CHAPTER 7

Development Bureau
Drainage Services Department

Revitalisation and improvement of rivers and nullahs by the Drainage Services Department

Audit Commission
Hong Kong
27 October 2026

This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 87 of the Director of Audit contains 8 Chapters which are available on our website (https://www.aud.gov.hk).

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REVITALISATION AND IMPROVEMENT OF RIVERS AND NULLAHS BY THE DRAINAGE SERVICES DEPARTMENT

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REVITALISATION AND IMPROVEMENT OF RIVERS AND NULLAHS BY THE DRAINAGE SERVICES DEPARTMENT

Executive Summary

1. Lucid waters and lush mountains are invaluable assets. According to the Drainage Services Department (DSD), Hong Kong's drainage facilities built in the early years were mainly made of concrete and were designed for flood prevention. Since the 2010s, DSD has started to apply river revitalisation elements into its drainage improvement works. Two large-scale drainage projects completed by DSD for rivers and nullahs in recent years were the revitalisation and improvement of Kai Tak River (upstream and midstream sections) and Tsui Ping River, as follows:

(a) ***Kai Tak River.*** Kai Tak River is one of the major drainage channels to collect stormwater runoff from the East Kowloon area. The river is about 2.4 kilometres (km) in length and can be divided into three sections (i.e. the upstream, midstream and downstream sections). The revitalisation and improvement of the upstream and midstream sections of Kai Tak River (the Kai Tak River Project) was implemented by DSD under three project votes (Project Votes I to III), with approved project estimates (APEs) totalling $3,005.7 million approved by the Finance Committee of the Legislative Council between July 2010 and July 2013. As at 31 May 2026, $1,905.7 million (63%) of APEs for the Kai Tak River Project had been incurred; and

(b) ***Tsui Ping River.*** Tsui Ping River is one of the major stormwater channels in the East Kowloon area, and the river is about 1 km in length. The revitalisation and improvement of Tsui Ping River (the Tsui Ping River Project) was implemented by DSD under one project vote (Project Vote IV), with an APE of $1,342.2 million approved by the Finance Committee in June 2020. As at 31 May 2026, $1,127.2 million (84%) of APE for the Tsui Ping River Project had been incurred.

2. DSD has introduced various facilities and greening elements into the river revitalisation and improvement projects. In addition to regular management and maintenance of drainage channels, DSD is responsible for the management and maintenance of relevant facilities and greening elements introduced under the Kai Tak River Project and the Tsui Ping River Project. The Audit Commission (Audit) has recently conducted a review of the revitalisation and improvement of rivers and nullahs by DSD.

Revitalisation and improvement of Kai Tak River

3. In June 2006 and January 2010, DSD awarded two consultancy agreements to two consultants (Consultants X and Y) for the investigation, design and construction supervision work of the Kai Tak River Project. Between August 2010 and December 2013, DSD awarded three works contracts (Contracts A to C) to three contractors (Contractors A to C) for the implementation of the Kai Tak River Project. Consultant X was the Engineer responsible for supervising the contract works under Contracts A and B, and Consultant Y was the Engineer responsible for supervising the contract works under Contract C. The works under Contracts A to C were substantially completed between January 2014 and December 2019, which were 5.1 to 31.1 months later than their respective original completion dates with extensions of time (EOTs) for the respective whole periods granted to the contractors. The total final contract sum of Contracts A to C was $1,621.6 million (paras. 1.9, 1.10 and 2.3).

4. ***Interfacing issues of Contracts B and C.*** According to Contract C, the works site had 4 portions and Contractor C should be given possession of areas within 1 portion on the commencement date of Contract C. However, Contractor C was unable to take over a part of that portion (Area A) on the commencement date of Contract C. The site boundaries of Contracts B and C were overlapped, and Area A was within the works area of Contract B. On 30 December 2013 (i.e. the commencement date of Contract C), Area A was still being occupied by Contractor B. Since January 2014, various meetings were held among DSD and the project teams of Contracts B and/or C to discuss the interfacing issues including the handover of Area A and the related mitigation measures. In November 2014, Consultant X issued a variation order (VO — valued at $2.3 million) under Contract B to instruct Contractor B to vacate Area A. In the event, Contractor C was able to take over Area A on 4 December 2014 (i.e. about 11 months after the commencement date of Contract C). Consultant Y also certified an additional

payment of $11.9 million to Contractor C for the delay due to the non-occupation of Area A. Audit noted that, while DSD had checked the availability of land prior to accepting tender of Contract C by referring to the programmes of Contract B, there were delays in the progress of works under Contract B compared to the programmes and Contractor C was therefore unable to take over Area A on the commencement date of Contract C (paras. 2.5 and 2.7).

5. ***Scope for improvement in local consultation.*** Audit noted that, after the commencement of works under Contracts B and C, there were changes in the design of nullah wall finishes under the two contracts. According to DSD, to engage the public on the planning of the Kai Tak River Project, the Government conducted a two-stage public engagement exercise in December 2010 and June 2011. After the commencement of Contract C in December 2013, new suggestions were received from local communities to further enhance the nullah wall finish design to match with the existing masonry walls in view of the historical value. In the event, VOs were issued under Contracts B and C to revise the design of nullah wall finishes. In implementing river revitalisation projects, DSD needs to enhance the local consultation process with a view to early identifying the concerns of relevant stakeholders, particularly in carrying out works related to features/structures of historical value in the locality (paras. 2.9 and 2.10).

6. ***Scope for improvement in mitigating flooding impact during the course of works at rivers and nullahs.*** After the commencement of works under Contract B, a flooding incident occurred in September 2015 at Choi Hung Road. To safeguard the properties of the public and minimise the nuisance caused to the road users during heavy rainfall, DSD decided to impose a higher flood protection standard for the temporary drainage during the construction stage of Contract B than that originally planned in accordance with the requirements in the contract. In March 2017, Consultant X issued a VO under Contract B to instruct Contractor B to carry out additional works for, among others, meeting the additional requirements on the flood protection standard for the temporary drainage in the wet season during the construction stage, and the direct cost of works for the additional requirements was $47.4 million. According to Consultant X's assessment, the additional requirements had increased the difficulty level of the works and changed the original working sequence of the works under some issued works orders. As a result of the additional requirements, EOTs of 50 to 447 days were granted to Contractor B for completion of works under 13 works orders, leading to prolongation costs totalling $69 million incurred under Contract B. According to DSD: (a) in the past, temporary drainage mitigation measures relied heavily on fixed and stationary

diversion works; and (b) with advances in technology, new resilience measures available in the market could be leveraged to effectively mitigate both the extent and severity of flooding throughout the entire course of construction period. DSD needs to continue to explore further measures to mitigate the flooding impact during the course of works at rivers and nullahs (paras. 2.13 to 2.17).

7. ***Scope for improvement in ascertaining the presence of underground utilities.*** According to Contract B, Contractor B was required to construct a sewer trunk underneath a road using open-cut method. Audit noted that: (a) in November 2013, Consultant X issued a works order under Contract B to instruct Contractor B to carry out works for constructing the sewer trunk. A number of trial trenches were then carried out at the road, and the results revealed that the alignment of the proposed sewer trunk and the associated sheet piling works would be in conflict with some underground utilities; and (b) in August 2015, Consultant X issued a VO (valued at $3.4 million) under Contract B to instruct Contractor B to change the construction method of the sewer trunk from open-cut to trenchless as diversions of the utilities were considered impracticable given the site constraints (para. 2.23).

8. ***Need to keep under review the work in estimating project costs.*** The APE for Project Vote III mainly covered the works for the midstream section of Kai Tak River, which were implemented under Contract C. Audit noted that, as at 31 May 2026, the expenditure incurred under Project Vote III was $478.1 million (i.e. 38% of the APE of $1,244.3 million for Project Vote III). According to DSD: (a) the difference between the APE for Project Vote III and its actual expenditure was mainly due to the lower actual expenditure of Contract C compared to its pre-tender estimate and unspent project contingency; and (b) with the adoption of parallel tendering since September 2020, the original contract sums of works contracts would be reflected in the APEs of related project votes. In implementing works projects, DSD needs to keep under review the work in estimating project costs with a view to ensuring that project costs are estimated as accurately as possible (paras. 2.29 to 2.31).

Revitalisation and improvement of Tsui Ping River

9. In July 2015 and December 2017, DSD awarded two consultancy agreements to a consultant (Consultant Z) for the investigation, design and construction supervision work of the Tsui Ping River Project. In June 2020, DSD

awarded a works contract (Contract D) to a contractor (Contractor D) for the implementation of the Tsui Ping River Project. According to DSD, Contract D was a target contract with activity schedule (i.e. a contract option of the Engineering and Construction Contract in the New Engineering Contract (NEC) form). DSD was the Project Manager for Contract D, and Consultant Z was the Supervisor and Project Manager's Representative responsible for supervising the contract works under Contract D. The works under Contract D were substantially completed on 30 September 2024, which was about 10 months later than the original completion date with EOTs for the whole period granted to Contractor D. The final contract sum of Contract D was $989 million (paras. 1.15, 1.16, 3.2 and 3.3).

10. ***Scope for improvement in ascertaining underground conditions in works sites.*** According to Contract D, the works site was divided into four zones (i.e. Zones A to D), and Contractor D was required to carry out nullah bed reconstruction works in Zones A to C and piling works in Zone C. Audit noted that five compensation events issued under Contract D were related to the underground conditions in Zone C, leading to additional costs totalling $79.2 million incurred under Contract D (para. 3.5), as follows:

(a) ***Gushing of groundwater during nullah bed reconstruction works.*** From November 2020 to January 2021, Contractor D issued three early warnings to report that there was groundwater gushing from the excavation after demolishing and removing the existing concrete nullah bed. To overcome the groundwater seepage, Contractor D was required to carry out additional works and rearrange the sequence of nullah bed reconstruction works. According to DSD, Contractor D claimed that the groundwater gushing from the excavation was caused by the higher permeability of the soil, which could not be identified from the site information enclosed in the tender documents. According to Consultant Z's assessment, for Zone C, the ground investigation data contained in the site information enclosed in the tender documents and that obtained after the commencement of Contract D were not consistent in terms of soil mass permeability. In the event, in July 2022, Consultant Z issued a compensation event (valued at $36.2 million) under Contract D for the additional costs incurred due to the underground conditions encountered during the nullah bed reconstruction works in Zone C (para. 3.6); and

(b) ***Settlement issue during piling works.*** In January 2022, the reading of a settlement monitoring point in Zone C exceeded the pre-set trigger level for works suspension. In view of the settlement issue, in February and March 2022, Consultant Z instructed Contractor D to carry out additional works, and issued three compensation events (valued at about $3 million in total) under Contract D for the costs incurred. According to DSD, Contractor D claimed that the settlement issue was caused by the underground conditions, which could not be identified from the site information enclosed in the tender documents. According to Consultant Z's assessment, the as-built drawing related to the existing nullah wall in Zone C did not contain some relevant information (e.g. the type and nature of bedding materials, and the degree of compaction of the unknown bedding materials), and more underground materials were flushed away as a result of more groundwater seepage caused by the higher permeability of the soil during the construction works (see (a) above). In the event, in September 2024, Consultant Z issued a compensation event (valued at about $40 million) under Contract D for the additional costs incurred due to the underground conditions encountered during piling works in Zone C (para. 3.7).

11. ***Need to draw on the experience gained from the installation of floating islands at Tsui Ping River.*** Under Contract D, Contractor D was required to install 3 floating islands (i.e. floating structures in the form of artificial floating raft) at the midstream section of Tsui Ping River. Audit noted that: (a) after completing the installation of the 3 floating islands in December 2024, DSD discovered that the floating islands had tilted due to unexpected hard solid waste and muddy water from the upstream section of the river. In August 2025 and January 2026, Consultant Z instructed Contractor D to carry out enhancement works for the floating islands and issued two compensation events under Contract D for the costs incurred. According to DSD, the total cost for the installation and enhancement works of the 3 floating islands was $2.7 million; and (b) in April 2026, DSD found that 2 of the 3 floating islands were detached from their original positions as the cables anchored to the riverbed were broken. In May 2026 (i.e. about 1.4 years after completing the installation in December 2024), all the 3 floating islands were removed from Tsui Ping River (para. 3.15).

12. ***Need to ensure completeness and accuracy of data in the risk register for early warnings.*** The risk register for early warnings typically summarises the key matters including the identified risks, mitigating measures and action parties.

Risk items should be reviewed periodically and marked as "closed" if they have been removed or resolved. During the contract period, a total of 193 early warnings were recorded in the risk register of Contract D. Audit examined the risk register of Contract D and noted that: (a) the action parties of 40 (21%) early warnings were not specified, in which the mitigating measures of 8 (4% of 193) early warnings were also not documented; and (b) the closing dates of 2 (1%) early warnings were before their respective issue dates. Besides, the closing date of 1 (0.5%) early warning was not recorded (paras. 3.20 and 3.21).

13. ***Scope for improvement in preparing returns on time and cost performance of NEC contracts.*** According to DSD, up to 31 May 2026, two returns with data on the time and cost performance of Contract D as at 30 June 2025 and 30 September 2025 had been submitted by the project team to DSD's internal working group on NEC. For the data in the two returns, Audit noted that: (a) according to the risk register of Contract D, as at 30 June 2025 and 30 September 2025, there were 193 early warnings recorded. However, according to the two returns, the number of early warnings was 208 (i.e. an excess of 15); and (b) according to the supporting documents for contract payments, as at 30 June 2025 and 30 September 2025, the forecast final target cost of Contract D was $862.3 million. However, according to the two returns, the forecast final target cost was $915.6 million (paras. 3.24 and 3.25).

Other related issues

14. ***Scope for enhancing construction site safety.*** According to the Construction Site Safety Manual issued by the Development Bureau, contractors are required to report specific accidents to the Engineer's site staff within specified timeframes. According to DSD, there were 6 and 2 non-fatal reportable accidents (i.e. accidents resulting in an injury with incapacity of the workers for more than 3 days) during the contract periods of Contracts B and C respectively. Audit noted that: (a) there was late reporting of some reportable accidents. For example, there was late submission of a preliminary report (with a delay of 100 days) by Contractor C for 1 (50%) of the 2 non-fatal reportable accidents; and (b) while 2 (33%) accidents were mentioned in Contractor B's performance reports of the relevant periods, no performance items related to site safety were rated as "Poor" in the performance reports. As far as could be ascertained, there was no documentation showing the justifications (paras. 4.3 to 4.6).

