Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-1

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction: Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise	SPL
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS													
Package 1 - Construction of Tunnels and Caverns for relocated STSTW													
Blasting Submission													
Access Road for Magazine at A Kung Kok Road													
Construction of Temporary Haul Road													
Construction of Access Road													
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1121.2	-46.2	0.0	-7.0	0.0	-27.0	6.0	-20.0	20.4
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1121.2	-46.2	0.0	-7.0	0.0	-27.0	6.0	-20.0	20.4
M1050	Permanent Slope Works	Drilling rig	3	114.6	1121.2	-46.2	0.0	-7.0	0.0	-27.0	4.8	-20.0	19.2
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1121.2	-46.2	0.0	-7.0	0.0	-27.0	4.8	-20.0	14.1
Construction of Explosive Compound Structure													
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1121.2	-46.2	0.0	-7.0	0.0	-27.0	3.0	-20.0	11.7
Inspection & Approval													
Main Access Tunnel													
Natural Terrain Hazard Mitigation Works-1													
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Temporary Road Construction													
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Pilot Construction Adit													
Preparation Works													
Site Formation Works of Portal													
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	3.0	-20.0	35.4
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	32.4
Excavation of Adit Tunnel													
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Main Access Tunnel Portal (East)													
Preparation Works													
Site Formation Works of Portal (East)													
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	32.4
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	4.8	-20.0	42.3
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Excavation of 16m wide Tunnel (East)													
Main Access Tunnel Portal (West)													
Preparation Works													
Excavation of 16m wide Tunnel (West)													
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Site Formation Works of Portal (West)													
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	10.0	-20.0	47.5
A1190	Testing for bored piles	Drilling rig	4	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	6.0	-20.0	43.5
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	32.4
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	6.0	-20.0	43.5
A1210.1	Piling Works	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1210.1	Piling Works	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Main Access Tunnel (26m wide)													
Excavation Works													
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.0
Cavern Construction													
Cavern Excavation (Drill & Blast)													
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	10.0	-20.0	32.8
Vent Shaft at A Kung Kok Shan													
Vent Shaft at A Kung Kok Shan													
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	828.9	-43.6	0.0	-7.0	0.0	-27.0	3.0	-20.0	14.9
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	828.9	-43.6	0.0	-7.0	0.0	-27.0	6.0	-20.0	23.0
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	828.9	-43.6	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.0
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	828.9	-43.6	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.0
Emergency Access Tunnel Portal													
Preparation Works													
Construction Works													
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	10.0	-20.0	32.8
A1290	Testing for bored piles	Drilling rig	4	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	428.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.7
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
Construction of effluent pipeline													
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.1
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.1
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A3000	Remaining Works	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A3000	Remaining Works	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.0
A1941	Soft ground excavation	Drilling rig	1	114.6	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.0
A1944	Micro TBM drive	TBM	1	115.9	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	38.4
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.9
Completion of Package 1													
Package 2 - Civil and E&M Works and T&C of relocated STSTW													
E&M Installation													
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	426.2	-37.8	0.0	-7.0	0.0	-27.0	4.8	-20.0	21.9
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.7
Emergency Outfall Construction													
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	137.8	-28.0	0.0	-7.0	0.0	-27.0	0.0	-20.0	33.9
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	137.8	-28.0	0.0	-7.0	0.0	-27.0	0.0	-20.0	33.9
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	137.8	-28.0	0.0	-7.0	0.0	-27.0	0.0	-20.0	33.9
Test & Commissioning/Inspection & Handover													
Package 3 - Construction of Ancillary Facilities													
Administration Buildings and other ancillary facilities construction													
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	3.0	-20.0	35.4
Package 4 - Decommissioning and Demolition of Existing STSTW													
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
Project Completion													

* For distance >300m, noise assessment will be excluded

2018

Activity ID	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1050	-	-	-	-	-	-	-	-	-	-	-	-
M1060	-	-	-	-	-	-	-	-	-	-	-	-
M1110	-	-	-	-	-	-	-	-	-	-	-	-
A1550	-	-	-	-	-	-	32	32	32	32	32	32
A1560	-	-	-	-	-	-	32	32	32	32	32	32
A1570	-	-	-	-	-	-	32	32	32	32	32	32
A1580	-	-	-	-	-	-	32	32	32	32	32	32
A1580	-	-	-	-	-	-	37	37	37	37	37	37
A2120	-	-	-	-	-	-	-	-	37	37	37	-
A1020	-	-	-	-	-	-	35	35	35	-	-	-
A1030	-	-	-	-	-	-	37	37	37	-	-	-
A1040	-	-	-	-	-	-	-	-	32	32	-	-
A1060	-	-	-	-	-	-	-	-	-	-	37	37
A1070	-	-	-	-	-	-	-	-	-	-	-	-
A1100	-	-	-	-	-	-	-	-	32	32	32	32
A1110	-	-	-	-	-	-	-	-	-	-	-	42
A1120	-	-	-	-	-	-	-	-	-	-	-	-
A1620	-	-	-	-	-	-	-	-	-	-	-	-
A1170	-	-	-	-	-	-	-	-	-	-	-	47
A1190	-	-	-	-	-	-	-	-	-	-	-	-
A1200	-	-	-	-	-	-	-	-	-	-	-	-
A1210	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1220	-	-	-	-	-	-	-	-	-	-	-	-
A1520	-	-	-	-	-	-	-	-	-	-	-	-
A1630	-	-	-	-	-	-	-	-	-	-	-	-
A1631	-	-	-	-	-	-	-	-	-	-	-	-
A1850	-	-	-	-	-	-	-	-	-	-	-	-
A1851	-	-	-	-	-	-	-	-	-	-	-	-
A1860	-	-	-	-	-	-	-	-	-	-	-	-
A1861	-	-	-	-	-	-	-	-	-	-	-	-
A1870	-	-	-	-	-	-	-	-	-	-	-	-
A1871	-	-	-	-	-	-	-	-	-	-	-	-
A1880	-	-	-	-	-	-	-	-	-	-	-	-
A1890	-	-	-	-	-	-	-	-	-	-	-	-
A1900	-	-	-	-	-	-	-	-	-	-	-	-
A1910	-	-	-	-	-	-	-	-	-	-	-	-
A1920	-	-	-	-	-	-	-	-	-	-	-	-
A1930	-	-	-	-	-	-	-	-	-	-	-	-
A1390	-	-	-	-	-	-	-	-	-	-	-	-
A1400	-	-	-	-	-	-	-	-	-	-	-	-
A1660	-	-	-	-	-	-	-	-	-	-	-	-
A1661	-	-	-	-	-	-	-	-	-	-	-	-
A1270	-	-	-	-	-	-	-	-	-	-	-	-
A1290	-	-	-	-	-	-	-	-	-	-	-	-
A1300	-	-	-	-	-	-	-	-	-	-	-	-
A1320	-	-	-	-	-	-	-	-	-	-	-	-
A1330	-	-	-	-	-	-	-	-	-	-	-	-
A2940	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2980	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A1940	-	-	-	-	-	-	-	-	-	-	-	-
A1941	-	-	-	-	-	-	-	-	-	-	-	-
A1944	-	-	-	-	-	-	-	-	-	-	-	-
A1945	-	-	-	-	-	-	-	-	-	-	-	-
A1710	-	-	-	-	-	-	-	-	-	-	-	-
A1730	-	-	-	-	-	-	-	-	-	-	-	-
A1790	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	-	-	-	-	-
A1810	-	-	-	-	-	-	-	-	-	-	-	-
A1430	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
Total SPL per period	0	0	0	0	0	0	43	43	45	43	44	50
Criteria	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N

