



*The Singapore
Land Transport
Master Plan 2013*
– A Review by PwC



Introduction

The Singapore Land Transport Authority (“LTA”) has published its new Land Transport Master Plan that sets out its vision for land transport in Singapore for the next 20 years. This vision is that by 2030, Singapore will have:

- 8 in 10 households living within a 10 minute walk from a train station;
- 85% of public transport journeys (less than 20km) completed within 60 minutes; and
- 75% of all journeys in peak hours undertaken on public transport.

In this paper PwC reviews the key features of the Master Plan, the major investment projects which are planned for the future and assesses which companies can benefit from the Authority’s Plans.

Overview of the Master Plan



The LTA has developed the Master Plan to respond to what it describes as a changed environment from when the previous Master Plan was published in 2008. Three key changes to the environment are laid out:

- Increased expectations of a better quality of life and correspondingly an improved travel experience;
- An increased 'demand for transport', driven by a larger economy and greater population; and
- Tighter land constraints.

These three factors show that the LTA cannot develop their Master Plan in isolation and they have complemented their own analysis and policy development with input from other sources including:

- Other government policies such as Population Policy (see Page 7), Land Use Policy and government forecasts for economic growth for the economy as a whole and growth within individual sectors; and
- Citizens of Singapore – Building on the government's engagement with the people through the 'Our Singapore Conversation', the LTA established a website to gather views and opinions from the people that use Singapore's public transport system every day. These views, and other ideas supplied through permanent feedback channels, were analysed, reviewed and incorporated into the LTA's policy formulation.





Strategic Themes

The 2008 Master Plan set out the LTA's overall vision of a 'people-centred land transport system' that would be achieved through making public transport a choice mode, managing road usage and meeting the diverse needs of the people.

The 2013 Master Plan is not a major departure from this vision and builds further on these themes, updating them to be relevant to the changed environment.

The 2013 themes are:

- **More Connections** – Rail will remain the backbone of the public transport system with more connections to the MRT network provided by bus, walkways and cycle routes;
- **Better service** – This will be achieved through supply side measures, primarily an expanded and more reliable public transport network, as well as demand management approaches such as encouraging the shifting of peak travel to shoulder or off-peak periods; and

- **Liveable and Inclusive community** – Ensuring that the public transport system makes Singapore a more liveable city. This encompasses making public transport accessible to all residents and ensuring the transport network's impact on the natural and built environment is limited and managed effectively.

These themes will be underpinned by a continuing commitment to a complementary policy of reducing reliance on private transport. The LTA is seen as a leader amongst governments in considering transport policy as a whole, and not developing public and private transport policies in isolation. Thus the LTA will consider ways to reduce the dependency on driving through reviewing a potential change to the target vehicle growth rate (a lever the government uses to control congestion) and seeking to deliver a stable supply of Certificates of Entitlement ("COE"). Of considerable impact will be the introduction of next generation Electronic Road Pricing System ("ERP") using satellite navigation systems. This has many potential benefits and gives the LTA significantly more power and flexibility to manage road usage and travel patterns.



Rail

The 2008 Master Plan set out the rail lines that would be built or extended up to the year 2020. Those lines are either soon to be operational (the Downtown Line which begins operations over its first phase in December 2013) or currently being procured and built. Thus the 2013 Master Plan looks further ahead and details the lines that will be built or extended between 2020 and 2030.

The lines are:

- ▶ **Cross Island Line** – A line spanning the breadth of the country, running from Changi Airport and the developing residential area of Punggol in the East to the industrial parks of Jurong in the West. The exact alignment of the route is not yet determined but it will broadly run through central areas of Bukit Timah and relieve the pressure on the existing East-West Line;
- ▶ **Jurong Region Line** – This line will serve the Jurong area in the West of the island. It is designed for the diverse needs of passengers in the area – from students at the local university, residents of local estates (currently in development) and commuters to Jurong Island and mainland industrial estates;
- ▶ **Downtown Line, Circle Line and North East Line** – All three lines will be extended to respond to land use plans and to fully realise the benefits (network effects) from the new lines that will be built;
- ▶ **Singapore-Johor Bahru Rapid Transit Link** – This line has previously been announced by the leaders of Singapore and Malaysia and an engineering study is currently underway to determine the alignment and chosen method to cross the Causeway. This Link will further integrate the economies of Singapore and the rapidly developing region of (Iskandar) Malaysia. It will also serve to relieve congestion at the two causeway links (Tuas and Woodlands); and
- ▶ **Singapore-Kuala Lumpur High Speed Rail** – Again previously announced by the two leaders, a “game changer” for both countries’ citizens and economies, the initial feasibility study has been completed by S.P.A.D. in Malaysia and they have indicated they are looking to tender the project in 2014.

