Financing for High Speed Rail in Australia

Introduction

Australia faces two serious situations which High Speed Rail (HSR) and Fast Freight Rail (FFR) would resolve together. First, the population of Australia and that of its cities, especially Melbourne, Sydney and Brisbane, are projected to about double in the next 3-4 decades. The consequences would be exponential increase in congestion, which is already troubling, and the loss of world leading liveability and prosperity as cities are densified, connections of people become more difficult and the skilled immigrants Australia relies on are discouraged. The attraction for immigration to Australia is world leading liveability and prosperity.

Second, the extremely high cost of interstate road freight along the east coast would worsen as general freight more than doubles. The consequence would be less industrial competitiveness than at present, already constrained by the large transport distortion that reduces prosperity significantly. East coast interstate freight that should be carried by sea is carried by rail. What should be carried by rail is carried by high cost road. It is a drag on national competition and prosperity. It raises the cost of living.

The two situations are inter-related. There is a strong case for combined HSR and FFR to remedy these situations as soon as possible. There may be a private financing opportunity to accommodate building the railways.

The VFT2 (second Very Fast Train) concept offers a strategy to adopt and adapt. It is remarkably robust, very profitable and low risk, which would fulfil government requirements and elicit government cooperation. The financing task would be very large, well rewarded and secured by property. The project is what Warren Buffet calls a ‘bridge’: a strong price maker, not a price taker. Warren Buffet’s company owns a large, US interstate railroad.

Preliminary considerations

For large projects, PPP arrangements have become the normal practice. They would not apply to the HSR railway. PPPs are typically intrastate and do not cross boarders like the interstate HSR project. Even if PPP were employed, there would be three states, one territory and a Federal Government, and later maybe South Australia, to coordinate. There would be no danger of different rail gauges, but there would be danger of different rolling stock, signalling, passenger management and pricing systems.

HSR would have to be one Federal supervised and coordinated project. The question is whether it would be on government books or off the books or private (with or without a government financial guarantee). It is unlikely to be on the books because it would expand national debt by a huge amount. Either way, the project would be undertaken by a consortium of companies experienced in large scale constructing, HSR technology and operation. Airlines, airports and road transport companies may become members of the consortium as a compromise for disruption, contributing skills and making a profit from their loss.

HSR could be a private project. The Government would be concerned about a financial guarantee in case the business fails, and the Government had to intervene. With infrastructure like HSR, this obligation would apply even if there were no guarantee. The Government should give formal comfort to private finance. The key is to make sure that the HSR project is as robust as possible to minimise the risk of failure, for both government and private participants. The risk should be managed.

The Federal and state governments are not well experienced or trained to manage or coordinate such large projects as HSR. The UK Government has trained a special team for these projects, for example Crossrail, the new London underground railway, and its own HSR project to the northwest from London. Australian governments should likewise develop specialist, trained teams to successfully manage and realistically oversee such major projects.

The HSR project is long term investment ideal for Super Funds. They need suitable arrangements and vehicles established to make it easier and more efficient for them to invest in infrastructure. HSR could be a one-off or the initiation of a system of such arrangements for future large Super Fund investments.
The project

The VFT2 concept envisages HSR and FFR (with dedicated, dual, standard gauge, electrified tracks and fast, double stacked, driverless container trains for general freight) built next to each other at the same time to reduce construction costs between Melbourne, Sydney and Brisbane. HSR entry and exit from the cities would be by trenches dug next to suburban rail for about 30km, higher capacity new suburban tracks and stations built in the trenches, all level crossings removed, trains switched to the new tracks when completed, and then trenches for HSR dug under the old suburban tracks into the CBDs. Some 400,000 dwellings would be built over the trenches in inner-city suburbs of the three cities close to jobs.

The 400,000 dwellings would include low rise buildings over tracks in trenches, medium rise over suburban stations, high rise over suburban hub stations before they become operational. High rise towers would be built over and around terminus stations. If necessary financially, they could include dwellings over regional stations. (For 24m more people, 10-12m dwelling are needed over 3-4 decades.)

