

# Kuala Lumpur – Singapore High Speed Rail Project

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This note is written as a general guide only, in respect of the Kuala Lumpur – Singapore High Speed Rail Project as of August 2015. It is not intended to provide legal advice and should not be relied upon as a substitute for specific legal advice.

## Introduction

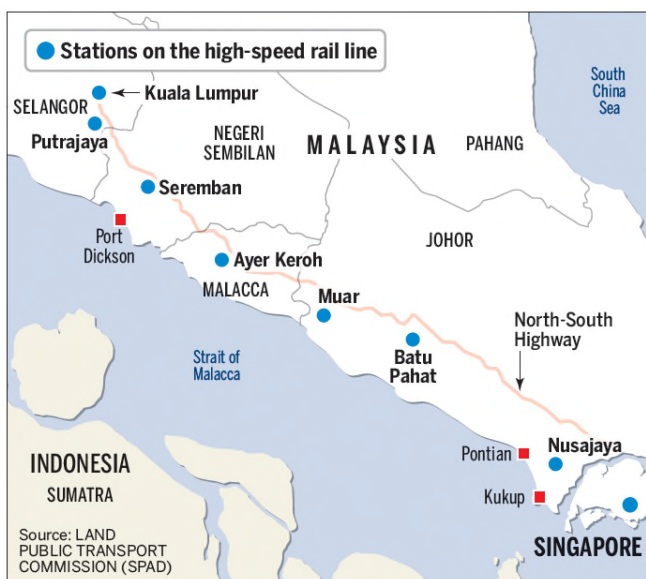
### Background

*This note serves as an update on the landmark Kuala Lumpur – Singapore High Speed Rail (the “HSR”). The attached schedules provide further insights on the rationale for the HSR and general structuring issues.*

### The HSR

In 2013, Singapore and Malaysia formally announced plans to develop the HSR. At around 350km, the HSR will connect Jurong East in Singapore with Bandar Malaysia (Kuala Lumpur) in Malaysia with six stops along the way (Putrajaya, Seremban, Ayer Keroh, Muar, Batu Pahat and Nusajaya). Services are planned to run four times an hour, including a non-stop service from Bandar Malaysia to Singapore.

### Proposed HSR line from Kuala Lumpur to Singapore



**Source:** *The Straits Times*, “Malaysia confirms its S’pore-KL rail stations” retrieved 20 August 2015 – <http://transport.asiaone.com/news/general/story/malaysia-confirms-its-spore-kl-rail-stations>

Presently, the HSR has an expected completion period of seven years, spanning from the design

phase (one year) to the tender phase (one year) and then to the construction phase (five years).

A joint ministerial committee has been set up to discuss the various implementation aspects of the HSR, and a bilateral agreement is set to be signed in the third quarter of 2015, which will define the technical, commercial and governance frameworks.

If successful, the HSR will be the first high speed railway in South East Asia.

### The HSR and existing travel modes

Singapore and Malaysia are presently very well-connected by land, air and sea, and the HSR must be viewed as a complementary addition to the existing infrastructure as opposed to filling in a complete vacuum.

(a) Land – Singapore and Johor are connected by the causeway and the second link. Numerous public and private bus services use these routes and continue along the North-South Highway to Kuala Lumpur.

Singapore and Malaysia are also connected by a railway service operated by Malaysian Railway (“KTM”).

(b) Air – There are full-service airlines and budget airlines plying the Kuala Lumpur – Singapore route.

(c) Sea – There are sea crossings between Singapore and Johor, as well as pleasure cruises between Singapore and various Malaysian ports.

Notwithstanding the existing plethora of options for travellers, the HSR offers an attractive transportation proposition, and is also a political, economic and social development tool. Please refer to Schedule 1 for further details on the rationale for the construction of the HSR.

