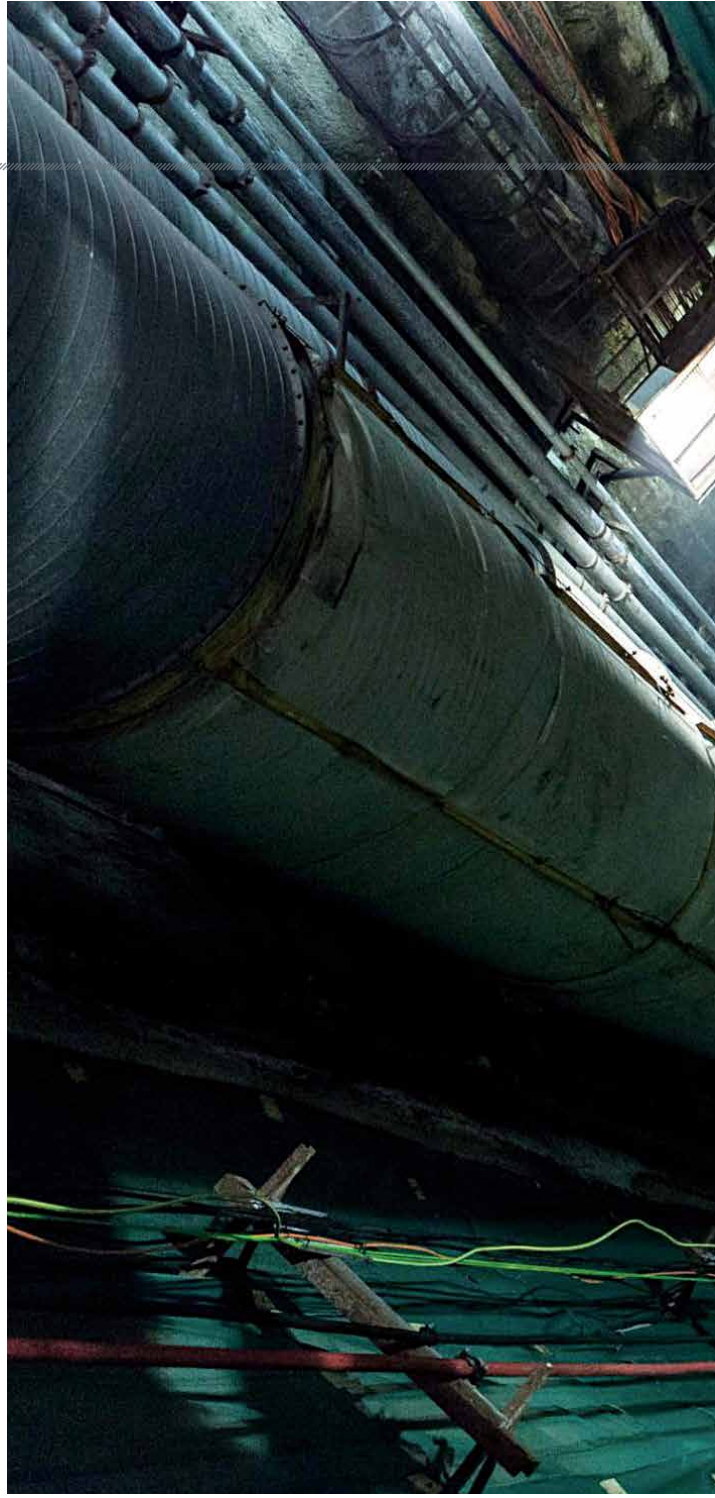
Christine Loh, Under Secretary for the Environment
環境局副局長陸恭蕙



Hong Kong's latest two pieces of waste infrastructure not only make the city cleaner and greener but also provide state-of-the-art sewage and sludge treatment that has started changing people's negative attitudes towards waste management.

Generally, people don't want to know about waste – out-of-sight, out-of-mind is best. A new approach is to showcase what actually happens to waste so that people become more aware of what they produce, how technology can treat it in a sustainable manner, and how waste management is an essential part of our urban lifestyle. Dealing with waste is high-tech, generates energy, advances knowledge, provides jobs and not to mention, waste plants can even be enjoyable.

T·PARK, the new sludge treatment facility in Tuen Mun, was officially opened on 19 May. Being the world's most technologically advanced sludge treatment plant, T·PARK combines a variety of advanced and self-sustaining technologies in a single complex: sludge incineration, power generation, seawater desalination and wastewater treatment. It also has a landscape garden, and various educational, recreational and ecological facilities to showcase sustainable waste management solutions.

