

## Appendix 9.3

Agreement No. CE 43/2005 (EP)  
HATS Stage 2A EIA Study - Investigation

### Estimated Quantities of C&D Materials Arising from PTW Upgrading Works (excluding construction of shafts)

Total C&D Materials to be Generated:

PTW	Major Upgrading Works	Estimated Bulk Volume (m <sup>3</sup> )			
		Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
North Point	Screening & dewatering facilities, Seawater P/S for SCS	8,330	620	2,800	-
Wan Chai East	Transfer Pumping Station	130	10,840	130	3,230
Central	Screening & dewatering facilities	2,000	5,010	670	50
Sandy Bay <sup>2</sup>	Transfer Pumping Station & connection channel	-	11,260	-	1,220
	Connection channel only	-	40	-	-
Cyberport <sup>2</sup>	Transfer Pumping Station & connection channel	26,670	15,000	8,930	-
	Connection channel only	26,670	40	8,930	-
Aberdeen	Screening & dewatering facilities, Seawater P/S for SCS	2,050	5,240	690	-
Ap Lei Chau	Screening & dewatering facilities, transfer P/S	3,810	3,910	1,270	-
Wah Fu	Screening & dewatering facilities	2,330	1,480	-	-
<b>Total</b>		<b>71,990</b>	<b>53,440</b>	<b>23,420</b>	<b>4,500</b>

1. A bulking factor 0.75 is assumed

2. The transfer pumping station may either be built at Sandy Bay PTW or Cyberport PTW.

Total C&D Materials to be recycled from Fill Bank (for backfilling of trenches):

PTW	Major Upgrading Works	Estimated Bulk Volume (m <sup>3</sup> )			
		Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
North Point	Screening & dewatering facilities, Seawater P/S for SCS	-	60	-	-
Wan Chai East	Transfer Pumping Station	-	1,080	-	-
Central	Screening & dewatering facilities	-	500	-	-
Sandy Bay <sup>2</sup>	Transfer Pumping Station & connection channel	-	1,130	-	-
	Connection channel only	-	-	-	-
Cyberport <sup>2</sup>	Transfer Pumping Station & connection channel	-	1,500	-	-
	Connection channel only	-	-	-	-
Aberdeen	Screening & dewatering facilities, Seawater P/S for SCS	-	520	-	-
Ap Lei Chau	Screening & dewatering facilities, transfer P/S	-	390	-	-
Wah Fu	Screening & dewatering facilities	-	150	-	-
<b>Total</b>		<b>-</b>	<b>5,330</b>	<b>-</b>	<b>-</b>

Remark:

1. 10% of public fill are assumed to be reused for on-site backfilling

2. The transfer pumping station may either be built at Sandy Bay PTW or Cyberport PTW.

Surplus C&D Materials (off-site disposal)

PTW	Major Upgrading Works	Estimated Bulk Volume (m <sup>3</sup> )			
		Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
North Point	Screening & dewatering facilities, Seawater P/S for SCS	8,330	560	2,800	-
Wan Chai East	Transfer Pumping Station	130	9,760	130	3,230
Central	Screening & dewatering facilities	2,000	4,510	670	50
Sandy Bay *	Transfer Pumping Station & connection channel	-	10,130	-	1,220
	Connection channel only	-	40	-	-
Cyberport *	Transfer Pumping Station & connection channel	26,670	13,500	8,930	-
	Connection channel only	26,670	40	8,930	-
Aberdeen	Screening & dewatering facilities, Seawater P/S for SCS	2,050	4,720	690	-
Ap Lei Chau	Screening & dewatering facilities, transfer P/S	3,810	3,520	1,270	-
Wah Fu	Screening & dewatering facilities	2,330	1,330	-	-
<b>Total</b>	<b>Scenario 1</b> (Transfer Pumping Station at WCE & SB PTWs)	<b>45,320</b>	<b>34,570</b>	<b>14,490</b>	<b>4,500</b>
	<b>Scenario 2</b> (Transfer Pumping Station at WCE & Cyberport PTWs)	<b>45,320</b>	<b>37,940</b>	<b>14,490</b>	<b>3,280</b>

\* Assume 28 months

## Attachment 2

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### 1. Estimated Quantities of Screenings generated at ultimate development scenario

