

# Using value capture mechanisms to finance local road infrastructure

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## Abstract

Current arrangements for local road maintenance, replacement and upgrades are complex and provide limited incentives for local governments to promote efficient provision, use and investment in the local road network. A key limitation is that current local road funding arrangements are typically unrelated to the principal cost drivers and provide limited incentives to undertake projects that have the potential to increase heavy vehicle productivity.

In addition, the disconnect between local road funding and charges for road use provides incentives for local governments to limit road access to higher productivity vehicles since these vehicles are one of the major causes of road wear. The project-based nature of funding decreases opportunities to fund more widely benefiting projects in local government areas.

Value capture mechanisms are a means of funding the costs of various land improving investments by 'capturing' part of the incremental increase in land value that results. This is simply the application of the beneficiary pays concept, and can be used as a basis for development of a charging system that captures the value received by beneficiaries of the road network, including land owners and businesses.

This paper focuses on how existing funding arrangements are unlikely to provide incentives for local governments to undertake investment upgrades, particularly given local governments' multiple funding priorities with limited funds available. It then presents how value capture mechanisms could be used to fill this potential gap in existing funding arrangements for these projects.

## 1. Introduction

The funding of local road maintenance, replacement and upgrade involves a complex system of mechanisms, which provides little incentive to local governments to make expenditure decisions that promote efficient use of and investment and maintenance in the local road network. As a consequence, there are indications that local road conditions are declining beyond acceptable levels, and there are instances of heavy vehicles being denied road access, thereby increasing transport costs to business.

Local governments claim that the problem can be solved simply by the provision of more funding. Indeed, estimates suggest that in 2008-09 local government expenditure on road infrastructure was only 79 per cent of the annual amount required to maintain the infrastructure over its life (Jeff Roorda and Associates, 2010, p.5). Moreover, expenditure is claimed to have been less than the life cycle cost of road infrastructure for at least the past five years.

In our opinion, the local road funding problem is not principally a consequence of a lack of funding (although this may indeed be part of the problem), but rather that there are insufficient incentives in current funding arrangements for local governments to maximise the efficiency of expenditure, and target investments to promote heavy vehicle productivity.

To determine the efficient level of funding would require a consideration of:

- § the desired serviceability of roads throughout the network;
- § the efficient level of road maintenance (ie, where the marginal cost of road upkeep is equal to the marginal benefits received by road users);
- § the efficient level of road provision (ie, where the marginal cost of a road upgrade is lower than or equal to the marginal benefits expected to be received by road users); and
- § the community's needs for (and ideally willingness to pay for) roads of a certain condition.

An important consideration for road funding is to determine the desired serviceability of roads (reflecting community and business needs). This provides the base for determining how the desired level of serviceability can be provided in the most efficient manner. In addition, the funding mechanisms should also ideally promote investments that cost effectively maximise the economic benefits received from the use of roads, and so lower transport costs to business.

Our focus in this paper is on the incentive problems within the existing system for local road funding that means that there is little incentive for local governments to seek out the most efficient means of providing the local road network, and undertaking road projects that promote greater heavy vehicle productivity. We are particularly interested in those road maintenance and/or road upgrades that have the potential to benefit heavy vehicle operators and their associated freight customers. This is because we believe that targeting funding arrangements in order to improve the efficiency and productivity of the heavy vehicle fleet is where the greatest road funding opportunities are likely to arise.

One mechanism that we believe might be of assistance is the use of targeted beneficiary pays funding for targeted road upgrades. These are also sometimes referred to as 'value capture mechanisms' and might be used effectively in the absence of a direct road user charge or toll, to fund targeted local road investments.

The remainder of this paper is structured as follows:

- § section 2 sets out the incentive problems within the existing system of local road funding;
- § section 3 describes value capture mechanisms, which may provide an alternative funding mechanism for local roads;
- § section 4 explains how value capture mechanisms could be used to finance local road investments; and
- § section 5 concludes.

