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Paper title: **Future directions in integrating land use and transport planning**

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Abstract (200 words):

State and local governments have many levers to bring about better land use and transport integration. These can be categorised into strategic asset management (infrastructure, services and non-built solutions), regulations (land use and transport), pricing (subsidies) and build capacity (others deliver transport solutions).

The challenge is to derive planning methods and tools that integrate these levers to achieve a desired outcome. Planning using urban design methods (place based planning) within a geographic setting is one approach to providing this integration. Integrated transport planning is also an approach to achieve modal integration.

The planning and assessment processes used in the UK and USA will be reviewed in the context of the ability of these processes to achieve land use and transport integration. In the UK this includes ‘’New Approach to Appraisal and Local Transport Plans’, and in the USA use ‘Metropolitan Planning Organisations and Regional Plans’.

The presenter will draw on experiences of a 10 month placement with a leading local authority in the UK to inform the presentation. Many of the learnings are derived from the merging of land use and transport planning functions into the West Australian Department for Planning and Infrastructure.

Introduction

The integration of land use with transport has been discussed for many years in the Australian transport and land use planning community. The track record of success has been rather scratchy however with isolated examples of success. The creation of the planning and infrastructure portfolio by the Western Australian government, for example, was undertaken, with the objective of improving the coordination of land use and transport infrastructure planning and service delivery.

This paper examines the land use and transport integration issue from an institutional, planning, public policy and organisational behaviour perspective. The planning and assessment processes used in the UK and US will be reviewed in the context of the ability of these processes to achieve land use and transport integration.

The author draws on experiences of a 10 month placement with a leading local unitary authority in the UK and learnings derived as a player in the merging of land use and transport planning functions into the West Australian Department of Planning and Infrastructure.

Coordination versus integration

The terms co-ordination and integration are often interchanged. It is worth however clarifying the difference between the two terms as they have a major bearing on the central theme of this paper.

Greiving and Kemper (1999) describe co-ordination as “efforts to increase the coherence between sectoral policies on a vertical and horizontal path” (p3). The vertical path refers to the different levels of government (eg state, regional and local) and the horizontal path is between land use and transport policies and players at the same level. Voluntary co-operation of the various players underpins co-ordination and Westerman (1998) adds that co-ordination still allows the players to pursue different outcomes.

Westerman (1998) goes on to define integration as implying “a concern with the whole; agreement on the kind of outcomes we wish to achieve; having the means of achieving them; and a collective commitment to make it happen” (p5).

Desired outcomes of integration

A key assumption of this paper is that a more sustainable transport desired outcome is achieved by better integrating land use planning and transport planning. Discussion on this assumption is divided into what is the desired outcome of land use and transport integration and what is the difference between co-ordination and integration.

The concept of sustainability is worth a brief examination. The Oregon Progress Board (2000) defines sustainability as “using, developing and protecting resources at a rate and in a manner that enables people to meet their current needs and also provides that future generations can meet their own needs” … through “simultaneously meeting environmental, economic and community (social) needs” (p1). The desired outcome for land use planning, as specified by

the Western Australian Planning Commission, aligns with this definition. The achievement of the sustainability outcome simultaneous with meeting of needs implies integration.

Greiving and Kemper (1999) link land use and transport planning together by defining the desired outcome for land use planning as "reducing the need for travel" and for transport planning "making the remaining traffic (travel) sustainable" (p2). Greiving and Kemper, however, only view the land use planning desired outcome from a transport perspective. The Western Australian Planning Commission (1996) identified the desired land use planning outcome as an orderly planning process that achieves regional wealth, conserves and enhances the environment and builds dynamic and safe communities. Based on this view, reducing the need for travel, or "accessibility by proximity", is the desired outcome for land use and transport integration rather than land use. The previous Government of Western Australia's (1996) desired outcome for transport matches Greiving and Kemper's transport desired outcome; that is to make transport sustainable, equitable and safe. Curtis (1999) describes the desired outcome of integration as achieving a better balance in the use of transport modes.

