



興建中的富蝶邨
Fu Tip Estate under construction

創建明日家園 Building Tomorrow's Homes

發展及建築處的主要職能

- 推行和監察房屋建設計劃
- 制定和檢討有關公營房屋土地供應、發展、規劃、設計和建設的策略與政策
- 制定、推行和探討機構採購、安全和環境管理策略
- 就全港／區域／地區規劃研究及規劃標準與準則提供意見
- 監察房屋資訊系統

Key Functions of the Development and Construction Division

- Implementing and monitoring the Housing Construction Programme
- Formulating and reviewing strategies and policies with regard to public housing land supply, and the development, planning, design and construction of public housing
- Formulating, implementing and reviewing corporate procurement, safety and environmental management strategies
- Contributing to territorial/district/local planning studies and planning standards and guidelines
- Monitoring the Housing Information System

2022/23年度完成的公共租住房屋(公屋)／綠表置居計劃(綠置居)發展項目(按時序排列)：
Public Rental Housing (PRH) / Green Form Subsidised Home Ownership Scheme (GSH) projects completed in 2022/23 (in chronological order):

屯門第54區3及4號工地(東) Tuen Mun Area 54 Sites 3 & 4 (East)	菁田邨 Ching Tin Estate	菁信樓 Ching Shun House
青鴻路 Tsing Hung Road	青富苑 Ching Fu Court	青盈閣、青隆閣 Ching Ying House, Ching Lung House

2022/23年度完成的其他資助出售單位發展項目(按時序排列)：
Other Subsidised Sale Flats (SSFs) projects completed in 2022/23 (in chronological order):

東涌第54區 Tung Chung Area 54	裕雅苑 Yu Nga Court	雅德閣、雅昌閣、雅榮閣、雅盛閣、雅歡閣、雅泓閣 Nga Tak House, Nga Cheong House, Nga Wing House, Nga Shing House, Nga Foon House, Nga Wang House
馬鞍山路 Ma On Shan Road	錦駿苑 Kam Chun Court	駿馳閣、駿騰閣、駿驃閣、駿駒閣、駿驥閣 Chun Chi House, Chun Tan House, Chun Biu House, Chun Kui House, Chun Kei House
鑽石山第三期 Diamond Hill Phase 3	啟翔苑 Kai Cheung Court	啟怡閣、啟悅閣 Kai Yi House, Kai Yuet House
安睦街第一期 On Muk Street Phase 1	愉德苑 Yu Tak Court	

公屋／綠置居和其他資助出售單位^[1]
PRH/GSH and other SSFs ^[1]

	2023/24年度至2027/28年度 ^[2] 五年期內預計建成單位總數(約數) Total estimated production in the five-year period from 2023/24 to 2027/28 ^[2] (approximately)	2022/23年度 ^[2] 單位落成數目(約數) Production completed in 2022/23 ^[2] (approximately)
公屋／綠置居 PRH/GSH ^[3]	76 400個單位 units	3 700個單位 units
其他資助出售單位 Other SSFs	35 300個單位 units	6 900個單位 units
總數 Total	111 600個單位 units	10 600個單位 units

註 Note :

- [1] 數字根據2023年3月房委會的預測及計至最近的百位整數。由於進位原因，數字相加結果可能不等於所列總數。數字會因應房屋建設計劃而修訂。
Figures are based on the forecast as at March 2023 which are rounded to the nearest hundred, and thus may not add up to the total due to rounding. Figures are subject to changes of the programme.
- [2] 財政年度由每年4月1日起至翌年3月31日止。因此，當有些工程項目(特別是以三月為目標完工期的項目)完工期有少許延後，這些項目的落成日期便會落入下個財政年度。
The financial year starts on 1 April of a year and ends on 31 March of the following year. Therefore, when some projects encounter slight delays in completion (especially those with target completion dates in March), the completion dates will be brought forward to the next financial year.
- [3] 數字指房委會預計於每個財政年度中落成的新單位數目。除新建單位外，從現有屋邨回收的單位，亦是編配予公屋申請者的主要單位來源。
Figures refer to the estimated number of new units to be completed by the Housing Authority in each financial year. In addition to new units, units recovered from existing estates are also a major source of units for allocation to PRH applicants.

