

Case Study

Turn Green Sustainable Living Concepts into Reality

It is one of our commitments to build more environmentally friendly estates and foster greener lifestyles for our tenants that will contribute towards a more sustainable future for Hong Kong. Three of the recently completed developments including Upper Ngau Tau Kok Estate, Sau Mau Ping South Estate and Lam Tin Estate demonstrate our efforts in greater use of renewable energy towards greener estates. In addition, the use of site-specific design combined with extensive Micro-climate Studies in the development of all these estates have maximised the natural features of these sites and enabled the better use of daylight, solar energy, natural ventilation, and wind directions.

Green Designs at Upper Ngau Tau Kok

Upper Ngau Tau Kok Estate, the last estate to be redeveloped under the Comprehensive Redevelopment Programme, consists of 4 584 flats in six residential blocks, housing 12 200 people.

The site-specific design is exemplified in Upper Ngau Tau Kok Estate where blocks are located to maximise the sea views and minimise traffic noise. Airflow is improved by allowing a “wind corridor” between the housing blocks. Cross-ventilated corridors are designed to increase the natural ventilation in flats which will help dry clothes and disperse cooking exhaust.

Upper Ngau Tau Kok Estate was built by using modular flat designs. These design principles not only improve quality and maximise efficiencies, but also reduce construction time and construction waste because of the higher levels of mechanisation and prefabrication techniques used.

Other green initiatives implemented in Upper Ngau Tau Kok Estate also include recycling of waste, effective life-cycle costing of typical building materials, greening of slopes and covered walkways as well as the preservation of mature trees.



Upper Ngau Tau Kok Estate



“Wind corridor” between the blocks



Cross-ventilated corridor

Greening in Sau Mau Ping South

Sau Mau Ping South Estate consists of five Harmony Blocks with 3 995 flats. The estate was planned as a “green” estate in every aspect. It has a higher ratio of greenery than other estates with a hectare of open space and extensive slopes. It is anticipated that the trees planted in the estate can absorb 125.6 tonnes of carbon emissions a year when they are mature. Plants were carefully selected by considering not only for their greening features, but also their ecological balance to attract insects such as butterflies and dragonflies.

Within the estate, there are theme gardens such as the “Fragrant Plant Garden” and the “Rainbow Garden” as well as a multi-purpose lawn that provide leisure and play areas for residents of all ages and different abilities.



Sau Mau Ping South Estate



Fragrant Plant Garden

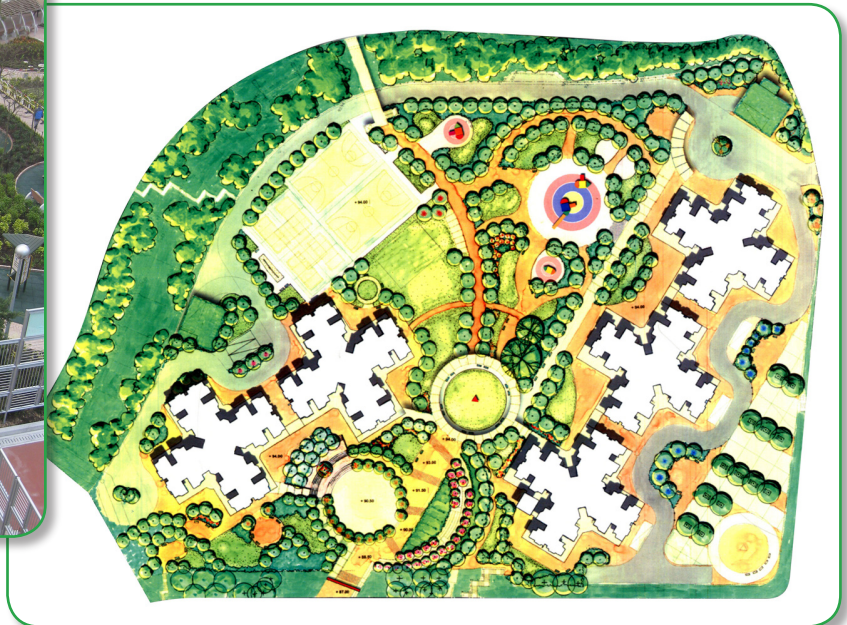


Rainbow Garden

Sau Mau Ping South is a “green” estate with a lot of greenery. There is, the longest “green covered walkway” among all public rental housing (PRH) estates. It also has green roof on the refuse chamber. Slopes in the estate have also been stabilised, turfed and planted with over 4 100 indigenous trees and shrubs. Allowing existing trees to be preserved, our slopes stabilisation works managed to save 114 trees on the slopes of the estate.



