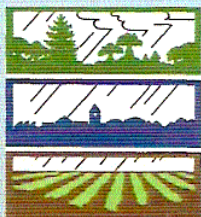


# Land Use Planning Handbook for the Lockyer Catchment



*A land use planning guide for use by landholders,  
government agencies and the community*



**Lockyer  
Catchment  
Association**

**November 2001**



**Natural  
Heritage  
Trust**  
*Helping Communities  
Helping Australia*





Lockyer Catchment  
Association Inc.

# Land Use Planning Handbook for the Lockyer Catchment

A land use planning guide  
for landholders, government agencies and the community.

Prepared by Bruce Boyes on behalf of the  
Lockyer Catchment Association (LCA).  
November 2001.

Published by the Lockyer Catchment Association (LCA) Inc.  
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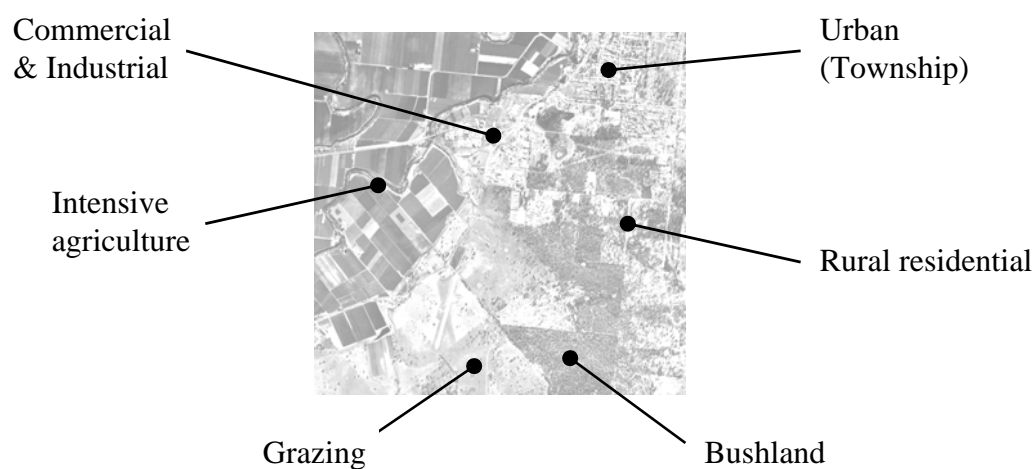
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### **Cover picture**

The cover picture shows a ‘snapshot’ of some land uses in and around the Lockyer Catchment:



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# Summary

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Integrated Catchment Management (ICM) is a coordinated and cooperative approach to the management of natural resources in Queensland's river and creek catchments. The Lockyer Catchment Association (LCA) is a community-based committee that manages ICM in the Lockyer Catchment, located 100 km west of Brisbane, South-East Queensland. The LCA works through goodwill and influence only - it has no power to set regulations or legislation.

The LCA has prepared *Caring for our Lockyer Catchment - A Natural Resource Management Strategy* to guide the sustainable management of the catchment into the future. *Caring for our Lockyer Catchment* establishes management actions under five themes: Land, Water, Biodiversity, Understanding and Participation (Education), and Integrated Planning and Coordinated Management.

The publication of this handbook implements Action 1 under Objective L1 of the “Land” theme of *Caring for our Lockyer Catchment*. Objective L1 is to “Encourage best land use management practice amongst landholders, government agencies and other stakeholders for sustainable resource management”.

This handbook describes the six major land systems in the catchment and recommends sustainable land uses and land management practices that can be encouraged to help maintain a beautiful and prosperous catchment while still accommodating growth and development. The handbook also establishes processes and actions to achieve the land use and management recommendations made.

## Recommended land uses and practices

The handbook recommends that the following land uses and practices are encouraged. Please read the full handbook to gather more detail and clarification about these land uses and land management practices.

### Land system 1: Helidon Hills

**Encourage:** sustainable grazing; commercial forestry; orchards in suitable areas; mining, extractive and explosives industries in suitable areas; flora and fauna habitat; recreation and tourism; and rural retreats on existing holdings.

**Discourage:** commercial clear felling for logs or woodchips; clearing or degradation of areas of significant flora and fauna habitat; inappropriate fire regimes; development that does not comply with stringent social, environmental and scenic guidelines; damage to Aboriginal and European cultural heritage; and public removal of flora, fauna or landscaping material.

### Land System 2: Gatton

**Encourage:** urban and village development with associated uses around existing settlements; limited areas of rural residential development on the fringes of existing settlements; buffers between new residential areas and intensive horticulture, agriculture or industry; grazing; erosion control and salinity control measures for all development and land uses; public open space; and flora and fauna habitat.

**Discourage:** rural residential subdivision on large blocks with no or partial services; ribbon development; damage to Aboriginal and European cultural heritage; and inappropriate fire regimes.

### **Land system 3: Undulating Sandstones**

*Encourage:* sustainable grazing; part-time or hobby farms on present block sizes; agroforestry; erosion control and salinity control measures for all development and land uses; and flora and fauna habitat.

*Discourage:* continuous cropping; development that does not comply with stringent social, environmental and scenic guidelines; damage to Aboriginal and European cultural heritage; and inappropriate fire regimes.

### **Land system 4: Steep Sandstones**

*Encourage:* sustainable grazing; recreation and tourism; flora and fauna habitat; and rural retreats on existing holdings.

*Discourage:* mass removal of timber; clearing or degradation of flora and fauna habitat; inappropriate fire regimes; land valuation practices that penalise landholders for good land management; and development that does not comply with stringent social, environmental and scenic guidelines; damage to Aboriginal and European cultural heritage; and inappropriate fire regimes.

### **Land system 5: Basalt/Walloons**

*Encourage:* sustainable grazing; sustainable vegetation management; forage cropping and strategic cultivation on suitable areas; mining in suitable areas (eg. diatomite); recreation and tourism; selective logging; flora and fauna habitat; and rural retreats on existing holdings.

*Discourage:* development that does not conform with stringent social, environmental and scenic guidelines; clear felling; land valuation practices that penalise landholders for good land management; permanent cultivation on steep slopes; clearing or degradation of areas of significant flora and fauna habitat; inappropriate fire regimes; damage to Aboriginal and European cultural heritage; and public removal of flora, fauna and landscape materials.

### **Land system 6: Creek Flats**

*Encourage:* intensive agriculture that is sustainable; sustainable grazing; and flora and fauna habitat.

*Discourage:* rezoning and sub division of good quality agricultural land; permanent alienation (eg subdivision) of good quality agricultural land through activities such as aquaculture; inappropriate levee banks; ribbon development along major roads; non-agricultural land uses which have an adverse impact on agricultural production; damage to Aboriginal and European cultural heritage; and waste disposal in and along creek lines.

## **Implementation guide**

The handbook establishes three action processes that can be used to implement the recommended land uses and land management practices. The three processes are:

1. Property management planning on individual properties.
2. Local government planning schemes and planning policies.
3. Agency and community actions.

The handbook lists recommended actions for each of the three processes.



# Introduction

---

## Land use in the Lockyer Catchment

The Lockyer Catchment is situated in South-East Queensland and forms approximately one-quarter of the Brisbane River Catchment. The Lockyer Catchment has an approximate area of 295,400 hectares (2,954 square kilometres) located an hour's drive west of Brisbane between the regional cities of Ipswich and Toowoomba. Approximately half of the original native vegetation of the Lockyer Catchment remains while half has been cleared for agriculture.

The Lockyer Catchment hosts a major vegetable-growing industry. Being a major supplier of vegetable produce in Queensland and having significant markets both interstate and overseas, this industry represents a large slice of the catchment's economic base. The catchment also supports an expanding fruit-growing industry.

Land use in the catchment has remained fairly constant over the years, however there has been recent growth in rural residential style developments. Rural residential development is also increasing with Laidley Shire in previous years being one of the fastest growing areas in the region.

Intensive agricultural activities and improved pasture pursuits are carried out on the fertile alluvial plains surrounding the creek systems within the sub-catchments and smaller catchments. These pursuits occupy around ten percent of the total area of the catchment. The major constraint in regards to agriculture in these areas is not the soil fertility but the limited supply of reliable, good quality water.

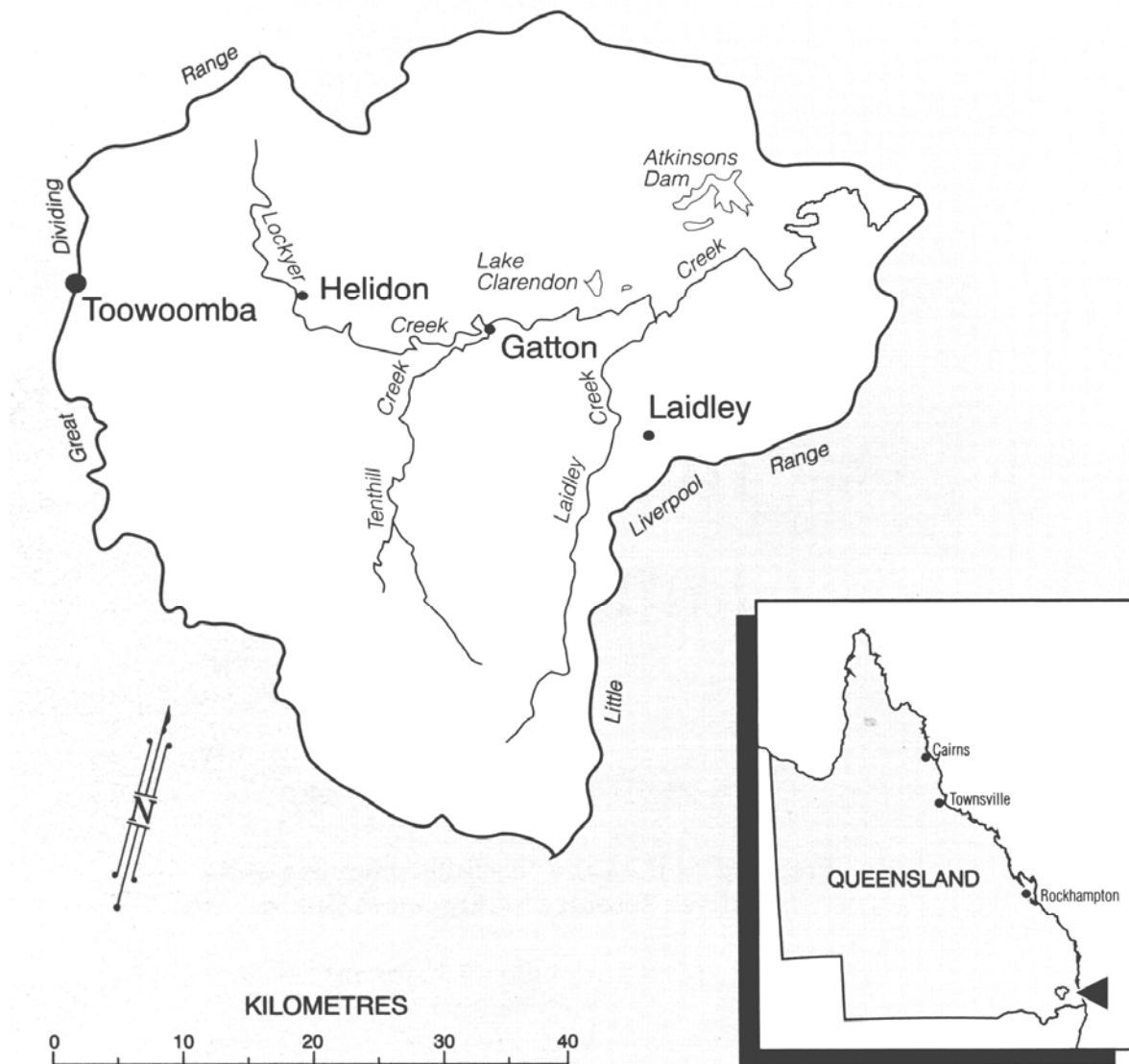
Surrounding these highly fertile areas are extensive areas of pasture on the lower hill slopes. These pasture areas generally have poorer soil quality and limited water supplies.

As you continue to move away from the creeks and alluvial plains, land uses change again to reflect different land characteristics. Land uses in these upper forested areas include grazing, timber extraction, rural retreats and conservation areas. Previous clearing activities on some of these areas has resulted in the development of erosion and landslide problems.

Rural residential developments, which combine urban style services with a rural character, have been a major growth area within the catchment for a number of years. However due to their sporadic nature and location and the need to protect good quality agricultural land, local authorities are attempting to better manage these developments.

Urban settlements have also grown in the catchment, incorporating residential, commercial and some light industrial activities. These areas now attract new residents from larger towns and cities.

There has been a rapid growth in nature-based industries as areas of land are taken up by landholders establishing new rural opportunities such as nature-based tourism and ecotourism. Much of this activity is taking place in the upland areas and is generally considered a sustainable land use. The Helidon sandstone industry, which operates in the uplands north of Helidon, has seen a resurgence in recent years and now makes an important contribution to the Lockyer economy. A new explosives industry has also established in this area, adjacent to the Department of Natural Resources and Mines explosives magazine at Helidon.



# Lockyer Catchment

## Caring for our land

Integrated Catchment Management (ICM) is a coordinated and cooperative approach to the management of natural resources in Queensland. Its overall purpose is to integrate the management of land, water, vegetation and wildlife in order to achieve their sustainable and balanced use within a creek or river catchment. The catchment management approach is used throughout Australia and in many countries of the world to assist in managing natural resources.

The Lockyer Catchment Association (LCA) manages ICM in the Lockyer Catchment. The LCA is fostering a cooperative partnership where the community and all levels of government are working together to sustainably manage the natural resources of the catchment through coordinated action. The LCA works through goodwill and influence only - it has no power to set regulations or legislation.

