**For discussion**
**on 14 July 2023**

# Legislative Council Panel on Transport
# Latest Progress of the Traffic and Transport Strategy Study

## Purpose

At the Legislative Council Panel on Transport meetings held on 19 October 2021 and 8 April 2022, the Government briefed Members on the background and scope of the Traffic and Transport Strategy Study ("TTSS") and reported on the progress of the study at that time. The purpose of this paper is to report to Members on the latest progress of the TTSS (including the preliminary findings of Travel Characteristics Survey ("TCS") 2022), and to seek Members' views on the four transport strategy concepts.

## Background

2. To tie in with economic and social development and to enhance Hong Kong's competitiveness, the Transport Department ("TD") commenced the TTSS in late 2021 to map out a forward-looking and long-term transport strategy blueprint for Hong Kong with a view to building a reliable, safe, smart, environmentally friendly and highly efficient transport system that can not only meet the economic, social and leisure travel needs of the public, but also support the sustainable development of Hong Kong and facilitate the flow of people and goods in the Guangdong-Hong Kong-Macao Greater Bay Area ("GBA"). The scope of the TTSS can be categorised into the following four key directions:

(1) to optimise the use of limited road space;
(2) to provide people-centric and efficient public transport services;
(3) to advocate green and active transport as healthy lifestyles; and
(4) to embrace opportunities to enhance transport connectivity with other cities in the GBA.

3. On the other hand, we launched the sixth TCS in September 2022. Since the 1970s, we have been conducting territory-wide TCSs[1] about once every

[1] The Government conducted TCSs in 1973, 1981, 1991, 2002 and 2011 respectively.

ten years. The purpose of the TCS is to collect people's up-to-date travel information so as to update and enhance the Comprehensive Transport Study model for forecasting traffic conditions. The traffic and transport forecasts will provide essential references for the planning of transport infrastructure and the formulation of transport policies, such that the future transport system can better meet the needs of the public. The preliminary findings of the TCS 2022 are presented at **Annex 1**.

4. Meanwhile, we have conducted topical studies on subjects that are closely relevant to the public or are relatively new. With society returning to normalcy and the full resumption of travel with the Mainland and overseas, the TD and its consultant team visited Mainland cities, including Shenzhen, Foshan, Shanghai and Hangzhou in March and April this year to study the cities' "City Brain" system and integrated traffic monitoring platform, autonomous vehicles ("AVs"), electric and hydrogen fuel cell public transport vehicles, etc. The team also visited the United Kingdom ("UK") and the Netherlands in June this year to learn more about the latest developments in these countries in respect of smart motorways, active transport, hydrogen fuel cell double-deck buses, etc. The practical experience learnt from both the Mainland and overseas provides us with great inspiration and useful reference in formulating suitable transport strategies and measures for Hong Kong.

## Latest Progress of the TTSS

### ***Preliminary Analysis Findings***

5. Based on the preliminary findings of the TCS 2022, the research findings of the topical studies under the TTSS, and recent development trends in the traffic and transport field, as well as the practical experience gained from the visits to the Mainland and overseas cities after the resumption of travel, we have arrived at the following three key points after conducting preliminary analysis.

6. First, **the Government should continue to uphold a public transport-oriented transport policy, and adopt a people-centric approach to enhance passenger experience**. Currently, Hong Kong already has a diverse and highly efficient public transport system with railways as the backbone, serving the entire territory and catering for the travel needs of most people. As shown by the preliminary findings of the TCS 2022, public transport is still the main mode of transport for most people, with over tens of millions of passenger trips made through different public transport services every day, accounting for nearly 90% of all personal trips in Hong Kong, a number that is far higher than other major cities around the world. In contrast, while some Mainland and overseas major

cities may have the vision of increasing public transport usage, they still have to take into account the fact that most people primarily use private cars for travel when formulating transport policies, on account of development intensity and other related backgrounds and factors. Owing to the fact that Hong Kong is small and densely populated, and the high development intensity on both sides of the Victoria Harbour, we have to maximise the use of highly efficient public transport services to optimise the use of limited road space. The future direction for Hong Kong's transport policy should focus on further improving the quality and efficiency of public transport services, adopting a people-centric approach to enhance passenger experience of public transport services, coordinating various public transport modes to complement one another and engage in healthy competition, and facilitating interchange between different public transport modes, so that the public can continue to benefit from efficient and affordable public transport services, and the current public transport-oriented travel pattern can be maintained and enhanced.