Integration in transport planning has been used wider than just the land use and transport integration objective. The UK Department for Transport (2002a) in its New Approach to Appraisal (NATA) identifies a third area of integration; that is Integration with whole of government policies – education, health, etc.

The suggested integration outcome for land use and transport, separate from land use and transport outcomes on their own, is presented in Figure 1.

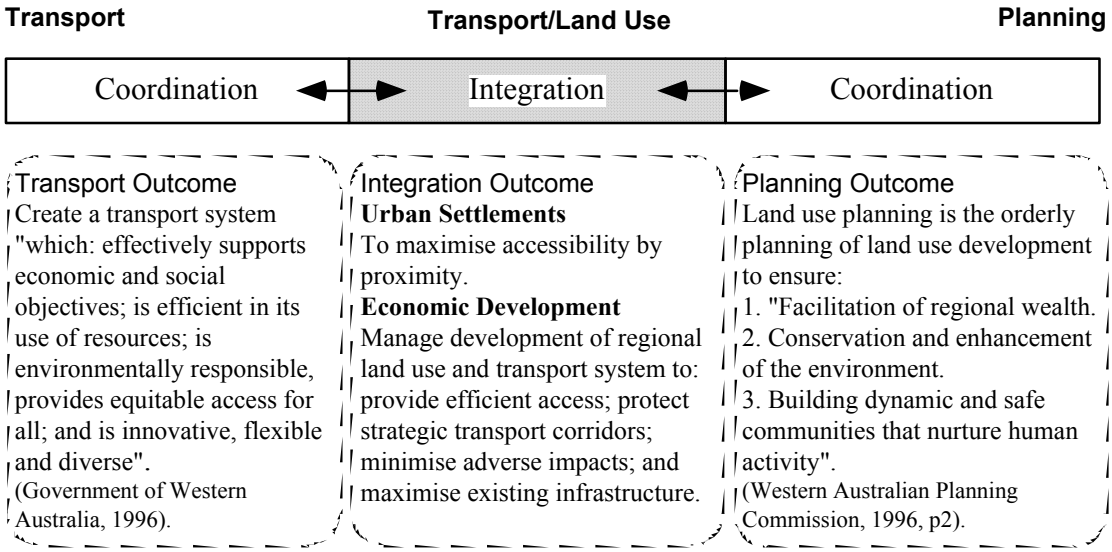

Figure 1: Land use and transport integration desired outcomes.

Integration processes

What is required to achieve effective integration of land use with transport ? Westerman (1998) argues that mechanisms for co-ordination are established and widely used but integration requires further commitment to common outcomes that may not deliver the

optimal outcome for each individual agency. He however doubts existing structures are able to achieve effective integration through co-ordination alone.

Ker (2001) developed an integration framework that comprises the three principles, being accountability, function and organisation. The aim and criteria for effective implementation of each principle is shown in Table 1.

The Irish Department of the Environment and Local Government has identified five critical success factors to achieve integration of land use and transport:

1. Public and political support for a "strategic body" that is accountable for integration, cost effectiveness and value for money in the delivery of its functions.
2. A strong legislative framework.
3. A clear Government mandate.
4. The 'right' people to do the job, and
5. The necessary financial and organisational resources and appropriate incentives to ensure delivery.
   (Department of the Environment and Local Government, 2001).

These success factors cover accountability ("strategic body"), functional aspects (incentives to ensure delivery) and organisational concerns ("strategic body" and the 'right' people).

Integration resources and powers

State and local governments have a range of resources, processes and powers that can be used be used in an integrated way to achieve the benefits from integration. Table 2 outlines the available resources and powers to state and local governments.

