

## A Sustainable Approach for future expansion

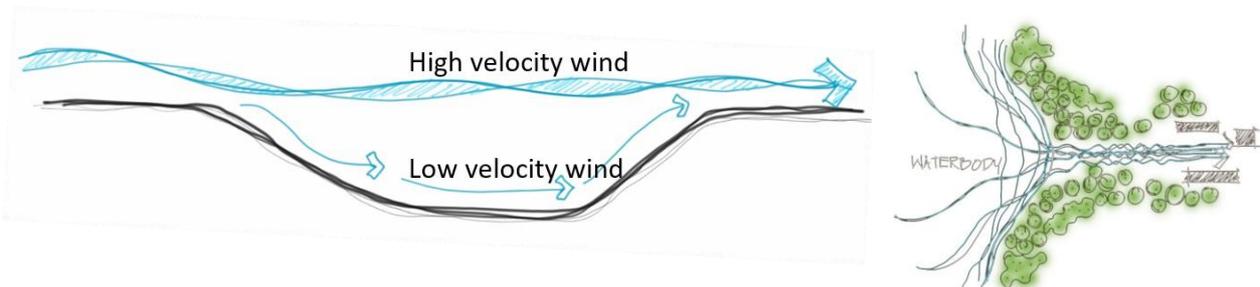
A sustainable landscape is responsive to the environment, re-generative, and can actively contribute to the development of a healthy community. It sequesters carbon, cleans the air and water, increases energy efficiency, restores habitats, and creates value through significant economic, social and, environmental benefits. The Masterplan strives towards developing and implementing key strategies specific to the site that helps Nitte University set exemplary standards in the domain of sustainable landscapes.

India has pledged in the Paris Agreement 2015 to reduce emissions by 30-35% below the 2005 emission intensity of GDP by 2030. Hence aligning with the 8 missions identified under National Action Plan for Climate Change, the following fundamental concepts have been considered in the campus master planning process:

- Micro Climate Modifications
- Efficient Water Cycle
- Clean Energy
- Ecological and Biodiversity Enhancement

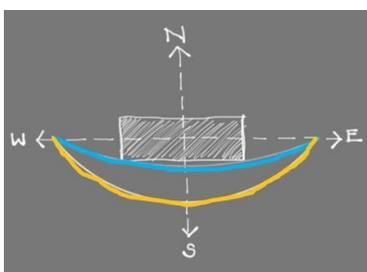
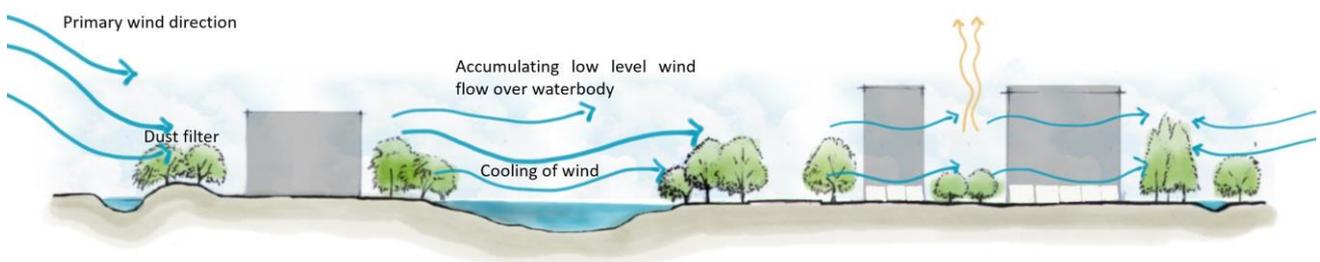
### 1. Micro Climate Modifications

The site is nestled in a valley, in a region which experiences hot and humid climatic conditions. Minimising solar heat gain and enhancing wind flow to reduce humidity are the primary objectives towards naturally maintaining comfortable micro climatic conditions.



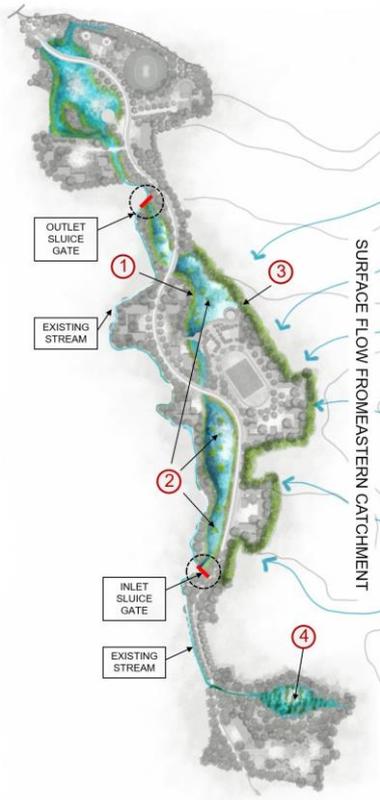
Wind flows are naturally reduced in a depressed landform like the one in which the site is located and hence large expanse of waterbody and open greens are used to regenerate lower level wind flows. Additionally, converging tree masses are used to funnel wind to desired zones while accelerating its velocity in the process.

