

## **A Proposal to Strengthen the Control of Excessive Exhaust Emissions from Petrol and Liquefied Petroleum Gas Vehicles and Introduce an Emission Reduction Supporting Measure**

### **PURPOSE**

To further improve roadside air quality, Government proposes to enhance the control of excessive exhaust emissions from in-use petrol and liquefied petroleum gas (LPG) vehicles and provides a one-off subsidy to assist vehicle owners to replace the catalytic converters of LPG taxis and LPG light buses. Government is consulting stakeholders about the proposal.

### **THE PROPOSAL**

2. We propose to strengthen the control of emissions from in-use petrol and LPG vehicles by –

- (a) using roadside remote sensing equipment to screen out in-use petrol and LPG vehicles that emit excessively and require their owners to rectify the excessive emission problem;
- (b) requiring those vehicles screened as emitting excessive emission to pass an advanced emission test done with the aid of a chassis dynamometer<sup>1</sup> at a designated emission test centre within a prescribed period<sup>2</sup> for ascertaining the rectification of the excessive emission problem, and canceling the licences of those vehicles failing to comply with the requirements. The vehicle owner will have to pay the emission test fee, which is currently set at \$310 as stipulated in Schedule 10 of the Road Traffic Ordinance. The

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<sup>1</sup> A chassis dynamometer, which is similar to a treadmill, can simulate real world driving conditions for testing the emissions of a vehicle. The test is more effective in screening out excessive-emission vehicles than conventional emission test which is done when the vehicle is stationary.

<sup>2</sup> The prescribed period will be same as the one under the Smoky Vehicle Control Programme, which is set at 12 working days.

proposal is similar to the existing smoky vehicle control programme<sup>3</sup> that targets diesel vehicles; and

- (c) setting aside a fund of \$150 million for providing a one-off subsidy to assist owners to replace the catalytic converters and associated components of their LPG taxis and light buses before the implementation of the proposed emission control measures.

3. Subject to the outcome of the consultation, we aim to start in early 2013 the deployment of roadside remote sensing equipment to screen out those petrol and LPG vehicles emitting excessively for their owners to take repair actions. In parallel, we will seek to incorporate the advanced emission test with the aid of chassis dynamometer into the annual roadworthiness examination. We also plan to commence the one-off subsidy scheme in mid-2012.

## **JUSTIFICATIONS**

### **Air Pollution at Roadside**

4. Sulphur dioxide (SO<sub>2</sub>), respirable suspended particulates (RSP) and nitrogen dioxide (NO<sub>2</sub>) are amongst the key air pollutants at the roadside. In the past decade, the sulphur contents of motor vehicle fuels were reduced substantially. As compared to 1999, the 2010 SO<sub>2</sub> level at the roadside was reduced by 63%. The SO<sub>2</sub> levels registered by roadside air monitoring stations are now broadly comparable to those by general air quality monitoring stations. Likewise, we have taken strong actions to cut the RSP emitted from diesel vehicles by replacing diesel taxis and minibuses with LPG vehicles, retrofitting pre-Euro diesel commercial vehicles and franchised buses with particulate removal devices, etc.. With progressive implementation of these air quality improvement measures, the roadside SO<sub>2</sub> and RSP levels were reduced by 63% and 34% respectively in last decade. Contrary to the

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<sup>3</sup> The Smoky Vehicle Control Programme operates based on smoky vehicle reports provided by accredited spotters who are trained and tested to visually identify vehicles that emit smoke level over the legal limit of 50 Hartridge Smoke units when they are running on road. We will issue Emission Testing Notices (ETNs) to the owners concerned requiring their vehicles to pass an advanced smoke test (done with the aid of a chassis dynamometer) at a Designated Vehicle Emission Testing Centre within 12 working days. Failure to comply with the requirement will lead to vehicle licence cancellation by the Commissioner for Transport.

reduction trend for other pollutants, the NO<sub>2</sub> levels at the roadside increased by about 20% over the same period. The trends of the concentration levels of SO<sub>2</sub>, RSP and NO<sub>2</sub> at general and roadside monitoring stations are at **Appendix A**. The increase in NO<sub>2</sub> levels at the roadside is the main cause of roadside Air Pollution Index reaching “very high” level (i.e. exceeding 100). To tackle the problem, we have to introduce measures targeting the relevant air pollution sources.