7. Secondly, **the Government should endeavour to enhance cross-boundary transport services and facilities and improve the one-hour commuting network in the GBA.** With the development of the GBA and the gradual formation of the "Twin Cities, Three Circles" layout of Hong Kong and Shenzhen in the future, the degree of integration between Hong Kong and neighbouring cities in the GBA will be further enhanced. To better grasp the significant opportunities brought about by the development of the GBA, the "Northern Metropolis Development Strategy" announced in the 2021 Policy Address proposed to develop a "Northern Metropolis" in the northern New Territories. As shown by the preliminary findings of the TCS 2022, on the assumption that a Hong Kong resident needs to commute to and from other cities in the GBA, the maximum commuting time that can be accepted by the majority of the respondents was one hour. In order to meet the future cross-boundary commuting needs, the TTSS will seize the opportunity of the Northern Metropolis development to enhance cross-boundary transport services and facilities with the goal of achieving one-hour commuting time, allowing the public to travel seamlessly between Hong Kong and other cities in the GBA.

8. Finally, **embracing advanced transport technologies to develop smart mobility is an important direction for our future.** With the rapid development of intelligent transport technology and artificial intelligence over the past decade, technological progress and innovation are reshaping the way people travel. To this end, the Government has all along been committed to providing a highly efficient transport system and creating comfortable and convenient travel experience through the effective use of technology. When developing a public transport-oriented passenger transport system with railways as the backbone and expanding the road network, we must

have a forward-looking mindset, make full use of technology, and take advantage of technological breakthroughs in recent years in aspects such as sensing detection, artificial intelligence and big data analysis, so as to cope with the evergrowing traffic and transport demand, overcome the difficulty in expanding the road network, and create capacity for Hong Kong's future.

***Transport Strategy Concepts***

9. Based on the preliminary analysis described above, we have come up with four transport strategy concepts. Instead of waiting for the completion of the entire TTSS, we will strive to incorporate relevant transport strategy concepts into the planning of the Northern Metropolis, the Kau Yi Chau Artificial Islands ("KYCAI") and other new development areas ("NDAs") as soon as practical. At the same time, we are also planning to take forward some innovative measures through trials or pilot schemes. Details are set out in the ensuing paragraphs.

***Concept 1: Building a New Generation of Transport Interchange Hubs***

10. Maintaining a high utilisation rate of public transport services is the key to the sustainable development of Hong Kong's overall transport system. In addition to maintaining highly efficient, convenient and comfortable public transport services, we also hope to further elevate the overall travel experience of the public and attract private car drivers to switch to public transport. With reference to Mainland and overseas experience (including Shapingba Station in Chongqing, China, King's Cross Station in London, the UK, and Jurong East Integrated Transport Hub in Singapore), we have noticed that these public transport facilities are not merely a station but also a diversified transport hub that can provide a range of facilities and services to meet the travel and daily needs of passengers. Moreover, these transport hubs can drive the development of neighbouring areas, creating economic and living circles centred around them.

11. Drawing on the above case studies, we consider that Hong Kong can also build a new generation of Transport Interchange Hubs ("TIHs") at strategic locations based on the principle of "single site, multiple use". Based on a people-centric approach to the planning, design and management of TIHs, we aim to build new community hubs which will not only tightly connect the daily living and travel activities of the public, but also drive peripheral developments and maximise the potential of the districts they are located in. We are of the opinion that Hong Kong's new generation of TIHs should meet the following conditions:

- Located at a strategic development centre;
- Connected to railways and other public transport services conveniently;
- Provided with park-and-ride facilities and associated facilities (including bicycle / electric mobility device parking spaces in areas connected with cycle tracks); and
- Equipped with a digital information platform that provides comprehensive transport information.

