STEALING FIRE

The Kulin people tell of a story of how fire was brought to humankind. Waang, ancestral deity and protector of the waterways, is responsible for stealing the jealously guarded scecret of fire and making it available for all to use. Waang takes the form of a crow, one of the most clever and intelligent birds of the animal kingdom. STEALING FIRE honors this legend by, once again, stealing fire from the light of the sun and gifting it, in the form of electricity, to the community of St. Kilda.

DESIGN

Previous to European settlement, the ecology of the area surrounding Port Phillip Bay was that of a dry coastal complex. Gently rolling sand dunes vegetated with native coastal saltbush, spinifex, and coastal tea-tree provided the framework for a diverse ecosystem.

We propose that historical condition be reimagined and restored by the implementation of built hillocks vegetated with a native planting scheme. The gently undulating ground plane, along with tree canopies and vegetated edges, create both visual and experiential interest by constructing the illusion of a larger space and by providing sequences of partially enclosed intimate spaces, along with larger more open spaces, to be explored and enjoyed. Atop each hillock, stands arrays of large scale feather sculptures, arranged in a positon reminiscent of the crow’s tail feathers, and aligned to the north for maximum sun exposure. Each individual feather sculpture measures 6.5m high, 1.5m wide, and 9.5m long. The body of the feather cantilever is constructed of molded carbon fiber as to provide high strength to weight ratios while retaining flexibility. The top is clad with flexible multijunction solar cells. The central structure and support is constructed of aluminum and lined with dimmable and programmable RGBW LEDs which allow for night time illumination with dynamic design capabilities for event programming. Between the hillock arrangements are soil cement paths that guide users to and from key destinations surrounding the site. Views of the sea remain, but are now framed with undulating earth, vegetated edges, and canopies of trees and sculptural elements.

Our goal is to create a unique multi-purpose space that engages the community through a celebration of past, present, and future.

TECHNOLOGY

Each feather sculpture consists of 10.1 Sq m of multijunction solar surface. Multijunction solar cells contain multiple materials layers that have multiple bandgaps and will therefore respond to multiple light wavelengths, capturing and converting some of the energy that would otherwise be lost. Current multijunction technology has a 40% efficacy rating (twice that of older traditional PV solar panels). With a combined 1,393.8 Sq m of multijunction solar collective surface exposed to (on average) 5 hours of sunlight each day, the site has the potential to produce 1,017,474 kWh annually. That is enough energy to power 176 homes in St. Kilda.

Additionally, we are proposing the implementation of piezoelectric harvesting technology by converting wind strain on the feather structures to electricity. As wind passes over the feathers the resulting vibrations and movement distort the piezoelectric bending sensor thus producing voltage.

ENVIORNMENTAL IMPACT SUMMARY

The existing conditions of the site are that of an asphalt car park. Implementation of the current accepted St. Kilda Triangle Masterplan requires the removal the car park. Implementation of our design will require no additional disturbance. Implementation of a native planting scheme will absorb more CO2 than current conditions provide.

Upon completion of construction phase, there will no longer be an expectation of noise generated by the design. On the contrary, the site will have a greater potential to infiltrate noise than at current.

Implementation of design will bear no negative effects on water quality, waste management, nor sewage management. The site will have a greater potential for storm water runoff infiltration than at current.

Implementation of design promotes a strong and diverse native ecology by providing habitat for the native ecosystem.

The design creates an opportunity to celebrate local history and culture while reinforcing and already resilient community identity.