

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Government Secretariat : Commerce and Economic Development Bureau New Subhead “Implementation of Phase 3 of the Trade Single Window System”

Members are invited to approve a new commitment of \$1,404,559,000 for developing the information technology system required for the implementation of Phase 3 of the Trade Single Window System.

PROBLEM

The Government is committed to establishing the Trade Single Window (TSW) of Hong Kong in three phases to provide a one-stop platform for lodging Business-to-Government trade documents for trade declaration and cargo clearance. Phase 1 of the TSW has been in full service and well received by the trade. The information technology (IT) system of Phase 2 is being developed, and we expect the services will be rolled out progressively starting from mid-2023. The Government needs to develop the IT system required for the implementation of Phase 3 to fully establish the TSW.

PROPOSAL

2. The Secretary for Commerce and Economic Development, with the support of the Government Chief Information Officer, proposes to create a new commitment of \$1,404,559,000 to develop the IT system of Phase 3 of the TSW.

/JUSTIFICATION

JUSTIFICATION

Scale and Complexity of TSW Phase 3

3. Phase 3 is the final and most complex phase of the TSW, involving a huge volume of document submissions from the widest range of stakeholders. It will cover –

- (a) Import and Export Declaration (TDEC);
- (b) submissions of cargo information which include Advance Cargo Information (ACI), Cargo Manifest (EMAN) and Cargo Report in respect of different transport modes; and
- (c) applications for the Certificate of Origin (CO) and Permit for Dutiable Commodities (DCP).

The total volume of these documents in 2021 was 121 million, which is 97 times the volume of the documents covered by Phases 1 and 2.

4. The Phase 3 system will also replace the Government Electronic Trading Services (GETS)¹, several existing cargo clearance systems of the Customs and Excise Department (C&ED)², including the Road Cargo System (ROCARS), the Air Cargo Clearance System (ACCS) and the Sea Cargo Support System (SCSS), as well as relevant back-end processing systems. Most of these systems were major IT projects on their own and established separately over the years. Phase 3 will provide a unique opportunity to streamline and standardise the current cargo clearance processes of different transport modes, as well as to integrate the existing cargo clearance systems into a single platform for all trade-related documents. The shared modules and infrastructure will create synergy in the new system, facilitating re-use and immediate sharing of data among modules. In addition, a separate risk assessment module with high processing power and large storage capacity will be established to allow C&ED to process the large volume of cargo clearance documents while maintaining customs clearance efficiency.

5. We have recently completed the related business and technical feasibility studies for Phase 3 and consulted the trade and key stakeholders to map out the implementation details. Relevant details are set out in the ensuing paragraphs.

/Functionality

¹ A front-end electronic service for the trading community to submit TDEC, EMAN, CO and DCP to the Government for customs control, trade declaration, trade control and statistics compilation purposes.

² Existing cargo clearance systems for traders, carriers, cargo terminal operators and other parties to submit information to facilitate customs clearance for road, air and sea cargoes.

Functionality of the IT System of Phase 3

6. The Phase 3 IT system will support the following services and functions of Phase 3 of the TSW –

- (a) **Central portal** – Phase 3 will establish a central portal for users to access all the services of the TSW, including user registration, user account administration, application for licences/permits, checking of licences information, submission of cargo information, etc. The central portal covers all 40-plus types of Business-to-Government documents/licences/permits required for trade declaration and cargo clearance, including those covered in Phases 1 and 2;
- (b) **Front-end platform for cargo information submission** – a new front-end platform will be established, replacing the different submission modules of the existing cargo clearance systems in C&ED as well as GETS, to provide web-based and system-to-system interface for the trade to submit cargo information to the Government;
- (c) **Cargo Clearance Module (CCM)** – a new and highly automated cargo risk assessment engine will be built to assist C&ED to perform risk assessment of cargo data and conduct cargo selection and examination. Instead of relying on multiple cargo clearance systems to carry out its enforcement work, C&ED could centrally handle all cargo information at various boundary control points through one single platform to expedite cargo clearance; and
- (d) **Post-clearance module** – the Phase 3 system will support participating government agencies (PGAs) in carrying out various auditing work after cargo clearance. For example, the Census and Statistics Department can make use of the auto-matching function of cargo information collected in TDEC and other trade documents (e.g. manifests, licences/permits) to conduct consistency checks in compiling trade statistics; and the Trade and Industry Department can check licences/permits information and verify it against the information in TDEC and EMAN.