### **Factors Accounting for High Roadside Nitrogen Dioxide Levels**

5. NO<sub>2</sub> is emitted directly by vehicles or formed after further oxidation of the nitric oxide (NO) emitted by vehicles (particularly those of old engine design) via a complicated photochemical process involving volatile organic compounds (VOCs) emitted by vehicles or other sources, and/or ozone present in the ambient air. Moreover, at busy roads in urban districts such as Nathan Road, Yee Wo Street and Des Voeux Road Central, franchised buses and taxis account for a high proportion of their road traffic and hence emissions therein. For example, on major roads in Mongkok<sup>4</sup>, franchised buses and taxis could account for 30% and 35% of the local traffic respectively. In terms of emissions, they respectively contribute to 43% and 39% of vehicular nitrogen oxides (NO<sub>x</sub>) emissions, as well as 27% and 55% of vehicular emissions of VOCs respectively.

6. To tackle the roadside NO<sub>2</sub> problem effectively, we need to adopt a multi-pronged strategy at both the local and regional levels. At local level, we have conducted trial to retrofit Euro II and Euro III buses with “selective catalytic reduction” devices to reduce their NO<sub>x</sub> emissions and pave the way for subsidizing franchised bus operators to undertake the retrofit. After the completion of subsidizing vehicle owners to replace their pre-Euro and Euro I diesel commercial vehicles, we have launched a one-off grant scheme to encourage owners of Euro II diesel commercial vehicles to replace their vehicles with new ones. In parallel, we are working jointly with the relevant Guangdong authorities on the post-2010 emission reduction arrangement for the Pearl River Delta region with a view to tackling, inter alia, the regional ozone and other air quality problems. The proposal set out in this paper can

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<sup>4</sup> We conducted in 2009 an exercise outside the Mongkok roadside air quality monitoring station to estimate with the aid of remote sensing equipment the relative contributions of various vehicle classes such as franchised buses, taxis, private cars, light buses and others to the vehicular NO<sub>x</sub> and hydrocarbons emissions in the locality.

tackle effectively the excessive emission problem of poorly maintained petrol vehicles and LPG vehicles.

### **Excessive Emissions by Petrol and LPG Vehicles**

7. Catalytic converters can reduce the emissions of petrol vehicles and LPG vehicles by up to 90% but their efficiency will deteriorate with use over time. The manufacturers of LPG vehicles recommend replacement of the catalytic converters every 100 000 km (i.e. less than 12 months for an average taxi or light bus), the actual time for replacement will depend on the maintenance conditions and mileage of the vehicles. In general, for LPG taxis and light buses, the replacement could be made every 18 plus months. Owing to the low mileage of petrol private vehicles (about 10 000 km a year on average), their catalytic converters could work for eight years or more. If catalytic converters are not replaced in time, the exhaust emissions (including NO<sub>x</sub>, which is a collective term for NO and NO<sub>2</sub>, VOCs and other pollutants) of the vehicles could exceed their normal levels by ten or more times.

### **Proposal to Offer a One-Off Subsidy to Owners of LPG Taxis and Light Buses**

8. Apart from reducing emissions, vehicle performance will be enhanced and fuel consumption reduced for those vehicles with proper vehicle maintenance. Take LPG taxi as example, proper maintenance can on average reduce fuel consumption by up to about 15% and reduce the chance of incurring the engine stalling problem.

9. Vehicle owners are responsible for ensuring their vehicles not to emit excessively and paying the necessary maintenance costs. As noted from paragraph 7 above, LPG taxis and light buses require much more frequent replacement of their catalytic converters and associated components than petrol private cars due to their high mileage. In order to facilitate vehicle owners of LPG taxis and light buses in adapting to the proposed new emission control regime, we have reserved \$150 million and propose to provide a one-off subsidy to assist vehicle owners to replace their catalytic converters and associated components of LPG taxis and LPG light buses once before introducing the proposed new emission control regime through deployment of

remote sensing equipment. Similar to previous retrofit exercises for pre-Euro diesel vehicles<sup>5</sup>, we will engage contractors via a tendering exercise to provide the replacement service to eligible vehicle owners.

### **Roadside Remote Sensing Equipment**

10. Unlike diesel smoke, the emissions of petrol and LPG vehicles cannot be seen by naked eyes. With the aid of roadside remote sensing equipment, we are able to screen out those emitting excessively and inform their owners to take prompt repair action so as to alleviate roadside air pollution and achieve early improvement in air quality.

11. Remote sensors work on the spectral absorption of infrared and ultra-violet light by the pollutants in the exhaust plume of a vehicle. The concentrations of the pollutants can be calculated based on the degree of absorption. It is a mature technology for screening out vehicles with excessive emissions. The Environmental Protection Department (EPD) started to use remote sensing equipment in Hong Kong as early as 1993 to monitor exhaust emissions of petrol and LPG vehicles. Other places, such as Taiwan as well as Texas and Virginia in the United States have also adopted practices similar to this proposal to control the excessive emission problems of some petrol and LPG vehicles.

