

DEPLOYMENT OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

HANDOVER FORM

Dated: _____

Car Park Code: _____

Description of Designated Lot (whether or not comprised within a parking lot):	Designated Lots Location(s)/Number(s):

The parties confirm that at the date of this Form:

- (a) there are no defects on the Designated Lot(s) that would in any way affect the commissioning, installation and/or operation of the Charging Infrastructure and Charge Points;
- (b) the Designated Lot(s) and the corresponding space for the installation of Charging Infrastructure is handed over to the Service Provider on an as is where is basis for the Service Provider to commence Works for the installation and operation of the Charging infrastructure and Charge Points
- (c) the respective Authority has granted the Service Provider a Licence governed by the terms and conditions of the Contract to install and operate the Charging Infrastructure and Charge Points and to use and occupy the Designated Lot(s) shown in Plan __ attached hereto, subject to and in accordance with the terms and conditions set out in the letter of offer.

Signed for and on behalf of:

Name of Service Provider:	*Housing & Development Board (HDB)/ Jurong Town Corporation (JTC)/ National Parks Board (NParks)/ Urban Redevelopment Authority (URA)/ People's Association (PA) (*Delete as appropriate)
<i>Signature:</i>	<i>Signature:</i>
<i>Name:</i>	<i>Name:</i>
<i>Date:</i>	<i>Date:</i>

DEPLOYMENT OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

REPORT FROM SERVICE PROVIDER ON HANDLING OF FEEDBACK AND COMPLAINTS

Name of Service Provider	
Name of Staff	
Date and Time of Incident Reported	
Date and Time of Interim Response	
Description of Incident	
Description of case resolution	
Date of case resolution	

MAINTENANCE WORKS FOR THE EV CHARGER AND RELEVANT INFRASTRUCTURE

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DEPLOYMENT OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

1. SCOPE

- 1.1. This Section outlines the minimum requirements of the Maintenance Works for the Charge Points and the Charging Infrastructure (e.g. cabling works from the EV charger to the switch room) installed by the Service Provider.
- 1.2. The Service Provider shall carry out and complete the Maintenance Works for the whole duration of the Service Period.
- 1.3. It shall be the Service Provider's responsibility to execute the Maintenance Works on round-the-clock basis.
- 1.4. Unless otherwise stated in the Contract, the Service Provider shall not be entitled to claim for anything or any additional payment.

2. DEFINITIONS

- 2.1. In the Contract, the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:
 - a) "Call-out Time" means the time for the Service Provider to comply with the Urgent Instruction and shall commence on and be calculated from the time the Authority gives the Urgent Instruction to the Service Provider till the time the qualified personnel of the Service Provider arrives at the Site where the fault is located and reports to the Authority.
 - b) "Critical Equipment" means the Charge Point, cabling works from the switch room to the Charge Point.
 - c) "Modification Time" means the time for completion of the Modification Works and subject to any extension of time, the Modification Time shall be 1 hour.
 - d) "Modification Works" means the works carried out pursuant to Clause 4.3.
 - e) "Reply Time" means the time for the Service Provider to respond to the Urgent Instruction and shall commence on and be calculated from the time the Authority contacts the Service Provider till the time the Service Provider responds to the Urgent Instruction.

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- f) "Service Time" means the time for completion of the Service Works.
- g) "Service Works" means the remedial works and measures carried out pursuant to Clause 4 and Clause 5.2.
- h) "Site" means the lands and other places including the Designated Lots and/or Designated Car Parks on or in which the Works are to be executed or carried out and where the context requires, includes places where the System is being operated or used.
- i) "Substitution Time" means the time for completion of the Substitution Works and subject to any extension of time.
- j) "Substitution Works" means the works carried out pursuant to Clause 4.2.
- k) "Urgent Instruction" means the instruction issued by the Authority pursuant to Clause 5.1.

3. MAINTENANCE WORKS

The Service Provider shall be responsible to maintain the System at its own cost and expense. The maintenance shall include but not limited to the following:

- 3.1. Regular maintenance shall include, but not limited to the following:
 - a) Check the System to ensure that all functions, operations and conditions must be able to achieve the standard as prescribed in Clause 7;
 - b) Check and service all installations (including all cabling and terminations);
 - c) Inspect, test, check, service, lubricate, clean and adjust the Hardware; and
 - d) Perform test, check, analyse and examine the System to ensure the System is operating effectively and efficiently
- 3.2. Replace any parts due for replacement or have to be replaced;
- 3.3. Replace all parts that have become defective or corroded due to wear and tear;
- 3.4. Replace all faulty cables (including excavation, reinstatement works);
- 3.5. Maintain all Displays such that all the characters and numerals are easily legible;

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- 3.6. Carry out programming changes as and when required;
- 3.7. Carry out all procedures required by the System, such as the changing of security keys;
- 3.8. Carry out necessary modifications to the System as and when required by the Authority or relevant government agencies;
- 3.9. Provide advice, assistance and guidance on the use and operation of the System, when requested by the Authority;
- 3.10. Despatch of any component or unit to the Original Equipment Manufacturer or the Service Provider's principal (local or overseas) for diagnosis, repair, etc; and
- 3.11. Provide Corrective Maintenance and execute Urgent Instruction as prescribed in Clause 4 and Clause 5 .
- 3.12. Save as aforesaid, the Service Provider shall maintain the System to the standards prescribed in Clause 7.

4. CORRECTIVE MAINTENANCE

- 4.1. Upon responding to any feedback by the User or the Authority, the Service Provider shall analyse and diagnose the possible cause of the fault, malfunction or Failure of the System or Defects. The Service Provider shall decommission the System within a reasonable time. Decommissioning of the System must be reflected prominently on the System to prevent confusion by the public.
 - 4.1.1. At the Designated Lot, the Service Provider shall immediately carry out detailed analysis and diagnosis for the cause of the fault, malfunction or Failure of the System or Defects. Unless otherwise instructed by the Authority for the remedial measures to be executed at a date and/or time decided by the Authority, the Service Provider shall immediately carry out and complete all necessary remedial works and measures diligently and expeditiously to make good the fault to the full satisfaction of the Authority. Such remedial works and measures shall be referred to as the "Service Works".
 - 4.1.2. In the event that the problems are concerned with the Critical Equipment, notwithstanding anything herein stated to the contrary, the Service Provider shall

immediately remove the Critical Equipment concerned and provide a substitute in accordance with Clause 4.2.

