

# 立法會 *Legislative Council*

LC Paper No. CB(4)1409/16-17(06)

Ref. : CB4/PL/TP

## **Panel on Transport Meeting on 21 July 2017**

### **Background brief on safety requirements for road works**

#### **Purpose**

This paper provides background information on safety requirements for road works. It also summarizes the major views and concerns expressed by Legislative Council ("LegCo") Members on the subject.

#### **Background**

##### Legal requirements and Code of Practice for the Lighting, Signing and Guarding of Road Works

2. Road works can cause inconvenience and are a potential hazard to the safety of road users and those employed in carrying out the works. Statistics of traffic accidents resulting in casualties involving works vehicles engaged in road maintenance works from 2006 to 2016 are set out in **Appendix I**.
3. At present, traffic issues of road works are regulated by the legal requirements stipulated in the Road Traffic Ordinance (Cap. 374) ("the Ordinance") and the relevant subsidiary regulations.
4. To ensure the safe operations of road works, the Highways Department ("HyD") has, pursuant to the Ordinance, prescribed a "Code of Practice for the Lighting, Signing and Guarding of Road Works" ("the Code") to set out a standard of good practice in order to enable the relevant legal requirements to be met in a wide variety of circumstances. The Code was drawn up by making reference to local experience and international standards (e.g. the United States, European countries, etc.), and will be updated when necessary. When carrying out road maintenance works, contractors should follow the requirements of the Code. Non-compliance with the requirements of the Code may in any civil or criminal proceedings be relied upon by any party to the proceedings as tending to establish or negative any liability which is in question in those proceedings.

5. Further, pursuant to regulation 20 of the Road Traffic (Traffic Control) Regulations (Cap. 374G), contractors shall, in accordance with Schedule 5 of Cap. 374G, erect signs, road markings, barriers and road hazard warning lanterns with positions in compliance with the Code, or otherwise would constitute an offence.

6. On the other hand, when conducting maintenance works on expressways, contractors shall first apply to HyD for an expressway works permit under the Road Traffic (Expressway) Regulations (Cap. 374Q), and shall comply with the conditions of the permit, or otherwise would constitute an offence.

7. In 2007, HyD included the requirement of using shadow vehicles when conducting mobile operations (such as setting up lane closure, removing lane closure, gully emptying, sweeping/watering, or emergency road surface repairs, etc.) on expressways in the Code in order to strengthen protection within the works area (**Appendix II**). The works vehicle and the shadow vehicle shall be equipped with warning lanterns and signing to provide early warning to other motorists. The Code also stipulates that, when carrying out maintenance works on expressways with lane closure, advance warning signs shall be displayed at least 600 metres in advance of the works area. Flashing arrow signs shall also be displayed where temporary diversion begins (**Appendix III**).

#### Other measures to ensure safety of road works

8. Apart from the above, HyD has included a requirement in the terms of road maintenance contracts that the contractors should formulate safety plans and implement safety management systems to strictly ensure that works procedures are conducted safely. The foremen and safety officers/safety supervisors of contractors shall conduct site inspections to monitor safety at operations.

9. HyD will regularly conduct random and surprise inspections. If any irregularities are found, HyD will deduct payment by the provision of the contract. Serious non-compliance cases will be reflected in the contractor's performance reports. The past performance of contractors is one of the factors in considering their future bids on public works contracts.

#### Recent revision of Code of Practice for the Lighting, Signing and Guarding of Road Works

10. With a view to enhancing safety of road works as well as the protection of road maintenance workers, the Administration has set up an

inter-departmental working group with participation of HyD, Transport Department and the Police to review the need to improve the lighting, signing and guarding measures relating to road works, making reference to the latest relevant technological developments, local experience, the latest standards and practices of other countries and their applicability to the local roads in Hong Kong, etc. Based on the findings of the working group, HyD revised the Code and published the revised edition in the Gazette on 16 June 2017.<sup>1</sup> The revised edition is the fifth edition of the Code and shall take effect from 1 January 2018. The major revisions include:

- (a) extending the application of shadow vehicles equipped with a truck-mounted attenuator and enhancing the associated technical requirements to further minimize the risk of a vehicle crashing into a work site during an accident as well as to further reduce the resultant damage or injury;
- (b) emphasizing the need to consider the provision of a sufficient safety clearance zone, working duration, space and safety protection for a works area while planning the road works to reduce the risk faced by road users and workers; and
- (c) strengthening the requirement on retroreflective material for temporary traffic signs, enhancing the application guidelines on flashing arrow signs and temporary variable message signs and more to provide clearer directions to motorists.

