



VIEW FROM PARK ENTRANCE TOWARDS MASDAR INSTITUTE OF SCIENCE AND TECHNOLOGY

01 CLOUD FIELD

USER-FRIENDLY INFLATABLE SOLAR PARK

"It is Allah who sends the winds, and they stir the clouds and spread them in the sky however He wills, and He makes them fragments so you see the rain emerge from within them. And when He causes it to fall upon whom He wills of His servants, immediately they rejoice" Surah Ar-Rum, 48

The concept proposal abstractly represents a cloudy and rainy sky in Masdar as a shading canopy for the park. The project rethinks what a solar park can be. Currently, solar parks are optimised for energy production and create vast hostile environments for people but, what if solar farms were public spaces for the people to rejoice? What if they could take the shape of the sky? What if there were constant clouds in Masdar providing fresh shading for the visitors?

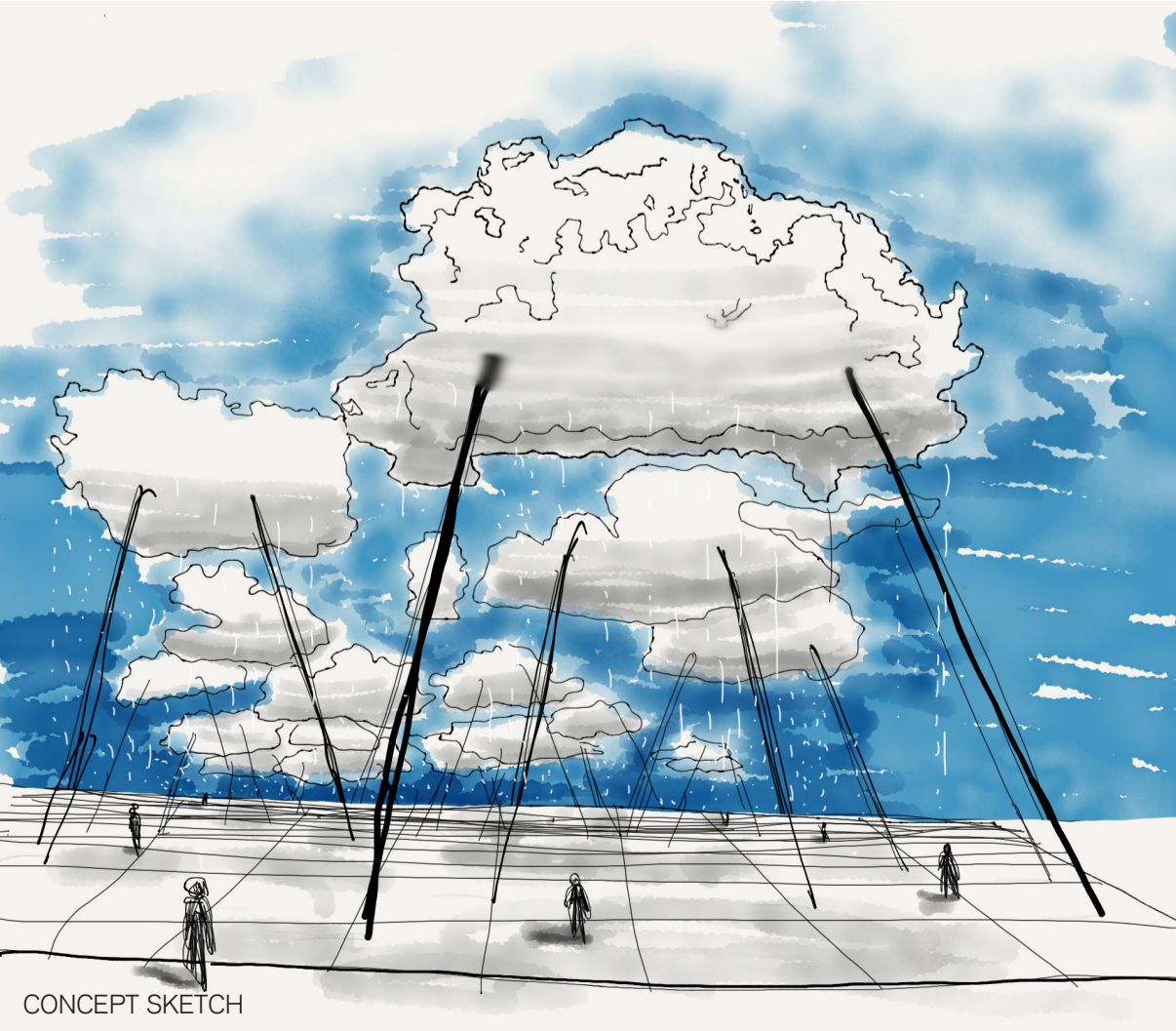
Cloud Field proposes a radical reinterpretation of solar parks by controlling two parameters, people's enjoyment and energy production. In the future, more solar farms will be installed in urban areas and we must rethink how they should look. By raising the PV panels, the ground is freed, and shading is created for the enjoyment of people.

