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Peri-scoping

knowledge for managing Australian landscapes

Outcomes of an expert workshop scoping social and institutional research issues for natural resource management in peri-urban environments

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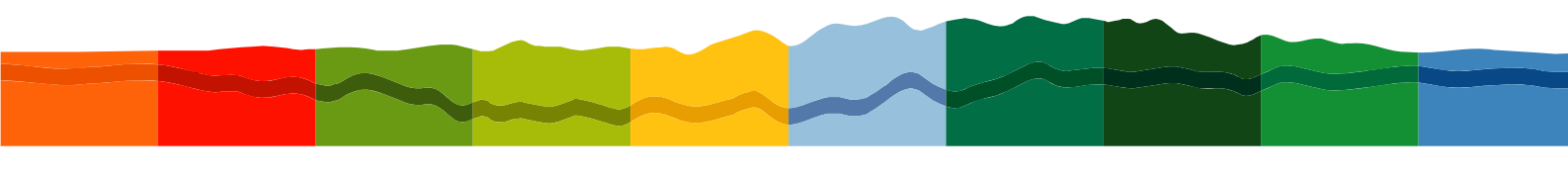
This booklet presents a distillation of key research areas identified by workshop participants to help guide research investment by Land & Water Australia. The information contained in this booklet provides a snapshot at the time of the workshop. It is not necessarily comprehensive, nor representative of the views of Land & Water Australia.



Introduction

This booklet summarises the outcomes of discussions about peri-urban natural resource management issues from a one-day workshop of invited experts in May 2006. Land & Water Australia's Social and Institutional Research Program (SIRP) convened the workshop to scope a research agenda on peri-urban issues related to natural resources management (NRM) to inform its future collaborative research investments.

What is peri-urban?

Peri-urban areas are neither urban nor rural but a dynamic interface and transitional zone. They can be characterised by a diverse range of land uses, communities and environments. They vary in terms of how distinct the boundary is between urban and rural. In some cases it is difficult to identify the outer boundary of a peri-urban area. They occur at the fringes of high growth, large population centres located primarily in coastal areas but also in some inland, regional locations. The intrusion of urban land uses and subdivisions on previously rural land uses results in progressive fragmentation and pressures from competing land uses.

Range and significance of impacts

Peri-urban areas are significant to Australia for many reasons. They are significant agricultural producers for nearby urban as well as international markets, accounting for up to 25 per cent of the value of Australia's agricultural output. Of late there has also been a great change in the types of agriculture and their viability in these areas. Peri-urban areas are also significant for residential developments and their associated recreational land uses. This is particularly the case in the coastal zone, where populations fluctuate enormously throughout the year and the emerging 'sea change' demographic shift.

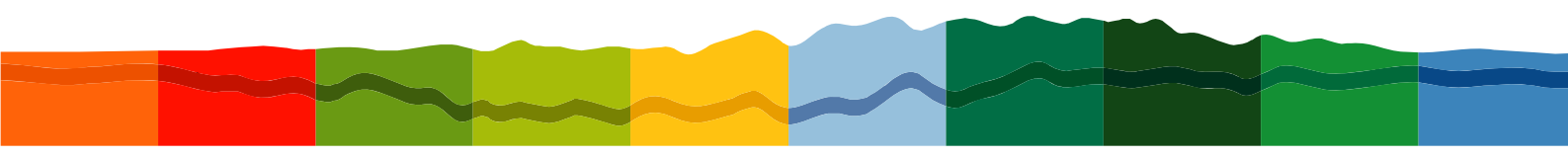
Because different types of land use have different environmental impacts, peri-urban areas generate a complex set of issues for the management of land, water and vegetation. Water previously available for agriculture is increasingly being diverted for urban consumption. More intensified land uses, whether agricultural or urban in form, are likely to have a negative impact on biodiversity. Urbanisation is now considered one of the greatest current threats to Australia's biodiversity and biosecurity, principally through the spread of exotic species, pollution and destruction of natural habitat.

Strategic research opportunity

Land & Water Australia has strategically identified that further research on peri-urban issues is needed for achieving sustainable natural resource management (NRM). It recognises that research needs to address NRM issues across different government jurisdictions, industry and community sectors. Research on peri urban areas also needs to be multidisciplinary to enable us to understand and manage the changing landscape and social dimensions.

Expert scoping workshop

The workshop in May 2006 brought together about 40 participants across a range of relevant bio physical and social sciences disciplines with peri-urban expertise. The disciplines included land use, regional and urban planning, demography, economics, landscape ecology, catchment management, industry-specific knowledge government and policy expertise. Participants were drawn from a wide range of public and private stakeholder organisations at national, state, regional and local government levels.



