

3. Environmental Treatment and Impacts 環境處理和影響

The key objective of the research theme is to cover the broad topics of environmental changes and pollution associated with land and space developments, including the types and sources of pollution and ecological changes, impacts of environmental changes on human life and ecosystems, treatments of pollution and contamination, and optimization of land and space developments with positive environmental impacts.

主要目標是研究涵蓋土地和空間發展所引致的環境變化和污染，包括污染和生態變化的種類和源頭、環境變化對人類生活和生態系統的影響、污染處理，以及具環保效益的土地和空間發展。



4. Land Economics and Planning 土地經濟和規劃

The key objective of the research theme is to study the costs and economic returns, and societal impacts of land and space development in Hong Kong, the Greater Bay Area and beyond. The main research topics will include economic and societal impacts of land shortage and development, forecast of future land demand, costs associated with different development options, and optimization of land and space development based on land economics.

主要目標是探討香港、大灣區及其他地區的土地和空間發展成本和經濟效益及對社會的影響。主要研究方向包括土地短缺及發展帶來的經濟和社會影響、未來土地需求預測、不同發展方案的成本，以及基於土地經濟原則的土地和空間發展。



5. Land Analytics and Management 土地分析和管

The key objective of the research theme is to develop innovative new technologies for land analytics and management. The main research topics include developing techniques for collecting highly detailed land use, land cover, and land legal information, methods for detecting changes in the information, study of land settlement and landslides, safety of rock caverns and underground space, and analyzing land and space development options based on multivariate optimization.

主要目標是研發土地分析和管



Key Laboratory and Joint Research Centres under RILS 研究院轄下重點實驗室及聯合研究中心

1. Key Laboratory of Geospatial Knowledge Innovation, Ministry of Natural Resources 自然資源部地理空間知識創新重點實驗室



自然資源部地理空間知識創新重點實驗室 (國家合作)
Key Laboratory of Geospatial Knowledge Innovation, MNR

Established jointly by the PolyU RILS and the Moganshan Geospatial Information Laboratory under the Ministry of Natural Resources of the Central People's Government, the laboratory serves as a collaborative platform for advancing geospatial research.

由理大土地及空間研究院與莫干山地理實驗室共同建立，隸屬於中央人民政府自然資源部，為推動地理空間知識協作的專業平台。

It focuses on three core areas: the dynamic acquisition, systematic analysis, and knowledge services of geospatial information. Through cross-disciplinary and cross-institutional collaboration, it develops high-quality global geospatial data and knowledge products, while fostering talent development and professional exchange to promote ecological governance, disaster early warning, food security, climate monitoring, and sustainable forest management.

實驗室聚焦三大核心方向：地理空間資訊的動態獲取、系統分析及知識服務。透過跨學科及跨機構合作，致力研發高質量的全球地理空間數據與知識產品，同時推動人才培育與專業交流，以促進生態治理、災害預警、糧食安全、氣候監測及可持續森林管理。



2. China Harbour-PolyU Joint Research Centre for Land Development 中國港灣-理大土地發展聯合研究中心



China Harbour - PolyU
Joint Research Centre for Land Development
中國港灣-理大土地發展聯合研究中心

Established by China Harbour Engineering Company Limited and PolyU under RILS, the Centre advances collaborative research in land development.

由中國港灣工程有限公司與理大在土地及空間研究院下共同成立，旨在推動土地發展研究的合作。

It brings together China Harbour's extensive experience in large-scale engineering projects and PolyU's strong research capabilities in land and infrastructure development. Key focus areas include innovative marine engineering, prefabricated construction, smart harbour and airport technologies, solid waste treatment and zero-landfill solutions, advanced materials for marine engineering, and AI-based spatial information technologies for construction projects.

中心結合中國港灣在大型工程項目的豐富經驗，以及理大在土地發展與基礎設施建設方面的科研實力。重點研究範疇包括創新海洋工程、裝配式建築、智慧碼頭與智慧機場技術、固體廢物處理及零堆填方案、海洋工程先進材料，以及人工智能空間資訊技術在建造工程中的應用。



3. PolyU-Yangjiang Laboratory Joint Research Centre for Offshore Wind Power 香港理工大學-陽江實驗室海上風電聯合研究中心



香港理工大學-陽江實驗室海上風電聯合研究中心
PolyU-Yangjiang Laboratory Joint Research Centre for Offshore Wind Power

Established by PolyU and the Yangjiang Offshore Wind Energy Laboratory, the Centre is dedicated to advancing offshore wind power research.

由理大與陽江海上風電實驗室共同成立，致力推動海上風電研究發展。

It facilitates resource sharing and mutual access to laboratory facilities between researchers from PolyU RILS and Yangjiang. Both parties work closely to develop new technologies and practical applications for the offshore wind power industry, with the aim of advancing innovation and supporting sustainable industry development.

