Capturing the value of transport infrastructure

A submission to the Federal Standing Committee on Infrastructure, Transport and Cities

February 2016

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EXECUTIVE SUMMARY

A working model of Value Capture (VC) applied to a new heavy rail station in suburban Australia is tested, applying estimates of resultant uplift in land values.

Three concentric zones, each with different dwelling densities, are modeled. To completely self-fund the provision of a station and associated works costing $100 m, the VC to be applied to each dwelling is shown by the model to be:

Prime Access Zone (high density, within 600 metres): $15,000
Secondary Access Zone (medium density, 600 to 1500 metres): $3500
Outer Access Zone (low density, 1500 to 3000 metres): $1000

The VC of $15,000 required in the Prime Access Zone compares to anecdotal estimates of typical uplift of $50,000 to $100,000 as a result of the nearby provision of a fast Australian urban rail service. These results are further consistent with comprehensive London studies concluding that well-sited heavy rail infrastructure gives rise to a total uplift of around four times the capital investment. For policymakers, the corollary is compelling: that is, only around a quarter of the uplift needs to be captured in order to have such a project completely self-funded.

Other advantages of VC are outlined, with emphasis on how VC dampens spiraling land unaffordability.

The ratio of land value uplift to capital investment provides an objective, quantifiable measure of how proposed projects should be ranked.

Compared to an urban rail project, different VC mechanisms are required for intercity fast rail. While the distance between Melbourne and Sydney is not optimal, if termini are located in respective CBDs to facilitate access from radial transport networks, then VC can be extended to outer suburbs to considerably enhance economic viability. If Albury and Canberra were part of the route, then further opportunities to reap significant VC would arise.

Criticisms of VC from lobbyists representing vested property interests are pre-empted and answered.

Fully-fledged land value taxation offers greater advantages in funding infrastructure as well as addressing wider economic issues, but this has been relegated to an appendix for want of certainty as to whether this falls within the terms of reference.

INTRODUCTION

It is no secret that Australia's ageing transport infrastructure is in urgent need of serious investment. With heavy rail networks outpaced by population growth and ever-slower commuting times, the need for an inquiry into the strategic integration of land use and transit to utilize resultant economic growth is long overdue.

Must we once again utter the same forlorn excuse to defer investment, "But from where will the funding come?" With so many of our Asian neighbours rolling out rail infrastructure using innovative funding mechanisms, are we to remain captive to political wind-sniffers who, lobbied heavily by propertied interests, condemn land value capture (VC) as "political suicide"?

This submission is not driven by any vested interests - the recommendations here will stand in stark contrast to those economic rent-seekers who have managed to culturally normalize how the Australian dream of owning one's own home has been thrown under the bus in favour of those who have transformed the family home into an investment opportunity. For every rent-seeker who has got something for nothing, some hapless citizen has got nothing for something!

The list of glittering advantages of VC will be outlined in the following pages, with the hope that the Committee will grant me my half-hour to respond to any queries. But one monumental Australian tragedy must necessarily be pulled into the foreground of this discussion.

It is this: the greatest despair of typical young Australians today is knowing that they will never own their own home. Because of our policy failure to collect the rent from land, we have condemned each succeeding generation to an economic trap which goes something like this: "While I'm saving for a modest home in the outer suburbs, the taxes I'm paying ['*which I shouldn't have to pay!'* add the more observant] are funding the infrastructure which is making that home even more unaffordable".

Value capture will provide the means of rolling out the infrastructure we could otherwise not afford ***as well as*** reining in the modern curse of home unaffordability. And there is much more.

WHY ARE VALUE CAPTURE MECHANISMS NEEDED?

The submitter will assume the Committee is conversant with VC, but here's a good working definition on my part so that the Committee can be satisfied we are addressing the same mechanism *"VC is the process whereby some or all increments in accessibility gains attributable to public sector actions are recouped by the public sector for the public purse".*

This paper will address the range of arguments for VC in terms of equity and economic efficiency, but it must be clear from the outset that the quantum of economic rent that could be retained is most definitely worthy of serious policy examination.

