

P r o f e s s i o n a l G r e e n B u i l d i n g C o u n c i l



Green Building Award 2008

環保建築大獎

Conserving for Livable Environment Building towards Sustainable Development 環境保育 建築永續



GREEN BUILDING AWARD 2008

Editor
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Graphic House
Beta Design Limited

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**Conserving for Livable Environment
Building towards Sustainable Development**

環境保育 建築永續

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GREEN BUILDING AWARD 2008

With an overwhelming support and recognition from the industry to the first GREEN BUILDING AWARD (GBA), the Professional Green Building Council (PGBC) launched the 2nd GBA again in 2008. The Green Building Award aims to promote sustainable and green development, to recognize developments and research projects with outstanding contributions to sustainability and the environment, and also to encourage the industry towards wider adoption of sustainable practices in planning, design, construction, maintenance and renovation projects. This year, the Award is open to both LOCAL projects and projects OUTSIDE HONG KONG contributed by Hong Kong professionals.

Objectives

- to provide recognition to building-related/ research projects with outstanding contributions in sustainability; and
- to encourage adoption of sustainable planning, design, construction, maintenance and renovation of buildings.

Award Category

In GBA 2008, there are 3 award categories: (open to both LOCAL projects and projects OUTSIDE HONG KONG)

- New Construction Category (NC) – for Buildings Completed after 01 Jan 2003
- Existing Building Category (EB) – for Buildings Completed before 01 Jan 2003
- Research & Planning Studies Category (RP)

Time Line

March 2008	Announcement of GBA2008 and open for nomination.
Mid May 2008	Deadline for submission of nomination forms together with documents.
Late May 2008	First screening on all nominations by the professional institutes' representatives.
June 2008	Finalist presentation to Jury Panel (Site visit as an option).
Late July 2008	Award announcement, presentation ceremony and local exhibition.
September 2008	Inclusion of winning projects in the exhibition of SB08 World Conference.

GBA 2008 Exhibition

An exhibition of winning projects will be held from 31 July to 1 August 2008 at The Rotunda.



NC(New Construction Category) / EB(Existing Building Category)

1. QUALITY

1.1 Indoor Environmental Qualities

Quality of indoor living environment creates health and comfort through integration of natural systems and appropriate technology to meet the user satisfaction with respect to daylight, air, views, acoustic environment, etc.

1.2 Bioclimatic & Landscape Qualities

Quality of outdoor environment creates comfort and livability through adaptation to the specific context/climate and provision of soft landscape within the lot and greenery sensitive boundary treatment.

1.3 Neighbourhood Amenities

Quality of built environment values the ecological / environmental (e.g., urban air ventilation), social and cultural aspects of sustainability of the site and its surroundings.

2. RESOURCES

2.1 Energy Flows & Energy Future

Sustainable building conserves energy, reduces the carbon footprint through efficient and effective use of energy, and anticipates future energy sources and needs such as renewable/alternative energy system.

2.2 Material Use & Water Conservation

Sustainable building demonstrates reduction in material and water consumption from a building life-cycle perspective, encourages the use of reusable/recyclable/recycled materials and the reuse of on-site water, and optimizes the use of timber from sustainable source.

2.3 Waste Management & Pollution Control

Sustainable building through appropriate design and construction / demolition method encourages best practices in waste management, including sorting, recycling and disposal of municipal, construction & demolition waste, while minimizing outdoor air, noise and water pollution during construction.

3. SUSTAINABILITY

3.1 Life Cycle Perspective

Design promotes the principles of sustainability during the building life, "long life, loose fit", including durability, flexibility and adaptability in the long term as well as the potential of adaptive reuse and disassembly at the expiry of its original use.

3.2 Building Amenities

Design promotes the buildability during construction as well as the controllability and serviceability during the management, operation and maintenance of the building.

3.3 Sustainability Policy & Feedback Loops

Policy with financial/strategic commitment encourages public/user participation and monitors building performance, including post-occupancy evaluation on user satisfaction for documenting effective implementation/improvement of sustainable measures.

4. INNOVATION

Project should elegantly integrate and express sustainable design, an inherent aspect of design excellence, and take advantage of innovative programming opportunities as well as other sustainable design innovations at appropriate stage(s) of a building life cycle.

(Note: For Existing Building without any recent major renovation, some criteria such as construction issues can be skipped as appropriate.)

RP (Research & Planning Studies Category)

1. ORIGINALITY

Project should be fundamental research / planning study that enhances the advancement in sustainability in relation to the built environment.

2. PRACTICALITY

Project should offer the scope of generalization, with beneficial applicability in the industry in terms of sustainable planning, design, construction and/or operations of the built environment.

3. QUALITY

Project should demonstrate rigor and validity in research or study methodology.

4. INNOVATION

Project should demonstrate innovation in design or research through the process and/or finding.

Message from Honorary Advisor, Professional Green Building Council (PGBC)



I would like to congratulate the Professional Green Building Council on its success in organizing the Green Building Award 2008. I also thank the Council for its continuous dedication and effort on promoting green and sustainable buildings in Hong Kong.

This year, over 100 high quality submissions of local and overseas projects contributed by Hong Kong professionals are received. All these submissions have vividly demonstrated the transformation of our vision and aspirations for sustainable development into environmental-friendly features in building projects. The event has undoubtedly provided a valuable opportunity for practitioners to exchange experience, insights and technology to achieve green buildings and for the public to better appreciate the goals of sustainability. This in turn will certainly generate more innovation and new ideas in future attempts.

I wish the Council and all the award winners every success in future green building endeavours.

Mrs Carrie Lam, JP
Secretary for Development, HKSARG
Honorary Advisor of PGBC

Message from Chairman, Professional Green Building Council (PGBC)

環保建築專業議會主席獻辭



As Chairman of the Professional Green Building Council, I'm very proud to be launching the 2nd Green Building Award 2008. The Green Building Award sets a pioneering platform for us to showcase outstanding efforts taken in pursuing environmental and sustainable concerns - concerns that have great impact on the development trend and a profound impact on our quality of living. This year, we have reached another milestone in the green building movement as we see the trend of sustainable and environmentally friendly buildings expanding to surrounding regions of Hong Kong. It gives me great pleasure to see some of this year's finalists come from regions outside of Hong Kong including Beijing and Shanghai. I hope that the future direction of the Green Building Award will take us even further and possibly expand across the Asia Pacific region.

Moreover, I believe that in recognizing and promoting the conservation of livable environment and sustainable development through this award show, we may generate more industry professionals, researchers and the government devoted to the green building movement. Indeed, we must continue to seek unlimited manpower to continue this global trend towards greener buildings and as movers and shakers of our society's highly-condensed city, we must make it our priority to adopt greater sustainable values in all aspects of planning, design, construction, operation and management, renovation, and research.

Finally, I would like to thank everyone for contributing to the continued success of the Green Building Award and to the organizing committee and all participants who pave the way to a greener future.

Ir Reuben Chu
Chairman of PGBC



作為環保建築專業議會的主席，本人十分榮幸能夠領導籌辦第二屆的環保建築大獎。環保建築大獎的成立，旨在表揚為推動環保及持續發展的業界代表，為具發展影響力及深化優質生活的卓越表現提供展覽平台。今年環保建築大獎亦跨進一個新的里程碑，我們成功將環保建築運動推廣到香港鄰近的地方。我們十分高興今年入圍的項目有包括來自香港以外的地區，例如北京及上海的項目。我寄望來年的環保建築大獎可以更進一步擴展到整個亞太地區。

此外，議會深信透過環保建築大獎對環保建築項目的肯定及推廣，更多業內的專業人士，研究人員以及政府部門都會更加落地地推行環保建築運動。事實上，我們作為香港這個密集城市的一份子，對全球推動環保建築的大趨勢委實責無旁貸，我們理應將持續發展的價值放於首位，並積極放諸於規劃、設計、建造、運作、管理、修復及研究工作等的範疇。

最後，我謹此向環保建築大獎的籌委會、參賽者以及各分別為環保建築運動作出貢獻的人士致最深的感謝。

環保建築專業議會主席
朱沛坤工程師

Message from Chairman, Green Building Award 2008 Organizing Committee

環保建築大獎2008籌備委員會主席 獻辭



The Professional Green Building Council (PGBC) has taken many steps in carrying forth the green building movement and one of its major steps is the launch of the Green Building Award. The main objectives of GBA are to promote green research, planning, design, construction, maintenance and renovation of buildings. Following the great success of the first GBA 2006, I am honored to act as the chairman of the Organizing Committee of GBA 2008.

This year, we have received overwhelming response and support from industry professionals. More than 100 nominations have been submitted for all 3 categories this year, which is double the amount from GBA 2006. Among those 100 quality nominations, 30 finalists were short listed after an initial thorough assessment and to take part in the award ceremony. There are more than 50 supporting organizations endorsed this event, which gives us great encouragement to see our award gain popularity while promoting the trend towards a greener and more sustainable environment. We have further taken a new initiative in raising more public awareness for greener buildings by setting up exhibition showcasing the finalists and winners of GBA 2008. The exhibition showcases to the public the ongoing tangible measures taken within the industry in helping to create a better environment for all.

Furthermore, we are very grateful to have Mrs. Carrie Lam, JP, Secretary for Development, HKSARG to participate in the course of promoting green buildings in Hong Kong as the honorable advisor of PGBC and also as our guest of honor at the award presentation ceremony. We are also glad to see the Honorable Jury Panel formed from a diverse group covering a wide spectrum of industry professionals, government heads and academics.

I would like to congratulate all winners and finalists alike and express my sincere appreciation to all advisors, jury panel members, sponsors, supporting organizations and the organizing committee of GBA 2008 for their time and involvement.

Mr. Sam Cheng
Chairman of GBA 2008 Organizing Committee



環保建築專業議會一直致力推動環保建築的發展，其中一項便是環保建築大獎，環保建築大獎旨在鼓勵業界採用可持續發展的研究、規劃、建築設計、建造、管理及維修方法。環保建築大獎2006的成功，令我深感榮幸能夠成為環保建築大獎2008籌備委員會的主席。

今年的環保建築大獎獲得業界的熱烈支持，三個組別一共收到超過100個提名，數量比上一屆倍增。經過全面的初步評審後，30個優質項目被挑選進入最後評審階段。另外，今年超過50個專業團體成為環保建築大獎2008的支持機構，我們十分鼓舞環保建築大獎於推廣環保建築及持續發展的同時備受肯定。為提升大眾對環保建築的認識，我們首次展出入圍以及得獎的項目，令公眾可以認識業界現行建立優質的生活環境的措施。

除此之外，我們十分榮幸能夠邀請香港特別行政區發展局局長林鄭月娥太平紳士成為環保建築專業議會的榮譽顧問及頒獎典禮的主禮嘉賓，一同推廣環保建築。我們亦十分高興評審委員來自業界的不同專業團體，政府部門及學術機構。

最後，本人衷心地祝賀參賽及得獎隊伍，並對各參賽隊伍、顧問、評審委員、贊助商、支持單位、籌備委員會委員及為環保建築大獎作出貢獻的各位致以萬分感謝。

環保建築大獎2008籌委會主席
鄭森興先生

Message from The Hong Kong Institute of Architects (HKIA)

香港建築師學會獻辭

Congratulations! It is encouraging to witness the success of the second Green Building Award launched by PGBC. It reflects the effort of Hong Kong professionals in the construction industry to respond to the challenge of creating a more sustainable built environment, both in Hong Kong and beyond. In the GBA2008, the encouraging evidence embraces both quantitative and qualitative terms. On one hand, there is a total of over a hundred entries, which doubles that in the first GBA organized two years ago. On the other hand, the overall quality of nominated projects, both in Hong Kong and elsewhere, is promising as demonstrated by increasing reference to various green building ratings like BEAM, CEPAS, GOBAS, LEED and SPeAR.

We should congratulate not only the award winners but also all entries as well as those professionals and team members involved in promoting sustainability. Our common vision is to collectively strive for transforming the mainstream practice to integrate the principles of sustainable building in new construction, renovation and existing building stock. We can all make a difference, based on the concept that sustainable buildings contribute to a win-win situation with respect to the concerns of profit, people and planet.

More concerted actions are still imminently in need! Besides the voluntary effort of individuals and NGOs in promoting sustainable built environment such as this award scheme, we have to strive for significant progress through government intervention – the critical catalyst for accelerating positive change. As shown in other leading Asian cities like Tokyo and Singapore, the respective government has been implementing their own blueprint on sustainable built environment including the promotion of green building rating system. The common steps include the pioneering adoption of such rating in all public and public funded projects, and then the extension of such requirement to all new construction and major renovation in the private sector. Given effective government intervention involving compulsory/incentive measures, research & development, public education, etc., the recent rate of market transformation towards a greener building stock is highly notable in these cities.



Incidentally, Beijing Olympics is held in 2008. As triggered by the Olympics, Beijing has been striving to make its built environment more sustainable through urban planning and greening as well as Green Olympic Building Assessment System (GOBAS). In this GBA, we should congratulate those 2008 Olympic projects shortlisted and honoured with award.

It's high time for Hong Kong government to catch up. Come on! Come on! (加油! 加油!) Architects are cheering up (打氣)!

Dr. Ronald Lu
President of HKIA
2007-2008

喜見香港環保建築專業議會之第二屆環保建築大獎的成功，見證推動本港建築界邁向可持續發展建設的又一里程碑。喜見的現象，包括「量」與「質」雙方：

- 共一百多參選項目，數量乃上屆之雙倍；
- 參選項目含本港建築專業人士參與之本地及境外作品，具體體質素，殊多並已以市場上之環保建築評估系統作客觀驗證作基礎，如 BEAM、CEPAS、GOBAS、LEED、SPeAR等。

須恭賀的，乃予所有百多參選項目及其團隊。我們期望爭取的，乃共同協力轉化現有市場，令環保建築成為主流，體現環保建設是促進經濟、社會及環境三方共贏的理念。

須爭取的，除了民間團體的自發自我提升以至獎勵計劃，關鍵是政府利導市場轉化之強度。環顧亞洲各主要城市，近年具前瞻性的政府，如東京、新加坡等，均訂立「環保建築藍圖」，包括大力推行環保建築認證制度，所有政府及相關物業先行，並以強制性(或附以誘因)推廣至所有新建及翻新工程，成效顯著。

今年正值北京奧運，北京市在都市規劃以至奧運建築層面，均力圖邁向可持續發展建設。今屆環保建築大獎喜見2008年奧運建築項目入圍並獲獎。反思香港，政府請「加油」，建築師樂意在「打氣」!

香港建築師學會會長 (2007-2008)
呂元祥博士



Message from The Hong Kong Institution of Engineers (HKIE)

香港工程師學會獻辭

On behalf of the Hong Kong Institution of Engineers, it is my pleasure to offer my warmest congratulations to all on the occasion of the Green Building Award 2008 presentation ceremony.

To conserve our environment and maintain a sustainable living, engineers could play a signification role and be a main contributor towards these goals. Since the launch of the Award in 2006, I am glad to witness the efforts that the building industry has made in promoting the advantages of sustainable planning, design, construction, maintenance and renovation of a building. The Award has provided an excellent platform for building specialists to showcase and share their professional knowledge and experience with other stakeholders in the community. I am confident that not only the industry will be benefited from the Award but so do the society at large.

The industry's efforts made towards building a greener Hong Kong are highly commendable and the achievements of all awardees are remarkable.

Ir Peter Wong
President of HKIE

香港工程師學會
會長 黃耀新 敬賀

環保建築
獻新猷
綠色生活
創明天

環保建築大獎二零零八年頒獎典禮



Message from The Hong Kong Institute of Landscape Architects (HKILA)

We commend PGBC for launching the second GBA in 2008. As this event brings together collaborative team efforts from professionals of the building industry in Hong Kong, we are proud to see GBA bring great awareness of green and sustainable practices.

Especially in the area of landscape architecture, nature's requirement in the city is one of our main concerns. We take on the huge task of making every development a greener place by incorporating greeneries and other natural elements. Indeed, we believe that any green development seeks to include more of nature's elements.

We congratulate PGBC on the success of GBA 2008 and we hope that GBA will encourage more projects to contribute in making our city more naturally green and pleasant.

Mr. Leslie Chen
President of HKILA



Message from The Hong Kong Institute of Planners (HKIP)

I heartily congratulate the Professional Green Building Council for organizing the Green Building Award 2008, which has successfully harvested so many high quality submissions from architects, engineers, landscape architects, town planners, surveyors and academia.

I have the honour of representing the Hong Kong Institute of Planners as one of the jurors for the Award. Whilst going through the submissions assigned to me is no doubt a demanding task, it has however provided me a unique opportunity to appreciate the wisdom and persistent effort of so many outstanding professionals in innovating green measures to make our buildings and planning schemes more environmentally friendly, more sustainable and more cost-effective in the use of resources.

We have planned and built our cities, within which there are high concentration of buildings and structures performing various functions to serve the human race. The construction, operation and maintenance of the man-made environment is undeniably resource-demanding. The Green Building Award represents a pro-active response to the rising aspiration for conserving the diminishing natural resource and the degrading environment. The effort of the organizer and all the professional teams contributing the submissions are most respectable in sustaining the effort of this green movement.

The success of the Professional Green Building Council would also be the success of all professionals making our share of contribution to sustain a livable environment for the community of Hong Kong. I am sure the Council will continue its effort in promoting green measures for buildings. I look forward to another successful year of the Award.

Mr. K. K. Ling
President of HKIP



Message from The Hong Kong Institute of Surveyors (HKIS)

With improving living standards, there is rising concern on sustainable development by the community. A good development project is not only functionally efficient, but also environmentally friendly in design.

The Green Building Award recognizes outstanding project teams with excellent contributions towards sustainability and the conservation of the environment. It also promotes green innovations in different areas of our industry which are reflected in the various stages of development projects, namely planning, design, construction, maintenance and renovation. The community as a whole, with the younger generations in particular, would be benefited by the sustainable practices of our industry.

On behalf of the Hong Kong Institute of Surveyors, I would like to congratulate all winners and nominees, and wish the Green Building Award 2008 a great success.

Mr. Yu Kam Hung
President of HKIS



Message from Dr. Cheng Hon Kwan, GBS, OBE, JP

It gives me a great pleasure to offer my warmest congratulations to the recipients of Green Building Award 2008. It is most encouraging that we have seen so many submissions of very high standard in terms of conservation and environment considerations. I do hope the design and construction of green building would become a prerequisite in the future trend to facilitate healthy, efficient and sustainable homes and workplaces to improve the quality of life.

HK Cheng & Partners Ltd.

Message from Mr. Au Choi Kai

I wish to congratulate all award winners in the New Construction Category. These buildings impressed me in their provision of a comfortable quality indoor environment which integrated harmoniously with the densely built neighbourhood. I look forward to their continued pursuit of excellence for a greener and more sustainable built environment.

Deputy Director
Buildings Department

區載佳先生獻辭

全新建築類別的各項得獎作品，既提供舒適和優質的室內環境，亦與周遭密集的建設融和協調，令人留下深刻印象。謹此祝賀所有得獎者，並希望他們秉持環保理念，精益求精，創造更環保和可持續的建築環境。

屋宇署副署長

Message from Dr. Ronald Lu

The 10 finalists represent different shades of green, yet the overall quality is commendable. The list embraces a wide range of building types, including academic, commercial, community, medical, sports, science park and theme park facilities – but without any residential project. On the other hand, the finalists demonstrate a wide range of “high” sustainable technologies for application in the design and construction process as well as for integration in the final building.

In contrast, a remarkable finalist is the village school in Northwest China, in which the vernacular “low” technology of earth dwelling is scientifically enhanced for contemporary application. The resultant building performance best suits the environment and climate of Loess Plateau – a sustainable and affordable alternative that deserves our appreciation.

President
The Hong Kong Institute of Architects

呂元祥博士獻辭

入選作品均具水平，建築用途廣泛，包括商業、學校、醫院、科學園、主題公園、社區及運動設施等，卻欠住宅項目，值得我們反思。

入選項目展現多樣環保「高」科技之應用於設計及建造過程，以至結合建築；而其中一項內地農村學校，科學地優化當地「土民居」之智慧「低」科技，切合黃土高原氣候，亦值得我們反思。

香港建築師學會會長

Message from Hon. Abraham Shek, SBS, JP

I would like to extend my congratulations to the Professional Green Building Council on the success of the 2nd Green Building Award (GBA). I am delighted to learn that the GBA, which was first introduced in 2006, has now developed into an established industry award in Hong Kong. Starting from this year, the GBA will be held on a biennial basis, providing a unique platform for local professionals to showcase their outstanding works.

It is my privilege to be the Jury Chairman of the Existing Building Category of this meaningful award, which recognizes outstanding performance and contributions to sustainability and the environment. This year, GBA is open to all relevant local projects as well as projects outside Hong Kong to which Hong Kong professionals have made a significant contribution. The inclusion of projects beyond our territory not only encourages universal adoption of sustainable planning, design, construction, maintenance and renovation, but also provides increased recognition to those local professionals who have made significant contributions in this field both at home and abroad.

I would also like to take this opportunity to congratulate all the award winners. Your excellence in realizing green and sustainable concepts in buildings and research projects will without doubt set the standard for our future construction projects! I am delighted to congratulate you on your great contributions and innovations, which are recognized by these distinguished awards.

石禮謙太平紳士獻辭

本人謹此祝賀環保建築專業議會成功籌辦第二屆「環保建築大獎」。本人非常高興得悉「環保建築大獎」自二零零六年開始舉辦起，便旋即成為業內矚目的獎項，並將由本屆開始以兩年一度的形式舉辦，為本港才俊提供獨一無二的平台，展示他們優秀的作品。

本人非常榮幸獲委任為「現有建築類別」的評審團主席，並藉著這個大獎表揚對可持續發展及環境有傑出貢獻的建築及研究項目。本屆「環保建築大獎」首次接受香港專業人士於境外的工程項目參賽，此舉不但能突破國界的限制，鼓勵業界跨地域採用可持續發展的規劃、建築設計、建造、管理及維修方法，更讓本地專業人士無論在本地或國外的傑出作品皆能獲得充分的肯定。

本人亦借此機會向各得獎者致賀。你們卓越的規劃建築及研究項目成功地融合環保及可持續發展的概念，勢必成為業界的典範，引領環保建築的潮流。本人深信「環保建築大獎」不單表揚了你們在環保建築上的貢獻及創意，還顯示出大眾及業界對你們的傑作致以崇高的肯定。

Message from Mr. Stephen Chan, JP

I would like to extend my warmest congratulation to the Green Building Award 2008 Organizing Committee on its great success in organizing the Green Building Award 2008 event this year and to all awardees on their outstanding achievements.

The Green Building Award event definitely helps promote a green living environment in Hong Kong. Being one of the jury panel members for the existing building category, I was very impressed by the participating teams with their high quality and innovative green initiatives as well as their passion and dedication to strive for a greener environment. Since there were a vast variety of submissions covering residential and industrial buildings, and equestrian venue and the competition was very keen, it was really a difficult task for the jurors to decide on the winners of the awards.

I look forward to having more green buildings with innovative and sustainable design in Hong Kong in the years to come.

Deputy Director
Electrical & Mechanical Services Department

陳鴻祥太平紳士獻辭

欣悉環保建築大獎2008籌備委員會於今年成功舉辦環保建築大獎2008，而所有得獎者均表現卓越，成績斐然，謹此衷心祝賀。

舉辦環保建築大獎有助我們在香港推廣綠化的生活環境。作為現有建築類別評審團成員之一，我對參賽隊伍的質素、創新的環保措施以及矢志建立綠化環境的精神留下非常深刻的印象。由於獲提名參賽的項目的範圍十分廣泛（涵蓋住宅和工業樓宇以及馬術場地），加上比賽競爭激烈，評審團成員要選出各類建築大獎的得獎者，確實十分困難。

謹此希望香港在未來數年會有更多設計創新及可持續發展的環保建築物。

機電工程署副署長

Message from Mr. Kendrew Leung

It is indeed a tremendous event to hold the second Green Building Award in July 2008 which has successfully launched by PBGC. I would like to congratulate those participants who have entered to all our existing buildings. The success of these existing buildings have not only contributed to sustainability and the environment but also a great impact to our green developments leading to industry awareness the importance of having a green society.

President
The Hong Kong Association of Property Management Companies

Message from Mr. Yu Kam Hung

It is my great honor and pleasure to be a member of the Jury Panel for the Existing Building Category for the Green Building Award 2008.

It is an interesting and enjoyable experience for being a member of the Jury Panel. The high standard participating projects exhibit brilliance of our industry which meet the increasing requirements of the community for green and sustainable buildings, and I am greatly impressed by the efforts paid by our profession in achieving the goals on the above aspects. It is not easy for me to choose a winner as I am most astonished by the great number of participating projects which have all incorporated innovative and environmentally friendly concepts in their schemes.

I would like to congratulate all winners and nominees for their outstanding performances as well as their contributions in enhancing green building concepts and sustainable development in and outside Hong Kong.

President
The Hong Kong Institute of Surveyors

Message from Ir Reuben CHU

I am proud to be on the jury panel of the Existing Building Category. Each finalist in the Existing Building Category has illustrated their significant contribution to sustainable and green development. The submissions from the property management companies are brilliant and innovative. The Beijing 2008 Olympic Equestrian Venues at Shatin Core Venue impresses me for its remarkable comprehensive planning and focus on energy-efficient and renewable strategies. Moreover, I also like the Rehabilitation of Moon Lok Dai Ha. By revitalizing the existing estate instead of re-developing the land, they have exemplified sustainability and great consideration to our environment.

Finally, I would like to convey my deepest congratulation to the winners, and heartfelt thank to the support of all entries.

Chairman
Professional Green Building Council

Message from Prof. Patrick Lau, SBS, JP

It is well known that buildings are major sources of energy consumption and greenhouse gases emissions, and although a green building grading system has been implemented in Hong Kong for over 10 years, it has never been applied to all buildings because it is adopted on a voluntary basis. With the completion of the Government's public consultation on imposing mandatory building energy codes, I look forward to seeing the Government taking the lead and adopting a full-scale application of green building standards in Hong Kong. I therefore support PGBC's commitment to promoting green designs by means of the Green Building Award.

One special feature of the GBA 2008 is that projects from outside Hong Kong are eligible for participation and the winning projects will be selected for inclusion in the exhibition of the Hong Kong Pavilion in Australia during the SB08 Melbourne World Conference in September 2008. This is a most encouraging step forward which augments Hong Kong's special status as an international metropolis.

The entries for the New Construction Category and Existing Building Category are marked by designs that take into consideration not only the sustainability of the project site, but also their relationship with the socio-cultural aspects of their surroundings. As the Jury Chairman of the Research and Planning Category, I was very impressed by the innovativeness of various research and planning studies in advancing the environmental performances of buildings in a wide range of topics.

I sincerely congratulate PGBC on the success of GBA2008 and I wish the Council and all participants will continue to work hand-in-hand to create a better and greener built environment for Hong Kong.

劉秀成教授獻辭

建築物是全球能源消耗及溫室氣體排放的最主要來源，而香港的環保建築評級制度雖然已經實施超過10年，但由於只是自願參與性質，始終未能普及推行至全港樓宇。政府推出的立法強制建築物能源效益公眾諮詢已結束，我期望政府將牽頭在香港全面推行環保建築評級制度。故此，我十分支持環保建築專業議會對於推動環保設計的承擔，舉辦環保建築大獎。

環保建築大獎2008首次接受香港境外項目參賽，而且部分得獎項目更有機會在2008年9月於澳洲墨爾本舉行的可持續建築會議2008，於香港館內展出。這特顯了香港作為一個國際大都會的特殊地位。

今屆全新建築類別及現有建築類別的參賽項目，其設計除了就項目本身的可持續性作詳細考慮外，還照顧到與周圍環境的社會文化特色相配合的重要性。作為研究及規劃類別評審委員會主席，我很高興見到各參賽的研究計劃均透過獨到的創意，從不同的方面探討如何改善建築物的環保效益。

我衷心祝賀環保建築專業議會舉辦的環保建築大獎成功，並期望環保建築專業議會及各參賽者能繼續攜手合作，為香港創建一個更美好、更環保的建築環境。

Message from Ms. Katherine Choi

I would like to extend my warmest congratulations to the Professional Green Building Council on making the Green Building Award 2008 a most successful event. The Green Building Award provides an opportunity for the community to recognize the efforts of the industry in achieving green and sustainable buildings. I am most encouraged by the outstanding qualities of the participating research and planning projects.

With the support of the industry and the general community, I am confident that we can build a greener and more sustainable city.

Principal Assistant Secretary for the Environment (Energy) 1
The Environment Bureau

蔡敏儀女士獻辭

我衷心祝賀環保建築專業議會成功舉辦環保建築大獎2008。環保建築大獎讓社會表揚業界致力提倡環保及可持續樓宇的努力。今次參與的研究及規劃項目質素之高，令我感到十分鼓舞。

有著業界及市民的支持，我深信我們定能建設一個更環保及更能持續發展的城市。

環境局首席助理秘書長(能源)1

Message from Prof. Edward Ng

BA(Hons)Nottm., BArch(Dist)Manc., MBA(Dist)Warw., PhD Cantab
RIBA HKIA Architect(UK and HK) IESNA MSLI FHKMetS FRSA

Sustainability is our only future and Green Buildings are the construction industry's contribution to this future. Great efforts are needed for a paradigm shift of values and aspirations, as well as methods and approaches. I offer my heartily congratulations and salute to you all making a contribution towards our future.

Department of Architecture
The Chinese University of Hong Kong

吳恩融教授獻辭

可持續發展是我們唯一的未來，綠色建築是建築專業界對此的貢獻。我們需要通過不懈的努力致力於一個典範的轉變，這種轉變既是價值觀和期望的轉變，同時也是方法和目的的轉變。我在此對大家為我們的明天作出的貢獻致以由衷的祝賀和敬意。

香港中文大學建築系教授



GBA 2008: NC - Jury's Citation

環保建築大獎2008 - 「新建建築類別」評審團意見

評審團意見

環保「新」建築的典範，在奉行「四節一環保」理念的同時，應實行「建築環境評估法」的驗證，並體現優質建築結合可持續發展模式的雅緻融和，創造健康舒適、可耐久宜居的生活環境。

第二屆環保建築大獎的評審對新建項目中環保的要求期望甚殷，對項目之內容持廣泛見解，惟主流意見支持赤柱市政大廈榮獲是屆環保建築（新建類別）大獎。而優異獎項，在香港和境外的包括香港理工大學 - 香港專上學院（紅磡灣校園），和分別在北京的2008奧運會國家游泳中心，及諾基亞北京經濟技術開發區中國園。

赤柱市政大廈

赤柱市政大廈在香港建築環境評估法「鉑金級」的認證基礎上，創意地滿足密集建築環境及複雜功能的要求，立體地打造舒泰、人本的建築體量及公共空間，與周邊的都市環境和諧共存，且予以沿街後退的園景空間、樹木保育、中庭綠洲、及屋頂花園等多層次的綠化並暢達空間與民共享。在高密度的香港，於節地節能等等的同時，各自建築項目能如何透過其場地內的設計，提升整體都市生活之宜居舒適素質，實在是高密度城市於可持續發展建設路上的關鍵挑戰。評審亦關注其「生命週期」中的管理保養，期許能配合建築設計的優質水平。

香港理工大學 - 香港專上學院(紅磡灣校園)

香港理工大學之香港專上學院(紅磡灣校園)亦在香港建築環境評估法「鉑金級」的認證基礎上，尋求超高密度都市中之平衡方案，其中亮點在於其設計中一系列的空中花園，迴旋而上地創造立體的都市綠洲及城市通風空間，利己利人。評審誠然關注高樓學府內空中花園的實質成效，這先導項目正好給社會一個驗證突破的良機。

北京2008年奧運會 - 國家游泳中心(水立方)

是次獎項首度接受本港專業人士參與之境外項目，評審表揚北京2008年奧運會國家游泳中心的設計體現「綠色奧運」中環保先進的科技結合，在「綠色奧運建築評估體系」(GOBAS)的客觀基礎上，突破性、節能節材地打造充氣ETFE薄膜如泡而成的「水立方」。

諾基亞北京經濟技術開發區中國園

境外項目中，評審亦喜見諾基亞北京經濟技術開發區中國園，在國內領先爭取美國綠色建築協會(USGBC)評估法LEED的「金級」認證，創造節能節材節水、且舒適的辦公場所。

Jury's Citation

In the new era, green buildings are expected to follow the concepts of “four conservation and environmental protection” (四節一環保) and subject to building environmental assessment rating. On top of these fundamentals, the award is given for the building that demonstrates most elegantly and durably the principles of sustainable design in an integrated approach and quality implementation, including contribution to a livable environment that is healthy and comfortable for both occupants and those in the neighbourhood.

For the category of new buildings in the GBA2008, the jury panel has a high expectation on the projects to be awarded. While there are diverse views, the main stream opinion supports to honour the **Stanley Municipal Services Building** with the Grand Award. Merits are granted to the local project, **The Hong Kong Polytechnic University - Hong Kong Community College (Hung Hom Bay)** and two projects outside Hong Kong, namely **Beijing 2008 Olympic Games - National Aquatics Center (Water Cube)** and **Nokia Beijing BDA Campus**.

Stanley Municipal Services Building

Together with a provisional BEAM rating of Platinum, the Stanley Municipal Services Building demonstrates a high quality design in response to the combined challenge of high building density and high programmatic complexity. Through thoughtful three-dimensional articulation of building volumes and public open spaces, the outcome offers comfort, human scale and a harmonious relationship with the existing urban setting. A rich layering of green and accessible open spaces, from street-side setback, existing tree conservation, landscaped courtyard to roof garden, provides the public with pleasant refuge from the hustle and bustle of Stanley. In light of Hong Kong's compactness, the critical challenge towards a sustainable built environment lies on not only the conservation of land, energy and other natural resources but also how individual development sites can collectively enhance the livability of urban living space. In the long run, the jury panel wishes the recurring management and maintenance would sustain the building quality as its initial design.

The Hong Kong Polytechnic University - Hong Kong Community College (Hung Hom Bay)

Also founded upon the provision of BEAM rating of Platinum, the project represents another attempt to seek a more sustainable high-rise built form in Hong Kong's high density context. A notable feature is the integration of a spiral chain of sky gardens in the tower, resulting in not only hanging garden spaces for academic interaction but also a more permeable building mass for facilitating air ventilation in the surroundings - a win-win situation for both the occupants and the neighbours. Such a pioneering approach will be subject to the test of time, and the jury panel is keen to see further sharing of the post-occupancy evaluation on the actual building performance.

Beijing 2008 Olympic Games - National Aquatics Center (Water Cube)

It is the first time that this award scheme admits the nomination of projects outside Hong Kong but involving Hong Kong professionals. The jury panel commends the design of Beijing 2008 Olympic Games - National Aquatics Center for its innovative expression of the concept of “Green Olympics” through the integration of advanced eco-friendly technologies. On top of the scientific basis of Green Olympics Building Assessment System (綠色奧運建築評估體系GOBAS), the project coined as “Water Cube” manifests the use of ETFE membrane to make a creative cubic enclosure of air-inflated “bubbles” that are lightweight, translucent yet heat insulating and energy efficient.

Nokia Beijing BDA Campus

The jury panel commends the Nokia Beijing BDA Campus, another project outside Hong Kong, for the environmentally friendly design that not only conserves energy, water and material resources but also creates comfortable and lively workplaces appropriate for the climate of Beijing. It represents a leading project in Mainland China honoured with LEED (Leadership in Energy & Environmental Design) rating of Gold by the US Green Building Council (USGBC).



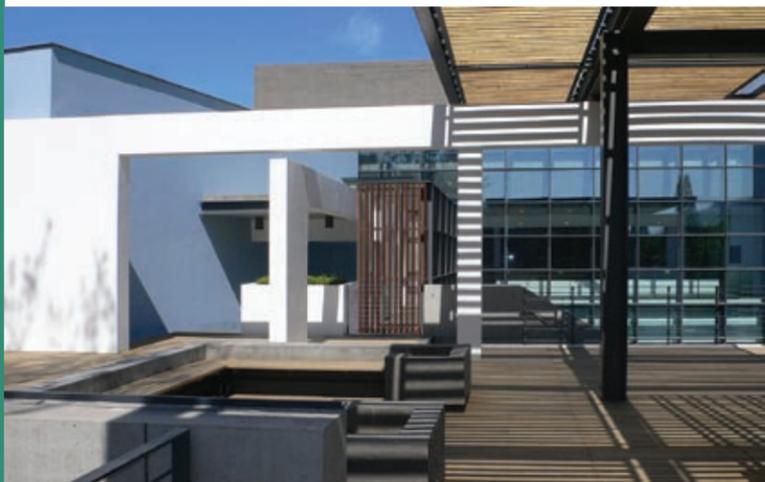
Stanley Municipal Services Building 赤柱市政大廈

Location	No. 6 Stanley Market Road, HK	Client	Home Affairs Department
Completion Date	2006	Project Manager	Architectural Services Department (Applicant)
Green Building Rating	BEAM Assessment (The building was submitted on a voluntary basis and measured against best practice criteria, on behalf of the BEAM Society by independent building and environmental specialists in 2007. The credits achieved at this stage are sufficient to achieve the provisional BEAM rating of Platinum)	Architect	Architectural Services Department
		Civil & Structural Engineer	Architectural Services Department
		Building Services Engineer	Architectural Services Department
		Quantity Surveyor	Levett & Bailey Quantity Surveyors Limited
		Landscape Architect	Architectural Services Department
		Main Contractor	Nishimatsu Construction Co Ltd.



The Stanley Municipal Services Building is organised in two constituent parts by functions to resolve the constraint of the steep change in levels along Stanley New Street. The leisure and cultural functions are organised around a courtyard with a wide major entrance fronting the Stanley New Street and facing the main bus terminus across the road to attract pedestrians and tourists. The communal function such as the community hall is arranged to face the Stanley Market Road. In this way, the major perimeter of the building reflects the nature of local street activities and small urban spaces.

The building has a staggered design, which not only reduces the building mass but also enhances a sense of integration with the environment. The building is composed of a series of small geometrical elements, which directly relate to the functional requirements of the building and at the



same time echo with the fragmented nature of the local environment. The idea of open terraces is used throughout the design for the public to participate in different activities on various levels. The use of vertical planes further reinforces the concept of horizontal terraces to create layering of spaces to harmonise with the street market tradition of Stanley.

A central courtyard is located within the building to form a rare piece of urban space in the local area. With a festive atmosphere, it becomes the centre for gathering of people, in harmony with other functions and activities of the building. The transparency of the facades along the courtyard also encourages the public to use the facilities offered by the building. The glass floor of the courtyard allows natural light to filter into the community hall below, and is equipped with a motorized louvre system to control the amount of daylight penetration throughout the year.

The design mediated between the ad hoc spaces of existing urban fabric and the language of modern architecture. The structure's contemporary expression projects transparency that appeases rather than provokes. As a reinterpretation of the cubist tradition, its physical form is perpetually destabilized by the insertion of interlocking frames and panels, which challenge the established matrix. Alternately framed and unframed, the boundary between the inside and outside is ambiguous, creating a new visual context for approaching the space and the architecture.

The choice of fair-faced concrete, shaped into dimpled slabs by simple plywood formwork, conveys an admiration for nature and the material's unfinished state. Chinese bricks were custom-made to a specific form to achieve the desired geometric proportions. The addition of a glass curtain further expresses honestly the anatomy of construction. The underlying concept demonstrates a desire to retrieve a sense of space from the congested environment and to provide an architectural space that is contemplative.



