

PROJECT CLEAN AIR
Certification Scheme for Clean Air Charter
Final Report
For
Swire Properties Limited (SPL)



Prepared by



February 2009

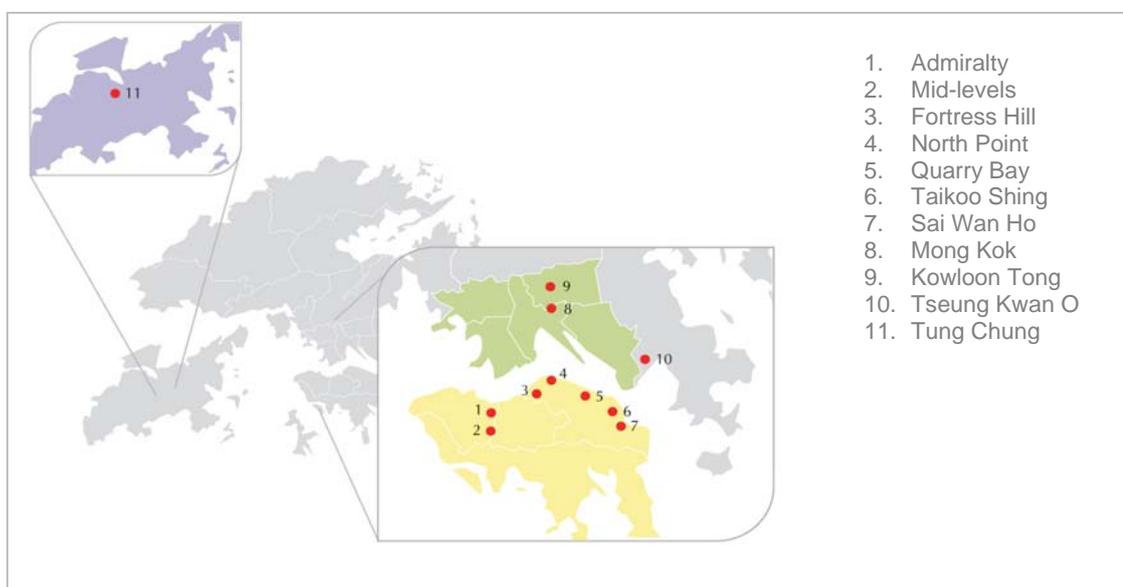
1. INTRODUCTION

Swire Properties Limited (SPL), a wholly owned subsidiary of Swire Pacific Limited, was incorporated in 1972 and is one of Hong Kong's leading developers with extensive experience in the development and management of major commercial, retail and residential properties. Its investment property portfolio in Hong Kong comprises office and retail premises in prime locations, as well as serviced apartments, hotel interests and other luxury residential accommodation. Including the completion of One Island East in March 2008, SPL's completed portfolio in Hong Kong totals 14.6 million sq ft of gross floor area, with Island East, Pacific Place and Festival walk as its core holdings.

This report outlines the findings of the Business Environment Council (BEC) from an interview with a SPL's representative, Ms Grace Lam, Environmental Affairs Officer, at the Board Room, 21/F, Cityplaza III, 14 Taikoo Wan Road, Taikoo Shing, Hong Kong.

From the pre-audit questionnaire completed by the SPL, it was determined that the SPL fits into Group C category of the certification scheme, showing that the organization has comprehensive management systems and means in place to identify and verify the implementation of energy efficiency / emission reduction programmes that are in compliance with the Clean Air Charter.

The audit interview was led by Ms Dorothy Lam, Mr Benny Au and Ms Brenda Fung on 25th November 2008. The purpose of this audit was to report the SPL's implementation of the Clean Air Charter obtained during the interview and the subsequent material submitted for demonstration purpose.



The map shows Swire Properties' portfolio in Hong Kong

2. OBSERVATIONS AND COMPLIANCE

Based on the site meeting, the SPL's programmes and practices on reducing air emission were reviewed. In general, a systematic structure on addressing the Clean Air Charter has been implemented with the followings:

