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ANNEX J

SOFT SHORE ECOLOGY



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ANNEX J1

MONITORING SCHEDULE

**Tung Chung New Town Extension (East)**  
**Post-Construction Soft Shore Ecological Monitoring Schedule (December 2024)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Dec	2-Dec	3-Dec	4-Dec	5-Dec	6-Dec	7-Dec
				Soft Shore Monitoring at Tung Chung Bay		
8-Dec	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec
	Soft Shore Monitoring at Tung Chung Bay					
15-Dec	16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec
			Soft Shore Monitoring at Tung Chung Bay	Soft Shore Monitoring at Tai Ho Bay		
22-Dec	23-Dec	24-Dec	25-Dec	26-Dec	27-Dec	28-Dec
29-Dec	30-Dec	31-Dec				



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ANNEX J2

MONITORING RESULTS

**Table J2.1 Results for Horseshoe Crabs during Qualitative Walk-through Surveys in December 2024**

Sighting #	Species	Prosomal Width (cm)	Total Length (cm)
<b>Monitoring Date: 5 December 2024</b>			
<b>Monitoring Station: TCB3</b>			
1	Unidentified <sup>(a)</sup>	0.5	0.7
2	<i>Tachypleus tridentatus</i>	2.0	3.7
	<b>Mean (Range)</b>	<b>1.3 (0.5 - 2.0)</b>	<b>2.2 (0.7 - 3.7)</b>
<b>Monitoring Date: 16 December 2024</b>			
<b>Monitoring Station: TCB1</b>			
1	Unidentified <sup>(a)</sup>	0.6	0.7
	<b>Mean</b>	<b>0.6</b>	<b>0.7</b>
<b>Monitoring Date: 19 December 2024</b>			
<b>Monitoring Station: THW</b>			
1	<i>Tachypleus tridentatus</i>	2.3	4.0
2	Unidentified <sup>(a)</sup>	0.6	0.7
3	<i>Tachypleus tridentatus</i>	2.7	5.0
4	<i>Tachypleus tridentatus</i>	2.3	4.7
	<b>Mean (Range)</b>	<b>2.0 (0.6 - 2.7)</b>	<b>3.6 (0.7 - 5.0)</b>

Note:

- a) Three (3) horseshoe crab individuals, one (1) at TCB3, one (1) at TCB1 and one (1) at THW were recorded with prosomal width of 0.5-0.6 cm and total length of 0.7cm. These individuals were considered to be too small for species identification by the naked eye and were recorded as unidentified species.

**Table J2.2** *Results for Other Intertidal Soft Shore Communities during Qualitative Walk-through Surveys in December 2024*

<b>Monitoring Station</b>	<b>Shore Height *</b>	<b>No. of Species</b>
TCB1	H	21
	M	19
	L	21
	<b>Overall</b>	<b>30</b>
TCB2	H	24
	M	18
	L	12
	<b>Overall</b>	<b>27</b>
TCB3	H	22
	M	19
	L	22
	<b>Overall</b>	<b>30</b>
THW	H	21
	M	19
	L	13
	<b>Overall</b>	<b>32</b>

\* H: +2mCD; M: +1.5mCD; L: +1mCD

**Table J2.3 Results for Other Intertidal Soft Shore Communities during Quantitative Transect Surveys in December 2024**

Monitoring Station	Shore Height *	Top Three Dominant Species	Density (ind. / m <sup>2</sup> )
TCB1	H	1 <i>Cerithidea diadjariensis</i>	316.0
		2 <i>Cerithidea cingulata</i>	168.0
		3 <i>Batillaria multiformis</i>	94.4
	M	1 <i>Cerithidea cingulata</i>	272.8
		2 <i>Batillaria multiformis</i>	146.4
		3 <i>Cerithidea diadjariensis</i>	136.8
	L	1 <i>Batillaria zonalis</i>	52.8
		2 <i>Cerithidea cingulata</i>	30.4
		3 <i>Cerithidea diadjariensis</i>	28.8
TCB2	H	1 <i>Batillaria zonalis</i>	11.2
		2 <i>Cerithidea diadjariensis</i>	7.2
		3 <i>Batillaria multiformis</i>	5.6
	M	1 <i>Cerithidea diadjariensis</i>	8.8
		2 <i>Cerithidea cingulata</i>	5.6
		3 <i>Batillaria multiformis</i>	4.0
	L	1 <i>Cerithidea cingulata</i>	22.4
		2 <i>Cerithidea diadjariensis</i>	15.2
		3 <i>Batillaria zonalis</i>	12.0
TCB3	H	1 <i>Batillaria zonalis</i>	1408.8
		2 <i>Batillaria multiformis</i>	1393.6
		3 <i>Nassarius festivus</i>	644.0
	M	1 <i>Batillaria zonalis</i>	628.0
		2 <i>Batillaria multiformis</i>	423.2
		3 <i>Nassarius festivus</i>	295.2
	L	1 <i>Cerithidea diadjariensis</i>	73.6
		2 <i>Batillaria multiformis</i>	66.4
		3 <i>Batillaria zonalis</i>	54.4
THW	H	1 <i>Cerithidea diadjariensis</i>	306.4
		2 <i>Cerithidea cingulata</i>	168.8
		3 <i>Batillaria zonalis</i>	48.8
	M	1 <i>Nassarius festivus</i>	556.0
		2 <i>Cerithidea diadjariensis</i>	272.8
		3 <i>Cerithidea cingulata</i>	230.4
L	1 <i>Nassarius festivus</i>	852.8	
	2 <i>Cerithidea diadjariensis</i>	354.4	
	3 <i>Batillaria zonalis</i>	109.6	