PTW	Average Flow at Ultimate Scenario (m <sup>3</sup> /d)	Avg. Screenings Collected (m <sup>3</sup> /1000m <sup>3</sup> sewage)	Assumed volume reduction	Daily Screenings (compacted) Generation (m <sup>3</sup> /d)
North Point	122,759	0.1	50%	6.1
Wan Chai East	182,690	0.1	50%	9.1
Central	138,193	0.1	50%	6.9
Sandy Bay	11,431	0.1	50%	0.6
Cyberport	9,816	0.1	50%	0.5
Aberdeen	95,059	0.1	50%	4.8
Ap Lei Chau	39,940	0.1	50%	2.0
Wah Fu	10,518	0.1	50%	0.5
<b>Total</b>				<b>30.5</b>

### 2. Estimated Quantities of Grits at ultimate development scenario

PTW	Average Flow at Ultimate Scenario (m <sup>3</sup> /d)	Avg. Grit Collected (m <sup>3</sup> /1000m <sup>3</sup> sewage)	Daily Grit Generation (m <sup>3</sup> /d)
North Point	122,759	0.05	6.1
Wan Chai East	182,690	0.05	9.1
Central	138,193	0.05	6.9
Sandy Bay	11,431	0.05	0.6
Cyberport	9,816	0.05	0.5
Aberdeen	95,059	0.05	4.8
Ap Lei Chau	39,940	0.05	2.0
Wah Fu	10,518	0.05	0.5
<b>Total</b>			<b>30.5</b>

\* The screenings and grit generation rates are based on the Final Report on Upgrading of Existing Preliminary Treatment Works for Agreement no. CE 45/89 Strategic Sewage Disposal Scheme – Site Investigations & Engineering Studies.

North Point PTW

1. Excavation	Plan Area	G.L. before excavation	G.L. after excavation	Depth	Volume	Breakdown			
						Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
	(m <sup>2</sup> )	mPD	mPD	(m)	(m <sup>3</sup> )				
1.1 Treatment unit & channels									
Grit traps	90	0.5	-0.5	1	90		90		
1.2 Connection Channel	60	4	3.5	0.5	30		30		
1.3 Piling									
Public Fill	4.8			40	192		192		
1.4 Seawater Pumping Station	30	4.3	-0.7	5	150		150		
<b>Total Volume of Excavated Materials:</b>					462				
2. Demolition	Plan Area			Assumed Rate	Volume				
	(m <sup>2</sup> )			(m <sup>3</sup> /m <sup>2</sup> )	(m <sup>3</sup> )				
2.1 coarse screen, grit traps	570			5	2850	2850		1000	
2.2 fine screen & asso. structures	500			5	2500	2500		800	
2.3 temp. fine screen house	300			3	900	900		300	
<b>Total Volume of Demolished Materials:</b>					6250				
<b>Total</b>						6250	462	2100	0

Wan Chai East PTW

1. Excavation	Plan Area	G.L. before excavation	G.L. after excavation	Depth	Volume	Breakdown			
						Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Deposit
	(m <sup>2</sup> )	mPD	mPD	(m)	(m <sup>3</sup> )				
1.1 Transfer Pumping Station	600	5	-12	17					
Public Fill	600			13	7800		7800		
Marine Deposit	600			4	2400				2400
1.2 Connection Channel	60			0.5	30		30		
1.3 Piling									
Public Fill	6			50	300		300		
Marine Deposit	6			4	24				24
					<b>Total Volume of Excavated Materials:</b>				
									10554
2. Demolition	Plan Area			Assumed Rate	Volume				
	(m <sup>2</sup> )			(m <sup>3</sup> /m <sup>2</sup> )	(m <sup>3</sup> )				
2.1 Minor Modification of Inlet P/S and treatment units					100	100		100	
					<b>Total Volume of Demolished Materials:</b>				
									100
					<b>Total</b>	100	8130	100	2424