2019

Activity ID	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1050	-	-	-	-	-	-	-	-	-	-	-	-
M1060	-	-	-	-	-	-	-	-	-	-	-	-
M1110	-	-	-	-	-	-	-	-	-	-	-	-
A1550	32	32	32	32	-	-	-	-	-	-	-	-
A1560	32	32	32	32	-	-	-	-	-	-	-	-
A1570	32	32	32	32	-	-	-	-	-	-	-	-
A1580	32	32	32	32	-	-	-	-	-	-	-	-
A1580	37	37	37	37	-	-	-	-	-	-	-	-
A2120	-	-	-	-	-	-	-	-	-	-	-	-
A1020	-	-	-	-	-	-	-	-	-	-	-	-
A1030	-	-	-	-	-	-	-	-	-	-	-	-
A1040	-	-	-	-	-	-	-	-	-	-	-	-
A1060	37	37	37	37	-	-	-	-	-	-	-	-
A1070	-	-	-	-	-	37	37	-	-	-	-	-
A1100	32	32	32	-	-	-	-	-	-	-	-	-
A1110	42	42	42	42	42	42	42	-	-	-	-	-
A1120	-	-	-	-	-	-	37	37	37	37	37	37
A1620	-	-	-	-	-	-	-	-	-	-	-	-
A1170	47	47	47	47	-	-	-	-	-	-	-	-
A1190	-	-	44	44	44	44	44	44	44	44	44	44
A1200	-	-	-	-	-	-	-	-	-	-	-	-
A1210	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1220	-	-	-	-	-	-	-	-	-	-	-	-
A1520	-	-	-	-	-	-	37	37	37	37	37	37
A1630	-	-	-	-	-	-	-	-	-	-	-	-
A1631	-	-	-	-	-	-	-	-	-	-	-	-
A1850	-	-	-	-	-	-	-	-	-	-	-	-
A1851	-	-	-	-	-	-	-	-	-	-	-	-
A1860	-	-	-	-	-	-	-	-	-	-	-	-
A1861	-	-	-	-	-	-	-	-	-	-	-	-
A1870	-	-	-	-	-	-	-	-	-	-	-	-
A1871	-	-	-	-	-	-	-	-	-	-	-	-
A1880	-	-	-	-	-	-	-	-	-	-	-	-
A1890	-	-	-	-	-	-	-	-	-	-	-	-
A1900	-	-	-	-	-	-	-	-	-	-	-	-
A1910	-	-	-	-	-	-	-	-	-	-	-	-
A1920	-	-	-	-	-	-	-	-	-	-	-	-
A1930	-	-	-	-	-	-	-	-	-	-	-	-
A1390	-	-	-	-	-	-	-	-	-	-	-	-
A1400	-	-	-	-	-	-	-	-	-	-	-	-
A1660	-	-	-	-	-	-	-	-	-	-	-	-
A1661	-	-	-	-	-	-	-	-	-	-	-	-
A1270	-	-	-	-	-	-	-	-	-	-	-	-
A1290	-	-	-	-	-	-	-	-	-	-	-	-
A1300	-	-	-	-	-	-	-	-	-	-	-	-
A1320	-	-	-	-	-	-	-	-	-	-	-	-
A1330	-	-	-	-	-	-	-	-	-	-	-	-
A2940	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2980	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A1940	-	-	-	-	-	-	-	-	-	-	-	-
A1941	-	-	-	-	-	-	-	-	-	-	-	-
A1944	-	-	-	-	-	-	-	-	-	-	-	-
A1945	-	-	-	-	-	-	-	-	-	-	-	-
A1710	-	-	-	-	-	-	-	-	-	-	-	-
A1730	-	-	-	-	-	-	-	-	-	-	-	-
A1790	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	-	-	-	-	-
A1810	-	-	-	-	-	-	-	-	-	-	-	-
A1430	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
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A1453	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
Total SPL per period	50	50	51	51	46	47	47	45	45	45	45	45
Criteria	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N

2020

Activity ID	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1050	-	-	-	-	-	-	-	-	-	-	-	-
M1060	-	-	-	-	-	-	-	-	-	-	-	-
M1110	-	-	-	-	-	-	-	-	-	-	-	-
A1550	-	-	-	-	-	-	-	-	-	-	-	-
A1560	-	-	-	-	-	-	-	-	-	-	-	-
A1570	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A2120	-	-	-	-	-	-	-	-	-	-	-	-
A1020	-	-	-	-	-	-	-	-	-	-	-	-
A1030	-	-	-	-	-	-	-	-	-	-	-	-
A1040	-	-	-	-	-	-	-	-	-	-	-	-
A1060	-	-	-	-	-	-	-	-	-	-	-	-
A1070	-	-	-	-	-	-	-	-	-	-	-	-
A1100	-	-	-	-	-	-	-	-	-	-	-	-
A1110	-	-	-	-	-	-	-	-	-	-	-	-
A1120	37	37	-	-	-	-	-	-	-	-	-	-
A1620	-	-	-	-	-	37	37	-	-	-	-	-
A1170	-	-	-	-	-	-	-	-	-	-	-	-
A1190	44	-	-	-	-	-	-	-	-	-	-	-
A1200	-	-	32	-	-	-	-	-	-	-	-	-
A1210	-	-	-	44	44	44	44	44	44	44	44	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1220	-	-	-	-	-	-	-	-	-	-	-	-
A1520	37	37	-	-	-	-	-	-	-	-	-	-
A1630	-	-	-	-	-	-	-	-	-	-	-	-
A1631	-	-	-	-	-	-	-	-	-	-	-	-
A1850	-	-	-	-	-	-	-	-	-	-	-	-
A1851	-	-	-	-	-	-	-	-	-	-	-	-
A1860	-	-	-	-	-	-	-	-	-	-	-	-
A1861	-	-	-	-	-	-	-	-	-	-	-	-
A1870	-	-	-	-	-	-	-	-	-	-	-	-
A1871	-	-	-	-	-	-	-	-	-	-	-	-
A1880	-	-	-	-	-	-	-	-	-	-	-	-
A1890	-	-	-	-	-	-	-	-	-	-	-	-
A1900	-	-	-	-	-	-	-	-	-	-	-	-
A1910	-	-	-	-	-	-	-	-	-	-	-	-
A1920	-	-	-	-	-	-	-	-	-	-	-	-
A1930	-	-	-	-	-	-	-	-	-	-	-	-
A1390	-	-	-	-	-	-	-	-	-	-	-	-
A1400	-	-	-	-	-	-	-	-	-	-	-	-
A1660	-	-	-	-	-	-	-	-	-	-	-	-
A1661	-	-	-	-	-	-	-	-	-	-	-	-
A1270	-	-	-	-	-	-	-	-	-	-	-	-
A1290	-	-	-	-	-	-	-	-	-	-	-	-
A1300	-	-	-	-	-	-	-	-	-	-	-	-
A1320	-	-	-	-	-	-	-	-	-	-	-	-
A1330	-	-	-	-	-	-	-	-	-	-	-	-
A2940	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2980	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A1940	-	-	-	-	-	-	-	-	-	-	-	-
A1941	-	-	-	-	-	-	-	-	-	-	-	-
A1944	-	-	-	-	-	-	-	-	-	-	-	-
A1945	-	-	-	-	-	-	-	-	-	-	-	-
A1710	-	-	-	-	-	-	-	-	-	-	-	-
A1730	-	-	-	-	-	-	-	-	-	-	-	-
A1790	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	-	-	-	-	-
A1810	-	-	-	-	-	-	-	-	-	-	-	-
A1430	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
Total SPL per period	45	40	32	44	44	44	44	44	44	44	44	0
Criteria	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N

2021

Activity ID	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1050	-	-	-	-	-	-	-	-	-	-	-	-
M1060	-	-	-	-	-	-	-	-	-	-	-	-
M1110	-	-	-	-	-	-	-	-	-	-	-	-
A1550	-	-	-	-	-	-	-	-	-	-	-	-
A1560	-	-	-	-	-	-	-	-	-	-	-	-
A1570	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A2120	-	-	-	-	-	-	-	-	-	-	-	-
A1020	-	-	-	-	-	-	-	-	-	-	-	-
A1030	-	-	-	-	-	-	-	-	-	-	-	-
A1040	-	-	-	-	-	-	-	-	-	-	-	-
A1060	-	-	-	-	-	-	-	-	-	-	-	-
A1070	-	-	-	-	-	-	-	-	-	-	-	-
A1100	-	-	-	-	-	-	-	-	-	-	-	-
A1110	-	-	-	-	-	-	-	-	-	-	-	-
A1120	-	-	-	-	-	-	-	-	-	-	-	-
A1620	-	-	-	-	-	-	-	-	-	-	-	-
A1170	-	-	-	-	-	-	-	-	-	-	-	-
A1190	-	-	-	-	-	-	-	-	-	-	-	-
A1200	-	-	-	-	-	-	-	-	-	-	-	-
A1210	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1220	-	-	37	37	37	-	-	-	-	-	-	-
A1520	-	-	-	-	-	-	-	-	-	-	-	-
A1630	-	-	-	-	-	-	-	-	-	-	-	-
A1631	-	-	-	-	-	-	-	-	-	-	-	-
A1850	-	-	-	-	-	-	-	-	-	-	-	-
A1851	-	-	-	-	-	-	-	-	-	-	-	-
A1860	-	-	-	-	-	-	-	-	-	-	-	-
A1861	-	-	-	-	-	-	-	-	-	-	-	-
A1870	-	-	-	-	-	-	-	-	-	-	-	-
A1871	-	-	-	-	-	-	-	-	-	-	-	-
A1880	-	-	-	-	-	-	-	-	-	-	-	-
A1890	-	-	-	-	-	-	-	-	-	-	-	-
A1900	-	-	-	-	-	-	-	-	-	-	-	-
A1910	-	-	-	-	-	-	-	-	-	-	-	-
A1920	-	-	-	-	-	-	-	-	-	-	-	-
A1930	-	-	-	-	-	-	-	-	-	-	-	-
A1390	-	-	-	-	-	-	-	-	-	-	-	-
A1400	-	-	-	-	-	-	-	-	-	-	-	-
A1660	-	-	-	-	-	-	-	-	-	-	-	-
A1661	-	-	-	-	-	-	-	-	-	-	-	-
A1270	-	-	-	-	-	-	-	-	-	-	-	-
A1290	-	-	-	-	-	-	-	-	-	-	-	-
A1300	-	-	-	-	-	-	-	-	-	-	-	-
A1320	-	-	-	-	-	-	-	-	-	-	-	-
A1330	-	-	-	-	-	-	-	-	-	-	-	-
A2940	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2980	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A1940	-	-	-	-	-	-	-	-	-	-	-	-
A1941	-	-	-	-	-	-	-	-	-	-	-	-
A1944	-	-	-	-	-	-	-	-	-	-	-	-
A1945	-	-	-	-	-	-	-	-	-	-	-	-
A1710	-	-	-	-	-	-	-	-	-	-	-	-
A1730	-	-	-	-	-	-	-	-	-	-	-	-
A1790	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	-	-	-	-	-
A1810	-	-	-	-	-	-	-	-	-	-	-	-
A1430	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
Total SPL per period	0	0	37	37	37	0	0	0	0	0	0	0
Criteria	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N

