Living in Sustainability ‘People-oriented Approach for Revitalization of Public Housing Estates’

Authors’ Names:
Mr. HO, William (W.L.) 1; Mr. CHAN, (S.T.) 1; Ms. LO, Winnie (W.Y.) 1; Mr. CHAN, Dick (L.S.) 1; Mrs. WONG LAM, Fiona (S.F.) 1; Mr. LEUNG, Daniel (T.M.) 1

1Hong Kong Housing Authority, Hong Kong, China

Abstract: Housing Department (HD) as the executive arm of the Hong Kong Housing Authority has attributed substantial efforts to provide a sustainable living environment for the existing housing estates by improving the building performance in environmental, social and economic aspects through Estate Improvement Programme (EIP). The EIP is a holistic, people-oriented and sustainable approach for the revitalization of aged estates befitting tenants’ needs, social harmony and heritage conservation. The EIP with the theme ‘Living in Sustainability – People-oriented Approach’ to sustain the existing estates while coping with changing needs at one of the oldest public housing estates in Hong Kong. Kwai Shing West Estate (Image 1) is one of the examples and many of the tenants have spent most of their life time living in this 39 years old estate given the opportunity to invite the stakeholders to participation at the early design stage of the EIP.

Keywords, Community Engagement, Social, Environmental and Economic Aspects

Introduction

Sustainability is one of the key maintenance strategies adopted for the public housing estates (PRH) by the Hong Kong Housing Authority (HKHA). To upkeep the provisions and facilities of an old estate so that it can continue to provide tenants with a decent living environment meeting their up-to-date needs, an Estate Improvement Programme (EIP) formulates for estates of about 40 years old after detailed structural appraisal under the
Comprehensive Structural Investigation Programme (CSIP)\(^1\) and confirmed as structurally sound and economically viable for preservation. Kwai Shing West Estate (KSWE) is one of the estates with the CSIP completed in 2009 and all the building blocks found structurally safe which can be sustained for the next 15 years. The findings of the CSIP favourably supported Kwai Shing West Estate to implement the Estate Improvement Programme. Under the theme of ‘Living in Sustainability – People-oriented Approach’, the EIP for the Kwai Shing West Estate, with active participation from stakeholders, aims at bringing the existing estate provisions closer to the current standard through an optimum scope of cost-effective improvement works to suit the changing of the tenants with a particular attention paid to the special needs of the elderly and disabled tenants, their living pattern and their integration with the younger generation. There is one important consideration in designing the improvement works for an old estate such as Kwai Shing West Estate, i.e. many tenants have grown up and grown old with the estate and have spent most of their lifetime living in the estate.

Social Aspect

*Community Engagement*

The external areas and open space have always been popular in PRH estates for recreational activities and social gathering. Aiming at obtaining inputs and ideas from the stakeholders including the tenants, Estate Management Advisory Committee (EMAC) members, non-governmental organisations (NGOs), local District Council (DC) members and neighbourhood schools’ principals, etc. on their views for the use of these external areas, we have conducted the Community Engagement Workshop during the planning stages of the EIP. The community workshops help to gauge the views and expectations of the tenants and local community through a series of social activities, focus group meetings, workshop and debriefing, stakeholders’ feedbacks were collected and consensus was drawn as the design team develops the detailed design of the open spaces. Recognizing the contribution of people in driving the community to a unified goal, we engage the community, empower people and

\(^1\) *THE COMPREHENSIVE STRUCTURAL INVESTIGATION PROGRAMME (CSIP) WAS LAUNCHED IN 2005 TARGETING AT ESTATES APPROACHING 40 YEARS OF AGE AND AT A 15-YEAR INTERVAL AFTERWARDS. CSIP LOOKS INTO THE STRUCTURAL INTEGRITY AND DETERMINES IF THE PUBLIC RENTAL HOUSING ESTATE IS ECONOMICALLY VIABLE TO MAINTAIN.*
foster participation so as to raise their environmental awareness, instill a culture of
environmental protection and a sense of belonging for the estate. The community
engagement workshop was held on 4 Dec 2013 (Image 2) and was actively participated by the
stakeholders of Kwai Shing West Estate which have given many fruitful ideas to the design
team to develop the design, a de-briefing session was held on 24 March 2014, the result of
design (Image 3) generally achieved the needs of the stakeholders for the design team to
further develop the detailed design.

