

**Hong Kong Offshore Wind Farm in Southeastern Waters
Confirmed Minutes of the Forth Stakeholder Liaison Group (SLG) Meeting**

held on 11th January 2012 from 10:30 am to 1:30 pm at Chiwan Sembawang Engineering (CSE) Fabrication Yard, PRC

Present:

Mr. John CHAN (CLP Power) – Stakeholder Liaison Group Chairman
 Prof. CHAN Lung-sang (HKU)
 Prof. LAM Kit Ming (HKU)
 Prof. NG Cho-nam (HKU)
 Prof. Gerald PATCHELL (Friends of Sai Kung)
 Mr. Frederick YU (Hong Kong Mountaineering Union)
 Mr. Mike KILBURN (HK Bird Watching Society)
 Mr. Ling Man Hoi (Member of Sai Kung District Council)

Absent with Apologies:

Prof. Alexis LAU (HKUST)
 Ms. Gloria CHANG (Greenpeace)
 Dr. CHENG Luk-ki (Green Power)
 Mr. LOK Shui Sang (Sai Kung Rural Committee)
 Mr. WONG Yung-kan SBS JP (LEGCO Member, Agriculture and Fisheries Industry)
 Dr. YAU Wing-kwong (Tai Po Environmental Association)
 Mr. CHENG King-man (Sai Kung Fishermen's Association)

Also present were SLG Facilitator Timothy J. Peirson-Smith, selected CLP staff and technical consultants from ERM.

Ref No.	Issues / Discussion	Follow-up Actions and Responsible by
1.	<p>1.1 The Facilitator welcomed the SLG members to the Data Mast fabrication yard at Chiwan Sembawang Engineering (CSE) and briefly previewed the fourth SLG meeting itinerary.</p> <p>Presentation on Offshore Data Mast</p> <p>1.2 The Chairman began the Offshore Data Mast presentation by briefly introducing the project background.</p> <p>1.3 The Chairman reported that the project is still in the feasibility study stage. The OWF will be located 9km from Clearwater Bay and it is estimated to generate up to 200MW (67 X 3MW or 40 X 5 MW) of electricity.</p> <p>1.4 The Chairman informed the SLG members that the Data Mast will collect detailed OWF site environmental data, to be used in assessing the feasibility of the OWF. Data may also be presented to the government for future use.</p>	

<p>1.</p>	<p>1.5 The Chairman explained the suction can foundation concept to be used in the Data Mast foundation. According to the project schedule, the installation of the mast will be in approximately April 2012. Initial data collection is targeted for May 2012.</p> <p>1.6 The Chairman then explained the components of the Data Mast in detail. On the mast various instruments will be installed and they will be powered by Solar Power Supply; collected data will be sent through wireless GSM data modems to onshore servers for further analysis. Navigation aids will also be installed on the Platform to alert marine and air traffic.</p> <p>1.7 The Chairman introduced the Data Mast Offshore Project Manager and Data Mast Construction Manager and emphasised that the project will be carried out in accordance with all Marine Department regulations.</p> <p>1.8 The Chairman showed a brief video demonstrating the Data Mast installation process, including the suction can concept. It explained that the suction cans will penetrate into the seabed without using the traditional piling method and will minimise impact to the seabed. The installation process will take around two days.</p> <p>1.9 The Chairman emphasised that safety will be CLP's utmost concern.</p> <p>1.10 The Chairman explained the routing of the fab yard site visit, showing the location and description of the Data Mast's key components. (approximately 1 hour duration)</p>	
<p>2.</p>	<p>Fab Yard Site Visit</p> <p>2.1 Throughout the tour, the Data Mast Construction Manager explained the Data Mast components in English, and the Chairman translated them into Chinese.</p> <p>2.2 The fab yard is divided into two areas, an open area and a covered area. Smaller components are constructed in the covered area, whilst large components will be constructed in the open area.</p> <p>2.3 Suction can (point C on the map), under construction, was viewed. The dimensions of the can are 7m (diameter) x12.5m (length) x 50mm thick.</p> <p>2.4 Stub cans (point G) were also seen in a covered area. Stub cans (3m (outer diameter) x5m (length))will be located, when built, above the three suction cans, to be used for suction can structural support. There are three junctions at each stub for the linking of all stub cans with the Central Caisson, with zinc sacrificial anodes to prevent corrosion of the Data Mast itself.</p> <p>2.5 Central Caisson fabrication (point F) was also observed in an open area. The Central Caisson (2.5m (outer diameter) x 41m (length) x 50mm thick) is made of steel.</p>	

