Green Infrastructure Strategy Planning Scheme Integration (GRISPI)

Why have we done the strategic project, and what did we want to achieve?

GRISPI will assist Council in achieving the Green Infrastructure Strategy vision and position Council as leaders in the planning and delivery of Green Infrastructure (GI).

Integrating GI into the Planning Scheme will improve future development outcomes, in particular, resilience to natural disasters, protection of environmental values and improved liveability.

What are the key components?

- Phase one involves a background research audit and mapping to identify the location of the Region's green infrastructure assets and networks.
- Phase two will involve policy development and consultation to test opportunities for the protection and enhancement of the Region's green infrastructure.

Who have we consulted with?

As part of the background research audit, internal consultation was undertaken during the first half of 2021. Community feedback and professional advice received as part of previous studies was verified through this consultation.

What are the key findings we have learned?

The background review of the Toowoomba Region's Green Infrastructure has identified a range of important Green Connectors, Spaces and Forms which require protection and enhancement to ensure they can continue to deliver important services to the local environment, community and economy.

Disclaimer

The following study has been prepared as part of the Toowoomba Region Futures program. It was endorsed by Toowoomba Regional Council at its Ordinary Council meeting on 19 April 2022 as information to aid decision-making. The content of this study does not reflect an adopted policy position of Council and Council's endorsement of it does not include adoption of any policy position, action or recommendation put forward by the study.

For further information, please contact Council on
yoursay.tr.qld.gov.au | 131 872 | yoursay@tr.qld.gov.au

TOOWOOMBA REGION

PSA CONSULTING

TRC Green Infrastructure Strategy Planning Scheme Integration

GREEN INFRASTRUCTURE POLICY RECOMMENDATIONS

28 February 2022

TOOWOOMBA REGION

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This document has been prepared for:

On behalf of:

Contact:

Kim Markwell
Associate Environmental Scientist
E2 Consulting
8A Princhester Street, West End QLD4101
(07) 3255 1571
kim@e2designlab.com.au

This document has been prepared by:

Contact:

Christie Kahukiwa
PSA Consulting (Australia) Pty Ltd
PO Box 10824, Adelaide Street, Brisbane QLD 4000
Telephone +61 07 3220 0288
christie.kahukiwa@psaconsult.com.au
www.psaconsult.com.au

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EXECUTIVE SUMMARY

Green infrastructure in the Toowoomba Region ranges from individual living assets – private gardens, street trees, green roofs and walls, community gardens, Water Sensitive Urban Design (WSUD) elements, parks, farms and bushland – to living asset connectors such as waterways and ecological corridors.

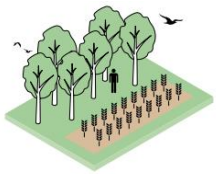
These assets provide a number of important ecosystem and community services including:

- Improved local water quality
- Improved local air quality
- Provision of habitat for biodiversity
- Provision of shade for wildlife and urban heat island amelioration
- Flood mitigation
- Increased amenity and recreational opportunities
- Enhancements to other networks such as roads, rail, pedestrian and cycling routes, and waterway corridors
- Opportunities for local communities to connect with nature and each other

Green Infrastructure Network

These ecosystem services are optimised through the Region's green infrastructure network describing how the Region's living assets are located and combined, and including the core components of:

Green Connectors, which are living connected networks such as waterways and ecological corridors.



Green Spaces, which are land, uses that utilise or protect natural processes and functions such as parks, open spaces, community gardens, farms and bushland

Green Forms, which are natural elements, built or planted in urban environments such as green roofs, green walls, Water Sensitive Urban Design (WSUD) elements, trees and backyards

Understanding the functions of these different aspects of the green infrastructure network is the basis for interpreting green infrastructure and making recommendations for its integration into the new Planning Scheme.

Green infrastructure functions are described in the following matrix. They are applied as the basis for development outcomes from which planning scheme integration recommendations are built.

Summary table 1. Summary of Green Infrastructure Matters and the primary functions (dark shaded) and secondary functions (light shaded) they provide

GREEN INFRASTRUCTURE MATTER		ECOSYSTEM SERVICES												
		Supporting			Regulating					Provisional			Cultural	
		Movement/ genetic diversity	Habitat	Soil formation	Clean water	Water conveyance	Cooling/ shelter	Clean air	Carbon storage	Food	Timber	Water supply	Recreation	Amenity
GREEN CONNECTORS These are the living connected networks such as waterways and ecological corridors. Consideration of the grey and blue corridors has been included in this assessment as these also influence the location and quality of Green Connectors across the region.														
Green connector *Movement is the primary function*	**Biodiversity corridors**													
	Natural wetlands & waterways													
	Constructed waterways & water bodies													
GREEN SPACES These are land uses and areas of vegetation that utilise or protect natural processes and functions. These include natural green spaces (such as National parks, conservation parks, state forests, bushlands) and managed green spaces (such as parks, farms and timber reserves.)														
Green spaces - natural *Habitat is the primary function*	**Natural biodiversity areas**													
	Urban bushland													
Green Spaces - managed *Managed for other primary functions*	**Open spaces, parks & backyards**													
	Agricultural land & timber reserves													
GREEN FORMS These are natural elements, built or planted in modified and managed environments to support the surrounding land use. This includes vegetated assets in public and private land in both urban and rural areas.														
Green forms *Natural features used to provide functions to support land use*	**Trees - urban (private land & street trees)**													
	Trees - rural													
	Landscape on structure (green walls & roofs)													
	Urban gardens & community farms													
	Stormwater management / WSUD assets													

GRISPI Recommendations' Overview

Recommendations for the integration of the Green Infrastructure Strategy into the new Planning Scheme are made to calibrate green infrastructure outcomes across the various Planning Scheme components, including the Strategic Framework, zones and overlays, use and development codes and PSPs. This would address some current gaps in the Planning Scheme – for example, the introduction and referencing of Matters of Local Environmental Significance – as well as improve the regulation of high value green infrastructure outcomes – such as greater protection of inter-urban breaks. The recommendations are made based on the following primary changes:

1. MLES mapping is adopted into a new Environmental Significance Overlay

Recommended options for the adoption of MLES mapping as part of the new Environmental Significance Overlay include a series of map outputs proposed for ecological corridors, waterways and wetlands, and areas of ecological significance. The different options are provided for Council consideration and present highest priority MLES values in different combinations with other MLES values.

2. Incorporate Environmental management zone for management of development areas

Applying the Environmental management zone to connector elements of the Green Infrastructure Network (i.e. not mapped as significant biodiversity corridors but as regional connector or inter-urban break) will allow for development to occur where appropriate and where more detailed responses are required. Regional connectors are very wide areas identified in the Green Infrastructure Network Plan for fauna movement but which are not expected to be clear of development. Inter-urban breaks are identified in the Toowoomba Region Scenic Amenity Study and have an important function for scenic amenity, visual separation of urban areas; and provision of green connection and space in accordance with the Green Infrastructure Network Plan.

3. Calibrate assessment benchmarks, overall outcomes and strategic intents across the Planning Scheme for strong policy outcomes and reinforced green infrastructure policy messaging

This recommendation proposes to build on the existing outcomes and benchmarks that facilitate green infrastructure policy and that already exist in the Planning Scheme. The work should address the gaps identified in this report and utilise the Planning Scheme integration options that are identified for optimal responsiveness.

Communication is an important drafting component to the work as the Planning Scheme doesn't currently frame or refer to the various components that comprise green infrastructure as 'green infrastructure'. Where possible, existing locations and names for different outcomes should be retained, however these should be presented more clearly to introduce the links between green connectors, green spaces and green forms (for example, through the overall outcomes in relevant codes).

4. Draft a Green Infrastructure planning scheme policy

With the essential calibration of benchmarks, outcomes and intents across the Planning Scheme, a dedicated Green Infrastructure PSP is recommended as a formal reference for development proposals and assessment against requirements to further the green infrastructure policy. The Green Infrastructure PSP would provide guidance on appropriate development outcomes in biodiversity areas, other guidance material for green infrastructure functions, and include the Green Infrastructure Network Plan. It should include:

- Green Infrastructure Network Plan and explanatory notes
- Guidance for the management of development in green connectors
- Guidance for creating multi-functional green environments and integrated natural systems
- Guidance for ecological assessment reports
- References to TRUFF for any green 'form' outcomes (e.g. landscape on structure)
- WSUD design/ urban bushland design/ drawing references

5. Draft a Local Offsets planning scheme policy

A Local Offsets PSP will articulate the value of MLES and opportunities for local lands to be valued as potential offset sites where suitable. It is proposed as a stand-alone PSP for the purpose of facilitating agreed offset opportunities for clearing of MLES, mature tree removal or stormwater quality treatments in supplement to the State Offsets Policy. This will require investigation into the appropriate offset requirements relevant to each matter, and the confirmation of preferred areas for offsets, where able to contribute to the enhancement of the Green Infrastructure Network. It is noted that policy intents and frameworks for local values' offsetting could also sit as part of the recommended Green

Infrastructure PSP (recommendation 4), having direct correlation to green infrastructure planning intents to enhance identified parts (spaces and connectors) of the green infrastructure network.

6. Adopt tree canopy targets

In accordance with the findings of the TRUFF, the new Planning Scheme should adopt a strong strategic position on increasing tree canopy cover across both rural and urban areas. It is acknowledged that the practicalities of enhancing tree canopy will vary according to environmental conditions and land tenure. Guidance through the TRUFF currently recommends a tree canopy target of 40% for greenfield development. This could be supplemented in existing urban or infill areas through policy. In the urban context, the target should be to increase tree canopy from a current baseline, with no net loss and a measurable percentage increase (25-35% dependent on localised targets).

The value of increasing tree canopy could be included in the Strategic Framework and referred to in overall outcomes for relevant codes (e.g. zone codes and development codes). Tree canopy targets could then provide acceptable outcome measures in relevant codes.

An urban forest strategy for the Toowoomba City Centre should also be adopted (e.g. as part of the City Centre Master Plan) to increase tree canopy cover.

7. Revise the Strategic Framework to include a green infrastructure theme

The Strategic Framework will play an important role in establishing green infrastructure policy and while the calibration steps would include aligning strategic intent statements in the Strategic Framework to green infrastructure policy, this recommendation proposes to completely redraft the Strategic Framework to incorporate a specific green infrastructure theme. This will require reviewing the purpose and overlap of existing strategic themes: with green infrastructure based on a much broader, comprehensive interconnectedness of different outcomes – e.g. connectors, spaces, form. A dedicated Strategic Framework theme for green infrastructure communicates a strong backing from Council and the community that green infrastructure is a fundamental issue for the Region that needs to be appropriately managed. While it is understood that the Strategic Framework is currently being re-drafted by Council, this may be a consideration for future iterations of the Planning Scheme, as green infrastructure approaches to development are more widely accepted.

8. Definitions are included as follows:

- **Significant tree** – includes significantly-sized trees being any tree that is 4m height and 40cm DBH; and/or significant heritage value trees (remnants of the bush, plantings by early settlers, Aboriginal sacred trees, important landscape or streetscape elements, or trees planted to commemorate important people or events as outlined by the National Trust Queensland)
- **Inter-urban breaks** – define in terms of ecosystem services i.e. important green space between urban areas, predominantly undeveloped, and having the function of reducing edge effects and providing safe passage for species from predation
- **Major projects** – projects above a determined value, intensity and size of lot as could be determined through analysis of development data or other development benchmarking as available to Council.