In fact, the Estate Tree Ambassadors (ETA) Scheme volunteered by tenants has been
implemented successfully in Kwai Shing West Estate since 2010. The ETA Scheme
encourages tenants to actively participate in estate trees conservation activities, education and
promotion programmes.

![Image 3 – Outcome of the Design of Elevated Walkway and the Public Open Space from the Community Engagement Workshop]

**Barrier-free Access and Connectivity** – Around 30% of the population in Kwai Shing West
Estate are aged 60 or above and the percentage is growing, there is a need of providing an
environment with barrier-free access (BFA) and improving connectivity within the estate
becomes inevitable. New lift towers have been added to building blocks (domestic blocks
and shopping centre) with no lift provisions bringing tremendous benefits to the tenants and
significantly improving the BFA as well as the connectivity of the estate (Image 4). Other
BFA improvement works such as tactile guidepaths, staircase railings, ramps, accessible
unisex public toilets, and carparking space, etc. at the communal areas have also been done
with due consideration of the valuable feedbacks from persons with disability on BFA
facilities. Upon completion of the extension of the existing covers along the elevated
walkways at Blocks 6 and 9 and construction of a new covered walkway at pedestrian
footpath from Blocks 1 to 5, weather-protected walkway network (Image 4) connecting
amongst building blocks and major facilities of the estate will be provided within Kwai Shing
West Estate.
**Twin Tank System** – Twin tank system for portable water supply system of the domestic blocks has been implemented in many new estates with the objective to provide uninterrupted water supply to tenants even during cleansing of water tanks. While recognizing the social and environmental benefits, the economic implication has also been taken into account when adopting such system in Kwai Shing West Estate. The twin tank system in Kwai Shing West Estate utilizes the existing two fresh water tanks located on the same roof of domestic blocks with modification of pipe-works, such arrangement to connect the two water tanks and serve the same function as the twin tank system which is more cost-effective, avoid unnecessary demolition construction waste and nuisance to tenants, at the same time to improve the quality of living and sustainability of the estate.

**Environmental Aspect**

In order to enhance the environmental performance, Kwai Shing West Estate has implemented the following improvement works, verification system and energy management system:

**Certification to BEAM Plus for Existing Buildings** – Kwai Shing West Estate has been selected as one of the pilot estates for certification to the Building Environmental Assessment Method (BEAM) Plus for Existing Buildings which is used to benchmark the environmental and sustainability performance of the buildings. Under this assessment, credits under a weighting system over different environmental performance categories, including the site aspects, material aspects, energy use, water use and indoor environmental quality, were evaluated. Having taken into account of the existing environmental performance as well as the improvement measures to be adopted, the Kwai Shing Estate has achieved ‘Platinum’ grading in the Provisional Assessment of BEAM Plus in May 2014, and is the first residential estate to achieve such rating in Hong Kong.

The action plans for assessment are grouped into five categories: i) data and records gathering (e.g. environmental purchasing records, waste records, etc.), ii) procedures/
manuals/ guidelines development (e.g. tenants guidelines), iii) site measurements (e.g. water quality survey), iv) technical studies (e.g. waste audit, energy audit, carbon audit and water audit) and v) building improvement works (e.g. modification of existing refuse storage areas with independent mechanical air filtration system, replacement of water cistern and urinal flush valve from single flush to dual flush system, sensory water taps for public toilets and implementation of ISO 50001 Energy Management System).

BEAM Plus is a new initiative to the existing PRH estates. Besides the above-mentioned enhancement works which represent just a portion of the total scope to achieve the BEAM Plus Certification, the estate management staff has devoted considerable efforts to improve the health, energy efficiency and environmental sustainability of the buildings to ensure that the living environment of the tenants are enhanced.

**Implementation of ISO 50001 Energy Management System (EnMS)** – With a view to reduce the emission of greenhouse gases (GHG) which are globally recognized as the culprit of climate change, the HKHA has committed to continually improve the energy performance standards of operation, planned maintenance and improvement works of PRH and related services. While full ISO50001 certification for all existing PRH estates is planned in April 2015, Kwai Shing West Estate was selected as the pilot estate and successfully obtained the ISO50001 Energy Management System (EnMS) certification in June 2013. This EnMS Certification covers the central building services installation of communal areas of the domestic blocks plus the nearby external lighting circuit.