12. Taking Hung Shui Kiu/Ha Tsuen NDA as an example, being one of the key development zones in the Northern Metropolis, this NDA will become a "Regional Economic and Civic Hub" of the Northwest New Territories. It will also have a major railway station that converges multiple railway lines, connecting the Tuen Ma Line, the Hong Kong-Shenzhen Western Rail Link (Hung Shui Kiu-Qianhai) currently being studied, and the preliminarily proposed "Hong Kong Island West-Hung Shui Kiu Rail Link" under the Study on the Artificial Islands in the Central Waters. We hope to seize this rare opportunity to shape Hung Shui Kiu Station and the areas in the vicinity of the Hong Kong-Shenzhen Western Rail Link into a new generation TIH which combines cross-boundary and local public transport services, with a view to expanding the coverage of the one-hour commuting network between Hong Kong and Shenzhen, connecting the corresponding transport network in other cities of the GBA, and better integrating Hong Kong into the overall national development. The Hung Shui Kiu TIH will provide connection between transport services of different modes through integrated spatial design. It will also be equipped with ancillary facilities, such as park-and-ride facilities and parking spaces for bicycles and electric mobility devices, enhancing the level of convenience and integration of interchange. In addition, the TIH will be equipped with a digital information platform that allows passengers to view in one glance real-time travel information (such as cross-boundary and local transport stations, schedules and ticketing information). Furthermore, the TIH will incorporate shopping and dining facilities as part of the development project, catering for passengers' various travel and daily needs.

13. On the other hand, the KYCAI will provide land for developing the third Central Business District ("CBD"), further enhancing Hong Kong's economic competitiveness. According to current planning, the KYCAI are located at the intersection of different transport networks, connecting to Hong Kong International Airport, Zhuhai and Macao to the west, the Northern Metropolis and Qianhai, Shenzhen to the north, West Kowloon to the east, and Hong Kong Island West and the CBD in Central to the south. Its geographical location is suitable for building a new generation TIH, as it connects a series of strategic transport infrastructure, including the Hong Kong Island West-Northeast Lantau Link, and the Hong Kong Island West-Hung Shui Kiu Rail Link. The proposed KYCAI TIH will significantly enhance the connectivity between the Harbour Metropolis

and the Northern Metropolis, and reinforce Lantau's competitive edge as a "Double Gateway" to the world and other GBA cities. Similarly, in addition to facilitating passengers' interchange to other transport modes for different destinations, the KYCAI TIH will also provide park-and-ride facilities, parking spaces for bicycles and electric mobility devices, shopping and dining facilities, etc. This will support the development of a sustainable, accessible and people-centric community on the islands, and encourage residents on the islands to travel by healthy modes such as walking or cycling, creating a "15-minute neighbourhood" within the islands. Apart from NDAs, we will also actively explore the development of TIHs at some locations in the city centre with geographical advantages.

14. In a nutshell, new generation TIHs will become an important link between transport and development of neighbouring areas by providing diversified "one-stop" transport facilities and ancillary services to enhance passenger travel experience, thereby improving transport services. Moreover, integrating different transport modes facilitates passengers to transfer smoothly and conveniently between different modes. This not only allows more efficient allocation of transport resources but also facilitates passengers to fully utilise the public transport network to travel to different destinations, thereby attracting private car users to switch to public transport services. We are currently designing the preliminary layout of new generation TIHs based on different criteria, including strategic locations, development potential, connectivity with surrounding development, and people's travel patterns and interchange demands. Under the TTSS, the TD has been actively discussing with other relevant policy bureaux/departments and organisations on the reservation of land and rezoning of land use to provide for TIHs, in order to finalise the land requirements for this transport initiative early at the planning stage.

