



## **REVIEW OF ECONOMIC PARAMETERS STUDY AND IMPLEMENTATION OF INNOVATIVE STRATEGIES FOR CONDUCTING LONGITUDINAL ANALYSIS**

### **1 INTRODUCTION**

The Land Transport Authority (LTA) spearheads land transport developments in Singapore. We plan, design, build and maintain Singapore's land transport infrastructure and systems. We aspire to strengthen Singapore's land transport connectivity and integrate a greener and more inclusive public transport system complemented by walk and cycle options. We harness technology to strengthen our rail and bus infrastructure and develop exciting options for future land transport. These are encapsulated under our Land Transport Masterplan 2040 (LTMP2040).

As we work towards achieving our goals under LTMP2040, we are often confronted with operational challenges driven by a dynamic operating environment. At the same time, we continue to strive towards better cost effectiveness, manpower optimisation, environmental sustainability, reliability and safer operations. These then present us with opportunities to work closely and co-create solutions to address the challenges and requirements with our ecosystem partners/innovators. LTA has launched this Call for Solutions for 'Review of Economic Parameters Study and Implementation of Innovative Strategies for Conducting Longitudinal Analysis', and we invite interested partners/innovators to collaborate with us.

### **2 PROBLEM STATEMENT**

LTA utilises key economic parameters such as value of time (VoT) and accident costs in economic evaluations, transport modelling and operations. The economic parameters were last updated in 2015 via a stated preference (SP) survey. Since then, there have been significant changes in socio-economic conditions and transport infrastructure developments post-pandemic which would have impacted commuters' VoT, sensitivity towards different cost factors and willingness to pay to avoid accidents. As such, LTA intends to update the economic parameters via an SP survey (plus any other recommended methods).

Other than updating the economic parameters, the Call for Solutions will also include the following studies to allow LTA to formulate planning and policy recommendations to encourage more use of public transport:

- Study on impact of car parking reduction on car ownership and usage to inform development of car lite towns.
- Study the role of car-sharing services in the transport sector. This includes studying factors influencing car-sharing usage, and exploring whether car-sharing is complementary or cannibalising from public transport and how willingness to pay for car-sharing services varies across different commuters, with a specific focus on the north-east region. The study for the north-east region should also include assessment on whether car sharing has any impact on North-East Line (NEL) loading.
- Identify factors influencing public bus and rail mode choice. This includes recommending strategies to shift bus commuters to rail, particularly when there are new rail lines.

LTA conducts numerous surveys throughout the year, each requiring the recruitment of new respondents. This process is both time-consuming and costly. To address this challenge, the Call for Solutions (CFS) will also include providing and implementing innovative solutions for conducting longitudinal analysis (e.g. via a Research Survey Panel (RSP)) using the respondents recruited for the SP survey. The respondents recruited are intended to be made available for other LTA divisions to tap on for their project needs. This will reduce the time and cost of repeatedly finding new respondents while ensuring that the future survey results are representative. A governance framework is required to be established to safeguard the confidentiality and privacy of the respondents' information, ensuring ethical data management and compliance with data protection regulations.

### 3 WHAT ARE WE LOOKING FOR?

LTA is seeking proposals that can cover the following key requirements:

#### A. Base Requirements

##### 1. General Requirements:

- a. By undertaking and submitting proposal for this CFS, the Organisation is to be deemed to have agreed that they will enter into the Terms and Conditions (in addition to other terms and conditions as may be mutually agreed) stated in **Appendix A** of this brief that will be contained in a Collaboration Agreement ("**Agreement**") in the event Organisation is awarded the Agreement.
- b. The Organisation is to undertake literature review, survey design, data collection and data analysis for all studies.
- c. The Organisation shall complete all studies within 24 months from commencement date of Agreement.
- d. The Organisation shall purchase a sampling frame from Department of Statistics.
- e. The Organisation shall submit, for the Authority's approval, a proposal on sampling methodology and segmentation of sample. The Organisation shall propose a sampling methodology and design an interactive SP survey (plus any other recommended methodologies). The survey shall be conducted using electronic means, with adaptive attribute value (attribute values e.g. travel time or cost will be adjusted based on respondents' stated journey information).

