

## Appendix 4A

### Justification of Percentage of Active Area and Calculation of Watering Efficiency

### Justification of Percentage of Active Area

## Kai Tak Development - Trunk Road T2 and Infrastructure at South Apron Investigation, Design and Construction

Activity ID	Plant	CNP	Percentage of Usage	Plan Size				Area (m <sup>2</sup> )	Area in Time of Usage
				B(m)	L(m)	No. of Item			
2. Mobilisation									Total Works Area 60000
2	Mobilisation								
	Lorry, 5.5 tonne < gross vehicle weight <= 38 tonne	CNP 142	30%	2.4	10	4	96.0	28.8	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0	
	Drill, Precussive, Hand-held (Electric)	CNP 064	70%	0	0	2	0.0	0.0	
Percentage of Usage Area to Works Area:									0.1%
3. Site Investigation									
3.1	Site Investigation at KTD (Total 9 Teams in Operation)							Total Works Area 17000	
	Drill rig, rotary type (diesel)	CNP 072	70%	1.5	3	1	4.5	3.2	
	Water Pump (Petrol)	CNP 282	100%	1	1.5	1	1.5	1.5	
Percentage of Usage Area to Works Area:									0.0%
3.2	Site Investigation at Lam Tin (Total 2 Teams in Operation)							Total Works Area 3900	
	Drill rig, rotary type (diesel)	CNP 072	70%	1.5	3	1	4.5	3.2	
	Water Pump (Petrol)	CNP 282	100%	1	1.5	1	1.5	1.5	
	Percentage of Usage Area to Works Area:								
4. TBM									Total Works Area 81000
4.1	Design and Procurement (Shaft Construction)								
	(No plant for design & procurement)								
4.2	Mobilisation & 1st TBM Launching								
	Crane, Tower (Electric)	CNP 049	50%	0	0	1	0.0	0.0	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0	
	Lorry, 5.5 tonne < gross vehicle weight <= 38 tonne	CNP 142	30%	2.4	10	2	48.0	14.4	
	Percentage of Usage Area to Works Area:								
4.3	Tunneling Works of Bore 1								
	Tracked excavator fitted with hydraulic rock breaker	BS D8/13	70%	3.2	8	1	25.6	17.9	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0	
	Conveyor Belt	CNP 041	100%	0	0	2	0.0	0.0	
	Ventilation Fan	CNP 241	100%	0	0	3	0.0	0.0	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Power pack (diesel)	CNP 174	100%	0	0	2	0.0	0.0	
	Soil pump	CNP 206	70%	0	0	4	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	4	0.0	0.0	
	Percentage of Usage Area to Works Area:								
4.4	Launch of 2nd TBM								
	Crane, Tower (Electric)	CNP 049	50%	0	0	1	0.0	0.0	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0	
	Lorry, 5.5 tonne < gross vehicle weight <= 38 tonne	CNP 142	30%	2.4	10	2	48.0	14.4	
Percentage of Usage Area to Works Area:									0.0%
4.5	Tunneling Works of Bore 2								
	Tracked excavator fitted with hydraulic rock breaker	BS D8/13	70%	3.2	8	1	25.6	17.9	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0	
	Conveyor Belt	CNP 041	100%	0	0	2	0.0	0.0	
	Ventilation Fan	CNP 241	100%	0	0	3	0.0	0.0	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Power pack (diesel)	CNP 174	100%	0	0	2	0.0	0.0	
	Soil pump	CNP 206	70%	0	0	4	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	4	0.0	0.0	
	Percentage of Usage Area to Works Area:								
4.6	Cross passages								
	Hoist, Passenger/Material (Electric)	CNP 122	70%	0	0	1	0.0	0.0	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Conveyor Belt	CNP 041	100%	0	0	2	0.0	0.0	
	Ventilation Fan	CNP 241	100%	0	0	3	0.0	0.0	
	Dump Truck	BS D9/39	30%	2.4	10	2	48.0	14.4	
	Power pack (diesel)	CNP 174	100%	0	0	1	0.0	0.0	
	Soil pump	CNP 206	70%	0	0	2	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0	
	Rock Drill, Hand-held (Pneumatic)	CNP 183	70%	0	0	1	0.0	0.0	
	Grout pump	CNP 106	70%	1	1.5	1	1.5	1.1	
Percentage of Usage Area to Works Area:									0.0%
4.7	Fitting out								
	Cutter circular, steel (electric)	CNP 056	50%	0	0	2	0.0	0.0	
	Hoist, Passenger/Material (Electric)	CNP 122	70%	0	0	2	0.0	0.0	
	Jig-saw, hand-held, wood (electric)	CNP 131	50%	0	0	2	0.0	0.0	
	Drill, Precussive, Hand-held (Electric)	CNP 064	70%	0	0	2	0.0	0.0	
	Ventilation Fan	CNP 241	100%	0	0	3	0.0	0.0	
Percentage of Usage Area to Works Area:									0.0%

