

Legislative Council Panel on Housing**Environment-friendly designs of and green measures
implemented in public rental housing estates****Purpose**

This paper briefs Members on the progress of the implementation of environment-friendly designs and green measures in public rental housing (PRH) estates by the Hong Kong Housing Authority (HA) in 2007/08.

Background

2. In December 2007, we briefed the Legislative Council Panel on Housing on the environment-friendly measures implemented by the HA. At the meeting, Members requested the Administration to submit an annual report on the effectiveness and progress of the environment-friendly measures implemented by the HA in PRH estates, and presented the details of each of the measures including brief description, implementation and the target set for the next year on those measures.

Progress

3. In the past year, the HA continued to enhance the building designs and construction technologies of PRH, and improve estate management and maintenance so that the quality of living can be upgraded and the impact on the environment can be minimised. We encouraged residents and stakeholders to save energy, reduce production of waste and promote recycling of waste. The HA sets out each year the target for implementing environment-friendly measures for the following year and monitors the implementation and progress of such measures. The effectiveness of the measures adopted in 2007/08 and the targets for the following year are set out in the **Annex**.

4. The HA will continue to provide a healthier and better living environment for PRH residents through various environment-friendly designs and green measures, contributing to the sustainable development of Hong Kong. It will also serve as an exemplary model for the industries, and an encouragement for stakeholders, including contractors and residents, to jointly protect the environment and improve the quality of life in the community.

**Progress Report on Environment-Friendly Designs and
Green Measures of Public Rental Housing Estates**

(As at 2007/08)

Measures	Brief Description	Implementation	Targets for 2008/09
I. During the construction of new PRH estates:			
A. Environment-Friendly Designs			
A1. 'Micro-Climate' Studies	<ul style="list-style-type: none">The Hong Kong Housing Authority has carried out 'Micro-Climate' Studies since 2004 for all newly designed estates, where computational fluid dynamics technology is employed to evaluate environmental performance and seek to enhance design, orientation and disposition of the housing blocks, so as to make the best use of the natural environment such as local wind direction, natural ventilation, daylighting	Number of projects in which 'Micro-Climate' Studies have been adopted for planning and design- <ul style="list-style-type: none">2005/06: 52006/07: 92007/08: 13	<ul style="list-style-type: none">6 new projects

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	and solar radiation in order to provide a healthy and quality living environment for residents.		
A2. Air Ventilation Assessments	<ul style="list-style-type: none"> The HA has taken great care in studying whether the developments would pose restriction to air flow for major development projects planned and designed after July 2006. The HA would also compare the level of air ventilation of each design option and select the estate disposition with the best environmental effects. 	Number of projects in which assessments have been conducted- <ul style="list-style-type: none"> 2006/07: 3 2007/08: 3 	<ul style="list-style-type: none"> Continue to be implemented.
B. Green Construction Techniques			
B1. Modular Design and Component Prefabrication Techniques	<ul style="list-style-type: none"> The techniques help enhance building quality, site safety and minimise the impact on residents in the vicinity of the construction sites. 	<ul style="list-style-type: none"> The use of precast concrete components accounts for around 20% for normal projects. The HA has successfully extended the scope of precast concrete works from the usual rate of 20% 	<ul style="list-style-type: none"> Continue to be implemented in other projects.

Measures	Brief Description	Implementation	Targets for 2008/09
		to around 60% in are pilot scheme.	
B2. Hard-paved Construction method	<ul style="list-style-type: none"> The Hard-paved Construction method, with the use of precast concrete slabs and other materials to provide hard paving at the sites, has been adopted in all HA's construction and piling sites since 2005. 	<ul style="list-style-type: none"> Since the adoption of the Hard-paved Construction method, the generation of mud and dust, and its impact on the surrounding environment and air quality has been minimised. 	<ul style="list-style-type: none"> Continue to be implemented.
B3. Incorporation of Overall Environmental Management Plan in Construction Works Contracts	<ul style="list-style-type: none"> All contractors are required to carry out on-site sorting of construction and demolition materials/waste. 	<p>Number of projects with the specification incorporated in the contracts:</p> <ul style="list-style-type: none"> 2005/06 : 9 2006/07 : 11 2007/08 : 8 	<ul style="list-style-type: none"> 4 projects
B4. 'Life Cycle Assessment' and 'Life Cycle Costing'	<ul style="list-style-type: none"> The HA has developed a 'Life Cycle Assessment' and 'Life Cycle Costing' method to assess and determine more accurately and effectively the use of new materials during the design stage since 	<ul style="list-style-type: none"> The method has been adopted to assess and determine the use of new materials during the design stage of all new projects since 	<ul style="list-style-type: none"> Continue to be implemented.

