For discussion
on 20 March 2009

Legislative Council Panel on Transport

Proposed Speed Map Panels in the New Territories and Progress Update on the Intelligent Transport Systems

INTRODUCTION

This paper briefs Members on the Administration's proposal to upgrade **6028TC** "Speed Map Panels in the New Territories" to Category A, at an estimated cost of $70.7 million, for the construction of Speed Map Panels in the New Territories. We also take this opportunity to update Members on the progress of the development and implementation of the Intelligent Transport Systems (ITS) in Hong Kong.

PROPOSED SPEED MAP PANELS IN THE NEW TERRITORIES

2. Speed Map Panels (SMPs) are used in some overseas countries to provide real-time traffic information to facilitate motorists to make informed route choices. The traffic conditions downstream are shown as a route map on the SMP mounted on a gantry. Different colours are used to represent different congestion levels. For example, a road section marked red and amber on the map may represent congested and slow traffic respectively. Overseas experience indicates that SMPs bring such benefit as better distribution of traffic on roads, alleviation of congestion, as well as reduction in travelling time, fuel consumption and pollutants emission.

Proposal

3. We propose to construct five SMPs in the New Territories. The SMPs will be installed on roads with high traffic flows so as to provide real-time traffic information to as many motorists as possible. Typically, the SMPs will be installed in advance of traffic divergent points where alternative routes are available. The scope of the proposed works comprises –

(a) provision of five SMPs with estimated journey time information and congestion level shown by graphical means. Of these five SMPs, three will be in the New Territories East and two in the New Territories West (a list of the locations and a map showing the locations and the sign face details are at **Enclosure 1** and **Enclosure 2** respectively);

(b) installation of vehicle speed detectors along the concerned routes for collecting real-time data;

(c) installation of a central computer system for data processing, control and monitoring;

(d) installation of data communication equipment for transfer of data between the central computer system and field equipment;

(e) associated civil engineering works including overhead gantries, mounting poles, roadside cabinets, cable ducts; and

(f) provision of computer hardware and software for the dissemination of real-time traffic information through the Internet.

Financial Implications

4. We estimate the cost of the project to be $70.7 million, in MOD prices, made up as follows –

		$ million
(a)	Supply and installation of electronic and electrical equipment	44.1
	(i) SMPs	7.0
	(ii) Vehicle detection equipment	9.0
	(iii) Data communication equipment	9.0
	(iv) Central computer equipment	6.1
	(v) Related building services works, installation and commissioning of the system	13.0
(b)	Construction of sign gantries	10.0
(c)	Consultants' fees for contract administration and site supervision	6.6

(d)	Contingencies	5.4	
	Sub-total	66.1	(in September 2008 prices)
(e)	Provision for price adjustment	4.6	
	Total	70.7	(in MOD prices)

5. We estimate the annual recurrent expenditure arising from this project to be $7.03 million, made up as follows–

		$ million
(a)	Equipment maintenance cost	4.01
(b)	Electricity charge	0.3
(c)	Data communication charge	1.66
(d)	Electrical and Mechanical Services Trading Fund charge (16% of maintenance cost)	0.64
(e)	TD staff cost (1 additional Technical Officer (Traffic))	0.42
	Total	7.03

Implementation Programme

6. Subject to funding approval, the implementation programme for the project will be as follows –

Invitation / Assessment / Awarding of Tender	July 2009 to January 2010
Construction	January 2010 to March 2012
Testing and Commissioning	March to April 2012

Public Consultation

7. We have consulted the Traffic and Transport Committees of the Sha Tin District Council, Tuen Mun District Council, Tai Po District Council and Yuen Long District Council in September 2008 on the proposed SMPs. Members supported the proposal.

Way Forward

8. We plan to seek the endorsement of the Public Works Subcommittee on 3 June 2009 for the approval of the Finance Committee on 19 June 2009 for the proposed SMPs in the New Territories.

PROGRESS UPDATE ON INTELLIENT TRANSPORT SYSTEMS

9. Intelligent Transport Systems (ITS) denotes the development of a comprehensive system to cater for the deployment of advanced information and telecommunication technologies to enhance the safety, efficiency, reliability and user and environmental friendliness of Hong Kong's transport system. The ITS Strategy Review Study conducted by the Transport Department (TD) in 2000/01 recommended the following four priority ITS components:

(a) a centralised **Transport Information System**,

(b) a more comprehensive **Traffic Management Framework**,

(c) an **Incident Management Framework**, and

(d) an **Journey Time Indication System** (JTIS).