As well as introducing new and extended lines, the LTA is looking to improve the performance of the existing infrastructure. In tandem with its own investment in upgraded signalling systems and new trains, the LTA will impose on operators tighter Operating Performance Standards and enforce more stringent maintenance and service reliability requirements.

Bus

The LTA has previously announced major investment and improvements to the density and reach of the bus network through the Bus Service Enhancement Programme (“BSEP”). The commitment to this Programme is reaffirmed in the Master Plan.

In March 2012, the LTA launched the BSEP to quickly increase capacity on existing bus routes and introduce new routes to alleviate overcrowding on the MRT. The Programme is a partnership between the two existing Public Transport Operators (“PTOs”) – SBS Transit Ltd and SMRT Buses Ltd. Under the BSEP, the Government pledged to provide funding of approximately \$1.1 billion for 550 new buses. For their part, the PTOs agreed to fund the addition of 250 buses to their fleets, over the next 5 years. These 800 new buses represent an increase of 20% to the total bus fleet.

In September of 2013, the LTA provided an update on the progress of the implementation of the BSEP¹. As at that date, almost 250 of the committed buses had been entered into service. This was done through enhancing 111 existing bus services and introducing 14 new bus services. The LTA stated that these improvements enhanced the connectivity of the bus network, shortened waiting times by 3 to 5 minutes for some existing bus services, and reduced the number of bus services with persistent crowding during peak periods from 96 services to 56 services, or by about 40%. The LTA also announced that they were accelerating the implementation of the Programme and that the bulk of the remaining BSEP buses will be rolled out by the end of 2014, instead of 2016.

To complement the BSEP, the LTA is currently looking to implement new City Direct services which are focused on high demand corridors during peak periods. These services are designed to relieve the MRT and existing bus services will be provided by private bus operators rather than the two existing public bus operators (SMRT and SBST).



Walking and Cycling

The Master Plan is not just focused on motorised transport but also covers walking and cycling:

- ▶ **Walk2Ride** – this Programme will extend the sheltered walkway network to improve connectivity and passenger experience, especially for transfers between transport modes;
- ▶ **Cycling Infrastructure** – the LTA will continue to expand the cycle network and build on existing initiatives such as the Park Connect Network and the National Cycling Plan; and
- ▶ **Integrated Transport Hubs** – more hubs will be developed to further improve transfer between modes and create a better passenger experience.



Roads and Cars

Although the LTA is looking to reduce reliance on private transport, they acknowledge that more roads are required to serve new developments and support improvements to the bus network. No new Expressways are announced but an update is provided on the previously announced North-South Expressway and there is to be a review of the feasibility of reversible flow along the Kranji Expressway. In addition, the LTA will review the implementation plans for the Singapore Underground Road System (“SURS”).

In place of increasing the supply of roads in Singapore, the LTA looks to demand management to manage (traffic) flow and deliver a fast and reliable road system. The LTA manages demand for road usage by targeting the demand for cars, through setting a vehicle growth rate and matching the number of COEs to this growth rate. Further, the demand for using those cars is reduced through the Electronic Road Pricing System. Of major significance, the LTA has announced it is trialling next generation ERP that is based on global navigation satellite system technology.

