Estimated volume of marine sediment to be excavated at Cross Bay Link

	Pier No.	Anticipated bored pile diameter in meter (r)	Anticipated no. of piles (n)	Depth of marine sediment samples (meter below seabed level)	Classification of sediment based on ETWB TC(W) No. 34/2002	Sediment depth (meter below seabed level)		Level difference in meter (y)	Estimated volume of each disposal option (m^3) ($r^2\pi y$) x n				Total estimated volume (m^3)
						From	To		Category L (Type 1)	Category Mp (Type 1#)	Category Mf (Type 2)	Category H (Type 2)	
Western Approach Piles	1	2	6	Grab Sample	**L**	0.0	0.4	0.4	7.5	-	-	-	
				0.2-0.9	**H**	0.4	0.9	0.5	-	-	-	9.4	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	**L**	13.9	*14.0*	0.1	1.9	-	-	-	
	sub-total								254.5	0.0	0.0	9.4	263.9
	2	2	6	Grab Sample	**L**	0.0	0.4	0.4	7.5	-	-	-	
				0.2-0.9	**H**	0.4	0.9	0.5	-	-	-	9.4	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	**L**	13.9	*14.0*	0.1	1.9	-	-	-	
	sub-total								254.5	0.0	0.0	9.4	263.9
	3	2	6	Grab Sample	**L**	0.0	0.4	0.4	7.5	-	-	-	
				0.2-0.9	**H**	0.4	0.9	0.5	-	-	-	9.4	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	**18.8**	-	-	-	
				-	-	5.9	7.9	2.0	37.7	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	**18.8**	-	-	-	
				-	-	8.9	10.9	2.0	37.7	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	**18.8**	-	-	-	
				-	-	11.9	13.9	2.0	37.7	-	-	-	
				13.9-14.9	**L**	13.9	14.9	1.0	**18.8**	-	-	-	
				-	-	14.9	*15.0*	0.1	1.9	-	-	-	
	Sub-total								265.8	0.0	0.0	9.4	282.7

	Pier No.	Anticipated bored pile diameter in meter (r)	Anticipated no. of piles (n)	Depth of marine sediment samples (meter below seabed level)	Classification of sediment based on ETWB TC(W) No. 34/2002	Sediment depth (meter below seabed level)		Level difference in meter (y)	Estimated volume of each disposal option (m^3) ($r^2\pi y$) x n				Total estimated volume (m^3)
						From	To		Category L (Type 1)	Category Mp (Type 1#)	Category Mf (Type 2)	Category H (Type 2)	
Western Approach Piles	4	2	6	Grab Sample	**Mp**	0.0	0.4	0.4	-	7.5	-	-	
				0.0-0.9	**L**	0.4	0.9	0.5	9.4	-	-	-	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	**L**	13.9	*14.0*	0.1	1.9	-	-	-	
	Sub-total								256.4	7.5	0.0	0.0	263.9
Main Bridge Piles	Pylon A	2	15	Grab Sample	**Mp**	0.0	0.4	0.4	-	18.8	-	-	
				0.0-0.9	**L**	0.4	0.9	0.5	23.6	-	-	-	
				0.9-1.9	**L**	0.9	1.9	1.0	47.1	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	47.1	-	-	-	
				-	-	2.9	4.9	2.0	**94.2**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	47.1	-	-	-	
				-	-	5.9	7.9	2.0	**94.2**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	47.1	-	-	-	
				-	-	8.9	10.9	2.0	**94.2**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	47.1	-	-	-	
				-	-	11.9	13.9	2.0	**94.2**	-	-	-	
				13.9-14.9	**L**	13.9	14.9	1.0	47.1	-	-	-	
				-	-	14.9	*15.0*	0.1	**4.7**	-	-	-	
	Sub-total								688.0	18.8	0.0	0.0	706.9
	Pylon B	2	15	Grab Sample	**Mp**	0.0	0.4	0.4	-	18.8	-	-	
				0.1-0.9	**L**	0.4	0.9	0.5	23.6	-	-		
				0.9-1.9	**L**	0.9	1.9	1.0	47.1	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	47.1	-	-	-	
				-	-	2.9	4.9	2.0	**94.2**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	47.1	-	-	-	
				-	-	5.9	7.9	2.0	**94.2**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	47.1	-	-	-	
				-	-	8.9	10.9	2.0	**94.2**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	47.1	-	-	-	
				-	-	11.9	12.8	0.9	**42.4**	-	-	-	
				12.8-13.8	**L**	12.8	13.8	1.0	47.1	-	-	-	
				-	-	13.8	*16.0*	2.2	**103.7**	-	-	-	
	Sub-total								735.1	18.8	0.0	0.0	754.0

	Pier No.	Anticipated bored pile diameter in meter (r)	Anticipated no. of piles (n)	Depth of marine sediment samples (meter below seabed level)	Classification of sediment based on ETWB TC(W) No. 34/2002	Sediment depth (meter below seabed level)		Level difference in meter (y)	Estimated volume of each disposal option (m^3) ($r^2\pi y$) x n				Total estimated volume (m^3)
						From	To		Category L (Type 1)	Category Mp (Type 1#)	Category Mf (Type 2)	Category H (Type 2)	
Eastern Approach Piles	5	2	6	Grab Sample	**Mf**	0.0	0.4	0.4	-	-	7.5	-	
				0.1-0.9	**L**	0.4	0.9	0.5	9.4	-	-	-	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	**L**	13.9	*14.0*	0.1	1.9	-	-	-	
	Sub-total								256.4	0.0	7.5	0.0	263.9
	6	2	6	Grab Sample	**Mf**	0.0	0.4	0.4	-	-	7.5	-	
				0.1-0.9	**L**	0.4	0.9	0.5	9.4	-	-	-	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	**L**	13.9	*14.0*	0.1	1.9	-	-	-	
	Sub-total								256.4	0.0	7.5	0.0	263.9
	7	2	6	Grab Sample	**Mf**	0.0	0.4	0.4	-	-	7.5	-	
				0.1-0.9	**L**	0.4	0.9	0.5	9.4	-	-	-	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	**L**	13.9	14.9	1.0	18.8	-	-	-	
				14.9-15.7	**Mf**	14.9	15.7	0.8	-	-	15.1	-	
				-	-	15.7	*16.0*	0.3	-	-	5.7	-	
	Sub-total								273.3	0.0	28.3	0.0	301.6

