Let's get real about ..........

High Speed Rail in Australia
High Speed Rail in Australia

Source: http://www.railpictures.net/photo/188926/
Let’s get real about ………… that those do not learn from history are doomed to repeat the mistakes of the past

- 1980s – “VFT” Sydney – Canberra – Melbourne
- Early 1990s – “SpeedRail” Sydney – Canberra
- Late 1990s – VHST Competition Sydney – Canberra with 4 bidders
  - 200-250 km/h High Speed + Tilting Capability
  - 300-350 km/h Very High Speed Non Tilting
  - 500 km/h Maglev
- ARUP-TMG ECVHST Study 2001;
- Rail CRC Study 2009/2010;
- Infrastructure Partnerships Australia/AECOM Report;
- September 2010 - Department of Infrastructure and Transport Internal Brief “A profile of high Speed railways”;
- 2011 – Government award of new study Phase 1.
- 2012 - 2014 – DIRD Stage 2 Study;
- 2016 – “The role of transport connectivity on stimulating development and economic activity” (Alexander Committee);
“…………..an EC VHST could have a place in Australia’s transport future. The securing of that place, however, would be dependent on whether it can become an integral part of a vision and action plan for a **new paradigm of development, mobility and transportation connectivity** in the East Coast corridor.

If it does have a place, an EC VHST will not achieve it in the absence of political vision and leadership, **long-term bipartisan political commitment**, the full participation of all Governments and the collective will and skills of Australians.”
Let’s get real about ..........

...... that the 2014 study said pretty much the same as the 2001 one

- Funding gap of 86%:
  - **even if private funding maximized**;
- Govt required to fund upfront infrastructure costs;
  - **$114 billion (in 2012 dollars)**.
- **If (!) pax forecast achieved, above rail operation self funding**
  - **but only if fares comparable to airfares!**
- **Headline Conclusion ............ **Reserve the corridors now!**
  - determine settlement patterns first! (and not just accept CLARA’s view on this!)
  - Define and acquire corridors;
  - defend those corridors against incompatible development;
  - effective termini and links to other modes within cities;

©Peter Thornton
Let’s get real about ........

........ the current state of play

- No specific Government policy as yet – but could be changing;
- Federal Govt interested but not at any cost; States interested but not at their cost – but are interested in regions; Victoria doing some good work;
- State competition – “not in their state if not in mine”; SA wants it too;
- HSR again being pushed at Government – CLARA, Centurion; Hyperloop;
- HSR back to being marketed on packaged up national supplier lines;
- Technology divide – VHST; HSR + Tilt; Maglev; Maglev plus evacuated tubes; all been considered before – SWSR preferred for China; Europe; USA
- Consortia still not operator led but constructor supplier led; Plenty want to build not many want to take the risk to operate as a business;
- And now – land developer led and asking for an exclusive mandate;
- And of course, as usual, the cub reporters in the press are getting breathless about it all and sundry retired politicians are talking it up.
Let’s get real about the current state of play

Futureproofing Sydney Metro?

Chinese push for Harbour line

CLARA but is it any Clearer?

New high speed rail plan connecting Sydney to Melbourne

Peter provoked to pick up pen

Do you want to be Stirred or Shaken Sir?

Sober and Sensible in SA

“imagine being whisked…”

Imagine being whisked from one city to another in a pod carried by a tube at speeds of up to 1200km/h.

That’s the vision of Los Angeles company Hyperloop One, which will share its vision with federal MPs in Sydney on Friday.


Source: AFR

Source: INDaily May 30th 2016

Source: AFR
Let’s get real about ……. that delivering HSR is not all pretty

• The pioneers – SNCF and JR - both required entire corporate restructuring because of the financial burden of HSR construction and operation; Later HSR lines far less economic;
• Taiwan HSR - initially privately funded, has required Govt refinancing;
• Madrid – Seville HSR - Govt funded - has not met regional development economic goals;
  "the big difference between Spain and other European countries is that the others plan services while we just plan spending”;
• London and Continental Railways – initially privately funded – bailed out by Govt;
• China – massive MoR enterprise debt; low patronage on new lines;
• California HSR – Govt funded – is strongly opposed by sections of public;
• HSR 2 in UK – Govt funded - whilst proceeding, has many vocal critics on its economics;
• Morocco HSR – no business case analysis done? French soft loans?
• Jakarta – Bandung HSR – China & Japan competing – economics doubtful – difficulties in land acquisition and raising funding?
• Spain to France (Figueres-Perpignan) HSR – privately funded – bailed out by Govt;
• Venezuela – Chinese aid project – now abandoned;
• Hong Kong – massive cost overruns due to tunnelling problems – heads rolled!;
• Netherlands HSR -  saved from bankruptcy by£250m government bailout
• But none of this is a reason not to do anything in Australia, only a reason to be very careful
Let’s get real about ………

......... that delivering HSR is not all pretty

Accidents and Incidents

Not everyone loves HSR in UK

Financing Issues Indonesia

Private sector bankruptcy
France and Spain

Government bankruptcy
Holland

Government Enterprise
Debt in China

Government bailouts

Holland


Source: https://www.thesun.co.uk/wp-content/uploads/2016/03/1435458.main_image.jpg?w=682&strip=all

Source: https://www.reuters.com/article/uk-chinas-railway-boom-hurtles-into-the-idUSLNE75M04520110623


Let’s get real about ……..