Measures	Brief Description	Implementation	Targets for 2008/09
method	2005 in order to minimise the need for future maintenance and the impact on environment, and to follow through with the HA's principles in adopting "functional and cost-effective" design and using easily maintained, durable and environment-friendly materials.	2006.	
C. Waste Management			
C1. Refuse Handling System	<ul style="list-style-type: none"> ● For effective waste handling, the HA has adopted new refuse handling systems for all new developments completed after October 2005 to reduce refuse volume for easy transportation and to prevent odour leakage. <ul style="list-style-type: none"> (i) The installation of a 'Central Compactor System' inside a central refuse collection point; or (ii) The installation of a small scale individual 'Distributed Compactor 	<ul style="list-style-type: none"> ● "Central Compactor System": 9 development projects ● "Distributed Compactor System": 3 development projects 	<ul style="list-style-type: none"> ● Continue to be adopted.

Measures	Brief Description	Implementation	Targets for 2008/09
	System' in each building.		
C2. Refuse Storage and Material Recovery Rooms	<ul style="list-style-type: none"> In designing PRH estates, the HA will provide refuse storage and material recovery rooms on typical domestic floors to allow sufficient space for three recycle refuse bins, so as to promote source separation by facilitating the tenants to separate refuse and store recyclables. 	Number of new estate development projects in which space is reserved for recycle bins- <ul style="list-style-type: none"> 2005/06: 7 2006/07: 9 2007/08: 5 	<ul style="list-style-type: none"> 7 development projects.
C3. Installation of De-odourizers at the Covered Refuse Collection Points	<ul style="list-style-type: none"> The HA has installed new de-odourizers at covered refuse collection points in newly completed estates, where bio-chemical technology is employed to contain the odour at the time of refuse collection since 2003. 	Number of de-odourizers installed: <ul style="list-style-type: none"> Before 2006/07: 52 sets 2007/08: 9 sets 	<ul style="list-style-type: none"> Continue to be adopted.
D. Energy Conservation			
D1. Designing new estates according to	<ul style="list-style-type: none"> All new housing projects of the HA have been designed according to the Building Energy Codes issued by the Electrical 	Number of energy efficiency registration certificates awarded:	<ul style="list-style-type: none"> To obtain 11 energy efficiency registration

Measures	Brief Description	Implementation	Targets for 2008/09
the Building Energy Codes	and Mechanical Services Department to ensure that the buildings meet the energy efficiency requirements on lighting, electricity, air conditioning, lift and escalator installations since 2002. In a typical public housing block with energy efficiency designs, electricity consumption can be reduced by about 6%, amounting to a saving of \$40 000 a year.	<ul style="list-style-type: none"> ● 2005/06: 21 ● 2006/07: 9 ● 2007/08: 9 	certificates.

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D2. Trial use of renewable energy in public housing estates	<ul style="list-style-type: none"> ● The HA to use renewable energy in public housing estates as far as possible. ● To continue with the experiments on installing solar or wind-powered lamp posts in the landscaped areas of new estates completed in or after 2008. 	<ul style="list-style-type: none"> ● The trial installation of a solar photovoltaic system in Lam Tin Estate Phases 7 and 8 and the East Harbour Crossing Phase 5 project is in progress. ● Number of solar or wind-powered lamp posts installed on a trial basis: <ul style="list-style-type: none"> – 2005/06: 1 project – 2006/07: 2 projects – 2007/08: 5 projects 	<ul style="list-style-type: none"> ● Continue with the trial scheme. ● To install 8 solar or wind-powered lamp posts.
E. Greening work			
E1. Estate greening	<ul style="list-style-type: none"> ● To enhance greening in PRH estates, the HA intends to attain the planting target of planting at least one tree for every 15 flats in new estates. Trees, shrubs and annual plants will be grown to enhance greening of the estates. 	<p>The numbers of trees, shrubs and annual plants grown in new and existing estates:</p> <ul style="list-style-type: none"> ● 2005/06 : 623 500 ● 2006/07 : 644 100 ● 2007/08 : 642 300 	<ul style="list-style-type: none"> ● To grow 720 000 plants.