- 4.1.3. If the remedial works and measures recommended by the Service Provider involves or concerns modifications of any components or unit of the System, the Service Provider shall seek the Authority's consent and carry out the modifications in accordance with Clause 4.3.

4.2. **Removal and Provision of Substitute**

- 4.2.1. Pursuant to Clause 5.1, if there is any component or unit of the System that has to be removed off-site for further diagnosis, repair or any other work deemed necessary by the Service Provider, the Service Provider shall at its own cost and expense provide a substitute component or unit of equal or higher performance, fully installed, operational and integrated into the System for the whole duration of absence of the component or unit removed. For purpose of the Contract, such work shall be referred to as the "Substitution Works".

- 4.2.2. The Substitution Time shall commence on and be calculated from the time the Substitution Works are executed until the removal works and the substitute component or unit is fully installed, operational and integrated into the System.

4.3. **Modification Works**

- 4.3.1. Pursuant to Clause 4.1, if there is any component or unit of the System that has to be modified as recommended by the Service Provider, the Service Provider shall seek the Authority's prior written consent and submit to the Authority all necessary details of the modification, estimated time for completion, reasons to justify it and the implication or effect on the System as a whole. If consent is received, the Service Provider shall carry out and complete the proposed modification at its own cost and expense. For the purpose of the Contract, such work shall be referred to as the "Modification Works". However, if consent is refused, the Service Provider shall carry out and complete the Service Works diligently and expeditiously to the full satisfaction of the Authority in accordance with Clause 4.1.

- 4.3.2. The Modification Time shall commence on and be calculated from the time decided by the Authority until the modification works and the modified component or unit is fully installed, operational and integrated into the System and to the full satisfaction of the Authority.

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- 4.3.3. If in the Authority's opinion, the System and materials or part thereof have to be substituted instead of modified, the Authority shall issue a written instruction to such effect to the Service Provider and the Service Provider shall comply and implement the instruction as per Clause 4.2. All costs and expenses incurred shall be borne by the Service Provider.
- 4.3.4. The Authority 's consent under Clause 4.3.1 shall not in any way prejudice the rights of the Authority against the Service Provider or render the Authority liable to the Service Provider.
- 4.3.5. Any modifications to the System carried out by the Service Provider under this Clause shall be at the Service Provider's costs and expenses.
- 4.3.6. A requirement for any modification works to the System by the Authority shall be instructed by means of an Authorisation requiring a variation issued to the Service Provider. The Service Provider shall carry out such Variation Works as may from time to time be required by the Authority in writing under the terms and conditions of the Contract, and the Service Provider shall not hold the Authority liable in any way for any loss or expense that may be suffered relating to the modification works.

5. URGENT INSTRUCTION

5.1. General

- 5.1.1. The Authority shall have the right to instruct the Service Provider to attend to any fault, malfunction or Failure of the System or Defects and the Service Provider shall comply with such instruction. Such instruction shall be referred to as the "Urgent Instruction".
- 5.1.2. The Service Provider shall respond to any Urgent Instruction by calling the Authority through phone or any mode accepted by the Authority within the Reply Time. The Service Provider shall also respond by going down to the Site where the fault is located and reports to the Authority within the Call-out Time.
- 5.1.3. For the avoidance of doubt, the Authority may issue the Urgent Instruction in any form (oral or written) or manner (telephone, electronic mail, etc) as he deems fit.

5.2. Remedial Works and Measures

- 5.2.1. Upon responding to the Urgent Instruction in pursuance to Clause 5.1.2, the Service Provider shall analyse and diagnose the possible cause of the fault, malfunction or

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Failure of the System or Defects. The Authority shall at his sole discretion decide on the appropriate follow-up.

- 5.2.2. At the Designated Lot and/or Designated Car Park, the Service Provider shall immediately carry out detailed analysis and diagnosis for the cause of the fault, malfunction or Failure of the System or Defects Subject to Clauses 5.2.1 and unless instructed by the Authority for the remedial measures to be executed at a date and/or time decided by the Authority, the Service Provider shall immediately carry out and complete all necessary remedial works and measures diligently and expeditiously to make good the fault to the full satisfaction of the Authority. Such remedial works and measures shall be referred to as the "Service Works".
- 5.2.3. In the event that the Urgent Instruction is concerned with the Critical Equipment, notwithstanding anything herein stated to the contrary, the Service Provider shall immediately remove the Critical Equipment concerned and provide a substitute in accordance with Clause 4.2.
- 5.2.4. If the remedial works and measures involves or concerns removal of any components or unit of the System off-site or the estimated time for completion of the remedial works is **six (6) hours** or longer, the Service Provider shall remove the unit or component of the System concerned and provide a substitute in accordance with Clause 4.2.
- 5.2.5. The Service Works or Critical Service Works shall be completed by the Service Provider to the full satisfaction of the Authority.
- 5.2.6. If the remedial works and measures recommended by the Service Provider involves or concerns modifications of any components or unit of the System, the Service Provider shall seek the Authority's consent and carry out the modifications in accordance with Clause 4.3.
- 5.2.7. Further to Clause 4.2, the Authority shall decide on the commencement date or time for the execution of the Substitution Works.

6. EXTENSION OF TIME

Any requests for the extension of time for the completion of Maintenance Works (such as the Call-Out Time, Service Time, Substitution Time, Modification Time etc, as the

case may be) shall be submitted to the Authority for approval, with the reasons clearly stated.

7. PERFORMANCE STANDARDS

7.1. The Service Provider undertakes to maintain the facilities, equipment and materials in such manner that at all times:

7.2. The Service Provider shall monitor the serviceability ratio for System. It shall compile the statistics on breakdown of equipment and submit a report on the serviceability ratio to the Authority on monthly basis in accordance with the format set out in **Schedule 1 to the Specifications**.

