THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

Agreement No. CE 51/2021 (TT)

Traffic and Transport Strategy Study – Feasibility Study

Brief

Transport Department

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1. Introduction

1.1 This Brief is to be read in conjunction with the Memorandum of Agreement, General Conditions of Employment of Engineering and Associated Consultants for a Feasibility Assignment (1997 Edition) (hereafter referred to as the General Conditions of Employment), Special Conditions of Employment and Schedule of Fees. For the avoidance of doubt but without prejudice to Clause 7 of the General Conditions of Employment, the performance of the Services specified herein shall be subject to Clause 22 of the General Conditions of Employment.

1.2 The following words and expressions shall have the meaning hereby assigned to them except when the context of this Brief otherwise requires:

(a) "Government" means the Government of the Hong Kong Special Administrative Region.

(b) "Assignment" for the purposes of this Brief means the "Traffic and Transport Strategy Study".

1.3 The following table lists the abbreviated titles of Government bureaux / departments, offices, statutory bodies and public organisations mentioned in this Brief:

Abbreviation	Full Title
CEDD	Civil Engineering and Development Department
DC	District Council
DEVB	Development Bureau
DSD	Drainage Services Department
EACSB	Engineering and Associated Consultants Selection Board
EMSD	Electrical and Mechanical Services Department
ENB	Environment Bureau
ETWB	Environment, Transport and Works Bureau
EPD	Environmental Protection Department
FSTB	Financial Services and the Treasury Bureau

HyD	Highways Department
LandsD	Lands Department
LegCo	Legislative Council
OGCIO	Office of the Government Chief Information Officer
PlanD	Planning Department
RC	Rural Committee
SMD	Smart Mobility Division
TD	Transport Department
THB	Transport and Housing Bureau
TPD	Transport Planning Division
TSSD	Traffic Survey and Support Division
WSD	Water Supplies Department

1.4 The following table lists the meaning of the abbreviations for expressions adopted in this Brief:

Abbreviation	**Full Title**
APS	Automated Parking System
AV	Autonomous Vehicle
BBI	Bus-Bus Interchange
BCP	Boundary Control Point
CA Plan 2035	Clean Air Plan for Hong Kong 2035
CC	Congestion Charging
CDP	Common Data Platform
CSDI	Common Spatial Data Infrastructure
CSI	Common Service Infrastructure
CTS	Comprehensive Transport Study
CTTSS	Comprehensive Traffic and Transport Strategy Study
DR	Director's Representative
EMD	Electric Mobility Device
ERP	Electronic Road Pricing
EV	Electric Vehicle
EV Roadmap	Hong Kong Roadmap on Popularisation of Electric Vehicles
FFTS	Free Flow Tolling System
GBA	Greater Bay Area
GIS	Geographical Information System
GVTCS	Survey on Goods Vehicle Trip Characteristics
HZMB	Hong Kong-Zhuhai-Macao Bridge

IT	Information Technology
KPI	Key Performance Indicator
MOD	Mobility on Demand
MOM	Management, Operation and Maintenance
MTRCL	Mass Transit Railway Corporation Limited
NDA	New Development Area
PR	Public Relations
PRO	Public Relations Officer
PT	Public Transport
PWCRAR	Public Works Consultants Resources Allocation Register
RMR2030+	Strategic Studies on Railways and Major Roads beyond 2030
R-to-C	Responses to Comments
SA&D	Systems Analysis and Design
SEA	Strategic Environmental Assessment
STM	Strategic Transport Model
TCS	Travel Characteristics Survey
TIA	Traffic Impact Assessment
TIH	Transport Interchange Hub
TPEDM	Territorial Population and Employment Data Matrix
TTSS	Traffic and Transport Strategy Study
V2X	Vehicle-to-Everything

2. Description of the Project

2.1 Background

2.1.1 Hong Kong is a dynamic city where there are continuous changes in economic growth and development, technology, public demands and aspirations. With a view to coping with the needs of social development and responding to demographic changes, three Comprehensive Transport Studies (CTSs) had been carried out over the past few decades to develop a timely transport strategy for Hong Kong. The First CTS was completed in 1979, covering the provision of roads to connect the new towns in the New Territories and the urban areas, the construction of the Mass Transit Railway, and the electrification and double tracking of the Kowloon-Canton Railway. Later in the 1980s, the Government conducted the Second CTS. Completed in 1989, the Second CTS focused on traffic restraint measures, such as first registration tax and annual licence fee, in containing vehicle fleet size and ownership. From 1990 to 1993, the Updating of the Second CTS was undertaken to review the Second

CTS framework, taking into account the relocation of the airport to Chek Lap Kok and various reclamation studies at that time.