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E2. Action Seedling	<ul style="list-style-type: none"> The Community Participation Scheme is introduced to engage tenants, contractors and the local communities in greening activities at the construction stage. Seedling plants will be given out by the HA and the building contractors to participants who will nurture the plants at home until they are fit for transplanting into the planters of the new estates. 	<ul style="list-style-type: none"> The Scheme is first implemented for 14 public housing projects to be completed in 2008 and 2009. 	<ul style="list-style-type: none"> Continue with the scheme.
F. Other Measures			
F1. Common W-Trap System	<ul style="list-style-type: none"> Subsequent to the outbreak of SARS in 2003, the HA, in collaboration with the Department of Building and Construction of the City University of Hong Kong, with the purpose of improving the design of drainage systems in new estates, developed this System which, by collecting waste water from wash basins and shower areas to floor traps, prevents the floor traps of new estates from drying up. 	<ul style="list-style-type: none"> 2005/06: 4 projects 2006/07: 9 projects 2007/08: 5 projects 	<ul style="list-style-type: none"> 7 projects

Measures	Brief Description	Implementation	Targets for 2008/09
F2. Twin Tank System for the supply of fresh/flushing water	<ul style="list-style-type: none"> The HA has successfully adopted the new Twin Tank System since early 2008 in the design of rooftop fresh water tanks and flushing water tanks for new PRH estates. The System, coupled with orderly cleansing arrangements, provides tenants with continuous supply of fresh/flushing water and reduces the inconvenience caused during the cleansing and repairs of water tanks. 	<ul style="list-style-type: none"> The System has been adopted for 19 new estate projects. 	<ul style="list-style-type: none"> Continue to be adopted.
II. Green measures implemented in existing PRH estates:			
A. Domestic Waste Disposal and Recovery			
A1. Domestic Waste Disposal	<ul style="list-style-type: none"> The HA has implemented the “Programme on Source Separation of Domestic Waste” in all PRH estates by phases since 2005. Floor-based waste separation facilities have been provided in PRH blocks and more types of recyclables were covered so as to increase the rate of domestic waste recovery and reduce wastes for disposal. 	<ul style="list-style-type: none"> Number of estates participating in the “Programme on Source Separation of Domestic Waste”: <ul style="list-style-type: none"> – 2005: 30 – 2006: 60 – 2007: 90 	<ul style="list-style-type: none"> The HA will introduce the Programme in 30 additional PRH estates each year. It is expected that the Programme will be extended to all PRH estates by

Measures	Brief Description	Implementation	Targets for 2008/09
		<ul style="list-style-type: none"> – 2008: 120 ● Daily rate of domestic waste disposal per capita: <ul style="list-style-type: none"> – 2005/06: 0.740 kg – 2006/07: 0.735 kg – 2007/08: 0.724 kg ● Waste paper collected: <ul style="list-style-type: none"> – 2005/06: 10 141 tonnes – 2006/07: 13 025 tonnes – 2007/08: 14 748 tonnes ● Plastic bottles collected: <ul style="list-style-type: none"> – 2005/06: 199 tonnes – 2006/07: 503 tonnes – 2007/08: 764 tonnes ● Aluminum cans collected: <ul style="list-style-type: none"> – 2005/06: 128 tonnes 	2012.

Measures	Brief Description	Implementation	Targets for 2008/09
		<ul style="list-style-type: none"> – 2006/07: 267 tonnes – 2007/08: 309 tonnes 	
A2. Waste Recovery Activities	<ul style="list-style-type: none"> ● The HA has joined hands with charitable and non-profitable making organisations to hold various waste recovery activities such as the collection of used clothes, rechargeable battery recycling programme, collection of compact fluorescent lamps and spent fluorescent tubes, computer recycling programme and mooncake tin box recycling campaign, etc. 	<ul style="list-style-type: none"> ● Used clothes collected: <ul style="list-style-type: none"> – 2005/06: 525 tonnes – 2006/07: 561 tonnes – 2007/08: 632 tonnes ● Rechargeable batteries collected: <ul style="list-style-type: none"> – 2006: 229 kg – 2007: 200 kg ● Collection boxes have been placed in estate offices for collecting disposed compact fluorescent lamps, fluorescent tubes and computer items. Arrangements have been made for Environmental Protection Department (EPD)'s contractor to collect and handle these items from estates. ● Participation in the Source Separation of Domestic Waste 	<ul style="list-style-type: none"> ● Continue to organise related activities in estates.

