

Appendix 3.1b Adjustment of Background SO₂ at Black Point Power Station and Castle Peak Power Station

Since the BPPS is gas-fired gas turbine power plant, the SO₂ emission is very negligible in accordance with the BPPS EIA Study, Annex B (source Emissions and Characteristics - Option 3). Thus, no SO₂ concentration contributed from BPPS is considered in this assessment.

Adjustment for SO₂ concentration from CPPS contribution:

For ASRs located at Lung Kwu Tan, Tuen Mun Valley & Area38, since the worst wind direction from BPPS/STF and CPPS are opposite, no cumulative impact from CPPS is anticipated.

Hourly SO₂ concentration

Since there is no wind tunnel test for SO₂ concentrations performed in the BPPS EIA Study, the SO₂ concentration from CPPS contribution are estimated based on the BPPS EIA Study Annex H, Table H1b & H1c, maximum hourly NO_x concentration at Ha Pak Nai and Mai Po Nature Reserve. In accordance with the BPPS EIA Study, Annex B, the NO_x concentration at the source is 1,577mg/m³, and the latest licence limit of SO₂ for emission from CPA & CPB is 2,100mg/m³. Thus, a factor of 1.33 is applied to adjust the SO₂ concentration from both CPA and CPB contribution.

There is no flue gas desulphurization system (FGD) applied to the current CPA and CPB operation. For CPB, FGD will be installed to reduce the SO₂ emission. In accordance with the Emission Control Project to CPPS "B" Units EIA Study, Annex A, Table A.4, further 89% SO₂ reduction will be applied to the adjusted SO₂ concentration from CPB contribution for Ha Pak Nai and 88.5% for Tin Shui Wan Park.

ASR	CPA, NO _x (µg/m ³) ⁽¹⁾	CPB, NO _x (µg/m ³) ⁽¹⁾	Adjusted SO ₂ concentration
Sheung Pak Nai ⁽²⁾	118.3	91.7	171
Ha Pak Nai	118.3	91.7	171
Lung Kwu Tan ⁽³⁾	-	-	0
Tin Shui Wai Park	73.8	89.3	112
Tuen Mun Valley & Butterfly Beach Area ⁽³⁾	-	-	0
Tuen Mun Area 38 ⁽³⁾	-	-	0

Notes:

- (1) The maximum measured NO_x concentrations from CPPS contributions are reference to BPPS EIA Report Annex H, Table H.1
- (2) As there is no wind tunnel testing was performed at Sheung Pak Nai in the BPPS EIA Study, the SO₂ concentrations predicted at Ha Pak Nai is used as worst case assumption.
- (3) For ASRs located at Lung Kwu Tan, Tuen Mun Valley, Tuen Mun Valley, Butterfly Beach Area & Tuen Mun Area38, since the worst wind direction from BPPS/STF and CPPS are not at the same wind directions, no cumulative impact from CPPS is anticipated.

Daily and Annual SO₂ concentration

In the BPPS EIA Study, Annex B, the SO₂ concentration at the source for CPA and CPB in the wind tunnel testing are 1,635mg/m³ and 1726mg/m³, respectively. However, refer to the latest SP Licence, the licence limit of SO₂ for emission from both CPA and CPB are 2,100mg/m³. Thus a factor of 1.28 is applied to adjust the SO₂ concentration from CPPS contribution as worst case condition.

ASR	Daily SO ₂ (%AQO) ⁽¹⁾	Annual SO ₂ (%AQO) ⁽¹⁾	Adjusted Daily SO ₂ concentration (µg/m ³)	Adjusted Annual SO ₂ concentration (µg/m ³)
Sheung Pak Nai ⁽²⁾	13.3	1.5	60	1.5
Ha Pak Nai	13.3	1.5	60	1.5
Lung Kwu Tan	8.6	0.8	39	0.8
Tin Shui Wai Park	12.5	1.1	56	1.1
Tuen Mun Valley & Butterfly Beach Area	7.6	1.0	34	1.0
Tuen Mun Area 38 ⁽³⁾	-	-	34	1.0

Notes:

- (1) The 2nd highest daily & annual SO₂ concentrations due to BPPS & CPPS emissions are reference to BPPS EIA Report Part B, Table 6.2b.
- (2) As there is no wind tunnel testing was performed at Sheung Pak Nai in the BPPS EIA Study, the SO₂ concentrations predicted at Ha Pak Nai is used as worst case assumption.
- (3) The daily and annual average SO₂ concentrations are mainly contributed by CPPS. For CPPS contribution, as no wind tunnel testing was performed at Tuen Mun Area 38 in the BPPS EIA Study, reference was made to the Emission Control Project to CPPS "B" Units EIA Study with regards to the CPPS contribution. The maximum concentration ratio predicted at Tuen Mun Area 38 is lower than the maximum concentration ratio predicted at Butterfly Beach Area as presented in the CPPS "B" Units EIA Study. Overall on conservative side, we assume that the total daily and annual BPPS and CPPS contribution at Tuen Mun Area 38 would be same as the total daily and annual BPPS and CPPS contribution at Butterfly Beach Area.