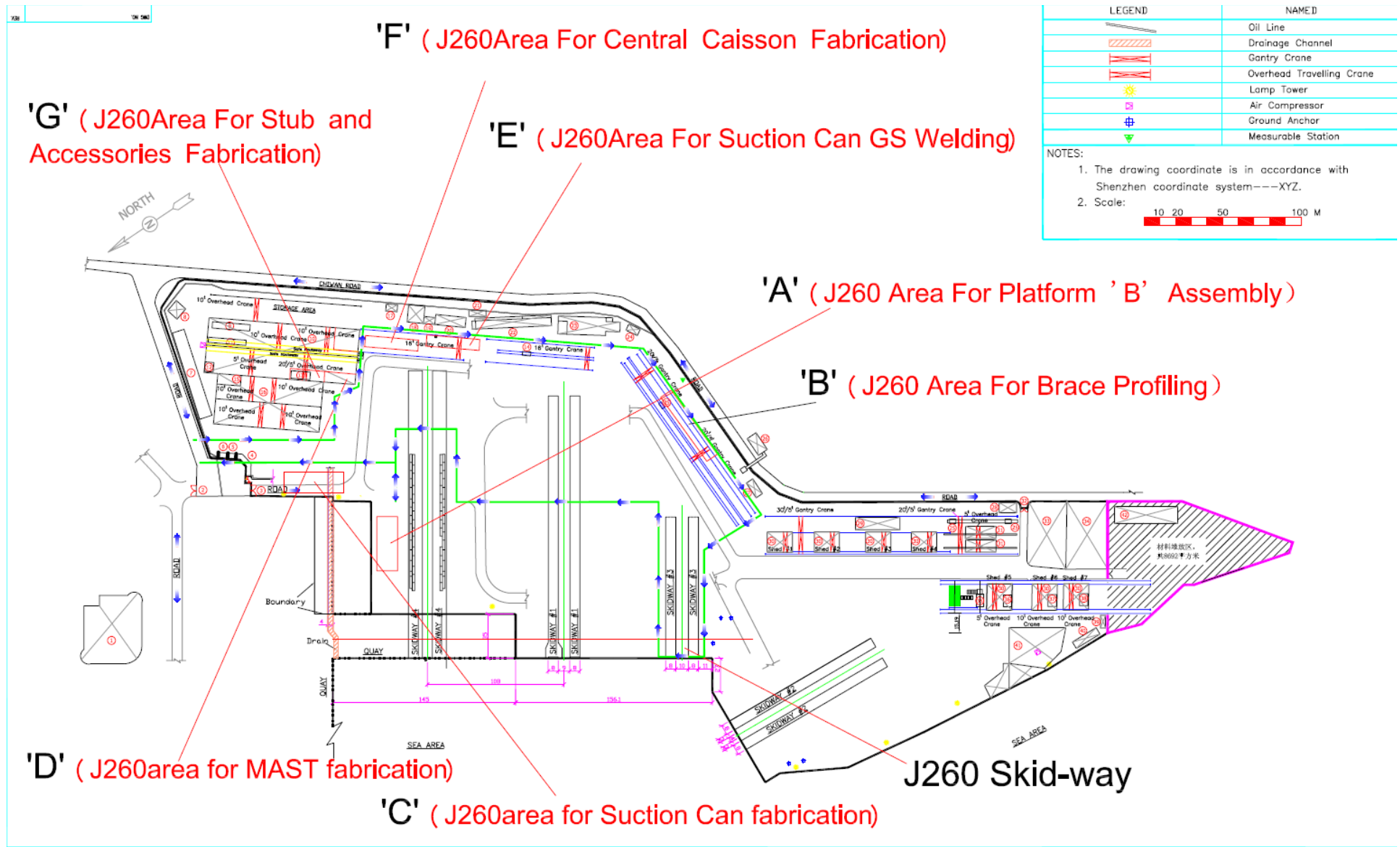
<p>2.</p>	<p>2.6 Two unfinished suction cans (point E) were seen and automatic welding machines were used to ensure high welding quality.</p> <p>2.7 Diagonal bracings (point B) (610mm outer diameter x 50mm thick) were seen. The profiling of the bracings were made by computer aided design so that they can be installed onto the central caisson accurately.</p> <p>2.8 The main Platform that houses all data collection instruments and the hexagonal platform was seen in an open area.</p> <p>2.9 The Construction Manager led the SLG members to the skid-way on which the Data Mast will be loaded onto a barge. After fabrication, the Data Mast will be transported to the OWF installation site by barge.</p> <p>(Please refer to attached map and guide sheet for details)</p>	
<p>3.</p>	<p>Follow-up Discussion Regarding Offshore Data Mast</p> <p>3.1 The Facilitator encouraged SLG members to ask questions after the site visit.</p> <p>3.2 An SLG member questioned if earthquake is taken into consideration in the design of the Data Mast.</p> <p>3.3 The Chairman responded that since Data Mast is a temporary structure and currently in the Building Regulations, earthquake is not required to be taken into consideration, therefore the design of the Data Mast did not take earthquake into consideration.</p> <p>3.4 An SLG member questioned the capacity of Platform B; specifically, whether or not additional equipment, such as bird monitoring radar, can be accommodated.</p> <p>3.5 An SLG member expressed disappointment that no provision had been made for installing the bird monitoring equipment on the Data Mast, given the known sensitivity of this issue for environmental groups.</p> <p>3.6 The Chairman answered that space is limited. On one side of the platform, the LIDAR system is installed, while the other devices are located on the other side. The Data Mast also needs to house a large battery bank to store power from the solar panels, which provide power to all instruments on the Data Mast. Additional equipment will consume the scarce solar power on the Data Mast, so radar monitoring is not being considered at this stage.</p> <p>3.7 An SLG member asked about placing the monitoring equipment on Nine Pins Island.</p> <p>3.8 ERM explained that there is no power supply and accessibility is limited, as there is no pier on Nine Pins Island.</p> <p>3.9 The Chairman agreed to take this into further consideration.</p>	<p>The Chairman agreed to report back the possibility of placing monitoring equipment on Nine Pins Island in the 5th SLG meeting.</p>