The objective of the workshop was to identify gaps in existing knowledge about socio-demographic drivers of change in peri-urban areas. It was organised into four main sessions, each preceded by a brief 'discussion starter' presentation that provided a basis for the subsequent discussion:

- key drivers of changing patterns of land ownership and use in peri-urban areas
- physical expression of changes in land use and landscape in peri-urban areas
- impacts and implications for the sustainable management of natural resources
- social and institutional implications, including roles and responsibilities bearing on sustainable management of natural resources.

Key drivers of change

Some of the factors known to drive change in peri-urban areas are:

- proximity to an urban settlement
- perception of landscape and environmental values
- a range of social and economic factors, which exert different influences on different demographic groups
- the changing nature of agriculture
- infrastructure development such as road construction, and
- the land use planning system itself, as institutional structures and policy measures exert influence on land use and speculation.

Sustainability and integration challenge

As with NRM more broadly, NRM in peri-urban areas should be considered as a subset of the larger challenge of sustainability or ecologically sustainable development. Responding to the challenge will entail changes in behaviour, and in the structures and functions of institutions as well as the use and management of natural resources themselves.

To date, government policy and planning responses have had difficulty in steering the development of peri-urban areas. Significantly, there is a lack of integration between the land use policy and planning measures that do exist and NRM policy and planning. Expanding urban development requires significant infrastructure, often in the form of local government services that generate costs to councils and communities as well as the natural environment.

The expansion of urban development into rural areas is a phenomenon that occurs around the world with NRM consequences in every case. There are opportunities for Australian planners and natural resource managers to learn from relevant experiences elsewhere.

Peri-urban change research areas

1. Principles and goals for ecologically sustainable peri-urban development.
2. Identifying land-use and socio-demographic trends.
3. Social change and values.
4. Impacts of existing policy and planning measures:
    a. regional and urban planning
    b. NRM policies.
5. Improving existing NRM and regional planning approaches and developing new approac
6. Stakeholder engagement and information dissemination.

1. *Principles and goals for ecologically sustainable peri-urban development*

What's the challenge?

Peri-urban areas are transition zones and are therefore in a state of flux. The types of development and agriculture we see now may be different to those we see in future. Across all land uses there are likely to be pressures for greater intensification. While allowing for change, the challenge is to identify principles and goals for development and agriculture, which will be ecologically sustainable in peri-urban areas. This is necessary if industrial, residential and agricultural developments are to minimise negative impacts on natural resources.

Focus for research

- Biophysical systems and processes important for ecological resilience.
- Key landscape and environmental values threatened by peri-urban development.
- Appropriate spatial scales for addressing NRM issues in peri-urban areas.
- Appropriate nesting of NRM regions within larger organisational regions that relate to government jurisdictions at local, state and federal levels, and mechanisms for better integration of activities across boundaries.

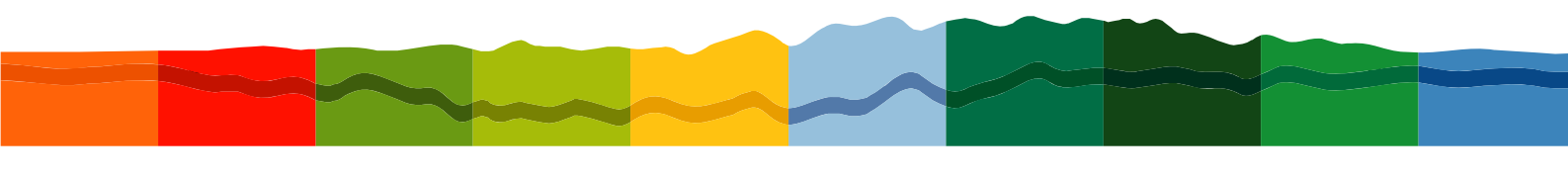
Rationale

A key ecological concept that applies at a landscape scale is that of resilience—the ability to adapt to changing environmental circumstances in the future. Resilience is important in the face of environmental externalities that introduce higher levels of variability and uncertainty into ecological systems, such as climate change and droughts. Factors relevant to the ecological resilience of landscapes and their biophysical systems include soil and water quality issues, vegetation cover, biodiversity, landscape connectivity, and the fragility and limits of ecological systems and land use practices (which in turn are affected by a range of economic and social factors).

> The goal … is to provide for land-use choices in the future by avoiding locking in particular pathways that will deplete finite resources, reduce ecological resilience and limit future land uses.

There is currently a poor fit between existing geographical regions for NRM governance and coherent biophysical systems. Existing NRM regions reflect two elements: the history of government jurisdiction boundaries; and the provision of infrastructure such as roads and mechanisms for water delivery. These elements frequently cut across both biophysical systems and contemporary human settlements. As a consequence it has been difficult to protect threatened ecological communities, especially native grasslands, from intrusions by peri-urban development.

