Best Practice Land Use Planning

by Amy Cosby and Tanya Howard
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AgriFutures Australia is the new trading name for Rural Industries Research & Development Corporation (RIRDC), a statutory authority of the Federal Government established by the Primary Industries Research and Development Act 1989.
Foreword

While agriculture remains Australia’s dominant land use, its share is declining. 1973 to 2017 saw a 14% decline in land used for food and fibre production, down from 500 million hectares to 394 million over that time period.

With Australia’s population predicted to reach 48 million in the next 50 years, it is imperative that land for food and fibre production remains viable, productive and at a scale needed to sustain Australia’s growing population. At a local, regional and national scale, changes in land use patterns, availability and regulations have the potential to significantly impact the expansion of Australia’s farm sector, particularly with competition from urban encroachment.

Productive land—be it urban, rural or regional—requires planning attention in its own right. A comprehensive and strategic approach to resource and land use planning is needed to appropriately value and prioritise agricultural production in planning decisions, particularly in development assessments and approvals.

AgriFutures Australia engaged the University of New England to evaluate evidence based, best practice principles for land use planning regulations and how these might translate into a nationally consistent approach.

The project examines various challenges that arise from the current land use planning frameworks to inform a more comprehensive discussion across Australian jurisdictions on best practice approaches that recognise the long term strategic value of agriculture. The aim being to inform future improvements to land use planning that caters for future food and fibre production.

The report considers the current Australian landscape, international approaches and case studies to identify best practice principles for planning regulations, and includes recommendations for future research and development activities.

The results of this work are relevant to agricultural producers and industries across Australia. The recommendations are particularly useful for research organisations, policy makers and industry bodies intending to improve best practice land use planning at a local, state and federal level.

This report has been produced under AgriFutures Australia’s National Rural Issues Program. It is an addition to AgriFutures Australia’s diverse range of over 2000 research publications and it forms part of our National Challenges and Opportunities arena, which aims to identify and nurture research and innovation opportunities that are synergistic across rural sectors. Most of AgriFutures Australia’s publications are available for viewing, free downloading or purchasing online at: www.agrifutures.com.au.

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Dr Amy Cosby is a researcher with the Australian Centre for Agriculture and Law at the University of New England. During this time she has had research input into a number of research programs over a range of topics including invasive species, managing conflict over natural resources and numerous agricultural policy issues. Dr Cosby has also taught several units on natural resource governance and environmental law in the Masters Program at the UNE Law School.

Dr Tanya Howard is a Post-doctoral research fellow at the University of New England. During this time, Tanya has worked in the Australian Centre for Agriculture and Law, and Invasive Animals CRC on the project ‘Facilitating Effective Community Action’. Tanya’s doctoral thesis explored participatory processes in the environmental governance of rural landscapes and capacity building in rural communities. This research applied socio-legal methods to explore how community voices are brought into environmental governance. Previously Tanya worked with rural and remote communities to develop and deliver quality natural resource management and environmental sustainability outcomes across the non-government to government sectors.

Acknowledgments

As part of this research, 20 industry representatives and agricultural producers were interviewed. They had a wide range of experience within agricultural industries, from cropping to intensive horticulture. Many had engaged with land use planning frameworks from a variety of perspectives, including as policy advocates, growers and business people, and as consultants that helped manage a range of planning development applications. They were asked for their top ideas and innovations, for examples of good land use planning and where it has worked in Australia and across the world. Their suggestions are included in the chapter ‘Recommendations: Best Practice Recommendations for Land Use Planning as pointers for further R&D. The authors of this report would like to acknowledge their contribution.

Scope of the report

The scope and presentation of this report is informed by the request from the client, that the content be accessible to the average reader, who may come to the issue of land use planning without training in legal scholarship or analysis. The report should be read with this in mind, and the authors acknowledge that it is not a comprehensive examination of land use planning law and policy in Australia. The report draws on key informant perspectives and expert sources to investigate the experiences of individuals and industries as they interact with land use planning.
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Executive summary

The last ten decades has seen a slow, but steady decline in the amount of land used for agriculture in Australia and a shift towards more intensified production.¹ The loss of agricultural land in Australia is a key concern as the world aims to feed a growing population on both a domestic and international level. As a key driver of economic growth, especially in rural and regional communities the recent ‘Roadmap’ released by the National Farmers’ Federation aims to make agriculture the next $100 billion industry in Australia.² It is therefore vital that land use planning mechanisms in Australia recognise the value of the sector.

Best practice land use planning is essential to balancing a growing population and their food and fibre needs, with housing and infrastructure requirements. In summary, this report:

- examines current land use planning laws in Australia
- reviews past research on land use planning and highlights recommendations that have previously been made
- presents a series of case studies from various agricultural industries and the challenges they face and how they are being addressed
- looks at international jurisdictions and how other countries are dealing with land use planning issues, and
- presents a series of evidence-based, best practice recommendations for land use planning regulation and recommendations for future research and development activities that look at best practice land use planning in Australia.

A series of interviews with key stakeholders involved in land use planning contributed to the development of recommendations for best practice land use planning regulation and future research and development. These recommendations are hypotheses based on the information available and require more in-depth research including an economic analysis before being implemented.

Recommendations

1. Develop an overarching strategic plan for how agricultural land can be preserved. For greatest effect, the plan must be legally binding and ensure that farmers have adequate infrastructure (e.g. transport) to access growing markets. This is essential for the viability of the agricultural sector.

2. Develop an innovative land use planning framework which prioritises the need for agricultural enterprises to be co-located within the community, while balancing the needs of a growing population and the environment. The difference between urban and rural land must be recognised.

3. Develop interactive tools which provide current, accurate and high resolution data of current land uses across regions, including future predictions of the impacts of land use change.

4. Develop and implement education programs to increase community knowledge and appreciation of agricultural businesses and economic contribution, leading to greater acceptance of these operations in regions.

5. Develop different economic models for farmers planning for retirement, enabling their land to remain agriculturally productive, whilst still allowing them to be financially secure.
Introduction

“Land-use planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land-use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future.

The driving force in planning is the need for change, the need for improved management or the need for a quite different pattern of land use dictated by changing circumstances.”

Food and Agriculture Organization of the United Nations (1996) Guidelines for land-use planning. FAO Development Series 1

Australia has a population of approximately 24 million people occupying 7.656 million km\(^2\) of land.\(^3\) This equates to a low population density kilometre of 3.2 people per km\(^2\), which is roughly equivalent to Mongolia or Iceland. Australia as a whole is significantly urbanised, with around 81% of the population living within 50kms\(^5\) of the coast and 66% in capital cities.\(^6\) Interestingly, Australia has a unique population distribution, where 90% of people live on a mere 0.22% of the country's land mass.\(^7\)

Over the last the last century, there has been a shift towards more intensive agricultural production and a negative regression in the amount of land used for food and fibre production. In 1973, 65% (500 million hectares) of Australia's land mass was used for agricultural production.\(^8\) In 2016-17, just over 88,000 agricultural businesses occupied 51% (394 million hectares) of Australia’s total land mass, a decline of 14%.\(^9\) The majority of land used for agricultural production is classified as grazing country, approximately 340 million hectares, with 31 million hectares used to grow crops.\(^10\) With the Australian population predicted to increase to up to 48 million in the next 50 years,\(^11\) it is imperative that the land currently used to produce food and fibre remains productive.

Governance of land use planning in Australia

The Australian Constitution provides that individual state and territories are responsible for land use policy, planning and management, resulting in a plethora of laws, policies and plans on the topic. In practice, state governments delegate many of their powers to local governments. For example, the zoning of land for different uses is the responsibility of local governments, powers which are provided by the following applicable statutes:

- NSW Local Government Act No. 30 of 1993
- NT Local Government Act No. 12 of 2008
- QLD Local Government Act No. 17 of 2009
- SA Local Government Act 1999
- TAS Local Government Act No. 95 of 1993
- WA Local Government Act No. 74 of 1995
- VIC Local Government Act No. 11 of 1989

The majority of Australian planning practices specify a process that must take place to allow the community to view the draft plans and be consulted before they are approved and implemented by the relevant authority. These requirements vary across jurisdictions and land use; however, what is clear is that they are often complex processes which require significant time and effort to navigate. Although there are Freedom of Information Laws in place in Australia, consultation of the
community and the extent to which this feedback is incorporated into the final plans is not clear or legally binding.

It is important to note that although the Constitution does not provide the Commonwealth Government power over land use planning, it does have control over how land under its control is used. Additionally, under Commonwealth legislation, most importantly the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) the Commonwealth Government is able to exercise power directly on how land is used. For example, the EPBC Act contains laws which prohibit action which ‘has or will have a significant impact on a listed threatened species…’12 As these laws do not constitute a typical land use plan, such as those commonly found in Europe (e.g. Land Registries & Cadastres),13 they are outside the scope of this report.