15. ***Scope for enhancing construction site security.*** For construction site security, Audit noted that: (a) according to Contract B, Contractor B should operate a smart card system to record and verify the information of all workers entering and leaving the construction site. According to Consultant X, the percentage of workers using the smart card system for entering and leaving the construction site was only 45% in September 2013. While improvement measures were implemented by Contractor B and the percentage increased and reached 99.9% in July 2016, the percentage then dropped to 88% in December 2019; (b) according to Contract B, Contractor B should ensure that all workers involved in site works would wear a set of site uniform when they were on site. The non-compliance rates of the site uniform requirement for each month during the contract period were not readily available. For the 78 months with non-compliance rates of the site uniform requirement found in DSD records, the non-compliance rates of 29 (37%) months were higher than 5%, ranging from 5.2% to 80% (averaging 17%); and (c) the departmental Safety Manual issued by DSD set out the requirements relating to construction site security. However, there were similar issues/incidents related to construction site security in the construction sites of Contracts A to D, including site areas not fenced off properly and items being stolen from the construction sites (paras. 4.8, 4.9, 4.11 and 4.12).

16. ***Need to draw on the experience gained from the implementation of the Kai Tak River Project and the Tsui Ping River Project.*** According to DSD, the Kai Tak River Project was implemented to improve the drainage capacity of Kai Tak River and revitalise the river, and the Tsui Ping River Project was implemented to revitalise Tsui Ping River into a green and vibrant river while enhancing its flood conveyance capability. Audit noted that, as at 31 August 2026, DSD had not conducted any reviews on whether the objectives of the projects had been achieved. According to DSD: (a) for the Kai Tak River Project, post-completion reviews for the contracts were considered not required; and (b) for the Tsui Ping River Project, the post-completion review report was targeted for completion by the end of November 2026. In view of several river revitalisation and improvement projects currently in the construction or design stage, DSD needs to draw on the experience gained from the implementation of the revitalisation and improvement projects for Kai Tak River and Tsui Ping River with a view to enhancing the implementation of similar works projects for rivers and nullahs in future (paras. 4.32, 4.33 and 4.35).

Audit recommendations

17. **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 Drainage Services should:**

Revitalisation and improvement of Kai Tak River

(a) **in implementing works projects involving interfacing works contracts, take measures to ensure timely handover of works sites among interfacing works contracts with a view to mitigating the risks arising from interfacing issues, including enhancing the supervision and monitoring of the progress of works and ensuring that the programmes of works contracts are accurately updated to reflect the actual site progress (para. 2.26(a));**

(b) **in implementing river revitalisation projects, enhance the local consultation process with a view to early identifying the concerns of relevant stakeholders, particularly in carrying out works related to features/structures of historical value in the locality (para. 2.26(b));**

(c) **continue to explore further measures to mitigate the flooding impact during the course of works at rivers and nullahs (para. 2.26(c));**

(d) **in implementing works projects, better ascertain the presence of underground utilities with a view to further enhancing the planning of works as far as practicable (para. 2.26(e));**

(e) **in implementing works projects, keep under review the work in estimating project costs with a view to ensuring that project costs are estimated as accurately as possible (para. 2.36(a));**

Revitalisation and improvement of Tsui Ping River

(f) **in implementing works projects, better ascertain the underground conditions in works sites with a view to further enhancing the planning of works as far as practicable (para. 3.18(a)(i));**

(g) **draw on the experience gained from the installation of floating islands at Tsui Ping River with a view to improving the design of similar floating structures in river revitalisation works in future (para. 3.18(b));**

(h) **in implementing works projects involving contracts in NEC form, take measures to ensure the completeness and accuracy of data in the risk register for early warnings (para. 3.28(a));**

(i) **strengthen the checking of data in the returns on the time and cost performance of NEC contracts (para. 3.28(b));**

Other related issues

(j) **in implementing works projects, take measures to enhance the construction site safety, including ensuring that reportable accidents are timely reported by the contractors in accordance with relevant requirements, and contractors' performance related to reportable accidents are duly reflected in the performance reports and justifications for not adjusting the relevant ratings are properly documented (para. 4.14(a));**

(k) **in implementing works projects, take measures to enhance the construction site security, including ensuring compliance with contract requirements and guidelines relating to site security, maintaining proper records for monitoring compliance and taking follow-up actions as appropriate (para. 4.14(b));**

(l) **take measures to ensure that the post-completion review for the Tsui Ping River Project is timely completed (para. 4.36(a)); and**

(m) **draw on the experience gained from the implementation of the revitalisation and improvement projects for Kai Tak River and Tsui Ping River with a view to enhancing the implementation of similar works projects for rivers and nullahs in future (para. 4.36(b)).**

Response from the Government

18. The Director of Drainage Services agrees with the audit recommendations.

PART 1: INTRODUCTION

1.1 This PART describes the background to the audit and outlines the audit objectives and scope.

Background

1.2 Lucid waters and lush mountains are invaluable assets. According to the Drainage Services Department (DSD), Hong Kong's drainage facilities (including nullahs — Note 1) built in the early years were mainly made of concrete and were designed for flood prevention. Drainage improvement works refer to upgrading the existing drainage system to increase its flow capacity and facilitate more effective discharge of surface runoff. Since the 2010s, DSD has adopted the concept of "Blue-Green Drainage Infrastructure", under which "blue" refers to rivers and water bodies and "green" refers to landscape greening, and it has started to apply river revitalisation elements (i.e. greening, environment beautification, water-friendly activities, effective drainage and biodiversity) into its drainage improvement works.

1.3 In the 2015 Policy Address, the Chief Executive of the Hong Kong Special Administrative Region of the People's Republic of China announced that the Government would adopt the concept of revitalising water bodies in large-scale drainage improvement works and planning drainage networks for new development areas. In the 2017 Policy Agenda, it was announced that the Government would review and evaluate the revitalisation potential of the major nullahs in Hong Kong with a view to identifying suitable nullahs for revitalisation. In the 2019 Policy Address Supplement, it was further proposed to develop and take forward the concept of "Rivers in the City" through river revitalisation projects and introduction of water bodies rejuvenation facilities.

Note 1: *According to DSD, in the context of drainage facilities, the meanings of "nullahs" and "rivers" are largely similar. These terms are used interchangeably in this Audit Report.*

1.4 According to DSD, it is dedicated to integrating concepts including "Blue-Green Drainage Infrastructure" and "Rivers in the City" into drainage projects. In addition to improving the drainage capability, it explores different options to enhance the ecological and aesthetic values of existing nullahs. Two large-scale drainage projects completed by DSD for rivers and nullahs in recent years (Note 2) were the revitalisation and improvement of Kai Tak River (upstream and midstream sections) and Tsui Ping River (Note 3), involving approved project estimates (APEs) of $3,005.7 million (see para. 1.8) and $1,342.2 million (see para. 1.14) respectively.

Revitalisation and improvement of Kai Tak River

1.5 Kai Tak River is one of the major drainage channels to collect stormwater runoff from the East Kowloon area. Its catchment area covers 11 square kilometres, including Tsz Wan Shan, Diamond Hill, Wong Tai Sin, San Po Kong, Kowloon City and the Kai Tak Development area. It flows along Choi Hung Road and Tung Kwong Road, runs underneath Prince Edward Road East before traversing the Kai Tak Development area and finally discharges into the Victoria Harbour. The river is about 2.4 kilometres (km) in length and can be divided into three sections (see Figure 1), as follows:

(a) the upstream section of about 600 metres (m) flows from Po Kong Village Road to Tung Kwong Road;

(b) the midstream section of about 500 m flows from Tung Kwong Road to Prince Edward Road East; and

(c) the downstream section of about 1.3 km flows from Prince Edward Road East to Kai Tak Approach Channel and finally connects to the Victoria Harbour.

Note 2: *According to DSD, since 2015, it had also completed the revitalisation of Jordan Valley Channel (formerly known as Jordan Valley Nullah), which was a smaller-scale drainage project for the nullah.*

Note 3: *According to DSD, Kai Tak River and Tsui Ping River were formerly known as Kai Tak Nullah and King Yip Street Nullah respectively. For simplicity, their current names are used in this Audit Report.*

Figure 1

Location and sections of Kai Tak River (August 2023)



Legend: Upstream section
Midstream section
Downstream section

Source: *DSD records*

1.6 Kai Tak River was built in tandem with the former Kai Tak Airport some decades ago. In the early 2010s, as the drainage capacity of Kai Tak River was inadequate to meet the prevailing flood protection standard and flooding incidents severely affected the traffic networks of Wong Tai Sin and its adjacent districts during heavy rainstorms, the Government proposed to carry out works for Kai Tak River to improve its drainage capacity and mitigate the flooding risk of surrounding areas. According to DSD, there was a strong public aspiration for revitalising Kai Tak River into an attractive green river and a townscape feature to enhance its visual quality and image. The Government therefore seized this opportunity to revitalise Kai Tak River and introduce various greening and ecological elements at the river.

Introduction

1.7 DSD was responsible for the revitalisation and improvement of the upstream and midstream sections of Kai Tak River (hereinafter referred to as the Kai Tak River Project) (Note 4). The scope of works under the Kai Tak River Project included:

(a) ***Stage 1 works.*** Local road widening works of about 200 m long at Choi Hung Road, construction of an additional twin-cell box culvert of about 100 m long across Prince Edward Road East, and ancillary works including drains and sewers diversion;

(b) ***Works for the upstream section.*** Reconstruction and rehabilitation of the upstream section of Kai Tak River, construction of a box culvert of about 400 m long, relocation of the affected existing water mains and sewers, and associated works including landscaping works and in-situ reprovisioning of an existing footbridge; and

(c) ***Works for the midstream section.*** Reconstruction and rehabilitation of the midstream section of Kai Tak River, utilities diversion including the reprovisioning of an affected existing dry weather flow interceptor, and ancillary works including landscaping works, environmental mitigation measures, and related monitoring and audit works.

Photograph 1 shows Kai Tak River after revitalisation and improvement.

Note 4: *The Civil Engineering and Development Department was responsible for the revitalisation and improvement of the downstream section of Kai Tak River within the Kai Tak Development area. The works for the downstream section of Kai Tak River are not covered in this audit review.*

Photograph 1

Kai Tak River after revitalisation and improvement (August 2021)



Source: *DSD records*

1.8 The Kai Tak River Project was implemented under three project votes (hereinafter referred to as Project Votes I to III), with APEs totalling $3,005.7 million approved by the Finance Committee (FC) of the Legislative Council between July 2010 and July 2013 (see Table 1).

Table 1

Funding approvals for the Kai Tak River Project
(July 2010 to July 2013)

Date	Particulars	Approved amount ($ million)
Project Vote I		
July 2010	Stage 1 works	159.4
Project Vote II		
July 2011	Works for the upstream section	1,602.0
Project Vote III		
July 2013	Works for the midstream section	1,244.3
	Total	3,005.7

Source: DSD records

1.9 Regarding the investigation, design and construction supervision work of the Kai Tak River Project, DSD awarded a consultancy agreement to a consultant (Consultant X) for the stage 1 works and the works for the upstream section in June 2006 and another consultancy agreement to another consultant (Consultant Y) for the works for the midstream section in January 2010. As at 31 May 2026, the consultancy fees paid to Consultants X and Y were $14.4 million and $16.5 million respectively (Note 5).

1.10 Between August 2010 and December 2013, DSD awarded three works contracts (Contracts A to C) to three contractors (Contractors A to C) for the implementation of the Kai Tak River Project. The works under Contracts A to C were substantially completed between January 2014 and December 2019, which were 5.1 to 31.1 months later than their respective original completion dates (see Table 2).

Note 5: *Of the total consultancy fees of $30.9 million (i.e. $14.4 million + $16.5 million), $12.3 million was funded under Project Votes I to III and $18.6 million was funded under the block allocation Subhead 4100DX of the Capital Works Reserve Fund Head 704 under the control of DSD.*

Table 2

Contracts awarded for the Kai Tak River Project
(31 May 2026)

Contract	Works	Commencement date	Original completion date	Actual completion date	No. of months later than original completion date
A (Awarded in August 2010)	Stage 1 works	30.8.2010	26.11.2012	25.1.2014	14.0
B (Awarded in October 2011)	Works for the upstream section	31.10.2011	28.5.2017	31.12.2019	31.1
C (Awarded in December 2013)	Works for the midstream section	30.12.2013	29.6.2017	30.11.2017	5.1

Source: *DSD records*

1.11 The accounts of Contracts A to C (see Table 3) were finalised between March 2017 and February 2022. As at 31 May 2026, $1,905.7 million (63%) of APEs totalling $3,005.7 million for the Kai Tak River Project had been incurred. Of this $1,905.7 million:

(a) $1,595.9 million (84%) was related to expenditures for the Kai Tak River Project under Contracts A to C (see Note 5 to Table 3); and

(b) the remaining $309.8 million (16%) mainly included resident site staff costs (Note 6) of $280.8 million, consultancy fees of $12.3 million (see Note 5 to para. 1.9) and other costs of $16.7 million.

