

For information

Legislative Council Panel on Environmental Affairs

**PWP Item 5166DR – Restoration of Tseung Kwan O Landfills –
post-completion environmental monitoring work**

Supplementary Information

INTRODUCTION

At the Environmental Affairs Panel meeting held on 25 October 2004, Members, after considering the PWP Item **5166DR** “Restoration of Tseung Kwan O Landfills – post-completion environmental monitoring work”, requested the Administration to provide supplementary information on –

- (a) the progress of the restoration of closed landfills
- (b) the planned usage of the 13 closed landfills; and
- (c) landfill costs.

THE ADMINISTRATION’S RESPONSE

Progress on Restoration of Closed Landfills

2. Restoration of landfill comprises two stages. Stage 1 is the construction and installation of restoration facilities including -

- (a) landfill gas management systems to control gas emission and prevent off-site gas migration;
- (b) leachate management systems to extract, collect, treat and dispose of the leachate;
- (c) engineered capping layers (with low permeability) and surface water drainage systems to reduce infiltration of rain water into

the waste mass thereby reducing the amount of leachate to be treated; and

- (d) improvements to the slope stability and landscaping of the landfill sites and other ancillary engineering works.

3. Stage 2 of the restoration involves post-completion environmental monitoring work to ensure that specified environmental and safety requirements are met and to monitor the progress of restoration. The post-completion environmental monitoring work comprises -

- (a) operation and maintenance of the landfill gas management systems to control gas emission and to prevent off-site gas migration;
- (b) operation and maintenance of the leachate management systems to control surface and groundwater infiltration into the landfills and to extract, collect, treat and dispose of the landfill leachate;
- (c) environmental monitoring and auditing; and
- (d) maintenance of landscape and site infrastructures.

— 4. Enclosure 1 shows the status of the restoration of the 13 closed landfills.

Current and Planned Usage of Closed Landfills

5. Restored landfills require continuous environmental monitoring as they continue to produce landfill gas and leachate of varying quantities. The continuing decomposition of waste results in the differential settlement process also affects the stability of the landfill surface. Therefore, there are considerable restrictions on the afteruse of restored landfills, e.g. excessive loading or construction of permanent building structures, should be avoided. The restored sites are considered more suitable for recreational uses, on condition that these are compatible with the ongoing environmental monitoring work. All the landfills under restoration are provided with suitable vegetation and planting.

— 6. The planned and current status of the afteruse development at the closed landfills are at Enclosure 2. The golf driving range at Shuen

Wan Landfill and the recreation ground at Sai Tso Wan Landfill are already in operation. The Administration will shortly invite expression of interest to gauge the private sector's interest to upgrade the Shuen Wan Landfill golf driving range to a 9-hole golf course. The Hong Kong Air Cadet Corps is using the top platform at Tseung Kwan O Stage II/III Landfill as a model aeroplane training field on weekends and public holidays.

7. The Administration is partnering with private organizations to utilise the Tsung Kwan O Stage I Landfill as a football training centre and Siu Lang Shui Landfill as an environmental education centre. The development of the Ma Tso Lung Landfill has been taken up by the Tung Wah Group of Hospitals. The Administration is taking active steps to put other closed landfills to recreational uses.

Approved Project Estimate and Estimated Future Funding Requirements

8. The total approved project estimates and the estimated funds required for further post-completion environmental monitoring work for
—— the closed landfills are at Enclosure 3.