To improve the ability of NRM agencies to address natural resource issues in peri-urban areas, consideration should be given to how the spatial aspects of NRM regions could be reshaped. This reshaping should better reflect coherent biophysical characteristics as well as the areas of interest to contemporary regional communities. Consideration should also be given to how best to reflect the nesting of NRM regions within larger organisational structures.



The matching of physical with social boundaries has been an issue for many decades and continues to be a subject of discussion. An alternative approach would be to explore ways for better integration or coordination of activities across institutional boundaries.

In short, the goal for NRM in peri-urban areas is to provide land-use choices in the future by avoiding locking in particular pathways that will deplete finite resources, reduce ecological resilience and limit future land uses. This requires the development of a coordinated cross-sectoral national approach drawing on multi-scale spatial planning.

2. *Identifying land use and socio-demographic trends*

What's the challenge?

There is an increasing amount of data showing trends in population movement and land-use change in peri-urban areas. The interpretation of this data, its accessibility and its timeliness and level of detail, however pose many challenges. There is a need to identify trends and patterns in land use and ownership in these areas and analyse the interconnected drivers that underpin them.

Focus for research

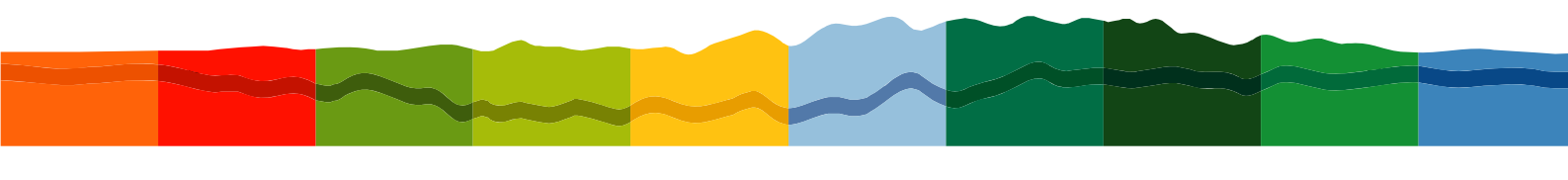
- Identify specific priorities for the standardisation of data about land use. For example, standard approaches to defining different categories of agriculture so that an accurate picture can be gained of agricultural enterprises and diversity in peri-urban areas
- Research on the causes and correlations between drivers of change and the resulting patterns of land use and ownership in peri-urban areas, drawing on relevant international research.
- Research comparing the economic contribution, structure and dynamics of different forms of agriculture in peri-urban areas.
- Identify pathways for linking trend analysis to proposals for alternative NRM policy and programs relevant to peri-urban areas, in particular for asset and/or income rich but time poor part-time or hobby farmers and 'lifestylers'.
- Identify target segment groups for delivery of NRM policy and programs in peri-urban areas.
- Forecast research associated with different urban growth, climate change and other scenarios.

Rationale

Developing an informed understanding of land use changes in peri urban areas is made difficult by generalised descriptions of "increasingly diversified land use" and "dynamic land use changes" over time. It is also complicated by variations between states in the way that land use data is recorded and its accessibility.

Particular problems arise in the use of census data for mapping economic activities in peri-urban areas. Given the heterogenous nature of economic enterprises in peri urban areas, individuals or particular land uses can be easily identified which poses problems with confidentiality.

Even where existing data shows clear patterns and trends, it can be difficult to interpret the underlying drivers. It can also be difficult to understand if trends relate to short-term factors that might be specific to a particular generation or longer-term drivers such as population pressures. For example, patterns have been widely reported associated with 'sea changers'—usually people in their fifties or sixties with strong capital resources who buy land within a two-hour drive from major urban centres for lifestyle reasons.



Superannuation and tax law may intersect with cultural factors to drive up the price of land in peri-urban areas, which in turn has negative impacts on the viability of certain forms of agricultural production. Other drivers of change in agriculture may be more strongly associated with the economics of large supermarket chains that sell mainly to urban consumers. Consumer demands for fresh produce may also drive changes in peri-urban agricultural production. Farmers in peri-urban areas may feel these kinds of impacts more strongly than those in other agricultural areas because of their proximity to and reliance on urban markets.

At a general level, peri-urban areas appear to be moving towards land-use scenarios that reflect landscapes of consumption rather than production. These changes have important implications for existing policy approaches to NRM and agricultural practices. Over the past 10 years NRM plans and programs have relied on engaging landholders in voluntary conservation measures and have promoted the concept of farmers as providers of ecosystem services through their management of natural resources. These assumptions may not be an appropriate basis for NRM programs and policies in peri-urban areas, where full-time farmers tend to favour providing their labour part-time and hobby farmers tend to be time poor but able to provide equipment and materials for NRM activities.

Fluctuations in property markets associated with these transformations create uncertainty about future agricultural land uses. These factors in turn affect the motives and behaviours of current agricultural land owners, and their willingness to invest in NRM.

