Market Sounding Exercise for the
First Stage of Desalination Plant at Tseung Kwan O

Supplementary Project Information and Questions

August 2016

1. On-site Generation of Chlorine in TKO Desalination Plant

In the approved *Environmental Impact Assessment Report* for the Project, it was assumed that chlorine would be used for disinfection of drinking water produced in TKO desalination plant, and liquid chlorine would be imported for storage inside the plant.

With advancement of technology, on-site generation of chlorine by a small-scale chlorine generation plant[1] may become a technically viable option. The on-site chlorine generation process, which operates under a negative pressure, will eliminate the possibility of chlorine gas leakage.

In summary, the benefits of on-site generation of chlorine include:

■ Eliminating the transportation of liquid chlorine, thereby negating the associated risk to the public in the vicinity of the transportation routes
■ Eliminating chlorine storage in TKO desalination plant, thus removing development constraints on the areas in the vicinity of the plant
■ Providing a more reliable and secured supply of chlorine for the TKO desalination plant

A review will be conducted by WSD to confirm the environmental implications of this proposal.

Do you have past experience in designing, constructing, and operating similar chlorine generation plants? Your views or suggestions are welcome to help us identify specific costs, risks, and benefits associated with the implementation of this proposal at the TKO desalination project.

2. Process Gas Power Generation Unit

The South-East New Territories (SENT) Landfill is located near the proposed TKO desalination plant site. While the landfill now only receives non-putrescible construction wastes, it has been estimated that surplus process gas (i.e., landfill gas after treatment) with calorific value of about 17 MJ/m^3 would be available for a period of approximate 10 years or more at sufficient capacity to provide a sustainable energy source.

WSD is now evaluating the feasibility of utilising the energy content in the surplus process gas to meet partly the power requirement of the proposed desalination plant. At this stage, it is envisaged that a small scale, say 1 or 2 MW power generation unit fuelled by process gas could be built and operated at the TKO site, subject to environmental and other considerations.

Do you have past experience in designing, constructing, and operating similar process gas or biogas power plants? Your views or suggestions are welcome to help us identify specific costs, risks, and benefits associated with the implementation of this proposal at the TKO desalination project.

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[1] The chlorine generation plant adopts the chlor-alkali process. The most common chlor-alkali process involves the electrolysis of aqueous sodium chloride (brine) in a membrane cell.

3. Incorporation of Natural Terrain Mitigation Works into Desalination Plant Contract

In the *Invitation to Respond (Issue 2.0)* of April 2016, it was indicated that works would be carried out on the adjacent natural slope to mitigate the natural terrain hazard affecting the Site of the Desalination Plant. At that time, the intention was for such slope mitigation works to be delivered using a traditional design-bid-build approach outside the scope of the Desalination Plant Design-Build (DB)/Design-Build-Operate (DBO) contract.

Upon review, it is now proposed to construct some of slope mitigation works (e.g., boulder barriers) <u>within</u> the Site of the Desalination Plant. This approach will reduce the extent of permanent works (and the need for future maintenance access) in a designated Country Park. To avoid interfacing complications, WSD intends to incorporate the slope mitigation works into the Desalination Plant DB/DBO contract.

Your views or suggestions are welcome to help us identify specific costs, risks, and benefits associated with the implementation of this proposal at the TKO desalination project.