<p>3.</p>	<p>3.10 An SLG member enquired how long the Data Mast would be used for data collection.</p> <p>3.11 The Chairman stated that it will be used for approximately one year, as restricted by government. However, the design life of the Data Mast is five years.</p> <p>3.12 An SLG member stated that the more data collected the better and could not understand why government only allowed the Data Mast to be installed for only about one year.</p> <p>3.13 An SLG member enquired about the usefulness of SLG members to write to government to request for extending the permit duration of Data Mast.</p> <p>3.14 The Chairman responded that CLP has discussed the issue with the government, attempting to persuade government to allow the Data Mast to be installed in the sea for a longer period.</p>	<p>The Chairman agreed to further discuss this with government about extending the permit duration of the Data Mast.</p>
<p>4.</p>	<p>Follow-up Actions from 3rd SLG meeting</p> <p>4.1 The Facilitator went through the 3rd SLG meeting minutes. Regarding the Fisheries Enhancement Plan (FEP) (<i>Ref.6 of the 3rd SLG minutes</i>), the Facilitator asked for any updates.</p> <p>4.2 The Chairman replied that the FEP will be conducted after obtaining government approval for the OWF. SLG members will be consulted on the FEP in the future.</p> <p>4.3 (<i>Ref.3 of the 3rd SLG minutes</i>) It was stated that the Chairman agreed to share the bird monitoring study findings when complete in the 4th SLG meeting, and the Facilitator invited ERM to begin their presentation.</p>	
<p>5.</p>	<p>Bird Monitoring Techniques Report Presentation and Discussions</p> <p>5.1 ERM recapped the study background and stated that bird monitoring is to be carried out during the second year of construction-cum-first year of partial operation and the first year of full operation of the Project, occupying 3 years in total.</p> <p>5.2 An SLG member expressed disappointment regarding the short ‘operational’ bird-monitoring period required in the Environmental Permit, and suggested that there should be on-going monitoring to close the data gap after the OWF is complete..</p> <p>5.3 ERM reported the types of bird monitoring and number of sensitive bird species, identified through boat-based baseline surveys in the approved project EIA. The results indicated the OWF site is not an important bird habitat or migratory pathway. Collision risk is considered negligible for all sensitive bird species, so no adverse impacts on birds are expected.</p>	