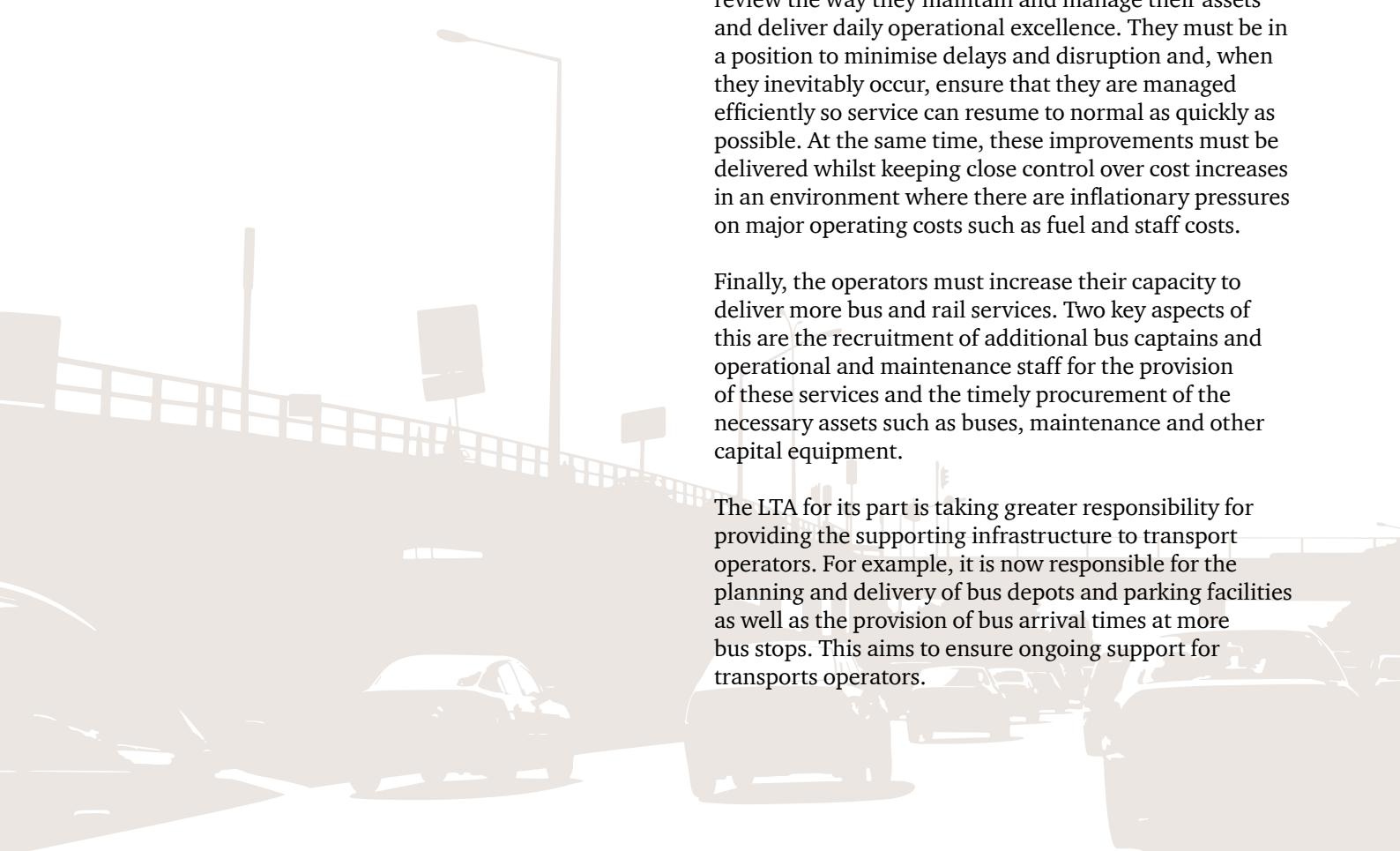
Responding to Singapore's challenges

A major challenge facing the Singapore government is how it manages the country's population given the land constraints that the island nation naturally faces. To effectively manage this, the government periodically reviews its population and looks to establish a long term population forecast that can be used across government for policy planning purposes. The last review was completed this year and was published as the 2013 Population White Paper by the National Population and Talent Division. This Paper concluded that in the second half of the last decade, both Singapore's economy and population grew more rapidly than anticipated, outpacing infrastructure development. As a result, “The demand for public transport and public housing, which have long lead times, was underestimated... and the result was congestion on our public transport system.”² The 2013 Master Plan looks to respond to these issues and incorporates the updated estimate of the Singapore population of between 5.8 and 6 million in 2020, and between 6.5 and 6.9 million by 2030.

¹ Bus Service Enhancement Programme One-year Report, 30 August 2013.

² A Sustainable Population for a Dynamic Singapore – Population White Paper, January 2013.

What does the Master Plan mean for transport operators?



For the current public transport operators and taxi operators, the Master Plan does not result in a major shake up of the industry or the way transport services are delivered. However, it does impact their businesses and require a renewed focus on operational standards and meeting of government performance standards. Across bus, rail and taxi, the LTA is regulating performance more tightly to ensure passenger needs are met. The LTA is strengthening the monitoring and performance frameworks with greater penalties if performance standards are not met.

