

環保報告

環保公屋 開創未來
Greener Public Housing for a Sustainable Future



管治架構



屋署環保健康安全委員會負責發展和制訂房屋署在環保、健康、安全及可持續發展方面的政策方針，並成立小組委員會監督各項環保措施和行動計劃的進展及成效。署內個別分處和組別已取得ISO 14001環境管理體系認證和ISO 50001能源管理體系認證。

環保設計與建築

零灌溉系統－節約用水

房委會已採用零灌溉系統多年，重用雨水作灌溉用途。目前已有28個新建屋邨的花圃使用這個系統，我們的長遠目標是在所有公營房屋發展項目廣泛應用這個系統。

現時，我們正研究這個系統使用預製構件式設計的可行性，以盡量減少在工地進行的建築工程。我們在漁灣邨試行使用構件式零灌溉系統，當中包括裝設在場外預製的混凝土花圃；又在該屋邨研究使用回收再造的碎玻璃（即碎裂或廢棄玻璃），代替河沙建造構件式零灌溉系統。



東匯邨匯智樓所有花圃均採用零灌溉系統
ZIS is applied in all planters at Wui Chi House, Tung Wui Estate

Governance

The Housing Department Environmental, Health and Safety Committee (HDEHSC) develops and formulates policy direction on environmental, health, safety and sustainability aspects in the HD. A Sub-committee is set up to oversee the progress and performance of environmental initiatives and action plans. Individual divisions and units in the Department have obtained ISO 14001 Environmental Management System and ISO 50001 Energy Management System certifications.

Green design and construction

Zero Irrigation System (ZIS) – water conservation

The HA has long been using ZIS as a means of reusing rainwater for irrigation. Currently, ZIS has been deployed in planters at 28 new housing estates. Our long-term aim is to adopt ZIS widely in all public housing developments.

Currently, we are looking into the feasibility of using prefabricated modular design for ZIS to minimise on-site construction work. A trial of a modular type of ZIS was conducted at Yue Wan Estate, involving the installation of pre-cast concrete planters fabricated off-site. At the same estate, we also undertook a study on using recycled glass cullet (i.e. broken or refuse glass) as a replacement for river sand in the construction of modular ZIS.



漁灣邨試用構件式零灌溉系統
A trial of modular ZIS at Yue Wan Estate

微氣候研究與空氣流通評估

微氣候研究和空氣流通評估有助我們將風環境、建築物自然通風、日光穿透、熱舒適度、空氣污染物排放等因素納入我們的設計考慮，是提升新設計公營房屋發展項目環境表現的寶貴工具。



為 **26** 個正在進行的項目作空氣流通評估

Carried out Air Ventilation Assessments in 26 ongoing projects

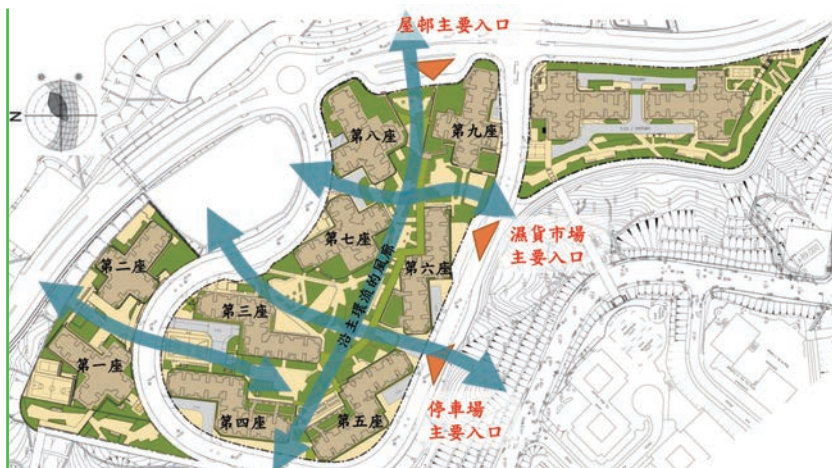
Micro-climate studies and Air Ventilation Assessments

Micro-climate studies and Air Ventilation Assessments are valuable tools for optimising the environmental performance of newly designed public housing developments. These tools enable us to include factors such as wind environment, natural building ventilation, daylight penetration, thermal comfort, and emissions of air pollutants in our design choices.