The value to a property of walkable access to a heavy urban rail station offers the most useful guide to the quantum of VC available to policy makers. While there is currently no recognized standard value of such access in the vast, varied and constantly-changing locational values of urban land in Australia, widespread anecdotal evidence serves as a useful guide. At present, real estate professionals and valuers in Australian capital cities estimate that a residential dwelling with the "sweet spot" of 600 or so metres of a railway station is typically worth an extra $50,000 to $100,000. Generally, commercial land value uplift appears to marginally exceed that of residential.

In terms of percentages, the Curtin-Corview study of 2011 is instructive, "*Long term trend analysis of residential property data in Brisbane demonstrates there is a 22% difference in property price in suburbs with high transit amenity compared to properties in suburbs with low transit amenity. Similar increases would be expected in Perth*."[1]

Uplift in values resulting from rail infrastructure are generally greater per dollar of investment than other forms of transport due to lower noise and emissions, the ability to compete with the speed of cars and, in particular, the perception of permanence (i.e. that services won't be withdrawn as with, for example, buses).

VC enables the ranking of projects in terms of economic efficiency. If it is proposed to build a major highway to, say, a state premier's peanut farm then the negligible uplift of the adjacent sparsely-populated land will quantifiably prove that the project is ill-chosen and a waste of taxpayer dollars.

Shifting the burden of taxes off productive sectors of the economy and onto the naturally arising increase in the value of land will bring about a veritable explosion in urban renewal, jobs creation and economic growth. On one side we have at present a seemingly endless list of infrastructure and community needs - improved and expanded transport, hospitals, parklands, education and training hubs, sports & cultural centres and so on. On the other sides we have the best educated workforce Australia has ever produced unable to fully exercise its talents.

What is keeping these two sides from coming together and mutually satisfying each other is a taxation system that rewards land speculation, imposes punitive taxes on productive

[1] "Alternative Funding Mechanisms for Public Transport in Perth" Curtain University & Corview Group, December 2011 p.19 https://www.committeeforperth.com.au/assets/documents/transport-and-congestion/7-Report-AlternativeFundingforPublicTransportinPerthDecember2011.pdf

efforts and ignores how infrastructure can be self-funded. From where should the proper basis of taxation be derived? Ironically, we are literally standing on it.

Let's call to the witness box the most trenchant critics of VC, property investors (you'll surely be reading lengthy submissions from the Property Council of Australia and the Institute of Public Affairs). What response will these powerful lobbyists have to this straightforward set of observations?

> *"Can you see that VC will actually *benefit* your members insofar as it will enable a long list of projects for which not a single shovel will be lifted for lack of funding? With VC, these projects can be completely funded and your members will enjoy a substantial gain in land values, though not quite the total windfall for which you've been lobbying. The point is that these projects can't get off the ground with our current archaic funding mechanism."*

We shall return to the all important multiplier effect of wisely-sited public investment in infrastructure, but it is appropriate at this point to pre-empt attacks on VC. Property speculators, developers and investors are forever broadcasting their mantra that property is already heavily taxed through state land taxes, local rates, developer charges and stamp duty. The mere fact that land prices in Australia have been soaring for so long to alarming levels is proof positive that far too little economic rent from land is being collected by governments.

At the flick of a policy switch, our erstwhile ageing infrastructure can begin to be revitalized and expanded by partially or even completely funding projects through VC. With regard to transport infrastructure, this means of economic revitalization could hardly have come at a better time. Car-based congestion has reached such a stage in most cities that a fast, quality transit system can now be highly competitive with cars in terms of time and economic value.

Cities without good transit are now becoming less and less competitive and Australia is in particular need of public transport renewal, with car use per capital nationwide beginning to decline from 2004[2] and, like nearly all western cities, continuing to fall since then. Major reasons include higher oil costs (until recently), increasing congestion, and a demographic shift of younger people wanting to live in dense urban centres with less need for private vehicles.