***Concept 2: Introducing "On-demand Public Transport Mode" Additionally***

15. The public transport operation mode adopted in Hong Kong has mostly been fixed-schedule and fixed-route services (such as franchised bus services) which can effectively meet the travel needs of a large number of passengers during peak periods. However, in situations where passengers' travel times and locations are more scattered, especially during off-peak periods, we have observed that there are instances where resources are under-utilised, such as double-deck buses carrying only a small number of passengers during off-peak periods.

16. To flexibly respond to passenger needs and make more efficient use of resources, we are exploring the introduction of an "On-demand Public Transport Mode" in addition to the regular public transport services. The concept is to use

technology to flexibly deploy vehicles of different passenger capacities, adjust schedules, and plan routes in specified areas. Passengers can request their trips through a mobile application. After collecting passenger trip requests, the operator will dispatch vehicles of a suitable capacity to pick up passengers based on the actual demand. The operator can also flexibly plan appropriate routes and schedules based on real-time traffic conditions and the travel needs of passengers. We believe that this new operation mode is suitable for some intra-district feeder services, allowing passengers to travel conveniently to different locations within the district and to major TIHs. We understand that some Mainland and overseas cities (such as Shenzhen and Sydney) also provide similar services. In specified areas/districts in these cities, on-demand public transport services with flexible schedules and routes are provided by means of technology and data analytics.

17. Since NDAs are more suitable for systematic planning of transport infrastructure and ancillary facilities, we consider it possible to make use of the opportunities presented by these areas, such as the specified areas within Hung Shui Kiu/Ha Tsuen NDA and the KYCAI, to introduce "On-demand Public Transport Mode" mentioned above. This mode can complement regular fixed-schedule and fixed-route public transport services, generating synergistic effects that enable operators to improve service quality while better controlling operating costs, thus promoting the financial sustainability of public transport services. We will continue to study and explore the practical operation arrangements for this conceptual public transport service mode, including how to cater for Hong Kong's actual traffic and travel situation, in order to set out a sustainable development direction for Hong Kong's future public transport services.

***Concept 3: Promoting the Development of AVs***

18. As global technology enters a new era, the development of AV technology has been very rapid in recent years. AV technology has the advantages of eliminating human errors and preventing illegal driving behaviours, thereby improving road safety.

19. As far as Hong Kong is concerned, AVs have their unique opportunities. The driving systems in Hong Kong and on the Mainland differ in terms of left- and right-hand driving, as well as traffic regulations. AVs can avoid operational issues caused by different driving habits, thereby promoting the integration of driving modes between the Mainland and Hong Kong, and traffic between the two places.

20. In the case studies of various countries / regions explored in the TTSS, the Mainland is more advanced in areas such as infrastructure, technological

development, pilot testing and application deployment of AV technology. Currently, some major cities have moved beyond the public road testing phase and are at the demonstration phase with regard to various services such as passenger and cargo transport, and will further advance towards the stage of commercialisation. We will continue to keep an eye on the developments on the Mainland and overseas, striving to align Hong Kong's autonomous driving development with that of other major cities on the Mainland and around the world.

21. In addition, the preliminary findings of the TCS 2022 show that among the car owners who are willing to switch to AVs in the future, about 40% of them would use their cars more frequently for travel. Therefore, while the Government actively fosters the development of autonomous driving, to reduce the growth of cars, the TTSS recommends that Hong Kong should take shared AVs as the main direction, and encourage members of the public to travel by shared AVs by harnessing information technology to match demand.