Note 6: *Consultants are required to employ resident site staff of different grades (e.g. professional grade and technical grade) for supervising contractors' works. The Government reimburses consultants for the personal emoluments of the staff and pays an on-cost to consultants to cover their costs in managing the staff.*

Table 3

Contract expenditures of Contracts A to C
(31 May 2026)

Contract	Original contract sum (a)	Final contract sum (b)	Increase/ (decrease) (c) = (b) – (a)	Decrease in provision for price fluctuation adjustment (Note 1) (d)	Increase/ (decrease) after price fluctuation adjustment (e) = (c) – (d)
	($ million)				
A	100.2	138.0 (Note 2)	37.8 (37.7%)	(2.4) (-2.4%)	40.2 (40.1%)
B	818.0	1,092.5 (Note 3)	274.5 (33.6%)	(15.1) (-1.8%)	289.6 (35.4%)
C	508.8	391.1 (Note 4)	(117.7) (-23.1%)	(36.0) (-7.1%)	(81.7) (-16.0%)
Overall	1,427.0	1,621.6 (Note 5)	194.6 (13.6%)	(53.5) (-3.8%)	248.1 (17.4%)

Source: *DSD records*

Note 1: *The original contract sums included provision for price fluctuation adjustment.*

Note 2: *Of the $138 million, $112.3 million was funded under Project Vote I, $24 million was funded under other project votes (for works not related to the Kai Tak River Project) and $1.7 million was funded under the block allocation Subhead 4100DX of the Capital Works Reserve Fund Head 704 under the control of DSD.*

Note 3: *The $1,092.5 million was funded under Project Vote II.*

Note 4: *Of the $391.1 million, $386.1 million was funded under Project Vote III and $5 million was funded under Project Vote II (for works carried out at the upstream section of Kai Tak River).*

Note 5: *Of the $1,621.6 million, $1,595.9 million (i.e. $1,621.6 million less $24 million less $1.7 million — see Note 2 above) was funded under Project Votes I to III.*

Revitalisation and improvement of Tsui Ping River

1.12 Tsui Ping River is one of the major stormwater channels in the East Kowloon area. Its catchment area covers 5.2 square kilometres, including Kwun Tong, Sau Mau Ping and Lam Tin. The river is about 1 km in length and runs along Tsui Ping Road and King Yip Street from Kai Lim Road to the Victoria Harbour (see Figure 2).

Figure 2

Location of Tsui Ping River
(December 2025)



Source: *DSD records*

1.13 Tsui Ping River was built over 50 years ago. In the mid-2010s, given the riverine characteristics and prime geographical location of the river, the Government proposed to revitalise Tsui Ping River into a green and vibrant river while enhancing its flood conveyance capability at the same time. According to DSD, the project aimed to enhance the ecological value of Tsui Ping River and promote water-friendly activities, thereby providing a green leisure space for the public. It would also enhance the walkability along the river and the connectivity with surrounding areas.

Introduction

1.14 DSD was responsible for the revitalisation and improvement of Tsui Ping River (hereinafter referred to as the Tsui Ping River Project). The Tsui Ping River Project was implemented under one project vote (hereinafter referred to as Project Vote IV), with an APE of $1,342.2 million approved by FC in June 2020. The scope of works under the Tsui Ping River Project included:

(a) revitalisation of Tsui Ping River, comprising resurfacing of the channel, installation of a smart water gate, provision of water-friendly features, provision of a water supplement system, installation of three dry weather flow interceptors, provision of a smart surveillance and weather forecast system, riverside lighting and in-stream plantation, etc.;

(b) dredging at the existing channel for about 800 m long and reconstruction/ strengthening of the existing nullah structures for about 740 m long; and

(c) construction of riverside walkways, six cross-river walkways and six landscaped decks, modification of an existing footbridge, and ancillary works including provision of public leisure spaces, streetscape enhancement works, landscaping works, etc.

Photograph 2 shows Tsui Ping River after revitalisation and improvement.

Photograph 2

Tsui Ping River after revitalisation and improvement (January 2025)



Source: DSD records

1.15 In July 2015, DSD awarded a consultancy agreement to a consultant (Consultant Z, which referred to the same consultancy firm as Consultant Y) for the investigation work of the Tsui Ping River Project. In December 2017, DSD awarded another consultancy agreement to Consultant Z for the design and construction supervision work of the Tsui Ping River Project. As at 31 May 2026, the consultancy fees paid to Consultant Z for these two agreements were $7.2 million and $18.1 million respectively (Note 7).

Note 7: *Of the total consultancy fees of $25.3 million (i.e. $7.2 million + $18.1 million), $7.9 million was funded under Project Vote IV, $0.4 million was funded under another project vote (for works not related to the Tsui Ping River Project) and $17 million was funded under the block allocation Subhead 4100DX of the Capital Works Reserve Fund Head 704 under the control of DSD.*

Introduction

1.16 In June 2020, DSD awarded a works contract (Contract D) to a contractor (Contractor D) for the implementation of the Tsui Ping River Project. The works under Contract D commenced on 3 July 2020 and were substantially completed on 30 September 2024, which was about 10 months later than the original completion date of 2 December 2023.

1.17 The account of Contract D (see Table 4) was finalised in May 2026. As at 31 May 2026, $1,127.2 million (84%) of APE of $1,342.2 million for the Tsui Ping River Project had been incurred. Of this $1,127.2 million:

(a) $978.7 million (87%) was related to expenditures for the Tsui Ping River Project under Contract D (see Note 2 to Table 4); and

(b) the remaining $148.5 million (13%) mainly included resident site staff costs of $130.1 million, consultancy fees of $7.9 million (see Note 7 to para. 1.15) and other costs of $10.5 million.

Table 4

Contract expenditure of Contract D
(31 May 2026)

Contract	Original contract sum (a)	Final contract sum (b)	Increase (c) = (b) – (a)	Decrease in provision for price fluctuation adjustment (Note 1) (d)	Increase after price fluctuation adjustment (e) = (c) – (d)
	($ million)				
D	826.3	989.0 (Note 2)	162.7 (19.7%)	(140.6) (-17.0%)	303.3 (36.7%)

Source: *DSD records*

Note 1: *The original contract sum included provision for price fluctuation adjustment.*

Note 2: *Of the $989 million, $978.7 million was funded under Project Vote IV and $10.3 million was funded under another project vote (for works not related to the Tsui Ping River Project).*

Management and maintenance of Kai Tak River and Tsui Ping River

1.18 According to DSD, by revitalising water bodies and expanding green landscapes, it aims to improve the ecological environment within and alongside the river channels, increase biodiversity, and strengthen the connection between rivers and communities. In this connection, DSD has introduced various facilities and greening elements into the river revitalisation and improvement projects. In addition to regular management and maintenance of drainage channels (e.g. routine inspections and clearance of debris or overgrown vegetation), DSD is responsible for the management and maintenance of relevant facilities and greening elements introduced under the Kai Tak River Project (e.g. submerged planters and fish shelters) and the Tsui Ping River Project (e.g. cross-river walkways and landscaped decks).

Responsible divisions of DSD

1.19 The Project Management Division and the Drainage Projects Division under DSD's Projects and Development Branch were responsible for monitoring the implementation of the Kai Tak River Project, and the Drainage Projects Division was responsible for monitoring the implementation of the Tsui Ping River Project. Upon completion of relevant works, the Mainland South Division under DSD's Operations and Maintenance Branch has taken over the management and maintenance of Kai Tak River and Tsui Ping River. According to DSD, as at 31 May 2026, 28 staff in the Mainland South Division were involved in, among other duties, the management and maintenance of the two rivers. In 2025-26, the related staff expenditure incurred for carrying out the relevant duties was $0.9 million. An extract of DSD's organisation chart as at 31 May 2026 is at Appendix A.

Audit review

1.20 In May 2026, the Audit Commission (Audit) commenced a review of the revitalisation and improvement of rivers and nullahs by DSD. The audit review has focused on the following areas:

(a) revitalisation and improvement of Kai Tak River (PART 2);

(b) revitalisation and improvement of Tsui Ping River (PART 3); and

(c) other related issues (PART 4).

Audit has found room for improvement in the above areas and has made a number of recommendations to address the issues.

Acknowledgement

1.21 Audit would like to acknowledge with gratitude the full cooperation of the staff of DSD during the course of the audit review.

PART 2: REVITALISATION AND IMPROVEMENT OF KAI TAK RIVER

2.1 This PART examines the revitalisation and improvement of Kai Tak River by DSD, focusing on:

(a) revitalisation and improvement works (paras. 2.2 to 2.27); and

(b) other project and contract management issues (paras. 2.28 to 2.37).

Revitalisation and improvement works

2.2 Between August 2010 and December 2013, DSD awarded three works contracts (i.e. Contracts A to C) for the Kai Tak River Project, as follows:

(a) Contract A (with an original contract sum of $100.2 million) was mainly funded under Project Vote I (with an APE of $159.4 million);

(b) Contract B (with an original contract sum of $818 million) was funded under Project Vote II (with an APE of $1,602 million); and

(c) Contract C (with an original contract sum of $508.8 million) was mainly funded under Project Vote III (with an APE of $1,244.3 million).

2.3 Consultant X was the Engineer responsible for supervising the contract works under Contracts A and B, and Consultant Y was the Engineer responsible for supervising the contract works under Contract C. DSD was responsible for overseeing the implementation of the contract works and the performance of Consultants X and Y. The works under Contracts A to C were substantially completed between January 2014 and December 2019, which were 5.1 to 31.1 months later than their respective original completion dates with extensions of time (EOTs) for the respective whole periods granted to the contractors. The accounts of Contracts A to C were finalised between March 2017 and February 2022, and the total final contract sum was $1,621.6 million. Table 5 shows the contract types, works and expenditures under Contracts A to C.

Table 5

Contract types, works and expenditures under Contracts A to C (31 May 2026)

Contract	Contract type	Works	Final contract sum ($ million)
A	Remeasurement contract (Note 1)	Stage 1 works	138.0
B	Works order type contract (Note 2)	Works for the upstream section	1,092.5
C	Remeasurement contract (Note 1)	Works for the midstream section	391.1
		Total	1,621.6

Source: *DSD records*

Note 1: *Under a remeasurement contract, the costs of works are based on the actual quantities of works done to be remeasured and the prices of different works items as priced by the contractor in the Bills of Quantities according to the contract. For Contracts A and C, the completion dates were the dates on which the works were substantially completed.*

Note 2: *Under a works order type contract, the Engineer will issue works orders to the contractor for carrying out the contract works. For Contract B: (a) the costs of works were based on the actual quantities of works done (under the works orders issued) to be remeasured and the prices of different works items as priced by the contractor in the Schedule of Rates according to the contract; and (b) the completion date was the last completion date of all issued works orders.*

Interfacing issues of Contracts B and C

2.4 According to the Project Administration Handbook for Civil Engineering Works issued by the Civil Engineering and Development Department (hereinafter referred to as the Project Administration Handbook), some of the issues that need to be considered and provided for in a multi-contract project will include, for example, handing over of site and consequence of delay in any one of the contracts on other contracts.

2.5 According to Contract C, the works site had 4 portions and Contractor C should be given possession of areas within 1 portion on the commencement date of Contract C (Note 8). However, Contractor C was unable to take over a part of that portion (Area A) on the commencement date of Contract C. The salient points are as follows:

(a) the site boundaries of Contracts B and C were overlapped, and Area A was within the works area of Contract B. On 30 December 2013 (i.e. the commencement date of Contract C), Area A was still being occupied by Contractor B. According to DSD, Area A was occupied by Contractor B as site access, works area facilitating the pipe piling works nearby, and storage area for construction materials and equipment. As a result, Contractor C was unable to take over Area A;

(b) since January 2014, various meetings (including site liaison meetings and monthly progress meetings) were held among DSD and the project teams of Contracts B and/or C to discuss the interfacing issues including the handover of Area A and the related mitigation measures;

(c) in June 2014, Contractor C reported to DSD and Consultant Y that the mitigation measures had been completed, and submitted claims for EOTs and an additional payment for the delay due to the non-occupation of Area A. According to Consultant Y's assessment of the claims, the additional payment was claimed for the mitigation measures implemented by Contractor C to mitigate the disturbance to the progress of the works arising from the non-occupation of Area A;

(d) in September 2014, an agreement was reached between the project teams of Contracts B and C that Contractor B would vacate Area A. In November 2014, Consultant X issued a variation order (VO — later valued at $2.3 million) under Contract B to instruct Contractor B to vacate Area A; and

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Note 8: *According to Contract C, for the remaining 3 portions, Contractor C should be given possession of areas within 1 and 2 portions within 365 and 540 days after the commencement date of Contract C respectively.*

(e) in the event, Contractor C was able to take over Area A on 4 December 2014 (i.e. about 11 months after the commencement date of Contract C). Consultant Y also certified an additional payment of $11.9 million to Contractor C for the claims submitted in June 2014 with no EOT granted (Note 9).

2.6 In September 2026, DSD informed Audit that:

(a) as the commencement date of Contract C was not certain during the preparation of tender of Contract B, the tender documents of Contract B did not specify or require Contractor B to vacate Area A before the commencement date of Contract C; and

(b) the programme of Contract B submitted by Contractor B in February 2013 indicated that the works requiring the occupation of Area A would be completed in June 2013. Before the tender invitation of Contract C in July 2013, DSD had checked the availability of land including Area A. After the tender closing for Contract C, DSD further checked the latest available programme of Contract B submitted in October 2013 which indicated that the land required for the works would be available for Contract C in a timely manner.

2.7 While DSD had checked the availability of land prior to accepting tender of Contract C by referring to the programmes of Contract B, there were delays in the progress of works under Contract B compared to the programmes and Contractor C was therefore unable to take over Area A on the commencement date of Contract C. In Audit's view, in implementing works projects involving interfacing works contracts, DSD needs to take measures to ensure timely handover of works sites among interfacing works contracts with a view to mitigating the risks arising from interfacing issues (e.g. contractual claims and works variations), including:

Note 9: *According to Consultant Y's assessment of the claims, no EOT was granted as the relevant works were substantially completed before the extended completion date (which was extended due to inclement weather) for the section of works at that time.*

(a) enhancing the supervision and monitoring of the progress of works; and

(b) ensuring that the programmes of works contracts are accurately updated to reflect the actual site progress.

Scope for improvement in local consultation

2.8 According to Contracts B and C, Contractors B and C were required to carry out works for the hard landscape on the nullah wall at the upstream and midstream sections of Kai Tak River respectively.