Table 1: Integration framework

Functional Principle	
Aim	Implementation
Allocation of functions is aligned with Government policy and strategic planning outcomes.	Outcomes derived from integrated planning processes include: • reduced travel distances through transport and land use integration • better balanced mode shares • strategic asset management, with non-built solutions and more efficient/effective use of existing assets used before new assets are purchased. • community involvement Principal funding priorities based on: • contribution to community and government objectives beyond just transport specific objectives. • integrated assessment (including financial, economic, social and environmental impacts and strategic asset management criteria) • encouragement of innovation.
Accountability Principle	
Aim	Implementation
Outputs expected of agencies are aligned with the allocation of functions.	Outcome requirements could be negotiated with the delivery agencies (eg Treasury/Department for Planning and Infrastructure (DPI); DPI/local government). Outcomes specified for/required of an agency should align with the funding provided. Responsibility for outcomes should align with funding allocation and management.
Organisational Principle	
Aim	Implementation
Organisations are able to deliver the outputs expected of them.	Allocation of functions and tasks to agencies should be carried out on a 'whole-of-portfolio' basis, recognising the need to achieve an appropriate mix between: • modes; • investment, maintenance and operations (levels of service); • land, infrastructure, services, regulation, pricing and non-built solutions (strategic asset management); • strategic asset management and building community capacity. All agencies should have a role in resource allocation, at their appropriate level of competence (that is, within their functional remits) and not simply be postmasters or contract managers for a 'higher' organisation.

Table 2: Resources and powers available to state and local government

Lever		Explanation
1	*Authorisation and Regulation*	• Statutory planning controls for land use planning (authorisation). • Transport regulation, usually through licences (regulation).
2	*Pricing*	Achieved through regulation of prices, taxation and subsidies to service providers and users.
3	*Strategic Asset Management (SAM)*	Strategic management of public assets: • Land - Government strategic land holdings. • Services - subsidised transport services (eg public transport). • Infrastructure - physical assets. • Intangible assets (travel behaviour) derived from demand management and non-built solutions, and intellectual assets.
4	*Building Community Capacity*	The State Government skilling, empowering and resourcing stakeholders, the general community, industry and professionals to achieve the desired outcomes. This is achievable through education, advocacy, grants and partnerships.

How can these resources and powers be used in an integrated way ?

A central organisation

The Irish Department of the Environment and Local Government identified the need for a strategic body within which the integration function should reside. This raises questions about what are the best organisational structures, corporate culture and work processes to achieve effective integration.

The most widely used organisational structure in the public sector is the hierarchical or functional organisation structure. The functional structure is typically a standard pyramid consisting of top, middle and lower managers and the workers at the bottom. The organisation is divided into functional units, such as corporate services, policy, service delivery, asset management, etc. These traditional bureaucratic structures are designed for vertical integration (ie policy to implementation) are not typically supportive of effective horizontal integration across different functional divisions within an organisation, and agencies outside the organisation.

A variation of the functional structure is the product structure. The previous Irish Department of Transport had this type of structure; the products being modes (Metropolitan, Maritime and Regional) and clear administrative tasks (Licensing). Each product division had its own vertical integration from a policy unit through to contract/subsidy management, revenue collection and regulation enforcement. An advantage of this approach is that it is legible for

external customers. A major disadvantage is that this type of organisational structure can create 'silos' and the resultant behaviour can hinder integration.

Weller (1989) identified that a challenge to the amalgamation of the two or more agencies is whether full integration or a just confederation of the two agencies or sections within the agencies is achieved. If the confederation scenario occurs, the result could be co-ordination rather than integration.

The limitations of the traditional functional structure and the need to avoid the pitfalls of a confederation suggest a different approach is required. A matrix organisation is sometimes advocated as a solution to limitations created by functional and product organisational structures (Huse and Cummings, 1985). The matrix structure imposes a project co-ordinator and team across the standard vertical hierarchical structure and the project teams operate with a finite life (ie. the life of the project). This approach evolved from the need to apply adaptable resources and skills to achieve specific project objectives (eg an integrated transport plan). To be effective, matrix structures are contingent on power balancing between hierarchical bosses and project bosses, projects having a clear objective, and an acceptance of blurring accountability within traditional bureaucratic structures (Huse and Cummings, 1985).

