



Case Study 2: Wah Ha Estate – An Adaptive Re-use of Heritage

Wah Ha Estate is converted from the historical Chai Wan Factory Estate (CWFE), which was granted Grade II Historic Building status by the Antiquities Advisory Board. The conversion was announced in 2012 to increase and expedite the short-term public housing supply. The conversion is completed in 2016, providing 187 flats on five domestic storeys, with about 12 500m² of total gross floor area.



1964



2013



2016

▲ A 50-year Change from Chai Wan Factory Estate to Wah Ha Estate

Conserving the Heritage

CWFE was constructed in June 1959. It is the last H-shaped factory building remained in Hong Kong, with an area of 0.4 hectare located in close proximity to the MTR station. With the purpose of enhancing public awareness of heritage conservation and sustainable housing development, the existing industrial building was retained for adaptive redevelopment.

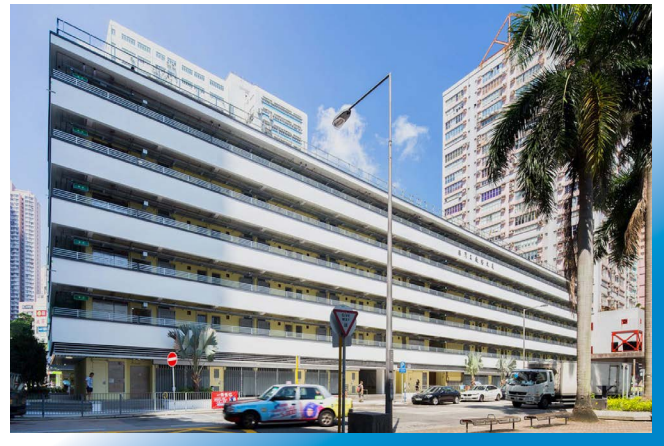


▲ Before (Left) and After (Right) the Conversion

With dual considerations of safety and structural stability, health and environmental issues, as well as the compliance of statutory requirements, conversion of this listed historic industrial building into public rental housing is a challenging task throughout the whole planning, design and construction process. Building clearance was required before the commencement of actual construction works, during which a large number of artifacts were salvaged. Existing floor slabs were tested and verified that the retained structure and materials can fulfil the latest fire safety requirements. As the test results were satisfactory, the original appearance of the building with about 70% of the building structure can be retained, which significantly reduced the demolition and re-construction of floor slabs, and thus building materials, energy consumption and carbon emissions in the construction process. Soil decontamination was carried out before commencing the construction works in order to ensure that future tenants of the estate can live or operate their business in a safe environment, and free from potential health risk arising from contaminated land. A number of “Character Defining Elements” have also been retained, including “H-shape” building form, strong horizontal lines formed by the balconies and slabs, paint characters of “柴灣工廠邨大廈” and floor loading capacity, ramps with concrete grilles and chimneys stacks.



▲ Floor Loading Capacity



▲ Strong Horizontal Lines Formed by Balconies

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Thoughtful Building Design for the Residents

The building block is carefully redesigned to suit the needs of public rental households and communities. As it is originally an industrial building, the floor plan varies depending on the intended use and scale of the occupants. During the conversion, each floor was redesigned and modified into domestic flats to fully utilise the floor space in the building.



▲ Interior of a Standard Flat (Left) (Right)

To minimise traffic noise impact on the tenants, all domestic flats overlook the courtyards. Acoustic balconies, with noise absorptive panels and noise screens are designed to attenuate the noise impact.