When completed, these desirable city dwellings, 1km or less from inner suburban stations connecting to the CBD for jobs, would be sold on average for $500,000 each. Total receipts of $200b would pay for the whole construction of the railways and housing. Preliminary indicative cost estimates suggest a cost of $100b for HSR, $60b for FFR and $40b for 400,000 dwellings. The total initial cost estimate is about $200b, to be confirmed by a thorough new feasibility study.

The cost of the railway foundations for the dwellings above would be large, so total cost of the housing would be $200b. The railway would create housing valued at $200b. Finance for capital costs would be repaid rapidly, leaving fixed assets of $200b and equity of $200b. The case for a private project would be made in negotiations with government during the feasibility study that no tax should be payable on the housing sales as there would be no net profit, and if it were a government project, no tax would be levied on the sales. Once operational, the project would be very profitable as there would be no interest expense on long term loans and no incremental loan repayments from fares and freight rates to be charged against net profits each year. Tax would be payable on operating profits.

HSR would have two sources of revenue: inter-capital travel in 3 hours or less, and daily commuting from new cities built to the east (in Gippsland on the route via Cann River to Canberra with coastal water supply and already 400,000 people living there, not inland to the north of Melbourne via Albury/ Wodonga) and to the west of Melbourne beyond Geelong, and from new cities to the north and south of Sydney and Brisbane. New cities would grow more rapidly. Commuter revenue may grow to exceed interstate revenue. Commuters are rarely profitable for railways, but fares here would be lower cost, subsidised and profitable. There would be a large and rapidly growing population living in six or more new, smart cities of +1m on the HSR line within 2-300km and less than an hour commuting to CBDs.

The aim is to have more than 10m people of the 24m increase of the Australian population living in new cities in the regions on HSR over the next 3-4 decades, instead of in Melbourne, Sydney and Brisbane.

Settlers would be attracted to new cities rather than outer fringe suburbs by lower capital cost of housing; lower operating cost of commuter fares in house-hold budgets in new cities than from the fringes (plus subsidised to profitability for HSR by transfer of a small increase in major city land tax that would represent a contribution to the cost of the unearned benefits of containing congestion and creating the value of avoiding loss of city-wide liveability); the same CBD jobs that would be available in the fringe suburbs would be available to the same settlers, if they chose to live in new cities on HSR; less commuting time from new cities than from fringes; houses and land bigger than in the cities; and new smart cities, with good schools and education facilities, which would be more rapidly growing than the rapidly growing total Australian population. Housing affordability would be greatly enhanced or solved.

Driverless electric FFR trains would carry the equivalent of 150 semi-trailers at 125-150km/h compared with semi-trailers travelling at an average of 70km/h. FFR would halve the cost and delivery time of interstate road freight.
FFR would end the competitive isolation of Melbourne, Sydney and Brisbane caused by the high cost of the interstate road transport distortion. General interstate road freight has approximately a 90% share of the east coast market. FFR would be highly profitable.

New cities

Many new smart cities would be built around stations along the HSR track by the consortium. HSR and FFR would serve each new city, as well as major cities. Buildings would coalesce around the regional stations which would create increased property value to be captured through sales by the consortium. Construction would go on for decades and be a profitable separate business for the consortium, especially if it bought land in advance around stations, the sites of which it selected.

The cost of land and property in sparsely populated Australian regions is significantly less than the high cost in the inner and fringe areas of major cities. The cost differential encourages new cities of 1m to be built on the HSR route from Melbourne to Sydney and Brisbane. HSR would connect with all the main airports on the east coast to give direct access for travellers from the growing regional population in new cities and for travellers from the major cities.