A collateral organisational structure is a fourth option (Huse and Cummings, 1985). This option is a parallel or informal structure (collateral structure) operating in tandem with the formal structure, staffed by people from the formal structure. This option is similar to the matrix option but the collateral structure is issue focussed and more than likely to be better suited to ill-defined knowledge problems that cut across an entire organisation. A review of the literature provides little evidence of this approach being used since Huse and Cummings suggested it in 1985.

The key question is then which organisational structural option with the appropriate work processes and corporate culture is the most effective to achieve the integration of these functions within this core organisational area. The answer more than likely lies in a combination of the matrix and collateral options applied to specific projects (eg integrated planning) and knowledge issues (eg policy making) respectively.

Integration processes

There are four processes that can be used to integrate these resources and powers. They are:

1. policy making,
2. integrated planning,
3. funding allocation, and
4. research and monitoring.

Policy Making

The policy making role provides the overall strategic direction for the portfolio and the settings in which plans are developed. The policy role also provides the interaction framework for the various functional elements within the portfolio and co-ordinates policies that sit outside land use and transport integration. Examples of policy issues are policies for transport

modes, transport pricing, housing, energy, employment and greenhouse. The integration of these policy issues is a key challenge of policy making in the context of the planning and infrastructure portfolio.

An example of a policy making issue that pervades much of the portfolio is the concept of sustainability. Sustainability is a term used widely in different contexts and understandings of what it means varies accordingly, such as land use plans, capital works programmes and pricing policies. The application of sustainability is therefore may have different impacts in the wide spread areas of the planning and infrastructure portfolio.

Defining a clear line of demarcation between policy making and integrated planning is difficult. Policy making differs from integrated planning in that it doesn't necessarily have the attributes of a plan; that is a specific geographical setting or a time line with components or milestones. Policy making does set the desired outcomes the integrated planning approaches are striving to achieve. At the end of the day, a clear demarcation between policy making and integrated planning may not be important.

Integrated planning

Integrated planning is the process for integrating the resources and powers within a geographical setting, ranging from regional, sub-regional, local and site specific areas. The product of integrated planning often includes a two dimensional plan with actions and timelines. The integrated planning process can also involve community consultation, negotiation and option testing to arrive at a desired outcome. Integrated planning also has the ability to create negotiated arrangements with key players involved in the geographical area of concern.

To achieve the desired outcomes from the integration of land use and transport, especially in the urban setting, transport planning needs to move from the traditional single mode planning to multi-mode planning and accessibility planning. This progression is shown in Figure 2.

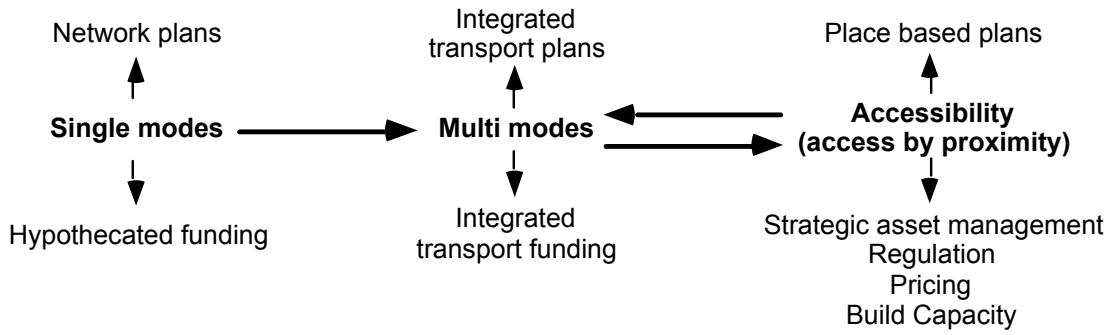

Figure 2: Progression from single mode network planning to accessibility planning.

Single mode planning comprises specific mode network plans (eg roads and public transport) and, in some cases, funding hypothecated to that mode through the agencies responsible for that mode. More often than not, each mode specific agency applies on an annual basis for capital and recurrent funding for the expansion, enhancement and maintenance/operation of

their specific network. The traditional Government funding processes follow this model with each transport agency individually negotiating for capital and recurrent funding. Based on Westerman's (1998) assessment, this is unlikely to foster integration.

