Peri-urban growth, planning and bushfire in the Melbourne city-region

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Abstract

Population growth in the peri-urban areas to the north of Melbourne has been significant over the past two decades. This has occurred in existing urban centres and across the rural landscape. Recent bushfires (February 2009) in this region have resulted in the highest casualties recorded in Australian bushfires and have caused considerable community trauma, dislocation and anxiety. This paper uses research establishing the patterns and level of new housing development in these areas to explore processes of planning, housing development and increased community risk in these regions. The paper explores the role of planning in the expansion of these vulnerable peri-urban communities and analyses responses to bushfire management within the planning process, identifying implicit understandings of risk and responsibility and inadequacies in policy formulation and decision making.

Introduction

Settlement patterns in the Melbourne peri-urban area have added to risk arising from increasingly frequent and intense catastrophic bushfire events such as Black Saturday on 7 February 2009. These fire events were Australia’s worst recorded single natural disaster with 173 lives lost, over 2,500 buildings destroyed and an estimated $1.2b in insured losses (VBRRA, 2009).

Victorian peri-urban areas are among most vulnerable in the world to bushfires and they are considered as subject to increasing risk because of climate change (Lucas et al, 2007). This risk is causing increased hazard to human populations, property and natural systems. The population of peri-urban areas is increasing at twice the rate of the rest of regional Victoria at rates comparable to, or exceeding, population increases in Melbourne, (Buxton et al 2008) and much of this growth takes the form of scattered housing in a rural, semi-rural or bushland setting.

The role of land use planning and settlement strategy in the process of risk management and mitigation within this environment is seemingly crucial, yet appears under-valued in the formation of responses to bushfire management at the community and landscape scales. Patterns of land use change, housing development and settlement form continue to occur with seemingly minimal regard for hazard and risk regardless of policy and decision
guidelines which recognise the importance of planning for bushfire in this environment. While issues of site management and emergency response remain, correctly, the critical and immediate concern of policy-makers, land use planning and settlement policy need to be considered as central to precaution and risk management in relation to bushfire.

This paper provides an exploration of the processes of landscape and settlement change in Melbourne’s peri-urban region, with specific focus on a case study area affected by the fires of February 2009. It will place the process of land use planning for bushfire risk and mitigation in Victoria within the context of land use change and city-region governance, offering perspectives on the lack of integrated land use planning, resource management and fire prevention policy.

**Bushfire Risk and the Events of 7 February 2009**

The Melbourne region is a fire prone landscape, with an ecological reliance on fire as a process of regeneration. The comparatively short written history of Victoria encompasses numerous fire events with including Black Thursday (1851), Red Tuesday (1898) Black Friday (1939) and Ash Wednesday (1983), creating a new lexicon in a developing culture of fire awareness. Until now the events of 1939’s Black Friday have been seen as the most seminal in community memory and in informing policy makers.

The lack of understanding and knowledge preceding Black Friday was lamented by Justice Leonard Stretton in his Royal Commission when he wrote “They had not lived long enough” (Stretton, 1939). In using these words Justice Stretton “was not commenting on the youthfulness of the dead: he was lamenting the environmental knowledge of both victims and survivors. He was pitying the innocence of European immigrants in a land whose natural rhythms they did not yet understand …he was indicting a whole society.” (Griffiths 2001: vii)

Victoria is the most fire vulnerable part of the most fire vulnerable continent. Even though Victoria comprises only 3 per cent of the country’s land mass, it has sustained around 50 per cent of the economic damage from recorded bushfires (McGee & Russell 2003), a proportion that has likely increased even further after February 2009. US-based environmental historian Stephen Pyne has provided an overview of Australian (and particularly Melbourne-region) fire events and policy responses. In relation to the events of February 2009, Pyne (2009) comments:

> “Australia is a fire continent: it is built to burn. To this general combustibility its southeast adds a pattern of seasonal winds, associated with cold fronts that draft scorching, unstable air from the interior across whatever flame lies on the land. At such times the region becomes a colossal fire flume that fans flames which for scale and savagery have no equal elsewhere on Earth.”

Fire to the Melbourne region might be considered as not unlike hurricanes and flood to New Orleans or earthquake to Tokyo or San Francisco. The continued urbanisation and exurbanisation of the region needs to be considered in the context of other examples of city regions developing in an environment of risk and hazard.