…….. about what it’s not about and what it is about

Not about the technologies or whether its French or German or Japanese or Chinese or Spanish or Alstom or Bombardier or Hyundai or whoever ……….

– there are plenty of technology options!

Or who wants to provide it and build it!! - Any number of companies available to do that.

It is about creating a successful and commercially sustainable transport system

but most of all……………………

it’s about the big NATIONAL goals for patterns of settlement in this country and how to make these work

©Peter Thornton

Source: South China Morning Post 19 March, 2016 Sydney Morning Herald April 11th 2016

Australian National Flag flying at Parliament House, Canberra Photo: Auspic
Let’s get real about ………

………… the cost of travel time savings

Travel Time as a Function of Upgrade Cost
Sydney Canberra ~ 250 kms

Upgrade Cost $ billions

Time by Rail in Hours

Existing Service
145 km/h Diesel

200-250 km/h
Tilting Trains

350 km/h "TGV"
type Trains

500 km/h Maglev

Source: Press reports

~ $11 million minute saved

~ $55 million minute saved

~ $70 million minute saved
Let’s get real about how patronage responds to travel time savings.

Patronage as a function of Travel Time

- Fall off in patronage growth at less than 1.5 hours.
- Paradigm Shift in patronage starts at about 2 - 2.5 hours.
- Slow growth initially as transit time reduces.

Source: Capital Rail Research
Let’s get real about ........

...........optimizing Investment

Travel Time as a Function of Upgrade Cost
In the Sydney to Canberra Corridor

- Paradigm shift in Patronage
- Insufficient investment to generate patronage
- Investment Target Zone ???
- Dimishing patronage for rapidly increasing investment

Travel Time by Rail in Hours
Patronage in Millions
Upgrade Cost $ billions (1998)

Patronage in Millions
Upgrade Cost $ billions (1998)

Source: Capital Rail 1998
Let's get real about optimizing Investment

Marginal Cost per Marginal Additional Annual Passenger Minute Saved

Travel Time Sydney To Canberra (hours)
Let’s get real about ……...

….. that fares are going to have to increase

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<thead>
<tr>
<th>City Pairs</th>
<th>Kms (ATCF)</th>
<th>Travel time (hrs) (see note 1)</th>
<th>Min One way fare (AUD$) (see note 1)</th>
<th>Max One way fare (AUD$) (see note 1)</th>
<th>Actual track distance (see note 1)</th>
<th>Lowest Cost (cents per minute)</th>
<th>Highest Cost (cents per minute)</th>
<th>Av. Speed (km/h)</th>
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</table>

NSW Routes compared to Global HSR Routes

|                  | 232% | 53% | 58% | 102% | 22% | 23% | 41% | 119% |

Note 1: Data Source https://www.rome2rio.com - fare data is approximate only and subject to verification.
Let’s get real about ………

….. that fares are going to have to increase
Let's get real about ………

……. listening to what experience has been telling us for 30 years

Source: Pierre Izard Chief Rail System Officer, SNCF Presentation to AFR Infrastructure Summit July 2016
Let’s get real about ..........

.......the facts of life about HSR for Australia

• Syd-Bris, Syd-Mel, Mel-Bris are natural aviation markets and corridors;
  o Aviation is fully privatised...
  o Australia needs a strong domestic and international aviation capability....
  o We should not spend taxpayers dollars to destroy it;
• We need a high level plan about how we are to live in the 21st century;
  o a few mega cities or better distribution of population in key corridors?;
• No one private sector “outfit” can do this;
  o this is always simply a distraction, everyone gets hot and bothered and it always ends with us doing nothing; at the end of the day government will have to underwrite the risk!
• Land value capture will not fully fund a project of this scale in the time lines that are needed;
  o Banks unlikely to securitize the promise of future value increase
  o but certainly it could help:
• By and large, the State Transport Agencies know what is needed;
  o but lack funding and an integrative cross border long term plan.
• We need much better rail in regional corridors that span our cities:
  o where it offer better travel time than road and which will never be served by air and which supports the above view and plan:
  o i.e. where it has a natural competitive advantage;
Let's get real about .........

..... that we need a practical way to create much better rail services in Australia

Mega city

Regional Growth Centre

Urban Growth Centre

Regional Growth Centre

Regional city

A City Traversing System

A Few Journey Possibilities
Let’s get real about ………

starting with regional fast rail serving the places where people live now

- Where first?
- Who owns?
- Who pays?
- Who delivers?
- Who operates and maintains?