11. Meanwhile, HyD has indicated that it will continue to carry out the relevant legislative review to strengthen the traffic control and safety for road works, and will report to the Panel on Transport on the latest developments in the review in a timely manner.

### **Major views and concerns of Members**

12. The major views and concerns of LegCo Members on safety requirements for road works are summarized in the ensuing paragraphs.

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<sup>1</sup> The revised Code is available at:  
[https://www.hyd.gov.hk/en/publications\\_and\\_publicity/publications/technical\\_document/code\\_of\\_practice/doc/COP\\_2017.pdf](https://www.hyd.gov.hk/en/publications_and_publicity/publications/technical_document/code_of_practice/doc/COP_2017.pdf)

### Road works safety

13. When discussing Hong Kong's occupational safety performance at the meeting of the Panel on Manpower on 15 November 2016, members expressed grave concern about the safety of workers engaged in road works and enquired about the specific measures taken by the Administration to safeguard occupational safety of workers working on road/at roadside. Some members took the view that the principal contractor should also be held responsible for safeguarding the occupational safety of road workers, and that various bureaux/government departments should work collaboratively in formulating safety plans prior to commencement of the road works, so as to safeguard the occupational safety of road workers.

14. According to the Administration, the Labour Department has enhanced various measures with regard to the occupational safety and health of road/roadside workers, including enhancing publicity to remind the industry to take appropriate measures, and stepping up surprise inspections to road/roadside work in terms of frequency and intensity.

15. In response to Council questions raised by Members at the Council meetings in July and November 2016, the Administration advised that between 2011 and 2015, HyD conducted a total of about 13 000 regular and surprise inspections at night time, or an average of about seven per night, to check if road maintenance contractors complied with the legislation and the Code. During such inspections, HyD identified 270 non-compliance cases, of which 248 cases concerned lighting, signing and guarding at works sites, including signage not properly secured, lack of information or wrong information on notice boards, defective flashing arrow signs and discolouring of warning signs. Another 22 non-compliance cases concerned personal protective equipment for workers, mainly non-wearing of safety helmets.

### Lighting, signing and guarding of road works

16. Members raised Council questions on the relevant requirements on lighting, signing and guarding of road works. A Member asked if the Administration would review the height of directional signs for traffic diversion for road works on expressways and consider installing additional directional signs of an appropriate height for viewing by motorists from a close distance. Expressing concerns over the prolonged malfunctioning of warning lanterns for some road works, a Member also asked if the Administration would review the mechanism for regulating the operation of warning lanterns, and step up inspections of road works so as to ensure that warning lanterns were being operated according to the requirements.

17. In this regard, the Administration explained that the Code specified the detailed requirements for different types of devices (e.g. size, colour, materials, conditions necessitating the use of the devices, quantity to be placed, spacing and height, etc.) taking into account the vehicle speed of different roads and road closure requirements for maintenance works, so as to ensure that signs would be clearly visible to road users from the anticipated distance to achieve the desired warning and guarding effect. There were also detailed requirements on the specifications of road hazard warning lanterns to ensure that road users could be aware of the scope of the works area during night time or times of poor visibility. Persons responsible for the road works should ensure that the relevant requirements in the Code were met during the road works.

18. At the meeting of the Panel on Transport on 26 May 2014, members expressed concern about the safety problem that drivers were not given sufficient notice of road repair works ahead by road signs, thus giving rise to potential hazards to the drivers. In response, the Administration said that HyD would urge contractors to strictly follow the relevant safety guidelines to erect signs ahead while carrying out road repair works.

### **Latest development**

19. The Administration plans to report to members the progress of the review of road works safety requirements at the meeting of the Panel on Transport to be held on 21 July 2017.