There is no legally binding spatial plan at a national or state/territory level in Australia. Each state and territory have a myriad of urban and rural planning documents and strategies. It is outside the scope of this report to discuss these documents in detail; however, they can be found on each state and territory government website.14 Tables 4-6 found in the Appendix of this report also highlight key laws and regulations for each state and territory regarding land use planning in Australia. This information has been adapted from a previous report by Martin and Cosby (2016).15 The 2016 reports provides a more in-depth analysis of the legal and policy aspects of spatial land use planning in Australia.

There are also many policy documents available for various jurisdictions on how rural land should be considered in the planning system.16 The New South Wales (NSW) Strategic regional land use policy and associated initiatives was developed in 2012 to better manage potential land use conflicts between the mining, coal seam gas and agricultural sectors.17 At the time of writing, the NSW State Government was considering public submissions responding to their proposed Primary Production and Rural Development State Environmental Planning Policy (SEPP).

This document intends to facilitate changes to the current planning system ‘to further support sustainable agriculture, aquaculture and rural development. These changes will help ensure planning proposals affecting rural land are properly assessed and provide greater certainty to farmers on the types of activities that will require development consent.’18 Draft guidelines to supplement the SEPP on intensive livestock agriculture development have also been developed.19 Right to farm policies are also starting to emerge in Australia; however, this issue is outside of the scope of this report.

**Land use planning analysis undertaken in Australia**

The authors recognise that best practice land use planning for agriculture is not a new issue, and has been considered previously. The next section of the report aims to identify key documents which have contributed significantly to the literature and in practice to strategic land use planning for agricultural industries (Table 1). Please note this is not an exhaustive list and does not include reports which do not focus on land use planning for agriculture. There are a number of reports available which focus on planning for land use within an urban area.20
Table 1. Summary of key reports on planning in the agriculture industry in Australia

<table>
<thead>
<tr>
<th>Report Name</th>
<th>Author/Date</th>
<th>Commissioned/ prepared by</th>
<th>Main Issues addressed</th>
<th>Conclusions</th>
<th>Accessible at</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney’s Agricultural Lands: An Analysis</td>
<td>Sarah James, Phillip O’Neill and Borce Dimeski (2010)</td>
<td>Urban Research Centre, University of Western Sydney for NSW Department of Planning</td>
<td>The need for comprehensive, up-to-date and accurate data on the land used for agricultural production in the Sydney region.</td>
<td>There is a critical gap in the data available which will influence land use and productivity in the future. The trend in the Sydney region has to move to more intensive agricultural production which does not rely on soil.</td>
<td><a href="https://trove.nla.gov.au/work/38393446?q&amp;versionId=50885169">https://trove.nla.gov.au/work/38393446?q&amp;versionId=50885169</a></td>
</tr>
<tr>
<td>Planning for Healthy Agriculture: A toolkit for good practice planning for prosperous agriculture in Queensland</td>
<td>Queensland Farmers’ Federation 2015.</td>
<td>Queensland Farmers Federation</td>
<td>Outlining core principles of land use planning in agriculture which consider not only food and fibre production, but transport and water infrastructure.</td>
<td>A planning checklist is presented based on the outlined core principles. This can be used by farmers and rural land holders who wish to participate in the planning process as well as local and state government officials involved in planning.</td>
<td><a href="https://www.qff.org.au/wp-content/uploads/2016/11/QFFToolkit.pdf">https://www.qff.org.au/wp-content/uploads/2016/11/QFFToolkit.pdf</a></td>
</tr>
<tr>
<td>Right to Farm - Agricultural Land Use Survey</td>
<td>Roberta Ryan, Liana Wortley, Alex Lawrie (2016)</td>
<td>University of Technology Sydney: Institute for Public Policy and Governance for NSW Department of Primary Industries</td>
<td>Agricultural land use conflict; NSW Right to Farm Policy</td>
<td>Local government authorities prefer dealing with conflict issues without legislation, and instead wish to use communication and education channels to avoid conflict. There are a number of ways in which the NSW Department of Primary Industries could support local councils including providing resources to use within the community and provide a consistent state-wide approach to protecting and managing conflict on agricultural land.</td>
<td><a href="https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/699010/Right-to-farm-agricultural-land-use-survey.pdf">https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/699010/Right-to-farm-agricultural-land-use-survey.pdf</a></td>
</tr>
<tr>
<td>Report: Animal Industries Advisory Committee</td>
<td>Lester Townsend, Hugh Millar, Katherine Navarro and Lucinda Peterson (2016)</td>
<td>Victorian Minister for Planning and the Minister for Agriculture</td>
<td>How the planning system can support the establishment and expansion of productive, competitive and market-responsive animal industries in Victoria.</td>
<td>A series of recommendations were made by the Committee and the Victorian Government responded to these by outlining 12 actions they intend to address these. These focussed on improving strategic planning, clarifying planning requirements, support the planning application process and ensure timely and effective enforcement.</td>
<td><a href="https://www.planning.vic.gov.au/__data/assets/pdf_file/0016/10078/PPV-Animal-Industries-Final-Report-.pdf">https://www.planning.vic.gov.au/__data/assets/pdf_file/0016/10078/PPV-Animal-Industries-Final-Report-.pdf</a></td>
</tr>
</tbody>
</table>
International Perspectives

Land is an essential natural resource, both for the survival and prosperity of humanity, and for the maintenance of all terrestrial ecosystems. Over millennia, people have become progressively more expert in exploiting land resources for their own ends. The limits on these resources are finite while human demands on them are not. Increased demand, or pressure on land resources, shows up as declining crop production, degradation of land quality and quantity, and competition for land.

Attention should now be focused on the role of humankind as stewards rather than exploiters, charged with the responsibility of safeguarding the rights of unborn generations and of conserving land as the basis of the global ecosystem.

The Future of Our Land: Facing the Challenge. p. 7

It is estimated that in the developed world there is 2.5 billion hectares of land with the potential for rain-fed agriculture. However, approximately two-thirds of this land is subject to production constraints such as topography and soil quality. Land use planning is a global issue with productive land becoming more and more scarce. Many of the problems faced in Australia with respect to land use planning are also occurring in international jurisdictions. Common issues faced across the world are urban encroachment, land use competition, degradation, loss of arable land, an increasing population and demand for housing and infrastructure.

This section examines the governance structures of three countries to understand how they deal with similar land use planning issues to Australia. Factsheets for OECD countries are available online. Table 2 below details key statistics of comparing the three countries and Australia.

Table 2. Population, total land area and land use statistics for select countries

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Total Land Area (km²)</th>
<th>Agriculture</th>
<th>Forest</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Australia</strong></td>
<td>23,470,145</td>
<td>7,682,300</td>
<td>52.90%</td>
<td>16.20%</td>
<td>30.90%</td>
</tr>
<tr>
<td><strong>New Zealand</strong></td>
<td>4,545,627</td>
<td>264,537</td>
<td>43.20%</td>
<td>31.40%</td>
<td>25.40%</td>
</tr>
<tr>
<td><strong>United States</strong></td>
<td>329,256,465</td>
<td>9,147,593</td>
<td>44.50%</td>
<td>33.30%</td>
<td>22.20%</td>
</tr>
<tr>
<td><strong>Canada</strong></td>
<td>35,881,659</td>
<td>9,093,507</td>
<td>6.80%</td>
<td>34.10%</td>
<td>59.10%</td>
</tr>
</tbody>
</table>

Table 3 outlines the governance structure for New Zealand, the United States and Canada. These countries were chosen because of their OECD status and anglo celtic settlement. Like Australia, all of these countries have more than one level of government involved in land use planning which can lead to fragmentation across a country.
Table 3. Governance structure for land use planning