Final definitions will need to be further determined through drafting of relevant guidelines.

Table 22 in the report provides a detailed breakdown of the GRISPI recommendations as they relate to integration in the new Planning Scheme. They are supported and rationalised through the leading chapters of this report.

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List of Acronyms

BAU	business as usual
DSS	desired standards of service
Green.IS	Toowoomba Region Green Infrastructure Strategy
GRISPI	Green Infrastructure Strategy Planning Scheme Integration
LGIP	Local Government Infrastructure Plan
MCU	material change of use
MLES	Matters of Local Environmental Significance
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
OPW	operational works
PDA	Priority Development Area
PIA	Priority Infrastructure Area
QERMF	Queensland Emergency Risk Management Framework
RaL	reconfiguration of a lot
SPP	State Planning Policy
TRGP	Toowoomba Region Growth Plan
TRUFF	Toowoomba Region Urban Form Framework
WSUD	water sensitive urban design

1 INTRODUCTION

In 2019, Toowoomba Regional Council (Council) developed its Green Infrastructure Strategy (Green.IS) providing a vision, supporting objectives and actions to drive best practice planning, delivery and management of the region's green assets.

Green infrastructure matters are described in Council's adopted Green.IS through the following strategic objectives:

- Enrich natural systems
- Protect and enhance local identity and character
- Support healthy communities
- Increase collaboration and co-design.

Green infrastructure in the Toowoomba Region ranges from individual living assets – private gardens, street trees, green roofs and walls, community gardens, Water Sensitive Urban Design (WSUD) elements, parks, farms and bushland – to living asset connectors such as waterways and ecological corridors.

These assets provide a number of important ecosystem and community services including:

- Improved local water quality
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- Provision of habitat for biodiversity
- Provision of shade for wildlife and urban heat island amelioration
- Flood mitigation
- Increased amenity and recreational opportunities
- Enhancements to other networks such as roads, rail, pedestrian and cycling routes, and waterway corridors
- Opportunities for local communities to connect with nature and each other

A key area of focus for the Green.IS is the development of policy, plans and standards that enable consistent and high-quality delivery of green infrastructure. This is the basis for this Green Infrastructure Strategy Planning Scheme Integration Project (GRISPI).

Furthermore, Council's undertaking of this work establishes its priority to respect the Region's ecosystem services and provides for a statutory positioning of these same imperatives.

1.1 PURPOSE

This document provides recommendations to Toowoomba Regional Council (Council) for green infrastructure policy that integrates green infrastructure matters into the planning framework.

1.2 APPROACH

The green infrastructure policy recommendations have been informed by the GRISPI Background Report, along with mapping developed for matters of local environmental significance (MLES).

A GRISPI Background Report (E2 et al, 2021) was prepared as a precursor to these policy recommendations and provides further references for the planning assumptions used in this report. It is noted that through the policy analysis process, further refinement of key inputs has resulted. This includes terminology used to summarise green infrastructure matters and ecosystem services.

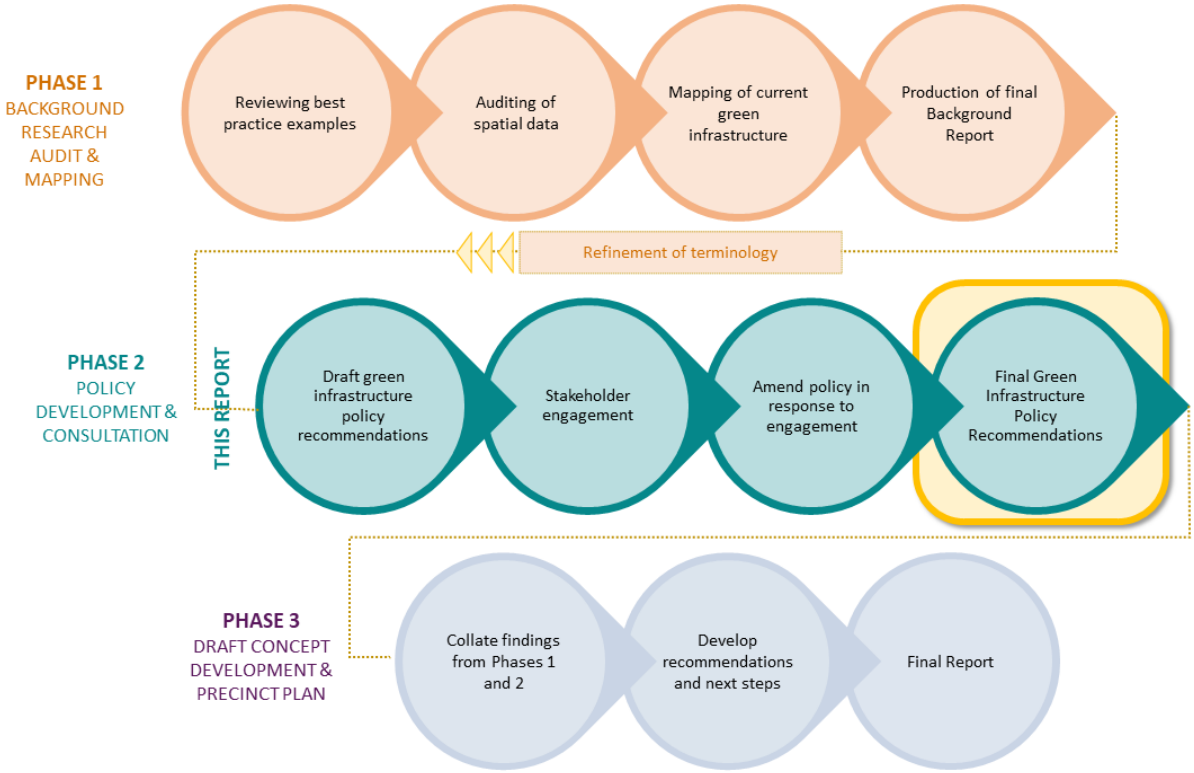

Figure 1. GRISPI approach

2 PRELIMINARY OUTCOMES

The GRISPI Background Report summarises green infrastructure policy objectives as the protection and enhancement of ecosystem services through connected and integrated living assets.

This aligns with the green infrastructure definition in the Australian Standard for Climate Change (AS 5334—2013):

> ***The network of natural and built landscape assets, including green spaces and water systems within and between settlements.***
>
> *NOTE: Individual components of this environmental network, such as gardens, parks, recreation areas, highway verges and waterways, are sometimes referred to as 'green infrastructure assets'.*

The fundamental approach to protect and enhance is to ensure development avoids or mitigates on-site, or offsets impacts on green infrastructure assets, as well as contributes to the connectivity of green infrastructure assets to enhance an inter-connected, functional green infrastructure network. Through the green infrastructure network, the benefits of green infrastructure – including improved resilience to climate change impacts, greater comfort for people, increasing scenic amenity, enriched biodiversity, improved water, air and soil quality and more sustainable land production – are achieved.

Preliminary outcomes identified in the GRISPI Background Report have been further refined through policy analysis in preparation of these recommendations. As such, while terminology and references have changed between documents, overall green infrastructure intents and objectives are consistent as a basis for Council's green infrastructure policy.

2.1 GREEN INFRASTRUCTURE MATTERS AND DEVELOPMENT OUTCOMES

Table 1 provides a summary of the green infrastructure matters and the types of ecosystems services they provide. These are broken down into 4 major categories of ecosystem services as per the Millennium Ecosystem Assessment[1]:

- **Provisioning services:** benefits/ resources that can be extracted from nature (e.g. food, timber, water)
- **Regulating services:** natural processes which regulate our environment (e.g. cooling, clean air and water, carbon storage, flood management)
- **Cultural services:** non-material benefit gained by our interaction with nature (e.g. recreation, cultural values, amenity etc)
- **Supporting services:** natural processes which underpin almost all other services and support healthy ecosystems (e.g. habitat, biodiversity, photosynthesis, nutrient cycling, creation of soils).

This table also identifies the primary function which will be focus for this report in terms of planning scheme recommendations.

[1] *https://www.millenniumassessment.org/en/About.html#: "Initiated in 2001, the objective of the MA was to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The MA has involved the work of more than 1,360 experts worldwide".*

Table 1. Summary of Green Infrastructure Matters and the primary functions (dark shaded) and secondary functions (light shaded) they provide

GREEN INFRASTRUCTURE MATTER		ECOSYSTEM SERVICES												
		Supporting			Regulating					Provisional			Cultural	
		Movement/ genetic diversity	Habitat	Soil formation	Clean water	Water conveyance	Cooling/ shelter	Clean air	Carbon storage	Food	Timber	Water supply	Recreation	Amenity
GREEN CONNECTORS These are the living connected networks such as waterways and ecological corridors. Consideration of the grey and blue corridors is included in this assessment as these influence the location and quality of Green Connectors across the region.														
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Green Spaces - managed *Managed for other primary functions*	**Open spaces and parks**													
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GREEN FORMS These are natural elements, built or planted in modified and managed environments to support the surrounding land use. This includes vegetated assets in public and private land in both urban and rural areas.														
Green forms *Natural features used to provide functions to support land use*	**Trees - urban (private land & street trees)**													
	Trees - rural													
	Landscape on structure (green walls & roofs)													
	Urban gardens & community farms													
	Stormwater management / WSUD assets													

2.2 DRAFT GREEN INFRASTRUCTURE NETWORK PLAN

The GRISPI Background Report and Mapping (July 2021) identifies a draft Green Infrastructure Network Plan. This has been developed from various sources, including matters of local environmental significance (MLES) mapping[2], state and regional mapping for biodiversity corridors, and existing planning scheme mapping for productive agricultural land. The draft Green Infrastructure Network Plan describes an understanding of how the Region's living assets are located and combined, providing a range of ecosystem services to Toowoomba's environment, community and economy. It represents preliminary spatial mapping of green infrastructure assets in the Region (Figure 2) and will be further referenced and developed through this report.

Refer to Appendix 1 for a full-page version of the draft Green Infrastructure Network Plan.