## Kai Tak Development - Trunk Road T2 and Infrastructure at South Apron

Activity ID	Plant	CNP	Percentage of Usage	Plan Size				Area in term of Time of Usage	
				B(m)	L(m)	No. of Item	Area (m <sup>2</sup> )		
5. (CH6559 - CH6629) Launching Shaft								Total Works Area 4600	
5.1	Construction of Diaphragm Wall (including excavation, rebar cage installation & concreting) for entire launching shaft								
	Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP 162	70%	4	10	1	40.0	28.0	
	Piling, Diaphragm Wall, Hydraulic Extractor	CNP 163	70%	2.6	10	4	104.0	72.8	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0	
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0	
	Concrete lorry mixer	BS D6/33	70%	2.4	10	4	96.0	67.2	
	Dump Truck	BS D9/39	30%	2.4	10	2	48.0	14.4	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0	
Percentage of Usage Area to Works Area:								5.1%	
5.2	Bulk excavation & ELS installation to final tunnel formation level								
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8	
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0	
	Dump Truck	BS D9/39	30%	2.4	10	2	48.0	14.4	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	4	0.0	0.0	
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	2	0.0	0.0	
	Percentage of Usage Area to Works Area:								2.4%
5.3	Launching Shaft Structure Construction (including rebar fixing & concreting)								
	Rebar Fixing								
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0	
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0	
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	4	0.0	0.0	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0	
	Circular Saw, bench mounted	BS D7/78	50%	0	0	4	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	4	0.0	0.0	
	Percentage of Usage Area to Works Area:								0.6%
	Concreting								
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0	
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8	
	Percentage of Usage Area to Works Area:								2.2%
	5.4	Partial soil backfilling							
Tracked excavator (14t)		BS C2/7	70%	3.2	8	2	51.2	35.8	
Dump Truck		BS D9/39	30%	2.4	10	4	96.0	28.8	
Roller, Vibratory		CNP 186	50%	3.2	8	1	25.6	12.8	
Percentage of Usage Area to Works Area:								1.7%	
5.5	Soil backfilling up to future ground formation level								
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Roller, Vibratory	CNP 186	50%	3.2	8	1	25.6	12.8	
Percentage of Usage Area to Works Area:								1.7%	
6. (CH6050 - CH6445) Cut-and-Cover Tunnel Section (1st Cell with ventilation audit)								Total Works Area 5500	
6.1	Construction of Diaphragm Wall (including excavation, rebar cage installation & concreting) each 100m								
	Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP 162	70%	4	10	1	40.0	28.0	
	Piling, Diaphragm Wall, Hydraulic Extractor	CNP 163	70%	2.6	10	4	104.0	72.8	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0	
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0	
	Concrete lorry mixer	BS D6/33	70%	2.4	10	4	96.0	67.2	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0	
	Percentage of Usage Area to Works Area:								4.5%
6.2	Bulk excavation & ELS installation to final tunnel formation level each section i.e. 50m								
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8	
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0	
	Percentage of Usage Area to Works Area:								2.3%

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Kai Tak Development - Trunk Road T2 and Infrastructure at South Apron  
Investigation, Design and Construction  
Dust Emission Rates

