Expansion of Hong Kong International Airport into a Three-Runway System



Detailed Plan on Deep Cement Mixing

Appendix C. Calculations of Total Sediment Loss



Summary of Sediment Loss Rates for Worst Case Scenarios

Summary Calculations from Approved 3RS EIA Report

Worst Case Scenario	Scenario Date	Work Type	Plant Type	Number of Plant	Production Rate/unit (m³/s)	Cycle Time (s)	Production Rate/unit (kg/s) ¹	Material Fines Content (%)	Sediment Loss Rate/unit (%)	Sediment Loss Rate (kg/s)	Cycles/Day	Total Daily Productivity (m³/d)	Total Daily Sediment Losses (kg/d)
Scenario B	Q4 2016 - Q3 2017	Sand Blanket	TSHD	1	0.278	32400	510.1	10%	5%	2.55	1	9,007	82,641
		Ground Improvement	DCM Rig	32	0.115	120	211.0	10%	5%	1.06	30 to 60	17,940	164,600
		Ground Improvement (LHR)	DCM Rig	10	0.056	120	102.8	10%	5%	0.51	60	4,032	36,994
		Sand Filling	TSHD	31	0.833	4440 to 10800	1528.6	20%	5%	15.29	1 to 3	221,511	4,064,733
Note:		·		·				·	·		·	_	4 348 968

1. Density of wet sand wet is assumed to be 1,835kg/m3

LHR - low head room

For the full calculations, please refer to Appendix 8.6 of the approved 3RS EIA Report

Updated Calculations based on Latest Detailed Design (July 2016)

Worst Case Scenario	Scenario Date	Work Type	Plant Type	Number of Plant	Production Rate/unit (m³/s)	Cycle Time (s)	Production Rate/unit (kg/s) ¹	Material Fines Content (%)	Sediment Loss Rate/unit (%)	Sediment Loss Rate (kg/s)	Cycles/Day	Total Daily Productivity (m³/d)	Total Daily Sediment Losses (kg/d)
Updated Worst	Q2 2017	Sand Blanket	TSHD	9	0.278	32400	510.1	10%	5%	2.55	1	81,065	743,770
		Ground Improvement	DCM Rig^	82	0.115	120	211.0	10%	5%	1.06	60	67,896	622,946
Case (for DCM)	QZ 2017	Ground Improvement (LHR)	DCM Rig	33	0.115	120	211.0	10%	5%	1.06	60	27,324	250,698
		Sand Filling	TSHD	5	0.833	10800	1528.6	20%	5%	15.29	1	44,982	825,420
A62 out of 82 nos. of DCM Rigs are working within CMP											2 442 833		

^62 out of 82 nos. of DCM Rigs are working within CMP.

Material **Production Total Daily Production Sediment Loss Total Daily** Sediment Cycle Time **Worst Case** Number **Fines** Rate/unit Rate/unit **Productivity Scenario Date** Work Type Plant Type Loss Rate Cycles/Day Sediment Scenario of Plant Content (s) (kg/s)¹ Rate/unit (%) (m³/d) (m³/s) (kg/s) Losses (kg/d) (%) **Updated Worst** Sand Blanket TSHD 0.278 32400 510.1 10% 5% 2.55 45,036 413,205 Case (for Total DCM Rig^ 120 211.0 5% 1.06 60 6,624 60,775 Ground Improvement 8 0.115 10% Q1 2018 Ground Improvement (LHR) DCM Rig Sediment 6 0.115 120 211.0 10% 5% 1.06 60 4,968 45,581 TSHD Sand Filling 23 0.833 10800 1528.6 20% 5% 15.29 3,796,931 206,917 Loss) 4,316,49

^8 out of 8 nos. of DCM Rigs are working within CMP