ST KILDA, is a suburb known for its vibrant community, rich culture and lively characteristics. This site aims to light up St Kilda and brighten all the elements which make it unique, from its art, music and beach culture to the diverse local and visiting community. Whilst also creating new connection across site and accessible public spaces.

**TECHNOLOGY DESIGN AND ENVIRONMENTAL IMPACT**

The site is comprised or several solar technologies that reference the diverse local and visiting community of St Kilda. These technologies weave they’re way through the site in the form of canopies, footpaths and building facades, creating new welcoming and useable public spaces.

**SOLAR SHADES**

Solar shades reach out from the cultural facility main entry expanding as the move towards the foreshore. These shades provide sheltered relaxing space near the secondary entrance for the art gallery and cafe/bar plaza through their lightweight and translucent presence. As well as providing a protected area for goers to take part in beach activities.

The poles are made from stainless steel with a diameter of 300mm. The base of the pole has a diameter of 1200mm allowing it to have an edged seat where people can observe ongoing activities. The sails are made from Organic Photovoltaic Panels (OPV) varying in size from 5000mm to 25000mm. The highest point (10000mm) occurs at their most southern location gradually decreasing in height as you move north (lowest point 4000mm), therefore maximizing on direct sunlight. These sails are capable of producing 100W of energy per unit area, with a conversion efficiency of 10%.

**SOLAR GLASS FACADES**

The facades of the buildings on site (hotel, Palais back of house, Cultural facility entrance and cafe/bars) are made for a tubular solar glass. Solar glass is a new technology that incorporates transparent semiconductor-based photovoltaic cells, which are also known as solar cells. These cells are sandwiched between two sheets of glass where they collect light which is then turned into the electricity. The performance of the solar cells is enhanced by the oval shape facade elements, with diameter 400mm and 200mm. The widest side (400mm) of the tube faces directly north maximising of the sunlight. Each tube acts as a magnifying lens increasing the amount of sunlight absorbed as it passes through each element of the facade.

**HCPV CANOPY**

High concentrating photovoltaic technology (HCPV) is applied to the amphitheatre and stage areas to create a semi enclosed outdoor performance space. The solar technology uses concave mirrors to concentrate large amounts of sunlight onto a small area of solar photovoltaic (PV) cells to generate electricity, increasing its conversion efficiency to 46%. Each HCPV panel is made from lightweight aluminium approximately 2200 mm in diameter (varying slightly with the form) and held in place by a steel frame. The panels rotate with the movement of the sun throughout the day in order to generate maximum electricity of 400W per unit area.

**STUDDED HCPV SEAT AND PATH**

The studded form of the HCPV cell which makes up the set and path has been designed to reflect the program it withholds, being the rock and roll museum**.** The cell works in similar way to the amphitheatre canopies through the controlled amplification of sunlight onto a solar cell, however in this case the sunlight is magnified through a glass lens. The HCPV cells which form a seat and balustrade to the upper boardwalk faces due north, while the path sits flat at the Esplanade level. The path has been designed to take the load of foot traffic and deal with drainage and traction. The studded nature of this cell is reflected in the ceiling plan of the rock and roll museum creating a connection between the inside and outside. The HCPV panel cover a total area of 150m2 and work at the same efficiency with 30% of sunlight being converted into electricity. Whilst the path covers a total area of 1000m2 has a conversion of 20% due to its orientation.