## **2. Incentive problems with local road funding arrangements**

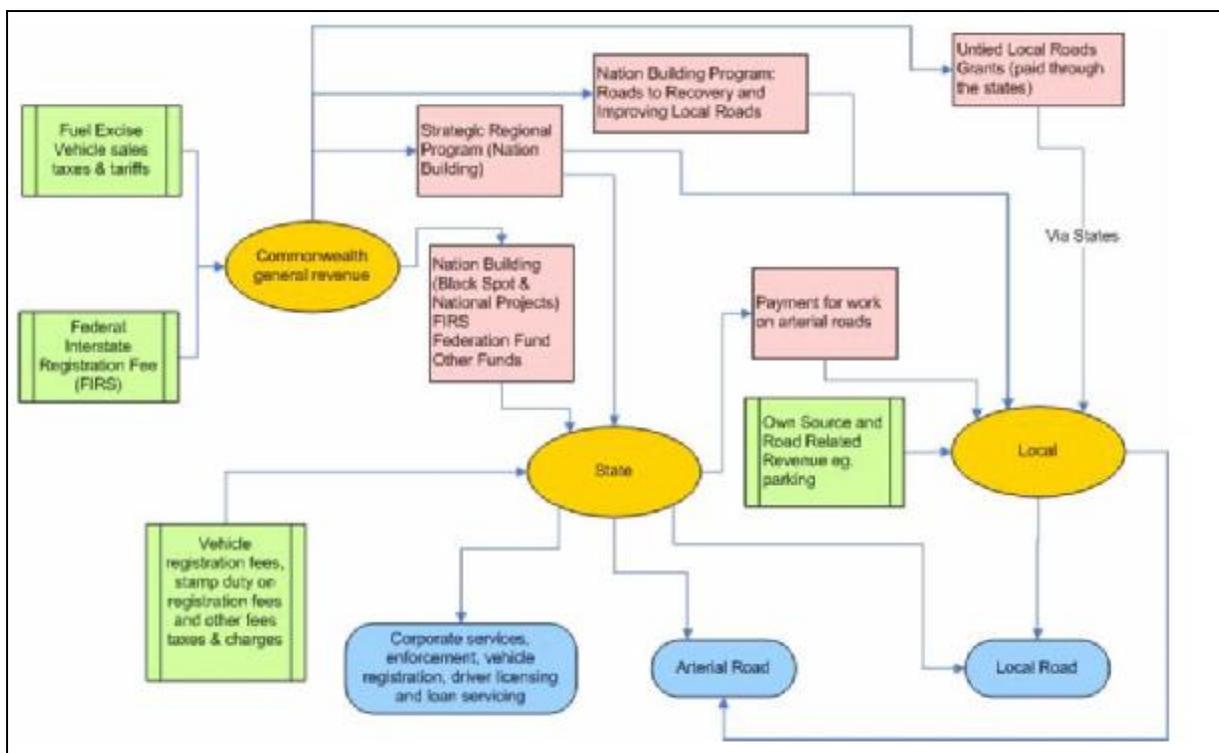
Currently road infrastructure is funded from a number of sources, including Commonwealth, state and territory consolidated revenues, and local governments. Importantly:

- § funding is typically unrelated to the principal drivers of costs, namely heavy vehicle road use and expectations of future traffic flows; and

§ funding is provided in order to satisfy specific objectives, which means that more broadly beneficial investments (ie, those that produce wider benefits that just one party) may not occur. For example, local governments typically invest in road infrastructure to meet local community needs – including those of local businesses.

Figure 1 sets out the principal sources of funds for road infrastructure. While local governments own the majority of roads (80 per cent), they do not directly receive any revenue collected from heavy vehicle operators for the use of roads. Instead, local governments receive funding through a combination of Commonwealth, local and state government grants, the Nation Building Program, land and property rates, and industry or development contributions. However, the majority of funding used to maintain local government roads is sourced from local governments own revenue (73 per cent), with the remainder coming from the Commonwealth (21 per cent), and state and territory governments (6 per cent) (Jeff Roorda and Associates, 2010).

**Figure 1: Australia’s funding arrangements for road infrastructure<sup>1</sup>**



Relevantly, the current arrangements do not provide a clear link between charges to road users, and the system of funding. The lack of prices that are linked to road use and other cost drivers means that there is a lack of signals both to:

§ road users, about the costs caused by road use; and

§ road providers, about the need for new road infrastructure investments.

Providing signals to road users about costs requires an examination of the merits of direct road use charging. Given that heavy vehicles are the principal cause of road wear, the focus of road user charging has been on its introduction for heavy vehicles (COAG Road Reform Plan, 2010). However, it would be equally relevant to consider road charges that seek to price the costs incurred on third parties from the use of roads that are particularly congested

<sup>1</sup> Source: COAG Road Reform Plan, 2011.