A series of bushfires spread from the mid-afternoon of Saturday 7 February 2009. The risk of increased fire activity and of conditions conducive to large and uncontrolled fire events had been forewarned earlier in the week (Doherty, 2009). In total, twelve major fire events were recorded on and around that day in locations including the Horsham region, Redesdale,
Beechworth and the northern fringes of Melbourne. These are the central fire events presently subject to the Victorian Bushfires Royal Commission. The Kinglake (or Kilmore-Murrindindi) Fire Complex was a group of fires that commenced in locations including Kilmore East and Murrindindi north of Melbourne, and eventually joined resulting in the most devastating loss of lives and property in areas including the towns of Kinglake, Flowerdale and Marysville.

**Growth and Change in Peri-urban Melbourne**

Melbourne’s peri-urban region, like those surrounding other Australian cities, has experienced significant levels of population growth and housing development over the last three decades. This peri-urban region has included locations which have experienced the greatest loss of life and damage to property from bushfires in Victoria. The combination of rising population, inadequate land use and natural resource planning, and high fire risk has proved consistently to be lethal.

Melbourne’s Peri-Urban region comprises those areas situated between metropolitan centres and rural areas. They are neither fully urbanised nor completely rural, but comprise a “middle band” of land with particular characteristics (Buxton, et al, 2008). The peri-urban area around Melbourne forms inner and outer peri-urban zones, as shown in figure 1. The inner peri-urban area consists of the Melbourne green belt including the Dandenong Ranges, Upper Yarra Valley, Mornington Peninsula and the Shire of Nillumbik. These areas are highly fire prone and include a mix of urbanised areas forming part of the Melbourne metropolitan area, small and medium sized towns, rural-residential developments, tourism complexes and larger rural lots. The outer peri-urban area includes the Shires of Surf Coast, Golden Plains, Moorabool, Macedon Ranges, Mitchell, Murrindindi, Baw Baw and Bass Coast. Areas such as Surf Coast, the Dandenong Ranges, and the Macedon Ranges and surrounds have been affected often by bushfires. In addition, areas beyond the outer peri-urban zone, such as the Ballarat and Bendigo regions, may legitimately be regarded as (increasingly) part of Melbourne’s extended peri-urban zone. Parts of the inner and outer peri-urban zones, and of the extended peri-urban area, were affected by the February 2009 bushfires.

The development of distinct peri-urban landscapes and communities around Australian cities has been occurring since at least the 1960s (Ford, 1999, McKenzie, 1996). Australian cities have a tradition of highly suburban forms at comparatively low densities. The development of exurban settlement forms is, in many places, an extension of this trend and a response to lifestyle preferences and housing affordability. Additionally, the development of commuter communities in previously rural landscapes, towns and villages, has occurred where agricultural restructure and changing urban employment trends (specifically increasing and often decentralised service sector employment) have occurred in parallel, particularly since the 1970s (McKenzie 1995, Hugo & Smailes 1985).
The process of Australian peri-urbanisation draws on concurrent processes of urban and rural restructuring where social and economic relationships are recast in terms of patterns of demographic change, social expectations, investment trends and economic circumstances. However, the reality of an extensive peri-urban region surrounding Australian cities remains at odds with perceptions of rurality in what is a highly urbanised society given that 87% of Australians live in urban areas and 60% live in cities of more than one million people (ABS, 2007).

Greater Melbourne has a population of 3.6 million (ABS, 2007) and an extensive peri-metropolitan area including small and large towns and rural areas. At least 40,000 people living outside the metropolitan area travel regularly to metropolitan Melbourne for employment (ABS, 2007) including more than 50% of the workforce of several of the local government areas surrounding the city. The peri-metropolitan area is growing at up to 4% per year in some locations, well in excess of that of metropolitan Melbourne, with significant levels of new housing being built in urban and rural areas.

Areas with distinct amenity values, including coastal, forested and hilly landscapes, have experienced the most significant changes (Buxton et al, 2008). These changes have led to increased levels of fire risk resulting from the expansion of population and housing into rural landscapes. This is most evident in areas that are neither urban nor agricultural, but rather bushland settings, where the values and ideals driving settlement and development relate to valued landscapes and lifestyles rather than notions of productive agricultural land values.
**Fire Risk: the Policy and Planning Response**

The planning response to Australian peri-urban settlement is typically drawn from a dual basis, involving an urban interest in managing settlement form and a rural ideal of protecting rural (specifically agricultural) land use (Butt, 2008). It is evident that these ideals often are not realized on the fringes of most Australian cities and towns. Issues of hazard and risk, where they are included in planning processes, are typically considered as site responses rather than in a broader, landscape-scale, context. Consideration of peri-urban population growth and housing development usually has included only a background concern for wildfire hazard as one element of a broader discussion of appropriate futures for these landscapes. Moreover, the competing objectives of managing fire risk, retaining habitat, protecting farmland and of recognizing post-agricultural land use possibilities all often lead to increased fire risk, particularly through conversion of many areas to rural residential purposes in areas of high bushfire hazard.