- f. The Organisation shall submit, for the Authority's approval, a proposal for data collection methodology. The Organisation shall assess the benefits and cons of different data collection methods such as face to face or digital online survey, as well as ways to overcome shortfalls of selected method taking into consideration the survey methodology. For both face to face and digital survey, the survey findings shall be captured via electronic means.
  - g. The Organisation shall submit, for the Authority's approval, a proposal outlining the strategy to reach out to the pre-selected desired respondents for both digital and face to face surveys (e.g. via mail, hotline and/or house visit). The Organisation is to ensure the survey is conducted in accordance with all applicable laws, regulations, codes and guidelines in Singapore and as per their own institution processes. This will include but not limited to, obtaining the necessary Institutional Review Board (IRB) approvals required for the conduct of survey.
  - h. The Organisation may consider other forms of outreach and sampling strategy for difficult profiles (e.g. elderly, households with young children) within the sampling frame, including manual intercept surveys or official letters, subject to approval by the Authority and at no additional cost to the Authority.
  - i. The Organisation shall illustrate that the proposed methodology can ensure that the samples collected are random, unbiased and consistent with the desired sampling distribution.
  - j. The Organisation shall design and implement a quality control procedure, logic checks and fraud detection algorithms to ensure the highest possible accuracy and completeness of collated data.
  - k. A sample size of around 5,000 unique persons for interviews will be expected to meet the study objectives. This sample size serves as a guideline and the Organisation shall recommend an appropriate sample size for each part of the scope of study.
  - l. The Organisation is to provide franking services if such services are required.
  - m. Details on the demographics of the respondents (e.g. age, sex, household income, employment status etc) are to be recorded for the purpose of the longitudinal analysis.
  - n. A data governance framework is to be established to safeguard the confidentiality and privacy of the respondents' information, ensuring ethical data management and compliance with data protection regulations.
  - o. The duration of interview for each segment for each unique respondent shall not exceed 10 minutes.
2. Review and Update of Economic Parameters:
- a. Review and update the VoT for different journey characteristics and market segments via a SP survey, using the concept of willingness to pay (WTP).
  - b. Quantify in-vehicle VoT for different travel modes (e.g. private vehicle, public transport and active mobility), journey purpose (e.g. work, non-work) and time periods (e.g. AM peak, off peak and PM peak).
  - c. Quantify the in-work VoT for work related journey purposes. The Organisation is to propose an approach to estimate the VoT in the course of work, by car drivers and car passengers on employer's business, or by drivers of goods vehicles or buses, all of which is not estimated from SP data. This will provide insight on impact of road

congestion on employees or companies with vehicles in operation during different time periods.

- d. Quantify effects of road congestion, fuel cost, parking cost, hypothetical distance based charging and Electronic Road Pricing (ERP) on road users' VoT.
  - e. Quantify effects of public transport crowding levels on public transport users' VoT for pre-pandemic and post-pandemic time periods.
  - f. Quantify walking and waiting VoT to major public transport nodes under different walking conditions.
  - g. For both bus and rail, quantify commuters' WTP for a shorter distance/time journey with more transfers vs a longer distance/time journey with fewer transfers under different type of transfer conditions. This shall include determining commuters' acceptable upper limit for number of transfers to be made within the public transport system.
  - h. For rail system, quantify value of resilience that commuters place in the event of a breakdown, including an estimate of the VOT in the loss frame (willingness to accept a one-min increase in travel time) as opposed to VOT in the gain frame (willingness to pay for one-min of travel time savings).
  - i. Review and update the accident costs for accidents of varying severity, based on the WTP to improve safety.
    - i. The accident costs shall include both direct and indirect cost of accidents. The target respondent shall include all road users of different transport modes including cyclists and pedestrians.
    - ii. Direct accident costs include, but are not limited to, medical costs, health insurance, penalties for criminal or civil charges. Indirect accident costs include, but are not limited to, loss of production or service standards, additional administrative costs.
    - iii. The accident costs shall be expressed in the form of incremental and constant unit rate with respect to traffic flow.
    - iv. The accident costs shall be segmented by types of roads, time periods of day and speed for the purpose of economic evaluation for both highway, public transportation and active modes schemes.
  - j. The Organisation shall propose survey methodology that estimate WTP to improve safety and hence derive the value of statistical life in Singapore. This value will then be used to estimate the accident cost of varying severity.
  - k. The Organisation shall review and recommend an approach to project or estimate parameters that are or can be derived from above survey for future planning years. In particular, to estimate equity (average) VOT for the current base year using BLP inversion and recommend if this approach can be used by the Authority to update key VoT parameters, eg equity VOT, age-specific equity VOT, and income-specific equity VoT parameters in the years between SP surveys.
3. Implementation of Innovative Strategies for Conducting Longitudinal Analysis:
- a. The respondents recruited for the survey will also be invited to be part of the longitudinal analysis studies conducted by LTA. These respondents shall be representative of the Singapore population in terms of demographics such as age, sex, geographic location, and other relevant criteria to ensure the validity and applicability of survey results.