The VFT 2 concept HSR route would not be the dry inland route through Albury/ Wodonga in the Government’s 2013 HSR Report. It would be the coastal route, with a plentiful water supply, through Gippsland to Canberra via the Canberra Airport, which is a more commercial and value creating route. It would attract more settlers away from Melbourne to a new 1m coastal city in Gippsland rather than an unlikely city of 1m 300km inland near Albury/ Wodonga. Similarly, it would provide a city of up to 1m south of Brisbane. The spur line to Canberra and the Gold Coast spur line from Brisbane on the 2013 Report’s route would be dispensed with and the funds saved would be used for the Gippsland route and the route through the Gold Coast to Brisbane instead of the 2013 Queensland route further inland.

Competition

Interstate HSR would compete mainly with air. Lower costs and fares would give HSR a competitive advantage. Air and road cannot compete with HSR commuting 2-300km from new cities right into CBDs. Direct entry to CBDs would be especially attractive to HSR business travellers, a key market segment.

FFR would halve the cost and delivery time of interstate road freight. It would have a huge competitive advantage over road and be very profitable. The sub-optimal, slow, diesel, double-manned, single track inland rail to be built by government has value in serving many small inland towns between Melbourne and Brisbane, bypassing Sydney. It would not be a competitive threat to highly efficient electric FFR.

The consortium would have a competitive advantage in constructing new cities by creating added value through HSR and FFR, by selecting sites for regional stations, buying land and contributing to city design.

Consortium revenue

Cost of construction of the railways and the housing would break-even with receipts from sale of housing built above the tracks in the major cities. Receipts would not be revenue as the business of the consortium exists to build, own and operate railways, not to continually sell units for a profit, but just to recover costs once. These dwellings can only be built above railway foundations. The dwellings could not be built without the HSR railway foundations. HSR creates their value and pays for their total cost of construction. Receipts should be tax free, subject to negotiations with government during the feasibility study. Receipts from sales before completion of project construction and outlay of remaining construction costs would be cash received in advance, not taxable profits. The consortium would own a large, profitable railway asset free from long term encumbrance on completion of construction. The consortium would earn large revenues from HSR and FFR operations over many years, the profits of which would be taxable.
The consortium would also earn revenue from its separate property development business of building cities around regional HSR stations. HSR creates value. It would build extensively around HSR major city terminuses and around HSR stations at city suburban hubs. This would be profitable and attract tax.

**Time frame**

It is anticipated that HSR and FFR construction would be completed in 10 years. First, a private feasibility study of 1½-2 years would determine commercial and financial viability. On a green light, trenches would be cut 30kmx50-100m wide into and out of cities for suburban and HSR trains and dwellings built above. This would create 3 square km of inner-city ‘new land’ in and out of each city, a total of 18km² which would create value only as foundations for housing above. Some 3km² extra ‘new land’ could be created over FFR city trenches where they diverge from HSR tracks. Sale of housing may occur in years 5-6. Tracks to new cities and new city construction would proceed. Commuter operations may begin in year 7-8. Construction of interstate HSR would be completed in year 10 and operations start in year 11.

Pay-back of $200b for the whole railway outlay over 10 years would be 6 years. It would be long-term debt free before completed. HSR/FFR is a robust project. Most other railway projects are paid back incrementally over 40 years from fares.

It is worth noting that the original VFT project construction time from Melbourne to Sydney after a long, thorough private feasibility study in the 1980’s by capable private consortium members was assessed to be 5 years. A new consortium feasibility study should assess it to take less than the 8 years allowed above from Melbourne to Brisbane. The addition of Sydney to Brisbane makes it a larger project, but not necessarily a longer construction period. Government approvals may take longer today than previously. There is some allowance for this.

Receipts from housing sales would come in before completion. Some HSR commuter revenue and FFR revenue for delivering new regional city building materials would start before completion. Interstate HSR and FFR revenue would start on full completion, after 10 years notice to road and air industries.

The project would be very robust by paying for the full capital cost before completion. Some taxable early operations revenue may pay off low interest rates recorded as capitalised interest expense before completion of construction. There would be opportunities for separate working capital loans well secured.

