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Clerk, Public Accounts Committee  
Legislative Council Building  
8 Jackson Road  
Central  
Hong Kong  
(Attn: Ms Miranda Hon)  
(Fax: 2537 1204)

Dear Ms Hon,

**The Directors Audit's Report on the  
Results of Value for Money Audits (Report No. 44)**

**Chapter 2: Diesel Vehicle Emission Controls**

I refer to your letter of 17 May 2005 and would like to provide you with the information below.

- (a) *the general legislative and administrative framework in respect of the control of vehicle emissions, including the division of responsibilities among different government departments and how they co-ordinate their work in this respect, the rationale for having both the Transport Department (TD) and the Environmental Protection Department (EPD) responsible for conducting smoke tests for smoky vehicles, as well as the reason for adoption of different test procedures and standards (the 60 HSUs of the TD and the 50 HSUs of the EPD) for the smoke tests in relation to the statutory vehicle design standards for smoke emission from motor*

*vehicles (35 HSUs as the prescribed maximum permitted smoke level in Schedule 1 to the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (Cap. 311 sub. Leg. J);*

To control vehicle emissions, it is necessary to stipulate and enforce design standards for vehicles newly produced and registered as well as in-use standards for vehicles running on the road.

Vehicle design emission requirements are stipulated in the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (Cap. 311 sub. Leg. J). Vehicles failing to comply with its emission requirements will not be allowed to be registered in Hong Kong under the Road Traffic Ordinance (Cap. 374) (the Ordinance). The 35 HSUs smoke emission requirement in the Schedule 1 of the Regulations is part of the vehicle design standard for a diesel vehicle. TD is responsible for first registration of all vehicles based upon the type approval emission information provided by the manufacturers. For a vehicle that lacks the required emission information provided by the manufacturers, the application will have to be supported by appropriate emission testing information to prove that the vehicle meets the design emission requirements. EPD provides technical advice to TD concerning the emission requirements.

The in-use vehicle smoke emission requirements are stipulated in regulation 31 and Schedule 4 of the Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap. 374 sub. Leg. A). The maximum permitted smoke or visible vapour emission from an in-use motor vehicle is 60 HSUs. This limit is enforced by TD through its roadworthiness inspection for annual licence renewal.

To further enhance the control of smoky vehicles, the EPD has been running a smoky vehicle control programme since 1988. Voluntary vehicle spotters are trained to report vehicles emitting smoke exceeding 60 HSUs. Vehicles reported will be required to pass a smoke test. The smoke limit for that test is specified as 50 HSUs in a Code of Practice. The programme operates under Part VIIIA of the Road Traffic Ordinance. The Commissioner for Transport has delegated the powers required for EPD to designate vehicle emission

testing centres and related matters, as well as to require the spotted vehicles to attend the smoke test. If a vehicle fails to attend the smoke test at a vehicle emission testing centre as required or fails to comply with the smoke limit, EPD will inform TD to refuse to license or cancel the licence of the vehicle under section 25 of the Ordinance. EPD has adopted a tighter smoke standard for this smoke test because it can help prevent a vehicle from being caught by spotters again soon after passing the EPD smoke test.

- (b) As pointed out in paragraph 3.16 of the Director of Audit's Report (Audit Report), given that the EPD smoke test procedures and standard are more stringent than the TD's, smoky vehicle owners would choose to undergo the TD smoke test instead. The current practice of withdrawing emission testing notice (ETNs) if the vehicles concerned have passed the TD smoke test, before EPD smoke test due dates, may have created a loophole in the smoky vehicle control programme. How would the Administration plug this loophole and will it consider designating one department e.g. TD, for conducting smoke test?***

To further enhance the effectiveness of controlling smoky vehicles, we have developed and introduced the dynamometer test. This new approach has reduced the number of smoky vehicles by 80% since 1999.

TD and EPD will work together to consult the relevant trades on harmonising the smoke limits. In addition, TD will, in conjunction with EPD, consider the feasibility of requiring vehicles with outstanding ETNs to have their smoke emission checked by a dynamometer at their roadworthiness inspection operated under TD's supervision. Hence, a vehicle issued with an ETN will have to undergo a dynamometer smoky test irrespective of whether the vehicle is sent to TD's centres for a roadworthiness inspection or to EPD's centres for a smoke test.