7. The Phase 3 IT system will also make use of the latest IT technologies to facilitate the trade and the work of relevant PGAs, such as –

- (a) **Robust infrastructure** – Phase 3 will be established on a cloud infrastructure, consisting of a central web portal, different system-to-system interfaces and a central message board to facilitate information exchange between PGAs and the trading community. It will also be a scalable infrastructure that enables easy connection to systems of other related organisations or platforms; and

/(b)

- (b) **Artificial intelligence and big data analytics** – CCM will apply risk products generated by artificial intelligence and big data analytics to help identify high-risk shipment patterns and complex relationships among entities, traders and goods. The new system will also facilitate post-clearance audit checks, enabling C&ED to review risk assessment results regularly in order to enhance the accuracy of cargo risk assessment engine. These latest technologies will help automate most of the screening procedures so that C&ED officers could focus their efforts on identifying high-risk cargo for more targeted risk assessment and effective enforcement.

Benefits of TSW Phase 3

8. The full implementation of the TSW will further enhance the operational efficiency of both the Government and the trade as well as improve our cargo clearance efficiency, which helps maintain Hong Kong's status as an international trade centre. After the proposed IT system comes into operation, Phase 3 of the TSW will deliver the following benefits –

- (a) **Centralised system and rationalised submission processes** – a centralised round-the-clock TSW platform will enable individual users to use a single account to handle all trade documents with the Government for trade declaration and cargo clearance. Users will no longer need to approach different PGAs individually for submission of different trade documents. In particular, Phase 3 of the TSW will replace the existing myriad of cargo clearance systems of different transport modes, thereby allowing the re-use of data among different users and eliminating duplicated submissions to multiple systems;
- (b) **Upgraded critical infrastructure** – Phase 3 of the TSW will replace GETS and various existing cargo clearance systems of C&ED, including ROCARS, ACCS and SCSS. Some of these customs and trade systems have been used for many years, and their functions and processing capacities cannot catch up with the exponential growth of cross-boundary cargo arising from rapid development of e-commerce in recent years. The Phase 3 system will also resolve the capacity and other technical issues of the existing systems through the provision of a completely new platform and newly added functions, in order to meet the challenges of ever-changing business needs in the e-commerce environment;

/(c)

- (c) **Facilitation of pre-shipment submissions** – the existing post-shipment arrangement for submission of TDEC and EMAN (i.e. to be submitted within 14 days after import or export) will be maintained. Nevertheless, Phase 3 will allow voluntary pre-shipment submission of manifests and TDEC to meet the statutory requirements. Phase 3 will also facilitate the submission of ACI in all transport modes by different parties to the one-stop platform. This will help streamline and rationalise the myriad submission requirements of cargo information amongst different users, allowing the trade to enjoy a smoother and more seamless cargo clearance process;
- (d) **Improved cargo flow** – Phase 3 will establish a powerful and highly automated cargo risk assessment engine that allows C&ED to screen cargo information more efficiently. The streamlined submission workflow, the ability of data re-use, and the submission of more detailed cargo information by the trade will help C&ED enhance its risk profiling work and focus enforcement efforts on targeted suspicious consignments, thus expediting the cargo clearance process, reducing unnecessary cargo hold-ups, and as a result improving cargo flow. The new risk assessment engine will also enhance C&ED's ability to detect contrabands and illegal activities more effectively, thus safeguarding the security and public safety of Hong Kong;
- (e) **Streamlined post-clearance work** – the enhanced cargo information on a single platform will allow PGAs to greatly streamline post-clearance checks of licence/permit and other regulatory work; and
- (f) **Connectivity with other TSWs or commercial systems** – Phase 3 has the technical capabilities to connect with the single windows of other economies or commercial systems should the needs arise. Terminal operators/traders/agents meeting specific technical requirements will be able to connect their IT systems with TSW so as to submit large amounts of trade documents more efficiently and cargo data in greater detail. In addition, we have established the TSW Expert Group with the Mainland authorities to enhance exchange on TSW development and explore possible collaboration to facilitate efficient cross-boundary cargo movement. During the development of Phase 3, we will study the feasibility of different trade facilitation measures, including data exchange arrangements that allow the trade to re-use data to submit trade documents, taking into account various technical, legal and data privacy issues etc.