	<p>5.4 An SLG member commented that the information used to determine that the OWF would not cover important bird habitat was not robust enough in the EIA as the data collected lacked monitoring of migrating birds at night.</p> <p>5.5 ERM replied that there is not yet a proven way to accurately monitor birds at night and therefore, per the Government issued EIA Study Brief, boat-based baseline surveys, a proven monitoring methodology, was used in the EIA. Nevertheless, CLP has requested ERM to conduct a review on remote monitoring techniques which could potentially collect bird flight data during the night. CLP agreed to share this internal informational review to the SLG members which is not a requirement in the approved EM&A programme nor in the Environmental Permit conditions. ERM reiterated that the approved EIA report had concluded that the OWF is not located within an important bird habitat or on the flight path of migratory birds.</p> <p>5.6 ERM introduced the remote bird monitoring techniques in relation to the OWF. ERM explained the merits of Surveillance Radar Monitoring for monitoring migratory movement (both horizontal and vertical), particularly during night-time or periods low visibility.</p> <p>5.7 Land-based, ship-based and platform-based Surveillance Radar Monitoring were also reviewed. Both land-based and ship-based radar were not suggested for in the OWF site, because of distance and data reliability limitations. Platform-based radar was considered relatively more appropriate for our site. However, ERM emphasised the practical limitations of applying remote monitoring technology, and reminded that remote techniques are not appropriate in all cases and may not necessarily be useful or practical in collecting data for evaluating bird collision risk.</p> <p>5.8 An SLG member asked for consideration of trialling the use of Thermal Camera instead of Surveillance Radar Monitoring, even though data collected may be sub-optimal.</p> <p>5.9 The Chairman replied that it can be considered during the OWF design phase.</p>	
<p>6.</p>	<p>Follow up Discussions on “Bird Report” Presentation</p> <p>6.1 An SLG member stated that the sensitive bird species found in the study were typically large in size, and asked about techniques with higher frequencies and resolutions that are able to monitor smaller birds.</p> <p>6.2 ERM answered that Fixed Beam Radar is the best radar with high frequency and resolution to detect individual small birds, but that it is much more expensive than Marine Surveillance Radar. Although Surveillance Radar Monitoring does have its limitations (i.e., it cannot detect single birds, only mass movement), this kind of monitoring data can still be useful. Together with traditional daytime visual observations, the supplementary data can promote a comparison of the differences in bird species between night and day.</p> <p>6.3 Another SLG member also opined that it is a golden opportunity to conduct different types of academic researches/studies such as current dynamics monitoring, water quality, fish spawning patterns, microorganism monitoring, and seawater impacts on the Data Mast.</p>	

<p>6.</p>	<p>6.4 An SLG member suggested that the bird monitoring could be considered beyond the life of the Environmental Permit required duration, and survey route could be reviewed to maximise the survey time within the footprint and immediate environs of the OWF.</p> <p>6.5 The Chairman reiterated that the project is still in an early feasibility stage and many factors and circumstances, such as cost and effectiveness, need to be considered. CLP hopes to make use of the Data Mast to collect data for more than one year, as described in discussion point 3. The Chairman also emphasised that CLP had to balance stakeholders' and the company's business interest.</p> <p>6.6 The Chairman acknowledged SLG members' comments concerning use of the Data Mast for night-time bird monitoring and other 'academic research' studies before OWF operation but highlighted that the lack of space and power on the Data Mast render such initiatives difficult to be implemented.</p> <p>6.7 An SLG member requested CLP to continue to seek creative solutions for bird monitoring during the OWF's operational given the limitations of boat-based surveys.</p> <p>6.8 Alternatively, CLP and ERM suggested the use of Hong Kong Observatory (HKO) radar for bird monitoring, if possible.</p> <p>6.9 An SLG member replied that the detecting range of HKO's radar is large, using low frequency and resolution, but that small range and high resolution radar is needed for bird monitoring.</p> <p>6.10 The Chairman said CLP will approach HKO to explore these opportunities.</p>	<p>The Chairman agreed to take the extension of survey duration and route optimisation into consideration.</p> <p>The Chairman agreed to report the feasibility of exploring using HKO's radar for bird detection in the 5th SLG meeting.</p>
<p>7.</p>	<p>Subsequent SLG Meetings</p> <p>7.1 The Facilitator stated that the Data Mast will be installed in the OWF site in Q2 2012 (weather and conditions permitting), providing a future opportunity to hold the fifth SLG meeting as a visit to the installed Data Mast at sea. The Chairman agreed the timing and sea conditions at that time should be suitable for the visit to view the installed Data Mast.</p> <p>Any Other Business</p> <p>7.2 The Facilitator suggested filming a basic video of the whole installing process of the Data Mast for showing to SLG members at the fifth SLG, if possible.</p> <p>7.3 According to the Terms of Reference, SLG members have a 2-year term in the SLG ending on 12th April 2012. CLP will send email or letter to individual SLG members to confirm if they would like to continue to serve the SLG.</p> <p>7.4 The SLG meeting closed at 13:30.</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><www.clp.com.hk/offshorewindfarm></p>