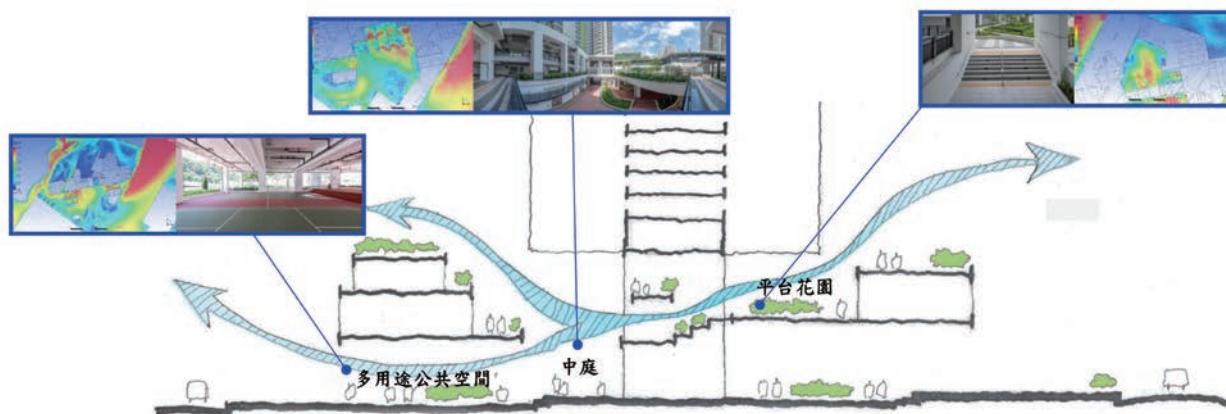
為 **29** 個正在進行的項目作微氣候研究

Conducted micro-climate studies in 29 ongoing projects



觀塘安泰邨善用各座大廈的整體布局與座向，預留多條通風走廊和景觀走廊

The buildings at On Tai Estate, Kwun Tong, were dispositioned to maximise distances between them to form open breezeway and open space for the whole estate



葵翠邨大樓架高的空間把位於東南面的園景平台和西北面上層平台的內庭院在視覺上連接起來，並形成一道通風廊

The tower of Kwai Tsui Estate is purposely raised to visually connect the landscaped podium at southeast to the internal courtyard on upper terrace at northwest and to form a breezeway corridor

低碳建築設計

我們利用碳排放量估算方法，估算樓宇在預計生命週期內大概的二氧化碳排放量。這個估算方法有助我們在整個項目周期的各個階段，為個別大廈以至整個屋邨設定碳排放量基準，可用以比較不同的大廈和屋邨，以及制訂可達到的改善目標。

碳排放量估算涵蓋經由建築物料、樓宇結構材料、公用屋宇裝備裝置運作期間和拆卸工程中產生的碳排放量，並以使用可再生能源和植樹等方法予以抵銷。這做法有助我們優化屋邨的設計，以達到長遠持續發展的目標。

CEE

9 2021/22 年度就
個項目進行碳排放量估算

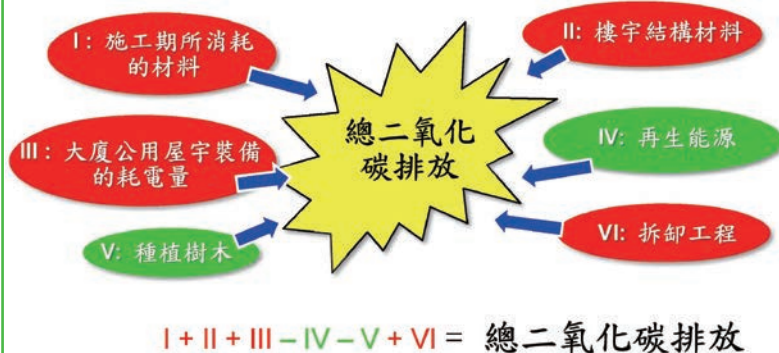
Conducted CEE for 9 projects in 2021/22

Low carbon building design

We estimate the likely carbon dioxide emissions of buildings over their lifespan by using the Carbon Emission Estimation (CEE) method. The CEE is a methodology that enables us to set benchmarks for the emission levels of both individual housing block and the entire housing estate throughout each stage of the project cycle. These benchmarks can be used to compare different buildings and estates, and to set achievable improvement goals.

