

**CONTRACT KCSM/CN0004/A - DESIGN, SUPPLY,  
INSTALLATION OF THE AUTOMATED FARE  
COLLECTION SYSTEM FOR AIRPORTCITY LINK**

**PARTICULAR SPECIFICATION**

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## **PARTICULAR SPECIFICATION**

### **TABLE OF CONTENTS**

<b><u>Section</u></b>	<b><u>Subject</u></b>
1.	Preamble
2.	Associated Documents
3.	General Description of the Works
4.	Commencement Date and Key Dates
5.	Method Statement
6.	The Site
7	Site Availability
8.	Site Constraints
9.	Sub-contractor's Design
10.	Relevant Authorities
11.	Inspecting, Testing and Commissioning
12.	Employer's Insurances
13.	Warranties
14.	Project Risk Management
15.	Option
16.	Cyber Security

<b><u>Appendix</u></b>	<b><u>Subject</u></b>
<b>A</b>	<b>List of Tender Drawings</b>
<b>B</b>	<b>Schedule of Key Dates and Significant Dates</b>
<b>C</b>	<b>Schedule of Submission Dates</b>
<b>D</b>	<b>Particular Technical Specification</b>
<b>E</b>	<b>Insurance Synopsis</b>

## **ABBREVIATIONS**

Abbreviations used in this Particular Specification shall have the following meanings:

ACL	AirportCity Link
AFCS	Automated Fare Collection System
Cap.	Chapter
Government	Government of the Hong Kong Special Administrative Region of the People's Republic of China
HKIA	Hong Kong International Airport
HKP	Hong Kong Port
HKSAR	Hong Kong Special Administrative Region
O&M	Operation and Maintenance
POS	Point-of-Sales
PS	Particular Specification
PTS	Particular Technical Specification
T&C	Testing and Commissioning

## IMPORTANT NOTES

“Main Contractor”	Means KCM-PML JV.
“Main Contract”	Means People-Carrying Autonomous Vehicles and Associated Transportation System for Airportcity Link.
“Employer”	Means the Airport Authority of Hong Kong or its successors or assignees.
“Project Manager”	Means the Project Manager or representatives of Airport Authority of Hong Kong.
“Site”	Means the work site of the ACL’s stations.
“Sub-contractor”	Means the successful Tenderer that is engaged to execute the Sub-contract upon award of the Sub-contract.
“Sub-contract Works”	Means the works to be performed and/or provided by the Sub-contractor pursuant to the Sub-contract.

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AUTOMATED FARE COLLECTION SYSTEM FOR AIRPORTCITY LINK**

**PARTICULAR SPECIFICATION**

**1. PREAMBLE**

- 1.1 The Particular Specification (PS) set out the functional, quality and performance and other technical requirements for the Sub-contract. The Sub-contractor's overriding requirement is that the Sub-contract Works are fit for the purpose of, and suitable in all respects for efficient, reliable and continuous use under actual operational conditions of the Automated Fare Collection System for Airportcity Link and in accordance with this Particular Specification. The Particular Specification are minimum requirements and shall be read subject to the overriding requirement.
- 1.2 A description of the Sub-contract Works is contained in Clause 3 of this Particular Specification including the project background and scope of works. The technical objectives, performance, design and construction requirements are provided in the Particular Technical Specification (PTS – see Appendix D). Obligations and requirements to be met by the Sub-contractor which are particular to this Sub-contract are also included in this Particular Specification
- 1.3 To the extent that any provision contained in other parts of the Specification that shall conflict with this PS, the provisions of this PS shall prevail.

**2. ASSOCIATED DOCUMENTS**

- 2.1 This PS shall be read in conjunction with all the Sub-contract documents including but not limited to the following:
- (a) Letter of Acceptance and its attachment (if any);
  - (b) Form of Tender and its appendices including the Pricing Document;
  - (c) Terms and Conditions
- 2.2 KCM-PML JV shall issue in accordance with the Terms and Conditions such additional and amended drawings and specifications as are in his opinion necessary for the execution of the Sub-contract Works. Any drawings and documents issued by the KCM-PML JV solely for the information of the Sub-contractor

shall be identified as such. The Sub-contractor shall seek clarification from the KCM-PML JV if he is in any doubt as to the status of any drawing or document.

- 2.3 The Sub-contractor's particular attention is drawn to the requirement to make references to the design of the AFCS referred to as the Particular Technical Specification which are provided to the Sub-contractor at Contract commencement to the extent that such associated documents are consistent with the requirements of the Particular Specifications. In the event of any discrepancy between the Particular Specification and Particular Technical Specification, the former shall take precedence. Particular Technical Specification are intended to amplify the Particular Specifications, providing more information of the provisions to facilitate the execution of the works required under the Sub-contract. Accordingly, Particular Technical Specifications shall not be taken to limit or restrict the Sub-contractor's design or reduce the Sub-contractor's responsibility under the Contract. The Sub-contractor may adopt or propose to modify, subject to the KCM-PML JV's approval, as it sees fit any of the Particular Technical Specifications for the design of the Sub-contract Works including the AFCS System. For the avoidance of doubt, if the Sub-contractor chooses to adopt or propose to modify any provisions as shown on the Particular Technical Specifications as aforesaid, it must accept full responsibility for the adopted or modified details under the Sub-contract.

### **3. GENERAL DESCRIPTION OF THE WORKS**

#### **3.1 General**

The Sub-contract Works to be executed under this Sub-contract shall include, but are not limited to, the following:

- 3.1.1 The Sub-contractor shall design, supply, install and configure, test and commission the Payment Platform System with both online platform and related on-site ticket sales machines to receive payment from passengers and connect with POS System, Payment Gateway and acquiring bank for transaction:
- 3.1.2 The Sub-contractor shall design, supply, install, configure, test and commission a payment gateway to handle all the transactions with Payment Platform System and Back Office Management System, also the web portal for on-site ticket sales machines at dedicated locations, in which shall be subject to the employer's approval, including:



<b>Type of Ticket Sales Machine</b>	<b>Roles in Ticket Sales Operation</b>	<b>Response time for each transaction</b>	<b>Transaction Capacity per hour</b>	<b>With receipt &amp; ticket printer</b>
Self-Services Kiosks	Auxiliary	20 second	720	YES
Tap / Scan & Pay Machines	Main	5 second	2,880	NO
Handheld POS (w/ ticket inspection function)	Auxiliary	20 second	360	YES
POS for CS Counter	Auxiliary	20 Second	180	YES

3.1.3 The Sub-contractor shall supply, deliver, install, testing & commissioning the Ticket Sales Machine at dedicated locations subject to the Employer's approval, including:

<b>Type of Ticket Sales Machine</b>	<b>No. of QTY required</b>	<b>Spare no. of QTY required</b>	<b>Sum</b>
Tap / scan pay device	4	2	6
Self-service kiosk	4	1	5
Handheld Point-Of-Sales (POS) devices with ticket inspection function	2	1	3
Point-Of-Sales device for CS Counter	1	1	2
<b>Total</b>	<b>11</b>	<b>5</b>	<b>16</b>

	<b>No. of QTY required</b>	<b>Spare no. of QTY required</b>	<b>Total</b>
Data/Sim Card for Ticketing Devices	11	5	16

## 3.2 **Scope of the Works**

- 3.2.1 The Sub-contractor shall provide an application and database server in cloud environment for AFCS.
- 3.2.2 The Sub-contractor shall provide electrical and mechanical provision for the Ticket Sales Machines.
- 3.2.3 The Sub-contractor shall design and implement a Back Office Management System for AFCS with the following functions:
  - 3.2.3.1 Record and store all payment transaction and ticketing records of AFCS.
  - 3.2.3.2 Generate ticket (QR code) for each successful ACL payment transaction (except for transactions completed via Tap & Pay devices) and sent to customer through email or kiosk's receipt.
  - 3.2.3.3 Provide function and user interface for access, modify and retrieve of all ticketing and transaction records for operator staffs and reporting services for generate the revenue/statistical reports for management staff.
  - 3.2.3.4 Provide function and user interface to transfer all revenue to the Employer's designated bank account.
  - 3.2.3.5 Provide function and user interface to verify the transaction records from QR Code or presentation of passenger's octopus card or credit card with Handheld POS devices used by operator staff.
  - 3.2.3.6 Provide function and user interface with Point of Sales (POS) System devices for collecting payment by manual input.
  - 3.2.3.7 Provide an interface to connect with other application systems (Include but not limited as: HKIA website, MyHKG, Alipay, Alipay HK, WeChat Pay, WeChat Pay HK).
  - 3.2.3.8 User management functions (e.g. access rights for the above functions).
- 3.2.4 The Sub-contractor shall design, supply, implement, install and configure a Payment Platform System with both online platform and related on-site ticket sales machines to receive payment from passengers and connect with POS System, Payment Gateway and Acquiring Bank for transaction. It shall cover all common payment methods including but not limited as:
  - A. Cash (Not apply for online platform)
  - B. Octopus Card

- C. e-payment methods such as credit cards (Visa, MasterCard, China Union Pay, JCB, American Express and Diners Club International), Apple Pay, Google Pay, Samsung Pay, Alipay, Alipay HK, WeChat Pay, WeChat Pay HK, BoC Pay, UnionPay QuickPass.)
- 3.2.5 The Sub-contractor shall design, supply and implement a payment gateway to handle all transactions with Payment Platform System and Back Office Management System.
  - 3.2.6 The Sub-contractor shall provide an operational and maintenance trainings to educate and train the Employer and KCM-PML JV staff of the corresponding system to operate, service, technical support, fault diagnose and maintain the AFCS and its equipment satisfactorily.
  - 3.2.7 Provide draft and final training documentations shall be provided fourteen (14) days prior to the schedule date of the training to reflect the changes incorporated into each deployment phase.
  - 3.2.8 Provide an interface to connect with the Central Vehicle Control Sub-system (CVS) in C23W14 Contract for providing relevant statistics e.g. number of passengers in different time slot
- 3.3 Design Responsibility**
- 3.3.1 This is a design, supply and installation contract. The Sub-contractor shall be responsible for the detailed design of the Sub-contract Works to meet the requirement of AFCS and making all associated submissions and obtaining all approvals, permits, certificates and licenses from the Relevant Authorities.
  - 3.3.2 The Sub-contractor shall carry out a site condition survey to identify the condition of all the existing installations and site constraint of the ACL Works area prior to the installation of AFCS. Site condition survey report with record photo shall be submitted for the KCM-PML JV's review without objection prior to the commencement of any actual on-site mapping, testing, trialling and installation works.
  - 3.3.3 The Sub-contractor shall be responsible for the coordination work with other Sub-contractors on all necessary civil, structural, building services and builder's works for the transportation / delivery /installation of equipment /material, for the execution of the Works, no matter being indicated or not in the Particular Specification.
  - 3.3.4 The Sub-contractor shall be responsible for all necessary works (day or night) for keeping the normal operation of the existing

system unaffected, including but not limited to temporary barriers, temporary decking, protection of existing services, temporary cables, temporary power supply, temporary storage, reinstatement, etc. for the execution of the Sub-contract Work, no matter being indicated or not in the Particular Specifications. All associated design, material supply, T&C and dismantle/ removal of existing installations shall be included.

