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23 January 2019

Ms Shirley CHAN  
Legislative Council Secretariat  
Legislative Council Complex  
1 Legislative Council Road  
Central  
Hong Kong

Dear Ms Chan,

### **Panel on Economic Development**

#### **Letter from Hon Jeremy TAM Man-ho dated 7 December 2018**

I refer to the captioned letter about the request for information on the Deep Cement Mixing (“DCM”) works of the Three-Runway System (“3RS”) project.

As previously reported to the Panel on Economic Development, with the support of Government, the Airport Authority Hong Kong (“AAHK”) commenced the construction works of the 3RS project on 1 August 2016. Government has been assisting and monitoring the work of AAHK in the implementation of the 3RS project while AAHK is responsible for the detailed technical aspects of the construction works.

The information on DCM works provided by AAHK is set out at **Annex** for Members’ reference.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Charvis LI', with a stylized, cursive script.

(Charvis LI)

for Secretary for Transport and Housing

c.c. Airport Authority Hong Kong (Attn: Mr KH SIU)

**Information on Deep Cement Mixing method  
provided by Airport Authority Hong Kong**

The Three-Runway System (“3RS”) project involves the reclamation of 650 hectares of land, about 40% of which is underlain by filled Contaminated Mud Pits (“CMPs”). Other parts of the reclamation area are situated above varying depths of soft marine deposit. From the early project stage, non-dredge ground improvement methods were proposed for land formation in order to avoid bulk removal and disposal of any dredged materials, as well as to minimise suspended solids and contaminants release, with a view to substantially reducing the potential impacts to surrounding water quality and marine ecology.

During the Environmental Impact Assessment (“EIA”) for the 3RS project, AAHK conducted detailed assessment on different options of non-dredge methods that are considered applicable to both CMP and non-CMP areas, and identified the preferred ground improvement methods for different areas.

According to the EIA report, for the CMP areas, only Deep Cement Mixing (“DCM”) method is considered environmentally acceptable. DCM involves the solidification of the marine mud by mixing it with cement, creating zones of improved ground in the form of closely spaced columns/panels that are able to support the reclamation above. DCM could also significantly reduce the lengthy consolidation process required by other non-dredge alternatives.

For the non-CMP areas, various non-dredge ground improvement methods, including DCM, prefabricated vertical drains, stone columns, etc., are considered technically and environmentally acceptable, according to the EIA report.

Having set out the preferred ground improvement methods to be adopted at various locations within / outside CMP areas, the EIA report further indicated that the actual combinations of ground improvement methods to be applied would be subject to detailed design. For details, please refer to

[https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_2232014/html/Drawing%203-007.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_2232014/html/Drawing%203-007.pdf) (English version only).

The DCM method adopted for the 3RS project is the first of its kind applied in large scale reclamation works in Hong Kong. Having considered the effectiveness of the DCM works in ground improvement, AAHK has optimised the overall reclamation design at earlier stages by increasing the use of DCM method outside the CMP area, where infrastructure and superstructure will be constructed. With the use of DCM in more programme critical areas, the need for lengthy periods of surcharging is eliminated, allowing the follow-on works to commence as soon as formation level is achieved.

AAHK confirms that the additional DCM works are to be carried out by the existing contractors. As the contract details involve commercially sensitive information, AAHK is not in the position to disclose the information.

To date, DCM works have been substantially completed in the critical reclamation areas and under the seawall areas. AAHK continues to work towards the overall programme of commissioning the new Third Runway by 2022 and the entire 3RS system by the end of 2024, and within the budget of HK\$141.5 billion.

**Airport Authority Hong Kong**  
**January 2019**