## Project structure

Key details of how the HSR will be structured have yet to be announced. However, some considerations are likely to come into play:

- (a) Financing – The HSR’s estimated cost is US\$11 billion. Given that the development costs are high and the return on investment will be on a long term basis, some level of government funding may be necessary (even if financing is mostly privately sourced). Should there be public funding involved, the issue then centers on the distribution of costs between the Singapore and Malaysia governments, with ownership of the rail tracks and rolling stock being a related consideration. Although the HSR is a bilateral project, most of the HSR will be situated in Malaysia. It will be important for both governments to reach an equitable solution on this point.
- (b) Construction – One possible option would be for both countries to appoint one contractor to construct the entire line. Another option would be for each country to appoint its own separate contractor to construct the line within its territorial boundaries. The second option may be considered more efficient from a project management basis, since each country will manage the construction within its soil, but interfacing will become a more pronounced issue.
- (c) Operation – It is not clear whether construction and operation of the HSR will be undertaken by a single party or multiple parties. Separating construction from operation could allow for specialisation and greater transparency, and may also be a possible way of apportioning the project between the public and private sectors. However, it might also create interfacing difficulties and inefficiencies as multiple parties will be involved and each party is entitled to a different income source which might not always be commensurate with its investment costs. Responsibility will be more diffused than under a single-contractor model, and each contractor may be less incentivised to adopt a broad-based view of the project. Further, there have also been suggestions for the Malaysian domestic HSR service to be operated separately from the express non-stop HSR service between Kuala Lumpur and Singapore, on the grounds of giving Malaysia complete autonomy over the domestic service and the ability to tailor it to meet local needs.

- (d) Regulation – It remains to see as to how the HSR will be regulated. Whilst reference may be made to regulations governing the railways in both countries, the HSR is of a different nature being a bilateral project. For example, cross-border issues such as immigration, national security and customs are likely to play a key role in the regulations, whereas these issues would not be of concern in respect of a domestic rail. It is also unclear whether both countries will be jointly setting up a single entity to regulate the HSR, or whether each country will set up an entity that will collaborate with its counterpart.

Please refer to Schedule 2 for more details on structuring the HSR.

## International interest

The HSR has generated a significant amount of international interest, with companies from China, France, German, Japan and South Korea expressing interest.

The Japanese consortium is made up of the East Japan Railway Company (“**JR-East**”), Sumitomo Corporation, Hitachi and Mitsubishi Heavy Industries<sup>1</sup>. JR-East is one of the operators of the Shinkansen. The Japanese consortium’s pitch contends that the Shinkansen design, with smaller tunnels and bridges, can be more cost-effective. The average lifespan of a Shinkansen train is also fairly long – about 16 to 20 years after being in use for around 10 million km. Finally, the Shinkansen boasts an enviable 50-year safety record of no-fatalities.

The Chinese consortium consists of China Railway Construction Corp Ltd (“**CRCC**”), the Third Railway Survey and Design Institute Group Corp and CSR Qingdao Sifang Co Ltd<sup>1</sup>. CRCC is China’s largest engineering contractor. It has designed more than 70% and constructed more than 60% of China’s high speed rail links.

The decision is likely to be a difficult one, even on the basis of two competitors (ie. the Japanese consortium versus the Chinese consortium). China has the largest high speed rail network in the world and is aggressively seeking to expand its presence overseas, even openly proposing ideas for a rail network from Kunming to Singapore. Further, the

<sup>1</sup> *The Straits Times*, 11 May 2015, “Jurong East to be terminus for Singapore-KL high-speed rail: 10 things about the new train line”, retrieved 19 August 2015 – <http://www.straitstimes.com/singapore/transport/jurong-east-to-be-terminus-for-singapore-kl-high-speed-rail-10-things-about-the>

Chinese consortium has reportedly offered a lower price and a faster completion time than its potential competitors. Japan, on the other hand, was the pioneering country for high speed rail, and remains a leader in this field, with an unmatched safety and punctuality record.

Project costs and benefits aside, election of either consortium would probably have corollary financing consequences (eg. whether loans will be obtained from Japanese or Chinese export credit agencies).

## Conclusion

The HSR currently occupies a Goldilocks sweet-spot, as it connects two major cities at an ideal distance of 350km that will bring substantial cost and time savings.