Sludge is a semi-solid by-product that arises from sewage treatment. Hong Kong currently generates about 1,200 tonnes of sludge a day. T·PARK receives sludge from 11 sewage treatment works from around the city, 70 per cent of which is transported there by sea, which results in reduced detrimental environmental and traffic impact.

Besides T·PARK, another major infrastructure project is the Harbour Area Treatment Scheme (HATS), which is the largest-ever environmental infrastructure project in Hong Kong, as well as one of the largest sewage treatment schemes in the world. It comprises the construction of the Stonecutters Island Sewage Treatment Works (SCISTW) and long, deep tunnels to transport the sewage there.

The SCISTW has a treatment capacity of 2.45 million cubic metres per day, which is equivalent to the volume of about 1,000 standard swimming pools. When sewage arrives there, it is lifted from the deep tunnels to the surface via one of the world's most powerful sewage pumping systems. Although the total footprint of SCISTW is only 10 hectares, which is about half the size of Victoria Park, it can serve up to 5.7 million people.

HATS' first phase significantly improved the water quality and ecology of Victoria Harbour over the past decade. All previously closed beaches in Tsuen Wan have been re-opened, the suspended Cross-Harbour Swimming Race was revived in 2011 and the Hong Kong International Dragon Boat Races have been held in the harbour again in recent years. In addition, the Volvo Ocean Race, one of the world's most prestigious sailing events, will take place in Victoria Harbour for the first time in 2018. Indeed, we can expect to see more sporting and recreational activities in the harbour now that the water quality is better.

With the full commissioning of HATS Stage 2A in December 2015, all sewage within the Victoria Harbour catchment is now collected and centrally treated at the SCISTW before discharge. Looking ahead, the Government will take other pollution control measures to further improve near-shore water quality so that the water quality in the harbour could be even better.

Sludge and Sewage

Hong Kong is taking a sustainable approach to waste management, writes **Christine Loh**

The world's deepest sewage tunnel, part of Harbour Area Treatment Scheme (HATS).
全球最深的污水隧道，為淨化海港計劃的一部分。

'Waste-to-Energy' in action

Following the dewatering process at sewage treatment facilities, sludge is delivered to T-Park for treatment to further remove odour and other pollutants. It is expected that the volume of sludge generated every day will increase to 2,000 tonnes by 2030, as a result of growing population, sewage upgrading and other related improvement works. Since April 2015, when testing began at T-PARK, increasing quantities of sludge have been sent there for treatment. Previously, the sludge was landfilled.

T·PARK treats sludge through high temperature combustion and considerably reduces the volume of waste disposal in the West New Territories Landfill by up to 90 per cent. Furthermore, the Environmental Protection Department is exploring the usable value of the ash with a view towards reusing it in construction materials in the future.

During the sludge incineration process, the heat energy generated is recovered to be converted into electricity to fully meet the energy needs of the entire facility's daily operations. When running at full capacity, T·PARK is capable of producing approximately two megawatts of surplus electricity that is expected to be exported to the public power grid, enough to power up to 4,000 households.

Chamber Pre-launch Visit to T-PARK
總商會先睹［源 • 區］

Emil Yu, Chairman of the Industry & Technology Committee, and 30 members paid a pre-launch visit to T-PARK on 20 January to learn about the sludge treatment process and the sustainable design of the plant's facilities.

工業及科技委員會主席于健安於1月20日帶領30名會員，率先一睹T • PARK［源 • 區］的設施，了解污泥的處理過程和處理設施的可持續設計。







污泥與污水

香港正採取可持續發展的廢物管理模式　**陸恭蕙**

香港兩項新的廢物基礎設施不單令城市更清潔及環保，其先進的污水及污泥處理設施，更開始扭轉市民對廢物管理的負面態度。

市民一般對廢物事宜不欲多聞，最好眼不見為乾淨。新模式展現處理廢物的實況，讓市民更了解自己產生了何種廢物、科技如何以可持續的方式處理廢物，以及廢物管理如何與都市生活息息相關。廢物處理是一門高科技，可產生能源、增進知識及提供就業機會，而廢物處理設施甚至可供市民享用。

T • PARK［源 • 區］是位於屯門的新污泥處理設施，於2016年5月19日正式開幕。作為全球最先進的污泥處理設施，T • PARK［源 • 區］把污泥焚化、發電、海水化淡及廢水處理等多項先進及自給自足的技術集於一身。此外，T • PARK［源 • 區］設有園林花園，以及各類教育、休閒及生態設施，展示了可持續的廢物管理方案。

