

## The HKIS Outstanding Final Year Dissertation Award 2012 - Executive Summary of Winning Papers

### From Heat Island to Green Island? – Feasibility Study of Adopting Green Roofs around Pedestrianisation in Mongkok

Top Award (BSD) • Awardee : **LAU Siu-kit, Leo**

The urban heat island effect has become more significant in Hong Kong, especially in Mongkok. It not only changes the environment, but also worsens air quality and increases the incidences of respiratory disease. As such, many people in Mongkok pedestrianisation suffer from this effect every day. One effective option for mitigating the urban heat island effect is to adopt green roofs. However, poor vegetation cover and plant health will affect a green roof's thermal effect. Private owners or developers in Hong Kong also have little motivation to build green roofs. For these reasons, it is important to determine the factors and barriers that affect their construction. Thus, this dissertation intended to evaluate the feasibility of adopting green roofs to mitigate the urban heat island effect around the pedestrianisation.

This study used interviews, literature studies, and 3D modeling to facilitate the analysis, which found that

direct sunlight and building service machines were the main non-human and human factors, respectively, that caused concern. However, only 16.32% of Mongkok's total area were covered by building service machines and there was no area that was affected by shadows during the summer. These factors could not have limited the construction of green roofs in pedestrianisation. The key factor that determined the success (or failure) of adopting a green roof was public perception. The public believed a green roof could only benefit the environment. It increases capital costs whilst guaranteeing no benefit. Undoubtedly, people would not intend to build green roofs.

Overall, the findings of this study were able to determine the feasibility of adopting green roofs around the pedestrianisation. Further studies are needed to examine the actual thermal effect of adopting them.

### An Empirical Study of the Impact of Public Rental Housing Estates on Neighbouring Private Housing Prices in Hong Kong

Top Award (GPD) • Awardee : **KWONG Ka-ho, Kevin**

Housing is an issue of great public concern. As a form of accommodation for low-income households, public housing has long been labeled a social stigma for its building design, housing management, and the relatively low socio-background-economic status of its tenants. Due to Hong Kong's limited supply of land resources and the compact design of its housing developments, it is often impossible for private residential projects to be situated in areas with no public housing estates nearby. However, from time to time, there emerge certain market sentiments that suggest public rental housing drags down neighboring private housing prices just by their proximity to each other.

This thesis studies eight popular private housing developments in both Kowloon and the New Territories,

namely Luk Yeung Sun Chuen in Tsuen Wan, Sceneway Garden in Lam Tin, Amoy Gardens in Kowloon Bay, Jubilee Garden in Shatin, Fanling Centre in Fanling, Parc Oasis in Kowloon Tong, Villa Esplanada in Tsing Yi, and Harbor Island View in Tai Kok Tsui. Half of them are adjacent to public housing estates. This serves as a control basis for comparison purposes. These comprehensive residential estates share similar characteristics, such as orientation, accessibility, amenities, and design layouts, thus minimizing the influences of other external factors that can affect their prices. A total of 17,297 transaction records from 1st November 2000 to 31st October 2010 were merged into the hedonic pricing model.

This study concludes that public rental housing induces a negative impact on adjacent private housing prices due

to its intangible social stigma effect. Yet, it also found that no premium was paid for residential units in private housing communities with neighboring public rental housing estates and no direct view of their public rental housing neighbors. This meant that the magnitude of such a negative effect was not directly correlated to the flat's view of its public rental housing neighbors. The psychological stigmatic effect was rather dependent on the social culture and respective housing communities instead of on any physical factor like view or distance to the adjacent public housing estate.

A major reason for this was that a view of an adjacent public rental housing estate from a private flat was not

necessarily an eyesore in the eyes of the private flat's residents. The empirical results implied that unlike a landfill, power plant, or factory, prospective buyers would not pay a premium for a unit that does not have a direct view of a neighboring public rental housing estate. The social stigma of public housing continued to exist as long as the affected private housing development was located next to a public rental housing estate. The view factor did not matter to those affected residents, since it did not affect the magnitude of the psychologically stigmatic effect of public rental housing on private housing. The stigmatic effect depended more on an individual's perception of public housing and its tenants, including their education and income levels.

## Deformation Analysis of Lee Shau Kee Building with the Use of Terrestrial Laser Scanning

Top Award (LSD) • Awardee : **HOU Wing-size**

Deformation monitoring has long been practiced to check the abnormal movements in order to prevent structures from collapsing. Conventionally, the method of single-point monitoring by geodetic survey is used. As a terrestrial laser scanner (TLS) has become popular for land surveying, many practitioners have started to manipulate TLS for their deformation monitoring projects due to its efficiency and coverage. For this dissertation, the author studied and assessed the possible deformation of the Lee Shau Kee Building at the Hong Kong Polytechnic University (PolyU) using TLS. The main objective of the project was to investigate the thermal effect on the building on a seasonal basis in relation to its elevation.