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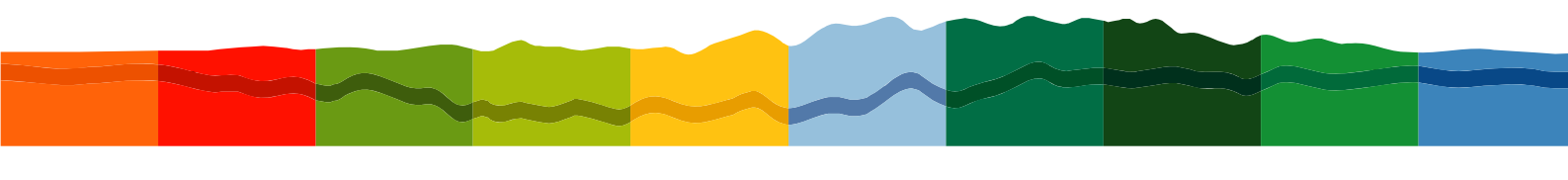
The changing demographic in peri-urban areas has important consequences for the ability of governments to engage landholders in NRM. For example, where land use is moving away from traditional forms of agriculture, there are fewer farmers available to be involved in land care initiatives. NRM policy would be more effective in peri-urban areas if new programs were developed with the aim of engaging developers, regional tourism industries and residents in NRM as well as those involved in emerging forms of intensive agriculture.



3. *Social change and values*

What's the challenge?

The peri-urban fringes are composed of diverse social and cultural groupings and are consequently characterised by an inherent potential for land-use conflicts. The challenge is to understand the relationship between changing social values and land use and interests in peri-urban areas.

Focus for research

- Develop approaches for identifying and mapping diverse land-related values associated with different socio-demographic groups active in peri-urban areas, including land values of Indigenous communities.
- Research into the motivations and capacities of different groups of land users for engaging in NRM issues in peri-urban areas.
- Research into social values associated with supply chains, for example introduction of new types of agriculture associated with lifestyle choices.
- Review the effectiveness of existing processes and institutions for conflict management over natural resources and develop more appropriate approaches for peri-urban areas.

While there are many possible research directions for understanding social change and its impacts on peri-urban areas, Land & Water Australia will focus specifically on those most directly related to natural resources and agriculture, which can be addressed through NRM policies and programs and institutional arrangements, particularly at the regional level.

Rationale

Key areas where social change has consequences for NRM are:

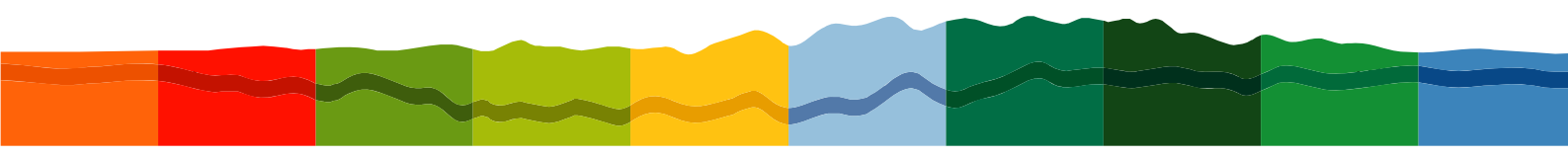
- perceptions of landscape and environmental values
- patterns of resource use associated with different lifestyles and livelihoods, and
- patterns of consumption of agricultural and other products from peri-urban regions.

Many of the changes that occur in peri-urban areas relate to the influence of new social values associated with new residents and land owners. There are large differences between groups in urban areas that relocate or locate for economic necessity and opportunity, such as new immigrants, and those that relocate for lifestyle choice. These groups may differ again from those that visit these areas on a seasonal basis for recreation.

Peri-urban areas also contain land with cultural significance for Indigenous Australians which include sites of former missions and reserves.

Planning for peri-urban NRM is not just affected by the diversity of interest groups, but also by changing social values linked to land use. For example, changing social values may affect both the supply and the demand sides of agricultural production in peri-urban areas. While niche agriculture is emerging to service niche markets, the influence of large supermarket chains remains a major factor in the type and form of agriculture in these areas.

Different perceptions of landscape and environmental values mean that developers, landholders and recreational users value different features of the landscape. For example, among new residents some prefer views across open landscapes and value ease of access while others prefer dense vegetation cover and seek to retain a sense of remoteness from other dwellings.



Patterns of resource use are affected by activities associated with different lifestyles and livelihoods. For example, intensive agricultural industries may require water for irrigation and removal of agricultural wastes, while residential developments require clean water for domestic consumption.

The production of agricultural commodities and the extraction of construction materials have significant impacts on NRM issues in peri-urban areas. Both are affected by social change, which alters the demand for existing products and creates the potential for new markets for new products.

