

**Hong Kong Offshore Wind Farm in Southeastern Waters
Confirmed Minutes of the First Stakeholder Liaison Meeting
held on 14th April 2010 at 2:30pm at Cliftons, 33/F, 9 Queen’s Road, Central**

Present:

Mr. John CHAN (CLP Power) – Chairman
 Prof. CHAN Lung-sang (HKU)
 Ms. Gloria CHANG (Greenpeace)
 Mr. CHENG King-man (Sai Kung Fishermen’s Association)
 Mr. Joseph LAW (CLP Power)
 Dr. CHENG Luk-ki (Green Power)
 Prof. LAM Kit Ming (HKU)
 Prof. Alexis LAU (HKUST)
 Prof. NG Cho-nam (HKU)
 Prof. Gerald PATCHELL (Friends of Sai Kung)
 Mr. Tim PEIRSON-SMITH (ExecutiveCounsel) – Meeting Facilitator

Absent with Apologies:

Mr. Mike KILBURN (HK Bird Watching Society)
 Mr. LOK Shui Sang (Sai Kung Rural Committee)
 Mr. WONG Yung-kan SBS JP (LEGCO Member, Agriculture and Fisheries Industry)
 Mr. Frederick YU (Hong Kong Mountaineering Union)

Ref No.	Issues / Discussion	Follow-up Actions and Responsibilities
1.	<p>The Chairman welcomed the SLG members and explained the primary reason for setting up the Offshore Wind Farm - Stakeholder Liaison Group (OWF-SLG) and stated that the SLG would be a platform of communication where CLP aims to collect all SLG members’ input in an objective manner, with the assistance of an independent Facilitator.</p> <p>The Facilitator also welcomed the SLG members and ensured all SLG members received the Terms of Reference (TOR) for OWF-SLG, meeting agenda (14 Apr 2010), and the membership list.</p> <p>The Facilitator explained to the SLG members that the establishment of the OWF-SLG was required by Clause 2.9 of the EIAO Permit (EP-341/2009) aiming to enhance and improve the project going forward.</p> <p>The Facilitator also clarified that the meeting was being taped only to assist in minute taking and the SLG members agreed to the recording.</p>	<p>Meeting minutes to be circulated, by Secretariat , among all SLG members and agreed and posted on website within one month of SLG meeting;</p>

	<p>The Facilitator further explained to the SLG members other TOR and housekeeping details and that the meeting minutes in both English and Chinese would be posted on the project website (website address to be provided).</p> <p>Present SLG members included Prof. CHAN Lung-sang (HKU), Ms. Gloria CHANG (Greenpeace), Mr CHENG King-man (Sai Kung Fishermen’s Association), Dr. CHENG Luk-ki (Green Power), Prof. LAM Kit Ming (HKU), Prof. Alexis LAU (HKUST), Prof. NG Chonam (HKU), Prof. Gerald Patchell (Friends of Sai Kung), John Chan (SLG Chairman).</p> <p>Absent members included: Mr. Mike KILBURN (HK Bird Watching Society), Mr LOK Shui Sang (Sai Kung Rural Committee), Mr WONG Yung-kan SBS JP (LEGCO Member, Agriculture and Fisheries Industry) and Mr. Frederick Yu (Hong Kong Mountaineering Union).</p> <p>Also present Joe Law (CLP), independent Facilitator Timothy J. Peirson-Smith, and Consultant, Dr Robin Kennish (ERM HK).</p>	
2.	<p>SLG members and the Facilitator briefly introduced their backgrounds, areas of interests, and concerns over the OWF, stated as follows: air pollution, Carbon emission reduction, climate change, development of renewable energy in Hong Kong, development and progress of the wind power project, education and awareness, effects of OWF on fishermen’s living/income/livelihoods, EM&A, environmental hydraulics, fisheries in Sai Kung, industrial ecology, input into design of OWF, marine geology and geophysics, renewable energy, sustainable development, use of renewable energy, wind engineering, and wind power.</p>	
3.	<p>An SLG member questioned whether there were any requirements for this SLG to report to and update the Advisory Council of the Environment (ACE) and what the frequency would be?</p> <p>ERM explained that ACE had been informed of the membership of the SLG and TOR but there were no formal requirements for updating ACE. However, CLP would have a mechanism to inform ACE of this SLG through a website. The website would contain SLG membership information, TOR and the meeting minutes. The ACE members would be informed of the location of the website and the meeting minutes.</p>	
4.	<p>An SLG member inquired as to how much room there is for providing advice into the design and planning for this OWF project under the Environmental Permit and whether the design was already fixed.</p> <p>The Chairman replied that the design was not by any means finalized and he hoped to seek advice and expert knowledge from the SLG members for the project design to enhance the OWF.</p> <p>The Facilitator explained that the Environmental Permit and SLG TOR indicate SLG advice into design, construction and operation of the possible OWF, such as the layout and number of wind turbines, exterior colour etc, comment on the marine geophysical survey, fisheries enhancement plan and landscape and visual intrusion plan, referenced in the Environmental Permit.</p>	
5.		