Environment, Transport and Works Bureau
December 2004

已關閉堆填區的修復進度 Progress of restoration of closed landfills

已關閉堆填區 Closed Landfill	修復設施工程開始日期 Date of commencement of construction of restoration facilities	驗收後的環境監測工程開始 日期 Date of commencement of post-completion environmental monitoring work	環境評審完成日期 Date of completion of 1st environmental review	環境評審的結論 Findings of environmental review
船灣堆填區 Shuen Wan Landfill	一九九六年十二月 December 1996	一九九七年十二月 December 1997	二零零三年四月 April 2003	驗收後的環境監測工程須繼續進行 To continue post-completion environmental monitoring work
牛池灣堆填區 Ngau Chi Wan Landfill	一九九八年八月 August 1998	一九九九年五月 May 1999	二零零三年十二月 December 2003	驗收後的環境監測工程須繼續進 行 To continue post- completion environmental monitoring work
晒草灣堆填區 Sai Tso Wan Landfill	一九九七年三月 March 1997	一九九八年五月 May 1998		
馬油塘西堆填區 Ma Yau Tong West Landfill				
馬油塘中堆填區 Ma Yau Tong Central Landfill				
佐敦谷堆填區 Jordan Valley Landfill				
將軍澳第一期堆填區 Tseung Kwan O Stage I Landfill	一九九七年七月 July 1997	一九九九年二月 February 1999	二零零三年十二月 December 2003	驗收後的環境監測工程須繼續進 行 To continue post- completion environmental monitoring work
將軍澳第二/三期堆填區 Tseung Kwan O Stage II/III Landfill				
牛潭尾堆填區 Ngau Tam Mei Landfill	一九九九年三月 March 1999	二零零零年六月 June 2000	二零零五年底 end 2005 ⁽¹⁾	N/A ⁽²⁾
馬草壟堆填區 Ma Tso Lung Landfill				
小冷水堆填區 Siu Lang Shui Landfill				
醉酒灣堆填區 Gin Drinkers Bay Landfill		二零零零年十月 October 2000		
望后石谷堆填區 Pillar Point Valley Landfill	二零零四年十月 October 2004	二零零六年中 Mid 2006	二零一一年底 end 2011 ⁽¹⁾	N/A ⁽²⁾

(1) : 預設時間表

(1) : Programme date

(2) : 暫時未能提供

(2) : Not yet available

已關閉堆填區 — 現時及計劃用途 (2004年11月)
Closed Landfills - Existing and Planned Afteruse (November 2004)