赤柱市政大樓繞著陡峭的赤柱新街而建，主要分為兩組功能設施。一為康樂及文化設施，當中包括室內運動場、乒乓球室、兒童遊樂室、圖書館、跳舞室、多用途活動室、辦公室和會議室等，這些設施均圍繞着庭院而建。庭院入口面向赤柱新街及公共巴士總站，其寬闊的入口正好吸引行人及遊客進入。另一組功能設施則為面向赤柱市場路的社區中心。透過合適的功能設施分佈，將赤柱市政大樓與該區的傳統特色緊緊地相連起來。

大樓採用層疊式設計以縮減建築的體積量，從而加強建築物與周圍環境的融合。建築的整體設計由多個細小的幾何空間元素組合而成，既符合各功能設施的要求，亦可和諧地配合周圍地區的環境。陽台的概念亦廣泛地應用於建築設計中，讓公眾能隨意地參予各式各樣的活動。建築大樓亦運用多個垂直面以加強及襯托水平式的陽台概念，從而產生層疊的建築空間，而抽象的空間卻與傳統的赤柱街市互相輝映。

大樓面向赤柱新街的一方設有一個庭院，此庭院的設計在赤柱是罕有的都市空間，它將成為公眾集結會友的地方。圍繞着庭院的建築外牆大量採用玻璃以增加透明度，鼓勵公眾多使用大樓的設施。此外，此庭院亦可作為從巴士總站通往赤柱市場路的通道。

為配合保留的茂盛樹木，設計亦將大樹成為建築中的一部份，而建築外牆亦相應地採用淺色材料作為綠樹的背景。淺色的材料把大樹所投下的光影及其多變的色彩顯現得更為突出。建築設計亦採用了清磚及清水混凝土，以帶出大自然的氣色，令建築物猶如置於山坡之上。這種自然的風格正好反映出赤柱的特色，而採用淺色素材及透明玻璃亦表現出現代建築中的簡潔特色。



The Hong Kong Polytechnic University - Hong Kong Community College (Hung Hom Bay) 香港理工大學 - 香港專上學院 (紅磡灣校園)

Location	Hung Lai Road & Hung Lok Road, NKIL 11163, Hung Hom, HK	Client	The Hong Kong Polytechnic University, Hong Kong Community College (Hung Hom Bay)
Completion Date	2007	Project Manager	The Hong Kong Polytechnic University
Green Building Rating	BEAM (Provisional Gold Standard and targeting for Platinum Standard) Good IAQ standard from EPD	Architect	AD+RG Architecture Design and Research Group Ltd. (Applicant)
		Collaborating Architects	AGC Design Ltd. Wang Weijen Architecture Meinhardt (C&S) Ltd. Parsons Brinckerhoff (Asia) Ltd. Davis Langdon & Seah HK Ltd. Team 73 HK Ltd.
		Civil & Structural Engineer	Department of Civil & Structural Engineering, The Hong Kong Polytechnic University
		Building Services Engineer	
		Quantity Surveyor	
		Landscape Architect	
		Research Investigator / Sustainable Design / Environmental Wind / Specialist Consultant	
		Facility Manager	The Hong Kong Polytechnic University
		Management Company	Campus Facilities Management Company Limited
		Main Contractor	Chevalier (Construction) Company Ltd.

The project is an 18-storey institutional building for The Hong Kong Polytechnic University - Hong Kong Community College (Hung Hom Bay Campus) for the pre-tertiary education programme. The college is located opposite to the Student Hostels of The Hong Kong Polytechnic University at junction of Hung Lai Road and Hung Lok Road in Hung Hom. The project aims at providing a dynamic and interactive space for education while incorporating the sustainable design considerations.

The conspicuous form could be easily perceived from the vicinity and along the footbridge to the nearby Student Hostels adjacent to the Royal Peninsula Complex. The form is composed of various teaching blocks stacked spirally in the air, which are separated with sky gardens at different levels. The various blocks have different degrees of opacity. The degree of opacity is made possible by varying the density of ceramic painted with dots patterned glass and the solid volumes which are represented by the traditional Polytechnic University crimson brown tiles. The opacity controls the degrees of direct sunlight casting into the interior of the building with different degrees of intensity.

The continuous spiral-chain of communal sky gardens could be perceived along the tower block periphery extending from the lower-ground floor to the upper-most floors. The gardens enrich the building elevation with a natural, pleasant environment and help to create a special open learning and vegetated communal environment.

A flexible modular system of communal spaces capable for future transformation has been developed to facilitate the need of adaptability and flexibility with public spaces provided with greenery for interaction. The modular system also enables the building to be the first institutional highrise building in Hong Kong that adopts full pre-cast construction system. The system minimizes wastes during the construction period and additional finishes required for the interior decoration.



CONNECTED COMMUNAL PUBLIC AREAS

The interface of the low block and high block is spatially enhanced with a top sky-lighted atrium. It serves as a focal point to link up various facilities together and orientates the internal space and circulation.

The mass teaching facilities are arranged on the lower floors not only because of larger floor plate areas there but because more interaction and communication could be enhanced among those mass teaching facilities such as lecture theatres, indoor sports hall and special classrooms. They are shared and connected effectively with the escalators and lifts system. The provision of escalators up to the eighth floor, which covers the main classroom floors, provides smooth and almost unaware vertical circulation within the building.

Main staircases are always provided next to the escalators and also link up all sky gardens together. They help to bring the outdoor atmosphere to the interiors. The wind, sunlight, greenery could integrate harmoniously with the internal spaces. The ambience is led to the interiors of the building not only visually but also spiritually. The boundaries of indoor and outdoor are merged so that users could feel very natural while entering and leaving the spaces.



SKY GARDENS

Sky gardens provide one of the major design features. From the appearance of the building, a spiral-chain of sky gardens could be perceived and the conspicuous feature is distinctive from the surroundings.

The sky gardens are conducive to students' discussions on projects and casual gathering for socializing. With the cutting-edge technology equipped, they could use whatever means of information technology and communicate with other people, browse the web and get access worldwide getting communication without any physical boundaries. Among the intense urban fabric, the sky gardens provide good locations for viewing towards Hung Hom district and the relatively open Hung Hom Station and Coliseum areas.

The choice of bamboo at the sky gardens leaning along the glazing wall suffices to let sunlight shine into the interiors and some large trees are also planted to form a living and pleasant atmosphere. Large amount of edge planting, podium and wall planting well demonstrate the vertical greening effect and constitute a fascinating landscape. The building is served by lifts opening on alternate floors, which are well connected by open staircases and escalators designed to integrate with the sky gardens along the height of the building.

By using sustainable architecture design and energy-efficient building system, the Hong Kong Polytechnic University - Hong Kong Community College (Hung Hom Bay Campus) provides substantial spaces for the communication of teachers and students and fosters a learning environment conducive to both academic and eco-awareness learning.

香港理工大學 - 香港專上學院是一所為香港提供專上教育的學院。大樓高18層，位處於紅磡區紅荔道及紅樂道之交界，面對香港理工大學學生宿舍。學院的設計重點為除了提供有活力及互動的學習空間，並加入可持續發展的元素。

行人可於鄰近的理工大學宿舍及半島豪庭的行人天橋輕易地望見這幢顯著的建築。此學院的建築外形是由多個層遞而有序的立體及多個處於各層的空中花園互扣串聯而組成的。其立體透過運用點印玻璃及傳統理工大學的緋紅磚兩種不同的材質，不單只營造出不同的透明度，同時有助控制陽光透入室內的強度。而連續層遞串聯的空中花園不單為整座大樓形造了一個自然舒適的環境，並重新演繹了室外學習及公共空間的理解。

此外，我們設計了靈活多變的模組式結構組合系統，以便應付日後的改動及提供綠化的公共空間。這系統為本港首幢使用全預制組件的高層公共教育建築。

串聯的公共空間

位於高座與低座間的中庭成為了整幢建築的接合點，為低座的整體佈局及使用者串聯。

為了配合設施面積的實際需要及行人流通空間的因素，演講廳、室內運場及特別課室等的較大型教育設施主要位置於低層部分。此設計更鼓勵了學生之間的互動和溝通。高效率的扶手電梯及升降機系統成功地將以上相關的各項設施串聯起來。使用者可從地下乘扶手電梯到達至第八層的主要教學樓層，而行人樓梯可讓使用者前往整座大樓的不同樓層。

主樓梯建設於升降機出口旁，並連接室內及空中花園，引領戶外的感覺進入室內空間。自然風、日光及綠化環境透過視覺，讓使用者在精神上和實體上和諧地融入室內，使室內外空間混然為一，使他們在不經意間穿梭於不同的空間。

空中花園

空中花園是本建築的一大特色。層遞串聯的空中花園使學院在鄰近建築物中突圍而出。

這些串聯的空中花園提供一個輕鬆和休閒的空間，讓老師與學生在高層位置走出室內，或進行戶外教學。它更鼓勵學生利用公共空間作為討論及交際的地方。另一方面，學生可透過互聯網，無礙地理的阻隔與世界各地

互通訊息。在高密度的城市環境當中，空中花園提供了一處遠眺景色的優良位置。

空中花園上種植的竹樹既可提供綠化，又可讓陽光引進室內。大樹的運用亦營造自然和諧的氣氛。大量的綠化體現了垂直綠化效果的同時，也帶出美妙而震撼的感覺。

透過運用可持續發展的建築設計及符合能源效益的機電系統而建成的香港專上學院(紅磡灣校園)，不單提供充足的空間進行交流，更讓學生於富環保意識及健康的空間學習。





Beijing 2008 Olympic Games – National Aquatics Center (Water Cube) 北京2008年奧運會 - 國家游泳中心(水立方)

Location	Beijing, China	Client/ Developer	Beijing State-owned Assets Management Co Ltd
Completion Date	2008	Project Manager	Three Gorges Corporation
Green Building Rating	SPeAR® Assessment	Architect	PTW (Australia) and CSCES + Design
		Civil & Structural Engineer	Arup (Australia) Arup (Hong Kong) (Applicant)
		Building Services Engineer	Arup (Australia) Arup (Hong Kong)
		Sustainable Design Specialist	Arup (Australia)
		Main Contractor	China State Construction Engineering Corporation (CSCEC)

In setting the criteria for their approach to the 2008 Olympics, China identified three fundamental attributes: a 'people's' games, a 'high-tech' games and a 'green' games. The National Aquatics Center, popularly known as the 'Water Cube', is arguably the building that best embodies all three.

This crystal palace, with a size of 177m long by 177m wide by 30m high and occupying a site area of 80,000 square metres, is the main aquatics venue of this year's Olympic Games. It comprises the main swimming and diving arena, training pool, leisure pool and restaurant, etc.

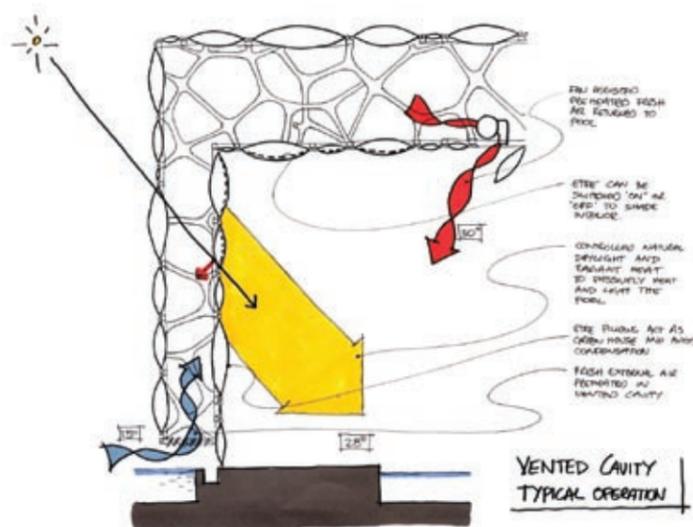
Designed to act as a giant greenhouse, the building appears to be built from a collection of oversized blue bubbles. These come together in the form of a blue, airy, cuboid that perfectly complements the red, muscular form of the National Stadium, located directly opposite the 'Water Cube' on Beijing's Olympic Green.

The organic structure of "Water Cube", which can be seen through the semi-transparent skin of the facade, is based upon the way soap bubbles join together to fill space. What is more, the translucence of the revolutionary facade means that high levels of natural daylight flood into the blue-clad building, harnessing the sun's energy to heat both the building and pool water.

The recyclable bubble cladding is key to the Water Cube's aesthetic and sustainability aspirations. The green house effect by the ETFE (ethylene tetra fluoro ethylene) cladding will reduce energy consumption of the leisure pool hall by at least 30 per cent. Meanwhile, it has positive effect on the acoustics of the venue: sound passes through the material, rather than being reflected.

ETFE is a better insulator than glass when shaped like inflated pillows. Further, ETFE is far lighter. It weighs just

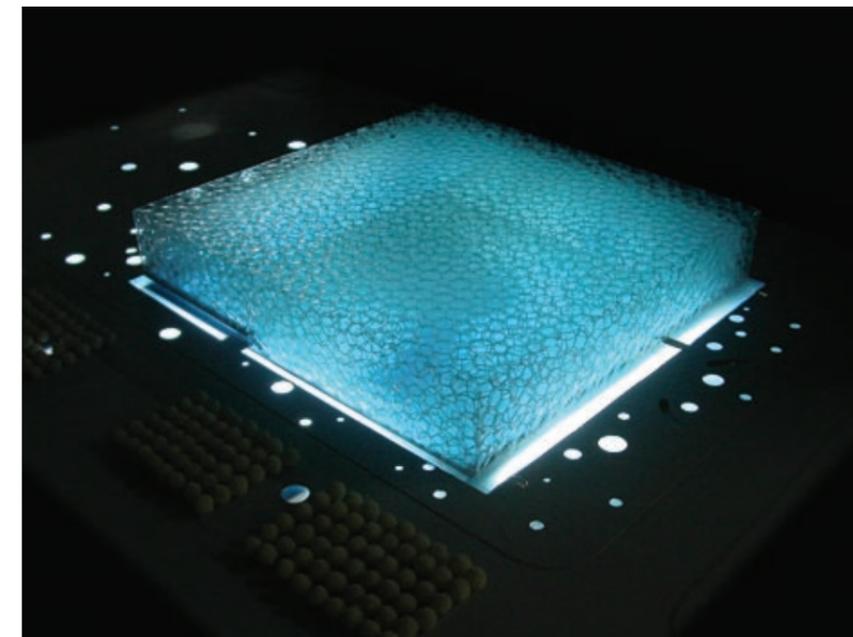
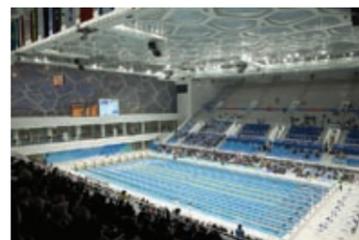




one per cent of an equivalent glass panel, making the entire structure of the 'Water Cube' incredibly light – just 100 kilograms per square metre, reducing the structural load. It is also good resistance against fire and intensive heat as well as self-cleansing.

To finalise the Water Cube's unique structure, a new computer technique was created to establish the size of all the individual elements of the building: too flimsy and it would lack the necessary robustness, too heavy and it would be in danger of collapse. The computer techniques showed the extent to which every element in the Water Cube's structure could bend and absorb energy. The bubble-like structure also enhances flexibility of the building. Such thorough testing also alleviated concern about how the roof would cope with the very low temperature of Beijing's winters and the weight of heavy snow storms. Testing revealed that the ETFE roof could withstand 17 times the weight of a normal Beijing snow load.

Water in Northern China is a valuable commodity and Beijing currently lacks a reliable water resource to meet existing and projected demand requirements. For the sake of this, a rainwater recycling system was designed such that 80% of the water harvested from the roof catchment areas, pool backwash systems and overland flows could be reused.



中國為2008年北京奧運會訂立了三個理念：「人文奧運、科技奧運、綠色奧運」。國家游泳中心，俗稱「水立方」，就是體現這三個理念的最佳例證。

這座佔地8萬平方米，長177米，闊177米，高30米的水晶宮殿，是今屆奧運會新建立的游泳主場館，內裡包括比賽用的主池、練習池、嬉水池及餐廳等。

以巨型溫室為設計藍本，整座建築看來就像千百個藍色大氣泡所組成。這個位處北京奧林匹克公園上的水藍色、感覺輕盈的立方體正好與毗鄰的鮮紅色、粗線條的國家體育場互相輝映。

「水立方」的外牆是多層半透明的氣泡薄膜，其型態是源自緊貼的肥皂泡。這革命性的外牆設計能讓自然光照進這座藍色建築，並能收集太陽的熱能為場館和泳池保溫。

能循環再用的氣泡薄膜令「水立方」既美觀又符合可持續性的要求。ETFE(聚四氟乙烯)薄膜產生的溫室效果使嬉水池的能源消耗最少減低百分之三十。此外，由於聲音能穿越該物料而不會產生回音，它對會場的聲效亦產生正面的作用。

ETFE氣泡充氣後的隔熱能力比玻璃好。此外，它亦比玻璃輕。它的重量只是玻璃的百分之一，使整座「水立方」更輕盈 - 每平方米只重100公斤。它具有良好的防火和耐熱功能，並擁有自我清洗的特性。

「水立方」的結構亦經過詳細設計，過於單薄便失去所需的強度，相反，過於沉重又會容易倒塌。為造出「水立方」的獨特結構，設計師利用了最新的電腦技術計算各支架部件最適當的大小。該電腦技術計算出各部件所能承受的負荷。氣泡狀的結構亦加強了建築的柔韌度。詳細的電腦測試亦解決了對屋頂結構能否應付北京嚴冬時低溫和暴雪帶來的負荷的疑慮。測試結果顯示用聚四氟乙烯建造的屋頂能承受的重量為北京平常降雪量的17倍。

水是華北珍貴的資源，而北京正缺乏可靠的水源去應付目前和將來的需求。為此，「水立方」配備了雨水循環系統，從屋頂的集水區、池水循環系統和地面收集雨水及中水，當中有八成經處理後可循環再用。



Nokia Beijing BDA Campus

諾基亞北京經濟技術開發區中國園

Location	Beijing, China	Client/ Developer	Nokia (CHINA) Investment Co., Ltd.
Completion Date	2008	Project Manager	M Moser Associates
Green Building Rating	Leadership in Energy and Environmental Design (LEED™) Gold assessment tool is employed to evaluate the overall green building performance including building design, internal decoration and construction methodology	Architect	Arup (Beijing)
		Civil & Structural Engineer	Arup (Beijing)
		Building Services Engineer	Arup (Beijing)
		Landscape Architect	Kenneth Ng & Associates Ltd.
		Sustainable Design Specialist	Arup (Hong Kong) (Applicant)
		Leed™ Specialist	Arup (Shanghai)
		Main Contractor	Beijing Construction Engineering Group

The Beijing Nokia China Campus, located in the BDA, serves as Nokia China's headquarters and also as an R&D base. It is a six-storey building with two basement levels and contains office and R&D facilities, energy centre, bicycle shed, guard house, link-bridge to existing administration building and a covered walkway. The Office and R&D Building has a total gross floor area (GFA) of 71,417 sq m for accommodating 2,300 employees. Master planning and design works commenced in September 2005, construction started in September 2006 and the project was completed in March 2008.

For indoor environment, the Campus achieved higher IEQ Standard with 30 per cent more Fresh Air Supply Rate. In addition, more than 77 per cent of internal spaces are benefited by natural lighting. Moreover, measurement and verification plan has been developed with the Client to verify the staff's satisfaction to the new environment for every three months. For outdoor environment, the development achieves 43% of greening ratio, while gravel and grasscrete as roofing materials are adopted to reduce heat island effect.

In terms of energy and water, the remarkable construction of the campus includes features such as a double-layer glass curtain wall, numerous water conservation mechanisms such as grey water recycling system, sophisticated methods to reduce light pollution, improved air ventilation, and more than 30 design techniques which have all in all resulted in a building that reduces water use by up to 37 per cent and energy consumption by 21 per cent.





For materials, various material usage strategies had been applied: more than 27 per cent of construction materials are from regional supply to saving transportation energy, at least 12 per cent materials with recycled content, and additional 3.5 per cent materials with rapidly renewable content.

For waste management and pollution control, the project team set up a series of construction environment management plan, construction IAQ monitoring and enhanced commissioning procedures. Also up to 78 per cent construction wastes are recycled or diverted from landfill.

Total Design Approach, including building sustainability, master planning, architectural, structural, MEP, facade, traffic, fire, lighting and acoustics, is applied. Life Cycle Cost analysis was also utilised to evaluate the impact of different design options to the operation of the building. Considerations of the analysis consisted of design measures on all architectural elements, structural size, system configurations, and operation opinion from the Client. This approach is highly recognised by the US Green Building Council (USGBC), through awarding the Campus the first Leadership in Energy and Environmental Design (LEED™) Gold certified commercial office building in China. It is also the first LEED™ certificated project among all Nokia's facilities worldwide. In addition, through design integration with Arup, Nokia launched a global strategy requiring all new facilities to be assessed by LEED™.

北京諾基亞中國園位於北京市經濟技術開發區，用作諾基亞中國區的總部和產品研發基地。整座大樓高六層，連兩層地下室，有辦公及研發設施、能源中心、單車停泊處、守衛室，也連接到現有行政大樓的天橋和有蓋行人通道。辦公及研發大樓的總樓面面積達71,417平方米，能容納2,300名員工。項目的主體策劃及設計工作於2005年9月開始，翌年9月開始興建，於2008年3月竣工。

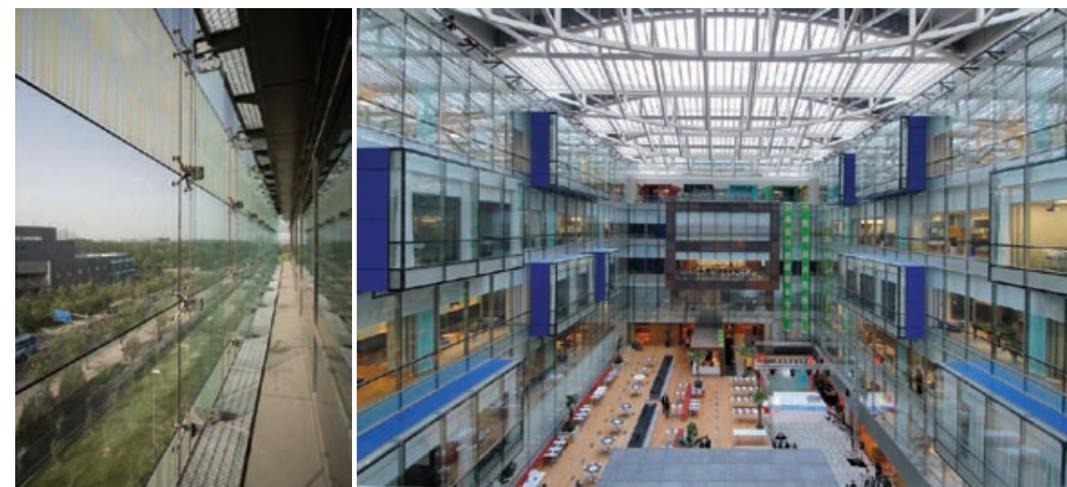
室內環境方面，因增加了30%的鮮風供應量而達到更高的室內環境質素 (IEQ) 標準。另外，77%以上的地方的日間照明是來自天然光。而且與客戶訂立了測量和核實計劃，每三個月查核員工對工作環境的滿意度。戶外環境方面，大樓能達到43%的綠化率，屋頂亦以碎石和草料鋪蓋以減少熱島效應。

至於能耗和用水方面，諾基亞園最突出的建設，包括雙層玻璃幕牆、多種節水裝置如中水回收系統等、以精密方法減少光污染，改良通風系統，以及其他30多種節能節水設計，令大樓節水達37%、節能達21%。

原料方面，也運用了多種措施，如超過27%的建築材料取自本區，以減少運輸所使用的燃油，12%以上的建築材料包含循環再用物料，另外3.5%的建築材料包含快速生長物料。

在排污管理及廢氣控制方面，項目人員已訂立了一系列的建築環境管理計劃，加強監管建築室內空氣質素 (IAQ)。另外78%的建築廢料會被循環再用或分流到堆田區以外的地方棄置。

項目利用整合手法，綜合考慮樓宇各項設計方案如可持續性、總體策劃、建築、結構、機電、幕牆、交通、防火、照明及聲學等。另外亦使用了生命週期成本分析，評估建築、結構、系統配置及樓宇運作等各方面對樓宇運作的影響。這個整合設計手法得到美國綠色建築協會 (USGBC) 的高度讚賞，北京諾基亞中國園更是中國境內首座商業樓宇獲該協會頒發新用商業建築類「綠色大樓」(LEED™) 金獎，也是諾基亞全球首個獲此殊榮的設施。而諾基亞亦透過與奧雅納 (Arup) 的合作，推出了一項全球性策略，要求該公司未來所有新設施都要進行 LEED™ 評估。





Hong Kong Science Park Phase 2 香港科學園二期

Location	Hong Kong Science Park, Shatin, New Territories, HK	Client/ Developer	Hong Kong Science and Technology Parks Corporation (Applicant)
Completion Date	Area A1 - 2007 Area A2 - 2008 Area B - 2007 Area C - 2007	Project Manager	Maunsell Consultants Asia Ltd.
		Architect	Leigh & Orange Ltd.
		Civil & Structural Engineer	Meinhardt (C&S) Ltd.
		Building Services Engineer	Meinhardt (M&E) Ltd.
		Quantity Surveyor	Davis Langdon & Seah Hong Kong Limited
		Landscape Architect	Urbis Limited
		Environmental Consultant	ERM-Hong Kong Limited
		Facility Manager	Jones Lang LaSalle Facility Management Services Ltd. (up to 30 April 2008) ISS EastPoint Property Management Limited (from 1 May 2008 onward)
		Other Team Members	Gensler (Planning Design Consultant to Architect) Shen Milsom & Wilke Ltd. (IT&T) Light Directions Ltd. (Special Lighting) Meinhardt Façade Technology International Offices (Façade Design) MVA Hong Kong Ltd. (Traffic Consultant) LCE Architects Ltd. (Laboratory Design)
		Main Contractor	Area A1 - Hsin Chong Aster Joint Venture Area B - Yau Lee Construction Co. Ltd. Area A2 & Area C - China Resources Construction Co. Ltd.

Contribution to green and sustainability is high on the agenda of the Corporation.

Environment

The master planning has created an extremely high ratio of open space to built space. Features such as central lake, auditorium and extensive landscaping allow the occupants with great freedom and space for interaction.

With all car parking located underground, greater freedom of connectivity between buildings is created and opportunity enhanced for the provision of more extensive soft and hard landscaping, sitting areas and covered walkways to promote a park-like atmosphere.

Phase 2 uses a zone approach with clear divisions between the Campus, Core and Corporate Buildings linked by a vehicular ring road which connects to Phase 1 and Phase 3. Orthogonal planning together with the careful placement and orientation of the individual buildings has encouraged the development of wide and open "view corridors" that enhance the development as a whole, allow light and air in eliminating any "wall effect" and capitalize on its waterfront location.

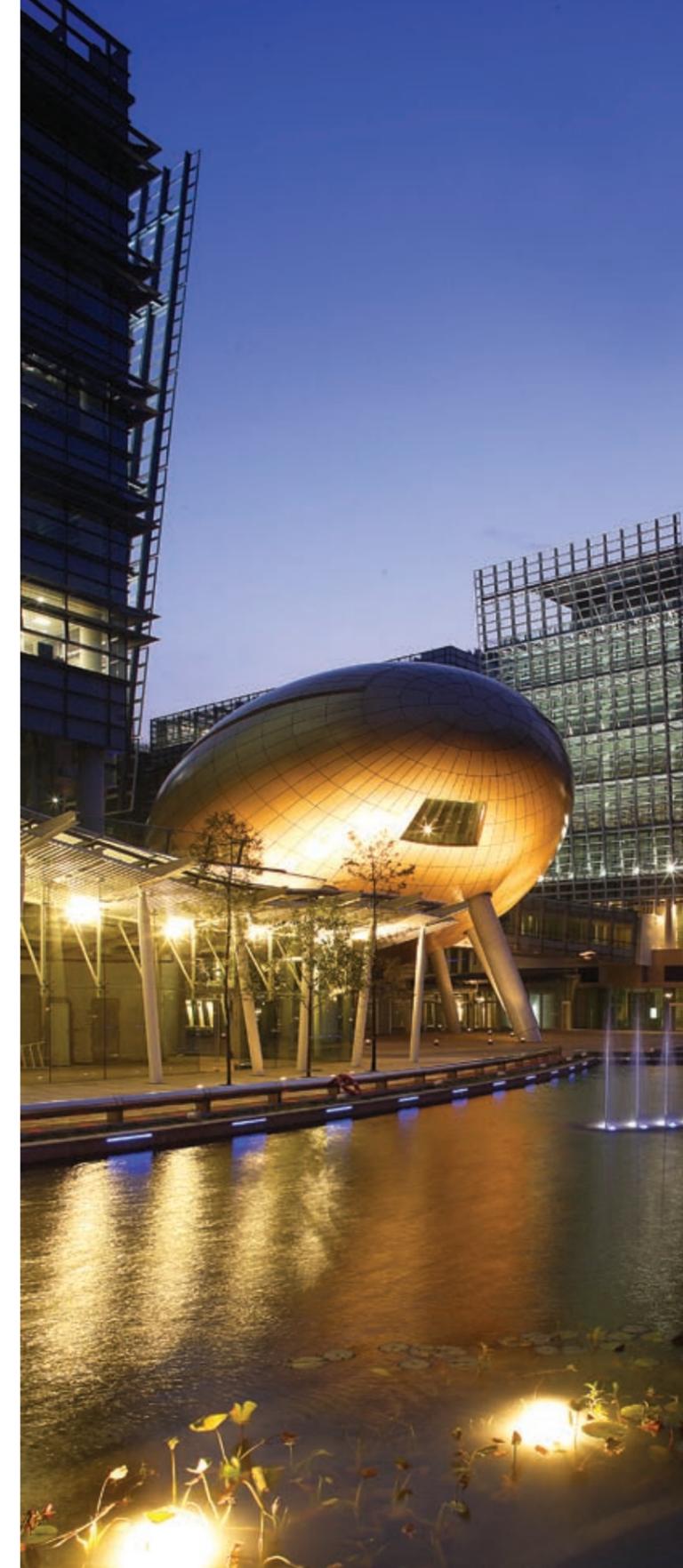
Through these planning concepts, the MLP footprint embodies the concept of meeting the needs of the present without compromising the opportunities of the future generations thus facilitating the long term cultural, socio-economic and environmental vitality, quality of life and health of the community.

Sustainable Design

Adaptability to changes is a pre-requisite for the Science Park. Modular concept has been adopted. Interstitial floors are introduced in the laboratories to enable grouping together of services, ease of maintenance works and services upgrades. They also free up usable floor space below. By using the universal concept in space planning, sustainable flexibility to allow easy spatial re-organisation with minimal wastage or loss of energy efficiency and adaptability to accommodate tenants' needs would be achieved. To make the environment visually stimulating, natural light is provided whenever possible supplemented by artificial lighting to all buildings.

Waste Minimization and Management

A campus-wide automatic refuse collection system has been used to centrally collect refuse / debris for Phases 1 and 2. Different shafts are used to separate general waste from paper waste. Nuisance from odour, waste disposal and movements across the Park can be kept to a minimum.



Energy Saving and Conservation

The BS systems are controlled and monitored by intelligent building management systems. Energy saving provisions such as automatic occupancy detection system, energy saving lamp/electronic ballast, VAV zoning and heat recovery facilities in the air-conditioning systems, etc. have been widely adopted.

The two energy towers house the central district air-conditioning equipments for Phase 2. By providing a centralised system, capital, management and maintenance costs are reduced as less standby central equipment is required and items of equipment are clustered for ease of maintenance and operation. Low ozone depletion potential refrigerant (R407C) is used for both the chillers and heat pumps. Some rejected heat is recovered via heat pumps to provide low temperature hot water for space heating and reducing the heat discharge to atmosphere. To provide small air conditioning part load capabilities without scarifying the energy efficiency during part load, the main plant is divided into a number of small components which can be individually operated or in combination.

Furthermore, the building envelope is a combination of concrete structure, low heat transmission curtain wall, sunshades, special metal roofing and skylight to achieve an OTTV of 17.9 - 23 W/m² which is significantly lower than the statutory permitted value.



Water Conservation and Grey Water Recycling

Electronically controlled water taps for hand washing and toilet flushing have been used. Rain sensors have been installed in landscape areas to control the operation and consumption of irrigation water. Condensation collected from air-conditioning system and rainwater is recycled for flushing.

Indoor Air Quality

Indoor humidity, dust and odour are also under control with the provision of chemical filters, UV disinfection, CO₂ sensors and humidifiers in the HVAC system.

Environmental-Friendly Building Materials

The Park has built in as many low-environmental impact and resource efficient materials as possible to minimize potential impact on the environment. Semi-precast concrete slabs, reusable formwork systems, permeable surface materials and certified sustainable timber have been widely used. Commonality of materials and systems has been introduced to speed up procurement and reduce the overall quantity of spare parts required.

Reliability and Maintainability

Underground service tunnels are provided in the Park for running the major water pipes, electrical cables, busducts and the refuse conveyance pipes. Apart from minimizing the disruption of operation to all tenants during maintenance, it enhances the efficiency of daily operation and management. Further, it helps the vibration-control performances of the Phase 2 buildings.



為環保及可持續性發展作出貢獻乃本公司一大前題。

環境

在整體規劃之下，科學園的開放空間於總建築面積的比率極高，還融入中央人工湖、演講廳及廣闊的園景等建築特色，讓入駐租戶可享有更大自由及空間互相交流。

由於所有停車場設於地下，令各幢大樓間的連接空間更大，以便提供更廣闊的園景軟件及硬件、休憩區及有蓋行人道，建立一個園林式環境。

科學園第二期的規劃採取區域形式，校園區、核心大樓及企業大樓之間有清晰的區域劃分，由一條連接第一期及第三期的環迴道路互相連繫。矩形規劃配合個別大樓的精心佈局及座向，發展出廣闊及開揚的景觀走廊，加強整體發展，讓光線及空氣流通以減低「屏風效應」的機會，以及讓其海濱地段得以加以善用。

透過上述種種規劃概念，總綱發展藍圖既展現符合現代需要的概念，卻又不需為日後發展契機而作出妥協，因此達到促進長遠文化、社會經濟及環境保護、提高生活質素及社會健康的目標。

設計持久耐變

能適應任何轉變為科學園設計的先決條件，因此本園一直採用模塊概念。實驗室大樓採用空隙樓層設計，有助匯集所有服務，方便進行保養工程及服務提升，此舉亦騰空下層的可用樓層空間。透過應用普遍的空間規劃概念，可持續彈性令空間易於重組之餘，同時令廢物數量及能源效益的損耗減至最低，以及照顧到租戶的需要。至於園內環境的視覺效果，所有建築物盡量採用天然光線，再輔以人工照明系統。

盡量減少及管理廢料

科學園第一期及第二期廣泛設置了自動化中央廢物收集系統，用作集中收集垃圾。使用不同通風井以分隔一般垃圾及廢紙，有效將臭味、垃圾棄置及在園內運送垃圾所造成的滋擾減至最低。



節約能源

在科學園，建築服務系統由智能建築管理系統控制及監察，亦廣泛採用節約能源的設備，例如自動化空間租用偵察系統、節能燈/電子鎮流器、空調系統加入風量調節空氣處理功能及熱能循環再用裝置等等。

科學園第二期的兩座能源大樓裝置了中央區域空調設備。藉著中央系統，可減少備用中央設備，器材裝置亦可分類以便保養及運作，有效降低資本、管理及保養的成本。冰水機及熱泵使用了低臭氧消耗潛能值製冷劑 (R407C)。空調系統排放的部份餘熱透過熱泵回收，以提供低溫熱水作空間供暖用途及減少向四周散熱。為提供小型空調部分負荷能力而負荷期間又不損耗能源效益，主機分為多個小部分，可獨立或以組合形式運作。

此外，建築物外殼結合了石屎結構、低傳熱幕牆、遮光罩、特別金屬屋頂及天窗而建，使熱傳導總值減至每平方米17.9 - 23W，此遠遠低於法定的限制值。

節約用水及污水循環再用

園內安裝電子控制的水龍頭供洗手及廁所沖水用途，園內範圍亦裝置了雨量感應器，以便控制灌溉用水。此外，空調系統的排出水及雨水均會收集並循環再用作沖廁水之用。

室內空氣質素

大樓內的HVAC通風空調系統加入化學過濾器、紫外線消毒、二氧化碳感應器及濕度調節器能有效控制室內濕度、塵埃及臭味。

環保建築物料

科學園一向盡量採用對環境損害性低及具資源效益的物料興建，以減低對環境可能造成的影響，其中包括大量使用半預製石屎平板、循環再用的板模系統、可滲透的表層物料及擁有認證的承受力強的木材。科學園亦特意選用同類物料及系統，藉此加快採購程序及減少所需零件的整體數量。

可靠度及保養能力

科學園內建有地下服務隧道供主要水管、電纜、密封式匯流排及垃圾運送槽，此設計讓保養工程進行時對所有租戶的運作影響減至最低之餘，同時提高日常運作及管理效益，更有助於第二期各大樓的減震效能。





Ma Wan Park - Nature Garden 馬灣大自然公園

Location: Ma Wan Park (Phase 1), Ma Wan, HK
Completion Date: 2007

Client/ Developer	Sun Hung Kai Real Estate Agency Ltd. (Applicant)
Project Manager	Sun Hung Kai Real Estate Agency Ltd.
Architect	Simon Kwan & Associates Ltd.
Civil & Structural Engineer	Maunsell Consultants Asia Ltd.
Building Services Engineer	Sun Hung Kai Architects and Engineers Ltd.
Quantity Surveyor	Davis Langdon & Seah / Sanfield (Management) Ltd.
Landscape Architect	Sun Hung Kai Architects and Engineers Ltd.
Town Planner	MasterPlan Ltd.
Research Investigator / Sustainable Design / Environmental/ Wind / Specialist Consultant	Renewable Energy Research Group (EREG), The Hong Kong Polytechnic University
Facility Manager	Ma Wan Park Management Services Office
Management Company	Ma Wan Park Limited
Other Team Members	Hong Kong Professional Training Alliance (Liberal Learning Centre) (Operation Consultant) MVA (Traffic Consultant) CH2M HILL Hong Kong Ltd. (Environmental Consultant) The Team Consultant (Conservation Consultant)
Main Contractor	Chun Fai Construction Company Ltd.

Ma Wan Park is an innovative new concept in Hong Kong by Sun Hung Kai Properties, with 18 hectares full of greenery and natural landscaping. A Nature Garden is one of the attractions in the first phase, to be followed by exhibits such as Noah's Ark and a Solar Tower. The second phase Ma Wan Old Village will be another tourist attraction with its culinary delights and cultural elements.

Nature Garden spans 5.6 hectares with elements on the themes of nature, learning, arts and love in three Rainbow Wall, Sweet Garden, Golden Mean Plaza, Windmill Station, Liberal Learning Centre, Hilltop Lookout and Heritage Centre. It was planned as a natural environment for interactive learning where it allows visitors to see nature close up. Renewable energy systems promote the conservation of resources and sustainable development.

(1) Renewable Energy

The Garden's Windmill Station developed with the Hong Kong Polytechnic University demonstrates renewable energy with solar, wind and hybrid power systems, geothermal coupling, biomass energy, bio-fuel technology and hydroelectric power. The systems supply some on the Park's power requirements; cutting down on pollution from conventional power generation. They also collect research data for education and promote conservation.