<table>
<thead>
<tr>
<th>Levels of government</th>
<th>Responsibility</th>
<th>Spatial and land use plans</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New Zealand</strong></td>
<td>Three tiers of government, national, regional (11) and municipal (67).</td>
<td>The national government is responsible for the legislation that structures the planning framework, providing guidance to regional and municipal governments.</td>
</tr>
<tr>
<td><strong>United States</strong></td>
<td>Four tiers of government, federated states (50), intermediate county governments (3031) and local authorities (35 879).</td>
<td>The Constitution provides that the States have power over land use planning, however all states delegate a large proportion of this power to local authorities. Although, the Federal Government does not have direct power over land use planning according to the Constitution there are many examples in practice that demonstrate its indirect influence over land use planning. Examples of Federal power include through the enacting environmental legislation owning significant amounts of land, signed numerous treaties which permit power over Native American tribal land and this has considerable influence over land use. Additionally, large parts of land in the USA are owned by the Federal Government especially those in the Western parts of the country and through fiscal and regulatory tools that influence land use planning particularly in rural areas.</td>
</tr>
<tr>
<td>Levels of government</td>
<td>Responsibility</td>
<td>Spatial and land use plans</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td><strong>Canada</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three tiers of government, national, provinces (10)/territories (3) and local authorities (3805) consisting of general local governments (1223) and special purpose authorities (2572).</td>
<td>Provinces have the power to structure and legislate for planning systems and land use, as permitted by the Constitution. The Federal government is able to plan for land directly under its control and can influence provincial and municipal planning through targeted programs and monetary support. Provinces and Territories with large populations often delegate power their power with respect to planning and land use to municipal authorities. Those provinces and territories with smaller populations tend to centralise planning and land use decisions.</td>
<td>No national spatial or land use plan exists in Canada. However, all provinces and territories have at least one regional plan which focus on land use, environmental management and infrastructure and economic development. At a local government level there are community plans which provide the objectives of spatial development, address zoning and identify boundaries for urban developments. There are also district, subdivision and site plans at a local government level.</td>
</tr>
</tbody>
</table>
The discussion below examines how international jurisdictions deal with key land use planning issues. Lessons learnt from these countries are useful for consideration in the Australian planning system.

**Transferable development rights**

The subdivision of rural land and subsequent reduction and fragmentation of productive agricultural land is of significant concern in Australia. This can be the result of farmers wishing to retire from their farming business and selling their land to property developers or alternative users in order to secure a retirement income. There is concern that the outcome will be a net loss of agriculturally productive land, with dire consequences for food security in Australia and the future as a major international exporter.

Transferable development rights (TDR) or transfer of development credits as they are called in Canada, are a tool which when used in conjunction with a zoning system can preserve the way land is permitted to be used. Common uses of TDR programs is to preserve agricultural land, protect natural resources and guide urban development. Simply put, TDRs allow the development rights associated with a privately owned piece of land to be separated from that land and transferred to another parcel in a different location. Once these rights are transferred, the original property owner is restricted from developing their land often by a type of covenant or easement and the person who purchases the rights are permitted to develop their land more intensively than the applicable zoning system allows.

Although this sounds like a simple system, implementation of this concept in practice is difficult. The evaluation of the many TDR programs in the US demonstrate they operate with various levels of success, with some resulting in no transfers hence no land is protected from development. While there has not been extensive research to understand the challenges, there are several factors that influence the success of a TDR program. These include the co-existence of a Purchase of Development Rights program, establishment of a TDR bank (e.g. facilitators to make buyers and sellers aware of each other), in-depth background studies prior to initiation of the program and an understanding of the development demand in the area.

**Monitoring and evaluation of land use change**

To detect and track ‘hotspots’ of land use change in Australia, particularly in peri-urban areas, innovative methods of data collection and an up-to-date, high resolution and simple to use system to analyse this data is required. Such a system would allow decision makers, planners and proponents to accurately identify the rate of loss of biodiversity and agriculturally productive land as a result of land use change. Australia has a few options to analyse land use change, for example, the Multi-Criteria Analysis Shell for Spatial Decision Support (MCAS) tool. The MCAS tool is designed to assist with spatial decision making by combining a number of maps to allow stakeholders to see the impact and effect of the choices they make. However, as is highlighted in the case studies, key stakeholders have identified the need for a tool which enables the different land values to be balanced and assist those involved in the planning process to make informed decisions about the siting and potential expansion of important agricultural industries.

The New Zealand government developed the Land Use and Carbon Analysis (LUCAS) system to respond to their reporting and accounting commitments under the United Nations Framework on Climate Change and Article 3.3 of the Kyoto Protocol. LUCAS provides a baseline dataset for several land use classes and forestry. Land use change is then mapped for the time periods.
1990-2008 and 2008-2012 using satellite imagery (Landsat and SPOT), aerial photography and other spatial dataset layers.\textsuperscript{31}

The North American Land Change Monitoring System (NALCM) is a collaborative project between the United States of America, Canada and Mexico. The NALCM system utilises Landsat-7 and MODIS satellite imagery for a variety of applications including carbon sequestration analysis, wildlife habitat mapping, ecosystem monitoring, environmental planning, water quality assessments and biofuels production potential.\textsuperscript{32} The maps indicate land use for 2005 and 2010 and detail the change in uses during this period.

None of the tools described above provide the up-to-date data required to advance land use planning. As data capture and access to satellite imagery improves, and data analytics becomes more sophisticated, there is great potential for tools to be developed that can assist with land use planning decisions across the world.
Case Studies

This section of the report considers land use planning issues facing a selection of agricultural industries in Australia. Through case studies of intensive horticulture, poultry and beef production, the report considers the major obstacles to sustaining and expanding their productivity. Through a case study of land use competition the report explores the challenges faced by agricultural landholders who see potentially productive land eaten up by alternative uses such as transport and energy infrastructure, or residential encroachment.

The National Farmers’ Federation’s Road Map has creates a target for increasing the value of agricultural production in Australia to $100 billion, while being more resource efficient and feeding a growing global population. The case studies suggest that current land use planning frameworks create significant roadblocks to realising this ambitious target.

Climate impacts increase the likely importance of intensive industries which may be able to plan for resource scarcity, incorporate technology, and produce more consistently with less reliance on seasonal rainfall. However, intensive agricultural industries are increasingly high-tech, large scale operations which do not correspond with common ideals of rural lifestyles and farming. When these intensive industries find themselves interacting with rural or peri-urban lifestyles, a clash of perspectives and land use values results. Suggestions that land use conflict may be a contributor to the decline in land used for agricultural purposes are common; however, there is little empirical evidence to support this claim.

Attention must then turn to the land use planning frameworks to try and mediate these conflicts. This report investigates current frameworks and documents several case studies where such conflicts between intensive agriculture and other land uses have arisen.

Four case studies were collected to illustrate the way that agricultural enterprises interact with, and experience the impact of, land use planning frameworks. These include:

1. Co-existence challenges resulting from solar farm development in QLD and NSW
2. Feedlot development in NSW
3. The blueberry industry on the Coffs Coast
4. Intensive chicken farms in the Scenic Rim area of Queensland

The case studies revealed several key inter-related themes with implications for the productive agricultural land base across the country. These include:

- The (possible) loss of productive agricultural land through urban encroachment and land use change
- The increasing costs and complexity involved in navigating land use planning frameworks which can impact the viability of the intensive agriculture and horticulture sector, and
- The challenge of attaining and maintaining the social license to operate as sites of resource scarcity and land use conflict increase.

These issues need to be resolved to ensure that the ambitions of industry groups, such as the National Farmers’ Federation Road Map, and Australia’s ability to meet food security and sustainability challenges remain feasible.

As illustrated in Chapter 1, the current fragmentation of planning frameworks between state and local government jurisdictions is a key driver for ad hoc development, lack of certainty and in many cases, reactive decision making that fails to deliver an integrated and holistic land use approach. As will be highlighted throughout the case studies, the risks of continuing this land use fragmentation is increased ad hoc regulation; lack of certainty for investors and producers; and...
erosion of the productive agricultural land base. These dynamics increase the risks for infrastructure development, business expansion and agricultural investment across Australia.
Case study 1 – The challenges of co-existence: agricultural land and solar farms

For most farmers in Australia, their most valuable investment and financial asset is their land.

The national median farmland price increased by 7.1 per cent in 2017. This follows a 9.3 per cent increase in 2016 and a 5.3 per cent increase in 2015. The average annual five year growth in median value per hectare is 5.1 per cent.


For ageing farmers with no family succession plan, unlocking the economic value of their land by subdividing or selling provides retirement income. In cases where retirement savings or superannuation funds are inadequate, 'land banking' provides an exit strategy for rural landholders, allowing them to access the capital they have built up over their lifetime.

There are a range of options for those farmers ready to sell or long-term lease their agricultural land asset. These include subdivision of a property into smaller agricultural parcels or for residential development; leasing to another farmer; or making a change in land use through partnering with solar, wind or other energy generation projects.

When productive agricultural land is sold, subdivided or put to a different use, there is generally an outpouring of concern from other farmers and agricultural industries about the loss of a valuable agricultural asset.

At 30 June 2017 there were 394 million hectares of agricultural land in Australia, a 6% increase on the previous year. Coinciding with this increase in agricultural land, there were 2,400 more agricultural businesses at 30 June 2017, a 3% increase on 2015-16 estimates.