	<p>An SLG member considered strict adherence to holding an SLG meeting every six months may not fit in with key milestones or seasons, and may not make best use of SLG advice, and should be flexible to the project activities and actual conditions.</p> <p>The Chairman agreed that the intention is to best use SLG advice in an effective manner and that the meeting frequency should take into consideration the progress of the project.</p>	
<p>6.</p>	<p>An SLG member raised a concern over the issue of indemnity and liability incurred by the comments in the meetings on certain specialist issues.</p> <p>The Facilitator clarified that the minutes, honouring the SLG's TOR code of conduct, would not indicate the identity of any SLG members by name, only their comments and suggestions.</p> <p>The Chairman explained that there would be an internal circulation of the minutes to SLG members and that the minutes would only be uploaded to the website (within 1 month from SLG meeting) after all SLG members agree that the minutes best reflect the SLG meeting discussion.</p>	<p>The Chairman agreed to follow up on the indemnity and liability question and respond at the next SLG meeting.</p>
<p>7.</p>	<p>The Chairman explained to the SLG members that the world is faced with the climate change challenge, and reliable, sophisticated renewable energy technology, including wind power technology could contribute to addressing this challenge. A short video of an offshore wind farm in Denmark was shown, giving the members visual impressions on the look and dimensions of an offshore wind farm.</p> <p>An SLG member inquired about the height of the wind turbines.</p> <p>The Chairman clarified the wind turbine was between 120 m and 150 m.</p>	
<p>8.</p>	<p>The Facilitator inquired about the reasons for selecting 200MW as the targeted power generating capacity of the possible OWF.</p> <p>The Chairman clarified that CLP aimed to achieve Hong Kong Government's target to have 1-2% of total local electricity supply by renewable energy, which is approximately 200MW.</p>	
<p>9.</p>	<p>The Chairman described the reasons for why the Southeastern Waters (Sai Kung) had been selected for the project.</p> <p>In addition, the Chairman explained the use of the suction caisson technology to install the wind turbine foundation, which is able to minimise adverse environmental impacts as no piling or dredging is required, with a short video demonstrating an onsite test on installation and retrieval of a suction caisson foundation in local waters between May and July 2008.</p> <p>The Chairman presented the past and future key milestones, summarised as below: 2006 – Began exploring feasibility of developing OWF.</p>	

