

# **SITE FORMATION AND ASSOCIATED INFRASTRUCTURE WORKS FOR DEVELOPMENT NEAR CHOI WAN ROAD AND JORDAN VALLEY**

## **Executive Summary**

1. In 1996, a site with an area of about 35 hectares (ha) near Choi Wan Road and Jordan Valley in East Kowloon was identified as a potential site for boosting housing supply. In October 1998, the feasibility of the proposed housing development at the site was confirmed. The Transport and Housing Bureau was the policy bureau for the planned development and the Civil Engineering and Development Department (CEDD) was the works agent responsible for carrying out site formation and associated infrastructure works for the development near Choi Wan Road and Jordan Valley (the Project).

2. Between June 1997 and July 2018, the Finance Committee (FC) of the Legislative Council and the Secretary for Financial Services and the Treasury (under delegated authority from FC) approved a total funding of \$2,084 million for the Project. There were two consultancies for the Project (i.e. one for the planning and engineering feasibility study and another one for the site investigation, design and construction supervision work), which were awarded to the same consultant (Consultant X). Three works contracts (Contracts A to C) were awarded between November 2001 and January 2007 for implementing the Project. In the event, the Project was completed in October 2010 and the residential sites under the Project were used for public rental housing development. As of October 2020, the Government had incurred \$2,057.4 million (99% of \$2,084 million) for the Project. The Audit Commission (Audit) has recently conducted a review to examine CEDD's work in managing the implementation of the Project.

### **Contractual disputes under Contract A**

3. Contract A mainly involved the excavation by blasting of about 9 million cubic metres of in-situ materials and formation of building platforms of about 20 ha

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and associated slopes and retaining walls. In November 2001, CEDD awarded Contract A to Contractor A at a contract sum of \$1,338 million. The contract works were completed in December 2006. There were contractual disputes under Contract A, comprising claims from Contractor A and counterclaims against Contractor A (Contract A disputes). In November 2018, CEDD entered into a settlement agreement with Contractor A, under which the Government paid \$32 million to Contractor A to settle all disputes and all arbitrations (i.e. including claims from Contractor A and counterclaims against Contractor A) under Contract A on a non-admission of liability basis. The account of Contract A was finalised in February 2019 and the total contract expenditure was \$1,701.9 million (paras. 2.2 to 2.4 and 2.7).

4. ***Scope for improvement in handling of disposal materials.*** Contract A disputes included Contractor A's claim relating to handling of disposal materials. Under Contract A, Contractor A was required to transport the excavated disposal materials from the development site to a site in Kai Tak (Kai Tak site) for delivery to 10 disposal sites. The disposal materials could be temporarily stockpiled at the Kai Tak site to suit Contractor A's disposal operation or the collection programme of disposal sites. Contractor A contended that CEDD was not able to arrange acceptance of disposal materials from disposal sites in a timely manner and claimed for additional payment for stockpiling and handling of disposal materials at the Kai Tak site. According to Consultant X, from early 2003 to May 2005, the demand for disposal materials produced under Contract A was continuously less than the supply, resulting in an accumulation of disposal materials in the stockpile areas at the Kai Tak site, and Contractor A's claim was considered valid. According to CEDD: (a) Contractor A's claim could have been mitigated if the forecast on the generation and demand of fill materials had been reviewed and updated to enhance accuracy and facilitate formulating the subsequent disposal arrangement in a timely manner; and (b) related control measures were subsequently enhanced in August 2011 (after the award of Contract A). In Audit's view, in implementing a works contract involving excavation and handling of disposal materials in future, CEDD needs to closely monitor the effectiveness of the enhanced control measures for the management of disposal materials (paras. 2.8 and 2.10 to 2.14).

5. ***Different interpretations of contract documents for valuation of concrete buttress works.*** Contract A disputes also included Contractor A's claim relating to the valuation of concrete buttress works (for slope stabilisation). The Bills of Quantities (BQ) items relating to the construction of concrete buttresses were grouped under a composite heading "In-situ Concrete (For baffle wall, debris trap and concrete

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buttress)” with BQ rates for different types of concrete. Regarding the valuation of concrete buttress works involving one type of concrete, Contractor A disagreed with the BQ rate applied by Consultant X for measuring the concrete buttress works involving this type of concrete and claimed for additional payment on top of the amount certified by Consultant X. According to CEDD: (a) Contractor A’s claim arose from different contractual interpretations on the applicability of particular BQ items in valuing the concrete buttress works involving this type of concrete; (b) the root cause was due to inconsistency between contract drawings (which showed another type of concrete for constructing concrete buttresses) and BQ; and (c) further guidelines on checking the completeness and accuracy of BQ and related documents were subsequently provided in 2014 (after the award of Contract A). In Audit’s view, in preparing documents for a works contract in future, CEDD needs to take measures to critically vet contract documents (e.g. BQ items under a composite heading) in accordance with the related guidelines (paras. 2.8 and 2.15 to 2.19).