Assessing the true cumulative impact of these losses is difficult. There is a lack of quality data on the amount of agricultural land that exists now and what has been lost over the past 20-30 years. Although recent census data suggests there has been an increase in agricultural land, the productive value of this land is not known. Productivity is linked to soil quality, water access, proximity to transport, labour and markets. A commonly held fear is that the most productive agricultural land is slowly being eaten away by other land uses, without any clear plan to protect the productive land base into the future.

Effort is being made to draw attention to the cumulative impact of unplanned land loss. In Queensland, AgForce is working with the State Government to protect the 'Best of the Best' agricultural land from piecemeal development. The objective is to create an additional planning layer that will ensure land which has been identified as highly productive (including all necessary resources e.g. soils, water access) is kept in the productive system. The ‘Best of the Best’ strives to achieve co-existence of different land uses, with no negative impacts on agriculture and an emphasis on mitigation where any possible impacts might occur.
A recent surge in large scale solar farm development across Australia has intensified concerns about the loss of productive agricultural land. Solar farms seek to reduce their start up and connection costs by targeting land that is already cleared and within close range of existing power distribution networks. This makes established farming areas ideal targets for solar farm development.

In a similar manner as wind farm development, community opposition to large scale solar development has focused on the threats to the existing amenity of the landscape and possible impacts on agricultural productivity. These threats are balanced against the individual benefit for those farmers who are seeking to diversify their income and asset streams through secure long-term leases.

The arrival of solar farms in an area may trigger a substantial surge in land use change, with knock on effects for close neighbours and a range of associated businesses. Land use change that takes a significant producer out of operation can undermine the viability of local processing plants, distribution networks, irrigation schemes and cooperative ventures.

In Queensland, solar farms are assessed by local government as opposed to the state (as in NSW) and this leads to concerns about the expertise in local government planning departments to adequately assess new solar developments. Close neighbours express concern about the possible negative impacts of inadequate planning conditions. Fears include a possible reduction of surrounding land value as the agricultural area becomes vulnerable to mismanagement of biosecurity risks, and stories of banks becoming cautious of lending to farms that are close to these developments due to uncertainty about the long-term impacts on soil quality and water sources.

As with any new industry and associated land use change, uncertainty about the possible impacts and lack of confidence in the land use planning framework fuel fears and resistance to change. Landholders who see their neighbours embracing large scale solar farms express dismay about the long term impact on agricultural viability in their region.

Industry observers see similar patterns as experienced with previous land use change initiatives. While options such as carbon farming and wind farm development open up economic opportunities for individual landholders, surrounding farmers see little to no economic benefit from these deals. This can lead to fears of being left behind or unfairly disadvantaged, although the long term impact is not known. For those farmers who hope to remain in agriculture, invest and grow their business, a neighbouring large-scale solar development can potentially undermine the value of their property asset.

Australia has 35GW of solar farms in the development pipeline. Big solar is well and truly booming in Australia in 2018, with new data from the Australian PV Institute confirming that there is a massive 35GW of solar farms in the nation’s planning and development pipeline.

In its latest annual update to the International Energy Agency, APVI says 2018 looks certain to be another record year for Australian PV, fuelled by a booming big solar market.

Coal seam gas development in Queensland triggered similar community fears as the industry rapidly expand across agricultural landscapes. Attempts to reassure stakeholders and mitigate co-existence impacts have been embedded in selected Priority Agricultural Areas (PAA) as defined under the Regional Planning Interests Act. Guidelines now exist to ensure consideration of co-existence impacts and possible loss of productive agricultural land.

A PAA is an area of regional interest under the Regional Planning Interest Act 2014 (RPI Act). PAAs are strategic areas, identified on a regional scale, that contain significant clusters of the region’s high-value intensive agricultural land uses. Within a PAA, high-value intensive agricultural land uses are recognised as the priority land use over other proposed land uses. These uses are termed priority agricultural land uses (PALUs) because they will be given priority when considering applications for resource activities and regulated activities to ensure existing PALUs are not threatened.

For neighbouring landholders, a lack of information about solar farm impacts create uncertainty and mental health impacts. Planning processes are not designed to deal with issues of stress and emotional toll, and can sometimes intensify feelings of isolation and not being heard. When similar tensions created community opposition to wind farm developments stimulated by Australian Government investment priorities, the government established a National Windfarm Commissioner. This role augments the planning framework of each jurisdiction with an additional avenue for community complaints to be registered and examined. A recent review of the role recommended expanding the scope to include solar and large scale battery storage, in recognition of the increasing concern around these new land uses.\(^\text{35}\)

Achieving a workable balance between economic development, new industries and productive agricultural land is a key concern with rural development. Recognising the productive value of the agricultural land base is crucial to finding this balance. While currently solar farms offer money generally beyond what could be developed agriculturally, this calculation may not include adequate recognition of the need to secure agricultural sustainability, food security and climate resilience in the long term.
Case study 2: Cattle feedlots

A cattle feedlot is a managed facility where livestock are provided a balanced and nutritious diet for the purpose of producing beef of a consistent quality and quantity. At any one time, around 2% of the cattle population are located in feedlots. The average period cattle spend in a feedlot is between 50-120 days or around 10-15% of their lifespan.

Source: http://www.feedlots.com.au/industry/feedlot-industry/about

Getting permission to construct and operate a feedlot signals a change from 'extensive' to 'intensive' livestock management. For farmers used to low density management strategies, such as grazing and herding, installing a feedlot can require a new level of engagement with the land use planning framework in their jurisdiction.

Requirements tend to become more onerous (and therefore more expensive to meet) as the number of cattle to be held in the feedlot increases. In most jurisdictions, the extent of regulations around effluent management, water run-off, proximity between livestock and separation distances from other development begin to increase once the feedlot capacity goes over 999 head of cattle.

Because feedlots represent a significant investment ($1000 per head on a greenfield site), the farmer needs some protection that their rights of operation will be assured. Land use planning approvals provide that investment protection and also specify operational guidelines to ensure the operation meets all of its regulatory responsibilities.

For larger operators, the investment needed to gain approval for a maximum use licence is worthwhile because it allows flexibility to increase their feedlot when the time and conditions are right. But for smaller operators, the upfront costs are often prohibitive and they end up applying for permission at the lower end of the scale. This imposes a natural constraint on the ability of these operations to scale up and go beyond the lower threshold, leaving them stranded with a feedlot investment that may be economically unviable because it doesn’t allow for expansion without having to jump through more hoops.

Most of the larger operations secure the maximum license based on site and water allocation—even when planning to run below the threshold capacity. This strategy has the added benefit of reducing business risk from urban encroachment or other competing land uses.

As changing climate conditions continue to challenge traditional grazing methods of livestock production, the role of feedlots is likely to increase. When drought conditions disrupt the production cycle, the ability to move livestock through a feedlot and into domestic or international meat markets is a valuable addition to the farm business. A feedlot provides more control over variables, making it easier to calculate inputs such as water and feed; and a feedlot operation has the potential to generate cash flow for farmers in shorter time frames. However, unlocking the benefits of intensive farming requires a significant upfront investment.

Approximately 40% of Australia’s total beef supply and 80% of beef sold in major domestic supermarkets is sourced from the cattle feedlot sector. The Australian beef industry is the largest agricultural industry in Australia. The cattle feedlot industry has a value of production of approximately $2.5 billion and employs some 28,500 people directly and indirectly.

Source: http://www.feedlots.com.au/industry/feedlot-industry/about
Feedlots are directly interacting with the surrounding environment. Livestock operations create dust, odour, flies, machinery noise and, in the intensive sector, operate 365 days year. Planning regulations respond to this by imposing large distance buffers, a 1km separation requirement is common across Australia. These separation distances also protect the viability of the operation in the long run as land use can rapidly change around growing towns. Encroachment is a serious issue that increases interaction between urban lifestyles and agriculture, leading to a mismatch of expectations about what a rural lifestyle should look like.

For livestock farmers hoping to construct a feedlot, understanding the intricacies of the planning process often requires help from a consultant who can help them navigate the variation between jurisdictions and planning authorities that can lead to delays or unnecessary consent requirements being imposed. For those consultants, maintaining good working relationships with both their client and the consent authority is made easier when they are dealing with local governments that have an agricultural strategy and staff who understand the sector. The less hands (in terms of agency staff and consent authorities) that a proposal passes through, the more likelihood it has of a smooth approvals process. Where possible, a consultant will advise clients about how to avoid triggering any community consultation provisions that might exist in the development process, because these add uncertainty to the outcome and increase the likelihood of amenity-based or animal welfare challenges.