	<p>2007 – Seabed investigation and engineering studies, surveys, commenced stakeholder engagement.</p> <p>2008 – Approval on new foundation concept, <i>in-situ</i> suction caisson tension loading test, additional studies and surveys.</p> <p>2009 – EIA Report submission, public consultation, Environmental Permit issuance.</p> <p>2010 – Preparation/tender for construction data collection mast establishment of SLG.</p> <p>2011 – Installation of data collection mast, commencement of site data collection.</p> <p>2012/13 – Completion of feasibility study, determination of next step forward.</p>	
10.	<p>The Chairman introduced the plan of establishing a temporary offshore data collection mast in the selected waters.</p> <p>The Chairman explained the temporary offshore data collection mast intends to collect data comprising wind, wave, foundation movement, lightning, temperature, humidity, and other environmental conditions for one to two years.</p> <p>The Chairman explained the data collected would be used to refine the design, scale, and layout of the wind farm and estimate the power generating capacity more accurately. The data would also help optimise construction and operation considerations.</p>	
11.	<p>Regarding other data collection, an SLG member requested the full list of environmental data (for example, solar radiation, current, sea temperature, and so on).</p> <p>The Chairman responded that other environmental conditions would comprise wind speed, wind direction, wave, wave height, wave direction, current direction, air temperature, intensity of lightning.</p>	<p>The Chairman agreed to review the value of collecting such data for the project and would revert to SLG on this consideration.</p>
12.	<p>An SLG member asked whether the data to be collected would include aforementioned environmental conditions under typhoons and whether reference would be made to other similar sites if those aforementioned environmental conditions were unable to be collected during the collection period.</p> <p>The Chairman responded that the mast was designed to operate in all conditions including typhoons. The data analysis will take into account the existing information from the Hong Kong Observatory.</p>	
13.	<p>An SLG member inquired about the wind turbine's minimum wind speed for power generation.</p> <p>The Chairman responded that no decisions would be made on the model of wind turbine before investigating and analysing the attributes of the wind in that area. The Chairman further explained that some large-scale wind turbines required at least 3 to 4 m/s for power generation, whilst wind speed of 25 m/s would be too high for power generation and the blades would be locked to avoid damage to the wind turbines.</p>	
14.	<p>An SLG member inquired about the length of the cable to be laid and the amount of the power loss during transmission.</p> <p>The Chairman responded the undersea cable would be connected to the power facilities in Tseung Kwan O (approximately 25km) and that they would use high voltage cable (132 kV) to minimise the power loss.</p>	

<p>15.</p>	<p>An SLG member raised a question regarding maintenance and contingency responses to any disasters.</p> <p>The Chairman responded that they consider the maintenance of the wind turbines of great importance and expressed that once sufficient data have been gathered and analysed, a comprehensive maintenance strategy will be developed.</p>	
<p>16.</p>	<p>An SLG member suggested the word “reduce emission” should be changed to “avoid emission” in a Chinese PowerPoint slide, while “avoid” was used in the English version, to ensure the consistency of message in both Chinese and English versions.</p>	<p>The Chairman welcomed the suggestion and agreed to revise the phrase.</p>
<p>17.</p>	<p>An SLG member asked, on behalf of an absent SLG member, whether the OWF would keep any record of bird strike during operation, yet admitting the fact that such recording could be practically difficult to implement.</p>	<p>The Chairman agreed to consider this during the offshore wind farm design phase.</p>
<p>18.</p>	<p>An SLG member asked whether 3 or 5 MW was the annual average power generating capacity of a wind turbine, and whether a wind turbine was able to reach this annual capacity, given that the wind turbine might not operate every day.</p> <p>The Chairman explained that 3 or 5 MW was the rating of a wind turbine and agreed there could be power generation variations due to the fluctuation of wind resources, but added that the capacity factor (efficiency) of the offshore wind turbines are in general higher than their onshore counterparts because of stronger and more continuous wind at sea.</p>	
<p>19.</p>	<p>An SLG member asked if it would be worth collecting information on the scour or the impacts of the foundation to the seabed through the temporary offshore data collection mast, to investigate the degree of scour.</p>	<p>The Chairman agreed to follow up on the issue of scour in the engineering design.</p>
<p>20.</p>	<p>An SLG member inquired about the height of the temporary offshore data collection mast.</p> <p>The Chairman explained that the height would be 35 m, and that the mast platform would be 30 m wide and 15 m above the sea.</p> <p>The Chairman mentioned that they would use both a new technology, LIDAR (Laser Detection and Ranging), to remotely measure the wind up to a height of 200 m, and employ traditional wind measurement devices in order to corroborate the data from the LIDAR system.</p> <p>The Chairman added that the temporary offshore data collection mast would not be manned and would be equipped with solar panels and batteries and use solar power to provide enough power to support necessary electronic data collection and safety</p>	