- 3.3.5 The Sub-contractor shall conduct training for the Employer's staff, operators and the staff of operation and maintenance contractor in respect of the system and equipment.
- 3.3.6 The Sub-contractor shall carry out any other works shown or described in the Particular Specifications as part of the Sub-contract Works.
- 3.3.7 The Sub-contractor shall design all Temporary Works of whatever nature, including permanent works that will be used as Temporary Works during manufacturing, installation and testing and commissioning to suit his own installation sequence and methodology. The Sub-contractor shall note all the works on AFCS to be carried out by others as shown on and as detailed in the Particular Technical Specifications are indicative only and are not necessarily complete nor do they necessarily take into account all the site constraints including but not limited to, phasing, construction sequence and working methods. The Sub-contractor shall develop his own design for all Temporary Works and be responsible for obtaining all necessary statutory approvals and consents if necessary.
- 3.3.8 The Sub-contractor shall ensure adequate support for the AFCS system in order to maintain the required availability rate until Key Date 4 that specified in Contract C23W14.
- 3.3.9 The Sub-contractor's particular attention is drawn to the following elements (list not exhaustive) which shall be designed by the Sub-contractor under this Sub-contract:
  - (a) AFCS system architecture, ticketing machines installation and operation on designated areas of the site.
  - (b) Equipment / devices setting, sizing and selection and equipment / services installation details
  - (c) Delivery route and schedule;
  - (d) Method and sequence of installation.
  - (e) Testing and commissioning procedures

- (f) Training to the staff
- (g) Any work for which the Sub-contractor has undertaken to provide and take responsibility for an alternative design to the scope, including but not limited to, the design, supply and installation of the AFCS, and as accepted by the Employer and/or KCM-PML JV.

### **3.4 Availability of Materials, Goods and Equipment**

- 3.4.1 The Sub-contractor shall procure the respective kinds and standards of the materials, goods and equipment in compliance with the requirements of the Particular Technical Specifications for the completion of the Sub-contract Works. The Sub-contractor shall be responsible for the availability and timely delivery of the AFC systems (hardware and software), materials, goods and equipment for completion of the Works. In the event of any shortage of supply or delay in delivery of the AFC systems (hardware and software), materials, goods and equipment, the Sub-contractor shall be responsible for the acquisition of an alternative source of supply sufficient without compromise on the safety and quality assurance of the system to fulfil the obligation under the Sub-contract, without additional time and/or cost to the Employer to achieve the Key Dates as specified in **Appendix B**.

## **4. COMMENCEMENT DATE AND KEY DATE(S)**

- 4.1 The Sub-contractor shall commence the Sub-contract Works on the date specified in **Appendix B** (“the tentative commencement date of the Works”).
- 4.2 The Sub-contractor shall programme the Sub-contract Works in stages on the basis that access to the works areas of the Site.

## **5. METHOD STATEMENT**

- 5.1 The Sub-contractor shall prepare and submit to the KCM-PML JV a method statement for review without objection.
- 5.2 The Sub-contractor shall take account of all constraints identified in the Particular Specification and on the Tender Drawings and state the measure to be adopted to ensure efficient and safe design and execution of the Works without impacting adversely on the Planning Works Schedule or the continuous operation of the Airport.

## **6. THE SITE**

- 6.1 The Sub-contract Works is to be carried out at 11 Skies ACL worksite as shown on the Tender Drawings in **Appendix A**. The Sub-contractor will be given access to work within the areas from time to time.
- 6.2 The Sub-contractor shall provide and maintain for his own use staff offices, stores, workshops, sanitary and other welfare facilities for executing the Works until substantial completion of the whole of the Works. The Sub-contractor shall be responsible for taking delivery of, unloading, storing, protecting and security of all materials, goods and equipment required for the Works.
- 6.3 Upon substantial completion of the whole of the Sub-contract Works, the Sub-contractor shall vacate, reinstate and clear any temporary storage areas. The temporary fencing/hoarding and all other materials and items whether existing or brought into the works area shall be removed, relocated or maintained upon substantial completion of the whole of the Sub-contract Works or earlier as instructed by the KCM-PML JV if necessary.

## **7. SITE AVAILABILITY**

- 7.1 The Sub-contractor shall follow the Key Dates specified in **Appendix B** to plan, arrange and allocate the necessary resources for completing the Sub-contract Works.
- 7.2 Under the direction and coordination of the KCM-PML JV, the Sub-contractor shall provide a construction programme to carry out the system integration, delivery schedule of the Sub-contract Works and installation of equipment at the Site.
- 7.3 The Sub-contractor shall provide a work schedule to propose the work dates for accessing the Site.

## **8. SITE CONSTRAINTS**

### **8.1 Site Constraints**

- 8.1.1 The Sub-contractor shall comply with the requirements of the AOM which include, but not limited to, the following:
- (a) general safety and operational restrictions;
  - (b) airport and HKP Closed Area security and staff permits;
  - (c) marking of vehicles and equipment (if required);

- (d) protection of works
- (e) maintain site cleanliness; and
- (f) operating communication systems.

- 8.1.2 The Sub-contractor shall ensure that his employees, Sub-contractors, consultants, agents, suppliers, invitees and visitors and their respective employees shall, at all times, whilst at or in the vicinity of the Airport, comply in all respects with the procedures.
- 8.1.3 The Sub-contractor shall recognise that the Sub-contract Works are to be carried out in an operational environment and it shall provide and maintain all safeguards to protect passengers and the public and the existing airport facilities and operations at all times and shall maintain, in compliance with statutory requirements, all existing means of escape adjacent to any works areas during the execution of the Sub-contract Works.
- 8.1.4 The Sub-contractor shall allow a two to three weeks “blackout” period in the Planning Works Schedule for each of the major holiday periods each year including Chinese New Year, Easter, National Day and Christmas/New Year. No system change work or work affecting airport operations will be allowed during these periods. The exact dates of the blackout periods will be confirmed by the KCM-PML JV prior to each holiday period.
- 8.1.5 All temporary and permanent connections and/or disconnections to the existing utility services systems, including electrical power system and any changes to the operational environment for all systems shall obtain the approval of the KCM-PML JV.

## **9. SUB-CONTRACTOR’S DESIGN**

- 9.1 The Sub-contractor shall be responsible for the design, implementation and testing & commissioning of the AFCS system to fulfil the specified requirements of the Employer. The handover of the live AFCS system shall be carried out subject to the satisfaction of the KCM-PML JV and the Relevant Authorities. The Employer and KCM-PML JV accepts no liability for the accuracy of the information included in the Sub-contract and the Sub-contractor will be deemed to have made his own inquiries to verify this information for the purpose of the due performance of the Sub-contract.
- 9.2 The Sub-contractor shall carry out the design, manufacturing, delivery, installation, testing and commissioning of the Sub-contract Works in accordance with the Schedule of Submission Dates set out in **Appendix C**. The Sub-contractor shall at every stage of the planning, design, testing, installation, manufacturing

and delivery process assume full responsibility for liaison and coordination with the KCM-PML JV, the O&M Contractor, the Relevant Authorities and Other Contractors.

- 9.3 The Sub-contractor shall comply with the requirements as detailed in the Particular Technical Specification and the Tender Drawings in respect of the AFCS System, software and hardware.
- 9.4 Consideration for maintainability during the service life of the AFCS System shall be given at the design stage to design life of the AFCS system, components and hardware and the maintenance regime. The design of the Sub-contract Works shall in all respects be based upon a reasonable and safe approach to meet long term requirements in terms of future maintenance, repair, servicing and cleaning/upkeep. The Sub-contractor shall explicitly consider, develop and present to the KCM-PML JV for review without objection its proposed arrangements to address these requirements covering all major components of the Sub-contract Works, proposed locations for the storage of the spare parts and maintenance equipment; frequency of inspections, examinations and overhaul, operation and maintenance manual, staff training and the requirement for warranty for the AFCS, particular components and system software.

## **10. RELEVANT AUTHORITIES**

- 10.1 The Sub-contractor shall provide all necessary attendance, access and site facilities for use by the Relevant Authorities in respect of the Sub-contract Works.
- 10.2 The Sub-contractor shall be responsible for obtaining all necessary licenses, permits, approvals and consents, howsoever called, for Sub-contractor's design items and any matters relating to the execution of the Sub-contract Works from the Relevant Authorities including but not limited to the Buildings Department, Fire Services Department, Transport Department, Highways Department, Environmental Protection Department, Water Supplies Department, Drainage Services Department, Electrical and Mechanical Services Department, Civil Aviation Department and Office of the Communications Authority.
- 10.3 The Sub-contractor shall not commence any parts of the Sub-contract Works on Site for which approvals and consents from the Relevant Authorities are required until such approvals and consents have been obtained and a copy has been submitted to the KCM-PML JV.
- 10.4 The Sub-contractor shall be responsible for consultation and liaison with all relevant statutory authorities, government departments, stakeholders affected and interested parties prior to



commencing any T&C works including all IT systems under the Sub-contract and obtain approval or no comments on the T&C works proposal from all the parties listed above. The Sub-contractor shall provide all the evidence of consultation with all those relevant parties to KCM-PML JV if necessary.

## **11. INSPECTION, TESTING AND COMMISSIONING**

- 11.1 The Sub-contractor shall carry out the inspection, testing and commissioning of the Sub-contract Works in accordance with this PS. The Sub-contractor shall provide an Inspection, T&C plan to the KCM-PML JV for review without objection prior to the execution of the inspection and T&C. The plan shall identify all necessary preparations, including documentation, for statutory submissions and approval.
- 11.2 The Inspection, T&C plan for each part of the Works shall be submitted to the KCM-PML JV and the Project Manager for review without objection, prior to the commencement of relevant parts of the Sub-contract Works on site. The plan shall identify all necessary preparation and documentation for statutory submissions and approvals.

## **12. EMPLOYER'S INSURANCES AND MAIN CONTRACTORS'S INSURANCES**

- 12.1 **Employer's Insurance and Main Contractor's Insurances**
- 12.1.1 Details of the insurances to be procured and maintained by the Employer and the Main Contractor are included in **Appendix E**.