2.9 Audit noted that, after the commencement of works under Contracts B and C, there were changes in the design of nullah wall finishes under the two contracts. The salient points are as follows:

(a) according to DSD, to engage the public on the planning of the Kai Tak River Project (including the nullah wall finish design), the Government conducted a two-stage public engagement exercise in December 2010 and June 2011. After the completion of consultation, it was decided that natural granite cladding should be adopted for the design of nullah wall finishes (Note 10). After the commencement of Contract C in December 2013, new suggestions were received from local communities to further enhance the nullah wall finish design (i.e. natural granite cladding with a new pattern consisting of granite of larger size) to match with the existing masonry walls in view of the historical value; and

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Note 10: *According to DSD: (a) at the time of tender invitation for Contract B in June 2011, the consultation was still in progress. Hence, three options for the nullah wall finishes, namely Lychee finish on granite cladding, patterned concrete and permeable green system, were included in Contract B. The Schedule of Rates of Contract B also included these three options; and (b) the tenders for Contract C were invited in July 2013. Under Contract C, natural granite cladding in tile pattern should be provided.*

(b) in the event, VOs were issued under Contracts B and C to revise the design of nullah wall finishes, as follows:

(i) ***Contract B.*** In July 2016, Consultant X issued a works order (Works Order A) under Contract B to instruct Contractor B to carry out the landscape and associated works including the nullah wall finishes. In March 2017, Consultant X issued a VO (later valued at $34.5 million, including prolongation costs of $8.7 million — see Note 13 to para. 2.15(b)) under Contract B to instruct Contractor B to carry out additional works for, among others, revising the design of nullah wall finishes. According to DSD, the direct cost of works for revising the design of nullah wall finishes was $20.2 million; and

(ii) ***Contract C.*** In October 2016, Consultant Y issued a VO (later valued at $4.5 million) under Contract C to instruct Contractor C to carry out additional works for revising the design of nullah wall finishes.

2.10 In Audit's view, in implementing river revitalisation projects, DSD needs to enhance the local consultation process with a view to early identifying the concerns of relevant stakeholders (e.g. local communities), particularly in carrying out works related to features/structures of historical value in the locality.

Scope for improvement in mitigating flooding impact during the course of works at rivers and nullahs

2.11 According to the prevailing DSD Technical Circular No. 14/2000 "Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage Systems" (Note 11):

Note 11: *In January 2017, DSD issued the Technical Circular No. 1/2017 "Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage Systems", which replaced the Technical Circular No. 14/2000.*

(a) during the course of works within, over or adjacent to the stormwater drainage systems, inadequate temporary flow diversions and/or poor temporary works design adversely affecting the flow have the potential to lead to flooding during heavy rain and the consequences may be very severe; and

(b) for the period of wet season (i.e. in general, from April to October), sufficient mitigation works or flow diversions shall be provided such that the capacity of the drain or river is, in general, no less than that existing before the commencement of the works.

2.12 According to Contract B:

(a) Contractor B was required to prepare and submit a Temporary Drainage Management Plan for the approvals of Consultant X and DSD prior to the replacement or reprovisioning of any of the existing drainage systems and update the plan at regular intervals during the contract period; and

(b) where existing drainage paths including nullah were affected, the plan should contain details of temporary drainage having a flood protection standard stipulated in the DSD Technical Circular No. 14/2000 at all time.

According to DSD, the related plans submitted by Contractor B had been approved in accordance with the requirements in Contract B.

2.13 After the commencement of works under Contract B, a flooding incident occurred in September 2015 at Choi Hung Road under the Amber Rainstorm Warning Signal (Note 12) and caused breakdowns of vehicles, leading to a major blockage to the road. To safeguard the properties of the public and minimise the nuisance caused to the road users during heavy rainfall, DSD decided to impose a higher flood protection standard for the temporary drainage during the construction stage of Contract B than that originally planned in accordance with the requirements in the contract.

Note 12: *According to Consultant X, the rain gauge data showed that the rainfall intensity at the Wong Tai Sin district reached the level of the Black Rainstorm Warning Signal.*

2.14 In July 2016, Consultant X issued a works order (Works Order B) under Contract B to instruct Contractor B to carry out the flood prevention and associated works. In March 2017, Consultant X issued a VO (later valued at $98.9 million, including prolongation costs of $48.3 million — see Note 13 to para. 2.15(b)) under Contract B to instruct Contractor B to carry out additional works for, among others, meeting the additional requirements on the flood protection standard for the temporary drainage in the wet season during the construction stage. According to DSD, the direct cost of works for the additional requirements was $47.4 million.

2.15 Audit noted that the additional requirements on the flood protection standard for the temporary drainage during the construction stage resulted in significant EOTs and prolongation costs under Contract B. The salient points are as follows:

(a) according to Consultant X's assessment on the time and cost implications, the additional requirements had increased the difficulty level of the works and changed the original working sequence of the works under some issued works orders, as follows:

(i) in order to satisfy the additional requirements, temporary stoplog/penstock systems would be constructed at Kai Tak River such that the whole flow sectional area of the river could be utilised when these stoplog/penstock systems were fully opened before heavy rainstorm events occurred; and

(ii) as a result of the opening of the stoplogs/penstocks or when the water depth overflows the stoplogs/penstocks, some work fronts inside the river for the works under Contract B (e.g. the box culvert construction and the river deepening works under Works Order B) would be flooded. Reinstatement works for these work fronts would have to be carried out immediately after each rainstorm, and the progress of works at these work fronts would be affected; and

(b) as a result of the additional requirements, EOTs of 50 to 447 days were granted to Contractor B for completion of works under 13 works orders, leading to prolongation costs totalling $69 million incurred under Contract B (Note 13).

2.16 In September and October 2026, DSD informed Audit that:

(a) after the flooding incident in September 2015 (see para. 2.13), DSD reviewed the prevailing site conditions and construction progress, and identified an opportunity to utilise the partially completed box culvert as temporary flood storage during extreme storm events, thereby enhancing the temporary drainage capacity of the existing Kai Tak River pending construction of the improvement works to prevent flooding;

(b) given the physical constraints and ongoing construction activities within the river channels, maintaining the existing drainage capacity during river works was already a stringent requirement. Therefore, upgrading the drainage capacity further during the construction stage was not always technically feasible, particularly where the required working space and completed channel sections were not yet available; and

(c) in the past, temporary drainage mitigation measures relied heavily on fixed and stationary diversion works. With advances in technology, new resilience measures available in the market (e.g. pumping robots which have become a widely adopted solution for relieving flooding effectively) could be leveraged to effectively mitigate both the extent and severity of flooding throughout the entire course of construction period.

2.17 In Audit's view, DSD needs to continue to explore further measures (e.g. adoption of applicable technologies) to mitigate the flooding impact during the course of works at rivers and nullahs.

Note 13: *According to DSD, the prolongation costs of $69 million were included in the costs of VOs related to 3 of the 13 works orders, including $8.7 million for Works Order A (see para. 2.9(b)(i)), $48.3 million for Works Order B (see para. 2.14) and $12 million for a works order related to road drainage works.*

Need to draw on the experience gained from the implementation of an interim sewerage system

2.18 Under Contract B, a new sewer trunk would be laid in the deepened riverbed of Kai Tak River to replace an existing sewer trunk. According to DSD:

(a) in May and August 2013, two flooding incidents occurred along Choi Hung Road, particularly at its junction with Shatin Pass Road, prompted DSD to consider interim measures to relieve the flooding impact on the public;

(b) as the permanent works to improve the drainage capacity of Kai Tak River under Contract B would take several years to complete, DSD worked with Contractor B to identify interim measures that could enhance the river's drainage capacity during the construction period; and

(c) upon investigation, DSD considered that the early removal of the existing sewer trunk and seven smaller sewers could enhance the drainage capacity of Kai Tak River. In October 2013, DSD decided to implement an interim sewerage system (which was essentially a pumping system) to facilitate the early removal of the existing sewer trunk and seven smaller sewers.

2.19 In January 2014, Consultant X issued a works order under Contract B to instruct Contractor B to carry out the inspection pit excavation works related to the interim sewerage system, and issued a VO (later valued at $15.1 million) under Contract B to instruct Contractor B to carry out additional works for constructing an interim sewerage system. The interim sewerage system was commissioned in July 2014.

2.20 In January 2015 (i.e. about 6 months after commissioning of the interim sewerage system in July 2014), a system breakdown incident occurred and all the three pumps for the interim sewerage system were out of order. Audit noted that:

(a) the investigation of Consultant X revealed that the incident was caused by the influx of solid waste into the pump pit and the float switches were intertwined with the solid waste, leading to overheating and breakdowns of the pumps;

(b) in February 2016, Consultant X issued another VO (later valued at $10 million) under Contract B to instruct Contractor B to carry out additional works for enhancing the operation and maintenance requirements for the interim sewerage system (e.g. increased frequency of routine maintenance, modification of filter cage, provision of spare parts for pumps, installation of hydrostatic-type level-sensing equipment and construction of an additional desilting manhole). At the time of issue of this VO, it was anticipated that the operation period of the interim sewerage system would end in December 2016;

(c) the construction of the permanent sewer trunk was delayed due to, among other reasons, the additional requirements on the flood protection standard for the temporary drainage during the construction stage (see para. 2.14). In the event, in October 2018 (i.e. about 1.8 years after December 2016), the permanent sewer trunk was handed over to DSD and the interim sewerage system was decommissioned; and

(d) the extended operation period of the interim sewerage system had increased the costs of the two VOs (see para. 2.19 and (b) above) from the originally estimated costs of $6.5 million and $3.5 million (totalling $10 million) respectively to the final values of $15.1 million and $10 million (totalling $25.1 million) respectively.

2.21 In September 2026, DSD informed Audit that:

(a) two duty sewage pumps and one standby sewage pump were provided in the interim sewerage system to ensure the robustness and reliability of the system. The influx of large amount of solid waste into the pump pit in January 2015 was unexpected and such situation was out of the original contemplation when designing the interim sewerage system; and

(b) with the improvement measures (see para. 2.20(b)) in place, the interim sewerage system had been operating smoothly.

2.22 In Audit's view, DSD needs to draw on the experience gained from the implementation of the interim sewerage system at Kai Tak River with a view to improving the design and operation of similar systems in implementing works projects in future.

Scope for improvement in ascertaining the presence of underground utilities

2.23 According to Contract B, Contractor B was required to construct a sewer trunk underneath a road using open-cut method. Audit noted that:

(a) in November 2013, Consultant X issued a works order under Contract B to instruct Contractor B to carry out works for constructing the sewer trunk. A number of trial trenches were then carried out at the road, and the results revealed that the alignment of the proposed sewer trunk and the associated sheet piling works would be in conflict with some underground utilities, in particular a large mass of concrete thrust blocks was found above the proposed sewer trunk; and

(b) in August 2015, Consultant X issued a VO (later valued at $3.4 million) under Contract B to instruct Contractor B to change the construction method of the sewer trunk from open-cut to trenchless as diversions of the utilities were considered impracticable given the site constraints.

2.24 In September 2026, DSD informed Audit that:

(a) the open-cut method was prioritised over the trenchless method to enhance cost-effectiveness, except where major underground utilities or significant traffic disruptions were anticipated. During the design stage of Contract B, utility records were obtained from underground utility providers, which indicated no potential conflict with the proposed sewer trunk. Site investigations had also been conducted wherever practicable to verify the accuracy of these records. The open-cut method was therefore adopted in the conforming design; and

(b) different diversion schemes were explored but were found infeasible due to the high density of underground utilities. The trenchless method therefore became necessary as a result of the unexpected obstruction.

2.25 According to the Environment, Transport and Works Bureau Technical Circular (Works) No. 17/2004 "Impossibility/Unforeseen Ground Conditions/Utility Interference", project officers should satisfy themselves that the utility records are reasonably accurate before the completion of the detailed design. In Audit's view, in implementing works projects, DSD needs to better ascertain the presence of underground utilities (e.g. exploring innovative detection methods) with a view to further enhancing the planning of works as far as practicable.

Audit recommendations

2.26 **Audit has *recommended* that the Director of Drainage Services should:**

(a) **in implementing works projects involving interfacing works contracts, take measures to ensure timely handover of works sites among interfacing works contracts with a view to mitigating the risks arising from interfacing issues (e.g. contractual claims and works variations), including:**

(i) **enhancing the supervision and monitoring of the progress of works; and**

(ii) **ensuring that the programmes of works contracts are accurately updated to reflect the actual site progress;**

(b) **in implementing river revitalisation projects, enhance the local consultation process with a view to early identifying the concerns of relevant stakeholders (e.g. local communities), particularly in carrying out works related to features/structures of historical value in the locality;**

(c) **continue to explore further measures (e.g. adoption of applicable technologies) to mitigate the flooding impact during the course of works at rivers and nullahs;**

(d) **draw on the experience gained from the implementation of the interim sewerage system at Kai Tak River with a view to improving the design and operation of similar systems in implementing works projects in future; and**

(e) **in implementing works projects, better ascertain the presence of underground utilities (e.g. exploring innovative detection methods) with a view to further enhancing the planning of works as far as practicable.**

Response from the Government

2.27 The Director of Drainage Services agrees with the audit recommendations.

Other project and contract management issues

Need to keep under review the work in estimating project costs

2.28 According to the Project Administration Handbook:

(a) project engineers are responsible for keeping the works within the approved scope and estimate. They must ensure that estimates are carefully prepared and given the same attention to detail as other aspect of project preparation; and

(b) any estimate must be as accurate as possible as it affects the management of public funds and it has a direct effect on fund allocation.

2.29 The APE for Project Vote III mainly covered the works for the midstream section of Kai Tak River (see Table 1 in para. 1.8), which were implemented under Contract C. Audit noted that:

(a) in early July 2013, DSD sought funding approval from FC for Project Vote III. FC approved the funding at an APE of $1,244.3 million, and the sum allowed for Contract C in the APE was $799.4 million;

(b) in late July 2013, DSD invited tenders for Contract C. In August 2013, the pre-tender estimate of Contract C was updated to $634.4 million. The tender then closed in September 2013;

(c) in December 2013, DSD awarded Contract C to Contractor C at an original contract sum of $508.8 million (i.e. $125.6 million (20%) less than the pre-tender estimate of $634.4 million updated in August 2013); and

(d) in the event, the account of Contract C was finalised in June 2020 and the final contract sum was $391.1 million, of which $386.1 million was funded under Project Vote III (see Note 4 to Table 3 in para. 1.11). As at 31 May 2026, the expenditure incurred under Project Vote III was $478.1 million (i.e. 38% of the APE of $1,244.3 million for Project Vote III).