Activity ID	Plant	CNP	Percentage of Usage	Plan Size				Area in term of Time of Usage		
				B(m)	L(m)	No. of Item	Area (m <sup>2</sup> )			
6.3	Tunnel Structure Construction (including rebar fixing & concreting)									
	Rebar Fixing									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0		
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0		
	Breaker, Hand-held. Mass >= 10 kg	CNP 023	50%	0	0	4	0.0	0.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0		
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0		
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0		
	Percentage of Usage Area to Works Area:							0.5%		
	Concreting									
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0		
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8		
	Percentage of Usage Area to Works Area:							1.8%		
6.4	Soil backfilling up to future ground formation level per section i.e. 50m'									
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8		
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8		
	Roller, Vibratory	CNP 186	50%	3.2	8	1	25.6	12.8		
	Percentage of Usage Area to Works Area:							1.4%		
7. (CH6050 - CH6445) Cut-and-Cover Tunnel Section (2nd Cell)									Total Works Area	6250
7.2	Construction of Diaphragm Wall (including excavation, rebar cage installation & concreting) per 100m									
	Excavation + Rebar Cage									
	Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP 162	70%	4	10	1	40.0	28.0		
	Piling, Diaphragm Wall, Hydraulic Extractor	CNP 163	70%	2.6	10	4	104.0	72.8		
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0		
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0		
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0		
	Percentage of Usage Area to Works Area:							2.9%		
	Concreting									
	Concrete lorry mixer	BS D6/33	70%	2.4	10	4	96.0	67.2		
	Percentage of Usage Area to Works Area:							1.1%		
	7.3	Bulk excavation & ELS installation to final tunnel formation level per 50m								
Tracked excavator (14t)		BS C2/7	70%	3.2	8	2	51.2	35.8		
Tracked excavator (14t)		BS C2/7	70%	3.2	8	2	51.2	35.8		
Tracked mobile crane (132kW, 55t)		BS C3/29	50%	2.6	10	2	52.0	26.0		
Dump Truck		BS D9/39	30%	2.4	10	4	96.0	28.8		
Generator, Super Silenced, 70 dB(A) at 7m		CNP 103	100%	0	0	1	0.0	0.0		
Water Pump, Submersible (Electric)		CNP 283	100%	0	0	2	0.0	0.0		
Percentage of Usage Area to Works Area:							2.0%			
7.4	Tunnel Structure Construction (including rebar fixing & concreting) per 50m									
	Rebar Fixing									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0		
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0		
	Breaker, Hand-held. Mass >= 10 kg	CNP 023	50%	0	0	2	0.0	0.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0		
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0		
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0		
	Percentage of Usage Area to Works Area:							0.4%		
	Concreting									
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0		
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8		
	Percentage of Usage Area to Works Area:							1.6%		
7.5	Soil backfilling up to future ground formation level per 50m									
	Back filling									
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8		
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8		
	Percentage of Usage Area to Works Area:							1.0%		
	Road Compacting									
Roller, Vibratory	CNP 186	50%	3.2	8	1	25.6	12.8			
Percentage of Usage Area to Works Area:							0.2%			

## Kai Tak Development - Trunk Road T2 and Infrastructure at South Apron

Activity ID	Plant	CNP	Percentage of Usage	Plan Size				Area in term of Time of Usage
				B(m)	L(m)	No. of Item	Area (m <sup>2</sup> )	
<b>8. SA Ventilation Building</b>								<b>4200</b>
<b>8.1 Piling Works (Pre-bored H-piles)</b>								
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0
	Drill rig, rotary type (diesel)	CNP 072	70%	1.5	3	2	9.0	6.3
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0
	Concrete lorry mixer	BS D6/33	70%	2.4	10	2	48.0	33.6
Percentage of Usage Area to Works Area:								1.6%
<b>8.2 Excavation with ELS (sheetpile) for construction of pilecap</b>								
	Piling, vibrating hammer	CNP 172	70%	3.2	8	2	51.2	35.8
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8
	Dump Truck	BS D9/39	30%	2.4	10	2	48.0	14.4
Percentage of Usage Area to Works Area:								2.0%
<b>8.3 Construction of Pilecap &amp; Ventilation Building Structure (including rebar fixing &amp; concreting)</b>								
<b>Rebar Fixing</b>								
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	1	0.0	0.0
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	1	0.0	0.0
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0
Percentage of Usage Area to Works Area:								0.6%
<b>Concreting</b>								
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8
Percentage of Usage Area to Works Area:								2.4%
<b>9. (CH5880 - CH6050) Depressed Road Section</b>								<b>4700</b>
<b>9.1 Site formation (Breaking of existing concrete pavement, Sheet-piling)</b>								
	Piling, vibrating hammer	CNP 172	70%	3.2	8	2	51.2	35.8
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8
	Roller, Vibratory	CNP 186	50%	3.2	8	1	25.6	12.8
Percentage of Usage Area to Works Area:								3.6%
<b>9.2 Excavation with ELS</b>								
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	3	78.0	39.0
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0
Percentage of Usage Area to Works Area:								3.3%
<b>9.3 Construction of structures</b>								
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	3	78.0	39.0
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	2	0.0	0.0
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8
Percentage of Usage Area to Works Area:								3.3%
<b>10. (CH5250 - CH5880) At-Grade Road Section</b>								<b>1500</b>
<b>10.1 Site formation (Breaking of existing concrete pavement &amp; Excavation)</b>								
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7
	Dump Truck	BS D9/39	30%	2.4	10	6	144.0	43.2
	Roller, Vibratory	CNP 186	50%	3.2	8	1	25.6	12.8
Percentage of Usage Area to Works Area:								8.5%
<b>10.2 Construction of underground drainage system &amp; utilities (including trench excavation, pipe/utilities installation, in-situ casting of gully/manholes/drawpit &amp; backfilling)</b>								
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0
	Power Rammer (Petrol)	CNP 169	70%	0	0	2	0.0	0.0
Percentage of Usage Area to Works Area:								6.5%