## **13. WARRANTIES**

- 13.1 The Sub-contractor and his Sub-contractors/suppliers of any tier shall jointly and severally warrant that the Sub-contract Works shall be free from all defects, whether latent or patent, in materials and workmanship for the period of 4 years after issue of the Completion Certificate for the whole of the Sub-contract Works or any Section of the Main Contract. The warranty shall be unlimited in operating hours for all parts. Any defective part or parts of the Sub-contractor Works shall be replaced with new part or parts and the defects in the Sub-contract Works made good within a reasonable time period free from all costs to the Employer including transport charges.

- 13.2 The Sub-contractor shall warrant to the Employer that hardware and software used in the AFCS shall not become obsolete for a minimum of 4 years after issue of the Completion Certificate for the whole of the Works or any Section of the Main Contract and all necessary parts and upgrades will be available for the continued O&M of such control systems during the 4 years period. The Sub-contractor shall warrant to the Employer that the AFCS and equipment for AFCS shall not become obsolete for a minimum of 5 years after issue of the Completion Certificate for the whole of the Works or any Section of the Main Contract and all necessary parts and upgrades will be available for the continued O&M of such control systems during the 4 years year period, unless otherwise specified. The Sub-contractor shall procure warranties as required in this PS from the relevant Sub-contractors/manufacturers/suppliers and submit them to the KCM-PML JV and the Employer before substantial completion of the whole of the Works or any Section of the Main Contract.

#### **14. PROJECT RISK MANAGEMENT**

- 14.1 The Sub-contractor shall submit a Project Risk Management Plan, within one month from the date for commencement of the Sub-contract Works, to the KCM-PML JV for review without objection, to provide early warning of any matter that may impact adversely on the programme, cost, quality and other key aspects of the Sub-contract Works. The Project Risk Management Plan shall identify all risks relevant to the Works including particular items of risk identified from time to time by the KCM-PML JV throughout the design, procurement, construction, testing and commissioning stages. The Project Risk Management Plan shall include a Project Risk Register which shows for each risk, as a minimum, the type of risk, the likelihood of the risk being realised, the potential consequences if the risk was realised, the mitigation measures being taken and the residual risk after implementation of the mitigation measures.
- 14.2 The Sub-contractor shall establish a project risk management organization that assumes the project risk management responsibilities and enables effective communication during the risk management process. The Sub-contractor shall appoint a project risk manager within one month after the date for the commencement of the Sub-contract Works and submit the same to the KCM-PML JV for review without objection. The Sub-contractor shall submit to the KCM-PML JV for review without objection in case of any change of the project risk manager.
- 14.3 The Sub-contractor shall update the Project Risk Register on a monthly basis to identify superseded risks and new risks and relevant mitigation measures.

- 14.4 The Sub-contractor shall enter all existing and new risks, risk assessments, mitigation actions, changes to risks and mitigation actions and changes in risk status to the Employer's 'Risk Database'. The format of the 'Risk Database' may be "MS-Excel", or any other off-the-shelf Risk Management Tool as deemed appropriate by the KCM-PML JV.
- 14.5 The KCM-PML JV will periodically conduct compliance audits on how the Sub-contractor fulfils the project risk management requirements in particular, as a minimum, to verify the actual implementation of the risk mitigation measures as recorded on the Project Risk Register during the audit. The sample size shall be determined by the KCM-PML JV. If necessary, full assessment will be conducted. The Sub-contractor shall facilitate such assessment.

## **15. OPTION**

- 15.1 The KCM-PML JV may, within 14 months from the commencement date of the Sub-contractor Works, exercise the following Option in whole or in part as part of the Sub-contract Works. The Sub-contractor shall not be entitled to any extension of time nor to any additional payment nor to any revision of the rates and prices shown in the Pricing Document whether the Option is or is not exercised by the KCM-PML JV.
- 15.2 The scope of works under the Option shall include, but not limited to supply, deliver, install, T&C the Ticket Sales Machine at the dedicated locations subject to the Project Manager approval, with the following types and quantities:

<b>Type of Ticket Sales Machine</b>	<b>no. of QTY required</b>
Tap / scan pay device	6
Self-service kiosk	6
Handheld POS (w/ ticket inspection function)	4
POS for CS Counter	2
<b>Total</b>	<b>18</b>

<b>Item</b>	<b>no. of QTY required</b>
Data/Sim Card for Ticketing Devices	18

## **16. CYBER SECURITY**

- 16.1 The Sub-contractor shall fully comply with all security requirements under this paragraph unless expressly stated otherwise, and each security requirement shall be applicable to the entire scope of this Sub-contract unless otherwise explicitly stated.
- 16.2 The Sub-contractor shall comply with the Information Security Policy and Standard IT015 and Internet of Things (IoT) Cybersecurity Framework IT072 for any works connected to the Employer's Network and Systems.
- 16.3 The Sub-contractor shall ensure that his personnel are sufficiently trained in Information and Communications Technology (ICT) security and are aware of the security implications of the work performed. The personnel shall be well versed in the security requirements of the Employer and adhere to the security standards and procedures stipulated by the Employer.
- 16.4 Upon request by Project Manager, the Sub-contractor shall present and elaborate on how the security requirements stated herein are met. The Sub-contractor shall ensure that proposed security measures and their capabilities can be examined by the Project Manager without infringing respective intellectual property rights.
- 16.5 The Sub-contractor shall note that unless otherwise stated explicitly, all additional resources and manpower provided by the Sub-contractor to resolve any security related issues such as rectifying vulnerabilities and mitigating risks are under the responsibilities of the Sub-contractor and shall not incur additional cost to the Employer.
- 16.6 The Sub-contractor shall fully comply with any written instructions on security related matters that are issued by the Project Manager from time to time.
- 16.7 The Sub-contractor shall state, submit, and obtain approval from Employer if there shall be any failure or exception of the compliance to the Specification.
- 16.8 **Information Handling and Data Protection**
  - 16.8.1 The Sub-contractor shall implement measures to manage and protect all sensitive and confidential data, the administration and usage processes and procedures. The Sub-contractor shall protect the data regardless of the format in which they are held. The Sub-contractor shall ensure that the measures are properly

documented, implemented, and maintained. The Sub-contractor may be requested to explain and demonstrate the measures on request by the Project Manager.

- 16.8.2 Access control with segregation of duties shall be implemented for users accessing sensitive and confidential data and information.
- 16.8.3 KCM-PML JV reserves the right to request the Sub-contractor to conduct risk assessment exercise by an independent third party in compliance with globally recognized industry security standards, such as ISO 27001 and regulatory requirements of the Authority.
- 16.8.4 The Sub-contractor shall ensure that the confidential or sensitive data and information are erased or destroyed in secure manner when they are no longer needed.
- 16.8.5 The Sub-contractor shall protect all data and information to ensure that such data and information is not used for any purpose other than the performance of this Sub-contract.
- 16.8.6 The Sub-contractor shall not transmit any sensitive and confidential data to another uncontrolled devices or accounts. Recipients of receiving these data shall be properly authorized by the Project Manager, and the transmission shall not be done over public Wi-Fi or unsecure network.
- 16.8.7 The Sub-contractor shall ensure that all sensitive and confidential data in his portable computers and external storage devices, such as flash drives, are stored in an encrypted form using any desktop or file security software. Portable computers unable to support such designated desktop security software shall not be used to store or transmit any sensitive and confidential data. All sensitive and confidential data shall be encrypted when transmission is done over public networks (such as internet).
- 16.8.8 Personal and Company Devices to be Connected to the Employer's Network and Systems
- 16.8.9 Only authorized device is allowed to be connected to the Employer's Network and Systems, the Sub-contractor shall ensure that the devices are authorized by the Project Manager before connecting to the Network and Systems.
- 16.8.10 The Sub-contractor shall store the authorized devices in a secure place with restricted access, the Sub-contractor shall also maintain and regularly update an inventory list and logbook for the devices.
- 16.8.11 The Sub-contractor shall regularly perform a security vulnerability scanning for the devices being used for the project. Any external / portable storage device shall be properly scanned before use.

16.8.12 The Sub-contractor shall ensure all the devices being used in the project are fulfil the following security requirements:

- (a) Password protected, the password shall be properly assigned and not easy-to-guess;
- (b) Antivirus software protected, the Sub-contractor shall regularly update and ensure the most updated version is being used;
- (c) The system and browser with security update, the Sub-contractor shall regularly update and ensure the most updated version is being used; and
- (d) Automatic turn off or lock function when the devices are left unattended.

16.8.13 The Sub-contractor shall always use secure and private networks and avoid accessing any suspicious websites.

## 16.9 **Email Security**

16.9.1 The Sub-contractor shall implement the following practices to the Sub-contractor's personnel for email security when the devices in use which are connecting the Employer's network and systems:

- (a) Avoid open attachment of suspicious email without scanning;
- (b) Alert email which may induce virus infection or data theft;
- (c) Beware email with clickbait titles and links; and
- (d) Verify sender name and email address to ensure it is legitimate.

## 16.10 **Access Control**

16.10.1 The Sub-contractor shall comply with the following Access Control requirements when connecting the Employer's network and systems:

- (a) Refrain from sharing password between different accounts;
- (b) Each account shall be created for one user, account sharing is not allowed;
- (c) The Sub-contractor shall revoke the account immediately where the account is no longer needed;

- (d) The passwords shall be encrypted and complied with IT015 when they are stored and transmitted over the systems and network;
- (e) The security and password control of user and administration accounts shall comply with IT015; and
- (f) Audit trails and reports shall be available for control purpose. The report and event log shall contain security relevant data such as successful and unsuccessful login, password changes, user privileges changes, etc.

**16.11 Remote Access and Wireless LAN Access Control**

16.11.1 The Sub-contractor shall comply with the following requirements when remote access and wireless LAN access to the Employer's network and systems are required:

- (a) Remote access shall only be granted to authorized personnel who have proper justifications;
- (b) It's prohibited in using public Wi-Fi or unsecure network for remote access;
- (c) Personnel who are authorized to perform remote administration shall use 2-factor authentication (2FA) to authenticate to the servers or applications; and
- (d) The devices being used for remote access shall be installed with updated antivirus software and firewall configured.