– so called congestion charges (and which are considered in the recent Australian Treasury tax review, 2009).

Providing signals to road providers about the need for new road investments means that these investments can be made having regard to road demands. Over time, this can be expected to improve investment decision making and so to maximise the benefits of these road investments to road users.

A key problem with the current funding arrangements, arising in part because of lack of a link between road funding and road use, is that there is a tenuous link between changes in road costs and funding (for any level of government).<sup>2</sup> For example, if road demand by heavy vehicles increases, maintenance costs will also increase. This would therefore require governments to increase maintenance funding but without the benefit of a commensurate increase in charges. Consequently, governments must take proactive steps to increase charges, often in the face of user opposition, to fund additional costs.

The lack of a direct link between road use, costs and funding is a particular concern for local governments. As a consequence and in the absence of sufficient flexibility to increase funding in line with changes in road use, local governments have strong incentives to limit or restrict road use particularly by heavy vehicles (as the major causes of road wear). This is because of the split between the party responsible for the costs and the beneficiary. For example, where a local government would be required to fund a road upgrade that facilitates access by higher productivity vehicles, the benefits accrue to the heavy vehicle operators, most of whom are likely to be based in another locality. That said if local businesses also benefit from access by higher productivity vehicles, then there might be a stronger incentive to undertake the road upgrade. It is therefore the disconnect between the incurrence of the costs and the achievement of benefits that can result in local governments refusing access to higher productivity vehicles, since they can contribute significantly to local road deterioration.

The limited scope for heavy vehicle operators to use higher productivity vehicles translates to a lost opportunity to improve the productivity of the freight transport industry.<sup>3</sup> Productivity is less than it might otherwise be because operators either have to:

- § use smaller and less productive vehicles than they would choose if higher productivity vehicles could be used; or
- § use higher productivity vehicles for the majority of the journey and switch to smaller and less productive vehicles for parts of the supply chains; or
- § use higher productivity vehicles for the entire journey but employ longer routes or take detours in order to travel over roads that they do have access to.

In total, this results in an increase in the overall cost of road transport for business.

A further problem with existing funding arrangements, particularly for local governments, is the difficulties of funding road upgrades. While arrangements differ from state to state, most local governments seek direct project funding for road upgrades from a number of government road funds (eg, the Building Australia Fund). These funds typically have specific objectives or prioritisation guidelines which the project must satisfy. These objectives

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<sup>2</sup> The automatic annual adjustment to heavy vehicle charges is in part based on changes in local government road expenditure.

<sup>3</sup> Indeed, one of the main contributors to increased vehicle productivity over the past two decades has been identified as provision and expansion of network access (Bureau of Infrastructure, Transport and Regional Economics, 2011, p.66).

commonly relate to safety and community access, as opposed to heavy vehicle use and requirements. If a project satisfies the specific project funding objectives, then the local governments are given opportunities to fund the needed road infrastructure upgrades.

However, where a road upgrade is needed to facilitate heavy vehicle productivity improvements (ie, facilitating access to a local road network for higher productivity vehicles) then the opportunity to fund such upgrades is more limited, particularly in the absence of a specific fund targeting these outcomes.

Another mechanism that is commonly used is where local governments receive funding through grants based on allocation formulas eg, allocation of funds based on the number of kilometres of road a local government area manages.

In addition to being project based, funding is largely driven by political and community concerns. This is particularly the case for local governments given that their local community is their main funding source. This provides strong incentives for local governments to only fund projects where their own community benefits. In turn, this compounds the above incentive for local governments not to provide access to higher productivity vehicles, given that this increased local road deterioration would increase community pressures on constrained budgets.

As mentioned above, the predominant funding mechanism for local governments is local property rates, with these based on either capital value, land value, or both. In principle, this funding method can be considered a value capture mechanism, since it seeks to recover some of the increases in land value that arise from surrounding public infrastructure being constructed. For example, if a light rail is built, property values in the area rise due to increased accessibility. This will be reflected in higher rates revenue, since the calculation of rates is based on the value of the property. However, in practice increases in land value may not directly translate to increased rates. For example, in New South Wales rates are subject to 'pegging' or 'capping', which means that rates do not necessarily increase in line with land values (Australian Local Government Association, 2010).