污泥是處理污水所產生的半固體副產品。香港現時每天生產約1,200噸污泥。T • PARK［源 • 區］接收本港11個污水處理廠的污泥，當中70%的污泥從水路運抵該處，以減少對環境及交通造成的影響。

T • PARK［源 • 區］與另一主要基礎設施項目——淨化海港計劃互相配合。淨化海港計劃是香港有史以來最大型的環境基礎設施項目，亦是全球最大型的污水處理計劃之一。工程包括興建昂船洲污水處理廠，以及建造深長隧道，以運送污水到該處理廠。

昂船洲污水處理廠每天可處理245萬立方米污水，相當於大約1,000個標準游泳池的容量。污水送達處理廠時，會經由世界頂尖的強力污水抽水系統由深層隧道抽至地面。雖然整個污水處理廠佔地僅10公頃，約相等於半個維多利亞公園，卻可服務多達570萬人口。

過去十年，淨化海港計劃第一期已大大改善維多利亞港的水質和生態。荃灣區所有先前封閉的泳灘已經重開，停辦的維港渡海泳已於2011年復辦，而香港國際龍舟競渡近年已在維港再次舉辦。此外，享譽國際的富豪環球帆船賽將於2018年首次在維港舉辦。事實上，隨着維港水質改善，我們預期會有愈來愈多康樂體育活動在維港舉行。

淨化海港計劃第二期甲設施在2015年12月全面啟用後，維港集水區內所有污水現時均在昂船洲污水處理廠收集和經中央處理後才排放。展望未來，政府會採取其他污染控制措施，進一步改善近岸水質，使維港的水質得到更大改善。

推動「轉廢為能」

在污水處理設施進行脫水程序後，污泥會被運送到T • PARK［源 • 區］處理，以進一步清除臭味及其他污染物。由於人口增加、污水處理設施升級及其他相關的改善工程，預計每天產生的污泥量將於2030年前增加至2,000公噸。自2015年4月T • PARK［源 • 區］的運作測試展開後，運送至該處處理的污泥量日增。過去，污泥會被送到堆填區傾倒。


Aerial view of HATS
淨化海港計劃的鳥瞰圖


The world's largest chemically enhanced sewage treatment plant, HATS.
全球最大型的化學強化處理設施—淨化海港計劃。


T • PARK〔源 • 區〕

T • PARK〔源 • 區〕以高溫燃燒方式處埋污泥，令傾倒於新界西堆填區的廢物量大幅減少達90%。此外，環境保護署現正研究灰燼的使用價值，以期於日後將之重用作建築物料。

污泥焚燒過程所產生的熱能會被回收和轉化為電力，有關電量可完全滿足整個設施日常運作的能源需要。T • PARK〔源 • 區〕以全產能運作時，可產生約兩兆瓦剩餘電力，預計可輸出至公眾電網，足可供應4,000戶家庭使用。

為確保設施能自給自足、持續運作，T • PARK〔源 • 區〕亦設有海水化淡廠，以製造淡水供場內使用。此外，T • PARK〔源 • 區〕亦會收集雨水作非飲用水，並採取零廢水排放政策，廢水經處理後可重用作灌溉、沖廁及清潔之用。

引領香港「轉廢為能」的旅程

在本年4月舉行的全球水資源高峰會中，淨化海港計劃第二期甲工程和T • PARK〔源 • 區〕獲頒「年度廢水處理項目」分類下的優異獎，以示對其綜合廢水及污泥管理工作的肯定。淨化海港計劃是改善香港海洋環境的一大成就，T • PARK〔源 • 區〕則更進一步，引領香港走向「轉廢為能」，以應對廢物處理方面的挑戰。項目亦體現了香港的技術成就，並開拓無盡的可能性，引領我們及下一代邁向更環保的道路。

To ensure self sustainability, T·PARK also houses a seawater desalination plant that produces freshwater for use on site. In addition, rainwater is collected for non-potable use. T·PARK adopts a zero-wastewater-discharge policy in which wastewater is treated and reused for irrigation, flushing and cleansing purposes.

Shaping Hong Kong's 'waste-to-energy' journey

Hong Kong's integrated wastewater and sludge management efforts were recognised at the Global Water Summit in April this year with the Distinction award under the "Wastewater Project of the Year" category. While HATS is a major achievement in the enhancement of Hong Kong's marine environment, T·PARK moves even further to shape Hong Kong's "waste-to-energy" journey and address the waste challenges in Hong Kong. This demonstrates what Hong Kong can achieve technologically. It opens up endless possibilities for Hong Kong's journey down a greener path for us, and our future generations.