16.11.2 The IT/OT System shall comply with IT015 to manage and control any remote access and wireless LAN access.

## **APPENDIX A**

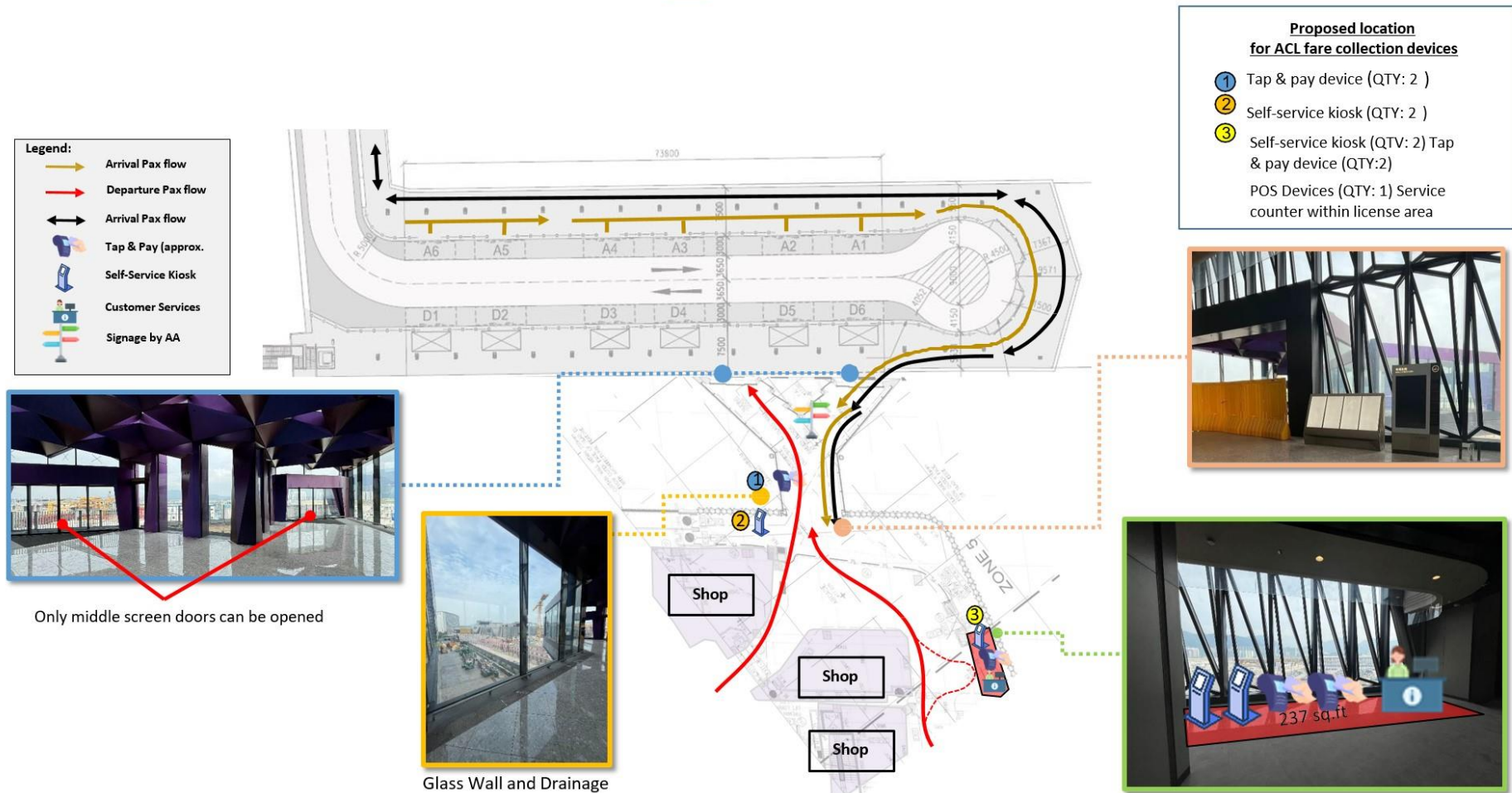
### **LIST OF TENDER DRAWINGS**



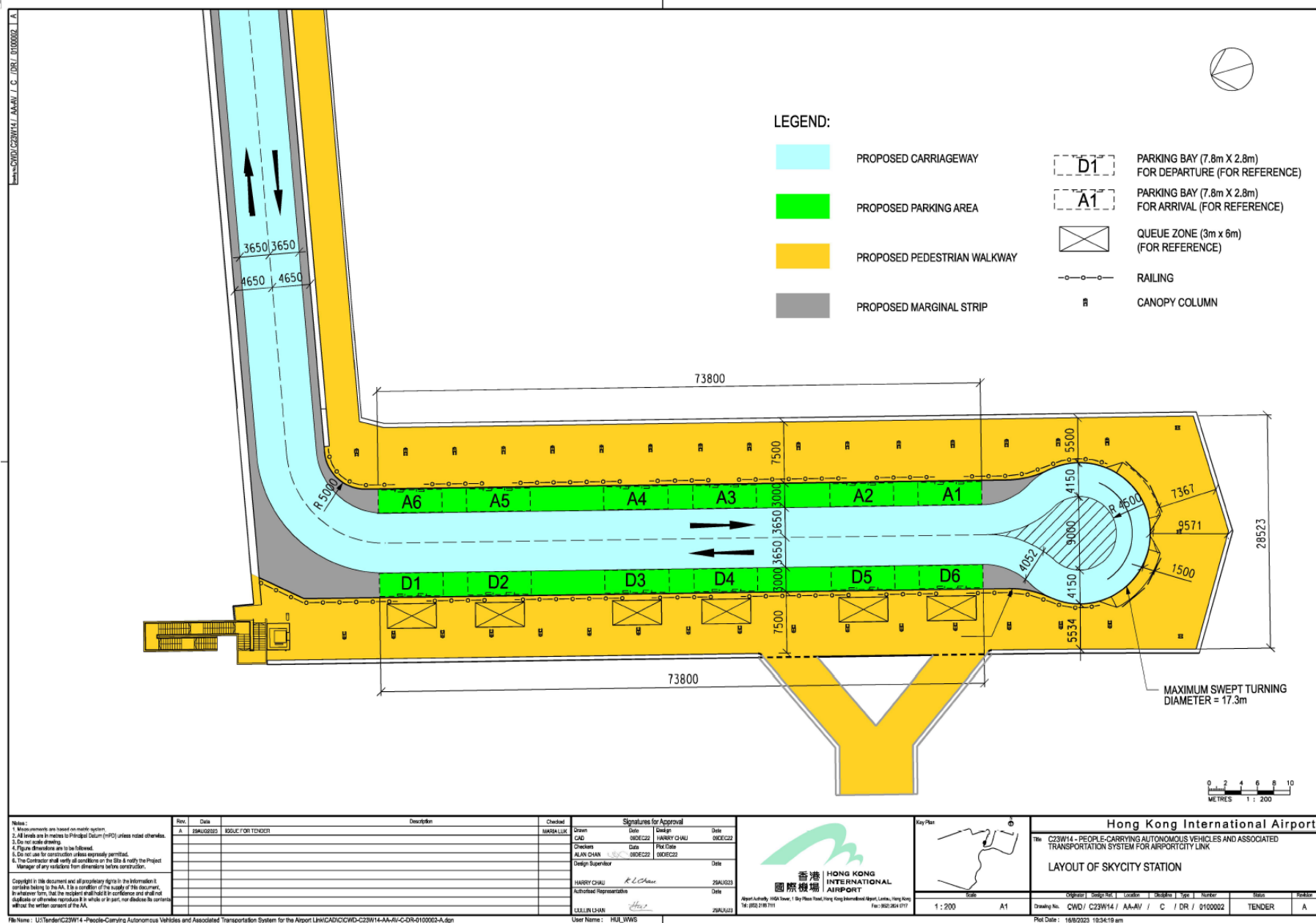
**LIST OF TENDER DRAWINGS**

<b>Drawing No.</b>	<b>Drawing Title</b>	<b>Revision</b>
1	Passengers flow and location for AFC fare collection devices at 11Skies ACL	-
2	Layout of SkyCity Station	-
3	Layout of Hong Kong Port Station	-

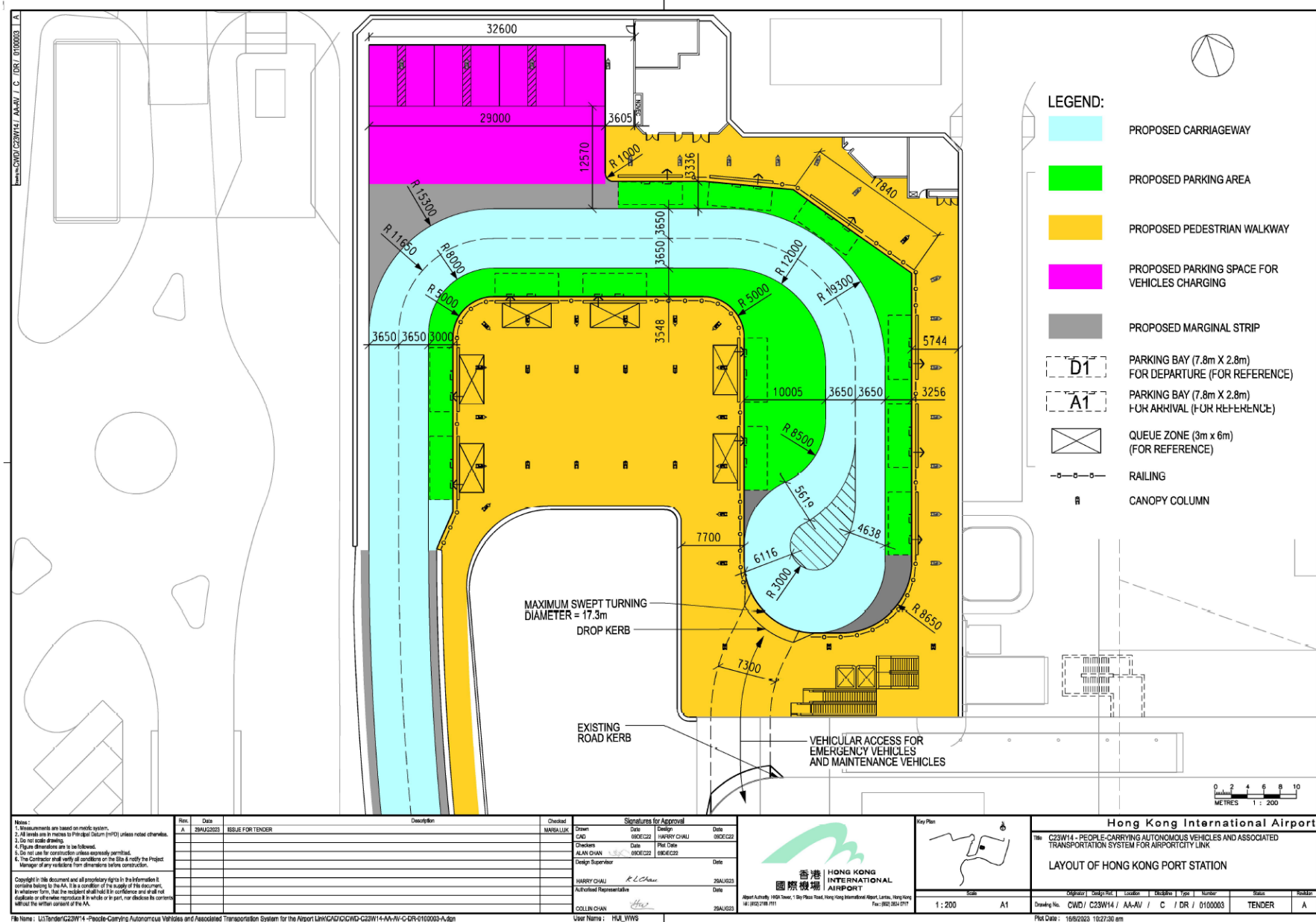
Drawing 1: Passengers flow and location for ACL fare collection devices at 11Skies