It is worth reiterating the point made in the introduction about home affordability, which is due to how land behaves as a monopoly. That is, when a tax is placed on labour and capital, the price of these rises. But when a tax (more properly here, economic rent collection) is placed upon land then the market price of land must fall. With spiraling land prices in Australia throttling would-be first home owners and industry alike, the fact that land affordability can be clearly addressed *while raising revenue* should be a boon for policymakers. Compare this measure to the ill-fated and expensive First Home Owners' Grant which threw more fuel on the bidding process to push up land prices even further.

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[2] Newman P. and Kenworthy J. (2011) Peak Car Use: Understanding the Demise of Automobile Dependence, *World Transport Policy and Practice,* 17.2: 32-42

VC has an inbuilt economic efficiency test. With it, the days of white elephants and questionable, lobbyist-induced projects will end. Any proposed project can and should be measured (objectively and quantifiably) in terms of estimated land value uplift. If a project doesn't pass the test (the highway to the infamous peanut farm) in terms of boosting land values to cover the investment, it should never see the light of day. Competing projects which do pass the test should be ranked in terms of the ratio of uplift to investment.

Collection costs of VC are relatively low, particularly if integrated into existing means of land valuation (local rates and state land taxes). Compliance costs are next to nothing. Evasion is almost impossible - land is the last thing that can be swept under the carpet, shifted offshore or have its ownership cast into doubt. Transparency is easily accomplished through accessible land registers and associated valuations, practically eliminating corruption. Stability and certainty of government revenue is virtually assured.

The issue of equity deserves more than a passing mention. It is basically as simple as this: why should taxpayers, located where they will benefit little or not at all, pay for a project that will enhance the land values of a group of lucky distant landowners? And those who are renting a house near a new train station won't benefit greatly because property investors will exact their ability to increase the rent accordingly.

Neoclassical economics has defended the current practice of massive windfall gains accruing to property investors with its doctrine of users pays. At first sight, to have train users pay for public investment might seem justifiable ….. until the doctrine of user pays is challenged by the principle of *beneficiary* pays. Of course, the great beneficiaries are those land owners whose windfall gains fall into their laps for want of VC.

Without VC, train users suffer excessive fares. A set of simple imaginative iterations illustrates the transformation that can be achieved. If a modicum of VC takes place, fares can be lowered, train use boosted and road congestion eased. If we lower fares again then affected land is made even more desirable, so more value can be captured which can in turn lower fares (free in off-peak?), ease congestion further and so on and on. These iterations drive home a point - in practice, the economic rent will be collected in one set of valuations, and with land valuation taxation (see Appendix 2), the system is inherently self-adjusting to any change in land values.

The quantum of potential revenue through VC is virtually irresistible. Perhaps one of the most detailed set of calculations was undertaken in the late 1990s by none other than a London property developer, Don Riley, who had much first hand experience of massive unearned increments in land values. He used his valuation skills to quantify the uplift resulting from the building of the 11-station Jubilee Line Extension in south London, built at the cost of £3.5billion to British taxpayers.[3]

Within 1000 yards of these stations, Riley estimated that the tube line boosted land values by £13.5 billion - that is, almost 4 times the cost. An independent study carried out for Transport for London confirmed Riley's findings, itself concluding that between 1992 and 2002 the tube line caused land values to rise by £2.8bn close to just 2 of the 11 new stations (Southwark and Canary Wharf).

[3] "Taken for a Ride: Trains, Taxpayers and the Treasury", Don Riley, 2001, Centre for Land Policy Studies, London, U.K.

Here we have hard numbers to drive home a compelling case for VC. That is, a well-sited project might only need to capture barely a quarter of the resultant uplift to make the project entirely self-funding. Even if only half-funded by VC, what property lobbyist can proclaim that VC is “political poison” when seven-eighths of the uplift still falls into his lucky hands - perhaps from a project that would not have begun without VC?

