

## SITES SELECTION CRITERIAS

<b>HEALTH, SAFETY AND SECURITY FACTORS</b>
<b>Magnitude and frequency of natural external events</b>
— Seismic hazard
— Geological faults
— Geological and geotechnical hazards (liquefaction, collapse, subsidence, landslides)
— Volcanoes
— Coastal flooding (wave action, storm surges, seiches, tsunamis)
— River flooding or diversion (including those due to dam breaks);
— Extreme meteorological events: hurricanes, tornadoes, tropical storms, straight winds; icing, snow, hail, lightning, draught, extreme precipitation, sandstorms, etc.;
— External fires, brush fires, forest fires, swamp fires;
— Biological events (biofouling of cooling water intake).
<b>Human induced external events</b>
— Airplane crashes (not intended) including impact, fire and vibration type loads;
— Dangerous goods transport accidents: trucks, railway, tankers, gas carriers (including drifting clouds)
— Industrial and military storage facilities (explosion, fire, dangerous substance release)
— Ship collisions or shipwreck, water intake blockage;
<b>Characteristics related to radiological impact</b>
— Transport and dispersion in air, groundwater and surface water ?
— Distance from population centres
— Requirements for exclusion area and low population area
— Infrastructure availability for evacuation.
<b>Security and safeguards</b>
— Electro magnetic interference;
— Security threats;
— Site organization with regard to safeguard implementation
<b>Emergency planning</b>
— Evacuation routes and access routes
— Population density
— Special population groups (hospitals, prisons, etc.), transient populations.
<b>ENGINEERING AND COST FACTORS</b>
<b>Suitability of water for cooling</b>
-the effects on water quantity left in the source water body after use
-the effects on water quality as a result of reduced waste assimilation capacity
-The quantity of water available
-temperature of the cooling water.
-The effect of cooling system on the project cost
<b>Suitability of existing electricity infrastructure</b>
-connection to the transmission grid (cost)
-supply electricity to large areas of demand

-ability of the grid system to accept power in-feed at a particular site location without requiring costly and time consuming reinforcement
-The stability of the grid system in the event of the sudden shutdown
-reliable startup power (reliable offsite power)
<b>Location of major load centres and selling price</b>
-supply of heat to large areas of demand
-major load centres (large populations, energy intensive industries, industrial centres) in order to minimize the cost of transmission lines and power losses
<b>Suitability of transport infrastructure</b>
-The distance, loading capacity of roads/bridges
-clearances and slopes on the route
-availability of rail networks
-existing harbours capacities or possibility to construct suitable harbours
-Road transport possibility, limitations due to bridges
<b>Impact of existing facilities</b>
-the use of services already in place
-constraints imposed by the host facility, such as sufficient distance of large cranes from existing security fences to avoid damage if the crane topples
-existing environmental permits in the site
- need for removal, containment and monitoring of hydrocarbon contamination at the proposed site
<b>Site development and construction costs</b>
-Availability of industrial infrastructure - The availability of industrial centres in the vicinity has many advantages.
-Availability of labour: A huge labour force is required during the construction of a NPP. Availability of local skilled and unskilled labour at reasonable rates at a site is therefore an advantage;
-Services and construction material availability: The site will require a suitable supply of electricity for construction purposes and heating/cooling for the site facilities etc. and will require appropriate
-Adequate freshwater quantities for the construction must also be available.
Wastewater treatment services (Are they available, would we need to develop anything?)
-Site topography: The presence of nearby mountains or steep terrain has a large impact on the costs associated with earth moving activities. Steep slopes can also be unstable and produce damage to safety related facilities because of landslides.
Construction costs due to geological conditions.
-Climate: In some regions, snow accumulation on building roofs can increase the design load. Snow on the plant site can also impact drainage, which could cause flooding. Additionally, it would be prudent to investigate the potential for changes in the site's suitability in relation to the general global warming issues.
<b>Multi-unit sites</b>
-There are a number of advantages to locating multiple units at a single site. Built in series allows costs of construction and associated infrastructure to be shared between units. The cost of site studies per unit is also reduced. Room for 4 units
-Land available for construction: Availability of land for the proposed number of units, together with auxiliary facilities, obviously has to be considered. 100 ha
<b>Physical security and protection considerations</b>
— The topology of the area which can impact the overall security barrier design (such as line of sight view);
— The proximity of other facilities or services that could adversely affect physical protection, such as a chemical plant that could release a noxious substance, a hydroelectric dam that could be accidentally or deliberately breached, or an airport that provides significant flight traffic in the vicinity of the site;

— Site boundaries
— Adverse weather that could be a potential impediment to the operability of physical protection systems;
— Details pertaining to the establishment of a construction site, such as the positioning of perimeter fences, access and egress points.
<b>Stakeholder opinion</b>
-acceptance from local citizens
-acceptance from NGOs
- risk of litigation
-risk to discourage investors due to negative attitude of locals
<b>Regional regulatory and legal processes</b>
-acceptance of local municipality (politicians)
-various national and international agreements that may prohibit a NPP, or can complicate the approval, construction, operation or decommissioning
-time for securing approvals
<b>SOCIO-ECONOMIC FACTORS</b>
<b>Future land use planning and sites ownership</b>
-the number of land owners
-area is designated as of scenic value or cultural heritage?
-touristic area with Historic buildings and fortifications and holiday houses
<b>Regional economy</b>
-positive impacts, such as economic development opportunities and improvements to local infrastructure and community services such as fire, police, utilities, health care, education, recreation and transportation
-allows for the waste heat to be used for various industrial purposes or residential heating systems
-Economic effect through the labour market, providing employment for various skilled workforce groups
-positive for competitiveness and quality of the local industry
-economy of the region may be predominantly based on non-industrial services (e.g. tourism, aquaculture, agriculture) in which case the nuclear facility may (but not necessarily) result in degrading the visual and aesthetic character of the area around the site, changing the aquatic conditions or industrializing the area
<b>Local society</b>
-workforce need to be imported from other areas/regions
-available level of expertise and knowledge that can be supplied to the NPP from local region
-social fabric of the area, if it is relatively isolated, may be strained or altered by the sudden influx of a significant number of non-local people
-impacts on local infrastructure and community services.
<b>Landscape</b>
-changes to individual landscape elements and characteristics, and the consequential effect on landscape character. -Have changes in landscape and seascape adverse impact on tourism and recreational activities and on the general public's opinion on the project's acceptance?
<b>Noise</b>
-noise sensitivity in site
-noise restrictions in construction phase
<b>ENVIRONMENTAL CONSIDERATIONS -DIANA</b>
<b>General eco-system characteristics</b>
-Presence of protected and migratory species - Species may have a commercial, cultural or supporting value. Commercial species are important for the fishing industry and their disruption will have an impact on it.

-Site's ecosystem sensitivity and value - Involving various levels of protection, sites in protected zones would complicate the NPP siting process.

***Aquatic ecology and marine impact***

-During construction the key issues are the disruption of species by activities such as dredging; disturbing the bottom sediment.

-geology of water resource bottom

-During operation, sedimentation may also be an issue. Additionally, the impact of the thermal discharge from cooling water needs to be considered.

-the effect of entrainment/impingement, since large quantities of water used for cooling may contain fish eggs, larvae, plankton, fish and other organisms.