Drawing 2: Layout of SkyCity Station



Drawing 3: Layout of Hong Kong Port Station



## **APPENDIX B**

### **SCHEDULE OF KEY DATES AND SIGNIFICANT DATES**

## **SCHEDULE OF KEY DATES AND SIGNIFICANT DATES**

### **Tentative Schedule of Key Dates:**

<b>Key Date No.</b>	<b>Description</b>	<b>End Date</b>
1	Completion of the draft design of the AFCS.	31 <sup>st</sup> of January, 2025
2	Completion of the final design of the AFCS.	28 <sup>th</sup> of February, 2025
3	Completion of Server and Portal Setup	31 <sup>st</sup> of August, 2025
4	On-site Hardware Installation	30 <sup>th</sup> of September, 2025
5	Completion of On-site Hardware Installation	30 <sup>th</sup> of November, 2025
6	Testing and Commissioning	31 <sup>st</sup> of December, 2025
7	Tentative Completion date of the complete AFCS	31 <sup>st</sup> of December, 2025
8	Ensure adequate support for the AFCS system in order to maintain the required availability rate until Key Date 4 that specified in Contract C23W14.	4 <sup>th</sup> July, 2028

### **Tentative Schedule of Significant Dates**

<b>No.</b>	<b>Description</b>	<b>Key Date</b>
1	Tentative Commencement date of the Works	31 <sup>th</sup> December, 2024
2	Commencement Date of Contract C23M01 Operation & Maintenance Services (Ref. to C23W14 Contract – KD2)	7 <sup>th</sup> April, 2026
3	Commencement Date of Contract C23W14 Design & Built– KD4	4 <sup>th</sup> July, 2028

## **APPENDIX C**

### **SCHEDULE OF SUBMISSION DATES**

### **SCHEDULE OF SUBMISSION DATES**

<b>No.</b>	<b>Description</b>	<b>Date</b>
1	Insurance policies as required in the Conditions of Contract and <b>Appendix E</b>	Within 7 days from the date of Letter of Acceptance
2	Site Condition Survey Report	Within 21 days from the commencement date of the Works
3	The draft design of the AFCS's system architecture.	Within 60 days from the commencement date of the Works
4	The final design of the AFCS's system architecture.	Within 90 days from the commencement date of the Works
5	Material Submission(s) of AFCS	Within 90 days from the commencement date of the Works
6	Method Statement and Works Programme	Within 150 days from the commencement date of the Works
7	Inspection, Testing and Commissioning Plan	Within 240 days from the commencement date of the Works
8	Inspection, Testing and Commissioning Report	Within 300 days from the commencement date of the Works
9	Training Plan for O&M of AFCS	Within 330 days from the commencement date of the Works
10	Submission of first draft of As-built Drawings	2 months prior to substantial completion of the Works
11	Submission of finalized As-built Drawings	14 days prior to substantial completion of the Works
12	Submission of first draft of Operation and Maintenance Manual	2 months prior to substantial completion of the Works
13	Submission of finalised Operation and Maintenance Manual	14 days prior to substantial completion of the Works



**APPENDIX D**

**PARTICULAR TECHNICAL SPECIFICATION**

## **PARTICULAR TECHNICAL SPECIFICATION**

### **TABLE OF CONTENTS**

<b>SECTION 1</b>	<b>Hardware requirements</b>
<b>SECTION 2</b>	<b>Functional requirements</b>
<b>SECTION 3</b>	<b>Ticket Issuance Module</b>
<b>SECTION 4</b>	<b>Ticket Validation Module</b>
<b>SECTION 5</b>	<b>Settlement (for Direct Tapping only)</b>
<b>SECTION 6</b>	<b>Ticket Inspection Module</b>
<b>SECTION 7</b>	<b>Staff Admin Portal</b>
<b>SECTION 8</b>	<b>Operation and Maintenance training</b>
<b>SECTION 9</b>	<b>System monitoring</b>
<b>SECTION 10</b>	<b>Maintenance and Support</b>
<b>SECTION 11</b>	<b>Data Tracking (fare verification &amp; tracking)</b>

## 1. HARDWARE REQUIREMENTS

### 1.1 Hardware requirements of Tap / Scan & Pay Machine

Description	
1.1.1	A minimum 8' monitor with resolution requirement (1280 x 800 or better)
1.1.2	A built-in contactless Credit Card reader (certified for Visa, MasterCard, China Union Pay, JCB, America Express, Discover/Diners Club International, Apple Pay, Google Pay, etc.)
1.1.3	An Octopus Reader (certified by Octopus), with Automatic Add Value Service
1.1.4	A QR-code reader to handle QR-code payment (incl. but not limited to WeChat Pay, WeChat Pay HK, Alipay, Alipay HK)
1.1.5	Wi-Fi: Wireless connectivity for flexible installation, configuration and system updates.
1.1.6	Cellular: Optional 4G/5G connectivity for mobile or remote use.
1.1.7	Bluetooth: For connecting peripheral devices such as printers.
1.1.8	Ethernet (Optional): Wired connection for stable and secure network access.
1.1.9	Support outdoor application: windproof & waterproof (IP54 or above).
1.1.10	Cloud Services: Integration with cloud-based services for data synchronization and management.
1.1.11	Removable and non-drill base stand (Must be stabilized on the ground safely), the design subject to the Employer's approval
1.1.12	With ability to connect to the Internet at all times for real-time transaction authorization and processing

## 1.2 Hardware requirements of Self-Service Kiosks

Description	
1.2.1	Capacitive touchscreen display: Minimum 32" touch-screen monitor with resolution requirement (1920 x 1080 or better) and supports multi-touch function
1.2.2	A receipt & ticket printer
1.2.3	A built-in contactless Credit Card reader (certified for Visa, MasterCard, China Union Pay, JCB, America Express, Discover/Diners Club International, Apple Pay, Google Pay, etc.)
1.2.4	An Octopus reader (certified by Octopus), with Automatic Add Value Service
1.2.5	A QR-code reader to handle QR-code payment (incl. but not limited to WeChat Pay, WeChat Pay HK, Alipay, Alipay HK)
1.2.6	Support outdoor application: windproof & waterproof (IP54 or above)
1.2.7	Wi-Fi: Wireless connectivity for flexible installation, configuration and system updates.
1.2.8	Cellular: Optional 4G/5G connectivity for mobile or remote use.
1.2.9	Bluetooth: For connecting peripheral devices such as printers.
1.2.10	Ethernet (Optional): Wired connection for stable and secure network access.
1.2.11	Cloud Services: Integration with cloud-based services for data synchronization and management
1.2.12	Remote accessible and manageable for ease of support
1.2.13	With ability to connect to the Internet at all times for real-time transaction authorization and processing
1.2.14	Removable and non-drill base stand (Must be stabilized on the ground safely), the design subject to the Employer's approval

**Contactless Credit Card reader and Octopus Card reader merged into a single reader is preferred.**

### 1.3 Hardware requirements of Mobile Point-Of-Sale machine (POS)

Description	
1.3.1	Capacitive touchscreen display: A minimum 4' monitor with resolution requirement (1280 x 720 or better) and supports multi-touch function
1.3.2	A receipt & ticket printer
1.3.3	A Magnetic Strip reader (certified for Visa, Master Card, etc.)
1.3.4	An Octopus reader (certified by Octopus), with Automatic Add Value Service
1.3.5	A QR-code reader to handle QR-code payment (incl. but not limited to WeChat Pay, WeChat Pay HK, Alipay, Alipay HK )
1.3.6	A built-in contactless Credit Card reader (certified for Visa, MasterCard, China Union Pay, JCB, America Express, Discover/Diners Club International, Apple Pay, Google Pay, etc.)
1.3.7	A speaker with sound alerts upon successful or failed payment verification
1.3.8	Wi-Fi: Wireless connectivity for flexible installation, configuration and system updates.
1.3.9	Cellular: Optional 4G/5G connectivity for mobile or remote use.
1.3.10	Bluetooth: For connecting peripheral devices such as printers.
1.3.11	Cloud Services: Integration with cloud-based services for data synchronization and management
1.3.12	With ability to connect to the Internet at all times for real-time transaction authorization and processing

**Contactless Credit Card reader and Octopus Card reader merged into a single reader is preferred.**

#### 1.4      **Hardware requirements of POS Terminal**

<b>Description</b>	
1.4.1	Capacitive touchscreen display: A minimum 12.9" monitor with resolution requirement (1920 x1080 or better)
1.4.2	A receipt & ticket printer
1.4.3	A Cash Draw with interface to the POS terminal and Key Lock
1.4.4	A Desktop holder (if applicable)
1.4.5	Wi-Fi: Wireless connectivity for flexible installation, configuration and system updates.
1.4.6	Cellular: Optional 4G/5G connectivity for mobile or remote use.
1.4.7	Bluetooth: For connecting peripheral devices such as printers.
1.4.8	Cloud Services: Integration with cloud-based services for data synchronization and management
1.4.9	With ability to connect to the Internet at all times for register/retrieve payment record to/from the Back Office Management System
1.4.10	With ability to connect to the mobile POS device for payment collection or verification

## 1.5 Quantity of Ticket Sales Machine for ACL – AFCS

### 1.5.1 Required quantity at 11Skies for single-trip journey

Type of Ticket Sales Machine	no. of QTY required	Spare no. of QTY required	Sub-total
Tap / scan pay device	4	2	6
Self-service kiosk	4	1	5
Handheld Point-Of-Sales (POS) devices with ticket inspection function	2	1	3
Point-Of-Sales device for CS Counter	1	1	2
<b>Total</b>	11	5	16















### 1.5.2 Options: Proposed Quantity for further expansion at Hong Kong Port for multi-station journey

Type of Ticket Sales Machine	no. of QTY required
Tap / scan pay device	6
Self-service kiosk	6
Handheld Point-Of-Sales (POS) devices with ticket inspection function	4
Point-Of-Sales device for CS Counter	2
<b>Total</b>	18