Colossal windfall gains, in the absence of VC, have a long history. The great project that opened up the USA - the set of transcontinental railways - was built on such gains. These railways were essentially surrogates for land companies, and these monumental engineering projects were funded by the strips of land either side of the tracks which were signed over to the land companies to seal the deal. The rest is history, literally - the railways were built and paid for by the companies and the railroad barons became among the richest non-royals in the world. All due to land value uplift.

THE PROPOSED MODEL

It is not clear from the terms of reference whether a fully-integrated system of land value taxation (which would capture much more than designated infrastructure projects) is within the scope of this of this inquiry. While this paper strongly endorses LVT as the best policy mechanism, the case for LVT has been relegated to Appendix 2 so that only project-specific VC mechanisms are discussed here in the body of this submission.

If we aim to implement a VC model based entirely on equity, each property benefitting from an infrastructure project (here we'll take a new railway station) would be individually assessed as to its resultant uplift. For practicalities sake, these thousands of valuations are impossible.

If we wished to implement a model based entirely on ease of valuation, the solution would be to draw an arbitrary line around a project's affected locations and divide the number of properties by the revenue sought in order to arrive at the value to be captured per property. This is clearly so inequitable (even with allowances for the size and value of properties) that a more carefully-calibrated mechanism must be sort. A blend of these two, if you like.

This submission's proposal represents an attempt to attain the optimal balance between the two extremes outlined above - that is, an equitable but expensive assessment of every affected property and a contrasting simple fixed levy imposed evenly on all properties within an arbitrary zone.

There is no end to the range of VC mechanisms that can be applied, and an analysis of major VC-based transport projects around the world quickly reveals how a project can be adapted to the time, culture, politics, geography and other particular circumstances in play. The following are particular instructive:

- Hong Kong's MTR transit system
- Paris's €30 billion metro extension
- London Crossrail Project
- The Warsaw Metro
- The most extensive metro in the world, in New York city, was funded by VC thus enabling all fares to be kept at 5 cents from 1904 to 1948
- Melbourne's own City Loop was part-funded by a Benefit Levy[4]

Acknowledging the flexibility that can be incorporated into any VC model, this paper will here outline a particular model recommended as the starting point for any infrastructure project in Australia.

[4] And here it is appropriate to acknowledge my EarthSharing colleague, Dr. Robert McAlpine, for his assistance in this paper. Dr. McAlpine, as a Melbourne City Councillor, played a leading part in the funding of Melbourne's City Loop through Benefit Levies.

Looking at Appendix 1, we see that what is therefore proposed is a 3-zone system:

Zone 1: Prime Access Zone within 600 metres, which valuers and real estate agents call the 'sweet spot'. The railway facility is clearly walkable within this zone.

Zone 2: Secondary Access Zone from between 600 to 1500 metres. It is still walkable to some but with a 1500 metre walk typically taking 20 to 25 minutes, the amenity is proportionally reduced.

Zone 3: Outer Access Zone from between 1500 to 3000 metres. Not readily walkable, the need for bicycle or car significantly diminishes the amenity.

The aim of this exercise is to apply VC to fully fund this heavy rail service rolled out in an Australian metropolitan area. To make this model more realistic, Zone 1 has been taken to be high density development, Zone 2 medium density and Zone 3 low density.

For the purposes of an indicative exercise, the proportion of VC recouped from each zone, as Appendix 1 shows, has been taken to be 70% from Zone 1, 20% from Zone 2, and 10% from Zone 3. All pertinent calculations are appended.

The final part of the exercise was to estimate the cost of the railway station and associated works. As a chartered accountant, the submitter knows well how costings can be creative, selective and downright misleading, but a range of independent sources show the figure of $100m is not an unrealistic cost, all things considered.