零售設施、私家車與貨車泊車位 (2022/23年度落成量) Retail facilities, private car and lorry parking spaces (completed in 2022/23)

零售設施的總樓面面積 (約數) Gross floor area of retail facilities (approximately)	5 500平方米 m ² ^[4]
私家車與貨車泊車位的數目 (約數) Number of private car and lorry parking spaces (approximately)	700個 units ^[5]

註 Note :

[4] 數字計至最近的百位整數。
Figure is rounded to the nearest hundred.

[5] 數字計至最近的十位整數。
Figure is rounded to the nearest ten.

「設計及建造」採購模式

「設計及建造」採購模式可讓承建商在單一合約下，一併負責項目的設計和建造。就房委會的項目而言，「設計及建造」模式帶來多項好處。尤其是委任「設計及建造」承建商，可讓我們調撥本身資源，為其他新項目施工前規劃。

《2022年施政報告》述明，擬於2028/29年度至2032/33年度的五年期內落成單位中，應最少一半採用「設計及建造」採購模式興建；而房委會已朝着這個方向展開工作。我們2022年6月和12月為首兩個「設計及建造」的項目招標。這兩個項目分別是古洞北第19區第二期（涉及約4 340個單位），以及屯門第54區4A（南）號工地和5號工地（涉及約2 490個單位），合共6 830個單位；第三個「設計及建造」項目亦已在籌劃階段，項目位於東涌第114區及117區，涉及約5 290個單位，定於2023年4月招標。

我們擬於2023/24年度以「設計及建造」採購模式招標，以期建造約11 000個單位，並繼續物色2024/25年度起可供採用「設計及建造」的項目。

Design-and-Build Procurement Model

The Design-and-Build (D&B) procurement model allows a contractor to take responsibility for both the design and construction of a project under a single contract. For HA's projects, the D&B model can bring a number of benefits. In particular, appointing a D&B contractor enables us to redirect our own resources to pre-construction planning of other new projects.

The 2022 Policy Address stated that the D&B procurement model should be adopted for at least half of the flats scheduled for completion in the five-year period from 2028/29 to 2032/33, and HA has already begun to work towards implementing this. We issued tenders for our first two D&B projects in June and December 2022 respectively. These projects are at Kwu Tung North Area 19 Phase 2, involving about 4 340 flats, and Tuen Mun Area 54 Site 4A (South) and Site 5, with about 2 490 flats, totally 6 830 flats. The third D&B project is also in the pipeline. Situated at Tung Chung Area 114 and Tung Chung Area 117 and involving about 5 290 flats, it is scheduled for tender in April 2023.

We plan to issue tenders with the D&B procurement model in 2023/24 for construction of around 11 000 flats, and will continue to identify potential D&B projects from 2024/25 onwards.

專題故事 Feature Story

迎接創科新時代 Embracing a New Era of Innovation and Technology

近年來，創新科技大大改變了我們的日常生活，觸及起居、工作、學習、與世界交流等各個層面。這些科技和數據管理發展日新月異，令可供用作規劃和建造房屋的工具也取得重大進展；當中一些工具更帶來前所未有的好處，例如對正在設計和興建的建築物而言，提升效率、加強安全、提高成本效益、改善環保表現和人類居住的舒適度。本章介紹現時房委會採用的一些先進科技工具，並概述所帶來的各種具體效益。