## 2. FUNCTIONAL REQUIREMENTS

### 2.1 Requirement of available payment tools for ticket-sales machines

2.1.1 All types of tickets-Sales machines must be able to accept the following payment tools:

Credit Card	     
Electronic Wallet	     
NFC (Near Field Communication )	   

### 2.2 Functional requirements of Tap / Scan & Pay Machines

Description	
2.2.1	Allow passengers to settle fare in Hong Kong Currency and shown by default in HKD
2.2.2	Accept payment by: <ul style="list-style-type: none"> <li>(a) Octopus Card,</li> <li>(b) contactless credit card (include but not limited to Visa, Mastercard, UnionPay, JCB, American Express, Discover card, etc)</li> <li>(c) mobile payment (include but not limited to WeChat Pay, WeChat Pay HK, Alipay HK, Alipay, BOC Pay, Octopus, Apple Pay, Google Pay, Samsung Pay etc)</li> </ul>
2.2.3	Allow payment record to register in real-time to the Back Office Management System
2.2.4	Allow discount function for disabled, elderly, which shall interface with the Government Public Transport Fare Concession Scheme for the Elderly and Eligible Persons with Disabilities
2.2.5	Comply with Payment Card Industry (PCI) Data Security Standard and requirements of the Office of the Privacy Commissioner for Personal Data (PCPD) such as Privacy Impact Assessments



Description	
2.2.6	Currency shall be shown by default in HK Dollar
2.2.7	Graphical User Interface (GUI) should clearly display information including but not limited to the fare types, payment methods. The layout of GUI shall be subject to the Employer's approval

### 2.3 Functional requirements of Self-Service Kiosks

Description	
2.3.1	Allow passengers to settle fare in Hong Kong Currency
2.3.2	Allow passengers to choose different products (i.e. different destinations) & fare types (single/ group purchase/ discounted fare)
2.3.3	Accept payment by:  (a) Octopus Card  (b) contactless credit card (include but not limited to Visa, Mastercard, UnionPay, JCB, American Express, Discover card, etc)  (c) mobile payment (include but not limited to WeChat Pay, WeChat Pay HK, Alipay HK, Alipay, BOC Pay, Octopus, Apple Pay, Google Pay, Samsung Pay etc)
2.3.4	Allow issuance of receipt of payment (in the form of unique QR code/ electronic receipt), which shall interface with the Back Office Management System
2.3.5	Allow payment record to register in real-time to the Back Office Management System
2.3.6	Comply with Payment Card Industry (PCI) Data Security Standard and requirements of the Office of the Privacy Commissioner for Personal Data (PCPD) such as Privacy Impact Assessments
2.3.7	Currency shall be shown by default in HK Dollar
2.3.8	Graphical User Interface (GUI) should clearly display information including but not limited to the fare types, payment methods. The layout of GUI shall be subject to the Employer's approval
2.3.9	Equip with Tap / Scan & Pay function
2.3.10	Equip with code function for staff to issue ticket with discounted or free fare by administrative access right

### 2.4 Functional requirements of Mobile Point of Sale devices (POS)

Description	
2.4.1	Allow passengers to settle fare, penalty and other charges in Hong Kong Currency and shall be shown by default in HKD
2.4.2	<p>Accept payment by:</p> <ul style="list-style-type: none"> <li>(a) cash</li> <li>(b) Octopus Card</li> <li>(c) contactless credit card (include but not limited to Visa, Mastercard, UnionPay, JCB, American Express, Discover card, etc)</li> <li>(d) mobile payment (include but not limited to WeChat Pay, WeChat Pay HK, Alipay HK, Alipay, BOC Pay, Octopus, Apple Pay, Google Pay, Samsung Pay etc)</li> </ul>
2.4.3	Allow payment record to register in real-time to the Back Office Management System
2.4.4	Allow discount function for disabled, elderly, which shall interface with the Government Public Transport Fare Concession Scheme for the Elderly and Eligible Persons with Disabilities, or any promotion provided by the Employer
2.4.5	Allow refund to passengers via the original payment method, and record such transaction in the Back Office Management System
2.4.6	Allow unique QR-code generation for issuance of paper or electronic receipt, which shall interface with the Back Office Management System
2.4.7	Allow staff to verify successful payment of passenger upon presentation of credit card/ octopus / paper or electronic receipt with QR-code
2.4.8	Allow real-time retrieval of payment record from the Back Office Management System
2.4.9	Comply with Payment Card Industry (PCI) Data Security Standard and requirements of the Office of the Privacy Commissioner for Personal Data (PCPD) such as Privacy Impact Assessments
2.4.10	Currency shall be shown by default in HK Dollar

Description	
2.4.11	Graphical User Interface (GUI) should clearly display information including but not limited to the fare types, payment methods. The layout of GUI shall be subject to the Employer's approval

## 2.5 Functional requirements of POS Terminal

Description	
2.5.1	Allow passengers to settle fare, penalty and other charges in Hong Kong Currency and shall be shown by default in HKD
2.5.2	Accept payment by cash or via mobile POS device
2.5.3	Allow payment record to register in real-time to the Back Office Management System
2.5.4	Allow retrieving payment record from Back Office Management System for verification and/or refund process
2.5.5	Allow discount function for any promotion provided by the Employer
2.5.6	Allow refund to passengers via the original payment method, and record such transaction in the Back Office Management System
2.5.7	Allow unique QR-code generation for issuance of paper or electronic receipt, which shall interface with the Back Office Management System
2.5.8	Allow staff to manually input transaction details, which shall interface with the Back Office Management System
2.5.9	Allow staff to generate real-time, hourly and day sales record of the specific POS terminal for daily administration
2.5.10	Currency shall be shown by default in HK Dollar
2.5.11	Allow on-site staff to perform administrative tasks with different levels of access via password protected user accounts

## 2.6 Functional requirement for Back Office Management System

Description	
2.6.1	Allow on-site and office staff to perform administrative tasks with different levels of access via password protected user accounts
2.6.2	Allow real-time payment record registration from self-service kiosks, Tap & Pay/ Scan & Pay devices, mobile POS & payment verification devices and online purchase platform
2.6.3	Allow real-time payment record retrieving from on-site staff using the verification solution mentioned in section 2.1.3
2.6.4	Allow real-time payment record retrieving from office staff via user accounts
2.6.5	Unique QR-code generation
2.6.6	Data storage for minimum 12 months
2.6.7	Interface to connect with the Central Vehicle Control Sub-system (CVS) in C23W14 Contract for providing relevant statistics e.g. number of passengers in different time slot
2.6.8	Interface with current AA systems or 3 <sup>rd</sup> party mobile app through API (e.g. MyHKG app )
2.6.9	Allow real-time overview of the status of equipment and devices, monitoring of system performance
2.6.10	Allow the generation of revenue and statistical reports based on real-time data with export function
2.6.11	Allow the update of content shown at the payment terminals (including but not limited to self-service kiosks, tap & pay/ scan & pay devices, mobile POS devices)

## 2.7 Functional requirement for Online Payment Solution

Description	
2.7.1	Accept payment by credit card, Wechat Pay, Wechat Pay HK, Alipay, Alipay HK, BoC Pay, UnionPay App, Apple Pay, Google Pay, Samsung Pay, etc. on 3 <sup>rd</sup> party mobile app (e.g. MyHKG)
2.7.2	Allow the issuance of payment proof (in the form of unique QR code/ electronic receipt), which shall interface with the Back Office Management System
2.7.3	Allow payment record to register in real-time to the Back Office Management System
2.7.4	Comply with Payment Card Industry (PCI) Data Security Standard and requirements of the Office of the Privacy Commissioner for Personal Data (PCPD) such as Privacy Impact Assessments
2.7.5	Graphical User Interface (GUI) should clearly display information including but not limited to the fare types, payment methods. The layout of GUI shall be subject to the Employer's approval
2.7.6	Allow interface with 3 <sup>rd</sup> party websites or programs, including but not limited to HKIA website, e-commerce platform, WeChat or Alipay mini programs

### 3. TICKET ISSUANCE MODULE

Description	
3.1	Generation of QR codes as ticket (Ticket ID: Dynamic/ Static code TBC)
3.2	Common API for calling by other systems (e.g. MyHKG, Car Park Booking System, 11 SKIES etc.) needed, where payment is already performed in other systems:
3.2.1	Input: Ticket Sales details, ticket request ID etc.
3.2.2	Output: Ticket ID (TBC)
3.3	Physical ticket able to be printed out via POS and self-service kiosk for online purchasing mode



## 4. TICKET VALIDATION MODULE

### 4.1 Tap-in Validation

Description	
4.1.1	Tickets:
4.1.1.1	Ticket Code to be scanned
4.1.1.2	Validation location & timestamp to be captured
4.1.2	Direct Tapping of Octopus / Credit Card / QR Code
4.1.2.1	To be directly scanned/ tapped
4.1.2.2	Capturing information in line with industry practice

### 4.2 Tap-out Validation (Provisional function)

Description	
4.2.1	Tickets:
4.2.1.1	Not required for phase 1 of ACL (Note: Correct ticket type to be chosen by user upon purchase)
4.2.2	Direct Tapping of Octopus / Credit Card / QR Code
4.2.2.1	Octopus / Credit Card / QR Code to be directly scanned/ tapped for capturing information in line with the latest industry practice
4.2.2.2	Exact fare amount will be charged against tap out
4.2.2.3	Maximum fare amount to be deducted without tap out after a period of time

## 5. SETTLEMENT

Description	
5.1	Interface with acquiring bank for billing & fees settlement

## 6. TICKET INSPECTION MODULE

Description	
6.1	Handheld POS for inspection staff to check information
6.1.1	Tickets: Display of validation location, ticket type and timestamp
6.1.2	Direct Tapping of Octopus / Credit Card / QR Code: Display of tap-in transaction record with location and timestamp
6.2	Handheld POS for immediate supplemental fare collection/ penalty

## 7. STAFF ADMIN PORTAL

### 7.1 Revenue Reporting

Description	
7.1.1	Raw data output on (1) Ticket Purchase transactions; (2) Ticket issuance; (3) Tickets Validated upon tap-in; (4) Direct tapping records
7.1.2	Daily, Monthly and Annually summary reports
7.1.3	Revenue report collected on a daily basis for Airport City Link
7.2	Key Parameters (e.g. fare, discount code) setting
7.3	User Administrative setting

## **8. OPERATION AND MAINTENANCE TRAINING**

- 8.1 The Sub-contractor shall provide a comprehensive program to educate and train personnel to operate, service, support, and maintain the AFCS and its equipment satisfactorily. Draft and final training documentation shall be provided to reflect the changes incorporated into each deployment phase.