- The SPL is committed to ongoing improvements in its energy efficiency through strong management leadership and support, setting clear goals, benchmarking of best practices and improving currently employed technologies.
- Environmental considerations are an integral part of the SPL's decision-making, management and culture.
- Sustainable Development Steering Committee (SDSC) made up of representatives from various departments was established in 2002 to support the environmental initiatives of Swire Group Environmental Committee and to drive EHS performance strategies within the SPL.
- An Environmental, Health & Safety (EHS) 3-year budget/plan with detailed project list was compiled to address the elements of environment, health and safety which include achieving 30,000 MWh accumulated energy saving by 2010. In this year 2009, SPL targets to achieve energy saving of about 8,300 MWh.
- The Head of Technical Services Department is responsible to review the annual performance and set up new objective and target addressing on energy saving. The Department's Building Services Team composed of one manager and 3 engineers is responsible for energy saving initiatives, research projects and Energy Research Fund with universities.
- Technical Manager Meeting held every two months and internal meeting with each center regularly transfer the top management direction on air emission or energy reduction to the working staff.
- SPL took the lead in initiating the "Best in Class" exercise to benchmark and share best practices with other leading property development and management companies in Hong Kong, Singapore and the UK. The results of this benchmarking exercise serve as a guideline to all participants in their efforts to improve the energy efficiency of their buildings.
- SPL entered into collaboration with the Building Energy Research Centre of Tsinghua University in Beijing to identify opportunities for savings and improve the SPL's plant and equipment operations.

Regarding the six commitments of the Clean Air Charter, the table below summarizing the achievements of Swire Properties Limited:

Commitment	Action done
<p>1) Operate to a recognized world class standard, or the standards established by the Hong Kong / Guangdong governments on emissions of air pollutants, even if it is not a requirement to do so here. (Relevant to industrial operations, power plants and business with direct emissions)</p>	<ul style="list-style-type: none"> ◆ In view of the core business operations of the SPL, there is no major direct air emission generated. Most of the air emission would be indirect (i.e. energy consumption), hence this commitment has limited applicability to the SPL. ◆ SPL has achieved Excellent Class of Indoor Air Quality for premises including internal office and office common area located in both One Pacific Place (July 2008) and Festival Walk (Feb 2009).
<p>2) Use continuous emissions monitors (CEMs) at significant sources, e.g. large and medium plants. (Relevant to large / medium industrial operations and power plants)</p>	<ul style="list-style-type: none"> ◆ As SPL is not considered as an industrial operation which possesses stationary emitting facilities that are regulated by Air Pollution Control Ordinance, therefore continuous emissions monitors are not applicable to the scope of SPL operation with regards to the Charter commitment.
<p>3) Publish information on energy and fuel use, as well as total emissions of air pollutants annually and timely, if emissions are significant.</p>	<ul style="list-style-type: none"> ◆ SPL published energy and fuel consumption annually on EHS Reports (2003-2007) and Swire Pacific Sustainable Development Reports. Moreover, these information also reported to Carbon Disclosure Project annually. ◆ In 2007, SPL took the lead in initiating the 'Best in Class' exercise to benchmark and share over 100 best practices with other leading property development and management companies in Hong Kong, Singapore, UK and the US. The objectives of the exercise were to understand the best applicable practices adopted by industry leaders and what could be done to enhance their performance. The results from this benchmarking exercise now serve as a guideline to all participants in their efforts to improve the energy efficiency of their buildings. The benchmarking exercise involved evaluation of more than 100 practices grouped under three sections: <ul style="list-style-type: none"> ➤ Section A: Sustainability in energy efficiency ➤ Section B: Reduction in energy consumption

Commitment	Action done
	<ul style="list-style-type: none"> ➤ Section C: Continued improvements in operational efficiencies for Heating, Ventilation and Air Conditioning (HVAC) systems. <p>Of the ten companies which participated in the exercise, SPL is considered as an industry leader, particularly in areas covered in Section B and C. SPL will continue with this benchmarking exercise in future and expand it to industry leaders in other countries.</p> <ul style="list-style-type: none"> ◆ Apart from the benchmarking, SPL also ensures the energy performance of their buildings remains at the leading edge by: <ul style="list-style-type: none"> ➤ enforcing the practice to assess new buildings and reassess existing buildings every 5 years by BEAM ➤ conducting independent energy audits on average two buildings a year, complying with the equipments of the Building Energy Codes and assessment criteria of Building Environmental Assessment Method (BEAM). ◆ Indirect CO₂ emissions from electricity use and other emissions from emergency generators or company cars at all sites is collected on a regular basis by responsible departments and recorded in the centralized database, namely Environmental, Health and Safety (EHS) database. The data then will be evaluated against the SPL's policy commitments, objectives and targets, thus enabling areas for improvement to be identified. The findings will be reported in an EHS annual report which is available online as well as in hardcopy. <p>SPL is among the first wave of property companies to establish an online EHS database system for collecting environmental data from various commercial portfolios and construction sites.</p>
4) Undertake to adopt energy-efficient measures in their operations.	<ul style="list-style-type: none"> ◆ In 2007, SPL has achieved an estimated energy saving of 3,383 MWh at six locations which equates to a total reduction of 2,712 tonnes of CO_{2e} emission. The reduction of electricity consumption was through the improvement and integration of facilities building management system (BMS) helping to improve energy efficiency and control the electricity usage