2.30 In September 2026, DSD informed Audit that:

(a) the pre-tender estimate of Contract C was updated in August 2013 with reference to the returned tender prices of other contracts and tendering strategy. Due to market competition, the 20% difference between the updated pre-tender estimate and the original contract sum was considered reasonable. In addition, the original contract sum included provisions for price fluctuation adjustment and contingency sum, and the lower actual expenditure was partly attributable to portions of these provisions remained unspent;

(b) the difference between the APE for Project Vote III and its actual expenditure was mainly due to the lower actual expenditure of Contract C compared to its pre-tender estimate and unspent project contingency. Throughout the project period, an administrative cap was imposed on Project Vote III, and full justification and approval by the relevant authority were required for spending beyond the administrative cap; and

(c) with the adoption of parallel tendering since September 2020, the original contract sums of works contracts would be reflected in the APEs of related project votes.

2.31 In Audit's view, in implementing works projects, DSD needs to keep under review the work in estimating project costs with a view to ensuring that project costs are estimated as accurately as possible.

Scope for improvement in the administration of works order type contracts

2.32 Contract B was a works order type contract. According to Contract B:

(a) the contractor shall not carry out any work without a works order except for events requiring emergency works or services. In such event, the Engineer may give a verbal order to the contractor, followed by a works order within 7 days of the verbal order; and

(b) the Engineer shall, in any case no later than 21 days of the date of receipt of a notice from the contractor that the works under a works order have been satisfactorily completed, either issue a certificate of completion or give instructions to the contractor specifying all the work which is required to be done by the contractor before a certificate of completion can be issued.

2.33 Consultant X issued a total of 443 works orders under Contract B to instruct Contractor B to carry out the contract works. Audit noted that there was scope for improvement in the administration of Contract B (i.e. a works order type contract), as follows:

(a) ***Works commenced before issue of works orders.*** Of the 443 works orders issued under Contract B, 137 (31%) were issued 1 to 381 days (averaging 54 days) after the commencement dates of works, of which 4 (3% of 137) works orders were even issued 5 to 8 days (averaging 6 days) after the actual completion dates of works. As far as could be ascertained, there was no documentation showing whether the 137 works orders were issued for emergency works or services; and

(b) ***Certificates of completion on works orders not timely issued.*** Of the 443 works orders issued under Contract B, the certificates of completion for 50 (11%) works orders were issued more than 21 to 131 days (averaging 40 days) after the dates of receipt of the completion notices. As far as could be ascertained, there was no documentation showing whether there was work required to be done for these works orders so that certificates of completion could not be issued within the required timeframe.

2.34 In September 2026, DSD informed Audit that:

(a) DSD, Consultant X and Contractor B maintained close liaison and coordination during the preparation of works orders. Given the tight construction programme and the need to ensure timely delivery, Contractor B might commence certain mobilisation and preparatory works prior to the formal issuance of relevant works orders, under the close supervision of Consultant X; and

(b) before issuing a certificate of completion, Consultant X was required to conduct a thorough site inspection to ensure that the works were completed in compliance with contractual requirements. For complicated works orders, additional time for site inspections was needed.

2.35 In Audit's view, in administering works order type contracts, DSD needs to take measures to ensure that works orders and certificates of completion are timely issued in accordance with contract requirements.

Audit recommendations

2.36 **Audit has *recommended* that the Director of Drainage Services should:**

(a) **in implementing works projects, keep under review the work in estimating project costs with a view to ensuring that project costs are estimated as accurately as possible; and**

(b) **in administering works order type contracts, take measures to ensure that works orders and certificates of completion are timely issued in accordance with contract requirements.**

Response from the Government

2.37 The Director of Drainage Services agrees with the audit recommendations.

PART 3: REVITALISATION AND IMPROVEMENT OF TSUI PING RIVER

3.1 This PART examines the revitalisation and improvement of Tsui Ping River by DSD, focusing on:

(a) revitalisation and improvement works (paras. 3.2 to 3.19); and

(b) administration of New Engineering Contract (NEC) (paras. 3.20 to 3.29).

Revitalisation and improvement works

3.2 In June 2020, DSD awarded a works contract (i.e. Contract D) for the Tsui Ping River Project. Contract D (with an original contract sum of $826.3 million) was mainly funded under Project Vote IV (with an APE of $1,342.2 million). According to DSD, Contract D was a target contract with activity schedule (i.e. a contract option of the Engineering and Construction Contract (ECC) in NEC form (Note 14)). Details are as follows:

(a) an activity schedule, which was prepared and priced by Contractor D at the tender stage (Note 15), was used to establish the target cost of Contract D. The target cost would then be adjusted for the prices of implemented compensation events (Note 16) and price adjustment for inflation to arrive at the final target cost; and

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Note 14: *NEC is a contract form that emphasises cooperation, mutual trust and collaborative risk management between contracting parties. There are different types of contracts in NEC form, including ECC for the appointment of a contractor for engineering and construction work. NEC also has different editions and Contract D was an ECC in the NEC3 form.*

Note 15: *In general, tenderers can decide how to break up their work into activities, and enter and price them in the activity schedule.*

Note 16: *Compensation events are events which may trigger the reassessment of the prices, completion date and/or key dates of the contract. In general, under the terms of NEC contracts, compensation events allow both time and monetary entitlement to the contractor. Examples of compensation events include weather events, unforeseen physical conditions and changes to the works information.*

(b) the payment to Contractor D was based on a cost reimbursable approach with a pain/gain share mechanism, under which the Government and Contractor D share the cost saving and overrun between the actual expenditure and the final target cost. If the actual expenditure is lower than the final target cost, the contracting parties can share the savings equally according to the mechanism stipulated in the contract. Conversely, if the actual expenditure exceeds the final target cost, the parties will share the excess expenditure equally up to a maximum of 10% of the final target cost (i.e. the Government to bear up to an additional 5% of the final target cost) and the remaining will be borne by Contractor D. In the event, as the actual expenditure of Contract D was higher than the final target cost, the Government shared a pain of $46.6 million (i.e. included in the contract payments) while Contractor D shared a pain of $140.2 million (i.e. not included in the contract payments) in accordance with the pain/gain share mechanism (Note 17).

3.3 DSD was the Project Manager for Contract D, and Consultant Z was the Supervisor and Project Manager's Representative responsible for supervising the contract works under Contract D (Note 18). DSD was also responsible for overseeing the implementation of the contract works and the performance of Consultant Z. The works under Contract D were substantially completed on 30 September 2024, which was about 10 months later than the original completion date with EOTs for the

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Note 17: *According to DSD, the actual expenditure of Contract D was $1,118 million, which was higher than the final target cost of $931.2 million (i.e. with an excess expenditure of $186.8 million). In accordance with the pain/gain share mechanism under Contract D, the Government's pain share amount was $46.6 million (i.e. $931.2 million × 5%) and Contractor D's pain share amount was $140.2 million (i.e. $186.8 million less $46.6 million).*

Note 18: *In general, under the terms of NEC contracts, the Project Manager is responsible for administering the construction contract particularly on matters related to time, cost and certification of payments, and the Supervisor is responsible for supervising the workmanship, testing of materials and identifying defects. According to DSD, some Project Manager's actions under Contract D were delegated to Consultant Z as the Project Manager's Representative, including the assessment of compensation events. However, if the estimated financial commitment of a compensation event was beyond $300,000 (i.e. the amount prevailing at the commencement of Contract D in July 2020, which was subsequently increased to $800,000 in September 2020, $1 million in January 2024 and $1.4 million in November 2024), prior consent from DSD was required.*

whole period granted to Contractor D. The account of Contract D was finalised on 7 May 2026 and the final contract sum was $989 million (Note 19).

Scope for improvement in ascertaining underground conditions in works sites

3.4 According to the "Practice Notes for New Engineering Contract (NEC) – Engineering and Construction Contract (ECC) for Public Works Projects in Hong Kong" issued by the Development Bureau (DEVB) (hereinafter referred to as the Practice Notes — Note 20):

(a) the site information forms part of the contract under ECC and it will form one of the bases in judging the physical conditions for the purpose of assessing a compensation event; and

(b) the project offices should include as much relevant information as possible, including site investigation records, existing utilities records, etc., for tenderers to prepare their tender submissions so as to allow reasonable risk of potential physical conditions to be encountered during the contract.

3.5 According to Contract D, the works site was divided into four zones (i.e. Zones A to D), and Contractor D was required to carry out nullah bed reconstruction works in Zones A to C and piling works in Zone C. As part of the site information enclosed in the tender documents during the tender stage (and later included in Contract D), there were a series of ground investigation and groundwater monitoring records, and a series of as-built drawings of the nearby existing structures. Audit noted that five compensation events issued under Contract D were related to the underground conditions in Zone C, leading to additional costs totalling $79.2 million incurred under Contract D (see paras. 3.6 and 3.7).

Note 19: *For Contract D, the final contract sum was $989 million, which comprised the final target cost of $931.2 million, the Government's pain share amount of $46.6 million, and the performance-tied payment of $11.2 million under the Pay for Safety Performance Merit Scheme.*

Note 20: *In September 2026, DEVB issued a new set of NEC practice notes (i.e. "NEC Practice Notes for Public Works Projects in Hong Kong"). Volume 1 of this set of practice notes covered ECC.*

3.6 ***Gushing of groundwater during nullah bed reconstruction works.*** During the excavation for nullah bed reconstruction works, Contractor D observed groundwater gushing from the excavation after demolishing and removing the existing concrete nullah bed in Zones A to C. The salient points are as follows:

(a) according to DSD, during the design stage of the Tsui Ping River Project, a series of existing ground investigation data in the vicinity of the works site of Contract D were retrieved. In addition, several drill holes were sunk within the works site of Contract D to obtain the ground investigation data. These ground investigation data were then provided in the site information enclosed in the tender documents;

(b) after the commencement of works, Contractor D carried out further ground investigation and pre-drilling works in Zones A to C as required under Contract D. From November 2020 to January 2021, Contractor D issued three early warnings (Note 21) to report that there was groundwater gushing from the excavation after demolishing and removing the existing concrete nullah bed in Zones A to C. To overcome the groundwater seepage, Contractor D was required to carry out additional works (e.g. installing additional pumping systems) and rearrange the sequence of nullah bed reconstruction works;

(c) in March 2021, Contractor D issued a notification of compensation event on the disruption to progress due to the underground conditions encountered in Zones A to C. According to DSD, Contractor D claimed that the groundwater gushing from the excavation was caused by the higher permeability of the soil, which could not be identified from the site information enclosed in the tender documents. According to Consultant Z's assessment of Contractor D's claim for the compensation event, with a comparison between the ground investigation data contained in the site information enclosed in the tender documents and that obtained after the commencement of Contract D:

Note 21: *According to the Practice Notes, the early warning mechanism is one of the key procedures in the NEC to stimulate good project management. It encourages both the Project Manager and the contractor to raise any event which may cause an impact to the project to the other party as soon as it is noticed. When risks are identified, either party shall alert another by giving an early warning.*

(i) for Zones A and B, the data were consistent in terms of soil mass permeability and hence the physical conditions encountered would be expected based on the ground investigation data contained in the site information; and

(ii) for Zone C, the data were not consistent in terms of soil mass permeability. As the actual soil mass permeability based on the ground investigation conducted after the commencement of Contract D was higher than that inferred from the ground investigation data contained in the site information, the rate of groundwater seepage was greater; and

(d) in the event, in July 2022, Consultant Z issued a compensation event (later valued at $36.2 million) under Contract D for the additional costs incurred (e.g. for the additional works carried out — see (b) above) due to the underground conditions encountered during the nullah bed reconstruction works in Zone C.

3.7 ***Settlement issue during piling works.*** During the piling works in Zone C, the ground settlement led to suspension of works (Note 22). The salient points are as follows:

(a) from August to November 2021, the readings of eight settlement monitoring points set up under Contract D in Zone C each exceeded the pre-set trigger level for works suspension. Contractor D then suspended the piling works. According to DSD, after investigation of causes and implementation of remedial measures, Consultant Z instructed Contractor D to resume the suspended works;

Note 22: *According to Contract D, the settlement due to the works under Contract D should not exceed the pre-set trigger level for works suspension (i.e. 25 millimetres).*

(b) in January 2022, the reading of a settlement monitoring point in Zone C exceeded the pre-set trigger level for works suspension. Contractor D then suspended the piling works and, upon request, prepared a works resumption plan with a series of mitigation measures (e.g. additional ground monitoring points and full-scale ground improvement works in Zone C). Contractor D also issued three notifications of compensation event for the settlement issue (Note 23);

(c) in view of the settlement issue, in February and March 2022, Consultant Z instructed Contractor D to carry out additional ground investigation works for subsequent ground strengthening works, pilot trial grouting and investigation works for existing utilities, and issued three compensation events (later valued at about $3 million in total) under Contract D for the costs incurred;

(d) in late March 2022, the works resumption plan was accepted by the relevant departments. The piling works in Zone C were resumed in April 2022 after the satisfactory implementation of mitigation measures;

(e) according to DSD, Contractor D claimed that the settlement issue was caused by the underground conditions, which could not be identified from the site information enclosed in the tender documents. According to Consultant Z's assessment of Contractor D's claim for the compensation events:

(i) the degree of compaction of the bedding materials was a probable cause of the ground settlement. However, the as-built drawing related to the existing nullah wall in Zone C (Note 24) did not contain information about the type and nature of bedding materials, the thickness and extent of the unknown bedding materials, and the degree of compaction of the unknown bedding materials on which the existing nullah was founded on; and

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Note 23: *According to DSD, in December 2021, Contractor D had issued one notification of compensation event related to the settlement issue.*

Note 24: *According to DSD, the as-built drawing contained an elevation, general layout and typical section of the as-built nullah wall in the 1950s and the interface with the existing seawall which had been built before the 1950s.*

(ii) the higher permeability of the soil caused more groundwater seepage during the construction works (see also para. 3.6(c)). As a result, more underground materials were flushed away and ground settlement occurred; and

(f) in the event, in September 2024, Consultant Z issued a compensation event (later valued at about $40 million) under Contract D for the additional costs incurred (e.g. for the mitigation measures implemented — see (d) above) due to the underground conditions encountered during piling works in Zone C.