- (c) *In the Administration's view, how should the different smoke opacity standards adopted by different countries, such as those listed out in Table 4 in paragraph 2.33 of the Audit Report, be compared to that adopted by Hong Kong?*

Smoke opacity standard is only one aspect of a smoke test. A place adopting a lower number may not be more stringent or advanced than another place adopting a higher number. For example, EU's smoke limits for in-use vehicles are equivalent to 66 HSUs for non-turbo-charged engines and 72 HSU for turbo-charged engines. Conducting loaded vehicle smoke tests with dynamometers makes Hong Kong's vehicle smoke standards among the most stringent of the world.

- (d) *In respect of the \$1.4 billion for implementing the programme to reduce vehicle emissions outlined in the 1999 Policy Address:*

- (i) *has all the \$1.4 billion has been spent and, if not, what is the remaining amount? Please provide the total expenditure so far as well as breakdown of expenditure into the various initiatives under the programme;*
- (ii) *apart from the five Finance Committee (FC) meetings as listed, had funding approval for implementing the imitative under the programme been sought from the FC on other occasions?*

- (i) The total spending so far is about \$1.2 billion. The rest will be spent on the retrofit programme for long-idling pre-Euro diesel heavy vehicles and LPG light bus programme which conclude in end-2005. The spending position is given below:

<b>Programme</b>	<b>Expenditure as at mid-May 2005 (SMillion)</b>	<b>Remarks</b>
<b>LPG taxi</b>	724	Programme completed. Nearly all of Hong Kong's 18,138 taxis have been replaced with LPG ones.
<b>Retrofitting pre-Euro Diesel light vehicles</b>	31.2	Programme Completed. 24,000 vehicles have been retrofitted.
<b>Retrofitting non-long-idling pre-Euro diesel heavy vehicles</b>	345	Programme Completed. 33,910 vehicles have been retrofitted.
<b>Retrofitting long-idling pre-Euro diesel heavy vehicles</b>	0	Programme will commence around mid-2005 and complete around end-2005.
<b>LPG / electric light buses</b>	108	Programme will complete in end-2005
<b>Total</b>	<b>1.2 billion</b>	

- (ii) We have not sought funding approval from the FC other than the five meetings.

- (e) *Detailed justifications for the Administration's view that it succeeded in achieving the target of emission reduction with the expenditure of the \$1.4 billion; whether and to what extent had the air quality improved.*

The targets of the comprehensive programme as stated in the 1999 Policy Address were to reduce the total emissions of respirable suspended particulates (RSP) emitted from vehicles by 60% by end 2003, and 80% by end 2005, by which time nitrogen oxide emissions (NOx) should also be reduced by 30%. With continuous implementation of the emission reduction measures, the vehicle emissions of RSPs in the urban area had been reduced by 72% by end-2003. By end-2004, the vehicle emissions of RSP and NOx in the urban area had been further reduced to 76% and 39% respectively. We expect that the reduction targets will be accomplished by end-2005.

Analyses done by the EPD have confirmed that vehicle emissions have been on a declining trend. Diesel vehicles are a major source of elemental carbon in the atmosphere. The measured roadside levels of elemental carbon decreased by 46% compared with four years ago. The measured roadside levels of NOx also decreased by 24% between 1999 and 2004.

While the emissions from motor vehicles are being substantially reduced, the air quality of Hong Kong is being increasingly affected by the regional air pollution. Data collected at the general monitoring stations show an increase of RSPs by 15% and ozone by 26% between 1999 and 2004. RSPs are major constituents of smog. Ozone oxidises nitric oxide to nitrogen dioxide (NO<sub>2</sub>) and causes photochemical reactions among different air pollutants to form RSPs. Hence, between 1999 and 2004, the roadside levels of RSPs decreased only by 9% and NO<sub>2</sub> maintained at similar levels, despite the substantial reduction in vehicle emissions.

While the Administration will keep up our momentum to further reduce the emissions from motor vehicles, we are also making efforts to work with Guangdong to improve the regional air quality through

implementing a Regional Air Quality Management Plan.

- (f) *What is the overall situation of vehicle emissions of RSPs and NOx throughout Hong Kong, not just the urban area?*

Compilation of territory wide emission inventories requires statistics inputs from other sources and departments. The 2004 information is being compiled and will be available later in 2005. In 2003, the corresponding territory wide vehicle emissions of RSPs and NOx have been reduced by 60% and 35% respectively.