2.1.2 After the reunification, in order to set out a transport development framework that would meet population growth and the upsurge in cross-boundary traffic demand, and contribute to the sustainable development of Hong Kong, the Government completed the Third CTS in 1999, which formed a sound basis for the promulgation of "Hong Kong Moving Ahead : A Transport Strategy for the Future". The strategy laid down five broad principles, namely (i) better integration of transport and land use planning, (ii) better use of railways as the backbone of the passenger transport system, (iii) better public transport (PT) services and facilities, (iv) better use of advanced technologies in traffic management, and (v) better environmental protection measures. These guiding principles remain applicable today, serving as an overarching transport planning strategy for formulating and evaluating transport policies and measures as well as mapping out new strategic transport infrastructure in Hong Kong.

2.1.3 Following the Third CTS, the Government completed a number of individual studies, including "Railway Development Strategy 2000" in 2000, "Railway Development Strategy 2014" in 2014, and "Public Transport Strategy Study" in 2017. Besides, a series of topical studies was undertaken to examine a host of traffic and transport issues, including congestion charging (CC) for toll tunnels, electronic road pricing (ERP), and walkability. The findings of these studies on different transport topics have been promulgated at the time of completion and followed up through progressive deployment of resources. In this way, the Government has forged ahead with the early formulation of transport policies and implementation of projects to meet burgeoning demand.

2.1.4 While the Government continues to enhance Hong Kong's integrated transport system under the five proven "betters", there have been dramatic socio-economic changes and progressive commissioning of various major domestic and cross-boundary transport infrastructure projects over the past twenty-odd years. The scarce land resources, exponential population increase in New Development Areas (NDAs), pressing need for transport infrastructure, ageing population and gradual emergence of new norms of travel behaviours have posed formidable challenges for Hong Kong's transport system. On the other hand, the booming development of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), the virgin land created in NDAs, the rapid advancement of transport and vehicle technologies, the public's rising aspirations for a cleaner environment and healthy lifestyles, and the recently announced Hong Kong Roadmap on Popularisation of Electric Vehicles (EV Roadmap) and

Clean Air Plan for Hong Kong 2035 (CA Plan 2035) have provided a golden opportunity to turn the page of Hong Kong's transport landscape.

2.1.5 Against the above backdrop of arduous challenges and unique opportunities, it is now an opportune moment to take a fresh look at the five "betters" and enhance the Government's transport strategy to cater for the prevailing and foreseeable circumstances. With a number of the Government's major transport-related studies[1] still ongoing at the moment, launching the Fourth CTS is neither desirable nor cost-effective as such a course of action will duplicate the effort of these ongoing studies and those completed topical studies. Taking into account the need to tackle challenges and grasp opportunities confronting Hong Kong in the coming decades, the Chief Executive announced in the 2020 Policy Address that the Government will carry out a comprehensive traffic and transport strategy study (CTTSS) which is a high-level study to capture the results of the past and ongoing studies on the one hand, and examine other topics and new areas of interest which are of concern to the community as a whole on the other.

2.2 Project description

2.2.1 The CTTSS includes surveying the latest travel patterns of the public, making reference to and introducing innovative transport modes and technologies as appropriate with a view to enhancing PT services to meet the demand of the public, as well as deploying different transport resources more effectively to support the sustainable development of Hong Kong and facilitate the flow of people and goods in the GBA.

Comprehensive Transport Study Model and Travel Characteristics Survey

2.2.2 Subsequent to the completion of Travel Characteristics Survey (TCS) 2011 and Survey on Goods Vehicle Trip Characteristics (GVTCS) 2011, it is essential to conduct a new round of territory-wide TCS and GVTCS in 2022 to capture the latest travel behaviour and goods vehicle trip characteristics, as well as public aspirations for the new generation transport services. As part of the CTTSS, the work on the conduct of TCS 2022 and GVTCS 2022 was advanced and packaged under a separate consultancy entitled "Enhancement of the Comprehensive Transport Study Model – Feasibility Study" which commenced in May 2021. TCS 2022 will be carried out by means of a separate service contract to be managed under the CTS Model Enhancement Study whereas GVTCS 2022 will be conducted by the consultants of the above study. The TCS aims at collecting up-to-date travel characteristics

[1] These include Strategic Studies on Railways and Major Roads beyond 2030, Review of Highway Projects, and others relating to CC for toll tunnels, ERP Pilot Scheme in Central, Walkability and Free Flow Tolling Systems.

data and information on Hong Kong residents and visitors, and developing such data into a travel characteristics database. The purpose of the GVTCS is to gather up-to-date information on the trip making characteristics of different types of goods vehicles in the territory.