### **Relevant papers**

20. A list of relevant papers is in **Appendix IV**.

**Traffic accidents resulting in casualties<sup>1</sup>**  
**involving works vehicles engaged in road maintenance works**  
**2006 to 2016 (until June)<sup>2</sup>**

Year	No. of accidents	Date of accident	Time of accident	No. of casualties			
				Killed <sup>1</sup>	Seriously injured <sup>1</sup>	Slightly injured <sup>1</sup>	Total
2006	0	--	--	0	0	0	0
2007	2	24/1/2007	21:09	0	1	0	1
		13/4/2007	01:20	0	0	2	2
		<b>2007 total</b>		<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
2008	0	--	--	0	0	0	0
2009	3	10/1/2009	13:10	0	0	1	1
		30/8/2009	09:50	0	0	1	1
		26/9/2009	04:38	0	0	1	1
		<b>2009 total</b>		<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>
2010	3	29/7/2010	23:50	0	0	1	1
		10/8/2010	08:00	0	0	1	1
		1/9/2010	19:04	0	0	6	6
		<b>2010 total</b>		<b>0</b>	<b>0</b>	<b>8</b>	<b>8</b>
2011	3	27/1/2011	03:35	1	0	0	1
		10/7/2011	04:01	1	1	1	3
		24/7/2011	03:52	0	0	1	1
		<b>2011 total</b>		<b>2</b>	<b>1</b>	<b>2</b>	<b>5</b>
2012	8	11/1/2012	20:47	0	0	1	1
		29/3/2012	04:24	0	0	1	1
		3/4/2012	00:01	0	1	2	3
		9/6/2012	03:35	0	3	11	14
		5/7/2012	23:13	0	1	3	4
		9/7/2012	13:33	0	1	1	2
		7/12/2012	13:42	0	0	4	4
		20/12/2012	21:59	0	0	1	1
		<b>2012 total</b>		<b>0</b>	<b>6</b>	<b>24</b>	<b>30</b>

<sup>1</sup> The figures are compiled by the Transport Department according to the record and classification of the Police. "Killed" means a person who died within 30 days of the accident; "seriously injured" means a person who sustained injury in an accident and was detained in hospital for more than 12 hours; and "slightly injured" means a person who sustained injury in an accident and needed not be admitted to the hospital or was detained in hospital for less than 12 hours.

<sup>2</sup> Figures of 2016 are provisional.

Year	No. of accidents	Date of accident	Time of accident	No. of casualties			
				Killed <sup>1</sup>	Seriously injured <sup>1</sup>	Slightly injured <sup>1</sup>	Total
2013	11	7/1/2013	15:46	0	1	0	1
		8/1/2013	03:00	0	0	1	1
		16/1/2013	13:55	0	1	1	2
		8/3/2013	23:15	0	1	0	1
		23/3/2013	04:14	1	0	1	2
		6/4/2013	03:24	0	1	0	1
		19/4/2013	23:44	0	0	4	4
		6/5/2013	16:44	0	0	1	1
		20/6/2013	22:57	0	1	1	2
		18/7/2013	00:20	0	0	1	1
		15/10/2013	20:35	0	0	2	2
		<b>2013 total</b>		<b>1</b>	<b>5</b>	<b>12</b>	<b>18</b>
2014	7	14/2/2014	15:38	0	1	0	1
		10/8/2014	04:45	0	0	2	2
		26/8/2014	05:44	1	0	0	1
		12/9/2014	16:50	0	1	0	1
		8/10/2014	20:10	0	0	2	2
		25/12/2014	03:03	0	0	2	2
		29/12/2014	04:30	0	0	1	1
		<b>2014 total</b>		<b>1</b>	<b>2</b>	<b>7</b>	<b>10</b>
2015	7	5/2/2015	23:34	0	1	1	2
		4/4/2015	09:12	0	0	2	2
		14/8/2015	02:39	0	1	1	2
		5/10/2015	03:30	0	0	1	1
		17/10/2015	02:05	0	0	1	1
		18/11/2015	02:45	0	1	0	1
		4/12/2015	00:19	0	2	0	2
		<b>2015 total</b>		<b>0</b>	<b>5</b>	<b>6</b>	<b>11</b>
2016 (Jan to Jun)	4	23/5/2016	23:20	0	0	1	1
		31/5/2016	03:42	0	0	2	2
		28/6/2016	04:25	3	0	1	4
		29/6/2016	10:40	0	1	2	3
		<b>2016 Jan to Jun total</b>		<b>3</b>	<b>1</b>	<b>6</b>	<b>10</b>