Acknowledging how some figures and guesstimates might be somewhat rubbery, the submitter is still confident that the bottom line is within a factor of 2. So then, to completely self-fund an investment of $100m into a local Australian urban railway station, the VC required from each dwelling in each zone has been calculated to be:

Zone 1: $15,000
Zone 2: $3500
Zone 3: $1000

These figures (particularly zone 1) are consistent with the anecdotal evidence of land uplift of $50,000 to $100,000 per dwelling within close proximity of an Australian railway station. They are also in line with the studies of Transport for London as well as Don Riley which concluded that, for a well sited rail project, only a quarter of the uplift need be captured to self-fund the project.

IMPLEMENTATION AND DEALING WITH OBJECTIONS

If a government is not serious about integrated, structural funding reform to revitalize public infrastructure in Australia, rent-seekers will readily provide the government with a long list of apparent justifications for doing nothing. This paper now attempts to pre-empt these howls of objection.

Objection: This is political suicide! No government wishing to get reelected has ever been so foolish as to implement a great big new tax, particularly one which threatens the family home.

Response: This is not a new tax, but a tax shift that will ease the tax burden in important productive areas of the economy. Moreover, it's not really a tax, but the collection of the unearned increment in land values provided by taxpayers. And it's demonstrably a progressive shift in the tax burden, with land ownership being so concentrated in Australia.

Objection: Remember what happened to the proposed mining super profits tax? You'll face an advertising barrage by vested interests keen to preserve the status quo.

Response: The selling of mining tax was handled in a ham-fisted manner, and Australia now seems to appreciate a thoughtful prime minister adept at explaining policy rather than policy by repetitive slogans.

Objection: The property sector is too important to stifle with something like VC.

Response: Rather than stifling property development, VC (and land value taxation in particular) actually *encourages* land to be put to its highest and best use, because the tax is applied whether the landholder is using it or not. As the owner is financially compelled put the land to optimal use (and employ people) or pass it on to someone who will, land taxes therefore do not thwart productive enterprise. Furthermore, land speculation (and the whole boom-bust cycle which it encourages) will be strongly discouraged by land taxes, depending on how much economic rent is collected.

Objection: You need to bring all parties on board for such a reform.

Response: Very true. And all levels of government (particularly because local and state government land valuation bodies are already in place) need to be involved.

Objection: People hate paying big lump sums in one hit, and VC is very visible and painful.

Response: There is a wealth of financial instruments that can be employed to initially raise the funding (such as the selling of infrastructure bonds) rather than extracting up front lump sums from landowners. Similarly, such instruments can convert these uplifts and VC into workable income streams.

Objection: Public transport just isn't an important enough issue.

Response: With worsening road congestion and overcrowded trains, it's an increasingly sensitive issue among voters. Victoria's Labor government was virtually thrown out of office in 2010 because it lost every electorate along the abysmally-performing Frankston Railway Line.

Objection: Voters can't wear tax slugs for no reason.
Response: For starters, voters won't be sacrificing their hard-earned to finance a project in a distant area. Secondly, by hypothecating VC to particular projects voters will see the fruits of the reforms quite clearly. Thirdly, it's a relatively easy policy to sell because voters will be told how VC enables projects to take place that wouldn't otherwise, and the uplift that is being collected is a mere fraction of the uplift to their property. So even those who are subject to VC are winners - they get to enjoy hefty uplifts while not paying taxes for projects in distant locations.

Objection: It's just way too complicated to introduce!
Response: What …. like the implementation of the GST? Or the adoption of the Euro currency?

Objection: Nothing like this has been done before - you're risking your political credibility needlessly.
Response: VC is happening all over the world, for good reason, and so we don't have to reinvent the wheel. And it's already happened in Australia in various forms such as the Benefit Levies for Melbourne's City Loop, CBD congestion levies, the Gold Coast Transport Levy, the differential rates and special area rates applied by local governments, developer contributions to greenfield developments, region wide transport levies and localized development parking levies.