/Support

Support Services

9. C&ED has set up the Office of TSW Operation (OSWO) since June 2018 to operate the Phase 1 system and services. OSWO will continue to provide corresponding support for users of Phases 2 and 3 in future, including round-the-clock enquiry, user registration, system administration and other support services (such as service counter, publicity, outreach and training, etc.).

Cost Savings

10. It is estimated that the implementation of Phase 3 will bring about notional savings of around \$663 million per annum for the trade and \$17 million per annum for PGAs because of improved enquiry service, data re-use in different submissions, streamlined collection processes of approved applications/licences, improved operational efficiency in following up outstanding TDEC submissions and elimination of duplicated submissions. In addition, the maintenance cost of about \$65 million per annum would be saved from the existing cargo clearance and other relevant IT systems to be replaced by Phase 3 of the TSW, which can offset relevant costs of the new Phase 3 IT system.

11. A cost and benefit analysis for the implementation of Phase 3 is set out at Enclosure 1.

Encl. 1

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

12. It is estimated that the IT system required for implementation of Phase 3 will incur a non-recurrent cost of \$1,404,559,000 from 2022-23 to 2026-27. The indicative cost breakdown and estimated cash flow requirements by financial years are set out below –

/(a)

	2022-23	2023-24	2024-25	2025-26	2026-27 and beyond	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
(a) Hardware	-	-	299	135,109	259,706	395,114
(b) Hosting services and site preparation	-	-	8,483	7,618	-	16,101
(c) Software	-	-	504	101,668	217,902	320,074
(d) Communication network	-	-	989	6,481	2,643	10,113
(e) Implementation services	-	-	178,443	127,866	77,332	383,641
(f) Contract staff	741	5,941	39,325	36,252	12,236	94,495
(g) Publicity and Training	-	-	3,000	9,518	16,030	28,548
(h) Miscellaneous	-	-	-	9,707	19,079	28,786
(i) Contingency	74	594	23,104	43,422	60,493	127,687
Total	815	6,535	254,147	477,641	665,421	1,404,559

13. On paragraph 12(a) above, the estimated expenditure of \$395,114,000 is for the acquisition of computer hardware, such as servers, workstations, storage devices, network equipment and backup equipment, etc.

14. On paragraph 12(b) above, the estimated expenditure of \$16,101,000 is for preparing the sites and using the services provided by the data centres.

15. On paragraph 12(c) above, the estimated expenditure of \$320,074,000 is for the acquisition of computer software, including the software of operating system, database management and application development, etc.

16. On paragraph 12(d) above, the estimated expenditure of \$10,113,000 is for the acquisition of communication networks and services.

17. On paragraph 12(e) above, the estimated expenditure of \$383,641,000 is for the acquisition of IT services from external service providers to implement the project, including project management, system analysis and design, programme development, user training and system administration, etc. It also covers the conduct of assessments and audits about security risks, privacy impact and privacy compliance, etc.

18. On paragraph 12(f) above, the estimated expenditure of \$94,495,000 is for the engagement of contract staff to assist with the preparation of service contracts, procurement, project monitoring, infrastructure setup and system testing, etc.

19. On paragraph 12(g) above, the estimated expenditure of \$28,548,000 is for arranging promotion and publicity, and providing training for internal and external users in preparation for the roll-out of Phase 3 services.