To avoid significant penalties, the operators will have to review the way they maintain and manage their assets and deliver daily operational excellence. They must be in a position to minimise delays and disruption and, when they inevitably occur, ensure that they are managed efficiently so service can resume to normal as quickly as possible. At the same time, these improvements must be delivered whilst keeping close control over cost increases in an environment where there are inflationary pressures on major operating costs such as fuel and staff costs.

Finally, the operators must increase their capacity to deliver more bus and rail services. Two key aspects of this are the recruitment of additional bus captains and operational and maintenance staff for the provision of these services and the timely procurement of the necessary assets such as buses, maintenance and other capital equipment.

The LTA for its part is taking greater responsibility for providing the supporting infrastructure to transport operators. For example, it is now responsible for the planning and delivery of bus depots and parking facilities as well as the provision of bus arrival times at more bus stops. This aims to ensure ongoing support for transports operators.

Where do the opportunities lie?

Singapore's land transport system is widely regarded as a world-class system. In order to maintain this excellence, the LTA must not only implement effective policies and robust regulatory frameworks, it must also support these

with investment in both hard and soft infrastructure. The level of investment required of the LTA to deliver the objectives of the Master Plan is significant and provides opportunities to firms across a wide variety of sectors.

	More Connections	Better Service	Liveable and inclusive community	Reducing Reliance on Public Transport
Master Plan initiative	New and extended rail lines	Increased capacity of bus system	Environmental Sustainability	Second generation ERP
Sector opportunities	<ul style="list-style-type: none"> - Route planning and technical consultancies - Civil construction companies - Tunnelling companies - Rolling Stock and signalling companies - MRT operators 	<ul style="list-style-type: none"> - Private sector bus and coach operators 	<ul style="list-style-type: none"> - Suppliers of fuel efficient/low emission cars 	<ul style="list-style-type: none"> - Technology companies
Comments	The almost tripling of the rail network from 2008 to 2030 provides great opportunity across the rail value chain	New routes are being tendered to private sector operators who can grow their businesses if they can deliver value for money services to the LTA	Carbon Emissions-based vehicle scheme and other policies encourage car buyers to consider the environmental impact of car models when making their purchase	ERP using GNSS is not a proven technology and the company that can develop the desired solution can become a market leader
Master Plan initiative	High Speed Rail (“HSR”) to Kuala Lumpur	Car sharing/better travel information	Transport Orientated Development	
Sector opportunities	<ul style="list-style-type: none"> - HSR systems, construction and infrastructure suppliers 	<ul style="list-style-type: none"> - Software companies 	<ul style="list-style-type: none"> - Urban developers and planners 	
Comments	HSR does not exist in SE Asia outside of China and Taiwan so there is opportunity for foreign firms to provide technology and know-how to deliver the HSR line	Technology can contribute to getting the most out of each mode of transport and improving the customer experience. Developers of applications and systems that enable this will benefit	A number of themes place transport infrastructure at the heart of development. Companies that realise this vision can target both small and large scale developments	



PwC View

The LTA must be commended for its continued forward thinking in developing and publishing transport policies and investments that extend out to 2030. The Master Plan outlines clear targets that the LTA is working towards and the projects and initiatives that will enable those targets to be met. However, now the hard work for the LTA and its partners starts. Delivering the projects on time and on budget will not be easy.

Key challenges that the LTA will need to overcome include:

- ▶ **Private sector capacity and capability** – the LTA harnesses the skills and experience of the private sector to construct new transport infrastructure and operate and maintain the existing network. This has worked well for the LTA in the past and there is no reason to suggest that it won't remain the case in the future. However, the LTA must work with its private sector partners to enable them to be in a position to deliver. Indeed, the published and credible project pipeline helps the private sector plan and make the necessary investments to deliver these projects. LTA must stick to these projects and ensure that they remain attractive to existing and new suppliers. There must be recognition that the LTA's program is competing for suppliers who have a wealth of alternative projects to target in South East Asia;
- ▶ **Supplier financial sustainability** – Linked to this is the need for suppliers to be financially sustainable. If they are not, then performance and standards may fall and in the worst case scenario, transport services could be interrupted. For example, the implementation of the new Rail Financing Framework and the findings of the Fare Review will be instrumental in providing an environment where operators can be sustainable;
- ▶ **Manage technological advances** – A number of the initiatives, from second generation ERP to Wi-Fi on trains or improved travel information, require technology to enable their delivery. The LTA must

work effectively with technology companies to specify the project outcomes whilst not limiting or impinging on their innovation;

- ▶ **Manage conflict between different road users** – The Master Plan includes measures to encourage cycling and increased use of bus priority lanes. Vehicle growth will continue which could lead to increased conflict between road users. How the LTA manages this will be key to maintaining public support for its transport policies; and
- ▶ **Maintaining service standards** – The bus market has already been opened up with new routes tendered to private operators and LTA aiming to "work towards greater contestability in the bus industry to improve the efficiency of bus operations." The LTA must ensure that this increased competition does not result in inconsistent service standards across operators, with passengers suffering. The introduction of the new Quality Incentive Framework is a positive first step in this regard.