房委會項目資訊管理及分析平台（「智築目」）

為應付龐大的公營房屋工程量，房委會自主研发資訊管理及分析平台「智築目」，透過雲端數碼科技，應用三維數碼地圖作為基礎底座，利用數字孿生技術，串連和整合轄下公營房屋建築項目不同工序的資訊，利用流動及電腦等裝置在任何時間、任何地方，全流程提供各個處於規劃、設計、建造及交付等領域工程項目的視像化資訊，以強化項目的管理工作。在規劃房屋用地階段，「智築目」能參考周邊發展的立體模型，以做好決策；在樓宇及單位設計階段，「智築目」能分析附近的環境影響，以優化項目布局及單位設計；在建造項目時，「智築目」能整合工地安全數據、檢查報告和工程進度表現數據，強化安全和質量管控；樓宇交付使用前，「智築目」能配合工地監察系統的數據提升驗收效率。



智築目

Innovation and technology have transformed our daily lives over recent years, covering almost every aspect of the way we live, work, study, and interact with the world. These astonishing advances in technology and data management have led to major developments in the tools available for planning and building housing. Some of the tools now available offer unprecedented benefits in terms of enhancing the efficiency, safety, cost-effectiveness, environmental performance and human comfort of the buildings being designed and built. In this chapter, we survey some of these state-of-the-art technological tools being used by HA, and the specific benefits they are bringing for all.

HA Project Information Management and Analytics Platform (HA-PIMAP)

To cope with the massive amount of public housing construction, HA has developed HA-PIMAP, a cloud-based digital platform that uses Digital Twin technology with 3D digital map as its base layer to collate and integrate information and to provide visualisation for public housing projects at various stages of planning, design, construction to handover anytime anywhere through laptop and computer in order to enhance project management. At the planning stage, the 3D model of surrounding developments shown in HA-PIMAP helps expediting the decision-making process; when at design stage, HA-PIMAP can analyse the nearby environmental impact to optimise the layout and design of building and domestic flats; at construction stage, HA-PIMAP can integrate site safety data, inspection reports and progress performance data to enhance safety and quality control; before handover of buildings, HA-PIMAP can integrate the data collected from the site supervision system to uplift inspection efficiency.

「智築目」已於2022年在房委會轄下的業旺路建築工地開始試用，運用多種感應器、攝影機及科技工具，能迅速偵測多項預設隱患，並即時向管理人員發出警示，以建立強大而全面的工地安全文化及表現，並提升工地安全監督工作的成效。



「智築目」的操作界面能展示從整個工地的感應器及其他探測器收集得來的數據，並提供統計摘要

HA-PIMAP includes a dashboard that displays data from sensors and other detectors across the site and provides statistical summaries

擴大「發展及建築工地流動系統」的應用範圍

為加強駐工地人員與承辦商之間的溝通，並改善追蹤工地巡查記錄，房委會2016年開始使用自行設計的「發展及建築工地流動系統」。鑑於流動通訊技術近年不斷發展，我們一直更新和提升該系統。截至2022/23年度，該系統已備有12個不同的流動和網絡應用程式，用於驗收建築工程、屋宇裝備工程和結構工程。

年內，我們完成該系統第四階段的開發工作，包括為該系統推出第12個流動應用程式，即「物料測試申請應用程式」。有了這個新應用程式，人員便可利用智能手機為物料申請進行測試，而該應用程式亦可用作記錄、檢查和分享物料測試申請和樣本收集的結果。在工地運作上，該應用程式取代當時所用的多個舊應用程式，讓人員通過流動電話，以劃一的方式共用「發展及建築工地流動系統」平台。我們將繼續探討如何擴大該系統的應用範圍，並使之與其他系統融合，從而提升該系統的效能。

HA-PIMAP began piloting in 2022 at HA's Yip Wong Road construction site. The platform had proven capabilities in efficiently detecting a range of pre-defined potential hazards through a range of sensors, cameras and technological tools, and immediately alerting management staff to build and maintain a powerful all-round site safety culture and performance and enhancing the effectiveness of site safety supervision.

Extending the Development and Construction Site Mobile System (DCSMS)

HA's DCSMS, which has been in use since 2016, is a mobile system designed to enhance communication between our site staff and contractors to improve the traceability of our site inspection records. As mobile technology has further developed over the years, we have also been making continual modifications and improvements to DCSMS. By 2022/23, the system included 12 different mobile and web applications for use in the inspection of architectural works, building services works and structural works.