3.8 In September 2026, DSD informed Audit that:

(a) site investigation information had already been provided in the tender documents of Contract D, including as-built drawings and borehole records. The spacing between points of exploration in the pre-contract site investigation complied with the relevant requirements, and the related report was approved by the relevant authority in August 2018;

(b) regarding the gushing of groundwater during nullah bed reconstruction works:

(i) the groundwater table that could be inferred from the pre-contract site information before the construction stage was below the formation level of the nullah bed reconstruction works. Hence, typical cast in-situ construction method was adopted in the design and specified in the tender documents;

(ii) during the construction stage, it was revealed that the actual groundwater table was higher than the formation level, leading to the gushing of groundwater. To overcome this issue, Contractor D proposed adopting the precast construction method instead of the cast in-situ construction method for the reconstruction of the nullah bed. Otherwise, substantial ground improvement works including grouting would be required which were more expensive and time-consuming; and

(iii) in view of the actual circumstances at the time, DSD agreed with Consultant Z's assessment on Contractor D's proposal to implement the compensation event concerned; and

(c) regarding the settlement issue during piling works:

(i) despite the fact that site investigation information had already been included in the tender documents, the presence of the highly localised drainage layer of coarse fill materials encountered during the piling works in Zone C was unexpected; and

(ii) the ground improvement works (i.e. grouting) conducted by Contractor D was a common approach in addressing the settlement issue. After completion of the ground improvement works, the settlement issue was successfully resolved and the construction works proceeded smoothly.

3.9 According to the Practice Notes, the site information plays an important role in assessing compensation events, and it is important to incorporate sufficient site investigation information into the site information during the tender stage to form a reliable basis for assessment. In Audit's view, in implementing works projects, DSD needs to better ascertain the underground conditions in works sites with a view to further enhancing the planning of works as far as practicable.

Scope for improvement in the monitoring of settlement

3.10 According to Contract D:

(a) the works were carried out in close proximity to existing buildings and structures and the site was congested with existing utilities. Contractor D was required to monitor the settlement of adjacent ground, structure and service; and

(b) the contract drawings specified the locations of the monitoring points, and the exact locations of the monitoring points would be confirmed on site by the Supervisor (i.e. Consultant Z).

3.11 Audit noted that:

(a) ***Setup of settlement monitoring points.*** In November 2021, a geotechnical engineering consultant was appointed by Contractor D to review the ground settlement in Zone C (see para. 3.7(a)). According to the review report of the consultant:

(i) the possible causes of the ground settlement in Zone C were mainly associated with disturbance of the soil structure due to the piling works; and

(ii) there were deficiencies in the monitoring setup which could lead to unreliable readings at the monitoring points. For example, some monitoring markers were installed at locations where they could be easily disturbed or damaged; and

(b) ***Settlement monitoring and reporting system.*** According to DSD, before the commencement of works, DSD, Consultant Z and Contractor D had deliberated and formulated a settlement monitoring plan that included a comprehensive and satisfactory settlement monitoring and reporting system. After the settlement issue in January 2022 (see para. 3.7(b)), DSD carried out a detailed review on the settlement monitoring and reporting system, and identified some deficiencies, including the following:

(i) the maintenance of settlement markers and utility monitoring points was inadequate. For example, according to the site records, some of the points had been covered by debris, obstructed by materials/equipment or damaged as early as in March 2021; and

(ii) the record-keeping of settlement data was not satisfactory and it took a long time to verify the information about the settlement issues.

3.12 In September 2026, DSD informed Audit that:

Setup of settlement monitoring points

(a) to meet the engineering needs, a series of ground settlement instrumentation was installed at the monitoring points along the road kerb in Zone C to monitor the ground settlement of adjacent carriageways during the course of construction, including the eight monitoring points of which the readings exceeded the pre-set trigger level for works suspension from August to November 2021 (see para. 3.7(a)). It was subsequently found that some of the exceedances were false alarms where the monitoring points along the road kerb were rolled over by heavy vehicles that disturbed the readings. The affected monitoring points were swiftly reinstated by Contractor D;

(b) while the installation of ground settlement instrumentation along the road kerb was subject to higher risk of disturbance by vehicles, it was a common practice and necessary for obtaining representative ground settlement information on the carriageways for ensuring road safety. Upon receiving the review report from the geotechnical engineering consultant (see para. 3.11(a)), the locations of some monitoring points were revised and additional monitoring points were set up under Contract D;

(c) for the other exceedances of pre-set trigger level for works suspension caused by Contractor D's construction works, Consultant Z had requested Contractor D to follow up and review the method statements. Afterwards, the ground settlement issues were addressed satisfactorily and no further exceedance occurred;

Settlement monitoring and reporting system

(d) during the course of construction, Consultant Z had closely liaised with Contractor D to monitor settlement. DSD also attached great importance to settlement control in the works site and issued correspondence to remind Consultant Z and Contractor D of the importance of properly implementing the settlement monitoring plan including the settlement monitoring and reporting system; and

(e) in February 2022, Contractor D implemented improvement measures under Contract D and Consultant Z was required to tighten the site supervision of Contractor D and enhance the record-keeping system of site activities. Since then, there was no further suspension of works under Contract D due to settlement in Zone C.

3.13 In Audit's view, in implementing works projects, DSD needs to take measures to enhance the monitoring of settlement of ground, structure and service adjacent to the works sites, including the setup of settlement monitoring points under works contracts and the implementation of settlement monitoring and reporting system by the contractors.

Need to draw on the experience gained from the installation of floating islands at Tsui Ping River

3.14 According to the prevailing DSD Practice Note No. 1/2015 "Guidelines on Environmental and Ecological Considerations for River Channel Design" (replaced by DSD Practice Note No. 3/2021 "Guidelines on Design for Revitalisation of River Channel" issued in December 2021):

(a) floating structure in the form of artificial floating raft, which is a vegetated floating platform, can support the growth of aquatic plant and thus create a habitat and offer shelter for birds, insects and other organisms. It also provides spawning ground for fish and helps to purify water; and

(b) one of the advantages of using floating structure for enhancement measure is that it can provide the ecological function regardless of water level. However, it should be noted that improper design of floating raft can result in short life span and high maintenance cost. Special attention should be paid to the choice of materials and the design of the anchorage.

3.15 Under Contract D, Contractor D was required to install 3 floating islands (i.e. floating structures in the form of artificial floating raft) at the midstream section of Tsui Ping River, which should be anchored to the riverbed with cable or rope connections. Audit noted that enhancement works were carried out after completing the installation of the 3 floating islands. According to DSD, the total cost for the installation and enhancement works of the 3 floating islands was $2.7 million. Details are as follows:

(a) according to DSD, Contractor D completed the installation of the 3 floating islands at Tsui Ping River (see Photograph 3) in accordance with the contract requirements in December 2024;

Photograph 3

Floating islands installed at Tsui Ping River (December 2024)



Source: DSD records

(b) after completing the installation in December 2024, DSD discovered that the floating islands installed at Tsui Ping River had tilted due to unexpected hard solid waste and muddy water from the upstream section of the river. This resulted in an unappealing visual appearance and stability issue of the floating islands. In August 2025 and January 2026, Consultant Z instructed Contractor D to carry out enhancement works for the floating islands (e.g. installing support structures for the 3 floating islands to keep them elevated and a trial upstand plate for 1 of the 3 floating islands to prevent accumulation of debris) and issued two compensation events (later valued at $1.2 million in total) under Contract D for the costs incurred; and

(c) in April 2026, DSD found that 2 of the 3 floating islands were detached from their original positions as the cables anchored to the riverbed were broken. In May 2026 (i.e. about 1.4 years after completing the installation in December 2024), all the 3 floating islands were removed from Tsui Ping River (see also para. 4.27).

3.16 In September 2026, DSD informed Audit that:

(a) the installation of floating islands at Tsui Ping River was a pilot trial aiming for trying out the suitability of various species of plants and identifying any maintenance issues on the floating islands. The design of the floating islands had followed relevant standards and codes of practice; and

(b) during the pilot trial, debris carried by the river was washed onto the floating islands leading to the need to enhance the design. The enhancement measures adopted included additional floating modules to keep the planting bed elevated above the river water, planting enhancement, and trial upstand plate as a protective barrier.

3.17 In Audit's view, DSD needs to draw on the experience gained from the installation of floating islands at Tsui Ping River with a view to improving the design of similar floating structures in river revitalisation works in future.

Audit recommendations

3.18 **Audit has *recommended* that the Director of Drainage Services should:**

(a) **in implementing works projects:**

(i) **better ascertain the underground conditions in works sites with a view to further enhancing the planning of works as far as practicable; and**

(ii) **take measures to enhance the monitoring of settlement of ground, structure and service adjacent to the works sites, including the setup of settlement monitoring points under works contracts and the implementation of settlement monitoring and reporting system by the contractors; and**

(b) **draw on the experience gained from the installation of floating islands at Tsui Ping River with a view to improving the design of similar floating structures in river revitalisation works in future.**

Response from the Government

3.19 The Director of Drainage Services agrees with the audit recommendations.

Administration of New Engineering Contract

Need to ensure completeness and accuracy of data in the risk register for early warnings

3.20 According to the Practice Notes:

(a) the risk register for early warnings typically summarises the key matters including the identified risks, mitigating measures and action parties;

(b) new risk items are added to the risk register by the Project Manager (i.e. Consultant Z under the delegation by DSD for Contract D) when the Project Manager or the contractor give early warning of a potential risk event each time; and

(c) risk items should be reviewed periodically and marked as "closed" if they have been removed or resolved.

3.21 During the contract period, a total of 193 early warnings were recorded in the risk register of Contract D. Audit examined the risk register of Contract D and noted that some data was not complete or accurate, as follows:

(a) the action parties of 40 (21%) early warnings were not specified, in which the mitigating measures of 8 (4% of 193) early warnings were also not documented; and

(b) the closing dates of 2 (1%) early warnings were before their respective issue dates. Besides, the closing date of 1 (0.5%) early warning was not recorded.

3.22 In September and October 2026, DSD informed Audit that:

(a) regular risk reduction meetings and ad-hoc coordination meetings had been held among the members of the project team to deliberate the mitigating measures and the progress in response to the early warnings; and

(b) among the 40 early warnings mentioned in paragraph 3.21(a), 24 of them were kept in view as generic reminders during the contract period. For the other 16 early warnings, 12 of them had been discussed in the risk reduction meetings and ad-hoc coordination meetings with no action party required by nature or resolved within a short period before action or action party was identified, whereas the remaining 4 early warnings had been discussed in the meetings with action parties and mitigation measures recorded in the meeting minutes.

3.23 According to the Practice Notes, the risk register is an important tool for all the members of the project team as it affords all relevant parties an opportunity to make informed decisions on the project and make appropriate decisions on events which may have time and/or cost implications. In Audit's view, in implementing works projects involving contracts in NEC form, DSD needs to take measures to ensure the completeness and accuracy of data in the risk register for early warnings.

Scope for improvement in preparing returns on time and cost performance of NEC contracts

3.24 According to DSD:

(a) since June 2025, a return with data on the time and cost performance (e.g. the time taken in closing early warnings, and the forecast pain/gain share amount and percentage) of each ECC (in NEC form) managed by the department has been submitted by the project teams to DSD's internal working group on NEC (chaired by the Deputy Director of Drainage Services) from time to time; and

(b) up to 31 May 2026, two returns with data on the time and cost performance of Contract D as at 30 June 2025 and 30 September 2025 had been submitted by the project team to DSD's internal working group on NEC.

3.25 Audit noted that some data in the two returns submitted to DSD's internal working group on NEC were inaccurate, as follows:

(a) ***Early warnings recorded during contract period.*** There were differences in the numbers of early warnings and the average time taken in closing them, as follows:

(i) according to the risk register of Contract D, as at 30 June 2025 and 30 September 2025, there were 193 early warnings recorded. However, according to the two returns, the number of early warnings was 208 (i.e. an excess of 15); and

(ii) according to DSD, 20 early warnings were risk items added to the risk register since the commencement of Contract D and managed throughout the contract period (i.e. with closing date on the completion date of the contract), and these early warnings were excluded when calculating the time taken in closing early warnings. For the 170 (i.e. 193 less 20 less 3 (see para. 3.21(b))) early warnings recorded in the risk register, the average time taken in closing them was 266 days. However, according to the two returns, the average time taken in closing the 188 (i.e. 208 less 20) early warnings was 31 days; and

(b) ***Forecast pain/gain share amount and percentage.*** Before the finalisation of contract accounts, the forecast pain/gain share amount was calculated from the difference between the forecast final target cost and the forecast actual expenditure. According to the supporting documents for contract payments, as at 30 June 2025 and 30 September 2025, the forecast final target cost of Contract D was $862.3 million. However, according to the two returns, the forecast final target cost was $915.6 million, leading to incorrect calculation of forecast pain/gain share amount and percentage in the returns submitted to DSD's internal working group on NEC.

3.26 In September 2026, DSD informed Audit that:

(a) in addition to the 20 risk items added to the risk register since the commencement of Contract D, there were 47 generic risk items that were kept active and in view as general reminders during the contract period. These generic risk items were only closed on the completion date of the contract, leading to a prolonged closing time as revealed from the risk register. Excluding these generic risk items, the average closing time of specific risk items under Contract D was calculated to be about 30 days; and

(b) there was a typo error in the forecast final target cost in the two returns submitted to DSD's internal working group on NEC.

3.27 In Audit's view, DSD needs to enhance the presentation and strengthen the checking of data in the returns on the time and cost performance of NEC contracts.