Five monitoring points were selected along the building's west-facing wall (refer to Fig. 1). The tool and software used in this project were a Leica ScanStation HDS3000 laser scanner and HDS Cyclone Software Suite. During data processing, the author modelled planar patches from the raw point clouds (refer to Fig. 2) and the monitoring points were derived by extending the patches. This reduced the error of the point clouds, since patch-fitting involves iterations with large redundancies. To compare the relative positions of the monitoring points between two seasonal epochs in November and January, the author adopted cloud-to-cloud registration. The registration error was 2 mm.

The resulting 3D position displacement of the monitoring points was about 13-26 mm in relation to the elevation of the building. This exceeded the estimated instrument and

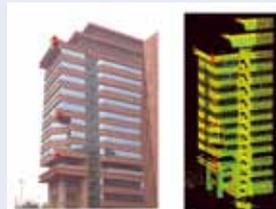


Fig. 1 – Locations of the monitoring points

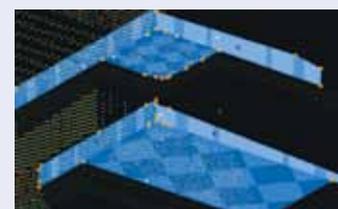


Fig. 2 – Modelling point clouds to planar patches

processing errors of less than 10 mm. The movements generally showed a positive relationship with a change in elevation, (i.e., the higher the elevation, the greater the displacement). Another finding was that the vertical direction experienced smaller movements than the horizontal directions. This can be explained by the sun's radiation from a lateral direction, which was more intense than the overhead direction during the warmer epoch. The overall result of deformation detection by TLS was satisfactory.

This project demonstrated a trial of deformation detection by TLS. It showed the feasibility of detecting centimetric movements without accessing the subject site. Since this project was carried out with limited resources, a more rigorous and comprehensive survey result is possible if more observables are included. With the recent introduction of more high-end laser scanners, the quality of scanned products has improved. The use of TLS can be further developed to produce precise survey results, so as to enhance surveying efficiency.

## Luncheon Talk by the HKSAR Chief Executive on Long Term Housing Strategy



- Hong Kong Construction Association
- Hong Kong Institute of Construction Managers
- The Hong Kong Institution of Engineers
- Hong Kong Institute of Housing
- The Hong Kong Institute of Landscape Architects
- The Law Society of Hong Kong
- Hong Kong Institute of Planners
- Hong Kong Institute of Real Estate Administrators
- Hong Kong Institute of Chartered Secretaries
- The Hong Kong Institute of Surveyors



The Long Term Housing Strategy (LTHS) Steering Committee published a consultation document on the review of LTHS and kicked off a three-month public consultation exercise on 3 September 2013. A "Luncheon Talk by the HKSAR Chief Executive on Long Term Housing Strategy" was co-organised by the following organisations on 11 September 2013 at the Renaissance Hong Kong Harbour View Hotel:-

- Hong Kong Coalition of Professional Services
- Hong Kong Institute of Certified Public Accountants
- The Hong Kong Institute of Architects

Accompanying the Chief Executive, the Hon Leung Chun-ying, at the luncheon was the Secretary for Transport and Housing, Professor Anthony Cheung Bing-leung, GPS, JP. There were over 300 participants occupying 27 tables from the aforementioned professional associations including six tables being occupied by members of the HKIS.

We were honoured to have the CE share his views on the LTHS, as well as summarising and highlighting the LTHS's consultation document during his speech. Professor Cheung also announced that the Steering Committee will organize public consultation forums for concern groups and stakeholders over the next few months.

A copy of the CE's speech and the PowerPoint presentation (in Chinese only) are available at the webpage : <http://www.info.gov.hk/gja/general/201309/11/P201309110555.htm>.

## HKIS Annual Conference 2013 – “Evolving Hong Kong – Infrastructure & Property Development”

The HKIS hosted its annual conference on 14 September 2013 at the Conrad Hong Kong. The theme of the conference was “Evolving Hong Kong – Infrastructure & Property Development”. We were honored to have Prof the Hon. Anthony Cheung Bing-leung, GBS, JP, Secretary for Transport and Housing, as our guest-of-honour. The conference provided a valuable opportunity for fellow members, allied professionals, government officials,

academics and industry stakeholders to exchange their views and experiences on many different issues relevant to Hong Kong’s infrastructure and real estate development. The conference attracted around 250 participants.