That being said, cross-border railway projects are complex challenging projects, as clearly evinced by the lengthy period of time that both countries have been at the drawing board. With the bilateral agreement expected to be concluded this year, we anticipate more light to be shed on the project structure for bidders to consider.

## Our selected rail experience

Advising a **member of a joint venture** constructing part of the Taiwan High Speed Rail

Advising the **general contractor consortium** building two lots of the ICE (high speed railway) track from Cologne – Frankfurt, throughout the project and on all aspects

Advising **Réseau Ferré de France**, the French rail network operator, and the **French government** in relation to the Tours – Bordeaux and the Nimes – Montpellier High Speed Rail concession contracts

Advising the **British Railways Board** on its original proposed joint venture with two leading private sector developers/contractors to build, own and operate a high capacity link between London and the Channel Tunnel Rail Link (a high speed rail line)

Advising the **UK Department for Transport** on the Intercity Express Programme and the procurement of the East and Great Western mainline rolling stock

Advising the **investors** on the HSL Zuid high speed rail link in the Netherlands and Belgium

Advising **PT Sarana Multi Infrastruktur (Persero)** on the pre-feasibility study for the Soekarno Hatta International Airport to Manggarai high speed rail link project in Jakarta

Advising **MTR Corporation** on the procurement of infrastructure and issues in respect of the development of infrastructure, including the procurement of the Airport Railway, Ngong Ping 360, Quarry Bay Relief Line and Tseung Kwan O Relief Extension, and West Island Line

## Schedule 1

### Rationale for the HSR

To understand the rationale for the construction of the HSR, the HSR must firstly be viewed against a larger political, economic and social background, secondly against current demand, and thirdly against the other existing transportation options.

#### The HSR and its political, economic and social context

##### *Political perspective*

Singapore and Malaysia have historically been closely related, and the HSR is seen as a symbol of strengthened diplomatic ties. In fact, the HSR was first announced at the 2013 Leaders' Retreat, an annual platform between the two countries' Prime Ministers that has traditionally yielded major bilateral agreements.

From a broader ASEAN perspective, the ASEAN member states have repeatedly affirm their desire to move towards greater regional integration and connectivity. For example, there are plans to establish an ASEAN Economic Community that would allow for free movement of goods, services and labour. The HSR could prove to be a showpiece of this wider ASEAN goal.

##### *Economic perspective*

The HSR would make day trips between Kuala Lumpur and Singapore even more convenient, be it for business or leisure, and thus act as a catalyst for economic growth.

For the Malaysian government in particular, the HSR is a key piece of the Economic Transformation Programme that targets to raise the GNI per capita to at least US\$15,000 by 2020. The Malaysian railway stations will be strategically located at areas which have been targeted by the government for economic development. For example, Seremban is currently already a major satellite city for Kuala Lumpur and is positioned to be a technology hub. The Malaysia government anticipates that the transformational effects will filter down into each of these regions and their peripheries.

##### *Social perspective*

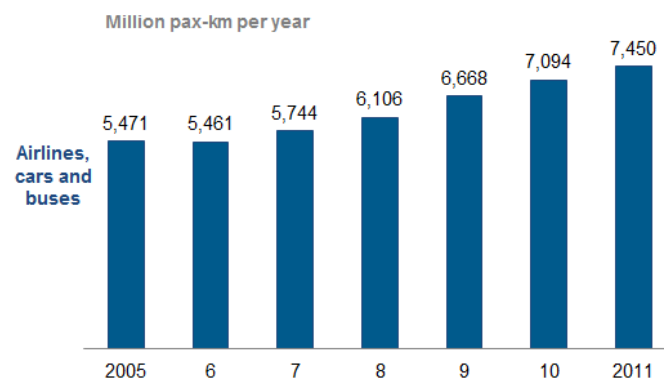
The HSR is an important infrastructure project that would improve connectivity and accessibility for people living near the stations.

For Singapore, the HSR also forms part of a larger urban development plan to develop regional centres outside of the central business district. For many years, land-scarce Singapore has faced transportation and congestion issues in the central areas and the government is trying to resolve this issue by dispersing human traffic. As such, the Singapore HSR terminus will be located in Jurong East – once a traditionally industrial area with residential pockets, that is being developed into and revitalised as a mixed-use self-contained urban district (the Jurong Lake District).