In some instances (eg, road upgrades needed as part of a land use development) local governments are able to attach conditions to development application approvals to facilitate road work changes needed. For example, some local governments in Western Australia require development or road impact bonds as part of development licences under the *Local Government Act 1995 (WA)* and the *Planning and Development Act 2005 (WA)*. These occur through states' development contribution plans that require developers to contribute to shared local infrastructure, facilities or services and infrastructure.

However, these development contributions are normally applied to greenfields developments, and have been recognised as not being suitable for large scale funding of significant transport projects (eg, developer contributions in New South Wales available under the *Environmental Planning and Assessment Act 1979* (Doherty, 2005)). Moreover, these arrangements are generally ad-hoc and cannot be used for road infrastructure upgrades that might benefit a number of road users, but where the benefits from any *one* road user alone are insufficient to justify the costs.

We note that additional ad-hoc arrangements are sometimes used to finance upgrades or construction of new road infrastructure ie, local governments impose conditions on land approvals such that roads are upgraded, or maintenance is funded. However, while such approaches can address clear links between land use and road use, they do not address or deal with wider access concerns such as providing signals to businesses on where to locate.

Finally, while a specific pricing arrangement (ie, a toll) could be used to fund specific road upgrades in a local government area (assuming there are no legal barriers to local governments imposing such a charge), the risks and uncertainties associated with predicting road demand means that this approach might be difficult to implement. This is likely to be

the case where it is difficult to estimate road demand for the upgrade, or the costs of charging and enforcing a road toll are prohibitive.

In summary, the current arrangements for road infrastructure funding, particularly for local roads means that funding is not linked with drivers of road costs, and that funding is largely project driven. This creates incentives for road providers to limit access to higher productivity vehicles.

### 3. What are value capture mechanisms?

Value capture mechanisms provide a potential alternative means of funding targeted road investments in local government areas. Importantly, such mechanisms address many of the incentive problems within current arrangements.

The starting point to any consideration of value capture mechanisms is to draw a clear distinction between the concepts of value *capture* and value *creation*. Value *creation* in transport is where an action or investment increases the value of land in a location, thereby accruing benefits to both the landowner and/or occupier (either a business or individual) from a specific location. This additional land value can be “created” through one or a number of three principal mechanisms, namely:<sup>4</sup>

- § improvements through the development of the land (eg, investments in the building or amenity of land); or
- § improvements in the surrounding community/social amenity (eg, investments in local parks, schools, water and electricity infrastructure, etc); or
- § improvements in the accessibility of the land (eg, investments in public transport or road infrastructure).

Each of these mechanisms can result in changes in the value of a location, as prospective purchasers (or leasers) of the land value more highly land that has improvements in each of these areas. For example, properties near light rail stations have found increased property values of up to 20 per cent (Lari *et al*, 2009, p.II-18). Similar results have been found with road infrastructure improvements. Boarnet and Chalermpong (2001) found that construction of toll-road on-ramps in Orange County, United States resulted in increased sale prices for those houses located close to the on-ramps. Sale prices declined by approximately \$4,600 per mile as houses moved further away from the Foothill Transportation Corridor Backbone toll on-ramp.

As a further example, land values for industrial developments can increase if access by higher productivity vehicles becomes possible.

Value *capture* mechanisms are then simply a means of funding the cost of these land improving investments by “capturing” part of the incremental increase in land value that results.<sup>5</sup> In principle, the incidence of the capturing mechanism can accrue to either the landowner and/or the user of the land (say a business occupying that location that is not otherwise the landowner). The advantages of either approach are likely to be based on administrative and legal considerations, because in principle landowners are likely to pass through the cost of any value capture mechanism directly to lessees.

Where an investment is net beneficial then the land value benefit should outweigh the cost and so the value increase should always be sufficient to fund the associated investment (eg,

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<sup>4</sup> See Medda (undated).

<sup>5</sup> For a summary of examples see Smith *et al* (2011).

Diaz (1999) found that proximity to rail transit increases accessibility and as such increases property values). Indeed the increase in land values through land becoming more *accessible* to major transport routes or public transport has been well documented in numerous studies.<sup>6</sup>

Capturing the value of a transport investment is therefore simply the application of the *beneficiary pays principle* and as such value capture mechanisms are also commonly referred to as 'benefit or betterment' charges. This means that in the absence of direct user charging any and all such individuals that benefit from the provision of transport infrastructure, where this is reflected by (and is proportional to) increases in land value should in principle contribute to the costs incurred to deliver the land value increase (Allen Consulting Group, 2010, p.19).

