**C.A.R.E : Connection and Reflection through Energy**

C.A.R.E is a manifestation of the connecting of renewable energy with the concept of a landscape reflecting the vibrant, artistic and entertainment culture within an urban context with the acknowledgement of the surrounding community. It seeks to promote a useful promenade and urban landscape which connects community whilst achieving the use of renewable energy and informs those around of the reflection of history, art and the importance of renewable energy through its forms and visual language.

Experience and how it drives renewable energy:

Urban context

The undulating landscape as a slope forms connection from the esplanade to the foreshore.

The way program was placed below, strengthens these connections from other key areas such as Luna Park, the Palais theatre the stretch from Acland Street.

It connect through acting as an urban fabric which stitches the surrounding context and creating walking connection by the way the form pulls up and down and creates permeable edges from key urban surroundings and the context making it a fully walkable landscape creating easy access for pedestrians and cyclists to the landscape thus promoting its use therefore further driving the creation of renewable energy.

The way program is placed and how it also helps develop usage for the Palais also reflects and respects Catani’s vision of st Kilda being a ‘seaside entertainment precinct.’

Social context

The spatial qualities of the promenade also assist to connect the different communities and address their different needs in a public space. The different edge conditions and social infrastructure aims to serve those from different backgrounds, ages, types and essentially their different needs and create spaces for events that would serve the community and create a known public park that serves as a proud plaza and meeting place for those coming to St Kilda as well as the locals. The urban strategy and social infrastructure also aspires to reflect the strong community value held in St Kilda and the importance of what the public needs and that it is implemented into the design.

Pattern and urban lighting

The sinuous strips which weave in and out of the contours of the landscape serves a myriad of reasons, the first of which is to drive walking connection and create a visualisation of the stitching and access of walking connection in the site and uphold the idea of the site being a meeting place and an area which connections are formed. The tendril like lines also reflects the artistic nature and vibrant culture of St Kilda and the importance of art in the community. The way these strips begin to light up at night also reflect the strong entertainment and night life that St Kilda is known for also acknowledging its context and the Palais’ use at night, it also helps to further activate the space creating further opportunity for the landscape’s use thus drive further creation of energy .

The way the lighting also lights up in a strong earthy red colour aspires to reflect the historic context of St Kilda. The lights aims to reflect St Kilda’s aboriginal history

with the earthy red reflecting what the site was once known as to the aboriginal people who were the first to inhabited it, which was ‘Euro-Yroke’ a name they used to describe the red-

brown sandstone found along the beach

**Materials, Energy production and the Environmental Impact in the context of St kilda**

**Triboelectric Nano generator (TENG)**

Triboelectricity is the phenomenon of things rubbing against each other creating static electricity. This concept can now be used in order to create renewable energy through chemically treating cellulose nanofibres, which in can be a material such as pulp. Wood pulp is central to the technology’s function, which was developed by Associate Professor Xudong Wang of university of Wisconsin. The pulp, which is already a common component of flooring, is chemically treated to produce an electrostatic charge when it comes into contact with an embedded electrode.

The charge is transmitted through embedded wires, which can be transferred through to the site power storage grid thus can power things or charge batteries. And because wood pulp is a cheap, abundant and renewable waste product of several industries, the technology could be as affordable as conventional materials as well as recyclable.

The placement of this energy system was along the flooring of areas around walking connecting paths as well as all of the social infrastructure so that all activity generates energy along the whole landscape.

Main material: Wood pulp which can be derived from waste from other companies thus being environmentally friendly and cost effective.

The technology produces around 5 milliwatts per step

About 80,000 steps, can generate enough energy for more than 100 super-bright stadium-sized light bulbs

If applied onto the site, in terms of an estimation of an average day, about 3 kWh would be produced, however if applied to special events that may take place due to the site design, the outcome could be much higher. As a rough estimation, about 5,351 kWh is produced annually based off everyday use and possible events

**Peizoelectric tiles (IPEGs)**

As people take steps along the rubberized surface the pressure on the harvester produces electricity current through the kinetic energy and the push from the pressure of those steps or the vehicles pushing down onto the harvester which the current is then sent through transmitter

The placement of the tiles shall be along the walking connections of the site in recycled concrete sourced from victoria.

The pedestrian IPEG tiles can roughly produce around 113 kWh a day which means around 41350kWh annually. As well as the tiles that suit vehicle weight shall be along the road where if about 400 kilowatts of energy based on average traffic conditions, is produced over a 1km road and so applied to the site where the road shall stretch over the length of Jacka Boulevard along the site length, the tiles should

Produce an estimated amount of 120 kilowatts a day and 43800 annually

**OPV and OLED**

The opv panels can produce around 100 watts per square metre with around 2100 square metres covering the surface of the site, the lightweight photovoltaic panels can produce around 0.21 kWh a day so annually producing around 76.65kWh.

The implementation of the solar OPV and OLED panels in the long sinuous strips creates a visual language of walking and the long meandering nature of this pattern serves to guide people as well as drive them to walk and explore the site, thus the form of the implementation of the renewable energy then begins to help further drive its use and therefore create more renewable energy which will then help to serve the site and the context of St Kilda and its community.

Altogether the design can produce 480,577.65 kWh annually which can power around 535 houses for a month in St Kilda.