



NRM Strategy

Lockyer Valley - Natural Resource Management Strategy 2020-2030







Blue Gum Stard

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ACKNOWLEDGMENTS

Lockyer Valley Regional Council is thankful to the community and particularly the Natural Resource Management Working Group for their extensive local knowledge, expertise and time in developing the Lockyer – Natural Resource Management Strategy 2020-2030.

Lockyer Valley Regional Council and the community acknowledge the traditional owners of the Lockyer Valley, and recognise and value their knowledge and land management practices. We wish to pay respects to their Elders, past, present and emerging and acknowledge the important role Aboriginal and Torres Strait Islander people continue to have within the Lockyer Valley community.

“Cherish the natural world, because you're a part of it and you depend on it” - Sir David Attenborough



MAYOR'S FOREWORD

It is a privilege to represent the people of the Lockyer Valley, especially when it comes to protecting the valuable resources which are responsible for literally putting our region on the map.

The Lockyer Valley is affectionately known as Australia's salad bowl and for good reason. We have some of the most fertile alluvial soil in the world, allowing us to produce hundreds of thousands of tonnes worth of fresh, healthy veggies every year. In addition, our region contains stunning natural beauty and a high level of biodiversity, drawing visitors from all over the World.

As a Council, we pride ourselves on our core values of accountability, leadership, customer focus, teamwork and collaboration, communication and integrity. This is why it was vital when developing this strategy that we sought input from, and listened to the community, who like us, as elected representatives, call the Lockyer Valley home.

The simple truth is that the majority of land in the Lockyer Valley is privately owned and we as custodians of that land, need to ensure it is sustainable not only for today and tomorrow, but for future generations who will live on and work the land.

Looking after our natural assets is the responsibility of all of us and I am immensely thankful to the community members who volunteered their time to be part of the process designed to do just that.

By partnering and working together, we can all be proud that we have played a pivotal role in protecting our future.

Cr Tanya Milligan

MAYOR

LOCKYER VALLEY REGIONAL COUNCIL



SIGNIFICANCE OF THE LOCKYER VALLEY TO ORIGINAL NATIONS

Prior to European settlement, the Lockyer Valley was home to the Yuggera Ugarapul (Yugara) people, Jagera People and the Western Wakka Wakka People. The following is written by Larena Thompson of the Gateebil People.

The Originals of Lockyer Valley are a part of the wider Yugara speaking Nations. Gateebil People are a clan of Lockyer Valley.

Lockyer Valley was a part of the main pathway by which Original People and their neighbours journeyed to and from the triennial Bunya Mountains Gathering. The Bonyi Bonyi Gathering was of immense significance to all peoples of southern Queensland and northern New South Wales. It was a gathering for feasting, trade, competitive sport and corroboree contests, sharing of news, tournaments to settle inter-tribal affairs, and arranging marriages.

Multuggerah is one of the definitive examples for Yugara People's survival, his story and the many warriors and warrioresses fighting beside him is testament as to why we are here today. When settlers started to move into the area, many important inter-tribal strategies were discussed and decided at the Bonyi Bonyi Gathering. It was trips back and forth across this Ancient Traditional Pathway that played a big part in organising the inter-tribal tactics Multuggerah used.

All over Australia, Originals tracks were the only and best routes through the land; they smoothly followed the ridges, valley floors and waterways and linked waterholes or other resources that travellers needed. Many main roads (e.g. Toowoomba Second Range Crossing - Multuggerah Way) largely follow ancient Original pathways, and over time they became dray and horse riding tracks, then roads and railways, and eventually highways.

Everywhere along these routes, stone scatters and scarred trees still attest to their frequent journeying.

Even though colonialism deeply affected Yugara in Lockyer Valley and surrounds, we maintain our stories, culture and connection physically and spiritually to our Ancient homelands, this is important for our past, present and future generations.¹⁸



ARTWORK BY
STEPHEN HOGARTH
(HOGARTH ARTS)



Craig Bachmann



INTRODUCTION

In response to The Lockyer – Our Valley, Our Vision, Community Plan 2017-2027, Lockyer Valley Regional Council (LVRC), in collaboration with the community, have developed this Natural Resource Management (NRM) Strategy 2020-2030. This 10-year NRM Strategy identifies the natural assets within the Lockyer Valley Local Government area and sets our community’s strategic direction to value, protect and enhance these natural assets to sustain our unique rural lifestyle and environment. Following this NRM Strategy, an NRM Plan will be written to outline what actions can be taken to achieve these strategic directions. The NRM Plan will detail and prioritise these actions over the next five years, and assign responsibilities, timeframes and funding opportunities for each action.

SHARED RESPONSIBILITY FOR OUR NATURAL ASSETS

We, as a community, all rely on our natural assets for food, water, clean air, energy and lifestyle and we therefore all share the responsibility for valuing, protecting and enhancing our natural assets. This NRM Strategy is a whole-of-community strategy, in which all levels of government, business, educational institutions, community groups and individuals have an important role to play.

It is for this reason that Council collaborated with the community to develop the NRM Strategy. To represent a broad range of stakeholders, an NRM Working Group was formed via a public expression of interest process. Figure 1 graphically represents the range of stakeholder interests. This NRM Working Group developed the content for this NRM Strategy including the vision for each natural asset. Most of our land in the Lockyer Valley Region is privately owned, so it is important that this NRM Strategy reflects our entire community’s vision for our natural assets. This NRM Strategy was therefore made available for broader community consultation prior to being adopted at the Ordinary meeting of Council on 22 January 2020.

The Working Group will develop the content for the future NRM Plan, prioritising actions to achieve the visions outlined in this NRM Strategy. This plan will outline which stakeholders are responsible for each action, as well as appropriate timeframes associated with each action. This NRM Plan will also be available for broader community consultation prior to adoption.

The Lockyer Valley community has fundamentally created this strategy from the bottom up through their involvement in the NRM Working Group and wider community consultation. The whole of the Lockyer Valley community are important partners in the implementation of the NRM Strategy and NRM Plan.



Figure 1: NRM Working Group Stakeholder interests

WHERE THE NRM STRATEGY FITS

The Lockyer – Our Valley, Our Vision Community Plan 2017-2027 details the community’s vision for the Lockyer Valley to the year 2027²³. The community identified Lockyer Nature as one of seven themes for which they set a future direction as:

“Our natural assets are valued and protected to sustain our unique rural lifestyle”.

Strategic Objectives to achieve that future direction:

- We seek support to protect and enhance our natural assets.
- We access and share land management knowledge.
- We encourage nature based recreation.
- We showcase our natural assets.
- We use innovation to sustainably manage our catchments.
- There are a range of incentives to encourage responsible land management.
- We collaborate to achieve harmony between conservation and farming.
- We have strong partnerships between nature and agricultural groups.

This aligns with LVRC’s Corporate Plan to provide a strategic plan for the region from 2017 to 2022²⁴. An outcomes of the plan is that “Lockyer Valley’s natural assets are managed, maintained and protected”. To deliver this Corporate Plan outcome, LVRC’s annual Operational Plan set, a Natural Resource Management Plan as key priority project²⁵.

This NRM Strategy is, to provide strategic direction for the more detailed NRM Plan. The NRM Strategy establishes the natural assets the community value and sets the vision for each. The action orientated five-year NRM Plan will be developed to prioritise actions, allocate timeframes, responsibilities and funding to achieve the visions in this NRM Strategy.

The NRM Strategy and the future NRM Plan incorporate directions from Federal, State, regional and local strategies, plans, policies and current research as well as ensuring legislative obligations are honoured.

During the development of the NRM Plan, on-ground actions from existing initiatives, programs and plans will be reviewed and incorporated, alongside new and innovative ideas and actions.

Implementation of the NRM Plan actions will be the responsibility of all stakeholders including LVRC, State and Federal Governments, Non-Government Agencies, businesses, researchers, educators, community groups, and individual landholders and community members (Figure 2).



Figure 2: We are all responsible for our natural assets

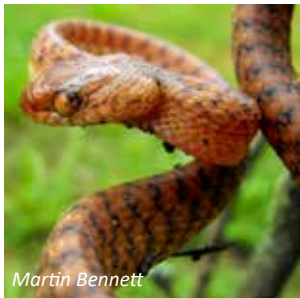




Martin Bennett



Barry Alsop



Martin Bennett

COUNCIL HAS THE FOLLOWING ROLES

LVRC will coordinate and assist the achievement of the NRM Plan actions through delivering services where Council is responsible, but also providing support to other parties through funding, partnerships, facilitation and advocacy (Figure 3).

The NRM Strategy and NRM Plan will provide Council with the head of power to incorporate prioritised actions which are Council’s responsibility for into LVRC’s future five-year Corporate Plans and annual Operational Plans. These actions may consist of legislative and policy changes, updates to regulation and compliance, as well as new programs, projects and initiatives.

THESE ROLES INCLUDE:

COUNCIL ROLE DESCRIPTION

COUNCIL ROLE	DESCRIPTION
Provider	Delivering services
Funder	Funding other parties to deliver services
Regulator	Regulating activities through legislation, local laws or policies
Partner	Forming partnerships and strategic alliances with other parties in the interests of the community
Facilitator	Assisting others to be involved in activities by bringing groups and interested parties together
Advocate	Promoting the interest of the community to other decision makers and influencers

Figure 3: Council’s role in the implementation of the NRM Strategy and NRM Plan

OUR UNIQUE LOCKYER VALLEY



Located west of Brisbane and east of Toowoomba, the Lockyer Valley Local Government area stretches over approximately 2,267 square kilometres. Sitting on the edge the moister coastal climate and the drier inland environment, the Lockyer Valley contains a variety of natural assets, habitats and land uses. The Lockyer Valley community love living here due to ease of access to metro centres, relaxed friendly rural lifestyle, local job opportunities, small close-knit communities and outstanding natural beauty.