Ultimately this approach aids with the promotion of efficient investment in and use of transport infrastructure, by aligning the recovery of costs to the beneficiary of those costs and so minimising the scope for cross subsidisation between beneficiaries and reducing the need to recover costs in excess of the marginal cost of use of transport, from transport users directly. This distinction becomes important where the users of transport and the beneficiaries of transport are not one and the same – which is commonly observed in transport.

The concept of value capture mechanisms as a means of funding infrastructure is not unique to transport. Indeed both the electricity and water industries use connection charging and developer charging arrangements to finance extensions to the network in order to accommodate either new greenfields developments, or new connecting assets (such as a new generator). As a consequence there are likely to be insights associated with examining the use of these mechanisms in the water and electricity industries, to examining the opportunities for similar mechanisms to be adopted for transport.

These benefits that result from having access to transport infrastructure accrue to the community as a whole, as well as to individual businesses, developers and homeowners. For example:

- § the community or public benefit from increased social cohesion and improvements in productivity that can arise;
- § businesses benefit from decreased freight and business-related transport costs;
- § developers benefit from increased values of the land being developed; and
- § homeowners benefit from shorter commutes; improved access to key infrastructure such as schools and hospitals; and improved access to public transport.

Given the wide range of beneficiaries, value capture is commonly used to fund public transport infrastructure. Indeed, there have been numerous studies published that investigate the concept of value capture to fund transport for a particular public transport system. For example, Gihring (2001) investigated value capture in relation to a proposed light rail line in Seattle.

The only comprehensive study of value capture mechanisms for transport finance more generally is a study conducted by the University of Minnesota's Center for Transportation Studies at the request of the Minnesota Legislature (Lari *et al*, 2009). This study was

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<sup>6</sup> Junge (2009) provides a good summary of those studies that evaluate the impact of highway investment on property values. In addition, Grimes and Liang (2008) estimated the benefits that resulted from extensions to Auckland's Northern Motorway since 1991, with these including significant increases in land values near the new exits.

commissioned in 2008 to investigate value capture as a potential mechanism for financing future infrastructure investments in Minnesota.

While there is a vast range of value capture mechanisms that exist, the most common forms of value capture mechanisms for transport discussed in the literature are, which are summarised in Lari *et al* (2009) are those:

§ value capture mechanisms applied to individuals, namely:

- property rates – ie, a general tax on either land or capital values, or both, to capture the value created by public infrastructure generally;
- betterment taxes – ie, a tax on either land or buildings to capture the value created by the lands' proximity to transport infrastructure;
- tax increment financing (TIF) – ie, a tax on the increase in property value within a specified development area;
- a special assessment – ie, where charges are imposed on property owners near a new or renovated transport facility based on geographic proximity or some other measure of special benefit;
- transport infrastructure fees – ie, charging users for the use of transport infrastructure directly in line with approaches applied by electricity and water utilities.

§ value capture mechanisms applied to developers, namely:

- development impact fees – ie, a one-time charge collected from developers for the purpose of funding new infrastructure and services that may be associated with the new development;
- negotiated exactions – ie, a negotiated form of development impact fee typically applied to the provision of infrastructure that directly benefits a developer;
- joint development – ie, where a private developer either directly constructs or makes a financial contribution to the cost of a transport development.

These value capture mechanisms have been used in the international context (eg, joint development and tax increment financing in the US, and betterment taxes in the UK), when capturing value created by transport. However, these have primarily been to finance public transport systems.

There has been increasing attention internationally for financing transport systems through value capture more generally. Closer to Australia, New Zealand allows for the use of value capture mechanisms to finance transport projects through the *Land Transport Management Act 2003* and the *Local Government Act 2002* that allow for beneficiary charging approaches. We note that these mechanisms have been used with mixed success in New Zealand.

In summary, value capture mechanisms can be split into four main beneficiary categories, as set out in Table 1.