Heaviest freight and commuter corridor in Australia - 1:40 grades; 240m curves; 52 Stations - capacity constrained.

©Peter Thornton
Let’s get real about ..........

....... maybe creating the foundation for ultimately a bigger system

- Unified Plan;
- Deliverable in realistic commercial stages;
- One Technical Specification – no A380 problems;
- COTS, not proprietary Technology;
- Common operating systems;
- One operator? But open access.
- Planned and owned by Government; delivered and operated by private sector.
Let’s get real about ………

……….. what is Australia’s most heavily used rail corridor

Newcastle
• Regional population 0.54 million

Sydney
• Metropolitan population 4.5 million

Heaviest freight and commuter corridor in Australia – 1:40 grades; 240m curves; 52 Stations - capacity constrained.

As the crow flies = 117 kms

(Beijing - Tianjin = 20 kms)

CBD to CBD
Rail - 168 kms 2hrs 45mins ($15.60 rtn);
Road - 164 kms; 2hrs 20mins
Air - 45mins plus 56mins ground access; ($166 rtn);

Source: Hamilton Lund & Tourism NSW
Let's get real about ........

...........that it's a 19th century piece of infrastructure

Diagram courtesy of my colleague Alex Wardrop
Let’s get real about .......... 
 .......... that it’s where the greatest good could be done

Key Points:
• 75% of all passenger minutes saved in Sydney – Newcastle corridor are in Hornsby Woy - Woy sector
• Over 50% of all passenger minutes saved by upgrading regional rail corridors to Newcastle, Canberra and Wollongong are in Hornsby – Woy Woy sector

Source: Confidential Research by AECOM/WorleyParsons for TfNSW and reproduced with permission from TFNSW
Let’s get real about ………

…….. what can deliver the best value for money

Key Point: Of all major projects, Hornsby Woy – Woy sector is the best value for money on a cost per passenger minute saved.

Source: Confidential Research by AECOM/WorleyParsons for TfNSW and reproduced with permission from TFNSW
Let’s get real about .......... 

.......... for NSW, Sydney – Newcastle fits the bill

- “A new paradigm of urban development, mobility and transportation connectivity” – changing the way we live;
- Demographic trends – corridor population increasing;
- Demand for affordable housing around Sydney;
- Rail Freight is set to grow “explosively”;
- Peak Passenger rail demand high and increasing;
- Rail corridor capacity issues and upgrade costs;
- Newcastle Freeway also reaching peak hour capacity;
- Airport connectivity & capacity constraints;
- Sustainable transport – Energy, Safety, “Value for money travel”.

©Peter Thornton
Let’s get real about ........

 .......... that the glory days have faded
and Sydney - Newcastle is a corridor in need of a rebuild

“On the 28 June 1964, 3801 ...set a new record
of 2 hours, 1 minute
and 51 seconds

http://en.wikipedia.org/wiki/Newcastle_Flyer

But it’s possibly the only railway journey in the
world where you first travel in exactly the
opposite direction to where you want to go!
Let’s get real about ...........

 .......... that it ain’t easy, it cost lots and you have to think big

From fitting the alignment to the terrain ▶ ▶ to shaping the terrain to fit the alignment

Thinking big 1889 style -
Fourth largest bridge constructed in the world - Hawkesbury River Railway Bridge - fully rebuilt in 1946

Thinking big 2016 style -
Highest railway bridge in the World
Caijiagou Railway Bridge Chongqing-Lichuan Railway, China

Let’s get real about ……..

walking before we run and finally getting real about HSR in Australia

“Australians, it would seem, would far rather do absolutely nothing than do something sensible, achievable, affordable, deliverable, ……….And that is precisely what we have done for the past 20 years.”

©Peter Thornton
Let’s get real about ..........

.......... finally getting real about HSR in Australia

• Let’s forget about bleeding edge technologies; Let someone else bleed proving them up;

• **But let’s not sit on our hands** - Let’s create better, very much better, **regional rail** links in all Australia States – issue of equity of national investment;

• Let’s not be distracted by grandiose, private sector claims - in the end, Government will have to financially underwrite it, just like everywhere else;

• Let’s encourage Government to decide on the big question of patterns of settlement, what is needed and where;

• Let’s not be locked into bespoke technologies but let’s have a long term integrated technology plan for Common Off The Shelf kit;

• Let’s not hand out any exclusive mandates and let’s put the private sector into competitive situations to deliver – many models to finance and deliver and operate;

• Let’s just do it and take that a single step towards successful regional fast rail;

• And let’s hand the next generation a decent platform on which they can continue to expand to full intercapital HSR – if they want.
Let’s get real about ……..

….. that if you can stand more from me, you could go to

3. Submission #38 by Transportation Associates to Commonwealth’s Standing Committee on Infrastructure, Transport and Cities on “The role of Transport Connectivity on stimulating Development and Economic Activity”
4. My many scribbling in the AFR and other places!