**The 5 elements**

This project was started from the concept of creating public land art which brings natural energy resources around the site to become its elements. Five of them are Earth, Water, Wind, Solar and Play. All of them have their own roles in creating entertainment public space that would inspire and educate locals and tourists to be able to feel, touch and understand the importance of renewable energy resources in an amusing way, while support and keep St.Kilda’s cultural heritage identity.

This area has a significant role since before the Establishment of Australian Colonies in 1800s. This is the settlement area of native people for hundreds of years. Until now, it is still an important area of Melbourne, as a vibrant entertainment destination which supports various usage, with many heritage buildings and areas around them, for example Catani Garden, St. Kilda Beach, Fitzroy Street, Palais Theatre and Luna Park.

The uniqueness of buildings’ architectonic and nature in the surrounding indicate the sense of place, this made St. Kilda area more special and different from other areas. The land art will be the public space that connects all activities, and also be the view point of City of Port Philip.Whimsical form and art were used to blend in with context, inspired from rail transport system which played significant role in the development of the city, including train and tram. Besides, it also came from roller coaster rail in Luna Park.

This rail systemis not only used for connecting to each activity points within the site but also for connecting to the access from outside, promoting connectivity between places, streets, foreshore promenade and public transports. Rails and wheels were designed with small and lightweight structure, in order to avoid blocking sea view and reduce environmental impact to the heritage buildings around the site. The structure including lightweight rails which can be attached to existing building without causing damage, together with thin laminated wood columns which blend in with Luna Park’s roller coaster rail and palm trees along The Esplanade and Jacka Boulevard. These elements, together, create conceptual form of the transparent wall that emphasize the Palais Theater.

For the purpose of creating large efficient green area while be able to maintain existing usage, automated parking system will be used to effectively manage and reduce the impact from the vehicles. 7-storey building with the height of 17 meters can accommodate 200 cars, located behind Palais Theatre. According to this, old car park area can be turned into an ecological park.

**Earth**

Restoring indigenous flora and fauna. Not only contains lots of cultural heritage, this area also represents abundant nature with rich natural resources. By restoring fertile soil surface with the original landscape, consisted of Grassy woodland and Coastal dune scrub, the park can supports nature study. With bioswale, it also acts as detention basin and helps filtering pollution in stormwater runs-off. Permeable grass paver were installed in some areas to provide spaces for community events such as flee market, which promote social interaction.People would realize about relationship between human and nature in the past, present and future.

**Water**

Water Management. Water is an essential part for ecological park. With the area of 18,336 square meters, the landscape requires approximately 42,000 litres of water per day. Water will be pumped from underground water and stored in the water tank, made from laminated glass with the capacity of 430,000 litres. Water will be dropped down and flow along the rail with gravity to feed plants in the park. The rail runs around the site to ensure that plants will be thoroughly watered and to promote visibility from the wheels. During the process, water will pass through the Hydro Power Motor to generate extra electric power. Remaining water can serve nearby places such as Palais Theatre and Luna Park.

**Wind**

Utilizing wind power to propel the mechanism. Wind blows from North, South and West directions of the site, but there are some buildings around the site those block wind directions. Thus, tall tower with vertical axis wind turbine was chosen for efficiently utilizing wind power, to drive the mechanism like the giant automata and mechanical toy that real-sized human are allowed to join by taking wheels to travel all around the site.

**Solar**

Gaining energy from excessive sunlight. Rail’s bases were installed with transparent solar cells those can generate power, while not block sunlight and visibility during daytime. With total solar cells area of 3,706 square meters and average solar radiation of 3.45 kWh/square meters/day, these transparent solar cells can generate 639.42kWh energy output per day (around 5 percent efficiency rate).
The generated power will be used for 2 main purpose;
1. Powering up LED Strip Street Lights, installed along the bottom of the railfor efficient lighting in the nighttime. The lights require 40.32 kWh per day. Lighting will not be provided only for the site but also for Luna Park because the rail will run continuously around LunaPark. So the area will be usable for 24 hours with safety.
2. Providing energy for the water pump. With 600 lpm rate, the pump requires 36 kWh per day. It will be able to fill in the water tank within 12 hours of operation.

**Play**

This area comprises of playful culture for ages. Since the Palais Theatre, Luna Park until this Land Art, it will be the next entertaining place for all generation with the combination of recreation and exercise facility. Various texture pavements can sync with user’s physical for more effective exercise create extraordinary experience of walking. Visitors can enjoy magnificent view and nature, promote good health and help generating electric power in the same time by traveling around in the wheels. These wheels were designed in various styles to make sure that all generations can enjoy using them, they can also be adapted with bicycle. Electromagnetic component were embedded in the edges of wheels and rail. When the wheels start moving, they will generate electric power that will be stored in the battery which located in the tower for further use.

**Environmental Impact**

The key of this land art is to provide efficient energy that not only support in-site usage but also be able to share with nearby surrounding, while do not cause negative impact that will ruin beautiful atmosphere of St. Kilda Triangle.
Replacing hardscape car park with indigenous softscape, giving the reclaimed area back to mother nature, will also reduce the site temperature and restore pleasant atmosphere to the area. Laminated wood columns were made from recycled wood, which helped reducing waste and avoid creating extra carbon footprint.
By making people familiar with nature-friendly facility, this land art will create conscious mind in nature and environment conservation to all generation.

Sources:

1. Victoria State Government (2015), *Guide to Community-owned Renewable Energy for Victorians*, Melbourne.
2. Dr Ian D. Clark and Professor Barry J. Blake (2011), *TheYulukit-Willam The First People of Hobsons Bay*, Melbourne: Hobsons Bay City Council.
3. Meyer Eidelson (2015), *YalukitWillam The River People of Port Phillip*, Melbourne: The City of Port Philip.
4. National Renewable Energy Laboratory, *PVWatts Calculator*, Retrieved 01/05/2018, <https://pvwatts.nrel.gov/pvwatts.php>
5. University of California, Division of Agriculture and Natural Resources, *Easy Calculator for Estimating Landscape Water Requirements*, Retrieved 01/05/2018, <http://ucanr.edu/sites/UrbanHort/Water_Use_of_Turfgrass_and_Landscape_Plant_Materials/Water_Demand_Calculators>
6. Office of Energy Efficiency & Renewable Energy, *Estimating Appliance and Home Electronic Energy Use*, Retrieved 02/05/2018, <https://www.energy.gov/energysaver/appliances-and-electronics/estimating-appliance-and-home-electronic-energy-use>
7. Chin Power, *LED Street Light*, Retrieved 02/05/2018, <http://www.chinpower.net/product/led-street-light/?gclid=CjwKCAjwoKDXBRAAEiwA4xnqv9KfVWvRr1YVj1wX_yHOsbniS_-RB6P95pYo25CGkQqSocleRfnQ0xoCvosQAvD_BwE>