Planning for peri-urban NRM is not just affected by the diversity of interest groups, but also by changing social values linked to land use.

In short, mitigating potential land use conflicts requires a clear understanding of diverse and fast changing values in peri urban areas. Anything of value among different groups sets up the possibility of conflicts and requires flexible and innovative conflict mediation arrangements. It also requires sound planning and consultation processes that reflect underlying values and their drivers in transparent processes that satisfy perceptions of procedural justice.

4. *Impacts of existing policy and planning measures:*

a) regional and urban planning

b) NRM policies

What's the challenge?

The long standing and common policy approach to controlling land use in peri-urban areas is a combination of zoning regulations and planning legislation. These are frequently used to separate urban from rural land uses and to restrict different land uses to different sides of an urban growth boundary. Urban growth boundaries and green belts have been used in some cases to control urban growth and protect environmental values. They have not however been universally applied across Australia's urban centres. The challenge is to assess the effectiveness of interactions between these planning methods for addressing NRM issues in peri-urban areas. This also needs to be assessed within the context of more recently introduced approaches of NRM policies, programs and planning. What has worked; what hasn't; and why?

Background

Since the late 1990s, the major new investments in NRM have come through the Natural Heritage Trust (NHT) and National Action Plan for Salinity and Water Quality (NAP). They involve bilateral agreements between federal and state agencies which provide financial incentives for the management of natural resources. Delivery is through over 50 regional NRM groups on the basis of approved regional NRM strategies and investment plans, and in partnership with a range of community and local government partnerships.

Several elements pose significant challenges for the full effectiveness of this institutional framework including:

1. Governance arrangements (such as catchment management) that are often out of step with NRM region boundaries.
2. Fragmented local government and state government regional jurisdictions for land use planning.
3. Lack of an appropriate interface between organisations associated with NRM.

In peri-urban areas these elements work against effective biophysical approaches to NRM and effective participatory democracy processes.

Given that the current bilateral NHT and NAP agreements come to an end in 2008, it is a high priority to understand their successes and failures for NRM in the peri-urban areas. There is an important opportunity to identify the barriers to successful implementation of these initiatives in order to inform their future incarnations.

a) regional and urban planning

Focus for research

- Review the effectiveness of state-based regional plans and strategies, green wedges and urban growth boundaries for preserving natural resource values, including agricultural production, in peri-urban areas.
- Review best practice models for national strategic planning approaches in other countries.
- Review barriers to adoption of earlier research findings on the need for national strategic planning to steer peri-urban development (such as findings from the Coastal Zone Inquiry) from the perspective of NRM outcomes.
- Explore the need for and ways to develop a national approach to peri-urban areas with a focus on integration and co-ordination of NRM outcomes.
- Research into impacts of existing transport corridors on NRM, particularly the impacts of road construction on development in peri-urban areas.
- Review existing approaches to development assessment by planning authorities and identifying key barriers to incorporation of NRM goals and priorities.

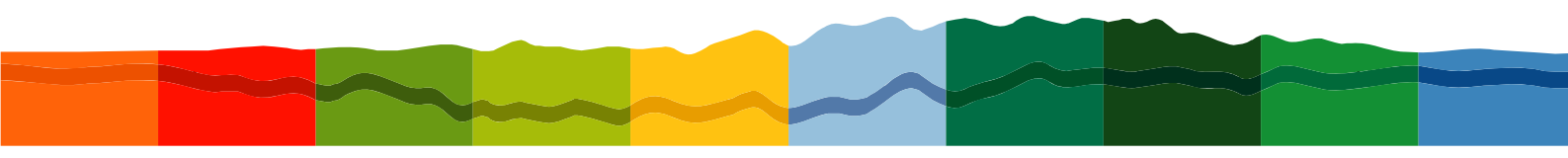
Rationale

The track record for strategic planning and regional planning in Australia is poor, with no coordinated national policy framework. A range of Australian government policies and programs impact on land use and development in peri-urban areas but there is no common land-use policy (for example, road construction). The Coastal Zone Inquiry, conducted in the early 1990s, recommended the development of a national planning framework to steer future development of coastal areas based on a whole-of-government approach. While the Coastal Zone Inquiry proposed a mechanism for intergovernmental arrangements, this was not taken up, largely due to resistance by state governments.

... land-use planning and the development industries continue to shape the patterns and forms of development in peri-urban areas. These drive land-use change and discourage predictable and stable local conditions likely to encourage private investment in sustainable NRM and agriculture.