	<p>devices.</p> <p>The Chairman also explained that they had consulted relevant government departments such as Civil Aviation Department and Marine Department to ensure the design and appearance of the temporary offshore data collection mast strictly adheres to the relevant requirements.</p>	
21.	<p>An SLG member raised a concern over the accuracy of the LIDAR system in wind measurement, when the weather condition was heavily misty or full of low clouds.</p> <p>The Chairman responded that they had meetings with various LIDAR system suppliers and that some products would be able to overcome those weather conditions and maintain the accuracy whilst minimising the scale and height of the temporary mast.</p>	
22.	<p>An SLG member inquired about whether there was any track record of the suction caisson technology in other places.</p> <p>The Chairman responded that the suction caisson technology had been widely used in the oil and gas sector and sometimes as a suction anchor, and that this technology as a foundation was proven but is being introduced to Hong Kong for the first time due to its environmental benefits.</p>	
23.	<p>An SLG member inquired whether the Hong Kong Government had any record of the ocean sediment movement during typhoons for the past 10 to 15 years and suggested it would be worthy of considering the impact of ocean sediment movement during typhoons or storms to the OWF.</p>	<p>The Chairman agreed to explore whether there is such existing record.</p>
24.	<p>An SLG member raised a concern if the fog horn placed on the temporary offshore data collection mast and the future wind turbines would cause any nuisance to the shore.</p> <p>The Chairman responded that they would strictly adhere to the requirements by the Marine Department, in terms of the placement and sound level of the fog horn</p>	
25.	<p>An SLG member inquired whether any seismic assessment had been conducted in the design of the offshore wind farm, which could be affected by earthquake.</p>	<p>The Chairman agreed to follow up on the issue in the engineering design.</p>
26.	<p>An SLG member inquired if the planned OWF site would be a restricted area to vessels in the future.</p> <p>The Chairman explained that after extensive discussion with the Marine Department, the planned OWF site is designated as a restricted zone and that any unauthorised individuals or vessels were not allowed to enter the zone.</p>	

	<p>The Chairman added that CLP would work with the Marine Department to evaluate if there would be a need to revise or amend the measure and arrangement once the OWF had been operating for a representative period.</p>	
27.	<p>An SLG member raised the issue of the restricted zone arrangement and subsequent impact on fishermen and suggested the project proponent consider providing measures on fisheries resources.</p> <p>The Chairman stated that fisheries can be further discussed in relation to the fisheries enhancement plan in future SLG meetings.</p>	
28.	<p>The Facilitator explained that the 2nd SLG meeting should be held in approximately mid October 2010 and suggested a boat trip to see the possible OWF site combined with a workshop/discussion on wind farm technology.</p> <p>The Facilitator explained that the 3rd SLG meeting was scheduled for approximately mid April 2011. Thus, the 3rd SLG meeting could usefully comprise a visit to see a wind farm plus briefing/discussion.</p> <p>The Facilitator further explained that the 4th SLG meeting should be held in approximately mid October 2011 while the data collection mast was scheduled for installation in Q3 2011. Thus, the 4th SLG meeting could possibly comprise a visit to the data collection mast by boat trip as soon as the mast was operational in Q3/Q4 2011 combined with discussion on EM&A for the OWF and subject to marine conditions.</p> <p>The Facilitator explained that the 5th SLG meeting should be held in approximately mid April 2012 and data collection from the mast would continue for at least one year. Thus, the 5th SLG meeting could comprise a brief initial findings sharing exercise and advisory workshop discussion on education and awareness programmes and activities for the OWF.</p> <p>The Facilitator explained that the 6th SLG meeting should be held in approximately mid October 2012 and that data analysis would be ongoing in Q3 2012. Thus, the 6th SLG meeting could comprise a brief initial findings sharing exercise and advisory workshop on HK OWF design, construction and operation.</p> <p>The Chairman expressed that this broad suggestion would be subject to the SLG members' interest.</p> <p>SLG members generally welcomed the Facilitator's suggestions on SLG content and broad timing as long as such meetings/visits would be able to enhance members' understanding of the project and provide timely and useful input to project design and advancement. One SLG member commented that OWF waters became too choppy in October and so a site visit should aim for September.</p>	<p>The Chairman agreed to consider the Facilitator's suggestions and revert to SLG at the 2nd SLG meeting with firmer plans and possible dates to assist SLG members.</p>
29.	<p>An SLG member inquired if the design and construction of the temporary offshore data collection mast required an Environmental Permit</p> <p>The Chairman explained that the design and construction of the temporary offshore data collection mast did not require an</p>	