This year we completed Phase 4 of DCSMS development, which involved rolling out the system's twelfth mobile app, the Materials Testing Request Module. This new module enables materials testing requests to be made via smartphones, and it can also be used to record, check and share materials testing requests and sample collections. The module supersedes a number of old apps that were being used for site operations, replacing them with a single and standardised mobile access via the common DCSMS platform. We will continue to explore ways of further extending the scope and efficiency of the DCSMS through interfaces with other systems.

年內，我們推出與「房署新居智入伙」系統相關的「損壞項目執修模組」。新推出的「房署新居智入伙」系統，取代舊有的「損壞情況報告表」，讓新建公共屋邨的租戶或業主可在網上以電子形式呈報有問題或損壞項目。這個新系統優點甚多，包括可直接連至「發展及建築工地流動系統」內的「損壞項目執修模組」，以更快、更有效率地監察已獲確認損壞項目的修繕過程。「房署新居智入伙」系統第一階段已於2022年年中推出，租戶可透過房委會網站或「房署資訊流動應用程式」進入「房署新居智入伙」網站。租戶只需輸入單位內損壞項目的位置和類別，並上傳最多25張相片，即完成呈報。至今我們透過「房署新居智入伙」系統已收到並處理超過2 200份報告，過程中不但確保輸入資料一致，亦便利日後資料檢索。我們現正為系統的第二階段進行研發工作，分別於2023年年底和2024年年中推出，以供資助出售單位業主呈報單位內的損壞項目和屋邨管理人員呈報屋邨／屋苑內公用地方的損壞情況。

During the year we also rolled out a Defect Rectification Module in connection with the Housing Smart Intake (HOST) System. The newly-launched HOST System, which replaces the previous Defect Report Form, is a web-based e-submission platform where tenants or owners can report problems or defects in new public housing estates. One of the benefits of the new HOST system is that it directly interfaces with the Defect Rectification Module of the DCSMS, making the process of monitoring the rectification of verified defects much faster and more efficient. Phase 1 of the HOST System was rolled out in mid-2022, under which tenants are able to access the HOST website from HA Website or via the iHousing Mobile App. To report a defect, tenants simply need to input the location and category of the defects identified inside the unit, and they can upload up to 25 photos. To date, over 2 200 reports have been submitted and handled via the HOST System, in a process that is ensuring consistency in data entry and facilitating easy future retrieval of the data. Phase 2, for the reporting of defects by owners in subsidised sale flats projects and the common areas of estates/courts by the estate management, is under development for roll-out in end-2023 and mid-2024 respectively.



住戶可用手機掃描張貼於住宅電梯大堂的二維碼進入「房署新居智入伙」網頁，或由房委會網站或應用程式的連結進入系統網頁
Tenants can access the HOST website by scanning the QR code posted in domestic lift lobbies via mobile phone, or via the link from the HA Website or iHousing Mobile App



「房署新居智入伙」網頁
HOST website

建築信息模擬技術和地理信息系統

房委會採用**建築信息模擬技術**和地理信息系統已多年，在多方面取得理想成績。我們在呈交法定圖則、進行施工規劃或衍生式設計活動時，均應用建築信息模擬技術。此外，我們結合使用建築信息模擬技術和地理信息系統，進行規劃、設計和分析等工作。我們2022年在應用建築信息模擬技術方面所取得的成就，獲得本地建造業界的肯定，並獲不同機構頒發合共四個與建築信息模擬技術有關的獎項，當中一個是表揚我們對推動本地發展建築信息模擬技術的貢獻。