New technologies and advancements in the field of Organic Photovoltaic Cells allow for more freedom in the design process and exploration of complex geometries. It is now possible to conceive light-weight tensile and pneumatic structures that are covered with flexible OPV cells ranging from transparent to coloured in many hues.

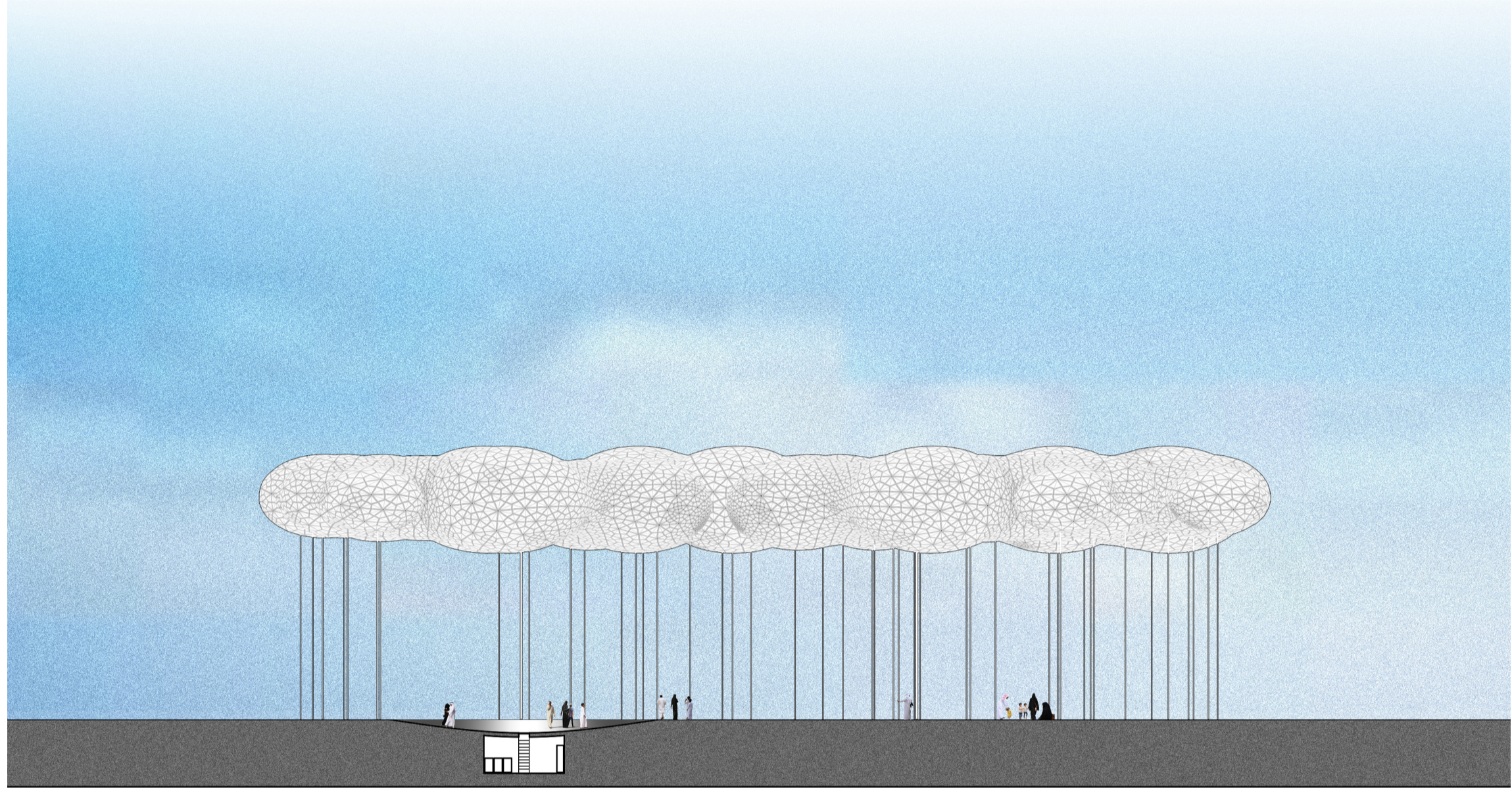
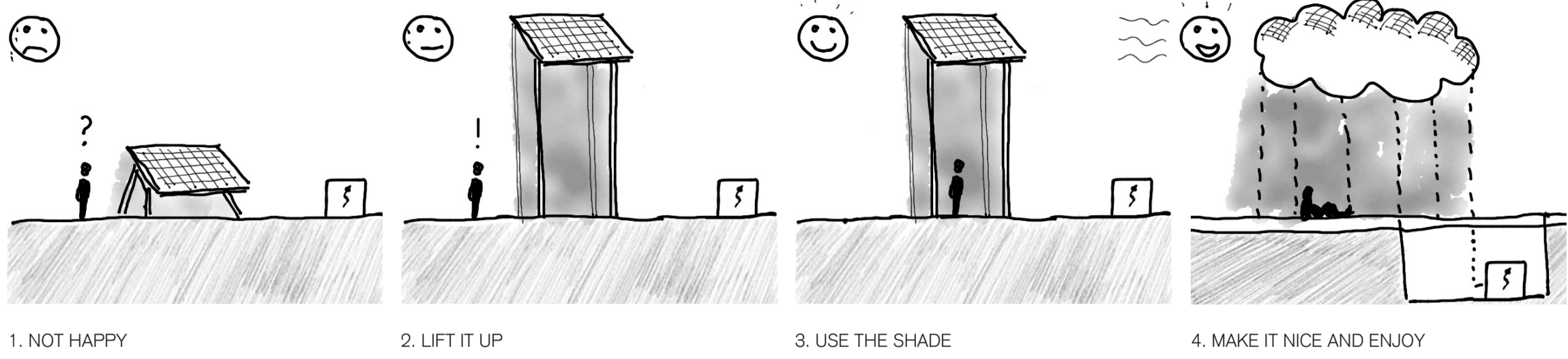
The clouds are formed by a pattern of flat irregular polygons created through computational design means. Inflatable clouds are manufactured with ETFE sheets and inflated with a low pressure system. The light-weight clouds are supported by slender steel tubes that channel all the services and wiring from the canopy to the underground service room, where all the pumps, inverters, distribution boards, transformers and substations are located, out of reach and sight from the park users to ensure a safe environment while minimising their impact on the landscape.