## **9. SYSTEM MONITORING**

- 9.1 The Sub-contractor shall provide a monitoring with the email and push notifications alerts, and URLs for monitoring the healthiness of these services at the System Operation Control Centre (SOCC) of HKIA. These URLs shall be reviewed and provided by the Sub-contractor, which are subject to review and approval by the Employer.
- 9.2 The Sub-contractor shall ensure adequate on-site comprehensive technical supports for the complete AFCS system in order to maintain the required reliability rate until Key Date 4 that specified in Contract C23W14.
- 9.3 The Sub-contractor shall provide incident reports to the Employer.
- 9.4 Alert email should be sent to the Employer if any failure is detected.
- 9.5 The Sub-contractor shall provide 7 x 24 services to monitor the System.
- 9.6 Apart from monitoring, the Sub-contractor shall carry out system health check and backup activities including but without limitation to the following

Item	Description	Frequency
1	Prepare daily backup for entire System.	Daily
2	Prepare monthly backup for entire System.	Monthly

- 9.7 The Sub-contractor shall act as the prime contact point with the Employer to manage all problems aroused from the System including but not limited to the software, Third Party software, customization, configuration, performance and documentation.
- 9.8 The Sub-contractor shall monitor and analyse the problem log and report the progress and findings to the Employer on a regular basis.
- 9.9 The Sub-contractor shall provide monthly service performance reports to the Employer. It shall include but not limited to the following:
- 9.9.1 For the online platform, self-service kiosks, tap & pay/ scan & pay device, mobile POS & payment verification device and ticket verification device
- 9.9.2 System availability achieved and its detailed calculation (e.g. outage for each case, total outage hours in the period and system availability e.g.  $((720 - 2.5)/720 \text{ hours} \times 100\% = 99.65\%)$ )
- 9.9.3 Ticket Machine Availability per month: at least 97%
- 9.9.4 Statistical reports including historical information.

- 9.10 The retention of all data for report generation shall be at least 12 months. A scheduled house-keeping job shall be introduced to prevent unlimited growth of data size in storage space.

**10. DATA TRACKING (FARE VERIFICATION & RECORD)**

- 10.1 The System shall provide a real-time transaction history for all transactions made via online payment (e.g. payment method and its associated card/account number, payment channel, transaction date & time) and association logs for operations team of HKIA.24x7 monitoring and support service

**APPENDIX E**  
**Insurance Synopsis**

## INSURANCE SYNOPSIS (CAR)

- TYPE** : Construction “All Risks” Insurance
- FORM** : To follow the terms, limits and conditions of the Marsh Broad Form wording. Amendments to be agreed
- INSURED** :
1. Airport Authority as Owners/Employer and/or Associate and/or Subsidiary and /or Affiliated Companies and/or Agents now existing or as may hereafter constituted jointly and severally for their respective rights and interests and/or The Government of HKSAR
  1. All Contractors to be appointed by Owners/Employer and/or their Sub-contractors of any tier and/or Nominated Sub-contractors and/or Specialist Contractors and/or Direct Contractors and/or Package Contractors as may be applicable and their respective subcontractors of every tier
  2. All consultants and/or engineers and/or suppliers and/or vendors and/or manufacturers and/or professional consultants and/or architects of any tier and/or all others engaged to provide goods or services in connection with the Insured Project in respect of their site activities only
  3. Any other party having an insurable interests (and not mentioned above) to the extent that Insured 1 is required by contract or agreement to provide insurance to such party(ies)
  4. Financing Parties meaning each Lender, the Agent, the Security Trustee, the Account Bank and each Hedging Counterparty, in each case as defined in the Facility Agreement, for their financial interests in the Insured Project
- The Insured shall be deemed to include all directors, partners, employees and agents of the above named (even if their names are not specifically mentioned in the Policy) in respect of their site activities only.
- All for their respective rights and interests and/or as may be more fully defined in this policy.

<b>INSURED PROJECT</b>	<p>: <b>Airport Authority – C23W14 People-Carrying Autonomous Vehicle and Associated Transportation System for Airportcity Link (EIM4757)</b></p> <p>The design, engineering, procurement, construction, erection, testing and commissioning and defects liability period of the <b>People-Carrying Autonomous Vehicle and Associated Transportation System for Airportcity Link</b> including all ancillary and associated works and services in connection therewith</p>
<b>INSURED CONTRACT</b>	<p>: Each individual contract let separately within the Insured Project and including any supply and/or works orders issued in conjunction therewith and including any variations and such additional works as may be incorporated.</p>
<b>PERIOD OF INSURANCE</b>	<p>: <u>Construction Period of Insurance</u></p> <p>To be confirmed (To be effective after unloading the first AV at the Site and/or other areas for AV testing and trialling as designated by the Project Manager, and/or upon the availability of Works Area C23W14/2 by the date specified in Appendix C2 (whichever is the earlier) until the substantial completion of the whole of the Works.)</p> <p>(including advance works to be advised if any)</p> <p><u>Defects Liability Period of Insurance / Maintenance Period of Insurance</u></p> <p>Defects Liability Period commence and apply upon completion of each section separately and shall be finished 12 months after substantial completion of the whole of the Works. Extensions of the Defects Liability Period within the overall construction period are automatically covered and are not subject to any additional premium.</p> <p>Hong Kong Local Standard Time both dates inclusive</p> <p>Period extension to be agreed</p>
<b>TERRITORIAL LIMITS</b>	<p>: Anywhere in Hong Kong SAR</p> <p>Limit extends to the PRC in respect of Offsite Fabrication, Casting Yards, Off-site Storage and Inland Transit</p>
<b>INTEREST INSURED</b>	<p>: To Indemnify the Insured in respect of all risks of Damage to the Property Insured occurring during the Period of</p>

Insurance arising from any cause whatsoever other than as specified in the General Exclusions and the Exclusions and pursuant and subject to the other terms and conditions of this Policy.

#### INSURED PROPERTY

The Permanent and Temporary Works including electrical and mechanical plant, services, materials and goods incorporation therein, rolling stock and works trains, spares, and any other property or equipment of whatsoever nature to be incorporated into the Insured Project and any property of the Insured or for which they are or hold themselves responsible and which are for use or intended for use in connection with the Insured Project including temporary buildings, mock ups and contents on site (but excluding Contractor's plant and equipment and spare parts thereof).

**MEMORANDA : Memoranda Applicable To Construction "All Risks"  
(inter alia) (including but not limited to):**

All below sub-limits are in addition to the Sum Insured, and unlimited during the period of insurance unless otherwise specified.

1. Basis of Indemnity
2. Escalation Clause – Limit not exceeding 20% of the item 1 Sum Insured any one Occurrence
3. Plans/Drawings – Limit HKD1,000,000 any one Occurrence and in the aggregate
4. Expediting Expenses – Limit 10% of adjusted loss of claim, maximum Limit of HKD1,000,000 any one Occurrence
5. Extra Cost of Reinstatement – Limit no more than 10% of the loss, maximum of HKD5,000,000 any one Occurrence
6. 50/50 Clause
7. Munitions of War
8. Temporary Repairs - Limit: HKD5,000,000 any one Occurrence
9. Other Interests
10. Professional Fees – Limit HKD5,000,000 any one Occurrence



11. Debris Removal – Limit HKD5,000,000 any one Occurrence
12. Inland Transit – Limit not exceeding HKD10,000,000 any one conveyance (exclude any ocean marine or air transit)
13. Offsite Fabrication & Offsite Storage – Not exceeding HKD10,000,000 any one occurrence per location
14. Automatic Reinstatement Clause - Additional Premium for loss exceeding HKD10,000,000
15. Preventative Measures - Limit HKD5,000,000 any one occurrence
16. Repeat Tests
17. Reproduction of Computer Records - Limit: HKD10,000,000 any one Occurrence
18. Free Issue Materials
19. 72 Hour Clause

**MEMORANDA (inter alia) (Cont'd)**

- : 20. Public Authority – Limit not exceeding HKD10,000,000 any one occurrence
21. Fire Extinguishing Expense – Limit not exceeding HKD5,000,000 any one occurrence
22. Temporary Building and Content Extension – Limit not exceeding HKD10,000,000 any one occurrence
23. Defects Liability Period and Temporary Works Cover Clause – Limit: not exceeding 20% of the contract value at the inception
24. Cover during the Testing and Commissioning (beyond the commencement of operation)
25. Entrusted Works (Limit: 10% of contact value any one claim)
26. X-Ray etc. Indicating Internal Damage
27. Ground Subsidence
28. Undamaged Property
29. Burning and Welding

*All other terms, limits and conditions as per Marsh Broad Form wording.*

**EXCLUSIONS TO (inter alia)**

- : 1. Wear, Tear Corrosion and Erosion
2. Defective Material, Workmanship, Design, Plan and Specification
3. Cash and the like
4. Aircraft and Power Driven Watercraft
5. Inventory and Stocktaking Losses
6. Liquidated Damages, Penalties and Commercial Risks
7. Normal upkeep
8. MR121 - Special Conditions concerning Piling Foundation and Retaining Wall Works
9. Deductible

*All other terms, limits and conditions as per Marsh Broad Form wording.*

**GENERAL MEMORANDA**

- : 1. Interpretation
2. Commenced project works
3. Material Alteration
4. Primary Insurance
5. Non Cancellation

6. Defects Liability Clause
7. Premium Adjustment
8. Multiple Insured Condition
9. Payments on Account
10. Reasonable Precautions
11. Application of Terms Conditions and Exclusions
12. Loss Payee
13. Nominated Loss Adjuster – Charles Taylor or to be agreed
14. Bankruptcy insolvency or termination
15. Site visits & ceremonies
16. Sue and Labour Clause
17. Claim Notification
18. Protection of Interests
19. Arbitration
20. Mediation
21. Several Liability Clause (if applicable)
22. Cancellation of Abandonment
23. Employers Clause

*All other terms, limits and conditions as per Marsh Broad Form wording.*

**GENERAL  
EXCLUSIONS**

- :
1. Radioactive risks
  2. Nuclear risks
  3. War & Terrorism
  4. Electronic Data / Property Cyber and Data Exclusion
  5. Asbestos Health Risk
  6. Sanction Clause
  7. Right of Third Parties Clause
  8. Personal Data Privacy Clause
  9. Communicable Disease Endorsement

*All other terms, limits and conditions as per Marsh Broad Form wording.*

**EXCESSES** : **Note all Deductibles listed below are subject to amendment following insurers' final agreement to terms and conditions.**

For each and every loss:-

Storm / Tempest / Typhoon / Water Damage/ Subsidence / Landslide / Collapse / Earthquake / Tsunami / Fire / Theft / Vibration or Weakening of Removal of Support	HKD500,000 or 20% of loss whichever is greater
Defective Design / Material / Workmanship / Maintenance / Testing & Commissioning	HKD500,000 or 20% of loss whichever is greater
Temporary Works / Scaffolding	HKD500,000 or 50% whichever is greater
Others	HKD500,000

In the event of damage occurring where more than one Policy Excess applies, the aggregate amount to be borne by the Insured shall not exceed the highest single Policy Excess applicable.