#### The HSR and current demand

The demand for Kuala Lumpur-Singapore trips appears to be high. The Kuala Lumpur-Singapore route has seen strong growth in passenger-km of travel, with the total travel market growing from 5.47 million passenger-km in 2005 to 7.45 million passenger-km in 2011.

##### Base transport demand in HSR corridor (only relevant routes)



Source: Malaysian Land Public Transport Commission, "Projects - High Speed Rail", retrieved 22 July 2015 - <http://www.spad.gov.my/projects/high-speed-rail>

Present demand also exceeds the capacity of the existing infrastructure. For instance, demand for the use of the causeway, one of the two bridges connecting Johor Bahru and Singapore, exceeds capacity by 33%. The market for Kuala Lumpur-Singapore trips is expected to continue growing at a comparable rate to the GDP growth of Malaysia and Singapore, at an average of 3 to 5%. In the long run, as the market matures, the growth rate might slow down. Nevertheless, average growth is still expected to hover around 3.2% from 2011 to 2060, with a market of 251 million passenger trips by 2060.

Hence, it appears that the HSR would add another option to meet increasing demand.

### The HSR and its competitive edge

Ticket sales are partially dependent on the HSR's advantages vis-à-vis its competitors, especially in terms of price and time. The HSR's closest competitors appear to be budget airlines and buses.

Presently, single-trip tickets for the HSR are anticipated to cost around US\$57-US\$64. This is roughly the same price range for a single-trip flight on a budget airline, but is possibly a more comfortable ride and a faster one (when the boarding and security checks are factored in). Budget airlines would nevertheless retain an advantage in respect of transit passengers as the HSR termini are located far from their respective airports.

Buses have a price advantage over the HSR, and have the flexibility to pick up and drop off customers at a greater variety of locations. However, they are significantly slower than the HSR.

### Estimated travel time and cost for a single-way trip between Kuala Lumpur and Singapore

Mode of transport	Estimated time (excluding customs clearance)	Estimated time (including customs clearance)	Estimated cost (US\$)
KTM railway	400 mins	430 mins	9 – 34
Bus	240 mins	270 mins	18 – 36
Plane	60 mins	170 mins	Budget airlines: 57 – 64  Full-service airlines: 178
HSR	90 mins	120 mins	57 – 64

## Schedule 2

### Structuring the HSR

#### Costs

High speed rail projects are complex and expensive. The 3 main construction cost components are as follows:

- (a) Planning costs such as feasibility studies, typically a sunk cost, usually account for 5 to 10% of the total investment.
- (b) Infrastructure building costs, including terrain preparation and platform building. This component varies widely across projects depending on the characteristics of the terrain, but typically accounts for between 10 to 25% of the total investment. If there are technical issues and geographic obstacles, this amount may easily double (up to 40 to 50%) for bridges and tunnels.
- (c) Superstructure costs usually make up the rest of the infrastructure costs and consist of all rail-specific elements.

Construction costs aside, as the HSR will likely be a green field project, land acquisition costs for the construction of the stations and the tracks could significantly increase the investment. Land acquisition is especially expensive if the HSR runs into densely concentrated downtown areas (which will almost certainly be the case at the Singapore side of the tracks).

At present, it is clear that land for both termini will need to be acquired. Singapore has chosen to situate its terminus on land which is currently occupied by the Jurong Country Club, while Malaysia's choice of terminus location is a plot of land currently occupied by the Royal Malaysian Air Force. With respect to other portions of the HSR line, plans are presently for parts of the HSR to be built on elevated platforms and underground so as to work around land constraints and avoid land disputes.

#### Source of funds

Financing for high-speed rail projects may come from a range of sources, including public funds, state-owned enterprises and private investors.

#### *Full public financing*

Full public financing requires the government to finance the total investment. The government uses funds from either tax revenue or public sector borrowing such as bonds. Public financing may be direct, or combined with funds from national railway companies. A major concern with public financing is the burden of public debt. Further, the government might need to take on the role of long term developer and owner of the project.