The multi-mode approach is undertaken through integrated transport plans are driven from the transport perspective and usually focus on integration of modes. In this case, land use is often taken as a given in the assessment of integrated transport plans (Department for Transport 2002a). As a consequence, network planning often matches existing land use patterns and the local transport plan mixes the provision of different modes, non-built solutions and transport regulation and pricing to achieve the desired outcome of sustainable travel.

The accessibility approach is tackled through place based plans that bring together land use and transport planning interventions. The focus is on the geographical aspects of the specific site, spatial land use patterns (eg mixed use), the form of the physical environment (eg interface between roads and adjacent land uses), and economic and social drivers (eg retail shopping and employment). The economic and social drivers are similar to Greiving and Kemper's (1999) informal policy lever. Place based planning approach is to varying degrees captured in the concepts of transit orientated development, new urbanism and the US Smart Growth movement.

The common element in both integrated transport planning and place based planning is that it is undertaken within a spatial setting where the location of transport modes and land uses affect the operation of each mode and land use. The objective is to maximise the benefits from the interactions of the different land uses and transport modes rather than just maximising the performance of the transport network in the single mode approach. The focus on the transport network is still important but it needs to be matched with the broader objectives of mode and land use integration such that network decisions in this context may be different. Effective place based planning approach is able to achieve the depth of information and breath of understanding about how transport interactions work in a regional or local level that Faber Maunsell (2002) argue is required for effective integration.

The integrated transport plan and place based plan approaches are a more complex task in binding more stakeholders and levers into achieving broader objectives than the traditional single mode network planning approach. Plan creation is the process of testing options, obtaining stakeholder support and contributions, and integrating some or all of the levers within a geographical setting. If done effectively, integrated transport plans and place based plans are able to better deliver the desired outcomes for the portfolio. Single mode network planning will still remain relevant but not as the only approach.

The UK Department for Environment, Transport and the Regions (2000) developed a useful framework that compares the impact of the traditional single mode approach and the integrated transport approach on funding, research and policy making. The author has developed the framework further, contained in Table 3, to include the accessibility or place based planning approach.

Table 3: Comparison between planning approaches.

Single Mode Plans	Integrated Transport Plans	Place Based Plans
Single transport agency.	Multiple transport agencies.	Multiple transport and land use agencies.
Capital bids determined annually with longer term network plans.	5 year plans with greater certainty of future funding as well as agreed commitments from other players, including the private sector.	
Just a 'bidding document' for government funds.	The plan is partly a bidding document, but also a strategic planning document.	
Programme of capital investment.	Consideration of capital and recurrent, as well as other revenue sources and contributions.	
Resources tightly ring-fenced to particular areas of expenditure (eg modes).	Greater local discretion over allocation of resources within the context of the regional or local plans (eg across modes).	
Historically constrained to hard infrastructure.	Integrates modes and transport pricing and voluntary behaviour change interventions.	Integrates modes, urban design, land use patterns and economic drivers (e.g. retailing and employment).
Limited input from operators and local partners.	Inclusive approach, involving public and greater business participation. Also solves local problems in a more holistic way.	
Network objectives and network performance standards.	Greater emphasis on targets, performance indicators and monitoring in areas not previously covered (eg performance indicators linked to outcomes – increase in local employment).	
Historic emphasis on road and occasional urban railway schemes.	Emphasise integrated transport solutions to encourage walking, cycling and public transport.	Emphasises urban design, settlement patterns and integrated transport solutions to encourage walking, cycling and public transport.