### **The Advanced Emission Test and the Emission Limits**

12 To simulate the actual driving environment and to test the real life emissions from vehicles, we propose to require those vehicles identified as emitting excessively to pass an advanced emission test done with the aid of a chassis dynamometer at a designated emission test centre within a prescribed period. Owing to normal vehicle engine aging and the associated wear and tear of mechanical parts, vehicle emissions will generally increase over use. We propose to set the emission limits at two times the corresponding vehicle emission design standard, which are comparable to similar international practices. Vehicles suffering from engine breakdown will have emissions

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<sup>5</sup> From 2000 to 2003, Government provided a one-off grant to assist vehicle owners to retrofit their pre-Euro diesel vehicles with particulate removal devices. About 60 000 vehicles were retrofitted under the scheme. In dispensing the one-off grant, we engaged via a tendering exercise contractors to provide the retrofit service. Upon confirmation of the completion of the retrofit, we paid the grant direct to the contractors to guard against abuse.

greatly exceeding the proposed standard. On the other hand, vehicles that have been properly maintained and serviced will keep their emissions within the proposed limits. Details of the proposed emissions limits are at **Appendix B**. We will exempt all petrol vehicles manufactured before 1 January 1975 as their emissions are not regulated under the Road Traffic (Construction and Maintenance of Vehicles) Regulations.

13. The proposed emission limits will be included in the annual inspection for petrol and LPG vehicles<sup>6</sup>. We shall proceed to amend the related regulation using the new emission limits to replace the existing emission requirement of the Road Traffic Ordinance (Construction and Maintenance of Vehicles) Regulations.

## **IMPLEMENTATION ARRANGEMENTS**

### **Emission Testing Notices**

14. We will deploy mobile roadside remote sensing equipment at various locations to monitor the emission levels of petrol and LPG vehicles. The licence plates of vehicles will be photographed. Based on the monitored emission data, Emission Testing Notices (ETNs) will be issued to the owners of vehicles that are found to have emitted excessively.

15. At each deployment site, we will use two sets of remote sensing equipment with a separation of about 15 metres. To preclude misjudging the emissions of a passing vehicle as excessive, we will issue an ETN only if both sets of equipment indicate excessive emissions. In addition, the equipment will automatically conduct regular check of its accuracy and store all the measurement data for follow up actions (including investigation of complaints). The computer will stop the remote sensing equipment from undertaking further measurement should the equipment fail the self-check.

16. The ETN will stipulate that the vehicle owner should repair the vehicle and have the vehicle passed the emission test at a designated vehicle emission testing center (DVETC) within a prescribed period (which is currently

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<sup>6</sup> Under existing law, private cars within six years from manufacture are not required to pass the annual inspection for licence renewal.

12 working days from the issuing date of the Notice under the Control Programme). If the vehicle can satisfactorily pass the emission test, the centre will issue its owner a Certificate of Compliance and inform us of the result. Should the vehicle owner fail to meet the requirement set out in the Notice, we will inform the Commissioner for Transport that the licence of the vehicle should be cancelled. For a vehicle with an ETN still in effect, the Commissioner for Transport will only consider its application for vehicle licence renewal or ownership transfer after it has passed the specified emission test. For a vehicle having its licence cancelled for failure to fulfill the requirement of an ETN, the Commissioner for Transport will consider its application for re-licencing only after it has passed the emission test. This proposed arrangement is similar to the current one under the Smoky Vehicle Control Programme that targets diesel vehicles. In order to assist vehicle owners and the vehicle repair trade to understand the emission limits applicable to the vehicle, we will print the applicable emission limits on the ETN.

### **Designated Vehicle Emission Testing Centres**

17. To implement the Smoky Vehicle Control Programme, the Government has designated under the Road Traffic Ordinance (Cap. 374) six DVETCs to conduct smoke tests for the vehicles spotted smoky. Details of these DVETCs, such as their locations and the types of vehicles to be tested, are provided at **Appendix C**. We are in discussion with DVETC operators on upgrading their testing facilities so that dynamometer emission tests can be provided for petrol and LPG vehicles as well. We also welcome other interested parties capable of providing the dynamometer emission test to set up DVETCs.

### **Vehicle Annual Inspection Centres**

18. After the abovementioned advanced emission test has been included in the vehicle annual inspection, vehicle examination centres run by Government with chassis dynamometers installed will be responsible for testing LPG taxis and light buses using chassis dynamometers. For new licencing or licence renewal of petrol private cars with vehicle aged over six years, the test will be conducted in designated car testing centres run by the private sector.