## Kai Tak Development - Trunk Road T2 and Infrastructure at South Apron

Activity ID	Plant	CNP	Percentage of Usage	Plan Size				Area in term of Time of Usage	
				B(m)	L(m)	No. of Item	Area (m <sup>2</sup> )		
10.3	Construction of Road Carriageway								
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0	
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7	
	Concrete lorry mixer	BS D6/33	70%	2.4	10	2	48.0	33.6	
	Asphalt Paver	CNP 004	70%	3.2	8	1	25.6	17.9	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Road Roller	CNP 185	70%	3.2	8	1	25.6	17.9	
	Breaker, Hand-held. Mass >= 10 kg	CNP 023	50%	0	0	2	0.0	0.0	
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0	
	Drill, Precussive, Hand-held (Electric)	CNP 064	70%	0	0	2	0.0	0.0	
	Percentage of Usage Area to Works Area:							14.8%	
11. (CH6445 - CH6559) Cut-and-Cover Tunnel Section (both cells)									
Total Works Area							3500		
11.1	Construction of Diaphragm Wall (including excavation, rebar cage installation & concreting) for entire section								
	Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP 162	70%	4	10	1	40.0	28.0	
	Piling, Diaphragm Wall, Hydraulic Extractor	CNP 163	70%	2.6	10	4	104.0	72.8	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0	
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0	
	Concrete lorry mixer	BS D6/33	70%	2.4	10	4	96.0	67.2	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0	
	Percentage of Usage Area to Works Area:							7.1%	
	11.2	Bulk excavation & ELS installation to final tunnel formation level							
		Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8
Tracked excavator (14t)		BS C2/7	70%	3.2	8	2	51.2	35.8	
Tracked mobile crane (132kW, 55t)		BS C3/29	50%	2.6	10	4	104.0	52.0	
Dump Truck		BS D9/39	30%	2.4	10	4	96.0	28.8	
Generator, Super Silenced, 70 dB(A) at 7m		CNP 103	100%	0	0	1	0.0	0.0	
Water Pump, Submersible (Electric)		CNP 283	100%	0	0	4	0.0	0.0	
Roller, Vibratory		CNP 186	50%	3.2	8	1	25.6	12.8	
Percentage of Usage Area to Works Area:							4.7%		
11.3	Tunnel Structure Construction (including rebar fixing & concreting)								
	Rebar Fixing								
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0	
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0	
	Breaker, Hand-held. Mass >= 10 kg	CNP 023	50%	0	0	2	0.0	0.0	
	Breaker, Hand-held. Mass >= 10 kg	CNP 023	50%	0	0	2	0.0	0.0	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0	
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0	
	Percentage of Usage Area to Works Area:							1.5%	
	Concreting								
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0	
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8	
	Percentage of Usage Area to Works Area:							2.9%	
	11.4	Soil backfilling up to future ground formation level							
		Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7
		Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8
		Roller, Vibratory	CNP 186	50%	3.2	8	1	25.6	12.8
		Percentage of Usage Area to Works Area:							3.2%
12. (CH8680 - CH8767) Reception Shaft									
Total Works Area							3900		
12.1	Construction of Diaphragm Wall (including excavation, rebar cage installation & concreting) for entire reception shaft								
	Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP 162	70%	4	10	2	80.0	56.0	
	Piling, Diaphragm Wall, Hydraulic Extractor	CNP 163	70%	2.6	10	4	104.0	72.8	
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0	
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0	
	Concrete lorry mixer	BS D6/33	70%	2.4	10	4	96.0	67.2	
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8	
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0	
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0	
	Percentage of Usage Area to Works Area:							7.1%	
	12.2	Bulk excavation & ELS installation to final tunnel formation level							
		Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7
Tracked excavator (14t)		BS C2/7	70%	3.2	8	2	51.2	35.8	
Tracked mobile crane (132kW, 55t)		BS C3/29	50%	2.6	10	4	104.0	52.0	
Dump Truck		BS D9/39	30%	2.4	10	4	96.0	28.8	
Generator, Super Silenced, 70 dB(A) at 7m		CNP 103	100%	0	0	1	0.0	0.0	
Water Pump, Submersible (Electric)		CNP 283	100%	0	0	4	0.0	0.0	
Percentage of Usage Area to Works Area:							4.8%		