2.2.3 Upon completion of TCS 2022 and GVTCS 2022, the data and information collected will provide a basis for the CTS Model to improve its capability and reliability for the better simulation of movements of people (using various mechanised transport modes) and different types of goods vehicles in Hong Kong. The enhanced CTS Model can then produce robust traffic and transport projections for assessing the need for, and the scope and timing of, new transport infrastructure projects, facilitating the formulation of transport policies. It is essential to take full account of the updated territorial traffic and passenger flow characteristics and the details of the enhanced CTS Model in this Assignment. The reports on TCS 2022 and GVTCS 2022 will be published in early 2024 tentatively, whereas the report on CTS Model enhancement will be published in 2025 tentatively.

Traffic and Transport Strategy Study

2.2.4 Other than capturing the latest travel patterns of the public, this Assignment, entitled "Traffic and Transport Strategy Study (TTSS) – Feasibility Study", will be carried out as the core part of the CTTSS as stipulated in the 2020 Policy Address. Instigating the TTSS at this critical point in time to oversee, review, complement, coordinate and incorporate the findings and recommendations of the previous and ongoing studies as a comprehensive repository of transport has the advantage of embracing the challenges and opportunities ahead.

2.2.5 The TTSS aims at enhancing the overall performance of the transport system of Hong Kong in terms of shorter journey time, lower travel cost and higher transport service quality. It will cover a broad spectrum of traffic and transport issues, and map out a visionary and future-proof transport strategy with a planning horizon up to 2050. In doing so, the TTSS will not only oversee and coordinate the Government's major transport-related studies to emanate synergy, but also formulate new and high-level transport initiatives. The final product will be a Transport Strategy Blueprint laying down the visions, strategies, initiatives and action plans with an indicative timeline for implementing Hong Kong's future traffic and transport policies.

2.2.6 The Government expects the TTSS to come up with a forward-looking transport strategy which can be categorised into the following five Directions.

Direction 1: To Optimise the Use of Limited Road Space

2.2.7 Traffic congestion is prevalent during peak hours, especially in the directions to and from the city centre. On account of scarce land space, further expansion of our transport infrastructure to meet ever-increasing traffic demand to support land development can be either impracticable or unsustainable. It is also hard to reconcile the need for transport infrastructure development with concern for the environment. Consideration should be given to making proactive, all-out and multi-pronged efforts to optimise the use of precious road space through harnessing leading-edge transport and vehicle technologies which heighten the efficiency of traffic management and mobility. This Direction is intended to formulate new approaches to achieve more efficient road use.

Direction 2: To Provide People-centric and Efficient PT Services

2.2.8 The development of the current network, operation and business model for PT have come to a bottleneck. It has also become increasingly difficult to strike a balance between providing passengers with comfortable and affordable PT services and generating sufficient revenue for PT operators to ensure sustainable operation. Hence, it is opportune to explore new modes of PT services. For example, Mobility on Demand (MOD) for PT with dynamic scheduling and on-demand timetables and routeings for buses and other road-based PT should help provide people-centric services. Having regard to new railway and highway development, identification of Transport Interchange Hubs (TIHs) at suitable locations enabling the implementation of more convenient inter-modal transport interchange schemes will also be instrumental in providing efficient PT services. On the taxi front, there is currently a strong public demand for better quality taxi services. All in all, there is a pressing need to enhance the delivery of PT services and to reflect people's aspirations by putting more emphasis on the needs of passengers. Therefore, the Government's goal is to provide a quality, affordable, efficient, well-coordinated and sustainable PT framework with railways as the backbone, which can enhance inter- and intra-modal connection, foster PT operators' healthy competition and meet commuters' rising expectations through new environmentally friendly and innovative PT modes and operations (in particular for those serving the NDAs).