(2) Heritage Conservation

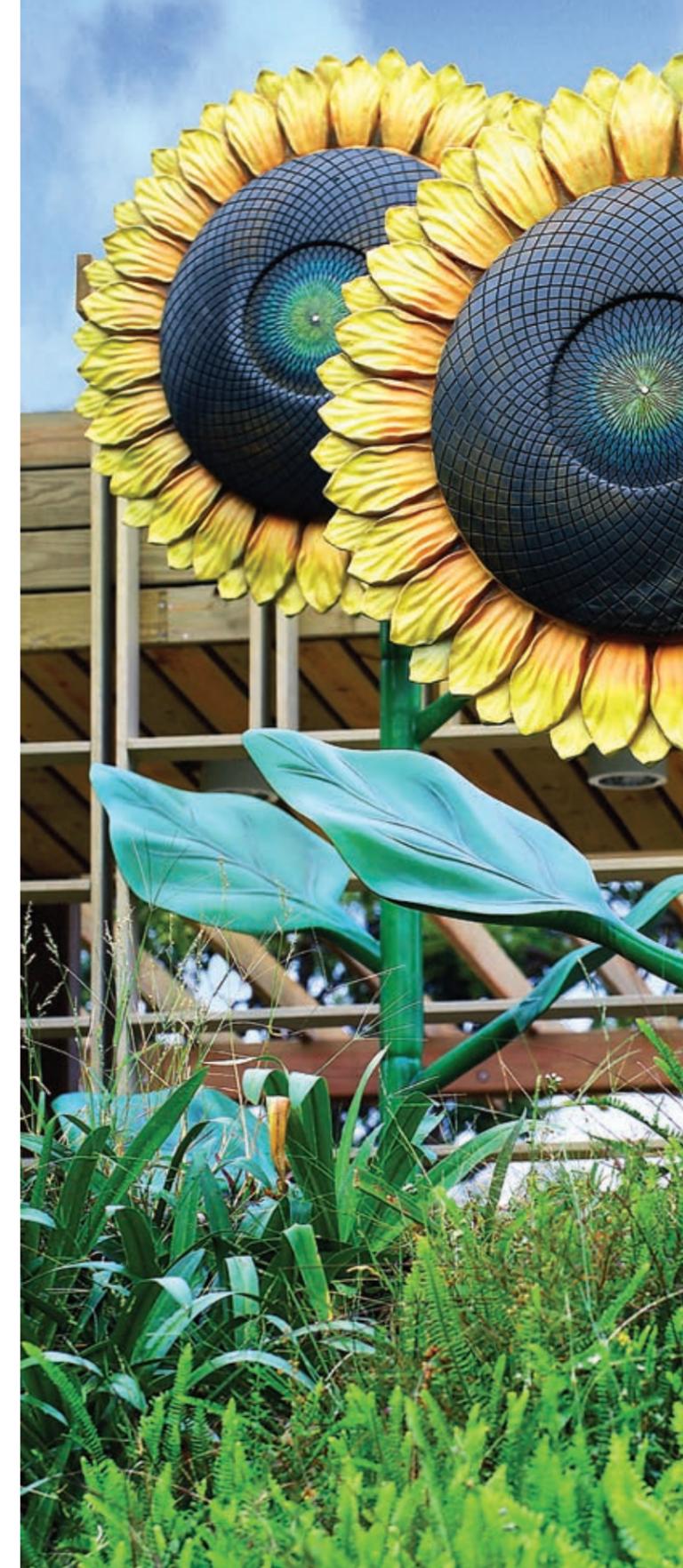
A Heritage Centre built in a restored village school teaches visitors about cultural history and the importance of heritage conservation. Educational displays include a Tang dynasty lime kiln, Qing dynasty brick kiln and replicas of late-neolithic human remains found on Ma Wan.

(3) Relationship with Nature

An extensive wooden boardwalk was installed with minimal disturbance to the natural topography, vegetation and ecosystem to demonstrate the possibilities for green initiatives in building design.

(4) Leisure, Love and Education

The Nature Garden is an oasis of beauty and harmony and a living classroom for all ages in a natural outdoor setting incorporating learning with experts providing education on personal development, society and culture and science, technology and the environment. This provides children with a natural environment to enjoy all-round learning through a series of interactive programmes.



馬灣公園是香港前所未有的嶄新計劃，佔地18公頃，綠蔭處處，流水淙淙。新鴻基地產運用嶄新意念興建公園，其中大自然公園為首階段發展項目之一，其他設施包括挪亞方舟及太陽館，而位於馬灣舊村的第二期發展，將注入多姿多采的飲食、文化及旅遊新元素，發展為島上極具特色的旅遊新景點。

結合自然、教育、藝術和愛為主題的大自然公園佔地5.6公頃，主要設施包括彩虹牆、意中園、金律廣場、再生能源基地、通識學園、鳥望台及古蹟館等。大自然公園的整體規劃和設施以天然教室為建設意念，透過自然景點及歷奇學習園地，讓遊人近距離欣賞和發掘大自然的奧妙，並提供寓學習於遊樂的活動課程，締造融合大自然的戶外學習園地，更開發多套再生能源系統推廣環保，向公眾灌輸珍惜資源和可持續發展的環保訊息。

(1) 開發再生能源系統

馬灣公園與香港理工大學合作，在公園開發多套可再生能源系統，包括太陽能、風能、風光混能、地源熱泵、生物質能、生化柴油和水電系統，供應公園內部照明、電腦等設施，減少使用傳統化石燃料之餘，同時可收集研究數據及加強環保教育，有效地向市民及下一代灌輸珍惜資源和愛護地球的訊息。

(2) 悉心保育古蹟

公園內一間鄉村小學獲改建成為古蹟館，既活化原址舊有建築物，亦悉心保存在島上發掘的史前人骨和文物資料，更把馬灣島上極具歷史價值的唐代灰窰和清代磚窰加以保留和修葺，與新石器時代晚期的馬灣人骨仿製復原像收藏於古蹟館，讓下一代從古蹟中學習。

(3) 與大自然共融

當遊人穿梭大自然公園內享受樹林浴的同時，不難察覺那些升高了的木棧道設計是為了刻意保護林內的植物和生態，這或許可啟發日後更多與大自然共融的設計概念。

(4) 大自然戶外教室

大自然公園展現了和諧的美與善，不僅是香港的旅遊景點，更是一個適合任何年齡人士的天然教室。既有地理優勢及優質設施，馬灣公園更是不遺餘力地推廣通識教育，故園內特設兒童活動啟導專家，圍繞「自我與個人成長」，「社會與文化」與「科學、科技與環境」等學習範疇，為孩子設計以大自然為課室、寓學習於遊樂的活動課程。





Maosi Ecological Demonstration Primary School 毛寺生態實驗小學

Location Maosi village, Xifeng City, Gansu Province, China
Completion Date 2006

Client Education Bureau of Xifeng
Architect Department of Architecture, The Chinese University of Hong Kong (Applicant)
Building Services Engineer Building Design Institute of Qingyang City
Quantity Surveyor Xifeng Audit Centre of Financial Budgeteering
Research Investigator / Sustainable Design / Environmental / Wind / Specialist Consultant Department of Architecture, The Chinese University of Hong Kong
Owners Association Maosi Village Government
Other Team Member Department of Architecture, The Xian Jiaotong University
Main Contractor Qingyang Si Litian Construction Limited

BACKGROUND

“Do you think it is possible for you to build us a ‘good’ school?”

What is a “good” village school? The poor conditions of China’s Loess Plateau region (north-west China) demand serious re-thinking. The fragile ecological conditions, coupled with having some extreme climatic conditions poses severe environmental and sustainable challenges to designers. The poor economy has restricted interventions and solutions. Villagers needing to leave their village homes to find work in the city further drain the social lineage; they leave their children behind but still hoping that they can be educated and one day make it in the society. They put their faith in their village schools. Like many donated schools that have been built in the region, a way they iconize them is as follows:

“The school is very modern with nice white tiles. We take pictures in front of them when they open. By the way, if they can also install air conditioners for us in the summer and heaters in the winter, it would be very good as otherwise it can be quite uncomfortable.”

We know for sure that something needs to be done. The project commenced in 2002. We wished to build a “demonstration” school that can showcase appropriateness and can address the environmental, social and economic dimensions of sustainability.



THE SITE

“The village head took the design team to a site that is south facing and surrounded by low hills. He told the team that it is the best site they have; and he hopes it is good enough for the school.”



The project is located in the village of Maosi, in Gansu province, 6 hours drive from Xian. The tranquil and unspoiled setting reminds one that the village and its life have always been like that for hundreds if not thousands of years. It is only very recently that the onslaught of modernity and urbanisation is beginning to intrude. The village has around 2500 villagers and 200 students. Their existing schools are either in caves or in simple single storey brick huts.

METHODOLOGY and DESIGN

“High science and low technology is a motto of the working.”

The project emphasizes a scientific and transferable methodology: condition analysis, computer simulation experiments and field construction.

Condition analysis in economy & resource for building, climate, and vernacular architecture deduce that thermal design for this region is the most effective approach towards ecological architecture, and both design and construction should follow these principles: comfortable indoor ambience, cost-effectiveness, minimum embodied energy and construction ease. The investigation is further by with thermal simulation experiments. By filtering and optimizing locally available materials and techniques, it is found that the most basic techniques of thermal mass and insulation based on earth and natural materials can be very effective; they should be strategically employed.



Follow the topography, 10 proposed classrooms are planned into 5 units at two levels for maximum exposure to daylight and natural ventilation in summer. A tree-based landscape helps to create a desirable campus ambience for children. The classroom form is derived from local traditional houses with timber structures so as to be constructed easily by villagers. Thermal mass and insulation are employed in the forms of mud-brick walls, the insulated traditional roof, double-glazed windows, etc. The semi-buried form at the north side together with the direct-gain mode of passive solar system can further upgrade the thermal performance. Daylight to the indoor space is maximised by the angled opening of windows.

MATERIALS and CONSTRUCTION

“Instead of buying and using cheaper factory made red tiles, we told the village head to go around to the homes of villagers to collect and buy un-used roof tiles to be recycled.”

The construction inherited the local traditional means. It was implemented by the villagers themselves mostly with simple traditional tools. Most building materials, such as mud bricks, rubble, straw and reed, are sourced in or around the site with minimum embodied energy. Also due to the involvement of these natural materials, little waste was generated during construction. Off-cut were recycled back into construction, for example, off-cut rafter reused for children's facilities, spare mud bricks mixed with straw mud for plaster. The construction has almost no environmental impact.

MEASUREMENT and EVALUATION

The construction of the new school was completed in summer 2007. The direct construction cost for materials, equipments and manpower is around HKD\$422/m², far cheaper than local conventional classrooms made of bricks and concrete. The new school has been used by children

and teachers since September, 2007. According to field measurements last year, the indoor air temperature of new classrooms is always stable, cool in summer and warm in winter. Even in the last winter's infrequent cold temperatures, the indoor ambience could still reach an acceptable thermal comfort with fresh air, without needing coal for heating.

DELIVERABLES

In conclusion, the following are achieved:

Firstly, the new school creates a comfortable and desirable campus ambience for the children. Furthermore, compared to local conventional schools, during its whole life cycle it contributes a far better ecological performance in indoor comfort, energy consumption and environmental impact.

Secondly, as a charity project, most of the donation was shared within the village community due to employing the local villagers and using their resources.

The last and most important point, with the eco-school project the villagers can re-understand their own tradition. The school illustrates to the locals a feasible way towards an ecological architecture suited for the conditions of China's Loess Plateau region. In this way, by selectively employing their familiar techniques and materials the villagers can easily build themselves their most effective and affordable ecological buildings.

A book about this project will be published to share more widely our “demonstration” works and experience for the whole region.

POSTSCRIPT

Last but not least, quoting the school master, “From now on, not one piece of coal needs to be burned to keep warm. All our money can be spent on books.”



地處西北的黃土高原是中國最為貧困的地區之一，經濟與技術水平的落後是當地生態建築發展所面臨的最大挑戰。2007年夏于甘肅省毛寺村新近落成的小學校正是在此背景下所進行的示範性研究成果。這是一個在當地政府的支持下，由我們負責設計、籌集捐款與組織施工的慈善項目。其目標不僅僅是為當地的孩子們創造一個舒適愉悅的學習環境，更關鍵的是要以此為契機，努力詮釋一個適合於當地發展現狀的生態建築模式。

該項目強調一個科學化且可推廣的設計與研究方法，其中包含三個基本階段：現狀調研與分析，模擬實驗研究，設計與施工建造。首先，根據對當地冬季寒冷夏季溫和的氣候特點、有限的經濟和建築資源水平、以生土建築為代表的傳統建築等方面的研究發現，在這一地區針對冬季的熱工設計是減少建築能耗和環境污染最為有效的生態設計手段。而當地以生土窑洞為代表的傳統建築中蘊含著大量基於自然資源並值得生態建築設計借鑒的生態元素。與此同時，學校的設計與建造需要遵循四個基本原則：舒適的室內環境、能耗與環境污染的最小化、造價低廉與施工簡便。以此為基礎，我們利用教室為模型，借助TAS軟件進行了一系列電腦熱學模擬實驗。通過對當地所有常規和自然材料、傳統建造技術和生態設計系統的篩選與優化，我們發現最基本的建造技術——以生土和其他自然材料為基礎的建築蓄熱體與絕熱體的使用，是提升建築熱特性、減少能耗和環境污染最為經濟和有效的措施，因此應被充分地運用在學校教室的設計之中。

順應所處的地形，學校所需的十間教室被分為五個單元，布置於兩個不同標高的臺地之上，使得每間教室均能獲得盡可能多的日照和夏季自然通風。以綠化為主的院落環境有助於為孩子們創造一個舒適愉悅的校園環境。教室的造型源於當地傳統木結構坡屋頂民居，不僅繼承了傳統木框架建築優良的抗震性能，而且對於村民而言更容易建造施工。教室北側嵌入臺地，可以在保證南向日照的同時，有效地減少冬季教室內的熱損失。寬厚的土坯牆、加入絕熱層的傳統屋面、雙層玻璃等蓄熱體或絕熱體的處理方法可以極大地提升建築抵禦室外惡劣氣候的能力，維護室內環境的舒適穩定。與此同時，根據位置的不同，部分窗洞採用切角處理，以最大限度地提升室內的自然采光效果。



小學的建設施工繼承了當地傳統的建造組織模式，施工人員全部由本村的村民組成。除平整土方所必須的挖掘機以外，所有施工工具均為當地農村常用的手工工具。同時，絕大部分建築材料都是“就地取材”的自然元素，如土坯、茅草、蘆葦等。由於這些材料所具有的“可再生性”，所有的邊角廢料均可通過簡易處理，立即投入再利用。例如，土坯是由地基挖掘出來的黃土壓制而成，而土坯的碎塊廢料又可混合到麥草泥中作為粘接材料。再如，剩下的椽頭與檁頭被再利用到圍牆和校園設施建造之中。以上措施不僅有助於最大限度地挖掘當地傳統的建築智慧，而且可以將由於施工而導致的能耗與對環境的破壞最小化。

新教室的直接造價（包括材料、人工與設備）只是每平米422港元，遠低於當地由粘土磚和混凝土建造的常規學校建築。而根據對教室在過去一年使用過程中的觀測發現，與當地常規的學校建築相比，新建教室的室內氣溫始終保持著相對穩定的狀態，可謂冬暖夏涼。即便在今年初罕有的嚴冬，無需任何燃料采暖，教室仍可達到舒適且空氣清新的室內環境。

從該項目建成的效果來看，總體而言，有三點值得強調。首先，新學校為孩子們創造了一個舒適、宜人的學習環境。在熱工性能、能源消耗與環境保護方面，其具生態可持續效能遠優於當地常規的建築；其次，由於施工建造大量地僱傭了當地的村民，作為慈善項目，除了學校本身絕大部分的社會捐助得以惠及這個村落；更重要的是，從這個學校項目中，村民們得以重新認識他們自己的傳統。新學校的建造向他們詮釋了一條適合於黃土高原地區發展現狀的生態建築之路。在有限的經濟基礎下，村民完全可以利用所熟知的傳統技術和隨地可得的自然材料，在改善自身生活條件的同時，最大限度地減少對環境的污染和破壞，並實現人與建築、自然的和諧共生。該項目的總結報告已初步完成，以供未來的出版和推廣。我們的工作還將繼續下去，不僅僅是為了一座學校，而是為整個這地區生態建築的發展進行更加有意義的研究與示範。

最後，引用毛寺生態實驗小學校長的一句話：“從現在開始，學校不再需要燒煤來取暖了，省下來的錢可以為孩子們多買一些書了。”



Mei Tin Community Hall 美田社區會堂

Location: No. 9 Mei Mun Lane, Tai Wai, Sha Tin, N.T, HK
Completion Date: 2007

Client	Home Affairs Department / Sha Tin District Office
Project Manager	Development and Construction Division, Housing Department, HKSAR Government (Appliant)
Architect	Development and Construction Division, Housing Department, HKSAR Government
Civil & Structural Engineer	Development and Construction Division, Housing Department, HKSAR Government
Building Services Engineer	Development and Construction Division, Housing Department, HKSAR Government
Quantity Surveyor	Development and Construction Division, Housing Department, HKSAR Government
Landscape Architect	Development and Construction Division, Housing Department, HKSAR Government
Town Planner	Development and Construction Division, Housing Department, HKSAR Government
Research Investigator / Sustainable Design / Environmental / Wind / Specialist Consultant	Center for Housing Innovations, The Chinese University of Hong Kong
Main Contractor	Hanison Construction Company Limited

Create a Green Environment for the New Generation

Public building bears a significant social responsibility. We build for the PEOPLE. Throughout the design and construction process, we have kept in close contact with the Client department (Home Affairs Department) and the District Council, and refine the details to meet user's need. To further enhance community participation, we have organized a joint function "Action Seedling" with the adjacent school, Estate Management and District Councilors. Students and tenants were given young seedlings to nurse until ready for planting in the estate flower bed.

To create a green environment for the user, we make the best use of the Site's environmental advantages-

- Slope and Greenery – the Site abuts to the green slope and enjoys quiet surrounding due to its set back from main street. We reduce cut slope, preserve existing trees, provide roof and vertical greening, to blend the building with the surrounding greenery.
- View and Light – the Site enjoys a panoramic view of the distant hill, green valley, Shing Mun River and new town. The north-facing full height window brings in natural daylight to the entrance foyer and multi-purpose hall, maximizes view to the surrounding Nature.
- Wind and Air – the building creates a 'Canyon Effect' with the slope, which increase local wind speed to enhance natural ventilation. Our Collaborator, Centre for Housing Innovations, The Chinese University of Hong Kong, utilized the technology of Computational Fluid Dynamics (CFD) to study the natural ventilation performance on various design options and came up with the optimum location and configuration of the wind guiding panels and wind scoops, to achieve the targeted indoor air quality and thermal comfort.

We believe, through the use and experience in the Green Building, the new generation will enjoy and build up their love for Nature.



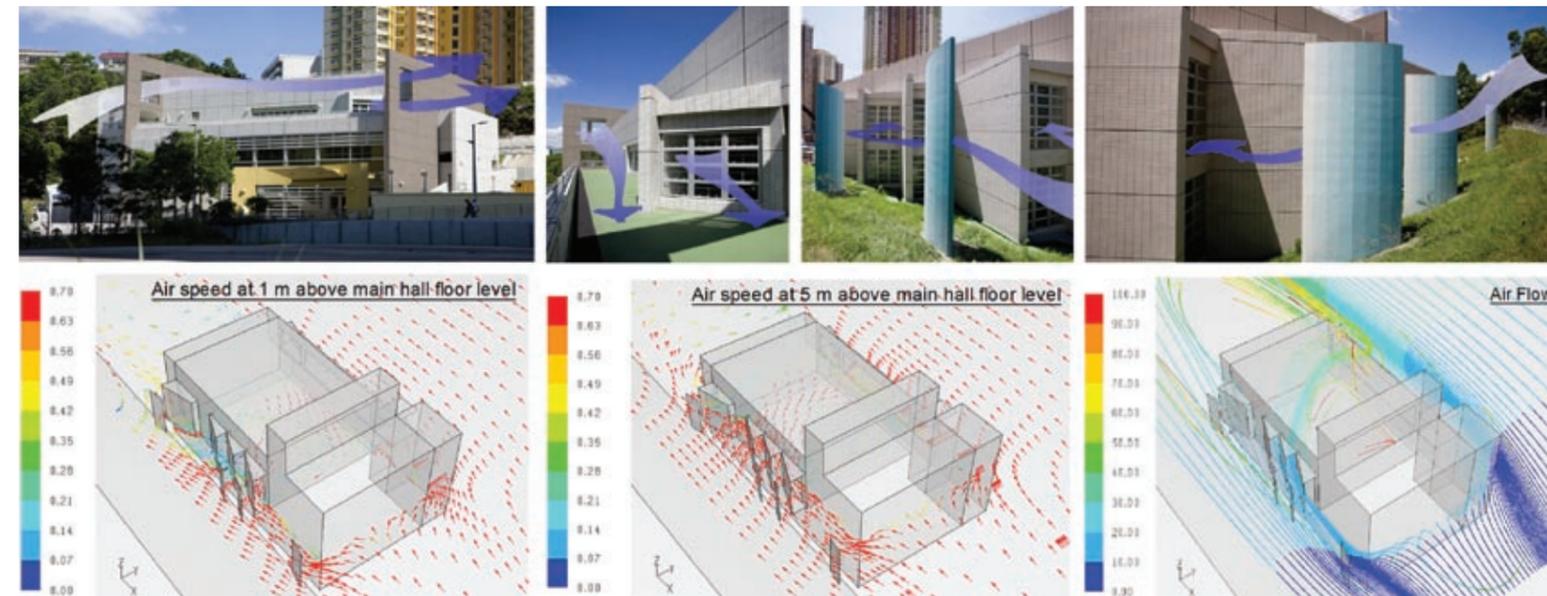
育苗在美田

公眾建築的服務對象是市民，負有重要的社會使命。因此，我們自早期設計至會堂落成，一直抱着「以人為本」的宗旨，與民政事務處及區議會保持聯繫，聽取意見，在設計上作出配合，切合用家需要。為進一步推動社區參與，加強社區凝聚力和環保意識，我們與屋邨辦事處合辦「育苗行動」，邀請區內學校、團體及居民參與，派發幼苗，待茁壯成長後，親手種回花園。

為給使用者一個既合用又舒適的綠色活動空間，我們利用位址擁有的環境優勢，作為會堂的設計元素：

- 倚山建 - 會堂四周綠樹成蔭，環境清幽。因此，會堂依山而建，減少削坡，保留樹木。天台綠化和垂直綠化把建築物融入於自然環境。
- 翠綠繞 - 會堂背山面河。向北的落地大窗，把天然光及四周翠綠引入大堂和多用禮堂，室內室外連成一體。
- 活風轉 - 會堂與後山坡形成「峽谷效應」，增加風速。為了善用這個風資源，我們得到中文大學中國城市住宅研究中心的協助，對四周環境及多個不同設計方案進行自然風的流體力學電腦分析，計算出風牆和風兜的最佳位置，把自然風引入室內，增加空氣流通和舒適度，減少空調的使用，節省能源。

我們相信，環保建築能夠提供一個栽培的環境，讓新一代去感受去欣賞大自然的美，培育出對環境的愛護。





One Island East 港島東中心

Location	Hong Kong
Completion Date	2008
Green Building Rating	BEAM (Platinum Rating) (Provisional)

Client/ Developer	Swire Properties Limited (Applicant)
Project Manager	Swire Properties Limited
Architect	Wong & Ouyang (Hong Kong) Limited
Civil & Structural Engineer	Ove Arup & Partners Hong Kong Limited
Building Services Engineer	Meinhardt (M&E) Limited
Quantity Surveyor	Rider Levett Bucknall Limited
Landscape Architect	Hargreaves Associates
Research Investigator / Sustainable Design / Environmental/ Wind / Specialist Consultant	Hyder Consulting Limited
Management Company	Taikoo Place Management Office
Lighting Consultant	L'Observatoire International Inc.
Façade Consultant	Arup Façade Engineering Hugh Dutton & Associates
Main Contractor	Gammon Construction Limited

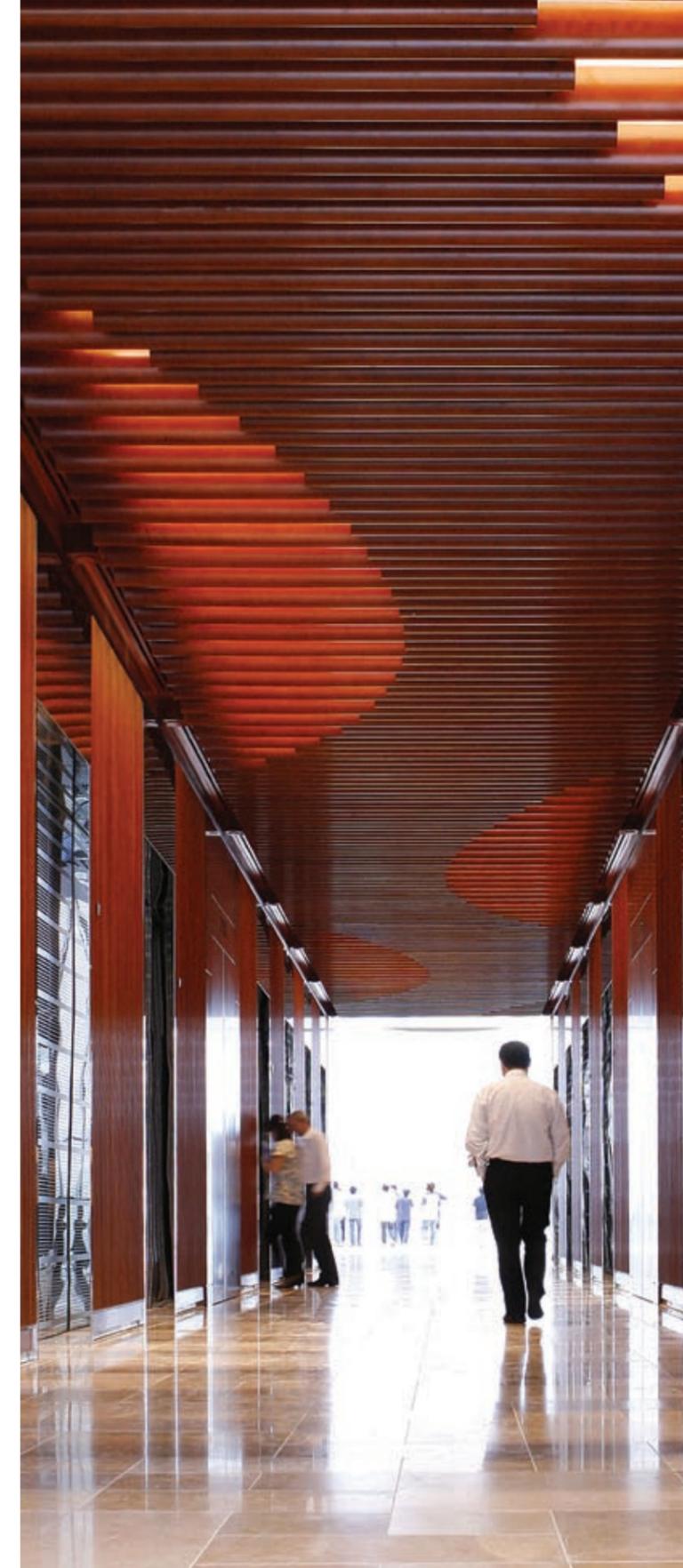
One Island East is the latest development in TaiKoo Place, Hong Kong's largest, single-owned business district. This 70-storey, triple Grade-A office building commands superlative views of the harbour and is within the immediate proximity of both TaiKoo and Quarry Bay MTR Stations.

The design and construction planning of One Island East is rooted in concerns for the environment. Developed on a site of approximately 10,200 sq m, the building footprint only occupies less than 50% of the site area, leaving ample ground floor space for landscaping for the enjoyment of the tenants and the public. In the landscape garden, which comprises about 75 % of the total development area, water features, green parterre and canopy trees have been introduced to create a green island for the neighbourhood. All the plants in the previous landscape area have been retained for on and off site transplantation. About 10% of the trees were either retained or transplanted on site. To echo this green carpet, the main roof of One Island East is also designed as a roof garden to provide an alternative amenity for the tenants. Moreover, all the timber used in the project came from sustainable sources.

The envelope of the building is designed to allow maximum amount of natural lighting while minimizing heat transmission so as to minimize the use of mechanical ventilation. Like 83% of SPL developments, One Island East has taken a further environmentally friendly solution in mechanical ventilation by using central seawater cooling which is more energy efficient than air cool systems and has no loss of seawater by spray dispersion. The MVAC system is also equipped with energy recovery from cool exhaust air by heat wheel to pre-treat incoming hot fresh air, and energy-efficient chillers to minimize energy consumption. Energy efficient LED light fittings are also substantially used for more than 85% of decorative lightings.

Other than seawater cooling, One Island East is also provided with rainwater recycling for flushing purpose and dual flush mechanism for water closets to minimize foul water disposal. With the adoption of these systems, we predicted a saving of a minimum 15% in use of fresh water.

Not only is the design heedful of the environment, the implementation of the construction works has also been planned to reduce impact on the environment. Innovative demolition method was employed to



demolish the two factory buildings that once stood on the site of One Island East. More than 90% of the demolition wastes were recycled. The use of concrete crushers instead of typical percussive breakers also allowed quieter and cleaner demolition.

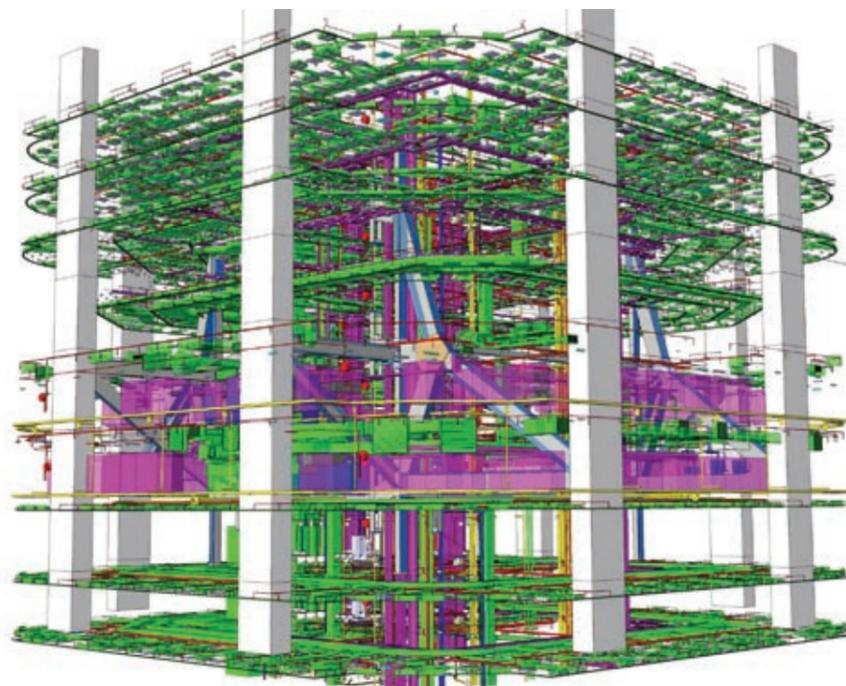
Building Information Modelling was used stemming from the concept of "Design out Wastes". Design coordination was conducted prior to actual site construction works by using the BIM-3D computer model. The building was built once in the computer to ensure no re-take in actual site works. As a result, a reduction on wastages, which would have been generated without the pre-coordination of 3D modelling, was achieved. BIM was also used with Virtual Construction Process Simulation software to simulate in details construction sequences. The technology has been employed to review the construction sequence of the complicated outrigger floors. With the help of the simulation, the contractors were able to resolve uncertainty prior to actual site works. Site operation and, most important, site safety were much enhanced.

Advanced technologies have also been employed in the structural and building services design of the building. One Island East is the first commercial building in Hong Kong to be built in vast quantity with Grade 100 High Performance Concrete. As compared to grade 60 concrete, size of structural elements and hence concrete volume have been reduced. Estimates show that approximately 14,000m³ concrete have been saved, which is equivalent to the volume of concrete for 21 number of floor slabs. The self-compacting performance of grade 100 concrete also means less vibration is required and so reduction in construction noise and energy used is achieved. Development and application of Grade 100 High Performance Concrete has been awarded "The 2007 Hong Kong Awards for Industries: Technological Achievement Award".



Other awards obtained include:

- One Island East has achieved a provisional rating of Platinum at BEAM assessment.
- AIA BIM TAP Award for Design/Delivery Process Innovation using BIM (Awarded to One Island East and Gehry Technologies – Asia)
- Construction Industry Safety Award Scheme 2007/08
 - Building Sites (Private Sector) Category Silver Prize (Contractor) (Awarded to Gammon Construction Limited)
 - Building Sites Category Silver Prize (Subcontractor) (Awarded to Balfour Beatty E&M Limited)
- The Lighthouse Club Safe Subcontractor Award 2006 Champion (Awarded to Wai Shun System Formwork Co. Ltd.)



港島東中心坐落於太古坊，這座樓高70層的超甲級辦公樓，擁有一望無垠的海景及優越的地理位置 — 鄰近太古及鯉魚涌港鐵站。

港島東中心的設計及工程計劃富有大量環保元素。在面積達10,200平方米的建築範圍內港島東中心的覆蓋率只佔不足50%，整個發展項目的75%空間為綠化地帶，包括園林廣場及獨特的流水設計，為公眾提供優美的園境設計。在原來建築範圍內的植物均被保留，10%的樹木被原址保留或於建築範圍內移植。大廈屋頂更設有空中花園，為租戶提供另一個休憩地點。另外，此發展項目的所有木材，均來自可持續發展的來源。

港島東中心的外牆能引入充足的自然光線，同時能將傳熱程度降至最低，從而減少空調系統的負荷。跟太古地產83%的發展項目相同，港島東中心採用較一般風冷空調系統具能源效益的中央海水冷凍系統。這空調系統更擁有能源回收功能，系統透過回轉式熱交換器，利用排出室外的低溫廢氣，把抽入室內的新鮮空氣預先冷卻，達致節能效果。另外，港島東中心超過85%的裝飾照明均採用節能的發光二極管燈具。

除海水冷凍外，港島東中心亦設有雨水回收系統，作為灌溉及沖廁之用，亦設有雙沖式坐廁，以減少污水排放。透過以上系統，我們預期可節省最少15%的食水。

港島東中心整項工程以減低對環境的影響為設計概念。於拆卸港島東中心原址的兩座工廠大廈時，超過90%的工程廢料被循環再用；混凝土破碎機取代了傳統的撞擊式破碎機，使拆卸工程較寧靜、較整潔。

建築資訊模型(BIM)有助準確估計所需物料，減少廢物量。我們可以透過三維電腦虛擬建築模型，於正式施工前作出各項的設計統籌，確保於正式施工準確，有效地減少建築廢物。除了BIM，我們同時採用虛擬工序模擬軟件模擬施工程序中的各項細節，例如用於檢查伸臂桁架樓層的施工程序。透過模擬系統，承建商能更準確地於正式施工前估計實際困難，大大提升營運效率及工地安全性。

先進科技亦應用於建築結構及屋宇設備上，港島東中心為全港首幢大量以高性能混凝土(high performance concrete, HPC)建成的建築。相比Grade 60，Grade 100 HPC的建築構件相對較小，據估計這樣有助節省約14,000立方米混凝土，即相等於興建21層樓層所需要的混凝土體積。Grade 100自密實性能使混凝土需要更少的振動，因此有效減低工程進行時所發出的噪音及所需能源。Grade 100 HPC的發展及應用已獲「2007年香港工商業獎：科技成就獎」。



其他獎項包括：

- 港島東中心獲建築環境評估法(BEAM)暫評為「白金」級別
- 獲美國建築師協會頒發建築資訊模型獎中「Design / Delivery Process Innovation using BIM」組別之最高榮譽 (獎項由港島東中心及Gehry Technologies – Asia奪得)
- 建造業安全獎勵計劃2007/08
 - 樓宇建造地盤(私營合約)組別銀獎(承建商) (獎項主承建商金門建築有限公司奪得)
 - 樓宇建造地盤組別銀獎(次承建商) (獎項由分建商保富機電工程有限公司奪得)
- 2006年明建會安全分建商冠軍 (獎項由分建商偉信系統模板有限公司奪得)





Radiotherapy Centre and Accident & Emergency Department at Princess Margaret Hospital 瑪嘉烈醫院腫瘤科大樓

Location	Princess Margaret Hospital, Lai Chi Kok, Kowloon, HK	Client/ Developer	Hospital Authority
Completion Date	2005	Project Manager	Architectural Services Department (Applicant)
Green Building Rating	BEAM Assessment	Architect	Architectural Services Department
		Civil & Structural Engineer	Architectural Services Department
		Building Services Engineer	Architectural Services Department
		Quantity Surveyor	Architectural Services Department
		Landscape Architect	Architectural Services Department
		Main Contractor	Shui On Construction Company Limited

The new Radiotherapy Centre and Accident & Emergency Department at Princess Margaret Hospital is a redevelopment building located at the site of the old A&E Department (Block H) adjacent to existing Main Blocks, allowing swift admission of patients from A&E Department to the acute wards or to other blocks for further treatment. Site Area is about 3,200 sq.m and total Gross Floor Area is 19,931 sq.m.

Equipped with the most advanced medical facilities, the 12-storey new Radiotherapy Centre houses a comprehensive range of clinical areas for services in radiotherapy, diagnostic radiology, clinical oncology and accident & emergency treatment.

The site lies approximately 50m above the MTR tunnels and the major technical challenge is reduction of building weight. Lightweight building materials are extensively used in this building. Externally, the façade is composed of unitised curtain wall, aluminium cladding, aluminium louvers and metal roofing which give this building an articulated modern look rarely seen in hospital buildings. Internally, a solid lightweight concrete infill wall system replaces traditional blockwall for general partitioning. To minimise the weight and space occupied by Linear Accelerator rooms, innovative construction techniques were explored and the final composite wall design makes use of steel plates sandwiched by concrete walls to substantially reduce the wall thickness but still provide sufficient shielding against radiation.

The new Radiotherapy Centre with its glazed curtain wall and skylight envelope maximises the use of day-lighting to achieve energy efficiency and enhance the ambience of internal space, especially at the double volume foyers in building entrance and outside lecture theatre. Use of sun-shielding devices and low-e double glazing system reduce solar heat gain through external walls. The landscape gardens on the roof and podium can also minimise heat gain on the roof level and helps to beautify the environment. Photo-voltaic panels integrated with the roof canopies supply electricity up to 19 KW to the building as well as provide sun-shading to upper levels of the building.





瑪嘉烈醫院腫瘤科大樓項目是在舊急症室原址（即H座）重建一座全新的腫瘤科中心及急症室大樓。H座的位置連接正座大樓及醫院主要車輛入口，新急症室可迅速接收急症病人及分流往其他主樓接受治療。大樓樓高十二層，地盤面積約為3,200平方米，總建築面積為19,931平方米。

樓高12層的新大樓擁有先進的醫療設備，是一項融合高科技的工程。大樓基本設施包括放射治療中心，放射診斷部，急症室，腫瘤科門診，病房及手術室。

由於新大樓位於地鐵行車管道約50米之上，因此在建材上須選用較輕質物料，以減低整體樓宇重量，外牆設計以單元件玻璃幕牆、鋁板、鋁百葉及夾心鋁質蓋頂取代傳統鋪砌瓷磚的混凝土。富現代感的大樓外型亦有別於傳統醫院設計。內牆則選用了比傳統磚牆輕但同樣堅固的輕混凝土實心組合牆系統。放射治療中心直線加速器房間牆身的設計，則以鋼板夾藏於混凝土牆身之中，使牆身厚度及重量大幅度減少，而防輻射能力則與傳統超厚混凝土相同。



新大樓利用玻璃天窗及幕牆，引入了大量天然光線，減低日間照明所消耗的能源，亦能強化室內之活力感及空間感，此效果於地面入口大堂及演講廳大堂特別明顯。大樓南面之金屬遮陽裝置及雙層玻璃幕牆亦增強了外牆隔熱能力。天台及一樓平台設有花園，既可減低頂樓受熱，亦有助環境綠化。天台另一項特色附設於建築物的太陽能光伏板設施，安裝於大樓天台兩側，不但製造最高達19千瓦電力供應給大樓使用，更形成遮光裝置，減少陽光直射進大樓。





GBA 2008: EB - Jury's Citation

環保建築大獎2008 - 「現有建築類別」評審團意見

Jury's Citation

A wide range of high quality submissions on existing buildings with regard to general existing building issues, newly renovated developments and conservation projects was received. The Jurors were very impressed with the high level of commitment, professional input, planning and creativity reflected from the submissions.