22. We have put in place a statutory regulatory framework for the pilot application of AVs in Hong Kong. The Road Traffic (Amendment) (Autonomous Vehicles) Bill 2022 was passed by the Legislative Council after the third reading in May this year, and the relevant subsidiary legislation setting out the details of the regulatory framework is also expected to be introduced into the Legislative Council within this year. The the Airport City Link autonomous transportation system of the Airport Authority Hong Kong will provide passenger services within the airport from Airport Island to Hong Kong Port Island on the basis of the new legislation, and is planned to be extended to Tung Chung town centre in the future.

23. At the same time, we are providing financial incentives in order to promote AV technology. Through the "Smart Traffic Fund", we are subsidising enterprises and organisations to conduct trials and pilot projects of AVs. Currently, some science and technology parks, university campuses, and private residential estates are already conducting AV trials. Public awareness and acceptance are crucial as AV technology is relatively new. We will continue to encourage the industry to introduce more trials and pilot projects on AVs, including mixed trial runs with manually operated vehicles (hereafter referred to as "conventional vehicles") on public roads and trial rides for the public, with the aim of increasing public acceptance of and confidence in AVs. Moreover, we will push forward the pilot application of various types of autonomous driving services in NDAs under planning.

24. Besides, vehicle-to-everything ("V2X") can assist in the development of AVs. Applicable to both conventional vehicles and AVs, V2X enables data exchange among vehicles, and between vehicles and pedestrians, roadside

infrastructure and networks. Through data transmission, V2X can enhance vehicle-infrastructure cooperation, such as providing real-time traffic information and traffic signals. It can also allow "platooning" for AVs to enhance the efficiency and safety of road networks, and elevate travel experience. In the foreseeable future, we believe that AVs will still share the road with conventional vehicles, and V2X can support the development of AVs by providing a platform to enhance the communication and interaction between AVs and conventional vehicles, and assist AVs in coping with the complexity of mixed-mode traffic conditions.

25. The prerequisites for the wider application of V2X in the market include breakthroughs in and standardisation of V2X technology. We have observed the development of V2X on the Mainland and overseas, and found that there is no global or national standard for V2X in the world, including in terms of communication, equipment, and equipment installation. We discovered that owing to the lack of standardisation of V2X and based on cost and risk considerations, installing "On-board Units" in new vehicles is uncommon for most car manufacturers. Notwithstanding, V2X is the general direction of the national development of intelligent connected vehicle industry. As more and more vehicles in Hong Kong can travel northwards to the Mainland, we will continue to encourage the industry, including the Hong Kong Applied Science and Technology Research Institute, to study the alignment with the Mainland V2X technology, make reference to the latest technology on the Mainland, communicate closely with stakeholders, keep a close eye on the development of national standards and specifications for V2X, and formulate standards suitable for Hong Kong. We aim to apply V2X technology in Hong Kong as soon as possible, while achieving compatibility and interconnection with neighbouring cities.

26. On the infrastructure necessary for the development of V2X, we have taken steps to liaise with relevant departments and requested that space be reserved in NDAs to facilitate future installation of "Roadside Units" and associated ancillary facilities, paving the way for the future application of V2X. In addition, V2X development also needs the support of communication networks. The Office of the Government Chief Information Officer is currently coordinating the installation of smart lampposts in different NDAs, and will encourage the trade to increase the coverage of communication networks. Apart from NDAs, we will next consider rolling out V2X in developed areas, and seek to balance the coverage and resources required for V2X in the process. We will continue to strengthen coordination with relevant policy bureaux/departments in facilitating the provision of the necessary infrastructure facilities for the development of V2X.