- (g) *How does the Administration control the emissions from the cross-boundary vehicles which travel between Hong Kong and the Mainland and which may use marked oil?*

The Dutiable Commodities Regulations (Cap. 109, sub. Leg. A) enforced by the Customs and Excise Department (C&E) regulates the amount of duty-exempted Mainland diesel which a cross-boundary truck can bring into Hong Kong, i.e. not exceeding 3/4 of the fuel tank capacities. It is also illegal to transfer the diesel to another vehicle or sell the diesel in Hong Kong. Any offence is subject to a fine up to \$1,000,000 and imprisonment up to 24 months.

The main environmental concern of Mainland diesel is its sulphur content. Until 2001, the sulphur limit of Mainland motor diesel was 0.5% by weight, which was 100 times that of the ultra low sulphur diesel (ULSD) currently mandated in Hong Kong. To improve the diesel quality, the Central Government reduced the sulphur limit by 60% to 0.2% in 2002. Since 2004, Guangdong has started to introduce diesel with sulphur limit of 0.05% in Shenzhen and Guangzhou. The environmental concern of cross-boundary vehicles using Mainland diesel has thus been much relieved, and the problem will be further contained with the progressive tightening of sulphur limit in the Mainland.

The amendments to the Dutiable Commodities Ordinance (Cap. 109) in 2001 enhanced the deterrent effect against illegal use of marked oil

in vehicles. The number of illicit refilling black spots dropped drastically from 110 in 1999 to around 27 in 2004. The total amount of motor diesel caught duty unpaid by C&ED has also dropped by 86% since then.

- (h) *When the Chief Executive undertook in 1999 to spend \$1.4 billion on reducing vehicle emissions, had the Administration assessed the impact of regional air pollution on air quality of Hong Kong as the Mainland economy continued to grow and, if so, the details of the assessment?*

In the 1999 Policy Address, the then Chief Executive stressed that “Hong Kong cannot possibly solve all of its environmental problems single-handedly. We need to work closely with the Mainland authorities.” In 1999, Hong Kong and Guangdong authorities embarked on a joint study on regional air quality and to formulate long-term preventive measures.

The joint study, completed in 2002, concluded that if the Hong Kong SAR Government and the Guangdong Provincial Government did not implement additional improvement measures, the regional air quality would continue to deteriorate.

Based on the findings of the Study, the Hong Kong SAR Government and the Guangdong Provincial Government reached a consensus in April 2002 to reduce by 2010, on a best endeavour basis, the regional emissions of four major regional air pollutants by such levels that will not only enable Hong Kong to meet its current air quality objectives but also significantly improve the air quality of the PRD and relieve the regional smog problem.

The two governments have drawn up a PRD Regional Air Quality Management Plan with a view to meeting the emission reduction targets. The PRD Air Quality Management and Monitoring Special Panel has been set up under the Hong Kong/Guangdong Joint



Working Group on Sustainable Development and Environmental Protection to follow up the tasks under the Management Plan. The two governments are now implementing this plan, which includes the setting up of a regional air quality monitoring network. The two governments are also developing an Emission Trading Pilot Scheme for the power plants in the PRD Region.

- (i) ***Regarding the recommendation in paragraph 4.21(a) of the Audit Report, would the Administration consider other means, which can reduce the risk, to import LPG from Shenzhen, such as by constructing a cross-border pipe for the purpose and, if so, what are the details?***

The Administration is open-minded as to where LPG suppliers source their LPG. LPG suppliers may propose any means of transporting LPG into Hong Kong provided that safety requirements under the Gas Safety Ordinance (Cap 51) are met. As regards the construction of a cross-border LPG pipe, since LPG is heavier than air, its transportation through long pipelines can be dangerous. Nevertheless, the Administration will consider any safe, practical and reliable means of importing LPG proposed by LPG suppliers.

- (j) ***It is stated in paragraphs 4.22(b) and (c) of the Audit Report that the EMSD will continue to examine the feasibility of building a new LPG terminal on Hong Kong Island, and the Government is making efforts to expand the LPG filling network. What are the implementation timetables and would the Administration consider providing more LPG filling stations?***

The EMSD will continue to examine the feasibility of building a new LPG terminal on Hong Kong Island and is working in conjunction with relevant departments on the time required for conducting a site search exercise. In addition, the Administration will continue to look for suitable sites for LPG filling stations. Up to now, there are 50 LPG filling stations in operation and six new stations with LPG filling service will be in operation in the next two years. The

Administration will require all new petrol filling stations to provide LPG filling service through land lease conditions, provided that the safety requirements can be met.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Sarah Liao".

( Sarah LIAO )  
Secretary for the Environment, Transport and Works

c.c.      Commissioner for Transport  
            Director of Environmental Protection  
            Director of Audit