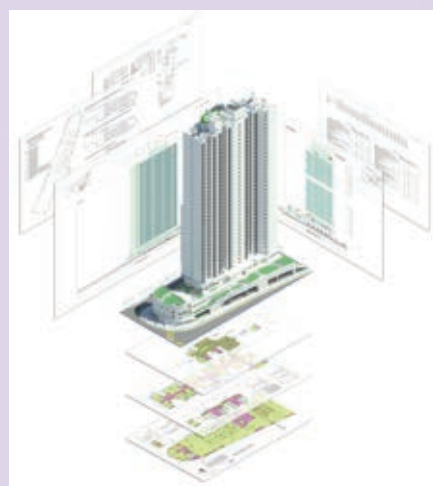


施工前利用建築信息模擬技術進行大量研究，以確保房委會的設計合乎可建性、降低風險，以及優化建築與安全規劃
BIM is used to conduct extensive pre-construction studies to ascertain the buildability of our designs, minimise risks, and enhance construction and safety planning



Building Information Modelling and Geographic Information System

HA has been using **Building Information Modelling (BIM)** and the Geographic Information System (GIS) for a number of years now, with encouraging results on many fronts. BIM has been applied to statutory submissions, construction planning, and generative design activities. We have also integrated the use of BIM and GIS for planning, design and analysis. In 2022, our BIM achievements were recognised by the local construction industry, with four BIM awards received from different organisations, including an award for our contributions to local BIM development.



利用建築信息模擬技術製作圖則，以便按法定要求呈交建築圖則
BIM is being used for the production of drawings, to facilitate statutory submission of general building plans

房屋署副署長（發展及建築）梁健文先生（左）在建造業議會的「2022建築信息模擬成就嘉許禮」上獲頒「建築信息模擬機構獎」
Deputy Director of Housing (Development & Construction), Mr Stephen K M Leung (left), receiving the Organisation Award at the Construction Industry Council Celebration of BIM Achievement 2022

頒獎機構： Awarding organisation:	建造業議會 Construction Industry Council
頒獎活動名稱： Award title:	建造業議會「2022建築信息模擬成就嘉許禮」 Celebration of CIC BIM Achievement 2022
獎項類別： Award category:	2022建築信息模擬機構 BIM Organisations 2022
獲頒獎項： Award attained:	2022建築信息模擬機構 BIM Organisations 2022
獲獎機構： Organisation:	香港房屋委員會 Hong Kong Housing Authority

房委會其中一個獲獎項目是「建築信息模擬新里程 – 成功呈交與審批法定圖則」。該項目主要探討如何應用建築信息模擬技術製作圖則，以便向獨立審查組呈交建築圖則。我們的工程項目人員研發出可加快工作流程的方案，以及多種創新的自動化工具，不但有利於改進圖則的製作過程，也有助我們廣泛使用建築信息模擬技術。

房委會的另一獲獎項目是「應用建築信息模擬技術於施工安全規劃及風險管理」，也是我們其中一項新舉措；在施工前利用建築信息模擬技術進行大量研究，從而得知如何降低工程項目的風險，提升施工安全。

此外，我們繼續探討如何在設計工作中應用衍生式設計技術，以期善用人工智能，使建築設計和結構設計的工序盡量自動化。



One of our winning projects entitled “BIM in Statutory Submission and Control – a successful step” focused on BIM’s use in the production of drawings to facilitate the submission of general building plans to the Independent Checking Unit. Our project staff developed an efficient workflow solution and a number of innovative automation tools that have improved the drawing production process, bringing advances that have significantly expanded our implementation of BIM.

Another winning project was entitled “Planning for Success: BIM for Construction / Safety Planning and Risk Mitigation”. This was one of our new initiatives, which made use of BIM to conduct extensive pre-construction studies, and showing how it was minimising project risks and enhancing construction safety.

Meanwhile, we will continue to explore the use of Generative Design (GD) technology in our design work, with the aim of utilising artificial intelligence to automate our architectural and structural designs wherever possible.