10. TD has undertaken a series of projects to implement the recommendation. As the projects progress, TD has also kept in view closely the development of technologies and overseas experience in ITS applications, so that the ITS implementation plan may be suitably updated and fine-tuned from time to time. Ultimately, we expect the projects will enable us to reap the benefits of advance in information and telecommunication technologies and enable us to be innovative on traffic management to maximise the utilisation of the limited road space in Hong Kong. The progress of the development of the four priority ITS components is set out below.

Transport Information System (TIS)

11. The TIS is a centralised data warehouse for the collection, processing and dissemination of comprehensive transport information. A more detailed description of the TIS is set out at Annex A. TD is now fine-tuning the TIS, linking it with external systems of other departments for data exchange, as well as conducting further testing and data update. Applications have been and will be launched for public use by phases in 2009 as follows—

- The Road Traffic Information Service has been launched in February 2009.
- The Public Transport Enquiry Service will be launched in April 2009.
- The Intelligent Road Network will be launched in the latter half of 2009.
- The Driving Route Search Service will be launched in end 2009.

Traffic Management Framework

12. The Traffic Management Framework comprises the Area Traffic Control (ATC) systems within a district, and the Traffic Control and Surveillance (TCS) systems on strategic roads. A brief description of the Traffic Management Framework is at Annex B.

ATC Systems

13. We completed the enhancement of the ATC system for the Hong Kong Island in 2006, and new ATC systems for Tai Po/Northern District and Yuen Long/Tuen Mun in 2007 and 2008 respectively. We have commenced, in mid 2008, a project to enhance the ATC system for Kowloon, Tsuen Wan and Sha Tin, as well as to expand the system to Tseung Kwan O. This project is scheduled for completion in late 2011.

TCS Systems on Strategic Roads

14. Comprehensive TCS facilities are currently being installed in the Tsing Sha Control Area (the section between West Kowloon and Tsing Yi). The TCS facilities of the Cross Harbour Tunnel are now being replaced and the work is expected to complete by the fourth quarter of 2009. We have scheduled to install such facilities on other major expressways including Tuen Mun Road and Tolo/Fanling Highway between 2013 and 2015.

15. In recent years, we have installed additional Closed-circuit Television (CCTV) cameras in Route 9 Extension in Tsuen Wan in 2007, Road T3 (part of Tsing Sha Highway) in Sha Tin and Tung Chung Road in 2008.

16. In June 2005, we have completed a review on the existing CCTV system and identified the “blind spots”, especially those along traffic sensitive and public transport sensitive routes. To address this problem, we are now installing 140 additional cameras to enhance the coverage of the CCTV system at strategic locations for completion by late 2010.

Incident Management Framework

17. At present, TD utilises the information collected from the CCTVs and feedback from tunnel operators and the Police, to conduct overall traffic management during incidents. Through the integrated Traffic Control Centre (TCC) at TD headquarters, TD is able to respond quickly and coordinate incident management efforts by different parties. Government's response to incidents is more immediate and effective as information throughout the territory is channelled to the TCC, and this has proven useful during the Sixth Ministerial Conference of the World Trade Organisation in December 2005, and the Olympics Equestrian Events in August 2008. To further enhance our incident management capacity and better utilise latest technologies, TD commissioned a Feasibility Study on Deploying Advanced Technologies in Incident Management in 2007 for completion in mid 2009. Building upon our current set-up on incident management, the study will make recommendations on the enhancement of our capacity and ability, as well as further utilization of advanced technology in incident detection, incident verification, incident data analysis and display, transport modelling, and collection and dissemination of real-time traffic information. Details of the Incident Management Framework are at Annex C.

Journey Time Indication System (JTIS)

18. A brief description of the JTIS is at Annex D. With funding allocation from Finance Committee in January 2007, work on JTIS Kowloon, which comprises six sets of journey time indicators to show the estimated cross harbour journey time to Hong Kong, commenced in October 2008 for completion in April 2010.

19. As a next step, TD is planning the following new works projects –

- Installation of an additional journey time indicator in the Eastern District;

- Gradual extension of the existing Internet Traffic Speed Map, which covers major roads on the Hong Kong Island, Kowloon and the New Territories South, to all strategic roads across the territory; and

- Installation of SMPs at five locations in the New Territories to show road traffic condition ahead with graphic images, as detailed in paragraphs 2 to 8 above.

Conclusion

20. ITS applications form an important part of the transport infrastructure provided by the Government to make our transport system more efficient and user-friendly. TD will continue to implement the above projects for the development of ITS in Hong Kong.