2022

Activity ID	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1050	-	-	-	-	-	-	-	-	-	-	-	-
M1060	-	-	-	-	-	-	-	-	-	-	-	-
M1110	-	-	-	-	-	-	-	-	-	-	-	-
A1550	-	-	-	-	-	-	-	-	-	-	-	-
A1560	-	-	-	-	-	-	-	-	-	-	-	-
A1570	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A2120	-	-	-	-	-	-	-	-	-	-	-	-
A1020	-	-	-	-	-	-	-	-	-	-	-	-
A1030	-	-	-	-	-	-	-	-	-	-	-	-
A1040	-	-	-	-	-	-	-	-	-	-	-	-
A1060	-	-	-	-	-	-	-	-	-	-	-	-
A1070	-	-	-	-	-	-	-	-	-	-	-	-
A1100	-	-	-	-	-	-	-	-	-	-	-	-
A1110	-	-	-	-	-	-	-	-	-	-	-	-
A1120	-	-	-	-	-	-	-	-	-	-	-	-
A1620	-	-	-	-	-	-	-	-	-	-	-	-
A1170	-	-	-	-	-	-	-	-	-	-	-	-
A1190	-	-	-	-	-	-	-	-	-	-	-	-
A1200	-	-	-	-	-	-	-	-	-	-	-	-
A1210	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1220	-	-	-	-	-	-	-	-	-	-	-	-
A1520	-	-	-	-	-	-	-	-	-	-	-	-
A1630	-	-	-	-	-	-	-	-	-	-	-	-
A1631	-	-	-	-	-	-	-	-	-	-	-	-
A1850	-	-	-	-	-	-	-	-	-	-	-	-
A1851	-	-	-	-	-	-	-	-	-	-	-	-
A1860	-	-	-	-	-	-	-	-	-	-	-	-
A1861	-	-	-	-	-	-	-	-	-	-	-	-
A1870	-	-	-	-	-	-	-	-	-	-	-	-
A1871	-	-	-	-	-	-	-	-	-	-	-	-
A1880	-	-	-	-	-	-	-	-	-	-	-	-
A1890	-	-	-	-	-	-	-	-	-	-	-	-
A1900	-	-	-	-	-	-	-	-	-	-	-	-
A1910	-	-	-	-	-	-	-	-	-	-	-	-
A1920	-	-	-	-	-	-	-	-	-	-	-	-
A1930	-	-	-	-	-	-	-	-	-	-	-	-
A1390	-	-	-	-	-	-	-	-	-	-	-	-
A1400	-	-	-	-	-	-	-	-	-	-	-	-
A1660	-	-	-	-	-	-	-	-	-	-	-	-
A1661	-	-	-	-	-	-	-	-	-	-	-	-
A1270	-	-	-	-	-	-	-	-	-	-	-	-
A1290	-	-	-	-	-	-	-	-	-	-	-	-
A1300	-	-	-	-	-	-	-	-	-	-	-	-
A1320	-	-	-	-	-	-	-	-	-	-	-	-
A1330	-	-	-	-	-	-	-	-	-	-	-	-
A2940	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2980	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A1940	-	-	-	-	-	-	-	-	-	-	-	-
A1941	-	-	-	37	37	37	37	37	37	37	37	37
A1944	-	-	-	-	-	-	-	-	-	-	-	-
A1945	-	-	-	-	-	-	-	-	-	-	-	-
A1710	-	-	-	-	-	-	-	-	-	-	-	-
A1730	-	-	-	-	-	-	-	-	-	-	-	-
A1790	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	-	-	-	-	-
A1810	-	-	-	-	-	-	-	-	-	-	-	-
A1430	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
Total SPL per period	0	0	0	37	37	37	37	37	37	37	37	37
Criteria	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N

2023

Activity ID	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1040	-	-	-	-	-	-	-	-	-	-	-	-
M1050	-	-	-	-	-	-	-	-	-	-	-	-
M1060	-	-	-	-	-	-	-	-	-	-	-	-
M1110	-	-	-	-	-	-	-	-	-	-	-	-
A1550	-	-	-	-	-	-	-	-	-	-	-	-
A1560	-	-	-	-	-	-	-	-	-	-	-	-
A1570	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-
A2120	-	-	-	-	-	-	-	-	-	-	-	-
A1020	-	-	-	-	-	-	-	-	-	-	-	-
A1030	-	-	-	-	-	-	-	-	-	-	-	-
A1040	-	-	-	-	-	-	-	-	-	-	-	-
A1060	-	-	-	-	-	-	-	-	-	-	-	-
A1070	-	-	-	-	-	-	-	-	-	-	-	-
A1100	-	-	-	-	-	-	-	-	-	-	-	-
A1110	-	-	-	-	-	-	-	-	-	-	-	-
A1120	-	-	-	-	-	-	-	-	-	-	-	-
A1620	-	-	-	-	-	-	-	-	-	-	-	-
A1170	-	-	-	-	-	-	-	-	-	-	-	-
A1190	-	-	-	-	-	-	-	-	-	-	-	-
A1200	-	-	-	-	-	-	-	-	-	-	-	-
A1210	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-
A1220	-	-	-	-	-	-	-	-	-	-	-	-
A1520	-	-	-	-	-	-	-	-	-	-	-	-
A1630	-	-	-	-	-	-	-	-	-	-	-	-
A1631	-	-	-	-	-	-	-	-	-	-	-	-
A1850	-	-	-	-	-	-	-	-	-	-	-	-
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A1860	-	-	-	-	-	-	-	-	-	-	-	-
A1861	-	-	-	-	-	-	-	-	-	-	-	-
A1870	-	-	-	-	-	-	-	-	-	-	-	-
A1871	-	-	-	-	-	-	-	-	-	-	-	-
A1880	-	-	-	-	-	-	-	-	-	-	-	-
A1890	-	-	-	-	-	-	-	-	-	-	-	-
A1900	-	-	-	-	-	-	-	-	-	-	-	-
A1910	-	-	-	-	-	-	-	-	-	-	-	-
A1920	-	-	-	-	-	-	-	-	-	-	-	-
A1930	-	-	-	-	-	-	-	-	-	-	-	-
A1390	-	-	-	-	-	-	-	-	-	-	-	-
A1400	-	-	-	-	-	-	-	-	-	-	-	-
A1660	-	-	-	-	-	-	-	-	-	-	-	-
A1661	-	-	-	-	-	-	-	-	-	-	-	-
A1270	-	-	-	-	-	-	-	-	-	-	-	-
A1290	-	-	-	-	-	-	-	-	-	-	-	-
A1300	-	-	-	-	-	-	-	-	-	-	-	-
A1320	-	-	-	-	-	-	-	-	-	-	-	-
A1330	-	-	-	-	-	-	-	-	-	-	-	-
A2940	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-
A2980	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-
A1940	-	-	-	-	-	-	-	-	-	-	-	-
A1941	37	-	-	-	-	-	-	-	-	-	-	-
A1944	-	-	38	38	38	38	38	38	38	38	38	38
A1945	-	-	-	-	-	-	-	-	-	-	-	-
A1710	-	-	-	-	-	-	-	-	-	-	-	-
A1730	-	-	-	-	-	-	-	-	-	-	-	-
A1790	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	-	-	-	-	-
A1810	-	-	-	-	-	-	-	-	-	-	-	-
A1430	-	-	-	-	-	-	-	-	35	35	35	35
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-
Total SPL per period	37	0	38	38	38	38	38	38	40	40	40	40
Criteria	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: **GBNSR-1**