\* H: +2mCD; M: +1.5mCD; L: +1mCD

Group	Species	TCB1			TCB2			TCB3			THW		
		H (Qual)	M (Qual)	L (Qual)	H (Qual)	M (Qual)	L (Qual)	H (Qual)	M (Qual)	L (Qual)	H (Qual)	M (Qual)	L (Qual)
Barnacle	<i>Balanus amphitrite</i>	+	+	+	+	+	+	+	+	+	+	+	+
Bivalve	<i>Anomalocardia squamosa</i>			++		+		+		+			
Bivalve	<i>Arcuatula senhousia</i>			+								+	
Bivalve	<i>Barbatia virescens</i>			+	+		+			+		+	
Bivalve	<i>Coecella chinensis</i>	+			+	+				+		+	
Bivalve	<i>Cyclina sinensis</i>	++	+					++					+
Bivalve	<i>Geloina erosa</i>	+	+		+	+					+++	++	+
Bivalve	<i>Laternula anatina</i>										+		
Bivalve	<i>Saccostrea cucullata</i>	+	+	+++	++	+	++	+	++	+++	+	++	+
Bivalve	<i>Septifer virgatus</i>	+	+	+	+	+	+	+	+	++		+	
Crab	<i>Macrophthalmus sp.</i>							+					
Crab	<i>Metapograpus frontalis</i>	+	+	+	+			+	+	+			
Crab	<i>Metapograpus quadridentatus</i>	+	+	+	+			+	+	+	+		
Crab	<i>Parasesarma pictum</i>									+			
Crab	<i>Perisesarma bidens</i>										+++		
Crab	<i>Uca arcuata</i>										+		
Crab	<i>Uca borealis</i>										+		
Crab	<i>Uca lactea</i>										+		
Crab	<i>Uca splendida</i>										+		
Fish	<i>Periophthalmus modestus</i>			+	+					+	+		
Gastropod	<i>Batillaria multiformis</i>	++	++	+	+	+	+	+++	+++	++		++	+
Gastropod	<i>Batillaria zonalis</i>	++	++	++	+	+	++	+++	+++	++	+	++	++
Gastropod	<i>Cellana grata</i>			+					+				
Gastropod	<i>Cellana toreuma</i>			+					+				
Gastropod	<i>Cerithidea cingulata</i>	++	+++	+	+	+	++	++	+++	++	+++	+++	++
Gastropod	<i>Cerithidea diadjarimensis</i>	+++	++	+	+	+	++	+++	+++	++	+++	+++	+++
Gastropod	<i>Cerithidea rhizophorarum</i>	+				+	+				++	+	
Gastropod	<i>Clithon spp.</i>	+	+		+	+		+	+	+		+	+
Gastropod	<i>Littoraria arduiniana</i>	+++						+			+		
Gastropod	<i>Littoraria articulata</i>	+	+	+	+	+	+	+	+	+			
Gastropod	<i>Littoraria melanostoma</i>	+			+			+			+		
Gastropod	<i>Lunella coronata</i>	+	++	+	+	+	+		++	+			
Gastropod	<i>Monodonta labio</i>	+	++	+++	++	+		+	+	++			
Gastropod	<i>Nassarius festivus</i>						+	+++	+++		+	+++	+++
Gastropod	<i>Nerita albicilla</i>				+	+		+	+	+		+	+
Gastropod	<i>Nerita chamaeleon</i>			+				+		+			
Gastropod	<i>Nerita polita</i>	+	+		++	+		+	+	++		+	+
Gastropod	<i>Patelloida pygmaea</i>				+								
Gastropod	<i>Terebralia palustris</i>										+	+	
Gastropod	<i>Terebralia sulcata</i>				+	+		+			++	+	
Gastropod	<i>Thais clavigera</i>	+	+										
Hermit Crab	<i>Clibanarius sp.</i>		+	+							+		
Hermit Crab	<i>Diogenes sp.</i>		+	+									+
Horseshoe Crab	<i>Tachypleus tridentatus</i>							+			+		
Horseshoe Crab	Unidentified sp.		+					+			+		
Sea Slater	<i>Ligia oceanica</i>				+								
Worm	<i>Oligochaete sp.</i>				+								
Worm	<i>Sipunculus sp.</i>							+	+				
Worm	Ribbon Worm sp.											+	