Commitment	Action done
	<p>distribution. These initiatives included:</p> <ul style="list-style-type: none"> ➤ <i>Chiller Plant Improvement</i> – electricity saving was an estimated 1,949 MWh which equates to a total reduction of 1,629 tonnes of CO_{2e} emission. <ul style="list-style-type: none"> → Based on the different operation hours and functions, separate schedule has been set for the Heating, Ventilation and Air Conditioning (HVAC) equipments. → The heat recovery function has been applied by diverting energy from exhaust airflows, for example from thermal wheel, to fresh air. → Free cooling/hybrid mechanical ventilation or air-conditioning systems have been applied as they were applicable. → Software is available to make historical data analysis and automatically detect and report any faults of Variable Air Volume (VAV) and Air Handling Unit (AHU) values. ➤ <i>Lighting Modification and Improvement</i> – electricity saving was an estimated 367 MWh which equates to a total reduction of 307 tonnes of CO_{2e} emission. <ul style="list-style-type: none"> → Replacement or modification of lighting fixtures increase the energy efficiency of lighting system which include replacing T8 fluorescent light tubes with T5 tubes and using high efficient electronic ballasts and addressable lighting control. ➤ <i>Air-Conditioning Airside Improvement</i> – electricity saving was an estimated 485 MWh which equates to a total reduction of 289 tonnes of CO_{2e} emission. <ul style="list-style-type: none"> → Variable Speed Drives (VSDs) for AHU were installed to reduce energy consumption while providing a comfortable environment. At Festival Walk, cooled air from the air conditioning within shopping units can leak out easily to common areas because of open shop fronts. This poses a challenge to achieving energy efficiency. But after installed VSDs for AHUs, over 450 MWh

Commitment	Action done
	<p>of energy was saved which equates to over 260 tonnes of CO_{2e} emission per annum. This initiative has a short payback period of three years and will be adopted in other shopping malls under SPL.</p> <ul style="list-style-type: none"> ➤ <i>Fresh Air Control</i> – electricity saving was an estimated 208 MWh which equates to a total reduction of 174 tonnes of CO_{2e} emission. <ul style="list-style-type: none"> → Such approach was installation of CO sensors at carpark to control ventilating fans to give an appropriate fresh air rate to the area. ➤ <i>Life/Escalator Modernisation Control</i> – electricity saving was an estimated 374 MWh which equates to a total reduction of 313 tonnes of CO_{2e} emission. <p>Life and escalator have been upgraded to reduce energy consumption through:</p> <ul style="list-style-type: none"> → adjusting the counterweight of passengers lifts to suit the traffic pattern, reducing energy wastage in the lift driving system → installing passenger sensors to slow down or come to a complete stop when escalators were not being used → using double-decked shuttle life <ul style="list-style-type: none"> ◆ A detailed energy audit and on-site diagnosis plan of the building service system at Festival Walk were completed in late 2007 by Tsinghua University. They recommended turning off five chillers while still maintaining an adequate environment. By improving operation and control at Festival Walk, an estimated total saving potential of up to 1,000 MWh, which is equivalent to a reduction of 580 tonnes of CO_{2e} emission, could be achieved. Improvement plans was rolled out in 2008 so that similar exercises can be conducted on other buildings. ◆ Green Roof: SPL completed a Green Roof Project at the level 3 roof of Festival Walk with the aim of identifying energy saving benefits and providing aesthetic benefits to our tenants and the public. The

Commitment	Action done
	<p>benefits of green roofs include aesthetic, environmental and economic. It estimates that the green roof could achieve an energy saving potential of about 60 kWh/sq m per year, a reduction in CO_{2e} emission of about 9,000 kg per year.</p>  <p><i>Before the green roof was installed</i></p>  <p><i>After the green roof was installed</i></p> <ul style="list-style-type: none"> ♦ To minimize undesirable exhaust emissions and contributing towards improving regional air quality, SPL installed an air soot filter system for the generator at Lincoln House in Taikoo Place in 2006. As black smoke emits during the start-up of the diesel-driven emergency generators which can be harmful to human health and the environment, the system can avoid black smoke and at the same time provide catalyst to convert harmful exhaust (i.e. carbon monoxide (CO), hydrocarbons and aldehydes) to neutral emission (CO₂ and water). The result was encouraging as there was drastic reduction of black smoke as well as reduction of 20% in levels of CO.

