

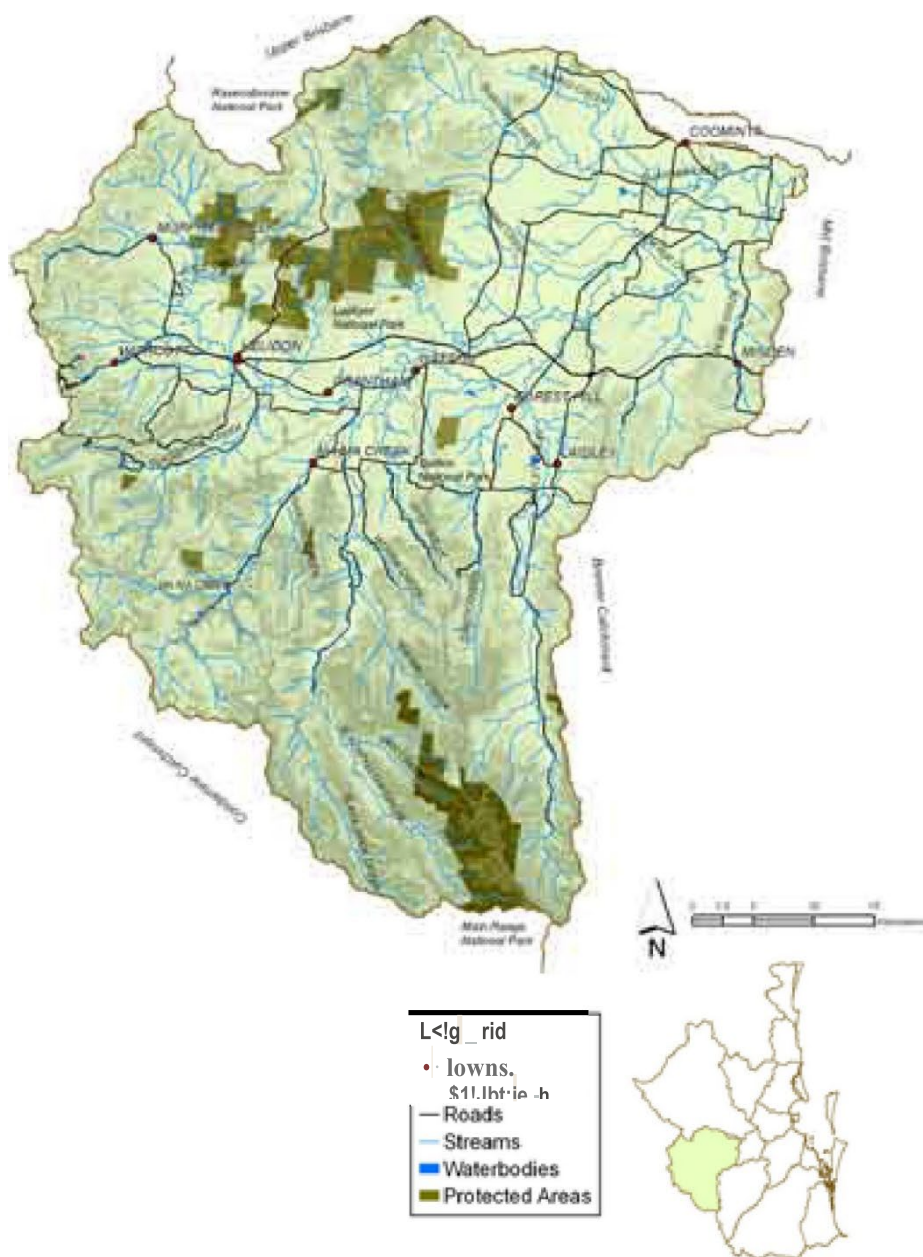
Lockyer catchment



The Lockyer Catchment covers 2974km² across steep ranges in the North, South and West forming major escarpments of the Great Dividing Range in the South and West. The Central and Eastern parts fall to undulating low hills which surround the wide alluvial plains of the lower Lockyer Creek and the narrow alluvial areas of its major tributaries. The Lockyer Valley comprises almost one quarter of the entire Brisbane River catchment and includes some of Queensland's most productive alluvial soils.¹