Remark: '+' denotes the species was relatively uncommon at the area;  
 '++' denotes the species was relatively common at the area;  
 '+++ ' denotes the species was relatively abundant at the area.



Group	Species	TCB1																	
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3	L4	L5	Density (ind. / m <sup>2</sup> or % cover)
Barnacle	<i>Balanus amphitrite</i>						0%						0%						0%
Bivalve	<i>Anomalocardia squamosa</i>						0						0	4			3	1	6.4
Bivalve	<i>Arcuatula senhousia</i>						0						0		2				1.6
Bivalve	<i>Barbatia virescens</i>						0						0	1					0.8
Bivalve	<i>Coecella chinensis</i>			1	1		1.6						0						0
Bivalve	<i>Cyclina sinensis</i>			1			0.8					1	0.8						0
Bivalve	<i>Geloina erosa</i>			2			1.6		1			1	1.6						0
Bivalve	<i>Saccostrea cucullata</i>			5%	5%		2%	10%		5%			3%	5%	10%		15%		6%
Bivalve	<i>Septifer virgatus</i>				<5%		<5%	0.05					1%						0%
Crab	<i>Macrophthalmus sp.</i>						0						0						0
Gastropod	<i>Batillaria multiformis</i>	6	9	42	56	5	94.4	17	17		83	66	146.4			4		9	10.4
Gastropod	<i>Batillaria zonalis</i>	13	7	4	9	2	28.0	2	9	16	50		61.6	12		6	34	14	52.8
Gastropod	<i>Cellana toreuma</i>						0						0						0
Gastropod	<i>Cerithidea cingulata</i>	38	108	18	8	38	168.0	76	83	123	17	42	272.8	4			21	13	30.4
Gastropod	<i>Cerithidea diadjarimensis</i>	111	48	99	61	76	316.0	38	18	41	42	32	136.8		34			2	28.8
Gastropod	<i>Cerithidea rhizophorarum</i>						0						0.0						0
Gastropod	<i>Clithon spp.</i>				3		2.4						0					2	1.6
Gastropod	<i>Littoraria articulata</i>						0						0						0
Gastropod	<i>Lunella coronata</i>				2		1.6		2			3	4.0						0
Gastropod	<i>Monodonta labio</i>						0		3			5	6.4		2				1.6
Gastropod	<i>Nassarius festivus</i>						0						0						0
Gastropod	<i>Nerita albicilla</i>						0						0						0
Gastropod	<i>Nerita chamaeleon</i>						0						0						0
Gastropod	<i>Nerita polita</i>						0						0						0
Gastropod	<i>Terebralia palustris</i>						0						0						0
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Gastropod	<i>Thais clavigera</i>		1				0.8		3				2.4						0
Hermit Crab	<i>Clibanarius sp.</i>						0						0			1			0.8
Hermit Crab	<i>Diogenes sp.</i>						0						0				1		0.8
Worm	<i>Oligochaete sp.</i>						0						0						0
Worm	<i>Sipunculus sp.</i>						0						0						0
Worm	Ribbon Worm sp.						0	2		2			3.2						0