6. ***Inadequate quantity and unsatisfactory quality of rock materials delivered by Contractor A to Shek O Quarry.*** The counterclaims against Contractor A were related to the rock materials delivered by Contractor A to Shek O Quarry under a CEDD contract (Contract D) awarded to another contractor (Contractor D). Under Contract A, Contractor A was required to deliver by barges the disposal materials at the Kai Tak site to Shek O Quarry. According to a supplementary agreement entered into between CEDD and Contractor D in August 2001, CEDD shall give preference to Contractor D to import two-thirds of acceptable quality rock materials (which shall meet the requirements for use as aggregates in concrete production) from Contract A subject to a maximum limit of 5.5 million tonnes of rock materials. There were contractual disputes under Contract D relating to the quantity and quality of rock materials delivered by Contractor A to Shek O Quarry. Contractor D claimed for additional payment for the inadequate quantity and unsatisfactory quality of rock materials delivered by Contractor A to Shek O Quarry. In July 2015, the Government paid a lump sum to Contractor D in full and final settlement of the contractual disputes under Contract D. CEDD counterclaimed Contractor A for the damages claimed by Contractor D. The counterclaims were settled in November 2018 (see para. 3). According to CEDD, the root cause of Contractor D’s claim arose from the inaccuracy of the estimation of the quantity of acceptable quality rock materials available from Contract A (paras. 2.22 to 2.26).

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### Other issues under Contract A

7. *Scope for conducting more thorough pre-tender site investigations.* In June 2005, FC approved an increase in the approved project estimate of the Project by \$230 million to cover additional costs arising mainly from variations under Contract A due to unforeseeable geological conditions. Regarding the cost increase, the Transport and Housing Bureau and CEDD informed the Legislative Council in May 2005 that: (a) before the commencement of Contract A, site investigation had been carried out to ascertain the geological conditions of the site for the design of the Project; (b) during the construction stage of Contract A, unforeseeable soil and rock profiles in various areas within the development site were encountered, resulting in variations and additional works under Contract A; and (c) only 200 boreholes had been included in the original site investigation works for the Project involving a site of about 35 ha. According to CEDD, further guidelines on good site investigation practice and geotechnical works of public works projects were subsequently promulgated in 2017 and 2018 respectively (after the award of Contract A). In Audit's view, in implementing a works project involving a large-scale site in future, CEDD needs to take measures to ensure that its staff and consultants conduct thorough pre-tender site investigations in accordance with the related guidelines, and continue to explore new technologies and digital tools for conducting pre-tender site investigations (paras. 3.2 to 3.4).

8. *Need to ensure compliance with control requirements on blasting activities.* Audit noted that there were two flyrock incidents after the blasting activities at the works site under Contract A in February and June 2003 respectively. According to CEDD: (a) for the flyrock incident in February 2003, it caused damage to 8 windows in 5 flats at a private housing estate. It was believed that the incident was due to the unfavourable rock joints in the blasting area; (b) for the flyrock incident in June 2003, it caused minor injuries to 9 persons and damage to 4 vehicles and properties (e.g. the roof and railing of two bus shelters). The incident was likely due to unforeseeable unfavourable ground condition in the blasting area and some protective and precautionary measures specified in the method statement were not taken or not effectively taken by Contractor A for the rock blast; and (c) after the two flyrock incidents, relevant guidelines were amended in 2007 so that works projects involving blasting activities were subject to more tightened control. In Audit's view, in implementing a works project involving blasting activities (particularly at works sites in densely populated area) in future, CEDD needs to make continued efforts to ensure that its consultants and contractors comply with the control requirements on blasting activities (paras. 3.7 to 3.9).

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### Administration of Contracts B and C

9. Contract B mainly involved the construction of two slip road bridges and a footbridge (Footbridge A), and taking over and maintenance of the completed works (e.g. slopes) under Contract A in various specified portions of the development site. In December 2005, CEDD awarded Contract B to Contractor B at a contract sum of \$129.3 million. The contract works were completed in March 2010 and the total contract expenditure was \$135.8 million. Contract C mainly involved the construction of two footbridges (Footbridges B and C). In January 2007, CEDD awarded Contract C to Contractor C at a contract sum of \$88 million. The contract works were completed in October 2010 and the total contract expenditure was \$101.8 million (paras. 4.2, 4.3, 4.12 and 4.13).