Audit recommendations

3.28 **Audit has *recommended* that the Director of Drainage Services should:**

(a) **in implementing works projects involving contracts in NEC form, take measures to ensure the completeness and accuracy of data in the risk register for early warnings; and**

(b) **enhance the presentation and strengthen the checking of data in the returns on the time and cost performance of NEC contracts.**

Response from the Government

3.29 The Director of Drainage Services agrees with the audit recommendations. He has said that:

(a) to ensure the completeness and accuracy of data in the risk register for early warnings, DSD will prepare a standard template for risk register with points to note on specifying the action parties and mitigating measures, and built-in prompts to prevent incomplete and wrongful data entry; and

(b) regarding the returns on the time and cost performance of NEC contracts, DSD will add a separate table for the generic risk items that do not require a closing date and applicable over the course of the contract.

PART 4: OTHER RELATED ISSUES

4.1 This PART examines other issues related to the revitalisation and improvement of rivers and nullahs by DSD, focusing on:

(a) construction site safety and security (paras. 4.2 to 4.15);

(b) management and maintenance of Kai Tak River and Tsui Ping River (paras. 4.16 to 4.30); and

(c) way forward (paras. 4.31 to 4.37).

Construction site safety and security

Scope for enhancing construction site safety

4.2 Contracts A to D set out similar requirements on construction site safety, as follows:

(a) according to Contracts A to C, the contractors should:

(i) throughout the progress of the works take full responsibility for the adequate stability and safety of all operations on the sites and have full regard for the safety of all persons on the sites; and

(ii) keep the sites and the works in an orderly state appropriate to the avoidance of danger to all persons; and

(b) according to Contract D, the contractor should ensure as a priority in all activities connected with the works, the safety and health of all persons on or adjacent to the sites.

4.3 According to the Construction Site Safety Manual issued by DEVB, contractors are required to:

(a) verbally report dangerous occurrences and accidents involving death, serious injury, serious damage or with workers admitted to the hospital to the Engineer's site staff immediately, followed by written preliminary reports within 24 hours. The contractors should also complete an injury report form within 7 days from the date of the accident; and

(b) report accidents to the Labour Department within 7 days (for accidents resulting in death or serious injury) or within 14 days (for accidents resulting in an injury with incapacity of the workers for more than 3 days) of the accidents.

4.4 According to DSD, during the respective contract periods of Contracts A to D, there were 6 and 2 non-fatal reportable accidents (i.e. accidents resulting in an injury with incapacity of the workers for more than 3 days) under Contracts B and C respectively, and no reportable accidents under Contracts A and D. Audit noted that there was scope for enhancing construction site safety for works projects by DSD (see paras. 4.5 to 4.7).

4.5 ***Late reporting of some reportable accidents.*** Regarding the reportable accidents under Contracts B and C, Audit noted that:

(a) ***Contract B.*** There was no readily available information on the submissions of preliminary reports by Contractor B. For 1 (17%) of the 6 non-fatal reportable accidents, there was late submission of an injury report form (with a delay of 65 days) and late reporting to the Labour Department (with a delay of 66 days) by Contractor B; and

(b) ***Contract C.*** For 1 (50%) of the 2 non-fatal reportable accidents, there was late submission of a preliminary report (with a delay of 100 days) by Contractor C. For all the 2 non-fatal reportable accidents, there were late submissions of the injury report forms (with delays of 94 days and 4.5 years respectively) and late reporting to the Labour Department (with delays of 43 and 101 days respectively) by Contractor C.

Other related issues

4.6 ***Scope for improvement in reflecting reportable accidents in contractors' performance reports.*** According to the Project Administration Handbook, the basic objective of the contractors' performance reports is to monitor the contractors' performance and assess their suitability for future work. Audit noted that there were different practices in reflecting the 6 non-fatal reportable accidents under Contract B in the contractor's performance reports, as follows:

(a) 3 (50%) accidents were mentioned in Contractor B's performance reports of the relevant periods with some performance items related to site safety rated as "Poor";

(b) 2 (33%) accidents were mentioned in Contractor B's performance reports of the relevant periods. However, no performance items related to site safety were rated as "Poor" in the performance reports. As far as could be ascertained, there was no documentation showing the justifications; and

(c) 1 (17%) accident was not mentioned in Contractor B's performance report of the relevant period, although some performance items related to site safety were rated as "Poor" due to other reasons (e.g. issues related to a non-reportable accident occurred during the period).

In September 2026, DSD informed Audit that serious reportable accidents would be specifically mentioned in the performance reports of contractors. While minor reportable accidents would not be specifically mentioned, the scorecards for the assessment of site safety performance would reflect the overall safety performance rating.

4.7 In Audit's view, in implementing works projects, DSD needs to take measures to enhance the construction site safety, including ensuring that:

(a) reportable accidents are timely reported by the contractors in accordance with relevant requirements; and

(b) contractors' performance related to reportable accidents are duly reflected in the performance reports and justifications for not adjusting the relevant ratings are properly documented.

Scope for enhancing construction site security

4.8 Audit noted that there was scope for enhancing construction site security for works projects by DSD (see paras. 4.9 to 4.13).

4.9 ***Non-compliances with the use of smart card system for entering and leaving the construction site under Contract B.*** According to Contract B, Contractor B should operate a smart card system to record and verify the information of all workers entering and leaving the construction site. Once the system is in operation, no person is allowed to work in the construction site without a smart card (Note 25). Audit noted that:

(a) the works under Contract B commenced in October 2011 and were substantially completed in December 2019. According to Consultant X, the percentage of workers using the smart card system for entering and leaving the construction site was only 45% in September 2013. While improvement measures were implemented by Contractor B and the percentage increased and reached 99.9% in July 2016, the percentage then dropped to 88% in December 2019; and

(b) in May 2013, an accident occurred in the construction site of Contract B and a worker was injured. Contractor B then checked the smart card system and no record of the injured worker on the date of accident was found. According to Consultant X, other information such as the medical report and sick leave letter revealed that the accident had happened on site (i.e. the injured worker entered the construction site), and the accident was then classified as a reportable accident in August 2013.

Note 25: *According to Contract B: (a) the smart card system should be in operation within one month from the commencement of the contract, and log books should be used prior to the operation of the system; (b) the smart cards issued by Contractor B should be compatible with the registration cards issued by the Registrar of Construction Workers and the registration cards were permitted to be used in lieu of the smart cards; and (c) all visitors should be issued visitor cards for identification.*

4.10 In September 2026, DSD informed Audit that:

(a) the works site of Contract B spanned approximately 500 m in length and included many discrete work fronts. During the early phase of Contract B, due to the lack of a 24-hour power supply on site, the smart card system could only be installed at a site office which was remote from Kai Tak River and various work fronts, resulting in low compliance percentages. To address this issue, Contractor B deployed foremen equipped with portable smart card readers to different discrete work fronts. This measure had improved the compliance percentages; and

(b) the poor compliance percentage in September 2013 had been duly reflected in the performance report of Contractor B.

4.11 ***Non-compliances with the site uniform requirement under Contract B.*** According to Contract B, Contractor B should ensure that all workers involved in site works would wear a set of site uniform when they were on site. Audit noted that:

(a) the non-compliance rates of the site uniform requirement for each month during the contract period were not readily available. Audit examined DSD records and only found the non-compliance rates for 78 months (80%) over the period between the commencement and completion of works under Contract B of 98 months (or 8.2 years); and

(b) for the 78 months with non-compliance rates of the site uniform requirement found in DSD records, the non-compliance rates of 29 (37%) months were higher than 5% (Note 26), ranging from 5.2% to 80% (averaging 17%).

Note 26: *According to DSD, follow-up actions would be taken when the non-compliance rate of the site uniform requirement of a month was higher than 5%.*

4.12 ***Other issues/incidents related to construction site security.*** According to the departmental Safety Manual issued by DSD, the perimeter of the works site shall be fenced and illuminated as far as practicable. For large construction sites, all ingress and egress points shall be guarded to control all vehicles and persons going in and out of the site. All valuable tools, equipment and materials shall be stored in a safe place, and locked if necessary, at the end of a workday. Audit noted that there were similar issues/incidents related to construction site security in the construction sites of Contracts A to D, including:

(a) ***Site areas not fenced off properly.*** In January 2017, DSD conducted site inspections in the construction site of Contract C and found that part of the site area was not fenced off. Similarly, in January 2025, a fencing gate for the site boundary and a fencing gate for a material storage room in the construction site of Contract D were found not locked; and

(b) ***Items being stolen from the construction sites.*** In April 2011 and March 2012, some items (e.g. survey equipment and computer items) in the site offices of Contracts A and B were stolen.

4.13 In Audit's view, in implementing works projects, DSD needs to take measures to enhance the construction site security, including ensuring compliance with contract requirements and guidelines relating to site security, maintaining proper records for monitoring compliance and taking follow-up actions as appropriate.

Audit recommendations

4.14 **Audit has *recommended* that the Director of Drainage Services should, in implementing works projects:**

(a) **take measures to enhance the construction site safety, including ensuring that:**

(i) **reportable accidents are timely reported by the contractors in accordance with relevant requirements; and**

(ii) **contractors' performance related to reportable accidents are duly reflected in the performance reports and justifications for not adjusting the relevant ratings are properly documented; and**

(b) **take measures to enhance the construction site security, including ensuring compliance with contract requirements and guidelines relating to site security, maintaining proper records for monitoring compliance and taking follow-up actions as appropriate.**

Response from the Government

4.15 The Director of Drainage Services agrees with the audit recommendations.

Management and maintenance of Kai Tak River and Tsui Ping River

4.16 According to DSD:

(a) it is responsible for managing and maintaining the stormwater drainage systems in Hong Kong, including Kai Tak River and Tsui Ping River, with a view to ensuring that the drainage systems are in normal condition and sustain adequate drainage capacity;

(b) rivers and nullahs are maintained through the maintenance term contracts of DSD. Task orders are issued under the term contracts to the term contractors for carrying out the related work, including routine inspections and clearance of debris or overgrown vegetation; and

(c) its staff would conduct inspections and quality audits on the work (including those work carried out at Kai Tak River and Tsui Ping River) of its term contractors, and carry out regular inspections at the riverside public space of Tsui Ping River on a weekly basis (Note 27).

Note 27: *According to DSD, Tsui Ping River is the first river where DSD is responsible for the daily management and maintenance of the riverside public space.*

Need to keep in view the water quality of Kai Tak River and Tsui Ping River

4.17 The Environmental Protection Department (EPD) has implemented a comprehensive river water quality monitoring programme (Note 28) since 1986. Under the programme, a River Water Quality Report, including the Water Quality Index (WQI) gradings of the river water (Note 29), is published annually. Regarding Kai Tak River and Tsui Ping River:

(a) Kai Tak River has been covered under the programme since 1986, and there are 6 monitoring stations located at the river; and

(b) Tsui Ping River has been covered under the programme since 2025, and there is 1 monitoring station located at the river.

4.18 Audit noted that DSD received complaints related to the water quality of Kai Tak River and Tsui Ping River from time to time. Regarding the river water quality:

Note 28: *The discharge of wastewater into rivers and nullahs is regulated by EPD under the Water Pollution Control Ordinance (Cap. 358). Under the river water quality monitoring programme, the monitoring involves conducting field measurements and collecting water samples for laboratory analyses, serving the purposes including evaluating the state of health of rivers, monitoring long-term changes in river water quality and providing scientific basis for planning water pollution control strategies.*

Note 29: *Under the river water quality monitoring programme, WQI is used to reflect the overall state of health of rivers. It classifies river water quality into five grades according to the level of organic pollution, namely "Excellent", "Good", "Fair", "Bad" and "Very Bad".*

Other related issues

(a) ***Kai Tak River.*** For Kai Tak River (Note 30):

(i) according to the annual River Water Quality Reports, while the WQI gradings of 4 and 2 monitoring stations at the river were "Good" and "Fair" respectively in 2020 (i.e. after the substantial completion of works under the Kai Tak River Project), the WQI gradings of all the 6 monitoring stations were only "Fair" in 2024. The WQI gradings of 2 monitoring stations improved to "Good" and those of the remaining 4 monitoring stations were maintained at "Fair" in 2025; and

(ii) since the substantial completion of works under the Kai Tak River Project in December 2019 and up to May 2026, DSD received a total of 149 complaints related to the water quality. In particular, while no such complaint was received in 2020 and only 1 to 7 complaints were received each year from 2021 to 2023, the number of complaints increased to 49 and 75 in 2024 and 2025 respectively. In 2026 (up to May), 12 complaints were received; and

(b) ***Tsui Ping River.*** For Tsui Ping River, the WQI grading of the monitoring station at the river was "Good" in 2025 (i.e. the first year covered under the programme). Besides, since the substantial completion of works under the Tsui Ping River Project in September 2024 and up to May 2026, DSD received a total of 29 complaints related to the water quality of Tsui Ping River (i.e. 5 complaints in 2024 (since October), 24 complaints in 2025 and nil complaint in 2026 (up to May)).

Note 30: *According to EPD, the water quality of Kai Tak River has been improved significantly since the commissioning of the Tolo Harbour Effluent Export Scheme in 1995 and the implementation of various pollution control measures (e.g. misconnections investigation and enforcement) by EPD. According to the annual River Water Quality Reports, in 1995, the WQI gradings of 3 of the 6 monitoring stations at Kai Tak River were "Good" or "Fair", and those of the other 3 were "Bad" or "Very Bad". In 2025, the WQI gradings of all the 6 monitoring stations at Kai Tak River were "Good" or "Fair".*

4.19 According to DSD, upon receiving complaints related to water quality:

(a) DSD will conduct site inspections at the rivers. For debris or refuse discovered inside the rivers, DSD will arrange the clearance work; and

(b) if the complaints are related to the work of other government departments (e.g. illegal discharge of wastewater or expedient connections at the upstream, and floating refuses, animal carcasses, dead fishes and dead vegetation found in the rivers), DSD will provide the details of the complaints to the relevant government departments for follow-up actions in parallel.

4.20 In view of a number of complaints related to the water quality of Kai Tak River and Tsui Ping River received, Audit considers that DSD needs to, in collaboration with relevant government departments, keep in view the water quality of the two rivers and take follow-up actions as appropriate.