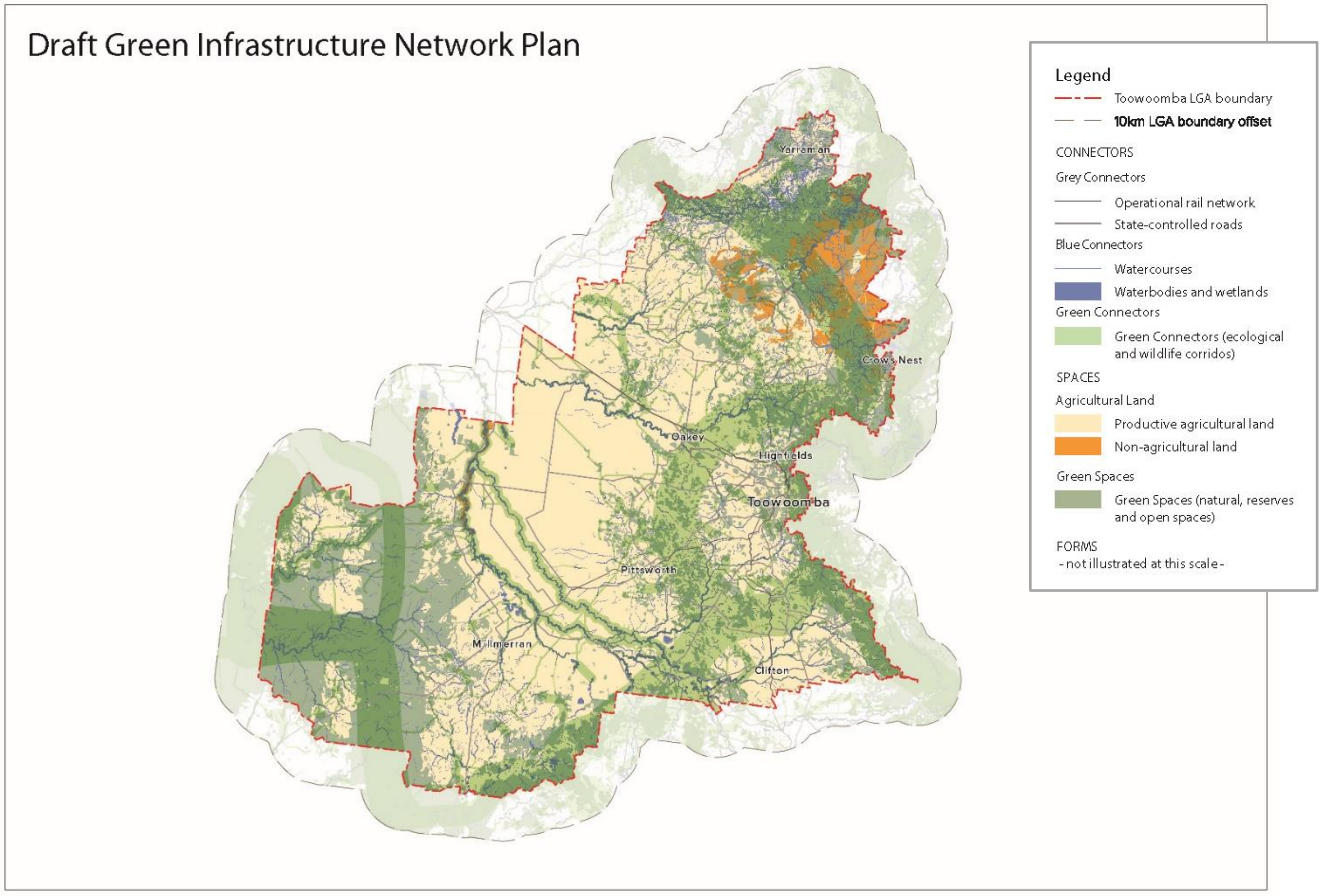


Figure 2. Draft Green Infrastructure Network Plan developed from MLES and other current spatial data to describe green infrastructure connectors and spaces

[2] *Based on: MLES ecological corridors (1.1), MLES wildlife corridors (1.2), MLES natural areas (2.1, 2.2, 2.3, 2.4, 3.2, 3.4, 3.5)*

3 POLICY CONTEXT AND ALIGNMENT

New approaches to the application of policy responses to address green infrastructure matters within the Region needs to be considered in the context of existing policy frameworks and with respect to how current delivery mechanisms align with or support green infrastructure. In the context of Toowoomba, the planning policy framework is illustrated in Figure 3.

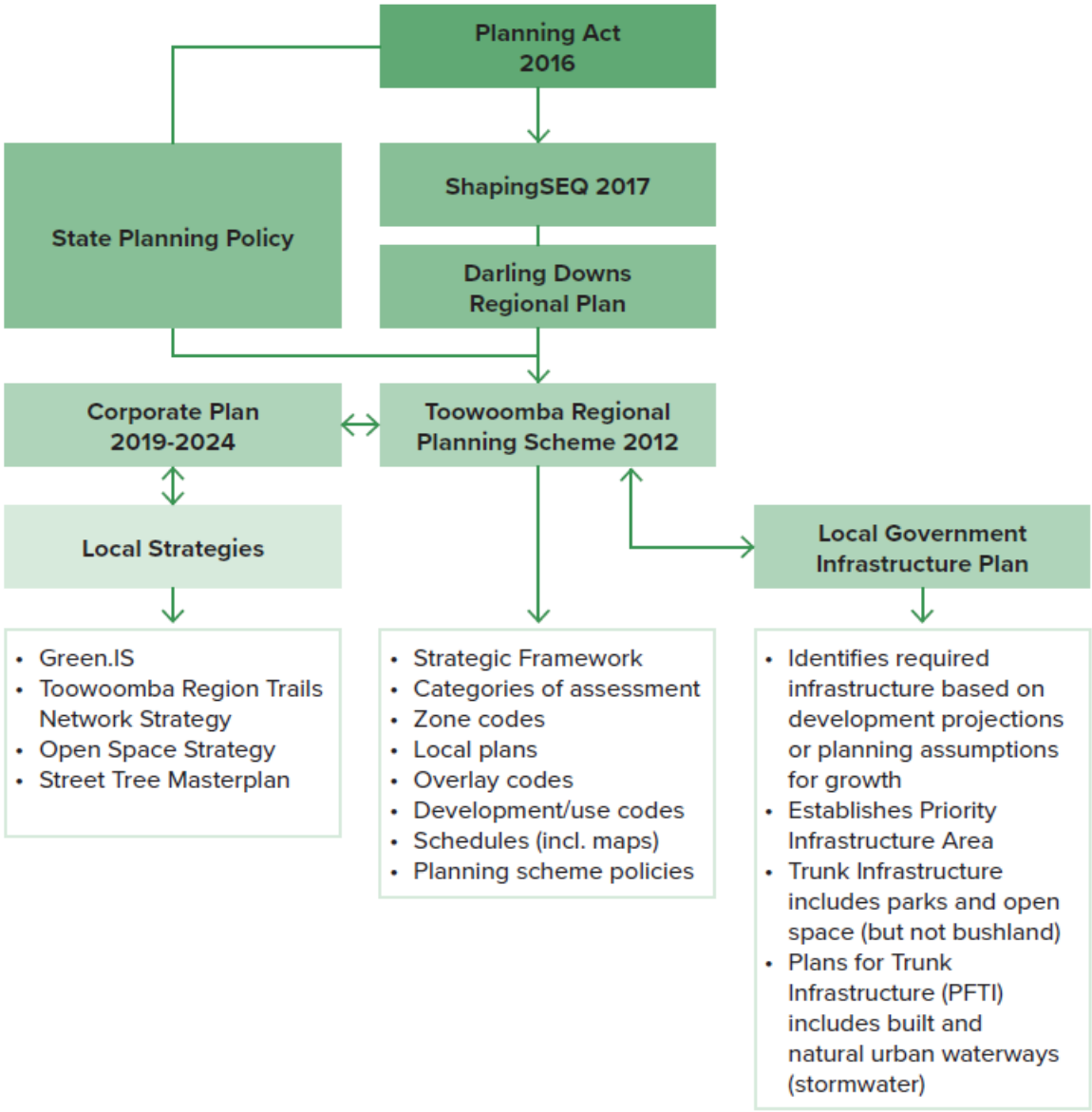


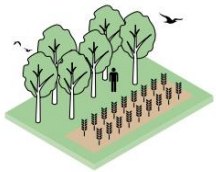
Figure 3. Toowoomba planning policy framework

This section will review the existing planning policy framework against the preliminary green infrastructure matters and outcomes, identifying where delivery is either currently effective or if there are any gaps in delivery.

3.1 Green.IS

In 2019, Council developed its Green Infrastructure Strategy (Green.IS), providing a vision, supporting objectives and actions to drive best practice planning, delivery and management of the region's green assets. The Toowoomba Green.IS has established a green infrastructure direction to be considered for integration into the new Planning Scheme through this project.

Green Forms, which are natural elements, built or planted in urban environments such as green roofs, green walls, Water Sensitive Urban Design (WSUD) elements, trees and backyards



Green Spaces, which are land, uses that utilise or protect natural processes and functions such as parks, open spaces, community gardens, farms and bushland

Green Connectors, which are living connected networks such as waterways and ecological corridors.

The natural processes provided by green infrastructure also enhance other networks such as roads, waterways and recreation corridors, by providing shade, improving air and water quality, creating habitat and adding to the character, amenity and health of these areas. Green infrastructure as an environmental policy establishes the opportunity to plan for the interconnectedness of natural processes such that multiple benefits for development and the region can be realised.

Delivery mechanisms however, are not envisioned as being contained wholly in the regulatory capacity of the local planning instrument. Delivery of green infrastructure is going to be an evolution through Council policy, education and knowledge building, community acceptance, and demonstration works. It will be the responsibility of everyone in the Region to support, reinforce and deliver green infrastructure. There is no single lever.

Demonstration projects

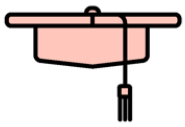
- Investment partners
- TRC
- State/ TRC

Policy and delivery tools

- State and regional planning policy
- City-wide strategies and plans (e.g. strategic framework)
- Precinct strategies and plans (e.g. local plans)
- Site-based plans and regulation (e.g. use provisions)

Skills and knowledge

- Guidelines
- Frameworks



Advocacy and education

- Programming
- Partnering
- Develop TRC regional position

While the objective of this report is to make recommendations for how the new Planning Scheme should integrate green infrastructure policy, this will also be guided by the broader planning frameworks and local strategies that provide direction for green infrastructure outcomes and delivery mechanisms. To successfully achieve desired green infrastructure outcomes, a multi-faceted approach is required, which cannot rely solely on delivery through the new Planning Scheme.

3.2 TOOWOOMBA REGION FUTURES PROGRAM ALIGNMENT

Concurrent to the GRISPI, Council is progressing a series of projects to investigate other planning matters and to inform the new Planning Scheme. These projects – under the Toowoomba Region Futures Program – will variously require alignment in findings to inform planning recommendations.

Of relevance to the matters of green infrastructure, the following studies have been reviewed:

- Toowoomba Region Bushfire Risk Analysis – Part B Risk Assessment (2021, Meridian Urban)
- Warm Temperate Climate Study and Guideline Project: Phase One Report: Defining the Warm Temperate March 2021 (2021, Pudmenzky, C. et al.)
- Toowoomba Region Urban Form Framework (TRUFF) – Context Report (2021, Jensen Plus et al)
- Toowoomba Region Growth Plan (2021, PSA Consulting)
- Toowoomba Region Scenic Amenity Study and Regional Landscape and Urban Character Study (2021, Lat27)

It is noted that these are works in progress and final reports have not been available in their entirety to review at the time of preparing this study.

This section presents aligning issues and opportunities between these works and the preliminary outcomes and envisioned mapping for green infrastructure.

3.2.1 Toowoomba Region Bushfire Risk Analysis

Meridian Urban has undertaken a bushfire risk analysis for the Toowoomba Region[3]. While the analysis and reporting are not yet completed, current findings have been summarised and made available for review.

> *…the Toowoomba Region is a fire-prone landscape, and its characteristics including fire weather and vegetation communities are continuing to evolve, translating to a higher likelihood of fire into the future as a result of climate change factors (Meridian Urban, 2021).*

Critical to strategic land use – including green infrastructure – is planning to ensure communities, services and infrastructure are safe from natural hazards – bushfire, flooding, landslide etc. Natural hazards are uncontrolled changes out of natural environments. Natural environments are integral to green infrastructure.