The CEE includes an estimate of carbon dioxide emissions generated by materials consumed during construction, materials used in structures, the operation of communal building services installations, as well as emissions caused by demolition activities. It also calculates the emission off-sets generated by renewable energy applications and tree-planting. This enables us to enhance the long-term sustainability of our estate designs.

碳排放估算



碳排放量估算方法

自採用碳排放量估算方法以來，估計碳排放量減少



16.55%

reduction in estimated carbon emission since the roll-out of CEE

環保材料及產品

礦渣微粉是重要的環保建築材料。我們現有的建築合約訂明，用於建造預製外牆和預製樓梯混凝土的水泥，當中35%必須以礦渣微粉代替。我們現正把這項規定的涵蓋範圍擴展至建造預製硬地面、預製板間牆和預製垃圾槽。我們的新工程項目規格均符合綠色建築環境評估（綠建環評）新建建築2.0版。我們定期修訂環保材料及產品指引，以符合香港綠色建築議會「綠材環評」。

Green materials and products

Ground Granular Blast Furnace Slag (GGBS) is an important green construction material. In our current building contracts, we specify that 35% of the cement normally used to produce precast façades and stairs must be replaced by the GGBS. We are extending this requirement to cover the production of precast hard paving, partition walls and refuse chutes. Specifications included in our new works projects are all aligned with BEAM Plus for New Building version 2.0. We regularly revise our green materials and products guides to align with Green Product Accreditation & Standards Scheme of the Hong Kong Green Building Council.

綠色建築認證

綠建環評新建建築的評估可為我們新建築物提供建築環境屬性的生命周期評估。房委會所有新建築物的設計均符合綠建環評評估標準，並以金級評級標準或以上為目標。

Green building recognition

The Building Environmental Assessment Method Plus for New Buildings (BEAM Plus NB) provides a lifecycle assessment of the environmental attributes of our new buildings. All the HA's new buildings are designed to meet BEAM Plus assessment criteria, and aim at Gold rating standard or above.

建築項目與評級 Project & Rating

(新建建築 1.2 版暫定評級) (NB V1.2 Provisional Assessment)	(新建建築 1.2 版最終評級) (NB V1.2 Final Assessment)
金級 Gold 東涌第99區 Tung Chung Area 99 東涌第100區 Tung Chung Area 100 啟德第2B2區地盤 Kai Tak Site 2B2 屯門顯發里 Hin Fat Lane, Tuen Mun 屯門恒富街 Hang Fu Street, Tuen Mun 元朗朗邊第一期 Long Bin Phase 1, Yuen Long 將軍澳昭信路 Chiu Shun Road, Tseung Kwan O 上水第4及30區第2號地盤 Sheung Shui Areas 4 and 30 Site 2 上水第4及30區第1號地盤 Sheung Shui Areas 4 and 30 Site 1	鉑金級 Platinum 東涌迎東邨 Ying Tung Estate, Tung Chung 沙田旭禾苑 Yuk Wo Court, Sha Tin 金級 Gold 新蒲崗景泰苑 King Tai Court, San Po Kong 屯門欣田邨 Yan Tin Estate, Tuen Mun 長沙灣麗翠苑 Lai Tsui Court, Cheung Sha Wan 黃大仙東匯邨匯智樓 Wui Chi House, Tung Wui Estate, Wong Tai Sin 葵涌尚文苑 Sheung Man Court, Kwai Chung 馬鞍山錦暉苑 Kam Fai Court, Ma On Shan

節約能源 Energy conservation



詳細設計工程項目中，**22** 幢住宅大廈的公用地方屋宇裝備裝置的平均能源消耗量為每年每平方米 **21.33** 度

Average energy consumption of building services installations in communal areas of 22 domestic blocks at detailed design was 21.33 kWh/m²/annum in 2021/22

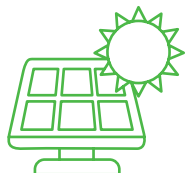
可再生能源

自2011年以來，我們一直為所有新的公共租住房屋項目安裝接駁電網的太陽能光伏發電系統，並參與電力公司的上網電價計劃。目前，我們太陽能光伏發電系統的設計供電量為大廈公用電力需求的1.5%至2.5%。

Renewable energy

Since 2011, we have been installing grid-connected photovoltaic (PV) systems in all new public housing rental projects, and participating in the feed-in tariff programmes of electricity supply companies. Currently, our PV systems are designed to supply 1.5% to 2.5% of the building's communal electricity demand.