**Table 1: Summary of Value Capture Mechanisms**

<b>Beneficiary</b>	<b>Incidence of Benefit</b>	<b>Description of possible value capture mechanism</b>
<b>General public</b>	General societal benefits	General taxation revenue
<b>Land developer</b>	Greenfields or major in-fill development that impacts on transport	One off in-kind or ongoing contribution to transport related costs incurred as a direct consequence of a development
<b>Land owner</b>	Ongoing benefits from access to transport infrastructure Targeted benefits from a specific transport investment	Ongoing land-based tax Specific levy to beneficiaries of a specific investment
<b>Transport user</b>	Ongoing benefits from access to transport infrastructure Targeted benefits from a specific transport investment	User charge

These value capture mechanisms on the land developer or owner can provide a potential alternative source of funding for local road projects in circumstances where:

- § a direct user charge is either impractical or inappropriate given the costs involved in implementation;
- § existing funding mechanisms provide insufficient funds for ad-hoc local government investment projects; and
- § existing funding mechanisms provide insufficient funds for economic maintenance of roads.

In the following section we examine the use of value capture mechanisms to finance new local road investments to enhance heavy vehicle productivity.

#### **4. Value capture mechanisms to fund new local road investments**

Improvements in local government transport infrastructure can result in increases in local land value, and so a number of beneficiaries can be created – including both local residents and businesses. For example:

- § an upgrade of a road to an industrial park to make it capable of accommodating B-double trucks would benefit those local businesses located in the park by lowering freight transport costs;
- § an upgrade of roads that could allow a new bus service to be provided within the local area would benefit the local residents since it would improve accessibility around the region; and
- § an upgrade of roads to a local shopping centre would benefit both those local businesses by making them more productive, and local residents by improving accessibility to the centre.

Therefore, there are numerous instances where value capture mechanisms can be used by local governments. In particular, value capture mechanisms provide a means for local governments to fund new local road investments where:<sup>7</sup>

- § funding is unavailable via existing specific allocation based funding, or program/project-based project funding arrangements;
- § there is more than one beneficiary all of whom are readily identifiable, regardless of whether they reside in the specific local government area or not; and
- § the benefits to the beneficiaries from the investment outweigh the associated upgrade costs.

An example that illustrates where value capture can readily be applied is a bridge strengthening project. This could benefit numerous farmers with lower grain transport costs, since it would increase the scope to use higher mass vehicles to cart grain to a local silo. Local farmers may not currently be able to transport grain over the bridge due to it not accommodating trucks of sufficient size, and instead incur extra transport costs and time by employing longer routes. While the cost of the bridge upgrade might be larger than the benefits to any *one* farmer (or alternatively haulage business), the collective benefits to *all* farmers (or alternatively haulage businesses) might outweigh the costs of the project, and thereby make it net beneficial. By undertaking the bridge strengthening project, all of the farmers would benefit through being able to experience cost and time savings. This would in turn increase the land value of the grain farms, due to the increased accessibility, and the location value of the farm.

In this example, the project may be funded currently through a special purpose grant, particularly if the net benefits are large. However, it would be difficult to fund the upgrade via other existing local government road funding arrangements such as general rates given community pressures that investments benefitting the more general community should be undertaken. In addition, we also expect that it would be impractical for the local government to charge a specific toll for the use of the bridge in order to recover the upgrade costs. Moreover, this situation is not a new development, wherein development charges could otherwise be applied.

Applying a value capture mechanism in this circumstance would result in the beneficiaries being charged a special contribution (either a one-off or annual charge) to recover the costs of the bridge upgrade. Ideally, this would be with the agreement of all beneficiaries. However, allowing local governments to compulsorily charge all identified beneficiaries might also be appropriate in some circumstances.

A value capture approach has the benefit of lowering the funding risks associated with the project because the local government is assured of the recovery of the costs of the upgrade from the beneficiaries. This has the effect of improving the incentives for the local government to consider these upgrade projects where there is a clear opportunity to charge identifiable beneficiaries.

However, to ensure that local governments do not invest in projects for which the benefits do not outweigh the costs, there would be a need for the use of a transparent, auditable and credible evaluation framework, with this involving community consultation. In this way, the merits of a specific project can be tested with the local beneficiaries to determine whether it is

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<sup>7</sup> We have not considered any legal or regulatory matters that would need to be investigated for local governments to use these mechanisms.

worthwhile or not. In other words, whether there are sufficient beneficiaries to recover the costs of the upgrade from.