## **Testing Fees**

19. The user of the emission test service at a DVETC will need to pay to the centre a testing fee, which is set out at Schedule 10 of the Road Traffic Ordinance (Cap. 374). The current fee is \$310 for each test. The inclusion of the advanced emission test into the annual inspection may bring adjustment to the testing fee. Any adjustment of the fee will require approval by the Legislative Council.

## **Publicity to Assist the Trades**

20. Prior to the introduction of the proposal, we will organize free seminars and demonstrations to help vehicle owners understand this new measure. We will also discuss with the vehicle repair trade to raise their awareness of the maintenance of petrol and LPG vehicles with excessive emission problems. In this connection, we have drawn up together with the taxi repair trade a checklist for repairing LPG taxis and will prepare a similar checklist for LPG light buses. We will also organize technical seminars and dynamometer test demonstrations for the trade to understand the new test method and the maintenance required for these vehicles.

## **Advice to Vehicle Owners**

21. Vehicle owners should properly maintain their vehicles. Apart from avoiding excessive emissions, this will help enhance vehicle safety and reduce fuel consumption. To prevent vehicles from emitting excessively, vehicle owners should inspect regularly their vehicles according to the vehicle owner's manual and replace when needed their catalytic converters, oxygen sensors, spark plugs, etc.. Support from vehicle owners to properly repair and maintain their vehicles is indispensable if we are to improve our roadside air quality.

## **TIMETABLE**

22. Subject to the outcome of the consultation, we plan to commence the one-off subsidy scheme to assist vehicle owners to replace the catalytic converters of their LPG taxis and light buses around mid-2012. The



replacement will take about six months to complete. In parallel, we will launch publicity to promote public awareness of the remote sensing and associated control measures in collaboration with the trades. After the completion of the replacement programme, we will start the deployment of remote sensing equipment to screen out vehicles that emit excessively for follow up action towards early 2013.

23. To give stronger impetus for vehicle owners to suitably maintain their petrol and LPG vehicles to meet acceptable emission standards and replace the catalytic converters when needed, we shall pursue incorporation of the advanced emission test into the roadworthiness examination.

## **CONSULTATION**

24. We will consult the relevant transport trades, vehicle maintenance trade and Hong Kong Automobile Association about the proposal. Views from vehicle owners and general public are also welcomed. Please send your views by post, email or fax by 15 January 2012 to the Environmental Protection Department (EPD):

Address: Environmental Protection Department

(Consultation on the Control of Excessive Vehicular Emissions)

33/F., Revenue Tower

5 Gloucester Road,

Wanchai, Hong Kong

Email: rs\_consultation@epd.gov.hk

Fax: 2827 8230

25. The Government would like to cite the opinions made in response to this consultation paper from various sectors of the community (in public or private discussions) in their subsequent reports in future. If the opinion maker requests to keep all or part of his/her opinion confidential, his/her wish would be fully respected. However, if no such request is made, the opinions received will be treated as information that can be made public.