The Lockyer Valley's natural bowl-shaped topography creates a unique combination of natural assets, unlike any other. The geology in the southern and eastern hills is basalt enabling high water infiltration to recharge important groundwater systems. Most of the remaining catchment is underpinned by sandstone formations, some of which have been mined since the 1860's and used for historic public buildings in Brisbane and Toowoomba⁶¹.

Thousands of years of floods and erosion have created the rich, fertile, alluvial soils of our valley floor. These soils, along with the relatively flat topography, ideal climate conditions and quality ground water, combine to provide one of the top ten most fertile farming areas in the World⁹. This land supports a regional agriculture industry worth hundreds of millions annually, producing the most commercial range of fruit and vegetables in Australia⁹.

The unique combination of elevation, aspect, rainfall, geology and soil types, creates habitat for a high diversity of native vegetation communities. The rim of our bowl-shaped region is bounded by vast intact tracts of remnant vegetation and protected areas including the World Heritage-listed Gondwana Rainforests of Australia within the Great Dividing Range in the south and west, the Little Liverpool range in the east, and Lockyer National Park covering Helidon Hills in the north⁴. These areas provide significant and connected habitat for many flora and fauna species and crucial ecosystem services such as clean air, ground water recharge, scenic amenity values and opportunities for nature-based recreation.

Ephemeral creeks flow from the hills and converge into the Lockyer Creek on the eastern side of the region before flowing into the Brisbane River below Wivenhoe Dam. The area experiences highly variable rainfall which results in unpredictable creek flows with floods and overland flows covering up to 17% of the region²⁶. Within these floodplains and extending into the upper catchments, permanent and ephemeral creeks, wetlands and waterbodies provide important ground water recharge areas as well as habitat for aquatic flora and fauna including local and migratory birds.

The land within the Lockyer Valley is of high cultural and spiritual significance to several traditional owner groups. European cultural heritage is also rich within the region, beginning with the discovery of the Lockyer Creek in 1825 by Major Edmund Lockyer⁶¹. Today, the Lockyer Valley's dominant land use supports important local agriculture industries such as: fruit, flower, nut, vegetable and grain growing as well as beef and dairy cattle and sheep farming⁶. Other local industries include quarries (sandstone, chalk, clay and gravel), seed and seedling growing, timber production and nature and food-based tourism. These industries, in turn support an even wider range of industries within our community such as health care, hospitality, retail, transportation, government, research and education.

All of these industries are supported by our natural assets. Since European settlement, these natural assets have been harvested at an alarming rate with little replenishment. To support these industries, vegetation on our alluvial floodplains and lower slopes has historically been cleared and water is becoming harder to source and declining in quality. This vegetation loss, combined with creek and ground water extraction has led to declines in flora and fauna species, a decrease in habitat connectivity and overall reduced biodiversity. The vegetation clearing has also lead to increased rates of hillslope rainfall run off, velocity of flood waters, soil erosion, downstream flooding and salinity expression.

We all need to cherish, protect and restore our natural assets so our environment is healthy, our economy thrives, and our community enjoy their lifestyle.

OUR NATURAL ASSETS UNDERPIN OUR ECONOMY AND LIFESTYLE

A snapshot of statistics in the Lockyer Valley

NATURAL ASSETS



Martin Bennett



Martin Bennett



Martin Bennett

452

REGISTERED ABORIGINAL CULTURAL HERITAGE SITES IN LVRC³⁸

**SAND GOANNA
(VARANUS GOULDII)**
IS THE TOTEM OF THE
YUGGERA PEOPLE²⁸



8,146

HECTARES OF WETLANDS⁴⁰

1063KM

OF NAMED WATERWAYS⁶⁴



14%

OF THE LOCKYER VALLEY REGION IS PROTECTED BY NATURE REFUGES AND PROTECTED ESTATES.^{44,45}

2115

DIFFERENT NATIVE FUNGI, FLORA AND FAUNA SPECIES HAVE BEEN RECORDED IN LVRC⁵⁶
751 animals

- 36 amphibians
- 357 birds
- 78 mammals
- 95 reptiles
- 21 fish
- 164 invertebrates
- 125 fungi
- 1238 plants
- 1 bacteria

WITH MANY MORE SPECIES YET TO BE DISCOVERED⁵⁶

91

91 CONSERVATION SIGNIFICANT SPECIES OF FLORA AND FAUNA RECORDED⁵⁶



OVER 213 PRIVATE LAND FOR WILDLIFE PROPERTIES CONSCIOUSLY CREATING HABITAT FOR WILDLIFE OVER APPROXIMATELY

10,500HA

49%

REMNANT VEGETATION⁵⁰



55

DIFFERENT REGIONAL ECOSYSTEM VEGETATION COMMUNITIES⁵⁴

16%

OF THE LAND IS FINE TEXTURED ALLUVIAL SOILS⁵⁸



16

ENDANGERED & 15 OF CONCERN, REGIONAL ECOSYSTEM VEGETATION COMMUNITIES⁵⁴

4

FEDERALLY LISTED THREATENED ECOLOGICAL COMMUNITIES⁵



41,011

CURRENT POPULATION⁶



IT IS EXPECTED THAT AN ADDITIONAL 21,500 PEOPLE WILL BE LIVING HERE OVER THE NEXT 22 YEARS⁶

75%

OF PEOPLE LIVE AND WORK IN THE AREA⁶



ECONOMY AND LIFESTYLE

12%

OF THE LOCKYER VALLEY REGION IS DEDICATED TO GROWING CROPS³¹

61%

DEDICATED TO GROWING LIVESTOCK³¹

\$365.7M

ANNUAL ESTIMATED AGRICULTURE PRODUCTION³⁵

WITH VEGETABLE PRODUCTION MAKING UP

78%

³⁵

445

JOB'S CREATED BY THE VISITOR ECONOMY³⁶

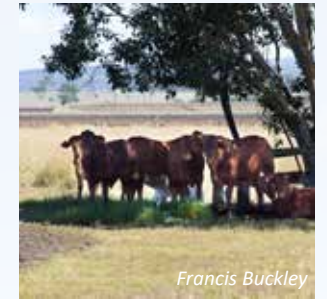


80%

OF VISITATION TO LOCKYER VALLEY IS FOR HOLIDAYS OR VISITING FRIENDS AND RELATIVES⁶³

\$94M

SPENT BY VISITORS TO THE REGION³⁶



Francis Buckley



Craig Bachmann

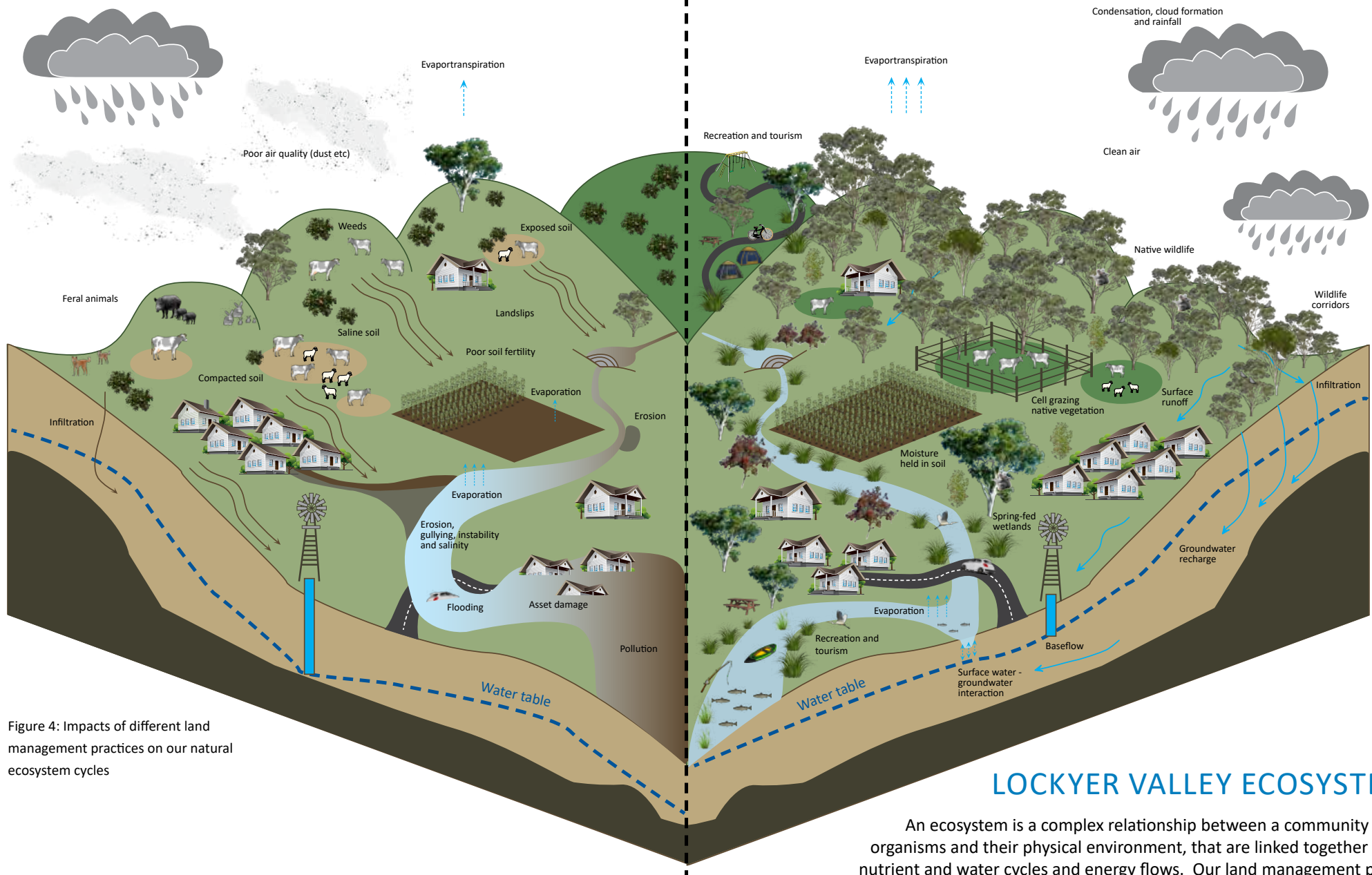


Figure 4: Impacts of different land management practices on our natural ecosystem cycles

LOCKYER VALLEY ECOSYSTEM

An ecosystem is a complex relationship between a community of living organisms and their physical environment, that are linked together through nutrient and water cycles and energy flows. Our land management practices have a significant effect on these natural cycles and the overall ecosystem health and diversity (Figure 4).