*(Source: Annex 1 to the Administration's reply to a Council question raised by a Member on "Road maintenance works" at the Council meeting of 13 July 2016)*

### The use of shadow vehicle for mobile operations on expressways

When conducting mobile operations on expressways, it is necessary to use shadow vehicles. Shadow vehicles must be equipped with truck-mounted attenuator, amber flashing beacon, flashing arrow sign and barricade sign. Please refer to **Figure 1** for the equipment of a shadow vehicle. According to the speed limit of the road and mode of operation, the works vehicle and shadow vehicle need to maintain a proper buffer distance (**Figure 2**). The relevant requirement on buffer distance can be found in the Code of Practice for the Lighting, Signing and Guarding of Road Works.



Figure 1: A shadow vehicle

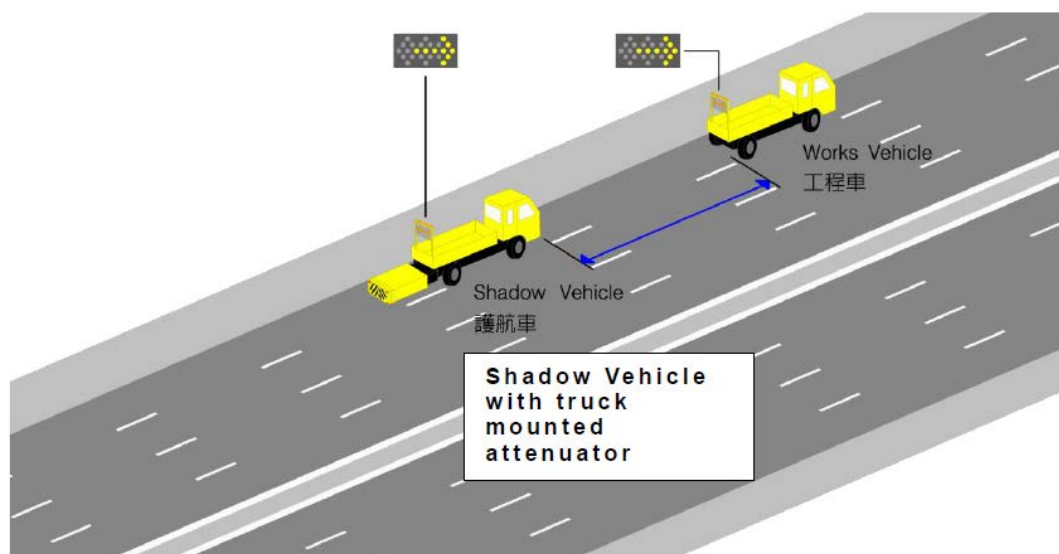


Figure 2: Works vehicle shall be escorted by a shadow vehicle

*(Source: Annex 2 to the Administration's reply to a Council question raised by a Member on "Road maintenance works" at the Council meeting of 13 July 2016)*



### Arrangements for lane closure on an expressway

The following figure shows the typical signs (including advance warning signs, cones and flashing arrow signs, etc.) used during lane closure on an expressway (see **Figure**). The Code of Practice for the Lighting, Signing and Guarding of Road Works ("the Code") stipulates that, when carrying out maintenance works on expressways with lane closure, advance warning signs shall be displayed at least 600 metres in advance of the works area. Flashing arrow signs shall also be displayed where temporary diversion begins. The detailed display requirements of advance warning signs and cones can be found in the Code. A flashing arrow sign has a matrix of individual lights that can flash on and off in a predetermined manner to show signs such as "arrow to the right" or "arrow to the left". When there are stationary or slowly-moving works vehicles on an expressway, it must be used to warn drivers to take special care. The mounting height of flashing arrow sign should not be less than 3.3 metres in order to provide advance warning.