ADVICE SOUGHT

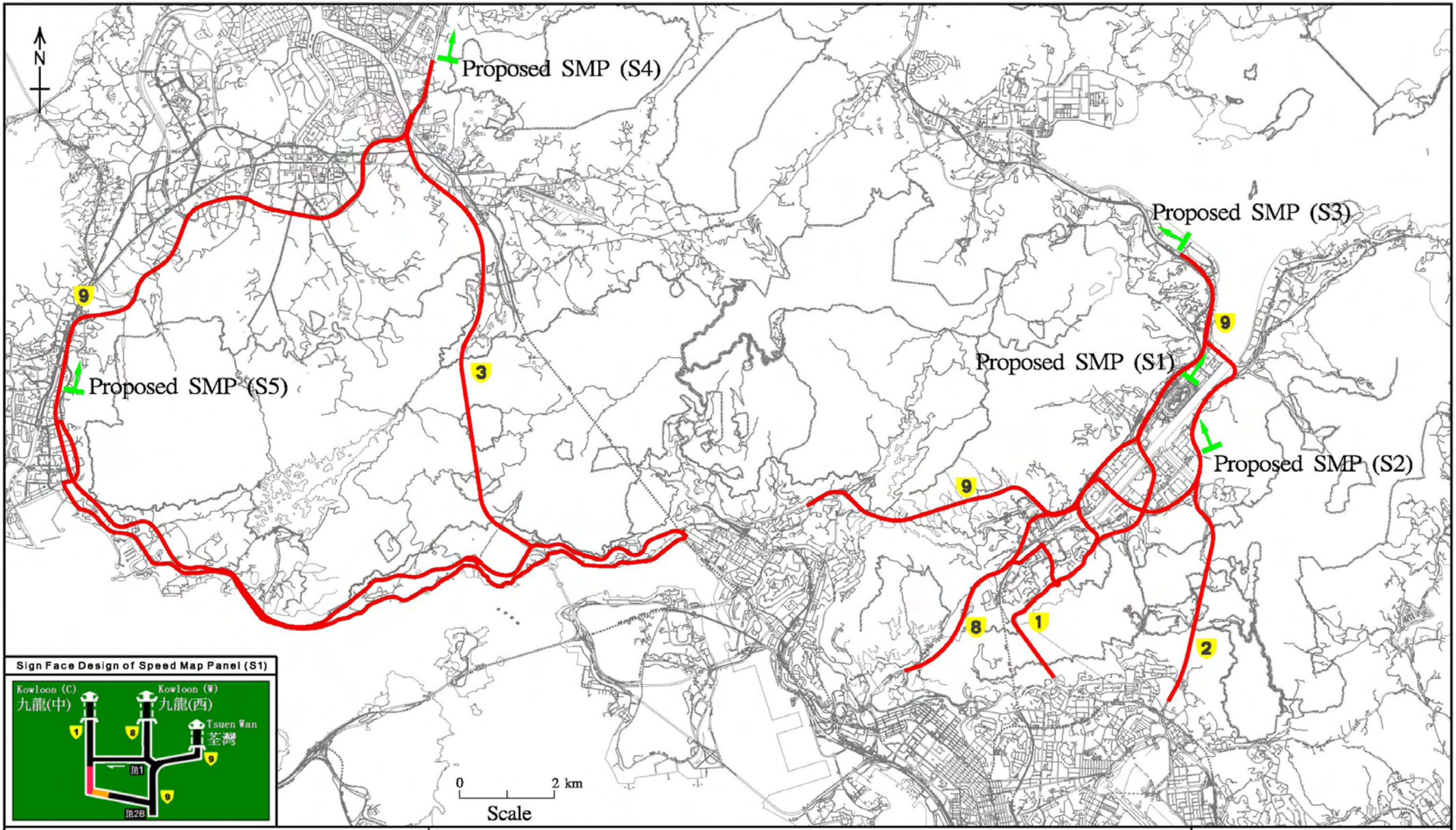
21. Members are invited to comment on the proposed SMPs in the New Territories, and note the development of ITS in Hong Kong.

Transport and Housing Bureau
March 2009

Enclosure 1

Locations of Proposed Speed Map Panels

Region	Speed Map Panel Number	Proposed Location
NT East	S1	Tai Po Road - Sha Tin Section southbound near the Racecourse
	S2	Tate's Cairn Highway southbound near Shek Mun
	S3	Tolo Highway southbound near the Science Park
NT West	S4	San Tin Highway southbound near the Fairview Park
	S5	Tuen Mun Road southbound near Tuen Mun San Hui



Sign Face Design of Speed Map Panel (S1)

Legend

Proposed Location of Speed Map Panels

Routes to be Installed with Vehicle Speed Detectors

Drawing Title

PWP Item No.: 6028TC - Speed Map Panels in the New Territories
Proposed Locations of Speed Map Panels

office

TRAFFIC AND TRANSPORT SURVEY DIVISION

運輸署
Transport Department

Annex A

Transport Information System

- The TIS is a centralised data warehouse for the collection, processing and dissemination of comprehensive transport information. Apart from the internal use components, it comprises four components for public use, namely the Road Traffic Information Service, Public Transport Enquiry Service, Intelligent Road Network and Driving Route Search Service. Installation of the TIS was completed last year[1] and opened for internal use.