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise	
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS													
Package 1 - Construction of Tunnels and Caverns for relocated STSTW													
Blasting Submission													
Access Road for Magazine at A Kung Kok Road													
Construction of Temporary Haul Road													
Construction of Access Road													
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1121.2	-46.2	0.0	-7.0	0.0	-27.0	6.0	-20.0	20.4
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1121.2	-46.2	0.0	-7.0	0.0	-27.0	6.0	-20.0	20.4
M1050	Permanent Slope Works	Drilling rig	3	114.6	1121.2	-46.2	0.0	-7.0	0.0	-27.0	4.8	-20.0	19.2
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1121.2	-46.2	0.0	-7.0	0.0	-27.0	4.8	-20.0	14.1
Construction of Explosive Compound Structure													
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1121.2	-46.2	0.0	-7.0	0.0	-27.0	3.0	-20.0	11.7
Inspection & Approval													
Main Access Tunnel													
Natural Terrain Hazard Mitigation Works-1													
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.8
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Temporary Road Construction													
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Pilot Construction Adit													
Preparation Works													
Site Formation Works of Portal													
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	3.0	-20.0	35.4
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	32.4
Excavation of Adit Tunnel													
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Main Access Tunnel Portal (East)													
Preparation Works													
Site Formation Works of Portal (East)													
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	32.4
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	4.8	-20.0	42.3
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Excavation of 16m wide Tunnel (East)													
Main Access Tunnel Portal (West)													
Preparation Works													
Excavation of 16m wide Tunnel (West)													
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Site Formation Works of Portal (West)													
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	10.0	-20.0	47.5
A1190	Testing for bored piles	Drilling rig	4	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	6.0	-20.0	43.5
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	32.4
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	6.0	-20.0	43.5
A1210.1	Piling Works	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1210.1	Piling Works	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	78.5	-23.1	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.5
Main Access Tunnel (26m wide)													
Excavation Works													
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.0
Cavern Construction													
Cavern Excavation (Drill & Blast)													
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	25.8
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	10.0	-20.0	32.8
Vent Shaft at A Kung Kok Shan													
Vent Shaft at A Kung Kok Shan													
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	828.9	-43.6	0.0	-7.0	0.0	-27.0	3.0	-20.0	14.9
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	828.9	-43.6	0.0	-7.0	0.0	-27.0	6.0	-20.0	23.0
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	828.9	-43.6	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.0
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	828.9	-43.6	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.0
Emergency Access Tunnel Portal													
Preparation Works													
Construction Works													
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	10.0	-20.0	32.8
A1290	Testing for bored piles	Drilling rig	4	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	428.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.7
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	428.2	-37.8	0.0	-7.0	0.0	-27.0	6.0	-20.0	28.8
Construction of effluent pipeline													
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.1
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.1
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A3000	Remaining Works	Drilling rig	1	114.6	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	22.8
A3000	Remaining Works	Hydraculic Breaker	1	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	0.0	-20.0	17.7
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.0
A1941	Soft ground excavation	Drilling rig	1	114.6	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	37.0
A1944	Micro TBM drive	TBM	1	115.9	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	38.4
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	82.7	-23.5	0.0	-7.0	0.0	-27.0	0.0	-20.0	31.9
Completion of Package 1													
Package 2 - Civil and E&M Works and T&C of relocated STSTW													
E&M Installation													
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	426.2	-37.8	0.0	-7.0	0.0	-27.0	4.8	-20.0	21.9
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	426.2	-37.8	0.0	-7.0	0.0	-27.0	3.0	-20.0	20.7
Emergency Outfall Construction													
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	137.8	-28.0	0.0	-7.0	0.0	-27.0	0.0	-20.0	33.9
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	137.8	-28.0	0.0	-7.0	0.0	-27.0	0.0	-20.0	33.9
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	137.8	-28.0	0.0	-7.0	0.0	-27.0	0.0	-20.0	33.9
Test & Commissioning/Inspection & Handover													
Package 3 - Construction of Ancillary Facilities													
Administration Buildings and other ancillary facilities construction													
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	78.5	-23.1	0.0	-7.0	0.0	-27.0	3.0	-20.0	35.4
Package 4 - Decommissioning and Demolition of Existing STSTW													
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	455.2	-38.4	0.0	-7.0	0.0	-27.0	7.0	-20.0	24.1
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	455.2	-38.4	0.0	-7.0	0.0	-27.0	10.0	-20.0	26.6
Project Completion													

* For distance >300m, noise assessment will be excluded

Activity ID	2024												2025												2026												2027												2028											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
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A1430	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Total SPL per period	35	35	35	35	38	38	38	38	38	38	38	38	38	38	38	38	35	35	35	35	37	35	35	35	35	35	35	35	35	35	35	35	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-2

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL	2018												2019												2020												2021												2022												2023											
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS																																																																																						
Package 1 - Construction of Tunnels and Caverns for relocated STSTW																																																																																									
Blasting Submission																																																																																						
Access Road for Magazine at A Kung Kok Road																																																																																						
Construction of Temporary Haul Road																																																																																							
Construction of Access Road																																																																																						
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	910.4	-44.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	910.4	-44.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Permanent Slope Works	Drilling rig	3	114.6	910.4	-44.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	910.4	-44.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	11.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of Explosive Compound Structure																																																																																								
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	910.4	-44.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspection & Approval																																																																																							
Main Access Tunnel																																																																																						
Natural Terrain Hazard Mitigation Works-1																																																																																						
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8	-	-	-	-	-	-	33	33	33	33	33	33	33	33	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8	-	-	-	-	-	-	33	33	33	33	33	33	33	33	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8	-	-	-	-	-	-	33	33	33	33	33	33	33	33	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8	-	-	-	-	-	-	33	33	33	33	33	33	33	33	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	38	38	38	38	38	38	38	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Road Construction																																																																																							
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot Construction Adit																																																																																						
Preparation Works																																																																																						
Site Formation Works of Portal																																																																																						
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	36.4	-	-	-	-	-	-	36	36	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	33.4	-	-	-	-	-	-	-	-	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of Adit Tunnel																																																																																						
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	-	-	38	38	38	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel Portal (East)																																																																																							
Preparation Works																																																																																					
Site Formation Works of Portal (East)																																																																																						
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	33.4	-	-	-	-	-	-	-	-	33	33	33	33	33	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	4.8	-20.0	43.3	-	-	-	-	-	-	-	-	-	-	-	43	43	43	43	43	43	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	38	38	38	38	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of 16m wide Tunnel (East)																																																																																							
Main Access Tunnel Portal (West)																																																																																							
Preparation Works																																																																																					
Excavation of 16m wide Tunnel (West)																																																																																						
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Formation Works of Portal (West)																																																																																							
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	48.5	-	-	-	-	-	-	-	-	-	-	-	48	48	48	48	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Testing for bored piles	Drilling rig	4	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	45	45	45	45	45	45	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	33.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	45	45	45	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel (26m wide)																																																																																							
Excavation Works																																																																																						
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cavern Construction																																																																																						
Cavern Excavation (Drill & Blast)																																																																																						
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	24.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	24.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	28.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent Shaft at A Kung Kok Shan																																																																																								
Vent Shaft at A Kung Kok Shan																																																																																							
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	719.6	-42.3	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	719.6	-42.3	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	719.6	-42.3	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	719.6	-42.3	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Access Tunnel Portal																																																																																						
Preparation Works																																																																																					
Construction Works																																																																																					
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	10.0	-20.0	24.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Testing for bored piles	Drilling rig	4	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	738.9	-42.6	0.0	-10.0	-1.0	-27.0	3.0	-20.0	11.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of effluent pipeline																																																																																							
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Soft ground excavation	Drilling rig	1	114.6	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-
A1944	Micro TBM drive	TBM	1	115.9	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	27.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	28	28	28	28	28	28	28	28
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Completion of Package 1																																																																																								
Package 2 - Civil and E&M Works and T&C of relocated STSTW																																																																																								
E&M Installation																																																																																							
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	440.9	-38.1	0.0	-10.0	-1.0	-27.0	4.8	-20.0	17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	16.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Outfall Construction																																																																																							
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	172.8	-29.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	172.8	-29.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	172.8	-29.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test & Commissioning/Inspection & Handover																																																																																								
Package 3 - Construction of Ancillary Facilities																																																																																						
Administration Buildings and other ancillary facilities construction																																																																																						
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	36.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	36	36	36
Package 4 - Decommissioning and Demolition of Existing STSTW																																																																																						
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Completion																																																																																							
													Total SPL per period	0	0	0	0	0	0	44	44	46	44	45	51	51	51	52	52	47	48	48	46	46	46	46	46	46	39	33	45	45	45	45	45	45	45	45	0	0	0	38	38	38	0	0	0	0	0	0	0	0	0	0	26	26	26	26	26	26	26	26	26	26	0	28	28	28	28	28	28	37	37	37	37
													Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
													Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-2

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise	
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS													
Package 1 - Construction of Tunnels and Caverns for relocated STSTW													
Blasting Submission													
Access Road for Magazine at A Kung Kok Road													
Construction of Temporary Haul Road													
Construction of Access Road													
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	910.4	-44.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.2
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	910.4	-44.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.2
M1050	Permanent Slope Works	Drilling rig	3	114.6	910.4	-44.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	17.0
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	910.4	-44.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	11.9
Construction of Explosive Compound Structure													
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	910.4	-44.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.5
Inspection & Approval													
Main Access Tunnel													
Natural Terrain Hazard Mitigation Works-1													
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	32.8
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
Temporary Road Construction													
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
Pilot Construction Adit													
Preparation Works													
Site Formation Works of Portal													
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	36.4
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	33.4
Excavation of Adit Tunnel													
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
Main Access Tunnel Portal (East)													
Preparation Works													
Site Formation Works of Portal (East)													
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	33.4
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	4.8	-20.0	43.3
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
Excavation of 16m wide Tunnel (East)													
Main Access Tunnel Portal (West)													
Preparation Works													
Excavation of 16m wide Tunnel (West)													
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
Site Formation Works of Portal (West)													
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	48.5
A1190	Testing for bored piles	Drilling rig	4	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	44.5
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	33.4
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	44.5
A1210.1	Piling Works	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
A1210.1	Piling Works	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	44.2	-18.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	38.5
Main Access Tunnel (26m wide)													
Excavation Works													
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.4
Cavern Construction													
Cavern Excavation (Drill & Blast)													
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	24.5
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	24.5
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	21.5
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	28.5
Vent Shaft at A Kung Kok Shan													
Vent Shaft at A Kung Kok Shan													
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	719.6	-42.3	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.2
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	719.6	-42.3	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.3
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	719.6	-42.3	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.2
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	719.6	-42.3	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.2
Emergency Access Tunnel Portal													
Preparation Works													
Construction Works													
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	10.0	-20.0	24.0
A1290	Testing for bored piles	Drilling rig	4	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.0
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	738.9	-42.6	0.0	-10.0	-1.0	-27.0	3.0	-20.0	11.9
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.0
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	738.9	-42.6	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.0
Construction of effluent pipeline													
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	15.8
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	15.8
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4
A3000	Remaining Works	Drilling rig	1	114.6	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	18.5
A3000	Remaining Works	Hydraculic Breaker	1	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	13.4
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.4
A1941	Soft ground excavation	Drilling rig	1	114.6	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.4
A1944	Micro TBM drive	TBM	1	115.9	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	27.8
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	176.9	-30.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.3
Completion of Package 1													
Package 2 - Civil and E&M Works and T&C of relocated STSTW													
E&M Installation													
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	440.9	-38.1	0.0	-10.0	-1.0	-27.0	4.8	-20.0	17.6
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	440.9	-38.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	16.4
Emergency Outfall Construction													
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	172.8	-29.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	172.8	-29.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	172.8	-29.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0
Test & Commissioning/Inspection & Handover													
Package 3 - Construction of Ancillary Facilities													
Administration Buildings and other ancillary facilities construction													
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	44.2	-18.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	36.4
Package 4 - Decommissioning and Demolition of Existing STSTW													
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	432.1	-37.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	20.6
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	432.1	-37.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	23.0
Project Completion													