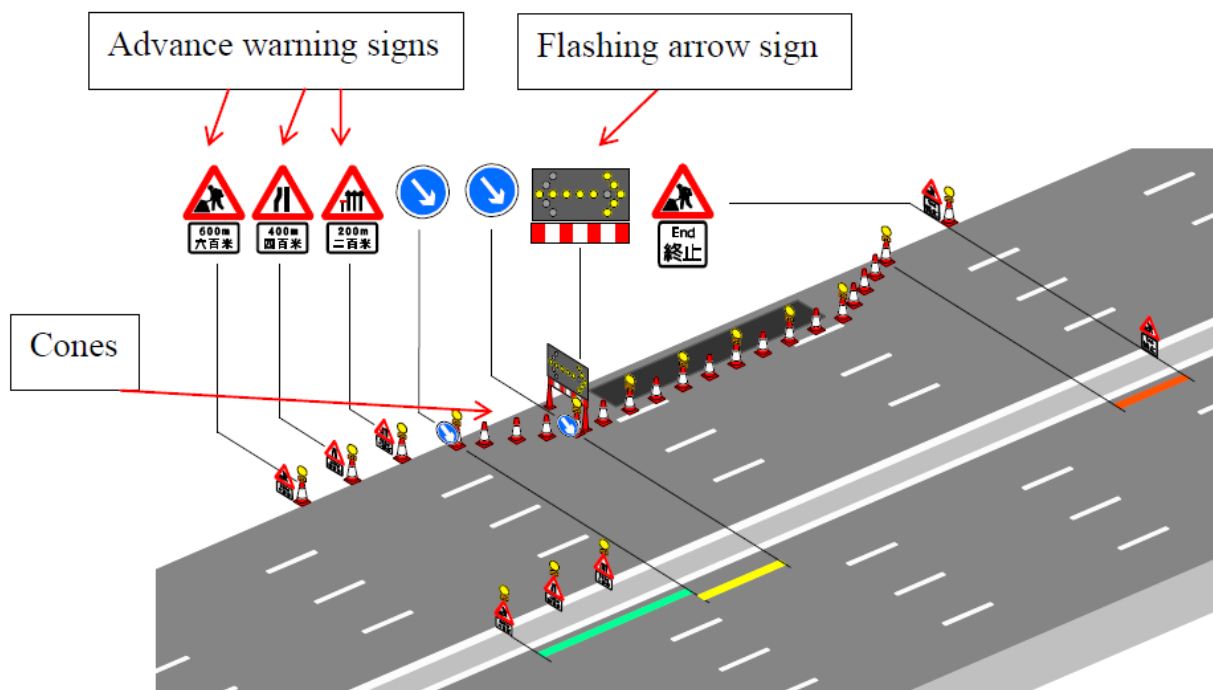


Figure: Advance warning signs, cones and flashing arrow signs

(Source: Annex 3 to the Administration's reply to a Council question raised by a Member on "Road maintenance works" at the Council meeting of 13 July 2016)

## Background brief on road works safety requirements

## List of relevant papers

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
10.11.2010	Council meeting	Hon CHEUNG Hok-ming raised a question on the lighting, signing and guarding for road works	<a href="http://www.info.gov.hk/gia/general/201011/10/P201011100101.htm">http://www.info.gov.hk/gia/general/201011/10/P201011100101.htm</a>
28.1.2011	Panel on Transport	Administration's paper on the highway repair and maintenance by Highways Department—current approach and future development	CB(1)1130/10-11(04) <a href="http://www.legco.gov.hk/yr10-11/english/panels/tp/papers/tp0128cb1-1130-4-e.pdf">http://www.legco.gov.hk/yr10-11/english/panels/tp/papers/tp0128cb1-1130-4-e.pdf</a>
		Administration's follow-up paper	CB(1)2249/10-11(01) <a href="http://www.legco.gov.hk/yr10-11/english/panels/tp/papers/tp0128cb1-2249-1-e.pdf">http://www.legco.gov.hk/yr10-11/english/panels/tp/papers/tp0128cb1-2249-1-e.pdf</a>
		Minutes of meeting	CB(1)1539/10-11 <a href="http://www.legco.gov.hk/yr10-11/english/panels/tp/minutes/tp20110128.pdf">http://www.legco.gov.hk/yr10-11/english/panels/tp/minutes/tp20110128.pdf</a>
9.11.2011	Council meeting	Hon KAM Nai-wai raised a question on the road management and repair works	<a href="http://www.info.gov.hk/gia/general/201111/09/P201111080298.htm">http://www.info.gov.hk/gia/general/201111/09/P201111080298.htm</a>
--	Panel on Transport	Administration's paper on the trial use of thermal patcher for small scale resurfacing of bituminous pavement	CB(1)1157/11-12(04) <a href="http://www.legco.gov.hk/yr11-12/english/panels/tp/papers/tpcb1-1157-4-e.pdf">http://www.legco.gov.hk/yr11-12/english/panels/tp/papers/tpcb1-1157-4-e.pdf</a>
--	Panel on Transport	Administration's paper on the maintenance of high speed roads in Hong Kong	CB(1)1485/11-12(01) <a href="http://www.legco.gov.hk/yr11-12/english/panels/tp/papers/tpcb1-1485-1-e.pdf">http://www.legco.gov.hk/yr11-12/english/panels/tp/papers/tpcb1-1485-1-e.pdf</a>