When best practice management techniques are used and our natural assets are valued, respected and sustainably managed, our land uses, industry, housing and natural environment can beneficially co-exist.

HOW TO READ THIS STRATEGY

This NRM Strategy has been written to present our community’s vision for each of our natural assets, by ensuring they are valued and protected, to sustain and enhance our unique rural lifestyle and environment. Overarching these natural assets are seven guiding principles which significantly influence all of our natural assets.

Although our natural assets are integrally linked within our ecosystem, for ease of understanding, they have been categorised into six broad elements. Some of these elements have sub-elements within them.

Each element has:

Aims - an outline of our goal for that natural asset, and

Objectives – an outline of what is required to achieve that aim at a higher strategic level.

All of the aims and objectives start with “We” which signifies that our entire community are responsible for achieving our shared vision, together.



Kev Russell



Kev Russell



Julie Reed

FUTURE DIRECTION

Our natural assets are valued and protected to sustain and enhance our unique rural lifestyle and environment

GUIDING PRINCIPLES

People	Cultural Heritage	Scenic Amenity & Local Character	Land Use Planning	Climate Change Mitigation & Sustainability	Production Plants & Animals	Pests, Pathogens & Diseases
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NATURAL ASSET ELEMENTS

Water	Land	Landscape	Flora	Fauna	Atmosphere
Water Systems	Geological non-renewable assets	Connected landscapes	Native flora and vegetation communities	Native fauna and their habitats	Air quality and health
Surface features	Soil and soil-based lifeforms	Landforms and special places			Urban design – built environments
Sub-surface features		Naturally culturally significant sites			
Supplementary water					



GUIDING PRINCIPLES

Overarching the natural asset elements are common guiding principles that flow through the entire NRM Strategy. These guiding principles describe the higher overarching values that influence our decision making throughout the NRM Strategy and NRM Plan.

PEOPLE

GP1 - We recognise that people are fauna and are an integral part of our ecosystem, both receiving and providing ecosystem services

CULTURAL HERITAGE

GP2 - We respect and preserve all cultural heritage

SCENIC AMENITY AND LOCAL CHARACTER

GP3 - We value scenic amenity, visual character and local, rural character as important community assets

LAND USE PLANNING

GP4 - We consider land use planning and its broad impacts at all temporal and spatial scales

CLIMATE CHANGE MITIGATION AND SUSTAINABILITY

GP5 - We mitigate climate change and live sustainably within our environmental limits to avoid risks to our environment, lifestyle and economy

PRODUCTION PLANTS AND ANIMALS

GP6 - We recognise that production plants and animals play an important role in the productivity of our region

PESTS, PATHOGENS AND DISEASES

GP7 - We mitigate the significant adverse impacts that pests, pathogens and diseases have on our ecosystems and economy

WATER

The hydrologic (water) cycle describes the constant movement of water through the evaporation, transpiration, condensation, precipitation and infiltration processes. Surface water evaporates and forms water vapor in clouds. It then falls back to the earth in the form of precipitation (rain, hail, sleet and snow). Some of this precipitation runs off the ground surface and flows into surface water bodies (wetlands, dams, creeks and eventually the ocean). Other precipitation seeps into the ground through groundwater recharge areas (wetlands and basalt rocks) and is stored as groundwater (Figure 5)⁶².

Our Valley's natural environment and economy depend on our water systems, including surface and subsurface water. Our natural environment relies on natural groundwater infiltration, groundwater levels, natural creek flows, springs and wetlands for their ecological processes. There are numerous ecosystems within our catchment that are dependent on discharge of groundwater or presence of sub-surface groundwater to meet their ecological requirements. These include surface expressions such as wetlands, as well as deep rooted (treed) vegetation communities¹. The quality and permanency of our groundwater naturally changes with rainfall, however it is also impacted by human extractions and manipulations¹.

Many of our industries are heavily reliant on water. Due to the variability of our rainfall, these industries source supplementary water by extracting water from groundwater, springs, creeks, constructed weirs, lakes and dams to produce fruits, vegetables and nuts and grow livestock. Over time, over-extraction of this water, can reduce its availability and quality (particularly increasing salinity levels)¹. Run off from land uses such as landfills, septic tanks, and industrial and agricultural processes can also impact the quality of our water, limiting its range of suitable uses¹.

Climate change is slowly altering our water cycle, creating longer dry/drought periods and heavier rain periods which can cause flash flooding¹⁴. Often this flash flooding causes damage to infrastructure, agricultural production areas and natural areas. It is important for our community to adapt to these changing climate conditions, maintain a landscape which enables maximum groundwater recharge and allow flora and fauna the opportunity to adapt to climate change by self-altering their natural range.

Industries are beginning to adapt to these changing climatic conditions by altering watering regimes, experimenting with different genetic seed stock and sourcing external imported or recycled water sources. Currently, most of our mains drinking water is sourced from outside of our region, from the Brisbane River at Lowood, meaning this is a supplementary source of water. Investigations are underway to determine whether additional supplementary water for economic and environmental benefits is viable⁹.