* For distance >300m, noise assessment will be excluded

Activity ID	2024												2025											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1944	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1945	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-
A1710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1790	-	-	-	-	28	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	28	28	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	-	-	-	-	-	-	-	-	-	-	-	28	28	28	28	28	-	-	-	-	-	-	-	-
A1430	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
A1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total SPL per period	36	36	36	36	37	37	37	37	37	37	37	37	37	37	37	37	36	36	36	36	37	36	36	36
Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Activity ID	2026												2027												2028											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
M1040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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A1631	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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A2940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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A2970	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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A1944	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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A1790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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A1430	36	36	36	36	36	36	36	36	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Total SPL per period	36	36	36	36	36	36	36	36	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-3

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL	2018												2019												2020												2021												2022												2023											
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS																																																																																				
Package 1 - Construction of Tunnels and Caverns for relocated STSTW																																																																																				
Blasting Submission																																																																																				
Access Road for Magazine at A Kung Kok Road																																																																																				
Construction of Temporary Haul Road																																																																																				
Construction of Access Road																																																																																				
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	28.6	-14.3	0.0	-10.0	-1.0	-27.0	6.0	-20.0	48.285	-	-	-	-	-	-	-	-	-	48	48	48	48	48	48	48	48	48	48	48	48	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	28.6	-14.3	0.0	-10.0	-1.0	-27.0	6.0	-20.0	48.285	-	-	-	-	-	-	-	-	-	48	48	48	48	48	48	48	48	48	48	48	48	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Permanent Slope Works	Drilling rig	3	114.6	28.6	-14.3	0.0	-10.0	-1.0	-27.0	4.8	-20.0	47.035	-	-	-	-	-	-	-	-	-	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	28.6	-14.3	0.0	-10.0	-1.0	-27.0	4.8	-20.0	41.936	-	-	-	-	-	-	-	-	-	-	-	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of Explosive Compound Structure																																																																																				
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	28.6	-14.3	0.0	-10.0	-1.0	-27.0	3.0	-20.0	39.603	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	40	40	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspection & Approval																																																																																				
Main Access Tunnel																																																																																				
Natural Terrain Hazard Mitigation Works-1																																																																																				
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Road Construction																																																																																				
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot Construction Adit																																																																																				
Preparation Works																																																																																				
Site Formation Works of Portal																																																																																				
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	10.341	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	7.331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of Adit Tunnel																																																																																				
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel Portal (East)																																																																																				
Preparation Works																																																																																				
Site Formation Works of Portal (East)																																																																																				
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	7.331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	4.8	-20.0	17.201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of 16m wide Tunnel (East)																																																																																				
Main Access Tunnel Portal (West)																																																																																				
Preparation Works																																																																																				
Excavation of 16m wide Tunnel (West)																																																																																				
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Formation Works of Portal (West)																																																																																				
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	10.0	-20.0	22.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Testing for bored piles	Drilling rig	4	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	7.331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel (26m wide)																																																																																				
Excavation Works																																																																																				
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cavern Construction																																																																																				
Cavern Excavation (Drill & Blast)																																																																																				
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent Shaft at A Kung Kok Shan																																																																																				
Vent Shaft at A Kung Kok Shan																																																																																				
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	110.6	-26.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	28.425	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	28	28	28	28	28	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	110.6	-26.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	36.535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	37	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	110.6	-26.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	30.514	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	31	31	31	31	31	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	110.6	-26.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	30.514	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	31	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Access Tunnel Portal																																																																																				
Preparation Works																																																																																				
Construction Works																																																																																				
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	10.0	-20.0	21.401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Testing for bored piles	Drilling rig	4	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.422	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	998.8	-45.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.3124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.422	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.422	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of effluent pipeline																																																																																				
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	18.541	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	18.541	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Soft ground excavation	Drilling rig	1	114.6	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1944	Micro TBM drive	TBM	1	115.9	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.5904	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Completion of Package 1																																																																																				
Package 2 - Civil and E&M Works and T&C of relocated STSTW																																																																																				
E&M Installation																																																																																				
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	323.2	-35.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	20.302	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Outfall Construction																																																																																				
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	993.4	-45.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	993.4	-45.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	993.4	-45.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test & Commissioning/Inspection & Handover																																																																																				
Package 3 - Construction of Ancillary Facilities																																																																																				
Administration Buildings and other ancillary facilities construction																																																																																				
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	10.341	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Package 4 - Decommissioning and Demolition of Existing STSTW																																																																																				
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Completion																																																																																				
													Total SPL per period	0	0	0	0	0	0	0	0	0	53	53	53	53	53	53	53	53	53	53	53	53	53	48	48	48	42	0	0	0	0	0	0	0	0	0	0	31	31	31	31	33	33	33	28	28	28	28	37	37	37	0	0	0	31	31	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
													Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
													Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-3

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL	2024												2025												2026												2027												2028											
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS													
Package 1 - Construction of Tunnels and Caverns for relocated STSTW													
Blasting Submission													
Access Road for Magazine at A Kung Kok Road													
Construction of Temporary Haul Road													
Construction of Access Road													
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	28.6	-14.3	0.0	-10.0	-1.0	-27.0	6.0	-20.0	48.285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	28.6	-14.3	0.0	-10.0	-1.0	-27.0	6.0	-20.0	48.285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Permanent Slope Works	Drilling rig	3	114.6	28.6	-14.3	0.0	-10.0	-1.0	-27.0	4.8	-20.0	47.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	28.6	-14.3	0.0	-10.0	-1.0	-27.0	4.8	-20.0	41.936	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of Explosive Compound Structure													
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	28.6	-14.3	0.0	-10.0	-1.0	-27.0	3.0	-20.0	39.603	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspection & Approval													
Main Access Tunnel													
Natural Terrain Hazard Mitigation Works-1													
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.7588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Road Construction													
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot Construction Adit													
Preparation Works													
Site Formation Works of Portal													
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	10.341	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	7.331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of Adit Tunnel													
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel Portal (East)													
Preparation Works													
Site Formation Works of Portal (East)													
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	7.331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	4.8	-20.0	17.201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of 16m wide Tunnel (East)													
Main Access Tunnel Portal (West)													
Preparation Works													
Excavation of 16m wide Tunnel (West)													
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Formation Works of Portal (West)													
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	10.0	-20.0	22.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Testing for bored piles	Drilling rig	4	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	7.331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	887.2	-44.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel (26m wide)													
Excavation Works													
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cavern Construction													
Cavern Excavation (Drill & Blast)													
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent Shaft at A Kung Kok Shan													
Vent Shaft at A Kung Kok Shan													
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	110.6	-26.1	0.0	-10.0	-1.0	-27.0	3.0	-20.0	28.425	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	110.6	-26.1	0.0	-10.0	-1.0	-27.0	6.0	-20.0	36.535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	110.6	-26.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	30.514	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	110.6	-26.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	30.514	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Access Tunnel Portal													
Preparation Works													
Construction Works													
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	10.0	-20.0	21.401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Testing for bored piles	Drilling rig	4	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.422	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	998.8	-45.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.3124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.422	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	998.8	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.422	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of effluent pipeline													
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	18.541	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	18.541	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Drilling rig	1	114.6	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Hydraculic Breaker	1	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Soft ground excavation	Drilling rig	1	114.6	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	14.689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1944	Micro TBM drive	TBM	1	115.9	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	684.0	-41.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.5904	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Completion of Package 1													
Package 2 - Civil and E&M Works and T&C of relocated STSTW													
E&M Installation													
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	323.2	-35.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	20.302	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	323.2	-35.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Outfall Construction													
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	993.4	-45.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	993.4	-45.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	993.4	-45.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test & Commissioning/Inspection & Handover													
Package 3 - Construction of Ancillary Facilities													
Administration Buildings and other ancillary facilities construction													
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	887.2	-44.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	10.341	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Package 4 - Decommissioning and Demolition of Existing STSTW													
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	7.0	-20.0	12.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	1077.4	-45.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	15.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Completion													
													Total SPL per period	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
													Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
													Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-4