Even with a good consultant guiding the application, a feedlot application may be subject to surprise post-approval conditions, such as road maintenance and upgrades imposed by local councils. Ensuring a feedlot reaches construction and operation adds more time and costs to consultant fees. These additional costs increase the investment required to set up a feedlot operation.

When is a feedlot not a feedlot?

For farmers trying to weather the challenges of drought, a common response is to start managing livestock movements and paddock use more intensively. Understanding and regulating these livestock management strategies is creating an emerging issue in the feedlot industry as questions about whether ‘pseudo intensive’ feedlots are being created.

In current planning frameworks, the distinction between extensive and intensive production is vague and producers are often uncertain about their requirements under the various land use planning rules. For example, while intensive feeding of livestock may become necessary as drought conditions intensify, this may not reflect a permanent change in operations but rather a temporary response to the conditions. Dairies might put down a temporary feed pad for example or sheep farmers might sacrifice a paddock, but neither of these actions automatically signal a permanent shift to intensive farming.

This raises questions around definitions in regards to ‘temporary’ or ‘permanent’ as well as ‘extensive’ and ‘intensive’ categories of livestock farming. Each state and territory have their own definition and interpretation of these key terms, which have direct regulatory implications for livestock farmers. In situations of extreme hardship, farmers may see the creation of a pseudo-intensive feedlot as an emergency response to both animal welfare and business viability threats. There is little agreement in the industry about when planning consent is needed to address these ‘grey areas’ of feedlot planning regulations. A lack of data about the different levels of land use impact that occur as the result of low density lot feeding, traditional grazing and traditional intensive feedlot operations is a major factor in resolving this regulatory challenge.
Industry is taking an active role in developing flexible definitions under the National Feedlot Accreditation Scheme (2018). Industry pressure must ensure the alignment of these definitions with planning frameworks to address over-engineering on huge expanses of land which may be operating as low density feed lots.

The National Feedlot Accreditation Scheme (NFAS) is an independently audited quality assurance scheme that was initiated by the Australian Lot Feeders Association and is managed by the Feedlot Industry Accreditation Committee.

The NFAS mission is to ensure the Australian beef feedlot industry demonstrates a responsive feedlot management program for continual improvement, particularly in relation to cattle welfare and the environment, whilst guaranteeing the safety and integrity of grain fed beef.


Feedlots, just like other intensive animal industries, tend to attract a great deal of consumer interest, particularly when concerns about animal welfare are raised. An added benefit of feedlot regulation is the reputational protection that this can provide when concerned consumers raise questions about the nature of this intensive livestock.
Case study 3: Blueberry industry expansion and urban encroachment in northern NSW

In 2015-16, national blueberry production was valued at $146 million. The industry is rapidly expanding with farmers on average producing 11,500 tonnes of blueberries per annum.

Around 250 growers produce blueberries over 1,300 hectares in all states of Australia, except the Northern Territory. The major production area of the Australian blueberry industry is on the NSW north coast. NSW produced over 80 per cent of the Australian crop in 2015.


The north coast of NSW has a long history of intensive plant agriculture. Well known for its banana industry, the Coffs Coast has also supports dairy farming, vegetable production and a thriving seafood sector.

The banana industry began in the late 19th century as Chinese, Italian and Indian Sikh communities established multi-generational enterprises along the Coffs Coast. The steep hills surrounding Coffs Harbour were cleared and the green canopy of banana plantations became a symbol of the multi-cultural and diverse agricultural enterprises thriving in the region.

Over time, the banana industry moved north and growers began to look for alternative crops suitable for the climate and conditions of the Coffs Coast. Blueberries began to appear in the 1980’s and by 2004 the region was growing 75% of the national crop

Since then, the industry has undergone rapid growth across the country.

Blueberry production has increased from 5,500 tonnes in the year ending 2014 to 17,000 tonnes in the financial year ending June 2018.


In the Coffs Coast region, this has led to rapid expansion of blueberry farming enterprises. While three large producers have traditionally dominated the industry in Coffs, smaller multi-generation farming families are also a feature of the area.

The speed of growth has raised serious issues for blueberry operations which find themselves in close proximity to surrounding communities. There are two main drivers behind this land use tension:

- ongoing residential ‘rural lifestyle’ encroachment into areas previously dominated by agricultural land use, and
- aggressive expansion of small-scale blueberry operations into pockets of highly visible, marginal land that was previously associated with banana plantations.

Regular reports in the local media document the increasingly politicised debate between the positive economic and social benefits of the blueberry industry, and land use concerns about the economic sustainability, environmental impact and degradation of rural lifestyle amenity factors.
Identifying the blueberry industry as “one of the most divisive topics” in the region, the local media reported on community meetings held by the Coffs Coast local government, where fears that some farmers were in breach of planning requirements and environmental standards. These fears were largely linked to previous bad experiences with the banana industry, before regulation was increased (source: https://www.coffscoastadvocate.com.au/news/fears-blueberry-farms-will-repeat-past-harm/3236576/ accessed 27/1/19)

The NSW North coast is a popular retirement and ‘sea change’ lifestyle area. A recent rural land use survey found that the largest proportion of rural land use in the Coffs Harbour region of Northern NSW relates to ‘rural living’ (67%), where residents don’t farm their property for primary income and instead pursue a ‘rural lifestyle’.

Residential development forecasts assume the number of dwellings in Coffs Harbour City will increase by an average of 496 dwellings per annum to 42,730 in 2036.


The same rural land use survey recorded common community concerns about the industry as including:

- Adverse impacts on waterways
- Storage of chemicals on site
- Spray drift, and
- “adverse impacts on rural living”.

Growers and industry representatives suggest that many of these complaints arise from a lack of willingness to accept the realities of living next door to a viable farming enterprise. However, other stakeholders have noted that a lack of adequate development controls in Coffs Harbour has enabled utilisation of unsuitable land to occur and in some cases, poor practices to develop and continue.

Growers commonly use white netting to protect their berries from birds and weather. These netting structures are regarded as temporary and removable, therefore avoid the need for construction permits. It may be that this encourages producers to pursue blueberry cultivation in areas that may be more marginal because there is no due diligence in the cost-benefit analysis, and no planning oversight triggered.

In the Coffs Harbour area, the proliferation of netting corridors has become a source of irritation because they are highly visible from the road and surrounding residences. This has increased the level of community concern as the visual impact of the landscape dominated by netting corridors.

Local government is challenged to dealing with the political dynamics of sensitive local issues, where vexatious complaints increase as issues become more politically charged. Generally local councils are not well equipped to deal with land use conflict, due to lack of financial resources, expertise and their proximity to their constituents which can leave staff and elected officials vulnerable to political lobbying.

Council has recently implemented a review of rural land use as part of the ‘Local Growth Management Strategy’. This review specifically considers options for strengthening the local planning framework in response to concerns about the growth of the blueberry industry. These
options include attaching new conditions to rural landholders who may be considering changing from one crop to another, such as requiring a form of development consent (see Council meeting minutes, 6th December 2018 https://infocouncil.coffsharbour.nsw.gov.au/).

At the time of writing, this proposal was under public display and growers note that if passed, it will have significant implications for all agricultural landholders who may seek to vary their land use by changing crops and should be treated cautiously. This would seem to be an attempt to assuage community concerns by increasing the regulatory burden on farmers, a common outcome which puts the onus back onto the growers to overcome grounds for vexatious complaints and secure the ‘social license to operate’. Without clear support or guidelines, the industry is likely to suffer continuing uncertainty and come under continuing pressure from land use conflict.
Planning a way forward for intensive horticulture industries

Conflict with urban or peri-urban development occurs when local government permits housing growth that encroaches on existing agricultural land use. As migration to sea-change areas increases, and land development pressures increase, existing buffers between horticultural enterprises and residential properties are eroded.

Local government needs to think holistically about the land use mix they want to achieve. This needs to be accompanied by a broader social dialogue about agriculture in the landscape, in the economy and in delivering food security for Australian consumers.

Intensive horticulture relies on technology to enable growth in a variety of conditions – not just netting but glasshouses, tunnels, aquaponics. There are strong economic and environmental arguments for supporting intensive horticulture. For example:

- Intensive production but the land use footprint is small
- Water efficiency and water reuse on site—no run off
- New projects can be energy efficient and run off-grid
- Creates jobs
- High tech—highly adaptive and innovative.

A big challenge for the industry is communicating effectively that intensive horticulture can deliver the food quality and food security required by consumers.

The blueberry industry on the Coffs Coast highlights how issues of size and scale can affect the ability of a producer to navigate the land use planning framework and avoid negative business impacts of land use conflict.