太陽能光伏發電系統 (截至2022年3月) PV Systems (as of March 2022)



已在 **140** 幢住宅大廈安裝，
Installed in **140** domestic blocks,
總發電容量為 **1 229** 千瓦
with a total system capacity of **1 229** kW

推廣電動車輛

為配合政府的《香港電動車普及化路線圖》，所有新建屋邨室內私家車停車場，已全部具備電動車充電設施的配套，當中三成泊車位已安裝電動車充電器。

建築物的能源效益

房委會在轄下所有新工程項目加入多項節能措施，包括在住宅和非住宅大廈的無障礙通道採用二級光度的照明系統；以及安裝節能的發光二極管凸面照明器、發光二極管出口指示牌和方向指示牌。安裝新的升降機系統時，我們採用高效節能的無齒輪升降機；當永磁同步電動機在市場上有供應時，將逐步在無齒輪升降機採用永磁同步電動機。我們也在8 000瓦功率或以上的升降機系統使用再生動力。為鼓勵租戶節約能源，我們在新建住宅大廈入口大堂安裝智能計量儀監察系統，向租戶展示所住大廈和鄰近大廈每月的電力、煤氣和食水消耗量。



智能計量儀監察系統
Smart Metre Monitoring and Energy Display System

屋邨生態環境

在房屋設計和發展過程中，我們考慮區內的生態環境，尤其是具高生態價值的發展項目地盤，確保區內的天然資源和生態系統得以保護和保存。暉明邨便是個好例子。該屋邨所在地區的蝴蝶品種繁多。事實上，該區錄得約78種蝴蝶，佔香港蝴蝶品種總數約三成。有見及此，我們的設計師在暉明邨特別闢設2 000平方米的生態過渡區，以吸引各種蝴蝶；最終有大量不同品種的蝴蝶在邨內棲息。



暉明邨 •
融合共處 各居其所

Promoting electric vehicles (EVs)

In support of the Government's Hong Kong Roadmap on Popularisation of Electric Vehicles, we have adopted 100% EV charging enabling facilities in indoor private car parks of all new estates, among which 30% of parking spaces are equipped with EV chargers.

Energy efficiency in buildings

The HA has incorporated a number of energy-saving measures in all its new works projects. Such measures include the use of a two-level lighting system for barrier free access in domestic and non-domestic blocks, along with the installation of energy efficient LED bulkhead lights and LED exit signs and directional signs. When installing new lift systems, we have adopted energy efficient gearless lifts and are moving towards the use of permanent magnet synchronous motors for these gearless lifts as they become available on the market. Regenerative power is also being used for lift systems with motors of 8kW or above. To encourage tenants to save energy, we are also installing Smart Metre Monitoring and Energy Display Systems at the main entrance lobbies of new housing blocks, which display information on the monthly consumption of electricity, gas and fresh water of their block as well as neighbouring blocks.

Estate ecology

As part of our housing design and development process, we take into account the local ecology, especially at development sites of high ecological value, to ensure that local natural resources and ecosystems are protected and conserved. A good example of this can be seen at Fai Ming Estate, a public housing development in an area of high butterfly diversity. Some 78 species of butterfly were recorded in the area, representing around 30% of all the species in Hong Kong. With this in mind, our designers created a 2 000-sq.m. Ecological Transition Zone at Fai Ming Estate specially designed to appeal to butterfly species. The end result was an abundance and high diversity of butterflies at the estate.