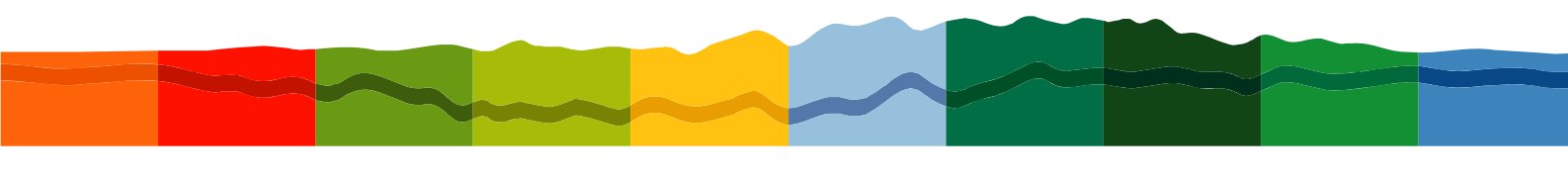
Green belts have been maintained around some Australian cities, where planners provided a broad inclusion zone but excluded development that was considered inappropriate. They were originally given broad purposes including protection of agricultural production, environmental values and natural resources. These areas have also been used to site airports, mining and landfill sites among other things. They have achieved some success in containing urban growth but there are increasing pressures to release land in these areas for urban use such as residential development.

Despite such measures the land-use planning and development industries continue to shape the patterns and forms of development in peri-urban areas. These drive land-use change and discourage predictable and stable local conditions likely to encourage private investment in sustainable NRM and agriculture. Responding to this will require a more systematic analysis of planning than focusing just on the merits of urban growth boundaries or green belts.



Given the importance of peri-urban areas, the threats to their current values, and the fragmented nature of governance and land use, research must be undertaken into options for the development and introduction of an integrated national approach to peri-urban (land-use) policy.

A barrier to intergovernmental cooperation in this area is cost sharing. There is now considerable debate around the issue of sustainable cities and appropriate infrastructure planning but the extent to which infrastructure (such as freeways and rail transport) is leveraged rather than planned is often underestimated. Cities such as Melbourne now make major use of the private provision of infrastructure but savings from outsourcing have not been used to meet infrastructure needs outside the urban growth boundary. Often these needs are left to poorly resourced local governments. A national intergovernmental planning approach could identify the needs for both social and environmental infrastructure in peri-urban areas, and plan for equitable cost-sharing arrangements between different levels of government to achieve sustainable development.



b) NRM policies

Focus for research

- Identify the range of existing NRM initiatives that are relevant to peri-urban areas, especially NAP and NHT regional programs, and identify successes and failures for peri-urban areas.
- Assess the emerging institutional linkages between land use planning and NRM planning, and identify areas where there is a need to clarify roles, functions and capacities in the implementation of NRM policy and programs.
- Assess the effectiveness of existing incentives for NRM on agricultural land and sustainable production in peri-urban areas.
- Assess the impact of water-pricing policy and tradeable water rights on agricultural land use in peri-urban areas.
- Review the NRM outcomes of recent innovations in land title such as nature covenants and common property titles, and assess their potential application in peri urban areas.

Rationale

A key issue in assessing the effectiveness of existing NRM measures in peri-urban areas is the need for a specific assessment of NHT and NAP programs affecting them. What are the key organisations, agencies and community constituencies for the implementation of these programs and how have they responded? What success stories can be identified for NAP and NHT in peri-urban areas? Where have they not been successful or how have challenges been overcome, what were the reasons? For example, were they based on assumptions about traditional forms of agricultural land use that were no longer valid? How do they acknowledge the changing socio-demographic profile or the impacts of changing land values in peri-urban areas?

…..the challenge is to effectively link NRM goals to the increasingly diversified patterns of land use, ownership and associated values in peri-urban areas, and particularly to sustainable agricultural livelihood.

There is now a range of incentives for farmers to become involved in NRM, including those delivered through the NHT and NAP. However, the challenge is to effectively link NRM goals to the increasingly diversified patterns of land use, ownership and associated values in peri-urban areas, and particularly to sustainable agricultural livelihood. Most farmers whose livelihoods rely on returns from production also need to identify a return on investment for NRM measures. The concept of ecosystem services and associated incentives may establish a broader financial basis on which to spread costs of NRM on agricultural lands.

New approaches to water pricing and the introduction of tradable water rights have significant implications for NRM on agricultural lands. The effect of water markets on land use in peri-urban areas therefore needs to be monitored carefully to assess the impacts on NRM. The separation of land and water titles may have different consequences in these areas of diverse and dynamic agricultural land use than in more uniform rural areas. While there has been significant research into the consequences of separating land and water titles in the United States, there is little equivalent research in Australia.

Nature covenants and other land title arrangements have now been in existence in most states for some years. Schemes such as Land for Wildlife, supported by organisations such as the Trust for Nature, have the goal of improving nature conservation on privately owned land. They are supported by new forms of land title in which covenants prescribing the protection of biodiversity values are attached to the land title and are transferred when the land ownership changes. To date these schemes have been popular with city-based people in their fifties and sixties—the baby boomer generation. It remains to be seen what will happen when these properties change hands and whether their new owners will respect the conditions of the covenants.