獲獎隊伍的代表出席建造業議會的「2022建築信息模擬成就嘉許禮」，獲獎項目是「建築信息模擬新里程 – 成功呈交與審批法定圖則」和「應用建築信息模擬技術於施工安全規劃及風險管理」
Representatives from the winning teams of the projects “BIM in Statutory Submission and Control – a successful step” and “Planning for Success: BIM for Construction/Safety Planning and Risk Mitigation” at the Construction Industry Council Celebration of BIM Achievement 2022

頒獎機構： Awarding organisation:	建造業議會 Construction Industry Council
頒獎活動名稱： Award title:	2022建築信息模擬成就嘉許禮 Celebration of BIM Achievement 2022
獎項類別： Award category:	2022建築信息模擬項目 – 「建築信息模擬新里程 – 成功呈交與審批法定圖則」 BIM Projects 2022 – BIM in Statutory Submission and Control – a successful step
獲頒獎項： Award attained:	優勝者 Winner
獲獎項目： Project:	新葵街公營房屋發展項目 Public Housing Development at San Kwai Street

頒獎活動名稱： Award title:	建造業議會的「2022建築信息模擬成就嘉許禮」 Celebration of CIC BIM Achievement 2022
獎項類別： Award category:	2022建築信息模擬項目 BIM Projects 2022
獲頒獎項： Award attained:	優勝者 Winner
得獎項目： Winning project:	應用建築信息模擬技術於施工安全規劃及風險管理 Planning for Success: BIM for Construction / Safety Planning and Risk Mitigation

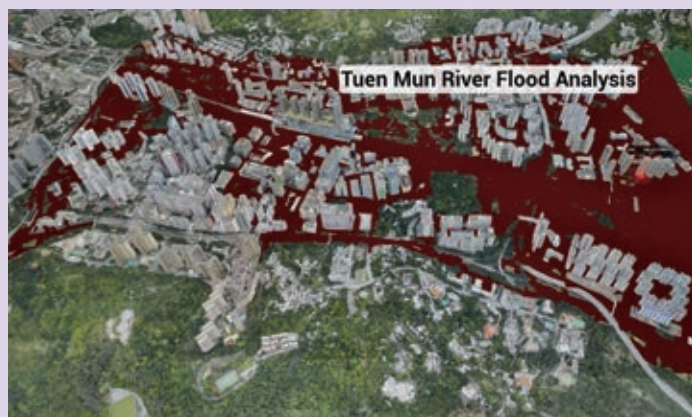


獲獎隊伍的代表出席「2022年歐特克香港建築信息模擬設計大獎」，就所負責項目「應用建築信息模擬技術於施工安全規劃及風險管理」接受獎園
Representatives from the winning team at the Autodesk Hong Kong BIM Awards 2022, where they received an award for their project "Planning for Success: BIM for Construction / Safety Planning and Risk Mitigation"

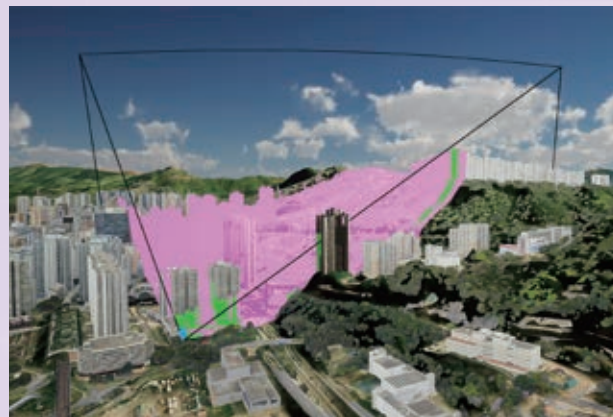
頒獎機構： Awarding organisation:	歐特克遠東有限公司 Autodesk Far East Limited
頒獎活動名稱： Award title:	2022年歐特克香港建築信息模擬設計大獎 Autodesk Hong Kong BIM Awards 2022
獎項類別： Award category:	專業獎 Professional
獲頒獎項： Award attained:	傑出建築信息模擬應用－項目安全與風險管理 Outstanding BIM Applications – Project Safety and Risk Management
獲獎項目： Winning project:	應用建築信息模擬技術於施工安全規劃及風險管理 Planning for Success: BIM for Construction / Safety Planning and Risk Mitigation