**APPLICABLE JURISDICTION AND/OR LAW AND/OR PRACTICE** : Law of Hong Kong Special Administrative Region

This document represents a summary of the insurance to be placed and is not a policy of insurance, nor should be construed as such. It is for information purpose only and should in no way be relied upon as a representation of the full terms and conditions of the insurance. Details are subject to change without prior notice. For further details, please contact the Authority.

The policy is subject to exception, memoranda, general exclusions and conditions. The above summary is not intended to replace any of the terms in the policy document itself which are subject to review by the Authority.

The Contractor shall be deemed to have satisfied themselves with regard to the extent and limits of the insurance cover provided by the Airport Authority identified in this Synopsis and shall arranged at their own cost and expense any additional cover as they consider appropriate, having due regard to relevant industry practice, the risk inherent in the execution of the works and prudent commercial principles.

## **Insurance Synopsis (Airport Contractor's Liability Insurance (OCWIP-TPL)**

Type :	Airport Contractor's Liability Insurance (OCWIP-TPL)
Insured Contract :	All contacts for Capital Works, Renovation, Repairs, Reinstatement, Demolition, Delivery, Installation, Maintenance, Service Works and/or contracts awarded and/or approved by the Airport Authority
Insured Parties :	Airport Authority and/or associated and/or subsidiary and/or affiliated companies now existing or as may be hereafter constituted jointly and severally for their respective rights and interests and all licensees, tenants, franchisees, lessees and/or other parties acting in their own capacity or as employers and/or The Government of Hong Kong Special Administrative Region and/or all contractors and/or all Sub-contractors of any tier and/or consultants and engineers for their site activities only and/or other parties involved in connection with the undertaking of the contracts for their respective rights and interests, including directors and/or partners and/or employees and/or agents of the above as insured parties for their related liabilities
Scope of Coverage :	The Insured's legal liability arising out of or in connection with any and all contracts for Capital, Renovation, Repairs, Reinstatement, Demolition, Delivery, Installation, Maintenance, Services Works and/or contracts awarded and/or approved by the Airport Authority
Sum Insured :	Combined Single Limit (Bodily Injury / Property Damage)  HKD150m any one Occurrence and in the aggregate in respect of Products Hazard including personal injury limited to HKD150m in the annual aggregate
Geographical Limits :	In and around the Airport as specified herein or elsewhere in connection with the Insureds aviation business including Hong Kong SAR, Macau SAR and the People's Republic of China but worldwide in respect of Products Liability
Deductibles :	Property Damage : USD5,000 each and every loss but USD25,000 each and every loss in respect of Property Damage to aircraft (excluding fees and expenses)

- Major Conditions :
- 1/ War Hi-jacking and Other Perils Exclusion Clause (Aviation) AVN48B with all sub-paragraphs other than (b) deleted subject to Extended Coverage Endorsement (Aviation Liabilities) AVN52G
  - 2/ Personal Injury Extension AVN60A
  - 3/ Two Way Cross Liability Clause as required as expiry
  - 4/ Primary Liability for Licenced / Unlicenced vehicles operating within the confines of the Airport and as per wording and also to include vendors, suppliers, material dealers and others to operate vehicles within the airports confines for sole purposes of support or transportation of material, equipment or parts. Excluding Road Traffic Act (RTA) or equivalent.
  - 5/ Liability for property damage to any property which is not owned by the Insured but is temporary occupied for the purpose of the Insured business.
  - 6/ Date Recognition Limited Coverage Clause AVN2002A
- Major Exclusions :
- 1/ Nuclear Risks Exclusion Clause AVN38B
  - 2/ Noise and Pollution and Other Perils Exclusion Clause AVN46B
  - 3/ Date Recognition Exclusion Clause AVN2000A 4/ Asbestos Exclusion Clause 2488AGM00003
  - 5/ Sanctions and Embargo Clause AVN111
  - 6/ Liability arising under Employees Compensation Ordinance of HK or other similar enactment or Bodily Injury to any employee of the Insured arising out of any in the course of their employment by the Insured
  - 7/ Liability arising out of improper or inadequate performance, design or specification, loss of use and lack of performance

The terms of this document are subject to the coverage, terms, conditions, limitations and exclusions stated in the Policies of Insurance.

Sample policy wordings are available for inspection at the Airport Authority's office.

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The Contractor shall be deemed to have satisfied themselves with regard to the extent of the insurance cover provided by the Airport Authority identified in this Synopsis and shall arrange at their own cost and expense any additional cover as they consider appropriate, having due regard to relevant industry practice, the risks inherent in the execution of the works and prudent commercial principles.

## Insurance Synopsis (Employee Compensation Insurance)

<b>Type of Insurance</b>	: Employees' Compensation Insurance
<b>Name of Insured</b>	: KCM-PML Joint Venture &/or Sub-contractors of every tier &/or Airport Authority as Owners/Employer and/or Associate and/or Subsidiary and/or Affiliated Companies and/or Agents now exiting or as may hereafter constituted jointly and severally for their respective rights and interests and/or The Government of Hong Kong Special Administrative Region
<b>Coverage</b>	: To Indemnify the Insured's liability at law (including liability under Employees' Compensation Ordinance of Hong Kong) to pay compensation and claimants costs and expenses in respect of Hong Kong Employees whose contracts are engaged in Hong Kong in respect of bodily injury by accident or disease caused during the Period of Insurance and arising out of and in the course of employment by the Insured in connection with the Contract.
<b>Legislation</b>	: Employees' Compensation Ordinance
<b>Policy Limit of Indemnity</b>	: HKD200 million Any One Event
<b>Contract Name</b>	: Contract C23W14 People-Carrying Autonomous Vehicles and Associated Transportation System for Airportcity Link
<b>Scope of Contract Works</b>	: Design & Build the People-Carrying Autonomous Vehicles and Associated Transportation System for Airportcity Link for Hong Kong International Airport
<b>Place(s) of Employment</b>	: Anywhere in Hong Kong SAR
<b>Geographical Limit</b>	: Anywhere in Hong Kong SAR and is extended to worldwide for employees temporarily working overseas
<b>Jurisdiction</b>	: Hong Kong SAR



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This Policy is subject to the following Clauses/Warranties/Endorsements printed and/or attached hereto:

- AEC / DOC / 9506A POLICY LIMIT OF INDEMNITY
- EE03 Definition of "The Insured"
- EL60 Absolute Asbestos Exclusion
- ELVZ 10.8% Levies
- ETEC Terrorism Endorsement
- EWCI Earnings under Contract Work
- W-204
- W-338
- W-348
- Right of Third Parties Clause
- Sanction Limitation and Exclusion Clause
- W-358
- Exclude any kind of Self-employed Persons/ Sole-proprietors
- Extra-Ordinary Weather Condition Clause
- Sports & Social Activities Clause
- Meal and Lunch Time Clause
- To and From Work Clause
- Catering Facilities Clause
- Emergency Transportation Clause (HKD100,000 any one accident)

#### **W-358**

It is hereby understood and agreed that this policy is extended to indemnify the principal contractor (as specified in the schedule) against liability at law (including liability under the ordinance set out in the policy) in like manner to the Insured but only so far as concerns the liability of the principal contractor to employees of the Insured engaged in connection with a contract undertaken by the Insured for the principal contractor.

Provided always that

- (1) The principal contractor shall as though he were the Insured observe fulfill and be subject to the terms of this policy insofar as they can apply.
- (2) The company shall have full conduct and control of all claims in respect of which indemnity is granted by this endorsement.

Subject otherwise to the terms of this policy.

#### **Exclude any kind of Self-employed Persons/ Sole-proprietors**

This is hereby noted and confirmed that this Policy does not indemnify any kind of self-employed persons/ sole-proprietors.

#### **Extra-ordinary Weather Condition Clause**

In the event of any employee of the Insured whose attendance at his place of employment is required by the Insured during extra-ordinary weather conditions being injured or killed whilst proceeding directly to his place of employment or returning therefrom to his home, such death or injury shall be deemed to have arisen out of and in the course of the Employee's employment for the purpose of this policy.

For the purpose of this clause the expression "extra-ordinary weather conditions" shall be deemed to be limited to the situation where the "red and black" rainstorm warning is triggered and the hoisting of typhoon signal no. 8 or higher or immediately following the Lowering of such signals and "extreme conditions" arising from a super typhoon or other natural disaster of a substantial scale.

#### **Sports and Social Activities Clause**

It is hereby noted and agreed that this Policy is extended to cover bodily injury (as defined) sustained by Employees whilst they are engaged in social functions and sports / recreational activities organized and/or sponsored by the Insured.

#### **Meal and Lunch Time Clause**

Notwithstanding anything herein contained to the contrary, it is hereby understood and agreed that this Policy shall include any employee who stays in the Insured premises during meal and lunch time in the event of an accident caused during the period of insurance and arising out of and in the course of his employment by the Insured in the business as set forth in the Schedule of the Policy.

#### **To and From Work Clause**

This Policy is extended to cover employees against bodily injury or death by Accident or Disease whilst they are travelling directly to and from their place of work by any means of transport (excluding motorcycle) or by walking for the purposes of and in connection with their employment. The operative time of each

journey (to or from residence) is limited to 3 hours.

**Catering Facilities Clause**

It is hereby noted and agreed that if any employee of the Insured shall sustain bodily injury by accident or disease caused whilst using the catering facilities/services provided by the employer shall be deemed to be arising out of and in the course of his employment by the Insured.

Provided that

1. The said bodily injury is otherwise covered by and be payable under this policy, and
2. The said emergency medical treatment must be recommended by a professionally competent medical practitioner, and
3. The said emergency medical treatment must be necessarily and reasonable incurred.

**Emergency Transportation Clause (Limit: HKD100,000 any one accident)**

It is hereby noted and agreed that this policy is extended to indemnify the insured in respect of the extra cost of expenses incurred for attending emergency treatment including transportation of the serious injured employees (within Hong Kong) as a result of an Accident arising out of and in the course of the employment. Provided further that the maximum liability of the company under this clause shall be limited to HKD100,000 each loss and in the aggregate during the period of insurance.