Hughes and Mercer (2009) contend that the legal and cultural nature of property have restrained effective policies restricting development in high fire risk locations, and although the planning systems in all States include bushfire protection elements of some form it is evident that these have not been consistently applied, or applied with a view to addressing large-scale settlement issues.

In Victoria, the Victoria Planning Provisions include statewide policy on fire risk which requires the identification of higher risk environments by councils and fire authorities, and the avoidance of intensify risk through development. Decision Guidelines for planning matters also require consideration of fire risk (State Government of Victoria, 2009). More specifically, areas of risk can be identified and a *Wildfire Management Overlay* applied. As in other Australian states, this overlay necessitates specific site and development requirements, typically relating to access, vegetation clearing and water storage requirements. In the case of the Victorian Wildfire Management Overlay (WMO), referral to the Country Fire Authority (CFA) is required allowing an opportunity for that agency to refuse a permit or place conditions on a limited range of development approvals. Each of these elements is positioned within a planning and decision-making framework that is performance based and development focused, where the capacity to proscribe land use and development is generally limited (Buxton, Goodman and Budge, 2003).

More broadly, the intent and application of this planning control is consistent with the expectation that government is pro-active rather than reactive in wildfire management (Hughes & Mercer, 2009), and that planning for bushfire is a process of community and locality preparedness. This is consistent with the more general approach to Victorian fire hazard which seeks to inform and prepare communities and householders, including the possibility that householders prepare for defending their own home, a policy presently under significant scrutiny (Bachelard, 2009).

Evidence indicates that community and householder perceptions of bushfire risk are generally inconsistent with those of experts (Cottrell et al, 2008), and that levels of awareness and preparedness vary within and between communities. The current approach to land use decisions in these areas (through the WMO and state and local policy) assumes risk mitigation and preparedness through conditions attached to a planning permit and subsequent elements of any development. Consequently, broader spatially-focused policies,
such as the outright proscription of development in identified areas, are effectively excluded as a planning policy option.

The unclear consequences of climate change have the potential to create additional uncertainty about appropriate responses to bushfires and peri-urban housing. Non-linear change, in place of gradual predictable change, has the potential to be particularly disruptive. Folke et al (2002:438) draw on Complex Systems Theory to propose a dynamic view of nature and society in which the “complex non-linear relations between entities under continuous change and facing discontinuities and uncertainty from...synergistic stresses and shocks” are emphasised. They argue for the consideration of the complexities and uncertainties associated with ecosystem management and critical ecosystem thresholds. Such complex non-linear relations between elements in a peri-urban region can lead to sudden, irreversible and fundamental change. Catastrophic non-linear impacts create new levels of uncertainty, increase the vulnerability and decrease the resilience of many affected species, including human populations. The possibility of rapid, non-linear change, once critical thresholds are exceeded, requires anticipatory planning for alternative futures and rigorous alternative policies to achieve such alternative ends. Such anticipatory planning is the antithesis of business-as-usual practices typically characterised by reactive, market oriented policies enabling incremental, ad-hoc development in a predictive trend line.