The LCA has prepared *Caring for our Lockyer Catchment - A Natural Resource Management Strategy* to guide the sustainable management of the catchment into the future. *Caring for our Lockyer Catchment* establishes management actions under five themes:

1. Caring for our land.
2. Caring for our water.
3. Caring for our biodiversity.
4. Understanding and participation (education).
5. Integrated planning and coordinated management.

The publication of this handbook implements Action 1 under Objective L1 of the “Caring for our land” theme of *Caring for our Lockyer Catchment*.

*Objective L1:* Encourage best land use management practice amongst landholders, government agencies and other stakeholders for sustainable resource management.

*Action 1:* Update *Principles and Guidelines for Land Use Planning in the Lockyer* and *Incorporating Catchment Management in Local Government Strategic Planning* to reflect the introduction of new legislation, in particular the Queensland *Integrated Planning Act 1997*, and recent improvements in the Lockyer Catchment natural resource management knowledge-base.

## Background to this handbook

The Lockyer Catchment Association (LCA) was previously known as the Lockyer Catchment Coordinating Committee (LCCC) and before that the Lockyer Resource Management Group (LRMG). In January 1994 the LRMG produced *Principles and Guidelines for Land Use Planning in the Lockyer* from an extensive community consultation process, with the aim of assisting community members and government agencies to plan for the future of the catchment in a coordinated way which met community needs.

In February 1996 the LRMG produced *Incorporating Catchment Management in Local Government Strategic Planning*, which identified Planning Scheme measures that could be used by Gatton, Laidley, Esk and Cambooya Shire Councils to implement relevant recommendations in *Principles and Guidelines for Land Use Planning in the Lockyer*.

When it prepared *Principles and Guidelines for Land Use Planning in the Lockyer*, the LRMG identified that the paper would need to be revised from time to time. In the introduction to the paper LRMG advised that:

The LRMG has named this paper a “final draft” because it believes the paper will never be final. It is envisaged that the paper will be reviewed and revised from time to time as changes occur in the Lockyer and as new and innovative solutions to some of the problems are discovered. The LRMG sees this paper evolving further over time.

Since the publication of *Principles and Guidelines for Land Use Planning in the Lockyer* and *Incorporating Catchment Management in Local Government Strategic Planning* a range of new legislation has been introduced and the Lockyer Catchment natural resource management knowledge-base has improved. Additionally, many of the actions identified in these papers have been implemented or are underway, often through the application of new and innovative solutions.

The changes that have occurred since the publication of *Principles and Guidelines for Land Use Planning in the Lockyer* and *Incorporating Catchment Management in Local Government Strategic Planning* are substantial and include:

- Review of the *Regional Framework for Growth Management* (2000).
- The introduction of the Queensland *Integrated Planning Act 1997*.
- The introduction of the Queensland *Vegetation Management Act 1999*.
- The introduction of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.
- The *National Action Plan for Salinity and Water Quality* (2000).
- The completion of the South-East Queensland Regional Forest Agreement (2000).
- The publication of *Caring for our Water- A Community Water Management Strategy for the Lockyer Catchment* (1999).
- The completion of the WESROC Sustainable Management of the Helidon Hills Project (2000) and the publication of the *Sustainable Management of the Helidon Hills Draft Management Plan* (1999), *Helidon Hills Fire Management Plan* (1998), and *Helidon Hills Fire Management Users Manual* (1998).
- The completion of 1:25,000 scale vegetation mapping for Laidley Shire (1997), 1:25,000 scale vegetation mapping for Gatton Shire (2000), and 1:50,000 scale vegetation mapping for Esk Shire (1998).
- The publication of the *Gatton Shire Biodiversity Strategy* (2000), the establishment of the LCA Biodiversity Subcommittee (2000), and substantial progress by the LCA Biodiversity Subcommittee in implementing the actions of the *Gatton Shire Biodiversity Strategy*.
- The publication of the preliminary draft *Recovery Plan for the Threatened Species and Ecological Communities of Gatton and Laidley Shires, South-East Queensland 2001-2006* (2000).
- The publication of *Living in the Lockyer - A Landholder's Guide to Land, Water, Wildlife and Vegetation Management in the Lockyer Catchment and Surrounds* (2000).
- The introduction of the Queensland *Natural Resources and Other Legislation Amendment Act 2000*.
- The publication of *The Natural Resource Management Strategy for South-East Queensland* (2000).
- The publication of the draft *Nature Conservation Strategy for South-East Queensland 2001 - 2006* (2000).
- The publication of the draft *Caring for our Lockyer Catchment - A Natural Resource Management Strategy* (2000).
- The initiation of the South-East Queensland Fire and Biodiversity Project and the publication of the *Individual Property Fire Management Planning Kit* (2000).
- The initiation of the Lockyer Managing Roadsides project (2000).
- The feasibility study *Use of Renewed Water for Irrigation in the Lockyer Valley* (1998).
- The publication of *Key Resource Areas for sandstone building stone, extractive materials and explosive industry in the Helidon Area* (2000).

These changes mean that *Principles and Guidelines for Land Use Planning in the Lockyer* and *Incorporating Catchment Management in Local Government Strategic Planning* are now substantially out-of-date. Recognising this, the LCA commissioned a review and revision of these papers, which has resulted in the preparation of this new handbook.

# Vision and aims

The Lockyer Catchment community is very proud of its rural lifestyle and the beauty of the catchment. Most people would not like to see the catchment developed in such a way that would degrade its natural resources, affect its viable agricultural industries or spoil its natural beauty. Most would like to see the catchment continue to prosper and develop in an orderly and sensitive way. *Caring for our Lockyer Catchment - A Natural Resource Management Strategy* has as its foundation a community vision that encapsulates these desires:

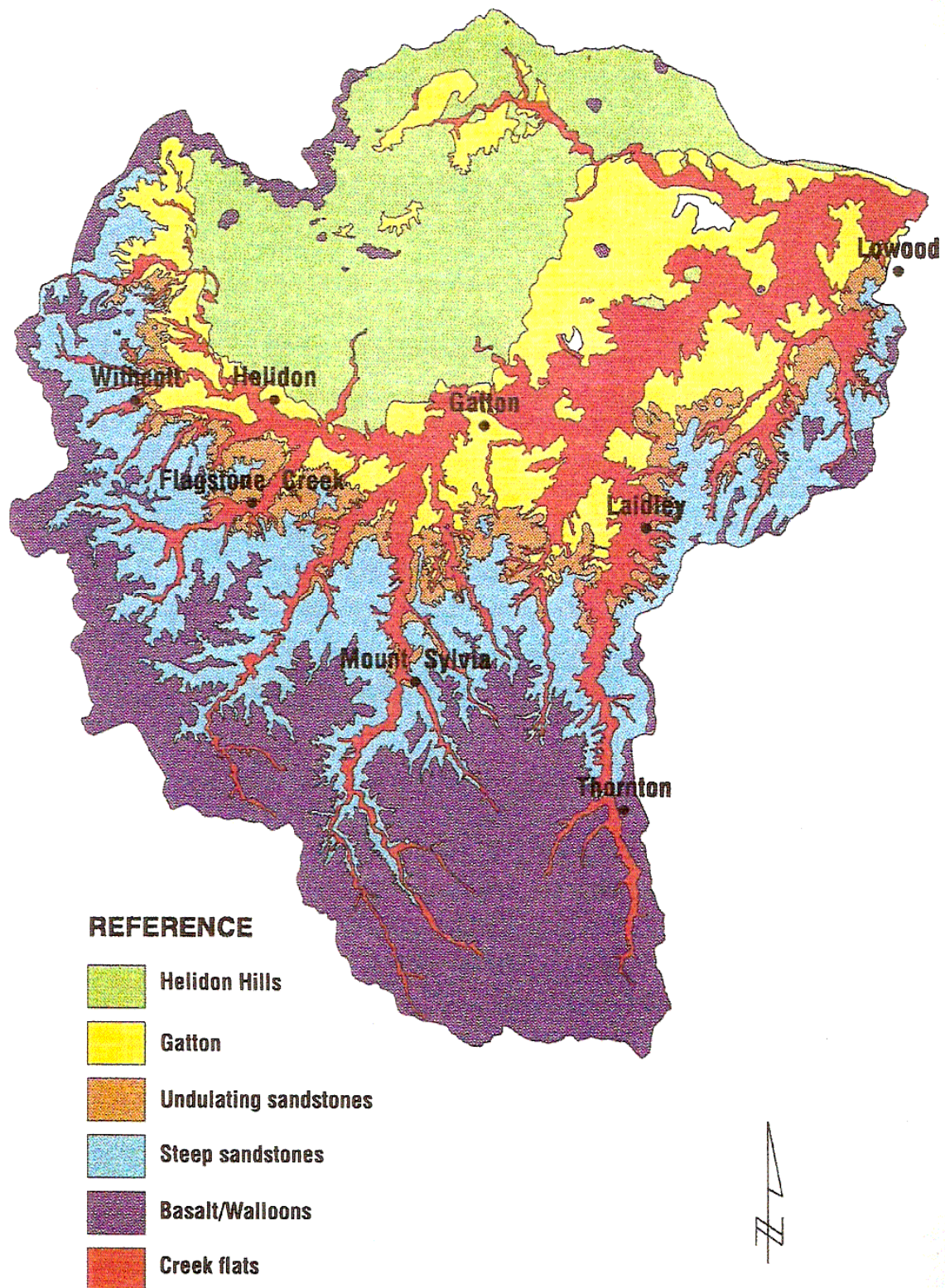
The Lockyer Catchment community has decided that it is working together...*to achieve and maintain a catchment which is environmentally sound, beautiful, prosperous and a good place to live, farm, work and play.*

This handbook will assist the community to work towards its vision. This handbook aims to encourage:

- Maintenance of sustainable cropping and grazing industries.
- Controlled and planned population growth and well managed housing, industrial, tourism, mining, extractive industry and recreation development.
- Planned, responsible and sustainable use of land, water, vegetation and other natural resources in the catchment.
- Maintenance of a healthy natural environment within the catchment.
- Responsible domestic, agricultural and industrial waste management.
- Maintenance and where appropriate improvement in water quality and efficient water use.
- Land used according to its suitability for specific uses where feasible.
- Responsible decision making on the development and implementation of renewed water use options in the catchment.
- Sound investment decisions by government and other stakeholders in salinity and other water quality relevant activities in the catchment.

This handbook does not aim to regulate development on, or the use of, premises as this would be against the wishes of the community and is not supported by the principles and practices of the Integrated Planning Act. This handbook is a guide to foster the appropriate use of land in the Lockyer Catchment.

# LOCKYER LAND SYSTEMS



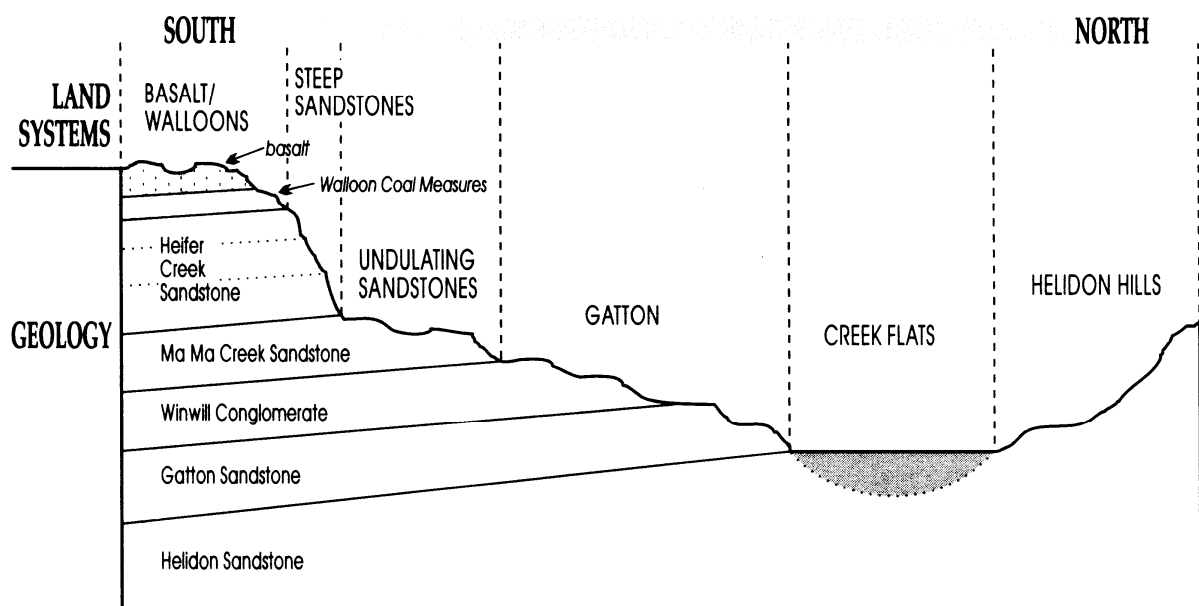
# Land uses and practices

This part of the handbook describes the different types of land in the Lockyer Catchment including their location, landform, soils, vegetation, water, land degradation and present land use. It then suggests sustainable land uses and land management practices to be encouraged, and undesirable uses and practices to be discouraged.

## The Lockyer Catchment land systems

The Lockyer has been divided up into six systems of land each with distinct physical characteristics. These land systems are shown on the map adjacent and as a cross section on the figure below. Each land system represents a group of areas with a characteristic pattern of landform, soils and vegetation. The concept of land systems was originally developed by CSIRO so that the development possibilities of a region could be assessed in a systematic way.

