

Air Quality

Malaysian Ambient Air Quality Standards 2013

In March 2015, the Department of Environment Malaysia issued a notice entitled “**Notice 1/2015 (March 2015): Notice to Registered EIA Consultants: New Malaysian Ambient Air Quality Standards, 2013**”. The notice is to inform that the Malaysian Ambient Air Quality Guidelines 1989 (hereinafter referred to as “**MAAQG, 1989**”) has now been replaced by the **Malaysian Ambient Air Quality Standards 2013** (hereinafter referred to as “**MAAQS, 2013**”).

The MAAQS, 2013 has the following features:

- a. Addition of a new parameter which is particulate matter with size less than 2.5 micron (PM_{2.5});
- b. Revised concentration limits.

The new concentration limit is introduced in a staggered approach with three (3) interim targets as follows:

- i) Interim target 1 (IT-1) by 2015;
- ii) Interim target 2 (IT-2) by 2018; and
- iii) Ambient air quality standard value by 2020.

In addition, Total Suspended Particulates (TSP) and Lead (Pb) has been removed from the MAAQS, 2013. The prescribed limits for TSP and Pb in the MAAQG, 1989 were 260 µg/m³ and 90 µg/m³ for 24 hours and 1-year averaging time, and 1.5 µg/m³ (3 months averaging period) respectively.

The summary of the MAAQS, 2013 prescribed standards is as follows (**Table 5.2.14**):

Table 5.2.14 Malaysia Ambient Air Quality Standard

Pollutant	Average Time	Unit	MAAQG, 1989	IT-1 (2015)	IT-2 (2018)	Standard (2020)
Particulate matter with size less than 10 micron (PM ₁₀)	1 Year	µg/m ³	50	50	45	40
	24 Hours	µg/m ³	150	150	120	100
Particulate matter with size less than 2.5 micron (PM _{2.5})	1 Year	µg/m ³	-	35	25	15
	24 Hours	µg/m ³	-	75	50	35
Sulphur dioxide (SO ₂)	1 Hour	µg/m ³	350	350	300	250
	24 Hours	µg/m ³	105	105	90	80
Carbon monoxide (CO)	1 Hour	mg/m ³	35	35	35	30
	8 Hours	mg/m ³	10	10	10	10
Nitrogen dioxide (NO ₂)	1 Hour	µg/m ³	320	320	300	280
	24 Hours	µg/m ³	75	75	75	70

Ground-level ozone (O ₃)	1 Hour	µg/m ³	200	200	200	180
	8 Hours	µg/m ³	120	120	120	100

5.2.8.2 Ambient Air Quality

For the determination of the baseline ambient air quality, twelve (12) sampling locations along the Project alignment were selected and monitored. The description of the ambient air quality monitoring stations is shown in **Table 5.2.15** and in **Figure 5.2.15 (a)** to **Figure 5.2.15 (e)**.

The baseline ambient air quality monitoring exercise was carried out by a SAMM [Laboratory Accreditation Scheme of Malaysia] accredited laboratory namely UiTM-A&A Laboratory (SAMM No.: 084) from 21 to 30 April 2016 (for **A1** to **A9**) and from 23 to 26 May 2016 (for **A10** to **A12**). The results of the monitoring exercise is summarized in **Table 5.2.16** and shown in detail in **Appendix 3**.

From the results, it can be seen that for the parameters monitored, the concentrations were within the **Malaysian Ambient Air Quality Standards (MAAQS) 2013** for IT-1 (2015).

Particulate Matter

Based on the results, the 24-hours averaging time for PM₁₀ concentrations ranged from 39 µg/m³ to 65 µg/m³ which complies with the IT-1 standards limit of 150 µg/m³. The 24-hours averaging time for PM_{2.5} concentration ranged from 13 µg/m³ to 39 µg/m³ which also complies with the IT-1 (2015) standards limit of 75 µg/m³. In addition, the ratio of PM_{2.5} to PM₁₀ ranged from 0.25 to 0.7.