Direction 3: To Implement Adaptive Transport Planning

2.2.9 The Government is doing its utmost to increase housing supply. The fast pace of land and housing developments has created new traffic and transport demand, imposing pressure on the road and PT network. At the same time, the Government is facing many challenges of

initiating and expediting the delivery of transport infrastructure to meet dynamic development needs. Moreover, under the current land use planning / development policy formulation process, Traffic Impact Assessments (TIAs) for different land developments are conducted under individual projects with different planning data and model assumptions. For the sake of concordance, there is a need to enhance the assessment approach and align planning parameters via a common interface so as to implement adaptive transport planning, making the process more interactive to facilitate land development. Furthermore, it is important to integrate resilience into transport planning, especially for transport infrastructure, to support the long-term development of Hong Kong.

Direction 4: To Advocate Green and Active Transport as Healthy Lifestyles

2.2.10 Green and active transport development in Hong Kong has much room for improvement, and priority should be given to these transport modes that tie in with the national and Government's policy on carbon neutrality. Aspiring to a cleaner environment, the community has called for green transport services which can be made possible by means of new and smart transport and vehicle technologies as well as electric mobility devices (EMDs). These could improve the utilisation of road space in urban areas. The Environment Bureau (ENB) is also forging ahead with the EV Roadmap and the CA Plan 2035 which will have a far-reaching impact on transport policy. Hence, there is a dire need to formulate various transport initiatives to cope with new environmental policies. In a bid to foster a green environment in transport-related areas, the Government proposes advocating green and active transport as healthy lifestyles and the preferred choice of travel with the goal of promoting the wider use of innovative green and active transport modes.

Direction 5: To Embrace Opportunities to Enhance Transport Connectivity with the GBA

2.2.11 Given the rapid development of the GBA, new and significant travel patterns and needs are foreseeable for business, employment, living and leisure. In this context, enhancing transport connectivity with the GBA will be essential for the continuous development of Hong Kong by way of facilitating the flow of people and goods, and promoting economic development and regional cooperation under the "one-hour living circle" in the GBA, etc. Indeed, embracing opportunities to enhance transport connectivity with the GBA is an integral part of Hong Kong's effort to attain the goal of fostering closer ties and integration with the GBA. This Direction aims to introduce suitable policies and measures to better reform the planning of transport infrastructure, systems and services so as to respond dynamically and proactively to Hong Kong's increasing integration with the GBA.

2.2.12 The above framework of five Directions is intended for the Consultants' reference. The Consultants shall further develop or modify this framework to meet prevailing circumstances during the course of the Assignment.

3. Objectives of the Assignment

3.1 The objectives of the Assignment are:

(a) To formulate appropriate transport strategies for achieving (i) more efficient use of road space; (ii) pleasant PT travel experience to meet passengers' rising expectations through the provision of quality, affordable, efficient, well-coordinated and sustainable PT services with railways as the backbone; (iii) a more interactive process of planning resilient transport infrastructure to facilitate land development; (iv) the wider use of innovative green and active transport modes; and (v) closer ties and integration with the GBA;

(b) To oversee, review, complement, coordinate and incorporate the findings and recommendations of the Government's previous and ongoing major transport-related studies (including those under major development studies) which may form part of the Transport Strategy Blueprint to be produced under the Assignment; and

(c) To amalgamate all the relevant findings and recommendations of previous and ongoing major transport-related studies (including those under major development studies) with those under the Assignment, and map out a long-term Transport Strategy Blueprint up to 2050 for ensuring a safe, efficient, reliable, smart and environmentally friendly transport system which meets the community's economic, social and recreational needs, and is capable of supporting the sustainable development of Hong Kong and maintaining seamless connectivity with the GBA.

6.5 Strategic Environmental Assessment

6.5.1 In consultation with EPD and other relevant Government bureaux/departments, the Consultants shall carry out an SEA for the proposed transport initiatives to ensure that environmental considerations will be fully integrated in the formulation of the Transport Strategy Blueprint, with environmental benefits maximised and the adverse environmental impact avoided or minimised.

Objectives of the SEA

6.5.2 The objectives of the SEA are:

(a) To integrate environmental factors, together with other considerations, in the decision-making process of the initiation, development and formulation of the Transport Strategy Blueprint with a planning horizon up to 2050;

(b) To strategically evaluate the environmental implications, including quantified merits and demerits represented by appropriate KPIs and environmental parameters, of both individual transport initiatives and their cumulative effects;

(c) To identify green, low carbon and environmentally preferred traffic and transport initiatives for adoption in the Transport Strategy Blueprint; and

(d) To identify suitable environmental mitigation measures, environmentally friendly and sustainable options or alternatives, and propose the required follow-up actions.

