

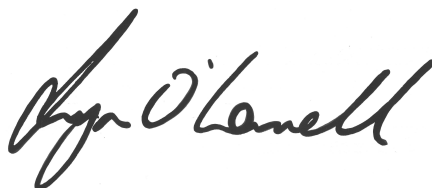
The cover features a solid beige background. On the left side, there are four vertical white lines of varying heights. On the right side, there are five vertical white lines of varying heights, some of which are slightly offset from the others, creating a sense of depth or movement.

# ON TRACK

## IMPLEMENTING HIGH SPEED RAIL IN AUSTRALIA

A report by the  
High Speed Rail Advisory Group

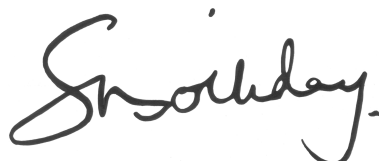
August 2013



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## Executive Summary

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High speed rail has been hotly debated in Australia for many decades. There have been numerous reports, proposals and investigations during this time, but none has progressed beyond the study stage.

The latest study (hereafter “the HSR report”), prepared by a consortium led by AECOM and released earlier this year, is by far the most wide-ranging—including its work on long-term travel demand and route selection, highlighting future pressures on our existing infrastructure and population centres, as well as some of the opportunities afforded by high speed rail.

But the importance of this study lies particularly in its timing and context. Australia today is not the same country that flirted with the idea of fast trains in the past. We have experienced decades of economic growth and prosperity, though not without challenges. We now have cities struggling to house and employ their populations, alongside regional communities striving to grow and attract residents, business, skills and services. We have increasing challenges for the movement of people up and down the east coast, alongside significant pressures on transport costs—for industry and individuals alike.

It is against this backdrop that the Deputy Prime Minister has asked us to look carefully at this report—alongside the views of stakeholders obtained through the extensive consultation process he initiated in April 2013—and provide him with our practical advice on the implementation of high speed rail in Australia.

We were not asked, and have not sought, to critique the HSR report, and as such are not in a position to endorse its specific findings or methodologies. But in the time available we have concluded that, as the product of several years’ work, it represents a comprehensive basis for considering next steps. It presents recommendations underpinned by wide-ranging analysis and clear economic justification for route selection and staging.

That said, however, our advice, recommendations and proposed actions augment the HSR report’s conclusions in several key areas, based in part on feedback from consultation. The feedback from consultation was generally supportive of high speed rail with most wanting it delivered cheaper and sooner than the HSR report concluded.

Our first and most important conclusion is that high speed rail has the potential to be an integral part of Australia's future.

The evidence is clear. It would build capacity and resilience into the major east coast transport networks, alleviate pressure on the busiest intercity air services, and thereby allow growth of international and new domestic aviation operations, and help diversify infrastructure investment into more energy efficient technology. More fundamentally, high speed rail would contribute to national productivity and open up greater opportunities for regional development, help shape transport planning for cities, and improve service provision, connectivity and accessibility.

Ultimately, it would have a profound and positive transformational effect on how most Australians live, work and travel.

The HSR report, the feedback from many stakeholders and—crucially—the lived, practical experience of high speed rail internationally all support these conclusions.

In our deliberations, our analysis of consultation and our own soundings, we have found no insurmountable issues that preclude Australia proceeding with high speed rail as a priority. Indeed, rather than uncovering any “showstoppers”, we have confirmed both the desire for, and considerable opportunities arising from, high speed rail in this country. Put simply, can we imagine Australia’s biggest cities in 2050 *not* connected by high speed rail?

In saying this, we recognise there are challenges around high speed rail. While opposed outright by a few, there are certainly some concerns—principally around how, where and when high speed rail could be built. We consider it vital to tackle these threshold issues directly—which must include approaching high speed rail as a series of smaller, more achievable projects that will be a reality for the current generation of Australians. Because the greatest immediate threat to high speed rail in Australia is not cost or timing or technology... it is simply inertia, brought about by perceptions that, even if desirable in concept, high speed rail is unrealistic or not within the contemplation of current generations.

A particularly worrying consequence of such inertia is the fact that, for high speed rail, inaction is not benign. The inevitable effects of population, demography, travel demand and urban and regional development mean that a future Australia without high speed rail could be a less prosperous one. And the magnitude of such a project means there are steps that must be taken right now, both to minimise costs and avoid rendering the initiative practically impossible in the future. If we don’t take action to progress the project now we may not get another chance.

In developing our recommendations we have therefore focused on how to “maintain the momentum” for high speed rail in Australia: how best to turn the vision into reality. This momentum needs specific, tangible steps that the public and private sectors can take in the short and medium term. It also demands pragmatism and nerves of steel—a steadfast, long term commitment by all of us to see the project through to completion.

It would also be a mistake for anyone to feel unduly bound or constrained by the HSR report. We see it as a starting point, not a foregone conclusion. It is vital to retain flexibility for the private sector, for state, territory and local governments—indeed, for any stakeholder—to look at all options, develop and propose solutions and innovations as they see fit. In particular this applies to route, staging, funding/financing options, as well as overall transport planning.

Our other specific recommendations (and their rationale) are detailed throughout this report. Foremost amongst these is that the Australian Government formally commit to high speed rail as a national priority. This should include a clear articulation of the opportunities for economic and productivity growth, and for

increasing our competitiveness on a regional and global level, by both addressing key constraints and opening up new opportunities for cities and regions alike.

We also believe that arrangements with state and territory governments must be settled quickly. While high speed rail is undoubtedly a national project in which the Australian Government must play the central leadership role, its potential transformational impacts make the full, ongoing participation of all relevant state, territory and (indeed) local governments essential. High speed rail also goes well beyond being simply a transport project; it implicates virtually every sphere of public policy. We therefore favour a direct role for the Prime Minister in this context.

**Recommendation: Formally commit to high speed rail and settle arrangements with state and territory governments**

The corollary of such a commitment is the need to protect the entire high speed rail corridor as a priority. Without a protected route, the inevitable spread of cities and other developments to accommodate population and service needs will reduce constructability and increase capital costs. This will be particularly problematic for station precincts and access to capital cities. The options for a suitable route are already limited and even these are under threat of development.

**Recommendation: Protect the corridor (initially through national legislation)**

The nature of high speed rail also warrants appropriate engagement with Infrastructure Australia, in its capacity as the national, independent body charged with advising governments on needs and priorities relating to nationally significant infrastructure. Infrastructure Australia's consideration of high speed rail, using its criteria and methodology, alongside other potential investments will help further ensure that all relevant issues are identified and analysed. Furthermore, the full incorporation of a future Australia with high speed rail into the planning and investment frameworks of all jurisdictions is essential.

**Recommendation: Refer high speed rail to Infrastructure Australia for initial assessment**

Two of the major concerns around high speed rail (and the HSR report) are cost and timing.

On the former, we have had ample feedback to indicate that the current forecast costs are conservative, and that there is scope to produce more competitive estimates—indicatively in the order of 15-20 per cent. This should be tested formally.

On the latter, the current “headline” focus on a 30-plus year horizon for this singular project (i.e. the full Brisbane to Melbourne network) is most unhelpful. High speed rail in Australia should be approached exactly as per the international experience: as a series of smaller, finite projects, each with tangible timelines, milestones and target dates, as well as staged completion within the foreseeable future.

Both these issues reinforce the need to retain sufficient flexibility to let the private sector demonstrate the capacity to, for example, lower costs, quicken delivery or finance innovatively.

Equally, it is important to acknowledge the potential for cost blowouts in projects of this scale, noting examples of other infrastructure projects, both in Australia and globally (including some high speed rail developments). We believe that addressing the threshold issues identified in this report would significantly reduce the likelihood of such problems arising for high speed rail in Australia.

Finally, we concur with the recommendation that a new dedicated Authority be established to progress work on high speed rail. But this should be a more immediate priority—that is, ideally within six months, and its initial work plan should include a number of the other priority tasks we have recommended in this report. As well as providing the appropriate vehicle to undertake the necessary work expeditiously, the mere act of establishing an Authority will itself add to the momentum we believe is essential.

#### **Recommendation: Establish a High Speed Rail Authority**

It is now almost forty years since the Snowy Mountains Scheme, Australia's last truly visionary and transformative national project, was completed. Fifty years have passed since high speed rail operations commenced in the Asian region of which we are a part. Some may question whether we, as a nation, are even capable of embarking on such a journey ourselves. High speed rail represents not only an opportunity for the next great nation building project, but the imperative for doing so.

***The time for studies has passed. Now is the time to commit to high speed rail and begin implementation: moving immediately to corridor protection, creating a dedicated Authority, opening the project to private sector innovation—and turning the vision into reality.***

## Background

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On 11 April 2013, the Deputy Prime Minister released the second and final report of the implementation study into high speed rail on the east coast of Australia ("the HSR report") and initiated a period of consultation and feedback. This included the establishment of a new High Speed Rail Advisory Group (Advisory Group), to advise the Australian Government on key industry and community issues arising from the report.

Members of the Advisory Group are:

- Ms Lyn O'Connell PSM (Chair) – Deputy Secretary, Department of Infrastructure and Transport
- The Hon Tim Fischer AC – former Deputy Prime Minister and former Ambassador to the Holy See
- Ms Jennifer Westacott – Chief Executive, Business Council of Australia
- Professor Sue Holliday – Professor of Planning Practice, Urban Policy and Strategy, University of NSW and member of the Urban Policy Forum
- Professor Peter Newman – Distinguished Professor of Sustainability at the Sustainability Policy Institute of Curtin University, and board member of Infrastructure Australia
- Mr Bob Nanva – National Secretary of the Rail, Tram & Bus Industry Union
- Cr Jenny Dowell – Mayor of the City of Lismore and President of the Northern Rivers Regional Organisation of Councils
- Mr Bryan Nye, Chief Executive Officer, Australasian Railway Association.

The Advisory Group has met formally on four occasions and had numerous informal interactions in the time available. The final terms of reference for the Group is provided at Appendix A.

Under the terms of reference, we have considered the following issues:

- The feedback on the HSR report as gathered through the Department's consultations and the submissions it has received
- The views of domestic and international industry and government stakeholders on the HSR report, including their experience in implementing and operating high speed rail
- Those aspects of the HSR report the Advisory Group considered particularly important for examining next steps, including:
  - alignment
  - corridor preservation
  - overall project staging and timing
  - financing issues
  - operating environment
  - opportunities for cities and regions
  - labour market impacts and workforce skills requirements.

Summaries of the issues the Group considered around the HSR Report are provided at Appendix B.

## Consultation

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At the Deputy Prime Minister's request, the High Speed Rail Unit in the Department of Infrastructure and Transport has undertaken a comprehensive consultation process to seek feedback on the HSR report from governments, industry, communities and international stakeholders. The Advisory Group has been extensively briefed on this consultation and drawn heavily on it in formulating its advice to the Deputy Prime Minister.

The consultation process has confirmed a high level of support for high speed rail and a prevailing view that the Australian Government should seek to build on the HSR report by moving to the next stage. The most common view was essentially that "high speed rail is a good idea and we should get on with it."

There is strong support for finalising and preserving the corridor so the option to develop high speed rail is not lost. But many stakeholders are concerned that the proposed timeframe is impractically long, that the costs appear prohibitive and that there are risks of the impetus being lost through indecision.

Many recognised the benefits of high speed rail—from being a cleaner form of transport through to the transformative opportunities it would have for cities, regions and economy as a whole—and argued that these far outweigh any cost or perceived negative impacts.

Notwithstanding this support, a number of challenges around high speed rail were raised by stakeholders. The timing was seen as making the project virtually irrelevant for current generations, while some thought the cost estimates so high that governments would simply back away from the project, citing prohibitive expense as a reason.

The consultation has provided a clear set of "threshold issues" that we consider must be dealt with systematically in order to take the next steps for high speed rail, including:

**Leadership:** the need for the highest levels of government, from all jurisdictions, to work together to make high speed rail a reality

**Corridor preservation:** recognition that inaction in preserving the corridor will result in higher costs in the future or in the worst case, abandoning high speed rail altogether

**Staging and route:** the need to retain flexibility over route and station options to best cater for development and growth, and also to resolve broader transport challenges

**Costs:** the perception that the headline figure of \$114 billion is beyond reasonable comprehension, and the need to explore options for reducing cost and disaggregating high speed rail into smaller, discrete and therefore more achievable projects



**Financing options and commercial case:** while acknowledging high speed rail will require significant public funding, there may be the potential for innovative financing options to reduce capital outlays and spread the risk

**System specifications:** the importance of selecting the right mix of technologies for Australia's needs

**Labour preparedness:** recognition that a project of this scale would have a substantial effect on the labour force and the importance of early planning to avoid negative flow-on effects

**Timeframes:** the need to deliver high speed rail in a timeframe that is perceived as a reality for the current generation of Australians.

### Consultation Process

The High Speed Rail Unit met with 151 stakeholder organisations along the proposed route, including 60 local governments, senior officials from the states and the Australian Capital Territory (ACT) and a range of other interested groups—around 319 individuals in total. Consultations were also held throughout Asia and Europe with 51 high speed rail operators, constructors, technology providers and governments involved in the development, construction and operation of high speed rail systems globally. Stakeholders were also consulted and contributed their views through a formal reference group, which included representatives from relevant state and territory agencies, as well as key stakeholder groups including the Australasian Railway Association, the Australian Local Government Association, the Cooperative Research Centre for Rail Innovation and Infrastructure Partnerships Australia.

In response to the Deputy Prime Minister's call for public feedback, there were over 32,000 visits to the high speed rail webpage and 328 written submissions were received from individuals, governments and industry.

A list of all stakeholders consulted is at [Appendix C](#).

### Governments

Feedback from Queensland, New South Wales, Victoria and ACT Governments welcomed the HSR report and acknowledged the level of work that had gone into it. Two formal submissions were subsequently received, which were supportive of high speed rail and recognised its long term potential to improve transport and bring economic benefits. All states have agreed to participate in further consideration of high speed rail through the Ministerial Group established by the Deputy Prime Minister.

Local government feedback was also generally positive, though the comments and suggestions were varied. Several councils recommended local adjustments to the route and station locations, staging of construction and timelines for implementation, in order to reduce impacts or deliver additional benefits to their constituents.

Many councils in the Sydney region raised alternative station locations to serve western Sydney more effectively. Some expressed concerns that the proposed location for the southern periphery station at Holsworthy is not well connected to the region and suggested that a station could be in an established hub such as Campbelltown, Liverpool or Glenfield.

Two councils were not supportive of a station being located in Hornsby with some councils suggesting there should be a station at Parramatta or Olympic Park to better serve the region. It was suggested that this should be instead of a station being located at Central (to reduce the cost of the project by not accessing the CBD). A number of local governments thought that wherever a second Sydney airport may be built, that options should remain open to allow for a high speed rail connection.

Regional councils are very supportive of high speed rail, recognising the considerable opportunities it would have for their cities and local economies in attracting much-needed skills, tourism and—depending on their location—new residents who could commute to capital cities. Some also expressed preferences for slight changes to the route and station locations. Also—again depending on their location—some councils had opinions on which section of the system should be built first, with many north of Sydney citing the high levels of growth and commuter potential as justification for Sydney to Brisbane to be built first, commencing with Sydney to Newcastle.

Councils and state/territory governments did not raise any objections to the proposed route or station locations for Brisbane, Canberra or Melbourne.

Some Victorian councils suggested a connection to Tullamarine was important and warranted further consideration, while others expressed disappointment that particular cities or regions were excluded from the proposed route, such as Geelong and Gippsland.

South East Queensland councils were generally supportive of the proposed system, though some expressed a view that a coastal route (via the Gold Coast) would be preferable to a spur line, as recommended in the report. There were also concerns as to how long the link between Brisbane and Sydney would take to be completed given the overall timeline suggested in the HSR report.

Relevant state and local government bodies in both Melbourne and Brisbane indicated that planning for development along the proposed city access routes would proceed soon, unless firm action is taken to account for high speed rail.

### **Community and Interest Groups**

Feedback from local community organisations generally welcomed the prospect of high speed rail serving their local areas and identified a number of benefits that would arise.