**Profitability**

Net profit from full HSR operations starting in year 11, unencumbered by large interest and debt repayment charges, would be high and grow rapidly after introduction to stabilise after 2-3 years of operations. Then ROI and IRR would be high. Patronage and revenue growth would be rapid long term.

Net profit from full FFR operations would be highly competitive. Without being weighed down by interest expense and debt repayment, it would be high. ROI and IRR would be high. Freight is projected to grow more than population. Revenue growth would be more rapid than rapid population increase.

Semi-trailers are depreciated annually over 10 years, aircraft over 20 years and railways over 40 years. HSR/FFR charges against profit would only be one fortieth pa of a large asset over a long period. Rolling stock may be 30 years. No debt financing costs would add to competitiveness and to profit, ROI and IRR.

Net profit from the separate property development business around regional stations would be high reflecting low land prices, large value created by HSR and FFR, and high, growing demand for housing at competitive low prices in new cities compared with high prices in major cities. Growth would be rapid.

The consortium’s revenue would be expanded by strong growth. Profitability would be high and robust as it would be competitive with its capital cost already recovered in less than 10 years before project completion.
As noted above, it would not have to rely on interest expense and debt recovery from fares and freight rates over 40 years of operation after completion. Consortium equity and project working capital are left aside at this point.

When the consortium’s business is listed on the stock exchange, it would command a high premium that would be supported by high and reliable profitability and growth. It would become a major listed company with a long and prosperous future. It would have a high credit rating.

The HSR/FFR project would create vast economic benefits for the country and a very high cost/benefit ratio. The overall indirect economic benefits are difficult to quantify: increased competition leading to greater innovation, larger productivity improvement and increased international competitiveness; reduced cost of living: greater prosperity; lower congestion in major cities; liveability protected; property value created next to the railway as trains are put in trenches which raises land taxes; cutting CO₂ production; cutting road deaths and injuries; stimulating growth, job creation and more private investment: aiding budget repair; and sustaining the Government’s AAA rating.

The VFT2 concept for the HSR/FFR project would be remarkably robust, profitable, self-funding and the risk of failure minimal, so Government would not have to step in and intervene at great cost. Government would be reassured and would cooperate in fast tracking approvals. It may need an enabling act which would be forthcoming for such a significant project for Australia’s future.

Risk

Passenger patronage risk would be low because HSR would be competitive and would carry interstate passengers and commuters right into CBDs. This competitive advantage would grow as road congestion to airports increases, as Tullamarine Airport attests in its pleading for a HSR connection to the Melbourne CBD which VFT2 would provide. It would build the HSR connection to Tullamarine and Badgerys Creek Airports. In time, the CBDs would develop further with offices more closely embracing HSR terminuses, which would be more convenient for business passengers. Daily commuter patronage would add to interstate patronage and grow more rapidly until its revenue exceeds interstate revenue.

The great advantage of the VFT2 concept of paying back the total capital cost within the construction period is that the project is less sensitive to passenger patronage. It does not rely on a enough passengers to pay off debt from fares over 40 years of operation, only the smaller number necessary to cover margin and operating costs. Patronage is likely to be well beyond this minimum requirement.

Cost, time and completion risk would be low for such an iconic project. Members of the consortium would be world leading companies with great capabilities, resources and reliability.

The practical competitive advantages of HSR and FFR, their low fares and freight rates and balance sheet strength would be sufficient to minimise competitive risk.

Well known, tried and tested “wheel on rail” technology would be chosen. However, technology such as “hyperloop” may be proved up and safe to compete with HSR later. It would not carry full sized general freight containers so would not compete with FFR. It has problems. It is a “bleeding edge” technology with long lead times which probably would not advance soon enough to distribute significant population increase from major cities into regions in a timely manner to prevent major cities’ populations doubling. It may never come. The case for duplicating existing HSR with new technology that destroys property value by dependence on viaducts into cities instead of built-over trenches that created property value which has been captured already by HSR would be difficult to make.