***Concept 4: Moving Towards Application of Smart Motorway Management***

27. Apart from the development of AVs, promoting smart road infrastructure in Hong Kong to complement the development of a smart city is equally important. As Hong Kong's transport demand continues to grow, traffic congestion is very common during peak periods. Owing to the scarcity of land resources and the continued increase in the number of vehicles, relying solely on implementing new transport infrastructure projects to increase road capacity is not a sustainable solution. At the same time, on account of the high road usage rate in Hong Kong, even if only a small section of a road experiences an incident or an emergency, the traffic on the entire road or even other major arteries in the area will be severely affected. In view of this, the TTSS recommends introducing the concept of smart motorway management, which will not only harness technology to fully utilise limited road resources, but also enhance the resilience of arterial roads in responding to emergencies. Smart motorways can leverage the development of new generation information technologies, such as mobile networks, the internet of things, big data, cloud computing, artificial intelligence, etc., to gradually enhance existing traffic management systems in a bid to build an intelligent traffic management platform. In addition, smart motorways can increase road capacity within the constraints of limited road space by improving traffic control and surveillance systems and applying new traffic modes, such as using the hard shoulder as a running lane.

28. The application of smart motorway management is to enhance the Intelligent Transport Systems[3] of existing major roads, and to collect and analyse traffic data more extensively, thereby implementing more comprehensive and effective traffic management. We will use this as the basis to further build an intelligent traffic management platform. In terms of enhancing the resilience to incidents, smart motorways can make use of big data to analyse the road network in real-time and utilise road facilities and real-time information platforms to implement appropriate traffic arrangements on the road, including real-time dynamic hard shoulder and contraflow schemes, in order to provide additional traffic capacity and divert traffic. At the same time, smart motorways can collect data more effectively and provide drivers with more accurate traffic information through different media, helping to divert traffic and facilitate members of the public in planning travel routes.

29. The TTSS has reviewed the application cases of smart motorways on the Mainland and overseas in recent years, and explored their applicability in Hong Kong's road environment. At present, the application of smart motorways on the Mainland has become increasingly mature, and is about to enter the stage of large-scale implementation. The Mainland prioritises the development of smart

---

[3] Hong Kong's existing Intelligent Transport Systems include Area Traffic Control Systems, Traffic and Incident Management System, and Traffic Control and Surveillance Systems.

motorways in the directions of digitalisation, networkisation and intelligentisation, and the promotion of the synergistic effect between intelligent control facilities equipped with sensing, transmission, computing technology, etc. and transport infrastructure. Moreover, the Mainland is promoting the application of emerging technologies on highways, e.g. big data, autonomous driving, V2X, etc., to further enhance the capacity and safety of highways. Under the guidance of various policies and development strategies, a number of completed road demonstration projects have successfully and effectively verified the concept of smart motorways. For example, the Taizao section of Jingtai Expressway has incorporated the above technical features of smart motorways, providing safety pre-warnings and smart control services having regard to the efficiency of road travel and the travel needs of the public. The exploration, implementation and development trend of smart motorways on the Mainland provide valuable references for Hong Kong and we should conduct further research on the applicability of these technologies in Hong Kong's road environment.

30. As regards the UK, it tends to place more emphasis on guiding drivers to use the hard shoulder and utilise road space through on-site information equipment. The UK has developed about 600 km of smart motorways as at the end of 2020, accounting for about 10% of the total length of highways in the country. According to the UK Department for Transport, the average fatal accident rate of road sections with smart motorway management is lower than that of conventional highways. As the driving mode on smart motorways differs from that on conventional highways, it is crucial for motorists to use smart motorways and follow instructions correctly. To achieve this, the UK authorities have invested a lot of resources in media publicity and public education. The UK's experience in the application of smart motorways, including strengthening guidance for motorists and implementing safety measures, is a valuable reference for Hong Kong.

31. With reference to the above case studies, smart highways are expected to bring benefits to Hong Kong's road infrastructure in terms of improving road safety and enhancing the resilience of the road network. Therefore, the TTSS has preliminarily recommended that all the major roads under planning in Hong Kong, and those proposed under the "Strategic Studies on Railways and Major Roads beyond 2030" should be constructed as smart controlled motorways to enhance road carrying efficiency and resilience. Considering the time required for the planning, design, construction, and completion of major road projects, we have been actively liaising with relevant Government works departments for the incorporation of suitable smart motorway elements and requirements into the design at the early planning stage to better prepare for the implementation of smart motorways.