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL	2018												2019												2020												2021												2022												2023											
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS																																																																																						
Package 1 - Construction of Tunnels and Caverns for relocated STSTW																																																																																							
Blasting Submission																																																																																					
Access Road for Magazine at A Kung Kok Road																																																																																					
Construction of Temporary Haul Road																																																																																					
Construction of Access Road																																																																																					
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Permanent Slope Works	Drilling rig	3	114.6	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	13.981	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	8.8817	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of Explosive Compound Structure																																																																																				
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	6.5485	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspection & Approval																																																																																				
Main Access Tunnel																																																																																				
Natural Terrain Hazard Mitigation Works-1																																																																																					
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042	-	-	-	-	-	-	20	20	20	20	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042	-	-	-	-	-	-	20	20	20	20	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042	-	-	-	-	-	-	20	20	20	20	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042	-	-	-	-	-	-	20	20	20	20	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	26	26	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Road Construction																																																																																				
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot Construction Adit																																																																																				
Preparation Works																																																																																					
Site Formation Works of Portal																																																																																					
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	3.0	-20.0	23.624	-	-	-	-	-	-	24	24	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.614	-	-	-	-	-	-	-	-	21	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of Adit Tunnel																																																																																					
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	-	-	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel Portal (East)																																																																																					
Preparation Works																																																																																					
Site Formation Works of Portal (East)																																																																																					
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.614	-	-	-	-	-	-	-	-	21	21	21	21	21	21	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	4.8	-20.0	30.484	-	-	-	-	-	-	-	-	-	-	-	30	30	30	30	30	30	30	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of 16m wide Tunnel (East)																																																																																					
Main Access Tunnel Portal (West)																																																																																					
Preparation Works																																																																																					
Excavation of 16m wide Tunnel (West)																																																																																					
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Formation Works of Portal (West)																																																																																					
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	35.713	-	-	-	-	-	-	-	-	-	-	-	36	36	36	36	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Testing for bored piles	Drilling rig	4	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	6.0	-20.0	31.733	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	32	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.614	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	6.0	-20.0	31.733	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel (26m wide)																																																																																				
Excavation Works																																																																																					
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cavern Construction																																																																																				
Cavern Excavation (Drill & Blast)																																																																																				
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.879	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.879	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-
Vent Shaft at A Kung Kok Shan																																																																																				
Vent Shaft at A Kung Kok Shan																																																																																				
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.092	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.092	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Access Tunnel Portal																																																																																				
Preparation Works																																																																																					
Construction Works																																																																																					
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	10.0	-20.0	24.229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Testing for bored piles	Drilling rig	4	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	721.3	-42.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of effluent pipeline																																																																																					
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.198	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.198	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Soft ground excavation	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	22	22	22	-	-	-	-	-	-	-	-	-	-	-
A1944	Micro TBM drive	TBM	1	115.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	23.193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	23	23	23	23	23	23	23	23	23
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Completion of Package 1																																																																																				
Package 2 - Civil and E&M Works and T&C of relocated STSTW																																																																																						
E&M Installation																																																																																				
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	4.8	-20.0	20.959	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	21	21	21
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	20
Emergency Outfall Construction																																																																																				
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	24.3	-12.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	45.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	24.3	-12.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	45.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	24.3	-12.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	45.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test & Commissioning/Inspection & Handover																																																																																				
Package 3 - Construction of Ancillary Facilities																																																																																				
Administration Buildings and other ancillary facilities construction																																																																																			
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	3.0	-20.0	23.624	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	24	24	24
Package 4 - Decommissioning and Demolition of Existing STSTW																																																																																					
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Completion																																																																																						
													Total SPL per period	0	0	0	0	0	0	31	31	33	31	32	38	38	38	39	39	34	35	35	33	33	33	34	34	33	30	28	33	33	35	34	35	35	35	36	33	32	32	33	33	33	33	33	33	34	34	34	33	30	28	25	27	27	27	33	33	33	33	33	33	32	0	23	23	23	23	23	23	28	28	28	28
													Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
													Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-4

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise	
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS													
Package 1 - Construction of Tunnels and Caverns for relocated STSTW													
Blasting Submission													
Access Road for Magazine at A Kung Kok Road													
Construction of Temporary Haul Road													
Construction of Access Road													
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.23
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.23
M1050	Permanent Slope Works	Drilling rig	3	114.6	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	13.981
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	4.8	-20.0	8.8817
Construction of Explosive Compound Structure													
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1285.4	-47.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	6.5485
Inspection & Approval													
Main Access Tunnel													
Natural Terrain Hazard Mitigation Works-1													
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.042
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
Temporary Road Construction													
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
Pilot Construction Adit													
Preparation Works													
Site Formation Works of Portal													
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	3.0	-20.0	23.624
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.614
Excavation of Adit Tunnel													
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
Main Access Tunnel Portal (East)													
Preparation Works													
Site Formation Works of Portal (East)													
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.614
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	4.8	-20.0	30.484
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
Excavation of 16m wide Tunnel (East)													
Main Access Tunnel Portal (West)													
Preparation Works													
Excavation of 16m wide Tunnel (West)													
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
Site Formation Works of Portal (West)													
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	35.713
A1190	Testing for bored piles	Drilling rig	4	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	6.0	-20.0	31.733
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	20.614
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	6.0	-20.0	31.733
A1210.1	Piling Works	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
A1210.1	Piling Works	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	192.3	-30.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	25.713
Main Access Tunnel (26m wide)													
Excavation Works													
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
Cavern Construction													
Cavern Excavation (Drill & Blast)													
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.879
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	27.879
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	24.869
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.859
Vent Shaft at A Kung Kok Shan													
Vent Shaft at A Kung Kok Shan													
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.003
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.112
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.092
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	1035.0	-45.5	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.092
Emergency Access Tunnel Portal													
Preparation Works													
Construction Works													
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	10.0	-20.0	24.229
A1290	Testing for bored piles	Drilling rig	4	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.249
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	721.3	-42.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.14
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.249
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	721.3	-42.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	20.249
Construction of effluent pipeline													
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.198
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.198
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76
A3000	Remaining Works	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A3000	Remaining Works	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1941	Soft ground excavation	Drilling rig	1	114.6	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	21.859
A1944	Micro TBM drive	TBM	1	115.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	23.193
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.76
Completion of Package 1													
Package 2 - Civil and E&M Works and T&C of relocated STSTW													
E&M Installation													
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	299.6	-34.7	0.0	-10.0	-1.0	-27.0	4.8	-20.0	20.959
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	299.6	-34.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.77
Emergency Outfall Construction													
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	24.3	-12.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	45.003
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	24.3	-12.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	45.003
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	24.3	-12.9	0.0	-10.0	-1.0	-27.0	0.0	-20.0	45.003
Test & Commissioning/Inspection & Handover													
Package 3 - Construction of Ancillary Facilities													
Administration Buildings and other ancillary facilities construction													
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	192.3	-30.9	0.0	-10.0	-1.0	-27.0	3.0	-20.0	23.624
Package 4 - Decommissioning and Demolition of Existing STSTW													
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	343.1	-35.9	0.0	-10.0	-1.0	-27.0	7.0	-20.0	22.573
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	343.1	-35.9	0.0	-10.0	-1.0	-27.0	10.0	-20.0	25.011
Project Completion													

Activity ID	2024												2025												2026												2027												2028											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
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A1710	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	20	20	20	20	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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A1810	-	-	-	-	-	-	-	-	-	-	-	45	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1430	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Total SPL per period	27	27	27	27	45	45	45	45	45	45	45	45	45	45	45	45	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-5

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL	2018												2019												2020												2021												2022												2023											
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS																																																																																					
Package 1 - Construction of Tunnels and Caverns for relocated STSTW																																																																																						
Blasting Submission																																																																																						
Access Road for Magazine at A Kung Kok Road																																																																																							
Construction of Temporary Haul Road																																																																																							
Construction of Access Road																																																																																							
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	6.0	-20.0	13.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	6.0	-20.0	13.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Permanent Slope Works	Drilling rig	3	114.6	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	4.8	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	4.8	-20.0	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of Explosive Compound Structure																																																																																									
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	3.0	-20.0	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspection & Approval																																																																																								
Main Access Tunnel																																																																																						
Natural Terrain Hazard Mitigation Works-1																																																																																							
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Road Construction																																																																																									
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot Construction Adit																																																																																								
Preparation Works																																																																																								
Site Formation Works of Portal																																																																																							
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of Adit Tunnel																																																																																								
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel Portal (East)																																																																																									
Preparation Works																																																																																							
Site Formation Works of Portal (East)																																																																																							
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	4.8	-20.0	16.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of 16m wide Tunnel (East)																																																																																								
Main Access Tunnel Portal (West)																																																																																								
Preparation Works																																																																																							
Excavation of 16m wide Tunnel (West)																																																																																							
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Formation Works of Portal (West)																																																																																								
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	10.0	-20.0	21.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Testing for bored piles	Drilling rig	4	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel (26m wide)																																																																																										
Excavation Works																																																																																								
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cavern Construction																																																																																									
Cavern Excavation (Drill & Blast)																																																																																							
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	10.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent Shaft at A Kung Kok Shan																																																																																								
Vent Shaft at A Kung Kok Shan																																																																																						
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Access Tunnel Portal																																																																																										
Preparation Works																																																																																							
Construction Works																																																																																							
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Testing for bored piles	Drilling rig	4	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	3.0	-20.0	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of effluent pipeline																																																																																										
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Soft ground excavation	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1944	Micro TBM drive	TBM	1	115.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Completion of Package 1																																																																																										
Package 2 - Civil and E&M Works and T&C of relocated STSTW																																																																																								
E&M Installation																																																																																									
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	4.8	-20.0	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Outfall Construction																																																																																											
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	444.3	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	19.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	444.3	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	19.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	444.3	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	19.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test & Commissioning/Inspection & Handover																																																																																												
Package 3 - Construction of Ancillary Facilities																																																																																								
Administration Buildings and other ancillary facilities construction																																																																																									
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Package 4 - Decommissioning and Demolition of Existing STSTW																																																																																								
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Completion																																																																																									
													Total SPL per period	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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													Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-5

