

## **DEEP TUNNEL SEWERAGE SYSTEM PHASE 2, TUAS WATER RECLAMATION PLANT AND INTEGRATED WASTE MANAGEMENT FACILITY TO REAP POTENTIAL BENEFITS FROM WATER-ENERGY-WASTE NEXUS**

**3 June 2014** – Singapore’s Deep Tunnel Sewerage System (DTSS) is set to expand with Phase 2 of the system, which extends the tunnels to collect used water from the western part of Singapore. Exemplifying Singapore’s long-term approach towards water resilience, DTSS is a core water infrastructure which provides a cost-effective and sustainable solution to support Singapore’s continued growth and meet its long-term used water needs.

A highlight of DTSS Phase 2 will be the new Tuas Water Reclamation Plant (WRP) and an integrated NEWater factory which contributes to the long-term goal of increasing the NEWater supply to meet up to 55% of total water demand. Tuas WRP will incorporate technologies that improve its energy efficiency and reduce manpower requirements. Besides a compact design, it will also be more energy efficient than the existing WRPs and it will generate less sludge and therefore reduce the cost of sludge disposal. To this end, PUB, Singapore’s national water agency, is presently test-bedding various technologies in the existing WRPs with the potential to harness more energy from used water, such as the Integrated Validation Plant at Ulu Pandan.

The implementation of the entire DTSS will result in a 50% reduction in land taken up by used water infrastructure, freeing up the previously occupied lands for other higher value developments. Under the long-term plan for the integrated used water system, the development of DTSS will also streamline the used water network with three centralised collection and treatment points: Changi WRP in the east, Kranji WRP in the north and Tuas WRP in the west.

“For a densely populated city state with limited land, the DTSS is a more strategic solution than simply renewing and expanding the existing used water infrastructure. DTSS is the backbone of NEWater production, through which we have short-circuited the natural water cycle to produce high-grade reclaimed water on a scale unprecedented anywhere in the world. The expansion of DTSS signifies a key milestone achieved through Singapore’s long-term vision and sound water policies to ensure its water sustainability”, said Mr Chew Men Leong, Chief Executive, PUB.

### **Synergies with the Integrated Waste Management Facility for Water-Energy-Waste Nexus**

Underscoring this strategic milestone in Singapore’s journey to ensure water and environmental sustainability, is the co-location of National Environment Agency’s (NEA) Integrated Waste Management Facility (IWMF) with Tuas WRP to reap the potential synergies of the water-energy-waste nexus. This co-location marks Singapore’s first initiative to integrate used water and solid waste treatment processes to maximise both energy and resource recovery, while minimising land footprint.

The IWMF will help meet Singapore’s long-term demand for solid waste treatment. It will provide several key solid waste treatment processes in an integrated facility to effectively handle multiple waste streams such as municipal solid waste, recyclables collected under the National Recycling Programme (NRP), source-segregated food waste and treated

sewage sludge. The integration of multiple treatment processes help to optimise both energy and resource recovery.

With cost-effectiveness and environmental sustainability in mind, the co-location will potentially allow the IWMF to supply electricity to Tuas WRP, while Tuas WRP will supply treated used water to IWMF for cooling and washing purposes. The IWMF, which will be constructed over two phases, is potentially able to cater for up to 50% of the waste treatment capacity needed in Singapore when it is completed in 2024.

“The IWMF is a strategic component of NEA’s long-term waste management roadmap. It will help land-scarce Singapore to realise even higher levels of resource efficiency as the co-location of the IWMF with Tuas WRP will allow both NEA and PUB to harness the potential synergies of solid waste and used water treatment processes. These synergies will keep the cost of solid waste disposal affordable in the long term,” said NEA’s Chief Executive Officer, Mr Ronnie Tay.

Following the open pre-qualification and tender exercises called in March 2013 and August 2013 respectively, the Black & Veatch + AECOM joint-venture team has been appointed as the Lead Consultant for DTSS Phase 2 and the IWMF, and will begin feasibility studies and preliminary design on the projects.

The contract for Professional Engineering Services was signed today by Chief Executive of PUB Mr Chew Men Leong, Executive Vice President of Black & Veatch Dr Cheong Hoe Wai, and the Regional Executive, South and Southeast Asia, of AECOM Mr Peter Lee at the Singapore International Water Week (SIWW). The event was witnessed by Singapore’s Permanent Secretary for the Environment and Water Resources Mr Choi Shing Kwok, CEO of NEA Mr Ronnie Tay, and President of AECOM Asia-Pacific Mr Tony Shum, in the presence of guests from the global water industry who are in Singapore for the SIWW 2014, the global platform for sharing and co-creating innovative water solutions.

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## **About PUB**

PUB is a statutory board under the Ministry of the Environment and Water Resources. It is the water agency that manages Singapore's water supply, water catchment and used water in an integrated way.

### **About PUB's tagline: Water for All: Conserve, Value, Enjoy**

PUB has ensured a diversified and sustainable supply of water for Singapore with the Four National Taps (local catchment water, imported water, NEWater, desalinated water).

To provide water for all, PUB calls on all to play our part to conserve water, keep our water catchments and waterways clean and build a relationship with water so we can enjoy our water resources. If we all play our part, we can have enough water for all our needs – for industry, for living, for life.

### **Find out more about PUB**

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For

### **About National Environment Agency:**

Formed on 1 July 2002, the National Environment Agency (NEA) is the leading public organisation responsible for improving and sustaining a clean and green environment in Singapore. The NEA develops and spearheads environmental initiatives and programmes through its partnership with the People, Public and Private sectors. It is committed to motivating every individual to take up environmental ownership and to care for the environment as a way of life. By protecting Singapore's resources from pollution, maintaining a high level of public health and providing timely meteorological information, the NEA endeavours to ensure sustainable development and a quality living environment for present and future generations.

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