The design is based on the same module of pneumatic cloud to ease the fabrication process however, the different positioning of the modules does not create a repetitive pattern and the canopy is perceived as a random distribution of elements, just like in natural skies. The geometry of the cloud maximises surface area within a limited footprint while their curvature follows the sun path keeping the sun rays normal to the surface and maximising the intensity of solar radiation. The placement of Organic Photovoltaic flexible cells on the top part of the cloud is optimised with a solar radiation digital analysis to maximise energy production.

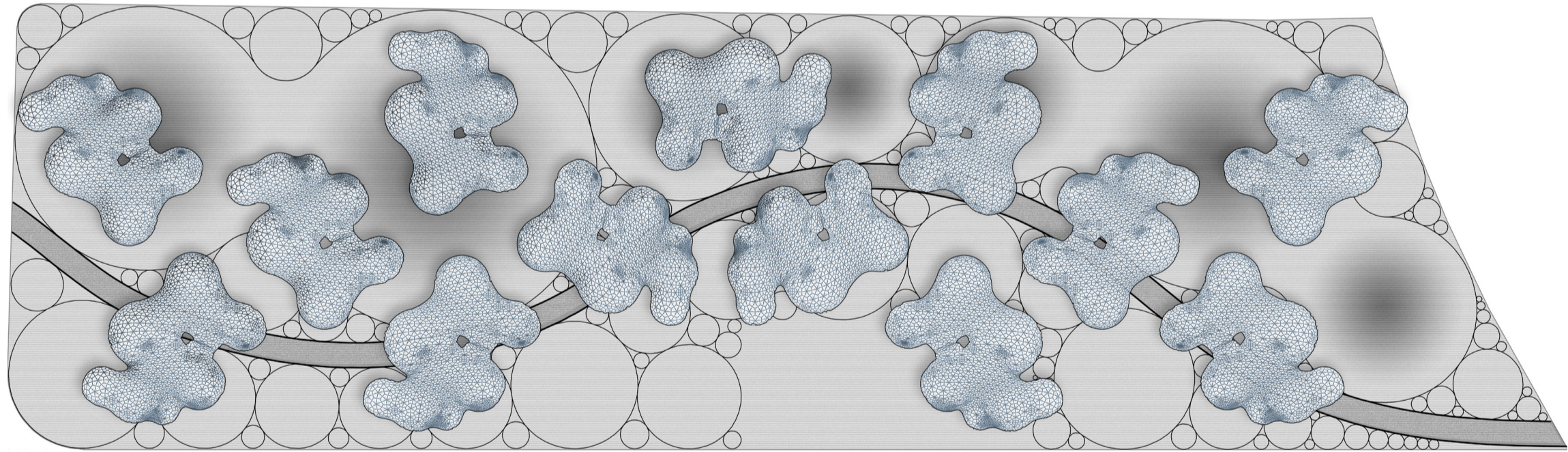
The layout of the proposal follows the axis of the existing park and continues its meandering path to seamlessly integrate the two interventions. The clouds are elevated 12 metres from the ground to allow for views of the Masdar Institute of Technology and Science and future adjacent buildings. The landscaping suggests a soft topography of valleys and allow for the growth of local plant species.