Group	Species	TCB2																	
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3	L4	L5	Density (ind. / m <sup>2</sup> or % cover)
Barnacle	<i>Balanus amphitrite</i>						0%						0%						0%
Bivalve	<i>Anomalocardia squamosa</i>						0						0						0
Bivalve	<i>Arcuatula senhousia</i>						0						0						0
Bivalve	<i>Barbatia virescens</i>						0						0						0
Bivalve	<i>Coecella chinensis</i>	1					0.8		3				2.4				1		0.8
Bivalve	<i>Cyclina sinensis</i>						0						0				1		0.8
Bivalve	<i>Geloina erosa</i>						0						0						0
Bivalve	<i>Saccostrea cucullata</i>						0%		<5%				<5%	<5%			<5%		<5%
Bivalve	<i>Septifer virgatus</i>						0%						0%				<5%		<5%
Crab	<i>Macrophthalmus sp.</i>						0						0						0
Gastropod	<i>Batillaria multiformis</i>				2	5	5.6				3	2	4.0					2	1.6
Gastropod	<i>Batillaria zonalis</i>			5	3	6	11.2						3.2	2	2	2	5	4	12.0
Gastropod	<i>Cellana toreuma</i>						0						0						0
Gastropod	<i>Cerithidea cingulata</i>				6		4.8	2		4		1	5.6	6	2	9	4	7	22.4
Gastropod	<i>Cerithidea diadjarimensis</i>				7	2	7.2		3	6		2	8.8	7		8	2	2	15.2
Gastropod	<i>Cerithidea rhizophorarum</i>						0						0						0
Gastropod	<i>Clithon spp.</i>						0						0						0
Gastropod	<i>Littoraria articulata</i>						0						0						0
Gastropod	<i>Lunella coronata</i>						0						0						0
Gastropod	<i>Monodonta labio</i>						0						0						0
Gastropod	<i>Nassarius festivus</i>						0						0		1				0.8
Gastropod	<i>Nerita albicilla</i>						0						0						0
Gastropod	<i>Nerita chamaeleon</i>						0						0						0
Gastropod	<i>Nerita polita</i>						0						0						0
Gastropod	<i>Terebralia palustris</i>						0						0						0
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Gastropod	<i>Thais clavigera</i>						0						0						0
Hermit Crab	<i>Clibanarius sp.</i>						0						0						0
Hermit Crab	<i>Diogenes sp.</i>						0						0						0
Worm	<i>Oligochaete sp.</i>				6		4.8						0						0
Worm	<i>Sipunculus sp.</i>						0						0						0
Worm	Ribbon Worm sp.						0	2					1.6						0

Group	Species	TCB3															Density (ind. / m <sup>2</sup> or % cover)			
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3		L4	L5	Density (ind. / m <sup>2</sup> or % cover)
Barnacle	<i>Balanus amphitrite</i>						0%						0%						<5%	<5%
Bivalve	<i>Anomalocardia squamosa</i>	1					0.8						0						1	0.8
Bivalve	<i>Arcuatula senhousia</i>						0						0							0
Bivalve	<i>Barbatia virescens</i>						0						0				3		1	3.2
Bivalve	<i>Coecella chinensis</i>						0						0						1	0.8
Bivalve	<i>Cyclina sinensis</i>		5			2	5.6						0							0
Bivalve	<i>Geloina erosa</i>						0						0							0
Bivalve	<i>Saccostrea cucullata</i>						0%	5%	5%		10%	15%	7%	10%	20%	25%	5%	25%	17%	
Bivalve	<i>Septifer virgatus</i>						0%						0%						<5%	0%
Crab	<i>Macrophthalmus sp.</i>				1		0.8						0							0
Gastropod	<i>Batillaria multiformis</i>	444	402	294	516	86	1393.6	178	28	146	39	138	423.2	44	24	8	4	3	66.4	
Gastropod	<i>Batillaria zonalis</i>	284	495	324	414	244	1408.8	177	42	332	78	156	628.0	26	9	17	14	2	54.4	
Gastropod	<i>Cellana toreuma</i>						0	1					0.8							0
Gastropod	<i>Cerithidea cingulata</i>	11	25	4	15	34	71.2	6	22	64	59	48	159.2	20	16	20	3		47.2	
Gastropod	<i>Cerithidea diadjarimensis</i>	54	22	6	16	12	88.0	31	20	70	28	56	164.0	25		54	12	1	73.6	
Gastropod	<i>Cerithidea rhizophorarum</i>						0						0							0
Gastropod	<i>Clithon spp.</i>	3					2.4	1					0.8	2						1.6
Gastropod	<i>Littoraria articulata</i>						0	5					4.0							0
Gastropod	<i>Lunella coronata</i>						0	4					3.2	4	3	2			4	10.4
Gastropod	<i>Monodonta labio</i>						0						0	3		3			5	8.8
Gastropod	<i>Nassarius festivus</i>	194	139	187	218	67	644.0	330	6	28		5	295.2							0
Gastropod	<i>Nerita albicilla</i>						0						0			2				1.6
Gastropod	<i>Nerita chamaeleon</i>						0						0						4	3.2
Gastropod	<i>Nerita polita</i>						0						0						2	1.6
Gastropod	<i>Terebralia palustris</i>						0						0							0
Gastropod	<i>Terebralia sulcata</i>						0						0							0
Gastropod	<i>Thais clavigera</i>						0						0							0
Hermit Crab	<i>Clibanarius sp.</i>						0						0							0
Hermit Crab	<i>Diogenes sp.</i>						0						0							0
Worm	<i>Oligochaete sp.</i>						0						0							0
Worm	<i>Sipunculus sp.</i>						0				5		4.0						1	0.8
Worm	Ribbon Worm sp.						0						0							0