### The geology and land systems of the Lockyer Catchment





# Land System 1: Helidon Hills

|                         |   |
|-------------------------|---|
| <b>Location</b>         | This land system is located north of Gatton, Grantham and Helidon.  |
| <b>Landform</b>         | It ranges from steep hills (greater than 25% slope) to low hills (5-10 % slope) with numerous rocky gorges. The area drains into several streams including Alice, Sandy, Redbank and Buaraba.   |
| <b>Soils</b>            | The soils are generally shallow, stony, low in fertility and sandy, with deeper red, white and yellow sandy soils on lower slopes.  |
| <b>Vegetation</b>       | The area has eucalypt forest/woodland with small areas of rainforest in moist sheltered valleys. Most of the area features a diverse, fire-sensitive shrubby understorey.   |
| <b>Water</b>            | Runoff water is of very high quality from a salinity point of view and could be used for urban purposes if suitable dam sites are available.  |
| <b>Special features</b> | The Helidon Hills is one of the largest areas of mostly continuous bushland left in South-East Queensland and features a large number of rare and threatened flora and fauna species. The steep and rocky landscape is beautiful. There is also evidence of important Aboriginal and European cultural heritage.  |
| <b>Land degradation</b> | This area is largely forest and has very few degradation problems. Over-clearing in the 1920's has resulted in excessive wattle growth and some erosion has occurred.   |
| <b>Present land use</b> | One-third of the area is State Forest (currently under review under the Regional Forest Agreement) and two-thirds is privately owned. The land is currently used for sandstone mining, nature conservation, commercial timber production, grazing of native pastures, sand and gravel extraction, explosives industries, rural retreats, orchards on associated alluvium, and passive recreation (bushwalking, bird watching etc). Ecotourism, nature-based tourism and aquaculture are emerging land uses. |

# Land uses and land management practices

## *Principles*

The area should be used and managed according to the principles of:

- Multiple sustainable use of freehold land.
- Land use and management focused on maintaining the area as a high-quality water supply catchment, and on retaining the natural and scenic characteristics of the area.
- Land use viability and sustainable resource use practices.
- Respect for Aboriginal and European cultural heritage.

## *Land uses encouraged*

- Grazing.
- Commercial forestry practiced as selective logging for mill logs.
- Orchards on suitable soils and slopes.
- Mining industries, extractive industries and explosives industries in suitable areas.
- Flora and fauna habitat.
- Recreation and tourism, where activities are of low environmental impact.
- Rural retreats on existing holdings.

## *Land management encouraged*

- Maintenance of ground cover in grazed areas to minimise erosion.
- Conservation of flora and fauna habitat.
- Cooperative management of National Park, Conservation Park and State Forest boundaries by Queensland Government agencies and landholders.
- Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.
- Conservation of soil and vegetation by public authorities which provide services such as roads, telephone and electricity.
- Nature conservation, fire, waste, erosion control, cultural heritage, rehabilitation, vehicle impact management and social impact management plans for mining, extractive and explosives industries.
- Recreation and tourism managed to reduce human and vehicle impact on natural areas and roads, and to reduce impacts on private landholders.
- Nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans for rural retreats and recreation and tourism developments.
- Rural enterprises that adopt a systems approach to the multiple use of key resources such as water and land.
- Agriculture and land management practices that are aware of water reuse issues; including salinity, water quality and community health.

## *Discouraged*

- Commercial clear felling for logs or woodchips.
- Clearing or degradation of areas of significant flora and fauna habitat.
- Damage to Aboriginal and European cultural heritage.
- Inappropriate fire regimes.
- Development that does not comply with stringent social, environmental and scenic guidelines (subdivision should only be approved if there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).
- Public removal of flora, fauna or landscaping material.

## Land System 2: Gatton

|                         |  |
|-------------------------|--|
| <b>Location</b>         | Located adjacent to the Lockyer Creek flats on both sides but in scattered areas. The undulating rises of the town of Gatton are typical of this land system. The localities of Lockyer Waters and Coominya are also on this land system.  |
| <b>Landform</b>         | The land has undulating rises and low hills of 3-8% slope  |
| <b>Soils</b>            | Shallow loamy sands of low fertility overlie sandy clay subsoils. The subsoils are very susceptible to erosion. Underlying rock is relatively soft.  |
| <b>Vegetation</b>       | The area has eucalypt forest/woodland. Dominant species include narrow-leaved ironbark, spotted gum and Moreton Bay ash.   |
| <b>Special features</b> | Generally close to existing urban development, transport, power and communication infrastructure and good water supplies, this land is very suitable for urban development.  |
| <b>Land degradation</b> | Topsoil is susceptible to sheet erosion and subsoils are extremely susceptible to tunnel and gully erosion where topsoil is removed. Erosion leads to water turbidity. Saline outbreaks occur in lower areas of the landscape.   |
| <b>Present land use</b> | The land is presently used for low intensity grazing of native pastures, rural residential development and urban subdivision with associated areas for waste dumps and recreation (e.g. golf courses). Areas of remnant bushland provide flora and fauna habitat. Sand and gravel are extracted in selected areas. |

# Land uses and land management practices

## *Principles*

The use and management of this land system should be based on:

- Suitability for urban development.
- Potential for a variety of non-agricultural uses.
- Land use viability and sustainable resource use practices.
- Encourage rehabilitation and control of erosion and salinity.
- Respect for Aboriginal and European cultural heritage.

## *Land uses encouraged*

- Predominantly urban and village developments around existing service centres, including associated uses such as residential, commercial, industrial, recreational, landfill and sewage treatment.
- Limited areas of rural residential subdivision on the fringes of urban centres where water, sewerage and social services can be provided.
- Buffer areas between new residential areas and adjacent intensive horticulture, agriculture or industry, and grazing carried out in buffer areas where appropriate.
- Public open space including golf courses, parks, playing fields and natural forests, particularly associated with urban areas and used as buffers where appropriate.
- Flora and fauna habitat.

## *Land management encouraged*

- Property management planning in affected sub-catchments to mitigate existing affects of salinisation.
- Grazing which is managed to maintain ground cover and prevent erosion.
- Controlled and planned development taking into account employment, social needs and provision of social and physical services.
- Management of litter, garbage, waste water and runoff.
- Conservation and reduction in the demand for energy (for transport, electricity etc) through urban and building design.
- Conservation and reduction in the demand for water through urban and building design.
- Planned development and subdivision design to ensure sufficient areas are used as open space.
- Erosion control and salinity control measures for all development and land uses.
- Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation and enhance fire management.
- Conservation of flora and fauna habitat.
- Rural enterprises that adopt a systems approach to the multiple use of key resources such as water and land.
- Agriculture and land management practices that are aware of water reuse issues; including salinity, water quality and community health.

## *Discouraged*

- Rural residential subdivision into large blocks in inappropriate areas with no or only partial services.
- Ribbon commercial and residential development.
- Damage to Aboriginal and European cultural heritage.
- Inappropriate fire regimes.

## Land System 3: Undulating sandstones

|                         |   |
|-------------------------|---|
| <b>Location</b>         | This land system occurs south of the Lockyer Creek. The localities of Woodlands and Plainlands are a part of it.  |
| <b>Landform</b>         | These sandstones form rolling, low hills with 5-15% slopes and are commonly known as the Ma Ma Creek sandstones.  |
| <b>Soils</b>            | The dominant soils are yellow-brown, earthy soils which are permeable and were initially fertile. They have been eroded in the past and are now shallow and less fertile.   |
| <b>Vegetation</b>       | The area has eucalypt forest/woodland, brigalow scrub and dry rainforest (softwood scrub), which have been substantially cleared in the past.   |
| <b>Water</b>            | Water is the limiting factor to productivity, management and development of this land system. This is a rainfall intake area for lower saline seepages. Seepage from this land system offers a threat to irrigation water supplies. There is little underground water in this land system.  |
| <b>Land degradation</b> | Soils are extremely fragile and subject to erosion. Sheet erosion, which followed clearing and mixed farming many years ago, has removed much of the soil from these hills. When cultivation was abandoned and pastures were established, there was a decrease in runoff (reducing erosion) and an increase in the deep seepage of water below the root zone of plants. This increase in deep seepage has moved salts with it, resulting in some saline seepage break outs in the area and some saltpans on the flatter land below. |
| <b>Present land use</b> | The land is used for grazing of native and improved pastures, mainly by beef cattle and some dairy cattle. Cropping in small areas has principally given way to improved pastures and some rural residential development.   |

# Land uses and land management practices

## *Principles*

Much of this land system has experienced severe degradation in the past and should be managed to:

- Encourage rehabilitation and control of erosion and salinity.
- Maximise the use by plants of rainwater where it falls, and minimise deep seepage of water.
- Land use viability and sustainable resource use practices.
- Identify, retain and enhance any residual vegetation and fauna values in the area.
- Respect for Aboriginal and European cultural heritage.

## *Land uses encouraged*

- Grazing of native and improved pastures.
- Part-time or hobby farm properties on present block sizes.
- Agroforestry.
- Flora and fauna habitat.

## *Land management encouraged*

- Property management planning in affected sub-catchments to mitigate existing affects of salinisation.
- Self-monitoring and management of grazing pressures to maintain native and improved pastures and timber resources, and to avoid land degradation.
- Fencing of severely degraded areas and remnant vegetation areas for rehabilitation purposes.
- Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.
- Use of reduced tillage and planting practices for introduction of improved pastures and short-term weed control.
- Retaining or replanting deep-rooted vegetation to reduce water/saline seepages and water-table salting
- Revegetation with native plants for wildlife habitat and corridors.
- Strategic removal and clearing of lantana.
- Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.
- Identification and adoption of other viable land uses.
- Rural enterprises that adopt a systems approach to the multiple use of key resources such as water and land.
- Agriculture and land management practices that are aware of water reuse issues; including salinity, water quality and community health.

## *Discouraged*

- Continuous cropping.
- Development that does not comply with stringent social, environmental and scenic guidelines (subdivision should only be approved if there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).
- Damage to Aboriginal and European cultural heritage.
- Inappropriate fire regimes.

## Land System 4: Steep sandstones

|                           |  |
|---------------------------|--|
| <b>Location</b>           | This land system occurs mainly south of Lockyer Creek. The steep slopes seen behind the townships of Tenthill, Ma Ma Creek Village, Blenheim, Stockyard, Flagstone and Withcott are typical of this land system. Landslips may be evident.   |
| <b>Landform</b>           | These steep sandstones often form slopes which exceed 20%. These sandstones cover a large part of the catchment and are commonly known as Heifer Creek sandstones.   |
| <b>Soils</b>              | This land has a range of scrub soils and forest soils, usually stony.  |
| <b>Vegetation</b>         | Naturally this land system supported a range of vegetation types including eucalypt forest/woodland, dry rainforest and brigalow. Much of the native vegetation has been lost or degraded as a result of land clearing, logging, inappropriate fire regimes and introduced species.                            |
| <b>Water</b>              | Water availability is generally limited to surface water and underground supplies for stock use.   |
| <b>Special features</b>   | Areas of remnant vegetation provide habitat for a large number of rare and threatened flora and fauna species, are linked to larger habitat and wildlife corridor areas along the Great Dividing Range, and feature plants with commercial potential e.g. wildflowers.   |
| <b>Land degradation</b>   | This land is susceptible to gully erosion and landslip. The presence of shallow-rooted plants such as lantana does not reduce this risk.   |
| <b>Present land use</b>   | Grazing occurs on small original blocks which are rarely commercially viable units. There are some small areas of cultivated cropping on gentler sloping hill crests and ridge tops, and some reserves for conservation and recreation. Ecotourism and nature-based tourism are emerging land uses.            |
| <b>Significant issues</b> | Landholders who sustainably manage their land and retain areas of remnant vegetation are incurring high and rising valuations because of the good condition of their properties. These valuation practices mean that good land managers are actually being penalised, rather than rewarded, for their efforts. |



# Land uses and land management practices

## *Principles*

Much of this land system has experienced past degradation and should be managed to:

- Encourage rehabilitation and control of erosion and salinity.
- Maximise the use of rainwater by plants where it falls and minimise deep seepage of water.
- Conserve flora and fauna habitat.
- Land use viability and sustainable resource use practices.
- Respect for Aboriginal and European cultural heritage.

## *Land uses encouraged*

- Grazing of native and improved pastures.
- Recreation and tourism (ecotourism, nature-based tourism) on public land and private land where owners permit.
- Flora and fauna habitat.
- Rural retreats on existing holdings.

## *Land management encouraged*

- Management of grazing pressures to maintain ground cover, and revegetation with deep rooted vegetation and shrub legumes in grazing systems.
- Recreation and tourism managed to reduce human and vehicle impact on natural areas and roads, and to reduce impacts on private landholders.
- Nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans for recreation and tourism developments.
- Identification and adoption of other viable land uses.
- Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.
- Conservation of flora and fauna habitat, and revegetation of cleared areas where appropriate.
- Managed regrowth on cleared land to reduce erosion.
- Strategic removal and clearing of lantana where it can be replaced by improved pastures or deep rooted vegetation.
- Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.
- Management of feral animals, and management of problem native fauna where they are causing degradation or production problems.
- Cooperative management of National Park, Conservation Park and State Forest boundaries by Queensland Government agencies and landholders.
- Rural enterprises that adopt a systems approach to the multiple use of key resources such as water and land.
- Agriculture and land management practices that are aware of water reuse issues; including salinity, water quality and community health.

## *Discouraged*

- The mass removal of timber.
- Clearing or degradation of flora and fauna habitat.
- Damage to Aboriginal and European cultural heritage.
- Inappropriate fire regimes.
- Land valuation practices that penalise landholders for good land management.
- Development which does not conform with stringent social and environmental guidelines (subdivision should not be approved unless there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).

