



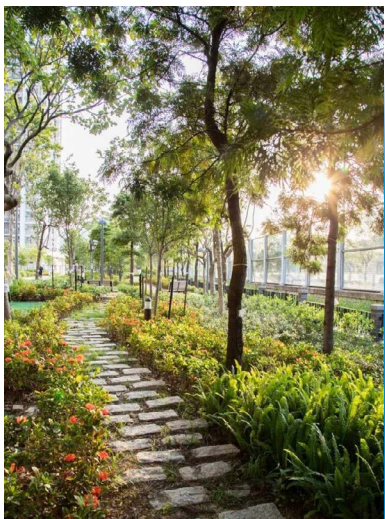
Case Study 1: Hung Fuk Estate – Transformation from Rural Habitation to Sustainable Community



▲ Overview of Hung Fuk Estate

Hung Fuk Estate is located in a low density rural area of Hung Shui Kiu, Yuen Long. The site area is 6.4 hectares comprising nine domestic blocks. Comprehensive planning consideration including geotechnical complexity, visual impact on the surrounding, wind environment, natural ventilation, daylight, traffic noise impact and its connectivity to the as-built surroundings were made. The development includes social welfare and recreational facilities such as kindergarten, youth centre, elderly centre and ball courts etc. Wide range of retail services are also provided to support the daily living of the residents.

Green Landscape



We aim to create a pleasant countryside community for sustainable living of the residents. We planned for over 30% green coverage area with 675 trees and 182 708 shrubs. Most of the trees and vegetation are native species, attracting birds, butterflies and other insects, enhancing ecological value of the area. We have provided over 5 000m² green roof and 400m² vertical greening with automated drip system for irrigation. We have also introduced “all-sand” rootzone profile design for community lawn. The sand layer under the lawn provides excellent drainage and is resistant to compaction. It also minimises maintenance.

◀ Transplanted Trees in Nature Walk

Energy Conservation

To promote the use of renewable energy, we installed 213 pieces of photovoltaic panels to produce renewable electric power in communal areas of residential blocks; we installed solar poles at landscape garden for external lightings. About 2.4% of electric power can be saved.

Apart from renewable energy, we have implemented various energy saving measures in the estate, including the installation of LED lights, solar tubes at car park and activity area, two-level lighting system at common lobbies and corridors, and photocells at typical floors. We have also adopted free-cooling operation mode and heat wheel energy recovery system in the air conditioning & mechanical ventilation system in wet market, which can save 83% and 13% of energy respectively when compared to traditional air-conditioning system.



▲ Photovoltaic Panel



▲ Solar Pole in Landscape Garden

▲ [Back to top](#)

Wind Environment and Natural Ventilation

We maximised the building separation, designed wind corridors and ventilation ground floor bay. Two view corridors of 30m and 15m in width viewed from the Tin Hau Temple on top of a small hill on the East of Hung Tin Road to the West of Hung Yuen Road are provided within the development. All domestic blocks are orientated in response to the prevailing easterly wind to enhance wind environment. We designed windows at typical lift lobbies and corridors to enhance natural ventilation of the common area.



▲ Two View Corridors

Noise Mitigation

The estate is surrounded by highways and main roads with severe traffic noise impact. We implemented various noise mitigation measures, such as positioning a 3-storey carport and a single-storey commercial centre abutting the main road as noise screening structures, providing a 3m high noise barrier above carport to screen traffic noise from main road, setting back domestic blocks from main roads and adopting single aspect design for those blocks facing highways, etc. With adoption of all these measures, we achieved 99% noise compliance rate.

Another major noise source is the Public Transport Interchange (PTI). Roof cover of the PTI comprises solid and transparent panels which are tilted at an angle to screen off noise impact from bus lanes to residential flats. Each roof covering is not more than 230m², so that mechanical ventilation system and sprinkler system are not required. The roof cover design not only allows natural ventilation and penetration of natural lighting but also, provides shelter in wet weather.



▲ Semi-covered Public Transport Interchange

▲ Back to top

Waste Management

We have implemented various waste management measures at different stages of the development. At design stage, standard flat modules were adopted to facilitate the use of pre-fabricated products thus reducing construction waste and pollution; rotational symmetry in layout of domestic floors enhanced the buildability; Building Information Model (BIM) was used for clash detection to minimise abortive works. During construction, under the ‘Pay for Environmental Management and Site Hygiene’ scheme in the building contracts, the contractor has implemented a series of effective environmental protection measures in the construction sites. In addition, we have a pilot program to recycle 200 felled trees. The felled trees were cut and shredded into wood chips at foundation works stage. With the collaboration of building contractor and neighbouring school on food waste and garden waste recycling program, the wood chips were mixed with food and garden wastes, and decomposed into soil conditioner. Finally, 2 623kg of compost was produced for community farming. To eliminate nuisance from daily operation of refuse collection, we have installed central compactor system, odour removal system and mechanical ventilation and filter system in the Domestic Refuse Collection Chamber.



▲ Refuse Collection Chamber (RCC)

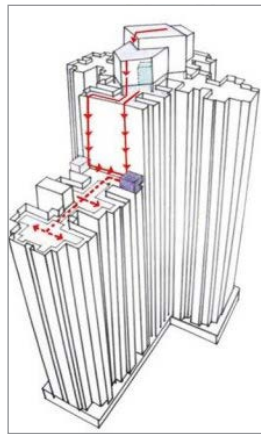


▲ Micro-climate Study at RCC

▲ Back to top

Water Conservation

We have carried out water conservation study in irrigation system, for example, zero irrigation system (ZIS), modular ZIS, root-zone irrigation system, drip irrigation system. We have adopted rain water harvesting system at roofs of domestic blocks, and air-conditioning condensation water recycling system at wet market for green roof irrigation. A friendly reminder on “Save Water” is printed on the mirror inside the bathroom of every flat.



▲ Rain Water Harvesting System at Roofs of Domestic Blocks



▲ Warm Reminder in Every Flat

▲ Back to top

Material Conservation

We have reused 1 565 granite blocks which were finishing materials of the old planter walls, fence walls and landscape paving and, this helps to reduce landfill burden. We have also reused building materials such as concrete tiles, steel frames, precast volumetric bathroom and façade mock up as educational display in the Recycle Garden.



▲ Reuse of Granite Blocks as Pavers



▲ Precast Components in Recycle Garden