32. Taking the Tsing Lung Bridge of Route 11 and the major roads on the KYCAI for external connections as examples, we will set up traffic control and surveillance system facilities, including lane control signals, variable speed limit signs, and traffic detectors, to make use of the hard shoulder at suitable road sections for general traffic. Furthermore, when building new major roads, we will also install the same facilities in the opposite direction of the carriageway to accommodate the operation of contraflow. In the event of severe congestion caused by a major incident and when no alternative routes are available, vehicles from one or more traffic lanes of a dual carriageway can use the traffic lane in the opposite direction via reserved entry and exit points on the central reservation, so as to optimise traffic flow.

33. With regard to existing major roads, we will take the opportunity to incorporate appropriate smart motorway elements when replacing the existing traffic control and surveillance systems in the future, and explore the feasibility of permanently converting the hard shoulders of appropriate road sections into running lanes to make better use of road space by deploying technology. To allow the public to experience the benefits of smart motorways as soon as possible, we propose taking forward a pilot scheme at Ting Kau Bridge southbound by optimising the traffic control and surveillance system in that section, enhancing the response to traffic accidents, and taking the opportunity to permanently convert the existing hard shoulder into a running lane to alleviate traffic congestion. This "all lane running" scheme can overcome the spatial limitations of the current road design by means of technology. It will not only avoid the issues that come with traffic merging when vehicles from Tsing Long Highway and connecting roads of Tuen Mun Highway converge on the southbound lane of Ting Kau Bridge, but also increase road capacity by upgrading the entire southbound lane of Ting Kau Bridge from three lanes to four lanes, allowing four-lane traffic upstream and downstream.

**Advice Sought and Next Steps**

34. We are currently preparing the necessary groundwork for the recommendations under the TTSS, in order to pave the way for the smooth implementation of relevant transport strategies or initiatives in the future. In a bid to enhance passengers' travel experience, further expand the coverage of public transport services, and connect with the development of the transport networks in Mainland cities in the GBA, we will continue to look for strategic locations suitable for building new generation TIHs (such as NDAs or spaces vacated after urban redevelopment). We will actively discuss with relevant Government bureaux/departments to reserve land for building new generation TIHs during the planning stage, with the aim of finalising a territorial layout. At the same time,

we are also studying suitable locations to provide more park-and-ride facilities, facilitating private car drivers to switch to public transport. In addition, we are actively planning trials to promote the testing of AVs at individual sites, aiming to test them on public roads to provide transport services in the next stage of testing. We will closely monitor the challenges encountered and experience gained in the trials in order to formulate the future direction for the development of AVs. As regards the recommendations on smart motorways, we will continue to discuss with relevant departments the specific details of the implementation plan with a view to launching the pilot scheme as soon as possible.

35. Members are invited to give views on the four transport strategy concepts mentioned above, so that we can further optimise relevant transport initiatives and trial schemes. Our next target is to put forward a Preliminary Transport Strategy Blueprint under the TTSS by the end of this year.

**Transport and Logistics Bureau**
**Transport Department**
**July 2023**

**Annex 1**

# Preliminary Findings of the Travel Characteristics Survey 2022

With the support of the public, we completed the Travel Characteristics Survey ("TCS") 2022 (hereafter referred to as "the survey") smoothly in January 2023. More than 35 000 households were successfully interviewed. The interviewed households were selected through random sampling based on the distribution of households in different districts in the territory, and data were collected through face-to-face or telephone interviews, or online self-completion questionnaires. Among the interviewed households, there were approximately 5 000 households that owned private cars. The data collected from the survey were mainly divided into two types. The first type included travel data of each household member, such as the time of each trip throughout the day, transport modes used, transfer locations and destinations, etc. The second type included the main factors that influence the formation of the interviewees' transport habits and their opinions on various transport facilities, such as the use of private cars, factors affecting the choice of transport modes, the use of transport information systems, the impact of new lifestyles on transport demand, etc. Although data analysis is still in progress, we would like to take this opportunity to provide the following preliminary results for Members' reference.