Regional Development Australia committees expressed support for high speed rail, and mostly reflected the views of local councils on route and staging issues.

Some local community groups raised concerns about the proposed route and its potential impact on local areas of high conservation value or amenity. Some also identified different route and technology options not recommended in the report, including more expansive networks, tilt trains and magnetic levitation (Maglev) trains.

### **Industry**

Feedback from industry was again, mostly supportive of high speed rail. Responses tended to focus on the impacts of high speed rail on their particular business (both positive and negative), options for being involved in the implementation of the project and suggestions for implementing high speed rail. There was also a considerable amount of feedback, both in meetings and submissions that identified innovative financing solutions that could be developed and applied to high speed rail in Australia.

Peak bodies, relevant to the rail industry, highlighted key issues to be considered in undertaking such a project, such as skills requirements. The Australasian Railway Association argued that the potential of high speed rail has not been fully realised in the HSR report. It outlined a more ambitious vision, for a network that could service airports, carry freight and be built more quickly and cheaply than estimated.

A number of businesses identified potential impacts from the proposed alignment on their operations and some suggested alternative alignments that would either remove or reduce that impact.

Several businesses propose alternative approaches to developing high speed rail, including different route and station options and using existing rail where possible.

### **Community**

Two hundred and sixty four submissions were received from individuals, with just under half coming from NSW. The majority of these submissions expressed outright support for the project. Most of the submissions, whether expressing outright support or not, discussed a range of issues, options and concerns around the proposed system. These included route and station locations, timing, cost, environmental and community impacts, as well as how the project could be undertaken (financing, labour demand and sequencing) and alternative infrastructure and technology options. A small minority were opposed to the project, arguing that funds could be better spent elsewhere.

### **International Stakeholders**

Consultation was undertaken with 51 (public and private sector) entities across China, Japan, Korea, Italy, Spain, France and the United Kingdom. Feedback from stakeholders on the experience of high speed rail in their countries was overwhelmingly positive. While stakeholders identified that there are inevitable challenges associated with such a project (including costs, technology and environmental sensitivities), the consistent message was that the decision to implement high speed rail had been a good one, and that, with very few exceptions,

it had successfully integrated into the broader transport networks and facilitated positive changes and opportunities for both cities and regions.

There was a high level of international awareness and interest in Australia's current consideration of high speed rail. There was also a generally good understanding of Australian demographics, population density and economic characteristics.

The majority of companies consulted indicated they would, if given the opportunity, seek to participate in the project. Consistent with feedback domestically, there was surprise expressed at the proposed timeframe, with most indicating that the network could be constructed much sooner—however some noted that a staged implementation approach, especially for a network of the scale proposed in Australia, could be rolled out over several decades. There was also a common opinion that the cost of constructing the network would be lower than forecast, and that this would become evident when and if the project proceeded to market testing.

A number of international stakeholders emphasised that, in their domestic experience, the key impetus to a successful high speed rail project was a clear government commitment to proceed, a publicly known date for services to become operational and a known and firm timetable met.

## Making the case

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Before contemplating the threshold issues around high speed rail in Australia and the best means of tackling them, it is instructive to take a step back and consider the question of *why high speed rail?* It is easy to become entangled in the intricacies of such a project and lose sight of the broader, more fundamental explanations of why it is necessary in the first place.

### *Will Australia's population be large enough to justify high speed rail?*

Australia's population could feasibly double by 2050. Sydney, Melbourne and the Brisbane urban agglomeration will have populations similar to those currently of Hong Kong, Kuala Lumpur and Singapore respectively. Consequently, the HSR report estimated that travel demand along the east coast will rise from just over 100 million trips per year currently to 264 million by 2050, and then 355 million by 2065.

Without high speed rail, these trips would need to be catered for by current transport modes. The car will remain dominant, and require considerable expansion of our urban and intercity motorways, such as the F3 between Sydney and Newcastle. Aviation demand will continue to grow. Sydney airport will reach total capacity during peak periods within the next decade and other airports will require significant expansion to cater for burgeoning demand. All of these trends point to the importance of a more diverse range of travel options in the years ahead.

### *How will high speed rail benefit our economic productivity?*

It is widely accepted that productivity will be the key driver of our economic growth and prosperity over the long term. The challenge is to compete on a regional and global scale for business and investment, and to attract visitors, students and skills to our shores. Efficient and integrated transport options, across a range of modes to meet the varied needs within our economy, are essential drivers of increasing productivity.

Congestion is a major issue across our cities today, and that not only impacts on the ability for people to access jobs and balance work and home life, but has considerable consequences for our economy and our ability to move goods and people around efficiently. The costs of congestion will grow significantly over the coming decades, impacting adversely on Australian productivity. Projections show that by the end of this decade alone, the cost of congestion will rise to over \$20 billion.

Travelling between our cities will become equally as challenging. Our service and knowledge-based industries demand that people are mobile and consequently, we have some of the busiest intercity air routes in the world, with the Sydney-Melbourne corridor nearly topping that list. Congestion, in the air and on the ground, affects the efficiency of air travel between our cities, as does bad weather, fog, industrial action and other issues such as volcanic ash in the upper

stratosphere. It is no longer viable that our economy should remain beholden to just one form of fast, intercity transport and its many vulnerabilities.

If Australia fails to address the constraints of Sydney airport alone, the economy-wide impacts would reach \$60 billion in lost expenditure and \$34 billion in lost GDP by 2060.

But there are other threats to productivity. Good access to jobs is essential for maximising productivity. Australia's ageing population is projected to nearly halve the tax base, meaning that, unless clear steps are taken to counter this trend, the fiscal burden of the ageing population would lead to spending exceeding revenue of up to 2.75 per cent of GDP annually, with deficits reaching 20 per cent of GDP by 2050.

Efficient transportation is a key enabler for our national productivity and if this is not in place the consequences for our economy are considerable.

### ***Why must we act now?***

High speed rail has the potential to transform how our nation—our cities and regions—develops in the next decades. While the critical need for this infrastructure may not be fully realised for another decade or so, failing to undertake the necessary steps toward the development of a high speed rail system now will likely preclude it ever being able to proceed.

By no means does this suggest the end of aviation in this country. The nations with most effective management of people and goods invariably have fully integrated transport networks, with modes operating on a complementary basis as much as a competitive one.

### **Cities**

In the second half of the 20th century, Australian cities spread rapidly outwards driven by the manufacturing boom. Now the focus is again on central business districts with the emergence of the new service economies and knowledge-based industries.

Our major cities generate around 80 per cent of our gross domestic product and employ 75 per cent of our national workforce. Cities are centres of economic activity where labour, industry and social institutions are concentrated.

Maintaining, let alone improving, social and economic equity in this period is becoming increasingly challenging, particularly in the context of Australia having some of the highest population growth rates in the developed world.

Cities are predicted to house their growing populations in high-density housing, a trend which is already well underway, particularly in Sydney. There will also be further low density development on their outskirts, stretching the capacity of road and transport infrastructure to adequately cater for these growing areas and beyond.

These largely unavoidable trends will place enormous pressure on our transport infrastructure, and on governments to alleviate congestion, improve planning and enhance services. As a result there will be significant challenges in moving people and goods that, under the status quo, must be met entirely by conventional public and private transport means—road, (standard) rail and aviation—each of which already faces substantial capacity, cost and logistical constraints.

Continued investment in maintenance, upgrade and expansion for traditional transport will be essential under any scenario and can reasonably be expected. But it is by no means certain that this will adequately maintain, let alone improve, the efficient and effective movement of people on the east coast.

**Brisbane** is the centre of the fastest growing region in Australia. It has experienced unprecedented growth for the past 30 years and this is expected to continue for the next 20 years. Population growth has essentially meant that the physical size of the city has grown, overreaching its boundaries and melding with neighbouring cities.

Between 1991 and 2006, the urban footprint increased from 1708 km<sup>2</sup> to 2801 km<sup>2</sup>, and housed an extra 1 million people. 'Brisbane' has now come to refer to an urban agglomeration which stretches from the Sunshine Coast in the north to the Gold Coast in the south, known by some as 'the 200 kilometre long city'. In 2050, its collective population—at over seven million people—will rival Sydney.

Public transport and road networks have been heavily expanded to cater for this growth, but despite this, the transport network remains under significant pressure. By the end of this decade, congestion in Brisbane is expected to cost \$3 billion annually, which equates to \$1,350 per person.

Roads and public transport systems struggle to cater for the long commute times, particularly as more people choose to live on the coast and work in Brisbane. Within 20 years, traffic on the major regional highways between Gympie, Brisbane and the Gold Coast is expected to double.

High speed rail offers the opportunity to create vital fast links within and beyond the existing metropolitan area. Not only would it further enable Brisbane and the Gold Coast to function as a single, integrated economy but it would help ease housing pressure and commute times by offering viable alternatives further south (including northern NSW).

High speed rail would also ease pressure on Brisbane Airport by significantly increasing the inter-city transport capacity. This would bring with it economic opportunities through extra capacity for international connections, particularly in attracting tourism, and increased business and investment.

**Sydney** is currently at a crossroads, and struggles with system constraints within a network where demand regularly exceeds capacity. Road and motorway expansion to deal with the crippling congestion comes at a premium price (and there is little space left for it), and public transport systems flounder under the daily demand.

Reactionary policies to unprecedented growth in housing and transport demand have left one half of the city feeling at odds with the other.

Getting to Sydney from elsewhere is just as challenging. A second Sydney airport will be necessary to help address these constraints. Without it, international visitors could opt to fly into other cities or not come at all. However, it will do little to dampen the long-term demand at Kingsford Smith, particularly for business travellers who are coming to and from the Sydney CBD. Either way, delivering a second airport is one of the many examples of the difficulties in delivering infrastructure in Sydney.

Bringing high speed rail into Sydney will itself be a significant challenge. Constrained by a very dense and complicated urban form, as well as the natural geography upon which the city was formed, the HSR report shows that the cost of delivering a high speed rail system will come at a premium.

This is by no means a reason not to do it. On the contrary, Sydney is in critical need of such transformative infrastructure. Sydney is Australia's first and biggest city, the linchpin of our economy and gateway to the nation. By 2050, its population is expected to equal Hong Kong's today. However, how well or poorly the city functions by the middle of the century—in terms of its liveability, competitiveness, attractiveness to tourists and ultimately its economic output—depends very much on the decisions made now to address its constraints.

High speed rail has the potential to properly unite east with west, improving access to jobs, easing pressure on housing and reducing the time and cost of long commutes. It will free up much needed space for freight on road and rail network, and trigger further improvements to public transport networks by taking some of the pressure off the furthest reaching connections and freeing up resources for the remainder of the network.

It would mean Newcastle, the Central Coast, the Southern Highlands and Canberra would all be within 30 minutes to an hour of the CBD, creating considerable opportunities for people to work in Sydney and live elsewhere.

The potential as it relates to Sydney is as much national as it is local. High speed rail would become the backbone for travel to and from Sydney up and down the east coast. Sydney would be the centre point of a link between Australia's biggest economic hubs, and a national gateway directly connected with some of the country's most popular tourist destinations.

**Melbourne** has long been extolled as Australia's cultural capital and most liveable city, underpinned by a love of the arts, sport and an iconic tram system.

Rapid population growth over the past decades has changed the face of Melbourne from a tight-knit industrial city to an expansive metropolis. This expansion, particularly to the north and west, has shifted travel dominance to the car, catered for by an extensive motorway network.



Melbourne is also the hub of one of Australia's best regional rail networks, linking regional cities such as Bendigo, Ballarat and Geelong and the Gippsland region. As a consequence of a range of targeted policies fostering regional growth, regional cities in Victoria have robust local economies. Nevertheless, infrastructure has struggled to keep pace with the growth, particularly in Melbourne. The city now experiences major congestion problems right across its transport network.

Melbourne will grow to nearly seven million residents by 2050. Predicted growth will generate even higher levels of congestion. How people and goods move into, around, and out of the city will determine its future productivity, its competitiveness, and its rank as a destination of choice to work, live and play.

High speed rail would deliver much needed fast rail links to growth areas in the north, reducing pressure on housing and current transport networks, and creating new opportunities. Shepparton, a vibrant regional city, would be just over forty minutes from central Melbourne.

But importantly, high speed rail between Sydney and Melbourne would link Australia's two biggest cities, transforming the way these cities interact with each other and the regional cities in between. It would open up Melbourne to even more international investment, business development, tourism and appeal as a destination for arts and cultural events. High speed rail between Sydney and Melbourne would eliminate it being a decision of an either/or destination.

## Regions

High speed rail is not merely a transport project. It is about enhancing accessibility between capital cities and regional centres, thereby acting as a catalyst for growth in the regional areas. It would deliver positive economic flow outward from capital cities such as Sydney and Melbourne, and create powerful regional connections within the Australian economy.

It would also have a transformational effect for regions. Regional cities could experience increases in property prices, improved amenities and services, and increased social and economic mobility of residents in regional Australia. While the cost of developing new infrastructure in our major cities has increased significantly in recent decades, improved access resulting from high speed rail brings the opportunity to focus more investment in regional areas. Service industries, especially those with large footprints—such as universities, training centres and hospitals—may be more attracted to regional areas that are serviced by high speed rail. Complementary planning and regional development policies could help facilitate this investment. High speed rail will help governments plan for growth in areas where providing infrastructure, facilities and amenities is often cheaper than retrofitting them into major cities.

The benefits of high speed rail to regional areas are reflected in overseas experience, as consistently emphasised by international stakeholders during consultations. High speed rail has quickly led to regional development, including land and property value increases in regional towns and smaller cities in the United Kingdom, France, Spain, Italy, Germany, China, Taiwan, and Japan.

High speed rail offers numerous potential benefits for regions, including:

- attracting business investment, decreasing the costs and increasing the efficiencies of existing businesses, increasing property values, attracting more students to regional tertiary institutions and significantly growing tourism
- providing significant impetus for population growth as the reduced commuting time to capital cities provides further opportunity and experiences, and improved access to health, educational and employment services
- dramatically improving connectivity for regional centres, where the lack of public transport impedes competitiveness, liveability and investment appeal.

For a country aspiring to be an integral part of the Asian Century—engaging and competing with our northern neighbours in business, education and innovation—well-connected and highly productive cities and regions will be essential.


### **The ‘Do-Nothing’ or ‘Not Yet’ Alternative**

Against this backdrop it is clear that delaying or not taking action to anticipate and cater for the challenges and opportunities facing eastern Australia will have serious consequences for our cities and regions.

A ‘business as usual’ approach is simply not an option. Without decisive action to address their many constraints now, cities will rapidly lose their competitive edge in an increasingly tough global environment. Such action should include realistic plans to foster growth and investment in easily accessible regional areas. By doing nothing to address these challenges, we will lose our ability to manage Australia’s growing environmental pressures, and to ensure our cities and regions remain the destinations of choice to work, live and play. Businesses and individuals alike will seek alternatives, perhaps overseas, which offer better opportunities for less constrained growth, attractive lifestyles, and lower costs of doing business.

Housing affordability, access to jobs and services, access to education and knowledge economy skills will all be critical for Australia to remain one of the most diverse, distinctive and liveable countries in the world.

Transport must play a critical role in meeting these challenges and shaping the future growth and structure of our cities and Australia as a whole. The integration of different transport modes into a seamless network will be critical for Australia to take advantage of the growth in Asia, but to also compete in a globalised economy. But the approach to transport must itself be innovative and far-sighted.



High speed rail is a transformative project that could help reduce the growing social and economic divide by reducing travel times from home to work and enabling greater access to a wider range of employment and housing choices and services. If integrated into our existing and planned transport networks, it will promote greater accessibility for our expanding population, allow greater opportunities for business agglomeration and encourage higher density mixed use activities around transport nodes. It is a key piece of infrastructure that will help drive Australia's social, economic and environmental wellbeing.

The capacity to deliver this infrastructure will rapidly reduce as time passes. As cities become denser and the pressure for housing increases, there will be fewer feasible options to place the necessary transport infrastructure to service the population adequately. Consequently, either the cost of providing this infrastructure rises significantly—or the opportunity to do so diminishes altogether.