	Pier No.	Anticipated bored pile diameter in meter (r)	Anticipated no. of piles (n)	Depth of marine sediment samples (meter below seabed level)	Classification of sediment based on ETWB TC(W) No. 34/2002	Sediment depth (meter below seabed level)		Level difference in meter (y)	Estimated volume of each disposal option (m^3) ($r^2\pi y$) x n				Total estimated volume (m^3)
						From	To		Category L (Type 1)	Category Mp (Type 1#)	Category Mf (Type 2)	Category H (Type 2)	
Eastern Approach Piles	8	2	6	Grab Sample	Mp	0.0	0.4	0.4	-	7.5	-	-	
				0.1-0.9	L	0.4	0.9	0.5	9.4	-	-	-	
				0.9-1.9	L	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	L	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	L	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	L	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	L	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	L	13.9	14.9	1.0	18.8	-	-	-	
				-	-	14.9	*17.0*	2.1	**39.6**	-	-	-	
	Sub-total								312.9	7.5	0.0	0.0	320.4
	9	2	6	Grab Sample	Mp	0.0	0.4	0.4	-	7.5	-	-	
				0.1-0.9	L	0.4	0.9	0.5	9.4	-	-	-	
				0.9-1.9	L	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	L	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	L	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	L	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	L	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	L	13.9	14.9	1.0	18.8	-	-	-	
				-	-	14.9	*15.5*	0.6	**11.3**	-	-	-	
	Sub-total								284.6	7.5	0.0	0.0	292.2

	Pier No.	Anticipated bored pile diameter in meter (r)	Anticipated no. of piles (n)	Depth of marine sediment samples (meter below seabed level)	Classification of sediment based on ETWB TC(W) No. 34/2002	Sediment depth (meter below seabed level)		Level difference in meter (y)	Estimated volume of each disposal option (m^3) ($r^2\pi y$) x n				Total estimated volume (m^3)
						From	To		Category L (Type 1)	Category Mp (Type 1#)	Category Mf (Type 2)	Category H (Type 2)	
Eastern Approach Piles	10	2	6	Grab Sample	**Mp**	0.0	0.4	0.4	-	7.5	-	-	
				0.1-0.9	**L**	0.4	0.9	0.5	9.4	-	-	-	
				0.9-1.9	**L**	0.9	1.9	1.0	18.8	-	-	-	
				1.9-2.9	**L**	1.9	2.9	1.0	18.8	-	-	-	
				-	-	2.9	4.9	2.0	**37.7**	-	-	-	
				4.9-5.9	**L**	4.9	5.9	1.0	18.8	-	-	-	
				-	-	5.9	7.9	2.0	**37.7**	-	-	-	
				7.9-8.9	**L**	7.9	8.9	1.0	18.8	-	-	-	
				-	-	8.9	10.9	2.0	**37.7**	-	-	-	
				10.9-11.9	**L**	10.9	11.9	1.0	18.8	-	-	-	
				-	-	11.9	13.9	2.0	**37.7**	-	-	-	
				13.9-14.9	**L**	13.9	14.9	1.0	18.8	-	-	-	
				-	-	14.9	*15.0*	0.1	**1.9**	-	-	-	
	Sub-total								275.2	7.5	0.0	0.0	282.7
Total estimated quantities in each category (m^3)									**4120.5**	**67.9**	**43.4**	**28.3**	**4260.0**
Total estimated quantities of each disposal option									**Type 1**	**Type 1#**	**Type 2**		
									4120.5	**67.9**	**43.4**	**28.3**	**4260.0**

Sediment categories

Category L: Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)

Category M: Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)
Category M sediments are subjected to Tier III biological screening test to identify the most appropriate disposal option.
Mp: Biological test passed Mf: Biological test failed

Category H: Analytical results greater than Upper Chemical Exceedance Level (UCEL)
Category H sediments with one or more contaminant levels >10x LCEL are subject to Tier III biological screening test in a diluted manner to identify the most appropriate disposal option.

Disposal method

Type 1 Open Sea Dispoal (applicable to sediment classified as Category L)

Type 1# Open Sea Dispoal (Dedicated Sites) (applicable to sediment classified as Category Mp)

Type 2 Confined Marine Disposal (applicable to sediment classified as Category Mf and H)

Underline denoted A conservative assumption was made about the grab sample that the data is representing the sediment layer between 0.0 and 0.4m below seabed level.

Double underline denoted Sediment sample from this sampling depth is assumed to be Category Mf since the sample would likely be contaminated by the Mf sediment adjacent to it

Bold denoted Sediment samples from these sampling depths are assumed to be Category L since the neighbouring samples are also classified as Category L and hence can be disposed using Type 1 option.

Italic denoted End of the sediment mud layer.