The identification of risks relating to bushfire hazards generally correlates with areas of dense vegetation (fuel for fire) and as noted in the Bushfire Risk Analysis report, ecological assets may be impacted by land and fire management activities in response to expanding development pressures. Rural residential and emerging community zones (often at the interface of urban and rural lands) are noted as being highly exposed to potential bushfire hazard. Through Queensland Emergency Risk Management Framework (QERMF) risk analysis matrices, areas of higher bushfire risk are identified, and include:

- Toowoomba urban area
- Crows Nest – Rosalie
- Millmerran

In terms of the draft Green Infrastructure Network Plan, areas of highest risk from bushfire will require bushfire management including the potential for asset protection zones around housing, conflicting with the green infrastructure intent to achieve more trees and vegetation and naturalised systems in urban areas. The study also recommends that planning considers the integration of provisions within the statutory context which focus on mitigating the risk of urban fire intrusion for new settlement at the urban bushland / grassland interface.

It is noted that draft Planning Scheme Policy for Bushfire prepared through this work by Meridian Urban establishes the following clarification for vegetation areas:

> *(5) Vegetation clearing for the purpose of establishing an APZ is to be avoided where possible. Development should be sited to avoid or minimise the need for vegetation clearing to achieve the required APZ.*

The policy establishes the priority to avoid vegetation clearing where possible, while addressing the need to provide bushfire protection to people and property. Acknowledging a degree of vegetation prioritisation aligns with the intents for green infrastructure network planning to protect and enhance vegetation.

[3] *Toowoomba Region Bushfire Risk Analysis – Part B Risk Assessment (2021, Meridian Urban)*

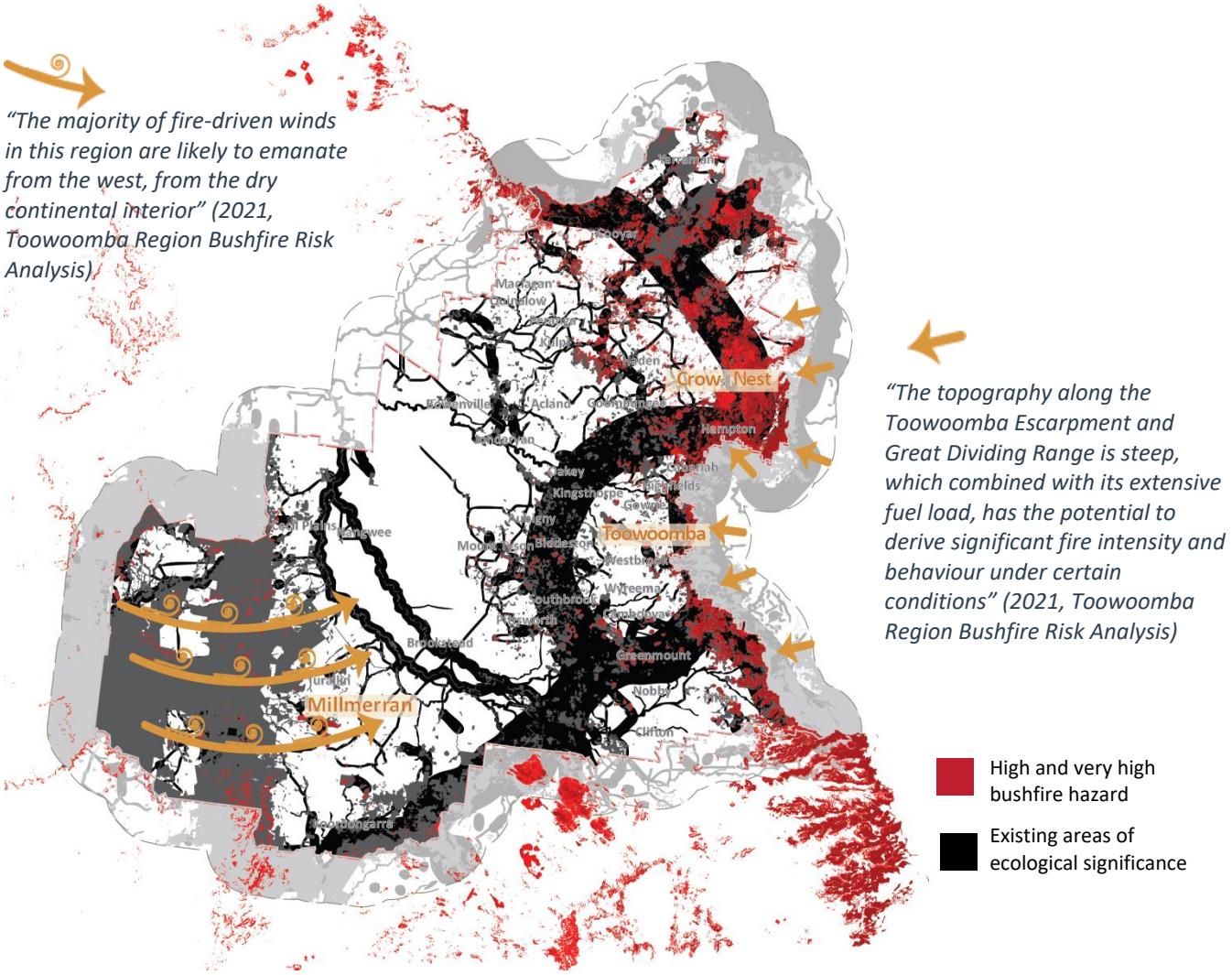


Figure 4. Draft Green Infrastructure Network overlaid with high and medium potential bushfire hazard areas

In alignment with this study the new Planning Scheme will need to balance these competing planning policy issues, however the protection of people and property would need to be reconciled with the retention and strengthening of green infrastructure and planning e.g. for new development would need to consider this issue carefully.

3.2.2 Warm Temperate Climate Study and Guideline Project

The Warm Temperate Climate Study and Guideline Project[4] begins to define Toowoomba's warm temperate climate to inform climate responsive building design and urban form policy for Toowoomba Regional Council's new Planning Scheme. It looks at recommendations for developing codes and guidelines for buildings that respond to climate change and enhance regional liveability – this is in alignment with the vision of the Green.IS.

It is understood that GRISPI will be supported by the Warm Temperate Climate Study and particularly green infrastructure (form) provisions identified through GRISPI should seek to align with its findings. Importantly, the Warm Temperate Climate Study reinforces the rationale and need for a strong policy position to improve climate resilience and even to slow localised warming (i.e. through heat island effects). This statement from the Phase One Report is an extremely important context to GRISPI:

> *"…climate variability is likely to continue to be a major influence in the Toowoomba region regardless of how soon and how far policy, regulation, technological and societal change take effect on influencing climate change. The lag between any emissions reductions from now on, and the expected benefits becoming*

[4] *To date this report is informed by Phase One Report: Defining the Warm Temperate March 2021 (Pudmenzky, C. et al.)*

noticeable, will take at least two decades. People will continue to need to manage risks associated with higher emissions for decades to come." (Pudmenzky, C. et al, 2021)

The imperative to adapt for climate change (i.e. warmer temperatures) through planning policy will help the Region to build resilience. This will be strongly supported through recognising and adopting a holistic understanding of the blue (waterways, wetlands, floodplains, canals etc) and green (grasslands, bushland, trees, habitats) natural systems that provide integrated ecosystem functions for Toowoomba. Green infrastructure policy would sit at the core of such an approach.

3.2.3 Toowoomba Region Urban Form Framework (TRUFF)

The TRUFF project is tasked with developing a "clear vision for urban form", with particular attention on the Region's towns and townships. The TRUFF Context Report presents outcomes from a review of various locational contexts to define the focus of the TRUFF project. This context includes urban form vision for towns and villages, emphasises the design of climate resilient buildings, streets and neighbourhoods, greenfield design guidelines and aging in place. These will all be relevant with regard to green infrastructure (form) outcomes such as street trees, WSUD, private gardens or landscape on structure.

Key alignments between the TRUFF and the GRISPI include guidance on:

- An emphasis on streetscaping and landscaping to reduce urban temperature, including options for larger trees, tree retention, limitations to impervious site areas, increased vegetation and tree canopy cover in developed areas, as well as areas of deep soil for planting and enhancing of natural systems.
- Providing for greater access to public and private open space and shifting the balance back towards green spaces from built elements
- The inclusion of WSUD policy and guidance for open spaces and streets and developments, designing stormwater management systems to also reduce stormwater pollution and for the harvesting of rainwater
- The integration of pedestrian and bicycle networks into streets design with the aim of gradually interconnecting new developments as the population continues to increase.

References in the TRUFF to QDESIGN (2018) note the need to take advantage of the local climate and adopt passive design strategies; conserve and protect healthy trees, plants of scale and significant species; provide areas of deep soil for planting; and enhance natural systems, landscape character and biodiversity. These building design inclusions will provide important enhancements within the green infrastructure network and will also critically help to plan for the Region's climatic future as per findings in the Warm Temperate Climate Study (Section 3.2.2).

3.2.4 Toowoomba Region Growth Plan

The Toowoomba Region Growth Plan (TRGP) addresses how projected population and employment growth will be sustainably accommodated through to 2051.

Green infrastructure policy will seek to facilitate development outcomes that protect and enhance the various elements to contribute to a Green Infrastructure Network – connectors, spaces and forms.

This will require that potential growth areas in the region are aligned with the Green Infrastructure Network to ensure that highest value ecosystem services are not impacted by incompatible development. In many locations this will translate as managing the interface of urban and natural areas (e.g. inter-urban breaks). This will require the Planning Scheme to be clear on the function of inter-urban breaks and what development (if any) is permitted in the inter-urban break areas. This is further discussed in Section 3.4.3 of this study.

GRISPI will ultimately be informed by the community's agreed settlement pattern, informed by the TRGP, and the assessment of all competing priorities at the urban and rural interface. It is noted that in proposing green infrastructure policy, it needs to be prioritised for truly effective outcomes including for the liveability of Toowoomba for its residents.

3.2.5 Toowoomba Region Scenic Amenity Study and Regional Landscape and Urban Character Study

The Toowoomba Region Scenic Amenity Study and Regional Landscape and Urban Character Study establish a framework for the protection and management of identified scenic amenity and landscape and urban character values

and this is strongly attached to the identification of the Region's living assets (areas of natural beauty and amenity). Through these assets cultural ecosystem services are provided (Table 1).

The protection and management of landscape and urban character and scenic amenity values are essential in order to maintain a sense of community identity, sense of place, promote stewardship of environmental and heritage values and support the physical and mental health of residents. However, character and scenic values are often seen as subjective, which can make them harder to incorporate into planning policy frameworks than other more easily quantifiable values (Lat27, 2021).

The areas of high character and scenic value from these studies will be reflected in the Green Infrastructure Network Plan as green infrastructure.

3.3 POLICY FRAMEWORKS

Protection of matters of environmental significance is facilitated through a framework of regulatory federal, state and local government requirements. Matters of National Environmental Significance (MNES) are established through the *Environmental Protection and Biodiversity Conservation Act* (Cwth 1999) and State and local matters provide a complement to these highest order biodiversity protections.

At the state level, Matters of State Environmental Significance (MSES) are provided for through a suite of State policies and legislation. Biodiversity is a State interest that requires consideration for the integration of Green Infrastructure into the new Planning Scheme.

Under the State interests, Matters of Local Environment Significance (MLES) are required to be included in local Planning Schemes. These identified local natural values must be different to Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES). These federal and state areas of environmental significance are identified and protected in other legislation, while MLES are to be identified and protected in the local Planning Scheme.