The consultation process has demonstrated that new developments are imminent, which may prevent high speed rail from accessing Melbourne and Brisbane in a cost effective way. The HSR report shows that currently, minimal tunnelling is needed to access these cities. However—even in the near future—accessing these cities with high speed rail could require tunnelling on the scale that Sydney already requires if steps are not taken now to shelter the corridor from development.

More broadly, it is clear that the magnitude of the constraints and challenges—alongside the tremendous opportunities—facing our cities and regions warrant solutions that go beyond business as usual. They require genuine, long-term, transformative reforms. High speed rail is one such reform.

## Threshold issues

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### Leadership

High speed rail is not just a question of “should we do this for transport?” It is a question of should we do this for our economic future as a nation and our quality of life as citizens.

If high speed rail is to become a reality in Australia, it is incumbent on all levels of government to commit to a project that goes beyond just delivering transport benefits by transforming how we live, work and travel in the decades ahead.

For initiatives such as this, which will necessarily be developed and implemented across many election cycles, support across all levels of government is essential to provide the confidence for all stakeholders to plan and invest for the long-term.

Whilst the Australian Government should spearhead this critical initiative of truly national significance, it is the relevant states and the ACT that will, to a very significant extent, benefit from the profound changes high speed rail will bring to cities and regions alike.

While noting the broadly positive disposition to further consideration of high speed rail from the states and ACT to date, this needs to be taken to the next level in the form of firm commitment and active engagement.

Given this—and the transformational nature of high speed rail—we believe that as a matter of early priority, it should be considered at the level of the Prime Minister, together with the Premiers of Victoria, New South Wales and Queensland and the Chief Minister of the Australian Capital Territory, with a view to settling a firm agreement of next steps. This needs to include:

- in-principle support for high speed rail and commitment to make it happen
- commitment from states and the ACT to work co-operatively with the Australian Government on the next stages for the project, in particular, preserving the corridor
- agreement to participate in a High Speed Rail Authority, including its charter to undertake, within five years, the key tasks we have identified in this report.

The High Speed Rail Ministerial Group, announced by the Deputy Prime Minister upon releasing the HSR report, will also be critical in ensuring clear leadership from and between governments. It should be convened as soon as possible and play an ongoing role in the years ahead.

## Corridor preservation

While we believe there is scope to accelerate the timeframes and vary the sequencing, it is clear that high speed rail is a long-term proposition regardless.

There are a number of issues to resolve immediately if high speed rail is to remain a viable proposition. Foremost is preserving the corridor on which high speed rail would be built.

The east coast is already experiencing high levels of population growth which puts enormous pressure on the ability of governments to build infrastructure to cater for resulting demand. This is particularly critical for the outskirts of regional centres and cities and will have significant implications on any future rail or road development, but particularly for high speed rail given its alignment constraints.

In this context the alignment for high speed rail is highly vulnerable to encroachment and development which would severely constrain or even prevent high speed rail from being built. Delaying the preservation of the corridor—even for a short while—would likely result in much higher costs, a sub-optimal alignment or, in the worst case, abandonment of the project altogether.

Examples, such as the M4 Motorway in Sydney, which had a corridor identified as early as 1950s but parts of it subsequently sold, show what can happen when corridors are lost. Recent proposals to connect the M4 from Strathfield to a tunnel entrance at Petersham are likely to be significantly more expensive than if the original corridor had been preserved.

Conversely, the F6 Freeway corridor between St Peters and Loftus has been reserved in planning instruments for more than 50 years and remains available for future development. Had the corridor been overbuilt during that period, any future highway proposal through the area would likely be significantly more expensive.

The other important consequence of early protection of the corridor is that it will allow the immediate commencement of work to integrate high speed rail into long-term transport and land use planning. The earlier this occurs the better, particularly given the impact that such plans have on government funding decisions.

A two-stage process, similar to that proposed in the HSR report—though faster—is envisaged.

Firstly, a number of initial steps would be undertaken to establish the high level agreement between the Australian, state and territory governments for the protection of the corridor. Secondly, once the necessary work had been undertaken to confirm the final alignment, site protection would be undertaken on a staged basis.

The multi-jurisdictional nature of the project, and the inconsistent and varying powers for corridor planning and protection, means that working with the states, the ACT and local governments in settling what to protect (and how to protect it) is vital to this stage of the project.

National enabling legislation to preserve the entire corridor from Brisbane to Melbourne, without invoking any compulsory acquisition of land, should be drafted as an immediate measure.

Overall, it is estimated that the corridor would be approximately 13,000 hectares of land, including stations and other land requirements for the system, such as that needed to offset significant natural environments impacted by the system.

The planning, zoning, development controls and design features for *how* the corridor is preserved, and to minimise the potential impacts on surrounding rural and urban areas, need to be considered concurrently. Further analysis of the corridor (geotechnical surveying and design work) would refine the corridor being preserved. This would then form the basis of a subsequent site protection program, prioritising those areas subject to imminent urban encroachment.

Cost to governments for the preservation of the corridor should be minimised by exploring options and mechanisms which protect the corridor without actually having to purchase it, such as holding or sheltering land from development by rezoning and restricting planning approvals to limit or change the development controls applicable to a site. In circumstances where land acquisition is required, timing of the purchase should be considered in terms of achieving the best value overall, with purchases delayed until later in the process where possible and appropriate. Whichever mechanism proves most suitable in each circumstance, the long-term benefits of preserving the corridor would significantly outweigh the necessary costs incurred in this process.

In all Australian jurisdictions, the compulsory acquisition of land by or on behalf of a government may be authorised in certain circumstances. Commonwealth, state and territory land acquisition Acts set out the relevant procedures. A description of these procedures for each jurisdiction is provided at [Appendix D](#).

### **Staging and route**

Not surprisingly, much of the debate around high speed rail comes down to where it would go, where it would stop and the order in which it would be built. The HSR report's conclusions and justifications for the alignment and sequencing of sections are underpinned by comprehensive economic and financial analysis. While recognising this analysis, the consultation process has brought into sharp focus a number of important broader considerations which should also inform the crucial staging decisions. Rather than recommending that governments should adhere to the route and stations in the HSR report—or indeed to a specific variant of them—we instead have concluded it is vital to retain as much flexibility as possible as to when, where and how high speed rail could be built.

Considerations identified in the feedback include how to best cater for population growth areas, how to facilitate and promote opportunities for urban and regional development (including changing settlement patterns through commuting services), how to stimulate and manage local economic growth, and of course how to help resolve broader transport challenges (such as congestion, as well as integrating high

speed rail into transport networks). It is also essential that staging, route and station locations are fully integrated with state and local planning strategies.

Retaining flexibility around the route and staging will allow the above issues to be thoroughly explored and, importantly, alternative innovative approaches to be considered (for example, there may be potential to commence revenue operations on some shorter sections before an entire line is completed.)

The outcomes of further work to be undertaken on costing (in terms of market testing), examining the commercial case for high speed rail, and the geotechnical analysis may well impact on decision-making about when, where and how to proceed with each stage.

Maintaining this flexible and open approach will also open up other opportunities for state and local governments and the private sector to get involved in the project. This would allow a range of stakeholders to work with the Government on developing discrete sections of the network.

In recommending this flexibility around route and station options, we are not advocating a “go slow” approach—on the contrary, it is vital that these issues are settled as soon as possible. But there is a risk for the overall project if the HSR Report findings in this area are treated as sacrosanct: governments should not inadvertently overlook alternative approaches that could help directly tackle the sorts of public policy challenges we have identified (as well as increasing the utility and effectiveness of high speed rail itself).

For our part, while not having time or indeed seeking to make definitive alternative recommendations around the route and stations, we have certainly seen sufficient feedback to suggest further work is warranted on opportunities for synergies with other infrastructure projects. For example, high speed rail could well link with a future second Sydney airport. Similarly the route and stations through Sydney could alter depending on the New South Wales Government’s broader intentions around transport planning, land use and density. In the Victorian context, the high speed rail corridor could be shared if the Victorian Government decides to proceed with a rail link to Tullamarine Airport in Melbourne. Also, the stages north of Sydney (including to Newcastle) could well be sequenced much earlier than currently envisaged. All such possibilities should be canvassed fully.

While perhaps self-evident, it is worth emphasising that commencement of operations on the first route constructed will be a watershed moment for high speed rail in Australia. The success of the first service—in capturing the public’s imagination and demonstrating the benefits high speed rail—will be fundamental in garnering public support for further investment. This consideration should feature prominently in decisions about the route and staging.

## Costs

Much of the focus since the HSR report was released has been on the headline figure of \$114 billion, the estimated cost of construction. Such a figure dwarfs any other infrastructure project and, even when committed over 30 plus years, would represent an unprecedented level of investment. Clearly costs are a significant threshold issue for all concerned—and perceptions of high and/or unacceptable costs must be overcome if high speed rail is to proceed.

One important way of achieving this, as discussed further below, is to frame high speed rail (including its costs) the same way as occurs elsewhere—as a series of smaller finite projects, still with significant, but more palatable, costs. However an equally critical issue is the *actual* costs the project would incur (for example the headline cost estimate of the first section recommended the HSR Report, Sydney-Melbourne, beginning with Sydney-Canberra for \$23 billion—is a much less intimidating figure than the \$114 billion estimate for the entire Brisbane-Melbourne line).

Feedback from consultations, particularly from international stakeholders with practical design and construction experience, has indicated that opening high speed rail in Australia to competitive global tender could achieve capital cost reductions of somewhere between 15 to 20 per cent. This is significant given it may equate to savings of up to \$20 billion on the entire project, and consequently serve to render the constituent parts of high speed rail more modest in cost—this should be tested.

There are also opportunities to work with consortia that offer a range of services across design, planning, construction, operation, testing and evaluation—international consortia with experience working together are likely to identify synergies that could provide further savings. For example, Japanese firms have developed narrower, lower cost tunnelling technology that is compatible with certain Japanese high speed rolling stock.

Capital cost reductions may also be achieved through consideration of alternative route and station options, as suggested above, as well as how the high speed rail system is built (including its technical specifications). We have provided a list of possible measures in [Appendix E](#), noting of course, that while they may deliver a capital cost saving, they would likely result in reduced patronage and revenues. Further financial and economic analysis would be required to determine the extent of these impacts.

We therefore recommend that detailed market testing of each potential section of high speed rail be undertaken to refine estimated development and construction costs. This could commence once further investigation of the alignment has been completed and the results of engineering and geological investigations are known. Opportunities to refine the system specification and/or capitalise on technological advances should also be investigated during the design phases, to improve the efficiency and further reduce the cost of construction for high speed rail.



We also believe there is a broader need to “de-risk” in the project which, if not managed properly, could result in cost blow-outs. Addressing the threshold issues identified in this report would significantly reduce the likelihood of problems during the project’s development, in particular:

- undertaking the necessary geotechnical work ahead of confirming the alignment to get a comprehensive and accurate understanding of the construction requirements and costs
- using tried and tested technologies for the infrastructure and rolling stock to minimise system development time, cost and risks
- minimising the risk and exposure to volatility for the private sector in the financing and packaging arrangements for the project.

### **Financing options and commercial case**

Crucial aspects of any significant infrastructure initiative, particularly one the size and scale of high speed rail, are:

- its commercial case
- the scope and opportunities for financing
- the overall role for the private sector in its development and implementation.

The arguments for high speed rail are less persuasive if it is perceived as a government-only initiative, and the scope for innovative approaches to financing and commercialising are also greatly diminished.

Whilst the HSR report addresses these issues, we believe they can be investigated further. In our view they are integral to the eventual success or failure of high speed rail—particularly in maintaining momentum.

Referring high speed rail to Infrastructure Australia to consider its merits in relation to other investment priorities is essential to developing the commercial case and assessing funding and financing issues.

Infrastructure Australia is best placed to consider high speed rail, using their criteria and methodology, in the context of Australia’s existing and planned infrastructure, and—consistent with its well-established processes—to provide advice on how to further develop the high speed rail proposal. It is also well placed to reflect on lessons learnt from financing previous major infrastructure projects in Australia and advise on the most appropriate options for high speed rail.

Feedback through the consultation process has shown that there is considerable commercial interest in the high speed rail project from across the globe. Many private sector entities (both domestically and internationally) would welcome the chance to work with government on these issues.

Feedback to us on financing has indicated that current constraints (post Global Financial Crisis) mean that traditional public private partnerships are not suitable for infrastructure projects of this size. As the Deputy Prime Minister himself has noted, it is likely that significant public sector funding will be required for high speed rail in Australia. Lack of interest or competition from construction companies means that prices may rise resulting in higher eventual cost to government.

Given this is a time when global infrastructure pools are growing (and there is growing demand for investment in infrastructure assets generally), we recommend that next steps for high speed rail include:

- thorough exploration of a comprehensive range of potential financing, funding and packaging options, particularly with the view to reducing the 'sunk' costs to governments
- opening the project to commercial innovation and competition
- achieving the project on an accelerated timeline.

Several submissions have raised such options and there is clearly merit in taking this work further.

In suggesting this, we also note the Australian Government's current work, including through the Infrastructure Finance Working Group, on infrastructure financing. High speed rail represents the excellent opportunity to pursue the sorts of options being canvassed in that context.

A more detailed list of possibilities in this area is provided at [Appendix F](#).

#### **Maximising value capture**

The HSR report takes a conservative view on the ability of land sale/value capture to contribute to the project's commercial financing. Particularly in its conclusion that, *"it is highly unlikely that all of [the value capture] measures would be implemented."*

Most value capture mechanisms operate at the state and local government levels, as they most commonly operate through property and development related levies. The extent to which value is captured therefore depends heavily on local factors and incentives.

If the states and local governments were responsible for funding the development of all stations (regional and city-centre), there would be a clear alignment of incentives to maximise the value capture opportunities which, in turn, will reduce the capital outlay for the Australian Government.

#### **Considering risk allocation**

Given many recent high profile public private partnership failures, there is now much greater demand for mature, operational infrastructure assets where investors can avoid construction and potentially patronage risk. Many long term investors perceive greater risks with greenfield projects than with fully operational assets.

We therefore believe that high speed rail presents an opportunity for new, innovative delivery models which can:

- match risks to the parties prepared to take them
- reduce project costs
- accelerate project timelines at a time when there is a considerable availability of capital competing for long-term infrastructure assets.

#### **Maximising fare yields**

Opportunities to increase fare yields, through more sophisticated market segmentation and yield strategies, should be investigated.

Whilst the HSR report used an appropriate fare structure for the purpose of the financial appraisal, it is our view that there would be a significant opportunity to increase fares in many markets given the attractiveness of the proposed high speed rail services. For example, inter-city fares were set to be broadly similar to air fares except on shorter regional journeys, such as Canberra-Sydney. In this particular market, higher business fares could be introduced (where air travel is the principle competitor) whilst maintaining the current leisure travel fare levels to remain competitive with car travel.

#### **Identifying and quantifying additional revenue streams**

The HSR report states that 95 per cent of revenues for the proposed high speed rail system would come from ticket sales. Whilst this was an acceptable starting point for the financial analysis, we believe that in conjunction with value capture, there are significant commercial opportunities—such as advertising, retail leasing and real estate development—which must be explored further in determining a commercial financing strategy for high speed rail.

In this regard, we have noted that JR Central (one of the private Japanese rail operators) now derives almost one quarter of its revenues from non-rail operations and the considerable, and growing, non-rail operations of High Speed 1 Ltd in the UK, particularly the St Pancras precinct.

#### **System specifications**

There are numerous potential technologies, systems and technical approaches to high speed rail, and the importance of prudent decision making in this area cannot be understated. The operational efficacy of high speed rail—including the reliability and the highest levels of safety of the system—is fundamental to its success.

The critical point in this area is that a single, consistent approach must be taken in developing high speed rail in Australia. Past experience in this country has amply demonstrated the adverse consequences of not establishing and maintaining consistent parameters for cross-jurisdictional rail networks. Feedback from international stakeholders validates the need for a consistent and standardised approach in Australia.