The pattern of existing small lots in Melbourne’s peri-urban regions demonstrates the impacts of business-as-usual decision making leading to incremental unplanned, ad-hoc dwelling construction throughout the rural areas of peri-urban councils. Extensive land fragmentation has occurred. Over 52,000 lots exist without dwellings in the outer peri-urban region (Buxton et al, 2008). Subdivision under schedules to the three rural zones available in the Victorian planning system, and further lot excisions, could add considerably to this total. A strong market exists for small lots and this is leading to dispersed dwelling construction in rural balance areas introducing uses incompatible with continued agriculture, breaking up larger lots containing most of the remaining biodiversity on private land, and leading to substantially reduced environmental flows, particularly as a consequence of small-dam construction, and increased fire risk to life and property. Between 1997-2007, 4,181 dwellings were approved for the rural zones of five of Melbourne’s peri-urban councils (Moorabool, Macedon Ranges, Murrindindi, Mitchell and Surf Coast) 75 per cent on lots less than 20 hectares in area, and almost 60 per cent on properties less than 8 hectares. In the Farming Zone, which is intended as an agricultural zone, over 60 per cent of all housing approvals have occurred on properties under 20 ha in area, despite the majority of planning schemes generally nominating substantially larger minimum lot sizes for subdivision. This is invariably inconsistent with the objectives and strategic intent of each of the relevant planning schemes and planning objectives and policy which seek to discourage the amount of development on small lots between townships particularly in the Farming Zone, and concentrate development into designated areas.

The following data and analysis will consider the relationships between unplanned fragmented rural development and fire risk in a case study area.
**Murrindindi Shire as a Case Study**

The following case of study of the Shire of Murrindindi is intended to explore issues of risk management, planning and the dynamics of the peri-urban region. Communities in Murrindindi were severely affected by the bushfire events of February 2009. The intention of the case study is not to suggest a unique focus on these issues in Murrindindi Shire (or a unique failure in policy and planning), but rather to explore this situation in light of the fire event with a view to considering the similarities of this area to other parts of peri-urban Melbourne, and to other Australian city-regions.

The Shire of Murrindindi is located to the north east of Melbourne. It includes areas at the interface of the metropolis and a number of more distinctly rural communities and localities. The population of the shire was over 14,000 people in 2008, and the area has experienced relatively modest overall levels of population growth in the past decade (ABS, 2009). Several communities within the shire have experienced more rapid population growth, related to an increasing influence of metropolitan-driven population growth (Buxton et al 2008).

The character of peri-urban growth in this area reflects similarities and differences to other peri-urban regions surrounding Melbourne. The area is not as clearly connected through road and rail infrastructure as some other areas, such as the Macedon Ranges, and the pattern and distribution of population and housing is guided by the predominance of public forests and hilly landscapes. The land area, especially that area affected by the recent fires, comprises public land and often narrow strips and inliers of private land in bushland settings. Commercial agriculture, including a large poultry industry, sub-commercial farming and rural residential land uses each feature in Murrindindi, however the area closest to Melbourne, where the fire was concentrated, is characterised by small holdings and high levels of recent housing activity (Buxton et al 2008) within area of public forest.

Over the decade to 2007, 728 dwelling permits were issued in the rural areas of Murrundindi (Buxton et al 2009). While this represents over half of the total dwelling permits in the shire, population growth in township areas was also considerable with Kinglake’s population increasing by 3.5% per year 1986 and 2006 and growth occurring in other townships.

The fragmentation of land and the construction of dwellings in small lots, specifically on inliers or corridors of private land close to public forests, is a feature of rural housing development in Murrindindi. Figure 2 shows the pattern of fragmented lots and zones, including the almost complete absence of the use of the Rural Conservation Zone in the fire affected areas, the zone with the strongest controls over rural uses.

Figure 3 shows incremental dwelling approvals for the Shire of Murrindindi and fragmented properties against the areas affected by the recent fire, and the use of the Wildfire Management Overlay.
The patterns of development and the development potential indicated in these maps demonstrate the lethal potential of dwelling construction on small rural lots through the exposure of dispersed, increasing rural populations to the risk of fire. Dwellings constructed on small lots north of Kinglake and Marysville were affected directly by the fire. However, a large number of new rural dwellings constructed recently north of the fire extent were potentially equally vulnerable but not affected on 7 February because of wind and other factors. These figures also demonstrate the incomplete and inconsistent use of the Wildfire
Management Overlay. This overlay was applied to most of the area affected by the fire north of Marysville, but not to the rural area affected north of Kinglake and not to the Kinglake township which was largely destroyed.