Objection: VC is outside the power of the federal government.
Response: While section 51 of the Australian constitution does impose limits on federal jurisdiction, we have witnessed many instances where the federal government is telling the states to exercise their own powers to tax land values to finance state projects. A VC mechanism involving a federal tax applicable in a specific area would invite a challenge under s.51(ii) and s.99. But a *State* tax doing the same thing would not be open to any such challenge -- and the Feds could use the conditional grants power (s.96) to encourage/compel the States to impose such a tax. A *federal* tax that makes no reference to location -- except insofar as the base just happens to vary with location -- would also be immune to constitutional challenge

REVIEWING THE TERMS OF REFERENCE

- *Identifying the likely impact on property values and property-related tax revenues as a result of transport connectivity*

This has been squarely addressed.

- *examining options for the application of value-capture mechanisms to sustainably fund transport infrastructure*

This also has been addressed, including calculations of the quantum per dwelling of VC for the provision of a typical Australian suburban train station.

- *considering means, including legislative and administrative actions, by which government and the private sector can best utilise value-capture funding mechanisms*

This has been addressed for government VC, but not for private sector involvement against which this submission will argue. Long international experience has shown that, where the private sector has been involved, the effectiveness of a project and the return to the public sector is invariably compromised. There is simply no need to forfeit any of the economic rent to the private sector, especially when a project such as heavy rail is a natural monopoly. One only has to look at the selloff of the natural monopolies that are Australian airports with their predictable price gauging to be forever warned off private sector involvement in infrastructure. How the spoils of economic rent are distributed is too often determined by which party has the better contract lawyers, and the big boys invariably employ the best!

- *considering the appropriate roles of each of the three levels of government in establishing sustainable value-capture funding mechanisms for planning and infrastructure construction*

Whilst this is a federal inquiry, the involvement of state and local governments in planning and implementation has been addressed, particularly with regard to the existing land valuation expertise (something rarely found abroad).

- *examining any international experiences of the delivery of high speed rail projects by value-capture methods and the impact of high speed rail on city and regional development;*

International experience does not generally provide good models to follow in terms of VC finance for high speed intercity (cf. urban) rail projects, which have usually been financed from a combination of federal, state and local governments plus private sources.

In the Australian context, there have been endless inconclusive studies into a high speed train service between one of the busiest air routes in the world, Melbourne and Sydney. Surprisingly, these studies indicate that VC has neither been properly understood nor considered, appearing to overlook how a private consortium planned to fund the Very Fast Train in the late 1980s and early 1990s along a coastal route between Melbourne and Sydney. Tellingly, this project was based on the private capture of uplifted land values in those rural towns where stations would be sited - this fact alone constitutes a strong indication of the viability of VC in high speed rail projects.

However, certain aspects of the Melbourne-Sydney route do not make this project particularly ripe for development. The most successful examples of high speed trains are

between cities around 300 to 500 kilometres apart. At this distance, competing short haul flights are relatively cumbersome and uneconomic. Longer journeys allow the low marginal cost and travel times of flights to generally outcompete fast trains.

VC can nevertheless play and important role on the Melbourne-Sydney route by incorporating stops at Albury and Canberra, at an acceptable cost in terms of extended rail length and travel time. The termini must be located in the CBD of Melbourne and Sydney where radial public transport enables most of the wider metropolitan areas to have convenient access, and thus be subject to city-wide VC according to the convenience of public transport connections with the fast train termini.

Naturally, the prospect of fast access to Melbourne and Sydney from Albury and Canberra will boost land values in the latter enormously. Again, these increased land values, need to be captured by the public purse. VC can also be seen to address the intractable problem of capital city centralization in Australia.

Here there are echoes of the insight of our federal founders who did not want private landowners and speculators to benefit by having either Melbourne and Sydney anointed as the nation's capital. Thus Canberra was wisely established with a system of land tenure which would retain as the primary source of public finance the rents from land. Alas, this system was later undermined as part of a cynical political exercise, but that is another story.