3.3.1 Commonwealth Environmental Protection and Biodiversity Conservation Act 1999

The *Environmental Protection and Biodiversity Conservation Act* (Cwth 1999) (EPBC Act) establishes regulation for prescribed activities that impact on areas where MNES are identified. In its role as the primary environmental protection legislation for the country, the EPBC Act defines several MNES including *nationally threatened species and ecological communities* and *migratory species.*

By way of example, the Toowoomba Region contains instances of wetlands of international importance (RAMSAR); Listed Threatened Ecological Communities; Listed Migratory Species; and Listed Threatened Species under the EPBC Act. Any prescribed activities – such as development and operation – that may impact on MNES will need environmental assessment under the EPBC Act.

3.3.2 Nature Conservation Act 1992

The objective of Queensland's *Nature Conservation Act 1992* (NCA) is the conservation of nature through the dedication, declaration and management of protected areas and the protection of native wildlife and its habitat. Protected areas include areas such as national parks, conservation parks and resource reserves.

Specific tools for managing protected areas, and for managing wildlife outside of protected areas are also established under the NCA, including park management plans and statements, regulatory notices, protected area permits and other authorities, licences and permits for the taking or use of wildlife, and individual conservation plans or recovery plans for species with particular needs.

3.3.3 Environmental Protection Act 1994

The objective of the *Environmental Protection Act 1994* (EPA) is to protect Queensland's environment while allowing for ecologically sustainable development.

The EPA regulates environmentally relevant activities and impacts, legislates for environmental impact statements, environmental management, and compliance matters for environmental offences.

3.3.4 Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VMA) regulates the clearing of vegetation in Queensland by:

- conserving remnant vegetation;
- ensuring clearing does not cause land degradation;
- preventing loss of biodiversity;
- maintaining ecological processes;
- reducing greenhouse gas emissions; and
- allowing for sustainable land use.

The VMA sets assessment benchmarks for the assessment of assessable development that is the clearing of vegetation for the *Planning Act*, including assessment matters for relevant referral agencies. It provides for the enforcement of vegetation clearing provisions and for the regulation of particular regrowth vegetation. *High nature conservation value* areas or *vulnerable land* areas may be declared under the VMA.

3.3.5 Planning Act 2016

The *Planning Act 2016* (the Act) sets the statutory requirements for drafting legal planning instruments in Queensland.

Section 3 of the Act outlines its purpose to (emphasis added):

> *…establish an efficient, effective, transparent, integrated, coordinated, and accountable system of land use planning (planning), development assessment and related matters that facilitates the achievement of* ***ecological sustainability***[5]*.*

With ecological sustainability at the core of green infrastructure outcomes, the proposed integration of green infrastructure strategy in the new Planning Scheme is seen to advance the purpose of the Act.

3.3.6 Planning Regulation 2017

Guidance for the drafting of planning instruments is provided through the *Planning Regulation 2017* (the Regulation). It sets out regulated requirements for local planning instruments such as administrative and use defined terms, required zones, categories of assessment and other provisions as set out in the Ministers Guidelines and Rules.

While the drafting of planning instruments is not within scope of this policy report, ensuring recommendations align with the legal application of instruments will be essential. The Regulation will be a primary reference in delivering the ensuing recommendations.

Walkable Communities Regulation

In 2021 the State Government incorporated regulation for walkable communities as Schedule 12A in the Regulation. Schedule 12A applies assessment benchmarks to particular reconfigurations of a lot – primarily greenfield development – and includes assessment benchmarks that can inform green infrastructure (form) for consideration in Planning Scheme integration:

- *Connectivity* – prioritising pedestrian connectivity in new residential subdivision
- *Maximum block length* – pedestrian convenience enhanced with block lengths of no more than 250m
- *Street trees* – planting a minimum of 1 tree every 15m on each side of any new road (or in accordance with any local assessment benchmark where requiring more frequent planting)
- *Footpaths* – minimum standards for providing footpaths
- *Parks and other open space* – provided within 400m of every lot

The implications of Schedule 12A on green infrastructure planning are considered in more detail in the outcomes analysis of this report (Section 4).

3.3.7 State Planning Policy 2017

The *State Planning Policy 2017* (SPP) identifies matters of State interest and provides planning guidance and development assessment benchmarks required to be addressed by local planning instruments. The requirements will apply to planning for green infrastructure as part of the new Planning Scheme. A review against the specific requirements for addressing State interests has been undertaken (refer to Appendix 3) and the following alignment comments are made:

[5] ***Section 3 of the Act*** *– Ecological sustainability is a balance that integrates— (a) the protection of ecological processes and natural systems at local, regional, State, and wider levels; and* [others] and *includes— (i) conserving, enhancing or restoring the life-supporting capacities of air, ecosystems, soil and water for present and future generations; and (ii) protecting biological diversity.*

- Green infrastructure outcomes generally support all State interests
- Coordination of green infrastructure outcomes with growth management planning (which addresses State interests for the suitable provision of lands for future residential growth), is needed to acknowledge and manage areas of high value green infrastructure and land demands for development
- Natural hazard areas will need to be carefully considered where identified within the Green Infrastructure Network Plan
- Proposed multiple purpose use of transport corridors will need to be compatible with the primary functions for safe transport and efficient use of transport corridors.

3.3.8 Queensland Environmental Offsets Policy 2021

The *Queensland Environmental Offsets Policy* (2021) provides a single, consistent, whole-of-government policy for the assessment of offset proposals to satisfy offset conditions. It establishes that offsets may be conditioned for prescribed activities where it can be demonstrated that impacts on matters of environmental significance cannot be avoided or mitigated. It also allows for local offset policies to be established in complement.

Currently some areas in the Toowoomba Region (predominantly along the Range), are identified as having high value priority within the Southern Brigalow Belt Strategic Investment Offset Corridors (SOIC) mapping, under the Queensland Environmental Offsets Policy. This establishes preferred areas for offset investments where being delivered on land, and are identified as containing some MNES and MSES.

It is noted that assessment of significant residual impact under the policy for matters of local environmental significance can also be established through a local government significant impact guideline for MLES and this should be considered for green infrastructure policy integration into the Planning Scheme in complement to the Policy. For example, the Green Infrastructure Network (connectors) could add to the strategic intents of the SOIC and help deliver greater biodiversity protection and enhancement in locally high-value areas.

Local offsets opportunities that reinforce the Green Infrastructure Network – for example, contributing to the enhancement of green connectors – could be identified and provide a framework for consideration in development proposals that will significantly impact on MLES (and where development cannot avoid or mitigate impacts). Local offset policies are often delivered as part of the planning scheme through a planning scheme policy.

3.3.9 Regional Plans

The Toowoomba LGA is subject to regional plans for both the Darling Downs and South East Queensland regions.

Darling Downs Regional Plan

Through the Darling Downs Regional Plan, specific regional policies that align with the SPP are included across the following themes:

- Amenity and community wellbeing
- Agriculture
- Mining and extractive resources.

It does not provide regional policy on environment and heritage matters – where green infrastructure matters would naturally sit – relying on local planning instruments to address these matters.

With its focus on productive agriculture and extractive resources, the Darling Downs Regional Plan prioritises the growth of these sectors, with Priority Living Areas (PLAs) supported in complement, to ensure liveable communities.

ShapingSEQ

Through the SEQ Regional Plan (ShapingSEQ) the urban extents of Toowoomba City and the Toowoomba Trade Gateway are incorporated and described as the 'western gateway' to the South East Queensland Region. Regional values include priorities tied to the regional economic cluster (REC) represented by these parts of the region. ShapingSEQ also identifies the escarpment and other natural areas in the east of Toowoomba, for regional biodiversity and corridor values; and regionally significant scenic values. These regional values will be observed through this work and spatially these values are encompassed by the Draft Green Infrastructure Network Plan (Figure 2 in previous chapter).

ShapingSEQ identifies new community growth areas (limited to eastern areas of Toowoomba) for Meringandan West and Westbrook/ Drayton, which will be relevant to ensuring green infrastructure is an inclusion in neighbourhood planning and subdivision master planning phases where possible.

It is noted that ShapingSEQ may be reviewed and revised in coming years and this may have implications for green infrastructure with regard to the identification of new growth areas, different provisions for the protection of natural assets and potential greater emphasis on planning for climate change.

3.4 TOOWOOMBA REGION PLANNING SCHEME

This section considers the preliminary green infrastructure matters and discusses potential development outcomes against the different components of the current Toowoomba Region Planning Scheme.

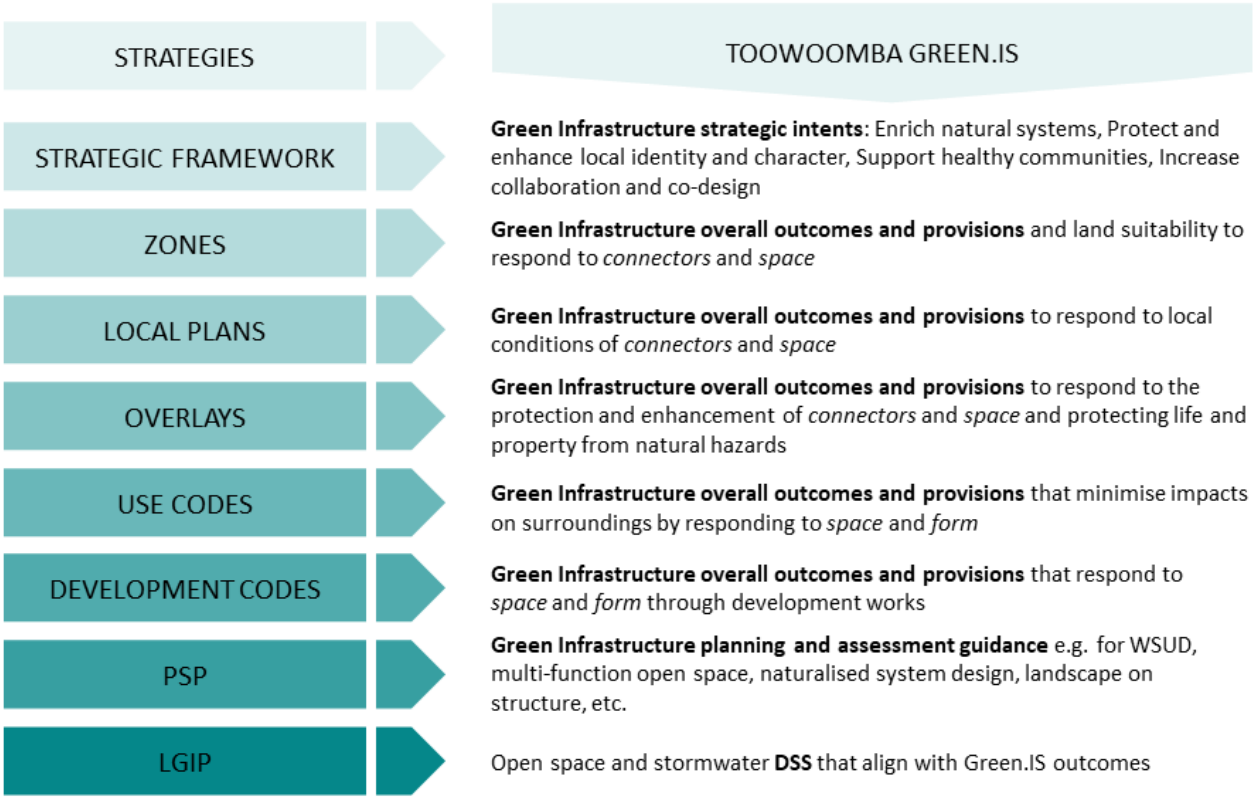


Figure 5. How green infrastructure can be applied as part of different planning scheme components