中心促進理大土地及空間研究院與陽江實驗室科研人員之間的資源共享及實驗設施互通，並攜手研發適用於海上風電產業的新技術及應用方案，以推動創新科研及促進行業的可持續發展。



Opportunities in RILS 把握機遇

Collaboration

RILS welcomes opportunities of collaboration with other researchers and the industry in Hong Kong and beyond in development and optimal use of land and space.

夥伴協作

土地及空間研究院熱切期待與本港及其他地區的研究人員和業界開展合作，共同為開發和善用土地和空間出力。

PhD Studentship

RILS provides excellent opportunities for outstanding students to pursue PhD research in fields related to major research focuses. Please contact the RILS members for further information.

博士生獎學金

土地及空間研究院為優秀學生提供研究機會及獎學金，於本院專注的研究領域修讀博士學位課程。請聯絡團隊成員以獲得更多相關資訊。

Contact Us 聯絡我們

Address 地址：
Room Z5610 6/F South Tower Block Z
The Hong Kong Polytechnic University
Hung Hom Kowloon Hong Kong
香港九龍紅磡香港理工大學Z座南座六樓610室

Tel 電話：
+852 3400 3584
E-mail 電郵：
info.rils@polyu.edu.hk
Website 網址：
www.polyu.edu.hk/rils



Research Institute for Land and Space 土地及空間研究院



Opening Minds • Shaping the Future
啟迪思維 • 成就未來

Message from Director 院長的話



Research Institute for Land and Space (RILS) was established by The Hong Kong Polytechnic University (PolyU) in May 2021 to carry out research into major issues surrounding land and space development in Hong Kong, the Greater Bay Area and beyond.

It is well-known that there is a shortage of land and space for accommodation and economic development in many parts of the world, especially in the densely populated Asian cities like Hong Kong. The above has resulted in very poor living conditions for a large proportion of the population, affecting the wellbeing of the under privileged both physically and psychologically. It has also limited a lot of industrial, educational, and economic activities. To create more land and space economically and environmentally friendly and to optimize the use of existing resources are keys for long-term sustainable development of many cities in the world.

A strong multi-disciplinary research team has been formed under the RILS with the over 60 team members coming from about twelve academic departments of the University. We aim to become a world leader in developing innovative solutions for creating economical and environmentally friendly land and space. In addition, we would like to work closely with the industry, especially relevant government departments, local and international consulting firms, and researchers around the world.

Prof. DING Xiaoli 丁曉利 教授
Director of RILS 土地及空間研究院 院長
Chair Professor of Geomatics 測繪及地理資訊講座教授
Department of Land Surveying and Geo-Informatics 土地測量及地理資訊學系
The Hong Kong Polytechnic University 香港理工大學

香港理工大學（理大）於二零二一年五月成立了土地及空間研究院，旨在研究香港、粵港澳大灣區及其他地區的土地和空間發展議題。

眾所周知，全球很多地方均缺乏用作住屋和經濟發展的土地和空間，特別是像香港這樣人口密集的亞洲城市。以上情況除了導致很多人生活在惡劣的居住環境，影響弱勢群體的身心健康，亦限制了不少工業、教育和經濟活動。因此，善用現有的資源，並運用符合經濟和環保效益的方法創造新的土地和空間，是很多城市達成長期可持續發展的關鍵。

土地及空間研究院擁有一支六十多名來自多個學系的理大學者組成的跨學科研究團隊，共同探討兼具經濟及環保效益的土地和空間發展方案，銳意成為這一領域的全球典範。此外，我們熱切期待與業界、相關政府部門、本地與國際顧問公司，以及世界各地的研究人員緊密合作。



Vision and Mission 願景和使命

Vision

To be a world leader in creating innovative solutions for developing affordable and environmentally friendly land and space.

Mission

1. To optimise land and space development strategies for dense cities like Hong Kong through cutting edge, multi-disciplinary and collaborative research;
2. To transfer knowledge from the research by collaborating closely with industry and governments; and
3. To make lasting positive impacts on the long-term development of Hong Kong and many similar cities in the world by helping shape the future land supply strategies.

願景

成為提供經濟及環保的土地與空間開發方案的世界級研究院。

使命

1. 通過開展前沿、多學科和協作研究，優化類似香港這樣的人口密集城市的土地和空間發展策略；
2. 與業界和政府緊密合作，實踐知識轉移；及
3. 協助制定未來土地供應策略，為香港和其他類似城市的長遠發展帶來持續的正面影響。



PolyU's Strengths and Expertise in the Area 理大的優勢和專長

A strong multi-disciplinary team consisting of over 60 core members has been formed. The expertise of the members covers well all the key disciplines related to land and space research, including land surveying, land economics, land law, planning, environment, soil and sediment contamination, marine biology, ecotoxicology, aquaculture, aquatic toxicology, structural engineering, geotechnical engineering, hydraulics, remote sensing, geographical information system, and public policy. Building on the team's distinguished track record in securing external research funding, RILS has further strengthened this momentum and enhanced its capacity to attract major grants.