Cost-benefit studies of fast trains rarely factor in savings from not having to build additional airports nor of clearing highway lanes. Little account is given of increasingly important environmental benefits. Given that the VC catchment area should fall practically over all of the cities which it will service, there is ample scope to incorporate VC as a vital element of the project's financing, if not the sole means in making the project entirely self-funded.

- *examining methods of implementing value-capture in both greenfield and brownfield developments*

There are a variety of mechanisms which the committee will undoubtedly have reviewed in this regard. I have attempted to identify the most practical, effective and politically palatable. The same arguments and means of application as suggested in this submission apply to greenfield and brownfield development.

Greenfield development is in fact much easier to implement especially in terms of quantifying VC. Compulsory acquisition at pre-development values is essential. Brownfield cleanup merely adds another light layer of complexity, but the issues of who pays for the cleanup have been thoroughly turned over in other settings.

- *examining ways to capture future value opportunity when reserving transport corridors*

Various recommendations have already been made, but more will be added here. Where new transport corridors are planned over underdeveloped sites then ample opportunities exist for governments to establish hubs of higher education and government services on modestly priced land whose significant uplift will accrue to the government. Where commercial or retail development opportunities will be ripe, the development rights can be auctioned off to defray the cost of investment.

APPENDIX 1: WORKINGS BEHIND ESTIMATES OF VC REQUIRED TO SELF-FUND THE PROVISION OF A HEAVY RAIL SERVICE

Zone	Zone 1 600 metre	Zone 2 600 to 1500	Zone 3 1500 to 3000
Area of zone	Π x radius squared = 3.1416 x 600^2 = 1,130,976 sq m = 1.13 km^2	Π x radius squared less area of Zone 1 3.1416 x 1.5^2 less 1.1301 = 5.94 km^2	Π x radius squared less area of Zones 1 & 2 = 28.27 - 7.07 = 21.2 km^2
Dwelling density per sq. km.[5]	High density 4000	Medium density 1000	Low density 500
No. of dwellings (from above)[6]	4520	5940	10600
Apportionment of VC[7]	70%	20%	10%
Apportioning est. cost of railway station and associated works, say $100m[8]	$70 million	$20 million	$10 million
VC per dwelling	$70m/4520 = $15,486 Say, $15,000	$20m/5940 = $3,367 Say, $3500	$10m/10600 = $943 Say, $1000
VC from each zone, totaling $99,190,000 (i.e. enabling self-funding)	$15,000 x 4520 = $67,800,000	$3500 x 5940 = $20,790,000	$1000 x $10,600 = $10,600,000

[5] Melbourne is aiming for average of 1500 dwellings per sq. km:
http://www.melbourne.org.au/docs/urban_density.pdf
Capital city comparisons, in persons/hectare:
http://chartingtransport.com/2012/10/19/comparing-the-residential-densities-of-australian-cities-2011/
Southbank (Melbourne CBD) now has 161,000 persons per sq. km - divide by around two for dwellings per sq. km:
http://blog.id.com.au/2015/population/australian-demographic-trends/population-densities-of-australian-capital-cities-melbourne-and-sydney/

[6] Merely multiplying density by area, as for high density 4000 dwellings per sq. km multiplied by area of 1.13 sq. km = 4520 dwellings in zone one.

[7] Anecdotal apportionment from valuers and real estate professionals. Whatever the split, the apportionment must of course total 100%

[8] The cost of providing railway stations varies greatly depending on location, cost of land, tunnels and bridges, economies of scale, prior ownership of land etc. Perth's recent southern railway to Mandurah was built for $12 million per kilometre, including the cost of freeway realignment and tunnels under Perth CBD, so the figure of $100m per railway station is probably not a significant underestimate. So for the purpose of this exercise, indications have been derived from
http://www.melbourne.org.au/docs/urban_density.pdf
https://melbpt.wordpress.com/rail-construction-costs/
http://www.ptua.org.au/myths/capcost/

APPENDIX 2: LAND VALUE TAXATION - THE MOST STRATEGIC INTEGRATION OF LAND USE AND TRANSIT TO FULLY UTILISE ECONOMIC GROWTH

Because of the uncertainty as to whether land value taxation (LVT, although the term Site Rent is more apposite) qualifies as a subset of VC, the case for LVT has been relegated to this appendix.