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
30.1.2013	Council meeting	Hon Albert HO Chun-yan raised a question on the road works in New Territories	<a href="http://www.info.gov.hk/gia/general/201301/30/P201301300219.htm">http://www.info.gov.hk/gia/general/201301/30/P201301300219.htm</a>
21.6.2013	Panel on Transport	Administration's paper on the recycling of bituminous pavement materials in road maintenance	CB(1)1298/12-13(05) <a href="http://www.legco.gov.hk/yr12-13/english/panels/tp/papers/tp0621cb1-1298-5-e.pdf">http://www.legco.gov.hk/yr12-13/english/panels/tp/papers/tp0621cb1-1298-5-e.pdf</a>
		Minutes of meeting	CB(1)466/13-14 <a href="http://www.legco.gov.hk/yr12-13/english/panels/tp/minutes/tp20130621.pdf">http://www.legco.gov.hk/yr12-13/english/panels/tp/minutes/tp20130621.pdf</a>
12.2.2014	Council meeting	Hon TAM Yiu-chung raised a question on the relationship between the road works and traffic accidents on Tuen Mun Road	<a href="http://www.info.gov.hk/gia/general/201402/12/P201402110498.htm">http://www.info.gov.hk/gia/general/201402/12/P201402110498.htm</a>
26.5.2014	Panel on Transport	Administration's paper on the maintenance of road pavements in Hong Kong	CB(1)1461/13-14(06) <a href="http://www.legco.gov.hk/yr13-14/english/panels/tp/papers/tp0526cb1-1461-6-e.pdf">http://www.legco.gov.hk/yr13-14/english/panels/tp/papers/tp0526cb1-1461-6-e.pdf</a>
		Administration's follow-up paper	CB(1)1944/13-14(01) <a href="http://www.legco.gov.hk/yr13-14/english/panels/tp/papers/tp0526cb1-1944-1-e.pdf">http://www.legco.gov.hk/yr13-14/english/panels/tp/papers/tp0526cb1-1944-1-e.pdf</a>
		Minutes of meeting	CB(1)78/14-15 <a href="http://www.legco.gov.hk/yr13-14/english/panels/tp/minutes/tp20140526.pdf">http://www.legco.gov.hk/yr13-14/english/panels/tp/minutes/tp20140526.pdf</a>
27.1.2016	Council meeting	Hon Frederick FUNG Kin-kee raised a question on the road hazard warning lanterns	<a href="http://www.info.gov.hk/gia/general/201601/27/P201601260732.htm">http://www.info.gov.hk/gia/general/201601/27/P201601260732.htm</a>
13.7.2016	Council meeting	Hon Michael TIEN Puk-sun raised a question on road maintenance works	<a href="http://www.info.gov.hk/gia/general/201607/13/P2016071301768.htm">http://www.info.gov.hk/gia/general/201607/13/P2016071301768.htm</a>

<b>Date of meeting</b>	<b>Meeting</b>	<b>Minutes/Paper</b>	<b>LC Paper No.</b>
16.11.2016	Council meeting	Hon HO Kai-ming raised a question on road works safety	<a href="http://www.info.gov.hk/gia/general/201611/16/P2016111600353.htm">http://www.info.gov.hk/gia/general/201611/16/P2016111600353.htm</a>
16.6.2017	--	Administration's press release on the revision of Code of Practice for the Lighting, Signing and Guarding of Road Works	<a href="http://www.info.gov.hk/gia/general/201706/16/P2017061600635.htm">http://www.info.gov.hk/gia/general/201706/16/P2017061600635.htm</a>

Council Business Division 4  
Legislative Council Secretariat  
17 July 2017