Resources to build large projects would be available in Australia as mining and private investment decline; the Australian automotive industry ceases production here; Hazelwood power station is decommissioned; under-employment grows; and migration continues at a high level. It would stimulate economic growth and job creation, if HSR and FFR were to employ these available resources.
It is unlikely that population increase would decline markedly. Properly managed, as when the Australian population tripled since WW2, it is a good thing. It turbocharges the economy. It would grow to 50m, which was the size of Britain at the height of its powers. Australia would become more self-sufficient and competitive. Without HSR and FFR, growth, liveability and prosperity may decline.

Conservationists support HSR as it reduces green-house gases produced by air, road and rail. Bob Brown, former Leader of the Green Party, said at a railway conference that some environmental damage from HSR construction is acceptable, provided it is minimised, because overall it is very beneficial in significantly reducing Australian greenhouse gases and global warming. HSR/FFR incremental electricity demand would be green as renewable energy grows.

Contingency

There would be four forms of contingency to cover unforeseen costs. The price of dwellings over tracks in trenches could be up to 50% higher or an extra $100b. HSR trenches and tracks could be extended beyond 30km by, say 5km, adding 17% to sales of dwellings. Dwellings may be built over FFR. Dwellings over regional stations could be included to pay for the total cost. The project is robust.

Feasibility study

A new comprehensive, customer oriented feasibility study by the consortium is required for the Australian HSR/FFR project to assess the new, innovative concept for its purpose, aims, design, construction, finance and government cooperation. It would assess its operable and financial viability.

The 2013 Government HSR (feasibility) study was based on a route that did not facilitate early cost recovery and was not commercially or customer oriented. It did not connect with any major airports. It planned for some 62km of tunnels, which are not needed. The cost estimate was $114b in 2012 dollars.

HSR was regarded as an interstate rail project. The 2013 study did not consider distribution of population increase from the cities to the regions. The implicit assumption was that Melbourne and Sydney would both grow to +8m. That is now formally planned by the Federal and state governments. Undoubtedly, this will be reversed and HSR will go ahead as the loss of spatial liveability and probable loss of prosperity otherwise is unnecessary, avoidable and undesirable. The c/b ratio is remarkably high.

Finance

The construction period falls within banks’ 10 years lending horizon with a short, 6-year payback for an infrastructure project of this size. Housing and railway under construction would be available as additional security until housing was sold and loans repaid. Once operational, super funds may be attracted to the long term, robust, profitable infrastructure business, before or after it is floated.

Cash-flow analysis during the feasibility study would refine the financial task for construction and operating year by year. It would give the basis for determining commercial and financial viability.

It may be possible that the Government would guarantee private finance for HSR/FFR. It may fear the risk of obligation should the business fail. Ultimately, the obligation exists with or without a guarantee. The HSR/FFR businesses and financing are highly profitable and robust. The risk of failure is minimal.

Sources of low interest, long term finance from bank syndicates, and from overseas suppliers of technology and rolling stock aided by their banks and Governments would be sought. They would be canvassed, and their advice considered during the feasibility study period so that finance would be arranged then and the project would go ahead without delay to capture as much population increase as possible for regional areas away from the major cities, once the project is assessed as viable.
Conclusion

There is clearly a demand for innovative HSR/FFR in Australia. The dominant, high cost interstate airline and road freight industries with extremely large market shares are vulnerable to competition. The project would reduce the cost of living.

Airlines, airports and road transport companies may become members of the consortium to contribute their skills and to profit from their loss.

HSR is practical, as similar projects have been built elsewhere. The project would be competitive and profitable; improve productivity and competition; stimulate growth and jobs; repair the budget; and induce more private investment. The project is financially viable, subject to feasibility study. It would be remarkably robust and low risk, and should be readily financeable privately. It would be welcome principally as the solution to population increase, crucially while sustaining liveability, prosperity and support of budget repair before the next recession. It would be a public and Government supported iconic Australian project. HSR/FFR should go ahead immediately.


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