7.3. The Authority may conduct random checks to monitor and verify the serviceability ratio and the performance of any other aspect of the System as and when it deems necessary. The Service Provider shall extend full co-operation to the Authority's staff when they are conducting the checks. All cost and expenses incurred shall be borne by the Service Provider.

7.4. The serviceability ratio (of a month) for the System shall be at least 99% and determined as follows:

$$\frac{(\text{Scheduled operation hours} \times n) - \text{Downtime}}{\text{Scheduled operation hours} \times n} \times 100\%$$

where:

a) "Scheduled operation hours" means the scheduled operation hours of a component which shall be calculated as follows:

= (24 hours a day x Number of days in a month) - Aggregate number of hours designated as free parking

b) *n* is the number of essential components forming the System installed for each Site. Essential components are the Charge Point, cabling from the switch room to the Charge Point and System (which includes the Hardware and Software).

c) "Downtime" means the aggregate time measured in hours within a month where the component/(s) is/are not operation due to corrective maintenance works, power failure, breakdown, malfunction or any other disorder.

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- 7.5. The Service Provider shall submit service report monthly. If serviceability ratio is less than 99%, the Service Provider shall provide reasons with supporting documents.
- 7.6. Further to the above clauses, the Service Provider shall maintain the facilities, equipment and materials to the standards and benchmarks agreed upon by the Parties after submission in **Schedule 2 to the Specifications**.

8. SPARE PARTS

The Service Provider agrees not to use as replacements, any parts which are not original or not approved by the manufacturer unless it has received the prior written consent of the Authority.

9. CONTEMPORARY RECORDS

- 9.1. The Service Provider shall maintain contemporary records of the following in such form and details and at a location as may be required by the Authority:
- a) Maintenance Works (including Corrective Maintenance Works in **Schedule 3 to the Specifications**) carried out;
 - b) The Urgent Instruction issued by the Authority;
 - c) Details of the Service Works, Substitution Works, and Modification Works carried out (including the time of completion for each works, etc);
 - d) Details on the condition of the System from the operational and maintenance point of view; and
 - e) Details of the total or partial shutdown of the System.
- 9.2. The Service Provider shall submit the records maintained by the Service Provider pursuant to Clause 9.1 to the Authority at the end of each month. The format of all records and reports shall be proposed by the Service Provider and approved by the Authority.

10. FAILURE TO MAINTAIN

The Service Provider shall designate a Project Manager and a deputy who shall be primarily responsible for directing and coordinating the development, supply, delivery, installation, If by any reason the Service Provider fails to maintain the Charging

Infrastructure, according to the standards set out herein, the Authority may authorise the carrying out of such work by a person other than the Service Provider. The amount of any cost, loss, expense or damage incurred in carrying out the same shall be recoverable by the Authority from the Service Provider.

SYSTEM SPECIFICATIONS OF THE ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

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DEPLOYMENT OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

1. GENERAL

- 1.1. The intent of the Specifications is to ensure that the Service Provider installs and renders operational the equipment for the deployment of electric vehicle charging infrastructure that is of high quality and highly reliability.
- 1.2. The Service Provider shall be responsible for providing a complete operational system that is able to fully comply with the operational and technical requirements set out herein.
- 1.3. All equipment, accessories, materials and wirings shall be proposed by the Service Provider and approved by the Authority and the relevant agencies.
- 1.4. All technical specifications of the equipment proposed shall be submitted with the Tender Offer. The Service Provider shall be fully responsible to ensure that the equipment proposed fully comply with the requirements of this Specifications. Any equipment installed, if found to be not complying with the requirements of this Specifications, shall be replaced immediately with one that comply with our requirements upon instruction by the Authority, all at the Service Provider's cost and expenses.
- 1.5. The Service Provider shall seek the Authority's approval for the proposed locations for the installation of the automated parking equipment, signboards, notices and all other electrical or mechanical apparatus i.e. Charge Point, cabling from Charge Point to switch room, etc.
- 1.6. The Service Provider shall submit a list of the proposed equipment, signage plan and the Site Layout Plan for each Designated Lot and/or Designated Car Park after issuance of the Letter of Acceptance. The plans shall include the following:
 - a) Location(s) of charging infrastructure (e.g. Electric Vehicle charge point);
 - b) Shop drawing showing the supply of electricity from the electrical source to the Electric Vehicle charge point in a single line drawing; and
 - c) Site modification plan (if any)
 - d) Location(s) of proposed signage to alert the public of Charge Point which is purely for vehicles to charge.

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- 1.7. However, acceptance of the tender by the Authority shall not mean or conclude that the Authority has accepted or approved the proposed equipment and layout. the Authority reserves the right to instruct the Service Provider to resubmit at the Service Provider's cost and expense, the proposed equipment and layout to the Authority's satisfaction even after the acceptance of tender.
- 1.8. The System shall be designed to function well under the local climate, the respective Car Park layout and traffic condition.
- 1.9. The Service Provider shall ensure that all equipment, accessories, materials and wirings are in optimum working condition.
- 1.10. The Service Provider shall engage qualified Professional Engineers (PEs) and Licensed Electric Workers (LEWs) who shall certify and ensure that
 - a) all new structures erected comply with the relevant Code of Practice and are structurally safe; and
 - b) all electrical installations comply with the relevant Code of Practice and are fit for use.

The Service Provider shall obtain the approval of the Authority and/or relevant authorities and other relevant authorities prior to carrying out any structural works or making any holes or openings in the buildings.
- 1.10 All existing installations and services affected by the Works shall be removed, relocated or diverted as instructed by the Authority and to the satisfaction of the Authority. All costs and expenses incurred shall be borne by the Service Provider.
- 1.11 The proposed deployment of Charging Infrastructure in the Authority's Designated Car Parks shall meet the requirements of the Authority's specifications and subject to the Authority's approval.
- 1.12 Any part of the System installed, if found to be not complying with the requirements of this Specifications, shall be replaced immediately with one that comply with our requirements upon instruction by the Authority, all at the Service Provider's costs and expenses.