Healthy Land & Water works in partnership with landholders, government, corporate businesses, Traditional Owners, education and research organisations, schools and community groups to protect, repair and rehabilitate the catchments of South East Queensland. A large proportion of the work on the ground is achieved by landholders and volunteers involved in community groups, such as the Helidon Hills Murphys Creek Landcare Group, Lockyer Valley Landcare Group, Atkinson Buaraba Creek Landcare Group, West Moreton Landcare Group, Somerset Regional Environment and Educational Group, Friends of the Escarpment Parks and others.

LOCKYER CATCHMENT





Bleating Tree Frog



Managing biodiversity

Biodiversity refers to the *variety of all life forms - the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part.*² The Lockyer Catchment is rich in biodiversity and is home to a range of native plant and animal species. There are many threatened species and wildlife habitat areas have declined across the catchments as human and climatic pressures have increased. All native species need vegetation, habitat and corridors to link habitat areas. Environmental weeds and pest animals typically outcompete native flora and fauna, causing declines in local populations.

Some ecosystems are under threat from encroaching weeds and feral animals, changed land uses and land management practices. Within the Lockyer Catchment, there are a number of distinct ecosystems, ranging from fringing forests to blue

gum woodlands on the alluvial plains, to brigalow and dry scrub communities on elevated alluvial terraces, to patches of rainforest and semi evergreen vine thickets in escarpment areas.¹ These regional ecosystems require appropriate management such as controlled stock access, specific fire regimes and pest control to enhance and protect the values these vegetation communities provide in terms of improved water quality, fauna habitat, visual amenity and livability in the region.

Current activities in the catchment include assisting landholders to manage endangered Brigalow and Swamp Tea-tree Forests which are considered at high risk of extinction by the Australian and Queensland Governments. This initiative is being managed by Healthy Land & Water, in partnership with Powerlink GreenWorks, the Australian Government's Caring for our Country, Logan City Council, and the Scenic Rim Regional and Lockyer Valley Regional Councils, and aims to improve the condition and increase the area of the forest communities in the Lockyer Catchment and surrounding areas of South East Queensland.

The voluntary Land for Wildlife program also enhances biodiversity values as landholders agree to manage their land in ways that protect and enhance wildlife habitat. There are more than 140 landholders in the catchment participating in this program, which is coordinated regionally by Healthy Land & Water and delivered by the Lockyer Valley Regional Council.

NATURAL ASSETS

Biodiversity
Productive land
Natural areas
Waterways





Managing the land

The Lockyer Valley is one of the world's most fertile and productive agricultural areas⁴ with approximately 3000 square kilometers of alluvial soil used for intensive agriculture. The 13,000 hectares of irrigated land in the Lockyer produces around 35 per cent of Queensland's vegetable supply. Major crops grown in the district include grains, vegetables and lucerne. The upland areas of the Lockyer Catchment are predominantly used for cattle grazing. There are also large areas of remnant forest from the Helidon Hills to the North- west, Mt Mistake in the south, and the D'Aguilar Range in the East.¹ Lifestyle blocks are another main use of land across the catchment. Natural areas in the catchment include the National Parks of Main Range (World Heritage listed area with its Gondwana Rainforest), Gatton and Ravensbourne, Helidon Hills State Forest, Glen Rock Regional Park, Dwyers Scrub, and Lockyer Forest Reserve.

Expected population growth in the region, and its associated impact on the supply and demand for land, infrastructure, primary production and natural resources, raises further challenges for land management in the catchment.

Sustainable land management practices can reduce degradation and increase productivity in part by maximising groundcover to reduce soil erosion from wind and water, and further halt sediment flow into the waterways. SEQ Catchments is coordinating the Sustainable Grazing Program to assist land managers improve their grazing management practices, achieve sustainable production, social and environmental outcomes. This program provides Property Management Planning services, education, training, paddock-based assessments, workshops and field days.