## Travel Characteristics

2. According to the survey, the interviewed households indicated that public transport accounted for about 90% of their passenger trips, reflecting that public transport has remained the main mode of transport. Besides, among those respondents using private cars, about 40% used private cars mainly for leisure/social purposes, while commuting to and from work accounted for about 25%[1]. With the rapid development of the public transport system in recent years, the proportion of respondents who used private cars mainly for commuting to and from work had decreased in comparison with that of about 30% in 2011.

## Electric Vehicles and Application of Technology

3. Among the respondents who planned to purchase private cars within the coming year, about half of them would choose to buy electric cars. The main

[1] For the remaining respondents, the main purposes for using private cars include picking up their family members/friends, work-related purposes, shopping and transporting personal items.

consideration for purchasing electric cars was to support environmental protection, followed by lower fuel costs and vehicle licence fees. On the charging front, owners of electric cars indicated that the most common places for charging their vehicles were public car parks and housing estates where they lived, each accounting for about half of the total. On average, it took about two hours to fully charge their vehicles. Besides, about half of the electric car owners stated that they would only feel comfortable using their electric cars when there was enough battery power to travel 100 km or more.

4. Nearly 25% of the car owners surveyed indicated that they would consider switching to AVs when such technology became mature and legal for use on public roads in the future. Among these car owners, about one-fourth would give up owning cars and opt for shared autonomous car services.

5. As the use of mobile phone applications has become more and more popular, about 15% of the respondents would book taxis online through relevant applications. The survey indicated that about half of the respondents would browse websites or mobile applications to obtain real-time traffic and public transport information before making a trip.

**Greater Bay Area and Northern Metropolis**

6. The survey also asked respondents about their residential and commuting preferences if they were to work in Mainland cities within the Guangdong-Hong Kong-Macao Greater Bay Area ("GBA"). About 20% of them indicated that they would consider moving to the Northern Metropolis, whereas approximately 30% would consider moving to Mainland cities in the GBA to reduce commuting time. Furthermore, if they were to live in Hong Kong and work in Mainland cities in the GBA, nearly half of the respondents stated that the longest commuting time per trip they would accept was one hour.

7. The survey also asked respondents about their residential and commuting preferences if they were to work in the Northern Metropolis. About 25% of them indicated that they would consider moving to the Northern Metropolis in order to reduce commuting time. Moreover, if they were to live in Hong Kong and work in the Northern Metropolis, approximately 70% of the respondents stated that the longest commuting time per trip they would accept was one hour.

## Emerging Lifestyle Patterns after the Pandemic

8. The pandemic has accelerated changes in people's work patterns. For example, the use of video conferencing and hybrid office modes of working from home has increased. Taking video conferencing as an example, about 15% of the respondents reported using video conferencing before the pandemic, while this proportion increased to approximately 25% during the pandemic. Video conferencing is expected to continue to be widely adopted. On the subject of working from home, the survey showed that only about 10% of the respondents worked from home before the pandemic, averaging about two days a week of working from home. During the pandemic, more than 20% of the respondents worked from home, and the number of days working from home increased to an average of about three days a week. After the pandemic, about 20% of the respondents expected to continue working from home on some or all days as new work patterns became increasingly popular.

9. In addition to work patterns, people's lifestyle patterns have also changed. Online shopping, ordering takeaway food and drinks, entertainment (e.g. online movies and virtual gatherings) and classes (such as regular classes, tutorial classes, and interest classes) have become common. About 40% of the respondents reported shopping online, about 30% of the respondents ordered food delivery online, about 40% of the respondents watched movies online or took part in gatherings virtually, and about 10% of the respondents attended classes, tutorial classes and interest classes online. These new lifestyle patterns will have an impact on people's travel and logistical activities.

**********