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1.13 All costs and expenses shall be borne by the Service Provider from the day the tender is accepted till the expiry of the Service Period. These costs shall include, but is not limited to:

- a) all fees payable for Qualified Person (QP) drawings and submissions;
- b) as-built drawings;
- c) engagement of Licensed Electrical Worker (LEW) for electrical works on EV chargers such as installation, testing, turn-on supply, maintenance, fault finding;
- d) fees and costs payable to relevant agencies to process installation of equipment, access consumer switch rooms, and to facilitate power shutdowns when installing/ servicing the Charge Point;
- e) all testing costs imposed by relevant agencies and SP Power Grid (SPPG);
- f) any costs related to installation and supply of its own electrical outlets, and setting up of separate utilities account;
- g) Electrical charges to the licensed electricity retailer to operate the charging infrastructure
- h) Purchase of insurance to cover incidents relating to EV charging
- i) Conversion of normal car lot to EV lot (e.g. painting of lines and logo, installing EV signboard etc). Please note that the signboard will need to contain information on the correct use of the lots, and the hotline number for feedback provision to the Service Provider;
- j) Maintenance of lots by Service Provider
- k) Cost of compliance monitoring
- l) The application, licensing, installation, subscription, rental, testing, commissioning, turn-on and maintenance of all necessary equipment, hardware, leased lines, communications/telephone lines and accessories

1.14 The Service Provider shall work with the respective card managers and acquirers to ensure acceptance of payment through payment modes such as Contactless e-Purse

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Application Specification (CEPAS), CEPAS-compliant cards and Singapore Quick Response Code (SGQR) [optional] and bear any costs involved (such as setup cost, transaction fees, etc).

- 1.15 The Service Provider shall work closely with and co-ordinate the works of all relevant Authorities, agencies, equipment suppliers and other services providers to ensure that the works are satisfactorily completed on schedule.
- 1.16 The Service Provider shall provide all necessary signages and personnel to guide and direct users of the Designated Car Park during installation. The areas affected by the Works shall be properly cordoned off and kept as small as possible and tight supervision must be carried out to ensure that debris and paint do not fall onto the users or vehicles.
- 1.17 The Works shall comply with all statutory rules, regulations and requirements of the relevant authorities and agencies, including Energy Market Authority (EMA), SP Services Ltd, SP PowerGrid Ltd, Fire Safety and Shelter Bureau (FSSB), Land Transport Authority (LTA), Singapore Land Authority (SLA) etc, and the Service Provider shall obtain the approval of the relevant authorities and agencies, where applicable. The Service Provider shall be deemed to have taken into account all costs and expenses in the computation of the Tender Offer for complying with the requirements of this clause.
- 1.18 Any approval granted by the Authority shall not in any way prejudice the rights of the Authority against the Service Provider or render the Authority liable to the Service Provider. The Service Provider shall be responsible and required to provide the System that complies with the Authority's requirements as described in the Specifications.
- 1.19 Unless otherwise stated in the Contract or specifications, the Service Provider shall not be entitled to claim for anything or any payment.

2. DESCRIPTION OF THE SYSTEM

- 2.1. The System shall be suitable for use by Electric Vehicles.
- 2.2. In the event of mains supply failure or interruption, the System shall be able to perform an orderly shutdown without any loss of data and all vehicles shall be allowed to charge their vehicles. When the mains supply is restored, the System shall be able to perform an automatic bootup and the whole System shall resume full operations automatically. The time of shutdown and restoration shall be recorded.

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- 2.3. The components/equipment incorporating facilities for monitoring of equipment problems and malfunctions shall include but not limited to the EV charge point and cabling works. The facilities for monitoring of equipment problems and malfunctions of other equipment proposed shall also be provided when instructed by the Authority, all at the Service Provider's cost and expense.
- 2.4. All equipment and components shall be of industrial grade and shall be capable of operating continuously for twenty-four (24) hours a day and seven (7) days a week.
- 2.5. All outdoor equipment shall be weatherproof. All equipment, fittings and accessories that are installed indoor shall be constructed such that they remain fully functional and their operations are in no way affected even when a water jet is directed at them. Water must not accumulate in or on any equipment.
- 2.6. Where any component of the System is likely to cause damages to existing installations/services, the Service Provider shall protect these installations/services against such damages upon approval by the Authority or upon instruction by the Authority. All costs and expenses incurred shall be borne by the Service Provider.

3. EXCEPTION HANDLING

3.1. Unusual Activities and Exceptional Events

- 3.1.1. All unusual activities and exceptional events at any part of the System shall be logged, including the information of the location and problem. Activities and events such as malfunction in the Charge Point, etc, shall be logged and the staff of the Service Provider shall be alerted immediately.

3.2. Maintenance Periods

- 3.2.1. Users should not be allowed to utilise the charger (unless instructed otherwise by the Authority), during maintenance of the System.

The system shall be able to delete un-reconciled entry records. In addition, it shall also allow manual deletion of these un-reconciled entry records by the Service Providers. All deletion of such un-reconciled entry records shall be registered. The Service Provider shall ensure the following procedure: when the system is under maintenance, purge/delete all un-reconciled entry records immediately after system is restored.

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3.2.2. The software shall ensure that the latest entry record is used to determine the payable fee of the User.

3.2.3. All un-reconciled entry records shall be stored for a minimum **6 (six) months** from record of entry. The Service Provider shall monitor, keep track and send the Authority reports of such records upon any occurrence.