Funding allocation

In striving to improve transport and land use coordination in Western Australia, Hicks et al (2001) recommended that the service agencies within the planning and infrastructure portfolio 'should not have direct access to allocations from the Consolidated Fund, but should receive any 'on-budget' funding through the central agency, the Department for Planning and Infrastructure' (p166). This matches Ker's (2001) integration principles in that he recommends agencies should be involved in resource allocation to the level of their competency and not just be postmasters for the higher organisation. The alignment of funding with objectives meets his functional principle and achievement of outcomes with prescribed funding meets his accountability principle.

Funding of transport projects in the UK and US is often done within the context of local or integrated transport plans. Integration occurs within these plans, however there is need for a different funding model if planning is to progress from multi-mode to accessibility planning (Boston Region Metropolitan Planning Organisation 2002, Department of Transportation 2000, Department of the Environment, Transport and the Regions 2000, Department for Transport 2002a). In both countries, there is a link between the planning process and the decision making process to fund the elements within the plans.

Whitelegg (2002) adds another dimension to the funding process. He argues that "at the core of best value thinking is "compare and challenge"" (p17). In this context, the task of acquiring, assessing and allocating funding should be based on comparing and challenging the mix of levers to achieve the desired outcomes.

The US and UK approaches incorporate Ker's principles and Whitelegg's compare and challenge thesis. The integrated assessment process, as developed in the UK (Department for Transport 2002a), is embedded in the integrated planning process. When completing the assessment process to obtain funding, proponents are required to compare options within the integrated planning process. This means the mix of mode funding is determined by the plan without funds hypothecated to a specific mode. However, it could be argued that the diversity of options being tested, such as non-built solutions, could be greater.

The prime mechanisms for the integration in the UK are local transport plans and the New Approach to Appraisal (NATA). Local transport plans are developed by local transport authorities to achieve a set of national and local objectives. The plans are multi-modal and have linkages to land use planning, albeit passive. NATA uses an Assessment Summary Table, using both quantitative and qualitative measures, to assess transport projects. NATA strives to "promote a stronger economy, to provide better protection for the environment; and to develop a more inclusive society" (Commission for Integrated Transport, 2003). NATA does however, based on the Commission for Integrated Transport (2003) review, "assume a constant disposition of land use between the reference case and the scheme".

There is one fundamental difference between the US and UK approaches and the planning and infrastructure portfolio proposed by Hicks. The US and UK approaches involve a bidding process between the national/federal governments and regional/local government. The planning and infrastructure portfolio comprises agencies within the same level of government reporting to the same Minister. The implication of a bidding process in this situation may lead to inter-service agency competition and behaviour that doesn't foster integration.

Application of integrated transport and place based planning within institutional arrangements based on traditional single modes, for example railways and roads, is likely to challenge network funding processes. This will occur through:

1. Integrated transport and place based planning generating different projects competing for scarce government funding,
2. Traditional service agency/Treasury bi-lateral arrangements having another layer of complexity with broader outcome based assessment tools included with traditional financial assessment tools built on specific mode network asset management.

The funding issues explored here have set several challenges in meeting Ker's integration principles. Nevertheless, arguably the integration of the funding allocation into the integrated transport planning and place based planning processes, as evident in the US and UK approach, is fundamental.

Research and monitoring

The aim of including the research and monitoring role with policy, planning and funding is to inform the policy and planning process and to ascertain if the policies and plans are achieving the desired outcomes they are aiming to achieve. The integrated transport planning approach applied in the UK involves ongoing annual performance reporting attached to central government funding provided to local transport plans (Department for Transport 2002b).

The issue of who is responsible for the actual data collection task may generate debate. Like the UK approach, the agencies implementing the various components of the plan undertake the data collection task, however the implementers are not the sole determinants of what data to collect and how to collect the date (Department for Transport 2002b).

Conclusions

State and local governments have many levers to bring about better land use and transport integration. These can be categorised into strategic asset management (infrastructure, services and non-built solutions), regulations (land use and transport), pricing (subsidies) and build capacity (others deliver transport solutions).

The challenge is to derive planning methods and tools that integrate these levers to achieve a desired outcome. Planning using place based planning within a geographic setting is one approach to providing this integration. Integrated transport planning is also an approach to achieve modal integration.

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