NO₂









For all sampling points, Nitrogen Dioxide (NO₂) was not detected (< 1 µg/m³) for the 1-hour averaging time monitored except at A1: Near Snake Temple (at 1 µg/m³).





CO

For all the sampling points, no detection (< 2 ppm) for Carbon Monoxide (CO) was observed for the grab samples.

It can be concluded that since most of the sampling points are located along the major roads, the presence of fine particulate matters is most likely from the emissions of vehicles plying the roads.

Table 5.2.15: Description of the Ambient Air Quality Monitoring Stations

Location	Description	Photo	Coordinates
A1	Near Snake Temple		N 5° 18' 50" E 100° 16' 56"
A2	Pintasan Mayang 7		N 5° 19' 19" E 100° 16' 18"
A3	Near Apartment Taman Sg Ara		N 5° 19' 33" E 100° 16' 8"
A4	Near Relau		N 5° 20' 36" E 100° 15' 56"
A5	Jalan Buah Jambu, Air Hitam		N 5° 22' 46" E 100° 16' 22"
A6	Near Emerald Height		N 5° 23' 12.78" E 100° 16' 22.44"
A7	Taman Cantik		N 5° 24' 35.32" E 100° 16' 49.25"
A8	Penang Chinese Girls High School		N 5° 26' 0.72" E 100° 18' 8.84"

Location	Description	Photo	Coordinates
A9	SJK Tamil Azad		N 5° 26' 12.16" E 100° 18' 16.69"
A10	Taman Western		N 05° 25' 26.24" E 100°18' 9.46"
A11	Kek Lok Si Crematorium		N 5° 23' 55.62" E 100°16' 12.97"
A12	Taman Oriental Garden		N 5°22' 32.34" E 100°16' 30.12"

Note: Location coordinates as determined from Google Earth

Table 5.2.16: Results of the Ambient Air Quality Monitoring

Parameter	Averaging Time	Concentration ($\mu\text{g}/\text{m}^3$)						MAAQS (IT-1 [2015])* ($\mu\text{g}/\text{m}^3$)
		A1	A2	A3	A4	A5	A6	
Particulate Matter less than 10 microns as PM_{10}	24-hours	52	65	65	52	52	39	150
Particulate Matter less than 2.5 micron as $\text{PM}_{2.5}$	24-hours	26	39	26	26	26	26	75
Ratio of $\text{PM}_{2.5}$ to PM_{10}	-	0.5	0.6	0.4	0.5	0.5	0.7	
Nitrogen Dioxide as NO_2	1-hour	1	ND (<1)	ND (<1)	ND (<1)	ND (<1)	ND (<1)	320
#Carbon Monoxide as CO	Grab Sample (ppm)	ND (<2)	ND (<2)	ND (<2)	ND (<2)	ND (<2)	ND (<2)	35 mg/m^3 (30 ppm)

Parameter	Averaging Time	Concentration ($\mu\text{g}/\text{m}^3$)						MAAQS (IT-1 [2015])* ($\mu\text{g}/\text{m}^3$)
		A7	A8	A9	A10	A11	A12	
Particulate Matter less than 10 microns as PM_{10}	24-hours	52	65	65	65	52	52	150
Particulate Matter less than 2.5 micron as $\text{PM}_{2.5}$	24-hours	26	26	26	26	13	26	75
Ratio of $\text{PM}_{2.5}$ to PM_{10}	-	0.5	0.4	0.4	0.4	0.25	0.5	
Nitrogen Dioxide as NO_2	1-hour	ND (<1)	ND (<1)	ND (<1)	2	ND (<1)	ND (<1)	320
#Carbon Monoxide as CO	Grab Sample (ppm)	ND (<2)	ND (<2)	ND (<2)	ND (<2)	ND (<2)	ND (<2)	35 mg/m^3 (30 ppm)

Note: * Interim Target 1 (2015) of the Malaysian Ambient Air Quality Standard 2013

#Unit quoted in ppm unless stated

Source: UiTM A&A Laboratory 2016 (**Appendix 3**)