Scope of the SEA

6.5.3 The Consultants shall carry out:

(a) Identification of environmental factors and integration of environmental considerations in developing and formulating the Transport Strategy Blueprint;

(b) Evaluation of environmental implications and performance, covering both qualitative and quantitative environmental benefits and improvements as well as adverse impacts, short-term and long-term implications, local and regional issues, and cumulative impacts of the proposed transport initiatives;

(c) Establishment of a do-nothing/base case conditions for comparison and evaluation of any potential environmental benefits that the proposed transport initiatives may bring;

(d) Identification of the key environmental issues associated with the proposed transport initiatives, and evaluation of the environmental impacts of the identified environmental issues;

(e) Identification of practicable and effective environmental mitigation measures to mitigate the identified environmental impacts;

(f) Review of any environmental measures for green and sustainable transport in other countries and Mainland China and investigation of their applicability in Hong Kong;

(g) Promotion of the adoption of green initiatives and environmentally friendly designs and technologies in the Transport Strategy Blueprint; and

(h) Formulation of any major follow-up actions for implementing the proposed transport initiatives, such as the statutory requirements under the Environmental Impact Assessment Ordinance, requirements for future environmental studies, and requirements for detailed designs of the identified environmental mitigation measures and green initiatives.

6.5.4 During the environmental evaluation of the proposed transport initiatives, the following environmental implications shall be considered:

(a) Impacts or development constraints due to various transport initiatives considered and proposed under the TTSS on the environment and other existing or potential sensitive receivers and developments likely to be affected. Examples of impacts include air quality and greenhouse gases implications, road traffic noise impacts, and ecological and cultural heritage impacts due to land clearance, etc.

(b) Strategic implications of the increase or decrease in air pollutant emissions associated with the transport initiatives;

(c) Strategic implications of the increase or decrease in greenhouse gas emissions associated with the transport initiatives and their associated implications for the Government's policy of achieving carbon neutrality in Hong Kong before 2050;

(d) Strategic implications of the cumulative road traffic and railway noise impacts associated with the transport initiatives; and

(e) Strategic implications of any disturbances caused by the transport initiatives on recognised sites of conservation importance or important habitats.

6.5.5 The SEA shall consider all transport initiatives relating to and arising from this Assignment. The Consultants shall also take full account of the findings of the SEAs conducted under other studies, for instance the RMR2030+, in conducting the SEA of this Assignment.

6.5.6 The Consultants shall propose transport initiatives under the five Directions of the TTSS that will bring about improvements to the environment and ensure the sustainable development of Hong Kong. The Consultants shall propose suitable KPIs and environmental parameters for quantifying the benefits in various environmental aspects at different stages up to 2050. The KPIs and environmental parameters will also serve as useful tools to provide

quantitative justifications for individual and combinations of transport initiatives or their combinations.

Assessment Methodology, Baseline Review and Identification of Key Issues

6.5.7 The Consultants shall take note of the nature and objectives of this Assignment and propose a suitable SEA process and methodology agreeable to the DR and relevant authorities. The time frame of the SEA shall match the overall timeline of the Assignment and environmental input should be provided at critical stages to facilitate decision making.

6.5.8 The Consultants shall conduct initial screening in order to identify aspects and areas having potentially significant sustainability and environmental implications. The Consultants shall also carry out scoping to define environmental issues to be assessed, to what level of details and by what kind of methodologies during each stage of the SEA.

6.5.9 In order to facilitate the SEA process, the Consultants shall collect and analyse baseline information to have a better understanding of the existing territory-wide environmental conditions of Hong Kong, as well as the environmental conditions of specific regions or areas likely to be affected or benefited by the transport initiatives relating to and arising from this Assignment. If existing baseline data are available and still valid, maximising the use of existing data is recommended.

6.5.10 The baseline conditions shall be established using appropriate strategic environmental parameters and KPIs to such a level of details that further details would not alter the conclusions on the environmental benefits or acceptability and preference of the strategic options under consideration. The criteria and methodology of the baseline evaluation shall be stated clearly. The baseline information will provide a foundation for assessing the nature and extent of potential implications which can arise from different transport initiatives being considered.