Proximity to non-farming landholdings: buffer zones

Older established producers may be able to avoid unfavourable community attention because they have bigger areas under cultivation with decent buffers around them. This is not possible for smaller operators who are farming a patchwork of land which increases visibility and becomes a focus for community concerns.

Access to skills and expertise

More established, bigger producers also have increased access to the capital, skills and capacity they need to effectively meet the requirements that might be imposed by planning regulations and development applications. As regulatory requirements become more onerous in response to community concern, it is likely that smaller producers will find it harder to stay in the marketplace.
Ability to absorb increasing costs:

- Development conditions may increase according to the scale of the operation - projects can become unviable if these conditions add expenses, increasing the risk that small operators will withdraw from the market, with flow-on impacts for servicing local markets.
- Bigger corporate enterprises are best placed to absorb the costs of meeting increased land use planning regulations and these bigger businesses can also service national markets - this insulates them somewhat from a reliance on local or regional markets.
- Private investment is an important driver in blueberry industry growth - blueberries are a business that needs patient investors that are able to absorb the delays and potential risks that arise from variations in planning frameworks across local government and state jurisdictions. This changes the investor profile, favouring larger managed funds, rather than the smaller, more active and knowledgeable investors. This can lead to a trade-off between strong development partnerships and a more transaction focused investment relationship.

Recommendations for R&D: investigate viable relocation strategies

- A lack of proactive planning can lead to a reactive response from local government and this variability needs to be addressed to gain security and certainty for the blueberry industry.
- There is a need for research and development to focus on proposing solutions for areas where the population pressure is going to continue.
- The intensive horticulture sector benefits from a reliance on genetic development to improve crop production. Because the crop is grown in substrate productivity is not dependent on soil quality so blueberries can be grown in any areas where the climate is favourable.
- While there are other considerations such as access to labour, packaging and processing facilities, transport and markets, it is possible that strategies for moving intensive horticulture away from popular ‘rural lifestyle’ areas could be developed.

Stakeholders suggest that if there was a focus on resolving these issues, it might be possible to develop viable relocation strategies for the blueberry industry that may be a model for other similar enterprises – an area for R&D.
Case study 4: Australian chicken meat industry

The Australian chicken meat industry is worth $2.7 billion (gross value of production 2015-16), with a retail value of around $6.6 billion. The industry has a strong presence in rural and regional communities, directly employing about 40,000 people with a further 100,000 jobs dependent on chicken meat production.


Despite the economic benefit of the chicken meat industry and the increasing market share, chicken farming struggles to navigate the land use planning framework in each state and territory.

For chicken farmers, operating a financially viable enterprise relies on a range of factors – proximity to chicken meat processors; access to a suitable workforce; and the potential to grow the business by expanding the number of sheds and therefore the number of chickens produced.

In areas of urban encroachment, planning regulations are becoming more and more challenging to meet. Regardless of the economic value of the chicken farm or the length of time it has been established, as residential or non-agricultural neighbours increase, so do the rules around noise, odour and transport infrastructure. Existing buffer zones are being whittled away and farmers keen to expand are forced to look for new land to enable the growth that keeps their business viable.

Suitable sites are becoming harder to find. Just like other intensive agricultural industries, chicken farming is greeted with community distaste for the realities of living in close proximity to an agricultural business. Neighbour complaints pose a real impact on the ability of a farm to operate, if the solution is to increase regulation rather than seek a workable balance of interests. Increased regulation imposes additional costs on the chicken farm proponent while doing little to address the fundamental problem of co-existence of land uses in areas close to population and transport networks.

Even when there is a stated desire or commitment by the local government to agricultural land uses, no one wants to experience direct impacts. The aesthetic and cultural appeal of agricultural land use comes into direct conflict with the lived experience of those rural lifestyle neighbours who are described as ‘smelling with their eyes’ when it comes to chicken farming operations. A chicken farm that is visible from the road or by its neighbours is likely to become a target for community dissatisfaction as urban encroachment and land use change increases.

In some areas of south west Queensland, the increasing trend towards subdivision of existing farm land and the demand for ‘rural lifestyle’ residential development, has created an
inhospitable environment for chicken farming. Land values have increased and farmers are finding it hard to expand their operations without coming into contact with more and more community resistance.

The Queensland government has initiated a zoning initiative that aims to provide development certainty for hard to place industries by reducing avenues for community opposition and removing development control decisions from local government. While the Scenic Rim Regional Council remains involved in “other assessable development” applications to establish new enterprises, a ‘material change of use’ are assessed solely by the Queensland Coordinator-General.

This strategy is responding to the commonly noted susceptibility of local government to political pressure from community constituents. It remains to be seen how successful the strategy is in facilitating the smoother development of chicken farms over time, but recent approvals have given the industry some confidence.

The Bromelton State Development Area (SDA) is divided into six land use precincts and one sub-precinct ensuring high impact, difficult-to-locate and rail dependent industries are appropriately located and buffered by other industrial and rural land uses.


Planning schemes like the Bromelton SDA are similar to others such as the ‘Green Wedge’ policy adopted in Victoria. This policy supports regional planning around Melbourne to avoid urban encroachment and achieve a balance between agriculture and other low-density land uses. Over time, these legislated ‘green wedges’ have developed as a constraint not just on urban expansion but also farm growth, as land in these areas surrounding the city has become more and more valuable. For some chicken farmers, the lack of affordable land has created an island effect, stranding them with a business that has limited future potential. Combined with the limited permission for subdivision under the policy, chicken farmers are experiencing financial constraints that may not have been understood at the start of the policy. The Green Wedge has become an exemplar of the challenges that come from trying to regulate co-existence in areas close to urban populations.

In those areas where land use is regulated by local government and not zoned by state policy or legislation, chicken farmers are facing increasing complexity as they try to navigate the different planning frameworks. There is little consistency between local government areas and new farms can find themselves subject to extended delays as planning conditions are interpreted, changed and challenged on a case-by-case basis.

The best outcomes are achieved when the local government staff have the industry specific knowledge they need to interpret the planning codes without unnecessarily increasing the consent conditions. This kind of expertise is not always available however, and if they can afford it, chicken farmers are turning to planning consultants to shepherd their proposals through the process.
planning process. Sometimes even with approvals, upgrades or expansions are too expensive due to the costs of meeting the development consent conditions that might be applied.

For chicken farmers, the difference between a successful planning application and an unsuccessful one may rest on how prepared and informed they are to deal with the ups and downs of the process. For example, are they aware of any potential conflict with disgruntled neighbours and proactively prepared to manage it? Planning consultants see a need for step-by-step guides that could help proponents navigate the entire system (not just the planning process), including building relationships with their neighbours and becoming a valued member of the local community by providing economic benefits. This is where smaller farmers with good local networks can gain an advantage over bigger corporate businesses—they can develop relationships with local contractors to create community support and ensure operational success.

In the same way, chicken farmers and the industry bodies can build local planning knowledge about the benefits and operating conditions of a successful chicken farm. Increasing the interactions between industry and planning staff through field days or farm visits could create the local knowledge to support developments, and hopefully avoid increasing reliance on more prescriptive planning regulations.

But the ongoing issue for chicken farms is the community tendency to ‘smell with their eyes’. Planning frameworks are struggling to implement a consistent and realistic regulatory condition to control odour impacts on surrounding land holders. The current suggestion that chicken farms can realistically restrict odour impacts to within their property boundary is seen as ‘impossible’ to comply with and unnecessarily strict. If this consent condition becomes the norm, it will have significant implications for other industrial or intensive agricultural operations, suggesting that co-existence will become even more difficult in areas of residential encroachment and land use change.
Recommendations: Best Practice Recommendations for Land Use Planning Regulation

A number of key themes emerged from the case studies and the review of national and international approaches to land use planning. Based on these themes, suggested best practice land use planning regulation recommendations and future research and development directions are summarised below. These recommendations are provided to further inform investigations into best practice land use planning.

**Intensification, loss of agricultural land and land use conflict**

These three issues are intrinsically linked and further work is needed to understand these linkages and where reforms can address these systematically.

Questions emerging from this research include:

- How do land use planning frameworks address the potential for land use competition to reduce availability of agriculturally productive land?
- How can land use planning ensure that intensive production systems are able to co-exist with rural community needs and aspirations?
- Can land use conflict be mitigated through increased education and services that assist landholders and the community to navigate the planning process?

**R&D focus – loss of agriculturally productive land and viable agricultural businesses**

There is continued competition for land resources from the natural resources, housing and energy sectors often leading to a loss of agriculturally productive land. There needs to be recognition that the loss of agricultural land has negative consequences for food security which should be factored in when making land use planning decisions. As urban sprawl continues there is a need to find a balance between amenity and production. Noise, odour, aesthetic issues are often raised by the community who in turn put pressure on their local councils to eliminate these perceived problems. The impact is then felt by agricultural businesses with pressure to change their practices and increased costs to meet strict planning regulations.