In the case of the HSR, we do not anticipate the project to be fully financed by the public sector, given the potential huge costs involved.

#### *Public-private partnership ("PPP")*

In order to combat increasing public debt, some projects have adopted PPP financing arrangements.

From a government perspective, a PPP arrangement should ideally be structured such that the government need not incur any borrowing. Rather, the borrowing is incurred by the private sector vehicle implementing the project. Accordingly, the government may benefit from new railway infrastructure in an "off-the-balance sheet" manner.

In practice, however, many PPPs come with significant government guarantees or financing, due to project risks such as high upfront sunk costs, as well as long and difficult construction phases.

Finally, it should be noted that public financing and private financing are not necessarily mutually exclusive. It may be possible for parts of the project to be fully financed while others are based on a PPP arrangement. For example, for the HSR, construction of the infrastructure could be publicly financed while the operations could be contracted out on a PPP basis.

It appears that the HSR will be open to private sector participation with possible local content requirements. Private sector participation will bring with it ownership considerations of the track, stations and rolling stock.



### *Capital servicing*

The income stream from a railway project can be used to repay the upfront capital. Typical income streams of a railway project include revenue from retail, advertising, property development, tolls and fees. It is necessary to identify how much of the capital cost can realistically be financed through usage-generated revenue, and how much must be financed through other sources of income.

The most significant income stream is likely to be from the ticket fares collected by the rail operator. This will depend on the ridership of the railway. As such, high-speed railways should only be built if justified by strong demand.

Given the strong existing demand for the Kuala Lumpur – Singapore route and the competitive edge of the HSR over other transportation options, this should not principally be an issue for the HSR although feasibility studies should still be undertaken to obtain more detailed forecasts.

### **Project structure considerations**

Financing for the HSR cannot be considered in isolation. Instead, the project and its financing should be structured in tandem to maximise cost-efficiency and to ensure reliable returns.

#### *Build profitable route first*

In the case of the HSR, the non-stop express service between Kuala Lumpur and Singapore is probably the most profitable route as it connects two large metropolises. Ensuring that the most profitable route is the first one up and running might make financing for subsequent parts easier. Prioritisation of the non-stop express service between Kuala Lumpur and Singapore would mean establishing the termini first. Although the service will travel through areas where other stations will eventually be constructed, such stations could be built at a later stage.

#### *Different financing models for different sections*

Increasingly, governments look to applying different financing models to different sections of the project. Decisions are made based on socio-economic factors for each section of the network, as well as estimated returns.

Mix-and-match of financing models should be done carefully, however, and not without thorough financial appraisal and feasibility study of the project.

### *Time costs*

Structuring and negotiating PPP arrangements can take far longer than government PPP financing. If there is great urgency for the new infrastructure, the government might need to fall back on simpler financing models. In the case of the HSR, we do not see pressing time constraints given the availability of other transport options. The various political commitments made by both governments in respect of a 2020 deadline should be noted, although such deadline is reportedly being re-assessed.

### **Project risks**

The HSR is a complex challenging project, given the number of risks involved including:

- (a) Delay – apart from the usual delay risks, the HSR is a bilateral project and coordination time may result in further delays. For example, there are likely to be a large number of third party consents required from both governments.
- (b) Demand/revenue – given the high development costs, the HSR would probably need a decade or so to turn profitable. Within this period, demand/revenue may fall below projections. For example, competing modes of travel might be subsequently introduced or enhanced, or overall demand for the Kuala Lumpur – Singapore route may fall, and the various modes of travel may cannibalise one another.
- (c) Project limitations – while there are potential revenue sources such as retail and advertising, it is likely that most of the revenue will have to come from ticket fares. Also, unlike a bus or airline company which can change routes or deploy its vehicles on other routes, it is not as straightforward to change the railway route or to deploy the rolling stock elsewhere should the HSR be less profitable than expected
- (d) Compliance – the operator may face compliance costs and regulatory restrictions in its management of the HSR (eg fare adjustment).

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