- b. The Organisation is to screen potential respondents to ensure they fulfil the demographic and criteria specifications.
  - c. Set up a registration process for collecting and verifying information of respondents. This includes creating an onboarding process to introduce new respondents to the study's purposes, expectations, and participation guidelines.
  - d. Establish a data governance framework as per Section 3.1(n) under General Requirements.
  - e. Develop and manage a secure database to store respondents' information and survey data during the Agreement period, ensuring compliance with data protection regulations. This includes implementing systems for regularly updating and cleansing data to maintain database accuracy, relevancy and representativeness of respondents. The full database is to be handed over to LTA at the end of the Agreement, including the rights for LTA and its appointed contractors to update and amend the original database.
  - f. System to be established shall be secure, easy to use and maintain.
4. Study Team and Study Management:
- a. The Organisation shall submit an overview of project team structure and identify the duties of each member of the team. The Organisation shall also submit the description of qualifications and relevant expertise of key team members.
  - b. A project manager who will be responsible for overall study management shall be appointed. Key team members shall consist of, but not limited to, project manager, SP survey specialist and fieldwork operations manager. A transport economist will be an added advantage to the team. Each key team members shall have a minimum of 10 years' experience in the relevant field for the scope he or she is assigned to.
  - c. The project manager and fieldwork operations manager must demonstrate experience in leading a team and must have relevant technical knowledge for the work required.
  - d. Key team members must be committed to be based in Singapore for key milestone discussions.
  - e. The Organisation shall submit a resource histogram using the format stipulated in **Appendix B**, indicating the number of man-days required and man-day rate for each member throughout the duration of the Agreement.
  - f. The Organisation shall also submit project details of similar nature undertaken by the Organisation including clients' references.
5. Information provided by Authority:
- a. The following information will be provided by the Authority to facilitate the study:
    - i. Technical notes and reports of previous study
    - ii. Number of accidents per year
    - iii. Mode share i.e. percentage of journeys via private transport and public transport.
    - iv. Amount of Passenger Car Unit (km) travelled
  - b. For information not listed above, the Organisation is to assume that they will have to source for the information themselves.

## **B. Options**

1. The Organisation shall price for all Options in the Price Schedule. In the event that any of the Option(s) under this Section 3B is exercised, the Organisation shall correspondingly keep in force all insurance policies that are provided by the Organisation during the extended Term, if any.
2. The Authority may at its sole discretion, exercise any or part of all the Options based on the same terms and conditions as per the Agreement before the expiry of the Options. The Options under the Agreement shall remain valid until the end of the initial Term.

### **Option A: Impact of Car Parking Reduction on Car Ownership and Usage**

3. The scope of works under Option A includes:
  - a. Design and conduct a survey to assess impact of reducing origin and destination car parking provision on car ownership and car usage;
  - b. Analyse how car parking supply affects decisions on car usage, car ownership and travel pattern; and
  - c. Recommend how car parking supply and pricing can be utilised as demand management tool in transport planning and evaluate its effectiveness.

### **Option B: Factors Influencing Car Sharing:**

4. The scope of works under Option B includes:
  - a. Analysing how demographic factors including but not limited to age, income, household car ownership influence frequency and patterns of car sharing usage, with a specific focus on the north-east region;
  - b. Identify primary motivations e.g. costs, purpose and availability behind individuals' decisions to use car-sharing services based on their respective demographic profiles;
  - c. To assess perceptions of cost-effectiveness of car sharing compared to private vehicle ownership;
  - d. To evaluate how willingness to pay for car sharing services varies across different demographic groups;
  - e. To determine the extent to which car sharing services are complementary to, or competitive with, public transport services; and
  - f. To formulate policy recommendations and promotional strategies based on the findings to encourage the adoption of car sharing as a sustainable transportation option.

### **Option C: Factors Influencing Public Transport Mode Choice:**

5. The scope of works under Option C includes:
  - a. Identifying primary factors influencing public transport commuters' mode choice between bus and rail during peak periods.

- b. Exploring effective strategies for encouraging bus commuters to transition to rail, particularly in the context of new rail lines; and
- c. Determining the behavioural strategies, including but not limited to monetary incentives, needed to shift individuals to a specific public transport mode, especially one that is not their current choice of travel.

## 4 EVALUATION GUIDELINES

The evaluation of the proposal will be guided by, but not limited to, the evaluation criteria set out below:

1. The proposal will be evaluated based on the ability to fulfil the requirements listed under Section 3.
2. The Organisation shall note that in addition to compliance with the Authority's requirements, a single envelope quantitative evaluation method will be used to evaluate this Call for Solutions. A Quality-Fee ratio of 70:30 where the Quality and Fee components shall constitute 70% and 30% of the evaluation weightings respectively will be adopted.
3. The Quality attributes and their assigned sub-weightings for the evaluation of the Quality component are as follows:
  - 3.1 Track record and performance (20 points out of 100 points):
    - 3.1.1 Relevant past projects of similar scale and depth undertaken by the firm within the last 10 years.
  - 3.2 Resources and expertise (40 points out of 100 points):
    - 3.2.1 Experience and relevant technical expertise of the proposed key personnel assigned to the project.
    - 3.2.2 Amount of resources deployed for the proposed project, including how overstretched the team is in terms of projects currently undertaken.
  - 3.3 Project Methodology (40 points out of 100 points)
    - 3.3.1 Demonstrate in-depth appreciation of scope of study and key issues to be addressed relating to the transport projects;
    - 3.3.2 Comprehensiveness in detailing proposed approach required in each part of the study, especially in survey design and results analysis; and
    - 3.3.3 Suitability of methodology for future application on other transport projects.
4. Only Quality Proposals which have achieved a Minimum Score of 50 points (out of 100 points) for overall Quality will be shortlisted for further evaluation. Shortlisted proposals may be invited by LTA to conduct further clarifications of the proposed solution with LTA.