Beijing 2008 Olympic Equestrian Venues – Shatin Core Venue

The Shatin Core Venue of the Beijing 2008 Olympic Equestrian Venues was modified temporarily from the Hong Kong Sports Institute and Penford Park, and will be reverted back to the 2 organizations after the Olympic events. Many advanced techniques have been adopted in the planning of the renovation scheme. They include “dynamic thermal modeling” in cooling load estimation, glazing optimization, building orientation study, roof insulation optimization and solar study, “computational fluid dynamics” to study thermal comfort on seating areas, and “hybrid ventilation” regarding natural and mechanic ventilation in the horse stalls. Moreover, the project is sustainable in terms of sustainable material, natural ventilation, MVAC system and lighting system.

The jury panel complements the immense effort of the owner in the planning of the renovation project.

Rehabilitation of Moon Lok Dai Ha

Moon Lok Dai Ha is an existing housing estate built in 1964. The rehabilitation of the estate aims at enhancement of the life and environment of the estate for another 20 years, strengthening community sense and estate identity, and reduction of social cost for elderly care. On top of typical improvement works on external walls, roof, common areas, lift service and building services installation, more facilities were provided for the elderly at G/F. Material use, waste management, pollution control and site safety were well planned and monitored before and during the conversion process.

The jury panel commends the determination of the owner to preserve the heritage, uphold community value and prevent production of C&D waste.

The Parcville

The Parcville is a low density residential development in Yuen Long. The management has implemented an integrated management system to manage quality, environmental, and occupational health and safety issues. The indoor environmental qualities are improved by innovative natural ventilation and lighting design, IAQ management and acoustic management. The management joins hands with the tenants and landscape contractor to manage the horticulture in the development. Innovative approach has been applied with regard to natural lighting and ventilation in basement carpark, rain water recycling system, water saving flush toilet and energy efficient ventilation system. There is significant reduction in electricity and water consumption in the last 4 years.

The development has won many awards in recent years in HK-BEAM rating, green project management and energy efficiency.

Park Central – Residential (Phase 1)

Park Central consists of 5 high-rise residential blocks in Tseung Kwan O. The management has also implemented an integrated management system to manage quality, environmental, and occupational health and safety issues, and is committed to prevent pollution and minimize waste through Environmental Committee, environmental control procedure, waste management and energy management system. Innovative schemes include efficient use of existing building fabric, piping system in landscaped area, solar photovoltaic lighting system and activities to promote green mind.

YKK Building

The YKK Building is an industrial building in Tuen Mun built 30 years ago. The management has incorporated a comprehensive green management system comprising source separation, energy saving, water saving, noise control, environment assessment, and encouragement and motivation of the tenants and contractor.

They have got the Grand Award from Hong Kong Eco-Business, Model Building of Industrial by Environmental Protection Department and Best OSH Property Management by Occupational Safety and Health Council.

City One Shatin

The management aims at green leadership through propagation of a sustainability policy. The policy deploys energy saving, material use, water conservation, waste management and pollution control. Innovative schemes include conversion of a fountain into a water conserving flower bed, collection of used clothes, notice boards with digital display, and promotional icons from recycled waste.

評審團意見

在「現有建築類別」方面，我們收到很多包括一般現有建築事宜、翻新建築項目和保育古建築工程的優秀參賽作品。作品表現高度的參與、專業知識、策劃和創意。

北京2008年奧運馬術比賽場地—沙田主場地

北京2008年奧運馬術比賽場地的沙田主場地由香港體育學院和彭福公園臨時改建，並在奧運比賽完成後還原。在規劃這翻新建築項目時採用了很多先進技術，其中包括採用「動態溫度模擬」來估計冷凍荷載、優化窗戶設計、研究建築物座向、優化屋頂耐熱設計和進行日照研究，採用「運算液體動力學」來研究座席的溫度舒適感，並運用「整體通風」來設計馬廄的天然和機械通風。此外，這工程在材料運用、天然通風、冷氣系統和照明系統等方面皆十分環保。

評審團嘉許業主在規劃這翻新建築項目的努力。

滿樂大廈復修工程

滿樂廈是一個建於1964年的屋邨。復修屋邨的目的包括提升屋邨的壽命和環境多20年、強化社區感和屋邨品牌、並減低照顧長者的社會成本。除了關於外牆、公共空間、電梯和屋宇設備的一般改善工程外，在地層提供了一些長者設施。在工程前期和施工期內，也小心計劃和監控材料使用、廢物管理、防止污染和工地安全。

評審團讚許業主在保育舊建築、維持社區觀和減免建築廢物方面的決心。

采葉庭

采葉庭是位於元朗的低密度住宅發展項目。管理公司採用了一套綜合管理系統來管理質量，環境，和職業健康與安全。他們透過創新的天然通風和照明設計、室內空氣質素管理和噪音管理來改善室內環境質素。管理公司也與住客和園藝公司攜手管理屋邨內的園林綠化。他們也不斷創新，如在地下停車庫使用天然照明和通風、雨水再循環系統、節水水廁和節能通風系統。屋邨在過去4年成功節省了可觀的電力和用水。

采葉庭在過去數年在香港建築環境評估法(HK-BEAM)，環保項目管理和節能方面獲得多項優異獎項。

將軍澳中心(住宅)(第一期)

將軍澳中心(第一期)共有5幢高層住宅建築。管理公司也採用了一套綜合管理系統來管理質量，環境，和職業健康與安全。同時透過環境委員會、環保程序、廢物管理和能源管理系統，管理公司致力防止污染和減少廢物。他們也推行一些創新計劃，例如有效地運用現有建築架構、在園藝區鋪設地底管道、太陽能池照明系統和推進環保意識的活動。

YKK大廈

YKK廈是一幢位於屯門有30年樓齡的工業樓宇。管理公司採用了一套全面的環保管理系統，其中包括源頭分類、節能、節水、控制噪音、評估環境、及對用戶和承建商的鼓勵和引導。管理公司曾獲得香港環保企業獎(Hong Kong Eco-Business)的大獎，環保署的工業大廈模範屋宇獎和職業安全健康局的最佳職安健物業管理獎等。

沙田第一城

管理公司透過推廣一套可持續政策致力於「綠色領導」。政策運用節能、材料使用、保育用水、廢物管理和監控污染。創新方案包括把水池改建為儲水式花槽、收集舊衣服、電子顯示的通告板和以再循環廢物製成的推廣雕塑。



Beijing 2008 Olympic Equestrian Venues - Shatin Core Venue 北京2008奧運馬術比賽場地 - 沙田主場地

Location	25 Yuen Wo Road, Shatin, New Territories, HK	Client/ Developer	The Hong Kong Jockey Club
Completion Date	2007	Project Manager	The Hong Kong Jockey Club
		Architects	Timothy Court & Company (Concept Design Architect) Ronald Lu & Partners (Hong Kong) Ltd. (Local Architect)
		Civil & Structural Engineer	Arup (Hong Kong) (Applicant)
		Building Services Engineer	Arup (Hong Kong)
		Quantity Surveyor	Rider Levett Bucknall Ltd.
		Landscape Architect	ACLA Limited
		Sustainable Design / Specialist Consultant	ARUP (Hong Kong)
		Facility Manager	The Hong Kong Jockey Club
		Main Contractor	China State Construction Engineering (HK) Ltd.

When the International Olympic Committee (IOC) announced Hong Kong's status as a co-host city on 5 July 2005, The Hong Kong Jockey Club had just two years to produce equestrian venues in time for the 2007 Test Event. With such a short timeframe, four years less than the traditional Olympic schedule, an innovative plan combining existing amenities with those facilities required for the Olympics was drawn up and the result is the facilities would set new world standards in terms of quality, environmental consideration, cost effectiveness and legacy value in the history of the Olympics.

The Olympic Equestrian Venue at Shatin is where all but one of the Olympic equestrian events will take place. Surrounded by superb training facilities built by the Club on the Hong Kong Sports Institute and on the Shatin Racecourse in-field at Penfold Park, the Olympic main competition arena has been created out of a former football field and athletic track, transforming into an Olympic playing field with seating for around 18,000 spectators for the world's best human and equine athletes. In order to provide a more comfortable environment, the Club has provided an air-conditioned main stabling complex comprising four stable blocks and an equine clinic and altered the multi-purpose hall in the Hong Kong Sports Institute to an all-weather air-conditioned indoor training arena. This is the first and only Olympic equestrian accommodation and training facilities to be equipped with air conditioning.

In helping to achieve the goal of a 'Green Olympics', the construction works, building materials and energy-saving measures were adopted where feasible to meet or exceed best international practices. To name a few, trees have been preserved and additional ones planted around the main competition and training arenas, and construction timetables have been carefully scheduled to avoid disturbing egret habitats. Rubber 'crumbs' were recycled from old tyres for the internal equine walkways, and some jumps were made from recycled telegraph poles. The horse stalls themselves have been

manufactured from recycled bamboo. In the stabling complex, the architectural design with solar shading and use of pre-fabricated construction elements were adopted to reduce solar gain and construction waste. The exceptionally high roof and windows in clerestory to enhance stack effect for natural ventilation, and electric fans have also been installed to help circulate the air and create a gentle breeze effect. The daylight design together with energy-efficient lighting installation and water-cooled air-conditioning system combined with free cooling system to supplement air conditioning during which outdoor environmental condition is suitable which offer energy savings of up to 30% on conventional installations. In addition, all Olympic stable waste will be sent to a vermicomposting plant where millions of earthworms will transform the stable waste into environmentally friendly, organic fertilizer. This helps slow down the overloading of landfills in Hong Kong, reducing the creation of non-environmentally-friendly gases in the landfills and so lessening the greenhouse effect.

As most of the facilities for the event will be retained after the Olympics are over for future sporting and community use, they will leave a long-term legacy for the public's benefit. For instant, Penfold Park will be retained for public as an interactive equine park, and facilities at the Hong Kong Sports Institute will be refurbished and upgraded to provide a much-improved training environment for Hong Kong's athletes. Besides, Sand footings from the equestrian arenas will be re-used to upgrade local riding school facilities. In addition, the reuse of floodlighting system in main arena was also considered in the design stage, which can be reverted back for various athletic use.



The Club's world-class facilities at Sha Tin had been used as the foundation for the Olympic and Paralympic venues. With additional competition and training venues being incorporated into existing sports facilities at the Hong Kong Sports Institute, combining racing and dedicated facilities was met with the approval of the international equestrian sports community. This will serve as a cost-effective and time-efficient model for advancing the equestrian sports and future Olympic equestrian events.

2005年7月5日，當國際奧委會宣佈香港成為奧運協辦城市的時候，香港賽馬會只有兩年時間為奧運馬術比賽建造場地，以趕及於2007年舉行測試賽。由於時間緊迫，建築時間比歷屆奧運少了四年，馬會制訂了一個創意的方案，把現有設施結合到奧運所需設施，使各場地在質量、環保意識、成本效益和保留價值等方面都達到一個新的世界標準。

大部份的奧運馬術比賽，將於沙田的奧運馬術場地進行。馬會把香港體育學院和沙田馬場中央的彭福公園改建成一流的比賽場地及練習設施，並把香港體育學院的足球場和跑步徑改建成可容納約一萬八千名觀眾的奧運馬術主賽場，為全球頂尖騎手和馬匹提供一個比賽場地。此外馬會特別為奧運馬術比賽建造由四座馬房和一座馬匹診所組成的空調主馬廄區及將原香港體育學院的室內多功能場館改建為全天候空調室內訓練館，為馬匹提供一個較舒適的居住及訓練環境，這是過去奧運會所沒有的。

為響應「綠色奧運」主題，在整個建造工程中包括場地建設、建築材料應用、節省能源等多方面，皆做出超越國際標準的努力。例如在主場館和訓練場地，種植及移種大量樹木綠化環境；為保護白鷺的棲息地，改變施工時間等。在馬房內通道採用以廢棄輪胎循環再造物料生產的膠墊、在馬格內採用以循環再用的竹料壓製而成的木材、部份越野賽障礙欄杆亦以廢棄木杆製成。至於為奧運馬術賽新建的馬房除了設有空調之外，特別高的樓底及高低層窗戶的設計可確保更理想的空氣流通，促進自然通風效果，而馬房內裝置的風扇更有助製造微風效應。馬房的建築設計結合遮陽系統及使用預制組件，有效地減低太陽熱增量及建築廢物。至於馬房空調採用節省能源的中央水冷系統，及於室外環境適合時利用室外空氣作空調補充之用，而馬房照明都採用具有能源效益的設備，配合自然採光設計使空調和照明系統的電力消耗量可以較傳統裝置節省高達百分之三十的電力。而所有於奧運馬術馬房產生的馬房廢料和馬糞，會以「蚯蚓堆肥法」處理，循環再轉化為環保有機肥料。透過將廢料循環再造，產生環保肥料，有助完成整個環保循環。整項計劃更有助舒緩香港堆填區的負荷及減少產生有害氣體，有助減緩溫室效應。



整項奧運馬術工程另一個特點是存留價值特別高，奧運會後大部份設施將會保留，為香港體育事業和市民帶來長遠的利益。例如彭福公園的各項設施將會保留，成為一個以馬為主題的公園，讓市民大眾有更多接觸和參與馬術運動的機會，同時亦成為一個旅遊新景點。在香港體育學院的設施將進行翻新和提升，為香港的運動健兒提供一個更理想的訓練環境。而主賽場和練習場地的全天候的地面亦將會保留，日後用於馬會轄下的騎術學校。至於主賽場的泛光燈照明系統於設計階段已作充分考慮，日後可為其他運動項目提供理想的照明。

馬會以國際知名的沙田馬場作為奧運及殘奧會場地的基礎，將新建的場地結合現有香港體育學院的體育設施，為馬術比賽建設結合速度馬競賽和馬術賽的專用設施，獲國際馬術界的肯定。這套兼具成本效益和時間效益的方案會有助推動馬術運動，並成為日後舉辦奧運馬術的新模式。





This is the first of the large scale rehabilitation project of the Hong Kong Housing Society for a 40 years old housing estate with an attempt on every major aspect of the building improvement works, in order to achieve sustainability, durability, adaptability and serviceability for a quality living environment. The rehabilitation of the estate could compare favorably to the cost of complete re-development option of the site, and consequently substantially minimizes generation of demolition and construction wastes from the estimated amount of 40,000 tones to 4,000 tones. It also essentially reduces consumption of huge amount of energy resources and building materials through the rehabilitation works.

By thoughtful design and implementation of the proposal, the estate was 'reborn' to achieve an elegant, comfortable and sustainable 'Green Estate' for the amenity of residents and neighbourhood. It is also worth mentioning that this is the first large rental estate that had undergone full scale rehabilitation without relocating its residents, hence successfully retains the neighbourhood community of the estate built up from the past.

Rehabilitation of Moon Lok Dai Ha 滿樂大廈復修工程

Location Moon Lok Dai Ha, 141 Sha Tsui Road, Tsuen Wan, HK
Completion Date 2006

Client/ Developer	Hong Kong Housing Society
Project Manager	Hong Kong Housing Society
Architect	Chung Wah Nan Architects Ltd. (Applicant)
Civil & Structural Engineer	Meinhardt (C&S) Ltd.
Building Services Engineer	Meinhardt (M&E) Ltd.
Quantity Surveyor	WT Partnership (HK) Ltd.
Landscape Architect	EDAW (Ltd.)
Management Company	Hong Kong Housing Society
Main Contractor	Fong Wing Shing Construction Co., Ltd.

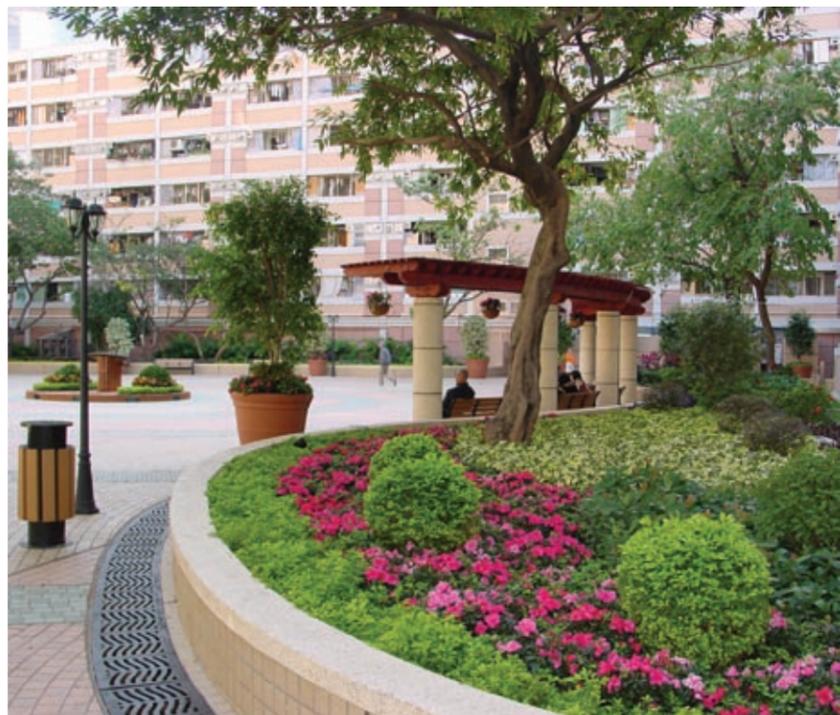
There are different forms of sustainable features in the estate which were achieved by the following measures:

Design & Planning Measures

- Maximization of cross ventilation and natural light penetration for the public indoor and circulation spaces in the design and space planning for energy conservation and amenity
- Use of recycled materials
- Repair of building structure to extend life expectancy of the estate
- Extensive soft landscaping for both indoor and outdoor areas for improvement of air quality and livability
- Re-roofing and tiling of building envelop to conserve energy and extend life expectancy of building
- Improvement and upgrading of electrical, fire service, plumbing & drainage and security system of the estate for serviceability, energy conservation and effective management
- Use of energy saving light source, electronic ballast and timer control system for public areas to reduce electricity consumption
- Improvement and addition of lift services for accessibility and amenity of all age groups
- Conversion of residential flats to shops for flexibility and adaptability to changing social and economic needs
- Renovation of vacant flats to current statutory standard for sustainability and quality living amenity
- Renovation of vacant flats to elderly friendly flats for sustainability and quality living amenity of elderly residents
- Improvement of reuse collection facilities for hygiene and waste management

Construction Measures

- Innovative re-use of steel formwork for construction
- Off-site fabrication of trunking and metal works to minimize construction waste and pollution generated on site
- Use of low waste technology for design and construction in the form of lightweight block work partition to minimize construction nuisance on site
- Sorting of construction and demolition wastes for either recycle process or proper disposal
- Effective waste management and pollution control of noise and dust to minimize environmental nuisance on site



Maintenance & Management Measures

- Monitoring system on various services performance in continuous basis enables effective policy making for implementation of environmental sustainable measures
- Recycle bins inside estate for collection and separation of reusable resources to educate and encourage participation of residents to develop environmental awareness for a sustainable future
- Green education in the form of organizing environmental protection activities and festival events with the environmental protection groups within the estate to raise public awareness

The rehabilitation project was completed in 2006. It is a successful demonstration for the industry and policy makers that rehabilitation under certain circumstances could be a better option than re-development.

位於荃灣區，興建於六十年代中期的滿樂大廈，屬於早期設計的房屋協會的一個公共屋邨，包括4座住宅大廈九百六十多個單位，若以今天的住屋要求來說，設施和環境都有待改善。所以經過周詳的計劃和考慮，在比較重建或復修之間的方向選擇，並在確定屋邨大廈結構良好後，房協終於決定於2003年開展全面的復修工程。並認真考慮屋邨在的復修項目上可持續發展方面的重要性。這裏主要有以下四方面的考慮：

1. 經濟效益方面

復修後的屋邨估計最少可有效地延長二十年或以上屋邨的壽命，並可降低發展上所需耗資的費用。在這方面，比較起重建屋邨所需費用可以大為降低(由約估計4億元降至1億1千萬左右)，並且省卻因重建所引起大規模調遷安排上的困難及居民的不滿。

2. 環境保護方面

這個復修項目能大大減少因重建而必須消耗的資源及物料。復修也能大大減少建築廢物因重建計劃所產生的環境的問題。估計只需產生重建計劃的十分之一左右的建築廢料。復修必須有效地提高屋邨的能源效益，並能長遠地降低屋邨能源的消耗以符合環境保護的原則。

3. 社會利益方面

滿樂大廈是房協第一個在毋須搬遷住戶的情況下完成全面復修的舊型屋邨，這樣便能避免因重建所引起搬遷上對900多戶居民日常生活中的不便，並能維繫居民原有的家庭關係及社區網絡上的聯繫，並得以保留多年來所建立的社羣，為居民建立對社區的歸屬感作出一點貢獻。

4. 可持續發展及適應性方向

這個項目必須具有靈活及適應性，以配合未來不斷變化的社會、經濟及環境的要求。在這方面為要配合維繫原有的社區生活及屋邨居民人口逐漸老化的情形，我們採用「通用設計」的原則將部份低層單位改裝，方便邨內長者使用。並將一部份單位改建為長者休閒室，提供活動設施可讓長者消閒和歡聚，擴闊社交網絡，增添生活情趣。



整個復修項目範圍遍及屋邨建築及設備不同方面的範疇，包括:

- 大廈外牆維修，修補石屎結構及美化外牆，以提高大廈的耐用性
- 重鋪天面防水及隔熱以提高大廈的耐用性及能源效益
- 美化屋邨中央公園配合大量綠化環境，提供怡人的休憩空間
- 在不同的大廈位置，加建升降機槽，以方便長者及傷健人士進出各個樓層
- 改建及美化地下電梯大堂，加裝大閘，閉路電視，對講機系統，信箱，告示箱，傷健人士坡道，改善照明及保安
- 改善樓層走廊照明，整理電線槽安裝，增進大廈安全
- 美化屋邨入口，加建更亭改善照明，保安及車場管理
- 美化屋邨內的幼稚園，改善戶外遊玩設施
- 增建新變壓房，以應付屋邨電力供應的需求
- 改建位於底層向街而缺乏私隱的居住單位作為商舖用途，以適應居民日常生活及經濟上的要求
- 改裝空置居住單位，改善居住空間及設備質素，以符合現今法例及居民的要求
- 改裝底層居住單位作適合長者居住單位，以切合居民人口日漸老化的情形。並同時改裝部份居住單位為長者休閒室，提供消閒及活動設施
- 在公共空間設計及規劃上，盡量引入天然光線及通風對流，減少照明上能源的消耗。並在每層公眾空間加建花槽作綠化之用。開放式的規劃能使室外景觀更為開揚
- 採用節能照明裝置，能有效地減少公共空間長遠的能源消耗
- 採用監察系統能有效制訂對不同設備上能源使用的政策
- 在不同的地方使用可循環再用的建築產品物料
- 在屋邨內為居民供循環物料收集箱，以鼓勵居民參與及提高環保意識
- 在建築的過程中，把建築廢料分類，作循環再做或作適當的棄置
- 在施工期間特別注意工程的環境管理，監察噪音及沙塵的問題，保持施工環境整潔，盡量減低對住戶的影響

此項目於2006年順利完成。當中所獲得的寶貴經驗，相信也能提供給業界對舊的居住項目的發展上，在除了考慮作重建的選擇之外，另外一個可能更為有效益的發展方向。



The Parcville 采葉庭

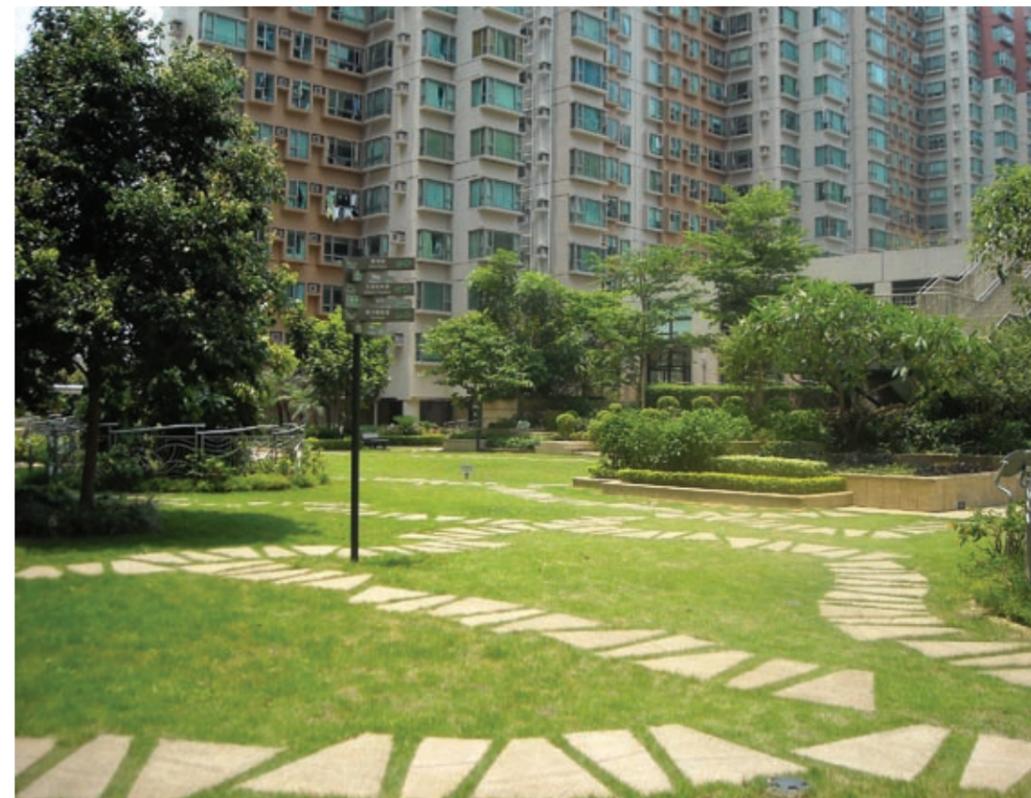
Location 33 Kau Hui Road, Yuen Long, New Territories, HK
 Completion Date 2002
 Green Building Rating BEAM Assessment (Platinum Rating)

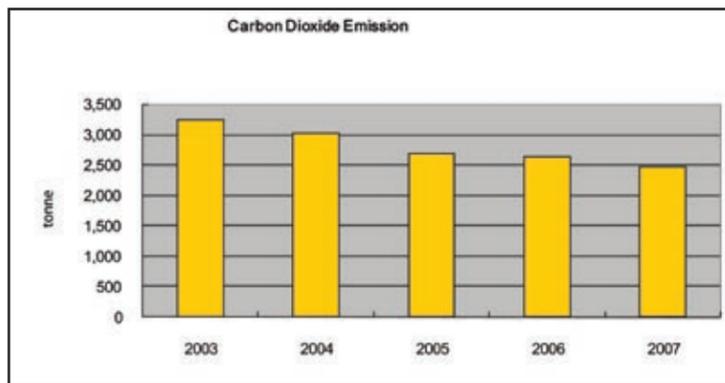
Client/ Developer Sun Hung Kai Properties Ltd.
 New World Development Co. Ltd.
 Project Manager Sun Hung Kai Management
 Architect Wong & Tai Associates Ltd.
 Civil & Structural Engineer Sun Hung Kai Engineering Co. Ltd.
 Building Services Engineer Sun Hung Kai Engineering Co. Ltd.
 Landscape Architect Hong Chui Consultants Co. Ltd.
 Management Company Hong Yip Service Company Ltd. (Applicant)
 Main Contractor Yee Fai Construction Company Ltd.

“New land, new home, new life!” is the concept of The Parcville, which is the joint-venture project of Sun Hung Kai Properties Limited and New World Development Company Limited, in the design stage. Located in Tung Tau, Yuen Long, The Parcville comprises 14 low-density residential buildings between 13 and 15 storeys, containing 1,618 units. The development enjoys a view of Mai Po Nature Reserve, and a nearby bauhinia garden offers The Parcville’s residents another view of scenic greenery. The development was planned to blend with its natural surroundings. It includes 20,000 s.m. of landscaping area planted with about 2,500 trees, making it one of the largest green housing estates in the area.

Environmental features are integrated into the building design of The Parcville, including rainwater recycling system, naturally ventilated semi-enclosed car park, environmental education pathway, water saving sanitary fittings, recyclable waste segregation bins on each floor, solar powered landscape lighting, etc. As a consequence of these pioneering initiatives, The Parcville achieved the highest HK-BEAM (the Hong Kong Building Environmental Assessment Method) rating of Excellent upon building completion in 2002, the first residential premises to accomplish this level of environmental performance.

As the first eco-friendly residential estate in Hong Kong, we have adopted many energy conservation design features such as : heat pump (indoor swimming pool and air-conditioning), natural ventilated carpark, natural lighting at clubhouse, VVV-F type lift, VRV, energy saving household appliances, solar lamps, wind turbine, “soft starter”, timer switches, and frame for solar energy receiver panel etc.. Through continuous reduction in energy consumption, our carbon footprint is also reduced and therefore minimised the urban heat island impact.





Remark: 1 tonnes CO₂ equal to 700MWhr

To ensure our facilities are in well condition, work instructions and schedule of regular maintenance of our facility are developed, and are performed by our technical team. Daily visual inspection to identify any damages is carried out by security guards and technicians.

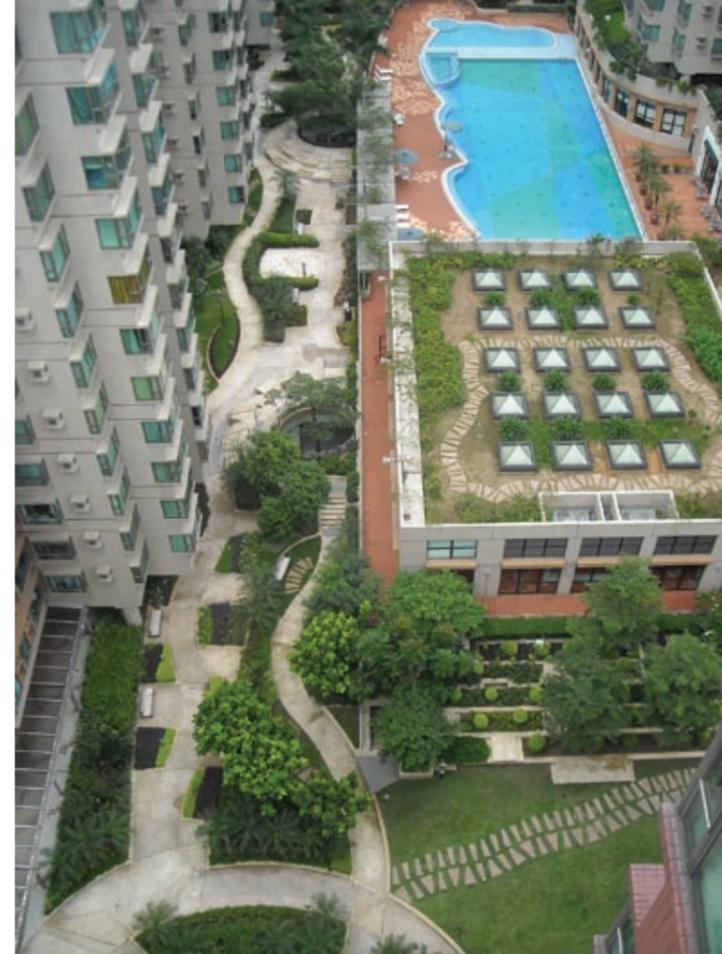
Besides the hardware, Green Procurement guidelines with instructions on preferential purchasing on environmentally-friendly materials (e.g. recycled content, low toxicity, sustainable source) are provided. Totally Degradable Plastics (TDPA) garbage bags and umbrella bags are provided for residents. Only environmentally-friendly fertilizers and pesticides are used.

To educate our next generation, environmental education pathway is designed for fostering the environmental concern of our residents. The facilities of environmental education pathway includes: Windhorn, Wind Mill, Sundial, Solar Photovoltaic Cell, Organic Farm and Tree Holes.

With the aim to enhance our effort in waste reduction and recycling, we have also developed the following periodic programmes: Mookcake container collection, old books, food donation, WEEE recycling day, etc.. A barter programme is organized on the first Sunday of every month for residents to exchange daily accessories with recyclable items.

Apart from achieving the highest HK-BEAM rating for the first private residential housing estate, there are many outstanding achievements of The Parcville, including: represented Hong Kong to participate in the international green building expo "Sustainable Building 2002" in Norway; Gold Award of the Hong Kong Eco-Business Awards – Green Property Management Award (Private Housing) in 2003 (programme led by the Environmental Campaign Committee, HKSAR Government); Merit Award of the 1st Hong Kong Energy Efficiency Awards in 2004 (by the EMSD); the first private housing estate to be certified Hong Kong Green Mark Certification Scheme – Building and Facilities Management Services in 2007; Certificate of Merit of the Competition of the Source Separation of Domestic Waste 2006/07; Model Estate of the Source Separation of Waste Programmes by the EPD and etc.

Since the full support of residents is the key success factor, we maintain close communication with our residents through monthly meetings with the Owner's Committee of The Parcville and ad-hoc meetings if necessary. We also communicate with our customers through electronic notice board, intranet, email, Home TV channel, Environmental Corridor, home interviews, environmental suggestion box, newsletter, and Environmental Committee meetings. Therefore, the excellent achievements of The Parcville is in virtue of the total involvement of the company, employees and residents.



采葉庭座落元朗東頭，由本港兩大發展商-新鴻基地產及新世界發展攜手興建，以“樹立新天新地”為主要發展理念。屋苑單位共1618伙，由14座樓高13至15層的住宅組成。聳立自然蒼翠地的采葉庭，近觀南生圍，遠眺米埔自然保護區；屋苑在20萬平方呎綠化區中栽種了2500多株植物，令住戶享受綠色家園的樂趣。

采葉庭於設計期間，已融入多項環保設施。包括雨水循環系統，半開放式自然通風停車場，環保教育徑，雙制式沖廁，樓層垃圾分類及太陽能燈等。基於上述創新設計，屋苑於2002年成為全港首間住宅樓宇取得商界環保協會頒發香港建築環境評估「優秀」證書。另外，屋苑日常管理上，由保養商及屋苑技術員對項設施作保養，確保所有系統正常運作。而日常管理消耗品，包括垃圾膠袋，滅蟲劑及肥料使用上，均以可循環使用物料及低毒性為基本採購要求。

同時，我們亦採用多種節能措施，包括有恆溫池電熱泵、停車場自然通風及會所自然採光設計，VVV-F升降機，太陽燈及風車燈，水泵軟起動裝置。經過歷年來節能措施，大廈對比入伙時節省用電超過24%，二氧化碳排放亦得以減少。

就環境教育由小造起，屋苑設有環保教育徑。以多種設備，如「風號角」傾聽自然風聲，由「風車燈」及「太陽能燈」認識再生能源，透過業戶參與親子種植，讓下一代感受有機種植。另屋苑亦定期舉辦多項活動，包括舊書本、月餅盒、電器回收及以物易物等活動，鼓勵住戶積極參與環保。

采葉庭在環保工作上所得的成績，全賴屋苑住戶之通力支持。透過電子通告版、家居資訊頻度，環保資訊廊、意見箱及屋苑通訊與各住戶保持緊密溝通；另外，每月與業主委員會召開會議，交流屋苑管理事務及一切環保訊息。

歷年來，屋苑取得多個本港及國際性環保獎項，分別在2002年代表香港到挪威參加“The International Green Building Expo”之“Sustainable Building 2002”展覽，於2003年榮獲「環保物業管理獎(私營房屋)金獎」，於2004年首屆香港能源效益獎取得優異獎項；最後，於2007年更為香港首批私人住宅屋苑取得「香港Q嘜環保管理計劃」認證。透過以上計劃，屋苑制定一套環保機制於日常管理中。





Park Central - Residential (Phase 1) 將軍澳中心(住宅) (第一期)

Location 9 Tong Tak Street, Tseung Kwan O, New Territories, N.T, HK
Completion Date 2002

Client/ Developer	Sun Hung Kai Properties Ltd. Henderson Land Development Co. Ltd. Chinachem Group Nan Fung Development Ltd.
Project Manager	Sun Hung Kai Properties Ltd.
Architect	Dennis Lau & Ng Chun Man Architects & Engineers (HK) Ltd.
Civil & Structural Engineer	Maunsell Consultants Asia Ltd.
Building Services Engineer	J. Roger Preston Ltd.
Landscape Architect	Dennis Lau & Ng Chun Man Architects & Engineers (HK) Ltd.
Facility Manager	Hong Yip Service Company Ltd. (Applicant)
Management Company	Hong Yip Service Company Ltd.
Owners Association	Owners' Committee of Lot 57 Park Central
Main Contractor	Teamfield Building Contractors Ltd.

Green Generation of Park Central Strives for a Sustainable Future

Situated in the hub of burgeoning satellite town Tseung Kwan O South with its comprehensive provision of public transportation network, Park Central brings convenient and cozy life to the new generation living here. The exquisite building design together with the sustainable management and maintenance programme establish the sustainable development of the estate.

The spacious greenery garden and the best-in-class clubhouse provide over 250,000 square feet leisure areas for our residents living in a relaxing and healthy lifestyle. Attached on 350,000 square feet shopping arcade fulfils local residents' daily needs.

Located at the artery of the public transportation network, Park Central is designed to integrate recreational and neighbourhood services with the residential development to form a self-sufficient community for its residents and nearby localities.

Sustainable development design concepts were being applied in the building stage. Apart from the different types of environmental-friendly building materials used, one of the outstanding environmental-friendly designs in Park Central is the wide use of glazing design and skylight which facilitate the maximization of natural lighting utilization at the common area. Green roof is also well maintained at the top of the Clubhouse to mitigate urban heat island effect within the estate and neighbourhood. Solar photovoltaic lighting system for outdoor lighting enhances the use of renewable energy, and together with other energy saving initiatives, our programmes reduce water and electricity consumption, and enhance the greenhouse gas emission. Besides, traffic control is enforced at the podium in order to let the residents enjoy a smokeless podium garden.





Strong records of recyclable materials being collected also highlight the remarkable environmental performance of Park Central. Emphasis is put on the promotion of source separation of waste in residential building. We are the first private housing estate to establish waste collection bags at each floor for facilitation of waste separation at source.

Continuous support from the residents is the key to success for our green management, therefore substantial efforts have been made in raising environmental awareness of the residents in Park Central. Green message cultivation through various activities and distribution channels is one of our core duties. Besides, we also share our vision and practice with the communities.

Sophisticated management systems and maintenance programmes prolong the building life and ensure a quality living environment in Park Central. With the green practices of our residents, we work together to strive for a sustainable future!