3.4.1 Strategic Assessment

The Strategic Framework describes strategic intents for the Toowoomba Region, currently drafted across 7 themes. The relevant strategic outcomes and elements of each theme as they pertain to green infrastructure, are indicated as follows:

1. **Settlement Pattern (SP)** – natural places (areas of ecological significance, waterways, wetlands and ecological corridors as shown on Strategic Framework Map 1) are preserved and enhanced and serve essential functions
2. **Natural Environment (NE)** – protect ecosystems with biodiversity values (elements: waterways, wetlands and aquifers; climate change; environmental offsets)
3. **Community Identity and Diversity (CID)** – a balanced range of community facilities including natural environments and attractive landscapes to meet community needs (elements: urban design; urban parks and public spaces)
4. **Natural Resources and Landscapes (NRL)** – natural ecosystems and water resources are to be protected and conserved (elements: scenic amenity, water resources, stock routes)
5. **Access and Mobility (AM)** – elements: integrated transport system (including recreation trails) is identified and protected; treed network of boulevard streets creates the visual frame of greenery of Toowoomba
6. **Infrastructure and Services (IS)** – elements: integrating water management and infrastructure

7. **Economic Development (ED)** – elements: tourism (the Region has a diverse range of tourist attractions including its natural features and parklands)

In considering the preliminary outcomes outlined in Section 2, the strategic intents for green infrastructure are, to varying degrees, already incorporated in these Strategic Framework themes. The matrix outlined in Table 2 below provides an assessment of this:

Table 2. Strategic Framework review matrix

GREEN INFRASTRUCTURE ELEMENT/ ASPECT		STRATEGIC FRAMEWORK THEME						
		SP	NE	CID	NRL	AM	IS	ED
CONNECTORS	*Biodiversity corridors*	●	●	○	●			○
	Natural wetlands	●	●	○	●		○	○
	Natural waterways	●	●	○	●		○	○
	Constructed waterways + water bodies	○	○	●	●		○	
SPACES	*Natural biodiversity areas*	●	●	●	●	●		○
	Urban bushland	○	●	●				○
	Open spaces, parks & backyards		●	●		●		
	Agricultural land & timber reserves	○	●		○			○
FORMS	*Trees - urban (private land & street trees)*		●	●		●		○
	Trees - rural							
	Landscape on structure (green walls & roofs)		○	●			○	
	Urban gardens & community farms							
	Stormwater management / WSUD assets		●	○	●		●	

● *Green infrastructure matter is directly referenced and intended to be protected and enhanced*

○ *Green infrastructure matter is indirectly referenced and/ or 'protect and enhance' intent is not clear*

GAPS The matrix above shows gaps in the Strategic Framework's efficacy in identifying strong strategic intents for 'form' aspects of green infrastructure, in particular trees in rural settings and urban gardens or community farms. WSUD also is not strongly reflected at the Strategic Framework level. Encouraging the inclusion of gardens and productivity in more urban areas will be valuable to re-framing the balance of built form and open space in more densely developed areas. It has the benefit of contributing to reducing heat island effects and can offer 'providing' ecosystem services (food productions). These benefits could be better reinforced at the Strategic Framework level of the new Planning Scheme.

Other strategic intents from the current Strategic Framework that build on the preliminary outcomes for green infrastructure are also noted below (emphasis added):

- Human individual and community **health and well-being** (Natural Environment Theme)
- Encourage **community and corporate involvement** in appreciating and understanding areas and species that are endangered, vulnerable and rare through public information strategy or investment in the protected area estate
- Impacts are to be minimised and residual **impacts offset** in accordance with the principles of the Queensland Government Environmental Offsets Policy
- Hydrological processes occur in surface water, **underground water** (the Great Artesian Basin) and alluvial basalts.
- **Climate change** projections suggest that changes in the flood, bushfire and storm risk can be expected
- Reduce the generation of **greenhouse gases**

While it is understood that the Strategic Framework will be re-drafted for the new Planning Scheme, it will still have the purpose to *effectively express the overall settlement strategy, policy direction and strategies for the local government area.* This is the primary opportunity within the new Planning Scheme for Council to establish green infrastructure outcomes as a fundamental policy position.

PLANNING SCHEME INTEGRATION OPTION In reviewing the Strategic Framework and specifically green infrastructure outcomes, it is observed that green infrastructure strategic intents are found in each of the current themes. Green infrastructure policy could be a new focus for strategic outcomes and suggests that green infrastructure could be considered as its own strategic theme within the new Planning Scheme. This would have the benefit of reinforcing the importance and prioritisation of more integrated, holistic strategic planning and development. While it is understood that the Strategic Framework is currently being re-drafted by Council, this may be a consideration for future iterations of the Planning Scheme, as green infrastructure approaches to development are more widely accepted.

Importantly, as well as setting the "big picture", the strategic outcomes will have an active role in the assessment of impact assessable development. With effective intent statements in the Strategic Framework, the new Planning Scheme can more robustly facilitate the integrated outcomes identified as necessary to see the benefits of green infrastructure play out across the Region. Rigour around this and the integrated system requirements that development needs to recognise and comply with could be achieved through maps and/or plans.

PLANNING SCHEME INTEGRATION OPTION The benefits of green infrastructure will be realised through recognising and implementing integrated systems that are sympathetic to, compatible with and that protect and enhance the Region's living assets. Integration of the various elements – connectors, spaces and forms – is going to be optimised through a spatial plan, such as the Green Infrastructure Network Plan (Appendix 1) developed in the GRISPI Background Report and Mapping (July 2021).

There is an opportunity to enhance the strategic intents for green infrastructure through the adoption of the Green Infrastructure Network Plan as the Strategic Framework map for green infrastructure elements as part of the new Planning Scheme. It is suggested that this will need to be coordinated with Council's strategic growth model to align planning assumptions for new development and growth with strategic land use planning outcomes.

3.4.2 Zones

In considering the Green Infrastructure Network Plan, living assets or green infrastructure 'connectors' and 'spaces' are in part intended to be protected or enhanced. This anticipates that development will be regulated in particular areas (e.g. development should avoid, mitigate or offset unavoidable impacts on high value MLES or essential ecosystem services). The exercise of zoning land under the new Planning Scheme will need to assess the suitability of lands to be zoned for development in light of any high value area constraints for green infrastructure outcomes.

However, significant components of the Green Infrastructure Network Plan provide for green infrastructure as assets to benefit development – bushland reserves, waterways, or private landscapes by way of example – all of which will contribute to improving sustainable, ecosystem services. Specific ecosystem services will have different relevance according to the different zone intents. In residential zones these living assets can provide essential streetscape amenity, scenic amenity or energy efficiency. In centre zones these ecosystem services can provide essential pervious surfaces (improving stormwater management), 'green lungs' (improving air quality) or shade (amelioration of heat island effects) in highly urbanised areas.

Designation of zones should be cognisant of the Green Infrastructure Network Plan and where possible, appropriately align with areas identified for protection and enhancement of green connectors and green spaces; and overall outcomes should support development that appropriately contributes to living assets or integrates with natural systems for the enhancement of zone intents.

Zoning intents are reviewed against their scope to facilitate green infrastructure outcomes and have been summarised in Table 3.

Table 3. Review of zones and scope for green infrastructure that supports sustainable ecosystem services

ZONE	SCOPE FOR GREEN INFRASTRUCTURE WITHIN PURPOSE OF ZONE	CURRENT ALIGNMENT FOR SUPPORTING ECOSYSTEM SERVICES
Residential zones	Residential zones provide for a variety of residential dwelling types, community uses and small-scale services, facilities and infrastructure to support local residents. Development in these zones is intended to elevate amenity and lifestyle of residents and the overall outcomes target dwelling densities, safe and efficient walkable neighbourhoods and how non-residential uses are envisioned for the zone.	GENERALLY ALIGNS Low Density Residential and Low-medium Density Residential zones provide ecosystem services through green forms and spaces – trees, private open space, landscape on structure etc.
Centre zones	As centre zones generally occur in urban areas, more form-based outcomes where responsive to site and streetscape design (street trees, tree retention, WSUD and public parks) would be most relevant to zone overall outcomes for the delivery of ecosystem services.	GREATER ALIGNMENT POSSIBLE Centres hierarchy suggests more intensified development of higher order centres and for meaningful adoption of green infrastructure intents, overall outcomes for centre zones need to re-frame built form and natural area/ open space priorities so that ecosystem services are more emphasised in urban areas.
Recreation zones	Potential for multi-purpose recreation and open space to allow for naturalised stormwater management systems/ WSUD/ water harvesting to be more broadly adopted for greater water quality and re-use outcomes – aligns with purpose of the zone.	GREATER ALIGNMENT POSSIBLE Recreation and open space zone assessment benchmarks for stormwater could incorporate reference to WSUD or multi-purpose open space.

ZONE	SCOPE FOR GREEN INFRASTRUCTURE WITHIN PURPOSE OF ZONE	CURRENT ALIGNMENT FOR SUPPORTING ECOSYSTEM SERVICES
Environmental zones	Environmental zones are intended to provide for the protection and maintenance of areas that support biological diversity; ecological integrity; and/or naturally occurring landforms and can be included as environmental management or conservation zones. In Toowoomba, environmental zones are not currently applied and conservation through State designated areas within the open space zone are relied on in addition to the environmental significance overlay.	ZONE NOT CURRENTLY APPLIED Environmental zones are not currently applied in the Planning Scheme – the potential for use of environmental management zones as a lever to recognise multi-functional green infrastructure and for the enhancement of green connectors or spaces (e.g. inter-urban breaks or regional biodiversity corridors) through both public and private land. Protection of green spaces and connectors could be further reinforced to support the Environmental Significance Overlay as required for Environmental management zones. Also, there is potential to identify preferred offset lands for coordinated offset outcomes for unavoidable impacts on green spaces.
Industry zones	Industry zones provide for a variety of industry activities, as well as other complementary activities. Green infrastructure forms that provide for regulating ecosystem services (water conveyance, cooling/ shelter, clean air, carbon storage) are important functions in viable industry. Separation of potential hazardous impacts from industry on green spaces (areas of high natural value) is also a planning consideration for industry zones. Green form outcomes can also support the purpose of this zone, increasing canopy cover and pervious surfaces on site and along screening areas.	GENERALLY ALIGNS Noting that the concurrent Industry Review being undertaken as part of the Toowoomba Region Futures Program will provide advice on the most suitable ongoing application of industrial zones and precincts. The potential for green infrastructure to be included as part of requirements for self-assessable applications should be considered. For example, the provision of buffers to green spaces and connectors, requirements for shade trees, or vegetated screening requirements to exclude WSUD/ raingardens will support ecosystem services and will be valuable for industrial activities.
Tourism zones	The purpose of the tourism zone is to provide for tourist activities, facilities and places in coastal, environmental, rural and urban areas. While not currently applied in the planning scheme, the value of highly scenic green spaces and connectors could be reinforced through use of tourism zones, which would allow also for the consideration of sensitively integrated commercial uses to support the Region's economy.	ZONE NOT CURRENTLY APPLIED *Minor tourism zone* could be used to integrate economic functions into natural areas that have high visitor attraction, simultaneously contributing to ecosystem services, in particular for 'supporting' (movement/ genetic diversity, habitat, soil formation) and 'cultural' (recreation, amenity) ecosystem services.
Community facilities zone	More form-based outcomes for the delivery of ecosystem services, where responsive to site and streetscape design (street trees, tree retention, WSUD and public parks), would be most relevant as overall outcomes in this zone code. Potential for multi-purpose recreation and open space could allow for naturalised stormwater management systems/ WSUD/ water harvesting and would still align with purpose of the zone	GENERALLY ALIGNS Consider also application of community facilities zone for the designation of some green infrastructure functions such as bushland areas with associated nature facilities (e.g. education centre) or visitor information services, as well as potential multi-function open spaces able to be maintained delivering support to community physical and mental wellbeing, landscape and scenic amenity (cultural ecosystem services),