## Land System 5: Basalt/Walloons

|                           |  |
|---------------------------|--|
| <b>Location</b>           | This land system comprises Mt Mistake, the Great Dividing Range and its offshoots.   |
| <b>Landform</b>           | This land system typically forms steep slopes often exceeding 20% and high, mountainous ridges. Flat-topped mountains and rocky outcrops are also common. The geology of the area is commonly known as tertiary basalt and Walloon coal measures.  |
| <b>Soils</b>              | Shallow, stony soils are dominant, with some deep black and grey clays and red soils.  |
| <b>Vegetation</b>         | This land system retains much of its natural vegetation, comprising eucalypt forest/woodland and areas of rainforest.  |
| <b>Water</b>              | This is an important irrigation water supply catchment for the aquifers of the Creek Flat alluvium. Ground water and surface water supplies in this area are limited. Some useful seepages and springs occur at the basalt-Walloon interface.  |
| <b>Special features</b>   | This area has special scenic qualities, featuring Mount Mistake National Park, Glen Rock Regional Park, and other reserves.  |
| <b>Land degradation</b>   | Lantana and other woody weeds are a problem. Erosion is not considered widespread although there is some severe, localised gully and sheet erosion.  |
| <b>Present land use</b>   | The dominant use is grazing. Some of the flatter areas are cleared but the area is mostly vegetated. Some cultivation of forage crops (winter oats) occurs in flatter areas with suitable soils. Some selective logging, natural revegetation, recreation and tourism occurs.                                  |
| <b>Significant issues</b> | Landholders who sustainably manage their land and retain areas of remnant vegetation are incurring high and rising valuations because of the good condition of their properties. These valuation practices mean that good land managers are actually being penalised, rather than rewarded, for their efforts. |

# Land uses and land management practices

## *Principles*

The land system should be used and managed according to the principles of:

- Multiple use of freehold land.
- Land use and management focused on maintaining the area as a high-quality water supply catchment, and on retaining the natural and scenic characteristics of the area.
- Land use viability and sustainable resource use practices.
- Respect for Aboriginal and European cultural heritage.

## *Land uses encouraged*

- Grazing of native and improved pastures.
- Forage cropping on flatter slopes with suitable soils, managed for erosion control (mainly Walloons).
- Strategic cultivation to control lantana and other weeds and to prepare for pastures.
- Recreation and tourism in public areas and on private land where owners permit.
- Selective logging.
- Flora and fauna habitat.
- Rural retreats on existing holdings.
- Mining in existing areas (eg. diatomite).

## *Land management encouraged*

- Management of grazing pressures to maintain grazing cover.
- Managed timber regrowth to reduce erosion, and selective tree thinning for agroforestry.
- Sustainable vegetation management to ensure the supply of good quality underground water to other land systems.
- Recreation and tourism managed to reduce human and vehicle impact on natural areas and roads, and to reduce impacts on private landholders.
- Nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans for recreation and tourism developments.
- Conservation of flora and fauna habitat.
- Cooperative management of National Park, Conservation Park and State Forest boundaries by Queensland Government agencies and landholders.
- Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.
- Management of feral animals and weeds on public and private land.
- Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.
- Best practice management of mine operations.
- Rural enterprises that adopt a systems approach to the multiple use of key resources such as water and land.
- Agriculture and land management practices that are aware of water reuse issues; including salinity, water quality and community health.

## *Discouraged*

- Development that does not conform to stringent social, environmental and scenic guidelines (subdivision should not be approved unless there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).
- Damage to Aboriginal and European cultural heritage.
- Clear felling.
- Land valuation practices that penalise landholders for good land management.
- Permanent cultivation on steep slopes.
- Removal of flora, fauna and landscape materials from roadsides and public areas.

## Land System 6: Creek flats

|                         |  |
|-------------------------|--|
| <b>Location</b>         | This area is made up of the major creeks in and their alluvial flats. The towns of Helidon, Laidley and Forest Hill are built on the creek flats.  |
| <b>Soils</b>            | Deep black cracking-clay soils and dark brown clay loams are dominant.   |
| <b>Vegetation</b>       | The original vegetation on the creek flats was eucalypt open woodland with a grassy understorey. The creek flats are now largely cultivated and only small areas of native vegetation remain. These remnants host several rare and threatened frog, bird and grassland plant species.  |
| <b>Water</b>            | This land system has extensive aquifers containing underground water which is suitable for irrigating a wide range of crops. The underground water varies considerably in both supply and quality, depending on the geology of the catchment area.   |
| <b>Special features</b> | The soils of the Lockyer Creek flats are some of the most fertile in the world. This land system is the largest single area of good agricultural land in the Moreton region. The location of the Lockyer Catchment close to Brisbane markets is also an added advantage. Creek lines, watercourses and wetlands are important areas for ground water recharge, sources of surface water and natural habitat. |
| <b>Land degradation</b> | Problems are relatively minor except for soil compaction and some erosive flooding. Creek lines are sometimes used as dumping grounds for household and industrial waste and are often infested with weed species.   |
| <b>Present land use</b> | This land system is primarily used for intensive, irrigated agriculture, including many vegetables, lucerne, silage, maize, sorghum, barley and soy beans. There are also some orchards and some areas of residential, rural residential and recreational development.   |

# Land uses and land management practices

## *Principles*

This land system should be used and managed according to the following principles:

- The preservation of good quality agricultural land for agricultural use.
- Rehabilitation and management of watercourses and wetlands.
- Land use viability and sustainable resource use practices.
- Respect for Aboriginal and European cultural heritage.

## *Land uses encouraged*

- Intensive agriculture on high-quality soils, including rotational cropping and the use of cover crops or green manure.
- Grazing on less productive soils.
- Orchards in suitable areas.
- Flora and fauna habitat.

## *Land management encouraged*

- Management of grazing pressures to maintain ground cover.
- Subdivision for the purpose of aggregation of agricultural properties.
- More efficient irrigation practices.
- Management of watercourses and wetlands to achieve improved stability, including reduction of flood, silting and erosion risk; control of inappropriate vegetation and enhancement as flora and fauna habitat and corridors.
- Management practices which will reduce the impact of using domestic and agricultural chemicals and fertilisers.
- Natural levees to be maintained or restored and constructed levee banks to be well planned and licensed on a sub-catchment/sub-regional basis.
- Management practices that maintain underground water qualities.
- Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.
- Conservation of flora and fauna habitat including wetlands.
- Rural enterprises that adopt a systems approach to the multiple use of key resources such as water and land.
- Agriculture and land management practices that are aware of water reuse issues; including salinity, water quality and community health.

## *Discouraged*

- Rezoning and subdivision of good quality agricultural land.
- Permanent alienation (eg subdivision) of good quality agricultural land through activities such as aquaculture. Freshwater aquaculture should be located on areas of lesser agricultural quality where possible. The proposal should be assessed against SPP 1/92 in terms of alternative sites and possible land use conflicts. Refer to the LCA Policy Paper on Aquaculture available through the Lockyer Catchment Centre.
- Damage to Aboriginal and European cultural heritage.
- Inappropriate levee banks.
- Ribbon development along the Warrego Highway and other major roads.
- Non-agricultural land uses and uses which have adverse impact on agricultural production.
- Waste disposal in and along creek lines.
- Inappropriate fire regimes.

# Implementation guide

---

Implementation of the recommended land uses and land management practices can be achieved through three action processes:

1. Property management planning on individual properties.
2. Local government planning schemes and planning policies.
3. Agency and community actions.

The tables at the end of this handbook show how the three processes and their subsidiary actions can be used to implement each of the recommended land uses and land management practices. The three implementation processes are detailed in the following sections.

## Property management planning

The management of natural resources is best achieved through the informed actions of individual landholders. By carrying out a property management planning exercise using the ‘property management planning’ actions in the tables at the end of this handbook, a landholder can readily implement the recommended land uses and land management practices on their property.

The ‘property management planning’ actions from the tables at the end of this handbook have been reproduced in a property management planning technical note. This technical note that can be used with either the Queensland Department of Primary Industries “Futureprofit” property management planning process, which is aimed at rural producers, or the *Living in the Lockyer Property Management Planning Kit*, which is aimed at non-producers. The inclusion of vegetation mapping and management at property level also provides the opportunity to meet requirements under the Vegetation Management Act 2000.

## Local government planning

Local government has the primary responsibility for land use planning in the Lockyer Catchment, and for this reason the Councils of Gatton, Laidley, Esk and Cambooya can play a major role in the implementation of the recommended land uses and land management practices in this handbook. Incorporation of the recommended land uses and land management practices into the planning schemes and policies of Gatton, Laidley, Esk and Cambooya can be achieved by:

- Planning scheme ‘desired environmental outcomes’ (DEOs) that reflect the Lockyer Catchment land use and land management aims featured in the Introduction to this handbook.
- Planning scheme land use areas or zones that are developed from the Lockyer Catchment Land Systems in this handbook.
- Planning scheme measures and planning scheme policies that reflect the recommended ‘local government planning’ actions in the tables at the end of this handbook.

### Planning scheme desired environmental outcomes

The Queensland *Integrated Planning Act 1997* requires local government planning schemes to include ‘desired environmental outcomes’ for the whole of the local government area. These outcomes are underpinned by the principle of ecological sustainability. Ecological sustainability can be achieved in the Lockyer Catchment if the Councils of Gatton, Laidley, Esk and Cambooya

adopt 'desired environmental outcomes' (DEOs) reflecting the Lockyer Catchment land use and land management aims featured in the Introduction to this handbook. These aims are:

- Maintenance of sustainable cropping and grazing industries.
- Controlled and planned population growth and well-managed housing, industrial, tourism, mining, extractive industry and recreation development.
- Planned, responsible and sustainable use of land, water, vegetation and other natural resources in or available to the catchment.
- Maintenance of a healthy natural environment within the catchment.
- Responsible domestic, public, agricultural and industrial waste management.
- Maintenance and where appropriate improvement in water quality and efficient water use.
- Land used according to its suitability for specific uses where feasible.
- Recognition of competing land uses and introduction of measures to reduce potential conflict.

### **Planning scheme land use areas or zones**

The councils of Gatton, Laidley, Esk and Cambooya should adopt planning scheme land use areas or zones that are developed from the Lockyer Catchment Land Systems in this handbook. By using the land systems approach, the Councils will be able to readily incorporate the recommended 'local government planning' actions into their planning scheme measures and planning scheme policies.

### **Planning scheme measures and planning scheme policies**

The councils of Gatton, Laidley, Esk and Cambooya should adopt planning scheme measures and planning scheme policies that reflect the recommended 'local government planning' actions in the tables at the end of this handbook. The 'local government planning' actions from the tables are reproduced below.

#### Land use security

Landholders often react against sustainable management programs. For most landholders, their adverse reaction is not because they are opposed to the sustainable management of their land, but because they feel that their land use activities are under threat. However, if landholders can have their land use activities secured through a binding agreement they are likely to be more willing to cooperate. Recent changes to Queensland legislation now make this possible. The councils of Gatton, Laidley, Esk and Cambooya should establish 'land management agreement' programs under the new *Natural Resources and Other Legislation Amendment Act 2000* that will allow landholders to secure the following land-uses on their properties:

| <b>Land use</b>           | <b>Land systems where activity may be applicable</b> |
|---------------------------|--|
| Grazing.                  | All.   |
| Flora and fauna habitat.  | All.   |
| Recreation and tourism.   | Helidon Hills, Steep sandstones, Basalt/Walloons.    |
| Selective logging.        | Helidon Hills, Basalt/Walloons.                      |
| Orchards.                 | Helidon Hills, Creek flats.                          |
| Part-time or hobby farms. | Undulating sandstones.                               |
| Agroforestry.             | Undulating sandstones.                               |
| Forage cropping.          | Basalt/Walloons.                                     |
| Cultivation.              | Basalt/Walloons.                                     |
| Selective tree thinning.  | Basalt/Walloons.                                     |
| Intensive agriculture.    | Creek flats.   |
| Mining/extractives.       | Helidon Hills, Basalt/Walloons.                      |
| Aquaculture.              | See page 52 regarding permanent alienation.          |



### Designation of Key Resource Areas

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b> |
|---|--|
| Incorporate Key Resource Areas for mining, extractive and explosives industries into Planning Scheme. | Helidon Hills.                                       |

### Development assessments

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Development assessments should consider flora and fauna habitat requirements.      | All.   |
| Development assessments should consider Aboriginal and European cultural heritage. | All.   |

### Incentives and assistance programs

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Landholders should be given rate rebates for flora and fauna habitat areas.  | All.   |
| Landholders should be assisted through Land for Wildlife programs.   | All.   |
| Recreation and tourism developments could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans). | Helidon Hills, Steep sandstones, Basalt/Walloons.    |
| Rural retreats could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans).                      | Helidon Hills, Steep sandstones, Basalt/Walloons.    |

### Managing infrastructure provision

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b> |
|---|--|
| Roadside soil and vegetation conservation plans should be prepared and implemented for all existing roads. All proposals for new roads and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures. | All.   |
| All proposals for new roads and other services should be required to demonstrate cultural heritage conservation measures where appropriate.   | All.   |

### Managing development in upland areas

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b>                     |
|---|--|
| Development controls should be established for bushfire-prone areas.  | Helidon Hills, Steep sandstones, Undulating sandstones, Basalt/Walloons. |
| Extractive industry and explosives industry development applications should be required to include nature conservation, fire, waste, erosion control, cultural heritage, rehabilitation, vehicle impact management and social impact management plans.                                    | Helidon Hills.   |
| Recreation and tourism development applications should be required to include human and vehicle impact management and social impact management plans.   | Helidon Hills, Steep sandstones, Basalt/Walloons.                        |
| Rural retreat, recreation and tourism development applications should be required to include nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans.   | Helidon Hills, Steep sandstones, Basalt/Walloons.                        |
| Low-impact tourism could be encouraged through the promotion of the National Ecotourism Accreditation Program (NEAP).   | Helidon Hills, Steep sandstones, Basalt/Walloons.                        |
| Developments with negative social impacts, negative environmental impacts or negative scenic impacts should not be approved.  | Helidon Hills, Undulating sandstones, Steep sandstones, Basalt/Walloons. |
| Subdivision should only be approved if there is a substantial community benefit e.g. where the applicant agrees to permanently set aside and manage all areas of significant flora and fauna habitat.   | Helidon Hills, Undulating sandstones, Steep sandstones, Basalt/Walloons. |
| All development applications should be required to include erosion control and salinity control management plans with these plans required to demonstrate that the development will not cause erosion or an increase in salinity either on the development property or in any other area. | Gatton, Undulating sandstones.   |