將中環保新世代 同創永續的未來

將軍澳中心(住宅)位於將軍澳南區的市中心，為區內其中一個大型私人屋苑，第一期共有五座住宅大廈，1872伙，於2002年年底入伙。屋苑位處交通脈絡，四通八達。住宅大廈坐落於25萬呎綠化平台，配合設施完善的住客會所，使居民足不出戶亦能享受健康悠閒的生活。此外，附設的大型購物商場，為居民帶來無限便利，優悠生活不假外求。

屋苑早於建築設計的時期，已採用了不少環保的概念及可持續發展的考慮。除了使用各式的環保建築物料外，苑內公眾地方，包括會所及穿梭升降機大堂使用了大量採光設計，善用日照。會所天台更設有空中花園，減低會所室溫，減少熱島效應。此外，苑內更裝設了太陽能發電的花槽燈，善用天然資源。優越的硬件設計配合我們的環保管理及保養工作，除了令樓宇歷久常新外，亦體貼居民生活的需要，我們以為業戶締造一個優質的綠色生活環境為目標。

將軍澳中心採用了不同的節能措施，以減少屋苑公眾地方的耗電及耗水量。此外，我們更於平台實行了車輛管制，使業戶能享受一個無污染的花園平台。於廢物管理方面，我們非常著重廢物源頭分類的工作，除於苑內



進行不同類型的回收活動外，亦致力推展樓層分類的工作，我們是全港第一個私人屋苑於各座後梯設置環保垃圾收集袋進行樓層分類的工作。每年屋苑的回收量亦正好見証我們多年努力的成果。

除了管理人的努力外，要推動可持續環保管理，業戶的參與及支持是非常重要的。因此，我們除了用心做好管理維修工作外，亦非常注重環保教育，向業戶灌輸環保訊息，讓其融入綠色生活。並與業界交流分享心得，攜手實踐永續的環保管理概念，為永續的未來共同努力！



City One Shatin
沙田第一城

Location: Sha Tin Town Lot No.1, HK
Completion Date: 1981

Client/ Developer	Cheung Kong (Holdings) Ltd.
Project Manager	Henderson Land Development Co. Ltd.
Architect	Wong & Ouyang (Hong Kong)
Civil & Structural Engineer	Wong & Ouyang (Hong Kong)
Building Services Engineer	Wong & Ouyang (Hong Kong)
Quantity Surveyor	Wong & Ouyang (Hong Kong)
Landscape Architect	Wong & Ouyang (Hong Kong)
Town Planner	Wong & Ouyang (Hong Kong)
Management Company	Paramatta Estate Management Limited (Applicant)
Owner Association	City Committee
Main Contractor	Sanfield Building Construction Ltd. Hip Hing Construction Company Ltd.

City One Shatin is a private residential estate composing of 10,642 units with estimated population of 40,000. The estate is built on part of a reclamation site and occupies an area of 1.8 million sq.ft. Besides high rise residential blocks, the estate consists of Olympic standard swimming pool, playgrounds and other recreational facilities. Situated in Shatin with good urban planning and in the vicinity of Shing Mun River as well as recreational park, the buildings of the estate harmonize well with surrounding environment creating no barrier to sun light and natural ventilation.

It is always the prime concern for the estate management office to protect the best interest of our residents by enhancing the value of their properties and providing a comfortable and sustainable living environment to them and their next generation. Green leadership is the indispensable factor contributing to the achievement of the above objectives. The core framework of our green leadership is the implementation of ISO 14001 standard environmental management policy with the aim of minimizing adverse effects on the environment from daily operations. On top of this, formulation of environmental policies is through the interaction of three elements: Environmental Sub-committee of owners committee, Green Care Committee of property management company and Building Committees of residents. Environmental issues are on the agenda in the meetings of various departments and committees with a view to encourage participation by all stakeholders. By engaging in the above processes, existing and new environmental measures can be generated, conveyed and implemented. In addition, feedbacks and ideas of environmental issues can be obtained from all level of staff and stakeholders for review and future planning.





To upkeep our properties in line with sustainable development, we have been implementing innovative and practical measures to prolong their life-cycle, improve the internal environmental qualities, conserve materials, water and energy as well as minimize waste and pollution. Examples are:

1. Undertaking lighting replacement for energy saving fluorescent tubes at building common areas
2. Installation of automatic light sensors for open area lighting
3. Replacement of damaged concrete surface channel covers by fiber glass made covers
4. Using swimming pool water to jet wash carriageways after annual closing
5. Setting up filtrating facilities to filter muddy water from repair work of underground water pipes before discharging to public drainage system
6. Encouraging residents and contractors to comply with Government policy by collecting Government's official receipt as an evidence for proper dumping of construction waste
7. Rejuvenating the defaced floor tiles in corridors instead of complete replacement
8. Converting a water fountain into a water conservation flowerbed
9. Installing digital photo frame at common notice board as an additional platform for environmental protection information
10. Using recycled waste to assemble large scale environmental promotional icons for promoting waste recycling.

In order to cultivate green living habits among our residents, we are the pioneer and have been promoting various kinds of environmental protection activities including second hand flea market, second hand book donation and sale, greenery teams for residents participating in landscape improvement work and various kinds of 3R activities.



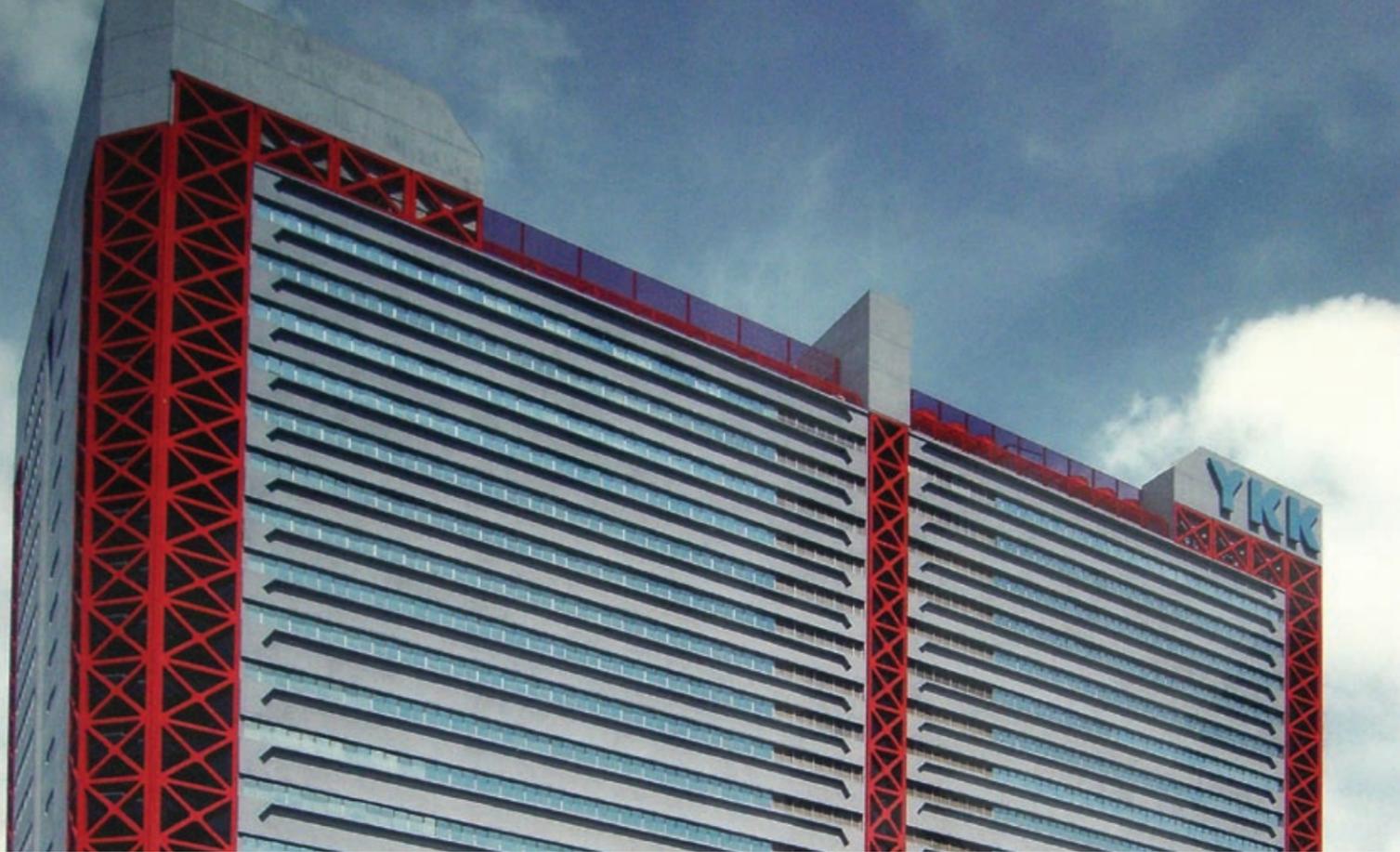
沙田第一城是一個擁有10,642個單位、估計人口約有四萬人的私人屋苑。從填海得地，屋苑佔地180萬平方呎，除巍峨洋樓，更備有奧林匹克標準大型泳池，遊樂場及其他康樂設施。屋苑位處優良城市規劃的沙田，座落於城門河畔及大型休憩公園旁，共同勾劃出一個理想環境，為居民締造風和日麗的安樂窩。

作為屋苑的物業管理公司，我們首要任務是提升物業的價值，並提供一個舒適及可持續發展的生活環境予業戶及其下一代，從而保障住戶利益。綠色領導是達致上述目標不可缺少的一個原素。ISO14001環保管理系統是我們綠色領導的核心架構，旨在減低日常運作對環境構成的負面影響。在此之上，制定環保政策是透過以下三個核心互動而成：第一城委員會內的環境及交通小組、管業處內的環境保護小組及代表各住戶的大廈委員會。為鼓勵相關方積極參與，環保事項是各部門及委員會會議上必定的討論議程。透過上述程序，現時及新引進的環保措施和訊息將會有效地產生、傳送及推行。

為保持物業配合可持續發展，我們推行具創意及可行的措施，藉以延長其生命週期、改善內部環境質素、保育資源、節約用水及能源、減少廢物及污染，例如：

1. 更換大廈公共地方光管為電子火牛慳電管
2. 安裝電子感光器調節開關公共地方燈光
3. 更換損壞石屎渠蓋為纖維渠蓋
4. 在每年泳季結束後使用泳池水噴洗全屋苑馬路
5. 在維修及更換地底水喉時設置過濾器過濾污泥，避免污染公共渠道
6. 要求住戶及承辦商提交建築廢料送往政府堆填區收據，支持政府環保政策
7. 進行特別處理修復損壞走廊地磚，避免全面更換
8. 把噴水池改裝為節省用水的環保花池
9. 在公共通告箱安裝電子相架，提供額外平台播放環保資訊
10. 使用環保物料組合成大型宣傳擺設，宣揚環保回收

我們一如既往擔任環保先鋒，透過推廣不同類型的環保活動，全面培育居民實踐綠色生活，活動包括二手跳蚤市場、舊書回收作慈善義賣、組織園藝隊持續改善屋苑園藝及多種環保回收活動。



YKK Building YKK大廈

Location Completion Date	Tuen Mun, New Territories, HK Feb 2008 (Conversion of air-cooled chillers to water-cooled chillers at Phase II and III)	Client/ Developer Architect Building Services Engineer Management Company Owners Association Main Contractor	YKK Hong Kong Ltd. Ng Chun Man Architect & Engineers (HK) Ltd. J. Roger Preston & Partners Jones Lang LaSalle Management Services Ltd. (Applicant) YKK Hong Kong Ltd. Kai Tai Construction Co., Ltd.
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Jones Lang LaSalle Management Services Ltd, a global leader in property management, is committed to create a sustainable environment for the next generation; and YKK Building exemplifies how we marry our environmental management ideas with full support from the building owner, YKK Hong Kong Limited. For instance, all staff were required to comply with the ISO14001 standard and follow environmental policies as established by the top management.

Jones Lang LaSalle's senior management formed the Sustainability Committee in 1999 to expedite the Environmental Management System in all buildings, dispatch environmental information to our clients, provide environmental guidelines for tenants and contractors to follow. Furthermore, new staff attend an Induction Course in which we include an introduction to our Environmental Management System; while existing staff attend the Revision Course to refresh their environmental knowledge and awareness regularly. We also set up a green website to address a growing interest from the staff to exchange new ideas such as environmental issues, etc.

In order to ensure that no recyclable and reusable wastes are disposed, YKK Building established a waste separation and recycling centre, wherein over 16 items out of 21 collected wastes were identified for recycling. In 2006, the total collected waste and recyclable volume recorded reached up to 1,024,939.80kg and 619,559.70 kg, respectively; while recyclable ratio is over 60% of the total waste. In order to reduce CO₂ production, a waste compactor was installed to reduce the number of times for truck travelling. Furthermore, a zipper shredder was engaged to reduce the disposal volume.





In order to encourage more occupants to participate in our waste-recycling scheme, we have placed different types of recycle stack or carton-box container, whichever is appropriate, inside their warehouses or office areas. The payback period of the captioned equipment is within two years. For chemical wastes, we have set up a chemical-waste centre, which is built to collect all chemical wastes produced at the building and ensure that all chemical wastes are properly stored and disposed. Chemical waste items including rage with paint, lube oil, fluorescent and energy-saving bulbs etc. Luminosity enhancement jackets and electronic ballasts were installed to reduce light energy consumption. Variable speed drivers and solar window films were also installed to reduce air-conditioning energy expenditure.

Implementation of energy saving and sustainable methods are being part of the financial considerations. Proactively pursuing a sustainable environment can significantly benefit in reducing cost and increasing productivity.

擁有國際物業管理界領導地位的仲量聯行物業管理有限公司，多年來致力推動環境保護工作，為社會和我們的下一代創造美好和可持續性的將來而不斷努力。

YKK大廈是實踐環保管理概念的最佳典範，當中有賴業主「YKK香港有限公司」的鼎力支持。大廈管理處所有職員亦需履行ISO14001計劃，並貫徹和執行公司所制定之「大廈環境管理系統」。

仲量聯行物業管理有限公司自1999年起組織持續發展委員會，全力推動各大廈環保管理工作，職能包括：編輯及發報環保報告、制定環保工作指引予廠戶及工程承辦商遵守。而每一位新入職的員工（不論職級）均必須參與公司制定的環保培訓，每年更有重溫課程提供及已設立「我的環保經理」網站供各員工籍此交流意見及提升彼此的環保意識。

YKK大廈設立「廢物分類處理中心」用以處理日常大廈所產生之生活及工業廢物，中心每日處理超過21種廢物，當中超過16種可供回收或變賣。於2006年所產生的廢物總重量達1,024,939.80千克，而當中可回收量達619,559.70千克，回收率超過60%。而所得的收益全數再撥入大廈基金之內，用以持續性發展環保設備，例如：購置廢物壓縮缸；有效地貯存及壓縮廢物的體積，以減省運輸次數及成本、引入碎拉鍊機；將需棄置的廢拉鍊輾碎，大大減少拉鍊的體積和彈性，同樣地可節省運輸成本、減少其體積更可間接延長堆填區的壽命和加快物料的分解。而於大廈內每一位廠戶均可獲發多套精美的四色回收箱和回收鐵籠車，以方便廠戶員工參與環保

回收，有效提高回收數量。而以上設備的投資回本期均不超過2年。YKK大廈更設有「化學廢物倉」以收集廠戶所產生之廢油漆、機械偈油、吸油物等，而近年更新增回收光管和慳電膽。管理處率先引入「納米聚光板」裝設於管理處燈管之上及介紹予多間廠戶使用以節省用電。另一方面大廈冷氣系統加設變頻設備及所有窗戶貼上隔光玻璃紙，有效減少廠戶冷氣耗電量和使用量，令業主、廠戶和管理公司達至三贏局面。

我們已將節省資源及循環再做定為項目財政的考慮條件，積極推行環保工作絕對有助降低成本及提升生產力。





Grand Century Place Shopping Mall & Office Tower 新世紀廣場商場及寫字樓

Location	193 Prince Edward Road West, Mongkok, HK	Client/ Developer	Sun Hung Kai Real Estate Agency Ltd.
Completion Date	1997	Management Company	Kai Shing Management Services Limited (Grand Century Place Management Services Limited) (Applicant)

Grand Century Place is located in Mongkok. It was completed in 1997 consisting of a shopping arcade, two Grade A office buildings, a podium landscape and a three-level carpark. For the purpose of providing a green environment to tenants and shoppers, Kai Shing Management Services Ltd adopts a green policy in Grand Century Place.

Green Policy

We respect the environment and commit to sustainable development by introducing innovative green technology, air quality improvement, energy saving, waste reduction and recycling to Grand Century Place. We also notice the importance of sustainable development and take part in various green activities. We help promote green awareness among tenants and shoppers.

New Green Technology

Grand Century Place is the first building in Hong Kong equipped with Parking Guidance System (PGS). This parking system will guide the drivers directly to the nearest available parking space which in return improve the air quality and temperature of the carpark by shortening the searching time for a parking space. Besides, we introduced a food waste conversion machine to reprocess food waste collected from Food Court into water and carbon dioxide which helps reduce food waste.





Energy saving

Environmental architecture design at the office tower such as double glazing glass maximizes natural light, reduces heat gain and saves energy. Besides, we frequently review the energy consumption status of the building and identify any energy saving opportunities.

For example, closure of a portion of carpark area during non-peak hour, replacement of the low bay lamps with T5 fluorescent tubes at carpark area and replacement of light bulbs at lift lobbies and common corridor with energy saving light bulb helps reduce energy consumption. Other measures include replacing all the traditional electromagnetic ballasts of fluorescent tubes in common corridors with electronic ones to achieve the energy saving objective. Besides, we strived to tap into various natural resources, such as using wind and solar power to supply electricity for the building.

Waste Recycling

We have placed waste separation and recycling bins at carpark lobbies, food court, children playground and each floor of office tower. Enormous amount of commercial-use waste such as waste paper, aluminium can, plastic and metal materials, other reusable items (i.e. computers, compact discs, ink cartridge and rechargeable batteries) are being recycled. In 2008, we have been awarded with Certificates of "Programme on Source Separation of Commercial & Industrial Waste" by the Environmental Protection Department.



Landscape

A landscape area of 2,400 sq.m. is provided on the 5/F, 9/F podiums and driveway. The landscape area helps refresh and cool the surroundings while offering a green refuge in the bustling city.

To achieve sustainability in Grand Century Place, we will continue to enhance our green management. We have formed a Green Committee to review the green management strategies regularly, organize green exhibitions and related activities, such as donation of old clothes and computers to charity organizations. We aim to share our experience and practices among different professionals. We hope that the green message and the green building concept can be further developed and spread so that the next generation can live in a sustainable world.

於1997年建成的新世紀廣場座落於繁囂的旺角鬧市中，項目包括大型商場、兩幢甲級商廈、平台花園及三層停車場。作為管理公司，啟勝服務有限公司於新世紀廣場貫徹推行環保政策，為租戶及市民締造環保的工作及消閒環境。

貫徹執行環保政策

我們尊重及愛惜自然環境，積極支持可持續發展，引入嶄新環保科技，改善空氣質素、節能減廢、將環保元素融入新世紀廣場。我們全體員工深明可持續發展的重要性，努力實踐環保使命。

嶄新環保科技

我們引入嶄新環保科技，成為香港首個大型商場於停車場加裝泊車指引系統，此系統大大節省駕駛者泊車的時間，從而減少車輛的廢氣排放及汽油消耗，改善停車場的空氣質素及溫度。同時我們又引入廚餘分解機，將食肆的廚餘轉化為水和二氧化碳，減少廢物。



節約能源

商廈在建築設計注入環保元素，採用低散熱表層的雙層玻璃，能加強隔熱及隔音功能。我們亦定期檢討大廈能源使用情況，發掘節能機會，例如：於非繁忙時間關閉最低層的停車場，成功節省20%的停車場電力消耗。另外，落貨區的HID燈更換為T5光管；大堂及走廊燈泡改用慳電燈泡；傳統電磁火牛已全部更換為電子火牛等。再者，我們亦積極利用可再生能源，利用風力及太陽能為部份大廈裝置供電，務求成為模範綠色商廈。

廢物分類回收

我們已於停車場客輦大堂、美食廣場、兒童遊樂場及寫字樓每一樓層擺放廢物分類回收筒，並積極推動廢物分類回收計劃，將回收到大量商用廢物如廢紙、鋁罐、塑料及金屬類物料(如光碟、碳粉盒、充電池等)循環再用，並於2008年獲發環保署工商業廢物源頭分類証書以示表揚。

綠化空間

新世紀廣場擁有2,400平方米的綠化面積，茂盛的綠色植物和花卉，能淨化空氣、降低溫度，使空氣更清新怡人，讓租戶及市民在鬧市之中亦能享受綠色生活。

為達致保護環境持續性，我們成立環保委員會，定期檢討環保工作的成效；為員工、租戶提供環保知識的訓練及推廣，更舉辦環保資訊展覽及舊衣物、電腦回收活動，轉贈弱勢社群。我們希望與其他專業機構分享有關環保管理，推廣環保意識及環保建築概念，讓下一代能繼續享用天然資源，為香港可持續發展盡一分力。



Hong Kong Cyberport 香港數碼港

Location	Telegraph Bay, HK	Client	Hong Kong Cyberport Management Company Ltd. (Applicant)
Completion Date	Cyberport 1 : 2002 Cyberport 2 : 2002 Cyberport 3 : Core A - 2002 Core B-D - 2002 Core E-F - 2003 Cyberport 4 : 2004 The Arcade : 2002	Developer	Cyber-port Limited (wholly owned by Pacific Century Premium Developments)
Green Building Rating	1. HKSAR EPD Indoor Air Quality Certificates- Excellent Class 2. HKSAR EMSD Compliance of the Energy Efficiency Registration Scheme for Buildings 3. HKSAR WSD Compliance of the Fresh Water Plumbing Quality Maintenance Recognition Scheme 4. Hong Kong Building Environmental Assessment Method (BEAM) for Cyberport 1,2&3 Offices - Excellent Class	Project Manager	Cyber-port Management Ltd
		Architect	Wong Tung & Partners Ltd
		Lead Consultant/ AP	Wong Tung & Partners Ltd
		Concept Designer	ARQ (Arquitectonica)/ Jerde Partnership
		Civil & Structural Engineer	Maunsell Structural Consultants Ltd
		Building Services Engineer	Ove Arup & Partners Hong Kong Ltd
		Quantity Surveyor	Levett & Bailey Chartered Quantity Surveyors Ltd
		Landscape Architect	Belt Collins Hong Kong Ltd
		Facility Manager	ISS EastPoint Property Management Limited
		Management Company	Hong Kong Cyberport Management Company Ltd
		Main Contractor	Cyberport 1, 2 & (3 of Core A) - PYI Corporation Limited The Arcade - Hip Hing Construction Co Limited Cyberport 3 - Hsin Chong Construction Group Limited Cyberport 4 - Gammon Construction Limited

Occupying a staggering 24 hectares, Cyberport nestles in a spectacular location at Telegraph Bay on Hong Kong Island's southern side. With a low density, campus-like environment and state-of-the-art Information Technology (IT) and telecommunications facilities, Cyberport is attracting a diverse range of local and international IT talents and becoming the breeding ground of a new generation of IT and digital entertainment professionals.

The Cyberport development consists of the Cyberport Portion and the Residential Portion. In the Cyberport Portion, there is a low-rise office block, three medium-rise office blocks (all offices with BEAM excellent rating), a retail and entertainment complex (The Arcade) and a five-star hotel. This article will outline the environmental qualities, environmental friendly features and measures of the office buildings and The Arcade in the Cyberport Portion.

The Cyberport Portion offers a low density, quiet campus-like environment with:

- Extensive landscaped terraces, water features and gardens
- Outdoor cafes, lounges and recreational facilities

At the heart of Cyberport Portion is The Podium on Level 4, the main centre for social interaction and an ideal venue for special events and neighbourhood amenities including green activities. With terraced lawns, gently meandering waterways and an abundance of seating areas with canopies and trees to provide shade, the whole area offers a dramatic, yet peaceful contrast to the modernity of the surrounding buildings.



In addition to conventional environmental (M&E) design and green features, such as use of low-e glass for double glazed curtain wall unit, automatic electric blind system at designated glazed areas, etc., there are some unique green features for the Cyberport development including the following:

1. Campus-like environment planning for bioclimatic and landscape quality
2. Amber indoor and outdoor neighbourhood amenities for social and cultural activities
3. Bicycle path and parking facilities to encourage outdoor activities and energy conservation
4. Sky garden design for better natural ventilation and communal landscape spaces
5. Fabric Roof of The Arcade to fully utilize daylight
6. Recaptured water for irrigation and gray water for flushing
7. Water-cooled air conditioning system (EMSD pilot scheme)
8. Intelligent infrastructure including energy-saving intelligent lifts and escalators, etc.

The green features provided in the buildings have been well maintained with the aid of Intelligent Building Management System (IBMS) and further enhanced by implementation of a series of green improvement works, such as installation of high performance reflectors for light fittings, waterless urinal system (under trial), etc. Waste management and pollution control including limiting the use of high emission and ozone depletion materials, fit-out guideline to control waste disposal, proper disposal of fluorescent lamps and waste lubrication oil, use of high life expectancy materials, etc. have also been adopted to sustain environmental friendly measures.

Green activities or events, such as Earth Day at Cyberport, have been organized and promoted by the Cyberport management to increase the awareness of environment protection among the tenants and the community as a public mission. The Cyberport management under the green policy has also been sharing the tips on energy saving with tenants via emails, circulars and seminars.

The Cyberport project has won many local and international awards for IT infrastructure, architecture, interior design and environment awareness including Hong Kong Energy Efficiency Silver Award – “Commercial Buildings” Sub-category, Excellent Class Indoor Air Quality Certificates, Overall Winner in the Best Landscape Award for The Podium, Intelligent Building of the Year Award 2004, etc.

The Cyberport management would like to share and learn with other participants through this Green Building Award 2008; together we can achieve a better green environment for us all.



數碼港座落於港島南區的鋼線灣，景致怡人，海山環抱，坐擁壯麗景色，佔地廣達二十四公頃。低密度的校園式環境，配以尖端資訊科技和電訊設施，數碼港廣泛吸引本地及國際不同層面的資訊科技人材，成為孕育新一代資訊科技及數碼娛樂專業人才的理想地方。

數碼港發展項目由數碼港部分和住宅部分組成。數碼港部分擁有一座低密度的甲級智慧型辦公室大樓、三座屬中密度的甲級智慧型辦公室大樓（所有辦公室大樓均榮獲香港建築環境評估證書計劃（BEAM）頒發優秀評級）、一個零售和娛樂商場（數碼港商場）和一幢五星級酒店。這篇文章將概述數碼港部分當中的辦公室大樓及數碼港商場的各項環境質素、環保特式及措施。

數碼港部分提供寧靜及低密度如校園的環境，配以：

- 廣闊的觀景陽台、水飾裝置及花園
- 戶外咖啡店、雅座酒吧及康樂設施

位於四樓的數碼廣場貫通數碼港的各座主要大樓，其中心位置最適合進行各項社交聚會和舉辦各類消閒娛樂及特別項目，包括環保活動。綠油油的青草地及階梯、蜿蜒清澈的流水，再加上數量充足、設置在太陽傘及樹蔭下的舒適雅座，使廣場的環境恬靜怡人，配合周圍的現代建築設計恰好形成和諧的對比。

除常規環保設計和綠色裝置包括玻璃幕牆使用雙層低放射傳熱性玻璃，及在特別強烈陽光照射的地方加裝電動窗簾等外，數碼港亦具備了以下獨特環保裝置：

1. 校園式環境設計以保持生物氣候和風景質素；
2. 充足室內及室外設施可用作社區及文化活動；
3. 單車徑及停車處以鼓勵室外活動和節約能源；
4. 空中庭院設計以創造更良好自然通風環境和共同空間景緻；
5. 數碼港商場的人造纖維屋頂能充分地運用天然光；
6. 循環再用水作灌溉及中水處理作沖廁之用；
7. 使用水冷式散熱中央空調系統（機電工程署試驗性計劃）；
8. 智能系統包括省耗電量的智能電梯及升降機等

在中央智能控制系統的幫助下，大廈的環保裝置得到良好的保養，並在一系列環保改善工程中得到進一步改善。改善工程包括裝置高效能反射的燈光、無水沖廁系統（試驗階段中）等。同時令環保措施可持續發展，我們採取有關廢物處理及污染控制措施，包括限制使用高放射性及破壞臭氧層物料、裝修工程指引控制建築廢料的產生、恰當處理棄置光管及廢料潤滑油、採用耐用物料等。

數碼港會定期透過舉辦及宣傳環保活動（如數碼港地球日）向社區及租戶宣揚環保訊息，作為公眾使命。數碼港管理層亦會根據環保政策，透過電郵、內部通訊及講座，與租戶分享節約能源的心得。

數碼港項目在資訊科技基建、建築、室內設計及宣揚環保訊息方面，獲得不少本地及國際性獎項，包括香港能源效益銀獎（商業樓宇類別）、優質室內空氣質素卓越獎證書、2004全年最佳智能建築物，以及數碼廣場榮獲最佳園景獎總優勝者等。

數碼港管理層希望與其他參與這次「環保建築大獎2008」的團體分享和學習，共同創造一個更美好的綠色環境。





Island Resort 藍灣半島

Location 28, Siu Sai Wan Road, Siu Sai Wan, HK
Completion Date 2001

Client/ Developer	Sino Group Sun Chung Estates Co. Ltd. China Everbright Holdings Co. Ltd. Vicwood Group
Architect	Ma Leung & Associates Architects & Engineers Ltd.
Landscape Architect	Belt Collins International Ltd. Earthasia Ltd.
Management Company	Island Resort Estate Management Co. Ltd.
Owners Association	Owners' Committee of Island Resort
Main Contractor	China Overseas Building Construction Ltd.

Island Resort is a large private residential development located in the Siu Sai Wan District. It consists of 8 residential towers with a total of 3098 apartments, housing over 13,000 residents.

The design of the building included lots of elements to let in bountiful sunlight. Windows and floor to ceiling glasses were massively utilized, allowing maximum natural light in the clubhouse, tower lobbies and apartments and bringing the natural picturesque scene to the residents. Breezeways were reserved in all towers to match with the mass landscape coverage of the estates. It helps to improve the air circulation for dispersing heat and pollutants within the site boundary and maintain a comfortable living environment for our residents.

The Management Company successfully obtained the full support from the Owners' Committee and owners of Island Resort to continuously promote environmental protection and energy efficiency works for years. In 2004, a series of improvement works had been conducted, including the dismantlement of an energy saving lamp in the lobby of each residential floor, replacement of all T8 tubes and electromagnetic ballast in lobbies and staircases with T5 tubes and HF electronic ballast and frequent review of the operation hours of common facilities etc. The energy consumption was kept to the minimum usage rate with 1,040,000 kWh saved after a year and at a reduced consumption equivalent to just 13.2% of that in 2004. Around \$1,000,000 electricity charge was ultimately waived through the captioned works. In view of these remarkable achievements, Island Resort won the "Silver Award" (Residential Building) of the "1st Hong Kong Energy Efficiency Awards" organized by the Electrical & Mechanical Services





Department in 2006. From 2004 up to the present moment, the Management Company is still persistently trying the utmost effort to trim down the electricity usage and the continuous reduction in energy consumption year on year demonstrates our tremendous effort.

Besides working on the hardware, the Management Company strongly believed that the participation of the residents and the staff is an important factor leading to the success of environmental protection. Newsletters had been issued to educate the residents on the tips of environmental protection and energy saving. In addition to interesting environmental protection activities organized by clubhouse, the "Waste Recycle Collection Day" had also been regularly launched to enhance the residents' awareness of protecting the earth. On top of these, Sino Group pioneered the "Green Academy" as one of the major training courses on environmental protection for staff during which key officials from the Electrical and Mechanical Services Department and the Environmental Protection Department were invited as facilitators.

The Management Company and the Owners' Committee will continue to actively promote the environmental protection works to upkeep the green environment.



藍灣半島是位於小西灣區之大型私人屋苑，由8座住宅大廈組成，共有3098個單位，住戶超過13,000名。

住宅於設計上加入大量自然採光元素，大幅落地玻璃除可讓自然光線直接透進會所、屋苑大堂及住戶單位外，更可充分讓各住戶飽覽大自然景色。各座間預留之通道，可使海風直達屋苑平台，配合大型園林覆蓋，加以淨化空氣中之污染物，使各住戶盡享舒適涼快之居住環境。

管理公司成功獲取藍灣半島業主委員會及居民的支持，一直致力推行「環保節能」工作，成效顯著，屋苑於2004年進行一系列系統上之改善，如將各層住宅大堂燈桶內之兩支節能光管拆去一支、全面使用電子火牛及T5節能管、持續檢討所有冷氣、升降機及照明系統之運作等工作，將能源消耗減至最低。短短一年間，屋苑節省了104萬度電，相等於2004年使用量之13.2%，省回約\$1,000,000電費開支。屋苑於2006年更榮獲機電工程署舉辦「第一屆能源效益比賽」住宅組別銀獎。由2004至今，管理公司仍持續進行一切可行之節能措施，屋苑耗電量每年均見遞減。

除硬件外，管理公司認為住戶及員工之積極參與，對於屋苑環保節能工作之成功，實屬不可或缺之要素，故特別印發刊物教育居民有關環保節能之小貼士，另透過會所舉辦多場環保活動及屋苑定期所推行之「環保減廢同樂日」，增強居民之環保意識。此外，除定期為轄下員工提供訓練外，管理公司更首創「環保學堂」邀請「環保署」及「機電工程署」職員到臨授課，確保各員工了解環保工作之要點。

管理公司及藍灣半島業主委員會將會繼續積極推行環保工作，致力維護美好之環境質素。





Ocean Shores 維景灣畔

Location: No.88 O King Road, Kowloon, HK
Completion Date: 2001

Client/ Developer	Arrowtown Assets Limited
Project Manager	Sanfield Building Contractors Limited
Architect	Wong Tung & Partners Limited
Civil & Structural Engineer	Joseph Chow & Partners Limited
Building Services Engineer	Sun Hung Kai Architects & Engineers Ltd.
Quantity Surveyor	Sun Hung Kai Architects & Engineers Ltd.
Landscape Architect	Sun Hung Kai Architects & Engineers Ltd. (Landscape section)
Management Company	Kai Shing Management Services Limited (Ocean Shores) (Applicant)
Owners Association	Ocean Shores Owner Association
Main Contractor	Chun Fai Construction Co. Ltd.

Ocean Shores, an impressive residential estate in Tseung Kwan O, is comprised of 5,728 flats which are homes to some 35,000 residents.

With a “planting on construction” concept in mind, approximately 55 percent of the site area is covered with plants to offset the carbon dioxide emitted. An ample green area on the podium exhibits a variety of delightful trees and smaller plants.

Among other environmentally friendly initiatives, the management works closely with Ocean Shores’ Owners’ Committee to actively promote a wide range of measures that help save electricity and water, encourage recycling waste and support green educational activities.

Ocean Shores is thus making its mark in the community as a Green Building, and is committed to continuously developing its green projects.

Saving Electricity

- To reduce the energy consumed by and the CO₂ emitted from the water heat pump that maintains the indoor swimming pool at a constant temperature in winter, Ocean Shores has replaced the original gas powered pump with an electric one. This has reduced energy costs by 78% and CO₂ emission by 41.2% annually. 
- The lobbies of the residential towers have surrounding glass that allow natural light in and sharply reduces the need to use ceiling lightings during daytime.
- Starting at midnight, half of the lift services are suspended until 6:00am. Lightings in corridors and the car park have been re-arranged and changed to energy efficient light bulbs. In the carpark alone, 50% of energy is saved.
- Buildings of Ocean Shores are equipped with an intelligent lift control system which can save 30% of energy when compared with conventional controls.

Saving Water

- Ocean Shores lies next to a hillside with abundant natural vegetation and streams. The management team has designed and installed a stream water collection system which includes a storage tank. The water collected is used for irrigation, saving approximately 156,000L of water every year. 
- When the swimming pools are closed for annual maintenance, the appointed cleaning contractor would use the pool water to clean the car park and thus saving 85,000 L of water a year. The water is also used to replenish the fountains featured outside each tower lobby, further saving 315,000L water per year. 

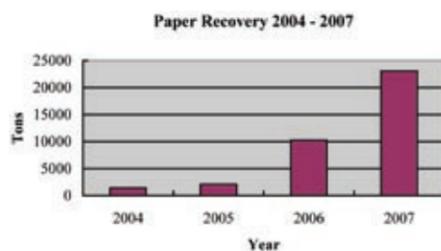


Waste Recycling & Reduction

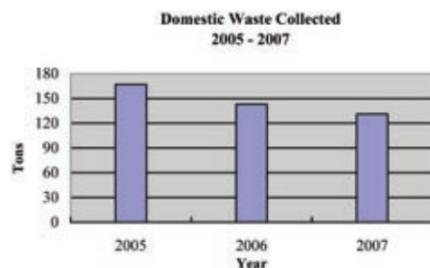
Ever since the first residents moved into Ocean Shores, management has been striving to encourage households to separate wastes for recycling. However, the traditional recycling bins were so bulky that they could be placed only in open spaces on the podium. The solution was to equip tailor made recycling bins that fit neatly at the cargo lift lobbies, thus allowing successful waste separation on each residential tower floor. This new, convenient facility brought about a significant increase in paper recovery and a substantial reduction in the amount of domestic wastes from 2005 to 2007. Observing this success, many other management companies followed by implementing the same concept in their buildings.



1. Results of Waste Recycling



2. Results of Waste Reduction



Green Education

To promote green awareness among residents, part of the hillside has been adopted as a piece of "Greenland" where residents can cultivate a variety of vegetables and plants. One of the special features of this Greenland is the use of fallen leaves and branches to create organic compost fertilizer. Our Greenland not only provides a charming leisure space where parents and children can enjoy meaningful activities together but also brings green messages and knowledge to the younger generations.



Future Plans

To keep up with the pace of advancing green technology, Ocean Shores will continuously implement new green measures, including:

1. Installation of heat reflective films on the Club House skylights to reduce air-conditioner loading otherwise needed to lower the indoor temperature raised by direct sunlight
2. A program using solar lawn lamps is already in trial
3. An irrigation system using wind and solar power generators is being studied and we expect it to be launched at Ocean Shores in the middle term.

Given the existing facilities and future plans presented here, Ocean Shores stands out as a residential estate that is successfully pioneering the promotion and adoption of green management concepts to provide a green living environment for its residents.