10. *Need to enhance the management of slope works.* The works under Contract A included the formation of two slopes (Slopes A and B) and were substantially completed in December 2006. In March 2008, Contractor A passed Slopes A and B to Contractor B (being the works agent of CEDD) for maintenance prior to handing over to the future maintenance government departments. Audit noted that: (a) Consultant X made submissions to the Geotechnical Engineering Office of CEDD for final checking of the completed Slopes A and B in January and July 2008 respectively (i.e. more than one year after the substantial completion of Contract A); and (b) in the event, slope enhancement works for Slopes A and B were found required and implemented by Contractor B via two variation orders (VOs — later valued at a total cost of \$1.3 million) issued in June and October 2008 respectively. In Audit's view, in implementing a works project involving slope works in future, CEDD needs to remind its staff and consultants to fully assess the conditions of slope works as early as practicable and take prompt follow-up actions as needed (paras. 4.8 and 4.9).

11. *Scope for improvement in ordering works variations.* For three VOs under Contract C issued between January 2009 and April 2010, Audit noted that: (a) the actual costs of these VOs increased by 280% to 327% as compared with the estimated costs; and (b) the actual costs of these VOs exceeded the approving authority of the officer approving their issuance. At the time of implementing Contract C, CEDD had no specific guidelines on this. According to CEDD, in May 2019 (after the award of Contract C), it promulgated guidelines for dealing with a variation with value exceeding its estimate made at the time of approval. Audit noted that, as of February 2021, the Project Administration Handbook for Civil Engineering Works

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(Project Administration Handbook) issued by CEDD had not yet incorporated such guidelines (para. 4.16).

12. *Discrepancies between BQ items and contract drawings.* Contract drawings of Contract C required the use of two grades of steel for the steelwork of Footbridges B and C. However, according to Consultant X, only BQ items of one grade of steel which did not fulfil the requirement were included in Contract C. Consultant X considered that the steelwork of Footbridges B and C were omitted in BQ. In the event, CEDD paid \$1.2 million to Contractor C for carrying out the works of the omitted items. CEDD subsequently provided in 2014 (after the award of Contract C) further guidelines on checking the completeness and accuracy of BQ and related documents. In Audit's view, in preparing documents for a works contract in future, CEDD needs to remind its staff and consultants to follow such guidelines (paras. 4.18 and 4.20).

### Audit recommendations

13. **Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has recommended that the Director of Civil Engineering and Development should:**

#### *Contractual disputes under Contract A*

- (a) **in implementing a works contract involving excavation and handling of disposal materials, closely monitor the effectiveness of the enhanced control measures for the management of disposal materials (para. 2.20(a));**
- (b) **in preparing documents for a works contract, take measures to critically vet contract documents in accordance with the related guidelines (para. 2.20(b));**
- (c) **in implementing a works contract involving excavation and delivery of excavated materials:**

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- (i) remind CEDD staff and consultants to conduct thorough ground investigation at the detailed design stage in accordance with the related guidelines (para. 2.28(a)); and
- (ii) closely monitor the quantity and quality of excavated materials delivered to specified disposal sites to ensure compliance with the related contract requirements (para. 2.28(b));

### *Other issues under Contract A*

- (d) in implementing a works project involving a large-scale site:
  - (i) take measures to ensure that CEDD staff and consultants conduct thorough pre-tender site investigations in accordance with the related guidelines (para. 3.10(a)(i)); and
  - (ii) continue to explore new technologies and digital tools for conducting pre-tender site investigations (para. 3.10(a)(ii));
- (e) in implementing a works project involving blasting activities (particularly at works sites in densely populated area), make continued efforts to ensure that CEDD consultants and contractors comply with the control requirements on blasting activities (para. 3.10(b));

### *Administration of Contracts B and C*

- (f) in implementing a works project involving slope works, remind CEDD staff and consultants to fully assess the conditions of slope works as early as practicable and take prompt follow-up actions as needed (para. 4.10(b));
- (g) in administration of a works contract:
  - (i) take measures to enhance the accuracy of cost estimate for works variations as far as practicable (para. 4.21(a)(i)); and

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- (ii) **remind CEDD staff and consultants to follow CEDD guidelines for dealing with a variation with value exceeding its estimate made at the time of approval (para. 4.21(a)(ii));**
  
- (h) **consider incorporating into the Project Administration Handbook CEDD guidelines for dealing with a variation with value exceeding its estimate made at the time of approval (para. 4.21(b)); and**
  
- (i) **in preparing documents for a works contract, remind CEDD staff and consultants to follow the related guidelines on checking the completeness and accuracy of BQ and related documents (para. 4.21(c)).**

### **Response from the Government**

14. The Director of Civil Engineering and Development agrees with the audit recommendations.