## 5 TECHNICAL BRIEFING

All parties interested to participate in this Call for Solutions are invited to attend a technical briefing to understand more information on the problem statement. The briefing will be held **on 16 Jan 2025, 1430 – 1630H (SGT/GMT +8)**. Each company/ organisation is allowed to send a maximum of 2 representatives to the briefing.

If you are interested to attend the briefing, please register [here](#) by **13 Jan 2025, 1600H (SGT/GMT +8)**. We seek your understanding that we are unable to accommodate registrations received after said date and time. Kindly note that the briefing will only be conducted if enough registrations have been received. All eligible registered attendees will receive a confirmation email with information about the venue on 14 Jan 2025.

## 6 SUBMISSION DEADLINE

All proposals must be submitted by **27 February 2025, 1600H (SGT/GMT+8)** via this [submission form](#).

We encourage interested parties to visit the [Land Transport Innovation Portal](#) for the latest updates.

## 7 GUIDELINES FOR PARTICIPATION

1. The purpose of this brief is to provide preliminary information on the problem statement on 'Review of Economic Parameters Study and Implementation of Innovative Strategies for Conducting Longitudinal Analysis'. Please note that the information provided does not form part of any subsequent Agreement.
2. To register for this Call for Solutions, you must be from one of the following:
  - a. Private company, with local business registration;
  - b. Tertiary institution based in and operating from Singapore;
  - c. Research institution based in and operating from Singapore; or
  - d. A consortium led by any of the above. For clarity, there is no restriction on overseas partners for the consortium.
3. If you will be registering as a consortium, do appoint a lead member as the main applicant and make all submissions through this lead member. The actions by the lead member of the team will be treated as representative of the consortium. All correspondence will be directed to the lead member.
4. Please provide relevant information on your (or consortium members') past experiences that are relevant for this submission.
5. Do note that all proposals submitted through this call should be sufficiently brief, with details for LTA's preliminary evaluation and shortlisting only. If your solution is shortlisted after the close of this call, we will contact you for further clarifications. You may be asked



to make presentations and/or provide more information on your solution to LTA and/or requested to host LTA at any proposed venue and/or facilities for visits and better understanding of the proposed solution.

6. Do also note that there will not be any requirements on co-funding the CFS by the collaborator (i.e. LTA will fully fund this CFS).
7. Any documents submitted will be treated as confidential and not be returned. By submitting any documents, you hereby consent to any disclosure by LTA of your documents to the Government of Singapore, the relevant Government Agencies, and/ or government-related agencies, as LTA considers appropriate in our discretion for purpose of evaluation in this Call for Solutions.
8. Please note that you shall price all the Options included in this CFS. Where an Organisation fails to price all the options, the Authority reserves the right to either award or reject the CFS proposal. In the case of any rejection, the Authority shall be at liberty to reject such Tender Offer without any further reference to the Tenderer.

The Authority may exercise any or all the options in whole or in part, or none of the options.

You are requested to note that options (including their pricing) will be taken into consideration in the evaluation of the Tender Offer, regardless of whether or not these options are exercised at the time of the award of the tender or to be exercised at the relevant validity date of each option.

9. Notwithstanding any other provision in this Call for Solutions, LTA may amend, suspend or withdraw all or any part of the Call for Solutions or the Call for Solution process, which will be informed via the [Land Transport Innovation Portal](#).

## 8 CONTACT US

Please submit any queries regarding this Call for Solutions via this [form](#) no later than **27 January 2025, 1600H (SGT/GMT +8)**. LTA's responses to the queries will be updated on [Land Transport Innovation Portal](#) before the close of the Call for Solutions.

## APPENDIX A - TERMS AND CONDITIONS

### 1. DEFINITIONS AND ABBREVIATIONS

1.1 The following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:

- (a) **“Authority”** or **“LTA”** means the Land Transport Authority of Singapore established by the Land Transport Authority of Singapore Act 1995 or its successors.
- (b) **“North-East Line”** or **“NEL”** means the high-capacity Mass Rapid Transit line in Singapore that runs from Harbour Front station in southern Singapore to Punggol Coast station in north-east Singapore.
- (c) **“Officer-In-Charge”** or **“OIC”** means an officer of the Authority authorised by the Authority, including any person designated to assist him, to perform such duties and functions as may be designated to him in respect of this Agreement.
- (d) **“Organisation”** means the successful partner/collaborator whose CFS proposal has been accepted by the Authority.
- (e) **“Parties”** means the Authority and the Organisation, and **“Party”** means any one of them.
- (f) **“Passenger Car Unit”** means the standardised unit that converts different vehicle types into a common metric based on their relative space occupancy and impact on traffic.
- (g) **“Price Schedule”** means the schedule of prices for Services proposed in the Organisation’s CFS proposal and accepted in the Agreement, as amended from time to time in accordance with the Agreement.
- (h) **“Project”** means the scope of works as detailed in this CFS.
- (i) **“Project Information”** refers to:
  - i. confidential Information and/or any other information disclosed by LTA to the Organisation (including but not limited to any of the Organisation’s employees, agents, contractors, researchers and/or students thereof) in connection with the Agreement and/or the Project.
  - ii. information (including personal data) collected by the Organisation from all potential and actual respondents surveyed.
- (j) **“Services”** means the services proposed in the Organisation’s CFS’s proposal as being capable of meeting the requirements in the CFS and accepted in the Agreement, which the Organisation is required to provide under the Agreement,

and such other services as may be agreed in writing between the Parties to be provided by the Organisation.