5. *Improving existing NRM and regional planning approaches and developing new approaches*

What's the challenge?

The challenge for NRM in peri-urban areas is determining how existing NRM policies, programs and instruments at the regional level can be improved and coordinated more effectively with state, regional, local and strategic planning measures. We need in particular to understand what alternative governance structures and processes could better address NRM needs in peri-urban areas.

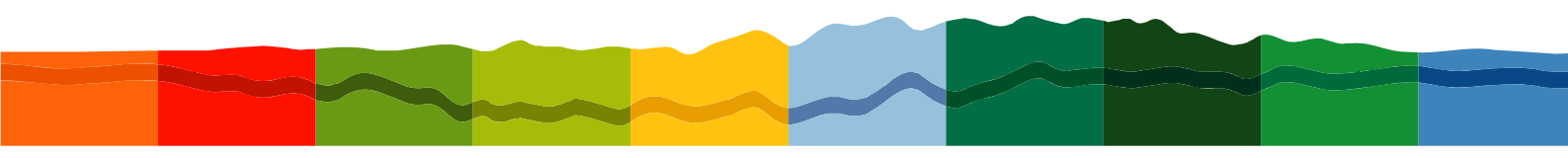
Focus for research

- Identify and define institutional roles and responsibilities to support integrated approaches to peri-urban planning and NRM across sectors and between different levels of government and planning scales. Particular attention should be given to clarifying the roles and responsibilities of local government and regional NRM authorities.
- Develop ways to build the capacity of local government and community organisations in peri-urban areas for active engagement in existing regional group NRM processes.
- Investigate change management paradigms that can assist with cultural and organisational change to support peri-urban NRM initiatives at all levels of government.
- Develop approaches for effective broad-based community consultation about land-use decisions that affect natural resource outcomes in peri-urban areas.
- Assess the potential of different kinds and mixes of policy instruments or incentive schemes to promote investment in NRM by developers in peri-urban areas, including fiscal arrangements and market interventions.
- Develop options, including statutory measures, for revising development assessment processes to incorporate NRM goals and objectives.
- Develop options to strengthen and expand new land title forms such as nature covenants and common property titles.
- Develop options for extending bilateral agreements for water (NAP) and vegetation (NHT) to include new targeted measures to address NRM in peri-urban areas, including appropriate capacity building in regional NRM groups.
- Model future environmental and development scenarios for peri-urban areas.

Rationale

Fundamental to improved planning for NRM is the clear identification of roles and responsibilities that reflect an appropriate balance between federal, state and local governments. Some of these will be new roles for each level of government and as such will require that they have the capacity to fulfil their new role.

This would constitute is a major step towards a system that allows a more coordinated and proactive planning approach that will identify the most appropriate areas for development in terms of environmental and social values, rather than allowing development needs alone to drive infrastructure investment and services provision.



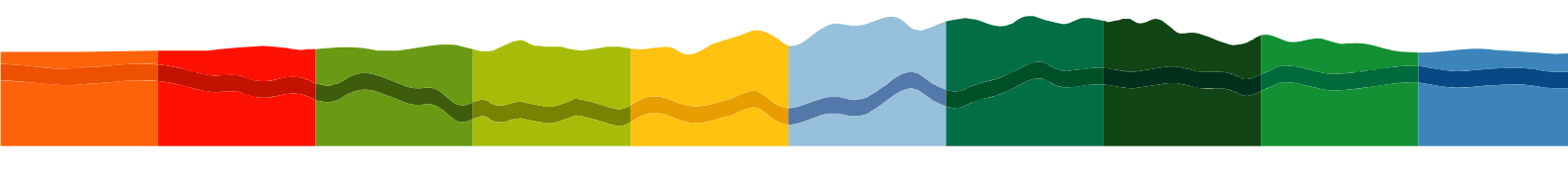
The widest possible consultation processes are needed to canvas the NRM priorities for peri-urban areas and to gain broad-based support for new initiatives and intergovernmental arrangements. Enhanced participatory democracy processes should be developed for this purpose and to effectively engage with and mediate between the diverse range of landholders and values, particularly the lobbying power of development interests. These processes need to include the diversity of groups in the community such as Indigenous, low-income and ethnic group migrants to peri-urban areas.

It is critical that new frameworks for NRM and regional planning in peri-urban areas factor in environmental externalities. This is to recognise the positive public benefits for NRM that accrue beyond the actions of any one stakeholder as well as the negative. Examples include the broad aesthetic and recreational landscape values delivered by an individual landholder, and the potentially detrimental environmental pressures caused by provision of major road infrastructure links. Improved stakeholder engagement and mediation processes need to be developed. Development and adoption of new policy instruments and mixes will also be needed, for example, involving ecosystem services approaches. Such frameworks will be most effective if the spatial scales for NRM are designed with this in mind, and if they map in a logical way onto local government areas as well as the jurisdictions of state and federal government agencies.