暉明邨的生態過度區
The Ecological Transition Zone at Fai Ming Estate

節約能源與碳排放管理

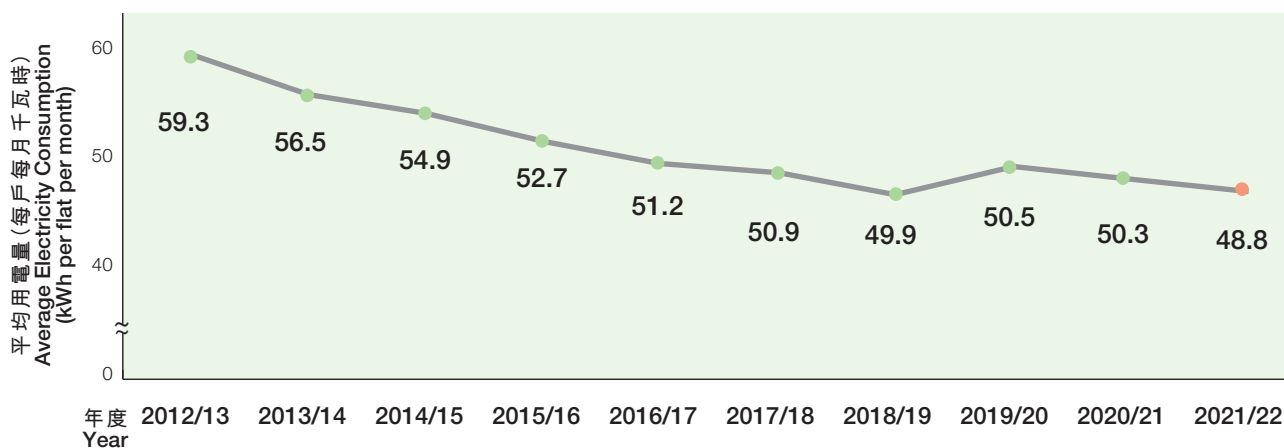
我們繼續為轄下所有公共屋邨更新ISO 14001環境管理體系認證，並為所有公屋住宅大廈公用地方更新ISO 50001能源管理體系認證。此外，我們繼續就14幢典型住宅大廈定期進行碳審計工作，監察碳排放情況。



Energy conservation and carbon management

We continued to renew the ISO 14001 certification for Environmental Management System (EnMS) for all PRH estates, and ISO 50001 certification for Energy Management System in the communal areas of all PRH domestic blocks. We also continued to carry out regular Carbon Audit exercises in 14 typical domestic block types to monitor carbon emissions.

屋邨公共地方的用電量 Electricity Consumption in the Public Areas of Estates



14 幢典型住宅大廈的碳足跡與 2011/12 年度相比平均減少 **20%**
Carbon Footprint of 14 Typical Housing Blocks decreased by **20%** against 2011/12 on average

廢物管理

我們與環境保護署(環保署)合作，在公共屋邨推行各項以推廣減廢及回收再造為目標的計劃，其中一項是第二期都市固體廢物收費實踐計劃。該計劃

2021年5月至12月推行，涵蓋九個公共屋邨共50幢住宅大廈，旨在加深居民對固體廢物收費安排的了解。年內，房委會也參與環保署其他持續推行的試驗計劃，其中一項是在三區共63個公共屋邨收集可回收的塑膠物料。此外，我們在三個屋邨設置逆向自動售貨機(入樽機)，回收塑膠飲料容器；在18個商場／街市收集廚餘；並在2021年12月至2022年3月於一個公共屋邨試用智能回收箱收集家居廚餘。

為提高租戶的減廢意識，我們在2021年12月把宣傳減廢的影片上載至房委會的Facebook專頁，並在2022年1月至4月安排這些影片於房屋資訊台播放。此外，我們在公共屋邨的公用地方展示宣傳橫額和海報，鼓勵租戶在日常生活中養成「惜物減廢」的良好習慣。



入樽機先導計劃



Waste Management

In collaboration with the Environmental Protection Department (EPD), we have been conducting various projects which aimed at promoting waste reduction and recycling in PRH estates. One of these projects was the Phase Two Municipal Solid Waste (MSW) charging trial, which was launched from May to December 2021 in nine PRH estates with a total of 50 domestic blocks, to enhance residents' understanding of the MSW charging arrangement. The HA also took part in various other ongoing EPD trials throughout the year, one of which was a trial scheme for collecting plastic recyclable materials in three districts covering 63 PRH estates. Besides, we have installed reverse vending machines (RVM) to collect plastic beverage containers for recycling at three estates; collected food waste at 18 shopping centres/wet markets; and launched a trial by using smart recycling bin for collecting domestic food waste at one PRH estate from December 2021 to March 2022.

To raise tenants' awareness, videos on waste reduction were posted on the HA's Facebook page in December 2021 and broadcast on the Housing Channel from January to April 2022. In addition, promotional banners and posters have been displayed in the common areas of PRH estates to encourage tenants to practise a good habit of "Use Less, Waste Less" in their daily lives.