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		<p>Competition organised by the EPD. Awards are given to estates that score high in the quantity of recyclables collected per household each month. In 2007/08, 71 PRH estates under the HA have been awarded the Certificate of Merit in the competition.</p> <ul style="list-style-type: none"> ● Participation in the “Source Separation of Waste (SSW) – Model Family Competition 2008”, jointly organised by the EPD and the community newspaper from October to December 2008. ● Assist the Friends of the Earth (HK) and the EPD in organising and publicising the mooncake tin box recycling campaign to collect mooncake tin boxes for recycling purposes. 	
B. Energy Conservation			

Measures	Brief Description	Implementation	Targets for 2008/09
B1. Lighting Device Energy Saving Scheme	<ul style="list-style-type: none"> ● In early 2007, the HA launched a trial scheme on lighting device energy conservation in Homantin Estate. Preliminary results indicate a monthly saving of about 11% in power consumption for the public areas of the housing blocks. ● Provided that safety will not be compromised, the personnel responsible for estate management are encouraged to switch off or delay switching on part of the lighting in the public areas of the estates during designated periods. Tenants can also participate in the energy saving campaign by acting in accordance with the energy saving tips at home provided under the scheme. 	<ul style="list-style-type: none"> ● The HA has extended the trial scheme on lighting device energy conservation to other estates to allow the energy saving measures to be further tested and assessed. ● The HA, in conjunction with the Friends of the Earth, organised “Dim it! 6.21 Lights Out” and “930 Energy Saving Day” under the programme Green Delight in Estates. 	<ul style="list-style-type: none"> ● The HA will continue to test and assess the efficacy of the lighting devices in the domestic blocks of 10 other estates.
C. Estate Greening			
C1. Thematic gardens and green roofs	<ul style="list-style-type: none"> ● Thematic gardens are built at selected estates to enhance estate landscape. ● The greening programme helps enhance 	<ul style="list-style-type: none"> ● The Lagerstroemia Garden at Wah Fu Estate and the Magnolia Garden at Lung Heng Estate have been 	<ul style="list-style-type: none"> ● Continue to be implemented.

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	<p>the rooftop landscape, reduce temperature and save energy.</p> <ul style="list-style-type: none"> Plants are grown, plant nurseries provided and vertical green panels cladded at public facilities, e.g. on the rooftops and external walls of refuse collection points. 	<p>built.</p> <ul style="list-style-type: none"> The pilot scheme for green rooftops at Wo Lok Estate has been completed. The second pilot scheme for green rooftops is being conducted at Fu Shan Estate. Plants are grown on the rooftops and external walls of the refuse collection point at Ching Ho Estate in Fanling which has been recently completed this year. 	
C2. Landscaping	<ul style="list-style-type: none"> The existing landscape of selected estates is upgraded by soft landscaping under the Landscape Improvement Programme. 	<ul style="list-style-type: none"> The landscaped areas are : 2005/06 : 110 450m² 2006/07 : 110 000 m² 2007/08 : 116 000 m² 	<ul style="list-style-type: none"> Landscaping works will cover an area of 110 000 m².

Measures	Brief Description	Implementation	Targets for 2008/09
C3. Green Delights in Estates	<ul style="list-style-type: none"> ● The HA continues to organise a community environmental protection programme Green Delights in Estates, in conjunction with three green groups, including the Conservancy Association, Friends of the Earth (HK) and Green Power. ● Under the programme, each green group designs and implements environmental initiatives for 10 estates every year to promote environmental awareness among the tenants. 	<ul style="list-style-type: none"> ● Activities organised include “Green Estate Ambassadors”, “Territory-wide Clean-up Day”, “Territory-wide Recycling Day”, “Territory-wide Energy Saving Day” and “In-depth Educational Activities”, etc. ● The programme have been extended to 90 estates and will be rolled out in phases to eventually cover all PRH estates in Hong Kong. 	<ul style="list-style-type: none"> ● Continue to be implemented.
D. Other Measures			
D1. Housing Channel	<ul style="list-style-type: none"> ● The HA continues to make use of the Housing Channel to broadcast at the ground floor lift lobbies of PRH blocks to disseminate green messages to tenants and encourage them to lead a green life. 	<ul style="list-style-type: none"> ● The HA continues to publicise the green activities at the estates through the Channel. 	<ul style="list-style-type: none"> ● Continue to be implemented.