## Kai Tak Development - Trunk Road T2 and Infrastructure at South Apron

Activity ID	Plant	CNP	Percentage of Usage	Plan Size				Area in term of Time of Usage		
				B(m)	L(m)	No. of Item	Area (m <sup>2</sup> )			
12.3	Shaft Structure Construction (including rebar fixing & concreting)									
	Rebar Fixing									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0		
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0		
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	4	0.0	0.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0		
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0		
	Water Pump, Submersible (Electric)	CNP 283	100%	0	0	2	0.0	0.0		
	Percentage of Usage Area to Works Area:							1.3%		
	Concreting									
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0		
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8		
	Percentage of Usage Area to Works Area:							2.6%		
12.4	Soil backfilling up to future ground formation level									
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7		
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8		
	Roller, Vibratory	CNP 186	50%	3.2	8	1	25.6	12.8		
	Percentage of Usage Area to Works Area:							2.9%		
12.5	Cut-and-cover tunnel finishing works									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	2	52.0	26.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	2	0.0	0.0		
	Drill, Precussive, Hand-held (Electric)	CNP 064	70%	0	0	4	0.0	0.0		
	Percentage of Usage Area to Works Area:							0.7%		
13. TKO-LTT works at Cha Kwo Ling PCA								Total Works Area	20000	
13	Construct Barging Point at South Apron									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0		
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0		
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	4	0.0	0.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0		
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0		
	Concrete lorry mixer	BS D6/33	70%	2.4	10	4	96.0	67.2		
	Percentage of Usage Area to Works Area:							0.6%		
	14. CKL Ventilation Building								Total Works Area	2300
	14.1	Handover of Lam Tin Site Formation								
		No plants required.								
	14.2	Piling Works								
Air Compressor, Air flow >10m3/min and <=30 m3/min		CNP 002	100%	0	0	2	0.0	0.0		
Drill rig, rotary type (diesel)		CNP 072	70%	1.5	3	2	9.0	6.3		
Tracked mobile crane (132kW, 55t)		BS C3/29	50%	2.6	10	4	104.0	52.0		
Generator, Super Silenced, 70 dB(A) at 7m		CNP 103	100%	0	0	1	0.0	0.0		
Concrete lorry mixer		BS D6/33	70%	2.4	10	4	96.0	67.2		
Percentage of Usage Area to Works Area:							5.5%			
14.3	Excavation with ELS for construction of pilecap									
	Piling, vibrating hammer	CNP 172	70%	3.2	8	2	51.2	35.8		
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	4	102.4	71.7		
	Dump Truck	BS D9/39	30%	2.4	10	4	96.0	28.8		
	Percentage of Usage Area to Works Area:							5.9%		
14.4	Construction of Pilecap & Ventilation Building Structure									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0		
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0		
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	4	0.0	0.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Poker vibratory	BS C4/34	50%	0	0	2	0.0	0.0		
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0		
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0		
	Concrete lorry mixer	BS D6/33	70%	2.4	10	6	144.0	100.8		
	Percentage of Usage Area to Works Area:							6.6%		