26 This document has been uploaded onto EPD's website:

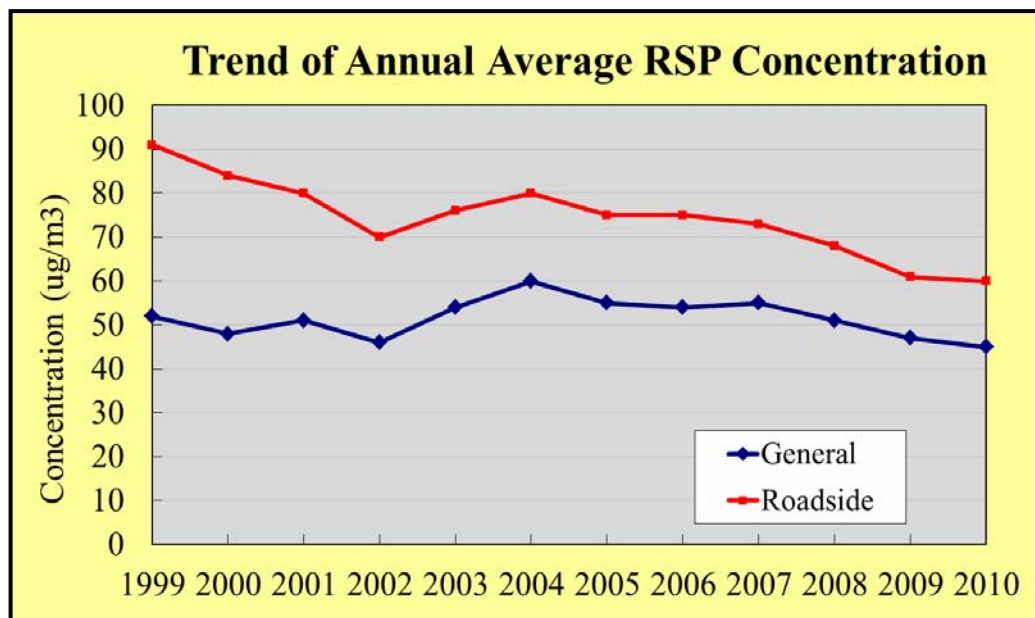
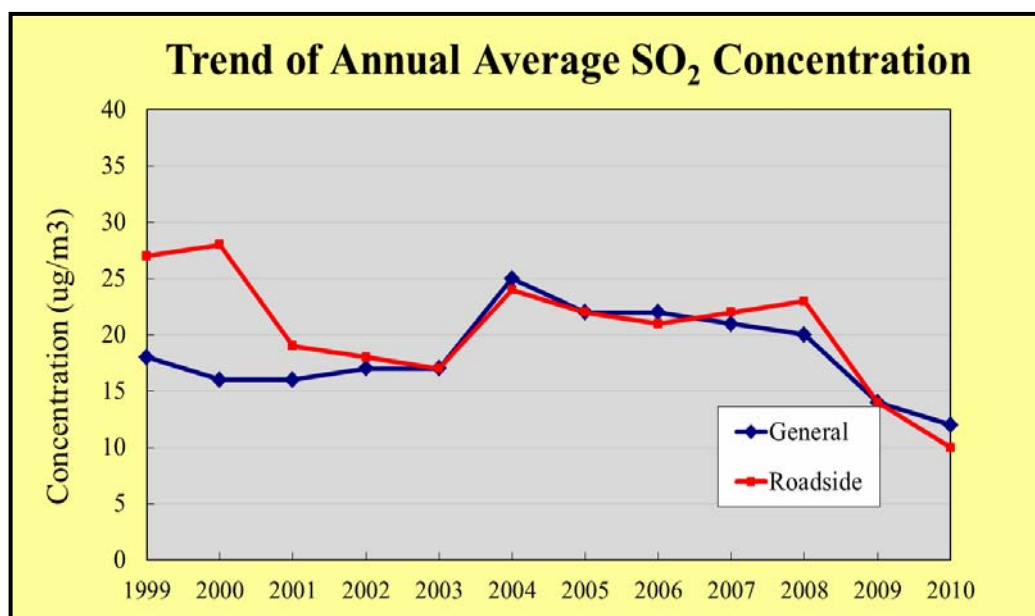
**[http://www.epd.gov.hk/epd/english/environmentinhk/air/pub\\_consult/](http://www.epd.gov.hk/epd/english/environmentinhk/air/pub_consult/)**

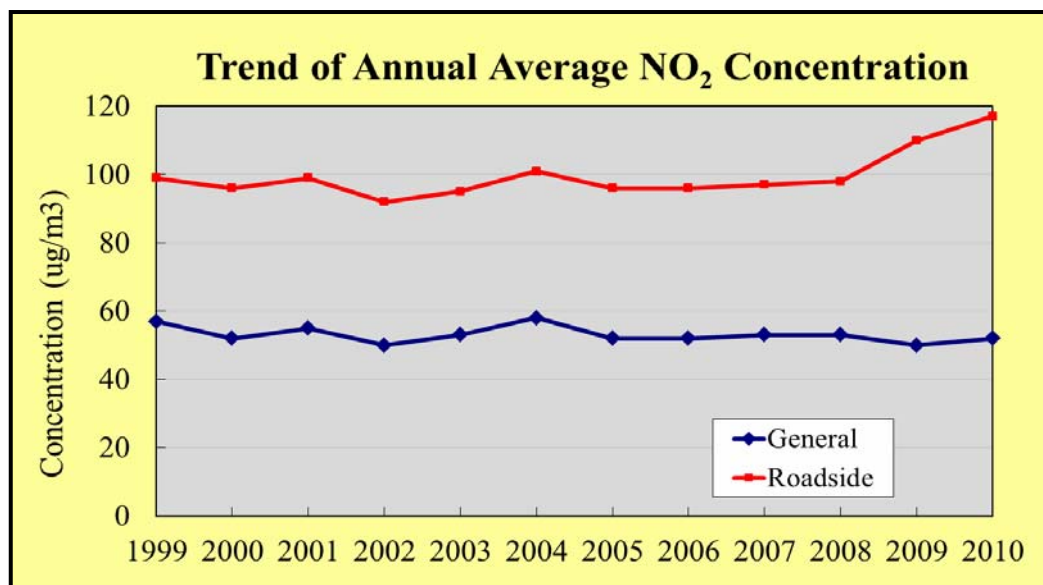
**air\_consult.html**

If you have any query on this consultation document, please contact us on 2594 6255.