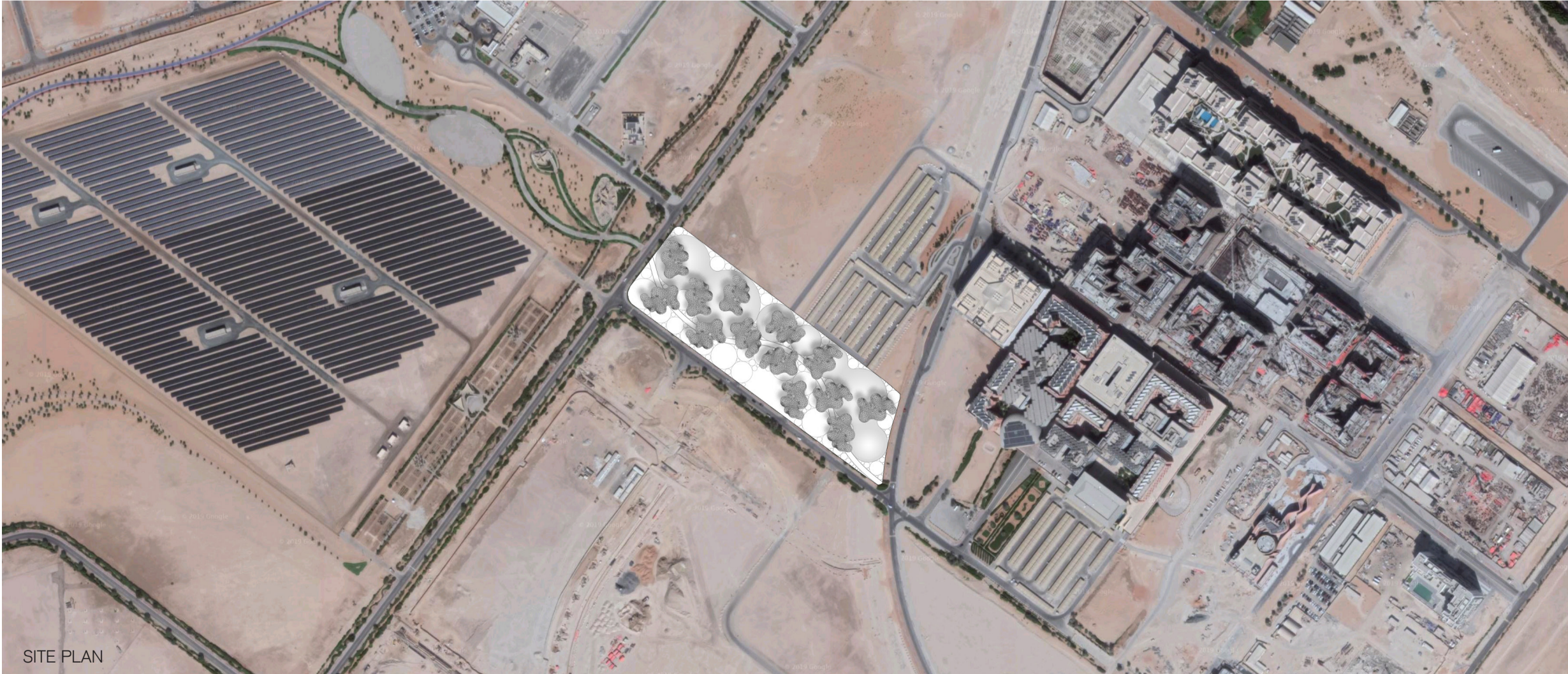
CONCEPT SKETCH



LONG SECTION THROUGH TECHNICAL ROOMS



TOP VIEW PLAN



SITE PLAN