We consider the system proposed in the HSR Report to be the right one and this is supported by practical experience. The use of standard gauge and wheel-on-track technology has considerable cost and development benefits, and we agree that the use of Maglev technology would not be suitable for this project.

### **Labour preparedness**

Without proper planning, a project of this scale could have adverse impacts on the labour market in Australia and potentially threaten successful completion of the project. However, rather than seeing this risk as a “show stopper” we consider high speed rail a great opportunity to enhance Australia’s labour force size, skills and expertise.

High speed rail will require a wide range of expertise across planning, pre-construction, development, implementation, testing and operations. Australia is capable of meeting this challenge. Although not in a position to forecast labour supply and demand years into the future, we suggest careful planning be undertaken to clarify the workforce requirements and identify capacity constraints early, so that appropriate measures can be taken to avoid skills and workforce shortages and ensuing bottlenecks and cost blowouts in the future. Previous examples of ramping up investment in Australia have demonstrated the need to manage labour force impacts to avoid flow on effects to other sectors of the economy.

As a newcomer to high speed rail, which has been refined over decades in other markets, the best outcome for Australia will be achieved by utilising a combination of domestic and international firms and labour forces. Nearly all of the international stakeholders that were consulted expressed interest in participating directly in the high speed rail project.

### **Timeframes**

The final and most all-encompassing threshold issue is timeframes.

Given the number of previous attempts in this country, and the international experience with progressing high speed rail, it is clear that impetus will be critical to achieving the reality of high speed rail in Australia.

The biggest “hurdle” high speed rail faces in the eyes of the public is its cost. But more fundamentally is the perception, reinforced by the HSR report, that high speed rail will not be a reality for many decades—beyond the lifetime of many Australians. This renders high speed rail almost impossible to conceive for many people—too intangible to warrant serious consideration.

There are two key aspects of the timeframe issue that must be dealt with in moving forward with high speed rail. The first relates to how high speed rail is characterised theoretically and treated commercially. Currently high speed rail in Australia is commonly denoted as a singular “project” with a possible completion date (according to the HSR report) of 2058. This timing refers to the entire network of 1,748 kilometres between Brisbane and Melbourne. It is an unhelpful and indeed

counterproductive way to depict high speed rail. Internationally, high speed rail is characterised, and packaged, on a line by line basis.

France, for example, in 2011 completed the first phase of the LGV Rhin-Rhône. This brought the total high speed rail network in that country to almost 2,036 kilometres (similar to the total proposed network in Australia) and it has another 757 kilometres currently under construction. The journey to this point in France has taken over three decades.

At no stage did the French Government present high speed rail to the community as a 30-plus year project. Instead it has been treated as a series of discrete high speed rail lines, each taking a finite number of years to complete, each involving a standard construction schedule, public debates and consultation over route and station locations and so on.

A similar approach is essential in Australia in order for high speed rail to become a reality in the minds of the community. The Government must demonstrate a vision for high speed rail that Australians can relate to and truly believe in. This means dividing the development of the system into smaller, 'achievable' projects—in terms of both time and cost. It also means that within these projects, planning and construction timelines need to be clear and realistic, and punctuated with regular milestones marking the completion of each step.

The second significant aspect of timeframes relates to the specific timing envisaged. Much of the feedback obtained through the international consultation suggests that the timeframes in the HSR report are, even when broken into constituent parts, highly conservative. The feedback suggests that once put to market, industry is likely to propose a construction schedule significantly shorter than envisaged. We believe this proposition should be tested as soon as possible.

Similarly we believe there is scope to accelerate the timeframes around the preparatory and pre-construction phases of high speed rail. A degree of ambition within Government is vital in this context, minimising the potential for bureaucracy to unduly delay or prolong this aspect. In this regard, we believe the early establishment of an independent High Speed Rail Authority would be highly beneficial. An Authority with a clear mandate and delineated timeframes will be well placed to undertake many of the tasks we have identified above. A draft charter for the Authority is at [Appendix G](#).

Finally, as has happened overseas, we are strongly of the view that once an initial section of the high speed rail is operational and successful, its popularity will be the catalyst for subsequent stages to be built. However, the success of the first stage is crucial for this to happen.

## Findings and Recommendations

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In light of the demonstrated need for high speed rail in Australia, the threshold issues that we have identified as critical to its success, and our suggestions for dealing with these issues, we make the following recommendations:

### **Formally commit to high speed rail and settle arrangements with state and territory governments**

As a matter of priority, we recommend that the Australian Government makes a public commitment to proceeding to the next stage of the high speed project.

Given the significance of this project to the nation as a whole, we also recommend the Prime Minister work with the Premiers of Victoria, New South Wales and Queensland and the Chief Minister of the Australian Capital Territory, with a view to confirming the support of the States and the ACT to high speed rail and a clear commitment to making it happen (including through their active participation in the work foreshadowed in our other recommendations).

### **Protect the corridor (initially through national legislation)**

The identified corridor for high speed rail is highly vulnerable to encroachment and development, which, if it were to occur, would severely constrain options in the future. Inaction in securing the corridor will likely result in substantially higher costs or, in the worst case, render high speed rail completely unviable.

While the final alignment and station locations need to be settled—protecting the corridor, as identified in the HSR report, is an important first step for ensuring that viable options remain. The protected corridor may need to be amended following the work of the High Speed Rail Authority on planning and testing, and consultation and negotiation with the jurisdictions. However this does not diminish the need to take action now. We therefore recommend that the full identified corridor for high speed rail is, as a matter of urgency, protected via national legislation.

Enacting national legislation will enshrine the Commonwealth's commitment to high speed rail, while allowing further refinements of the corridor. Through consultation with state and local governments, the opportunity would remain to adjust the alignment and station locations to complement future transport planning initiatives prior to the final route being settled and any land purchase and acquisition occurring.

### **Refer high speed rail to Infrastructure Australia for initial assessment**

We recommend that high speed rail is referred as soon as practicable to Infrastructure Australia for examination in the context of other potential investments, and with a view to it being considered for the National Infrastructure Priority List.

## Establish a High Speed Rail Authority

The HSR report recommends that a single, co-ordinating authority would be required to effectively and efficiently progress the detailed planning required to develop high speed rail.

The Advisory Group is of the view that the HSR report's proposed implementation framework (and its corresponding timeframe) is too protracted and lacks a body with the necessary ability to progress early critical work.

We therefore recommend that a dedicated High Speed Rail Authority (HSRA) is established as soon as possible, ideally within six months. This will provide a strong focal point for high speed rail and a more ambitious timeframe for its realisation.

The HSRA would be established through legislation, which sets out its constitution, objectives, powers and responsibilities, and agreed governance and funding arrangements.

It is envisaged that each relevant jurisdiction participate in settling the HSRA governing board.

The HSRA would undertake a range of tasks to satisfactorily address the threshold issues identified in this advice, but most importantly it will undertake work to:

- a) gauge and test the market to refine the capital and other cost estimates and identify any innovative financing opportunities (including the potential to capture value as stations are developed)
- b) analyse alternate route and staging options
- c) settle arrangements with state, ACT and local governments about the route protection mechanisms and timing
- d) ensure that the development of high speed rail is reflected in, and consistent with, the planning and investment frameworks of the States and the ACT.

We also recommend that the Authority's activities should be undertaken with a specific and finite remit of five years. A draft charter for the Authority is at [Appendix G](#).

### Indicative timetable

Based on these recommendations, our suggested high-level timetable for key milestones in the first three years is:

<i>31 December 2013</i>	Intergovernmental arrangements settled
<i>28 February 2014</i>	High Speed Rail Authority established
<i>30 June 2015</i>	Corridor protection arrangements settled and Commonwealth legislation passed
<i>30 June 2016</i>	Authority's initial work on market testing and business plan development completed
<i>31 December 2016</i>	Authority's work on site suitability and analysis (including geological and land survey work) completed

## **APPENDIX A High Speed Rail Advisory Group Terms of Reference**

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On 11 April 2013, the Hon Anthony Albanese MP, Minister for Infrastructure and Transport, released the second and final report of the government-commissioned study into high speed rail (HSR) on the east coast of Australia.

In releasing the report, the Minister called for a public debate on HSR and initiated a period of consultation and feedback. As part of this, he announced the establishment of a new High Speed Rail Advisory Group, to directly advise the Australian Government on key industry and community issues arising from the report.

Membership of the Group will include:

- Ms Lyn O'Connell PSM (Chair) – Deputy Secretary, Department of Infrastructure and Transport.
- The Hon Tim Fischer AC – former Deputy Prime Minister and former Ambassador to the Holy See.
- Ms Jennifer Westacott – Chief Executive, Business Council of Australia.
- Professor Sue Holliday – Professor of Planning Practice, Urban Policy and Strategy, UNSW. Member of the Urban Policy Forum.
- Professor Peter Newman – Distinguished Professor of Sustainability at the Sustainability Policy Institute of Curtin University, and board member of Infrastructure Australia.
- Mr Bob Nanva – National Secretary of the Rail, Tram & Bus Industry Union.
- Councillor Jenny Dowell – Mayor City of Lismore and President of the Northern Rivers Regional Organisation of Councils.
- Mr Bryan Nye – Chief Executive Officer, Australasian Railway Association.

The Group's work will focus on:

1. Gathering, analysing and commenting on the views of communities, local governments and Regional Development Australia committees on the HSR report - including the level of public understanding of HSR, the implications and opportunities for urban and regional development associated with HSR, and specific planning, environmental, and social and economic matters relating to the preferred alignment and stations;
2. Gathering, analysing and commenting on the views of domestic and international industry stakeholders on the HSR report - including issues around the projected travel market, transport products, system specifications and construction logistics; and
3. In light of 1 and 2 provide practical advice on the implementation of HSR in Australia – including:
  - corridor preservation,
  - timing and staging,
  - integration with transport services and land use planning,
  - institutional frameworks for governance, planning, procurement, and regulation, and
  - packaging HSR to leverage private sector support.

The Group will be supported by the High Speed Rail Unit in the Department of Infrastructure and Transport. It will consult as required, for an initial period of up to twelve months, and provide regular updates to Minister Albanese.

The work of this Group will help inform the Australian Government's consideration of next steps for HSR in Australia.



## APPENDIX B Summaries of Phase 2 Report Findings

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### HSR Infrastructure and Planning – Alignment selection

This paper explains how the alignment selection process was undertaken in phases 1 & 2.

#### Investigations

The phase 1 study defined a study area for investigation between Brisbane, Sydney, Canberra and Melbourne. Phase 2 further refined the alignment options and proposed a final, preferred alignment for the HSR. The analysis considered capital cost, patronage forecasts, economic benefit as well as the environmental, social and regional development impacts of the alignment.

#### Phase 1

Phase 1 considered several direct, coastal and inland alignment options between each city. These options were progressively narrowed based on cost, environmental impacts and other factors, such as length (and hence travel times), distance from key markets (i.e. towns and cities *en route*) and other constraints, such as urban development and difficult terrain.

Phase 1 shortlisted a corridor band within which individual alignments could be assessed in phase 2. The band broadly followed the alignment of the existing long-distance rail network, provided access to larger regional towns and cities, had lower capital cost and generally higher net economic benefits.

The corridors shortlisted for further analysis were:

- A coastal corridor between Brisbane and Newcastle, with potential variations around coastal cities and the Gold Coast. This was mainly due to their proximity to larger population centres.
- The Central Coast corridor between Newcastle and Sydney which performed best across a range of considerations including travel time, cost, environmental impact and proximity to key markets.
- The Hume Highway and Princes Highway corridor between Sydney and Canberra, via Southern Highlands. Potential variations for accessing Wollongong and Canberra were set aside for further examination in phase 2.
- The Hume Highway corridor between Canberra and Melbourne, via Riverina, Murray, and with a potential route option via the Goulburn Valley. These options, which skirted the Brindabella Mountains to the north, performed well compared to those which exited Canberra to the west through the mountain range, which were much more costly (by up to \$3.5 billion more), would cause significant impacts on the Canberra urban area, and would be damaging to sensitive environmental areas to the west of Canberra.

#### Phase 2

From the short-listed corridors identified in phase 1, phase 2 further examined alignment options with the use of alignment planning software. These were again narrowed based on user benefits (primarily travel time determined by distance and speed), accessibility (proximity to population and transport hubs), environmental and social impacts, comparative cost estimates and construction risk.

Based on the findings of phase 1, city-centre and city periphery locations were preferred for stations in the major cities (Brisbane, Sydney, Canberra and Melbourne), while sites close to, but not directly impacting on, intermediate cities and towns were preferred for regional stations. Regional stations, unlike city stations, would have express trains passing the station at high speeds. This would cause significant noise, safety and severance impacts if the line went through towns.

A number of other factors were considered in the selection of urban access alignments in the large cities. These included consideration of using existing and future rail corridors. The suitability of construction options (i.e. viaduct, tunnel and at-grade) was also considered for urban alignments, particularly on how it would affect:

- the speed and operation of services
- urban areas and issues such as severance and property resumption
- geological features such as flood ways, soil types, etc.

#### *Findings*

- The phase 2 study proposes a coastal alignment between Brisbane and Sydney, with a spur to the Gold Coast, and an inland alignment between Sydney and Melbourne, which bypasses Wollongong and serves Canberra via a spur.
- New tunnels were found to be the best option in accessing a Sydney station at Central. Tunnelling would have a significant cost advantage at \$171million/km compared to \$230 million/km for viaduct and \$252 million/km for surface in densely populated cities. Viaduct and surface would also accrue additional costs for amelioration of noise and severance impacts of the surrounding communities. The preferred alignments in tunnel would also be easier to construct than at-grade options, as they are more direct and would allow higher speeds. Tunnels also cause minimal disruption to communities in terms of noise, safety and severance.
- Accessing Wollongong was ruled out. Not only would construction cost \$7.3 billion more, the alignment would need to pass through two long tunnels with coal seams. This raises significant safety concerns for the operation of the HSR. If methane levels were to exceed an allowable level, the operations of the HSR between Sydney and Melbourne would be disrupted.
- The Gold Coast is an important market for HSR but problematic to access due to sensitive environmental areas, including the hinterland, numerous waterways and widespread residential development. A spur alignment was therefore considered the best option to access the Gold Coast. This option would cost \$300 million less and would largely avoid impacting residential and sensitive environmental areas. It would also reduce travel times for Sydney to Brisbane direct services by approximately nine minutes.
- A spur alignment was also considered preferable for accessing Canberra. As noted above, exiting Canberra to the south or west was ruled out in phase 1 on the basis of environmental impacts and cost. A diversion of the main line to Canberra and then back up to the vicinity of the Hume Highway would add a time-penalty of 13 minutes to the majority of passengers not travelling to or from Canberra. This option could also cost up to \$2.2 billion more, depending on the extent to which tunnelling would be required to avoid extensive property acquisition and severance impacts on the Canberra urban area. By comparison, the preferred 'spur' alignment would enter the city under Mount Ainslie which minimises impacts on communities and foregoes noise and safety impacts of trains travelling through Canberra at high speeds.
- Where opportunities exist to share existing or new infrastructure and/or corridors, the study found that:
  - In general, there were few opportunities to share the existing regional rail alignment with HSR due to the sharp curves of the existing tracks. Sharing corridors also generally requires them to be widened, which can result in impacts on surrounding property and road networks at a similar scale to that of a completely new corridor.
  - With the exception Melbourne (both in terms of sharing existing rail corridors and potential synergies with a future rail link to Melbourne's Tullamarine Airport) synergies with current or future city access alignments were minimal. In Sydney and Brisbane, the current rail corridors are already at capacity or had expansion planned for the current rail network.

- In Brisbane, Sydney and Melbourne there are good opportunities to leverage off the existing station infrastructure at the preferred sites, which also provide readily available connections to other transport modes. Most regional and peripheral stations are not located within the vicinity of an existing transport hub and would need new connections to be established.

## HSR Infrastructure and Planning – Station locations

This paper explains the process for selecting station locations in the study.