Attachment: Map and guide sheet of Fab Yard Site Visit



(A) 平台 B (30米 x 6米): 存放電池櫃,數據記錄儀,太陽能板,鐳射雷達及導航輔助儀器

(A) Platform 'B' 30m x 6m location of the battery cabinets, data loggers, solar panels, lidar & navigation aids.



Black-----Not start
Yellow-----Cutted
Blue-----Fabricated
Red-----Assembled
Status: 30th Dec, 2011

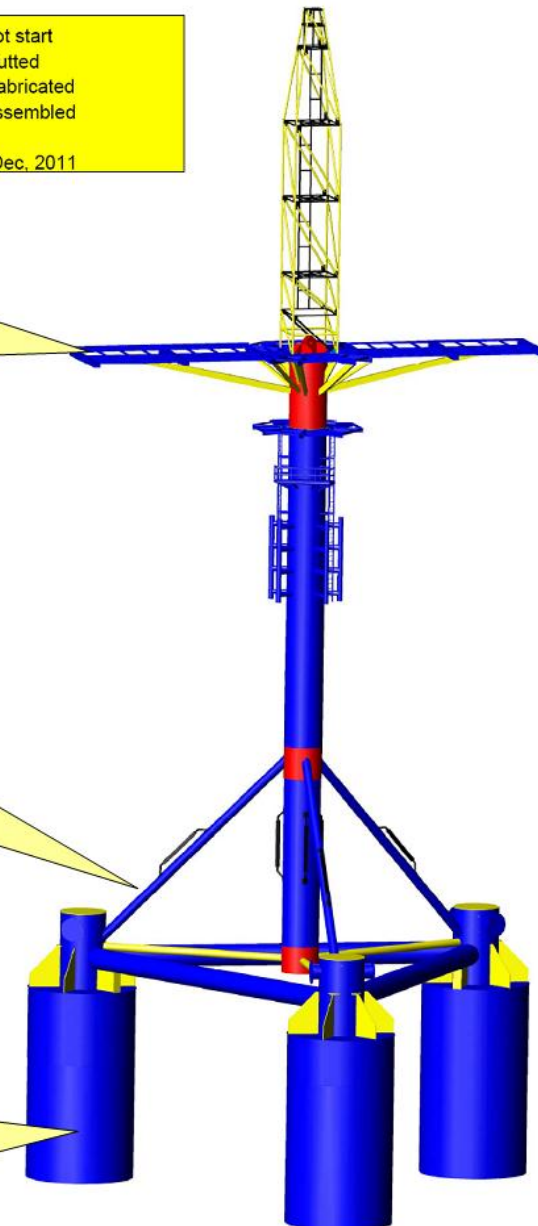
(B) 對角支柱外圍直徑610毫米,40毫米厚

(B) Diagonal bracing 610mm Outer Diameter, 40mm thick



(C) 吸力式沉箱厚50毫米,外圍直徑7米,12.5米長

(C) Suction cans/piles 50mm thick 7m Outer Diameter, 12.5m long.



(D) 儀器塔3米 x 3米 x 22.5米高
(D) Mast for instruments 3m x 3m x 22.5m high



Black-----Not start
Yellow-----Cutted
Blue-----Fabricated
Red-----Assembled
Status: 30th Dec. 2011

(E) 平台 A
(E) Platform A



(F) 中間支柱厚50毫米, 2.5米外圍直徑x 41米



(F) Centre Caisson
50mm thick 2.5m
outer diameter x 41m

(G) 小型沉箱70毫米厚, 3米外圍直徑x 5米
(G) Stub Cans 70mm thick 3m outer diameter x 5m