**Environment Bureau/Environmental Protection Department**  
**November 2011**

**Trends of the Concentration Levels of SO<sub>2</sub>, RSP and NO<sub>2</sub>  
at General and Roadside Monitoring Stations**





## Emissions Limits

## Appendix B

由 1975 年到 1991 年製造的汽油私家車

### Petrol Private Car of Manufacture year from 1975 to 1991

一氧化碳 (克/公里) CO [g/km]	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
RW <=750	49.36	49.36	49.36	39.49	39.49	39.49	39.49	32.08	32.08	32.08	32.08	32.08	28.63	28.63	28.63	28.63	28.63
751<= RW <= 850	53.80	53.80	53.80	42.94	42.94	42.94	42.94	35.04	35.04	35.04	35.04	35.04	28.63	28.63	28.63	28.63	28.63
851<= RW <= 1 020	57.75	57.75	57.75	46.40	46.40	46.40	46.40	37.51	37.51	37.51	37.51	37.51	28.63	28.63	28.63	28.63	28.63
1 021<= RW <= 1 250	66.14	66.14	66.14	52.81	52.81	52.81	52.81	42.94	42.94	42.94	42.94	42.94	33.07	33.07	33.07	33.07	33.07
1 252 <= RW <= 1 470	75.02	75.02	75.02	60.22	60.22	60.22	60.22	48.86	48.86	48.86	48.86	48.86	37.51	37.51	37.51	37.51	37.51
1 471<= RW <= 1 700	83.42	83.42	83.42	66.63	66.63	66.63	66.63	54.29	54.29	54.29	54.29	54.29	41.46	41.46	41.46	41.46	41.46
1 701<= RW <= 1 930	91.81	91.81	91.81	73.54	73.54	73.54	73.54	59.72	59.72	59.72	59.72	59.72	45.90	45.90	45.90	45.90	45.90
1 930 <= RW <= 2 150	100.20	100.20	100.20	79.96	79.96	79.96	79.96	65.15	65.15	65.15	65.15	65.15	49.85	49.85	49.85	49.85	49.85
RW > 2150	108.59	108.59	108.59	86.87	86.87	86.87	86.87	70.58	70.58	70.58	70.58	70.58	54.29	54.29	54.29	54.29	54.29

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Emissions Limits

Appendix B

車輛之最高質量 Vehicle Maximum Mass	車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	製造日期 Date of manufacture	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]	碳氫化合物+氮氧化物 (克/公里) HC + NOx [g/km]
<= 2.5 tonnes or <= 6 passengers incl. driver  <=2.5 公噸 或 <= 6 位乘客包括司機	-	01/01/1992 - 31/12/1997	-	5.44	-	1.94
		01/01/1998 - 31/12/2000	-	4.40	-	1.00
> 2.5 tonnes or > 6 passengers incl. driver  > 2.5 公噸 或 > 6 位乘客包括司機	RW <=1250	01/01/1992 - 31/12/1998	-	5.44	-	1.94
		01/01/1999 - 31/12/2000	-	4.40	-	1.00
	RW >1250 and RW <=1700	01/01/1992 - 31/12/1999	-	10.34	-	2.80
		01/01/2000 - 31/12/2000	-	8.00	-	1.20
	RW >1700	01/01/1992 - 31/12/1999	-	13.80	-	3.40
		01/01/2000 - 31/12/2000	-	10.00	-	1.40

由 2001 年 1 月 1 日到 2002 年 1 月 1 日之前製造的汽油私家車  
Petrol Private Car of Manufacture date on or after 01/01/2001 and before 01/01/2002

車輛之最高質量 (公噸) Vehicle Maximum Mass (tonnes)	車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]	碳氫化合物+氮氧化物 (克/公里) HC + NOx [g/km]
<=2.5	-	0.40	4.60	0.30	-
>2.5	RW <=1250	-	4.40	-	1.00
	RW >1250 and RW <=1700	-	8.00	-	1.20
	RW >1700	-	10.00	-	1.40

Emissions Limits

Appendix B

在 2002 年 1 月 1 日或之後製造的汽油私家車  
Petrol Private Car of Manufacture date on or after 01/01/2002