- 1.2 Words importing the singular only shall also include the plural and vice-versa where the context requires.

## 2. DATA MANAGEMENT PLAN

- 2.1 The Organisation shall undertake the Project entitled 'Review of Economic Parameters Study and Implementation of Innovative Strategies for Conducting Longitudinal Analysis' (hereinafter referred to as the "Project") in accordance with the Agreement.

- 2.2 The Parties' rights and obligations under the Agreement are conditional upon acceptance in writing by LTA at its sole discretion of a written proposal from the Organisation on its data management policies ("**Organisation's Data Management Plan**") (the "**Condition Precedent**"), which shall include but not be limited to, the following:

- 2.2.1 information on how the Organisation (including but not limited to its employees, agents, contractors, researchers and/or students) shall be handling the Project Information; and

- 2.2.2 measures which the Organisation has put in place or shall put in place as soon as practicable before the start of the project to prevent any unauthorized disclosure of the Project Information.

- 2.2.3 information on how the Organisation would comply with the provisions of the Personal Data Protection Act 2012 in respect of personal data collected by the Organisation from all potential and actual respondents surveyed, and in respect of the handing over of its database to LTA at the expiry or termination of the Agreement.

- 2.3 Subject to Clause 2.2, the Agreement shall be effective either one (1) month from the date of Agreement or upon the fulfilment of the Condition Precedent, whichever is earlier (unless otherwise agreed by the Parties in writing) (the "Effective Date"), and shall continue for a period of 24 months thereafter or for such further period as may be mutually agreed between the Parties (the "Term"). If the Condition Precedent is not fulfilled by the Organisation upon the expiry of one (1) month from the date of Agreement, the Agreement shall automatically terminate and no Party shall have any claim against the other Party for costs, damages or otherwise in respect of the Agreement, unless LTA at its sole discretion:

- 2.3.1 expressly modifies the Condition Precedent in writing, including but not limited to extending the time for the fulfilment of the Condition Precedent (in which case the Effective Date of the Agreement shall be adjusted accordingly);  
or

- 2.3.2 expressly waives the Condition Precedent in writing.

### **3. CONFIDENTIALITY**

- 3.1 The Organisation undertakes not to divulge or communicate to any person any Confidential Information however acquired which refers to the LTA, the Project and the work carried out under the Agreement and shall not, without the prior written consent of LTA, disclose any Confidential Information relating to the Project to any third party, and such consent not to be unreasonably withheld.
- 3.2 For the purposes of the Agreement, information disclosed orally or visually and identified at the time as "Confidential" shall be considered Confidential Information if it is designated "Confidential", concurrent with the oral or visual disclosure.
- 3.3 The Organisation shall hold any information which the Organisation receives from LTA in accordance with the Agreement as absolutely secret and shall not during the continuance of the Agreement or at any time after its expiration or termination disclose or permit or suffer any act or matter whereby the same to be disclosed or communicated to any person unless the same may be expressly authorised by LTA and shall take all reasonable precautions to prevent any unauthorised access to such information, documents or papers. For the purposes of this clause, all information is to be treated as confidential except such as is or has become public knowledge otherwise than through the default or neglect of the Organisation and its employees.
- 3.4 Upon the completion of the Project and or termination of the Agreement from whatever cause, the Organisation shall forthwith deliver to LTA, all drawings, written data, documents, papers of a similar nature and property belonging to LTA and which may be in possession or under the control of the Organisation and its employees.
- 3.5 The provisions of Clause 3.1 above shall not apply to any information that:
- 3.5.1 is or was already known to the Organisation at time of disclosure to it, or
  - 3.5.2 after disclosure to the Organisation is published or otherwise generally available to the public otherwise than through any act, default or omission by the Organisation of its obligations hereunder, or
  - 3.5.3 can be established by tangible evidence was independently developed by the Organisation without the use of or reference to LTA's Confidential Information;  
or
  - 3.5.4 is required to be disclosed to governmental or regulatory bodies or to a court of competent jurisdiction pursuant to any written law.

#### **4. INSURANCES (TO BE PROVIDED BY ORGRANISATION)**

- 4.1 Without limiting its obligations or responsibilities under the Agreement, the Organisation shall, before commencement of any execution of Services, at its own cost, insure against all damage, loss or injury whatsoever arising from or in connection with any duty or obligation under the terms of the Agreement.
- 4.2 The Organisation shall also at its own cost, procure and maintain the appropriate insurance cover in respect of any liability which it may incur under the provisions of the Work Injury Compensation Act or at Common Law in respect of any workman or employees employed by it, and for damage, loss or injury which may occur to any property, or to any person, by or arising out of the execution of the Services.
- 4.3 The Organisation, shall at the request of the Authority, submit a copy of the insurance policies and receipts in respect of the premiums paid.
- 4.4 In the event of the Authority (including for this purpose every officer and department thereof) being held liable for damages arising out of any claim by any workman or employee employed by the Organisation in and for the performance of the Agreement and/or by any third party whatsoever and howsoever arising in respect of the performance of the Agreement, the Organisation shall indemnify the Authority, its officers or departments against such claim(s) and any costs, charges and expenses in respect thereof.