A wide range of policy responses is available to control land use in these areas ranging from regulatory to market-based to voluntary. On going socio-demographic trend analysis can inform the continued refinement of existing measures as well as the development of new ones. For example, the shift from productive to post-productive, consumption value landscapes brings new opportunities to develop and apply ecosystem services-based instruments.

In summary, the framework for NRM governance in peri-urban areas needs the capacity to develop and deploy a wide and innovative range and mix of policy and planning approaches, measures and instruments in a more effectively integrated and co-ordinated manner across the various scales and levels of responsibility than is possible within the existing institutional roles and governance frameworks. For example, more extensive use could be made of common land titles in the context of residential developments for retirees, provided that measures are in place to protect environmental values. In the context of increasing demands on scarce water resources, we might reconsider the ways we use water to transport waste—we can have small scale, effective, water collection, treatment and storage systems. Research initiatives can open up new developments in environmental design for agricultural and residential developments as well as recreation facilities.

If the goal for peri-urban land management and planning is to keep future options open how can we deal with a high level of uncertainty, including the economic and political climate, factors such as climate change and changing social values, so that future options will not be cut off? By modelling a range of future scenarios, preferred options for current land use and planning may be identified.



6. *Stakeholder engagement and information dissemination*

What's the challenge?

The complex and fragmented nature of cross-sectoral government jurisdictions in dynamic and diverse peri-urban areas poses particular challenges for the effective and timely sharing of information collected by different agencies. There is a need to identify key stakeholders for collaborative research into peri-urban issues, and establish how best to engage these stakeholders in both the framing and conduct of research and the communication and adoption of its findings within an adaptive management framework . A related challenge is the critical need to establish a shared information resource to inform integrated and coordinated policy development, planning, implementation, monitoring and evaluation.

Focus for research

- Identify key stakeholder for research on peri-urban change.
- Identify opportunities and processes for involving key stakeholders in research programs through participatory and collaborative approaches.
- Adoption pathways for research knowledge and links to policy, planning and operation within an adaptive management framework
- Develop appropriate communication forums and other activities for industry, government and community organisations at all jurisdictional scales and levels
- Explore systems for data collection, standardisation and sharing to support both regional planning and NRM, and their monitoring and evaluation.

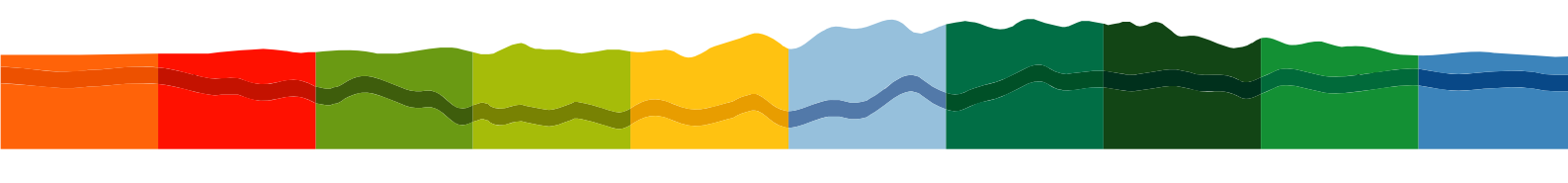
Rationale

Stakeholders for research in peri-urban areas include; a broad range of community, industry and professional groups; government agencies at all levels across different policy areas and the regional NRM groups.

Broad-based engagement will then be needed to ensure that the diversity of interests is reflected in the framing and conduct of research projects and programs. The wide range of stakeholders with interests in peri-urban areas also poses challenges for the adoption of research findings. Without the support and engagement of key agencies and decision makers at all levels of government, community and the agricultural and business sectors, research findings are unlikely to effectively inform key decision-making and adoption processes.

Information sharing on a timely and ongoing basis is critical to achieving more integrated approaches to NRM. A shared database of basic information about the dynamic and increasingly diverse land use and economic and socio-demographic profile of peri-urban areas is essential for informing policy development affecting these areas.

Collaborative partnerships should be identified with stakeholder agencies for research projects supported by Land & Water Australia. These might include the NRM regional bodies, the Federal agencies of Agriculture and Environment, relevant State agencies, national research and development organisations and universities, the Australian Local Government Association, agricultural organisations, and professional bodies such as the Planning Institute of Australia.



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Land & Water Australia is a statutory corporation of the Australian Government within the Agriculture, Fisheries and Forestry portfolio, established under the Primary Industries and Energy Research and Development (PIERD) Act 1989. We invest in knowledge, partnerships, innovation and adoption to underpin sustainable natural resource management in Australia.