車輛之最高質量 (公噸) Vehicle Maximum Mass (tonnes)	車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	製造日期 Date of manufacture	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]	碳氫化合物+氮氧化物 (克/公里) HC + NOx [g/km]
<=2.5	-	01/01/2002 - 31/12/2005	0.40	4.60	0.30	-
		On or after 01/01/2006	0.20	2.00	0.16	-
>2.5	RW <=1305	01/01/2002 - 31/12/2006	0.40	4.60	0.30	-
		On or after 01/01/2007	0.20	2.00	0.16	-
	RW >1305 and RW <=1760	01/01/2002 - 31/12/2006	0.50	8.34	0.36	-
		On or after 01/01/2007	0.26	3.62	0.20	-
	RW >1760	01/01/2002 - 31/12/2006	0.58	10.44	0.42	-
		On or after 01/01/2007	0.32	4.54	0.22	-

## Emissions Limits

## Appendix B

### 由 1975 年到 1991 年製造的汽油貨車

### Petrol Goods Vehicle of Manufacture year from 1975 to 1991

一氧化碳 (克/公里) CO [g/km]	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
RW <=750	49.36	49.36	49.36	39.49	39.49	39.49	39.49	32.08	32.08	32.08	32.08	32.08	28.63	28.63	28.63	28.63	28.63
751<= RW <= 850	53.80	53.80	53.80	42.94	42.94	42.94	42.94	35.04	35.04	35.04	35.04	35.04	28.63	28.63	28.63	28.63	28.63
851<= RW <= 1 020	57.75	57.75	57.75	46.40	46.40	46.40	46.40	37.51	37.51	37.51	37.51	37.51	28.63	28.63	28.63	28.63	28.63
1 021<= RW <= 1 250	66.14	66.14	66.14	52.81	52.81	52.81	52.81	42.94	42.94	42.94	42.94	42.94	33.07	33.07	33.07	33.07	33.07
1 252 <= RW <= 1 470	75.02	75.02	75.02	60.22	60.22	60.22	60.22	48.86	48.86	48.86	48.86	48.86	37.51	37.51	37.51	37.51	37.51
1 471<= RW <= 1 700	83.42	83.42	83.42	66.63	66.63	66.63	66.63	54.29	54.29	54.29	54.29	54.29	41.46	41.46	41.46	41.46	41.46
1 701<= RW <= 1 930	91.81	91.81	91.81	73.54	73.54	73.54	73.54	59.72	59.72	59.72	59.72	59.72	45.90	45.90	45.90	45.90	45.90
1 930 <= RW <= 2 150	100.20	100.20	100.20	79.96	79.96	79.96	79.96	65.15	65.15	65.15	65.15	65.15	49.85	49.85	49.85	49.85	49.85
RW > 2150	108.59	108.59	108.59	86.87	86.87	86.87	86.87	70.58	70.58	70.58	70.58	70.58	54.29	54.29	54.29	54.29	54.29

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Emissions Limits

Appendix B

由 1992 年 1 月 1 日到 1996 年 1 月 1 日之前製造的汽油貨車  
Petrol Goods Vehicle of Manufacture date on or after 01/01/1992 and before 01/01/1996

車輛之最高質量 (公噸) Vehicle Maximum Mass (tonnes)	車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]	碳氫化合物+氮氧化物 (克/公里) HC + NOx [g/km]
DW <=2.5	RW <=1250	-	5.44	-	1.94
	RW >1250 and RW <=1700	-	10.34	-	2.80
	RW >1700	-	13.80	-	3.40
DW >2.5 and DW <= 3.5	RW <= 1 020	-	28.63	-	9.38
	RW <= 1 250	-	33.07	-	10.12
	RW <= 1470	-	37.51	-	10.86
	RW <= 1700	-	41.46	-	11.60
	RW <= 1930	-	45.90	-	12.34
	RW <= 2150	-	49.85	-	13.08
	RW > 2150	-	54.29	-	13.82

## Emissions Limits

## Appendix B

由 1996 年 1 月 1 日到 2000 年 12 月 31 日製造的汽油貨車

**Petrol Goods Vehicle of Manufacture date on or after 01/01/1996 and on before 31/12/2000**

車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	製造日期 Date of manufacture	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]	碳氫化合物+氮氧化物 (克/公里) HC + NOx [g/km]
RW <=1250	01/01/1996 - 31/12/1998	-	5.44	-	1.94
	01/01/1999 - 31/12/2000	-	4.40	-	1.00
RW >1250 and RW <=1700	01/01/1996 - 31/12/1999	-	10.34	-	2.80
	01/01/2000 - 31/12/2000	-	8.00	-	1.20
RW >1700	01/01/1996 - 31/12/1999	-	13.80	-	3.40
	01/01/2000 - 31/12/2000	-	10.00	-	1.40