維景灣畔坐落於將軍澳，是一個擁有5,728個單位及約35,000住客的大型屋苑。

建基於“在建築物上種植”的設計概念，屋苑平台的綠化面積達總面積的55%以抵銷二氧化碳的排放。

過往在業主委員會的支持下，屋苑致力推行多項節約水電、鼓勵廢物回收及推廣環保活動等工作，成功將屋苑營造成為社區的環保屋苑。

節約用電

1. 屋苑將室內恆溫泳池的煤氣熱水泵更換為高效能之電熱水泵，每年節省78%支出及減少二氧化碳排放量達41.2%。
2. 大堂設計採用玻璃幕牆以善用天然光，節省日間照明系統的用電量。
3. 在深夜時段暫停一半升降機數目，將樓層及停車場的照明重新安排和改用較低功率而高照明度的光管，節省停車場50%的用電量。
4. 選用比傳統升降機系統節省30%耗電量之智能升降機系統。

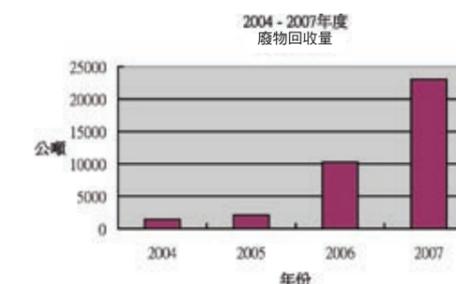
節約用水

1. 因應依山而建的天然環境將雨水由山邊引入儲水缸作灌溉用途，每年節省用水大約156,000公升。
2. 在每年泳池休池維修期間，將泵走的池水用作清洗停車場及補充各座噴水飾池池水，每年分別節省用水85,000公升及315,000公升。

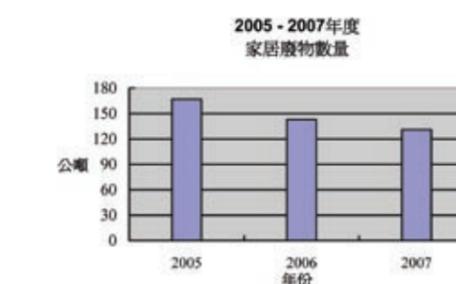
廢物回收及減少廢物

由維景灣畔入伙起，服務處已致力提高住戶在廢物分類方面的參與率，由於傳統的廢物分類桶體積較大，只適宜擺放於平台位置，故特別訂造了適合樓層載貨升降機大堂狹小空間使用的組合式分類桶，成為其中一個率先在每層樓擺放廢物分類桶的屋苑。因而令廢紙回收數量大幅上升，相反家居廢物數量則大幅減少。及後不少屋苑亦相繼參考此成功經驗。

1. 廢物回收成效



2. 減少廢物成效



綠色教育

屋苑將荒地開墾為綠田園，讓住戶參與種植蔬菜及植物等。綠田園的其中一個特色是採用由枯枝樹葉發酵而成之天然肥料。除了向住戶灌輸環保及綠色理念，亦為住戶提供一個親子活動之平台。

未來計劃

維景灣畔將來在環保工作會不斷創新及緊貼日新月異的環保科技，包括：

1. 落實在會所天窗加貼反光保護貼，將太陽熱力反射以減少冷氣使用量。
2. 正試驗在平台使用太陽能花槽燈以節省能源。
3. 研究引入太陽能及風力發電之灌溉系統。

在種種現有及新增之環保設施下，維景灣畔為住戶提供綠色的生活環境，同時成為推動環保的典範之一。



Pristine Villa 曉翠山莊

Location
Completion Date

18 Pak Lok Path, To Fung Shan, Shatin, N.T, HK
2005

Client / Developer
Project Manager
Architect
Landscape Architect
Facility Manager
Management Company
Owner Association
Main Contractor

Sun Hung Kai Properties Limited
Sun Hung Kai Properties Limited
KNW Architects & Engineers Limited
Clouston Landscape Architect Planning Consultants
Hong Yip Service Company Limited (Applicant)
Hong Yip Service Company Limited
The Incorporated Owner of Pristine Villa
Manfield Building Contractors Limited

Recent Achievements

- Certificate of Registration of The Hong Kong Energy Efficiency Registration Scheme for Buildings - Lighting Installations 2007
- Champion Quality Building Management Competition in Shatin 2005 and 2007
- Certification of Merit: Competition on Source Separation of Domestic Waste 2006/07
- Silver Award: Best Landscape Award for Private Property Development 2004

Background

Pristine Villa is gently cradled in To Fung Shan, an extraordinary lush and peaceful area of Shatin, where Shatin's year-round mountain greenery is. Pristine Villa is a high quality and low density residential development built in 1995 which comprises 14 low-density residential buildings, two multistoried car parks, a clubhouse and over 480,000 square feet of spectacular private country park area. Together with the large grassland, it provides a great enjoyment of natural environment and lets the residents enjoy a feeling of true comfort and the sights and sounds of mother nature.

Pristine Villa has its own private shuttle buses taking only 3 minutes and walking distance within 10 minutes to Shatin Town Centre and Tai Wai local market and public transport MTR station. In addition, Pristine Villa is well connected to the Tolo, T3 and T8 highways, so residents can drive to Northern-New Territories and Kowloon conveniently.

Green and Building Design

Pristine Villa was built in parallel with the slope which conserves the natural landscape and blends in with its natural surroundings. A private country park area is included in the development; large area of green coverage enhances the air quality of Pristine Villa, reduces heat island effect and provides shade and windbreaks. More than thousands of trees act as the green barrier and allow our residents to be free from the crowded noise and air. Furthermore, green roof is designed at the top of main refuse collection point which further minimizes the unpleasant smell affecting the surrounding area.

Apart from the green area, the residential units are mainly North-South facing which reduce the effect of direct sunlight; external walls are designed in light color to lower the building temperature and the external walls were paved with self-cleaning tiles to reduce the cleaning frequency. Besides, the window glazing of residential buildings





and clubhouse allows maximum natural sunlight penetrating into apartments and clubhouse. Also, large green lawn and swimming pool was situated at the centre of properties to absorb heat during summer. Semi-opened design in car parking area encourages natural lighting and ventilation which reduce around 30% of energy usage.

Sustainable Management

For a continuous green building management, green improvement works and waste management activities were implemented. Energy consumption pattern is reviewed periodically to ensure the energy efficiency and to look for any energy saving opportunities.

The green works in Villa includes use of energy saving devices such as installation of timer switch control, Light ECO and motion sensors in 2003; silencer at lift machine room, water saving taps and timer control irrigation system in 2005 and photo sensors in 2006. Besides, energy saving lightings such as replacement of existing fluorescent tubes T8 to T5 at typical floor lobbies and rear staircase of residential blocks, spot lights (50W) in lift cars were replaced by LED down lights (3W); relocation of fluorescent tubes from the ceiling to beam at car parking area in 2007, etc. We have also adopted the Building Energy Codes and registered under the Hong Kong Energy Efficiency Registration Scheme for Buildings - Lighting Installations 2007 to ensure effective use of energy.

In addition, we have established internal Energy Saving Guideline and green procurement policy for the management team to follow. Environmentally friendly materials are widely adopted such as VOC-free painting material, biodegradable plastic bag and recycled materials, etc.

Waste management practices and waste recycling activities are strongly supported by our residents which is actually the key for the successful implementation of environmental initiatives. Recycling activities such as collection of used computers, moon cake boxes, books and old clothes are held periodically. Green message is passed to residents through Green carnival and Green Farm. In addition, tri-color recycle bins and source separation scheme are commonly accepted and supported in Villa.

Building Maintenance

Comprehensive and proper maintenance program are the cornerstone of the sustainable development of the estate. Daily, annual and planned maintenance are well organized to enhance the durability of the building life, to reduce waste production and to keep efficiency of public facilities. For example, pumping, CCTV and security system are checked monthly; 5 year plan is established for large scale maintenance.

Innovation

Some innovation concepts were carried out such as changing vacant water spray pool to a fish pond, changing low usage rate children play area to multipurpose court, installation of tailor made flower beds to beautify the private road of Pristine Villa, etc.

Our mission is to enhance a better life and living environment in Pristine Villa and sustain our GREEN lifestyle through the green building concept.



近年獲得的獎項

- 香港建築物能源效益註冊計劃註冊證書 2007
- 沙田區優質大廈管理比賽冠軍 2005 及2007
- 廢物源頭分類比賽優異獎 2006/07
- 私人物業最佳園林大獎 2005

背景

曉翠山莊座落於沙田道風山上的優質低密度住宅物業，佔地88萬平方呎，擁攬一片青蔥滌靜的山林。山莊設計為14座住宅樓宇，2座多層停車場，1座會所及48萬呎私家郊野公園及一大片草地，為業戶提供恬靜優雅的居住環境，使業戶能盡享大自然的舒適。

儘管座落於道風山，曉翠山莊距離沙田市中心及大圍街市只需3分鐘車程或10分鐘步行距離。住戶更可乘坐屋苑穿梭巴士，只需3分鐘時間便可到達市中心。此外，曉翠山莊鄰近吐露港、T3及T8公路，住戶駕車到新界北區及九龍區均快捷方便。

環境質素及樓宇設計

曉翠山莊享有道風山四季常綠的山景，為沙田區樹林茂密及寧靜的地區。此外，山莊依山而建，保留了附近一帶的自然景觀，亦能與週邊環境融合。

480,000平方呎的私人郊野公園，廣闊的草原使住戶能盡情享受綠化的郊野環境，配合大面積的綠化覆蓋，提供優質的空氣質素，同時亦能減低熱島效應，作為遮陰及防風林的作用。而大量林立的樹木更成為天然綠色屏障，有效阻隔外間的污染。

山莊的住宅單位窗戶均向南或北，有效減低陽光直接照射；山莊外牆採用淺色設計，有助減低樓宇的溫度，而樓宇的外牆磚更採用釉面磚，具備自動清潔果效，減低清洗外牆的次數及時刻保持外牆美觀。

樓宇及會所外牆亦採用大玻璃設計，使單位及會所室內能採用自然光。而泳池及大草地亦設於山莊之中央位置，於夏天有調節溫度的作用。半開放式的車場能利用天然光及天然通風，減省30%的耗電量。

可持續管理

保持屋苑的可持續性，節能及廢物管理均十分重要。山莊定期檢視耗電的狀況，以確保節能的成效。



節能方面，曉翠山莊安裝了各項的節能裝置包括於2003年安裝光線感應器，電子火牛；2005年於升降機房安裝減聲器，自動灑水系統；2006年安裝光線感應器；於樓層大堂，除了減少光管的數量，更由T8光管改用慳電的T5光管；升降機、洗手間及其他公眾地方的射燈(50W)改為使用LED燈(3W)；於2007年，透過改動車場光管安裝的位置及減省不必要的光管，提高能源使用的效益。曉翠山莊已於2007年取得香港建築物能源效益註冊計劃註冊證書。

另外，山莊亦設立了節能指引及環保採購政策供員工遵守。一些對生態無害的產品，例如無VOC的油漆，可分解的膠袋及循環再用物料等已在山莊獲廣泛被採用。

廢物管理措施及廢物回收運動得到業戶的支持與推動，是推動環保的重要因素。山莊定期舉辦各項回收活動，如舊電腦、電器、月餅罐、舊書、舊衣回收等。此外，環保嘉年華及種植活動均能將環保訊息帶給業戶。此外，三色回收桶計劃及源頭分類計劃亦獲業戶支持。

大廈維修

除可持續管理外，綜合的維修計劃也是可持續管理的基石。安排良好的日常、周年及計劃性維修能延長樓宇設施的壽命，從而減少製造廢物及保持公共設施的效能。例如水泵、閉路電視及保安系統每月進行例行檢查。大型的維修項目按5年計劃進行。

創新意念

創新意念包括透過加裝濾水系統，將水池更改為魚池，將使用量低的兒童遊樂場改建為多用途球場，於曉翠山莊的私家路加設花槽以作美化。

我們的使命是以環保建築的概念以改善曉翠山莊居民的生活及居住環境，並持續這綠色的生活方式。



GBA 2008: RP - Jury's Citation

環保建築大獎2008 - 「研究及規劃類別」評審團意見

Jury's Citation

Research and Planning is a pivotal arena for advancing environmental performances of buildings and the Jurors are very pleased to see the various research and planning studies in a wide range of topics in Hong Kong and Mainland.

Beijing Changxing Eco-city

The breadth of the study is outstanding and covered a wide spectrum from energy reduction, transportation mode, biodiversity, waste separation to social aspects. Through the establishment of bench marks for environment, society, resource and economy, this project aims at creating a new planning decision making model for future. The Jurors are particularly impressed by the project team's efforts to introduce pioneering concepts for planning and gaining the support of these from the local authorities. The in-situ retention of village settlers and thus preserving the village tradition is innovative.

Micro-climate Studies for Sustainable Public Housing Development

This submission is a comprehensive study on the performance of various aspects of micro-climate within various public housing developments. Continuous improvements to the study have been implemented such as the inclusion of the air ventilation assessment throughout its development. On site post-occupation monitoring were also conducted. The works have helped to create a better living environment not just for the occupants of the housing development but also for those in its surroundings.

Vertical Greening Research Study

The condition of vertical greening for Hong Kong is topical and innovative. The research study objective was to create a practical guide to assist designers to implement vertical greening within the dense urban areas. Various potential greening areas were identified and the result guideline is a user friendly and detail tool.

Kai Tak Planning Review for a Sustainable and Green Environment

A breakthrough in HK planning studies with people involvement placed as the foremost consideration. Innovatively, it is also the first planning study in Hong Kong that usefully considers the urban air ventilation environment. The plan has incorporated useful design consideration to ensure a more sustainable and green environment.

Comprehensive Environmental Performance Assessment Scheme for Buildings (CEPAS)

The study establishes an environmental performance assessment scheme that is specially suited to the Hong Kong climatic, built and social conditions. The framework of the scheme and the proposed staged assessment are both innovative and practical. The scheme is also up-to-date as it has incorporated the latest findings and knowhow.

Centennial Campus – The University of Hong Kong

The project has incorporated an extensive list of sustainable features including conservation of three heritage buildings, elimination of vehicular traffic within the centennial campus, use of proven as well as experimental energy efficient technologies such as night time fresh air purging and capturing the energy of the free falling of lifts and implementation of an environmental display and monitoring system for giving useful information to the occupants.

評審團意見

研究及規劃是推動環保建築的重要一環，而評審員們非常高興接獲多份在香港及內地就廣泛議題所進行的有關規劃及研究。

北京長興生態城

該研究的範圍之廣值得讚許，研究涵蓋了節約能源、運輸模式、生物多樣性、廢物分類、社會方面的問題等多個範疇。這個項目旨在通過訂立在環境、社會、資源和經濟的基準點，為未來創造一個新的規劃決策模式。評審員對項目顧問努力引進新的規劃觀念，以及從地方當局爭取支持，有特別深刻的印象。在原址安置村民，從而保存鄉村的傳統亦極具創意。

可持續發展公屋的微氣候研究

這份參賽作品是一份非常全面就多個公屋發展的微氣候研究，研究內容不斷改進，後期研究更加入了空氣流通的評估。入伙後仍然繼續進行空氣監測。通過上述研究，為公屋住戶和鄰近的居民創造一個最佳的居住環境。

垂直綠化研究

垂直綠化為香港極具創意及熱門之話題。該研究的目的是編制一個實用的指南，以協助設計師在密集的市區內貫徹垂直綠化。研究指出了多個有潛力進行垂直綠化的範疇，而方便易用的指南提供了詳盡的指引。

以可持續發展及以綠化環境為本的啟德規劃檢討

把人的參與放在首要的考慮是香港規劃研究的突破。該規劃檢討亦是首份應用空氣流通評估及另外多個範疇，以達至可持續發展及環保的環境。

全面評估樓宇環境表現計劃

一個特別為適合香港氣候、建築環境和社會條件而設的評估環境表現計劃。分階段之評估切實可行，亦具創意。

香港大學千禧校園

該項目涵蓋了多項可持續發展的原素，包括保育三棟歷史建築物、園內禁止車輛行駛、使用已實證及具實驗性的節能技術，如夜間淨化新鮮空氣、收集自由下降升降機的能量及採用監測環境和顯示系統，為使用人士提供有用的信息。



Beijing Changxing Eco-city 北京長興生態城

Completion Date of Study 2007

Client/ Developer

Beijing Wannian Flowercity Real Estate Development Company Limited

Town Planner

Ove Arup & Partners Hong Kong Limited (Applicant)

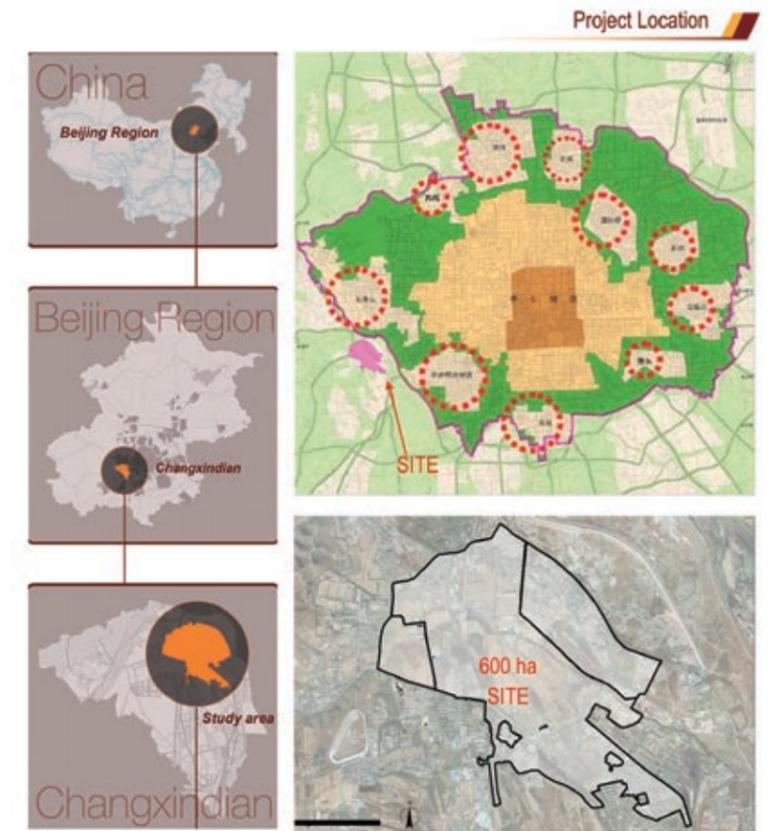
The Changxing Eco-city is located in Fengtai's Hexi District, within the south-western region of Beijing. Arup's East Asia Planning team based in Hong Kong and Shanghai office was directly commissioned by a leading private sector real estate company to review the existing government statutory master plan and produce a sustainable eco-city master plan for the 600 hectare site. Utilizing the multi-disciplinary skills of Arup on sustainable development, the team led a consortium of consultants to develop a plan and implementation strategy for one of the first private sector led eco-city projects in China.

With sustainable development on the center stage, the vision of the project is to:

- Plan and implement an urban district driven by sustainable development principles, based on an integrated urbanism and resource management planning framework; and
- Balance the environmental, social, and economic needs of the project to achieve "energy efficiency, environmental friendliness, economic growth and social harmony".

The project covered thorough interaction with client, local residents and stakeholders in establishing the sustainable development framework, objectives and indicators, as well as various technical, master planning and implementation strategies resulting in the preferred master plan. A variety of sustainability tools were used to assist the project team in coming to the preferred planning and design solutions, including Integrated Resource Management (IRM) Model, Micro-climate Modeling, Arup's Sustainable project Appraisal Routine (SPeAR™), Eco-footprint and intensive use of GIS.

After in-depth analysis on site conditions, the SPeAR™ was used to define sustainability objectives and indicators. The SPeAR™ is a comprehensive sustainable decision making tool and is also one of the very first of this kind available at present in the region to facilitate stakeholders in debating and deciding on the relative importance of various sustainable development objectives. The project developed a total of nineteen quantitative sustainable indicators to compare the proposed eco-city master plan with conventional city development (Business-as-Usual). The results demonstrated that the eco-city proposal has positive contribution to sustainability, quality of life and health, and planning and design of built environment. This approach is different from conventional planning practice with focus on physical land use planning only.



The project emphasized the importance of integrating social dimension into the “Green” approach and thus formulated an in-situ village improvement plan. The local character and social fabric of three existing rural villages will be preserved by avoiding comprehensive village relocation. A number of workshops were held with the client and major stakeholders including the government and local communities to develop and refine the sustainable village improvement objectives, while gaining an understanding of the needs of and impact to the local community. This was the first time in Beijing that such an innovative approach to rural village in-situ improvement instead of relocation and clearance was proposed.

The proposed eco-city development plan adopted sustainable strategies on the use of renewable energy, reduction in carbon emission, water consumption, energy demand and waste generation. This is a strong driving force for achieving specific sustainability targets and it broadened China’s conventional local planning considerations to include positive impact on climate change and global resource.



In addition, a comprehensive economic financial model was tailor-made for the project to assess the cost and benefit associated with the “Green” infrastructure. The model demonstrated to the client the financial feasibility of the eco-city option and sustainability driven planning project makes business and financial sense. The project’s final recommendations included a cost-benefit re-distribution business plan which was subsequently endorsed by the private sector developer.

The eco-city option significantly reduced the ecological footprint compared to Beijing average and the “Business as Usual Approach” through implementation of a number of key strategies to reduce resource consumption. Eco-city resident will require 3.47 global hectares per person to support their lifestyle - a notable reduction in the footprint by 27% compared to Business-as-Usual development mode in Beijing urban area.

With the support from the client and the local government, a decision to proceed to implementation has been made. Arup is again appointed as the lead consultant for the second stage of the project. The project team will work in partnership with Beijing Planning & Design Institute to prepare statutory Control Plan and implementation plans. The next stage will also involve formulation of urban design guidelines based on the established sustainable framework and design of a 3,500sq.m. Carbon Neutral Demonstration Centre.

北京長興生態城位於北京市西南部豐台區的河西地區。奧雅納東亞區駐香港及上海辦公室的都市規劃團隊受北京著名的私人房地產開發商直接委託，探討在北京長辛店地區約600公頃的土地上，在北京現行總體規劃中，發展可持續發展生態城的可行性。奧雅納的項目團隊在可持續發展領域上具備豐富跨專業的國際經驗，帶領其它共同合作的諮詢顧問，為國內首個以私人發展商名義推行的生態城項目制定可持續發展規劃方案和實施策略。

以可持續發展為核心思想，此項目的發展願景包括：

- 以綜合城市化發展和資源管理規劃框架為基礎，規劃及實踐一個可貫徹可持續發展原則的都市區域；及
- 平衡項目在環境、自然資源、社會和經濟方面的需要，以達到“能源高效、環境友好、經濟增長及社會和諧”。

項目在籌備可持續發展框架、目標和指標，各技術可行性、總體規劃和實施策略上也有安排與委託方、當地居民和其它有關人士進行充分的溝通和交流，以達至有共識的總體規劃方案。規劃團隊在過程中利用了一系列可持續發展工具，包括有綜合資源管理（IRM）模型、微氣候模型、奧雅納研發的可持續發展評估系統（SPeAR™），生態足跡和廣泛使用地理資訊系統，以協助選定優先的規劃和設計方法。

經過深入的基地條件分析，規劃團隊以可持續發展評估系統確定了可持續發展目標和指標。該系統是一套全面的可持續發展決策工具，也是區域內首套同類型可以協助項目有關人士就可持續發展目標的相對重要性進行辨証及決定的系統。此項目共定出了十九個可量化的可持續發展指標，用以比較擬建生態城總體規劃和常規城市發展的成效。結果顯示，生態城方案在可持續發展性、生活和健康質素、環境規劃和設計方面有十分正面的貢獻。而這個方式與一般傳統只針對土地利用的規劃做法有明顯的區別。

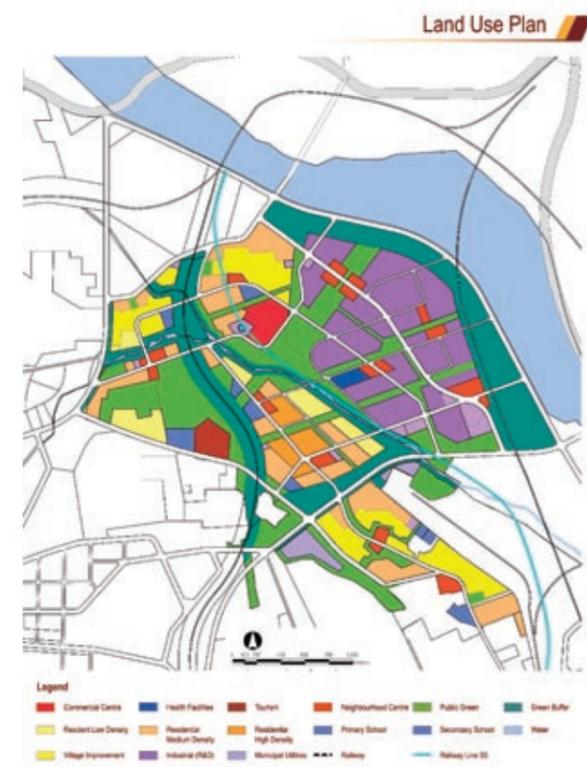
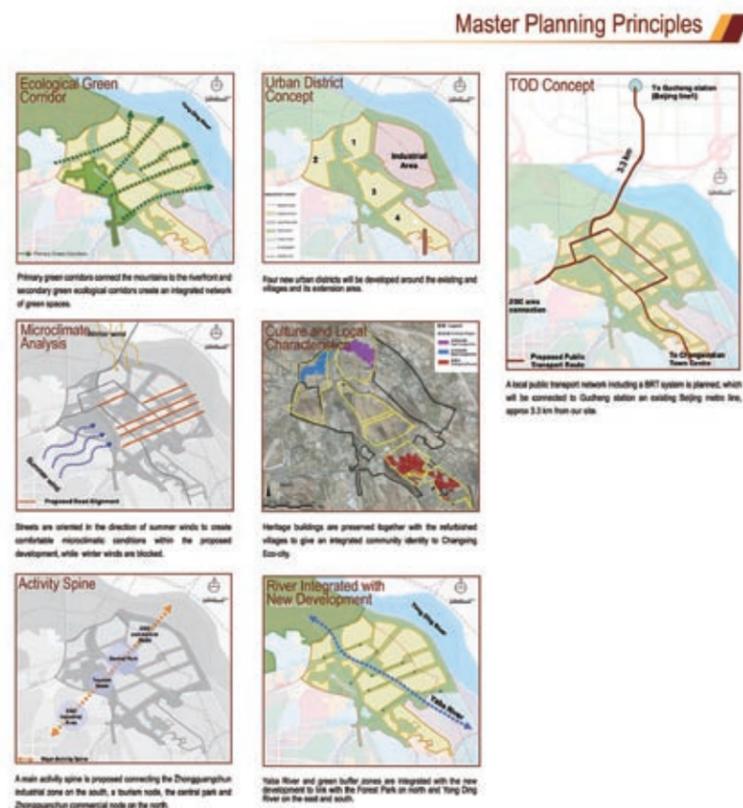
把社會融入整個“綠色”規劃是本項目重要的一環，有見及此，規劃團隊制定了一套舊村原地改善計劃。建議在原有的村落逐步進行重建及改善計劃，此計劃可避免了大規模的舊村拆遷，令項目範圍內三個現有村落的本土特色和社區網絡得以保存。過程中項目團隊共舉行了多次工作坊，旨在與委託方、主要相關方包括政府和當地社區人士共同制定改善舊村的可持續發展指標，同時了解本地居民的需要和影響。這個創新的建議屬北京首次以舊村原地改造代替全面拆遷的做法。

項目建議的生態城規劃採用了一系列可持續發展策略，當中涵蓋利用可再生能源、碳減排、水資源使用、能源需求和減廢物產生等幾方面。這些策略是作為達到可持續發展目標的推動力，也令中國常規城市規劃中的一般考慮因素拓闊至包含氣候變化和地球資源等方面考慮。

此外，項目團隊也為項目特別設計了一個經濟財務可行性模型，以評估項目有關之綠色基礎設施的成本收益。該模型不但為委託方證明了生態城規劃方案在財務上的可行性，更顯示了以可持續發展目標推動的規劃項目在商業及財務上的合理性。在項目的最後階段建議內還包括一套成本得益再分配計劃，同時也被委託方所接納採用。

經過研究確定，透過實行可持續發展策略有效減少資源消耗，生態城方案的生態足跡比北京平均情況以及常規規劃方案有顯著的下降。生態城的居民每人只需要3.47公頃土地來支撐他們的生活方式，較北京市在常規發展模式下的生態足跡減少了27%。

在得到委託方和政府雙方面的支持下，下一階段的實施工作已經展開。奧雅納有幸再次被委任為實施工作的領導顧問。奧雅納團隊將與北京城市規劃設計研究院合作為項目準備控制性詳細規劃和實施方案。除此而外，奧雅納還負責為委託方和政府制定一套以可持續發展框架為基礎的城市設計指引及設計一個約3,500平方米的“碳中和展示中心”。





Micro-climate Studies for Sustainable Public Housing Development 可持續發展公屋的微氣候研究

Estimated Completion Date	2008 - 2013 (Remark: up till end of 2007, micro-climate studies have been applied for over 25 public housing projects with completion date from 2008 to 2013)	Client/ Developer Project Manager	Hong Kong Housing Authority Development and Construction Division, Housing Department, HKSAR Government (Applicant)
Architect	Development and Construction Division, Housing Department, HKSAR Government	Civil & Structural Engineer	Development and Construction Division, Housing Department, HKSAR Government
Building Services Engineer	Development and Construction Division, Housing Department, HKSAR Government	Quantity Surveyor	Development and Construction Division, Housing Department, HKSAR Government
Landscape Architect	Development and Construction Division, Housing Department, HKSAR Government	Town Planner	Development and Construction Division, Housing Department, HKSAR Government
Research Investigator / Sustainable Design / Environmental/ Wind / Specialist Consultant	Ove Arup & partners Hong Kong Limited Center for Housing Innovations, The Chinese University of Hong Kong Allied Environmental Consultants Limited CH2M.IDC (HK) Ltd.		

Health is wealth. As the key housing provider for one third of Hong Kong's population, the Hong Kong Housing Authority adopts Micro-climate Research Studies to enhance the environmental sustainability of public housing. These contribute to the physical, mental and social realm of healthy living for society as a whole.

Planning and design play an important role in creating a healthy living environment. Hong Kong Housing Authority initiated in 2001 the application of Micro-climate Research Studies in the planning and design of housing development using the latest proven technologies, including computational fluid dynamics simulations, wind tunnel tests and daylight simulation tools, etc. These studies enable holistic consideration to optimize the development potential and enhance the built environment of the neighbourhood. From 2004 onwards, Micro-climate Research Studies have been applied to all new public housing developments covering core topics of wind environment, natural ventilation, daylight and solar heat gain, as well as other special topics such as urban heat island effect, pollutant dispersion, etc. Over 25 projects have now adopted the studies so as to provide cleaner and greener environment for our tenants, and for a healthy community.

WIND ENVIRONMENT

Objectives

To optimize estate planning, disposition/orientation of blocks and building permeability to enhance wind environment for the proposed development and as-built neighbourhood.

Scope of Study

- establish existing local prevailing wind profiles at and around the site
- wind flow pattern and magnitude for different site planning options
- wind flow pattern and magnitude for different building design options
- wind flow pattern and magnitude at external circulation and open spaces
- impact of wind environmental performance to as-built neighbourhood

NATURAL VENTILATION

Objectives

To optimize disposition/orientation/configuration of blocks, flat design and window openings to enhance natural cross ventilation in domestic flats, public and circulation areas.

Scope of Study

Wind flow pattern and magnitude of typical domestic units, lobby and common areas at low, mid and high zones of domestic floors, and ground floor entrance lobby for different building design options.

DAYLIGHT

Objectives

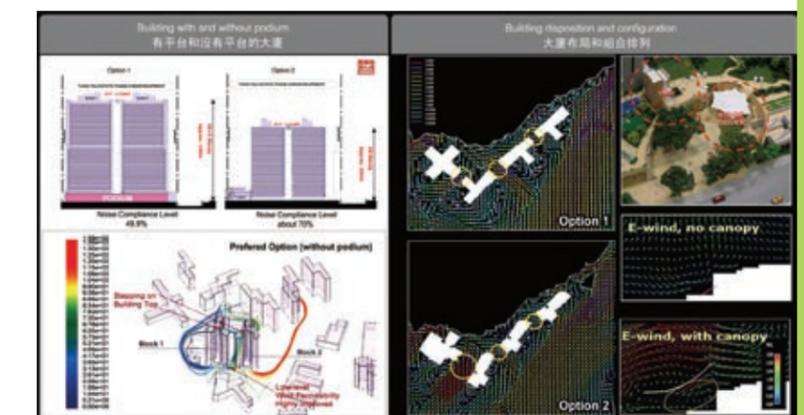
To optimize daylight penetration in domestic units and common areas of domestic blocks for energy efficiency, comfort and health.

Scope of Study

- Sunlight and shade pattern in outdoor spaces for different estate planning
- Daylight penetration of typical domestic units, lobby and common areas at low, mid and high zones of domestic floors, and ground floor entrance lobby for different building design options

OTHERS

- Pollutant Dispersion
- Urban Heat Island Impact Study
- Holistic Micro-climate Appraisal
- Fine Calibration of Computer Softwares



SOLAR HEAT GAIN

Objectives

To minimize solar heat gain in domestic units in order to have higher energy efficiency and better human comfort.

Scope of Study

- Assess Solar heat gain in typical domestic units, lobby and common areas at low, mid and high zones of domestic floors, and ground floor entrance lobby for different building design options
- Assess solar heat gain for the external works layout and assessment on thermal comfort at passive and active open spaces
- Effectiveness of mitigation measures including design of window openings, canopy, shading fins, use of materials, colouring etc

PROJECTS

Choi Wan Road Site 1
Choi Wan Road Site 2
Choi Wan Road Site 3A
Choi Wan Road Site 3B
Cheung Sha Wan Flatted Factory
East Harbour Crossing Phase 3
East Harbour Crossing Phase 4
East Harbour Crossing Phase 6
Ex-Chai Wan Estate
Ex-Yuen Long
Hung Hom Estate Phase 2
Hung Shui Kiu Area 13
Kwai Luen Road
Lam Tin Estate Phase 7
Ma On Shan Area 86B
Sau Mau Ping Estate Phase 12
Sau Mau Ping Estate Phase 13
Sau Mau Ping Estate Phase 14
Shatin Area 11
Shatin Pass Estate
Shek Kip Mei Estate Phase 5

Upper Ngau Tau Kok Estate Phase 2 & 3
Upper Wong Tai Sin Phase 3
Tseung Kwan O Site 73B
Tung Tau Cottage Areas West
Yau Tong Estate Phase 4 & 6

ENVIRONMENTAL CONSULTANTS

CH2M. IDC (HK) Ltd.
Center for Housing Innovation, Department of Architecture, The Chinese University of Hong Kong
Ove Arup & Partners (HK) Ltd.

西圖(香港)有限公司
中國城市住宅研究中心, 建築學系, 香港中文大學
奧雅納工程顧問(香港)有限公司

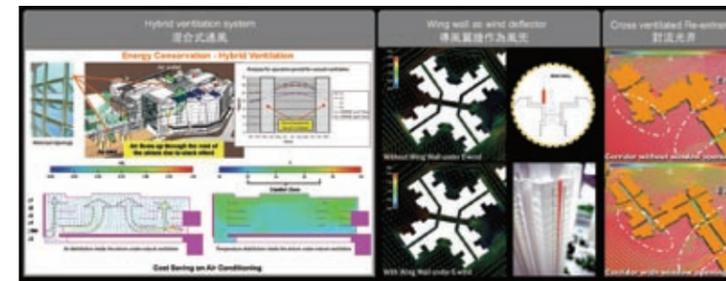
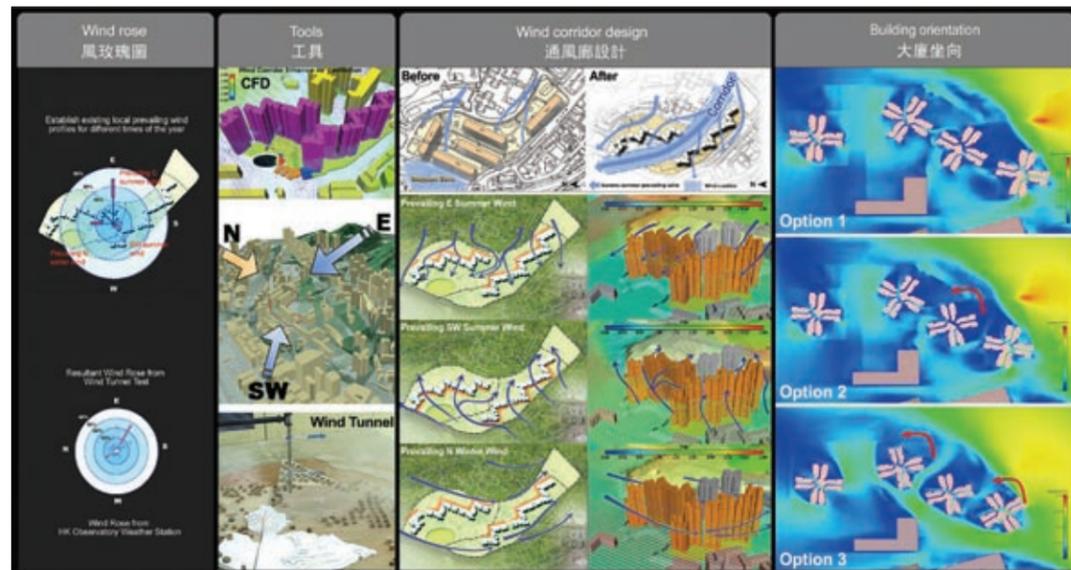
AWARDS

Upper Ngau Tau Kok Phase 2 and 3

- Green Building Award 2006
 - Grand Award (Research and Planning Studies Category)
- Platinum Rating in BEAM Version 2004
- HKIP Award 2003 - Certificate of Merit
- HKIA Annual Awards 2006
 - Special Architectural Award (Architectural Research)

Lam Tin Phase 7 and 8

- Platinum Rating in BEAM Version 2004



健康就是財富。香港房屋委員會是本港主要的公營房屋發展機構，為三分之一人口提供居所。我們運用微氣候研究，深化公屋環境的可持續發展。這些研究有助社區整體均可享受健康生活，包括身心，精神和社區等方面。

在締造健康生活環境的過程中，規劃與設計擔當舉足輕重的角色。房屋委員會在2001年創先進行微氣候研究，以規劃和設計房屋發展項目。所應用最新的科技，包括電腦流體動力模擬測試、風洞測試和採光模擬程式等。微氣候研究有助全面考慮如何善用發展潛力，以及改善鄰近已建成社區的環境。由2004年起，所有新的公營房屋發展項目均應用微氣候研究，當中的核心研究計有風環境、自然通風、採光和太陽熱能吸收，與其他特別的研究，例如城市熱島效應、空氣污染擴散等。至目前為止，應用微氣候研究的工程項目已超過25個，為住戶提供更清潔、更綠化的環境，建設健康的社區。

風環境

目標

優化屋邨規劃、大廈的布局／坐向和通透性，加強擬議發展計劃和鄰近的風環境。

研究範疇

- 確定地盤和四周的盛行風現況
- 各地盤規劃方案的氣流模式和強度
- 各大廈設計方案的氣流模式和強度
- 外部通道與休憩用地的氣流模式和強度
- 風環境表現對鄰近的影響

自然通風

目標

善用大廈的布局／坐向／組合排列，以及透過單位設計和窗戶，改善住宅單位、公眾地方和通道地方的空氣對流。

研究範疇

不同大廈設計方案在低、中、高住宅樓層的典型單位、大堂和公用地方，以及地下入口大堂的氣流模式和強度。

採光

目標

優化住宅大廈環境單位和公用地方的採光情況，以提高能源效益和舒適度，從而促進健康。

研究範疇

- 不同屋邨設計中戶外地方的日照和遮光模式。
- 不同大廈設計方案在低、中、高住宅樓層的典型單位、大堂和公用地方，以及地下入口大堂的採光情況。

其他方面

- 污染空氣擴散
- 城市熱島效應研究
- 全面微氣候評估
- 精密校準電腦軟件

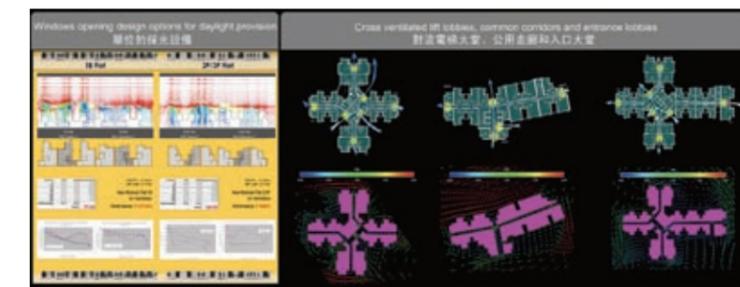
太陽熱能吸收

目標

減低住宅單位吸收太陽熱能，以改善能源效益和提高舒適度。

研究範疇

- 評估不同大廈設計方案在低、中、高住宅樓層的典型單位、大堂和公用地方，以及地下入口大堂的太陽熱能吸收情況
- 評估外部工程布局吸收太陽熱能的情況，以及靜態休憩用地和動態休憩用地的溫度
- 評估窗戶、簷篷、遮光翼牆的設計、物料運用和顏色等緩解措施的效用





Vertical Greening Research Study 垂直綠化研究

Completion Date

Part 1 - Background & Six Greening Treatment (July 2007),
Part 2 - Detailed Case Study (May 2008)

Project Manager
Architect
Civil & Structural Engineer
Quantity Surveyor
Landscape Architect
Research Investigator/ Sustainable Design/
Environmental/ Wind/ Specialist Consultant

Urban Renewal Authority (Applicant)
AD+RG Architectural Design and Research Group Ltd.
BMMK, Ratcliffe, Hoare & Co Ltd.
Treasure Ltd. (TXL)
Earthasia Design Group (EADG)
Department of Architect, The University of Hong Kong

PURPOSE

In order to promote multi-level greening, Urban Renewal Authority (URA) has appointed a multi-disciplinary study team led by Architecture Design and Research Group Limited (AD+RG) in October 2006 to review the best practices of vertical greening design and to formulate standards and guidelines for future reference with regard to existing local building regulations, codes of practice as well as management and maintenance issues etc.