## Kai Tak Development - Trunk Road T2 and Infrastructure at South Apron

Activity ID	Plant	CNP	Percentage of Usage	Plan Size				Area in term of Time of Usage		
				B(m)	L(m)	No. of Item	Area (m <sup>2</sup> )			
15. Construct Barging Point at South Apron								Total Works Area	6600	
15	Construct Barging Point at South Apron									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	1	26.0	13.0		
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	1	0.0	0.0		
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	2	0.0	0.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Bar Bender and Cutter (Electric)	CNP 021	50%	0	0	1	0.0	0.0		
	Circular Saw, bench mounted	BS D7/78	50%	0	0	2	0.0	0.0		
	Concrete lorry mixer	BS D6/33	70%	2.4	10	2	48.0	33.6		
Percentage of Usage Area to Works Area:								2.0%		
16. Export existing fill material from WA4								Total Works Area	26550	
16.1	Excavator at WA 4									
	Tracked excavator (14t)	BS C2/7	70%	3.2	8	2	51.2	35.8		
16.2	Truck Traffic at Haul Road									
	Dump Truck	BS D9/39	50%	2.4	10	20	480.0	240.0		
16.3	Barge Operation at Barging Point									
	Derrick Barge	CNP 061	30%	10	25	1	250.0	75.0		
Percentage of Usage Area to Works Area:								1.3%		
17. TCSS and Finishes								Total Works Area	100000	
17	TCSS and Finishes									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	4	104.0	52.0		
	Lorry, 5.5 tonne < gross vehicle weight <= 38 tonne	CNP 142	30%	2.4	10	4	96.0	28.8		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Drill, Precussive, Hand-held (Electric)	CNP 064	70%	0	0	4	0.0	0.0		
	Percentage of Usage Area to Works Area:								0.1%	
	18. Installation of Signages & Road Painting								Total Works Area	100000
	18	Installation of Signages & Road Painting								
Tracked mobile crane (132kW, 55t)		BS C3/29	50%	2.6	10	4	104.0	52.0		
Lorry, 5.5 tonne < gross vehicle weight <= 38 tonne		CNP 142	30%	2.4	10	4	96.0	28.8		
Generator, Super Silenced, 70 dB(A) at 7m		CNP 103	100%	0	0	1	0.0	0.0		
Drill, Precussive, Hand-held (Electric)		CNP 064	70%	0	0	4	0.0	0.0		
Paint Line Marker		CNP 161	50%	0	0	2	0.0	0.0		
Percentage of Usage Area to Works Area:								0.1%		
19. Surfacing Works								Total Works Area	100000	
19	Surfacing Works									
	Air Compressor, Air flow >10m3/min and <=30 m3/min	CNP 002	100%	0	0	2	0.0	0.0		
	Breaker, Hand-held, Mass >= 10 kg	CNP 023	50%	0	0	4	0.0	0.0		
	Asphalt Paver	CNP 004	70%	3.2	8	1	25.6	17.9		
	Road Roller	CNP 185	70%	3.2	8	2	51.2	35.8		
	Percentage of Usage Area to Works Area:								0.1%	
20. Testing and Commissioning								Total Works Area	100000	
20	Fitting Out									
	Tracked mobile crane (132kW, 55t)	BS C3/29	50%	2.6	10	1	26.0	13.0		
	Generator, Super Silenced, 70 dB(A) at 7m	CNP 103	100%	0	0	1	0.0	0.0		
	Drill, Precussive, Hand-held (Electric)	CNP 064	70%	0	0	1	0.0	0.0		
	Percentage of Usage Area to Works Area:								0.0%	



## APPENDIX 4A CALCULATION OF WATERING EFFICIENCY

With reference to Cowherd et al., “*Control of Fugitive Dust Sources*”, EPA-450/3-88-308 issued by United States Environmental Protection Agency, Office of Air Quality Planning and Standards Research Triangle Park NC, the percentage of efficiency for dust mitigation by watering is calculated from the Equation (3-2).

$$C = 100 - \frac{0.8pdt}{i} \quad (3-2)$$

Where

- C = percentage of efficiency, %  
 p = potential average hourly daytime evaporation rate, mm/hr = 0.23676 <sup>(1)</sup>  
 d = Average hourly daytime traffic rate per hour = 40/hr <sup>(2)</sup>  
 t = time between applications of watering, hr  
 i = Application intensity = 0.201 gal/yd = 0.91 L/m<sup>2</sup> <sup>(3)</sup>

Note:

- (1)  $p = 0.0049 \times \text{annual evaporation} = 0.0049 \times 48.3189 \text{ inch}$ . 48.3189 inch is equivalent to the annual evaporation of 1227.3mm obtained from the Hong Kong Observatory ([http://www.weather.gov.hk/cis/normal/1981\\_2010/normals\\_e.htm](http://www.weather.gov.hk/cis/normal/1981_2010/normals_e.htm)).
- (2) Estimated by Engineer.
- (3) The assumptions provided are for the purpose of assessment predictions only. Actual figures would be defined in the detailed design stage.

With the above assumptions and the frequency of watering as 1 per hour (i.e.  $t = 1$ ), the percentage of efficiency is calculated as:

$$C = 100 - \frac{0.8 \times (0.23676 \times 40 \times 1)}{0.91} = 91.7\%$$