#### **5. OFFICER-IN-CHARGE (OIC)**

- 5.1 The Authority shall appoint a person to act on behalf of the Authority. The “Officer-In-Charge” or “OIC” means an officer of the Authority authorised by the Authority, including any person(s) designated to assist him, to perform such duties and functions as may be delegated to him in respect of the Agreement. Prior notice in writing of any such authorisation shall be given by the Authority to the Organisation. Such authorisation shall continue in force until such time as the Authority shall notify the Organisation in writing that the same is terminated.
- 5.2 Any written instruction or acceptance given to the Organisation within the terms of authority delegated under Clause 5.1 of **Appendix A** but not otherwise shall bind the Organisation and the Authority as though it had been given by the Authority, provided always that the failure of a person authorised under Clause 5.1 of **Appendix A** to reject the Works shall not prejudice the power of the Authority thereafter to reject any of such Works.
- 5.3 The OIC shall have no authority to relieve the Organisation of any of its duties or obligations under the Agreement unless expressly provided for in the Agreement.

- 5.4 The functions of the OIC are to accept or reject the Organisation's performance of the Works, monitor and inspect the execution of the Works and to carry out such powers and authorities delegated in accordance with Clause 5.1 of **Appendix A**.
- 5.5 The OIC may appoint delegates or representatives to administer separate parts of the Works and may delegate different powers and authorities vested in him to his several delegates or representatives.
- 5.6 The authority of the OIC shall be that stated in or necessarily to be implied from the Agreement.

## **6. PRICE SCHEDULE AND SCHEDULE OF RATES**

- 6.1 The Organisation shall price on a lump sum basis for all items in the Price Schedule under **Appendix C**. The unit rates and the lump sum priced by the Organisation in the Price Schedule shall be firm fixed priced, valid throughout the entire period, including any extension. These unit rates and lump sum priced shall not be subject to amendments, escalations or variations of any nature whatsoever, except as expressly provided under the Agreement.
- 6.2 All prices quoted by the Organisation shall be deemed to be inclusive of professional services, labour, delivery, material, equipment, freight/transportation costs, insurance, licenses, overheads, incentives to respondents, profits and all other direct and incidental costs of whatever nature, including co-ordination and liaison of activities required for the execution of the works and services and fulfilment of Organisation's obligations under the Agreement. No adjustments shall be made for price fluctuations, additional man-hours, materials and/or equipment required to carry out the Services under the Agreement.
- 6.3 The Organisation shall also submit a man-day rates in the resource histogram as per **Appendix B**. Unless explicitly excluded, the man-day rate shall be deemed to be inclusive of professional services, labour, delivery, material, equipment, reports, insurances, freight/transportation costs, accommodation and living expenses, licences, overheads, profits and all other direct and incidental costs of whatever nature, including co-ordination and liaison of activities required for the execution of Services and fulfilment of Organisation's obligations under the Agreement.
- 6.4 The rates specified in the resource histogram shall be used as the basis for the valuation of variations under the Agreement if there is no Services of similar character set out in the Price Schedule.
- 6.5 If there is any discrepancy or inconsistency in the rates between the Price Schedule and the resource histogram, the rates in the Price Schedule shall take precedence.
- 6.6 All additional services to be performed by the Organisation shall be approved by the Authority. Rates priced shall remain valid throughout the Agreement period including the extended Agreement (if any).

- 6.7 LTA shall be entitled, at its own cost and expense, conduct adhoc on-site reviews and audits to ensure that the terms of the Agreement are complied with by the Organisation. For avoidance of doubt, LTA shall be entitled to appoint external auditors to carry out such reviews and audits under the Agreement for and on behalf of LTA. The Organisation shall provide LTA and its authorised representatives all necessary information and documents for the purposes of such reviews and audits. In the event that the funding is found not utilised in accordance with the Agreement and that the invoices are found to be inflated, inaccurate, tampered, or otherwise contain financial discrepancies, LTA reserves the right to take action to resolve such financial discrepancies, including but not limited to withdrawing the Project Funding and recovering of any disputed claims from the Organisation.
- 6.8 The OIC shall have the right to require the Organisation to provide further breakdowns of any components of the Services in such detail to justify the composite or overall rate or lump sum indicated in any of the Price Schedule, if required for the purpose of valuing any variations ordered during the Agreement Period. This further breakdown shall provide full details of all the items, quantities and rates involved in the make-up composite or overall rate or lump sum for the component.
- 6.9 Upon request by LTA, the Organisation shall provide the invoices, receipts or other documents to substantiate the actual cost incurred when claiming payment for the completed items of services where rates are not available in the Agreement.
- 6.10 Man-day rate
- 6.10.1 If requested by the OIC, the Organisation shall provide timesheets for the services provided by the respective staff to verify the time worked to the nearest ½ hour.
- 6.10.2 For additional services to be paid based on the rates in the resource histogram, payment shall be based on the man-days agreed and/or verified by the OIC. 1 man-day shall be taken as 1 man working for a minimum of 8 hours. Where the Organisation work less than 8 hours, payment shall be based on the time spent as agreed and/or verified by the OIC, rounded up to the nearest ½ hour, multiplied by the hourly rate (the rate is derived by dividing the man-day rate by 8 hours). These rates are applicable for all additional services carried out during or outside normal working hours and during public holidays.
- 6.10.3 The Organisation shall provide the designation of personnel and its associated rates applicable for the computation of additional fee payable for additional services rendered as per the rate in the Resource Histogram.