公共屋邨公用地方展示宣傳減廢的橫額
Promotional banners on waste reduction displayed in the common areas of PRH estates



梨木樹邨設置入樽機，回收使用完的塑膠飲料容器
RVM placed at Lei Muk Shue Estate to collect used plastic beverage containers



連翠邨試用智能回收桶收集廚餘
A trial of using smart bin to collect food waste at Lin Tsui Estate

綠化環境與樹木管理

2021/22年度，房委會致力在20個公共屋邨加強現有綠化工作。除廣植花木外，還引進更多植物品種，特別是最適宜在本地環境生長的植物；並在20個屋邨舉辦綠化活動，讓居民一同參與植樹和園藝活動，為屋邨社區出一分力。

我們定期檢查轄下屋邨的樹木，確保所種植的樹木安全健康。這項工作根據房委會中央電子樹木數據庫進行，利用地理信息系統備存最新的樹木數據。此外，我們運用一套在網上平台的電腦化企業樹木管理系統，並配備流動裝置應用程式，用以儲存詳細的樹木資料和記錄每年樹木風險評估工作中得知的樹木狀況。年內，我們再次動員社區力量，支援樹木管理工作，招募約690名屋邨居民擔當屋邨樹木大使，協助監察樹木狀況。

舉辦綠化活動

我們在十個屋邨舉辦植樹日，並在十個屋邨推行一系列社區園圃計劃；又透過Facebook專頁、房屋資訊台、海報、橫額等渠道，向居民推廣綠化和推行公眾教育。



深水埗富昌邨的植樹日
Tree Planting Day at Fu Cheong Estate, Sham Shui Po



公共屋邨綠化活動及
廢物回收設施



Greening and tree management

In 2021/22, the HA undertook to enhance the existing greenery at 20 PRH estates. This involved increasing planting and adding more varieties of plants, especially plants that best matched the local environmental conditions. Greening activities were also organised at 20 estates, whereby residents could contribute to their community by taking part in the planting and gardening activities.

We conduct regular tree inspection work to ensure the trees planted in HA's estates remain safe and healthy. This work is based on HA's centralised electronic tree database, which utilises the Geographic Information System to keep tree data up to date. In addition, we operate a computerised Enterprise Tree Management System on a web-based platform with a mobile device application, enabling us to maintain a detailed tree inventory and record condition of trees in the annual tree risk assessment exercise. We once again drew on community help to support our tree management efforts, recruiting about 690 Estate Tree Ambassadors from residents to help monitor trees during the year.

Organising green activities

We organised tree planting days in 10 estates and a series of community garden programmes in 10 estates. Green publicity and public education were also conducted through channels such as Facebook, the Housing Channel, and displays of posters and banners.



葵青大窩口邨的社區園圃計劃
Community Garden Programme at Tai Wo Hau Estate, Kwai Tsing

節能和低碳管理 Energy saving and carbon management

房委會辦公室的省電量

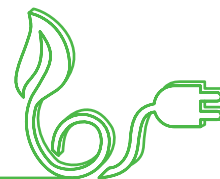
Electricity Saving in HA offices

2021/22 年度節省

Saved **2.2%** in 2021/22

超出較 2018/19 基準年度少

Exceeding our target of **0.5%** reduction against base year 2018/19



廢物管理 Waste management

房委會辦公室的耗紙量

Paper Consumption in HA offices

2021/22 年度減少

Reduced by **9.4%** in 2021/22

超出較 2013/14 基準年度少

Exceeding our target of **4%** reduction against base year 2013/14



節約用水 Water conservation

房委會總部的用水量

Water Consumption in HA Headquarters (HAHQ)

2021/22 年度減少

Lowered by **24.4%** in 2021/22

遠超 2015/16 基準年度少

Far exceeding our target of **2.75%** reduction against base year 2015/16



上述措施的詳情和各項環保議題的目標或成果，請瀏覽以下網頁：

For details of the above initiatives and the targets or results in various environmental issues, please visit:

2021/22 年度和
2022/23 年度的
環保工作目標與前景



Environmental Targets
and Outlook for
2021/22 and 2022/23



房委會綠色生活網站



HA's Green Living
mini-website



統計數字摘要 Summary of Statistics

能源消耗 Energy Consumption

已消耗能源 Energy consumed	
現有屋邨的能源消耗量 Energy Consumption in Existing Housing Estates	(千瓦時) (kWh)
屋邨公眾地方的用電量 Electricity consumption in public areas of estates	447,446,890
屋邨公眾地方的平均用電量 (每戶每月) Average electricity consumption in public areas of estates (per flat/month)	48.8
太陽能光伏發電板產生的可再生能源量 Renewable energy generated from PV panels	1,014,164
房委會辦公室的能源消耗量 Energy Consumption in HA Office Premises	(千瓦時) (kWh)
辦公室的用電量 Electricity consumption in office premises	34,392,645
辦公室的平均用電量 (每名員工) Average electricity consumption in office premises (per staff)	3,453
建築工程承建商的能源消耗量 Energy Consumption by Construction Contractors	(千兆焦耳) (GJ)
建築活動的柴油消耗量 Diesel consumption for construction activities	1,041,067
運輸建築廢料的柴油消耗量 Diesel consumption for transportation of construction waste	50,873
建築活動的用電量 Electricity consumption for construction activities	100,789
合約車輛的汽油消耗量 Gasoline consumption for contract cars	16,156

溫室氣體排放 Greenhouse Gas (GHG) Emissions

	2016/17	2017/18	2018/19	2019/20	2020/21
現有屋邨住宅大廈的溫室氣體排放強度 (公噸二氧化碳當量／平方米) GHG Emission Intensity in Existing Housing Domestic Blocks (tonnes CO₂e/m²)					
各住宅大廈類型的平均數 Average of domestic block types	0.025	0.025	0.024	0.024	0.024
房委會辦公室的溫室氣體排放強度 (公噸二氧化碳當量／平方米) GHG Emission Intensity in HA Office Premises (tonnes CO₂e/m²)					
房委會總部第三座 Block 3 of HAHQ	0.123	0.112	0.107	0.113	0.110
樂富客戶服務中心 Lok Fu Customer Service Centre	0.144	0.140	0.136	0.139	0.138

物料使用 Materials Consumption

已使用物料 Materials Consumed	
房委會辦公室的物料使用量 Materials Consumption in HA Office Premises	
房委會辦公室的耗紙量 (令／員工) Paper consumption in office premises (reams/staff)	13.5

水資源管理 Water Management

	用水 Water Consumed	回收再用水 Water Recycled
新工程項目的用水量 (立方米) Water Consumption in New Works Projects (m³)		
新工程項目 New works projects	1,780,563	469,157
現有屋邨的用水量 (立方米) Water Consumption in Existing Housing Estates (m³)		
屋邨公眾地方 Public areas of estates	3,463,238	—
房委會辦公室的用水量 (立方米) Water Consumption in HA Office Premises (m³)		
房委會總部 HAHQ	10,095	—
房委會總部 (每名員工) HAHQ (per staff)	2.48	—

廢物管理 Waste Management

	處理方法 Handling Method		
	已回收 循環再造 Recycled	已運往 公眾填土區 Public fill	已運往 堆填區 Landfill
新工程項目的廢物處理量 (公噸) Amount Handled in New Works Projects (tonnes)			
有害廢物 Hazardous waste	12.92	—	5.67
非有害廢物 Non-hazardous waste	375,102	1,313,089	80,998
新工程項目的廢物總量 Total waste for new works projects			1,769,208
現有屋邨的廢物處理量 (公噸) Amount Handled in Existing Housing Estates (tonnes)			
非有害廢物 Non-hazardous waste			
廢紙 Paper	28,478	—	—
膠樽 Plastic bottles	3,047	—	—
鋁罐 Aluminium cans	2,393	—	—
舊衣物 Used clothes	745	—	—
玻璃樽 Glass bottles	687	—	—
月餅盒 Mooncake boxes	13	—	—
房委會總部的廢物處理量 (公噸) Amount Handled in HAHQ (tonnes)			
有害廢物 Hazardous waste			
碳粉盒 Toner cartridges	4	—	—
慳電膽及光管 Fluorescent lamps and tubes	3	—	—
非有害廢物 Non-hazardous waste			
一般廢物 General waste	—	—	136
廢紙 Paper	120	—	—