### Managing urban, rural residential and associated development

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Urban subdivision and associated uses such as residential, commercial, industrial, recreational, landfill and sewage treatment should be restricted to suitable areas of the Gatton land system around existing urban centres (rather than on the creek flat land system).   | Gatton.  |
| Rural residential subdivision should be restricted to suitable areas of the Gatton land system on the fringes of existing urban centres (rather than on the creek flat land system).   | Gatton.  |
| Subdivision for the purpose of aggregation of agricultural properties should be permitted on the creek flat land system, and could be encouraged by incentives such as fee discounts. Any other rezoning or subdivision should be discouraged on the creek flat land system. | Creek flats.   |

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Local government planning - non-agricultural land uses and uses which have adverse impact on agricultural production should be discouraged on the creek flat land system.  | Creek flats.   |
| Ribbon development should be avoided by ensuring that commercial and residential development is restricted to areas around existing urban centres except where this encroaches on areas that have been identified as important for other key land use options. There may be a need to identify limits to the expansion capacity of existing centres and the options for where new communities could be developed.. | Gatton.  |
| New urban and rural residential areas should include buffer areas between residences and adjacent areas of intensive horticulture or industry. The cost of buffer establishment should be incurred by the development applicant, and the buffers should be of sufficient width to prevent the residences being affected by machinery noise, spray drift or other normal management practices and impacts.          | Gatton.  |
| Urban and rural residential subdivisions should be required to include public open space contributions.  | Gatton.  |
| Public open space areas (including golf courses, parks, playing fields and natural forests) should be located on suitable areas of the Gatton land system adjacent to urban and rural residential areas (rather than on the creek flat land system). Where appropriate, public open space areas can be used as buffer areas between residences and adjacent areas of intensive horticulture or industry.           | Gatton.  |
| Subdivision should only occur in designated areas.   | Gatton.  |
| Subdivision applications should be required to identify employment opportunities for residents, that development design will be in tune with the social needs of residents, and the availability of social and physical services such as schools, medical services, shops, waste disposal and public transport.  | Gatton.  |
| Subdivision applications should be required to include litter, garbage, waste water and runoff disposal management plans.  | Gatton.  |
| Subdivision applications should facilitate optimal use of public transport and provide appropriate walking and cycling facilities.   | Gatton.  |
| Building applications should be required to demonstrate energy efficient design.   | Gatton.  |
| Energy efficient building design could be encouraged through the provision of incentives such as fee discounts.  | Gatton.  |
| Subdivision applications and building applications should be required to demonstrate waterwise and water efficient design.   | Gatton.  |
| Waterwise and water efficient design could be encouraged through the provision of incentives such as fee discounts.  | Gatton.  |
| All development applications should be required to include erosion control and salinity control management plans with these plans required to demonstrate that the development will not cause erosion or an increase in salinity either on the development property or in any other area.  | Gatton, Undulating sandstones.                       |

# Agency and community actions

The full implementation of the recommended land uses and land management practices in this handbook requires a range of agency and community actions, in addition to the property management planning action and local government planning actions already described.

The ‘agency and community actions’ from the tables at the end of this handbook are reproduced below.

## Actions for Queensland and Commonwealth Government agencies

### All Government agencies

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b> |
|---|--|
| All proposals for new roads, telephone lines, powerlines and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures. | All.   |
| The Queensland Government should continue to exclude woodchip industries from South-East Queensland.  | Helidon Hills.                                       |
| Investigate/encourage the amalgamation of lots in sensitive areas through the use of creative solutions such as succession rights and transferal incentives.                                | All.   |

### Queensland Environmental Protection Agency

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Mining industry applications should be required to include nature conservation, fire, waste, erosion control, cultural heritage, rehabilitation, vehicle impact management and social impact management plans. | Helidon Hills.                                       |

### Queensland Parks and Wildlife Service

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b> |
|---|--|
| National Park, Conservation Park and State Forest management plans should be prepared in consultation and cooperation with adjoining landholders. | Helidon Hills, Steep sandstones, Basalt/Walloons.    |
| Landholders can be assisted to secure their flora and fauna habitat areas through Nature Refuge Agreements.                                       | All.   |
| Financial assistance should be used to encourage landholders to manage flora and fauna habitat.   | All.   |
| Financial assistance should be used to encourage landholders to revegetate with native plants.  | Undulating sandstones.                               |
| Financial assistance should be used to encourage landholders to remove and clear lantana.   | Undulating sandstones, Steep sandstones.             |
| Financial assistance should be used to encourage landholders to manage feral animals and manage problem native fauna.                             | Steep sandstones.                                    |

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Financial assistance should be used to encourage landholders to manage regrowth on cleared land to reduce erosion. | Steep sandstones, Basalt/Walloons.                   |
| Financial assistance should be used to encourage landholders to manage feral animals and weeds.                    | Basalt/Walloons.                                     |

Queensland Department of Natural Resources and Mines

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Landholders should be given valuation concessions for flora and fauna habitat areas.   | All.   |
| Financial assistance should be used to encourage landholders to manage flora and fauna habitat.  | All.   |
| National Park, Conservation Park and State Forest management plans should be prepared in consultation and cooperation with adjoining landholders.  | Helidon Hills, Steep sandstones, Basalt/Walloons.    |
| Financial assistance should be used to encourage landholders to retain or replant deep-rooted vegetation.  | Undulating sandstones.                               |
| Financial assistance should be used to encourage landholders to revegetate with native plants.   | Undulating sandstones.                               |
| Financial assistance should be used to encourage landholders to remove and clear lantana.  | Undulating sandstones, Steep sandstones.             |
| Financial assistance should be used to encourage landholders to manage feral animals and manage problem native fauna.  | Steep sandstones.                                    |
| Valuations should not be increased on the basis of scenic amenity in areas where landholders are not permitted to subdivide.   | Steep sandstones, Basalt/Walloons.                   |
| Financial assistance should be used to encourage landholders to manage regrowth on cleared land to reduce erosion.   | Steep sandstones, Basalt/Walloons.                   |
| Financial assistance should be used to encourage landholders to manage feral animals and weeds.  | Basalt/Walloons.                                     |
| DNR&M and DPI should take the lead in working with the community and local government to set a policy for aquaculture on GQAL.   | Creek Flats.   |
| Mining industry applications should be required to include nature conservation, fire, waste, erosion control, cultural heritage, rehabilitation, vehicle impact management and social impact management plans. | Helidon Hills.                                       |

Commonwealth Government

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b> |
|---|--|
| Financial assistance should be used to encourage landholders to manage flora and fauna habitat.           | All.   |
| Financial assistance should be used to encourage landholders to retain or replant deep-rooted vegetation. | Undulating sandstones.                               |
| Financial assistance should be used to encourage landholders to revegetate with native plants.            | Undulating sandstones.                               |

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b> |
|---|--|
| Financial assistance should be used to encourage landholders to remove and clear lantana.                             | Undulating sandstones, Steep sandstones.             |
| Financial assistance should be used to encourage landholders to manage feral animals and manage problem native fauna. | Steep sandstones.                                    |
| Financial assistance should be used to encourage landholders to manage regrowth on cleared land to reduce erosion.    | Steep sandstones, Basalt/Walloons.                   |
| Financial assistance should be used to encourage landholders to manage feral animals and weeds.                       | Basalt/Walloons.                                     |

### **Actions for the Lockyer Catchment Association (LCA)**

#### Alternative land uses

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b> |
|---|--|
| Other viable land uses should be identified and developed; education programs should be used to promote other viable land uses. | Undulating sandstones, Steep sandstones.             |

#### Incentive and assistance programs

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b> |
|--|--|
| Financial assistance should be obtained to encourage landholders to manage flora and fauna habitat.  | All.   |
| Financial assistance should be obtained to encourage landholders to secure their flora and fauna habitat areas through Nature Refuge Agreements. | All.   |
| Financial assistance should be obtained to encourage landholders to retain or replant deep-rooted vegetation.                                    | Undulating sandstones.                               |
| Financial assistance should be obtained to encourage landholders to revegetate with native plants.   | Undulating sandstones.                               |
| Financial assistance should be obtained to encourage landholders to remove and clear lantana.  | Undulating sandstones, Steep sandstones.             |
| Financial assistance should be obtained to encourage landholders to manage feral animals and manage problem native fauna.                        | Steep sandstones.                                    |
| Financial assistance should be obtained to encourage landholders to manage regrowth on cleared land to reduce erosion.                           | Steep sandstones, Basalt/Walloons.                   |
| Financial assistance should be obtained to encourage landholders to manage feral animals and weeds.  | Basalt/Walloons.                                     |

#### Levee bank licensing

| <b>Actions</b>                                      | <b>Land systems where activity may be applicable</b> |
|---|--|
| Levee bank licensing schemes should be implemented. | Creek flats.   |

## Fire management

| <b>Actions</b>  | <b>Land systems where activity may be applicable</b>                     |
|---|--|
| Landscape-level fire management plans and strategies should be prepared using the South-East Queensland Fire & Biodiversity Consortium's <i>Fire Management Planning Manual</i> . | Helidon Hills, Undulating sandstones, Steep sandstones, Basalt/Walloons. |

## Education programs

| <b>Actions</b>   | <b>Land systems where activity may be applicable</b>                             |
|--|--|
| Promote sustainable grazing practices.   | All.   |
| Promote an understanding of the importance of flora and fauna habitat.   | All.   |
| Promote appropriate fire regimes.  | Helidon Hills, Gatton, Undulating sandstones, Steep sandstones, Basalt/Walloons. |
| Promote reduced tillage and planting practices.  | Undulating sandstones.   |
| Promote the retention or replanting of deep-rooted vegetation.   | Undulating sandstones.   |
| Promote an understanding of the importance of revegetating with native plants.   | Undulating sandstones.   |
| Promote other viable land uses.  | Undulating sandstones, Steep sandstones.   |
| Promote an understanding of the importance of removing and clearing lantana.   | Undulating sandstones, Steep sandstones.   |
| Promote the management of regrowth on cleared land to reduce erosion.  | Steep sandstones.  |
| Promote an understanding of the importance of managing feral animals and the issues associated with managing problem native fauna.   | Steep sandstones.  |
| Promote revegetation with deep-rooted vegetation and shrub legumes in grazing systems.   | Steep sandstones.  |
| Promote an understanding of the importance of managing feral animals and weeds.  | Basalt/Walloons.   |
| Promote the management of regrowth on cleared land to reduce erosion.  | Basalt/Walloons.   |
| Promote more efficient irrigation practices.   | Creek flats.   |
| Promote management practices that maintain aquifer water qualities.  | Creek flats.   |
| Promote the management of watercourses and wetlands to achieve improved stability, including reduction of flood, silting and erosion risk; control of inappropriate vegetation and enhancement as flora and fauna habitat and corridors. | Creek flats.   |
| Promote ways of reducing the impact of using domestic and agricultural chemicals and fertilisers.  | Creek flats.   |
| Promote the maintenance or restoration of existing levee banks and the need for the construction of any new levee banks to be well planned.  | Creek flats.   |



| Actions  | Land systems where activity may be applicable |
|--|---|
| Discourage the public removal of flora, fauna or landscaping material. | Helidon Hills, Basalt/Walloons.               |
| Discourage continuous cropping.  | Undulating sandstones.                        |
| Discourage the mass removal of timber.                                 | Steep sandstones.                             |
| Discourage clear felling.  | Basalt/Walloons.                              |
| Discourage permanent cultivation on steep slopes.                      | Basalt/Walloons.                              |
| Discourage waste disposal in and along creek lines.                    | Creek flats.                                  |



# Appendices

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## Appendix 1: Glossary

**Aquaculture:** The cultivation of live fisheries resources (live fish and marine plants cultivated in aquaculture) for sale other than in circumstances prescribed under a regulation (Fisheries Regulations 1995).

**Clear felling:** A form of logging for commercial wood production where a section of forest is fully cleared of millable timber (Note: this has never been allowed in the Lockyer and especially in the milling industry).

**Community:** Individuals and non-government groups and organisations, including landholders, farmers, graziers, community service organisations, industry groups, conservation groups, and other interest groups.

**Good Quality Agricultural Land:** Land capable of sustainable use for agriculture with a reasonable level of inputs, without causing degradation of land or other natural resources (Planning Guidelines: Identification of Good Quality Agricultural Land, 1993).

**Government agencies:** Government departments and authorities that are the administrative arm of Government, including Commonwealth and State Government departments, local governments and statutory authorities.

**Hobby farms:** A form of land use where agriculture is practiced on small to medium land holdings (5 to 40 hectares) but is not the primary source of income; typically cleared and fenced, with good soil and water.

**Land and water resources:** All land, soil, landscape, and surface and underground water components of a catchment, including related biological resources such as terrestrial and aquatic plants and animals that are dependent on or affected by the other resources in the catchment.

**Management:** The assessment, planning, allocation, control, care and use of natural resources.

**Rural residential development:** A form of land use where the emphasis is on residential development on larger than normal urban block sizes (0.4 to 5 hectares); often partially serviced, usually with good roads and electricity and possibly with water, but rarely sewered.

**Rural retreats:** A form of land use where accommodation can be built on existing land holdings where the emphasis is on retention of the natural environment and isolation from other residences.

**Selective logging:** A form of commercial wood production where a sustainable yield of millable trees are taken from the forest for sawlogs.

**Wood chipping:** A form of commercial wood production where all or part of the wood from a logging operation is used to produce woodchips.

## Appendix 2: Implementation tables

Implementation of the recommended land uses and land management practices can be achieved through three action processes:

1. Property management planning on individual properties.
2. Local government planning schemes and policies.
3. Agency and community actions.

The tables on the following pages show how the three processes and their subsidiary actions can be used to implement the recommended land uses and land management practices for each of the six Lockyer Catchment land systems.