創新科技（例如建築信息模擬技術、地理信息系統）發展一日千里，必定有利我們的工作「提量、提速、提效和提質」。我們繼續研究新方法，把這些工具應用於房委會項目，從而加快達至建屋量的目標。舉例來說，我們現正擴大地理信息系統的使用範圍，並應用於視覺影響評估、太陽輻射評估、水浸評估和視域評估，使我們的規劃、設計和分析工作更精準到位。

Innovative and fast-developing technologies such as BIM and GIS can certainly help enhancing quantity, speed, efficiency and quality of our work. We will continue to explore new ways of applying these tools in our projects to help us better meet our housing production targets. For example, we are expanding our use of GIS for more advanced planning, design and analysis work by incorporating it in our visual impact, solar radiation, flooding and viewshed assessments.



結合建築信息模擬技術與地理信息系統，製作模型，模擬水浸情況
Integration of BIM and GIS models for flooding simulations



結合建築信息模擬技術與地理信息系統，製作模型，以進行視覺評估／視覺影響評估
Integration of BIM and GIS models for Visual Appraisals/
Visual Impact Assessments

「組裝合成」建築法

「組裝合成」建築法在工地以外地方預製組件，再把組件運往施工的工地安裝；有效減低惡劣天氣和勞工短缺對工程所造成的影響，從而提升施工效率。

房委會分別在東涌、安達臣道石礦場和德田街三個公營房屋項目採用「組裝合成」建築法，合共提供約2 000個單位。其中東涌項目和安達臣道石礦場項目的「組裝合成」組件，2023/24年度開始裝嵌。

2023年3月，房委會安排傳媒和業界代表參觀東涌第99區的「組裝合成」模擬搭建單位，讓他們了解房委會如何在轄下的房屋發展項目中應用該建築法。該模擬搭建單位樓高兩層，屬實物原大模型，用於測試承建商在現場進行組裝的成效，以及確保建築的質素。我們透過該項目，全面仔細分析「組裝合成」建築法的整體成本效益，並評估其帶來的好處及挑戰，以期日後在合適的公營房屋項目中，更廣泛採用「組裝合成」建築法。

Modular Integrated Construction

Modular Integrated Construction (MiC) is a construction method that involves using prefabricated modules that are constructed offsite and then transported to the construction site for installation. MiC can reduce the impact of adverse weather conditions and scarcity of labour resources, making for greater efficiency in construction.

HA has adopted MiC for three public housing projects located in Tung Chung, Anderson Road Quarry and Tak Tin Street, providing a total of about 2 000 units. The MiC modules for the Tung Chung and Anderson Road Quarry projects will begin to be assembled in 2023/24.

In March 2023, HA arranged a visit to its mock-up of the MiC project in Tung Chung 99 for the media and industry stakeholders to understand how MiC is being applied in HA projects. The mock-up is a two-storey full-scale model built to test the effectiveness of the contractor's on-site installation method and ensure built quality. Throughout this project, we will carefully evaluate the overall cost effectiveness of this method and assess the benefits and challenges of adopting MiC, with the aim of facilitating wider application of MiC in suitable public housing projects in the future.

東涌第99區的「組裝合成」模擬搭建單位
The MiC mock up in Tung Chung Area 99



我們一直致力探討「組裝合成」建築法在香港的發展潛力，並與學術研究人員合作，共同制訂一套適合房委會採用的「組裝合成」建築法規格和表現衡量準則。我們也透過這些合作，了解香港採用「組裝合成」建築法在物流方面所遇到的限制，並就申請運載特闊貨物許可證制訂指引，以便把大型預製組件從工廠運送至建築工地。

As part of our efforts to explore the potential of MiC in Hong Kong, we have been collaborating with academic researchers on developing MiC specifications and performance measurement criteria that are suitable for HA. These collaborations are also helping us identify logistical constraints on the use of MiC in Hong Kong, and develop guidelines relating to wide load permit applications when transporting large pre-fabricated structures from factories to construction sites.