4. SOFTWARE REQUIREMENTS

4.1. General Software Packages for the Authority

4.1.1. The software packages, in addition to catering to the operation of the System as described, shall be capable of capturing, summarising and visualising the data of the following:

- a) Clause 18 of **Appendix E**, and also, but not limited to the Monthly Serviceability Ratio Report (Schedule 1), Monthly Corrective Maintenance Report, Monthly Feedback Report, and the Observations/Defects (Schedule 3).
- b) All Charge Point utilisation activities, electricity utilised, actions of the Service Providers or transactions, exceptional events, alarms, alerts, malfunctions, system overrides, etc., shall be immediately logged by the System.
- c) The software to download the image file captured by the System for any charge point during any Charge Point programmable time and duration (for example, the image captured from 1000 hrs to 1020 hrs on 28 Aug 2022) (if applicable).
- d) The rates and amount payable for Charge Point utilisation (include the rate and amount for idle time i.e. from the time the vehicle is e.g. 100% charged till the time the vehicle is unplugged from the Charge Point).
- e) The System shall be able to generate, display, print and transfer separate reports for the different car parks in the format in Clause 18 of **Appendix E**. The type of reports to be produced shall also include, but is not limited to, the real-time monitoring and counting of the total number of active and inactive Charge Points at each Designated Car Park and each Designated Lot.
- f) All information shall be recorded by the Service Provider. All information and management reports shall be submitted to the Authority within a reasonable time

upon request unless otherwise instructed and shall be at the Service Provider's costs and expenses.

- g) It is highly encouraged for the Service Provider to provide simple, windows-type, menu-driven GUI for all functions and parameters for the Authority to extract the data in the format stipulated in Clause 18 of **Appendix E**, and also, but not limited to the Monthly Serviceability Ratio Report (Schedule 1), Monthly Corrective Maintenance Report, Monthly Feedback Report, and the Observations/Defects (Schedule 3). The instructions in the GUI shall be very simple and clear so that the Authority shall not require personnel with programming knowledge to add, delete, update or modify the functions and parameters to obtain the data.

4.2. Software for Users

4.2.1. The Service Provider should include the necessary software with the following features to allow Users to:

- a) Register and perform billing payments via different payment modes stated in Clause 7,
- b) Access information on:
 - i. Availability and status of the charge points (occupied/ reserved/ available/ not-in-use – if relevant);
 - ii. Charge point locations;
 - iii. State of charge of vehicle;
 - iv. any other pertinent information for the effective use of the Charge Point
- c) Reserve (in advance or on the spot) Charge Points from specific origin locations and destination charging/parking locations (if applicable);
- d) Be notified of events and issues, through automatic SMS text notification or otherwise;
- e) Provide information and feedback, which can contribute to the Service Provider to facilitate the smooth operations of the deployment of charging infrastructure; and

- f) Log-in remotely and securely to access their retail transaction history under individual accounts.

4.3. Software to integrate with different stakeholders

4.3.1. The Tenderer shall specify the approach and how their software will have the ability to integrate different, independent stakeholders and their domain / back-end systems, such as:

- a) Singapore Power and its management systems;
- b) Energy retailer which provides energy to charge points and consumers, and other energy market players;
- c) Other EV-related service providers and payment solutions

4.4. General Software Requirements

4.4.1. The Tenderer's description of software/solution architecture should include:

- a) Approach and ability to integrate different, independent stakeholders on one software;
- b) Implementation, hosting and governance options for such a software solution;
- c) Characteristics relating to hardware independence, which refers to the possibility to connect charge points from different Original Equipment Manufacturers (OEMs) with respective communication protocols;
- d) Capability to integrate potential new participants in the EV ecosystem into the platform and its process (e.g. additional commercial/advertising partners, additional service providers, additional charge point providers, additional energy vendors).

4.4.2. The Tenderer may wish to provide a prototype of the abovementioned software in Clause 4, although this is strictly optional and any associated costs will be borne by Tenderer.

4.4.3. The Tenderer shall also recommend any other functions that the Tenderer assesses to be necessary to facilitate the operation of the Charge Point System.

5. POWER SUPPLY PROVISION

- 5.2. The Service Provider shall be responsible for the electrical installation works including arrangement with Singapore Power to open the electricity account for the electricity supply to the equipment at the Designated Lot and/or Designated Car Park.
- 5.3. The Service Provider shall obtain approval from the Authority and the relevant Authorities on any shutdown of electricity supply.
- 5.4. The Service Provider shall engage a Licensed Electrical Worker (LEW) of the appropriate grade who shall be responsible for all the electrical installations at the Designated Lot and/or Designated Car Park, including the turn-on of electricity supply.
- 5.5. The Service Provider's LEW shall certify that the complete electrical installation is satisfactorily completed in accordance with the latest regulations and fit for use.
- 5.6. The Service Provider shall bear all costs and expenses relating to electrical installation and connection, electricity supply, as well as the associated costs such as the seeking of approvals from the relevant authorities and the engagement of the LEW.

6. OPERATIONAL REQUIREMENTS

6.1. Processing of Vehicle at Charge Point

- 6.1.1. The proposed locations for the Charge Point shall allow the motorists to align and maneuver their vehicles with ease.
- 6.1.2. The features of the Charge Point at the start of the utilization period shall include, but not be limited to, the followings:
 - a) It shall incorporate a display panel to provide appropriate messages to advise and assist the motorist.
 - b) It shall provide remote voice communication facilities to enable the vehicle driver to establish communication with the Service Provider's staff.
- 6.1.3. The Charge Point shall be de-activated automatically if there is a main power failure.

6.2. Computation of Rates for EV Charging

- 6.2.1. The Charge Point shall start computing the EV charging rate from the commencement of charging till the vehicle is 100% charged. If the Electric Vehicle has parked beyond

the time permitted under its validity period, it shall be up to the Service Provider's discretion to charge the User accordingly. The charges may be calculated from the time whereby the vehicle is 100% charged till the time the vehicle is unplugged from the EV charge point.

- 6.2.2. The Service Provider shall build-in flexibility in the System so that the rate structure that determines the charge amount shall be easily changed when instructed by the Authority and/or relevant authorities.