Another issue caused by urban encroachment is that as agricultural enterprises are pushed away from population centres, access to labour, production and transport infrastructure and markets becomes more difficult, calling the viability of businesses into question. If farmers are required to relocate or transition to a new enterprise when changing land use makes their business unviable, it is important that they are supported during this process and are not left stranded.
R&D focus – the place of intensive production systems

As the amount of agricultural land is reduced and the demand for food increases, intensive production systems are becoming increasingly common. These intensive farms are often faced with intense scrutiny and opposition by the community. Intensive industries seem to create the most community opposition but they may also be the industry of the future, given climate constraints, land use competition and the increasing use of technology in agriculture. Negative stories are widely portrayed rather than the benefits of producing more food with less resources. The place of intensive agriculture/horticulture and how it is treated under current land use planning frameworks must be considered. There is a need to improve planning processes for intensive horticulture and meat production to allow business certainty, potential expansion and improved production practices.

R&D focus – the complexity of land use planning

The planning and zoning system in Australia is complex. To achieve the objectives set by the National Farmers’ Federation’s 2030 Vision, there is a need for a clear prioritisation of agricultural land use in planning schemes to ensure that agriculture does not become squeezed between other (more profitable) interests. There is a lack of distinction between rural and urban needs in the current planning frameworks and this can lead to inappropriate application of regulations by relevant authorities.

The planning process requires a high level of expertise and local knowledge to be effective. In Australia, the majority of the planning responsibility rests with local government authorities. Key informants interviewed for this research raised questions about the adequacy of local knowledge in setting assessment conditions and prioritising decision-making criteria in the planning process. The diversity in planning regulations and their application across Australian jurisdictions contributes to the complexity of the system and the variation that might result. Harmonisation of regulations and requirements across jurisdictions would support business development, as operators often have more than one farm across different council areas and state boundaries.

The challenges of navigating land use planning regulations may be leading to increased reliance on external expertise in the form of agricultural consultants. Consultants are expensive but can mean the difference between an approved project with minimal delays, and a long drawn out process with an uncertain result. As a result, smaller producers find themselves at a disadvantage to larger operations which can absorb the costs of hiring consultants and meeting additional requirements of the planning process. This may be increasing the pressures on small producers.

R&D focus – mapping tools for holistic land use planning

Further research is required to develop mapping tools that provide accurate, high resolution data about land use in a region. These tools must enable the different land values to be balanced and assist proponents and developing consent authorities to make informed decisions about the siting and potential expansion of important agricultural industries. Mapping layers could help identify suitable land with consideration of a range of factors including planning regulations, business needs, access to transport networks, export markets and proximity to lifestyle residential developments. The development of these tools could enable producers and planning agencies to identify suitable sites for a range of industries, facilitating proactive zoning and reducing unanticipated conflicts or loss of productive land. Access to real time, high resolution,
open access data could help authorities, landholders and developers understand the availability of productive agricultural land and areas where other land uses could be encouraged.

Currently, public opinion drives planning approvals, which are too reactive and lead to ‘not in my backyard’ legal challenges which are expensive to contest. When land use conflict often end up in litigation, suggesting that there are serious flaws in the current planning process. There is a role for government to lead a process that enables more informed development and co-existence in agriculturally productive landscape. However all stakeholders can contribute to the effort of building a new narrative which sees farming as an important contributor to society and encourages more tolerance in terms of co-existence of agriculture and other land uses.

**R&D focus – reducing land use conflict and increasing community acceptance**

There is a growing concern among agricultural stakeholders about perceived low levels of social awareness and support for farming in the wider community, particularly in circumstances of land use competition. A lack of clear prioritisation of agriculture in land use planning suggests a need to increase knowledge of the benefits and needs of the agricultural sector among policy makers and planners. An audit of current education programs and awareness campaigns would identify gaps in community knowledge about the value of agriculture, and suggest opportunities for new programs that might increase the social license of agriculture, especially intensive systems.

The agriculture sector also has a role to play in reforming the planning and zoning system. Industry bodies can work on keeping their planning guidelines up to date, particularly in those intensive industries where community expectations and production standards are changing all the time. Industry can also lobby state and local governments to put more statutory weight behind industry planning guidelines, in order to reduce community concerns and ensure best practice becomes the norm for agricultural businesses.

**R&D Focus – planning and zoning schemes**

Innovative models, frameworks and market instruments (e.g. tradeable development rights, the Sydney heritage building scheme model) that are successful in other jurisdictions should be examined for their potential application to a planning and zoning system which prioritises agriculture.

The concept of co-existence and what it means in terms of best practice land use planning for agriculture should be explored. Industry has a role in leading this work and engaging with all stakeholders to promote shared responsibility in the implementation of the concept.

Zoning schemes have potential but need to be closely examined for potential constraints and perverse consequences. Zoning may have a negative impact on land values, particularly if subdivision or land use change is restricted. This can create negative repercussions for those depending on land banking for retirement/wealth creation.
R&D focus – land banking

Land banking can be described as the purchase of a large block of undeveloped land, usually by a property developer, with the purpose of selling the land in smaller blocks when it has been approved by local council for development. Local councils are seduced by revenue from housing developments and expansion of the rate payer base. Farmers are now often using the concept of land banking to unlock their retirement income by selling off their farm asset to alternative uses such as solar farms and housing developments.

Land banking can also create land use conflict for the landholder if they choose to subdivide their estate, thereby inviting competition or alternative uses into their neighbourhood. To avoid these scenarios there must be better policy or programs in place to allow farmers to maintain their land asset and retire on a reasonable income.

An additional land banking issue is the scope for the land use planning framework to facilitate relocation of intensive production away from areas where land use change, particularly through residential encroachment, is threatening their economic viability and increasing community conflict.

Further work is needed to address the legacy of this very Australian approach to wealth building – What policy changes are needed to enable land holders to unlock the capital value of their agricultural land without losing agricultural productivity to housing development or energy infrastructure? Where development pressures are increasing, what planning could be done to successfully relocate industries and ensure the viability of the agricultural sector is maintained?
Conclusion

For land use planning to be effective it must be seen more than a mere process. There is a need for more integrated long term thinking. Best practice land use planning requires extensive and effective consultation with the community so that a joint vision for how the land will be used comes to fruition.

Land use planning can be emotive, as people often have strong opinions which may conflict with the applicable policy and others in the community, on how the land should be used. Therefore, any consultation must be conducted with transparency, in good faith and handled professionally to ensure the result is accepted by the community. There is a growing concern that the agricultural industry is being marginalised in the political process. It is important that food and fibre production is given priority in land use planning and that those in leadership roles recognise that food security is just as important as other public good issues such as housing security, water security and energy security.

A number of overarching themes that might inform development of a ‘best practice’ approach for land use planning and agriculture in Australia arose from the research. The issues can be summarised as:

- A lack of harmonisation in the laws and shortage of expertise in local governments to adequately guide people through the process.
- The skyrocketing value of agricultural land and the absence of suitable alternatives for farmers to obtain retirement income without selling.
- The underlying social value of agriculture and the issues which result from a lack of knowledge in the community about the industry.
- A growing concern that continued loss of agricultural land will have a severe negative impact on food security both here in Australia and across the globe.

The recommendations below are hypotheses based on the information available and interviews conducted and require more in-depth research including an economic analysis before being implemented. Recommendations to achieve best practice land use planning include:

1. An overarching strategic plan for how agricultural land can be preserved at a state government level. To be most effective such a plan must be legally binding and ensure that farmers have adequate infrastructure (e.g. transport) to access growing markets. This is essential for the viability of the agricultural sector.

2. An innovative land use planning framework which prioritises the need for agricultural enterprises to be co-located within the community, whilst balancing the needs of a growing population and the environment. The difference between urban and rural land development must be recognised.

3. Development of interactive tools which provide current, accurate and high resolution data of current land uses in an area and future predictions of the impacts of land use change.

4. Education programs to increase community knowledge and appreciation of agricultural businesses, hopefully leading to greater acceptance of these operations in their region.

5. Development of different economic models for farmers planning for retirement, enabling their land to remain agriculturally productive, whilst still allowing them to be financially secure.
## Appendices

Table 4. Applicable legislation regarding right to compensation for use/property restrictions and zoning information available online for each state/territory in Australia.