20. On paragraph 12(h) above, the estimated expenditure of \$28,786,000 is miscellaneous expenses for acquisition of consumables and performance of related tasks, such as user registration and accounts migration to the new system, etc.

21. On paragraph 12(i) above, the estimated expenditure of \$127,687,000 is a 10% contingency on the cost items set out in paragraph 12(a) to (h).

Other Non-recurrent Expenditure

22. A Project Management Office, led by two time-limited directorate staff and supported by a team of time-limited non-directorate staff, has been set up under the Commerce and Economic Development Bureau to take forward the TSW. In addition, various PGAs would incur some staff costs to take forward various tasks required for implementing Phase 3, and they will absorb the concerned cost within their existing resources as far as possible. The proposal will entail additional non-recurrent staff costs of \$198,983,000 from 2022-23 to 2026-27. The Project Management Office and relevant PGAs will review their respective manpower requirements from time to time.

Recurrent Expenditure

23. Upon full implementation of Phase 3, it is estimated that an indicative annual recurrent expenditure of \$54,449,000 in 2026-27, gradually increasing to \$281,088,000 in 2029-30 onwards will be required to maintain and support the operation of Phase 3 IT system. A breakdown is as follows. We will review the relevant resource requirement in more detail nearer the time.

/(a)

	2026-27 \$'000	2027-28 \$'000	2028-29 \$'000	2029-30 onwards \$'000
(a) Hardware and software maintenance	9,435	37,358	122,163	168,157
(b) Communication network	23,046	23,046	23,046	23,046
(c) System maintenance	-	10,418	41,765	61,036
(d) Contract staff	21,759	28,257	28,257	28,257
(e) Consumables	209	592	592	592
Total	54,449	99,671	215,823	281,088

24. The proposal will entail recurrent staff costs of \$1,120,000 in 2026-27, increasing to \$4,476,000 in 2027-28 onwards per annum to administer and provide support to TSW. The relevant PGAs will review the respective manpower resource nearer the time and try to absorb the costs from within the existing resources as far as possible.

IMPLEMENTATION PLAN

25. Subject to the funding approval, we plan to implement Phase 3 of the TSW according to the following schedule –

Activity	Target Completion Time
(a) Invitation of tenders	Late-2022
(b) Award of contract	Late-2023
(c) System analysis and design	Mid-2024
(d) System development (by batch)	From early-2025 till end-2026
(e) System live run (by batch)	From early-2026 till late-2027

26. In addition, upon the full implementation of Phase 3, the TSW will replace GETS as the single electronic platform for submitting TDEC, EMAN, CO and DCP. We will need to make some technical amendments to a number of ordinances, including the Import and Export Ordinance (Cap. 60), the Dutiable Commodities Ordinance (Cap. 109), the Reserved Commodities Ordinance (Cap. 296) and the Protection of Non-Government Certificates of Origin Ordinance (Cap. 324), and various subsidiary legislation to enable the submissions of these trade documents through the new TSW platform.

PUBLIC CONSULTATION

27. We consulted the Legislative Council Panel on Commerce and Industry (the CI Panel) on 17 May 2022 on the above funding proposal for the IT system required to implement Phase 3 of the TSW. The CI Panel supported the submission of the proposal to the Finance Committee for funding approval.

Trade Consultation

28. We have extensively engaged the trade on the planning, development and implementation of different phases of the TSW. We have set up six User Consultation Groups (UCG) since 2018 to collect views of industry users, including airlines, shipping lines, cargo terminal operators, express couriers, forwarders and trader associations, and to keep them abreast of the development on TSW. Apart from the UCG platform, we have also conducted briefings and held meetings with other stakeholders and logistics industries during the technical studies on Phase 3 in order to ensure that future services will meet the needs of different stakeholders.

