water Availability: 4800 m3/hr for 2x220 MW and 9000 m3/hr for 2x700 MW NPP.

  - Land Availability : 340 Hectares for 2x700 MW etc.

Sub-Committee Activity

- **Water Availability & Allocation** : 6 sites shortlisted; 4 sites excluded due insufficient water based on following criteria:-

-Source Identification: Confirming the permanent water source and its distance from the plant.

-Allocation:

- Listing unit-wise water allocation in m3/hr.
- Confirming if water from decommissioned units has been surrendered or is available for transfer.
- Demand Matching: Verifying if the source can meet the ~4,800 m3/hr & ~9,000 m3/hr requirement for a standard 2x220MW and 2x700 MW NPP configuration resp.

Sub-Committee Activity

- Site visits and Deliberations: 3 Potential sites selected for conversion of thermal power plants into nuclear power plants

Site 1: Land available in ash dyke area and sufficient water available for 2x220 MW, however further confirmations required from site.

Site 2: Suitable for 2x700 MW; Land available in material storage yard area; water available but state government to allot water linkage; 15-20 families in exclusion zone.

Site 3: Suitable for 2x700 MW subject to change of exclusion zone to 0.7 km; Land available in ash dyke area; water available but state government to confirm water linkage; suitable engineering measures required.

Way Forword for Selected Sites

- Pre-Project: Site studies (Seismic, geotechnical, hydrological, and meteorological), DPR, regulatory & environmental clearances, Stakeholder Engagement, Land Acquisition, Infrastructure Planning, Risk Assessment
- Design & Licensing: Reactor selection, engineering design, safety approvals
- Procurement: Vendor finalization, manufacturing of nuclear-grade equipment
- Construction: Civil works, reactor & turbine installation, safety systems
- Commissioning: Testing, fuel loading, criticality, power ascension

Phase-II

- **Preliminary Shortlisting Criteria**

  - Unit Age & Status: Identifying TPPs having units aged 30-40 years.

  - 11 sites shortlisted

- **Comprehensive Data Gathering (under Process):**

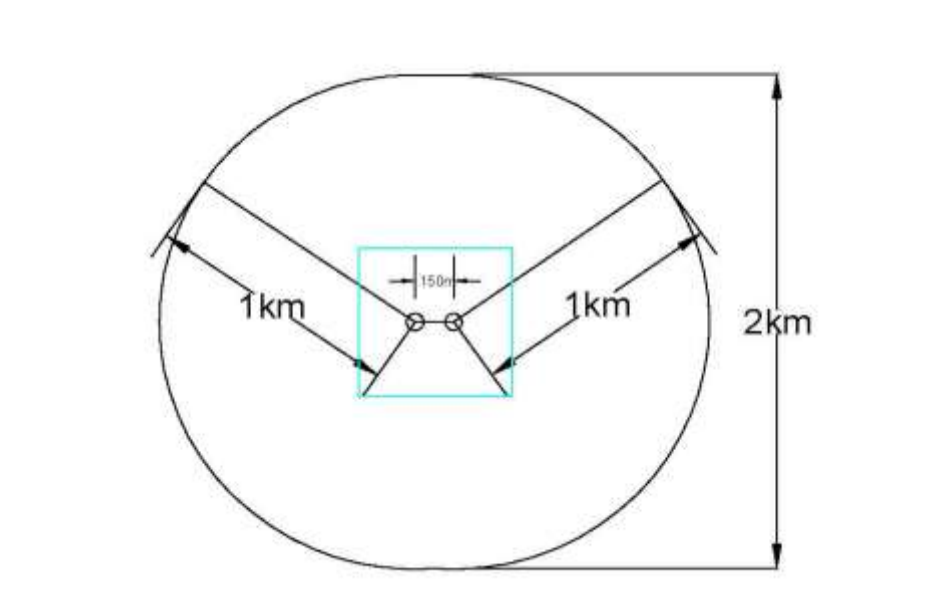
(i). 20 point checklist :Comprising of details about Location, Site accessibility, Land & Water availability, Seismo-Techtonics , site meteorology, surrounding population details etc.

(ii). Water Allocation Information..

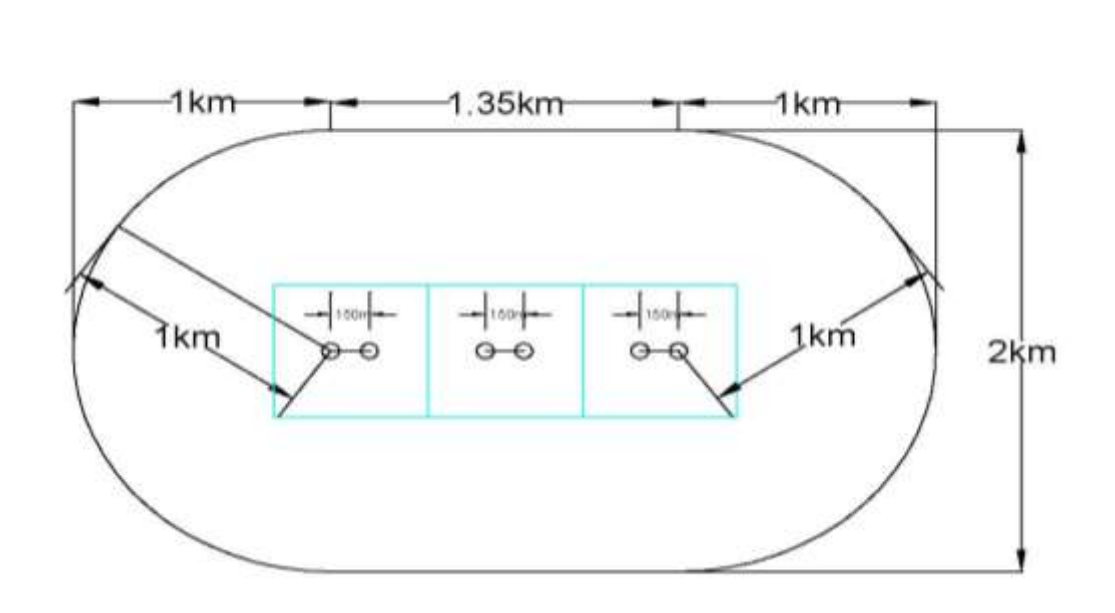
(iii). KML or Autocad File demarcating Plant Boundary including ash dyke area.


Thank You

Land requirement up to exclusion zone



Typical land requirement for typical two units PHWR



Typical land requirement for typical six units PHWR

Operating Island: 400 m x 260 m (for 2x220 MW configuration)
400 m x 600 m (for 2x700 MW configuration)