Large surfaces of water bodies and ample vegetation proposed at site constantly reduces the temperature of air due to the process of evapo-transpiration as air passes over it.



The building units are proposed to be primarily oriented in the East- West direction with the major openings on the north and south facade only. This is not only aimed towards reducing solar heat gain but also to enhance cross ventilation across the built mass.

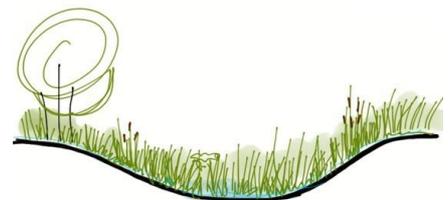
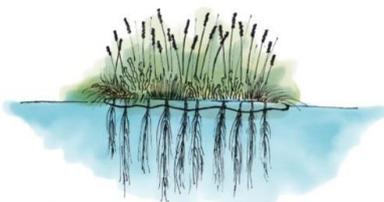
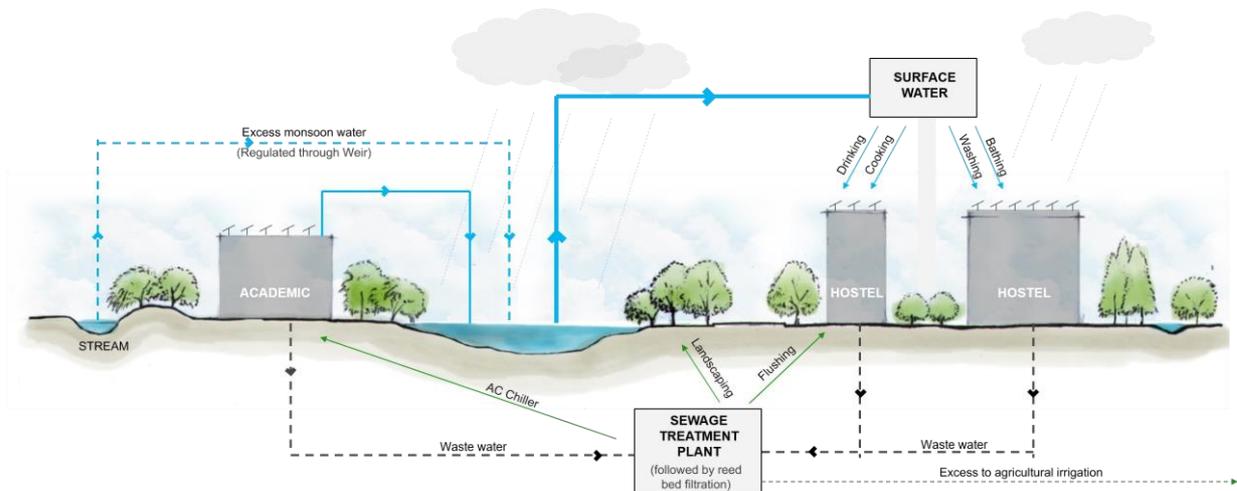
## 2. Efficient Water Management



One of the bigger challenges faced globally and also at the site is to efficiently conserve and reuse water while maintaining the natural flows over the landscape. The water management strategy also has to take account of seasonal flooding which inundates more than two thirds of the site annually.

With no possibility of subsurface storage of water, owing to groundwater salinity, a series of cascading lakes are proposed to act as a sponge, retaining the sudden gush of water during heavy monsoon while slowly releasing it downstream. The remaining water and recurring smaller spells of rain are to be stored as freshwater for domestic use, sufficing for about two-thirds of the year.

Freshwater usage from the lakes is further reduced by supplementing treated water from STPs for purposes like Flushing, Landscaping, feeding AC chiller units etc.



Natural and Bio-engineering techniques such as Constructed wetlands, Floating Islands, BioSwales and Lake Buffer planting helps in continuous decontamination of the water as well as assists in stabilising the soil and enhancing aquatic and terrestrial biodiversity.