THE STUDY PROCESS

Stage 1 – Background Study

There were two parts in the background study. Part one of the study covered an extensive literature review on the policies, technologies, benefits, and good practice case study of vertical greening while part two of the study recommended different greening treatments that could be applied to the local context of Hong Kong.

Stage 2 – Schematic Detailed Design

This part of the study provides viable and innovative vertical greening design and practices with respect to the local context, using a generic project as illustrative example to ensure practicality in application and with reference to Government regulations. Under this study, schematic sketches and illustrations, written control clauses, specifications and schematic installation details with rough cost estimates were provided.

THE MAIN FEATURES OF THE STUDY

Originality

It was the first attempt by a professional multi-disciplinary team including architect, university researchers, landscape architect, structural engineer and quantity surveyor to study vertical greening in local high-rise context. The study has identified six vertical Greening treatments that can be applied including Planting on Wall, Podium Garden, Sky Garden, Roof Garden, Edge Planting and Planting in Balcony.

Quality

Learning experiences from overseas policies, regulations and guidelines. Local constraints on Vertical Greening application were studied in terms of physical (solar radiation availability, maintenance, air pollution and the side effects created by harmful insects and animals) and non-physical (user perception) aspects, for instance, many urban inhabitants would be against the idea of greening their property walls and roofs for fear of attracting harmful insects mentioned above.

Practicality

The output consists of six greening treatments covering practical issues such as growing medium, plant species, supporting devices, maintenance and etc. The treatments are based on international studies, local climatic, botany and landscape context.

Innovation

Previous studies were conducted in low-rise cities in temperate climates. This research systematically defined six vertical greening treatments and explored the application of Vertical Greening in a high rise, high density urban environment in Hong Kong in order to improve environmental quality.

	Wall	Edge	Ground	Podium	Sky-garden	Roof
Tokyo •Regulation •Financial Incentive	Building vegetation must constitute 20% of all the developments. (Source: Nikkei Architecture)					
Germany •Financial Incentive	Direct financial incentives. Indirect financial incentives through split wastewater fees. Ecological compensation measures integrate with development regulations. Karlsruhe model Proposed extension Compensation Replacement					
North America •Financial Incentive	 All municipal buildings require green roofs. Offering subsidies to green roof implementation. Offering bonuses to developers. Reduction of stormwater management charge.					

IMPLEMENTATION OF GREENING INITIATIVES

Planning and Design

- Vertical greening opportunities will be investigated in strategic studies/early planning stage initiated by URA.
- Consultants engaged by URA for Master Layout Plan (MLP) preparation will be required to make reference of the recommendations in the vertical greening study.
- Vertical vegetation could become a major part of the innovative design strategies in high rise built form.

Implementation

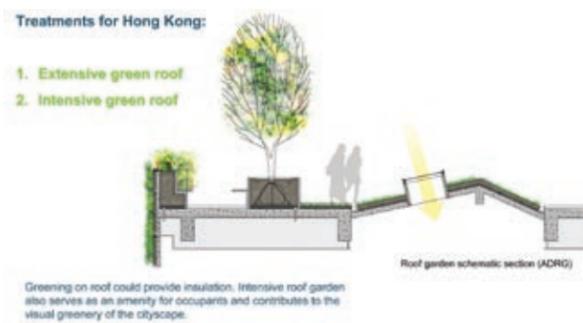
- The practical applications of the six different greening treatments have been examined in detail. Each greening treatment has been produced in the form of a project fact sheet for ease of future project reference.
- URA's future projects will consider vertical greening initiatives, as and when appropriate.

CONCLUSION

- The original research objectives commissioned by URA aimed at ascertaining greening initiatives and opportunities in the densely built urban area.
- Research on international policies, guidelines, best practices, sustainable growing systems; vertical green treatments and innovative design strategies facilitated practical considerations of greening applications in the local context responding to the building regulations as well as management and maintenance issues.
- The research demonstrates the merits of vertical greening. At a micro-level, it enhances building thermal performance and improves outdoor comfort. At a macro-level, it improves urban ecology,

provides visual relief and improvement to an urban environment.

- Successful implementation of urban greenery requires sunshine (daylight), water and air, plus careful consideration on placement and orientation of greenery. Careful selection of suitable species and stringent maintenance measures are necessary. Through quality design, roof top, sky and podium gardens could enhance accessibility, user-friendliness and patronage.
- Implementing road-side tree planting in urban area is not always possible with the presence of underground utilities. The six greening treatments should also be seen to complement the road-side tree planting and other at-grade greening initiatives in the densely built urban area.

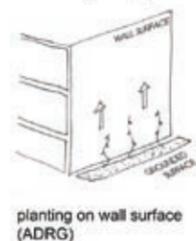


Treatments for Hong Kong:

1. Planting on wall surfaces
2. Planting on steel frame
3. Integrated system
4. Climber fence
5. Green panel



Wall treatment ranges from planting directly on the wall surface to cladding frames/panels to wall with plantation. Planting on wall surface would be relatively easier with less structural implication. Comparatively, additional frame/panel is easily replaced in seasonal interest with little maintenance and causes less impact to concrete structure due to constant wetting and drying.



目的

目標

為了推動多層次的城市綠化，市區重建局(市建局)於2006年10月委任由AD+RG建築設計及研究所有限公司領導的多專業界別研究團隊，來探索垂直綠化設計及最佳實施方法，並依據現時本地建築條例、作業守則以及管理和維修等方面來編制設計指標以及指引作日後參考。

研究過程

第一階段 — 基礎研究

第一階段包括兩部分。第一部分就垂直綠化的政策、技術、優點和範例進行了全面的文獻綜述；第二部分針對香港環境，提出不同的綠化策略。

第二階段 — 詳細概念設計

第二階段以一個通用專案作為詮釋範例，就本地環境及政府條例，提供了創新且具有可行性的垂直綠化設計和實施方法。本階段包括了概念草圖、質控條款、工程規格、設計施工細部圖示以及初步的造價估算。

本研究的主要特色

原創性

本研究是第一次由一個多專業界別研究團隊，就香港高密度環境栽種垂直綠化的研究。團隊成員包括建築師、大學研究者、園境建築師、結構工程師以及工料測量師。研究確定了六種垂直綠化策略：包括牆面綠化、平台綠化、天台花園綠化、屋頂綠化、邊沿綠化以及陽台綠化。

質素

觀摩海外的政策，法規和設計指引方面的經驗，就客觀方面（陽光輻射、維修、空氣污染和害蟲帶來的副作用）和主觀方面（用家的接受程度）對垂直綠化在本地應用的限制進行了系統研究。例如，許多城市人表示，因為擔心引來有害的昆蟲，從而反對將他們的物業外牆及天台進行綠化。

可行性

研究成果包括六種綠化策略，覆蓋了如生長基質、植物種類、支撐系統、維修等的具體事項。每種策略的建立均建基於國際案例、本地氣候、植物和景觀環境的綜合研究基礎上。

創新性

以往同類型的研究，主要集中在溫和氣候的低層低密度地區。本次研究確定的六種垂直綠化策略，均是以改善環境品質為目標，對垂直綠化在香港的高層及高密度城市環境中的具體實施，做出系統研究論證得出的成果。

實施綠化計劃

規劃和設計

- 市建局在策略研究/早期規劃階段，會探討進行垂直綠化的可行性。
- 市建局會要求聘用的總綱發展藍圖顧問，參考本研究所推薦的垂直綠化策略。
- 垂直綠化可演變成高層建築物的創新設計策略中的主要部分。

實施方面

- 對六種垂直綠化策略的具體實施進行了深入探討。針對每種策略，製作了一份專案分項清單，以方便未來的項目進行參考借鑒。
- 如情況合適，市建局將考慮垂直綠化策略作為工程項目在設計品質標準方面的其中一項要求。

結論

- 本研究的目標是確立在高密度城市能引入綠化策略的可行性。
- 對於國際垂直綠化政策、守則、最佳實施方法、可持續的生長系統，進行了全面整理綜述；結合本地環境、建築條例、管理維修等各方面對垂直綠化的本土應用策略和創新設計進行了深入探討。
- 研究展現了垂直綠化的優點。在微觀層面，它可增進建築物在隔熱方面的功能及改善室外的舒適程度；宏觀層面，其有利於城市生態，提供視覺上有自然景觀的享受，以及改進城市綜合環境。
- 成功的城市綠化實踐，需作周全考慮，包括陽光、水和空氣，再加上適當的植物朝向和方位。選擇合適的品種和制定嚴格的維修措施亦必不可少。通過高質素的設計，可以改善天台花園、空中花園和平台花園的使用性、吸引更多人享用。
- 礙於地下設施，在城市路邊栽種樹木並非必然可行。六種垂直綠化策略可視為在高密度城市，補充路邊栽種樹木和其他地面綠化形式的不足。



Kai Tak Planning Review for a Sustainable and Green Environment 以可持續發展及綠化環境為本的啓德規劃檢討

Completion Date	2007	Client	Planning Department, Hong Kong Special Administrative Region Government (Applicant)
		Planning Consultant	Edaw City Planning Consultants Limited
		Engineering Consultant	Maunsell Consultants Asia Limited

The Planning Department commissioned the Kai Tak Planning Review in 2004 to prepare a new development scheme for the 328-hectare ex-airport site under a “no reclamation” scenario so as to preserve the heritage of the Victoria Harbour. The study proceeded with extensive public engagement activities under the theme of “Planning with the Community” to help build up public consensus on the development proposals. After three rounds of public participation programme, a new Kai Tak Outline Zoning Plan was published in November 2006, amalgamating the ‘shared’ vision of a “Distinguished, Vibrant, Attractive and People-oriented Kai Tak by Victoria Harbour”.

The community generally supported the following planning principles to guide the planning of Kai Tak:

- Engaging the public throughout the entire planning process
- Planning Kai Tak as a sustainable and environmentally friendly development to contribute to Hong Kong as a world-class international city
- Developing Kai Tak as a hub for sports, recreation, tourism, business and quality housing
- Designing Kai Tak as Hong Kong’s showcase for urban design and landscaping
- Promoting pedestrian-oriented environment, integrated public spaces and maximising the waterfront for public enjoyment
- Preserving the heritage assets in Kai Tak and respecting the legacy of the ex-Kai Tak Airport and its runway
- Integrating Kai Tak with its surrounding, providing opportunities for revitalising the surrounding districts and promoting local and diversified economy

The land use layout for Kai Tak has been formulated taking into account the results of air ventilation assessment. Besides, environmentally friendly initiatives, such as roadside greening, roof greening and district cooling system, provision of environmentally friendly transport system, and planning for mass transit, minimizing noise impact and better air ventilation through “podium-free” design concept are all built into the planning framework.

Six sub-districts linked by its definitive open space system are created within Kai Tak:

Kai Tak City Centre

- Station Square around Shatin-to-Central Link Kai Tak Station will be the focal point of the new city centre. The lush green square will be surrounded by small shops to provide a spacious and welcoming environment in the city centre. A new premier office node is located in the north and east of the Station Square, shaping a distinctive image of Kai Tak
- Kai Tak Nullah will be opened up and turned into a river. This will form a major urban design axis in shaping the public space in the city centre. To enhance the connectivity with the neighbouring districts, a continuous curvilinear landscaped elevated walkway will be provided
- The Grid Neighbourhood located to the south of the Station Square is a unique form of residential development with intimately scaled urban street blocks similar to those found in surrounding neighbourhoods



Sports Hub

- In line with Hong Kong's sports policy in hosting major international sports events and encourage community's participation in sports activities, a new multi-purpose stadium complex is located in Kai Tak. The 45,000-seat main stadium is located in the waterfront creating a new icon in Victoria Harbour as well as to help the revitalization of the adjacent old districts. It is also well integrated with the dining cove, which provides waterfront-related commercial, cultural and leisure uses for a vibrant environment.



Metro Park

- The 24-hectare Metro Park is located in the northern part of the former runway. It would be a unique waterfront park in Hong Kong. The elongated shape of the park helps to keep the collective memory of the former airport.

Runway Precinct

- The distinctive waterfront setting is planned to accommodate quality hotel and residential developments under the concept of "Living on the Runway" for the Runway community to enjoy spectacular views at a unique location. An open space corridor is planned at the centre of the Runway Precinct so as to reminisce the previous aircraft landing activities.

Tourism & Leisure Hub

- A cruise terminal is located at the tip of the former runway to support Hong Kong as a cruise hub in Asia. A tourism node of hotel/retail/entertainment facilities located adjacent to the cruise terminal is intended to expand the tourism activities to this part of the metro area. A landmark building with a public observation gallery in this location will form a major icon signifying the gateway to Kai Tak for the cruise ships entering the harbour and achieving a more dramatic height profile. A runway park is located at the end of the runway with an aviation theme.

South Apron Corner

- Taking advantage of the tranquil seaview of the Kai Tak Approach Channel, it is planned to rejuvenate the waterfront area and regenerate Kowloon Bay and Kwun Tong into business areas by introducing a variety of commercial and government, institution or community use.

Kai Tak is envisaged to become a new urban node in South East Kowloon as well as a new heritage, green, sports and tourism hub of Hong Kong. The planning intention is to pursue a low to medium density development in Kai Tak to achieve quality living environment, to enhance the townscape as well as to meet public aspiration. Upon completion of the Kai Tak Development, 30,000 flats will be provided to accommodate 86,000 population and 83,000 job opportunities will be created.



規畫署於2004年展開「啓德規畫檢討」，目的是以「不填海」的發展方案為基礎，為328公頃的舊機場用地擬備新的發展藍圖，藉以保存維多利亞港獨有的文化遺產。此外，為就發展建議取得社會共識，我們舉辦了大規模的公眾參與活動，致力落實「與民規畫」的理念。經過三個階段的公眾參與活動，結合「維港畔富有特色、朝氣蓬勃、優美動人及與民共享的啓德」的共同理想，新的啓德分區計劃大綱圖已於2006年11月展示。

公眾普遍支持採用以下的規畫原則，作為規畫啓德的指引：

- 讓公眾參與整個規畫的過程
- 規畫啓德作為可持續及環保的發展，以鞏固香港國際都會的地位
- 發展啓德為一個體育、康樂、旅遊、商業及優質房屋的中心
- 締造啓德為香港城市及園景設計的典範
- 提倡便利行人的環境、整合公共空間及開放海濱供公眾享用
- 保留啓德獨有的歷史文化和昔日啓德機場及其跑道的特色
- 將啓德與周邊地區融合，增加機會活化周邊地區，促進本土及多元化的經濟

在擬備啓德的土地用途發展藍圖時，已考慮空氣流通評估的結果。此外，多項環保措施，例如路旁綠化、屋頂綠化和區域冷卻系統、關設環保運輸系統、以至集體運輸、減少噪音影響和透過「不設平台」的設計概念改善空氣流通的規畫，均已納入規畫大綱。

啓德地區共設六個分區，每個分區由休憩用地緊密連繫起來。

啓德城中心

- 環繞沙中線啓德站的車站廣場將會成為啓德城中心的新焦點。綠茵處處的車站廣場將會被小型商店環抱著，為遊人提供一個既開揚又活潑盎然的環境。位於車站廣場北面及東面是一個新的辦公室樞紐，從中展現啓德的獨特形象。
- 啓德明渠將會開闢為河流，成為啓德城中心的主要城市設計軸心。為加強與鄰近社區的連繫，將關設一條連綿而彎曲的園景美化高架行人道。
- 位於車站廣場南面是一個具有特色的住宅小區——「啓德坊」，其規畫概念是希望把鄰近地區那種人性化及較親切的都市面貌伸延至住宅小區內。

體育場館區

- 為配合香港特區政府爭取舉辦國際體育賽事的體育政策及推動全民參與體育活動，一所新的多用途體育館將屹立於啓德。設於海旁的45,000個座位的主場館不單締造維港的新標記，亦有助鄰近舊區的更新。體育館亦連接到餐飲小海灣區，提供與海旁有關的商業、文化及休憩用途，為這片海濱地帶注入新動力。

都會公園

- 位於舊跑道北部的24公頃都會公園，面臨維多利亞港，絕對是緬懷舊啓德機場的理想位置。

跑道休閒區

- 善用舊跑道獨有的地形和把握面臨海港的優勢，舊跑道將發展成優質的酒店及住宅地帶，坐享優美的景色，以實現「生活在跑道上」的概念。林蔭大道設於跑道中央，讓人們重踏昔日飛機升降的軌跡。

旅遊及休閒中心

- 位於跑道末端的郵輪碼頭，將令香港成為亞洲區內重要的郵輪中心。毗鄰郵輪碼頭的地方將設有一個結合酒店／零售／娛樂設施的旅遊中心，使旅遊活動得以伸延至此部份的都會區。在旅遊中心內，計劃興建一座附有公眾觀景廊的地標建築物，不單成為啓德的門廊指引郵輪進入維港，亦能締造錯落有致的都市輪廓線。以航空歷史為主題的跑道公園將設於跑道末端。

南停機坪角

- 以不同形式的商業及政府、機構或社區設施，作為跑道上的景點及九龍灣及觀塘商業區間的中轉土地用途，並協助觀塘商貿區的重整。

啓德發展將會成為東南九龍新的都市樞紐，亦是匯集歷史文化、綠茵、體育及旅遊特色的新焦點。規畫意向是以低至中密度來發展，以提供優質的居住環境、美化市容及滿足公眾的期望。在完成整個啓德發展後，將會提供約30,000個住宅單位，以容納約86,000人，亦會提供約83,000個就業機會。



Comprehensive Environmental Performance Assessment Scheme for Buildings (CEPAS) 全面評估樓宇環境表現計劃

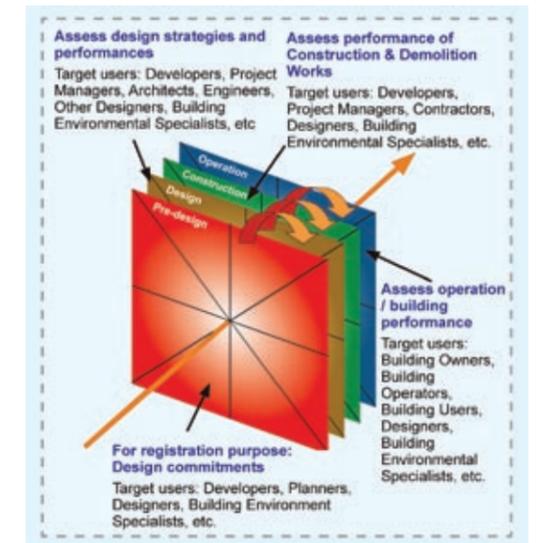
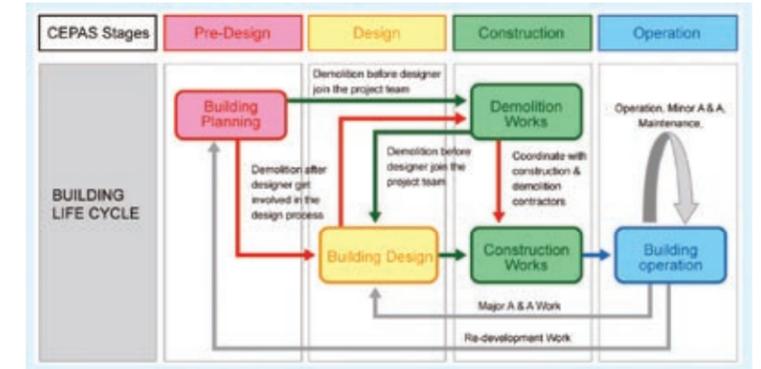
Completion Date	2008	Client	Buildings Department, HKSAR Government
		Project Manager	Arup (Hong Kong) (Applicant)
		Principal Research Investigator	Arup (Hong Kong)
		Research Investigator	Arup (Hong Kong)
		Sustainability Expert	Arup (UK)
		Architect	Aedas
		Town Planner	Urbis Limited
		Special Consultant	The University of British Columbia Department of Architecture, The Hong Kong Polytechnic University Department of Mechanical Engineering, The University of Hong Kong

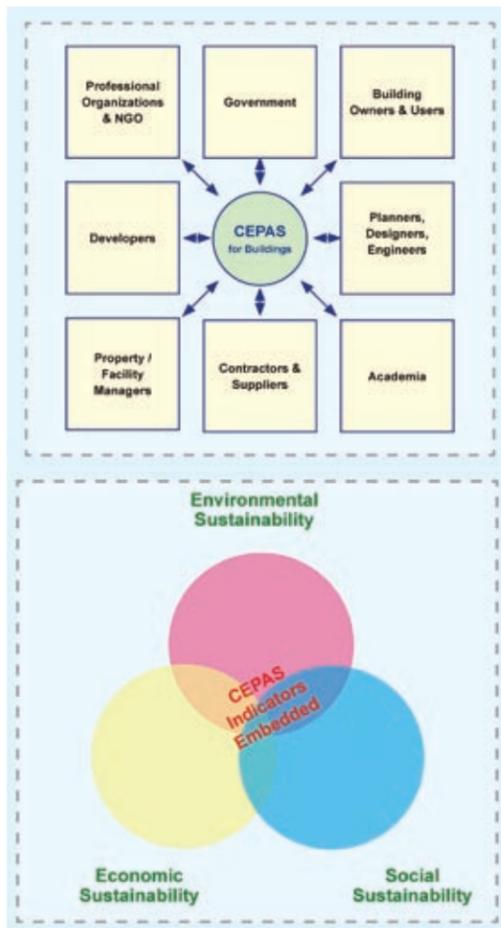
The Comprehensive Environmental Performance Assessment Scheme (CEPAS) was initiated under the 2001 Government Policy Objectives to form a comprehensive green building labeling scheme. The CEPAS for buildings is a new generation of assessment tool for various building types with clear demarcation of the entire building life-cycle, which covers the pre-design, design, construction and demolition, and operation stages. Apart from using the CEPAS as a performance assessment scheme, it can also be adopted as a decision-making tool for developers, designers, builders, owners, users and stakeholders. The defining characteristics of CEPAS include the considerations of sustainability, building life-cycle, modular assessment structures, neighbourhood context and life-cycle analysis for building components. The ultimate goal of implementing CEPAS is to create a positive shift on the current environmental performance of buildings in Hong Kong, as well as to keep in line with the global trend of building sustainability.

The CEPAS publications are prepared for use for building pre-design, design, construction and operation stages. Hence, the complete set of publication includes:

1. CEPAS Application Guidelines;
2. CEPAS for Pre-design Assessment Manual;
3. CEPAS for Design Assessment Manual;
4. CEPAS for Construction Assessment Manual; and
5. CEPAS for Operation Assessment Manual.

Sustainability consists of three aspects – environmental, social and economic. Relevant and applicable indicators under each aspect are considered in the formulation of CEPAS. Environmental sustainability for CEPAS includes reduction of resources use, use of renewable energy, as well as minimization of environmental loadings and impacts. Social sustainability can be incorporated into buildings by considering aspects like inclusion, access, amenities, user comfort and satisfaction, health and welfare, equality and etc. Economic perspective includes the holistic building life cycle consideration, energy and material cost, buildability and serviceability, and so on.





Sustainability is the element embedded in the assessment scheme. Issues of broader sense of sustainability are to be integrated into all CEPAS categories and indicators, extending environmental sustainability to social and economic aspects.

The target users for these publications are building developers, owners, designers, contractors, planners, operators and building environmental specialists, i.e. all parties of the building industry. The general public is also encouraged to use this scheme to understand more about building environmental issues. It is expected that the building performance will be improved when all the stakeholders are involved.

In the early stage of the CEPAS study, a detailed review of 11 major existing and developing local and overseas assessment schemes, as well as the local and global sustainability context of building development was conducted. CEPAS has been tailor-made as a comprehensive building environmental assessment scheme, addressing globally recognised sustainable elements as well as unique environmental and building conditions in Hong Kong.

CEPAS endeavours to address both physical and human related issues amongst the core aspects of sustainability. While emphasis on the traditional environmental performance, CEPAS also addresses other social-economic related factors, such as impacts on the surroundings, communal interactions, building economics, transportation, heritage conservation, etc.

全面評估樓宇環境表現計劃（CEPAS）是根據《2001年政府政策目標》為基礎而發展的，以建立一個環保建築標籤計劃。CEPAS是適用於全面評估各種類型樓宇的工具，並明確劃分整個樓宇生命周期，涵蓋了樓宇的策劃、設計、建造及拆卸和運作階段。CEPAS除了用作評估樓宇環境表現計劃外，還可以用來作為發展商、設計師、承建商、業主、用戶和其他相關人士的決策工具。CEPAS的特點包括考慮可持續發展狀況、樓宇生命周期、組合式評估結構、鄰近環境和樓宇元件的生命周期評估。實行CEPAS的最終目的是促使現時香港的樓宇環境表現邁向正面的方向，並使樓宇的可持續性與全球趨勢一致。

CEPAS 評估手冊應用在樓宇策劃、設計、建造和運作階段。整個CEPAS評估系統由以下幾部分組成：

1. CEPAS應用指南；
2. CEPAS策劃階段評估手冊；
3. CEPAS設計階段評估手冊；
4. CEPAS建造階段評估手冊；及
5. CEPAS運作階段評估手冊

可持續發展包括三方面的內容－環境、社會和經濟。在制定CEPAS期間，已考慮各個範疇的相關和適用指標。CEPAS的環境可持續性包括減少耗用資源和利用可再生能源，以盡量降低環境負荷和影響。社會可持續性包括建築物的社會融合、所設置的通道、設施、使用者的舒適度和滿意度、健康和福利、平等等因素。經濟方面包括建築物的全面生命周期、能源和材料成本、可建成性和可用性等。

總括而言，可持續性是本評估計劃中的要素。廣義的可持續性事宜已綜合在所有CEPAS的評估類別和指標內，並將環境可持續性擴展到社會和經濟層面上。

整套評估手冊的目標使用者為地產發展商、業主、設計師、承建商、規劃師、物業管理者、建築環境專家，即建築行業的所有相關的專業人員。此外，本手冊也鼓勵公眾通過此計劃更加了解建築環境問題。希望所有用戶能夠加以使用，令本港樓宇環境的表現得以廣泛提高。

在CEPAS研究的前期階段，顧問對11個本地和海外現有及發展中的主要評估計劃，以及本地和全球的建築可持續性問題進行了詳細審核。CEPAS考慮了全球公認的可持續性要素，並針對香港獨特的環境和建築條件而制定，因此是一個全面的樓宇環境評估計劃。由於全面性是CEPAS的一個主要特點，因此CEPAS評審框架的制定與國際社會上於可持續性樓宇評審計劃的最新發展是一致的。除此之外，CEPAS亦結合了顧問專家的最新概念而創立，所以這個堅實的框架與一些現存的本地和國際評估計劃有所不同。

CEPAS盡量包括可持續性核心內容中與物質和人文兩者相關的問題。在注重傳統環境表現指標，例如能源利用、室內空氣質素和屋宇設備維修等的同時，CEPAS對其他社會經濟相關的因素，如對附近環境的影響、社區互動關係、樓宇經濟、交通、古跡保護等亦有考慮。





Centennial Campus – The University of Hong Kong 香港大學千禧校園

Estimated Completion Date 2011

Client/ Developer	The University of Hong Kong (Applicant)
Project Manager	The University of Hong Kong
Architect	Wong & Ouyang (HK) Ltd. (Applicant)
Civil & Structural Engineer	Wong & Ouyang (Civil-Structural Engineering) Ltd.
Civil & Structural Engineer	Ove Arup & Partners Hong Kong Ltd.
Building Services Engineer	Wong & Ouyang (Building Services) Ltd.
Quantity Surveyor	Davis Langdon & Seah Hong Kong Ltd.
Landscape Architect	Sasaki Associates, Inc Urbis Limited
Research Investigator/ Sustainable Design/ Environmental/ Wind/ Specialist Consultant	Umow Lai & Associates Pty Ltd.
Facility Manager	The University of Hong Kong
Management Company	The University of Hong Kong
Other Team Member	Arup Façade Engineering (London)

To achieve the academic vision of the University of Hong Kong and cater to the change of the Education Programme, the Centennial Campus of approximately 75,000m² GFA is being developed to house the faculties of Law, Social Sciences and Arts together with a new Learning Commons, a Lecture Centre and other supporting facilities.

The Centennial Campus Plan embodies the concept of sustainability and reflects the vision of the University to promote and demonstrate sustainability principles through green building. A holistic approach to sustainability has been adopted for every aspect of design and implementation:

Site Preparation

Site Constraints

The Centennial Campus is situated on a plateau at foot of the Lung Fu Shan Country Park, to the west of the existing campus with three historical buildings to be retained in situ and adaptively reused.

To preserve the natural setting of the Centennial Campus, the existing Water Supplies Department reservoirs on site are being relocated to make the site available for the new campus. The salt-water reservoirs in form of tunnels are buried inside the hillside to the south of the site to avoid extensive excavation.

Master Planning

Reliance on Mass Transit System and Pedestrian Access

To maintain a car-free campus and to create strong connections with community, three entry gates namely the West Gate, the Central Gate and the East Gate will link the campus to the MTR's new University of Hong Kong Station, with a convenient pedestrian network facilitating barrier-free access to all areas of the Campus.

Adaptive Re-use of Heritage Buildings

The two historical staff quarters embraced by the surrounding landscape will be retained and designed as the backdrop of the Entry Plaza at the West Gate. The Elliot Water Treatment Works building may house a "Water Museum" integrated into the overall campus design.

Architectural Design

Building Orientation

The layout of the blocks provides space between buildings to promote cross ventilation. The long sides of the faculty buildings are oriented in a north-south direction, reducing cooling and heating loads, maximizing daylight and give protection from winter winds. Building depths are optimized to a narrow enough width to maximize daylight to the interior spaces.

Sustainable Façade Design

A sustainable Façade System with external sun shading devices will be adopted to minimize solar gains with maximum daylight penetration allowing the use of low energy cooling systems. The sunshade configuration also functions as a light shelf reflecting daylight deeper into the interior space. Pre-cast and off-site fabrication technology and environmentally conscious construction methods will be used.

Comprehensive Tree-planting Program

A comprehensive tree-planting scheme will be undertaken to provide a green environment with the introduction of 500 new trees planted throughout the existing campus and the Centennial Campus.

Communal Green Spaces

Extensive landscaped communal spaces such as the landscaped rooftop of the reservoirs and the new Lily Pond are integral parts of the Campus. Three landscaped courtyards facilitate social interactions, air movement, providing shade and weather protection. They are characterized by a central theme of water features and landscaped with trees and shrubs. Green Roofs and Sky Gardens contributing in the reduction of heat island effect will be designed to be easily accessible.





公共綠化空間

新校園設置多個綠化空間如水庫上蓋廣場，新荷花池，其中三個以水景為主題的學術庭院更為學內人員提供理想的互動空間，促進空氣流通，多個綠化屋頂及空中花園，亦有效減低「熱島」效應。

屋宇裝備設計

百周年校園的屋宇裝備設計將透過下列系統以達到節約能源和減少碳排放量之目的。

節約能源

透過採用多個控制空調及照明系統以減低能源消耗量。

水源管理

雨水、空調冷凝水及經處理的生活廢水將會被回收用作灌溉、冷卻塔補充水及一般清洗之用。

再生能源

教學大樓的天台及外牆，將融入多項再生能源系統設計，作供電系統用途。

監管及控制

為提高環保意識，校園內將廣設電子顯示板，即時發佈各項環保數據及資料。

廢物回收及處理

透過生化處理器，廚餘將會被轉化為可用的燃氣及種植肥料。

落鏢能量回收再用

電梯及水的落鏢能量將會被轉化為電能。

為實踐香港大學的教學理念及配合教育改革，大學正興建約75,000平方米的百周年校園，為法學院、文學院及社會科學學院提供校舍，研習坊，演講廳及配套設施。

校園整體設計貫徹了可持續發展的概念，反映了香港大學推廣「綠色建築」的理想。

籌備用地

地理局限

新校園座落於現有校園西面龍虎山山坡上，現為水務署水庫用地，南北兩側共有三棟文物建築，將被原址保留及活化。為保護自然景觀，大學正將水庫以隧道型式搬遷至山坡中，減少非必要的挖掘以建造新校舍。

總體規劃

連接港鐵及行人交通網絡

為實現「無車」校園及強化與鄰近社區的聯繫，大學將設置三個閘口連接日後的港鐵大學站，經完善的行人交通網絡連接校園各地。

活化文物建築

新校園內兩棟職員宿舍文物建築，將結合優美的園景，融合於西閘口的廣場設計。

建築設計

樓宇佈置

教學大樓為南北朝向，適當的間距及進深有助空氣對流，減低冷熱耗能，促進室內日照。

環保外牆設計

大樓外牆均設置遮陽裝置，有助減低耗能，反射日照至室內。施工將採用預製件技術，減少施工廢料。

完善植樹計劃

大學將廣泛種植500棵樹於現有校舍及新校園，以綠化校園。

Waste Recycling & Processing

A food waste digester will convert the energy in food waste into biogas for cooking and fertilizer for vegetation. The system will serve as a demonstrative example to local catering business.

Capturing Free Falling Energy

Free falling energy from lifts and hydraulic systems will be converted into electrical energy, which illustrates an effective mechanism that can be adopted throughout skyscrapers.



Building Services Design

The Building Services design embraces the concept of sustainability by reducing energy use, carbon footprint and promoting renewable energies in the following systems:

Energy Conservation

By adopting systems such as Chilled Water Storage, Variable Speed Drive Control, Under-floor & Displacement AC Systems, Energy Recovery Heat Wheels, Free Cooling and Night Purging Ventilation, Light Pipe System, Daylight Sensors and Auto-dimming, etc., an estimation of 2,700,000 kWh of electrical energy can be saved and 1,600 tons of CO₂ emission can be reduced annually.

Water Management

Water recycled from Grey Water, Storm Water Harvesting and AC Condensate Collection for irrigation, cooling tower make-up water and general cleansing contributes in the annual reduction of potable water consumption.

Renewable Energies

By integrating with the roof and façade design, Mini-wind turbines developed by the University, Photovoltaic Panels, Solar collectors will be installed to provide renewable energies to the Campus. Approximately 148,000 kWh of electrical energy will be saved annually.

Some renewable energy technologies in their experimental stages will be installed for the purpose of demonstration to benefit the whole industry and facilitate future improvement in environmentally social behavior.

Monitoring & Control

A real time Monitoring and Electronic Display System keeping track of the environmental performance of the Campus will be installed around the Campus to increase awareness of environmental protection.





China Merchants Bank Tower 上海招商銀行大廈

Estimated Completion Date 2010

Client/ Developer	China Merchants Bank Co. Ltd.
Project Manager	RMJM Hong Kong Ltd. (Applicant)
Architect	RMJM HK Group 1
Civil & Structural Engineer	Ove Arup & Partners Hong Kong Ltd.
Building Services Engineer	Ove Arup & Partners Hong Kong Ltd.
Quantity Surveyor	Davis Langdon & Seah Consultancy (Shanghai) Company Ltd.
Landscape Architect	Strata, RMJM Landscape group
Town Planner	RMJM HK Group 1
Research Investigator/ Sustainable Design/ Environmental/ Wind/ Specialist Consultant	RMJM's Environment Design Group (RED)
Facility Manger	China Merchants Bank
Other Team Member	BPI (Shanghai)
Main Contractor	Shanghai No. 4 construction Company Ltd.

Project description

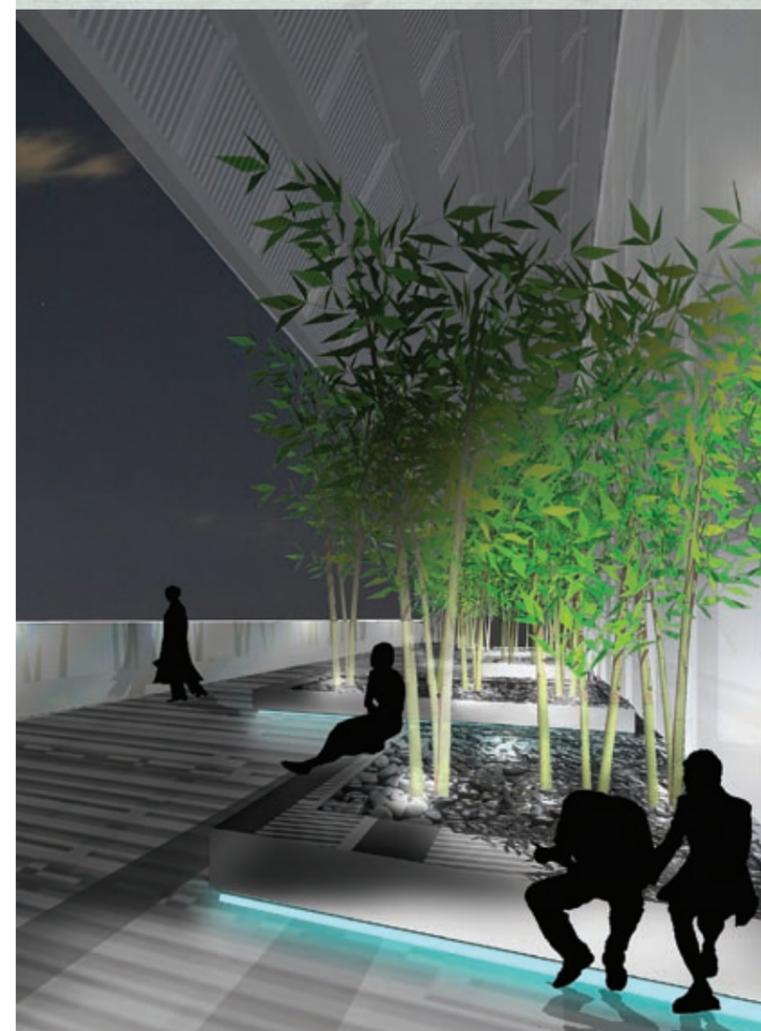
Following an international design competition, China Merchants Bank awarded RMJM the design of their new landmark headquarters tower in Shanghai. China Merchants Bank will build their landmark tower on the shores of the Huang Pu Jiang river in the Pudong district.

The prominent location of the building along this river and against the commercial skyline of Pudong called for an iconic building with state-of-the-art environmental features to make it truly relevant for the 21st century. Inspired by its location and the client's history in shipping, the form of the building exterior reflects a pair of curved sails, with an interior footprint based on the figure eight, an auspicious number, that enables two sites split by a public street to integrate seamlessly and intuitively.

The design of the building incorporated an environmental strategy from its earliest stages, with considerations being made to materials close to source and recyclable where feasible, inclusion of renewable energy sources, and good design principles that maximized the use of light, shade and other aspects of the environment in which the building is located.

CMB is aiming for LEED certification silver accreditation. Furthermore, it aims to do this with less than 2% of additional construction cost.

In addition to environmental considerations, thought was also given to the inhabitants of the building. A large central sky garden that links the two towers provide a green oasis in the bustling central business district, with the greening extended to roof gardens and outdoor plaza. A five storey high ceiling in the lobby and banking hall, along with natural materials and open views, provide a calming and conducive environment to work and do business in.