## 7. PAYMENT TERMS

- 7.1 The Organisation shall submit its invoice including all supporting documentations as the OIC may require. Payment shall be based on actual work done and paid at the rates priced by the Organisation.
- 7.2 The OIC shall assess the claim for payment accordingly and the payments of the amounts certified by the OIC shall be made to the Organisation within thirty (30) days of receipt of the invoice(s) submitted by the Organisation.
- 7.3 The Organisation shall, if required by the Authority, provide additional supporting documents and records to substantiate the payments to be made to the Organisation. The Organisation shall attend or respond to all such queries promptly and at no additional costs to the Authority.
- 7.4 If any item or part of an item of the request for payments rendered by the Organisation is disputed or subject to question by the Authority, the payment by the Authority of that part of the request for payment which is not contested shall not be withheld on those grounds.
- 7.5 If in the opinion of the Authority, the Organisation is in breach of any of the provisions of the Agreement, the Authority shall be entitled to withhold any payment or part thereof as may be due or become payable to the Organisation without prejudice to any rights of action that may have accrued to the Authority and to the continuance of the Agreement unless otherwise terminated by the Authority.
- 7.6 For the avoidance of doubt, the Authority shall not pay for the expenses or costs of whatever nature other than those set forth in the Agreement.
- 7.7 Both Parties shall agree on the payment milestones of the Project as specified in **Appendix D** of this brief. Upon the achievement of each payment milestone set out in **Appendix D**, payment of approved deliverables will be based on the work done to the satisfaction of the Authority.



## 8. VARIATION

8.1 The term “Variation” shall mean any change in the Agreement describing or defining the Goods and Services to be delivered and carried out and shall include but is not restricted to:

- a. an increase or decrease in the quantity of any part of the Services;
- b. an addition to or omission from the Services;
- c. a change in the character or nature of any part of the Services;
- d. a requirement to deliver and complete the Services or any phase or part by a date earlier or later than the relevant date for completion as set out in the Agreement.

For the avoidance of doubt the term “Variation” shall include any changes as aforesaid which may be designed to alter the use to which the Goods and Services will be put, but shall exclude any instruction (which would otherwise be a Variation) which has arisen due to or is necessitated by or is intended to cure any default of or breach of contract by the Organisation.

8.2 No variation of the Agreement shall be of any force unless agreed upon in writing and signed by the authorised signatories of both Parties. A variation made in accordance with this Clause 8.2 shall not require consideration for the variation to be binding and enforceable.

8.3 In addition to Clause 8.2 of **Appendix A**, the Authority may at any time issue an instruction in writing requiring a Variation.

8.4 Any Variation works carried out by the Organisation without the Authority’s written instruction for Variation works will not be considered by the Authority and no payment for such works will be made.

8.5 If for any reason the Authority considers it necessary to give any such instruction orally, the Organisation shall comply with such instruction. Confirmation in writing of such oral instruction given by the Authority, whether before or after the carrying out of the instruction, shall be deemed to be an instruction within the meaning of this Clause. If no written confirmation of any oral instruction is given by the Authority, the Organisation shall within **seven (7) days**, confirm in writing to the Authority any oral instruction of the Authority and request for a written instruction to be issued.

8.6 The valuation of Variations shall, unless otherwise agreed, be made in accordance with Clauses 8.7 to 8.12 of **Appendix A**.

8.7 The Organisation shall satisfy the Authority as to the reasonableness of changes to the works schedule and of the extra costs or savings resulting from the Variations. The Organisation shall only be entitled to claim payment for any Variation works (with

written instruction) upon completion of such works and upon agreement with the Authority on the valuation of the Variation works.

- 8.8 The Organisation shall carry out all Variation works instructed by the Authority pending the valuation of the Variation works by the Authority.
- 8.9 The valuation of the Variation shall be consistent with the values of work of similar character set out in the Price Schedule or rates in resource histogram as the case may be.
- 8.10 Where there is no work of a similar character set out in the aforesaid Price Schedule or rates in the resource histogram, the Organisation shall provide his quotation with detailed cost breakdown for the works to the Authority for approval prior to the commencement of the Variation works.
- 8.11 Upon completion of the Variation works, the Organisation shall provide the necessary invoices, receipts and other documents which the Authority may require to substantiate the cost incurred when claiming payment for the completed Variation works.
- 8.12 Where the Organisation is unable to produce the required invoices, receipts or other documents to substantiate the actual cost incurred for the Variation works, the Authority shall have the right to make a fair valuation for the works based on market rates and the Organisation shall be paid based on such valuation.