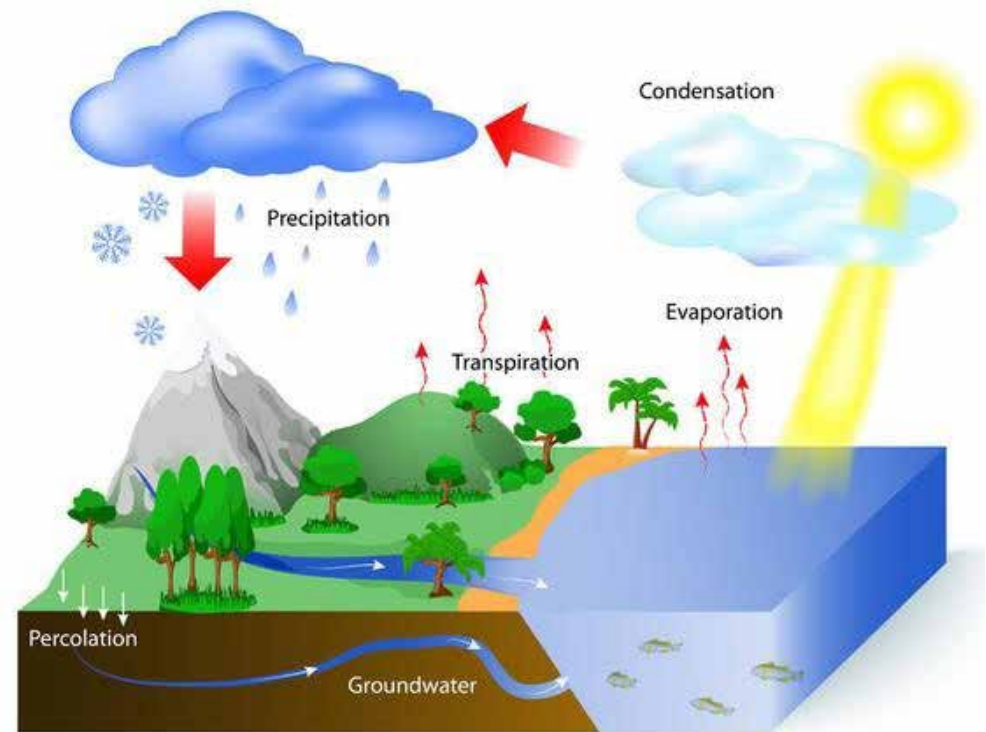


Figure 5: The water cycle⁶²

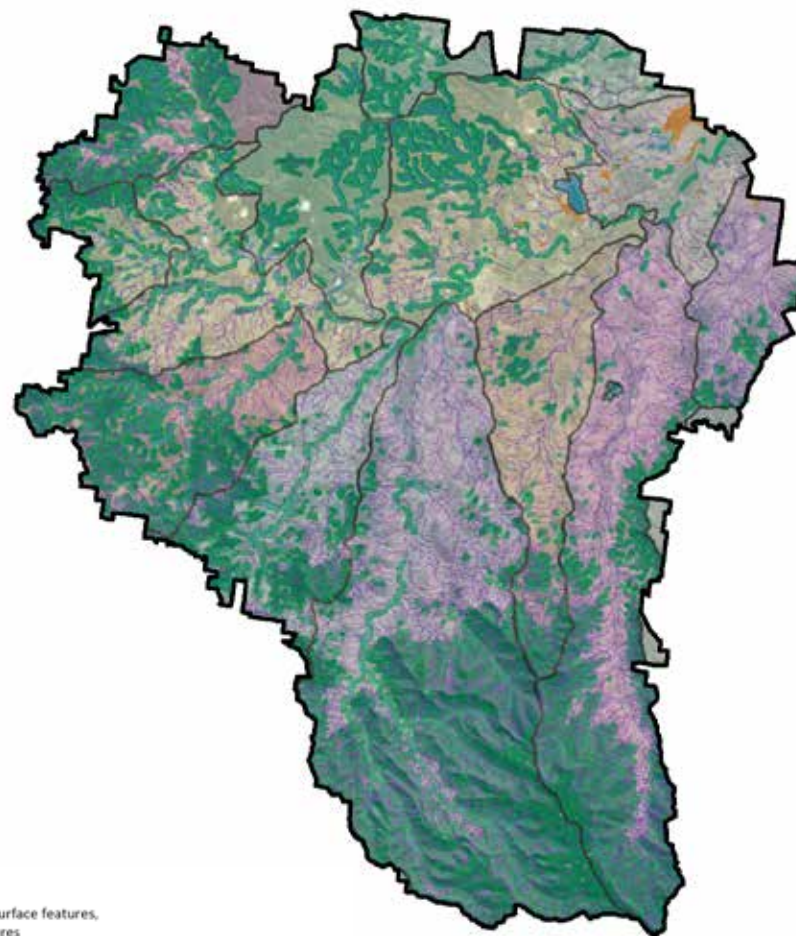
WATER SYSTEMS, SURFACE FEATURES, SUB-SURFACE FEATURES

Aim:

W1 - We will understand, manage and improve water systems

Objectives:

- **W1a** - We will implement a robust monitoring, compliance and continuous improvement system to monitor (ground) water usage and water available for the natural environment
- **W1b** - We will use latest research, data and technology to improve our knowledge of the region's hydrology, including minimum ecosystem requirements and agricultural usage
- **W1c** - We will use agreed (current, historical and future prediction) data to inform actions and planning
- **W1d** - We will invest in education and community engagement to increase knowledge of, protection and management of our precious water systems
- **W1e** - We will protect recharge areas by maintaining soil quality, vegetation and other constructed assets to ensure maximum natural groundwater recharge
- **W1f** - We will efficiently manage our current water supply to ensure water quality and quantity for an expanding population, agricultural use and local ecosystems
- **W1g** - We will collaborate and use best available data and knowledge to deliver a coordinated approach to catchment management



Legend

Water systems, surface features,
sub-surface features

- Ground water dependant ecosystems (GDE) surface lines
- Major Waterways
- Ground water dependant ecosystems (GDE) - surface expressions
- Terrestrial ground water dependant ecosystem (GDE) areas
- Wetlands
- Catchment Boundaries

Data sources: 1, 40, 42, 43, 59, 64

SUPPLEMENTARY WATER

Aim:

W2 - We will efficiently manage supplementary water

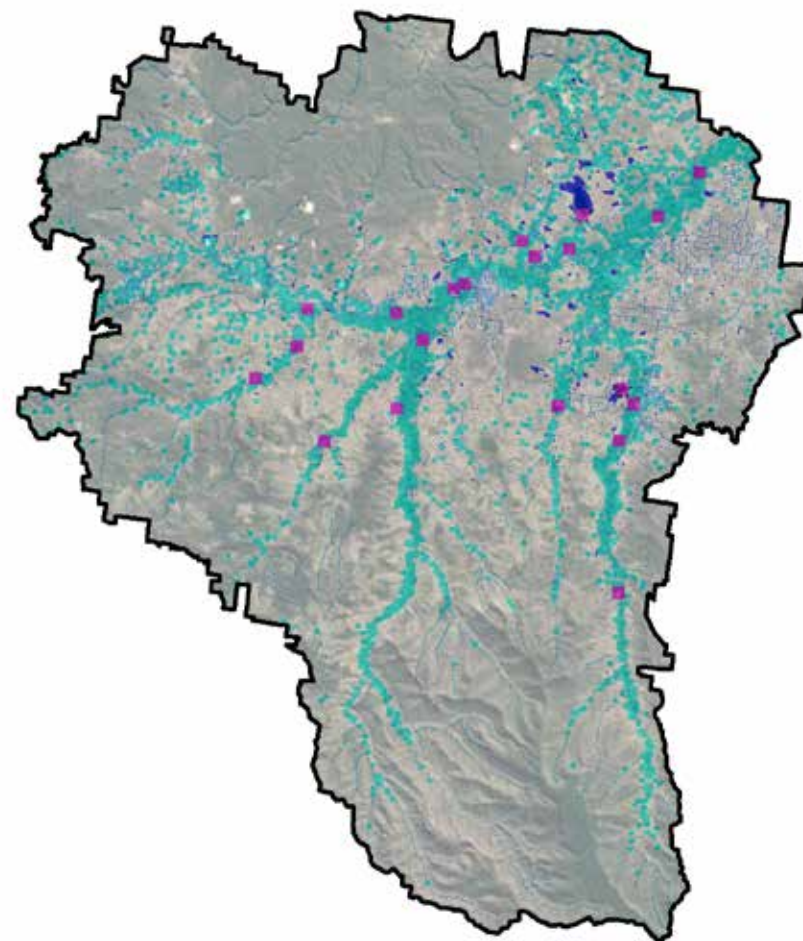
Objectives:

- **W2a** - We will seek supplementary sources of water
- **W2b** - We will ensure supplementary sources of water are efficiently managed
- **W2c** - We will protect our region's water security to support our current and expanding population, agricultural demands and environmental benefit

Legend

Supplementary Water

- Weirs and instream dams
- Bores
- Mains water supply
- Reservoirs
- Major Waterways



Data sources: 1, 64

LAND

Our land includes non-renewable natural assets such as geology and soils but also soil-based lifeforms such as fungi. These natural assets are vitally important to much of our region's economy.

Geological non-renewable assets

The underlying geology of our Lockyer Valley drives land formations, topography and soil types. Geology is divided into three types of rocks: igneous (created through volcanic activity), sedimentary (formed through weathering and erosion) and metamorphic (created through high pressure and heat)². Some of our sandstone from Helidon Hills is amongst the oldest and highest quality in the world, due to its ancient freshwater origin²⁷.

Soils

The slow erosion of rocks, over time, forms soils³⁷. Different rocks produce different soils³⁷. Our alluvial soils were deposited into our valley floor through hillslope and gully erosion and sediment movement downstream via flooding. The diversity of our native vegetation communities and wildlife are derived from the unique combination of geology, soil, elevation, slope, aspect and water.

Soil-based lifeforms

Fungi are soil-based lifeforms that absorb nutrients from dead or living organisms. Many fungi specialise in decomposing organic material. They break down logs, leaves, and other organic matter so that other species can use them. Others have a symbiotic relationship with plants. The fungi supply minerals and water from the soil to the plant and the plants supply food in the form of carbohydrates to the fungi. Plants grown without these fungi do poorly. Examples of fungi include mushrooms, detritivores, rusts, smuts and mycorrhizal (symbiotic with plants). Some fungi depend on animals to spread their spores and many animals depend on plants or fungi for food. This creates a three-way symbiotic relationship between flora, fauna and fungi²⁹. If one of these components is lost from the environment the entire ecosystem is at risk of collapsing.

Our community's economy is heavily reliant on our geological and soil natural assets. The region contains quarries extracting non-renewable assets such as high quality sandstone, basalt, limestone and diatomaceous earth. Our community also relies on our rich, productive, alluvial soils for a multimillion dollar agricultural industry that provides jobs for thousands of people, including international agricultural workers. Our soils also host important soil-based life forms such as bacteria and fungi, and store carbon via soil organic matter, without which our natural ecosystems and productive industries would fail.

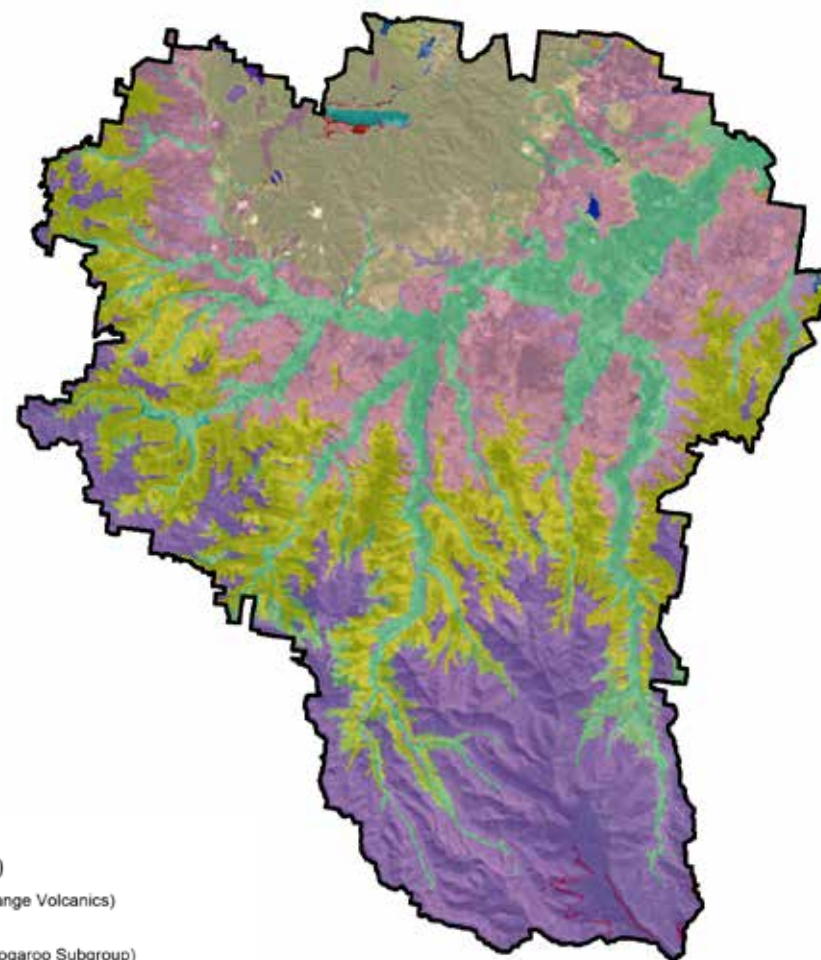
GEOLOGICAL NON-RENEWABLE ASSETS

Aim:

L1 - We will ensure non-renewable geological assets are extracted and managed efficiently

Objectives:

- **L1a** - We will use research and technological advances to investigate innovative renewable alternatives and processes to minimise waste or reuse by-products
- **L1b** - We will monitor and minimise the impacts we are having on our non-renewable assets and their surrounding environments
- **L1c** - We will improve planning to ensure there is adequate separation between industry, environmental and social uses
- **L1d** - We will improve planning, education and compliance of best management practices to minimise non-renewable industry impacts such as air pollution, water pollution and erosion
- **L1e** - We will ensure exhausted extraction areas are re-purposed, reused and/or appropriately restored



Legend

Geology (dominant types)

-  Basalt (Main Range Volcanics)
-  Sandstone (Woogaroo Subgroup)
-  Sandstone (Gatton Sandstone)
-  Sandstone (Koukandowie Formation)
-  Deep alluvial plains (Qa-QLD)

Data sources: 48

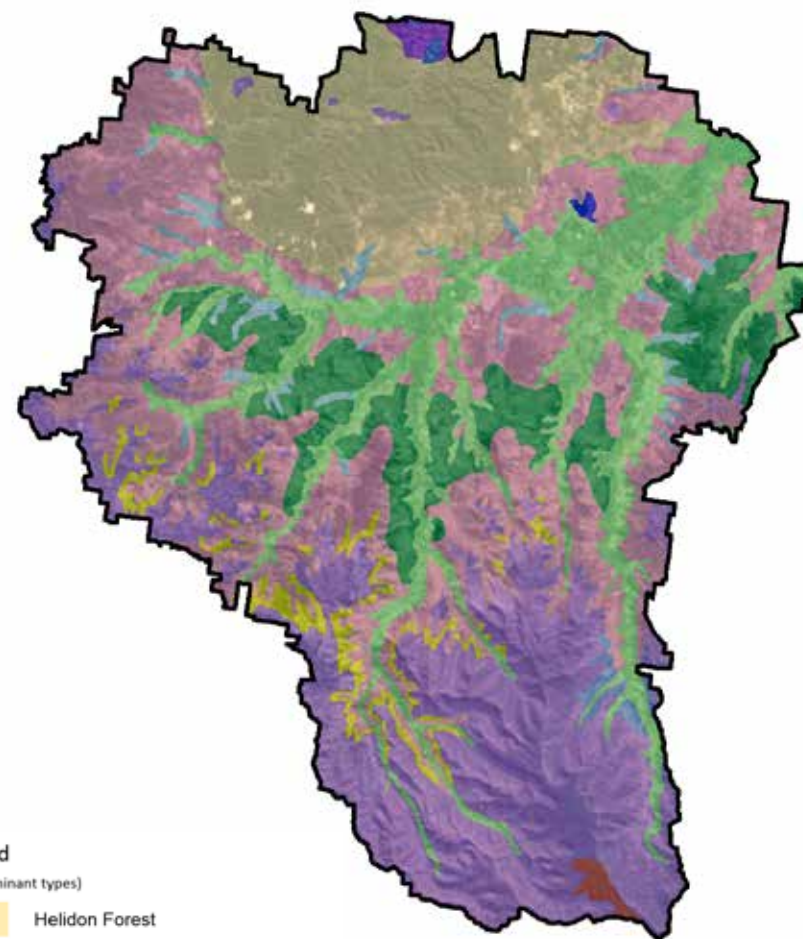
SOILS AND SOIL-BASED LIFEFORMS

Aim:

L2 - We will ensure soil quality and retention is maintained and improved

Objectives:

- **L2a** - We will use the best available techniques to assess and monitor our soil quantity and quality
- **L2b** - We will collaborate with researchers, industry bodies and landholders to retain our soils, and maintain and improve healthy productivity in our agricultural soils and biodiversity in our natural environments
- **L2c** - We will collaborate with landholders to use best practice management techniques to build soil quality and retention
- **L2d** - We will improve the resilience of our soils
- **L2e** - We will ensure our soils can sustain a diversity of soil-based lifeforms
- **L2f** - We will ensure land use planning reflects the most appropriate land use with regards to soil types and characteristics
- **L2g** - We will be known internationally for our soil conservation



Legend

Soil (dominant types)

	Helidon Forest
	Fine textured alluvial plains
	Marburg Scrub
	Marburg Forest
	Scrub Walloons
	Basaltic Uplands
	Red Volcanics

Data source: 58

LANDSCAPES

Landforms

Thousands of years of natural geological and hydrological processes have created the beautiful valley we see today. The unique combination of topography, geology, and soil types support a variety of landforms including rocky outcrops, uplands, ridgelines, alluvial floodplains, waterways and wetlands. The diversity of our landforms provides an array of habitat types for flora and fauna, protection and resilience against extreme weather events and natural pathways through the landscape used for centuries. They also support our economy by providing our community with various land use and industry opportunities. The beauty of our Lockyer Valley provides scenic amenity as well as nature-based recreation and tourism opportunities.

Special Places

There are many areas within the region that are classified as 'special places' by the community. These include protected areas, mountain peaks and ranges, areas that provide a sense of place, landmarks, creeks, springs, wetlands, ground water recharge points and centres of endemism (areas of high ecosystem diversity). These special places are important to our community for story-telling, providing directions, nature-based recreation, tourism and biodiversity.

Connected Landscapes

Many of these special places coincide with large intact patches of vegetation. These large patches are important to the biodiversity of our region as they support a diversity of species and are generally able to withstand the impacts of edge effects, meaning less pest animal and weed invasion. When these patches of vegetation are connected to retained vegetation on private properties, vegetated creek lines, road reserves and individual paddock trees, they create a connected network of various habitat and landform types. Connected landscapes at a local, regional, state and national scale are vital to the long-term survival and possible re-introduction of locally extinct species of flora and fauna. Flora and fauna rely on these connected landscapes for migration, dispersal, breeding, colonisation and interbreeding (genetic movement), refugium from extreme weather events and opportunities for climate change adaptation. Our community also relies on these connected landscapes for cultural pathways, scenic amenity and nature-based recreation.

Naturally Culturally Significant Sites

The Lockyer Valley contains many significant natural Aboriginal, European and other cultural heritage sites^{38, 7, 61}. Some indigenous sites include Table Top Mountain where the frontier battle was held, Helidon Spa's healing place, birthing caves, Chalawong Rock, a petroglyph art site (Stone carving), scarred trees, scattered artefacts, borra rings, totems and pathways. Some of our non-indigenous, natural, cultural heritage includes Cobb and Co tracks, range crossings and lookout points such as Gorman's Gap^{7, 61}. It is important to our community that these sites are respected and conserved so we can honour and remember our history and pass these stories to future generations. Knowledge of these sites and their associated stories provides a sense of connection to country, health and well-being to our community and can provide economic and tourism opportunities.

LANDFORMS AND SPECIAL PLACES

Aim:

LS1 - We will value, embrace and conserve our diverse land forms

Objectives:

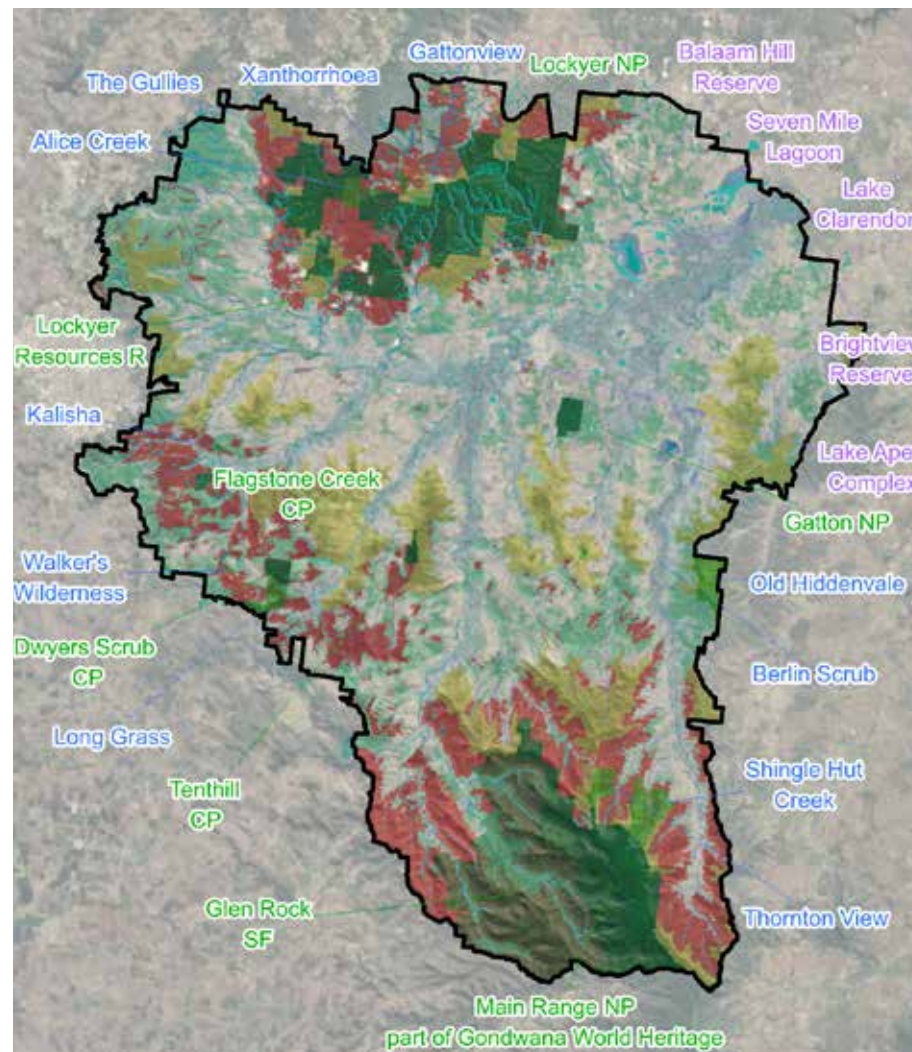
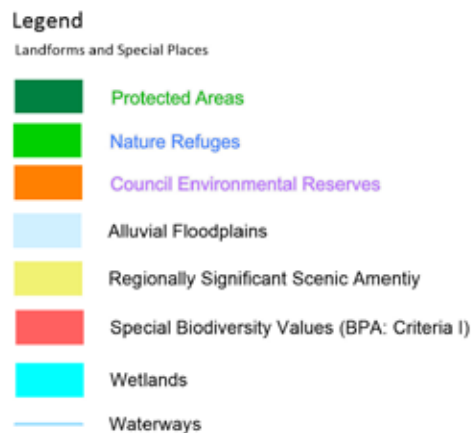
- **LS1a** - We will gather knowledge and use latest research to ensure planning decisions conserve our diverse landforms
- **LS1b** - We will collaborate with and share knowledge of our diverse landforms within our community

Aim:

LS2 - We will value, protect and enhance our special places

Objectives:

- **LS2a** - We will collaborate with local and regional partners and groups to ensure best practice management of our special places
- **LS2b** - We will encourage our community to value, connect with and use our special places
- **LS2c** - We will ensure our special places are protected through planning and compliance



Data sources: 20, 21, 40, 41, 43, 44, 45, 58, 64

CONNECTED LANDSCAPES

Aim:

LS3 - We will maintain and improve ecological connectivity in the landscape

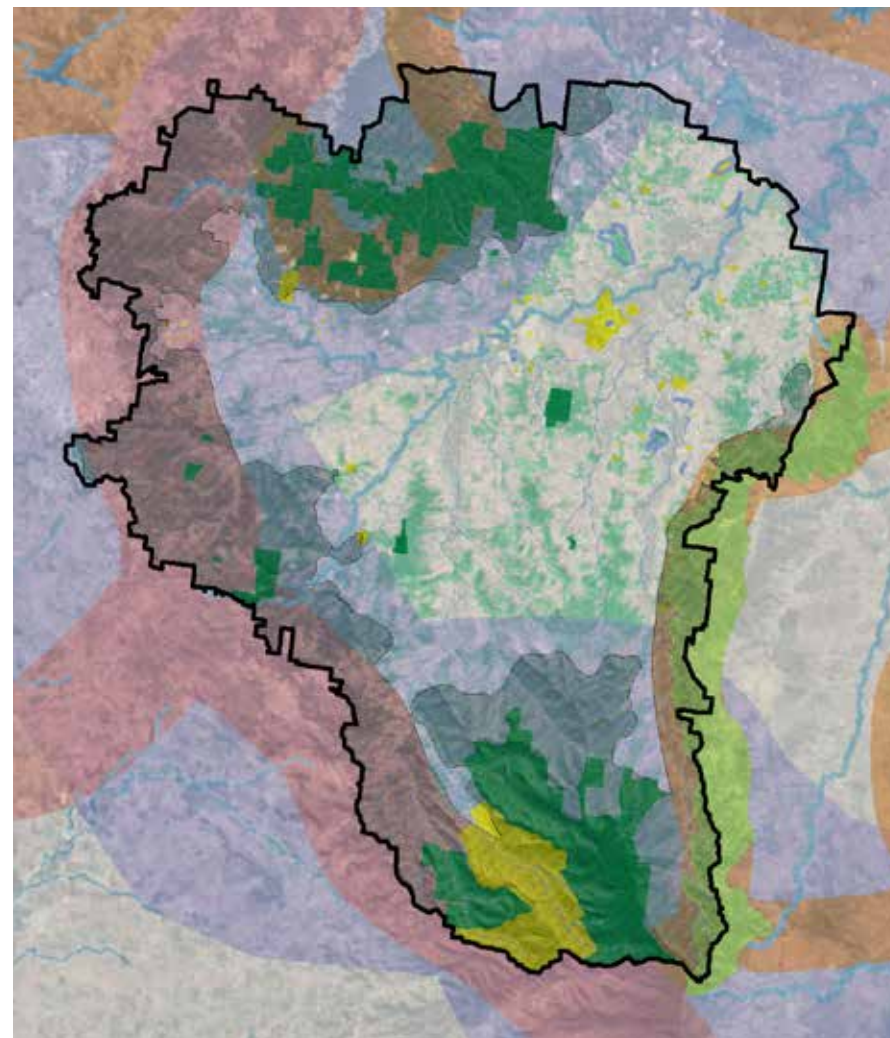
Objectives:

- **LS3a** - We will collaborate with local, regional and national partners, and community and industry groups to understand our local corridor requirements in relation to the regional context
- **LS3b** - We will use best available information and techniques to inform policy and planning to enhance ecological connectivity in our landscape

Legend

Connected Landscapes

	SEQ Regional Biodiversity Corridors
	State Biodiversity Planning Assessment (BPA) Corridors
	Regional BPA Corridors
	State and Regional Riparian BPA Corridors
	Little Liverpool Range Initiative
	Great Eastern Ranges Initiative
	Protected areas and nature refuges
	SEQ Regionally significant greenspace
	Vegetation



Data sources: 20, 21, 40, 41, 43, 44, 45, 58, 64

NATURAL CULTURALLY SIGNIFICANT SITES

Aim:




LS4 - We will value, conserve and embrace the naturally culturally significant sites of our region

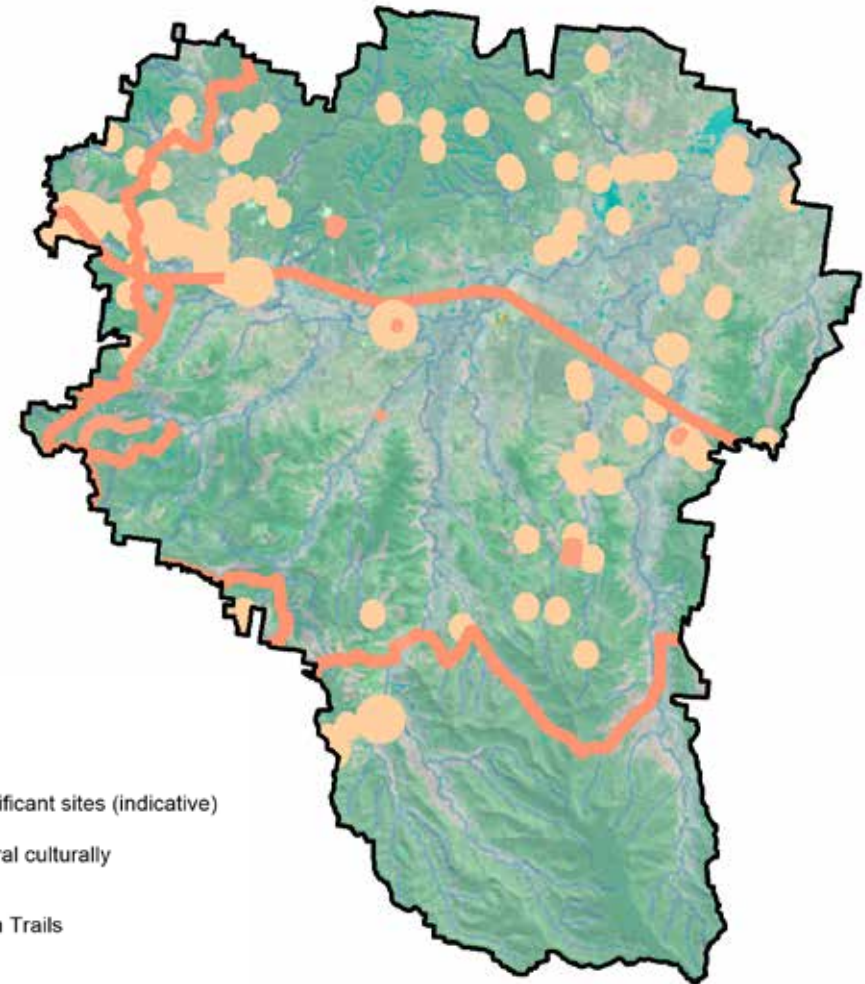
Objectives:

- **LS4a** - We will gather robust data to inform policy decisions which value and conserve the natural culturally significant sites of our region
- **LS4b** - We will educate and collaborate with our community to strengthen their knowledge and value of the natural cultural heritage of our region

Legend

Natural Culturally Significant Sites

-  Indigenous culturally significant sites (indicative)
-  European and other natural culturally significant sites
-  Indigenous and European Trails



Data sources: 7, 38, 61

FLORA

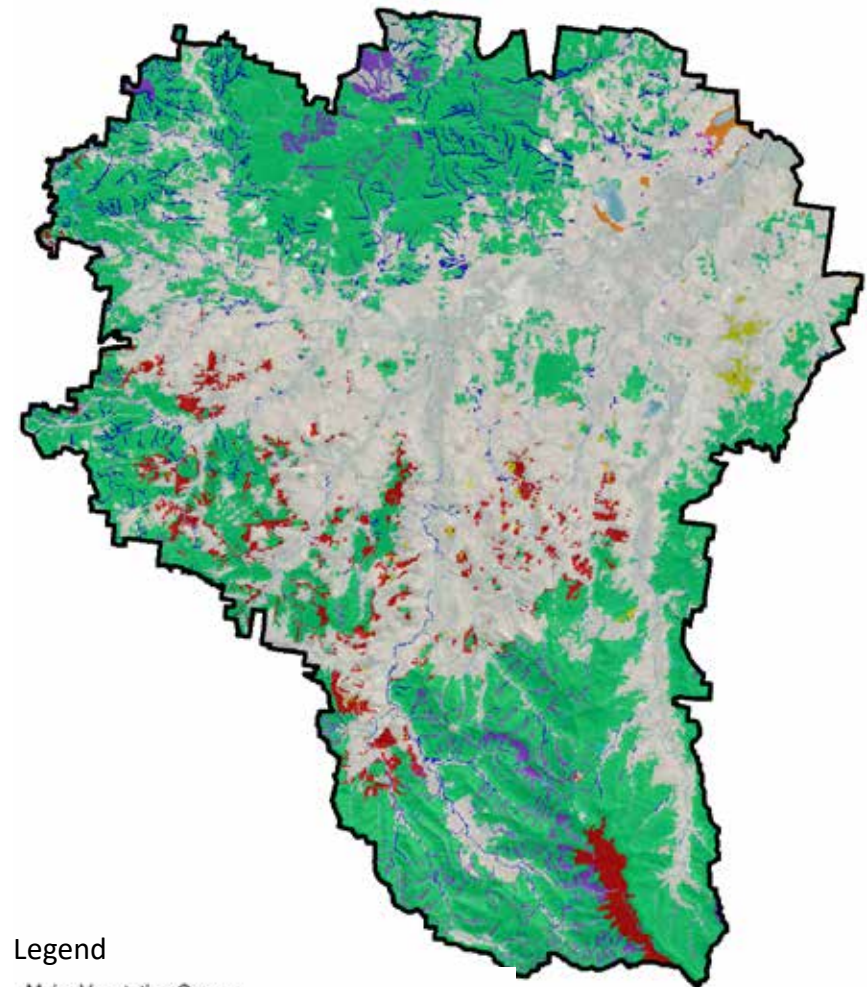
Flora is used here to describe the naturally occurring plants within our region. Plants interact with animals and their surrounding physical environment to form complex ecosystems. Vegetation communities are groups of native grasses, herbs, shrubs and trees commonly growing together within similar physical features such as elevation, slope, aspect, geology, soil, rainfall and ground water. These communities are mapped by the Queensland Herbarium as regional ecosystems.

Native vegetation is often referred to as either remnant or regrowth vegetation. Remnant vegetation is a term used to describe older-growth vegetation with a similar flora diversity and physical structure to that which existed prior to European arrival, such as vegetation patches which have never been cleared³⁰. Regrowth vegetation are areas previously cleared or thinned which are now regenerating³⁰. Within the Lockyer Valley much of our native vegetation has been cleared since European arrival, leaving 16 State-listed Endangered and 15 State-listed Of Concern remnant regional ecosystems⁵² and four Federally-listed threatened ecological communities (TEC): Brigalow (*Acacia harpophylla* dominant and co-dominant), Lowland Rainforest, Swamp Tea-tree (*Melaleuca irbyana*) Forest of Southeast Queensland and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland⁵.

Individual plants can also be listed as threatened under Federal or State legislation if their populations have declined. Within the Lockyer Valley we have 24 threatened flora species⁵⁶. Some more commonly known species include Bailey's cypress (*Callitris baileyi*), Lloyd's native olive (*Notelaea lloydii*), Helidon ironbark (*Eucalyptus taurina*), Phebalium distans and Swamp Tea-Tree (*Melaleuca irbyana*). Native nurseries are attempting to grow some of these species, so they can be included in native revegetation projects to increase their populations.

Thanks to our ancestors, we are fortunate to still have some ancient old growth trees in our valley. These enormous and often gnarly old trees act as high-rise apartments for a variety of fauna needing tree hollows to roost and breed in. They also provide a majestic and awe-inspiring spectacle for our community.

All types of flora, from large intact patches of remnant forest to grasses, garden plants, paddock and street trees provide, benefits to the ecosystems and community. They provide us with clean air, food for our livestock, renewable sources of timber, reduce temperature and humidity, increase the value of our homes, increase scenic amenity, and have a relaxing effect on humans, increasing social well-being³. They also increase ecosystem resilience by providing food and shelter for native fauna, reducing flooding, filtering water, stabilising soils and increasing water infiltration to our aquifers.



Legend

Major Vegetation Groups	
	Casuarina Forests and Woodlands
	Other Forests and Woodlands
	Low Closed Forests and Tall Closed Shrublands
	Eucalypt Low Open Forests
	Eucalypt Open Forests
	Eucalypt Tall Open Forests
	Rainforests and Vine Thickets
	Tropical Eucalypt Woodlands/Grasslands

Data sources: 49, 64

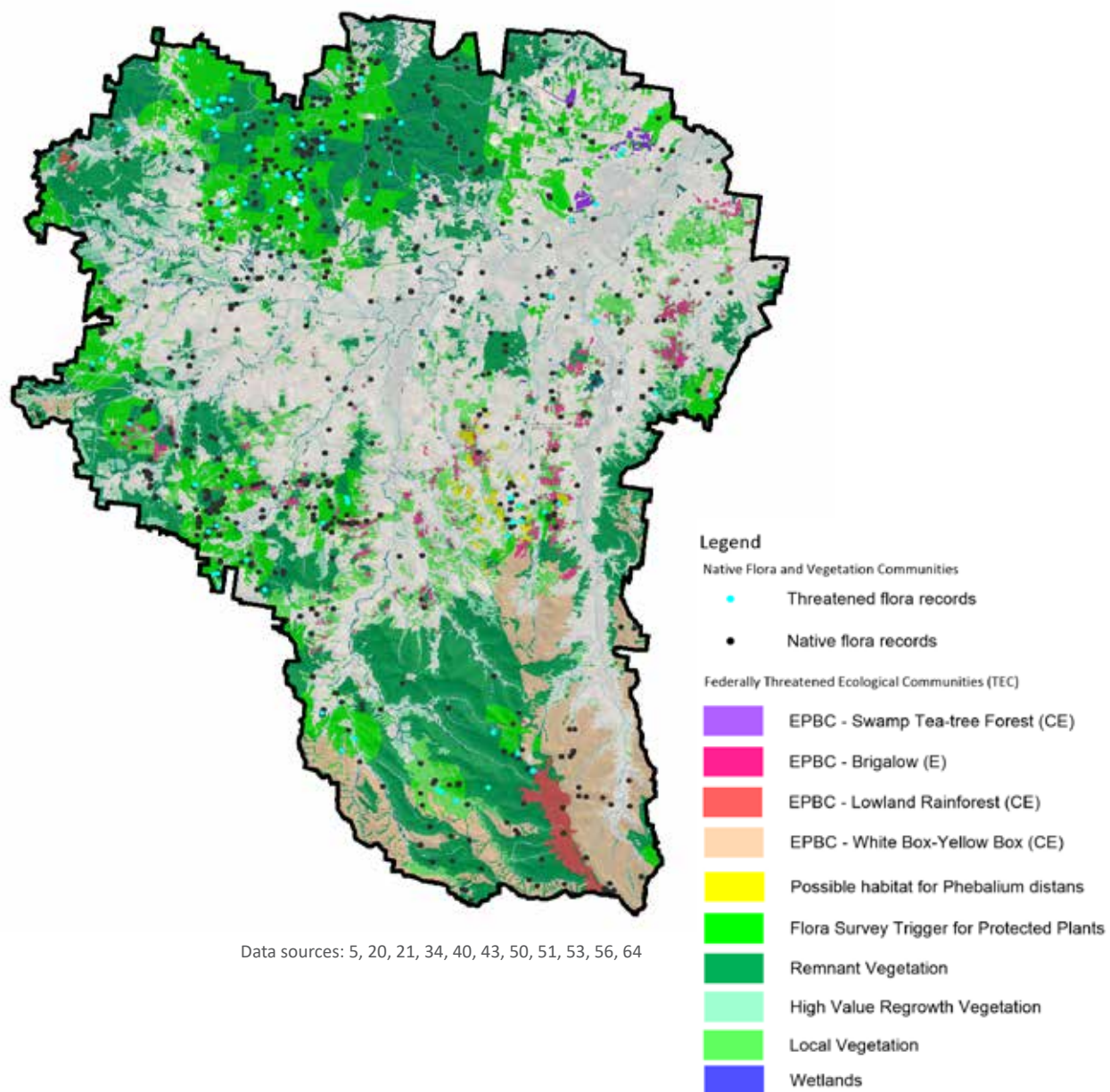
NATIVE FLORA AND VEGETATION COMMUNITIES

Aim:

FL1 - We will protect and enhance our natural ecosystems

Objectives:

- **FL1a** - We will improve our knowledge and understanding of our flora and vegetation communities, their health, diversity, abundance, distribution and threats to these, through research and monitoring
- **FL1b** - We will use the latest research to inform best practice planning, policy and management
- **FL1c** - We will improve legislation, policies and compliance to ensure effective protection of vegetation communities and flora species across land tenures
- **FL1d** - We will ensure our community value and enjoy our vegetation and natural areas through education, awareness raising and collaboration
- **FL1e** - We will collaborate to ensure cross-tenure co-ordinated conservation



FAUNA

Fauna is used here to mean the native mammals, birds, reptiles, amphibians, fish and invertebrates of our region. Fauna and their habitats are essential for the healthy functioning of our ecosystems, and ecosystem connectivity is vital to sustaining the diversity and abundance of our native fauna. Many fauna perform vital ecological roles within their ecosystems.