已關閉堆填區 Closed Landfill	總面積 (可提供使用的平地面積) Total surface Area (flat area available for afteruse) (公頃 ha)	土地用途 Zoned land use	計劃用途 Planned Usage	現時狀況 Current Status	其他因素 Other Consideration
船灣堆填區 Shuen Wan Landfill					
船灣 (大埔區) Shuen Wan (Tai Po District)	50.00 (11.0)	其他既定用途- 高爾夫球場 Other Specified Use annotated Golf Course"	一個九洞高爾夫球場及高爾夫球練習場，供公眾使用。 A public 9-hole golf course and golf practice range.	現時為一個高爾夫球練習場。政府將於短期內向私營機構發出意向邀請書，探討邀請私營機構參與發展高爾夫球場的可行性。 Currently used as a golf driving range. The Administration is exploring the feasibility of inviting the private sector to develop the golf course. Expression of Interest to gauge the private sector's interest should be issued within 2 months.	不適用 N.A.
市區堆填區 Urban Landfills					
牛池灣 (黃大仙區) Ngau Chi Wan (Wong Tai Sin District)	7.63 (4.0)	休憩用地 Open space	部分將發展為公園。 Part of the site will be developed as a park.	公園的發展計劃現正進行，這計劃得到黃大仙區議會的支持。當局已申請2005/06年度撥款，以小型工程興建，預計在2005年初知道申請結果。 The Wong Tai Sin District Council supported the development of the park and planning of the project is currently underway. Funding bid has been made under 2005/06 draft estimates for minor building works. The outcome of the exercise is expected to be announced in early 2005.	毗鄰有私人住宅發展項目。 Residential development adjacent to the site.
晒草灣 (觀塘區) Sai Tso Wan (Kwun Tong District)	9.15 (2.0)	休憩用地/ 綠化地帶 Open space/ green belt	包括一個可作足球及棒球比賽使用的多用途草場、兒童遊樂場、緩跑徑及兩個棒球練習場。 One multi-purpose grass pitch for football and baseball. One children's playing area, a jogging trail and 2 baseball batting cage.	晒草灣遊樂場已於2004年4月開放。 The recreation facilities has been opened to the public since April 2004.	不適用 N.A.
馬游塘西 (觀塘區) Ma Yau Tong West (Kwun Tong District)	5.53 (1.0)	部分休憩用地及 部分綠化地帶 Partly open space and partly green belt	休憩用地 Open space	政府現正檢討發展項目的優先次序，預計在2005年初有檢討結果。 Project priority under review. The outcome of the review is expected to be available in early 2005.	毗鄰有私人住宅發展項目，及缺乏公用設施。 Residential development adjacent to the site. Lack of basic utilities.
馬游塘中 (觀塘區) Ma Yau Tong Central (Kwun Tong District)	10.87 (0.8)	部分休憩用地及 部分綠化地帶 Partly open space and partly green belt	藍田休憩公園擴展範圍 Lam Tin Park extension	政府現正檢討發展項目的優先次序，預計在2005年初有檢討結果。 Project priority under review. The outcome of the review is expected to be available in early 2005.	毗鄰有私人住宅發展項目，及缺乏公用設施。 Residential development adjacent to the site. Lack of basic utilities.
佐敦谷 (觀塘區) Jordan Valley (Kwun Tong District)	10.72 (5.0)	休憩用地 Open space	俱環保教育中心的生態主題公園及兩個門球場。 Ecological theme park with an environmental education centre and 2 gateball pitches.	政府現正檢討發展項目的優先次序，預計在2005年初有檢討結果。 Project priority under review. The outcome of the review is expected to be available in early 2005.	毗鄰有私人住宅發展項目，及缺乏公用設施。 Residential development adjacent to the site. Lack of basic utilities.
將軍澳堆填區 Tseung Kwan O Landfills					
將軍澳第一期 (西貢區) Tseung Kwan O Stage I (Sai Kung District)	68.00 (9.6)	休憩用地 Open space	建議用途包括足球訓練中心，休憩用地包含風箏場、緩跑徑及單車徑，和高爾夫球練習場。 Proposed uses include a football training centre, open space including kite-flying area, jogging trail and cycle track and a golf driving range.	香港足球總會(足總)將會以自資的形式發展及營運足球訓練中心，足總經已草擬好初步發展計劃，並向香港賽馬會申請所需撥款。 A Football Academy will be developed and operated by Hong Kong Football Association (HKFA) on a self-financing basis. HKFA has formulated a development proposal and has applied to Hong Kong Jockey Club for the requisite funding.	不適用 N.A.
將軍澳第二及第三期 (西貢區) Tseung Kwan O Stage II/III (Sai Kung District)	42.00 (2.8)	休憩用地 Open space	因土力及地勢所限制，暫時未有既定用途。 No committed use since access to the site is constrained geotechnically.	香港航空青年團已於2004年8月開始，獲准於週日、週末及公眾假期，使用高臺作為暫時性模型飛機訓練場。 The HK Air Cadet Corps has been given permission since Aug 2004 to use the upper platform temporarily as a model aeroplane training field during Saturdays, Sundays and Public Holidays	附近缺乏公用設施，土力及地勢的限制會影響前往平臺的通道。 Lack of basic utilities. Geotechnical constraint affecting site access to the top platform.
新界西北及醉酒灣堆填區 North West New Territories and Gin Drinker's Bay Landfills					
牛潭尾 (元朗區) Ngau Tam Mei (Yuen Long District)	2.00 (1.0)	綠化地帶 Green belt	作為綠化地帶的一部分。 Forming part of "Green Belt" zoning.	牛潭尾堆填區為一綠色地帶，佈有綠化景觀。因面積較細小及通道的限制，所以政府認為應保留牛潭尾堆填區為區內的綠化風景區。 General landscaping provided. The whole site at Ngau Tam Mei is zoned "Green Belt". Given the small size of the site with limited access, the Administration is of the view that it should remain as local green scenery.	毗鄰有私人住宅發展項目，只有單線雙向行車的狹窄通道，會造成交通問題，而堆填區範圍沒有公用設施及污水渠接駁。 Vehicular access to the site problematic as there is only one narrow, one-lane rural access road. No public utilities and sewerage available. Residential development adjacent to the site.
馬草壘 (北區) Ma Tso Lung (North District)	2.00 (0.9)	政府/機構/社區 Government/ institution/ community	東華三院渡假營 Tung Wah Group of Hospitals (TWGH) Holiday Camp	該場地經已於2000年8月交由東華三院發展。 Site has been returned to TWGH for development in August 2000.	不適用 N.A.
小冷水 (屯門區) Siu Lang Shui (Tuen Mun District)	12.00 (0.6)	主要為綠化地帶及小部 分為政府/機構/社區 Mainly Green belt & small portion govt/ institution/ community	一個環保團體表示有意在該處發展環境保護教育中心。 A green group has expressed interest in developing an environmental education centre at this site.	該環保組織已著手研究及準備詳細建議。 Investigation and preparation of detailed proposal are being carried out by the interested green group.	小冷水堆填區共有兩個小平臺。往平臺之通道狹窄，附近缺乏公用設施，擬議的發展項目須作出斜坡危險評估確保安全。 Lack of basic utilities. Flat area is divided into two separate parts. Vehicular access to the flat area problematic due to narrow site access road. Natural terrain hazard assessment required to confirm acceptability of the proposed development.
醉酒灣 (葵青區) Gin Drinkers Bay (Kwai Tsing District)	29.00 (2.7)	休憩用地 Open space	葵涌公園發展 Kwai Chung Park development	政府正作出初步研究及評估開放部分醉酒灣堆填區為休憩公園的可行性。 Preliminary assessment being undertaken by the Administration to investigate the feasibility of opening part of the site for passive recreational use.	休憩公園的設計要避免過重負荷。 Park design should avoid applying excessive loading to the site.
望后石谷堆填區 Pillar Point Valley Landfill					
望后石谷 (屯門區) Pillar Point Valley (Tuen Mun District)	38.00 (14)	主要為綠化地帶及小部 分為休憩用地及青山練 靶場 Mainly Green belt, a small part OU & Castle Peak Firing Range	青山練靶場外圍地方為綠化地帶。 Area outside the Castle Peak Firing Range forms part of "Green Belt" zoning	建造修復設施工程於2004年10月開始，估計工程會於2006年中完成。 Construction of landfill restoration facilities started in October 2004 and is programmed to be commissioned in mid 2006.	青山練靶場面積約10公頃，佔總面積38公頃的百分之二十六；或約佔平臺面積14公頃的百分之五十七。 The Castle Peak Firing Range occupies about 26% (10ha) of the total area (38ha) and 57% (8ha) of the total flat area (14 ha) at the top platform.