由 2001 年 1 月 1 日到 2005 年 12 月 31 日製造的汽油貨車

**Petrol Goods Vehicle of Manufacture date on or after 01/01/2001 and on before 31/12/2005**

車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	製造日期 Date of manufacture	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]	碳氫化合物+氮氧化物 (克/公里) HC + NOx [g/km]
RW <=1305	01/01/2001 - 31/12/2005	0.40	4.60	0.30	-
RW >1305 and RW <=1760	01/01/2001 - 31/12/2001	-	8.00	-	1.20
	01/01/2002 - 31/12/2005	0.50	8.34	0.36	-
RW >1760	01/01/2001 - 31/12/2001	-	10.00	-	1.40
	01/01/2002 - 31/12/2005	0.58	10.44	0.42	-

## Emissions Limits

## Appendix B

由 2006 年 1 月 1 日到 2006 年 12 月 31 日製造的汽油貨車

**Petrol Goods Vehicle of Manufacture date on or after 01/01/2006 and on before 31/12/2006**

車輛之最高質量 (公噸) Vehicle Maximum Mass (tonnes)	車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]
DW <= 1.7	RW <= 1305	0.20	2.00	0.16
1.7 < DW <= 3.5	RW <= 1305	0.40	4.60	0.30
	RW >1305 and RW <=1760	0.50	8.34	0.36
	RW > 1760	0.58	10.44	0.42

在 2007 年 1 月 1 日或之後製造的汽油貨車

**Petrol Goods Vehicle of Manufacture date on or after 01/01/2007**

車輛之參考質量 (公斤) Vehicle Reference Mass (Kg)	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]
RW <= 1305	0.20	2.00	0.16
RW >1305 and RW <=1760	0.26	3.62	0.20
RW > 1760	0.32	4.54	0.22

Emissions Limits

Appendix B

汽油及石油氣的士  
Petrol and LPG Taxi

製造日期 Date of manufacture	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]	碳氫化合物+氮氧化物 (克/公里) HC + NOx [g/km]
On or before 31/12/2002 在 2002 年 12 月 31 日之前	-	4.40	-	1.00
01/01/2003 - 31/12/2005	0.40	4.60	0.30	-
On or after 1/1/2006# 在 2006 年 1 月 1 日或之後#	0.20	2.00	0.16	-

汽油及石油氣小巴  
Petrol and LPG Light Bus

製造日期 Date of manufacture	碳氫化合物 (克/公里) HC [g/km]	一氧化碳 (克/公里) CO [g/km]	氮氧化物 (克/公里) NOx [g/km]
On or before 31/12/2006 在 2006 年 12 月 31 日或之前	2.4	14	2.4
On or after 1/1/2007# 在 2007 年 1 月 1 日或之後#	2.4	14	2.4

備註 Remarks :

- DW (Design Weight 車輛之設計重量) means, in relation to a particular motor vehicle, the maximum design loaded vehicle weight recommended by its manufacturer for motor vehicles of the same class or description as the particular vehicle  
設計重量(Design Weight) 就某輛汽車而言，指其製造商就與該汽車屬同一類別或種類的汽車而建議的最高設計負載車輛重量。
- RW (Vehicle Reference Mass 車輛之參考質量) means the mass of the vehicle in running order less the uniform mass of the driver of 75 kg and increased by a uniform mass of 100 kg  
車輛參考質量(Vehicle Reference Mass)指某輛汽車在可駕駛情況下的質量，減去駕駛員平均質量 75 公斤後再一律加上平均質量 100 公斤。
- # These are the draft emission requirements. Requirements subject to revision when more appropriate information becomes available.  
這是草擬排放要求。有關要求會在獲得更多適當資料時加以修訂。-

## Appendix C

### List of Vehicle Emission Testing Centres (VETC)

Company	Address	Vehicles Served
Crown Motors Ltd.	Lot 355, Kiu Wong Street, Kiu Tau Wai Industrial Area, Ping Shan, Yuen Long, N.T.	<u>Centre 1:</u> Vehicle below 5.5 tonnes
		<u>Centre 2:</u> Medium and heavy goods vehicles, single and double deck buses as well as special purpose vehicles
Dah Chong Hong (Motor Service Centre) Ltd.	G/F, 20 Kai Cheung Road, Kowloon Bay, Kowloon	Vehicle below 5.5 tonnes
	1 Hong Yip Street, Yuen Long, N.T.	
China Inspection Co., Ltd.	50 Fuk Hi Street, Wang Chau Industrial Estate, Yuen Long, N.T.	<u>Centre 1:</u> Vehicle below 5.5 tonnes
		<u>Centre 2:</u> Medium and heavy goods vehicles, single and double deck buses as well as special purpose vehicles