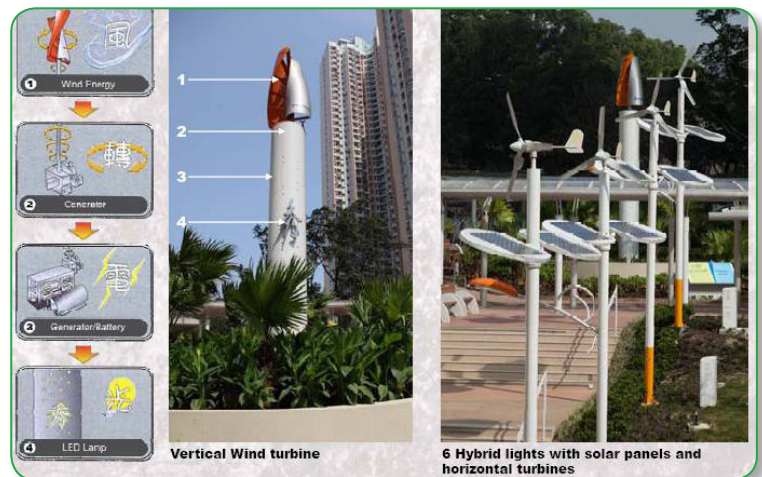
The longest “green covered walkway”



Landscape master layout of Sau Mau Ping South Estate



A slope at Sau Mau Ping is stabilised by soil nails and concrete grillages



Vertical Wind turbine

6 Hybrid lights with solar panels and horizontal turbines

Vertical wind turbine and six solar cum wind hybrid powered lighting system

With the help of the Micro-climate Studies, the estate’s design achieved an average wind speed of 3 – 5 metres per second at the central pedestrian passage, which is suitable for the generation of wind power. To utilise this natural resource, a vertical wind turbine and six solar cum wind hybrid powered lighting systems were installed in the estate to save energy and raise the residents’ awareness in the use of renewable energy. These systems generate and supply electricity for outdoor light-emitting diode (LED) lighting in an area of about 850 square metres in the Sau Mau Ping South Estate.

Energy Saving in Lam Tin



Lam Tin Estate

Lam Tin Estate consists of four 40-storey blocks with 3 036 units and is a showcase of extensive use of renewable energy in PRH estates.

A grid-connected photovoltaic (PV) system was installed in Lam Tin Estate to generate electricity for the operation of general facilities such as lighting, lifts, pumps, etc within the estate. The solar panels of the PV system are mainly installed on roofs to avoid obstructions from the surroundings so as to maximise the strength of sun rays. It is estimated that the PV system produces 43 000kWh of electricity per annum, which is sufficient to support the annual consumption of 11 typical Hong Kong families. It is also equivalent to the reduction of around 30 tonnes CO₂-e emitted to the environment.

A number of PV panels have been installed on the transparent skylight of the covered walkway with high pedestrian traffic in the estate in order to increase both awareness and knowledge of renewable energy among residents. Apart from the glass-fronted panels, residents can also see real-time data displays showing the current and cumulative rate of electricity production as well as associated benefits to the environment in the walkway.



Solar panels of the PV system installed on roofs



The glass-fronted panels in the walkway

In addition to the use of renewable energy, Lam Tin Estate has also adopted a number of greening initiatives. For instance, 20 trees were saved from the old estate and a further 1 070 new trees were planted, bringing the total green areas within the estate to 26%. Vertical greening panels have been installed on west facing walls to protect homes from the hot afternoon sun during sunset, and green roofing has been provided on the car park, podiums of domestic blocks as well as the roofs of the covered walkways.