Alternatively, the bridge upgrade could be funded from a more limited number of beneficiaries, with only those beneficiaries who contributed to the costs having the authority to use heavier trucks on the bridge. If other beneficiaries subsequently wanted to use the bridge, then it would be possible to have an arrangement for part of the costs to be refunded to the original contributing beneficiaries. In this way, the risks of other beneficiaries using the road upgrade are borne by the beneficiaries who contributed to the initial funding of the upgrade.

In these circumstances, there would need to be enforcement mechanisms to ensure that only those authorised to use the bridge upgrade do so. In practice, these enforcement mechanisms may be costly compared to the net benefits of the project, thereby warranting a different approach.

Another example where these mechanisms could be applied is to fund the introduction of a local bus service for the community within a local government area. This could improve accessibility for local residents, and so result in increased land values for those located within the bus service area of operation. While the cost of upgrading the roads and providing the bus service would be larger than the benefits received by any one community member, the collective benefits to the community may outweigh the costs of the project, and so make it net beneficial.

In this situation, the bus service may be funded through a betterment tax or an increase in land property rates on the surrounding community. This is likely to be more suitable in this instance, given the wider range of beneficiaries than in the above example. Moreover, this will allow funding for the ongoing operating costs of the bus service over time.

Importantly, charging beneficiaries for the costs of a specific road infrastructure upgrade provides incentives for local governments to better identify opportunities for net beneficial road upgrades. Additionally, it provides incentives that ensure support amongst the identified beneficiaries, and so funding contributors, for the upgrade – this would occur in both the examples discussed above. Finally, it contributes towards removing any disincentives that may exist to funding net beneficial road upgrades in local government areas from local governments.

As discussed in section three above there are numerous mechanisms that could be used to capture value associated with land investments. The choice between these alternative value capture mechanisms would need to be based on an assessment of the specific circumstances of the project being funded. In some circumstances a charge on the land owner who is the beneficiary, might be the most appropriate approach. Alternatively, in some circumstances a specific levy on a business beneficiary may be preferable. The charge may be a one-off capital contribution, or an ongoing charge that includes the additional costs of upkeep and maintenance. Importantly, these would need to be considered on a case by case basis. In the example above, it may be preferable to levy a one-off payment on the grain businesses that would benefit from the bridge upgrade. Given the large upfront cost of the upgrade this is likely to be most suitable. Whereas, in the bus service example it may be more appropriate to charge an on-going payment over time, in order to fund the ongoing costs of providing the service.

While we have used specific examples to illustrate the use of value capture mechanisms to fund local road infrastructure upgrades, such mechanisms could be used in a variety of circumstances. For example (amongst others):

§ to facilitate higher productivity vehicle access to an industrial zone that currently is inaccessible to higher productivity vehicles;

- § to contribute to a road upgrade that benefits numerous businesses, but which is principally used to facilitate a new land use development; and
- § to address new road demands following changes in existing land use, which may be unrelated to a new land development.

Importantly, these examples highlight circumstances where existing funding arrangements are unlikely to provide incentives for local governments to undertake the investment, particularly given local governments' multiple funding priorities with limited funds available. Value capture mechanisms provide the opportunity to create a new source of funding that is unrelated to a new land use development, and does not involve a direct user charge. In this way, it fills a potential gap in existing funding arrangements for these projects.

## 5. Conclusions

In this paper we have briefly outlined the lack of incentives within current funding arrangements for local governments to seek out and provide road investments that have the potential to deliver significant heavy vehicle productivity improvements. The lack of incentives arises principally because of the uncertainty of funding for these projects, particularly where beneficiaries are in adjoining local government areas, or the project is unrelated to a proposed land use change.

Value capture mechanisms fund transport projects by charging the beneficiaries of the project. They differ from a direct user charge, or a development charge for road infrastructure, because they typically involve multiple beneficiaries in circumstances where the benefits from only one beneficiary would be insufficient to outweigh the costs of the project alone.

In this way, value capture mechanisms provide an alternative funding source, which has the potential to facilitate funding of local road investment projects that could deliver significant heavy vehicle productivity improvements. Relevantly, regional companies have indicated that they are "not opposed to contributing to infrastructure" (Butcher et al, 2001), where the benefits to them outweigh the costs. This highlights that improving the funding arrangements for these projects may be an untapped source of opportunity to further drive heavy vehicle productivity improvements in the transport sector. In order to investigate the potential for improved productivity, future work should include an empirical investigation into the use of value capture mechanisms for local government roads in Australia.

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