## Implementation table for Land System 1: Helidon Hills

| Land uses and practices   | Implementation processes and actions  |
|---|---|
| <i>Land uses encouraged</i>   |   |
| <ul style="list-style-type: none"> <li>Grazing.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include grazing areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their grazing activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Commercial forestry practiced as selective logging for mill logs.</li> </ul>                     | <ul style="list-style-type: none"> <li>Property management planning - plans can include selective logging areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their selective logging activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Orchards on suitable soils and slopes.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include orchard areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their orchard activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Mining industries, extractive industries and explosives industries in suitable areas.</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans can include mining industries, extractive industries and explosives industries in suitable areas.</li> <li>Local government planning - Key Resource Areas for mining, extractive and explosives industries should be incorporated into planning schemes and given strong planning protection.</li> <li>Agency and community actions - Refer development applications in Key Resource Areas for mining, extractive and explosives industries to the Queensland Department of Natural Resources and Mines for advice.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include flora and fauna habitat areas.</li> <li>Local government planning - development assessments should consider flora and fauna habitat requirements; landholders should be given the opportunity to secure their flora and fauna habitat areas through Land Management Agreement programs.</li> <li>Agency and community actions - landholders can be assisted to secure their flora and fauna habitat areas through Nature Refuge Agreements.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Recreation and tourism, where activities are of low environmental impact.</li> </ul>             | <ul style="list-style-type: none"> <li>Property management planning - plans can include recreation and tourism areas.</li> <li>Local government planning - recreation and tourism developments could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans); low-impact tourism could be encouraged through the promotion of the National Ecotourism Accreditation Program (NEAP).</li> <li>Local government planning - landholders should be given the opportunity to secure their recreation and tourism activities through Land Management Agreement programs.</li> </ul> |

| Land uses and practices   | Implementation processes and actions   |
|---|--|
| <ul style="list-style-type: none"> <li>Rural retreats on existing holdings.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include rural retreats.</li> <li>Local government planning - rural retreats could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans).</li> </ul>  |
| <b><i>Land management encouraged</i></b>  |  |
| <ul style="list-style-type: none"> <li>Maintenance of ground cover in grazed areas to minimise erosion.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should include grazing regimes that will maintain ground cover.</li> <li>Agency and community actions - education programs should be used to promote sustainable grazing practices.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Conservation of flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should include actions to conserve flora and fauna habitat.</li> <li>Local government planning - landholders should be given rate rebates for flora and fauna habitat areas; landholders should be assisted through Land for Wildlife and Land Management Agreement programs.</li> <li>Agency and community actions - landholders should be given valuation concessions for flora and fauna habitat areas; landholders should be given financial assistance to manage flora and fauna habitat; landholders can be assisted through the Nature Refuge Agreement program.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Cooperative management of National Park, Conservation Park and State Forest boundaries by Queensland Government agencies and landholders.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans should include actions to manage boundaries with National Parks, Conservation Parks and State Forests.</li> <li>Agency and community actions - National Park, Conservation Park and State Forest management plans should be prepared in consultation and cooperation with adjoining landholders.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.</li> </ul>                | <ul style="list-style-type: none"> <li>Property management planning - plans should include a fire management plan component prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Individual Property Fire Management Planning Kit</i>.</li> <li>Local government planning - development controls should be established for bushfire-prone areas.</li> <li>Agency and community actions - Landscape-level fire management plans and strategies should be prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Fire Management Planning Manual</i>.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Conservation of soil and vegetation by public authorities which provide services such as roads, telephone and electricity.</li> </ul>  | <ul style="list-style-type: none"> <li>Local government planning - roadside conservation plans should be prepared and implemented for all existing roads; all proposals for new roads and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures.</li> <li>Agency and community actions - all proposals for new roads, telephone lines, powerlines and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Nature conservation, fire, waste, erosion control, cultural heritage rehabilitation, vehicle impact management and social impact management plans for mining, extractive and explosives industries.</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans for mining, extractive and explosives industries should include nature conservation, fire, waste, erosion control, cultural heritage and rehabilitation management components.</li> <li>Local government planning - extractive industry and explosives industry development applications should be required to include nature conservation, fire, waste, erosion control, cultural heritage, rehabilitation, vehicle impact management and social impact management plans.</li> <li>Agency and community actions - mining industry development applications should be required to include nature conservation, fire, waste, erosion control, cultural heritage, rehabilitation, vehicle impact management and social impact management plans.</li> </ul> |

| Land uses and practices   | Implementation processes and actions  |
|---|---|
| <ul style="list-style-type: none"> <li>• Recreation and tourism managed to reduce human and vehicle impact on natural areas and roads, and to reduce impacts on private landholders.</li> </ul>   | <ul style="list-style-type: none"> <li>• Property management planning - plans for recreation and tourism developments should include vehicle impact management and social impact management components.</li> <li>• Local government planning - recreation and tourism development applications should be required to include vehicle impact management and social impact management plans.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans for rural retreats and recreation and tourism developments.</li> </ul>   | <ul style="list-style-type: none"> <li>• Property management planning - plans for rural retreats and recreation and tourism developments should include nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management components.</li> <li>• Local government planning - rural retreat, recreation and tourism development applications should be required to include nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans; low-impact tourism can be encouraged through the promotion of the National Ecotourism Accreditation Program (NEAP).</li> </ul> |
| <b>Discouraged</b>  |   |
| <ul style="list-style-type: none"> <li>• Commercial clear felling for logs or woodchips.</li> </ul>   | <ul style="list-style-type: none"> <li>• Agency and community actions - the Queensland Government should continue to exclude woodchip industries from South-East Queensland.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Clearing or degradation of areas of significant flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>• Local government planning - development assessments should consider flora and fauna habitat requirements.</li> <li>• Agency and community actions - education programs should be used to promote an understanding of the importance of flora and fauna habitat.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Inappropriate fire regimes.</li> </ul>   | <ul style="list-style-type: none"> <li>• Agency and community actions - education programs should be used to promote appropriate fire regimes.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Development that does not comply with stringent social, environmental and scenic guidelines (subdivision should only be approved if there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).</li> </ul> | <ul style="list-style-type: none"> <li>• Local government planning - developments with negative social impacts, negative environmental impacts or negative scenic impacts should not be approved; subdivision should only be approved if there is a substantial community benefit e.g. where the applicant agrees to permanently set aside and manage all areas of significant flora and fauna habitat.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Public removal of flora, fauna or landscaping material.</li> </ul>   | <ul style="list-style-type: none"> <li>• Agency and community actions - education programs should be used to discourage the public removal of flora, fauna or landscaping material.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Damage to Aboriginal and European cultural heritage.</li> </ul>  | <ul style="list-style-type: none"> <li>• Consideration of cultural heritage in all activities and development.</li> </ul>   |

## Implementation table for Land System 2: Gatton

| Land uses and practices   | Implementation processes and actions  |
|---|---|
| <i>Land uses encouraged</i>   |   |
| <ul style="list-style-type: none"> <li>Predominantly urban and village developments around existing service centres, including associated uses such as residential, commercial, industrial, recreational, landfill and sewage treatment.</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans can include urban and associated areas such as residential, commercial, industrial and recreational.</li> <li>Local government planning - urban subdivision and associated uses such as residential, commercial, industrial, recreational, landfill and sewage treatment should be restricted to suitable areas of the Gatton land system around existing urban centres (rather than on the creek flat land system).</li> </ul>   |
| <ul style="list-style-type: none"> <li>Limited areas of rural residential subdivision on the fringes of urban centres where water, sewerage and social services can be provided.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans can include rural residential areas.</li> <li>Local government planning - rural residential subdivision should be restricted to suitable areas of the Gatton land system on the fringes of existing urban centres (rather than on the creek flat land system).</li> </ul>   |
| <ul style="list-style-type: none"> <li>Buffer areas between new residential areas and adjacent intensive horticulture or industry, and grazing carried out in buffer areas where appropriate.</li> </ul>  | <ul style="list-style-type: none"> <li>Local government planning - new urban and rural residential areas should include buffer areas between residences and adjacent areas of intensive horticulture or industry, with the cost of buffer establishment incurred by the development applicant and the buffers of sufficient width to prevent the residences being affected by machinery noise, spray drift or other impacts.</li> <li>Property management planning - plans can include buffer areas that are used for grazing where appropriate.</li> <li>Local government planning - landholders should be given the opportunity to secure their grazing activities through Land Management Agreement programs.</li> </ul> |
| <ul style="list-style-type: none"> <li>Public open space including golf courses, parks, playing fields and natural forests, particularly associated with urban areas and used as buffers where appropriate.</li> </ul>                              | <ul style="list-style-type: none"> <li>Property management planning - plans can include public open space areas.</li> <li>Local government planning - public open space areas (including golf courses, parks, playing fields and natural forests) should be located on suitable areas of the Gatton land system adjacent to urban and rural residential areas (rather than on the creek flat land system); urban and rural residential subdivisions should be required to include public open space contributions; public open space areas can be used as buffer areas where appropriate.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include flora and fauna habitat areas.</li> <li>Local government planning - development assessments should consider flora and fauna habitat requirements; landholders should be given the opportunity to secure their flora and fauna habitat areas through Land Management Agreement programs.</li> <li>Agency and community actions - landholders can be assisted to secure their flora and fauna habitat areas through Nature Refuge Agreements.</li> </ul>  |



| Land uses and practices  | Implementation processes and actions   |
|--|--|
| <b><i>Land management encouraged</i></b>   |  |
| <ul style="list-style-type: none"> <li>Grazing which is managed to maintain ground cover and prevent erosion.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans should include grazing regimes that will maintain ground cover.</li> <li>Agency and community actions - education programs should be used to promote sustainable grazing practices.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Controlled and planned development taking into account employment, social needs and provision of social and physical services.</li> </ul> | <ul style="list-style-type: none"> <li>Local government planning - subdivision should only occur in designated areas; subdivision applications should be required to demonstrate employment availability for residents, that development design will meet the social needs of residents, and the provision or availability of social and physical services such as schools, medical services, shops, waste disposal and public transport.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Management of litter, garbage, waste water and runoff disposal.</li> </ul>  | <ul style="list-style-type: none"> <li>Local government planning - subdivision applications should be required to include litter, garbage, waste water and runoff disposal management plans. Councils to provide and maintain garbage transfer stations where appropriate.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Conservation and reduction in the demand for energy (for transport, electricity etc) through urban and building design.</li> </ul>        | <ul style="list-style-type: none"> <li>Local government planning - subdivision applications should be required to demonstrate designs that minimise the use of private vehicles and maximise the use of public transport, cycling and walking; building applications should be required to demonstrate energy efficient design; energy efficient design could be encouraged through the provision of incentives such as fee discounts.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Conservation and reduction in the demand for water through urban and building design.</li> </ul>  | <ul style="list-style-type: none"> <li>Local government planning - subdivision applications and building applications should be required to demonstrate waterwise and water efficient design; waterwise and water efficient design could be encouraged through the provision of incentives such as fee discounts.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Planned development and subdivision design to ensure sufficient areas used as open space.</li> </ul>                                      | <ul style="list-style-type: none"> <li>Local government planning - urban and rural residential developments should be required to include public open space contributions.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Erosion control and salinity control measures for all development and land uses.</li> </ul>   | <ul style="list-style-type: none"> <li>Local government planning - all development applications should be required to include erosion control and salinity control management plans with these plans required to demonstrate that the development will not cause erosion or an increase in salinity either on the development property or in any other area.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.</li> </ul>                 | <ul style="list-style-type: none"> <li>Local government planning - roadside conservation plans should be prepared and implemented for all existing roads; all proposals for new roads and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures.</li> <li>Agency and community actions - all proposals for new roads, telephone lines, powerlines and other services should be required to demonstrate how land degradation will be minimised.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Conservation of flora and fauna habitat.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans should include actions to conserve flora and fauna habitat.</li> <li>Local government planning - landholders should be given rate rebates for flora and fauna habitat areas; landholders should be assisted through Land for Wildlife and Land Management Agreement programs.</li> <li>Agency and community actions - landholders should be given valuation concessions for flora and fauna habitat areas; landholders should be given financial assistance to manage flora and fauna habitat; landholders can be assisted through the Nature Refuge Agreement program; education programs should be used to promote an understanding of the importance of flora and fauna habitat.</li> </ul> |

| Land uses and practices  | Implementation processes and actions   |
|--|--|
| <i>Discouraged</i>   |  |
| <ul style="list-style-type: none"> <li>Rural residential subdivision into large blocks in inappropriate areas with no or only partial services.</li> </ul> | <ul style="list-style-type: none"> <li>Local government planning - rural residential development should be restricted to the fringes of existing urban centres; development applications should be required to demonstrate the availability of services such as schools, medical services, shops, waste disposal and public transport.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Ribbon commercial and residential development.</li> </ul>   | <ul style="list-style-type: none"> <li>Local government planning - commercial and residential development should be restricted to areas around existing urban centres.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Inappropriate fire regimes.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should include a fire management plan component prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Individual Property Fire Management Planning Kit</i>.</li> <li>Agency and community actions - education programs should be used to promote appropriate fire regimes.</li> </ul> |
| <ul style="list-style-type: none"> <li>Damage to Aboriginal and European cultural heritage.</li> </ul>   | <ul style="list-style-type: none"> <li>Consideration of cultural heritage in all activities and development.</li> </ul>  |