Commitment	Action done
	<div> </div> <p><i>Air soot filter system for the generator was installed at Lincoln House in Taikoo Place</i></p> <ul style="list-style-type: none"> ◆ Influencing Tenants: SPL liaises with their tenants on developing measures which can reduce energy consumption in their premises, through design, maintenance and general housekeeping. Sometimes, they also play a more active role in providing expert opinions to tenants on their fitting out design and offer technical advice on energy reduction. The aim is to explore win-win projects/practices with tenants. <div> </div> <p><i>A retail tenant at Festival Walk said: "We would like to know more about Swire Properties' initiatives to improve energy efficiency and waste recycling so that we can get more involved as a tenant and best practices can be shared in the industry."</i></p> <ul style="list-style-type: none"> ◆ In-house Green Practices: energy saving practices are remarked in the Employee Handbook and the Green Office Guidelines which now is available on the SPL's Intranet. ◆ A bimonthly Newsletter "CornerStone" with current environmental information and issues is for staff,

Commitment	Action done
	<p>which is available online and in hardcopy. Trainings and activities have also regularly been organized to raise the staff awareness and enthusiasm for energy efficiency and environmental issues.</p> <ul style="list-style-type: none"> ➤ Different in-house activities and regular environmental awareness training with the aim of enhancing awareness of the need for energy consumption reduction among staff and their family members have been organized regularly. By the end of 2007, 81% of their staff had attended the environmental awareness training session. ➤ Social Responsibility Awards, which are under environmental and community categories of Managing Director's (MD) Award given annually, and competitions, for example sustainable development logo and slogan competition and environmental photography competition, have been held regularly with the aim of providing incentives for the staff on environmental issue and energy efficiency. <div style="text-align: center;"> </div> <p><i>Slogan Design Competition 2007. The winning slogans were used as their employee newsletter 'CornerStone' souvenir mug.</i></p> <ul style="list-style-type: none"> ◆ SPL listed "low VOC and other environmental guidelines" in their Environmental Procurement Portal and Environment Procurement Enquiry Form to control the material/product purchasing in regarding air emission reduction. <p>The Environmental Procurement Portal customized for procurement of building materials with preferred product list and EHS management plan requirements for service providers was launched in November 2007. To further address corporate social responsibility issues in supply chain, a task force will</p>

Commitment	Action done
	<p>be formed to identify key risks and action plain in the near future.</p>
<p>5.) Identify and encourage business-relevant measures to be taken on days when air pollution is high.</p>	<ul style="list-style-type: none"> ◆ SPL is planning to stop conducting regular test of emergency generator sets or carry out any full flow flushing on high pollution days, where practicable. Ultra Low Sulfur Diesel (ULSD), a cleaner diesel fuel, has been used for emergency generator sets.
<p>6) Share air quality expertise in business with others.</p>	<ul style="list-style-type: none"> ◆ SPL has been actively sharing their experience on energy efficiency and air emission reduction with others. <ul style="list-style-type: none"> ➤ Publish research papers or EHS annual report (online or hardcopy) on various energy saving initiatives ➤ Invite professors and university students for site visits ➤ Speak at various energy saving or environmental related forums, seminars or events. ➤ Share the 'Best in Class' benchmarking exercise experience with local and international property developers ◆ SPL and the Building Energy Research Centre of Tsinghua University established the Building Energy Efficiency Research Fund to enhance energy efficiency in early 2008. SPL has committed to offer an initial funding of not less than HK\$1 million a year in the coming three years for conducting building energy efficiency research, while researchers from the University provides onsite energy consumption monitoring, analysis and research on the commercial buildings of SPL, with the aim to further reduce energy consumption and carbon dioxide emissions to achieve excellence in energy efficiency. ◆ SPL has been very supportive to participate in environmental related awards. For example, they have applied for the Hong Kong Awards for Environmental Excellence (HKAEE) which aims to encourage businesses and organizations to adopt green management, and to present participants with

Commitment	Action done
	<p>an opportunity to benchmark and recognize their commitment to environmental protection.</p> <ul style="list-style-type: none"> ◆ SPL is developing a Supplier's Code of Conduct and an action plan to reduce potential risks along the supply chain. The supplier's audit is being considered and will be in place in 2009. Meanwhile, contractors are requested to complete a questionnaire, namely Environmental, Health and Safety Management Plan (EHSMP), to find out their commitment on mitigating or eliminating the EHS impacts arising from a project.

3. CONCLUSION

Swire Properties Limited has demonstrated their commitments towards the Clean Air Charter's commitments and is recommended to be certified under the Clean Air Charter.