In the implementation of EnMS, improvement works for installations/facilities accounting for a significant energy use, such as public lighting, lift and water pumping systems, are actively explored and energy saving opportunities are identified. For example, the public lighting improvement programme for all the domestic blocks in Kwai Shing West Estate was carried out in October 2012 and completed in January 2013 by using energy efficient product, i.e. electronic ballast with registration under Electrical and Mechanical Services Department (EMSD)’s Energy Labelling Scheme.

With the completion of the public lighting improvement programme, there was a significant reduction of energy use of 15.8% in the communal areas of the domestic blocks of Kwai Shing West Estate. In 2012/13, the electricity consumption for all domestic blocks at Kwai Shing West Estate was 3,015,642 kWh. With the energy saving initiatives being put in place, the electricity consumption in 2013/14 was greatly reduced to 2,538,564kWh.

**Environmental Protection Window (EPW)** – To arouse tenants’ awareness of energy conservation and environmental sustainability, the Environmental Protection Window (EPW) (Image 5) was initiated in the EIP through installation of an used liquid-crystal display (LCD) panel at the ground floor lift lobby of every domestic block to show the periodic performance of electricity consumption (both tenants and communal), gas (tenants only) and water (communal only) for individual block. Comparisons on various consumption performances of the blocks against previous year’s performances, and also comparisons on various
consumption performances (using relative indexes) of individual block against the average figures of all PRH blocks in Hong Kong can be carried out.

In addition to above information, videos on environmental protection and energy saving messages from other government departments, utilities companies and green groups are also broadcast so as to encourage tenants to treasure resources and lead an environmentally friendly lifestyle.

**Green Roof and Vertical Greening** – As one of the improvement works under the EIP, green roof will be put at the shopping centre which locates at the centre of Kwai Shing West Estate (Image 6). Not only providing aesthetics enhancement to the neighbourhood, this green roof also reduces the surface temperature as compared to hard roof surface by about 4°C, reinforces building insulation and energy efficiency, lowers the overall heat island effect and increases the overall green ratio to 27% of the total Construction Floor Area of the estate. Apart from green roof, we have also put vertical greening at identified low rise building structures such as the refuse rooms, water pump houses in the estate to give the estate a lively look which is very much welcomed by the tenants (Image 6).

**Economic Aspect**

**Shopping Centre Improvement Works** – Another focus of the EIP is to enhance the commercial facilities so as to meet the up-to-date shopping needs. Consisted of retail shops
on G/F, a market on 1/F and a shopping lane at podium with a total of 21 retail shops and 85 market stalls, the existing 3-storey shopping centre is of an occupancy rate 96% & 26% for the retail shops and the market stalls respectively.

Under the EIP, the existing shopping centre will be renovated with additional public toilets with child sanitary fitments and accessible unisex toilet. Whereas the G/F storerooms will be converted to new retail facilities, the market stalls and trades of the retail shops will also be re-ordered to increase the retail areas and improves the shopping environment. Such renovation and shops re-ordering works will, in return, improve the occupancy rate, increase revenue and bring in new job opportunities to the district.

Conclusion
As one of the largest public sector developers in Hong Kong, the HKHA upholds the building sustainability strategy with community engagement, social, environmental and economic principles in pursuit of harmonious living environment. The EIP in Kwai Shing West Estate has demonstrated how the HKHA strives for sustainable living for aged estates by working out a set of environmental friendly, socially welcoming and cost-effective solutions in a people-oriented approach with its stakeholders.

A series of improvement programmes have been implemented to address the various aspects with a goal of improving the sustainability of the estate. As many of the tenants have lived in Kwai Shing West Estate for more than three decades, they were invited to participate at the early design stage of the EIP to obtain their views and expectation of the EIP. On the social aspect, the provision of barrier-free access and connectivity of the buildings and major facilities of the estate improves the facilities to today’s standard and meet the needs of its aging population. Further to the implement of ISO 50001 Energy Management System with energy saving initiate for communal facilities, Environmental Protection Window is installed to promote tenants’ awareness on energy conservation of each domestic block. With respect to the economic aspect, the shopping environment of the shopping centre is significantly improved by re-ordering and re-alignment of the existing shops, to optimize the retail areas and, as a result, reduces the vacancy rate and increases the revenue of the premises. All in all, the HKHA will continue to contribute towards the well-being of the community and provide a quality and sustainable neighbourhood like Kwai Shing West Estate so that the tenants can all enjoy a sustainable living.