For more details of the conference, please visit the HKIS website at <http://www.hkis.org.hk>



## 香港測量師學會周年研討會 - 專家探討香港基建及物業發展

香港測量師學會（「學會」）於 9 月 14 日假座港麗酒店舉行一年一度周年研討會。研討會以「蛻變中的香港：基建及物業發展」為主題，探索香港基建及物業未來發展的路向。出席的嘉賓及參加者近 250 人。

是次研討會邀得香港特別行政區政府運輸及房屋局局長張炳良教授擔任主禮嘉賓並發表開幕演辭。

學會會長賴旭輝測量師表示：「香港土地資源珍貴，不同持份者對土地利用和保育均持有不同意見，往往會產生不少爭議。所以，政府在發展新基建時，需致力平衡各方利益，並同時重視土地規劃、市區重建、環境綠化及文物保育，從而改善香港的生活環境。土地的發展、供應和利用等三方面乃相互緊扣、互相影響的，我認為現時首要的任務是做好土地發展規劃，即使土地供應有限，我們仍能更有效利用土地資源，促進經濟發展，同時兼顧市民和商界的需要。」

學會副會長兼周年研討會籌備委員會主席何鉅業測量師於閉幕致辭時表示：「是次研討會所探討的範圍非常廣泛，應邀出席的講者亦來自四方八面，包括政府部門、學術機構、測量師同業、發展商、顧問公司和承建商等，探討的內容可謂理論與實踐兼備，他們以真實的經驗，從土地規劃、基

建、集體運輸、民生及房屋等不同議題，分享香港物業發展當前所面對的問題。我相信講者豐富的題材啟發了參加者的多角度思考，並衷心希望是次研討會的討論及研究內容能夠成為日後香港的基建及物業發展的參考，並讓這個議題成為公眾焦點及引起討論，讓社會上有關人士能從中找到發展路向。」

學會會長賴旭輝測量師補充說：「學會創自 1984 年，成立至今已 29 年，一直為各界提供專業的測量及相關服務。除了是次研討會外，學會屬下各測量組別還會定期與不同團體及組織合辦各類型的活動及會議，藉此促進各界交流。另外，學會亦十分重視薪火相傳，故經常為大專院校開辦測量課程，鼓勵學生參與學會舉辦的活動，培育未來的社會精英。」

研討會的其他嘉賓講者包括規劃署署長凌嘉勤先生、土木工程拓展署署長韓志強工程師、香港鐵路有限公司工程總監周大滄工程師、香港機場管理局建築工程副總監潘嘉宏工程師、俊和發展集團副主席彭一邦工程師、西九文化區管理局項目推展行政總監陳文偉博士測量師、恒基兆業地產有限公司執行董事黃浩明測量師、香港科技大學工學院羅康錦教授及香港理工大學土地測量及地理資訊學系丁曉利教授。



## Council Members Reaching Out

3 to 6 September 2013	第十屆中國 - 東盟博覽會	Sr Stephen Lai Sr Simon Kwok
10 September 2013	Seminar on "Occupational Safety and Health in Arboriculture" organised by the Greening and Landscape Office under the Development Bureau	Sr Joseph Ho
11 September 2013	Welcome Cocktail of "Sustainable Building 2013 Hong Kong (SB13 HK) co- organised by Construction Industry Council and the Hong Kong Green Building Council	Sr Stephen Lai
12 September 2013	Monthly Thursday Luncheon organised by Executive Council Secretariat	Sr Stephen Lai
12 September 2013	The BEAM Plus Platinum Night Conference Dinner co-organised by Construction Industry Council and the Hong Kong Green Building Council	Sr Stephen Lai
18 September 2013	7th Annual Dinner of Hong Kong Professionals and Senior Executives Association	Sr Stephen Lai
23 September 2013	64th National day Celebration Dinner organised by Hong Kong Institute of Certified Public Accountants	Sr Stephen Lai
24 September 2013	A banquet to celebrate the 63rd Anniversary of the Founding of the People's Republic of China jointly organised by the Hong Kong Construction Association Limited, the Hong Kong Federation of Electrical & Mechanical Contractors Limited, Hong Kong Construction Industry Employees General Union, Construction Industry Council, Hong Kong Construction Sub-contractors Association and H.K. General Building Contractors Association	Sr Stephen Lai
26-27 September 2013	Visit to Chongqing by Hong Kong SAR Trade Delegation organised by Commerce and Economic Development Bureau	Sr Stephen Lai
28-30 September 2013	Hon Tony Tse's Beijing Visit	Sr Stephen Lai Sr Simon Kwok
30 September – 2 October 2013	27th International Project Management Association (IPMA) World Congress 2013	Sr Keith Yim Sr TT Cheung Sr Samson Wong
27 September 2013	"Construction Manager of the Year Awards 2012 Presentation cum the 40th Anniversary Dinner" organised by the Chartered Institute of Building (Hong Kong)	Sr Stephen Lai
30 September 2013	Briefing Session on Proposed Procurement Approach to Enhance Price Proposal Assessment Mechanism for Public Works Tenders	Sr Wong Kwok Leung Paul