## Implementation table for Land System 3: Undulating sandstones

| Land uses and practices   | Implementation processes and actions   |
|---|--|
| <b><i>Land uses encouraged</i></b>  |  |
| <ul style="list-style-type: none"> <li>Grazing of native and improved pastures.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include grazing areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their grazing activities through Land Management Agreement programs.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Part-time or hobby farm properties on present block sizes.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include part-time or hobby farm activities.</li> <li>Local government planning - landholders should be given the opportunity to secure their part-time or hobby farm activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Agroforestry.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans can include agroforestry areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their agroforestry activities through Land Management Agreement programs.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include flora and fauna habitat areas.</li> <li>Local government planning - development assessments should consider flora and fauna habitat requirements; landholders should be given the opportunity to secure their flora and fauna habitat areas through Land Management Agreement programs; landholders should be given rate rebates for flora and fauna habitat areas; landholders should be assisted through Land for Wildlife programs.</li> <li>Agency and community actions - landholders can be assisted to secure their flora and fauna habitat areas through Nature Refuge Agreements; landholders should be given valuation concessions for flora and fauna habitat areas.</li> </ul> |
| <b><i>Land management encouraged</i></b>  |  |
| <ul style="list-style-type: none"> <li>Self-monitoring and management of grazing pressures to maintain native and improved pastures and timber resources, and to avoid land degradation.</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans should include grazing regimes that will maintain ground cover.</li> <li>Agency and community actions - education programs should be used to promote sustainable grazing practices.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Fencing of severely degraded areas and remnant vegetation areas for rehabilitation purposes.</li> </ul>  | <ul style="list-style-type: none"> <li>Agency and community actions - landholders should be given financial assistance to manage flora and fauna habitat; education programs should be used to promote an understanding of the importance of flora and fauna habitat.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.</li> </ul>                                    | <ul style="list-style-type: none"> <li>Local government planning - roadside conservation plans should be prepared and implemented for all existing roads; all proposals for new roads and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures.</li> <li>Agency and community actions - all proposals for new roads, telephone lines, powerlines and other services should be required to demonstrate how land degradation will be minimised.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Use of reduced tillage and planting practices for introduction of improved pastures and short-term weed control.</li> </ul>                                  | <ul style="list-style-type: none"> <li>Property management planning - plans could include reduced tillage and planting practices.</li> <li>Agency and community actions - education programs should be used to promote reduced tillage and planting practices.</li> </ul>  |

| Land uses and practices   | Implementation processes and actions  |
|---|---|
| <ul style="list-style-type: none"> <li>Retaining or replanting deep-rooted vegetation to reduce water/saline seepages and water-table salting</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans could include actions to retain or replant deep-rooted vegetation.</li> <li>Local government planning - applications for subdivision or rezoning should be accompanied by expertly prepared salinity and/or property management plans.</li> <li>Local government planning - areas which are heavily salinised resulting in saline base flows from streams and expanses of saline soils should be specifically identified in planning documents and all up catchment planning applications should be required to address the impact of the intended land use in these areas.</li> <li>Agency and community actions - landholders could be given financial assistance to retain or replant deep-rooted vegetation; education programs should be used to promote the retention or replanting of deep-rooted vegetation.</li> </ul> |
| <ul style="list-style-type: none"> <li>Revegetation with native plants for wildlife habitat and corridors.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans could include actions to revegetate with native plants.</li> <li>Agency and community actions - landholders could be given financial assistance to revegetate with native plants; education programs should be used to promote an understanding of the importance of revegetating with native plants.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Strategic removal and clearing of lantana.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans could include actions to remove and clear lantana.</li> <li>Agency and community actions - landholders should be given financial assistance to remove and clear lantana; education programs should be used to promote an understanding of the importance of removing and clearing lantana.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should include a fire management plan component prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Individual Property Fire Management Planning Kit</i>.</li> <li>Local government planning - development controls should be established for bushfire-prone areas.</li> <li>Agency and community actions - Landscape-level fire management plans and strategies should be prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Fire Management Planning Manual</i>.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Identification and adoption of other viable land uses.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should consider the adoption of other viable land uses.</li> <li>Agency and community actions - other viable land uses should be identified and developed; education programs should be used to promote other viable land uses.</li> </ul>  |
| <b>Discouraged</b>  |   |
| <ul style="list-style-type: none"> <li>Continuous cropping.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should not include continuous cropping.</li> <li>Agency and community actions - education programs should be used to discourage continuous cropping.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Development that does not comply with stringent social, environmental and scenic guidelines (subdivision should only be approved if there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).</li> </ul> | <ul style="list-style-type: none"> <li>Local government planning - developments with negative social impacts, negative environmental impacts or negative scenic impacts should not be approved; subdivision should only be approved if there is a substantial community benefit e.g. where the applicant agrees to permanently set aside and manage all areas of significant flora and fauna habitat.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Inappropriate fire regimes.</li> </ul>   | <ul style="list-style-type: none"> <li>Agency and community actions - education programs should be used to promote appropriate fire regimes.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Damage to Aboriginal and European cultural heritage.</li> </ul>  | <ul style="list-style-type: none"> <li>Consideration of cultural heritage in all activities and development.</li> </ul>   |

## Implementation table for Land System 4: Steep sandstones

| Land uses and practices  | Implementation processes and actions  |
|--|---|
| <b><i>Land uses encouraged</i></b>   |   |
| <ul style="list-style-type: none"> <li>Grazing of native and improved pastures.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans can include grazing areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their grazing activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Recreation and tourism (ecotourism, nature-based tourism, recreational) on public land and private land where owners permit.</li> </ul>                 | <ul style="list-style-type: none"> <li>Property management planning - plans can include recreation and tourism areas.</li> <li>Local government planning - recreation and tourism developments could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans); low-impact tourism could be encouraged through the promotion of the National Ecotourism Accreditation Program (NEAP).</li> <li>Local government planning - landholders should be given the opportunity to secure their recreation and tourism activities through Land Management Agreement programs.</li> </ul> |
| <ul style="list-style-type: none"> <li>Flora and fauna habitat.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans can include flora and fauna habitat areas.</li> <li>Local government planning - development assessments should consider flora and fauna habitat requirements; landholders should be given the opportunity to secure their flora and fauna habitat areas through Land Management Agreement programs.</li> <li>Agency and community actions - landholders can be assisted to secure their flora and fauna habitat areas through Nature Refuge Agreements.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Rural retreats on existing holdings.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans can include rural retreats.</li> <li>Local government planning - rural retreats could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans).</li> </ul>   |
| <b><i>Land management encouraged</i></b>   |   |
| <ul style="list-style-type: none"> <li>Management of grazing pressures to maintain ground cover, and revegetation with deep rooted vegetation and shrub legumes in grazing systems.</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans should include grazing regimes that will maintain ground cover; plans could include actions to revegetate with deep rooted vegetation and shrub legumes in grazing systems.</li> <li>Agency and community actions - education programs should be used to promote sustainable grazing practices; education programs should be used to promote revegetation with deep rooted vegetation and shrub legumes in grazing systems.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Recreation and tourism managed to reduce human and vehicle impact on natural areas and roads, and to reduce impacts on private landholders.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans for recreation and tourism developments should include vehicle impact management and social impact management components.</li> <li>Local government planning - recreation and tourism development applications should be required to include vehicle impact management and social impact management plans.</li> </ul>   |

| Land uses and practices   | Implementation processes and actions  |
|---|---|
| <ul style="list-style-type: none"> <li>Nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans for rural retreats and recreation and tourism developments.</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans for rural retreats and recreation and tourism developments should include nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management components.</li> <li>Local government planning - rural retreat, recreation and tourism development applications should be required to include nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans; low-impact tourism can be encouraged through the promotion of the National Ecotourism Accreditation Program (NEAP).</li> </ul> |
| <ul style="list-style-type: none"> <li>Identification and adoption of other viable land uses.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should consider the adoption of other viable land uses.</li> <li>Agency and community actions - other viable land uses should be identified and developed; education programs should be used to promote other viable land uses.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.</li> </ul>  | <ul style="list-style-type: none"> <li>Local government planning - roadside conservation plans should be prepared and implemented for all existing roads; all proposals for new roads and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures.</li> <li>Agency and community actions - all proposals for new roads, telephone lines, powerlines and other services should be required to demonstrate how land degradation will be minimised.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Conservation of flora and fauna habitat, and revegetation of cleared areas where appropriate.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans should include actions to conserve and/or revegetate flora and fauna habitat.</li> <li>Local government planning - landholders should be given rate rebates for flora and fauna habitat areas; landholders should be assisted through Land for Wildlife and Land Management Agreement programs.</li> <li>Agency and community actions - landholders should be given valuation concessions for flora and fauna habitat areas; landholders should be given financial assistance to manage flora and fauna habitat; landholders can be assisted through the Nature Refuge Agreement program.</li> </ul>                  |
| <ul style="list-style-type: none"> <li>Managed regrowth on cleared land to reduce erosion.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans could include actions to manage regrowth on cleared land to reduce erosion.</li> <li>Agency and community actions - landholders could be given financial assistance to manage regrowth on cleared land to reduce erosion; education programs should be used to promote the management of regrowth on cleared land to reduce erosion.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Strategic removal and clearing of lantana where it can be replaced by improved pastures or deep rooted vegetation.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans could include actions to remove and clear lantana where it can be replaced by improved pastures or deep rooted vegetation.</li> <li>Agency and community actions - landholders should be given financial assistance to remove and clear lantana; education programs should be used to promote an understanding of the importance of removing and clearing lantana.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.</li> </ul>          | <ul style="list-style-type: none"> <li>Property management planning - plans should include a fire management plan component prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Individual Property Fire Management Planning Kit</i>.</li> <li>Local government planning - development controls should be established for bushfire-prone areas.</li> <li>Agency and community actions - Landscape-level fire management plans and strategies should be prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Fire Management Planning Manual</i>.</li> </ul>  |

| Land uses and practices  | Implementation processes and actions   |
|--|--|
| <ul style="list-style-type: none"> <li>• Management of feral animals, and management of problem native fauna where they are causing degradation or production problems.</li> </ul>   | <ul style="list-style-type: none"> <li>• Property management planning - plans could include actions to manage feral animals and manage problem native fauna where they are causing degradation or production problems.</li> <li>• Agency and community actions - landholders could be given financial assistance to manage feral animals and manage problem native fauna; education programs should be used to promote an understanding of the importance of managing feral animals and the issues associated with managing problem native fauna.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Cooperative management of National Park, Conservation Park and State Forest boundaries by Queensland Government agencies and landholders.</li> </ul>  | <ul style="list-style-type: none"> <li>• Property management planning - plans should include actions to manage boundaries with National Parks, Conservation Parks and State Forests.</li> <li>• Agency and community actions - National Park, Conservation Park and State Forest management plans should be prepared in consultation and cooperation with adjoining landholders.</li> </ul>  |
| <b>Discouraged</b>   |  |
| <ul style="list-style-type: none"> <li>• The mass removal of timber.</li> </ul>  | <ul style="list-style-type: none"> <li>• Agency and community actions - education programs should be used to discourage the mass removal of timber.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Clearing or degradation of flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>• Local government planning - development assessments should consider flora and fauna habitat requirements.</li> <li>• Agency and community actions - education programs should be used to promote an understanding of the importance of flora and fauna habitat.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Inappropriate fire regimes.</li> </ul>  | <ul style="list-style-type: none"> <li>• Agency and community actions - education programs should be used to promote appropriate fire regimes.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Land valuation practices that penalise landholders for good land management.</li> </ul>   | <ul style="list-style-type: none"> <li>• Agency and community actions - valuations should not be increased on the basis of scenic amenity in areas where landholders are not permitted to subdivide; landholders should be given valuation concessions for flora and fauna habitat areas.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Development which does not conform with stringent social and environmental guidelines (subdivision should not be approved unless there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).</li> </ul> | <ul style="list-style-type: none"> <li>• Local government planning - developments with negative social impacts, negative environmental impacts or negative scenic impacts should not be approved; subdivision should only be approved if there is a substantial community benefit e.g. where the applicant agrees to permanently set aside and manage all areas of significant flora and fauna habitat.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Damage to Aboriginal and European cultural heritage.</li> </ul>   | <ul style="list-style-type: none"> <li>• Consideration of cultural heritage in all activities and development.</li> </ul>  |

## Implementation table for Land System 5: Basalt/Walloons

| Land uses and practices   | Implementation processes and actions  |
|---|---|
| <i>Land uses encouraged</i>   |   |
| <ul style="list-style-type: none"> <li>Grazing of native and improved pastures.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include grazing areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their grazing activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Forage cropping on flatter slopes with suitable soils, managed for erosion control (mainly Walloons).</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans can include forage cropping on flatter slopes with suitable soils, managed for erosion control.</li> <li>Local government planning - landholders should be given the opportunity to secure their forage cropping activities through Land Management Agreement programs.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Strategic cultivation to control lantana and other weeds and to prepare for pastures.</li> </ul>                 | <ul style="list-style-type: none"> <li>Property management planning - plans can include actions to strategically cultivate areas to control lantana and other weeds and to prepare for pastures.</li> <li>Local government planning - landholders should be given the opportunity to secure their cultivation activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Recreation and tourism in public areas and on private land where owners permit.</li> </ul>                       | <ul style="list-style-type: none"> <li>Property management planning - plans can include recreation and tourism areas.</li> <li>Local government planning - recreation and tourism developments could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans); low-impact tourism could be encouraged through the promotion of the National Ecotourism Accreditation Program (NEAP).</li> <li>Local government planning - landholders should be given the opportunity to secure their recreation and tourism activities through Land Management Agreement programs.</li> </ul> |
| <ul style="list-style-type: none"> <li>Selective logging.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include selective logging areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their selective logging activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include flora and fauna habitat areas.</li> <li>Local government planning - development assessments should consider flora and fauna habitat requirements; landholders should be given the opportunity to secure their flora and fauna habitat areas through Land Management Agreement programs.</li> <li>Agency and community actions - landholders can be assisted to secure their flora and fauna habitat areas through Nature Refuge Agreements.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Rural retreats on existing holdings.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include rural retreats.</li> <li>Local government planning - rural retreats could be encouraged through the provision of incentives such as rate rebates and/or fee discounts (which would assist in offsetting the significant cost of preparing management plans).</li> </ul>   |