29. Overall speaking, the trade showed overwhelming support towards the development of TSW and urged the Government to take forward Phase 3 as soon as possible. They expected that TSW will help reduce their operating costs and further improve cargo flow efficiency. The presence of the one-stop round-the-clock electronic platform will greatly streamline their submission workflows and alleviate the need for making duplicated submissions on multiple systems. The ability to re-use data in different submissions will also save their time and effort, as well as reduce the risk of human error. They also welcomed the proposed voluntary submission arrangements for pre-shipment information which will facilitate the trade in meeting the regulatory requirements while minimising multiple submissions.

30. We will continue to work closely with the trade and other stakeholders on the transitional arrangements and other issues relating to the implementation of Phase 3.

BACKGROUND

31. “Single Window” is an essential trade facilitation measure enshrined in the World Trade Organization’s Agreement on Trade Facilitation³ to enable businesses involved in cross-border trade and logistics to submit documentation through a single entry point to participating authorities.

32. According to the Global Competitiveness Report released by the World Economic Forum in 2019, Hong Kong is ranked the 9th worldwide for “border clearance efficiency” (in the context of trade openness). Over the years, the Government has put in place various measures and initiatives to enhance customs clearance efficiency and expedite cargo flow while maintaining effective control. To bring Hong Kong on par with the mainstream international development and to uphold our competitiveness, full implementation of the TSW is essential.

Encl. 2

33. Phase 1 of the TSW, first rolled out in December 2018, is now in full service. It covers 14 types of trade documents (see Enclosure 2), which include mainly import/export licences or permits for specific controlled goods. The trade’s feedback on the services has been positive, and the take-up rate for the new system has been on the rise. As at 30 April 2022, there are around 1 610 registered users (including individuals and companies), about five times the number we reported to the CI Panel in December 2019. The latest monthly usage rate (i.e. proportion of licences/permits issued through TSW out of the total) is over 90%. Many users consider that the TSW services can save time and cost.

Encl. 3

34. The Phase 2 services will cover another 28 types of trade documents (see Enclosure 3). Members approved the commitment of \$133,770,000 for the implementation of Phase 2 IT system in July 2020. The development work is proceeding full steam ahead. We expect that the Phase 2 services will be rolled out progressively starting from mid-2023.

Commerce and Economic Development Bureau
June 2022

³ Paragraph 4 of “Article 10: Formalities Connected with Importation, Exportation and Transit” (WT/L/579), in force since February 2017.

**Cost and Benefit Analysis for
the Implementation of Phase 3 of the Trade Single Window (TSW)**

	Cash Flow (\$'000)										
	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	Total
1 Non-Recurrent											
Expenditure	815	6,535	254,147	477,641	640,924	24,497	-	-	-	-	1,404,559
Staff Cost	8,344	23,536	60,765	60,765	45,573	-	-	-	-	-	198,983
Total Non-Recurrent Cost	9,159	30,071	314,912	538,406	686,497	24,497	-	-	-	-	1,603,542
2 Recurrent											
Expenditure	-	-	-	-	54,449	99,671	215,823	281,088	281,088	281,088	1,213,207
Staff Cost	-	-	-	-	1,120	4,476	4,476	4,476	4,476	4,476	23,500
Total Recurrent Cost	-	-	-	-	55,569	104,147	220,299	285,564	285,564	285,564	1,236,707
Total Non-Recurrent and Recurrent Cost (A)	9,159	30,071	314,912	538,406	742,066	128,644	220,299	285,564	285,564	285,564	2,840,249
3 Savings											
Realisable Savings ¹	-	-	-	-	-	25,000	65,448	65,448	65,448	65,448	286,792
Notional Savings ²	-	-	-	-	-	340,128	680,256	680,256	680,256	680,256	3,061,152
Cost Avoidance ³	-	-	-	-	-	296,268	2,572	2,572	2,572	2,572	306,556
Total Savings (B)	-	-	-	-	-	661,396	748,276	748,276	748,276	748,276	3,654,500
Net Savings (C) = (B) - (A)	(9,159)	(30,071)	(314,912)	(538,406)	(742,066)	532,752	527,977	462,712	462,712	462,712	814,251
Net Cumulative Savings	(9,159)	(39,230)	(354,142)	(892,548)	(1,634,614)	(1,101,862)	(573,885)	(111,173)	351,539	814,251	

¹ Realisable savings will be achieved when the maintenance of existing systems are no longer required after full implementation of TSW.