7. PAYMENT MODE

- 7.1. The system shall also be able to accept minimally payments which are compatible with the Contactless e-Purse Application Specification (CEPAS) and be able to accept payment through CEPAS-compliant payment cards. The Service Provider should work with the respective card managers and acquirers to ensure acceptance of CEPAS cards and bear any costs involved (such as setup cost, transaction fees, etc).
- 7.2. The inclusion of the Singapore Quick Response Code (SGQR), which is technologically compatible with popular mobile payments modes (e.g. PayNow, GrabPay, AliPay) is highly encouraged.
- 7.3. The Service Provider's System, should thus be compatible with the payment modes in Clause 7.1 and Clause 7.2 and unless otherwise instructed by the Authority.

8. TELECOMMUNICATION PROVISION

- 8.1. The Service Provider shall liaise with the Telecommunication System Licensee authorised under the Telecommunication Act, for the telecommunication supply to the proposed EV charge point.
- 8.2. The Service Provider shall bear all costs and expenses for the services connection, and to seek approval of the relevant authorities prior to commencement of the works.

9. LICENSED CABLES/ SERVICES DETECTION WORKER

- 9.1. The Service Provider shall engage EMA licensed cables/ services detection workers to carry out all cables/services detection work. The proposed line of excavation or area of other work shall be checked for existing services in a systematic manner by making sufficient passes in a grid formation to cover the entire area of work.

10. ROAD WORKS AND EARTHWORKS

- 10.1. All road works, earthworks and excavations shall be scheduled to minimise inconvenience to motorists using the Designated Car Park. All openings, turfs and excavations shall be properly reinstated within one week from the making of the opening or excavation. The extent of the reinstatement works shall be to the satisfaction of the Authority.
- 10.2. Where required and subject to the approval of the Authority, the Service Provider shall carry out modification work to facilitate the placing of the EV charging infrastructure. All cost and expenses incurred shall be borne by the Service Provider.
- 10.3. In designing the layout for the Charging Infrastructure, the Service Provider shall take note not to reduce the number of parking lots at the car park. There shall be no loss of parking lots arising from changes to the car park layout.

11. TEMPERATURE AND HUMIDITY CONTROL

- 11.1. All equipment and accessories installed by the Service Provider must be well designed to operate continuously under the local climate and environment. The respective operating temperatures shall not be exceeded and there shall not be any undesirable condensation.

12. PROTECTION OF EQUIPMENT INSTALLED BY SERVICE PROVIDER

- 12.1. All equipment and accessories shall be of rugged construction, rust-proof and shall function normally under the local climate. Outdoor equipment and accessories shall be weatherproof and vandal-resistant.
- 12.2. To facilitate maintenance of equipment and components inside the enclosures/chassis and to prevent unauthorised access to these equipment and components, all enclosures/chassis shall come complete with lockable covers and/or side doors as appropriate.
- 12.3. All outdoor equipment shall sit on and firmly anchored to concrete stumps/footings to reduce the effects of the elements on the lower portions of these equipment.
- 12.4. Sturdy protective barriers shall be strategically installed beside each outdoor equipment to prevent these equipment from being hit by vehicles. The design, height,

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dimension and location of these barriers shall be proposed by the Service Provider and approved by the Authority.

- 12.5. All equipment shall be designed to fully withstand the effects of voltage and current spikes, transients and fluctuations caused by power surges, switching transients and lightning strikes. Equipment thus damaged shall be immediately replaced at the Service Provider's cost and expense.

13. WORKING DRAWINGS AND SCHEDULES

- 13.1. The Service Provider shall, before the relevant Works proceed, prepare and submit all working drawings to the Authority for approval. They shall take into account any modifications, either to the building or the installation, which may have taken place, incorporating details of the actual equipment to be installed.
- 13.2. The Service Provider shall also include the locations of all the Charging Infrastructure including detailed dimensions and wiring routes.
- 13.3. Service Provider to submit proper drawings/detailed plans for the Authority and other relevant authorities' approval.

14. AS-INSTALLED DRAWINGS AND MANUALS

- 14.1. The Service Provider shall submit to the Authority **two (2) sets** of drawings showing the locations of the EV charging infrastructure. In addition, the cabling details of all installations carried out by the Service Provider shall also be indicated on the drawings. The drawings shall be properly stencilled. Handwriting and free-hand sketches shall not be accepted.
- 14.2. The Service Provider shall provide **two (2) sets** of all equipment and accessories with the particulars of the manufacturers, model/type number, specifications, technical literature, etc. for all equipment installed by the Service Provider at each Site.
- 14.3. One copy of the Operation and Maintenance Manuals shall be supplied on thumb drive (in Microsoft Word or other format approved by the Authority) for all equipment installed by the Service Provider at each Designated Car Parks.
- 14.4. Should the Service Provider fail to submit the drawings, the lists of all equipment and accessories or the Operation and Maintenance Manuals, the Authority shall have the

right to have these items done by others and the cost thereof shall be recovered from the Service Provider.

15. MANAGING ELECTRIC VEHICLE CHARGE POINTS

15.1. The System shall have a Management Station that could be used as a central control unit and data station for the Charge Point.

15.2. The System shall have data storage facilities for the storage of each transaction and the printing of this transaction. The capacity of the storage shall be able to store all information that is generated by any of the ancillary equipment for a minimum period of twelve (12) months.

15.3. It shall be able to keep track of comprehensive details related to usage of each charge point and charge point(s) at each Designated Car Park and payment auditing (e.g. monthly utility bills from the electricity retailer). The statistics should include the total amount of electricity recorded using the:

- i. AMI meter installed at each Charge Point by SP Services to determine the total amount of electricity consumed by Users of the Charge Points.
- ii. Meter installed at the Distribution Board by SP Services, to determine the total amount of electricity supplied to the charging infrastructure at the Designated Car Park.

The monthly payment to the Authority is determined by (i).

15.4. It shall be able to provide for easy handling and management of transaction records and data. It shall be possible to produce management reports in formats defined by the Authority in Clause 18 of **Appendix E**, and also, but not limited to the Monthly Serviceability Ratio Report (Schedule 1), Monthly Corrective Maintenance Report, Monthly Feedback Report, and the Observations/Defects (Schedule 3)

15.5. The Service Provider shall provide the Authority with the access rights to audit the operations of the System and audit the reports generated by the System, if needed.