MAJOR THREATS

Climate change
Population growth and development
Unsustainable land use
Drought
Inappropriate use of fire
Habitat fragmentation
Weeds and pest animals



Managing water quality

The main stream system central to the Lockyer Valley is the Lockyer Creek. The headwaters of the larger tributaries of the catchment about the ranges in the South and West. Main tributaries of the Lockyer Creek include Murphys, Flagstone, Ma Ma, Tenthill, Laidley, Sandy, Woolshed, Buaraba, and Plain Creeks. Numerous water storages exist in the catchment, with the major ones being Atkinsons Dam, Lake Clarendon and Lake Dyer.¹

Historically water resources in the Lockyer Catchment have been plentiful, over 80 percent of the water used to irrigate the extensive irrigated cropping area has been sourced from groundwater aquifers.¹ For most of these aquifers, demand has exceeded the sustainable yield, particularly during drought years. Poor quality water with high concentrations of salt has entered some of the main aquifers from the surrounding landscape, making it less suitable for irrigation and increasing the amount of stress on the remaining good quality aquifers.

Surface water in creeks has been used for irrigation and many of the streams have silted up due to erosion of agricultural soil and highly erosive soils in the surrounding hillsides. This, combined with extraction for irrigation, has led to many permanent waterholes becoming shallow, intermittently dry or disappearing altogether. This not only means that the creeks may no longer be a reliable source of irrigation water; it also means the aquatic ecosystems that the stream supports are significantly impacted.

Healthy water quality is important for maintaining the health of the catchment and all that lives in it. Sustainable land management practices, including the protection of riparian species, play a significant role in stabilising creek and river banks and maintaining waterway health.



Efforts to improve water quality in the catchment include providing incentives to adopt practices aimed at reducing sediment reaching waterways.

Measures include:

- Installing sediment traps
- Creating buffer zones where appropriate
- Fencing creeks and providing off-stream watering points to manage stock access to waterways
- Encouraging natural regeneration and replanting native species
- Maintaining ground cover throughout the year
- Adopting minimum tillage techniques
- Maintaining cover crops and minimizing periods of bare fallow
- Gully and streambank stabilisation
- Coordinating and managing drainage

Efforts on-ground are being steered by the best available science through a collaborative approach with DERM, DEEDI, SEQTOA, local government and community. Latest airborne monitoring techniques combined with detailed modeling of water and sediment movement help ensure works are implemented in appropriate locations. Controlling sediment movement, reducing nutrient and pollutant loads and improving water quality benefits all of South East Queensland by assisting the entire drainage network from the local subcatchment and Lockyer Creek to the Brisbane River and Moreton Bay.

Key Points of Land Management

- Manage according to land capability
- Plan infrastructure location
- Rehabilitate degraded areas
- Maintain ground cover
- Minimise weedspread
- Prevent soil and nutrient movement off property
- Monitor soil condition
- Manage for soil biota
- Prevent, minimise and mitigate against salinity
- Manage forestry for multiple outcomes
- Maximise water use efficiency
- Adopt minimum tillage techniques
- Provide waterway and wetland buffer zones



REFERENCES

¹ B Powell, J Loi and NG Christianos 2002 , Soils and Irrigated Land Suitability of the Lockyer Valley Alluvial Plains, South-East Queensland. Department of Natural Resources and Mines, Queensland

² National Biodiversity Strategy Review Task Group 2009, Australia's Biodiversity Conservation Strategy 2010-2020 , Consultation Draft, Australian Government, Department of the Environment, Water, Heritage and the Arts, Canberra, ACT.

³ The State of Queensland (Department of Environment and Resource Management) 2010, Vegetation Communities , [Internet]. Available at: www.derm.qld.gov.au/vegetation/bioregions.html

⁴ Department of Employment, Economic Development and Innovation, Queensland Government 2009, Queensland Crown, Issue 3, Winter 2009. [Internet]. Available at: www.dpi.qld.gov.au/30_14718.htm



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**Delivering an environment
 for future generations to thrive**

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