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| **Circles in the Triangle St Kilda Triangle LAGI 2018** |

**Assumptions of the project**

The treasure of St Kilda Triangle is its location, Palais Theatre and palm trees. Therefore one of main assumption of this project was to maintain these assets in possible unchanged way.

The advantage of the location was maintained with preserving The Esplanade as a “… distinctive ‘balcony’ providing panoramic views of the bay …” and therefore maintaining St Kilda Triangle as the seaside public space.

The proposed solution meets the requirements mentioned in St Kilda Master Plan 2012, especially by fulfilling such goals as:

* removing car parking from the view,
* creating an open public space offering entertainment and relax, green, contemporary but still reflecting and maintaining the heritage of this place,
* offering possibilities of cultural events,
* maintain the views of foreshore,
* providing required opportunities to move big groups of people across The Triangle from The Esplanade to the seaside.

All car parking places are hidden from the view by the construction of underground car park (according to St Kilda Triangle Car Park Feasibility Study). The entrance for cars will be from Cavell Street. No cars are allowed within interior of the Triangle site.

**Solar panels**

Australia has favorable natural conditions to harvest solar energy. Additionally solar panels are of small dimensions comparing to installation aimed e.g. to harvest wind energy. In proposed solution, solar panels are adhered to the wall of existing buildings and therefore occupy only a little of space.
The wall of Palais Theatre and the envelope building, proposed to be a holder of solar installation, is exposed to the sun during a significantly big part of the day (except morning periods), enabling good harvesting of solar energy.

**Energy technology**: monocrystalline solar panels

**Total area** of proposed solar panel design is estimated around 600 m2.

**Estimated annual capacity**: 120-170 MWh

Solar panels shaped using solar cells into the circles, bracketed together by the fixed frames. The frames are hooked to the wall of the Palais Theatre and the envelope building.

Due to only possible exposition to sun (regarding both sun orientation and available tilt angle), the installation will be shaded during morning hours. The below proposed options will increase to obtain the maximum performance of solar panels in given location:

* implementation of micro-inverters (in place of a central one) to enable each panel to perform at its maximum potential,
* no trees or other high greenery in direct vicinity to avoid any shading of solar panels.

Monocrystalline solar panels have the highest efficiency rates and therefore were selected to the described solution. But still, more detailed consideration and calculation (especially financial ones) should be conducted before making the final decision in this area.

The efficiency rates of monocrystalline solar panels, proposed type of solar panels is between 15% and 22% and therefore the value of possible energy output was calculated for this range of values.

The value of annual average solar radiation was based on date obtained from NASA Atmospheric Science Data Center [https://eosweb.larc.nasa.gov/].

The performance ratio, accepted for this solution, is equal to 0,9 due to unfavorable solar exposition.

**Environmental impact statement**

The solar panels enable to harvest energy without any operational pollution to the environment. The only impact will be at the moment of the production of these panels but no significant impact after successful installment on walls of Palais Theatre and the envelope building.

The location of panels on the walls limits the occupied space and blocking light access to the interior of The Triangle. The minimum height of the bottom of panel circles should be above the height of humans. The whole supporting equipment necessary to benefit from solar panels, will be hidden inside the envelope building, inaccessible for the general public, making this installation a safe one.

**Buildings**

The project presents The Triangle as an activated, modern and landscaped public place, complementing St Kilda. The only new building adherent to Palais Theatre allows most of the area to be a public open place for all who wants to enjoy it. The Palais Theatre remains to be the dominant, enlarged by envelope building raised in the same style as the Theatre. The architectonical style of an envelope building must be the same or similar as this of Palais Theatre.

Proposed shape and volume of new envelope building will hide the view to the back of Luna Park and at the same time will be an acoustic barrier protecting and calming the public area inside The Triangle.

The envelope building will include cultural facilities and will support Palais Theatre in its function as well as will activate this area in period of the day, when the Theatre is closed. The interior of the new envelope building should be divided between:

* small restaurants/ cafes, where people can gather, have a meal or just a cup of coffee and
* places for entertainment: playground for children (e.g. ball pool), bowling, etc.

All these rooms should be joint by open space arranged in pleasant way, inviting just to hook there at least for a while and therefore serving also as a shelter and refuge both during very hot and very cold days of the year.

The area inside the Triangle, adherent to the wall of both the Theatre and new building can be used as small outdoor cafes.

**The Esplanade**

Palm trees, which grow on The Esplanade, have at present unfavorable conditions. Their location cannot be changes regarding the distance to the roadway but their cultivation conditions could be improved by removing part of pavement close to the base of trunks and leave this area free of the solid cover. In order to protect trees from sun and heat and to conserve soil moisture by reducing surface evaporation, the area should be mulched. The low fences around these fragments will protect them from devastating by walking people and animals.

The type of fences was selected regarding the smallest possible integration in the root zone. The style of border fences should be correlated with the style of lamp posts, both created of the same metal materials.

The balustrade along The Esplanade will be remained although in very different form as long pots with plants:

* high enough to be a safe barrier, protecting people from accidently falling from The Esplanade,
* low enough to protect the beautiful views from the pedestrian pavement to the sea.

It would enliven the pedestrian zone and be a green connector to the Slopes and St Kilda Triangle.

All views from The Esplanade are remained as well as long view to entrance to Luna Park along the Lower Esplanade, now incorporated invisibly into the open area of The Triangle, following the guidelines, defined in St Kilda Triangle Visual Impact Analysis 2012.