Central PTW

1. Excavation	Width	Length	Plan Area	G.L. before excavation	G.L. after excavation	Depth	Volume	Breakdown				
								Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal	
	(m)	(m)	(m <sup>2</sup> )	(mPD)	(mPD)	(m)	(m <sup>3</sup> )					
<b>1.1 Treatment unit &amp; channels</b>												
Part A (pumping mains discharge)	8.2	6	49	5	-2	7	344		344			
Part B (flow dist channel 1)	8.2	17	139	5	2	3	418		418			
Part C (screen channels)	8.5	10	85	5	2	3	255		255			
Part D (flow dist channel 2)	4	21	84	5	2	3	252		252			
Part E (grit traps)	15	27	405	5	2	3	1215		1215			
Part F (effluent channel)	3	35	105	5	1	4	420		420			
<b>1.2 Biofilter</b>	8	45	360									
Area on demolished structure (70%)			252	3	2	1	252		252			
Remaining area (30%)			108	5	2	3	324		324			
<b>1.3 Piling</b>												
Public Fill			5.76			48	276		276			
Marine Deposit			5.76			7	40				40	
<b>Total Volume of Excavated Materials:</b>							3797					
<b>2. Demolition</b>			<b>Plan Area</b>			<b>Assumed Rate</b>	<b>Volume</b>					
						(m <sup>3</sup> /m <sup>2</sup> )	(m <sup>3</sup> )					
2.1 Treatment Unit & Channels			500			3	1500	1500		500		
<b>Total Volume of Demolished Materials:</b>							1500					
<b>Total</b>								1500	3757	500	40	

Sandy Bay PTW

1. Excavation	Plan Area	G.L. before excavation	G.L. after excavation	Depth	Volume	Breakdown			
						Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
	(m <sup>2</sup> )	(mPD)	(mPD)	(m)	(m <sup>3</sup> )				
1.1 Transfer Pumping Station	420	6	-15.5	21.5					
Public Fill	420			19.5	8190		8190		
Marine Deposit	420			2	840				840
1.2 Connection channel	30			1	30		30		
1.3 Piling									
Public Fill	7.6			30	228		228		
Marine Deposite	7.6			10	76				76
					<b>Total Volume of Excavated Materials:</b>	9364			
					<b>Total</b>	0	8448	0	916

Cyberport PTW

1. Excavation	Plan Area (m <sup>2</sup> )	G.L. before excavation	G.L. after excavation	Depth (m)	Volume (m <sup>3</sup> )	Breakdown			
						Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
1.1 Transfer Pumping Station Public Fill	600	6	-12.5	18.5	11100	11100			
1.2 Connection Channel Public Fill	30			1	30				
1.3 Piling Public Fill	6			20	120	120			
Total Volume of Excavated Materials:					11250				
2. Demolition	Plan Area (m <sup>2</sup> )			Assumed Rate (m <sup>3</sup> /m <sup>2</sup> )	Volume (m <sup>3</sup> )				
1.1 CEPT Unit	2500			6	20000	20000		6700	
Total Volume of Demolished Materials:					20000				
<b>Total</b>						<b>20000</b>	<b>11250</b>	<b>6700</b>	<b>0</b>

Assumed generation period	Surplus C&D	26670	13500	8930	0
Mar 2010	6			6	6
Apr 2010					
May 2010					
Jun 2010			2250		0
Jul 2010			2250		0
Aug 2010			2250		0
Sep 2010			2250		0
Oct 2010			2250		0
Nov 2010			2250		0
Dec 2010			2250		0
Jan 2011					
Feb 2011					
Mar 2011					
Apr 2011					
May 2011					
Jun 2011					
Jul 2011					
Aug 2011					
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Apr 2013					
May 2013					
Jun 2013					
Jul 2013					
Aug 2013					
Sep 2013					
Oct 2013					
Nov 2013					
Dec 2013					
Jan 2014					
Feb 2014					
Mar 2014					
Apr 2014	4445			1488	
May 2014	4445			1488	
Jun 2014	4445			1488	
Jul 2014	4445			1488	
Aug 2014	4445			1488	
Sep 2014	4445			1488	
Oct 2014					
Nov 2014					

**Aberdeen PTW**

1. Excavation	Plan Area	G.L. before excavation	G.L. after excavation	Depth	Volume	Breakdown			
						Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
	(m <sup>2</sup> )			(m)	(m <sup>3</sup> )				
<b>1.1 Treatment unit &amp; channels</b>									
Part 1 (pumping mains discharge)	40			5	200		200		
Part 2 (flow dist channel, screens, grit trap)	560			3.5	1960		1960		
Part 3 (additional for grit trap)	200			4	800		800		
<b>1.2 Administration Building</b>	720			0.2	144		144		
<b>1.3 Piling</b>									
Public Fill	16.32			40	653		653		
<b>1.4 Seawater Pumping Station</b>	30	5	-0.7	5.7	171		171		
<b>Total Volume of Excavated Materials:</b>					3928				
2. Demolition	Plan Area			Assumed Rate	Volume				
	(m <sup>2</sup> )			(m <sup>3</sup> /m <sup>2</sup> )	(m <sup>3</sup> )				
2.1 Treatment Unit & Channels	300			3	900	900		300	
2.2 Administration Building	80			8	640	640		220	
<b>Total Volume of Demolished Materials:</b>					1540				
<b>Total</b>						1540	3928	520	0