Group	Species	THW															Density (ind. / m <sup>2</sup> or % cover)			
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3		L4	L5	Density (ind. / m <sup>2</sup> or % cover)
Barnacle	<i>Balanus amphitrite</i>						0%	<5%						<5%						0%
Bivalve	<i>Anomalocardia squamosa</i>						0							0						0
Bivalve	<i>Arcuatula senhousia</i>						0	1						0.8						0
Bivalve	<i>Barbatia virescens</i>						0	2						1.6						0
Bivalve	<i>Coecella chinensis</i>						0		1					0.8						0
Bivalve	<i>Cyclina sinensis</i>						0							0		1		1		1.6
Bivalve	<i>Geloina erosa</i>	5	7	9	7	13	32.8	1	5	1		5	9.6		1		6		5.6	
Bivalve	<i>Saccostrea cucullata</i>						0%	20%	10%	10%				8%	<5%					0%
Bivalve	<i>Septifer virgatus</i>						0%	10%						1%						0%
Crab	<i>Macrophthalmus sp.</i>						0							0						0
Gastropod	<i>Batillaria multiformis</i>						0	42	12					43.2						0
Gastropod	<i>Batillaria zonalis</i>		12	10	14	25	48.8	20	16	11	2	12	48.8	82	26	6	7	16	109.6	
Gastropod	<i>Cellana toreuma</i>						0							0						0
Gastropod	<i>Cerithidea cingulata</i>	34	44	90	12	31	168.8	52	80	28	34	94	230.4	29	8	67	14	3	96.8	
Gastropod	<i>Cerithidea diadjarimensis</i>	56	72	69	66	120	306.4	130	75	40	38	58	272.8	154	82	56	53	98	354.4	
Gastropod	<i>Cerithidea rhizophorarum</i>						0			2	4			5						0
Gastropod	<i>Clithon spp.</i>						0	2						1.6						0
Gastropod	<i>Littoraria articulata</i>						0							0						0
Gastropod	<i>Lunella coronata</i>						0							0						0
Gastropod	<i>Monodonta labio</i>						0							0						0
Gastropod	<i>Nassarius festivus</i>					4	3.2	262	74	70	168	121	556.0	70	26	322	600	48	852.8	
Gastropod	<i>Nerita albicilla</i>						0	3						2.4	1					0.8
Gastropod	<i>Nerita chamaeleon</i>						0							0						0
Gastropod	<i>Nerita polita</i>						0	4						3.2						0
Gastropod	<i>Terebralia palustris</i>						0					2	1.6							0
Gastropod	<i>Terebralia sulcata</i>			1			0.8							0						0
Gastropod	<i>Thais clavigera</i>						0							0						0
Hermit Crab	<i>Clibanarius sp.</i>						0							0						0
Hermit Crab	<i>Diogenes sp.</i>						0							0	1					0.8
Worm	<i>Oligochaete sp.</i>						0					1	0.8							0
Worm	<i>Sipunculus sp.</i>						0							0						0
Worm	Ribbon Worm sp.						0		1					0.8						0



**ERM**

ANNEX J3 EVENT AND ACTION PLAN

*Annex J3 Event and Action Plan for Soft Shore Ecological Monitoring*

Event	Action			
	ET	IEC	ER	Contractor
Density or the distribution pattern of horseshoe crab, seagrass and intertidal soft shore communities recorded in the impact or post-construction monitoring are significantly lower than or different from those recorded in the baseline monitoring.	<ol style="list-style-type: none"> <li>1. Review historical data to ensure differences are as a result of natural variation or previously observed seasonal differences;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform the IEC, ER and Contractor;</li> <li>4. Check monitoring data;</li> <li>5. Discuss additional monitoring and any other measures, with the IEC, ER and Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET;</li> <li>2. Make agreement on the measures to be implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and in writing;</li> <li>2. Discuss with the ET and the IEC and propose measures to the IEC and the ER;</li> <li>3. Implement the agreed measures;</li> <li>4. Resubmit proposals of remedial actions if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>