房屋局局長兼房委會主席參加為傳媒和業界代表安排的「組裝合成」模擬搭建單位參觀活動

The Secretary for Housing cum Chairman of HA joins the visit to the mock-up of the MiC project for the media and industry stakeholders

小型無人駕駛飛機（「無人機」）用以檢查建築物

2020年，我們開始使用配備攝影機的無人機，為七個公營房屋項目（即錦暉苑、漁灣邨、海達邨、蝶翠苑、和田邨、青富苑和愉德苑）的樓宇外牆拍攝高解像度數碼影像，然後利用攝影製圖法處理所收集的影像，再為相關建築物製作立體模型，並以人工智能技術找出建築物的裂縫及其他問題所在位置。事實證明，相比傳統的檢查方法，這個做法更為準確、安全、快捷和有效。此外，影像清晰，配以詳盡的人工智能記錄，驗樓督察和承建商得以據此製作完備的損壞項目清單，更有效地進行相關修繕工作。經過多次試驗後，證實無人機具備不少優點，因此由2022年8月起，我們使用無人機為正在施工的新工程項目檢查外牆。此外，我們正研究使用更先進並配備更優質攝影機的無人機，以便潛入需要關注的更隱蔽地方（例如裝有排水渠和喉管的外牆凹入天井位）進行較全面的外牆檢查。

Small Unmanned Aerial Vehicles (UAVs / drones) for building inspections

In 2020, we began using UAVs equipped with cameras to capture high-resolution digital images of the exterior walls of seven public housing projects, namely Kam Fai Court, Yue Wan Estate, Hoi Tat Estate, Dip Tsui Court, Wo Tin Estate, Ching Fu Court and Yu Tak Court. The images they collected were then processed using photogrammetry to create 3D models of the buildings, and artificial intelligence technology was used to identify the locations of cracks and other problems. This process proved to be more accurate, safer, faster, and more effective than traditional inspection methods. In addition, the clear images and comprehensive AI records generated have enabled building inspectors and contractors to create a comprehensive defect checklist and carry out associated rectification works more effectively. Given the clear positive benefits from these UAV trials, from August 2022 we have begun to use UAVs for external wall inspections on new projects under construction. We are also exploring the use of more advanced UAVs with higher quality cameras, in order to penetrate deeper into the confined and concerned areas such as the re-entrants with drains and pipeworks for more comprehensive external wall inspection.



裝上攝影機的無人機檢查和田邨的外牆
A UAV with a mounted camera inspects external walls
at Wo Tin Estate

建築機器人技術

由2020年起，我們在新訂的建築合約中加入有關使用建築機器人的規定，藉此提高各個施工範疇的生產力、質素、安全和環保表現，而油漆便是其中一個範疇。2023年2月，我們在青衣的一個公營房屋項目中試用油漆機器人，為一個住宅單位牆壁和天花板油漆，成效理想。我們又利用建築信息模擬技術為機器人編製工作流程，不但能使油漆工序自動化，而且可提升工作的效率和精準度。我們繼續探討如何在公營房屋項目中推廣使用建築機器人技術。



數碼化室內
油漆噴塗機器人

在公營房屋項目中試用油漆機器人
A painting robot trial in a public housing project



Construction robotics

We have introduced construction robotics into new construction contracts since 2020, with the aim of enhancing productivity, quality, safety, and environmental performance in various construction areas. One of these areas is painting. In February 2023, we tested a painting robot in a public housing project in Tsing Yi, to paint the walls and ceilings of a domestic flat. The results were satisfactory. By using BIM to compute the robot's workflow, we were able to automate the painting process and improve the efficiency and accuracy of the work. We will continue to explore ways of extending the use of construction robotics in public housing.