The market demand modelling indicated that the highest demand for fast long-distance travel is between city centres. As such, CBD locations are preferred for the Brisbane, Sydney and Melbourne stations. Evidence from established systems overseas, such as Spain, France and Japan, show that one of the biggest competitive advantages of HSR systems (particularly over the aviation market) is that it travels city-centre to city-centre. As cities are hubs of local transport networks, HSR passengers can access direct connections to their final destination on local services.

The study findings for station locations are as follows:

- Brisbane, Sydney and Melbourne would be served by a city-centre station and a peripheral station (Sydney would have two to serve both the north and south lines out of Sydney). A city centre location was also preferred for Canberra as it would deliver \$2 – 3 billion more user benefits compared to other alternatives, including Canberra Airport.
- Regional station locations were selected on the basis of their proximity to large population centres (>50,000), or in the case of the Casino station for example, where the station can serve a region with a dispersed population. For example:
  - a Southern Highlands station would serve approximately 60,000 people in 2036 and be accessible for other large centres in the area (such as Shoalhaven), compared to a Goulburn station, which would serve a regional population of approximately 30,000 in 2036; and
  - the Central Coast station location at Ourimbah was chosen because it is within 30 minutes' drive for 85 per cent of the Central Coast population. Locations nearer to either of the regional centres of Wyong and Gosford were not preferred because they would limit total access.
- The regional stations between Sydney and Melbourne would be:
  - Southern Highlands, Wagga Wagga, Albury-Wodonga, and Shepparton.
- The regional stations between Sydney and Brisbane would be:
  - Gold Coast, Casino, Grafton, Coffs Harbour, Port Macquarie, Taree, Newcastle and the Central Coast.

### Consideration of alternative terminus station locations

Terminus station locations outside of the CBDs of cities (Brisbane, Sydney, Canberra and Melbourne) were consistently found to deliver less user benefits, due to reduced access and demand, than CBD locations.

<i>CBD station location</i>	<i>Additional user benefits compared to alternative options</i>
Sydney (Central)	\$3 – 45 billion
Canberra (Civic)	\$2 – 3 billion
Melbourne (Southern Cross)	\$4 billion
Brisbane (Roma Street)	\$1 – 2 billion

Sydney has the greatest difference in user benefits, depending on where the station is located. The phase 2 report states that locating a station at Parramatta would result in a \$45 billion reduction in user benefits

compared to a station located at Sydney Central due to its distance from the CBD, the need to transfer modes, and the potential lack of car parking. Parramatta also has additional constraints to building a new HSR station due to the configuration of the city centre, heritage buildings and the highway system. As a result, locating a station in this vicinity would require it to be 30 metres below the surface, making it difficult and costly to construct.

Consideration would need to be given to the additional cost of providing alternative transport option to deliver fast and direct connections to CBDs to ensure this market is served.

### **Airport stations**

Phase 1 did consider airport HSR stations (for Sydney, Canberra and Melbourne specifically) on the basis that they could provide for interchange between air and HSR passengers and have interchange facilities for other transport modes. Brisbane was not considered due to its location.

Evidence from established HSR systems overseas consistently shows that airports are not significant drivers of demand for a long distance HSR network. This is because long-distance HSR systems are generally most successful when they operate as a competitive mode (rather than a support mode) to aviation. If HSR stations were located at airports instead of city-centres, it is likely HSR would lose its advantage as a competitive mode. Consideration would also need to be given to how passengers then make their onward journey to their final destination from the airport.

Evidence suggests that this would also be the case in Australia. The current proportion of people accessing airports via public transport in Australia is very low, despite the presence of rail links in Brisbane and Sydney. Melbourne has the highest (at 15%) via the Skybus service.

For these reasons, direct HSR connections to city airports (either as a secondary station or alternative to a CBD station) was ruled out early in the study. There were further concerns that airport stations could cause a time delays for passengers not travelling to or from an airport, and that the cost could be prohibitive. For example, diverting the HSR line and constructing a station underground at Sydney's Kingsford-Smith Airport could be difficult and therefore expensive (noting that further work would be required to calculate the specific cost of such a development, as it has not been considered in detail in the study).

Due to the planning of Canberra, demand does not tend to originate from a single CBD location and therefore, trip start and end points were much more dispersed across the urban area. ACT planning documents showed a possible future HSR corridor servicing a station in the vicinity of the airport.

The option for a station at Canberra Airport was given greater consideration. However, this option was not considered in light of making Canberra Airport the 'second Sydney Airport'. The recent Sydney Aviation Capacity Study concluded that Canberra is too far from Sydney (even with a HSR link) for it to serve this purpose. Based on demand (and Civic's position as preeminent town the centre of the transport network), the phase 2 report concluded that a HSR station at Canberra Airport would deliver less economic benefits than a station located in Civic.

### **HSR Infrastructure and Planning – Corridor width considerations**

This paper explains how the corridor width was considered in the development of the preferred alignment.

#### **Engineering considerations**

Corridor width for the HSR program would be primarily influenced by:

- engineering considerations such as maintaining a smooth vertical alignment for the railway, site stability and drainage;
- type of structure (bridge, viaduct, cutting); and
- noise mitigation.

The corridor width (or corridor boundary as it is known in the phase 2 report) for the HSR system would, as a minimum, be 30 metres. This would be for normal, dual-track configuration with no incline/decline or additional features (such as cut or fill construction).

The phase 2 report details typical corridor boundaries. For example, regional alignment in 'cut' would require a further 13 metres of width (ie 43 metres), on fill a further 31 metres of width (totalling 61 metres). In urban areas, typically a 'cut' or 'fill' construction with walled boundary would require a further 9 metres (totalling 39 metres).

The report notes that the maps provided reflect the inaccuracies inherent in the published data sets used (including cadastral data sets which can be +/- 25 metres). Therefore the corridor boundary shown on the maps is wider than what would be required following the completion of detailed design.

The report also considers road and rail diversions to allow for the HSR as a sealed system. In most cases road and rail connections would be maintained as underpasses or overpasses. Final decisions on diversions and connections would need to be determined in the detailed design stage.

Additional land may also be temporarily required adjacent to the corridor to allow for road access during construction. At certain points along the alignment, major urban worksites would need to be established (typically 50,000 to 80,000 sqm) for the construction of tunnels and bridges. At-grade construction of the railway and grade separation where necessary (road/rail underpass/overpass) would be undertaken using temporary linear worksites adjacent to the corridor. This will keep temporary land reservation to a minimum.

The identified major urban worksites are listed below.

#### Brisbane

- St Lucia Golf Course
- Sherwood Road, Sherwood
- Ipswich Motorway, Ipswich
- Bowhill Road, Durack
- Logan Motorway, Browns Plains

#### Sydney North

- Jersey Street, Hornsby
- Britannia Street, Pennant Hills
- Concord Road, Rhodes
- Centenary Park, Croydon
- Newington Road, Stanmore

#### Sydney South

- Henson Park, Marrickville
- Tasker Park, Canterbury Road, Canterbury
- Newbridge Road, Moorebank
- Moorebank Avenue, Holsworthy

## Canberra

- Majura Road

## Melbourne

- Sages Road, Gowrie
- McAllister Oval, Park Road, Melbourne

### Noise management

An HSR train set would be slightly louder than an existing passenger train operating on Australia's rail network today, although given its greater speed the duration of the noise impact would be shorter. However, the predicted frequencies of HSR trains would be significantly greater than current service levels, leading to a potentially greater noise impact overall.

An assessment of the noise impact was undertaken to establish the extent and type of mitigation that would be required. The cost of noise mitigation was included in the commercial and economic appraisals.

Two types of generational noise were assessed:

- Airborne noise emitted by passing trains across open space (noise being created by the bogie, front of train and pantograph); and
- Groundborne noise transmitted through the ground arising from trains moving along the track.

At 25 metres from the centreline of the track, a train passing at 350 kmh will produce a noise impact of approximately 90 - 100db for 5 seconds.

The applicable noise standard currently in NSW and Victoria is 60 db and this was adopted for the assessment of mitigation requirements. Noise emissions were then plotted against the distance from the track. The table below shows the distance from the centreline of the track and at what distance compliance with the adopted standard is achieved.

Scenario	Compliance offset distance
Rural area	230 m
Transition area with 2 m mounding	70 m
Transition area with 3 m mounding	51 m
Urban area with 2 m noise wall, 7 m from track centreline	25 m
Urban area with 2 m noise wall, 4 m from track centreline	21 m
Urban area on viaduct with 2 m noise barrier	21 m

The results shown above indicate that the approximate distance at which noise receivers would be affected range from 21 metres to 230 metres depending on location and type of mitigation used. To ensure compliance, further noise mitigation treatments may need to be considered in the detailed design phase, should a decision be made to proceed with HSR. Whilst mitigation in built up areas would normally comprise physical barriers, mitigation in sparsely populated areas would generally comprise architectural treatments including door and window seals and mechanical ventilation.

## **HSR Infrastructure and Planning – Corridor preservation issues**

This paper describes the phase 2 report's findings on the preservation of corridors for a future HSR.

Corridor protection is the reservation of land (eg by rezoning, resuming, or purchasing) for subsequent use in preparation for the construction of a major transport project and facilitation of access through adjacent land during the construction phase.

The report concludes that the minimum corridor width required to accommodate two dedicated HSR tracks is 30 metres. This represents a refinement of the Phase 1 evaluation, which was based on a 200 metre width to ensure that any significant issues were captured when comparing initial corridor options. This 30 metre width does not include the additional width required for embankments or cuttings necessary to maintain the smooth vertical alignment required for HSR. Overall the land take for corridor reservation would be approximately 10,500 hectares, plus an additional 2,500 hectares for stations, depots and stabling facilities, station car parks, traction power substations, tunnel ventilation and emergency ingress/egress shafts and the purchase of land to offset environmentally sensitive land or land within national parks.

The multi-jurisdictional nature of HSR complicates the process of corridor preservation, with current legislative provisions and policies for corridor planning and protection varied and inconsistent between the different states and territories in Australia. Given the long-term nature of implementing HSR and the amount of public funding indicated, it would be important to ensure that the process of corridor protection is efficient, and achieves the project objectives.

Corridor protection forms part of the preliminary requirements proposed in the report – to be undertaken in the initial six years of work – and the subject of the negotiation of appropriate agreements between jurisdictions on what to protect and how to protect it.

### **Intergovernmental Agreement (IGA)**

An IGA is proposed as the means by which jurisdictions would formally commit to protection of an HSR corridor. The phase 2 report estimates that an IGA could be finalised in the initial two years of a commitment to proceed with HSR. Under the IGA, each jurisdiction would have responsibility for the conduct of land title searches and searches of subdivision plans where appropriate, to identify land demarcations within their jurisdiction. The preferred staging of the HSR program would determine the timing for conducting site suitability studies and land acquisition within jurisdictions. However, the report suggests that all jurisdictions begin planning for appropriate rezoning with preparations made for site studies once the IGA is signed.

The report notes that while initial examination suggests that legislative amendments are not required for the acquisition of land within the rail corridor, some requirement for amendments to state and territory Acts relating to land rezoning and restriction of planning approvals may be identified, and if deemed advantageous to HSR, these should be included in the IGA. Working back from an assumed start date of 2035 for the Sydney to Canberra segment, enabling legislation would need to be enacted by 2019. This would provide the HSR Development Authority with necessary powers and functions and enable the HSR program to proceed to the detailed planning and procurement phase.

The report suggests that funding and payment arrangements to compensate existing land owners/occupiers/title holders should also be included in the IGA.

### **Government powers to acquire land**

The phase 2 report notes that a variety of government powers and rights exist in relation to accessing and acquiring land in order to provide public services, such as would be the case for a future HSR project corridor.



In all Australian jurisdictions, the compulsory acquisition of land by or on behalf of a government or government agency may be authorised in circumstances where the proposed use of the land is within the powers and functions of the relevant government or agency. Commonwealth, state and territory land acquisition Acts set out procedures for the acquisition of land by each government respectively.

### **Agreement on what to protect**

The agreement on what to protect would include consideration of land reservations, policies in respect of adjacent land use, station locations and station classifications, and details of complementary infrastructure and access. During construction of the railway infrastructure, easements on land adjacent to the right of way may be required to allow heavy machinery access for activities including the creation of cuttings, bridges and tunnels, formation of track and turnouts, drainage, signalling systems, electrification, and building of stations and railway yards.

Following construction, a narrower corridor would provide right of way, with consideration for a wider corridor zoned for land use appropriate for a noise barrier and the possibility of complementary development adjacent to the right of way, such as rail interchanges, intermodal hubs, retail and office precinct development.

The scale of corridor protection is determined by the assets being protected. The width of the corridor to be protected would also depend on the land zoning and type of activity performed on adjacent land. Considerations in built-up areas, for example, may differ from those on or near pastoral land. A narrow corridor might be applied in appropriately zoned sites, such as in rural and regional areas, but a wider corridor or noise barrier applied in some built-up areas, where land costs are not prohibitive. Wider corridors would also be required at station locations and where large-scale complementary developments are being targeted.

### **Agreement on how to protect the corridor**

Agreement on how to protect the corridor would include alignment of the mechanisms for protecting each system component, and of the timing and funding arrangements for protection activity. Options include land resumption, purchase, holding or 'sheltering from development' decisions.

The land resumption, purchase, holding or sheltering-from-development decisions should include the following considerations:

- Rezoning land and restricting planning approvals within and adjacent to the corridor to preserve the land for the future.
- Assessing time value of money considerations of acquiring and/or purchasing land prior to HSR construction and delaying payment until just before construction starts, except in hardship cases.
- Assessing time value of money considerations of maintaining land currently held that is vacant/poorly utilised prior to HSR construction.
- Prioritising the funding of land purchase over competing government priorities.

The responsibilities of each jurisdiction for protecting the preferred sites and alignments would be agreed with land identified as a preferred site for the HSR corridor sheltered from development until construction of the HSR infrastructure is due to begin. Rezoning and restricting planning approvals would limit the range of land uses permissible on a site or change the development controls applicable to a site.

By rezoning land as appropriate to support HSR, both for the corridor and land adjacent to the corridor, land can be preserved for possible future use by a HSR program. Rezoning considerations may also apply to land adjacent to the corridor. Encouragement of compatible land use within and beside rail corridors may be via strict zoning or via policies that promote land use in accordance with jurisdictional plans.

While rezoning activity is generally performed by local councils, the report suggests that advice be sought as to the cost of amending state and territory legislation to streamline zoning powers for the corridor and avoid the need for jurisdictions to negotiate with multiple local councils along the HSR corridor.

### **Rationale**

The phase 2 report views corridor protection as a high priority in the event a decision is made to proceed with HSR.

It also advises that if a decision to proceed is not taken now policy-makers, whether or not convinced of the merits of committing to HSR, could also legitimately weigh the possible consequences of not taking actions to preserve that option at some time in the future. Inaction in regard to corridor protection is not benign. In the absence of a protected route, the spread of cities and other developments in the preferred corridor will gradually reduce the constructability and increase the potential capital costs of a future HSR program, rendering it increasingly more difficult to implement, even while the fundamental trends towards HSR may become increasingly favourable.

### **HSR Economic Analysis – Operating environment**

This paper describes aspects of the proposed operating environment for HSR, as recommended in the phase 2 report.

The operating environment described in the phase 2 report has been tailored to meet the forecast demand for east coast travel in 2065. Modelling undertaken for the study found that:

- Inter-city and long distance regional travel (>250 km) is expected to account for 85 per cent of total passenger trips and 97 per cent of total passenger kilometres on HSR;
- Short regional travel (<250 km) would represent only 14 per cent of total trips and 3 per cent of total passenger kilometres on HSR; and
- Business travel would account for around 35 per cent of total trips and 42 per cent of total passenger kilometres on HSR.

As HSR would primarily serve the intercity and long distance travel market, the report found that approximately 55 per cent of HSR trips would be diverted from aviation, with the remainder diverted from surface transport modes (private vehicle, coach and existing rail) or induced travel. Accordingly, the report recommends an operating environment that would be competitive with aviation in terms of fares, frequency, travel times and amenity.