- The Road Traffic Information Service provides real-time predicted traffic speed on major roads, traffic conditions via CCTV images and special traffic news; thus allowing users to plan their journeys to avoid congestion.

- Public transport passengers can make use of the Public Transport Enquiry Service, through the Internet, to search for possible routes based on fare, estimated journey time and number of interchanges.

- Value-added service providers in the private sector, including telecommunication companies, fleet and freight operators, as well as logistic and IT organisations, can make use of the Intelligent Road Network to develop applications of ITS, such as car navigation, fleet management systems and personalised information services for the public.

- Motorists can make use of the Driving Route Search Service, through the Internet, to search for their optimum driving routes on the digitised map based on options such as distance, time and toll.

---

[1] As the previous contract for the implementation of the TIS was seriously delayed with little progress made, the Administration had to re-tender the contract for the implementation of the TIS and awarded it in August 2006.

Annex B

Traffic Management Framework

- An ATC system is a computerised system that integrates the control and operation of traffic signals within a district having regard to changes in the traffic conditions. Through area-wide optimisation and co-ordination of the traffic light signal plans at road junctions, the ATC system can maximise the use of road capacities and reduce journey time, delay and number of stops.

- Over recent years, we have expanded the ATC system to cover most of the territory. As at end 2008, over 90% of the signalised junctions have been included into the ATC system.

- TCS systems include CCTV cameras, incident detectors, Variable Message Signs, Variable Speed Limit Signs, Lane Control Signals and control centres. They enable TD to monitor traffic conditions, detect traffic incidents, provide motorists with important traffic information and regulate/divert traffic to improve traffic management on strategic roads.

- The TCS systems have been installed in the road tunnels, the Tsing Ma Control Area, the Shenzhen Bay Bridge, the Kong Sham Western Highway and the Tsing Sha Control Area (section between Sha Tin and West Kowloon).

- CCTV cameras are installed for traffic monitoring on the strategic road network along Tuen Mun Road, Tolo Highway (between Ma Liu Shui and Island House Interchange), West Kowloon Highway, North Lantau Highway, Yuen Long Highway, Tuen Mun River Trade Terminals, Penny's Bay and the approach roads to the land boundary crossings (e.g. San Tin Highway, Man Kam To Road, Lok Ma Chau access road and the public transport interchange).

Annex C

Incident Management Framework

- An Incident management framework integrates the information detected by, and the incident management capacity of, such different set ups as the TIS, TCS systems and ATC systems. It therefore enables quicker incident detection, incident response and incident recovery, which in turn will help minimize impact of primary incidents and prevent happening of secondary incidents.

- TD has taken steps in the past few years to strengthen its incident management capabilities including :

  (a) establishment of an integrated Traffic Control Centre (TCC) in 2003. The TCC currently accommodates the Emergency Transport Coordination Centre (ETCC), the ATC system operation for the New Territories and the TCS of the Shenzhen Bay Bridge. The TCC handles emergency transport incidents and has successfully coordinated the traffic and transport response during adverse weather conditions and special events such as the World Trade Organisation's 6th Ministerial Conference in December 2005 and the Olympics Equestrian Events in August 2008. It also monitors the traffic conditions at the Shenzhen Bay Bridge and implements the Wind Management System when necessary;

  (b) deployment of mobile/temporary CCTV systems to supplement the coverage of existing CCTV system;

  (c) development of contingency plans and wind management plan;

  (d) development of an incident map system to collate information from different sources to assess the severity and spread of the incidents;

  (e) establishment of an in-house web-based computer-aided inter-departmental system to facilitate communication; and

  (f) dissemination of emergency traffic and transport news to large organizations and government departments.

Annex D

Journey Time Indication System

- By informing motorists of the latest traffic situation, they will be able to make an informed choice on the routes, thus enhancing the distribution of traffic and alleviate the congestion on the road network for the benefits of the public at large. It will result in the saving of journey time and costs to the motorists and improved environment by reduced emissions.

- Dissemination of traffic information on our road network is currently mainly done through the JTIS, which display the estimated time for passing through individual road harbour crossings. JTIS was first implemented on Hong Kong Island in 2003. Information collated from the system has also been disseminated to the public through a Traffic Speed Map shown on TD's website since August 2005.