New Maitri Station: Concept Feasibility and Conceivability

C N Technology has been associated with the Indian Antarctic Program for two decades. We participated as a local design support for the Consortium of M/S IMS, BOP Architekten and m+p consulting, Germany, selected by NCPOR for Bharati-the the prestigious 3rd Antarctic Research Station of India. Being our first project of such a challenging magnitude, we gathered lot of knowledge on Antarctic terrain and the design complexities. The weather data at Maitri region shows strong westerly wind that can reach a maximum speed of 322 Km/s. The minimum annual average wind speed is 120 Km/s while the temperature is of the order of -23.1. The new station must take also into cognizance the local topography orography, speed and direction of wind direction and other logistic and scientific requirements while short listing the site and freezing the design of the station. Being an inland research base, its waste disposal policy has to be entirely different from a coastal station like Bharati. Some of the key factors that need serious consideration are: snow and Ice conditions viz snow-drift and snow accumulation, temperature and Wind Chill, detailed topography of the site, postulated human activities –noise, scenery, aesthetic natural Values and cumulative Impacts, building area including requirements of living accommodation and laboratory space, estimated atmospheric emissions, estimated waste (solid and liquid) generation, major transportation routes The new station should be able to use heat generated from the generators for heating the station. The use of fossil fuels should be minimized by increasing renewable energy and maximizing the indoor use of natural sunlight and recycling the waste heat. Full-capacity operation of heavy equipment during the construction will reduce pollution and advance the time of construction. The water supply required was calculated to be 150ℓ/day per person, which includes water needed for cooking, washing and personal hygiene. While the water may continue to be drawn from the Priyadarshini Lake, a tank inside the station complex should have sufficient water storage capacity for 7days to deal with emergency situations. In view of large distance of sea from the station, the disposal of liquid and degradable waste has to be planned. A large capacity bio-treatment and incineration plant will be required for waste treatment. The station design will largely depend upon all above criteria and may have to be different from existing Maitri or Bharati Stations.