- **Fares:** Modelling in the report assumes average fares for business and leisure travel to be comparable to, and competitive with, airfares on the main inter-capital routes on the east coast. In practice, a range of fares would be offered, targeted to market segments and influenced by seat utilisation patterns and competitive pressures, as is currently the case with the airlines. For example fares between Sydney and Melbourne are recommended to be in the range of \$86-\$141, in 2012 dollars.

The phase 2 report recommends fares be set significantly lower than airfares on shorter routes (i.e. Sydney to Canberra in the range of \$42-\$69) because HSR would be competing with both air and car travel over shorter distances<sup>1</sup>.

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<sup>1</sup> A table of indicative fares is included on page 76 of the phase 2 report.

- **Frequency:** In 2065 the report projects 114 services per direction per day on the Sydney-Brisbane/Gold Coast line and 130 services per direction per day on the Sydney-Melbourne/Canberra line. This would include up to 5 inter-capital city express services per direction per hour during peak periods – with trains carrying up to 780 passengers.
- **Stopping Patterns:** Stopping patterns recommended in the report have been designed to maximise utilization by balancing regional access with travel times. A range of express, limited express and regional services would be offered to meet market demands. For example, on both the Sydney-Melbourne and Sydney-Brisbane lines, there would be express inter-city services during non-peak periods, but these would also stop at the outbound peripheral station during the morning peak period and the inbound peripheral stations during the evening peak period.

The phase 2 report recommends that inter-regional services not serve all stations, but be tailored to prioritise high demand trips<sup>2</sup>. For example, on the Sydney-Melbourne line, there is no service recommended that stops at both the Albury-Wodonga and Southern Highlands stations, because this is forecast to be a low demand route. Anyone seeking to make this trip would need to change trains in Wagga Wagga.

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<sup>2</sup> Tables of indicative stopping patterns and frequencies for each station are included on pages 113 and 114 of the HSR Report.

- **Travel Times:** As there are a range of express, limited express and regional services recommended, there would be a range of travel times. Express services would take:
 

– Sydney-Brisbane	2 hours 37 minutes
– Sydney-Melbourne	2 hours 44 minutes
– Sydney-Canberra	64 minutes
– Sydney-Newcastle	37 minutes
- **On-board facilities:** The report recommends that in-service amenity and catering be akin to airlines. HSR operators would offer a range of services to meet market demands – it is envisaged that there would be both business and economy travel classes.

Passengers would also be able to use mobile phone and other devices for the duration of the journey, an advantage over the current aviation operating environment.

### HSR Program – Overall project staging and timing

This paper describes the phase 2 report’s conclusions on staging for high speed rail (HSR) along the east coast of Australia, including the consequential timeline envisaged.

The report concludes that the size and complexity of HSR, together with the overall estimated capital cost, are such that it would need to be delivered as a series of stages rather than as a single project. This would reduce the upfront funding demands and smooth future capital requirements, as well as better matching network development to market growth and allowing revenue to be generated on sections as they are completed. The optimal order of stages and timing for construction is primarily driven by passenger demand, economic outcomes and funding considerations.

#### Staging

The phase 2 report identifies five primary route segments connecting the major centres of expected future demand. The recommended staging of development is:

1. Sydney to Canberra, construction commencing in 2022 and completed by 2035;
2. Canberra to Melbourne, construction commencing in 2026 and completed by 2040 (connecting Sydney to Melbourne);
3. Sydney to Newcastle, construction commencing in 2031 and completed by 2045;
4. Gold Coast to Brisbane, construction commencing in 2038 and completed by 2051; and
5. Newcastle to Gold Coast, construction commencing in 2046 and completed by 2058 (connecting Sydney to Brisbane and completing the full network).

The line from Sydney to Melbourne is identified to be connected first because it has stronger forecast demand than the Brisbane to Sydney line (18.76 million forecast annual passenger trips against 10.86 million respectively, in 2065). The report shows that once fully operational, a Sydney to Melbourne line could deliver a positive net economic return and cover its operating and asset renewal costs on an ongoing basis. This is also the case for the full network.

The recommended timeline includes some overlap between stages, with planning of the next segment beginning a number of years before construction of the previous segment is completed.<sup>3</sup> The report notes the potential for loss of skills and expertise if there are delays between the stages.

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<sup>3</sup> See GANTT charts on pages 500-501 of the HSR Phase Two Report for indicative timing of each section.

## Timing

The phase 2 report assumes implementation would occur over a period of 45 years from 2013 to 2058, with actual construction commencing in 2027 and taking around 30 years.

The report recommends 6 years, from 2013 to 2018, be allocated to preliminary arrangements for establishing an HSR system in a multi-jurisdictional context, including:

- Governments considering the report's detailed case for investment and making a decision to proceed with next steps (6 months)
- Governments agreeing responsibilities and timeframes for the HSR program and incorporating these into a Memorandum of Understanding (6 months)
- Work leading to agreement of the first Intergovernmental Agreement (IGA) including:
  - confirmation of the rail corridor (including any refinements required by jurisdictions) and agreement of the plan for its protection (6 months)
  - site suitability studies and geological analysis – including establishing a work plan, arranging funding, securing the agreement of land holders, testing and analysis activity, and considering the results of the site studies. This work would form the basis of environmental impact statements and support government budgeting and approval processes (8 months)
- Following the signing of the first IGA to protect the HSR corridor, work would include:
  - the strategic environmental assessment (24 months)
  - stage by stage site protection as agreed in the IGA (28 months)
  - agreement to the mandate and funding arrangements for the publicly-owned HSR Delivery Authority (HSRDA) and developing the second IGA (24 months)
- Following the signing of the second IGA for HSR development, work would include:
  - preparation of the enabling legislation for the HSRDA (12 months)
  - introduction and passage of the legislation (8 months)
  - establishment of the HSRDA.

From 2019 to 2021 the implementation of HSR would commence. The tasks of preliminary design, environmental impact statement (EIS), and public consultation would be undertaken for all five segments of the network during this period. This would be followed from 2022 by the remainder of the implementation for the Sydney to Canberra segment. All of these tasks, except testing and commissioning the system, overlap and occur within a 10 year period. This work includes:

- outline design and land acquisition (27 months)
- procurement and contracting for enabling works, civil works, electrical & mechanical (E&M) systems, track work and rolling stock operators (35 months)
- enabling works (48 months)
- civil works design and construction (82 months)
- E&M systems design, manufacture and installation (includes depot sites) (101 months)
- power study and grid supply and rolling stock manufacture and delivery (53 months)
- procurement, design and construction of public private partnership (PPP) stations (Sydney South, Southern Highlands and Canberra) (49 months)
- track work construction (19 months)

- testing and commissioning of the system – including staff training (drivers, etc), static testing, dynamic testing of track, test running and trial operations (34 months).

Operations between Sydney and Canberra would commence in 2035. Prior to this, the same process would start in 2026 for the segment from Canberra to Melbourne, with HSR operations from Sydney through to Melbourne, commencing in 2040. Similarly implementation for:

- Newcastle to Sydney would commence in 2031, with operations from 2045;
- Brisbane to the Gold Coast in 2038, with operations from 2051; and
- Gold Coast junction to Newcastle in 2046 with operations from 2058.

### **HSR Governance: Possible next steps on HSR**

This paper describes the phase 2 report's recommendations, including jurisdictions' responsibilities, as part of next steps on HSR – specifically under a proposed Memorandum of Understanding (MoU) and subsequent Intergovernmental Agreements.

Assuming a decision by governments to proceed to the next phase of an HSR program, the report suggests:

1. an MoU be agreed between the Australian, ACT and state governments that sets out the process for at least two formal intergovernmental agreements (IGAs);
2. an initial IGA to provide the policy mandate for the protection of an HSR corridor;
3. a second IGA to provide the policy mandate for implementation of the first stage of an HSR program; and
4. legislation to provide the legal framework for implementation of the HSR program.

The report recommends that prior to negotiating the MoU, the Australian Government:

- compiles a summary of investigations completed and gap analysis of remaining tasks for distribution to the jurisdictions; and
- formulates a proposition to take to the jurisdictions for the conduct of a future HSR program.

### **Memorandum of Understanding**

The MoU would set out:

- the HSR program objectives, mechanisms for program governance and responsibilities of the parties;
- the process to be followed and the timelines for resolving issues; and
- a framework for public consultation in the lead up to a formal IGA.

The phase 2 report envisages up to 12 months for this process with the MOU to be signed in late 2013/early 2014.

### **First Intergovernmental Agreement – for corridor protection**

This IGA would formally commit jurisdictions to protection of the HSR corridor. It would include:

- the public policy objectives to be achieved by a future HSR program;
- the preferred HSR system, corridor alignment and station locations;
- the responsibilities and obligations of each jurisdiction for protection of the preferred alignment;
- the timeline to be followed and the principles by which any public resources required would be allocated between the jurisdictions; and
- general principles that would apply if it became necessary to alter the route.

During this stage, jurisdictions would work together to:

- confirm the preferred alignment for HSR, including station locations and other critical infrastructure;
- prove the chosen sites are technically suitable;
- develop a whole-of-government approach to assessing environmental impacts; and
- agree on the mechanisms for protecting the corridor.

The report envisages 14 months for this stage of work, with the first IGA to be signed in early 2015.

## **Second Intergovernmental Agreement – to develop and implement a future HSR program**

Subsequent to agreement of an IGA for corridor protection, a second IGA would be negotiated to formally commit jurisdictions to develop and implement a future HSR program. It would need to include:

- public policy objectives and commercial performance aims of the HSR program (such as the extent to which the pricing should prioritise financial return on capital or patronage and economic benefits);
- operating principles and arrangements for HSR (such as the minimum technical performance capability of the system and minimum service frequency at each station);
- broad principles by which the infrastructure and train operator(s) would be procured;
- overall public governance structure to be instituted, and the organisation that would be responsible for the delivery of the HSR program on behalf of the governments – the HSR Development Authority (HSRDA);
- agreement to implement any enabling legislation to vest the necessary powers in the HSRDA;
- the role of each jurisdiction in the development of the preferred HSR system, including the potential for state and ACT-led station developments;
- confirmation of the agreed first route stages for construction, with an anticipated decision date for final commitment to its implementation; and
- guiding principles for an effective and consistent policy approach for promoting an integrated regional development corridor.

During this stage, jurisdictions would:

- implement the requirements of the first IGA on corridor protection;
- continue to strengthen the conditions for a successful HSR in advance of a formal commitment to proceed, including pursuing complementary transport, land use and regional development policies; and
- agree key implementation issues such as funding and the commitments of each party.

The report envisages up to 42 months for this stage of work, with the second IGA to be signed in 2017.

### **Enabling Legislation**

Following the agreement to implement the first stage of an HSR program, the phase 2 report recommends enabling legislation be enacted. The legislation would formally establish the public entities required to develop and deliver the HSR program, with appropriate functions and powers to deliver their objectives. It would also commit the necessary funding, as agreed between the jurisdictions, to allow the entities to establish contracts to further develop and procure the system.

The introduction of Commonwealth legislation and complementary state and territory legislation would help to harmonise an approach to the large volume of planning regulations the program would likely face.

The report envisages 12 months to prepare the legislation and eight months to introduce and pass it, with the HSRDA established late 2018/early 2019.

### **HSR Program – Private financing issues**

This paper examines the phase 2 report's conclusions on the commercial performance of high speed rail (HSR) and potential opportunities for private investment.

The future HSR program and the majority of its individual stages are expected to produce only a small positive financial return on investment, which falls well short of the financial returns expected by commercial providers



of debt and equity. The financial internal rate of return for the HSR program as a whole (under the central case) is 0.8% per annum. For a project of this size, timing and risk, commercial providers of debt and equity to infrastructure projects would typically require returns of 15% or more per annum.

Based on this, the phase 2 study finds:

- Significant private sector equity investment would not be available given the program's financial returns. It is expected only 14% (or \$16.3B) could be funded by private debt. Even with a fare yield increase of 30%, the debt carrying capacity of the program would only amount to 24% (or \$27.4 billion) of the total program cost of \$114B (2012).
- The debt-carrying capacity (or ability to access debt) of the future HSR program would largely be a function of the program's ability to generate sufficient free cash flow.

Therefore, the projected low financial return significantly constrains the amount of private finance that it could support on a free standing basis i.e. without guarantees or support from governments. (It is important to note that the study did not assume any such guarantees or underwriting.)

### **Increasing the proportion of private finance**

One option to increase the amount of private finance is for governments to provide a sovereign guarantee to lenders for debt servicing. Such de-risking could allow the HSR program to achieve higher levels of gearing.

Alternatively governments could provide only a guarantee for critical risks, for example, revenue risk. However even with governments underwriting, debt servicing would still be required which will limit the amount of finance that could be arranged.

The provision of a full (or even partial) government guarantee transfers significant risk to governments, which could limit the attractiveness of providing a guarantee over the direct injection of public equity (which could be funded via governments issuing debt in their own right).

### **Closing the commercial financing gap**

The phase 2 report examines three methods to close the commercial financing gap.

#### **1. Value capture**

International experience shows that well integrated, thoughtfully designed and strategically located transport infrastructure can serve as a catalyst for urban renewal and higher density development in urban areas.

Good examples are Union Station in Washington DC, Grand Central Station in New York and Nagoya Station in Japan. All three have spurred modern high density retail, entertainment, commercial and residential development.

As revenues from value capture mechanisms are difficult to predict and quantify, the phase 2 report used the Central Station precinct in Sydney as an example of what could be done to capture value for station precincts for Sydney and elsewhere. Mechanisms considered include stamp duty, land tax, parking levies and other rates, and the sales of government assets and bonus floor space.

The report concludes that, while value capture has the potential to partially close the commercial financing gap, it is likely that the contribution would be small (around \$3 billion in present value terms). This is in part due to who captures the benefit, if (and when) the measures are implemented, and that the opportunities would be primarily around city-centre stations.

## 2. Tax concessions

Tax concessions typically involve a reduction in corporate taxation to increase the after tax return on investments. The HSR program is not expected to pay significant corporate tax during its operational life (due to the accumulation of tax losses from depreciation of the asset base). It therefore seems likely that tax concessions would have little or no impact on the commercial financing gap.

## 3. Government loans

Finance could potentially be provided by governments to the future HSR program via a loan arrangement. However the same limitations would apply as apply to obtaining private sector debt – including the debt carrying capacity of the program.

### **HSR Economic Analysis – Cities issues**

This paper examines the potential benefits of HSR for cities.

Cities are responsible for approximately 80% of Australia's GDP and improved productivity is central to continued economic growth. Functional and efficient transportation systems, for both metropolitan and inter-city travel, is integral to a city's productivity and growth, as they directly affect access to jobs, workplace productivity, the availability of goods and services and competition with other cities for employment, investment and tourism.

The phase 2 report concludes that HSR would be expected to produce a positive economic benefit (2.3 benefit to cost ratio for the whole network and 2.5 for the Sydney – Melbourne line only), much of which would be attributed to cities. This was derived from the benefits to the users and operators of a HSR system, and the broader economic benefits the building and operation of a HSR would have on the broader economy (in terms of contribution to GDP and employment).

The study found that while business travellers only made up 36% of overall patronage, they would derive two-thirds of the total user benefits from the introduction of a HSR system. This is because the value of time is much higher for a business traveller and the introduction of HSR could offer the availability of fast, reliable and frequent inter-city services.

Most business travel occurs between cities and currently, workforce productivity is negatively affected by issues such as time delays (across all modes of transport) and the inability to continue working while travelling.

### **Employment Density and Access to Jobs**

Agglomeration refers to the external economies available to individuals or firms in large concentrations of population and economic activity. These arise because larger markets allow wider choice and a greater range of specialist services. The theory of agglomeration explains how productivity improvements can be gained through improved linkages between jobs.

For example, HSR could have wider economic impacts on cities through its impact on effective employment density, that is, by bringing places of residence and employment closer together by a reduction in travel times. For example, as the HSR system is constructed, travel times to major cities from areas such as the Central Coast to Sydney would reduce from 1 – 2 hours to 27 minutes by HSR, allowing employers to access a larger labour pool and providing employees with a wider choice of employers.

Benefits can then arise in a number of ways:

- It is easier to match workers to specific vacancies and to find employees with appropriate skills.