If the LTA can overcome these challenges and continues to listen to citizens and respond to external changes then Singapore can maintain its position as a leading liveable city. The successful implementation of the specified projects will realise significant benefits. For example, a smooth transition to a second generation ERP system will give the LTA a much greater ability to manage traffic and congestion on a real time basis. Dynamic pricing could be implemented to respond to congestion blackspots or respond to accidents. It also enables the LTA to be more flexible and targeted in its overall road use policy.

Overall, this Master Plan reaffirms the importance of effective economic infrastructure to the success of Singapore as a dynamic and successful city-state. It sets out the projects that must be delivered and the desired outcomes from those projects. With its successful implementation and delivery, Singapore's competitive position in the world economy will have been safeguarded.

Where PwC can help

PwC's Transportation & Logistics practice provides assurance, tax and advisory services to transportation & logistics companies. Our T&L practice comprises a global network of more than 4,400 industry professionals who are recognised for their innovation in resolving complex business issues through analysis, and the development and implementation of tailored solutions.

Transportation is a key sector in Singapore, with demand for public transport growing as a result of population growth, land use constraints and environmental concerns. PwC advises government and private sector

participants in the transport sector, reconciling investors' need for profit with the public sector's requirements for financial transparency.

Our work with governmental agencies includes shaping their policies, developing delivery frameworks and procuring and tendering projects. On the private sector side we can help transport operators, construction companies and industry suppliers to assess and win these projects. Our key advisory service offerings in the transport sector are summarised in the diagram below.

Key service offerings

1 Government Sector/PPPs	<ul style="list-style-type: none">Our government sector advisory service offering provides comprehensive assistance to governmental agencies from the outset of any project. Our service offering includes conducting feasibility studies, framework/policy development and tendering/procurement advice.PwC also provides specialist advice for PPPs and project financing, having previously been involved in key projects such as the Singapore Sports Hub and ITE West.
2 Capital Projects Services/Project Management Office ("PMO")	<ul style="list-style-type: none">Capital project management is a PwC approach that governments and businesses can use to plan, manage and deliver capital projects in a structured way in order to maximise potential benefits.It focuses on risk at every stage, whether "up front" during appraisal and procurement stages or "downstream" during construction or when disputes develop. This allows us to help clients in the transport industry deliver projects on time and more importantly on budget!
3 Market Entry/Strategy Assessment	<ul style="list-style-type: none">PwC's dedicated strategy team specialises in supporting both local and international clients with successful market entry decisions.We help answer key questions such as (i) What is the size of the market, what are the key trends driving it and its growth potential? (ii) What is the competitive landscape (including local and international players) and what would be your points of differentiation? (iii) What are the entry barriers and the risks associated with them?
4 Bid Management	<ul style="list-style-type: none">We help private sector participants with assessing the right business opportunities and preparation of bids for projects.This includes project managing the entire bid submission process, building of financial models to assess potential returns, drafting the bid documents and providing commercial support during negotiation.
5 M&A/Capital Raising (Equity & Debt Financing)	<ul style="list-style-type: none">The transport sector is characterised by a growing level of privatisation, finance-raising and merger and acquisition activity (M&A). Transactions are often complex and impacted by the regulatory environment, competition issues, or need for contracted subsidies to support operations.With our industry know-how and specialist skill-sets, PwC is well placed to assist transportation and logistics companies across the deal continuum through assessing, capital raising and maximising the return on transactions.

Contacts



Richard Abadie
Global Head, Capital Projects & Infrastructure
+44 20 7213 3225
richard.abadie@uk.pwc.com



Mark Rathbone
Asia Pacific Leader, Capital Projects & Infrastructure
+65 6236 4190
mark.rathbone@sg.pwc.com



Oliver Redrup
Capital Projects & Infrastructure
+65 6236 4053
oliver.jw.redrup@sg.pwc.com



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