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise	
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS													
Package 1 - Construction of Tunnels and Caverns for relocated STSTW													
Blasting Submission													
Access Road for Magazine at A Kung Kok Road													
Construction of Temporary Haul Road													
Construction of Access Road													
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	6.0	-20.0	13.1
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	6.0	-20.0	13.1
M1050	Permanent Slope Works	Drilling rig	3	114.6	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	4.8	-20.0	11.8
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	4.8	-20.0	6.7
Construction of Explosive Compound Structure													
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1650.6	-49.5	0.0	-10.0	-1.0	-27.0	3.0	-20.0	4.4
Inspection & Approval													
Main Access Tunnel													
Natural Terrain Hazard Mitigation Works-1													
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	5.7
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
Temporary Road Construction													
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
Pilot Construction Adit													
Preparation Works													
Site Formation Works of Portal													
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.3
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.3
Excavation of Adit Tunnel													
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
Main Access Tunnel Portal (East)													
Preparation Works													
Site Formation Works of Portal (East)													
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.3
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	4.8	-20.0	16.1
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
Excavation of 16m wide Tunnel (East)													
Main Access Tunnel Portal (West)													
Preparation Works													
Excavation of 16m wide Tunnel (West)													
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
Site Formation Works of Portal (West)													
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	10.0	-20.0	21.4
A1190	Testing for bored piles	Drilling rig	4	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.4
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.3
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	6.0	-20.0	17.4
A1210.1	Piling Works	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
A1210.1	Piling Works	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.4
Main Access Tunnel (26m wide)													
Excavation Works													
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
Cavern Construction													
Cavern Excavation (Drill & Blast)													
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	12.9
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	10.0	-20.0	19.9
Vent Shaft at A Kung Kok Shan													
Vent Shaft at A Kung Kok Shan													
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	4.8
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.9
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.8
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	1686.8	-49.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	6.8
Emergency Access Tunnel Portal													
Preparation Works													
Construction Works													
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	16.6
A1290	Testing for bored piles	Drilling rig	4	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.6
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	3.0	-20.0	4.5
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.6
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	1742.4	-50.0	0.0	-10.0	-1.0	-27.0	6.0	-20.0	12.6
Construction of effluent pipeline													
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.3
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.3
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8
A3000	Remaining Works	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A3000	Remaining Works	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1941	Soft ground excavation	Drilling rig	1	114.6	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	9.9
A1944	Micro TBM drive	TBM	1	115.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.3
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	4.8
Completion of Package 1													
Package 2 - Civil and E&M Works and T&C of relocated STSTW													
E&M Installation													
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	4.8	-20.0	9.0
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	1183.9	-46.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.8
Emergency Outfall Construction													
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	444.3	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	19.8
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	444.3	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	19.8
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	444.3	-38.1	0.0	-10.0	-1.0	-27.0	0.0	-20.0	19.8
Test & Commissioning/Inspection & Handover													
Package 3 - Construction of Ancillary Facilities													
Administration Buildings and other ancillary facilities construction													
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	1002.4	-45.2	0.0	-10.0	-1.0	-27.0	3.0	-20.0	9.3
Package 4 - Decommissioning and Demolition of Existing STSTW													
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	157.2	-29.1	0.0	-10.0	-1.0	-27.0	7.0	-20.0	29.4
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	157.2	-29.1	0.0	-10.0	-1.0	-27.0	10.0	-20.0	31.8
Project Completion													

* For distance >300m, noise assessment will be excluded

Activity ID	Vibratory PME	2024												2025												2026												2027												2028											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
M1040	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1110	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1550	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2120	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1020	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1060	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1100	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1620	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1170	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1520	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1630	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1390	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1270	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2940	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Drilling rig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1944	TBM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1945	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1710	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1790	TBM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	TBM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	TBM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1430	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	29	29	29	29	29	29	29	29
A1450	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	32	32
A1451	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	29	29	29	29	29	29	29	29
A1451	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	32	32
A1452	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	29	29	29	29	29	29	29	29
A1452	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	32	32
A1453	Hydraculic Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	29	29	29	29	29	29	29	29
A1453	Hand-held Breaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	32	32
Total SPL per period		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	40	40	40	40	40	40	40
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Exceedance?		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: GBNSR-6

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL	2018												2019												2020												2021												2022												2023											
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS																																																																																						
Package 1 - Construction of Tunnels and Caverns for relocated STSTW																																																																																						
Blasting Submission																																																																																					
Access Road for Magazine at A Kung Kok Road																																																																																						
Construction of Temporary Haul Road																																																																																						
Construction of Access Road																																																																																					
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Permanent Slope Works	Drilling rig	3	114.6	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	4.8	-20.0	14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	4.8	-20.0	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of Explosive Compound Structure																																																																																						
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspection & Approval																																																																																							
Main Access Tunnel																																																																																					
Natural Terrain Hazard Mitigation Works-1																																																																																						
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	26	26	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	26	26	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	26	26	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	26	26	26	26	26	26	26	26	26	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	32	32	32	32	32	32	32	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Road Construction																																																																																						
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot Construction Adit																																																																																						
Preparation Works																																																																																							
Site Formation Works of Portal																																																																																							
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	3.0	-20.0	29.7	-	-	-	-	-	-	30	30	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.7	-	-	-	-	-	-	-	-	27	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of Adit Tunnel																																																																																							
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel Portal (East)																																																																																							
Preparation Works																																																																																							
Site Formation Works of Portal (East)																																																																																							
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.7	-	-	-	-	-	-	-	-	27	27	27	27	27	27	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	4.8	-20.0	36.6	-	-	-	-	-	-	-	-	-	-	-	37	37	37	37	37	37	37	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	32	32	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of 16m wide Tunnel (East)																																																																																						
Main Access Tunnel Portal (West)																																																																																							
Preparation Works																																																																																						
Excavation of 16m wide Tunnel (West)																																																																																							
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Formation Works of Portal (West)																																																																																							
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	41.8	-	-	-	-	-	-	-	-	-	-	-	42	42	42	42	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Testing for bored piles	Drilling rig	4	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	37.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	38	38	38	38	38	38	38	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	37.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	38	38	38	38	38	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel (26m wide)																																																																																							
Excavation Works																																																																																							
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	28	28	28	28	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cavern Construction																																																																																							
Cavern Excavation (Drill & Blast)																																																																																						
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	10.0	-20.0	26.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent Shaft at A Kung Kok Shan																																																																																									
Vent Shaft at A Kung Kok Shan																																																																																								
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	914.8	-44.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	10.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	914.8	-44.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	914.8	-44.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	914.8	-44.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Access Tunnel Portal																																																																																								
Preparation Works																																																																																							
Construction Works																																																																																							
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	10.0	-20.0	27.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Testing for bored piles	Drilling rig	4	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	515.5	-39.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	15.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of effluent pipeline																																																																																								
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Soft ground excavation	Drilling rig	1	114.6	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	28	28	28	28	28	28	28	28	-	-	-	-	-	-	-	-	-	-	-
A1944	Micro TBM drive	TBM	1	115.9	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	29.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	29	29	29	29	29	29	29	29	29
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Completion of Package 1																																																																																								
Package 2 - Civil and E&M Works and T&C of relocated STSTW																																																																																								
E&M Installation																																																																																							
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	531.4	-39.7	0.0	-10.0	-1.0	-27.0	4.8	-20.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Outfall Construction																																																																																								
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	117.8	-26.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	117.8	-26.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	117.8	-26.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test & Commissioning/Inspection & Handover																																																																																								
Package 3 - Construction of Ancillary Facilities																																																																																						
Administration Buildings and other ancillary facilities construction																																																																																							
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	3.0	-20.0	29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	30	30	30
Package 4 - Decommissioning and Demolition of Existing STSTW																																																																																						
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Completion																																																																																							
													Total SPL per period	0	0	0	0	0	0	38	38	39	38	38	44	44	44	45	45	40	41	42	39	39	39	39	39	39	33	27	38	38	39	39	38	38	38	38	0	0	0	32	32	32	0	0	0	0	0	0	0	0	0	0	28	28	28	28	28	28	28	28	28	28	0	29	29	29	29	29	29	33	33	33	33
													Criteria	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
													Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded

Appendix 4.06 Calculation of Construction Ground-borne Noise (Unmitigated Scenario)

NSR: **GBNSR-6**

Activity ID	Activity Name	Vibratory PME	No. of Plant	Vel Ref	Dist.*	Correction							SPL	2024												2025												2026												2027												2028											
						Cdist	Cdamping	Cbuilding	Cfloor	Cnoise	Cmulti	A-weighted Noise		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS																																																																									
Package 1 - Construction of Tunnels and Caverns for relocated STSTW																																																																									
Blasting Submission																																																																									
Access Road for Magazine at A Kung Kok Road																																																																									
Construction of Temporary Haul Road																																																																									
Construction of Access Road																																																																									
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1040	Piling Foundation for Retaining Wall	Drilling rig	4	114.6	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1050	Permanent Slope Works	Drilling rig	3	114.6	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	4.8	-20.0	14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1060	Retaining Wall & Elevated Section	Hydraculic Breaker	3	109.5	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	4.8	-20.0	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of Explosive Compound Structure																																																																									
M1110	E&M Installation for Explosive Compound Structure	Hand-held Breaker	2	108.9	1196.7	-46.8	0.0	-10.0	-1.0	-27.0	3.0	-20.0	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspection & Approval																																																																									
Main Access Tunnel																																																																									
Natural Terrain Hazard Mitigation Works-1																																																																									
A1550	NTHS-Construction of Check Dam near East Portal	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1560	NTHS-Construction of Check Dam near West Portal	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1570	NTHS-Construction of Check Dam near Emergency Portal	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Hand-held Breaker	1	108.9	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1580	Boulder Fall Fence Construction	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Road Construction																																																																									
A2120	Temporary steel bridge across Ah Kwong Kok Street	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot Construction Adit																																																																									
Preparation Works																																																																									
Site Formation Works of Portal																																																																									
A1020	Construction of Retaining Wall	Hydraculic Breaker	2	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	3.0	-20.0	29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1030	Portal Slope Stabilisation Works	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1040	Excavation and Temporary Haul Road Construction to Adit Portal	Hydraculic Breaker	1	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of Adit Tunnel																																																																									
A1060	Soft ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1070	Hard ground excavation for Pilot Construction Adit	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel Portal (East)																																																																									
Preparation Works																																																																									
Site Formation Works of Portal (East)																																																																									
A1100	Excavation and slope cutting	Hydraculic Breaker	1	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1110	Portal Slope Stabilisation Works	Drilling rig	3	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	4.8	-20.0	36.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1120	Tunnel Portal Formation & Soft ground excavation (East)(60m)	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excavation of 16m wide Tunnel (East)																																																																									
Main Access Tunnel Portal (West)																																																																									
Preparation Works																																																																									
Excavation of 16m wide Tunnel (West)																																																																									
A1620	Drill & Blast excavation works of 16m wide Tunnel (West) (50m)	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Formation Works of Portal (West)																																																																									
A1170	Pre-drilling for bored pile wall	Drilling rig	10	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	10.0	-20.0	41.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1190	Testing for bored piles	Drilling rig	4	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	37.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1200	Excavation and slope cutting	Hydraculic Breaker	1	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210	Portal Slope Stabilisation works	Drilling rig	4	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	6.0	-20.0	37.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1210.1	Piling Works	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1220	Tunnel Portal Formation & Soft ground excavation (West)(25m)	Drilling rig	1	114.6	95.1	-24.8	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Access Tunnel (26m wide)																																																																									
Excavation Works																																																																									
A1520	Drill and Blast excavation works of Primary Access Tunnel outside Caverns (320m long)	Drilling rig	1	114.6	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cavern Construction																																																																									
Cavern Excavation (Drill & Blast)																																																																									
A1630	Primary Access Tunnel Inside Cavern (183m long) before using Magazine	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1631	Remaining excavation of Primary Access Tunnel inside Cavern (192.5m)after using the Magazine	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1850	Excavation of Driveway and Secondary Access Tunnel	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1851	Excavation of Driveway 3 (300m long per driveway)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1860	Excavation of Caverns W4 (5nos.)	Drilling rig	4	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1861	Excavation of Caverns W3 (5nos.)	Drilling rig	4	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	6.0	-20.0	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1870	Excavation of Driveway 4 (incl. A1, A2 & W1)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1871	Excavation of Driveway 1 (incl. A1, A3, A4, W1, S1,S2 &W5)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1880	Excavation of Caverns W2 (2nos.)	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1890	Excavation of Caverns W2 (2nos.) & A3A4A5	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1900	Excavation of Secondary Access Tunnel inside Caverns)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1910	Excavation of Secondary Access Tunnel Outside Caverns (200m hard ground)	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1920	Excavation of Secondary Access Tunnel Outside Caverns (40m soft ground)	Drilling rig	2	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1930	Remaining excavation in side caverns (20nos. of location, 200m long in total, 5 teams)by Drill & Break	Drilling rig	10	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	10.0	-20.0	26.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent Shaft at A Kung Kok Shan																																																																									
Vent Shaft at A Kung Kok Shan																																																																									
A1390	Construction of Diaphragm Wall	Hydraculic Breaker	2	109.5	914.8	-44.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	10.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1400	Testing of Diaphragm Wall	Drilling rig	4	114.6	914.8	-44.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1660	Excavation for Ventilation Adit by drill & blast method (540m)	Drilling rig	1	114.6	914.8	-44.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1661	Excavation in Rock Portion by drill & blast method (90m depth)	Drilling rig	1	114.6	914.8	-44.4	0.0	-10.0	-1.0	-27.0	0.0	-20.0	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Access Tunnel Portal																																																																									
Preparation Works																																																																									
Construction Works																																																																									
A1270	Pre-drilling for bored pile wall	Drilling rig	10	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	10.0	-20.0	27.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1290	Testing for bored piles	Drilling rig	4	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1300	Excavation and slope cutting	Hydraculic Breaker	2	109.5	515.5	-39.4	0.0	-10.0	-1.0	-27.0	3.0	-20.0	15.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1320	Portal Slope Stabilisation works	Drilling rig	4	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1330	Tunnel Portal Formation at Mui Tsz Lam Portal	Drilling rig	4	114.6	515.5	-39.4	0.0	-10.0	-1.0	-27.0	6.0	-20.0	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of effluent pipeline																																																																									
A2940	Condition Survey and install temporary support and grouting work	Hand-held Breaker	2	108.9	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2950	Modify the permanent support and install new temporary support measures	Hand-held Breaker	2	108.9	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2960	Construction of new effluent tunnel by drill and break method	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2970	Breakthrough the THEES tunnel and install new temporary support measures	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2980	Install permanent support for the connection	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Drilling rig	1	114.6	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A3000	Remaining Works	Hydraculic Breaker	1	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	0.0	-20.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1940	Condition survey and tunnel strengthening works for THEES tunnel*	Drilling rig	1	114.6	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1941	Soft ground excavation	Drilling rig	1	114.6	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1944	Micro TBM drive	TBM	1	115.9	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	29.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1945	Modification of existing inlet chamber and complete connection*	Hydraculic Breaker	1	109.5	148.2	-28.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Completion of Package 1																																																																									
Package 2 - Civil and E&M Works and T&C of relocated STSTW																																																																										
E&M Installation																																																																									
A1710	Installation of E&M works inside caverns	Hand-held Breaker	3	108.9	531.4	-39.7	0.0	-10.0	-1.0	-27.0	4.8	-20.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1730	Construction of ventilation building at main access tunnel portal area	Hydraculic Breaker	2	109.5	531.4	-39.7	0.0	-10.0	-1.0	-27.0	3.0	-20.0	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emergency Outfall Construction																																																																									
A1790	Micro TBM driving - 1st (150m)	TBM	1	115.9	117.8	-26.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.3	-	-	-	-	31	31	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1800	Micro TBM driving - 2nd (200m)	TBM	1	115.9	117.8	-26.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.3	-	-	-	-	-	-	-	31	31	31	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1810	Micro TBM driving - 3rd (250m)	TBM	1	115.9	117.8	-26.6	0.0	-10.0	-1.0	-27.0	0.0	-20.0	31.3	-	-	-	-	-	-	-	-	-	-	-	31	31	31	31	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test & Commissioning/Inspection & Handover																																																																									
Package 3 - Construction of Ancillary Facilities																																																																										
Administration Buildings and other ancillary facilities construction																																																																									
A1430	Construction of Administration Buildings and other ancillary facilities	Hydraculic Breaker	2	109.5	95.1	-24.8	0.0	-10.0	-1.0	-27.0	3.0	-20.0	29.7	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Package 4 - Decommissioning and Demolition of Existing STSTW																																																																										
A1450	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1450	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1451	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1452	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hydraculic Breaker	5	109.5	548.3	-40.0	0.0	-10.0	-1.0	-27.0	7.0	-20.0	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A1453	Demolition of existing STSTW	Hand-held Breaker	10	108.9	548.3	-40.0	0.0	-10.0	-1.0	-27.0	10.0	-20.0	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Completion																																																																										
													Total SPL per period	30	30	30	30	34	34	34	34	34	34	34	34	34	34	34	34	30	30	30	30	31	30	30	30	30	30	30	30	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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													Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

* For distance >300m, noise assessment will be excluded