	<p>Environmental Permit, but the CLP-OWF permanent wind farm held an Environmental Permit.</p>	
<p>30.</p>	<p>An SLG member raised a concern that the requirements for the design of the temporary offshore data collection mast would not be stringent enough, because of the “temporary” nature of the mast.</p> <p>An SLG member suggested that although the temporary offshore data collection was not a designated project, it should be treated like one to minimise environmental impact.</p> <p>An SLG member suggested the OWF proponent should attentively and comprehensively monitor the engineering works and the environmental performance of the engineering contractor of the temporary offshore data collection mast, because it could provide valuable reference for the possible future OWF construction and for SLG members to further understand and consider the OWF project, in view of the fact that the construction and installation procedures of the temporary offshore data collection mast would be greatly similar to that of wind turbines,</p> <p>The Chairman explained that environment would be protected during the installation, operation and removal of the temporary data collection mast.</p> <p>The Chairman also stated that given that the temporary building of the mast would be most significant to the future wind farm construction, CLP would uphold stringent standards of the mast design, and works conducted and audited according to an Environmental Management Plan.</p> <p>The Facilitator suggested as there was interest from SLG members that the proponent could retrospectively share this tender decision with the SLG.</p>	<p>The Chairman expressed that the initial proposed works procedures of the mast installation and delivery of materials could be shared in the second SLG.</p>
<p>31.</p>	<p>An SLG member suggested that the OWF proponent should demonstrate to the public that the OWF would be able to help Hong Kong avoid emission and educate the public that emission could be really avoided by the OWF and the use of renewable energy.</p> <p>The Chairman agreed and stated that the OWF could have a significant role in both education and raising awareness.</p>	
<p>32.</p>	<p>An SLG member inquired whether the OWF proponent had any information on the local job opportunities and economic benefits that the OWF project and the relevant maintenance works could produce and whether there would be any local participation in this area, as a contribution to sustainable development.</p> <p>The Chairman responded that there was no scientific study on the economic benefits to the local community, but with reference to overseas similar projects, an estimation of approximately 300 jobs could be created during the construction, while an estimation of approximately 30 jobs during the operation period.</p> <p>The Chairman also explained that currently there were very few qualified local professionals who would be able to perform the wind turbine maintenance, but they would strive to expand and encourage more local job opportunities in other relevant work areas,</p>	

	including tourism and education.	
33.	<p>An SLG member inquired whether there were any specific obligations as stipulated in the Environmental Permit that the SLG should fulfill and what CLP expected the SLG members to contribute as individuals or representatives of their interest group.</p> <p>The Facilitator responded that they hoped the SLG members could provide their advice from two aspects, one being the representatives of their sectors, industries and interest groups, the other being to provide advice based on their expert knowledge and skills.</p> <p>The Facilitator read aloud Clause 2.9 of the EIAO Permit (EP-341/2009) to clarify the obligations of the SLG members, which were to advise on the design, construction and operation of the project:</p> <p><i>Environmental Permit (EP-341/2009): http://www.epd.gov.hk/eia/register/permit/latest/ep3412009.htm</i></p>	
34.	The Facilitator thanked the Chairman and SLG for their active participation, advice and questions. The 1 st CLP-OWF SLG meeting closed at 1652 hours and the Facilitator agreed to circulate draft minutes to SLG members for review, comment and agreement.	