Addendum 更正

附件3
Enclosure 3

已關閉堆填區的修復工程費用和驗收後環境監測工程的預算費用 (按付款當日價格計算)
Costs for construction of the restoration facilities and estimated costs for post-completion environmental monitoring work of the closed landfills (in MOD prices)

已關閉堆填區 Closed Landfill	大約面積 Approximate site area (公頃) (ha)	建造修復設施實際費用 Actual cost for construction of restoration facilities (百萬元) (\$ M)	財委會通過的驗收後環境監測工程預算費用 Estimated cost for post-completion environmental monitoring work approved by Finance Committee (百萬元) (\$ M)	預計未來驗收後的環境監測工所需費用 (以30年環境監測期計算) ⁽²⁾ Estimated funds to be sought in future for Post-completion environmental monitoring work (assuming 30 years of environmental monitoring work is needed) ⁽²⁾ (百萬元) (\$M)
Projects for which funding has been sought for the first 14 years of Post-Completion Monitoring				
船灣堆填區 Shuen Wan Landfill	50	160	64.7	48.3
牛池灣堆填區 Chi Wan Landfill	Ngau 8	249	227.1	79.9
晒草灣堆填區 Sai Tso Wan Landfill	9			
馬油塘西堆填區 Yau Tong West Landfill	Ma 5			
馬油塘中堆填區 Yau Tong Central Landfill	Ma 11			
佐敦谷堆填區 Jordan Valley Landfill	11			
Projects for which funding has been sought for the first 7 years of Post-Completion Monitoring				
將軍澳第一期堆填區 Tseung Kwan O Stage I Landfill	68	369	105	306
將軍澳第二/三期堆填區 Tseung Kwan O Stage II/III Landfill	42			
牛潭尾堆填區 Tam Mei Landfill	Ngau 2	332	110.5	320.5
馬草壟堆填區 Ma Tso Lung Landfill	2			
小冷水堆填區 Siu Lang Shui Landfill	12			
醉酒灣堆填區 Gin Drinkers Bay Landfill	29			
望后石谷堆填區 Pillar Point Valley Landfill ⁽¹⁾	38	221 ⁽¹⁾	80	248
總計 Total		1,331	587.3	1,002.70

(1) 預計望后石谷堆填區的修復設施於2006年年中建成，驗收後的環境監測工程會隨即展開。此為現時預算的建造費用。

(1) Construction of the restoration facilities at Pillar Point Valley Landfill is expected to complete in mid 2006 and the post-completion environmental monitoring work will commence thereafter. The construction cost is an estimate at present.

(2) 將根據各堆填區的實際環境監測工程需要而可能作出調整。

(2) It may be adjusted in future subject to the actual need of individual landfills for environmental monitoring work.