Bandicoots for example, forage by turning over soil which increases leaf litter decomposition, soil production and nutrient cycling. This foraging process also disperses fungi spores which are vital to the health of our plants. Losing bandicoots from our ecosystems could consequentially affect our plant diversity, species composition and the structure of our forests and woodlands. Conversely, the presence of bandicoots may be an indicator of a healthy and balanced ecosystem¹⁰.

Flying Foxes are the essential natural pollinators of our native forests. They have a more significant role in pollinating our flowering plants than bees and disperse seed across vast distances. This expands the gene pool of flora species within our forest, strengthening their resilience to environmental changes⁴⁷. We rely on fauna to pollinate our natural vegetation communities and our agricultural plants. Fauna are also culturally significant and provide tourism and economic benefits to the region. We need to remember that people are a species of fauna who are intrinsically integrated into our ecosystems. Every action we take has significant impacts on all our natural assets.



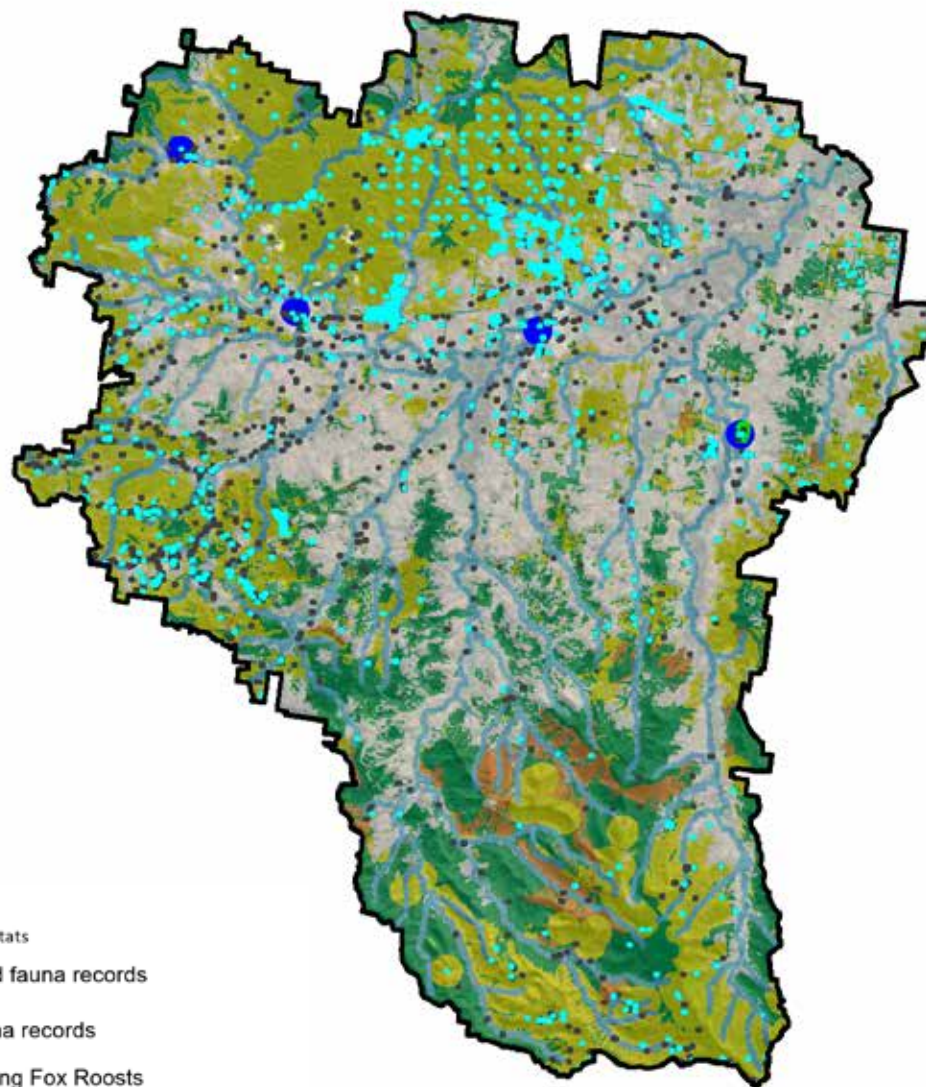
NATIVE FAUNA AND THEIR HABITATS

Aim:

FA1 - We will protect and enhance our natural habitats

Objectives:

- **FA1a** - We will improve our knowledge and understanding of our fauna including their distribution, lifecycle, behaviour, habitat requirements and threats to these, through research and monitoring
- **FA1b** - We will use the latest research to inform best practice planning, policy and management
- **FA1c** - We will improve legislation, policies and compliance to ensure effective protection of fauna and their habitats across land tenures
- **FA1d** - We will ensure our community value and enjoy our fauna and their habitats through education, awareness raising and collaboration
- **FA1e** - We will collaborate to ensure cross-tenure co-ordinated conservation



Legend

Native Fauna and their habitats

- Threatened fauna records
- Native fauna records
- Known Flying Fox Roosts
- MSES - Essential Habitat
- MSES - Threatened wildlife and special least concern animals
- Vegetation

Data sources: 20, 21, 46, 50, 53, 54, 5, 56, 64

ATMOSPHERE

Within the Lockyer Valley we are lucky to have relatively clean air, low light and sound pollution as well as abundant sunshine, urban blue space and views of the night sky and stars. Maintaining these natural assets is important to our community's health and wellbeing, as well as the survival of our natural ecosystems.

AIR QUALITY

Aim:

A1 - We will maintain and improve our air quality

Objectives:

- **A1a** - We will maintain large tracts of native vegetation to help clean our air
- **A1b** - We will improve planning and compliance to reduce particulate pollution

URBAN DESIGN – BUILT ENVIRONMENT

Aim:

A2 - We will balance the needs of the built and natural environments and how we interact with them

Objectives:

- **A2a** - We will improve planning and compliance to ensure compatible land uses are co-located
- **A2b** - We will ensure our community enjoy living in the Lockyer Valley and have the opportunity for a healthy lifestyle
- **A2c** - We will ensure public transport and alternative modes of transport are well planned to assist in emission reduction





Al Young

GAP ANALYSIS

Through the process of developing the NRM Strategy, the limitations of existing data and knowledge in certain areas became apparent. Below is a list of information and data that will need to improve, some of which can be listed as actions in the NRM Plan.

- Areas affected by salinity and their recharge areas
- Current fire regimes versus appropriate fire regimes for each area
- Flora and fauna species locations and distribution – vast unsurveyed areas and those without ground-truthing
- Flora and fauna habitat requirements and modelled habitat mapping
- Undiscovered species of flora, fauna and fungi
- The cultural value of our natural assets
- Whole of region cultural heritage study (Indigenous, European and other, both built and natural)
- All cultural heritage locations
- Current water usage
- Minimum natural water requirements for sustainable ecological functioning
- Total impact of pest animals and weeds
- Impacts of climate change (estimated but not known)

NEXT STEPS FOR THE NRM PROJECT

Having a strategy that reflects the community's long-term vision is important. Acting on these strategic aims is even more important. Therefore, the next step for the NRM Working Group is to collaborate with the community to develop an NRM Plan which will outline actions to achieve the strategic aims set out in this NRM Strategy. Each action will be prioritised, and have timeframes set for achievement and responsible stakeholders assigned.

This NRM Strategy is a fluid document. It is scheduled for review in 10 years, however can be reviewed sooner if required.

HOW OUR COMMUNITY CAN GET INVOLVED

Get involved in the consultation for the NRM Plan. It will be available via our online engagement portal:
lockyvalley.engagementhub.com.au

Adopt practices that contribute to the sustainability of our natural assets

Volunteer to be part of a community group

Apply for a community grant or a community environmental grant to enhance our natural assets

Become a Land for Wildlife member to protect and enhance our natural assets

Work with your neighbours to improve your neighbourhood

Be a good citizen

Contact Council's Environment and Pest unit on 1300 005 872 or visit www.lockyvalley.qld.gov.au for more information.



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ACRONYMS

LGA – Local Government Area

LVRC – Lockyer Valley Regional Council

NRM – Natural Resource Management

SEQ – South-east Queensland

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Reference document

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FOR MORE INFORMATION

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