ZONE	SCOPE FOR GREEN INFRASTRUCTURE WITHIN PURPOSE OF ZONE	CURRENT ALIGNMENT FOR SUPPORTING ECOSYSTEM SERVICES
		stormwater conveyance etc (regulating ecosystem services).
Emerging community zone	Usually located beyond the edge of urban areas, emerging community zone supports transitional land development and could incorporate provisions that amplify early requirements for green infrastructure such that, when more intensified growth is confirmed through a re-zoning for residential uses, the fundaments of green infrastructure are imbedded in the planning/ community. Emerging community zones are also usually the interface with rural land and where future development would constitute greenfield subdivision this zone should be establishing protections for inter-urban breaks and any other natural areas ahead of more intensive development.	GREATER ALIGNMENT NEEDED Emerging community zones found in Cotswold Hills, Torrington, Mt Kynoch, Glenvale, Drayton – it is noted that the Toowoomba Region Growth Plan (TRGP) currently being undertaken will review and plan for revised residential land supply and this may impact on zoning for emerging communities. Green infrastructure spaces delivered through identified inter-urban breaks should be considered as part of growth planning for the Region. Opportunities for reducing reliance on stormwater infrastructure through nature-based solutions should be an outcome in the emerging community zone to improve benefits to water quality, cooling and landscape amenity.
Innovation zone	The purpose of the innovation zone is to identify land suitable for new and emerging uses and activities to provide opportunities for innovation and creativity; facilitate new and emerging uses and activities and provide for uses and activities that promote knowledge creation in industry, research and development, science and technology. There may be scope within this zone for demonstration projects (a strategic objective of the Green.IS) for innovative development outcomes that integrate naturalised systems and living assets.	NOT CURRENTLY APPLIED – MAY HAVE SOME APPLICATION Pilot development that showcased innovative application of ecosystem services could be considered within such zones e.g. green business park where ongoing innovation and green tech could be researched and tested. Council's intent to lead the State and Australia on green infrastructure policy would be strongly supported by a program that included a land-based, pilot project to test and demonstrate the implementation of innovative green infrastructure in areas where 'enhancement' to green infrastructure is sought.
Limited development zone	The purpose of the limited development zone is to identify land that is significantly affected by one or more development constraints, including flooding, land contamination, past or future mining activities or topographical constraints. It could potentially be a land use lever for green infrastructure connectors and spaces along waterways and flood plain areas to be left as naturalised systems and to manage development impacts where these ecosystem services are highly functioning.	GREATER ALIGNMENT POSSIBLE Potential for the zone to be applied to deliver benefits in response to natural constraints and as an opportunity to enhance the ecosystem services in areas where development is intended to be limited/ managed.
Mixed use zone	Mixed use zones provide a mixture of development including service industry, business, retail, residential and low impact industrial uses. Development in these zones generally occurs in urban areas, and as such more form-based outcomes where responsive to site and streetscape design (street trees, tree	GREATER ALIGNMENT POSSIBLE Most prevalent in Toowoomba City Centre and major rural centres and currently makes requirement for further detail of use mixes and servicing through structure planning – *see PSP review Section 3.4.6*.

ZONE	SCOPE FOR GREEN INFRASTRUCTURE WITHIN PURPOSE OF ZONE	CURRENT ALIGNMENT FOR SUPPORTING ECOSYSTEM SERVICES
	retention, WSUD and public parks) would be most relevant to zone overall outcomes for the delivery of ecosystem services. Residential components of any site would also benefit from living assets integrated into development to support amenity and climatic comfort.	Overall outcomes should incorporate ecosystem services responsive street design, including street trees and WSUD and retention of significant trees* (all regulating ecosystem services). **will require definition of 'significant'.*
Rural zone	Protect or manage significant natural features, resources, and processes, including the capacity for primary production – this zone encompasses agricultural lands, waterways, biodiversity areas and open spaces –green infrastructure connectors and spaces at the broadest scale servicing the entire LGA (e.g. the Condamine River), as well as at more local small scale ecosystem services of lots or localities.	GENERALLY ALIGNS Most of the Toowoomba LGA is zoned rural. While the zone provisions are reviewed as generally aligning with green infrastructure intents, other parts of green infrastructure programming need to address land management of rural lands where impacts on green infrastructure may occur
Rural residential zone	The semi-rural nature of the rural residential zone provides scope for ecosystem services (supporting, regulating, provisional and cultural) to be sought through the zone provisions. Impacts from agricultural uses on natural environments in this zone are complex and interrelated and may not be initially obvious. It is noted that pressures to 'infill' development of rural residential areas to accommodate growth is common and the zone outcomes and codes should aim to ensure rural residential (and green infrastructure) outcomes prevail.	GREATER ALIGNMENT NEEDED The zone is commonly used at the edge of urban areas and with very low density development outcomes intended. Protection of high value green infrastructure connectors and spaces should be based on pre-cautionary principles to effectively deliver supporting ecosystem service outcomes.
Township zone	Encompasses all necessary services for respective townships including open space, recreation and tourist attractions that may all be founded on living assets in rural settings. As this is an all encompassing zone, development impacts are assessed across living assets and additional provisions to protect and enhance may be needed where areas of high value are identified.	GENERALLY ALIGNS The township zone is generally applied in smaller rural localities[6] and it is recommended that each of these localities are further considered to ascertain any potential impacts on high value living assets

GAPS Overall outcomes for zones as part of the new Planning Scheme preparation, will need to be calibrated to align with green infrastructure intents. Indicatively, the Emerging Community and Rural Residential zones will need the most attention, to ensure that interfaces to natural areas are suitably protected from urban encroachment, and also that vegetated areas do not create bushfire hazard risks to communities at these interfaces.

[6] *Acland, Bowenville, Brookstead, Cambooya, Cecil Plains, Cooyar, East Greenmount, Greenmount, Haden, Hampton, Jondaryan, Kulpi, Maclagan, Mount Tyson, Nobby, Peranga, Quinalow, Southbrook, Meringandan, Kingsthorpe, Gowrie, Wyreema*

PLANNING SCHEME INTEGRATION OPTION Zoning lands under the new Planning Scheme will need to assess the suitability of lands to be zoned for development in light of any proposed constraints for high value green infrastructure outcomes. Additionally, more specific outcomes should be included within the applicable zone codes that still facilitate the achievement of the desired green infrastructure outcomes where those values exist (even where land may be zoned for potential development) reflecting the ecosystem service (forms, spaces, or connectors) identified in Table 3 above.

3.4.3 Local Plans

Local Plans provide valuable opportunities for green infrastructure outcomes that respond to the local conditions and local environmental values. Currently the Planning Scheme includes the following Local Plans:

- Highfields, Meringandan and Meringandan West Local Plan
- Glenvale Local Plan
- Toowoomba Charlton Wellcamp Enterprise Area Local Plan[7]

Local planning matters that are relevant to ecosystem service outcomes have been identified through a review of the local plans and summarised in Table 4.

Table 4. Green infrastructure relevant inclusions currently found in Local Plans

LOCAL PLANNING MATTER	GREEN INFRASTRUCTURE INCLUSIONS	CURRENT ALIGNMENT
Inter-urban breaks	Inter-urban breaks provide an important green space between urban areas, to reduce edge effects and provide safe passage from predation; however, may have different composition (heavily vegetated/ waterway/ sparse, low vegetation but limited development) depending on the locality	GREATER ALIGNMENT NEEDED (Highfields, Meringandan and Meringandan West Local Plan) • Stronger protection for inter-urban breaks could be incorporated through more localised planning • Inter-urban breaks are green connectors and should be defined in terms of ecosystem services (supporting ecosystem services that provide habitat and movement/ genetic diversity; or cultural ecosystem services where primary functions are recreation and amenity)
Integrated open space network	High value environmental values are identified where relevant to a locality (e.g. creeks, riparian areas, major landscape features etc.) and outcomes and provisions for connection, protection and enhancement are outlined	GREATER ALIGNMENT POSSIBLE (Glenvale Local Plan) Requires additional public space to be created as part of new subdivision and identifies connected 'open space zone', however, greater emphasis on ecosystem services attached to these requirements and the promotion of their values could reinforce their prioritisation in developing environments
Conservation precinct	Protect environmental values whilst managing stormwater and flooding and provides for opportunities to rehabilitate ecosystem function in the Open Space Precinct and along riparian corridors	GENERALLY ALIGNS (Toowoomba Charlton Wellcamp Enterprise Area Local Plan) Identifies environmental values and the need for conservation in predetermined areas however, regard is given to the MLES mapping to be adopted as part of the Environmental significance

[7] *To be reviewed through the Industry Review Project*

LOCAL PLANNING MATTER	GREEN INFRASTRUCTURE INCLUSIONS	CURRENT ALIGNMENT
		overlay, and use of the Conservation precinct may be an overlap in terms of intents and purpose. This should be reviewed and avoided. It is suggested that the Environmental management zone may have a better functional fit within the Green Infrastructure Network and that "conservation precinct" mapping may not be needed where more robust MLES overlay details are incorporated into the new Planning Scheme.
Multi-purpose open space	Low impact recreational uses are suitable within riparian corridors. Such uses are generally compatible with environmental values. Linear open spaces present opportunities to provide trails that link into the broader pedestrian and cycle network	GREATER ALIGNMENT POSSIBLE (Toowoomba Charlton Wellcamp Enterprise Area Local Plan) Provides opportunity for multi-functional open space but would benefit through the identification of ecosystem services (supporting, cultural) to ensure green infrastructure network planning is acknowledged in corridors and the value of enhancing connections is made clear.

GAPS Inter-urban breaks are identified as valuable across several Toowoomba Region Futures Program studies – providing for landscape character, scenic amenity, potential growth lands, community identity. For green infrastructure outcomes they are important strategic natural open spaces (waterways or vegetation communities) that retain large areas of ecosystem services in between intensifying urban areas. Outcomes for these functions should be recognised with more rigour in land use planning and designation of zones (or other mapping designation) and/or through assessment benchmarks in relevant codes.

PLANNING SCHEME INTEGRATION OPTION Similar examples of the integrated open space networks, conservation precinct and multi-purpose open space provisions from current local plans would be a valuable requirement for all greenfield development (RaL development applications, master planning) and major development projects (e.g. new hospital site), to enhance green infrastructure networks in local neighbourhoods. Local neighbourhood planning might be achieved through structure plans, integrated land use plans or local area plans.