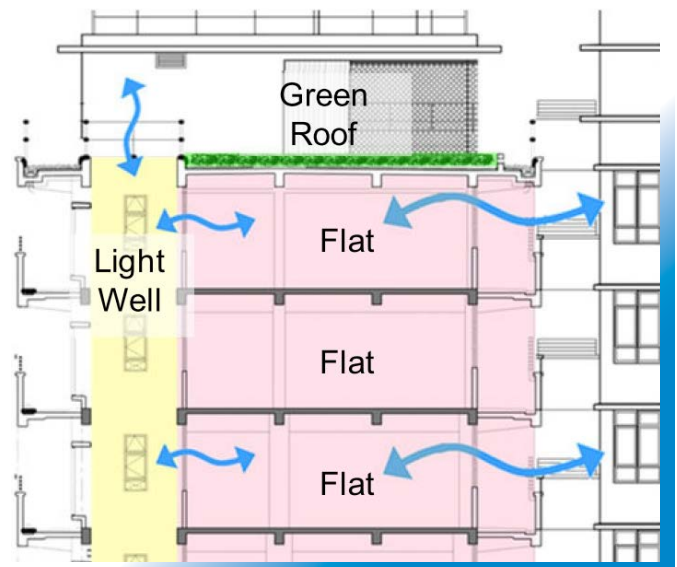


▲ Acoustic Balcony

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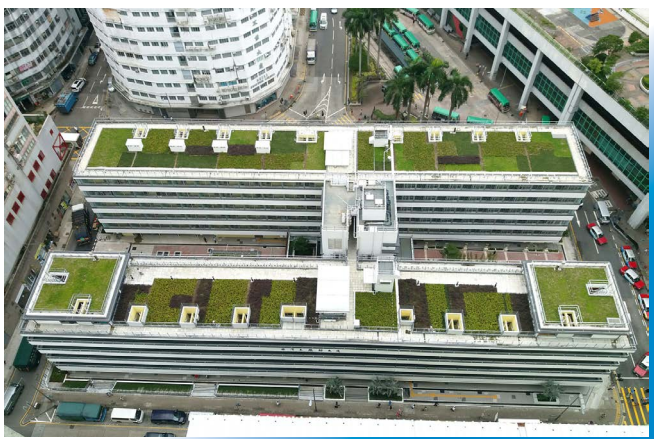
Protecting the Environment

Other than saving a large amount of construction materials by retaining most of the original structure, the estate was also modelled to be 46% more energy efficient than the specification in the Electrical and Mechanical Services Department’s Performance-based Building Energy Code. We have adopted passive design in this development. We designed additional light wells to enhance natural ventilation and capture daylight for the flats.



▲ Interaction between Light Well and Flats

We have provided extensive landscaping with over 40% greening ratio to create a comfortable environment as well as a “green-lung” within the congested industrial area.



▲ Green Roof at Wah Ha Estate (Taken in August 2016)



▲ Green Roof

We have conserved precious water resources used in gardening. Rainwater harvesting system, together with the drip irrigation system, is installed to collect rainwater for irrigation, and projected to save over 50% of irrigation water annually. We also use eco-friendly recycled block pavers at the external areas.

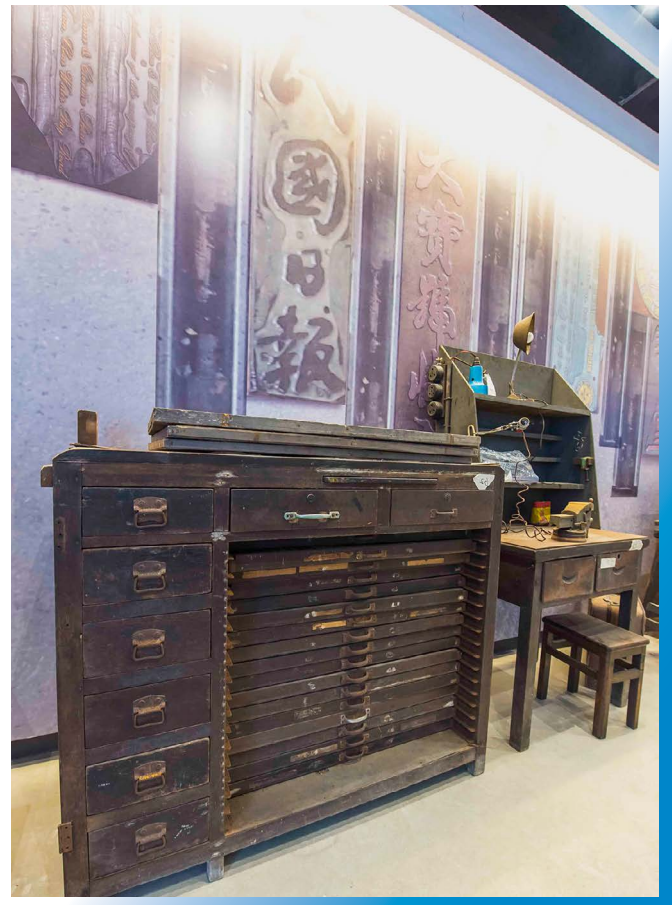


▲ Vertical Greening

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Interaction with the Community

HA adopts a people-oriented approach in delivery of the development project. We invited the ex-tenants and stakeholders to join the community engagement workshops. We incorporated their views and memories in the design process. In particular, a display area was setup to display the artifacts salvaged during building clearance, which include movable type printing machine and wardrobes, wooden carved chests, furniture, toys, daily supplies company signage, etc.



▲ Artifacts from CWFE Being Displayed



We have also reserved the ground floor of the building to provide courtyard, commercial, car parking and estate management facilities to satisfy the daily needs of the tenants as well as blending the building into the sustainable neighbourhood.

▲ Courtyard

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Conclusion

Wah Ha Estate has successfully demonstrated the adaptive re-use of existing building structure to public rental housing. We strive to take a holistic planning and design approach in addressing the public and create a sustainable community in delivering the public housing production.

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