- It enables greater specialisation of supply, leading to more efficient production of goods and provision of services.
- It leads to knowledge spill-over (i.e. greater opportunities for formal and informal contact through increased accessibility).
- Employees have a greater choice of jobs.
- There is more competition between companies and between individuals.

Importantly, these productivity gains would be additional to the time savings measured in traditional transport benefits. Generally used to assess the impacts of urban mass transport systems, agglomeration can be used to assess, over the longer term, how employment would respond to the change in accessibility delivered by HSR in other ways, with different types of jobs being created, and some jobs moving out and others moving in.

Internationally, positive economic benefits have been attributed to these agglomeration benefits, and included in the quantitative assessment of the benefits of investments in transport infrastructure. However, because of the uncertainty of these effects in the current context, the phase 2 study did not specifically quantify or account for them in the economic returns of the project.

### **Regional Cities**

Agglomeration benefits would not be limited to the capital cities. Regional centres in HSR corridors generally benefit from improved accessibility to major metropolitan areas. In essence, regional centres in proximity to major metropolitan areas are able to take advantage of concentrations of population and economic activity to exchange information and technology, thereby increasing the productivity of the HSR corridor. This could result in:

- Enhanced regional centres as alternatives to metropolitan centres and stem the steady drift of people and jobs to the more congested and expensive capital cities.
- Improved regional productivity.
- Changes in tourist spending patterns.
- Changed commuting patterns for regions closer to the capital cities.

However, the key difference between the larger capital cities and regional cities is that the responses of the latter can vary greatly, and economic growth is not assured simply by introducing a HSR service. It depends on the economic environment, key industries and assets (for example, if it has a university or is a popular tourist destination), and the nature of local policies and plans of the regional city to capitalise on the opportunities presented by HSR.

HSR can change the way cities and towns interact. Where smaller towns have traditionally accessed medium-sized service centres for jobs, goods and services, the introduction of HSR can mean that both small and medium centres now access the larger markets in major cities, which are usually able to provide the same goods and services for lower cost (and hence some local industries may eventually disappear). Furthermore, those regional centres without HSR stations can lose employment, services and investment to those that do. A similar pattern has been observed with other transportation projects in Australia (historically, improvements to transport have reinforced the concentration of activity in larger centres).

### **Value-capture Opportunities**

International experience shows that well integrated, thoughtfully designed and strategically located transport infrastructure can serve as a catalyst for urban renewal and higher density development in urban areas. The phase 2 study considered the potential for value-capture mechanisms to be used for HSR-related developments (direct) and as a catalyst for urban renewal around HSR stations (indirect).

To demonstrate the potential, the study used Sydney Central station as an example of what could occur if an HSR station were accompanied by a targeted program to redevelop the surrounding precinct.

The proposed value-capture program would provide a new cultural and recreational precinct where the rail yards and Prince Alfred Park currently are. The redevelopment could provide an additional 2.5 – 3.7 million square metres of commercial and residential floor space, which would nearly double the number of residential dwellings in the precinct (currently 21,000).

The program would offer a revenue stream (in the order of \$24 – 33 billion over 30 years) which could be used in financing the HSR (or components of it, such as the station itself). It would also offer a number of benefits for transforming the area into a hub of employment and services, well served by local and interstate transport connections. In addition to the transport benefits, increased local productivity could also be derived from new jobs (from construction and growth in the retail and services sector associated with the new precinct) and an easing in the supply constraints on commercial and residential space.

Similar opportunities would exist at other capital city station locations and some peripheral and regional station sites, such as Hornsby and the Gold Coast. However, no value-capture programs were incorporated into the financial or economic modelling of the study as it is uncertain to what extent such mechanisms would be used.

### **HSR Economic Analysis – Labour market impacts and skills requirements**

This paper summarises the workforce issues to be considered should a HSR system be built and operated in Australia.

Workforce requirements for building and operating a HSR were considered as part of the phase 2 study's social appraisal. Due to the long-term nature of the project, quantitative forecasts are difficult to obtain and verify. The study did draw on Census and other national data, particularly current industry characteristics and trends. It also analysed particular issues in qualitative terms.

In doing so, the phase 2 study makes the following conclusions about the capacity of Australia's rail industry in meeting the future needs of a HSR system on the east coast of Australia:

- The workforce needed to construct and operate a HSR network is difficult to estimate because some roles relevant to HSR do not currently exist in Australia (and are potentially unique to HSR). Some stakeholder estimates indicated that a dedicated workforce exceeding 20,000 would be necessary during construction.
- The workforce required for operations and maintenance is similarly difficult to estimate. Some preliminary estimates suggest the workforce will steadily grow as the network develops and patronage increases in key regional station locations such as Newcastle, the Central Coast and Albury–Wodonga.
- Construction of a complete line (such as Sydney–Melbourne) would likely far exceed the current, national labour capacity in both skilled and unskilled resources, exacerbated by the declining and ageing workforce in the Australian rail industry.
- Labour market competition with other sectors, including mining industries, could result in above average wage increases, especially in engineering and construction.
- HSR could attract skilled and unskilled labour into those states with HSR and away from other states.
- Should a decision be made to proceed with HSR, it would be important to plan for workforce requirements including:
  - identifying those areas with critical shortages in labour and skills;

- implementing policies or remedial actions including education systems to meet the human capital demands of constructing and operating a HSR; and
- Determining the level and type of labour that may need to be brought into the country to supplement the local workforce.

### HSR Environmental Analysis: Carbon impact

This paper considers the question: “What effect would assuming future electricity generation were 50, 75 or 100% ‘green’ (i.e. not coal generated) have on the Phase 2 report’s estimates of greenhouse emissions from HSR travel?”

#### HSR Study Approach

The Phase 2 study assumed an average HSR emission rate of 0.028 tonnes CO<sub>2</sub>-e per thousand passenger kilometres. This means that for the Reference Case travel market forecasts of about 53.1 billion passenger kilometres per annum (by 2065, for a fully operational high speed network), emissions from HSR system operation would be around 1.5 million tonnes CO<sub>2</sub>-e per annum. The study estimated that taking into account diversion of existing trips to HSR, as well as the emissions association with HSR construction and those arising from the freeing up of capacity at Sydney airport, the introduction of HSR services on the east coast would increase total greenhouse emissions by 21 Mt CO<sub>2</sub>-e over the 50 years to 2085.

#### Rationale

This estimated emission rate for HSR travel is based the average energy requirements of HSR services and the expected emissions intensity of the Australian electricity network for the Phase 2 evaluation period. The electricity emissions intensity (tonnes CO<sub>2</sub>-e per MWh generated) projections for the Phase 2 report have been drawn from Treasury modelling of various carbon pricing scenarios (Australian Treasury, *Strong Growth, Low Pollution: Modelling a Carbon Price*, Commonwealth of Australia, 2011) – specifically, for the HSR Reference Case, using the values derived for Treasury’s ‘Core policy’ scenario.

The carbon price levels in the Core policy scenario provide a strong incentive to change the energy supply mix used in the electricity industry, and thus the HSR Reference Case already incorporates an underlying assumption that the Australian electricity generation sector decarbonises over time, with the average national emissions intensity falling to around a quarter of current levels (in tonnes CO<sub>2</sub>-e per MWh terms) by 2050.

#### Conclusion

The HSR Reference Case (under the assumed generation emissions intensity of Treasury’s ‘Core policy’ scenario) already has lower operational emissions than scenarios featuring 50 or 75% ‘green’ generation mixes.

If it is assumed that ‘green’ generation sources could yield around a 95% reduction in lifecycle emissions (per unit of electricity supplied), then a 100% ‘green’ electricity scenario would have an average HSR emission rate of about 0.007 tonnes CO<sub>2</sub>-e per thousand passenger kilometres. This lower emission rate would have HSR travel (by 2065), averaging around 0.4 million tonnes CO<sub>2</sub>-e per annum (i.e. a reduction from the Reference Case results, for eventual HSR system operation, of approximately 1.1 million tonnes CO<sub>2</sub>-e per annum). This could result in a small net reduction in emissions from east coast travel with HSR of around 20 Mt CO<sub>2</sub>-e over the 50 year period to 2085 (see Figure 2, over page).

(These estimates do not include the impact of advances in clean energy/low emissions technology on other transport modes—e.g. aviation biofuels, biofuels or hydrogen cells in cars—which, while lowering overall emissions, would reduce the relative emissions benefit of introducing HSR.)

## Opportunities for higher speeds on the current rail network

This paper addresses the question “Should different ‘scaling’ options for investment in rail be investigated that might lift speeds at potentially much lower cost (e.g. are there higher speed options to today’s services worth pursuing but which are not ‘HSR’)?”

### Discussion

International experience shows that HSR journeys of less than three hours tend to attract over 50 per cent share of the travel market – if HSR journeys are longer than this, passengers will often prefer aviation.<sup>4</sup> To realise these travel times between east coast capital cities, HSR in Australia must be able to achieve an average operating speed of more than 250 km per hour.

Australia’s existing rail network is generally less developed than many parts of Europe where high speed operations have been added to existing networks. The existing rail alignment on Australia’s east coast was not constructed to cater for high speeds and its geometry is inadequate to accommodate HSR services.

Tight curves in the track alignment would prevent high speeds even with the use of technologies such as ‘tilt trains’ (a trial of a tilt train between Sydney and Canberra in 1995 found that the tilt mechanism was unable to deliver enhanced speeds due to the severity of the track curves). Furthermore, most major rail lines on the east coast share both passenger and freight services, which would constrain opportunities for higher-speed trains to operate on the network.

The Department’s Bureau of Infrastructure, Transport and Regional Economics is looking at opportunities to provide higher-speed services on the existing rail networks. This work is concentrating on regional networks serving cities (for example, Toowoomba to Brisbane or Wollongong to Sydney) as ‘feeder’ services to metropolitan transit systems and inter-city travel, including air travel. It does not take into account the inter-city routes being considered for HSR due to the identified constraints to significantly higher speeds, which would need to be overcome in order to generate adequate patronage to justify the investment. This work is due to be concluded around the end of the year.

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<sup>4</sup> Figure 2-4 on page 24 of the report plots international mode share against travel times.

## **APPENDIX C Details of Meetings and Submissions**

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**SUBMISSIONS RECEIVED ON THE HIGH SPEED RAIL PHASE TWO REPORT, AND  
COMMENTS RECEIVED FROM MEETINGS INITIATED BY THE  
DEPARTMENT OF INFRASTRUCTURE AND TRANSPORT,  
WERE PROVIDED IN CONFIDENCE AND HAVE THEREFORE  
NOT BEEN INCLUDED IN THIS DOCUMENT.**

## APPENDIX D Acquisition of Land in Australia

### How does the process of compulsory land acquisition operate in Australia?

In summary, the following steps outline the process of compulsory land acquisition:

- The acquiring authority serves a Notice of Intention to compulsorily acquire particular land.
- In some jurisdictions, the landowner has the opportunity to lodge an objection.
- A notice of the acquisition is published in the Government Gazette.
- The land is compulsorily acquired by the government authority.
- The Valuer-General determines an amount of compensation to be payable to the claimant.
- The Claimant can negotiate with the Authority and then either accept or reject the offer of compensation.
- If the offer is accepted by the claimant, the claimant receives the compensation and vacates the land.
- If the offer is rejected, the claimant, through their legal representative will seek an alternative compulsory acquisition valuation and the relevant Court will decide on the amount of compensation payable to the claimant.

Compulsory acquisition processes vary in operation depending on the jurisdiction of the acquisition.

### What legislation governs compulsory acquisition in Australia?

NSW	Land Acquisition (Just Terms Compensation) Act 1991
Victoria	Land Acquisition and Compensation Act 1986
Queensland	Acquisition of Land Act 1967
Australian Capital Territory	Lands Acquisition Act 1994
Commonwealth	Lands Acquisition Act 1989

Compulsory acquisition legislation in Australia varies by state. In addition, the Commonwealth also has the power to compulsorily acquire property.

### Overview of process by jurisdiction

#### **Queensland**

The Coordinator-General facilitates many of the large-scale infrastructure projects that underpin Queensland's economic development. Sometimes, the Coordinator-General needs to compulsorily acquire, or take, the land on which these projects are to be built.

The Coordinator-General can compulsorily acquire land for:

- undertaking works
- state development areas
- other purposes, including a 'private infrastructure facility' (previously called an 'infrastructure facility of significance').

The Coordinator-General can take land with any type of tenure, including freehold. The Coordinator-General can take:

- all of a property



- part of a property
- an easement over a property
- native title rights and interests
- resource interests.

### **Land acquisition process**

The main steps of the compulsory acquisition process are as follows:

1. Notice of Intention to Resume
2. Objections to land acquisition
3. Application to acquire land
4. Taking of Land Notice
5. Compensation.

Throughout the process, representatives of the Coordinator-General are available to assist affected landowners.

### **Relevant legislation**

Sections 82 and 125 of the *State Development and Public Works Organisation Act 1971* give the Coordinator-General the power to acquire and deal with land, when necessary.

The process for compulsory land acquisitions is set out in the *Acquisition of Land Act 1967*.

### **How is land taken?**

The Coordinator-General can compulsorily acquire land:

- With the landowner's agreement (section 15 agreement)
  - The Coordinator-General's preference is to negotiate with the landowner to compulsorily acquire his or her land by agreement.
  - An agreement can be struck before or after a Notice of Intention to Resume has been issued to the landowner.
  - If the landowner agrees to the acquisition, the amount of compensation can be finalised at a later date. However, if compensation is also agreed to, this will be included in the agreement.
- Without the landowner's agreement.
  - If the landowner does not agree to the compulsory acquisition of their land, the statutory land acquisition process will run its course.

### **Open market**

In addition to taking land, the Coordinator-General can purchase properties that come up for sale on the open market.

The Coordinator-General would normally only do this if there was an identified project, need or purpose.

\*Source: <http://www.dsdp.qld.gov.au/compulsory-land-acquisition/about-compulsory-land-acquisition.html>  
Retrieved 11 July 2013.

## ***New South Wales***

State and local government agencies may acquire land through compulsory process for a range of public purposes. The compulsory acquisition process can be instigated when an acquiring authority and landowner fail to reach agreement concerning the acquisition.

The compulsory acquisition process is regulated by the *Land Acquisition (Just Terms Compensation) Act 1991* (the Act).

The Act provides procedures as well as compensation provisions. It requires acquisitions to be on just terms and encourages purchase by negotiation in preference to compulsory acquisition. Provision is also made for owner initiated acquisitions in cases of hardship.

The Act prescribes a timeframe for the acquisition process from a formal proposed acquisition notice (PAN) before formalisation of the compulsory acquisition by its publication in the government gazette to determination of compensation within 30 days of gazettal.

The Act also requires for 90% advance payment of compensation where it is disputed, provides solatium for a principal place of residence and includes objection and appeal rights to the Land and Environment Court.

### *Land Acquisition (Just Terms Compensation) Act 1991*

The Act requires the Valuer General to determine the amount of compensation to be offered to a dispossessed owner where land is compulsorily acquired (section 47). Compensation must be determined in accordance with the Act.

Section 3 of the Act sets out the objects of the Act as:

- To guarantee compensation will be no less than the unaffected value.
- To ensure compensation on just terms where land is acquired by an authority and is not available for public sale.
- To establish new procedures to simplify and expedite the acquisition process.
- To require an authority of the State to acquire land designated for a public purpose where hardship is demonstrated.
- To encourage the acquisition of land by agreement instead of by compulsory process.

Section 54 of the Act requires that compensation must be such amount, having regard to all relevant matters under Part 3, to justly compensate the former owner for the acquisition of the land.

The relevant matters determining compensation are:

- the market value of the land
- any special value to the former owner
- any loss attributable to severance
- any loss attributable to disturbance
- solatium
- any increase or decrease in the value of any other land owned by the former owner at the date of acquisition, which adjoins or is severed from the acquired land by reason of the carrying out of, or the proposal to carry out, the public purpose for which the land was acquired.

The Act applies to land acquired, by agreement or compulsory process, by an authority which is authorised to acquire land by the compulsory process.