A long-winded case for LVT will not be made here, but the most important advantages can at least utilize and build on the what has been written about the benefits of VC:

SELF FUNDING - LVT not only collects the uplift of new infrastructure but also the existing rent of land. In other words, the quantum of LVT far exceeds that of VC.

ELIMINATING THE NEED FOR VC VALUATIONS - Utilising current land valuation data from local and state governments, LVT captures all rents from all sources without the need for arbitrary and inaccurate zoning. Changing valuations from year to year are immediately reflected and negative impacts (noise, closure of services or other loss of amenity) are also factored in.

FREEING PRODUCTIVE FACTORS OF PRODUCTION - If VC applies a light touch in terms of shifting the burden of taxation off wealth and employment production, LVT multiplies this effect by orders of magnitude.

REINING IN SPRAWL - LVT makes it financially unviable to hold land unused or underused. The pressure to bring about efficient urban infill is increased as more rent from land is collected. This reduces wastage as less infrastructure is forced to leapfrog over underused land, also resulting in lower commuting times. Furthermore, a more compact cityscape makes investment in heavy rail more viable.

HOME AFFORDABILITY - Collecting even more of the economic rent of land with LVT will not only minimize the uplift from land from new infrastructure but can actually reduce the market price of land.

COLLECTION AND COMPLIANCE COSTS - As with VC, these are minimal.

TAX EVASION - Similarly, with land impossible to hide, evasion is impossible

EQUITY - In line with VC, LVT is based on the value of community-created services that are embodied in the value of land. Revaluations should be made annually.

PUBLIC ACCEPTANCE - The collection of land-based rent can be far more easily explained and justified on the basis that what is expected from the citizenry is in direct proportion to the value of services and amenities provided to one’s land. Indeed, it is a means of fairly sharing the earth through the finely-calculated equalizing of all locational advantages.

ENDING THE GREATEST INDUCEMENT TO CORRUPTION - Our system of taxation and land tenure give rise to an almost irresistible inducement to property developers and ordinary folk alike to influence the planning of infrastructure. At the stroke of a rezoning pen, a lucky (or influential) landowner can reap what amounts to a lifetime of ordinary savings. LVT can completely eliminate such ill-earned gains, and the corruption that accompanies it.

BOOM-BUST CYCLES - Economic cycles are amplified by irrational expectations that capital gains in property will continue indefinitely, and thus constitute a self-fulfilling prophecy. But the speculative bubble can be precariously poised (as it is right now) at a point when returns from holding land are minimal and it's only the expectation of capital gains that induces the greater fool to enter the market at a late stage. History has shown repeatedly that it might only be a minor change to economic forecasts that frightens the horses into a stampede, and the next recession will be underway.

EMPLOYMENT BOOSTED - This can be seen to occur in 3 ways. Firstly, through the opening up of endless public infrastructure projects. Secondly, through forcing land to be put to its highest and best use. Thirdly, by the concomitant phasing out of punitive taxes on production.

ABOUT THE SUBMITTER

Karl Williams is a 60-year resident of the Dandenong Ranges (outer Melbourne) who has been a keen student of land-based taxation reform for 35 years.

He has a Bachelor of Economics and a Master of Business Systems, both from Monash University. He was admitted to the Institute of Chartered Accountants in 1983.

His varied work history includes time spent as an audit supervisor and a teaching academic at Monash's I.T. faculty.

EarthSharing Australia is a Melbourne-based not-for-profit organisation which aims to share the bounty of land and natural resources through fully-costed natural resource charges, with a particular emphasis on land value taxation.

http://www.earthsharing.org.au