15.6. The System shall incorporate the following applications:

- a) Facilities to define and alter the EV charging rates chargeable

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- b) Automatic logging of any system malfunction and system override such as the EV charger malfunctioning, etc.

15.7. The system shall allow back-up for its memory content.

16. USE OF COMMUNICATION FACILITIES

16.1. A master intercom system for 2-way remote voice communication facilities shall be provided and used for the User to establish communication with the Service Provider's staff.

16.2. The 2-way remote voice communication facilities with call button shall be provided at each of the Charge Point.

16.3. The response time shall be within a reasonable time from the moment the motorist presses the call button to activate the intercom.

16.4. The intercom voice recording between Service Provider's staff and motorist for a particular day shall be kept for duration of at least **six (6) months** and to be made available for the Authority's use.

17. DATA EXCHANGE INTERFACE

17.1. Providing Real-Time Charge Point Information

17.1.1. The Service Provider shall provide real-time charge point information for all the charge points managed in this tender through secured web service on an internet connection to the Authority and other relevant agencies.

17.1.2. The real-time EV charging information for each Charge Point at each Car Park shall be updated and made available via the web service hosted by the Service Provider.

17.1.3. The Service Provider shall support the following web service requests and respond with the relevant information, via an open mark-up language format to be defined by the Authority, upon being queried.

17.1.4. The relevant information to be provided by the web service shall include, but not limited to Clause 18 of **Appendix E**.

17.2. IMPLEMENTATION AND SUPPORT

- 17.2.1. The Service Provider shall ensure that the access to the System resources, sensitive utilities and data resources are controlled. All copies of the data base and/or all information of the Authority stored within any computer system maintained or controlled by the Service Provider within or outside Singapore must be erased and destroyed within **two (2) months** from the date of expiry or termination of the contract.
- 17.2.2. The Service Provider shall permit the Authority to conduct audit or inspection of services provided to the Authority where the Authority deems necessary. Such inspection shall also include the examination of any materials, documents, equipment, premises and facilities relating to the Services provided under this tender that are within the possession, custody or control of the Service Provider. The Authority shall inform the Service Provider in advance for any audit or inspection and the Service Provider shall ensure that such audit or inspection shall not affect the service levels.
- 17.2.3. The Service Provider shall bear all costs and expenses incurred to achieve the above requirements for the provision and support of the implementation.

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18. Data Collection and Formats (to follow the schema in Clause 18.1 to 18.3)

18.1. Report Provided for each Car Park

Period of Data Extracted from (dd/mm/yyyy):													01/01/2022	
Period of Data Extracted to (dd/mm/yyyy):													01/01/2024	
Name of Service Provider (e.g. ABC Private Limited):													ABR Private Limited	
Car Park Code:													J0122	
Car Park Address:													Jalan Kayu	
Number of Charge Points:													50	
Charger Speed (e.g. 7kW AC 3 phase, 22kW AC 3 phase, 50kW DC 3 phase):													22kW AC 3 phase	
Accepted Tender Price (\$/kWh):													0.40	
Amount Service Provider charges the User (\$):													0.50	
Total Number of Charging Sessions:													20,000	
Total Number of Unique Vehicles:													1,000	
Details of each Charge Point at each Car Park														
Charge Point Number	Date (dd/mm/yyyy)	Day (ddd)	Start Time of Charging Session (hh:mm)	End Time of Charging Session (hh:mm)	Duration of Charging Session (min)	State of Charge upon Arrival (%)	State of Charge upon Departure (%)	Actual charge time (min)	Idle time ¹ (min)	Total amount of electricity consumed by Users of the Charge Point (kWh)	Amount payable by Users for the charging session (\$)	Mode of Billing and Payment (e.g. CEPAS, SGQR)	Vehicle type (e.g. cars, taxis, LGVs)	

¹ Charges may be calculated from the time whereby the vehicle is e.g. 100% charged till the time the vehicle is unplugged from the EV charge point.

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12345	12/12/2 023	Mon	23:22	08:22	540	30	100	500	40	2000	35.60	SGQR	Car
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18.2. Report Provided for each Charging Session

Period of Data Extracted from (dd/mm/yyyy):	01/01/2022
Period of Data Extracted to (dd/mm/yyyy):	01/01/2024
Name of Service Provider (e.g. ABC Private Limited):	ABR Private Limited
Car Park Code (e.g. J0122):	J0122
Car Park Address (e.g. Jalan Kayu):	Jalan Kayu
Number of Charge Points:	50
Charger Speed (e.g. 7kW AC 3 phase, 22kW AC 3 phase, 50kW DC 3 phase):	22kW AC 3 phase
Accepted Tender Price (\$/kWh):	0.40
Amount Service Provider charges the User (\$):	0.50
Total Number of Charging Sessions	20,000
Total Number of Unique Vehicles	1,000
Details of each Charging Session	

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Date (dd/mm/yyyy)	Day (ddd)	Start Time of Charging Session (hh:mm)	End Time of Charging Session (hh:mm)	Duration of Charging Session (min)	State of Charge upon Arrival (%)	State of Charge upon Departure (%)	Actual charge time (min)	Idle time ² (min)	Total amount of electricity consumed by Users of the Charge Point (kWh)	Amount payable by Users for the charging session (\$)	Mode of Billing and Payment (e.g. CEPAS, SGQR)	Vehicle type
12/12/2023	Mon	23:22	08:22	540	30	100	500	40	2000	35.60	SGQR	Car

18.3. Monthly Report to be submitted to the relevant Authority

Period of Data Extracted from (dd/mm/yyyy):							01/01/2022					
Period of Data Extracted to (dd/mm/yyyy):							01/01/2024					
Contract:							Contract N (URA)					
Name of Service Provider:							ABC Private Limited					
Total Number of Car Parks							50					
Total Number of Charge Points							400					
Amount Service Provider charges the User (\$):							0.50					
Details of each Designated Car Park Each Month												
Car Park Code	Number of Charge Points	Accepted Tender Price (\$/kWh)	Charger Speed (e.g. 7kW AC 3 ph)	Total number of	Total number of unique vehicles	Average duration of charging	Total amount of electricity consumed by Users of the Charge Points (kWh)	Average amount of electricity consumed by Users of the Charge Point (kWh)	Total amount payable by Users for the charging session (\$)	Average peak arrival time (hh:mm)	Average peak departure time (hh:mm)	

² Charges may be calculated from the time whereby the vehicle is e.g. 100% charged till the time the vehicle is unplugged from the EV charge point.