Section 5 of the Act provides that the Act does not apply to land which is available for public sale and which is acquired by agreement.

An acquiring authority may not acquire land by the compulsory process unless the authority has given the owners of the land, written notice of its intention to do so.

A proposed acquisition notice need only be given to all the owners of the land who:

- a) have a registered interest in the land, or
- b) are in lawful occupation of the land, or
- c) have, to the actual knowledge of the authority of the State, an interest in the land.

As soon as practicable after expiration of a notice of proposed acquisition, the Authority must acquire the land. On the date of publication in the Government Gazette of an acquisition notice, the land or interest acquired is vested in the acquiring authority. An acquiring authority may acquire land or an interest in land such as an easement.

#### *The Roles of the Valuer General and LPI*

Where an acquiring authority cannot negotiate a settlement for land to be acquired, the land is compulsorily acquired and the Valuer General is required to determine the amount of compensation to be offered to a dispossessed owner. Land and Property Information (LPI) manages this process under delegated authority from the Valuer General.

The Valuer General is an independent statutory officer appointed by the Governor to oversee the valuation system. The Valuer General is independent in the compulsory acquisition process and does not act for either the former owner or acquiring authority. The acquiring authority manages negotiations with landowners and is required to offer the Valuer General's determination to a former owner or persons with a registered interest in the land.

\*Source: [http://www.lpi.nsw.gov.au/valuation/compulsory\\_acquisition\\_of\\_land](http://www.lpi.nsw.gov.au/valuation/compulsory_acquisition_of_land) Retrieved 11 July 2013.

#### **Victoria**

Under the provisions of the *Land Acquisition and Compensation Act 1986*, land required for a public purpose can be acquired/resumed by government departments and agencies. This can be done either compulsorily or by negotiation. The legislation sets out the process to be followed and how compensation is to be determined. Valuations are needed to assess the amount of compensation to be paid. Valuer-General Victoria (VGV) provides valuations for these acquisitions in accordance with Management of Government Valuations processes.

Compensation can also be paid under the provisions of the *Planning and Environment Act 1987*. This occurs where 'loss' is assessed following the sale of a property affected by an acquisition overlay or, where a planning application is refused on the grounds that the property is required for a public purpose. VGV also assesses compensation in respect to these situations.

Properties are acquired, either in total or in part, by the state for purposes such as new roads/freeways, road widening/deviations, parks, reservoirs, sewerage works, drainage reserves etc.

Compulsory acquisition of land is governed by the Policy and instructions for the purchase compulsory acquisition and sale of land (August 2000).

\*Source: <http://www.dse.vic.gov.au/property-titles-and-maps/valuation-home-page/government-valuations/compulsory-acquisition> Retrieved 11 July 2013.

### ***Commonwealth***

The *Lands Acquisition Act 1989* (the Act) provides specific powers to the Commonwealth Government to acquire interest in land.

The Minister for Finance and Deregulation is responsible to the Parliament for administering the Act. The Department of Finance and Deregulation (Finance) represents the Commonwealth and carries out the day-to-day administration of the Act.

The Commonwealth can acquire land through one of the three following ways:

1. Compulsory acquisition
2. Negotiated agreement
3. Urgent acquisition

#### ***Compulsory acquisition***

The Commonwealth can use compulsory acquisition to obtain an interest in land anywhere in Australia. Compulsory acquisition can be used whether or not an owner is willing to sell their interest in the land, when the land has no title, when an owner has difficulty establishing proof of title, or even if the owner cannot be found.

#### ***Negotiated agreement***

The Commonwealth can also obtain land by negotiated agreement. Acquisition by negotiated agreement involves the owner and the Commonwealth agreeing to the terms of the agreement and the amount of compensation.

#### ***Urgent acquisition***

In some extraordinary circumstances, such as in time of national emergency, the Commonwealth may need to acquire land urgently and therefore the process may go more quickly than the usual procedures for compulsory acquisition. In such a case, the Minister may issue a section 24 certificate in place of the pre-acquisition declaration.

If a section 24 certificate is issued, the Minister has to provide a copy of the certificate to both Houses of Parliament within three parliamentary (3) sitting days and, as soon as possible, give the owner a copy. A copy of the certificate may also be published in the Commonwealth Gazette and in a local newspaper, but this is not compulsory. This certificate overrides any pre-acquisition declaration already issued, and means that the owner cannot appeal to the Administrative Appeals Tribunal about the Minister's decision to acquire the land. All compensation rights remain unchanged.

\*Source: [http://www.finance.gov.au/property/lands-acquisition/docs/Compulsory\\_Acquisition\\_of\\_Land\\_Brochure-May-2011.pdf](http://www.finance.gov.au/property/lands-acquisition/docs/Compulsory_Acquisition_of_Land_Brochure-May-2011.pdf) Retrieved 11 July 2013.

### **Australian Capital Territory**

The ACT Government does not publicly provide further information on compulsory land acquisition processes to what is provided in the *Lands Acquisition Act 1994*, which can be found at:  
<http://www.legislation.act.gov.au/a/1994-42/current/pdf/1994-42.pdf>

## APPENDIX E Possible Measures to Reduce Capital Costs

Market testing and competitive tendering would be the main cost reduction strategy. The feedback from domestic and international industry stakeholders suggests a significant cost-reduction (in the order of 20 per cent) could be achieved in this way and would not impact on proposed high speed rail system or its projected patronage and revenues.

	Pros	Cons	Comments
<b>Existing city access rail lines into Sydney could be considered for short or long term use.</b>	May reduce upfront capital costs May deliver project (and revenues) sooner	May be issues associated with sharing the line (including safety, congestion, delays) which would negatively impact operations resulting in less patronage and decreased revenue	The existing city access rail alignments into Sydney (and stations such as Glenfield and Central) could be shared while only the Sydney – Canberra stage is complete. While travel times would temporarily be longer, it would reduce costs for this section and provide revenue earlier than otherwise forecast. Sydney access tunnels and station reconfigurations could then be completed to coincide with the completion of the whole Sydney to Melbourne line, maintaining the inter-city speeds required for Sydney – Melbourne to be competitive. Sharing the existing rail lines into Sydney over the long-term (i.e. once Sydney – Melbourne is complete) or permanently would likely cause significant negative impacts on travel times (and hence lower demand and revenue).
<b>Investigate alternatives to tunnelling on city access alignments into Sydney.</b>	May reduce cost	Increases impacts and associated costs for mitigation.	Increasing the use of viaduct and construction of the line at-grade on the approach to Sydney could be investigated as a way of decreasing costs. The HSR report found that tunnelling would likely be significantly cheaper (\$170m for tunnel as opposed to \$230m and \$252m for viaduct and surface respectively, primarily due to the cost of land). However, this may change if a different decision was made on the alignment and station locations in Sydney.

	Pros	Cons	Comments
<b>Consider alternative station locations for Sydney including Parramatta, Badgerys Creek and Glenfield station.</b>	<p>May reduce capital costs</p> <p>May have urban development benefits and opportunities</p> <p>Provides a more direct alignment for travelling through Sydney</p>	<p>Would significantly reduce patronage and revenue</p>	<p>Alternative station locations for Sydney would likely achieve significant cost savings and pose urban development opportunities. For example, a station at Parramatta would reinforce its importance as a second Sydney CBD. There would also be significant opportunities for the Commonwealth-owned Badgerys Creek site which could be developed into a new city and HSR-Aviation hub. Glenfield station has recently been upgraded as part of the \$2.1b South West Rail Link project and now serves as a transport hub. Each of these options would require a recasting of the demand and economic analyses on the basis of decreased patronage and potentially fares (as willingness to pay may also decrease in line with passenger's 'perception of value'). Consideration would also need to be given to alternative fast transport connections to the CBD (such as a metro rail service).</p>
<b>A less costly access alignment and station be considered for Canberra which accesses Canberra Airport.</b>	<p>Reduces capital cost of the Canberra station</p>	<p>Would reduce patronage and revenue.</p> <p>May be contrary to broader transport planning in the ACT</p>	<p>Canberra Airport has proposed building and funding an HSR station on airport land.</p>

## APPENDIX F Possible Funding and Financing Options

Funding and financing options	Comments (pros/cons)
<b>Financial risk hedging tools</b> <ul style="list-style-type: none"> <li>• Currency swap</li> <li>• Interest rate swap</li> <li>• Interest rate cap and collar</li> <li>• Commodity price swap</li> <li>• Full or partial loan guarantees</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces project risk thus increasing competition and reducing cost</li> </ul>
<b>Government bonds</b> <ul style="list-style-type: none"> <li>• Options would include a general infrastructure bond market or bonds issued for HSR specifically.</li> </ul>	<ul style="list-style-type: none"> <li>• Improves access to low-cost finance for the project</li> <li>• Provides access to capital markets and long-term investors</li> <li>• Hard to set up and depends on the quality of the issuer, and its extra-financial ranking</li> </ul>
<b>Attracting investors</b> <ul style="list-style-type: none"> <li>• The long-term nature of the HSR project could provide the level of certainty that superannuation funds require when investing in infrastructure projects.</li> <li>• More favourable taxation treatment could encourage superannuation funds to invest in HSR, particularly more favourable treatment of early stage tax losses.</li> </ul>	<ul style="list-style-type: none"> <li>• HSR being a greenfield development may be a major constraint. There may be opportunities around the development of stations.</li> </ul>
<b>Procurement strategies</b> <ul style="list-style-type: none"> <li>• Using smaller and competitive performance-based contracts by splitting up project construction stages into components. Means that several contractors can be engaged separately to undertake the work (i.e. avoids winner-takes-all project design and tender structures).</li> <li>• Reducing bid costs wherever possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Could increase competition and reduce prices in construction markets</li> <li>• Reduces risk for any one contractor</li> <li>• PPP should fully describe the risk distribution between actors and can be flexible</li> </ul>
<b>Availability payments</b> <ul style="list-style-type: none"> <li>• Under the availability payment model the private sector would develop, finance, operate and maintain HSR over a concession term. Periodical payments would be made by government for the availability of the infrastructure asset once the infrastructure is operational.</li> </ul>	<ul style="list-style-type: none"> <li>• Government does not need to raise debt in the short term</li> <li>• Government is also insulated from design and construction risk</li> <li>• At the end of the concession, the Government can sell the asset or add it to the public network for further leverage</li> </ul>
<b>Value capture options</b> <ul style="list-style-type: none"> <li>• State and local governments cover the costs of station development for city and regional stations</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces the overall capital cost to the Commonwealth</li> <li>• States and LGs are best positioned to capitalise on value capture opportunities through property development and associated levies</li> <li>• There are then incentives for states and LGs to maximise value-capture opportunities for station sites</li> </ul>

Funding and financing options	Comments (pros/cons)
<p><b>Sale of development rights</b></p> <ul style="list-style-type: none"> <li>• The 'rights' of station development are sold or gifted to the private sector (e.g. land/property developers or other appropriate parties such as Canberra Airport) who would then build the station as part of a broader development (e.g. business park etc)</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces the overall capital cost to the Commonwealth</li> <li>• Opportunities for value-capture would be left to the private sector to leverage</li> <li>• May impact on where the station could be located. Would require these impacts to be assessed</li> </ul>



## **APPENDIX G Possible Charter for an Independent High Speed Rail Authority**

A single, independent, co-ordinating High Speed Rail Authority (the Authority) will effectively and efficiently progress the detailed planning towards implementing high speed rail (HSR) for the east coast of Australia. The Authority will undertake a range of tasks, building on work undertaken to date, principally centred on:

1. Analysing route and staging options (including alternatives);
2. Gauging and testing the market to refine capital and other cost estimates and identify any innovative financing opportunities;
3. Settling arrangements with the relevant state, territory and local governments about the route protection mechanisms and timing;
4. Helping to ensure that development of HSR is reflected in, and is consistent with, the planning and investment frameworks of the east coast mainland states and the Australian Capital Territory; and
5. Liaising with Infrastructure Australia, including in further developing the business case for HSR.

The Authority will operate under the governance of a board. The Authority will undertake the work identified in this charter within five years of its establishment, at which time its status will be reviewed.

### **1. Analysis of route and staging options (including alternatives)**

The Authority will commission the necessary public and community consultation and geotechnical work (geological surveys, site inspections and detailed environmental and engineering assessments) required to confirm the HSR alignment. This will enable a comprehensive and accurate understanding of the construction requirements and costs, and inform the process leading to the preservation of strategic parts of the corridor.

In doing so, maximum flexibility will be retained for the route and station locations in order to permit a range of stakeholders to work with the Authority on developing discrete sections of the network. This flexibility will help enable the private sector to demonstrate any potential capacity to lower costs, speed up delivery or develop innovative options for financing.

The development of a strategic assessment will also commence. This will bring together the outcomes of the environmental and engineering investigations and other stakeholder input (such as any refinements to the alignment to support state or territory government objectives) in support of the preferred HSR alignment and station locations. Key findings and recommended management measures would be compiled into a draft strategic assessment document for public review.

### **2. Gauge and test the market to refine capital and other cost estimates and identify any innovative financing opportunities.**

The Authority will undertake market testing to gauge the private sector's appetite and ability to undertake a role in supporting the implementation of HSR, including through engagement with domestic and international consortia likely to be interested in bidding for various stages of the project. This will, importantly, help refine estimated construction costs once an analysis of the route has been completed and the results of consultation, and engineering and geological investigations, are known.

Opportunities to refine the system specification, and/or capitalise on new technological advances, will also be investigated, with a view to maximising the efficiency and minimising the cost and timetable for the construction of HSR.

In addition to the physical components of capital cost (land, earthworks, structures, track, equipment and facilities), the re-examination of cost estimates will also include design, program and construction management, and asset renewals.

To help reduce potential 'sunk' costs to governments and propose an accelerated timeline for HSR, the Authority will pursue opportunities for commercial innovation and private sector competition, including an examination of a comprehensive range of potential financing, funding and packaging options. In doing so, the Authority will

draw on work such as that of the Infrastructure Finance Working Group, and undertake a further examination of the potential of HSR to:

- Maximise value capture opportunities;
- Minimise the risk and exposure to volatility for the private sector in financing and packaging arrangements;
- Maximise fare yields through more sophisticated market segmentation and yield strategies; and
- Identify and quantify additional revenue streams (including advertising, retail leasing and real estate development).

**3. Settle arrangements with the relevant state, territory and local governments about the route protection mechanisms and timing.**

In consultation with the east coast mainland states and the Australian Capital Territory, the Authority will pursue relevant agreements on the mechanisms and timeframes to confirm and protect the corridor, as well as station locations and sites for other infrastructure critical to the implementation of HSR. In doing so, the Authority will consider options to:

- Develop and utilise national legislation, to be mirrored by the relevant states and Australian Capital Territory, to enable corridor preservation and the harmonisation of relevant state and local government-based transport, urban, regional and other relevant planning; and
- Propose HSR-specific legislation to standardise statutory planning regulations, including environmental assessments, at each level of government along the corridor.

**4. Help ensure that development of HSR is reflected in, and is consistent with, the planning and investment frameworks of the east coast mainland states and the Australian Capital Territory.**

The Authority will collaborate with the east coast mainland states and the Australian Capital Territory on work to help ensure that HSR is planned, developed and delivered in a manner that supports and facilitates its integration with precinct and corridor master planning. This will include considering how relevant metropolitan and regional planning policies integrate HSR stations at the site, precinct, town and regional planning levels.

Precinct master planning would address relevant regional population, employment, environmental, infrastructure and land use issues, while the focus of corridor master planning would be on more detailed metropolitan and urban renewal planning, and transport planning. This should include measures to ensure that HSR will be integrated with existing and proposed transport networks in order to maximise its contribution to Australia's transport capacity and connectivity.

To help maximise the benefits of HSR to the regions, integrated corridor planning strategies will need to consider land acquisition and land use planning, regional development projects and stakeholder engagement, and complementary HSR projects.

**5. Liaise with Infrastructure Australia, including in further developing the business case for HSR.**

Following referral of HSR to Infrastructure Australia (IA) by the Minister for Infrastructure and Transport, the Authority will work closely and iteratively with IA to improve and refine the business case for HSR.