Other issues related to management and maintenance of Kai Tak River and Tsui Ping River

4.21 Audit noted that there were other issues related to the management and maintenance of Kai Tak River and Tsui Ping River (see paras. 4.22 to 4.28).

4.22 ***Improper activities of the public at Kai Tak River and Tsui Ping River.*** According to DSD, for safety concerns, unauthorised entry to areas not open to the public and fishing activities at Kai Tak River and Tsui Ping River should be avoided as the sudden rise in water level in the rivers may cause dangers. Besides, release and feeding of animals at the rivers may affect the river ecology and water quality.

4.23 Audit noted that DSD received complaints related to some improper activities of the public at Kai Tak River and Tsui Ping River from time to time, as follows:

Other related issues

(a) ***Kai Tak River.*** Since the substantial completion of works under the Kai Tak River Project in December 2019 and up to May 2026, DSD received 13 complaints related to unauthorised entry to areas not open to the public at Kai Tak River, and 47 complaints related to fishing activities, release of animals and feeding of animals at Kai Tak River; and

(b) ***Tsui Ping River.*** Since the substantial completion of works under the Tsui Ping River Project in September 2024 and up to May 2026, DSD received 19 complaints related to fishing activities, release of animals and feeding of animals at Tsui Ping River.

4.24 According to DSD:

(a) upon receiving complaints related to improper activities of the public, it will conduct site inspections at the rivers, and advise the persons to leave the areas not open to the public and/or stop conducting improper activities when observing such cases during the site inspections. For matters outside its jurisdiction, the complaints will be referred to other relevant government departments for follow-up actions as appropriate;

(b) to enhance public awareness, prominent warning signs have been erected along Kai Tak River and Tsui Ping River to remind the public not to conduct the improper activities; and

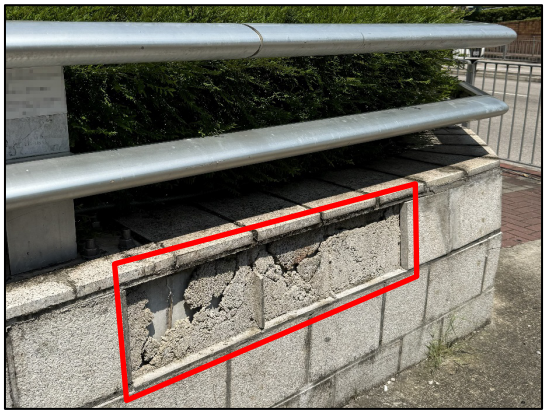
(c) to promote public enjoyment of river facilities while fostering a comfortable and liveable community environment, promotional videos, publications and social media pages have been produced, and other activities such as outreach educational programmes and guided tours have also been conducted.

4.25 ***Maintenance of Kai Tak River.*** On 6 July and 16 August 2026, Audit conducted site visits to the upstream and midstream sections of Kai Tak River, and noted that:

(a) parts of the artificial granite tiles along the upstream section of Kai Tak River had been broken and detached (see Photograph 4); and

Photograph 4

Broken and detached artificial granite tiles (August 2026)



Source: *Photograph taken by Audit staff on 16 August 2026 at 2:12 pm*

(b) a section of riverside planter railings along the midstream section of Kai Tak River was deformed (see Photograph 5).

Photograph 5

Deformed riverside planter railings (August 2026)



Source: *Photograph taken by Audit staff on 16 August 2026 at 2:41 pm*

Other related issues

4.26 In September 2026, DSD informed Audit that:

(a) regarding the broken and detached artificial granite tiles, the condition was noted during an inspection in July 2026. DSD had arranged repair work and the replacement of new tiles was completed on 26 August 2026; and

(b) the deformed riverside planter railings were discovered during an inspection in September 2025. DSD had arranged repair work and the installation of a new section of railings was completed on 17 September 2026.

4.27 ***Floating islands at Tsui Ping River removed.*** According to DSD, ecological devices such as floating islands were installed at Tsui Ping River (see para. 3.15) to provide favourable conditions for the river ecology. Audit noted that all the floating islands installed at Tsui Ping River had been removed in May 2026. The salient points are as follows:

(a) in April 2026, DSD found that 2 of the 3 floating islands installed at Tsui Ping River were detached from their original positions as the cables anchored to the riverbed were broken, and drifted to the downstream section of the river; and

(b) in late April 2026, to avoid further drift of the floating islands towards the harbourfront, DSD instructed its term contractor (with a task order later issued and valued at $0.7 million) to remove the 2 detached floating islands from Tsui Ping River and remove/reinstate the remaining floating island subject to the results of the inspections. Upon reviewing the conditions of the remaining floating island and the risk implications, DSD decided to remove the remaining floating island from the river. In the event, all the 3 floating islands were removed in May 2026.

According to DSD, reinstatement of the floating islands would be reviewed after the wet season and would be considered subject to the suitability and growth condition of the trial planting on the floating islands, and the maintenance effectiveness and risk implications of the floating islands and associated landscaping works.

4.28 In Audit's view, DSD needs to:

(a) make continued efforts in publicity work on not conducting improper activities at Kai Tak River and Tsui Ping River, keep under review the situation and take follow-up actions as appropriate;

(b) take measures to ensure that broken facilities and structures at Kai Tak River are timely repaired; and

(c) timely complete the review on reinstatement of the floating islands at Tsui Ping River.

Audit recommendations

4.29 **Audit has *recommended* that the Director of Drainage Services should:**

(a) **in collaboration with relevant government departments, keep in view the water quality of Kai Tak River and Tsui Ping River and take follow-up actions as appropriate;**

(b) **make continued efforts in publicity work on not conducting improper activities at Kai Tak River and Tsui Ping River, keep under review the situation and take follow-up actions as appropriate;**

(c) **take measures to ensure that broken facilities and structures at Kai Tak River are timely repaired; and**

(d) **timely complete the review on reinstatement of the floating islands at Tsui Ping River.**

Response from the Government

4.30 The Director of Drainage Services agrees with the audit recommendations.

Way forward

Need to draw on the experience gained from the implementation of the Kai Tak River Project and the Tsui Ping River Project

4.31 According to the Project Administration Handbook:

(a) a post-completion review is a useful project management tool and should be conducted upon the substantial completion of a major works contract on projects under the Public Works Programme. The emphasis and objective of the review are to gain maximum benefit from the experience accrued, rather than to apportion blame;

(b) a post-completion review is generally not warranted for works contracts of a project which has a total cost less than $500 million or of a project which does not involve complicated technical and management issues; and

(c) upon the completion of a post-completion review, the government department should prepare a report documenting all concerned issues, findings, conclusions and recommendations for future reference by the government department.

4.32 According to DSD:

(a) the Kai Tak River Project was implemented to improve the drainage capacity of Kai Tak River and revitalise the river (see para. 1.6). The works were substantially completed in December 2019; and

(b) the Tsui Ping River Project was implemented to revitalise Tsui Ping River into a green and vibrant river while enhancing its flood conveyance capability (see para. 1.13). The works were substantially completed in September 2024.

Audit noted that, as at 31 August 2026 (i.e. after the substantial completion of works under the Kai Tak River Project and the Tsui Ping River Project for about 6.7 and 2 years respectively), DSD had not conducted any reviews on whether the objectives of the projects had been achieved.

4.33 In September 2026, DSD informed Audit that:

(a) ***Kai Tak River Project.*** For Contracts A and C, post-completion reviews were considered not required as the respective final contract sum of the two contracts was less than $500 million and they did not involve any complicated technical or management issues. For Contract B, while the final contract sum was higher than $500 million, DSD had conducted an internal review in October 2022 and decided not to select Contract B for post-completion review as the contract did not involve any complicated technical or management issues; and

(b) ***Tsui Ping River Project.*** Under the consultancy agreement awarded to Consultant Z in December 2017, Consultant Z was required to prepare a post-completion review report covering a two-year period from the date of substantial completion of Contract D (i.e. 30 September 2024). The post-completion review report was targeted for completion by the end of November 2026.

In Audit's view, DSD needs to take measures to ensure that the post-completion review for the Tsui Ping River Project is timely completed.

4.34 Audit also noted that:

(a) according to DSD, it had been implementing several drainage improvement projects to enhance the flood prevention infrastructure and better cope with increasingly frequent extreme weather conditions. For example, the works for the revitalisation and improvement of Yuen Long Nullah had been included in the projects with works commenced in late May 2023 for completion in mid 2030; and

(b) in the 2017 Policy Agenda, it was announced that the Government would review and evaluate the revitalisation potential of the major nullahs in Hong Kong (see para. 1.3). In 2018, DSD completed the assessment on the revitalisation potential of major rivers and nullahs in Hong Kong, and four rivers and nullahs with high revitalisation potential (i.e. Jordan Valley Channel, Tai Wai Nullah, Fo Tan Nullah and Middle Tuen Mun River Channel) were identified. The works for the revitalisation of Jordan Valley Channel commenced in March 2020 and were completed in April 2022.

For the remaining three rivers and nullahs, the designs of revitalisation works were in progress as at 31 August 2026.

4.35 In view of several river revitalisation and improvement projects currently in the construction or design stage, Audit considers that DSD needs to draw on the experience gained from the implementation of the revitalisation and improvement projects for Kai Tak River and Tsui Ping River (including taking into account the audit observations and recommendations in this Audit Report and the results of the post-completion review for the Tsui Ping River Project) with a view to enhancing the implementation of similar works projects for rivers and nullahs in future.

Audit recommendations

4.36 **Audit has *recommended* that the Director of Drainage Services should:**

(a) **take measures to ensure that the post-completion review for the Tsui Ping River Project is timely completed; and**

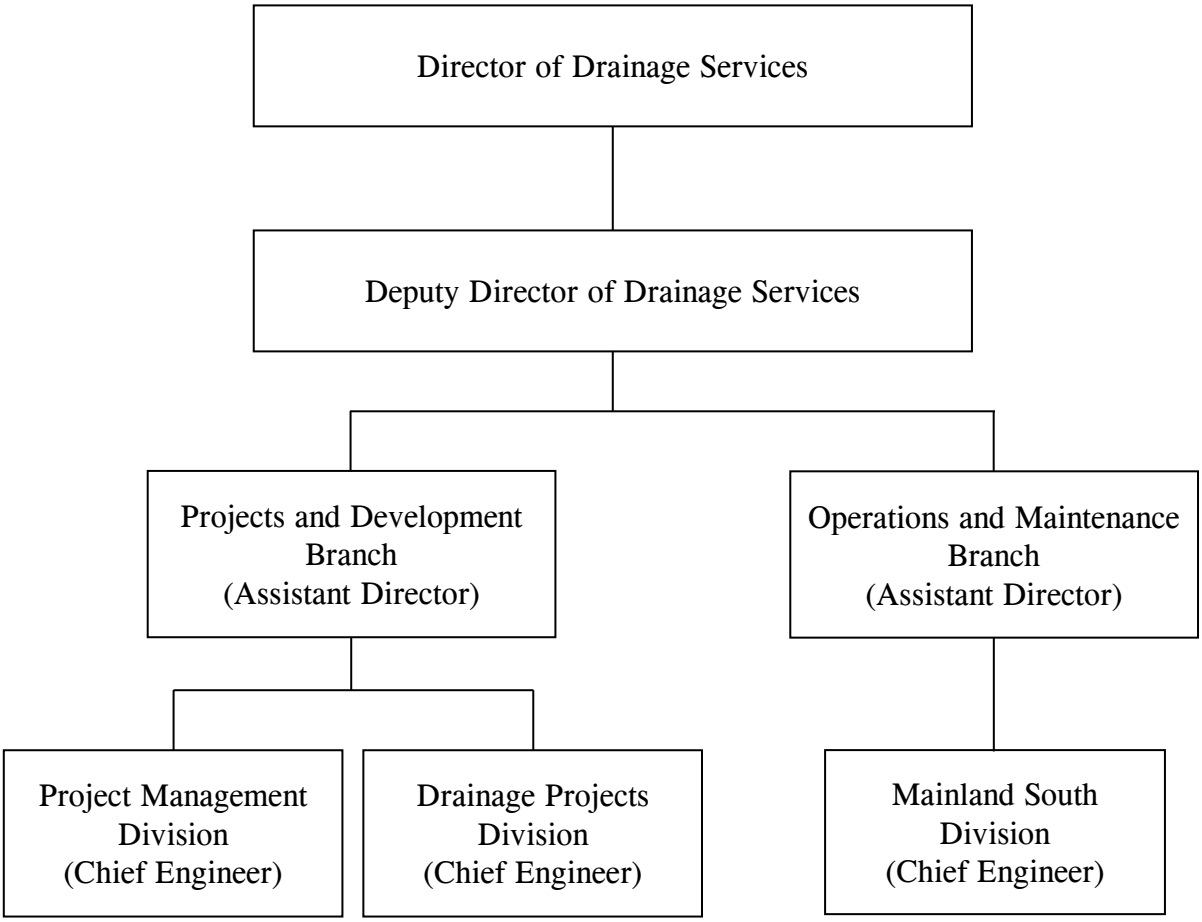
(b) **draw on the experience gained from the implementation of the revitalisation and improvement projects for Kai Tak River and Tsui Ping River (including taking into account the audit observations and recommendations in this Audit Report and the results of the post-completion review for the Tsui Ping River Project) with a view to enhancing the implementation of similar works projects for rivers and nullahs in future.**

Response from the Government

4.37 The Director of Drainage Services agrees with the audit recommendations.

Appendix A
(para. 1.19 refers)

Drainage Services Department: Organisation chart (extract) (31 May 2026)



Source: *DSD records*

Appendix B

Acronyms and abbreviations

APEs	Approved project estimates
Audit	Audit Commission
DEVB	Development Bureau
DSD	Drainage Services Department
ECC	Engineering and Construction Contract
EOTs	Extensions of time
EPD	Environmental Protection Department
FC	Finance Committee
km	kilometres
m	metres
NEC	New Engineering Contract
VO	Variation order
WQI	Water Quality Index