Ap Lei Chau PTW

1. Excavation	Plan Area	Depth	Volume	Breakdown			
				Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
	(m <sup>2</sup> )	(m)	(m <sup>3</sup> )				
<b>1.1 Treatment unit &amp; channels</b>							
Part 1 (flow dist channel, screens, grit trap)	150	3	450		450		
Part 2 (additional for grit trap)	60	2	120		120		
<b>1.2 Transfer P/S</b>							
Part 1 (rest on demolished treatment units)	150	4	600		600		
Part 2 (others)	200	8	1600		1600		
<b>1.3 Transformer room &amp; switch room</b>	100	0.2	20		20		
<b>1.4 Piling</b>							
Public Fill	9.6	15	144		144		
<b>Total Volume of Excavated Materials:</b>			2934				
2. Demolition	Plan Area	Assumed Rate	Volume				
	(m <sup>2</sup> )	(m <sup>3</sup> /m <sup>2</sup> )	(m <sup>3</sup> )				
2.1 Workshop building & transformer room	270	5	1350	1350		450	
2.2 Treatment Units, channels	420	3	1260	1260		420	
2.3 Control Room	50	5	250	250		80	
<b>Total Volume of Demolished Materials:</b>			2860				
<b>Total</b>				2860	2934	950	0

Wah Fu PTW

1. Excavation	Plan Area	Depth	Volume	Breakdown			
				Public Fill (waste concrete)	Public Fill (other inert materials)	C&D Waste (not include general refuse)	Marine Disposal
	(m <sup>2</sup> )	(m)	(m <sup>3</sup> )				
<b>1.1 Treatment unit &amp; channels</b>							
Part 1 (flow dist channel, screens, grit trap)	200	5	1000		1000		
Part 2 (additional for grit trap)	15	2	30		30		
<b>1.2 Piling</b>							
Public Fill	3.84	20	77		77		
	<b>Total Volume of Excavated Materials:</b>		1107				
2. Demolition	Plan Area	Assumed Rate	Volume				
	(m <sup>2</sup> )	(m <sup>3</sup> /m <sup>2</sup> )	(m <sup>3</sup> )				
2.1 Existing Treatment Building & Store	350	5	1750	1750			
	<b>Total Volume of Demolished Materials:</b>		1750				
<b>Total</b>				1750	1107	0	0

**Programme of Disposal of Materials**

<b>Month</b>	<b>Public Fill (waste concrete)</b>	<b>Public Fill (other inert materials)</b>	<b>C&amp;D Waste (not include general refuse)</b>	<b>Marine Disposal</b>	<b>Remarks</b>
Mar 2010	194	111	0	0	Arising from demolition of existing facilities and excavation works.
Apr 2010	194	111	0	0	
May 2010	194	111	0	0	
Jun 2010	704	4681	185	538	
Jul 2010	704	4681	185	538	
Aug 2010	704	4681	185	538	
Sep 2010	1565	5103	474	543	
Oct 2010	1565	5103	474	543	
Nov 2010	1565	5103	474	543	
Dec 2010	1543	1220	453	4	
Jan 2011	1543	1220	453	4	
Feb 2011	1543	1220	453	4	
Mar 2011	1349	1109	453	4	
Apr 2011	1349	1109	453	4	
May 2011	1349	1109	453	4	
Jun 2011	861	423	289	4	
Jul 2011	861	423	289	4	
Aug 2011	861	423	289	4	
Sep 2011	0	0	0	0	
Oct 2011	0	0	0	0	
Nov 2011	0	0	0	0	
Dec 2011	0	0	0	0	
Jan 2014	0	0	0	0	
Feb 2014	0	0	0	0	
Mar 2014	0	0	0	0	
Apr 2014	4445	0	1488	0	
May 2014	4445	0	1488	0	
Jun 2014	4445	0	1488	0	
Jul 2014	4445	0	1488	0	
Aug 2014	4445	0	1488	0	
Sep 2014	4445	0	1488	0	
<b>Total</b>	<b>45320</b>	<b>37940</b>	<b>14490</b>	<b>3280</b>	Arising from demolition of CEPT complex in Cyberport, which will be undertaken after full commissioning of HATS2A.