6.5.11 The Consultants shall prepare a baseline of air quality, greenhouse gases, water quality, noise, hazard, ecology and cultural heritage conditions as well as agricultural and fisheries resources and visual and landscape values of affected areas susceptible to the proposed transport initiatives where appropriate.

6.5.12 The Consultants shall identify and examine the key environmental issues relating to the Assignment, including but not limited to environmental constraints, opportunities, and their linkages.

Interim and Final Assessments

6.5.13 The Consultants shall list all possible options and alternatives of transport initiatives for preliminary consideration, evaluation and refinement, and identify the environmental implications and compare the environmental performance of various options and combinations using the pre-determined indicators, parameters, criteria and methodologies. The key environmental issues identified in Clause 6.5.12 and other key environmental issues to be identified at the interim and final assessment stages shall be examined. The potential issues to be examined shall include, but not limited to, air quality, greenhouse gases, water quality, noise, hazard, ecology and cultural heritage, agricultural and fisheries resources and visual and landscape values. Besides predicting changes in the environmental conditions, the Consultants shall also assess the pressure on the environmental capital and resources of the existing infrastructure. The Consultants shall consult the EPD and agree with the DR on the use of appropriate methodology for conducting the assessment.

6.5.14 In the evaluation process, key environmental implications of the options and alternatives under different scenarios, in particular the worst-case scenario shall be identified and examined. The issues and consequences of the "do-nothing" scenario shall also be identified, serving as a benchmark for evaluation. Environmental implications shall cover both direct and indirect, as well as cumulative impacts on the environment and sustainability. Specific environmental concerns such as environmentally undesirable features and problematic areas shall be highlighted.

6.5.15 Appropriate qualitative and/or quantitative methods / tools, which may include indicators, environmental mapping, appraisal checking, sensitivity testing, educated guess, specific criteria and measurement, shall be adopted for the assessments as agreed with the DR.

6.5.16 The Consultants shall consult the DR and EPD on the modelling methodology and details to be carried out for the SEA and to collect all information and input assumptions. The Consultants shall prepare all input files, carry out all the assessments and prepare a set of procedures for presenting the SEA results in a tabular and/or graphical form. The Consultants shall also analyse and review the SEA results for the design years as agreed with the DR and EPD to ensure that they are reasonable and acceptable.

6.5.17 The Consultants shall identify and eliminate transport initiatives that are environmentally unacceptable even with all the practical mitigation measures implemented, as well as identify environmentally preferred proposals for further consideration. The Consultants shall also justify and refine the transport initiatives or develop alternatives based on the evaluation

results, and recommend any further investigations required and mitigation measures to reduce the impacts to acceptable levels.

6.5.18 The Consultants shall define areas where development shall be avoided, taking into account areas/sites with high landscape, environmental, ecological, cultural heritage and archaeological value that merit conservation and protection, and natural terrain.

6.5.19 For the preferred transport initiatives, the Consultants shall assess and confirm the environmental feasibility of the initiatives by identifying and evaluating the potential environmental impacts. If the initiatives would be favourable to the environment and sustainable development of Hong Kong, the Consultants shall quantify and confirm their environmental benefits. On the other hand, if the initiatives would affect the environment, the Consultants shall identify suitable mitigation measures, follow-up investigations, and any unmitigated or residual impacts. The extent of uncertainties on the prediction of environmental implications and major assumptions shall be stated. The major pros and cons of the preferred transport initiatives shall be highlighted. If options with the best environmental performance are not selected, justifications or rationales behind the recommendations shall also be stated.

6.5.20 In situations where certain design features and mitigation measures must be exercised, such as land use planning control and constraints to be imposed on nearby and/or future developments, further environmental investigation before other developments can proceed, special phasing and timing of works, compensatory tree planting and restoration / replacement of carbon sink and important habitats at specific locations, and the use of noise barriers / enclosures for noise control, the measures should be described clearly. The need for any further study to examine specific environmental issues for the later stages of planning and implementation of the transport initiatives should be identified with its scope defined. All the mitigation measures and follow-up studies identified should also be covered in a summary action plan to facilitate future monitoring of the initiatives.