The Research Institute has already established strong collaborations with researchers around the world. A sample of the current academic collaborators includes Harvard University, Massachusetts Institute of Technology, New York University, Northwestern University, KTH Royal Institute of Technology, Singapore-MIT Alliance for Research and Technology, Stanford University, Université de Toulon, University of California, Berkeley, University of California, Irvine, University of Cambridge, University of Genova, University of Tokyo, University of Toronto, and Yonsei University. Moreover, the team is also cooperating well with relevant Hong Kong government departments and industrial partners.

理大土地及空間研究院擁有一支由六十多名核心成員組成的跨學科研究團隊。成員的專長涵蓋土地和空間研究的所有重點學科，包括土地測量、土地經濟學、土地法、規劃、環境、土壤和沉積物污染、海洋生物學、生態毒理學、水產養殖、水生毒理學、結構工程、土力工程、水力學、遙感、地理信息系統和公共政策。憑藉團隊在校外研究資助方面的卓越往績，本院進一步鞏固發展動力，並提升其爭取大型項目資助的實力。

本院與世界各地的研究人員建立了強大的合作網絡。目前的學界合作夥伴包括哈佛大學、麻省理工學院、紐約大學、西北大學、瑞典皇家理工學院、新加坡-麻省理工學院聯盟研究中心、史丹福大學、土倫大學、加州大學柏克萊分校、加州大學爾灣分校、劍橋大學、熱那亞大學、東京大學、多倫多大學和延世大學。此外，研究團隊更與本港相關政府部門和業界維持良好的合作關係。

Directors and Management Committee 院長和管理委員會



Prof. DING Xiaoli
丁曉利 教授
Director of RILS
土地及空間研究院 院長
Chair Professor of Geomatics
測繪及地理資訊講座教授
Department of Land Surveying and Geo-Informatics
土地測量及地理資訊學系



Prof. WENG Qihao
翁齊浩 教授
Associate Director of RILS
土地及空間研究院 副院長
Chair Professor of Geomatics and Artificial Intelligence
地理信息學和人工智能講座教授
Department of Land Surveying and Geo-Informatics
土地測量及地理資訊學系



Prof. YIN Zhen-yu
尹振宇 教授
Associate Director of RILS
土地及空間研究院 副院長
Professor
教授
Department of Civil and Environmental Engineering
土木及環境工程學系



Prof. ZHAO Xiao Lin
趙曉林 教授
Associate Director of RILS
土地及空間研究院 副院長
Chair Professor of Civil Infrastructure
土木建設講座教授
Department of Civil and Environmental Engineering
土木及環境工程學系



Prof. CHEN Wu
陳武 教授
Head (LSGI) and Professor
系主任及教授
Department of Land Surveying and Geo-Informatics
土地測量及地理資訊學系



Prof. GUO Hai
郭海 教授
Professor
教授
Department of Civil and Environmental Engineering
土木及環境工程學系



Prof. LI Heng
李恆 教授
Chair Professor of Construction Informatics
建築資訊學講座教授
Department of Building and Real Estate
建築及房地產學系



Prof. WONG Man Sing Charles
黃文聲 教授
Associate Dean (FCE) and Professor
副院長（建設及環境學院）及教授
Department of Land Surveying and Geo-Informatics
土地測量及地理資訊學系

Major Research Focus Areas 主要研究領域

1. Land Reclamation 填海

The key objective of the research theme is to develop cutting edge concepts and technologies for land reclamation. The main research topics include innovative methods for fast land reclamation, new materials and structures for land reclamation, use of construction wastes in land reclamation, cost and economic returns of land reclamation, hydrological challenges, e.g., coastal circulations, environmental impacts and mitigation, water quality modification in coastal areas due to land reclamation, and management of reclaimed land, e.g., land settlement.

主要目標是研發填海的最前沿概念和技術。主要研究方向包括快速填海的創新方法、填海新材料和結構、利用建築廢物填海、填海的成本和經濟回報、水文相關的範疇包括海岸環流、填海對環境的影響和緩解措施及填海沿岸水質管理，以及填海所得土地的管理，例如土地沉降。



2. Innovative Land and Space Solutions 土地和空間發展創新方案

The key objective of the research theme is to develop innovative concepts and technologies for land and space development. The main research topics include innovative design and construction of floating structures, development of high-performance materials and innovative structural systems for floating structures, wave-structure-soil interaction analysis, innovative methods for creation and use of rock caverns, underground space and multi-layered urban space, utilization of brownfield sites, and ocean modelling and sediment transport analysis.

主要目標是研發土地和空間發展的創新概念和技術。主要研究方向包括浮動結構體的創新設計和建造、浮動結構體的高性能材料和創新結構系統、海浪-結構-土壤相互作用分析、岩洞、地下空間和多層城市空間的開發和使用、棕地使用、海洋建模，以及沉積物運輸分析。