Table 1 Murrindindi Dwelling Approvals 1997-2007 (property size, zone and fire impact)

<table>
<thead>
<tr>
<th>Property Category</th>
<th>Rural Living Zone</th>
<th>Farming Zone</th>
<th>Rural Conservation Zone</th>
<th>Total (Fire Areas) %</th>
<th>Rural Living Zone</th>
<th>Farming Zone</th>
<th>Rural Conservation Zone</th>
<th>Total (other areas) %</th>
<th>Total All Rural Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2ha</td>
<td>24 (65%)</td>
<td>78 (33%)</td>
<td>0</td>
<td>37%</td>
<td>13 (20%)</td>
<td>27 (7%)</td>
<td>14 (93%)</td>
<td>12%</td>
<td>156 (21%)</td>
</tr>
<tr>
<td>2-4ha</td>
<td>4 (11%)</td>
<td>15 (6%)</td>
<td>0</td>
<td>7%</td>
<td>24 (37%)</td>
<td>37 (10%)</td>
<td>0</td>
<td>13%</td>
<td>80 (11%)</td>
</tr>
<tr>
<td>4-8ha</td>
<td>5 (14%)</td>
<td>36 (15%)</td>
<td>0</td>
<td>15%</td>
<td>13 (20%)</td>
<td>37 (10%)</td>
<td>1 (7%)</td>
<td>11%</td>
<td>92 (13%)</td>
</tr>
<tr>
<td>8-20ha</td>
<td>2 (5%)</td>
<td>43 (18%)</td>
<td>0</td>
<td>16%</td>
<td>12 (18%)</td>
<td>75 (20%)</td>
<td>0</td>
<td>19%</td>
<td>132 (18%)</td>
</tr>
<tr>
<td>20-40ha</td>
<td>1 (3%)</td>
<td>35 (15%)</td>
<td>0</td>
<td>13%</td>
<td>0</td>
<td>79 (21%)</td>
<td>0</td>
<td>17%</td>
<td>115 (16%)</td>
</tr>
<tr>
<td>40-100ha</td>
<td>0</td>
<td>18 (8%)</td>
<td>0</td>
<td>7%</td>
<td>1 (2%)</td>
<td>65 (17%)</td>
<td>0</td>
<td>15%</td>
<td>84 (12%)</td>
</tr>
<tr>
<td>100ha+</td>
<td>1 (3%)</td>
<td>11 (5%)</td>
<td>0</td>
<td>4%</td>
<td>2 (3%)</td>
<td>55 (15%)</td>
<td>0</td>
<td>13%</td>
<td>69 (9%)</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>236</td>
<td>0</td>
<td>100%</td>
<td>65</td>
<td>375</td>
<td>15</td>
<td>100%</td>
<td>728</td>
</tr>
</tbody>
</table>

Source: Buxton et al 2009 and authors’ revision

As indicated in Figure 4, most existing rural lots in Murrindindi are jointly owned, a situation broadly repeated over most of the rural shires in Victoria. Properties (that is, singly owned lots or combinations of lots held jointly) 40 hectares or larger comprise almost 28 per cent of all properties. The construction of dwellings on lots currently jointly owned, and closer subdivision of properties in areas of high fire risk, will increase the number of dwellings exposed to serious bushfire danger. Importantly, under the Victorian planning system this can often occur without the need to formally subdivide land and therefore pressure for development has tended to occur in concert with the proliferation of newly separate land ownership (Buxton et al 2007).

The retention of larger properties also remains important for agriculture and biodiversity as they contain most of the remaining vegetation on private land. Their retention is compatible with the precautionary principle by retaining a range of future options. Many Victorian planning schemes in the past have preventing dwelling construction on multiple lots through the use of tenement controls which required a minimum land size for dwelling construction, or to a lesser extent, rural restructure zones seeking consolidation of holdings. The VPP removed such tenement controls.
Rural dwelling construction and other development is inadequately related through policy and statutory planning provisions to remnant native vegetation. The importance of retaining remnant native vegetation for landscape, biodiversity, water and land protection and other reasons has been recognised through statutory planning controls in Victoria for over 20 years. But a picture emerges of dwellings continually constructed in close proximity to remnant native vegetation, and the approval of subdivisions of land containing significant native vegetation. Both types of action result in the exposure of rising numbers of people to increasing risk from fire by introducing developments and uses into vegetated areas, while constantly degrading, reducing or eventually eliminating remnant native vegetation. In rural areas, the risk from introducing uses and developments which are incompatible with native vegetation could be recognised by limiting or preventing dwelling construction and further subdivision of vegetated land. Many examples of cumulative developments can be cited over time: for example, Deluge Developments Pty Ltd v Murrindindi SC 2008 where the Victorian Civil and Administrative Tribunal (VCAT) approved the subdivision of a 183 hectare largely vegetated site into four lots despite the council’s opposition; and Eynesbury Station in the inner peri-urban Melton green wedge involving approval of 1,250 residential lots located in or near significant remnant vegetation.