Technical Requirements of the SEA

Air Quality Assessment

6.5.21 The Consultants shall conduct a comprehensive review of the potential air quality benefits and impacts of the proposed transport initiatives, changes (or reductions) in emission amount and spatial distribution from road traffic due to the proposed transport initiatives, identify the necessary air quality mitigation measures, and follow up investigations required. The

Consultants shall propose an appropriate air quality assessment approach by making reference to the air quality modelling guidelines published on the EPD's website (https://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/guide_aqa_model.html) and the Air Quality Objectives (a new set of air quality objectives will be promulgated on 1 January 2022), to compare the "with project" and "without project" scenarios in order to demonstrate the air quality benefits and acceptance.

6.5.22 The Consultants shall assess the air quality benefits and impacts for the design years specified in Clause 6.3.6 of the Brief or other years applicable to specific proposed transport initiatives and for the different integration scenarios with the GBA recommended for testing under Direction 5 of the TTSS. The do-nothing/base case conditions shall be established for comparison. The assessment year(s) and scenario(s) shall be agreed with the DR and EPD prior to assessment. The overall air quality of Hong Kong for the do-nothing/base case conditions for the defined assessment year should be evaluated as the "without project" scenario.

6.5.23 The Consultants shall formulate mitigation measures at strategic level to address the potential air quality impacts due to the proposed transport initiatives under the Assignment.

Greenhouse Gas Emissions

6.5.24 The Consultants shall assess the implications and benefits of the proposed transport initiatives for GHG emissions, and identify suitable and practicable green initiatives for incorporation into the proposed transport initiatives.

6.5.25 The Consultants shall propose an appropriate approach to assess GHG emissions from the proposed transport initiatives by making reference to the latest standards or guidelines, such as the ISO 14064 standard, relevant guidelines published by the World Resources Institute under the Greenhouse Gas Protocol Initiatives, etc. The methodology shall be agreed with the DR and EPD prior to assessment.

6.5.26 The Consultants shall assess the GHG emissions for the design years specified in Clause 6.3.6 of the Brief or other years applicable to specific proposed transport initiatives and for the different integration scenarios with the GBA recommended for testing under Direction 5 of the TTSS. The do-nothing/base case conditions shall be established for comparison. The assessment year(s) and scenario(s) shall be agreed with the DR and EPD prior to assessment. The GHG emissions for the do-nothing/base case conditions for the defined assessment year should be evaluated as the "without project" scenario.

6.5.27 By comparing the GHG emissions in the "with project" and "without project" scenarios, the changes in GHG emissions (increase or reduction) due to the proposed transport initiatives can be demonstrated to confirm and justify the environmental benefits in terms of GHG emissions.

6.5.28 The Consultants shall recommend strategic green initiatives or carbon reduction measures in reducing GHG emissions from the proposed transport initiatives under the Assignment.

Noise

6.5.29 The Consultants shall conduct a comprehensive review of the potential environmental benefits and impacts of the proposed transport initiatives, identify any noise mitigation measures, and follow up investigations required.

6.5.30 The Consultants shall assess the population exposed to traffic noise for the design years specified in Clause 6.3.6 of the Brief and for the different integration scenarios with the GBA recommended for testing under Direction 5 of the TTSS. The do-nothing/base case conditions shall be established for comparison. The assessment year(s) and scenario(s) shall be agreed with the DR and EPD prior to assessment. The assessment results shall be presented in a 3D geographic information system (GIS) model from LandsD and agreed with the DR and EPD.

6.5.31 The Consultants shall propose and adopt suitable road traffic noise assessment methodology which can account for the noise emission of EVs, and appropriate computation software to carry out quantitative noise assessment. The Consultants may make reference to international literature or other reasonable approaches for the development of assessment methodology involving EVs. The methodology shall be agreed with the DR and EPD prior to assessment. The computation software shall be applicable to territory-wide noise mapping assessment to handle GIS data for all road networks, buildings, topography, etc. The information to be gathered shall include existing or planned road infrastructure and existing noise sensitive receivers (NSRs) and planned or committed noise sensitive developments.

6.5.32 The Consultants shall formulate mitigation measures at strategic level to address the potential noise impacts due to the proposed transport initiatives under the Assignment.

Other Environmental Issues

6.5.33 The Consultants shall assess, if any, other relevant environmental issues, including but not limited to ecology, fisheries, landscape resources, waste management implications, cultural heritage, water quality and hazards to life, to broadly address the potential environmental impacts arising from the proposed transport initiatives.