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Legislation regarding right to compensation for use/property restrictions</th>
<th>Zoning information for local government areas</th>
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</thead>
<tbody>
<tr>
<td>TAS</td>
<td></td>
<td>Land Information System Tasmania</td>
</tr>
<tr>
<td>Location</td>
<td>Legislation References</td>
<td></td>
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</tbody>
</table>
| WA       | Part 4, Division 5 of *Land Use Planning and Approvals Act 1993*  
          | Part 3 of *Land Acquisition Act No. 23 of 1993*  
          | Part 11 of *Planning and Development Act 2005*  
          | Part 10 of *Land Administration Act No. 30 of 1997* |
| VIC      | Part 5A of *Planning and Environment Act 1987*  
          | Part 3-6 of *Land Acquisition and Compensation Act No. 121 of 1986*  
          | Western Australian Planning Commission  
          | Planning Schemes Online.  
          |
Table 5. Relevant legislation for each state/territory regarding compliance with plans, market-based incentives to achieve compliance, permits or licence to control land uses and enforcement mechanisms.

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Compliance with plans</th>
<th>Market-based incentives to achieve compliance of land use plans</th>
<th>Environmental permit or licenses to control land uses</th>
<th>Enforcement mechanisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>ss 45 &amp; 51 of <em>Planning and Development Act 2007</em></td>
<td>Part 6 &amp; Part 8 of <em>Environment Protection Act 1997</em></td>
<td>Chapter 12 of <em>Planning and Development Act 2007</em></td>
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<tr>
<td>NT</td>
<td>s 65 of <em>Planning Act</em></td>
<td>Part 4, Division 2 &amp; Part 5 of <em>Planning Act 2007</em></td>
<td>Part 7 of <em>Planning Act 2007</em></td>
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<tr>
<td>QLD</td>
<td>Chapter 6, Part 10 of <em>Sustainable Planning Act 2009</em></td>
<td>s 243 of <em>Sustainable Planning Act 2009</em></td>
<td>Chapter 7 of <em>Sustainable Planning Act 2009</em></td>
<td>Part 4A of <em>Environmental Protection Act 1994</em></td>
</tr>
<tr>
<td>State/Territory</td>
<td>Compliance with plans</td>
<td>Market-based incentives to achieve compliance of land use plans</td>
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<tr>
<td>SA</td>
<td>Part 4, Division 1, Subdivision 1 of Development Act 1993</td>
<td>Part 6 of Environment Protection Act</td>
<td>Part 11 of Development Act 1993</td>
<td></td>
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<tr>
<td>TAS</td>
<td>s 63A of Land Use Planning and Approvals Act 1993</td>
<td>s 14(1)(e) of Environmental Management and Pollution Control Act No. 44 of 1994</td>
<td>Part 4, Division 2 &amp; Division 2A of Land Use Planning and Approvals Act 1993</td>
<td>Part 4, Division 1, 4 &amp; 4A of Land Use Planning and Approvals Act 1993</td>
</tr>
<tr>
<td>WA</td>
<td>s 38 of Planning and Development Act 2005</td>
<td>s 4A(4) of Environmental Protection Act 1986</td>
<td>Part 5, Division 3 of Environmental Protection Act 1986</td>
<td>Part 13 of Planning and Development Act 2005</td>
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<td></td>
<td>s 48 of Environmental Protection Act 1986</td>
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<td></td>
<td>Various sections e.g. ss 19A(3)(c) and 31C of Environment Protection Act 1970</td>
<td></td>
<td></td>
<td>Part 3, Division 2 &amp; 3 of Environment Protection Act 1970</td>
</tr>
</tbody>
</table>
### Table 6. Applicable legislation for public participation and access to information in the planning process and documents relevant to the consultation and participation process.

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Public participation in the planning process</th>
<th>Access to information in the planning process.</th>
<th>Consultation and participation in the planning process.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACT</strong></td>
<td>ss 12(1)(n), 61, 63-69, 85C-85F, 88-90, 38AE – 138AF, 218-219, 22, 323 &amp; 411-412 in Planning and Development Act 2007</td>
<td>Freedom of Information Act No. 5 of 1989</td>
<td>The ‘Engaging Canberrans – A Guide to Community Engagement’ document provides support and information for Government departments on how to facilitate community consultation. The community engagement section of the Environment and Planning Directorate website outlines where citizens can find common sources of information regarding public consultation on planning and development activities. ‘Your Say’ is a website that allows members of the public to voice their opinion on issues and have their say on topics which are currently being consulted on.</td>
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<td></td>
<td>ss 25, 26 &amp; 48 in Environment Protection Act 1997</td>
<td>Territory Records Act No. 18 of 2002</td>
<td></td>
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<tr>
<td><strong>NSW</strong></td>
<td>ss 5, 38, 56, 57, 60(c), 79, 79A, 89F &amp; 115Z in Environmental Planning and Assessment Act 1979</td>
<td>Government Information (Public Access) Act No. 252 of 2009</td>
<td>Planning and Environment The ‘Development Assessment’ page provides information on Community Consultative Committees and Independent Hearing and Assessment Panels for projects NSW.</td>
</tr>
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<td></td>
<td>Part 3, Division 2, Part 4, Division 2, Part 6, Division 5 – 7, Part 14, Division 3, 5 in Environmental Planning and Assessment Regulation 2000</td>
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</tr>
<tr>
<td><strong>NT</strong></td>
<td>s 2A(2)(f), Part 2, Division 4 in Planning Act 2007</td>
<td>Information Act 2003</td>
<td>Northern Territory Government Planning proposals which are on exhibition are displayed as are development applications which have closed.</td>
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<td></td>
<td>Part 5, Division 2 in Planning Act 2007</td>
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<tr>
<td>State/Territory</td>
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<tr>
<td>QLD</td>
<td>ss 6, 41(3)(c), 264(1)(d)(i)(B), 318A &amp; 706(2) in <em>Environmental Protection Act 1994</em></td>
<td>Right to Information Act No. 14 of 2009</td>
<td>Department of State Development, Infrastructure and Planning The consultation process is designed to reap the benefits of community engagement. Active and past consultations can be found on the website.41</td>
</tr>
<tr>
<td></td>
<td>ss 60-62, 68(3)(b)(ii), 118(1)(a-c), 207(1)(b-c) &amp; (3), 680G(2)(e), 680l(c-d), 760(1)(b) &amp; 959 in <em>Sustainable Planning Act 2009</em></td>
<td>Information Privacy Act No. 23 of 2009</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>ss 13(2)(b), 28(3)(b), 43(4a), 54(1)(ab), 103H(2)(h),103J(2)(k) &amp; 103N(2)(b) in <em>Environment Protection Act 1993</em> s 38 in <em>Development Act 1993</em></td>
<td>Freedom of Information Act No. 20 of 1991</td>
<td>As part of the SA Planning Portal, the ‘Have your say’ page allows citizens to get involved in the planning process. Department of Planning, Transport and Infrastructure.42</td>
</tr>
<tr>
<td>TAS</td>
<td>ss 25-27, 30H &amp; 38-40 in <em>Land Use Planning and Approvals Act 1993</em></td>
<td>Right to Information Act No. 70 of 2009</td>
<td>iPlan Tasmania, Tasmanian Planning Commission</td>
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<tr>
<td></td>
<td>s 28 in <em>Planning and Development Act 2005</em></td>
<td>Freedom of Information Act No. 76 of 1992</td>
<td>Planning schemes that are open for comment can be found on the website.43 Information about current matters before the Planning Commission including assessments, public hearing dates and reviews can be found on the website.44</td>
</tr>
<tr>
<td>WA</td>
<td>s 28 in <em>Planning and Development Act 2005</em></td>
<td>Freedom of Information Act No. 76 of 1992</td>
<td>Environmental Protection Authority The ‘Consultation Hub’ provides chance the public to participate by submitting a proposal for any open consultation process.45</td>
</tr>
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<td></td>
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<td></td>
<td>The Western Australian Department of Planning, Lands and Heritage also has a page seeking input from the community on planning matters.46</td>
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<tr>
<td>VIC</td>
<td>ss 6(d),19(3)(d), 50BB(3)(a-b) &amp; 50BC(4)(a-b) in Environment Protection Act 1970</td>
<td>Freedom of Information Act No. 9859 of 1982</td>
<td>The ‘Engage Victoria’ page sets out all the present and past opportunities for consultation on a range of issues including planning available for public comment as well as environmental assessments.⁴⁷</td>
</tr>
</tbody>
</table>
References


26 Ibid.
45 Environmental Protection Authority, EPA Consultation and public comment https://consultation.epa.wa.gov.au/ accessed (Date of use 20 May 2018).

48 Best Practice Land Use Planning: Agricultural Industry
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by Amy Cosby and Tanya Howard
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