Figure 5 plots the bioregional conservation status of remnant native vegetation. Buxton et al (2008) demonstrate the inadequate use of overlays in relation to remnant native vegetation on private land in this area. The use of planning controls neither adequately prevent or limit potential harm to individuals from locational decisions close to native vegetation, or prevent the certain degradation of increasingly rare native habit from inappropriate uses and developments.
Overall, it is apparent that the process of planning for land use change in this region inadequately responds to the apparent fire threat. Moreover, the available planning tools are insufficient to offer a means to ensure that the fire control objective does not, through pressure for fragmented development, conflict with other state planning objectives, particularly in relation to habitat protection. This situation is not unique to Murrindind; many of the causes of increased risk appear to be products of policy and decision-making at the State level, and resulting from cultural and political expectations for development in peri-urban regions.

**Discussion**

Three inter-connected processes can be identified in relation to the failure to adequately plan for bushfire in Melbourne’s peri-urban region:

i. An insufficient scope within the planning system to conceive of, and manage, risk and precaution, in relation to wildfire

ii. The consequences of a peri-urban planning logic that struggles to rationalize post-agricultural land use possibilities, and instead allows a retreat from effective policy, and

iii. The disjointed nature of policy and governance ‘silos’ including the inadequacy of the Victorian planning system to offer a comprehensive approach to planning for fire risk at the settlement or landscape scale.

Allowing for risk and uncertainty sits uncomfortably with contemporary approaches to land use planning, including planning within vulnerable peri-urban regions. Policy-making is largely reactive, and orientated to current market preferences and presumed future performance. In a context of increased uncertainty these approaches are not adequate responses to the risk of large-scale bushfire events. Planning for uncertainty should mean planning for climate change at the upper levels of scenarios given that change at these levels has occurred consistently this century.
The process of decision and policy making in relation to bushfires in these areas is, like other issues in the peri-urban region, fragmented and managed without cohesion in government and other agencies. For example, the WMO was not been applied over most of the areas affected by fire in February, and even where applied, does not appear to have resulted in any notable constraint to new housing development over recent years. Effectively, the WMO is simply a trigger used to add conditions to new development. Along with local policy contained in planning schemes, the WMO and the Victorian planning system generally rarely limits development where bushfire risk is evident, but rather influences (site-specific) features of eventual development. Hughes and Mercer, (2009, p137) note two examples where VCAT refused development, and in both cases the complexity and competing planning agenda (for habitat and fire management) resulted in local council unwillingness to decide the matters, suggesting difficulties in meeting perceived incompatible objectives in a development facilitation context.

Adequate institutional and policy structures and processes are needed for the protection and sustainable use of peri-urban areas. Few countries, however, have analysed adequately future needs and the threats from the development of their peri-urban regions, established clear and enforceable aims, or put in place adequate policies, planning tools and governance arrangements to achieve long term integrated planning and management of land and the resource base.

Present uncertainty should lead to caution and motivate the introduction of regional cross-sectoral policies designed to sustain peri-urban values in place of incremental degradation through business-as-usual activity. Successful adaptation to environmental change on such a scale will require fundamental changes to systems and long held beliefs - equivalent to paradigm change. A precautionary approach requires government intervention to develop integrated responses to deal with sectoral problems and to prevent market decisions delivering short term benefits to individuals but catastrophic medium and long term consequences to communities. Regional strategic planning requires government intervention, institutional integration and cross-sectoral planning and policy development across a defined spatial area. A cross-sectoral approach proposes that sectoral agencies consider the conceptual and methodological approaches of other sectors in framing proposals, and consider the impacts of proposals on all sectors and the broader community and environment. It requires the consideration of environmental, social and economic factors and building in their reciprocal impacts to decision making processes through integrated assessment criteria.

Fragmented institutional arrangements lead to fragmented policy responses. Institutional and policy fragmentation is hampering the ability of governments at all levels to develop anticipatory policies which can assist the peri-urban region to adapt to rapid and fundamental change. This fragmentation is characterized by division between Commonwealth, State, Regional and Local levels of government, within large multi-sectoral government agencies, such as within the Victorian Department of Sustainability and Environment, and between sectoral state agencies.. The means do not exist for developing integrated, far-sighted, strategic policies which effectively anticipate the potential impacts of rapid, radical changes to environmental and social conditions.
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