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				charging sessions		sessions (min)					
J0122	4	0.40	22kW AC 3 phase	400	100	400	20,000	2,000	8,000	19:30	08:30

APPLICATION FOR LETTER OF NO OBJECTION (LNO)

Application for Letter of No Objection (LNO)	
Company Name	
Brand	
Model	
Mode	* 2 / 3 / 4 appropriate *Note: To delete where
Max. Output Power	
Application Date	
<u>For IJP Use :</u>	

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S/N	Report No	Date of Report (dd / mm / yyyy)	Description of Document	Test Lab	Lab accreditation (pls tick the appropriate box)		Pg No.
					SAC	ILAC MRA	
	<i>Example</i>						
1	1234567 888	30 / 03 / 2019	EMC test report for Model XYZ-1 IEC xxx	ABC lab	✓		1 to 57
2	1234567 999	30 / 03 / 2019	EMC test report Model XYZ-2 IEC xxx	EFG lab		✓	58 to 114
3	1234567 999	15 / 04 / 2019	Certificate of Conformity - XXXX1	XYZ lab		✓	115, 116
4	1234567 999	15 / 04 / 2019	Certificate of Conformity - XXXX2	XYZ lab		✓	117, 118

CHARGE POINT SPECIFICATIONS

Item	Details
Charging Type (kW, AC/DC, speed)	
Output charging connector	
Weight (kg)	
Dimensions (mm) – length, breadth, height	
Interface and access (i.e. Type of display, payment mode)	
Security	
Load management	
Communication protocol (e.g. OCPP 1.6, 2.0)	
Communication (e.g. Ethernet, WiFi, 4G)	
Warranty	
Casing (e.g. material, colors, design) – to provide the design of the charger in .jpeg	
Customisations (if any)	

The fields provided above are non-exhaustive. Please continue on an extension page filing in the required data in a similar format if necessary.

DEPLOYMENT OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

MONTHLY SERVICEABILITY RATIO REPORT

Monthly Serviceability Ratio Report for: _____ (mm/dd/yyyy)

Car Park Code & Lot Number: _____

Components	Total Schedule Operating Time for the reporting month (hrs)	Total Downtime for the reporting month (hrs)	Remarks (if any)
Charging Unit			
Operation Computer			
Charge Point 1			
Charge Point 2			
Online Access			
Total			
Serviceability Ratio			

Is Serviceability Ratio greater than or equal to 99%? *Yes/No

If No, please state reasons (if any):



Reported by:

(Name/Date/Signature/Company's Stamp)

*Delete where appropriate.

DEPLOYMENT OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

STANDARDS AND BENCHMARKS OF CHARGING INFRASTRUCTURE

S/N	Indicator	Indicative Benchmark	Tenderer's Suggested Benchmark
1. Maintenance & Redistribution			
a	Useable charge points/parking lots during peak hours	97% of the time	
b	Useable charge points/parking lots during non-peak hours	95% of the time	
c	Condition of charge points (No dents/damages)	97% of total number	
2. IT System			
d	Time required to unlock a charge point	95% completed in less than 5 minutes	
e	Time required for payment transaction	95% completed in less than 3 minutes	
f	Maximum time on a single day that online IT system is not functional or available	20 minutes	
g	Availability of IT system online per month	99%	

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3. Customer Service			
h	Time required for processing registration	99% processed within three days, with 90% processed within one day	
i	Time required for feedback processing	100% with first response within 3 working days, with 90% resolved within 14 working days	
j	Promptness to pick up the phone	75% within 4 seconds	
k	Pick up rate of call-in centre	97%	
l	Overall customer satisfaction	97% (e.g. Average score of maintenance, IT system, car availability, customer service, safety/security, realtime information, comfort, etc)	

MONTHLY CORRECTIVE MAINTENANCE REPORT

Corrective Maintenance Report for the month of <i>(mm yy)</i>				
Car Park Code:				
Date / Time Occurred	Time of Restoration	Downtime	Description of Defects	Cause of Defects
Total downtime				

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Monthly Feedback Report for the month of (*mm yy*)

Car Park Code:

№	Date / Time	Feedback from	Nature of Feedback	Findings	Actions taken

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Observations/ Defects

To: "Urban Redevelopment Authority"/ "Housing & Development Board"/ "JTC Corporation"/
"National Parks Board"/ "People's Association"³

Car Park Code and Designated Lot Number(s): _____

Reported By: _____ Date: _____ Time reported _____

S/No	Description of items	Please indicate Yes (√) or No (X) or NA	Location of observations/ defects (please indicate lot no)
1	Is the colour of the signboards fading?		
2	Is the colour of the directional signages fading?		
3	Is the colour of the EV logo fading?		
4	Is any lamppost tilted?		
5	Is any signboards pole tilted?		
6	Is there any pothole?		
7	Is the car park generally clean?		
8	Is any light not working, missing or in bad condition?		
9	Is there any uneven/broken aeration slab?		
10	Is any need to repair/replace fire hose reel compartments / casings? (If applicable)		

³ To delete as appropriate

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11	Condition of trees and grass (including those at the edge of the car park)		
12	Other observations/defects (please specify)		
13			
Submitted by Name: Designation:		Signature: Company:	

Section B: To be acknowledged and followed up [“Urban Redevelopment Authority”/ “Housing & Development Board”/ “JTC Corporation”/ “National Parks Board”/ “People’s Association”⁴]

Name and Designation: _____

Signature: _____ Date: _____

- Please forward this form to the relevant Authority by the next working day via e-mail highlighting any issue or any defects observed.

⁴ To delete as appropriate