Green Features

1. Renewable energy options:
 - a. Rooftop wind turbines – analysis of past ten years' wind data for the area provided an early indication of feasibility, and a subsequent wind tunnel test yielded an accurate wind velocity profile to ensure efficient generation of energy. The turbines are expected to provide 100% of the façade lighting energy requirements (1.2% of the total energy requirements for the building)
 - b. Solar thermal system to generate 33m³ hot water per day, enough for the demand for the whole building
2. Reduce energy consumption:
 - a. Ground Source Heat Pump using energy piles to reduce energy required for heating and cooling
 - b. High performance envelope system and external shading device to keep heat out and internal heat in
 - c. HVAC heat recovery system
 - d. Vegetated roof to reduce heat island effect
3. Environmental friendly materials:
 - a. Use regional materials to reduce CO₂ emission by transportation
 - b. Use materials with high recycled content
 - c. Recycle construction waste
 - d. Use low VOC content materials
4. Water usage:
 - a. Rainwater harvesting for irrigation
 - b. Dual flush toilet, low flow faucet, low flow shower head to reduce water usage

5. Others:
 - a. Hybrid ventilation where introduction of external air can be controlled to provide natural ventilation, mechanical ventilation or full air conditioning
 - b. Thermal Storage System to take advantage of electricity prices at non-peak times



項目介紹

招商銀行為項目舉辦國際性的設計比賽，最後由RMJM勝出，獲招商銀行委任設計其位于上海浦東區黃浦江沿岸新的地標性總部大廈。

總部大廈位于沿江重要位置，並以浦東商業建築的天際線景觀作為背景，因此，這棟地標性建築必須配置最先進的環保設施才能襯托出其21世紀特色。設計靈感來自項目地點以及業主悠久的航運歷史，建築外形仿照兩幅船帆，而建築輪廓則隱藏“8”字，取其吉祥之意。項目地塊被公共街道分為兩個地塊，但是設計巧妙、無縫地將兩個地塊融為一體。

從早期的設計階段開始，大廈設計構思已包括環保設計策略，考慮因素包括在可行的情況下，盡量採用當地建築材料，使用可回收循環再用材料和可再生能源。另外，設計也充分利用自然採光、遮陽以及善用建築物四周的其它天然條件。

招商銀行大廈設計以獲得LEED銀級認證為目標，並且將相關建設成本控制在2%之內。

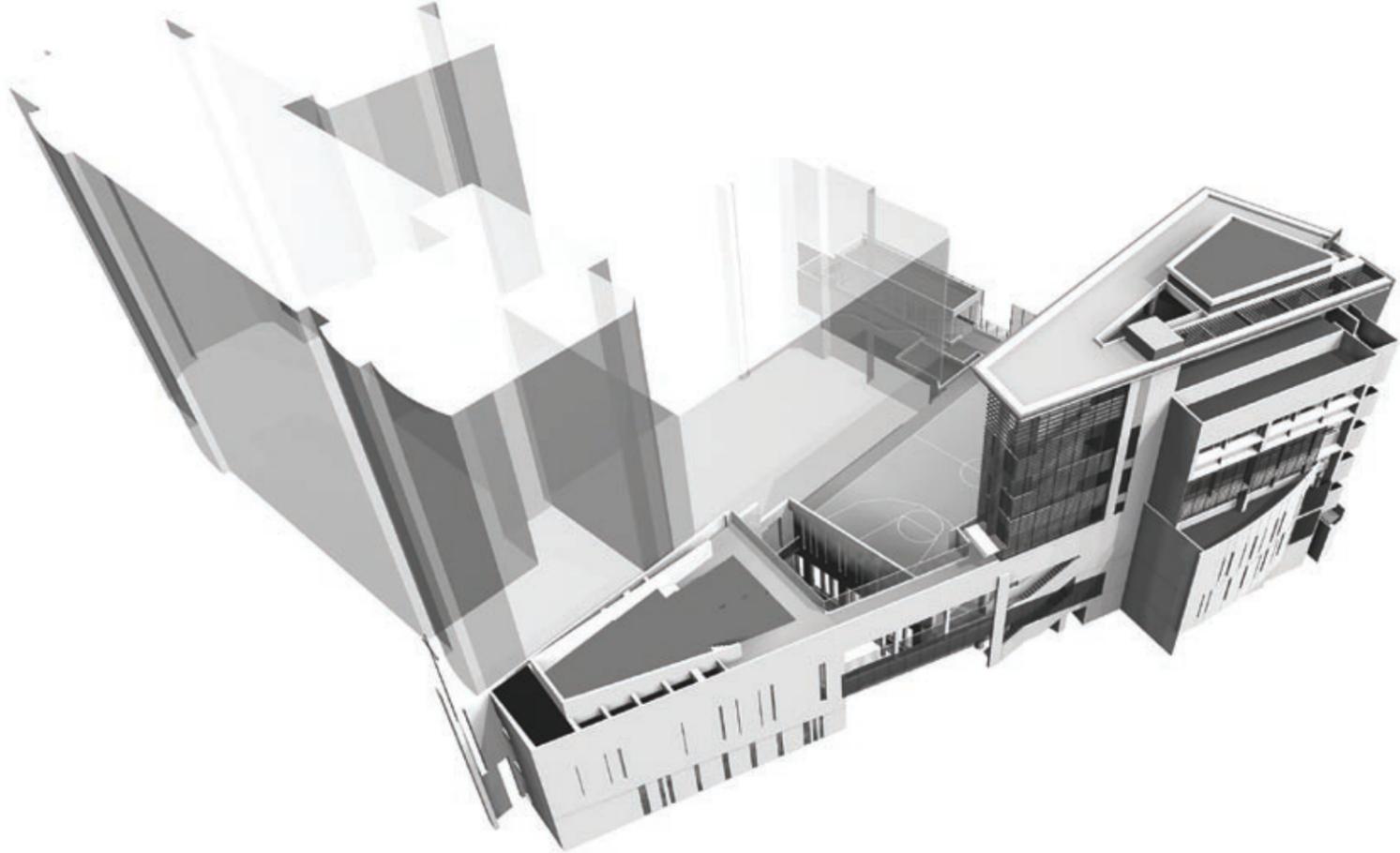
除了對環境的考量，設計也考慮到用戶的需求。大廈設有一個連接兩棟塔樓的大型中央空中花園，把綠化景色延伸到屋頂花園和室外廣場，為繁忙的商業中心區提供休憩綠洲。五層高的大堂和銀行大廳，配合天然建材和開揚景色，塑造適合工作和洽商業務的舒適環境。

綠色建築設施

1. 採用可再生能源：
 - a. 在屋頂安裝風渦輪機 - 首先對當地過去十年的風力數據進行分析，初步確定安裝設備的可行性。其後進行的風洞測試提供準確的風速廓線特徵，確保風渦輪機可生產足夠的電力。風渦輪機預期能滿足外牆照明的電力需求（即建築總能耗需求的1.2%）
 - b. 太陽能熱水系統可每天供應33立方米的生活熱水，滿足整棟建築物的需求
2. 減少能耗：
 - a. 地源熱泵利用樁基埋管減低供熱製冷的能耗需求
 - b. 高效能外牆系統及室外遮陽裝置可以減少建築物夏季的外熱吸收和冬季的內熱損失
 - c. 新風處理裝置全熱回收系統
 - d. 綠化屋頂可減低熱島效應

3. 環保建築材料：
 - a. 採用當地建材，減少材料因運輸而產生的二氧化碳
 - b. 選用循環物料成分較高的材料
 - c. 回收可循環再生的建築廢料
 - d. 選用揮發性有機化合物（VOC）含量較低的材料
4. 善用水資源：
 - a. 收集雨水供灌溉使用
 - b. 選用雙檔沖水座廁、低流量水龍頭以及低流量蓮蓬頭來減低用水量
5. 其它：
 - a. 混合通風，控制室外空氣流量，以提供自然通風、機械通風或全新風空氣調節
 - b. 利用低谷時段的電價優惠，通過蓄熱和蓄冰系統儲存能量，以便在電價高峰時使用





Dormitory & Facility Extension Block for United Christian College (Kowloon East) 匯基書院(東九龍)學生宿舍及綜合大樓

Estimated Completion Date 2008

Client/ Developer	United Christian College (Kowloon East)
Project Manager	KCS Projects Ltd.
Architect	Ronald Lu & Partners (Hong Kong) Ltd. (Applicant)
Civil & Structural Engineer	Wai Kin (HK) Consultants Ltd.
Building Services Engineer	WEC Engineering Consultants (International) Ltd.
Quantity Surveyor	TLS & Associates Ltd.
Landscape Architect	Team 73 HK Ltd.
Environmental Consultant	Ove Arup & Partners HK Ltd.
Main Contractor	W.M. Construction Ltd.

“Learning with a Lighter Footprint”

United Christian College (Kowloon East) is developing a 5,000sq.m. extension programme including dormitory, canteen, chapel, gymnasium, activity rooms, basketball court and indoor swimming pool. Envisioned by the user, this school extension aspires to create “a different sky for learning” and serves to cultivate students to respect environmental sustainability, among other virtues.

To this end, the building shall serve as a “living educational & research tool” in which environmental loadings are minimized both locally and globally throughout the life cycle. Pre-assessments on building environmental performance, based on CEPAS and LEED (for School 2007), are performed and adopted as design guidelines. Qualitative and quantitative studies using computer simulation technologies are carried out to achieve specific environmental performances. Several focus areas are summarized below:

Natural Ventilation

Cross ventilation, stack effect, wind catcher and wing wall are researched and then incorporated as applicable. With the help of dynamic thermal analysis using IES Virtual Environment & CFD, an addition of 1/3 to 2/3 natural ventilation mode in various areas can be achieved.

Daylighting

Vertical Daylight Factor (VDF) is employed to study the daylight performance of a typical dormitory unit. An average lux level of 300-400 can be achieved with 21% VDF. Desktop Radiance is also used to simulate the actual lighting effect.

Green Coverage

An approximate 0.45 “Green Plot Ratio” can be achieved through design.

Resource Conservation

The principle of 4Rs (i.e. Reduce, Renew, Reuse and Recycle) is adopted with emphasis on using less materials.

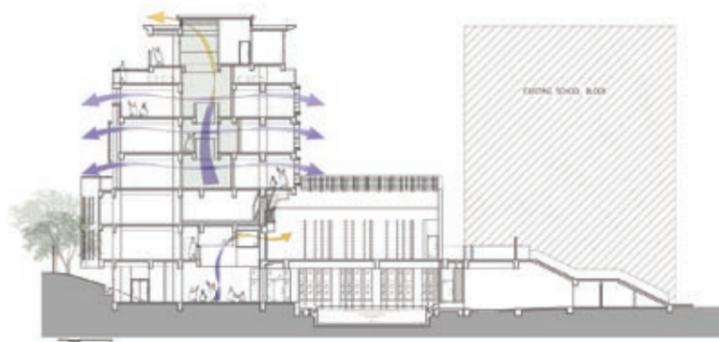
Waste Minimization

Grey water from the swimming pool will be used for irrigation or floor cleansing while kitchen waste will be composted as fertilizer.

Life Cycle Assessment (LCA)

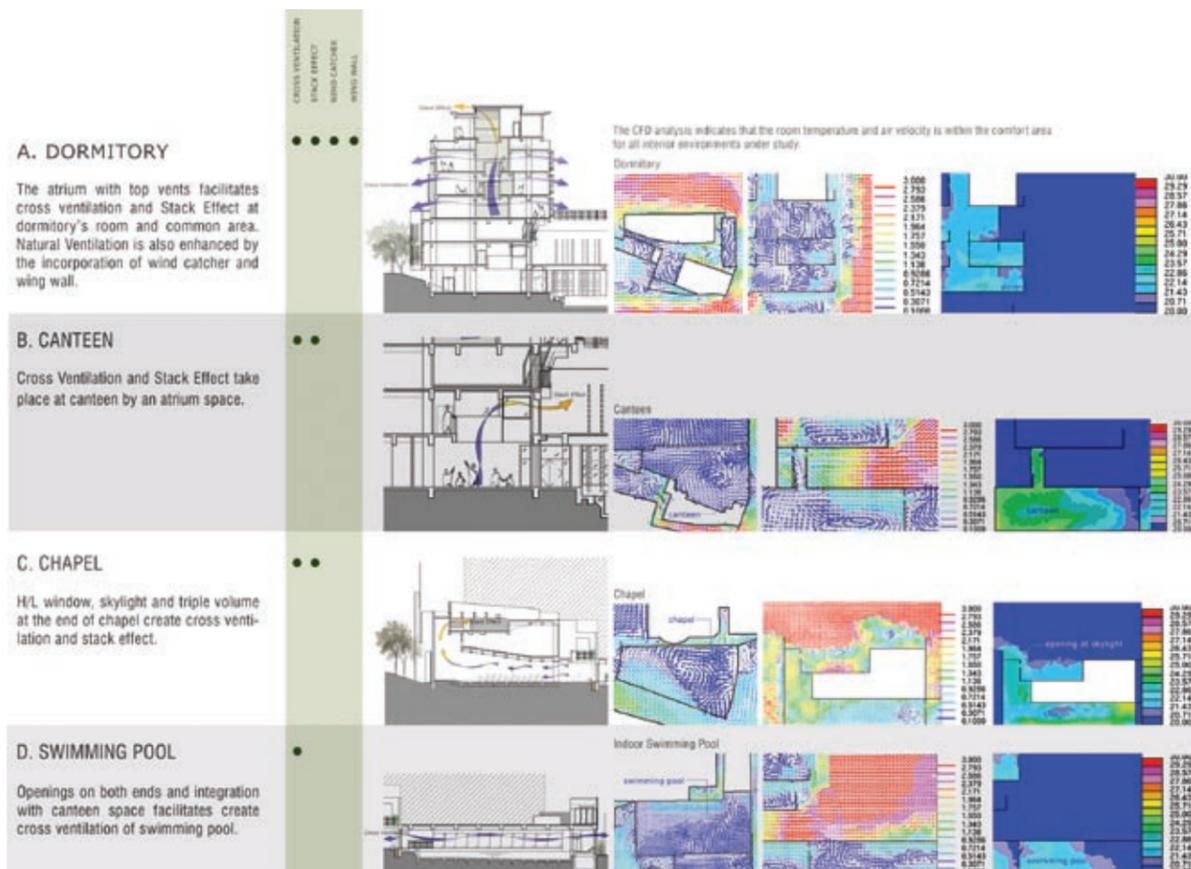
Computer LCA software is used. Over 80% of total energy consumption falls in the operation stage of the building while a 10% annual energy consumption reduction is noted with natural ventilation potential being maximized.





Above all, an interactive approach has been adhered in such a way that the design is developed along with collaborative research and feedbacks from the school, bringing sustainability into the forefront of design decisions and turning it into a key concern for the eventual end users of the project. For example, sub-meters for electricity consumption will be installed at individual dormitory level for ease of comparison by the students while strategic areas for self-decoration by teachers and students have been designed to heighten the sense of belonging. Besides, the effectiveness of the environmental measures (e.g. green roof & wall and natural ventilation devices) will be monitored through linking university researchers with the students of the school. All data from the monitoring will be collected for further evaluation in this project of applied research.

The essence of research and design for this project is how architecture can help better shape the minds of the students. The vision is that the process and methodologies as generalized in the research and design process can serve as a beneficial reference in the industry, particularly to the design of urban schools in the South China regions.



綠色教育

匯基書院(東九龍)進行5,000平方米擴建工程。計劃包括興建學生宿舍、飯堂、餐廳、體育館、活動室、籃球場、室內游泳池及一系列戶外校園空間等。跟據可持續發展為首要之設計原則，此擴建工程務求能創造一個“不一樣的學習天空”，讓學生能培養出良好的環保意識，懂得愛惜地球資源，緩減人類生態足印。

於此，新校舍的設計、建造及運作必需乎合低能耗要求，成為一個“活的教學及研究工具”。首先，此項目採納了美國的LEED (for School 2007) 及香港的 CEPAS 作為初部的環保建築評估，並以此作為設計深化的指引。再透過使用電腦模擬科技，為設計進行質量及數據的分析，以達到滿意的環保及節能要求。部份分析節錄如下：

天然通風

透過熱動力分析(IES Virtual Environment)及電腦流體動力分析，可看到採納不同自然通風的措施，如對流、風斗及翼牆等，能有效增加1/3至2/3室內空間之自然通風效益，減少冷氣的使用率。

日照

宿舍房間進行了“垂直日光係數”(VDF)及“Desktop Radiance”的應用。顯示房間可達致平均300-400勒克斯及21%VDF之要求。Desktop Radiance亦模擬了自然光在房間之效果。

綠化覆蓋率

項目設計可達到約45%之“綠色地積比率”。

資源保育

採納了4R原則作為設計及物料選擇之基礎。強調建築材料之節約。

廢物減少

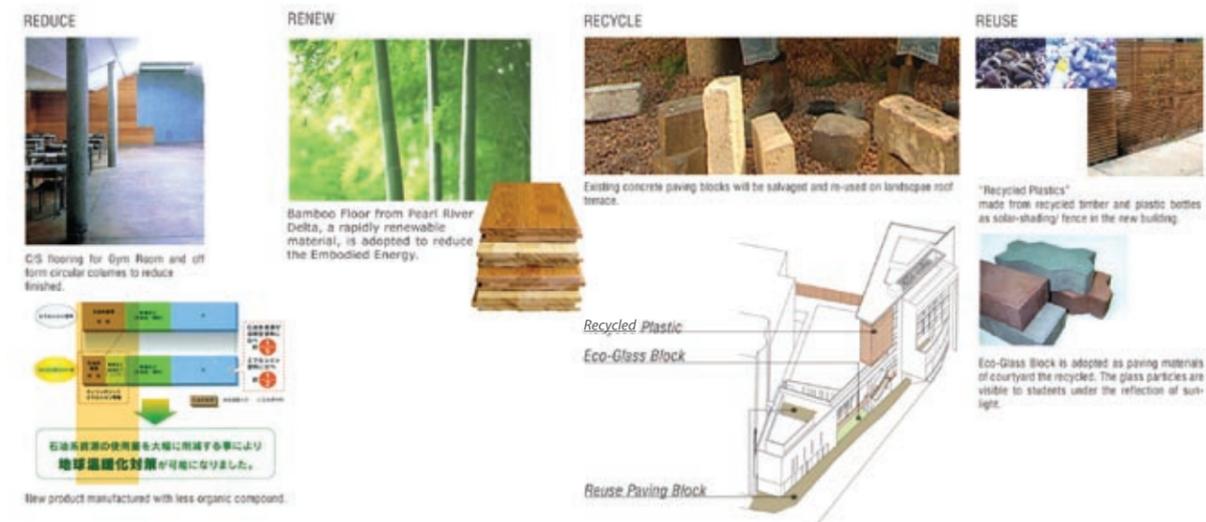
源自室內泳池的池水可用作清洗室內室外場地。飯堂的剩餘物資將在校園裏讓學生用作堆肥料。

生命周期評估

透過軟件的應用，反映出在整個建築物的生命週期中，超過八成資源耗來自校舍的運作階段。另外，自然通風的措施亦有效地把能源消耗減省一成。

最後配合互動的方式，建築師收集了校長、老師及學生的意見為設計的基礎，讓可持續發展的原則領導整個設計方向，成為建築物最終使用者共同關注的課題。如今擴建部分更成為一項寶貴的教學資源，讓學生親自監察能源消耗，從中領略修補資源循環的重要性。擴建工程的設計創造了不同的空白牆給予學生發揮創作之用，增加他們的歸屬感。節能措施的成效(如綠化屋頂及自然通風設計)亦會交由學生聯同學者進行共同監察。從中得到的數據可繼續進行分析及研究之用。

此設計及研究項目之本質，在於讓建築物成為啟發及陶造學生之性格及思考。整個設計及研究過程的歸納，亦期盼能成為業界對於城區綠色校園設計之參考。





Green Roofs for Old District Buildings: Suitability, Cost and Benefit 舊區樓宇植物天台: 應用, 成本與效益

Estimated Completion Date 2008

Research Investigator
Facility Manager
Management Company
Owners Association
Other Team Member

The Hong Kong Polytechnic University (Applicant)
The Hong Kong Polytechnic University
The Hong Kong Polytechnic University
Baptist Oi Kwan Social Services
Ryerson University

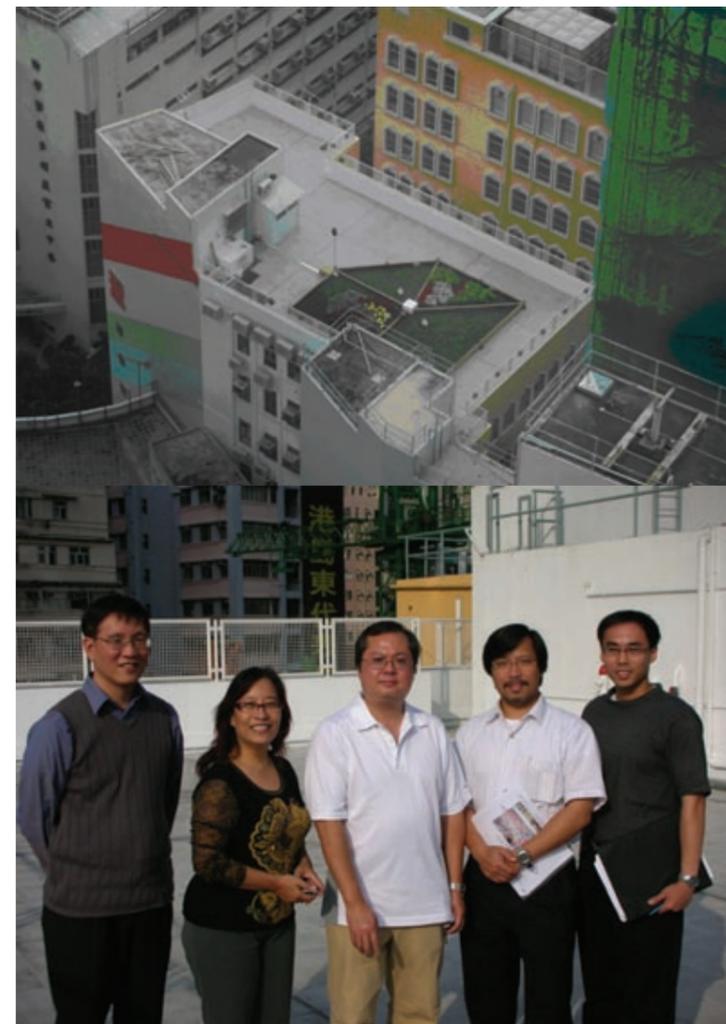
Hong Kong, like many other highly urbanized cities, is facing severe air quality problems and elevated temperature in the summer time. While environmental regulations in Hong Kong control local emission of particulates and other air pollutants, it is still a challenge to control regional transport of polluted air from neighbouring cities. Greening of roof areas will improve air quality by trapping airborne particulates and other air pollutants with vegetation. The elevated temperature in the summer time is due to the heat trapped by impervious asphalt and concrete surfaces. By releasing heat through evapo-transpiration and reflecting solar radiation, green roofs will reduce ambient temperature. While the benefits of greenroof (e.g. air quality improvement, energy savings, reduction of greenhouse gases, heat island effect, and stormwater, extension of building membrane life, noise reduction, urban ecology, aesthetic benefits, and food production) have been recognized and their adoption is becoming widespread in Europe, North America and Japan, this green technology remains relatively unexploited in Hong Kong. A pilot research study has been carried out by The Hong Kong Polytechnic University, in collaboration with Baptist Oi Kwan Social Service at Wan Chai and Ryerson University in Canada, to demonstrate and promote the green roof technology.





The study focuses on the quantification of social and environmental benefits of green roofs in Hong Kong old districts in which many rooftops are thought to be unsuitable for any activities. The green roof at Oi Kwan provides the patients of the Social Service gardening opportunities and a tranquil and natural environment within a crowded city and also allow mental health practitioners and researchers to monitor the patients at the facility. Public concerns such as Building regulation violation, extra loading, safety issue due to typhoon and seasonal monsoons, cost, roof drainage, and plant irrigation, long-term maintenance, sustainability, and so forth will be addressed in the study. Researchers involved in this study include environmental and structural engineers, landscape architects, urban planners, plant and soil specialists, hydrologists and numerical modellers. The funding bodies of this study are Baptist Oi Kwan Service, The Community Chest and PolyU. Preliminary monitoring results indicate a significant reduction of roof temperature (e.g. 10°C) and top floor temperature (e.g. 5°C). As a result, an electrical saving of over \$2,000 per month for air conditioning was found in the summer of 2007. Additionally, a moderate decrease of carbon dioxide concentration (e.g. 10%) has been observed at the green roof. The findings of this study may be used to formulate a design and implementation procedure and facilitate the development of a green roof industry in Hong Kong.

香港跟不少高度發展的都市一樣，不僅空氣污染問題嚴重，夏季氣溫更持續上升。儘管環保條例對本地排放的粒子及其他空氣污染物有所管制，但如何控制從鄰近城市擴散到香港的廢氣，仍然是一個棘手問題。植物天台可以吸收大氣粒子及其他污染空氣的物質，從而改善空氣質素。夏季氣溫上升，則是因為天台的防滲瀝青和混凝土地面吸收了熱力。植物天台透過蒸散作用釋放熱力和反射日照輻射，可以降低環境溫度。植物天台雖然優點甚多(如改善空氣質素、節約能源、減少溫室氣體及洪水、紓緩熱島效應、延長建築物膜材的壽命、減少噪音、促進市區生態平衡、增添美感及生產食糧)，在歐洲、日本及北美地區亦開始流行，但此技術在香港則未被廣泛探討。為了示範和推廣這項綠色科技，香港理工大學與灣仔浸會愛群社會服務處及加拿大懷雅遜大學合作推行試點計劃。計劃的另一目的，是以科學方法量化在香港舊區推行植物天台的社會及環境效益，這些天台中，不少都被視為毫無用處。愛群社會服務處的天台在繁囂的都市中提供了一個寧靜自然的環境，愛群院友既可在此進行園藝活動，精神科的醫護及研究人員亦能監察院友的情況。這項計劃會探討植物天台是否違反建築物條例、額外負重、颱風及季候風所引起的安全問題、成本、排水及灌溉、長遠維修、可持續發展等事宜。參與這研究的有結構工程師，園境設計師，城市規劃師，植物及土壤專家，水文學者及數值建模師。資助機構除了香港理工大學，還包括浸會愛群社會服務處及香港公益金。初部溫度監察結果顯示天台溫度降低了十度，頂層降低了五度。而在二零零七年夏天，浸會愛群的電費每月減少了二千多元。還有，綠化天台的二氧化碳濃度相對減少百份之十。研究結果或會用作制訂一套設計及建造程序，促進植物天台工程專業在香港的發展。





GBA 2008: Acknowledgements

環保建築大獎2008 - 鳴謝

The Honorable Jury Panel

New Construction Category 新建建築類別



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鄭漢鈞顧問工程有限公司



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Existing Building Category 現有建築類別



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Research & Planning Studies Category 研究及規劃類別



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凌嘉勤先生
香港規劃師學會
會長

New Construction Category 新建建築類別

Project Name	項目名稱	Applicant
Beijing 2008 Olympic Games - National Aquatics Centre (Water Cube)	北京2008年奧運會 – 國家游泳中心(水立方)	Arup
Bel-Air Phase 1 to 4	貝沙灣一至四期	Island South Property Management Limited
City University of Hong Kong Student Residence, Phase 3	香港城市大學學生宿舍第3期	The City University of Hong Kong
Direct Subsidy School, Shatin Area 11 (Secondary-cum-primary)	沙田第11區直接資助計劃學校 (中學暨小學)	Architectural Services Department
Hong Kong Science Park Phase 2	香港科學園二期	Hong Kong Science and Technology Parks Corporation
HKU SPACE Community College, Kowloon East Campus	香港大學專業進修學院九龍東分校	Design Consultants Limited
Kennedy Town Community Complex	堅尼地城社區綜合大樓	Architectural Services Department
Ma Wan Park - Nature Garden	馬灣大自然公園	Sun Hung Kai Real Estate Agency Ltd.
Maosi Ecological Demonstration Primary School	毛寺生態實驗小學	Department of Architecture, The Chinese University of Hong Kong
Marsh Road Station Building	馬師道車站	The Hongkong Electric Co. Ltd.
Mei Tin Community Hall	美田社區會堂	Development and Construction Division, Housing Department, HKSAR Government
Millennium City 6	創紀之城六期	Kai Shing Management Services Limited - Millenium City 6
Mount Beacon	畢架山峰	Sino Estates Management Limited
Nokia Beijing BDA Campus	諾基亞北京經濟技術開發區中國園	Arup
One Island East	港島東中心	Swire Properties Limited
Park Island	珀麗灣	Kai Shing Management Services Ltd
Proposed Residential Development (at Shatin, Town Lot. No. 481, Area 77, Ma On Shan, NT)		Sino Estates Management Ltd.
Radiotherapy Centre & Accident & Emergency Department at Princess Margaret Hospital	瑪嘉烈醫院腫瘤科大樓	Architectural Services Department
Redevelopment of Kwai Chung Flatted Factory	葵涌工廠重建項目	Development and Construction Division, Housing Department, HKSARG
Royal Green	御皇庭	Well Born Real Estate Management Limited - a member of Henderson Land Group
Sham Mong Road 132kV Substation and Equipment Building	深旺道變電站及設備大樓	CLP Power Hong Kong Limited
Skyline Tower	宏天廣場	Sino Estates Management Limited
Stanley Municipal Services Building	赤柱市政大廈	Architectural Services Department
The Hong Kong Polytechnic University - The Hong Kong Community College (Hung Hom Bay)	香港理工大學 – 香港專上學院 (紅磡灣校園)	AD+RG Architecture Design and Research Group Ltd
The Vineyard	葡萄園	Supreme Management Services Limited
Villa by the Park	朗庭園	Kai Shing Management Services Ltd. (Villa by the Park Management Services Office)
Vision City	萬景峯	Sino Land Co. Ltd.
YOHO Town	新時代廣場	Kai Shing Management Services Ltd. (YOHO Town)

Existing Building Category 現有建築類別

Project Name	項目名稱	Applicant
148 Electric Road	電氣道148號	Sino Estates Management Ltd.
Aegean Coast	愛琴海岸	Kai Shing Management Services Limited - Aegean Management Services Office
Anglers' Bay	海雲軒	Anglers' Bay
Bayview Park	灣景園	Sino Estates Management Limited
Beijing 2008 Olympic Equestrian Venues - Shatin Core Venue	北京2008年奧運馬術比賽場地 – 沙田主場地	Arup
Beverly Hill	比華利山	Hang Yick Properties Management Limited - Beverly Hill
Casa Marina I	淺月灣一期	Well Born Real Estate Mgt Ltd.
Casa Marina II	淺月灣二期	Well Born Real Estate Management Limited - A member of Henderson Land Group
Castello	帝堡城	Castello Management Services Office
Chi Fu Fa Yuen	置富花園	Chi Fu Fa Yuen Ltd.
Chi Fu Landmark	置富南區廣場	Kai Shing Management Services Limited
China Hong Kong City	中港城	C.H.K.C. Building Management Limited
City One Shatin	沙田第一城	Parametta Estate Management Ltd.
Civil Engineering and Development Building – Upgrading of Building Services Installation, External Redecoration Works, Refurbishment to Toilets, Main Entrance, External Area and Refuse Collection Point	土木工程拓展署大樓 - 屋宇裝備、外牆、洗手間、地下大堂、廢物回收站及綠化平台翻新改善工程	Architectural Services Department
Corporation Square	商業廣場	Sino Estates Management Limited
Dr. Sun Yat-Sen Museum	孫中山紀念館	Architectural Services Department
Dynasty Heights	帝景峰	Sino Estates Management Limited - Dynasty Heights Customer Services Centre
Dynasty View (Tail Po Town Lot NO. 113)	御峰苑	High Elite Limited
Elegance Gardens	怡樂花園	Sino Estates Management Limited
Faraday House	雅德苑	Sino Estates Management Limited
Futura Plaza	富利廣場	Sino Estates Management Ltd., Futura Plaza
Goldwin Heights	高雲臺	Citybase Property Management Ltd.
Grand Century Place Shopping Mall & Office Tower	新世紀廣場及寫字樓	Kai Shing Management Services Limited (Grand Century Place Management Services Limited)
Grand Central Plaza	新城市中央廣場	Kai Shing Management Services Limited
Grand Waterfront	翔龍灣	Well Born Real Estate Management Limited - Grand Waterfront
Hong Kong Cyberport	香港數碼港	Hong Kong Cyberport Management Company Ltd.
HK Pacific Centre	亞太中心	Sino Estates Management Limited - HK Pacific Centre
Hong Kong Gold Coast	香港黃金海岸	Hong Kong Gold Coast
Hong Lok Yuen	康樂園	Hong Lok Yuen Property Management Co. Ltd.

Existing Building Category 現有建築類別

Project Name	項目名稱	Applicant
Island Resort	藍灣半島	Sino Estates Management Ltd - Island Resort
King's Park Hill	京士柏山	Well Born Real Estate Management Limited - King's Park Hill
Majestic Park	帝庭豪園	Sino Estates Management Ltd.
Metro Centre II	美羅中心二期	Sino Estates Management Limited
Metroplaza	新都會廣場	Kai Shing Management Services Limited
Millennium City 1	創紀之城一期	Kai Shing Management Services Limited - Millennium City 1
No. 1 Homantin Hill	何文田山1號	Supreme Mgt Services Limited (No. 1 Homantin Hill)
Ocean Shores	維景灣畔	Kai Shing Management Services Limited (Ocean Shores)
Oceania Heights	海典軒	Oceania Heights
Olympian City 2	奧海城二期	Sino Estates Management Ltd.
One SilverSea	一號銀海	One SilverSea
Park Central - Residential (Phase 1)	將軍澳中心(住宅) (第一期)	Hong Yip Service Company Limited
Parkland Villas	疊茵庭	Well Born Real Estate Mgt Ltd.
Pristine Villa	曉翠山莊	Hong Yip Service Company Limited
Regence Royale	富匯豪庭	Well Born Real Estate Management Limited - Regence Royale
Rehabilitation of Moon Lok Dai Ha	滿樂大廈復修工程	Chung Wah Nan Architects Ltd.
Rosedale Garden	玫瑰花園	Sino Estates Management Limited
Scenic Gardens	御景園	Sino Estates Management Ltd.
Serenity Park 1	太湖花園一期	Serenity Park Building Management Limited
Shui On Centre	瑞安中心	Shui On Centre Property Management Ltd.
Sky Horizon	海天峰	Sino Estates Management Limited
Springdale Villas	御庭居	Sino Estates Management Limited
The Astoria	雅士花園	Sino Estates Management Limited
The Centrium	中央廣場	Sino Estates Management Limited - The Centrium
The Parcville	采葉庭	Hong Yip Service Company Limited
The Pinnacle	豪峰軒	Well Born Real Estate Management Limited - The Pinnacle
The Sherwood	豫豐花園	Well Born Real Estate Management Limited (a member of Henderson Land Group)
The Virescent Paradise, The Beverly Hills		The Beverly Hills, Well Born Real Estate Management Ltd.
Three Bays		Sino Estates Management Limited
Tsim Sha Tsui Centre	尖沙咀中心	Sino Estates Management Ltd.
Tuen Mun Town Plaza	屯門市廣場	Sino Estates Management Limited
Villa Tiara	怡峰園	Kai Shing Management Services Ltd.
YKK Building	YKK大廈	Jones Lang LaSalle Management Services Ltd.

Research and Planning Studies Category 研究及規劃類別

Project Name	項目名稱	Applicant
Beijing Changxing Eco-city	北京長興生態城	Ove Arup & Partners Hong Kong Ltd.
Centennial Campus - The University of Hong Kong	香港大學千禧校園	The University of Hong Kong, Wony & Ouyang (HK) Ltd.
China Merchants Bank Tower, Shanghai, PRC	上海招商銀行大廈	RMJM Hong Kong Ltd.
Comprehensive Environmental Performance Assessment Scheme for Buildings (CEPAS)	全面平估樓宇環境表現計劃	Arup (Hong Kong)
Dormitory & Facility Extensioin Block for United Christian College (KIn. East)	匯基書院(東九龍)學生宿舍及綜合大樓	Ronald Lu & Partners (Hong Kong) Ltd.
Greening Mater Plan for Mong Kok and Yau Ma Tei	旺角及油麻地綠化總綱圖	Earthasia Ltd.
Greening Master Plans for Sheung Wan to Causeway Bay	上環至銅鑼灣綠化總綱圖	ACLA Limited
Green Roofs for Old District Buildings: Suitability, Cost and Benefit	舊區樓宇植物天台：應用，成本與效益	The Hong Kong Polytechnic University
Kai Tak Planning Review for a Sustainable and Green Environment	以可持續發展及以綠化環境為本的啟德規劃檢討	Planning Department, HKSAR Government
Kwun Tong Town Centre	觀塘市中心	Urban Renewal Authority Wong & Ouyang (HK) Ltd.
Micro-climate Studies for Sustainable Public Housing Development	可持續發展公屋的微氣候研究	Development & Construction Division, Housing Department, HKSAR Government
Vertical Greening Research Study	垂直綠化研究	Urban Renewal Authority

Supporting Organizations

Government Departments & Related Organizations

Architectural Services Department
 Buildings Department
 Council for Sustainable Development
 Electrical and Mechanical Services Department
 Environmental Protection Department
 Hong Kong Housing Authority
 Hong Kong Housing Society
 Hong Kong Observatory
 Leisure and Cultural Services Department
 Planning Department
 Urban Renewal Authority
 Water Supplies Department

(in alphabetical order)

Academic Institutes

Chu Hai College of Higher Education
 • Department of Architecture
 The Chinese University of Hong Kong
 • Department of Architecture
 The City University of Hong Kong
 • Department of Building & Construction
 The Hong Kong Polytechnic University
 • Department of Building Services Engineering
 • Faculty of Construction and Land Use
 • School of Design
 The Hong Kong University of Science and Technology
 • Institute for the Environment
 The University of Hong Kong
 • Department of Architecture
 Vocational Training Council

Professional, Environmental & Related Organizations

American Institute of Architects (Hong Kong Chapter)
 BEAM Society
 Building Services Operation and Maintenance Executives Society
 Business Environment Council
 Friends of the Earth Hong Kong
 Green Council
 Green Power Hong Kong
 Hong Kong Institute of Construction Managers
 Hong Kong Institute of Housing
 Hong Kong Institute of Real Estate Administrators
 Hong Kong People's Council for Sustainable Development
 Hong Kong Productivity Council
 Planning Institute of Australia (Hong Kong Chapter)
 Royal Institution of Chartered Surveyors
 The Association of Consulting Engineers of Hong Kong
 The Conservancy Association, Hong Kong
 The Hong Kong Association of Property Management Companies
 The Hong Kong Construction Association
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環保建築專業議會

The Professional Green Building Council (hereinafter called "the PGBC") is constituted as a company by guarantee. It was formed in 2002 and now comprises 5 Institutional Members: The Hong Kong Institute of Architects (HKIA), The Hong Kong Institution of Engineers (HKIE), The Hong Kong Institute of Landscape Architects (HKILA), The Hong Kong Institute of Planners (HKIP) and The Hong Kong Institute of Surveyors (HKIS).

The PGBC is a non-profit making research and education institute to promote a better sustainable built environment through professional involvement. Its objectives are:

- (1) to conduct collaborative research and publish research results on local and global developments of green buildings;
- (2) to organize Seminars and training courses in green building design and technology; and
- (3) to advise the government on the formulation, setting up and monitoring of a local green building labeling scheme.

環保建築專業議會(英文簡稱為PGBC) 於2002年以擔保有限公司形式成立，目前屬會包括香港建築師學會、香港工程師學會、香港園境師學會、香港規劃師學會及香港測量師學會。

環保建築專業議會屬非牟利學會，專注有關環保建築項目的研究和教育工作，並著重專業推廣可持續發展之都市及建築設計。議會目標包括：

1. 推行本地以至外地環保建築項目的合作研究及研究發佈；
2. 統籌以環保建築設計及技術為主題的研討會及訓練課程；
3. 建議政府有關整理、確立及監察本地環保建築標籤方案。



www.hkpgbc.org



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