| Land uses and practices   | Implementation processes and actions   |
|---|--|
| <b><i>Land management encouraged</i></b>  |  |
| <ul style="list-style-type: none"> <li>• Management of grazing pressures to maintain grazing cover.</li> </ul>  | <ul style="list-style-type: none"> <li>• Property management planning - plans should include grazing regimes that will maintain ground cover.</li> <li>• Agency and community actions - education programs should be used to promote sustainable grazing practices.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Managed timber regrowth to reduce erosion, and selective tree thinning for agroforestry.</li> </ul>  | <ul style="list-style-type: none"> <li>• Property management planning - plans could include actions to manage regrowth on cleared land to reduce erosion; plans could include actions to carry out selective tree thinning for agroforestry.</li> <li>• Local government planning - landholders should be given the opportunity to secure their selective tree thinning activities through Land Management Agreement programs.</li> <li>• Agency and community actions - landholders could be given financial assistance to manage regrowth on cleared land to reduce erosion; education programs should be used to promote the management of regrowth on cleared land to reduce erosion.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Sustainable vegetation management to ensure the supply of good quality underground water to other land systems.</li> </ul>   | <ul style="list-style-type: none"> <li>• Property management planning - plans could include actions to manage remnant vegetation to reduce salinity.</li> <li>• Agency and community actions - landholders could be given financial assistance to manage remnant vegetation to reduce salinity; education programs should be used to promote the management of remnant vegetation to reduce salinity.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Recreation and tourism managed to reduce human and vehicle impact on natural areas and roads, and to reduce impacts on private landholders.</li> </ul>   | <ul style="list-style-type: none"> <li>• Property management planning - plans for recreation and tourism developments should include vehicle impact management and social impact management components.</li> <li>• Local government planning - recreation and tourism development applications should be required to include vehicle impact management and social impact management plans.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans for rural retreats and recreation and tourism developments.</li> </ul> | <ul style="list-style-type: none"> <li>• Property management planning - plans for rural retreats and recreation and tourism developments should include nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management components.</li> <li>• Local government planning - rural retreat, recreation and tourism development applications should be required to include nature conservation, fire, waste (sewage, garbage, household, industrial), erosion control and cultural heritage management plans; low-impact tourism can be encouraged through the promotion of the National Ecotourism Accreditation Program (NEAP).</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Conservation of flora and fauna habitat.</li> </ul>  | <ul style="list-style-type: none"> <li>• Property management planning - plans should include actions to conserve flora and fauna habitat.</li> <li>• Local government planning - landholders should be given rate rebates for flora and fauna habitat areas; landholders should be assisted through Land for Wildlife and Land Management Agreement programs.</li> <li>• Agency and community actions - landholders should be given valuation concessions for flora and fauna habitat areas; landholders should be given financial assistance to manage flora and fauna habitat; landholders can be assisted through the Nature Refuge Agreement program; education programs should be used to promote an understanding of the importance of flora and fauna habitat.</li> </ul> |

| Land uses and practices   | Implementation processes and actions   |
|---|--|
| <ul style="list-style-type: none"> <li>Cooperative management of National Park, Conservation Park and State Forest boundaries by Queensland Government agencies and landholders.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans should include actions to manage boundaries with National Parks, Conservation Parks and State Forests.</li> <li>Agency and community actions - National Park, Conservation Park and State Forest management plans should be prepared in consultation and cooperation with adjoining landholders.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.</li> </ul>  | <ul style="list-style-type: none"> <li>Local government planning - roadside conservation plans should be prepared and implemented for all existing roads; all proposals for new roads and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures.</li> <li>Agency and community actions - all proposals for new roads, telephone lines, powerlines and other services should be required to demonstrate how land degradation will be minimised.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Management of feral animals and weeds on public and private land.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans could include actions to manage feral animals and weeds on public and private land.</li> <li>Agency and community actions - landholders should be given financial assistance to manage feral animals and weeds; education programs should be used to promote an understanding of the importance of managing feral animals and weeds.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Management of fire for the protection of life and property, the conservation of flora and fauna, the maintenance of grazing pasture and the protection of commercial forestry areas.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should include a fire management plan component prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Individual Property Fire Management Planning Kit</i>.</li> <li>Local government planning - development controls should be established for bushfire-prone areas.</li> <li>Agency and community actions - Landscape-level fire management plans and strategies should be prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Fire Management Planning Manual</i>.</li> </ul> |
| <ul style="list-style-type: none"> <li>Management of mining operations.</li> </ul>  | <ul style="list-style-type: none"> <li>Carry out best practice mining operations.</li> </ul>   |
| <b>Discouraged</b>  |  |
| <ul style="list-style-type: none"> <li>Development that does not conform to stringent social, environmental and scenic guidelines (subdivision should not be approved unless there is a substantial community benefit e.g. the permanent setting aside of significant areas of flora and fauna habitat).</li> </ul> | <ul style="list-style-type: none"> <li>Local government planning - developments with negative social impacts, negative environmental impacts or negative scenic impacts should not be approved; subdivision should only be approved if there is a substantial community benefit e.g. where the applicant agrees to permanently set aside and manage all areas of significant flora and fauna habitat.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Clear felling.</li> </ul>  | <ul style="list-style-type: none"> <li>Agency and community actions - education programs should be used to discourage clear felling.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Land valuation practices that penalise landholders for good land management.</li> </ul>  | <ul style="list-style-type: none"> <li>Agency and community actions - valuations should not be increased on the basis of scenic amenity in areas where landholders are not permitted to subdivide; landholders should be given valuation concessions for flora and fauna habitat areas.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Permanent cultivation on steep slopes.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should not include permanent cultivation on steep slopes.</li> <li>Agency and community actions - education programs should be used to discourage permanent cultivation on steep slopes.</li> </ul>  |

| Land uses and practices  | Implementation processes and actions  |
|--|---|
| <ul style="list-style-type: none"> <li>• Clearing or degradation of flora and fauna habitat.</li> </ul>                              | <ul style="list-style-type: none"> <li>• Local government planning - development assessments should consider flora and fauna habitat requirements.</li> <li>• Agency and community actions - education programs should be used to promote an understanding of the importance of flora and fauna habitat.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Inappropriate fire regimes.</li> </ul>  | <ul style="list-style-type: none"> <li>• Agency and community actions - education programs should be used to promote appropriate fire regimes.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Removal of flora, fauna and landscape materials from roadsides and public areas.</li> </ul> | <ul style="list-style-type: none"> <li>• Agency and community actions - education programs should be used to discourage the public removal of flora, fauna or landscaping material.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Damage to Aboriginal and European cultural heritage.</li> </ul>                             | <ul style="list-style-type: none"> <li>• Consideration of cultural heritage in all activities and development.</li> </ul>   |

## Implementation table for Land System 6: Creek flats

| Land uses and practices  | Implementation processes and actions  |
|--|---|
| <b><i>Land uses encouraged</i></b>   |   |
| <ul style="list-style-type: none"> <li>Intensive agriculture on high-quality soils, including rotational cropping and the use of cover crops or green manure.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans can include intensive agriculture on high-quality soils, including rotational cropping and the use of cover crops or green manure.</li> <li>Local government planning - landholders should be given the opportunity to secure their intensive agriculture activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Grazing on less productive soils.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include grazing areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their grazing activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Orchards in suitable areas.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans can include orchard areas.</li> <li>Local government planning - landholders should be given the opportunity to secure their orchard activities through Land Management Agreement programs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Flora and fauna habitat.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans can include flora and fauna habitat areas.</li> <li>Local government planning - development assessments should consider flora and fauna habitat requirements; landholders should be given the opportunity to secure their flora and fauna habitat areas through Land Management Agreement programs.</li> <li>Agency and community actions - landholders can be assisted to secure their flora and fauna habitat areas through Nature Refuge Agreements.</li> </ul>  |
| <b><i>Land management encouraged</i></b>   |   |
| <ul style="list-style-type: none"> <li>Management of grazing pressures to maintain ground cover.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should include grazing regimes that will maintain ground cover.</li> <li>Agency and community actions - education programs should be used to promote sustainable grazing practices.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Subdivision for the purpose of aggregation of agricultural properties.</li> </ul>   | <ul style="list-style-type: none"> <li>Local government planning - Subdivision for the purpose of aggregation of agricultural properties should be permitted, and could be encouraged by incentives such as fee discounts.</li> </ul>   |
| <ul style="list-style-type: none"> <li>More efficient irrigation practices.</li> </ul>   | <ul style="list-style-type: none"> <li>Property management planning - plans could include actions aimed at more efficient irrigation.</li> <li>Agency and community actions - education programs should be used to promote more efficient irrigation practices.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Management of watercourses and wetlands to achieve improved stability, including reduction of flood, silting and erosion risk; control of inappropriate vegetation and enhancement as flora and fauna habitat and corridors.</li> </ul> | <ul style="list-style-type: none"> <li>Property management planning - plans should include actions to manage watercourses and wetlands to achieve improved stability, including reduction of flood, silting and erosion risk; control of inappropriate vegetation and enhancement as flora and fauna habitat and corridors. Refer to Queensland Fruit and Vegetable Growers Farmcare Code of Practice.</li> <li>Agency and community actions - education programs should be used to promote the management of watercourses and wetlands to achieve improved stability, including reduction of flood, silting and erosion risk; control of inappropriate vegetation and enhancement as flora and fauna habitat and corridors.</li> </ul> |

| Land uses and practices  | Implementation processes and actions   |
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| <ul style="list-style-type: none"> <li>• Management practices which will reduce the impact of using domestic and agricultural chemicals and fertilisers.</li> </ul>                                | <ul style="list-style-type: none"> <li>• Property management planning - plans could include management practices which will reduce the impact of using domestic and agricultural chemical and fertilisers.</li> <li>• Agency and community actions - education programs should be used to promote ways of reducing the impact of using domestic and agricultural chemicals and fertilisers.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Natural levees to be maintained or restored and constructed levee banks to be well planned and licensed on a sub-catchment/sub-regional basis.</li> </ul> | <ul style="list-style-type: none"> <li>• Property management planning - plans could include the maintenance or restoration of existing levee banks and plans for the construction of any new levee banks.</li> <li>• Agency and community actions - education programs should be used to promote the maintenance or restoration of existing levee banks and the need for the construction of any new levee banks to be well planned; levee bank licensing schemes should be implemented.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Management practices that maintain underground water qualities.</li> </ul>  | <ul style="list-style-type: none"> <li>• Property management planning - plans should include management practices that maintain underground water qualities.</li> <li>• Agency and community actions - education programs should be used to promote management practices that maintain underground water qualities.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Planned siting, construction and maintenance of roads, tracks and other services to minimise land degradation.</li> </ul>                                 | <ul style="list-style-type: none"> <li>• Local government planning - roadside conservation plans should be prepared and implemented for all existing roads; all proposals for new roads and other services should be required to demonstrate flora and fauna habitat conservation measures and soil conservation measures.</li> <li>• Agency and community actions - all proposals for new roads, telephone lines, powerlines and other services should be required to demonstrate how land degradation will be minimised.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Conservation of flora and fauna habitat.</li> </ul>   | <ul style="list-style-type: none"> <li>• Property management planning - plans should include actions to conserve flora and fauna habitat.</li> <li>• Local government planning - landholders should be given rate rebates for flora and fauna habitat areas; landholders should be assisted through Land for Wildlife and Land Management Agreement programs.</li> <li>• Agency and community actions - landholders should be given valuation concessions for flora and fauna habitat areas; landholders should be given financial assistance to manage flora and fauna habitat; landholders can be assisted through the Nature Refuge Agreement program; education programs should be used to promote an understanding of the importance of flora and fauna habitat.</li> </ul> |

| Land uses and practices  | Implementation processes and actions   |
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| <i>Discouraged</i>   |  |
| <ul style="list-style-type: none"> <li>Rezoning and subdivision of good quality agricultural land.</li> </ul>                                    | <ul style="list-style-type: none"> <li>Local government planning - rezoning should not be permitted; subdivision should not be permitted unless it is for the purpose of aggregating agricultural properties.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Permanent alienation of good quality agricultural land through activities such as aquaculture.</li> </ul> | <ul style="list-style-type: none"> <li>Agency and community actions - DNR&amp;M and DPI should take the lead in working with the community and local government to set a policy for aquaculture on GQAL (in the meantime local government should consider the following action).</li> <li>Local government planning - freshwater aquaculture should be located on areas of lesser agricultural quality where possible. The proposal should be assessed against SPP 1/92 in terms of alternative sites and possible land use conflicts (eg chemical spray drift from adjacent areas). Conditions of approval should require rehabilitation to good quality agricultural land should aquaculture cease. The applicant should be required to present a rehabilitation process as part of the development application. Setting of a bond to ensure rehabilitation is at the discretion of the local government.</li> </ul> |
| <ul style="list-style-type: none"> <li>Inappropriate levee banks.</li> </ul>   | <ul style="list-style-type: none"> <li>Agency and community actions - education programs should be used to promote the construction of appropriate levee banks.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Ribbon development along the Warrego Highway and other major roads.</li> </ul>                            | <ul style="list-style-type: none"> <li>Local government planning - commercial and residential development should be restricted to areas around existing urban centres.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Non-agricultural land uses and uses which have adverse impact on agricultural production.</li> </ul>      | <ul style="list-style-type: none"> <li>Local government planning - non-agricultural land uses and uses which have adverse impact on agricultural production should not be permitted.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Waste disposal in and along creek lines.</li> </ul>   | <ul style="list-style-type: none"> <li>Agency and community actions - education programs should be used to discourage waste disposal in and along creek lines.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Inappropriate fire regimes.</li> </ul>  | <ul style="list-style-type: none"> <li>Property management planning - plans should include a fire management plan component prepared using the South-East Queensland Fire &amp; Biodiversity Consortium's <i>Individual Property Fire Management Planning Kit</i>.</li> <li>Agency and community actions - education programs should be used to promote appropriate fire regimes.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Damage to Aboriginal and European cultural heritage.</li> </ul>   | <ul style="list-style-type: none"> <li>Consideration of cultural heritage in all activities and development.</li> </ul>  |