**APPENDIX B – RESOURCE HISTOGRAM**

NAME	DESIGNATION	MAN-DAY RATE	COMPANY	WEEK NUMBER							TOTAL MAN-DAYS	TOTAL COST	WORKING HOURS PER DAY	WORKING HOURS PER WEEK
				1	2	3	...							
	Project manager													
	SP survey specialist													
	Fieldwork operations manager													
	Others, if any e.g. Specialist for option 1													

Note:

1. Under 'NAME' column, please input name of personnel.
2. Under 'DESIGNATION' column, please input position or designation of personnel. Do indicate clearly which additional personnel is required to fulfil the options' requirements.
3. Under 'MAN-DAY RATE' column, please input the daily unit rate of the personnel.
4. Under 'COMPANY' column, please input company of personnel.
5. Under 'WEEK NUMBER' column, please input the planned total man-day per week of the personnel for this project.
6. Under 'TOTAL MANDAYS' column, please compute the cell based on all man-days for personnel for this project.
7. Under 'TOTAL COST' column, please compute the cell based on total man-days multiplied by daily man-day rate for the personnel.
8. Under 'WORKING HOURS PER DAY' column, please input the personnel's normal working hours per day.
9. Under 'WORKING HOURS PER WEEK' column, please input the personnel's normal working hours per week.

**APPENDIX C – PRICE SCHEDULE**

**BASE**

Description	Unit	Qty	Rate (\$)	Amount (\$)
Base proposal (i.e. Section 3A): Review and Update of Economic Parameters and Implementation of Innovative Strategies for Conducting Longitudinal Analysis (e.g. Research Survey Panel (RSP))	Sum	1		
<b>TOTAL (EXCLUDING GST)</b>				

**OPTIONS**

Description	Unit	Qty	Amount (\$)
Option A: Impact of Car Parking Reduction on Car Ownership and Usage	Sum	1	
Option B: Factors Influencing Car Sharing	Sum	1	
Option C: Factors Influencing Public Transport Mode Choice	Sum	1	

Note: It is mandatory to price for **all** Options (i.e. Options A, B and C).

## APPENDIX D – PAYMENT MILESTONES

S/N	Deliverables <sup>[1]</sup>	% of the Amount of Each Part Indicated in the Price Schedule	Timeline (T: Agreement Effective Date / Option(s) Exercised Date)
1.	<b><u>Authority's Acceptance of Inception Report</u></b> -Inception report for Economic Parameters Study, Implementation of Innovative Strategies for Conducting Longitudinal Analysis, Car Parking study, Car Sharing study and Public Transport Mode Choice study	5% of the cost priced for Base Proposal and Options A/B/C (if applicable)	T + 2 months
2.	<b><u>Authority's Acceptance of Survey Design</u></b> -Technical Note 1: Economic Parameter survey design to meet requirements -Technical Note 2: Respondents recruitment requirements and methodology -Technical Note 3: Option A - Car Parking survey design and methodology to meet requirements -Technical Note 4: Option B - Car Sharing survey design and methodology to meet requirements -Technical Note 5: Option C - Public Transport Mode Choice survey design and methodology to meet requirements	10% of the cost priced for Base Proposal and Options A/B/C (if applicable)	T + 5 months
3.	<b><u>Authority's Acceptance of Pilot Survey</u></b> -Working Paper 1: Pilot survey and results analysis -Completion of fieldwork for pilot survey	10% of the cost priced for Base Proposal and Options A/B/C (if applicable)	T + 8 months
4.	<b><u>Authority's Acceptance of Main Survey</u></b> -Working Paper 2: Main survey -Completion of fieldwork for main survey -Database of respondents for longitudinal analysis	15% of the cost priced for Base Proposal and Options A/B/C (if applicable)	T + 14 months
5.	<b><u>Authority's Acceptance of Data Analysis</u></b> -Working Paper 3: Results Analysis from stated preference survey for all parts	15% of the cost priced for Base Proposal and Options A/B/C (if applicable)	T + 20 months
6.	<b><u>Authority's Acceptance of Reporting and Documentation</u></b> -Final reports for all parts -Summary reports for all parts -Final database of respondents for longitudinal analysis -Presentation to LTA senior management	20% of the cost priced for Base Proposal and Options A/B/C (if applicable)	T + 24 months
7.	<b><u>Authority's Acceptance of Full Handover of All Documents</u></b>	25% of the cost priced for Base Proposal and Options A/B/C (if applicable)	T + 24 months

<sup>[1]</sup> The Project Manager shall submit a milestone report upon achievement of each milestone before submitting e-invoice via Vendors@Gov to request for payment from LTA.