² Notional savings will be achieved by streamlining the manual process and improving operational efficiency in the trade relating to submissions of cargo information and trade documents.

³ Cost avoidance represents a broad-brush estimation on the re-provision of existing systems at the end of their lifespans at their current processing capacity and the corresponding incurred maintenance cost.

**Trade Single Window
Trade Documents under Phase 1**

Government Agency	Types of Trade Document
Agriculture, Fisheries and Conservation Department	1. Import/Export Licence for Pesticides 2. Import/Export/Re-export Licence of Toothfish
Customs and Excise Department	3. Authorization to Import/Export Controlled Chemicals ¹ 4. Certification of Non-U.S. Frozen Chicken Products Transhipped to the Mainland through Hong Kong 5. Licence for Optical Disc Mastering and Replication Equipment 6. Permit to Remove Controlled Chemicals in Transhipment 7. Transhipment Notification for Optical Disc Mastering and Replication Equipment 8. Certificate of Non-manipulation under Free Trade Agreement Transhipment Facilitation Scheme
Civil Engineering and Development Department	9. Hong Kong Natural Sand Final User Certificate 10. Sand Removal Permit
Environmental Protection Department	11. Licence for Ozone Depleting Substances ² 12. Licence for Scheduled Chemicals
Office of the Communications Authority	13. Import and Export Permit for Radiocommunications Transmitting Apparatus 14. Transhipment Notification for Radiocommunications Transmitting Apparatus

¹ Some controlled chemicals also require the Import/Export Licence issued by the Department of Health.

² The Trade and Industry Department is also involved in the processing and issue of this licence.

Enclosure 3 to FCR(2022-23)22

**Trade Single Window
Trade Documents under Phase 2**

Government Agency	Types of Trade Document
Agriculture, Fisheries and Conservation Department	<ol style="list-style-type: none"> 1. Licence to Export/Re-export Endangered Species 2. Licence to Import/Introduce from the Sea for Endangered Species 3. Permit for Import of Mammals from the Mainland and Animal Products 4. Plant Import Licence 5. Re-export Certificate for Species of non-Convention on International Trade in Endangered Species of Wild Fauna and Flora or not yet Controlled under the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586) 6. Special Permit for Import of Animals and Birds from Overseas 7. Special Permit for Import of Dogs and Cats from Overseas 8. Special Permit for Import of Food/Pet Reptiles
Customs and Excise Department	<ol style="list-style-type: none"> 9. Currency and Bearer Negotiable Instruments Declaration Form 10. Import and Export Statement for Dutiable Commodities
Department of Health	<ol style="list-style-type: none"> 11. Diversion Licence for Dangerous Drugs 12. Import Licence for Radioactive Substances and Irradiating Apparatus 13. Import/Export Licence and Import Certificate for Dangerous Drugs 14. Import/Export Licence for Pharmaceutical Products and Medicines 15. Import/Export Licence of Chinese Herbal Medicines 16. Import/Export Licence of Proprietary Chinese Medicines 17. Import Permit for Biological Materials 18. Removal Licence for Dangerous Drugs

Government Agency	Types of Trade Document
Food and Environmental Hygiene Department	19. Health Certificate for Food of Animal Origin and Food Inspection Certificate 20. Import Licence for Frozen/Chilled Meat or Poultry 21. Permission for Import of Eggs 22. Permission for Import of Frozen Confections 23. Permission for Import of Game, Meat and Poultry 24. Permission for Import of Milk, Cream and Milk Beverage 25. Permission for Import Meat or Poultry (Applicable to import for re-export to the Mainland/Macau)
Trade and Industry Department	26. Import/Export Licence for Rice 27. Kimberley Process Certificate 28. Strategic Commodities Licence