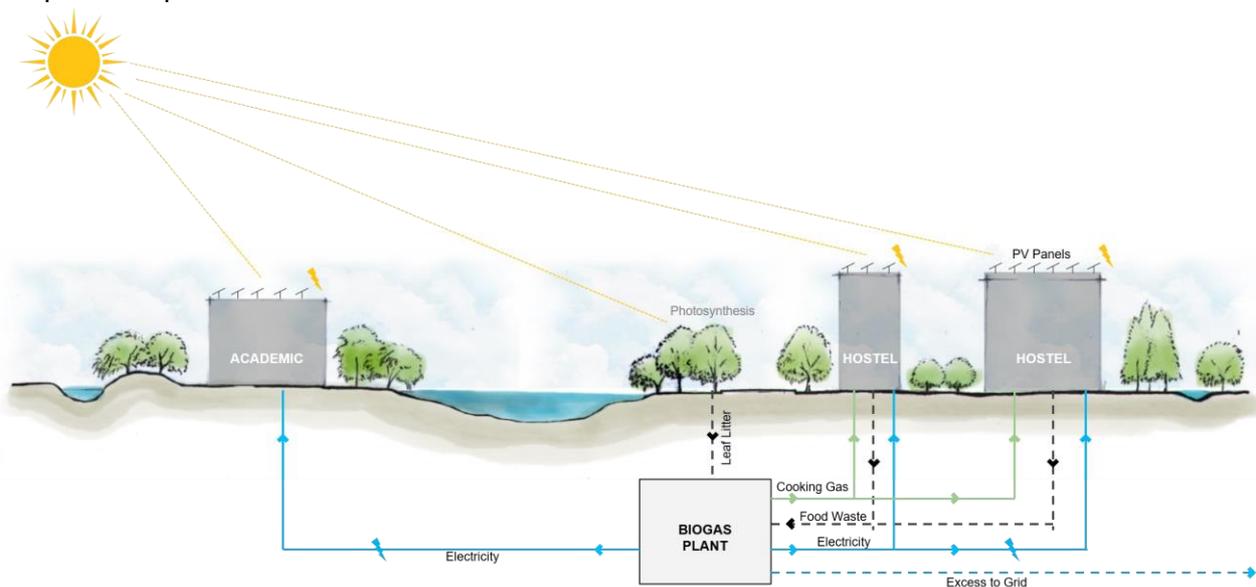
Use of native species in the planting pallet further strives towards reducing the water demand of the living landscape.

### 3. Clean Energy

Reducing dependency on exhaustible natural resources is the very essence of climate protection policies across the globe. As stewardship towards climate enhancement, the energy requirement at Nitte University is judiciously complimented with renewable and clean sources.

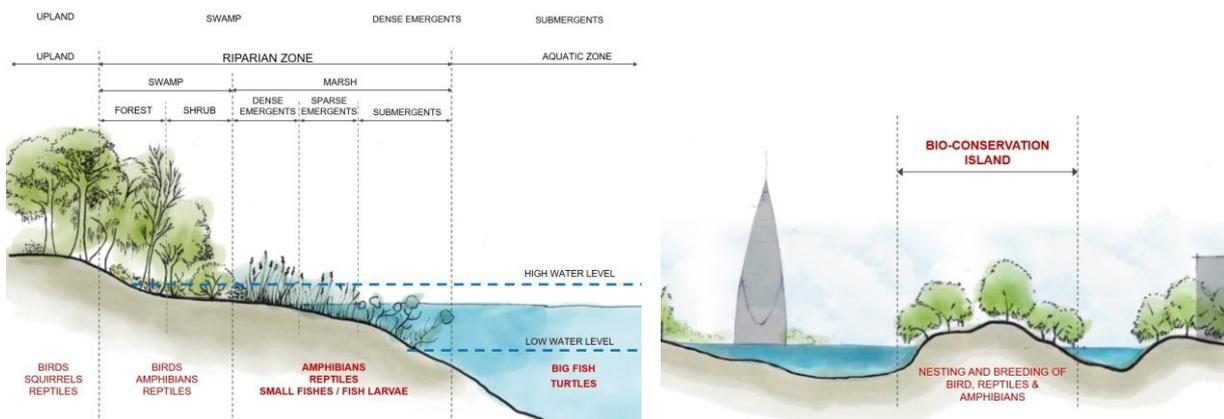
Tropical location and abundant sunlight for about three quarters of the year makes solar a highly potent source of energy. Solar cells are thus proposed on all roof tops and some open parking areas wherein suitable.

Large amount organic waste derived from hostel and restaurant kitchens as well as leaf litter across the site makes Bio-Gas a viable source of energy here. The output can be directly used as cooking gas or converted to electricity. The remaining byproduct is an excellent organic fertilizer that can be used across the campus softscape. Furthermore, organic waste and animal excreta, if collected from surrounding farms can immensely boost the production of biogas energy, taking the campus a step closer towards the coveted 'net-zero' mark.



### 4. Ecological and Biodiversity Enhancement.

All the above mentioned strategies are planned to work within a fabric of dedicated ecological niches, namely the bio-conservation island, forest corridors, riparian edges and deeper water ecosystem. These niches aim to protect, enhance and develop a rich and self sustaining ecosystem that plays a small scale but very crucial role in regional and global carbon sequestration.



MASTER PLAN