3.4.4 Relevant Overlays

Environmental significance overlay + MLES

Assessment benchmarks in the current environmental significance overlay can be broadly categorised as requiring an avoid, mitigate or offset response to mapped areas of environmental significance. However, while outlined in the overall outcomes, assessment benchmarks for the *enhancement* of environmentally significant areas and more robust provisions for several of the major ecosystem services – movement, genetic diversity and habitat – are not provided in the overlay code.

It has also been recognised that currently mapped overlay areas of environmental significance do not adequately address matters of local environmental significance (MLES). As such Council has prepared new MLES mapping to update the existing mapping and overlay.

This suggests an opportunity for a new overlay to better reflect, not just MLES, but also the Green Infrastructure Network Plan and the supporting biodiversity ecosystem services for movement/ genetic diversity and habitat in the Region.

The current environmental significance overlay is generally shown in Figure 6.

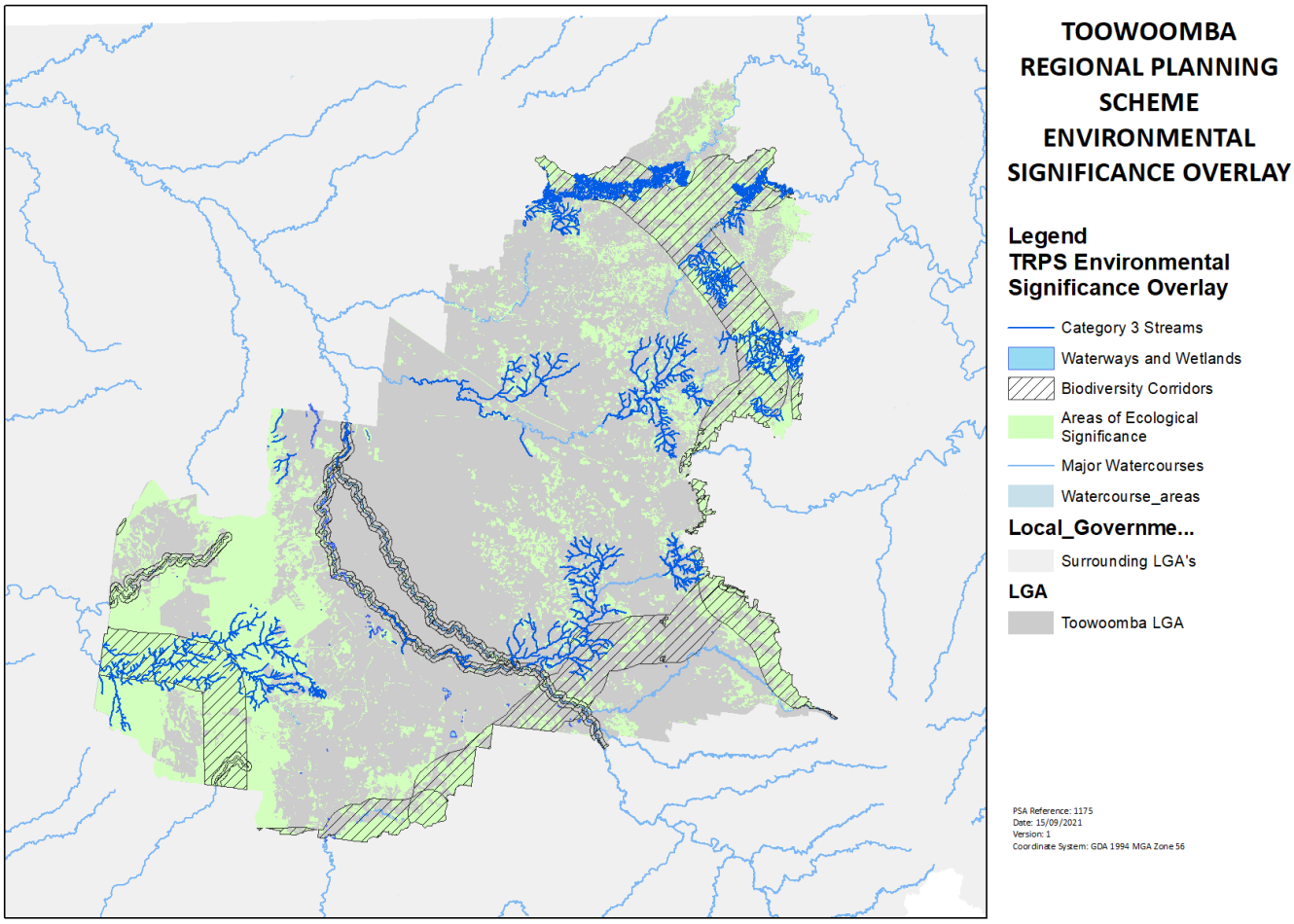


Figure 6. Toowoomba Regional Planning Scheme (TRPS) environmental significance overlay

To progress the objectives of the SPP, Council recently undertook assessment and mapping analysis for MLES. This mapping establishes the current spatial designation of high value environmental matters. It will inform and update the current environmentally significant areas mapping in the environmental significance overlay with data based on the processing of existing available environmental values mapping from agreed sources and excluding MSES and MNES values. The MLES Category Framework documents three key asset categories: corridors, biodiversity areas and vegetation communities.

The various sub-categories of the MLES mapping are an important mechanism for consideration in the GRISPI. It is through the MLES that local high value environmental areas are identified and will be the basis for more stringent development controls such as avoiding development in such areas or offsetting for impacts to these areas.

Suggested application of the different values is presented in Table 5.

Table 5. MLES potential use of MLES data in the update of the planning scheme overlay for environmental values

CURRENT OVERLAY	POTENTIAL NEW OVERLAY	MLES INFORMATION	MLES DATA DESCRIPTION	POTENTIAL USE OF MLES DATA IN OVERLAYS
Ecological corridor	Option 1 – Ecological Corridor	1.1 Ecological Corridors	• Connects largest 5% tracts of contiguous vegetation (green spaces for protection within the identified corridor) to connect and build resilience in populations • Includes special features MLES 11, MLES 12, MLES 13 and MLES 14	• These ecological corridors are the top of the hierarchy for MLES in Toowoomba • Potential to replace existing ecological corridor overlay and for new overlay to be used to identify potential areas for enhancement
	Option 2 – Ecological and wildlife corridors	1.2 Wildlife corridors (all)	• Connects identified habitat areas (green spaces for protection within the identified corridor) to facilitate movement of local fauna	Potential for inclusion in the new ecological corridor mapping to identify potential local areas for enhancement – note this may be too detailed and as a first step only 1.1 should be used.
Waterways and wetlands	Option 1 - Waterways and wetlands	1.3 Aquatic	• Identifies local wetlands and waterways not protected elsewhere	Potential to replace existing waterway and wetlands map to identify required buffers depending on stream order etc.
Areas of ecological significance	Option 1 – Focus on significant vegetation and special features	2.1 Large tracks of vegetation	• Largest 5% tracts of contiguous ecologically intact areas of remnant and regrowth vegetation which are critical to maintain and sustain landscape function and resilient populations of flora and fauna	Potential to replace existing areas of ecological significance mapping with these layers, as a new consolidated biodiversity areas map used to identify key green spaces which require protection.

		3.2 Grassland regional ecosystems	• Areas containing natural grassland communities matching the pre-clear regional ecosystems RE11.3.21 and 1.8.11
			• Vegetation classified as:
			  • Regrowth
			  • Remnant	

		MLES special features (on mapping data for 2.4)	• Includes special features MLES 01 to MLES 10	
	Option 2 – inclusion of critical habitat areas	3.4 Local significant species habitat	• Mapped areas of habitat that support populations of locally significant species • Mapped as suitable areas based on different size requirements of different fauna groups • Consists of regrowth and remnant vegetation and native woody vegetation	This could be added to option 1 to increase the area of protection

CURRENT OVERLAY	POTENTIAL NEW OVERLAY	MLES INFORMATION	MLES DATA DESCRIPTION	POTENTIAL USE OF MLES DATA IN OVERLAYS
		3.5 Stepping stone habitat	• Identified habitat areas that support the movement of native fauna between core habitat areas • Mapped as suitable areas based on different size requirements of different fauna groups • Consist of regrowth and remnant vegetation and native woody vegetation	

	Option 3 – inclusion of other vegetated areas	3.1 Least concern vegetation	• Important local vegetation areas not otherwise protected by state or federal law
			• Vegetation classified as:
			  • high value regrowth
			  • remnant
				These could be added to option 1 and 2 to increase the area of protection

		3.3 Urban bushland	• Areas of vegetation with a minimum size of 1,000m^2 that sustain local populations of flora and fauna • This contains non-mapped vegetation and / or remnant or regrowth vegetation	• There are some small areas of this urban bushland which are not picked up in layers above although flora/ fauna surveys may be required to verify these assets (can be provisioned through the overlay code) • Inclusion of urban bushland provides for MLES in urban areas, and can be added to through new development
Not included		1.4 Rehabilitation areas	• Includes regrowth vegetation, remnant vegetation, protected areas, waterways and wetlands which should be improved	• This map would be better used to inform where new vegetation should be planted in other programs (eg offsetting) • The areas that should be protected should be picked up in the mapping layers above
		2.2 Areas of species richness and diversity	• Delineated areas of a number of special features identified by expert panel • Data of high recorded species richness and diversity	• The special features in these layers will be shown in option 1 • The other mapping outcomes (e.g. heat maps etc) are not seen to be useful for the planning scheme mapping
		2.3 Areas of ecosystem representation and /or uniqueness	• Delineated areas of a number of special features which are recognised as unusual / disjunct in the region	
		2.4 Climate change adaptation and refugia	• Delineated areas of a number of special features which provide climate change / extreme weather refugia	

These mapping configurations are included in Appendix 2.

GAPS It is understood that the current Environmental Significance Overlay mapping does not comprehensively represent high value areas of local environmental significance, with historical preference to rely on State significance mapping of environmental values. The overlay has not been effective in protecting environmental values with issues in how the codes, outcomes and intents are applied. For example, tree clearing does not trigger operational works development applications.

PLANNING SCHEME INTEGRATION OPTION It is noted however, that biodiversity is not an isolated outcome of MLES and while MLES spatial values are seen as a critical component of an overlay (e.g. as overall outcomes), matters of national environmental significance (MNES) and matters of state environmental significance (MSES) are equal parts of a biodiversity system. This should be considered for the application in the new Planning Scheme. An overarching biodiversity lens for matters of environmental significance would provide a comprehensive approach for a new overlay and would address biodiversity connector and spaces values as a function of the Green Infrastructure Network.

Through the increased efficacy of the Planning Scheme in the protection of high value biodiversity areas, considerable green infrastructure 'spaces' can be achieved to amplify regional benefits (scenic amenity, amelioration of heat impacts, climate change resilience and health benefits).

A hierarchy of environmental mapping that follows the structure of biodiversity layers – corridors, buffers, MNES, MSES and MLES – provides a practical approach to drafting a new overlay code with biodiversity values.

Natural hazards overlays (Bushfire and Flood)

In considering the functions of green infrastructure, natural hazards from bushfire and flood have a direct relationship with green connectors, spaces and forms. In protecting and enhancing biodiversity areas and corridors to support green infrastructure outcomes and ecosystem services, and with intents that more development outcomes are integrated with natural systems, the safe management of any subsequent hazard risks must be a primary consideration.

The current overlays for natural hazards (bushfire hazard and flooding) are shown in Figure 7.

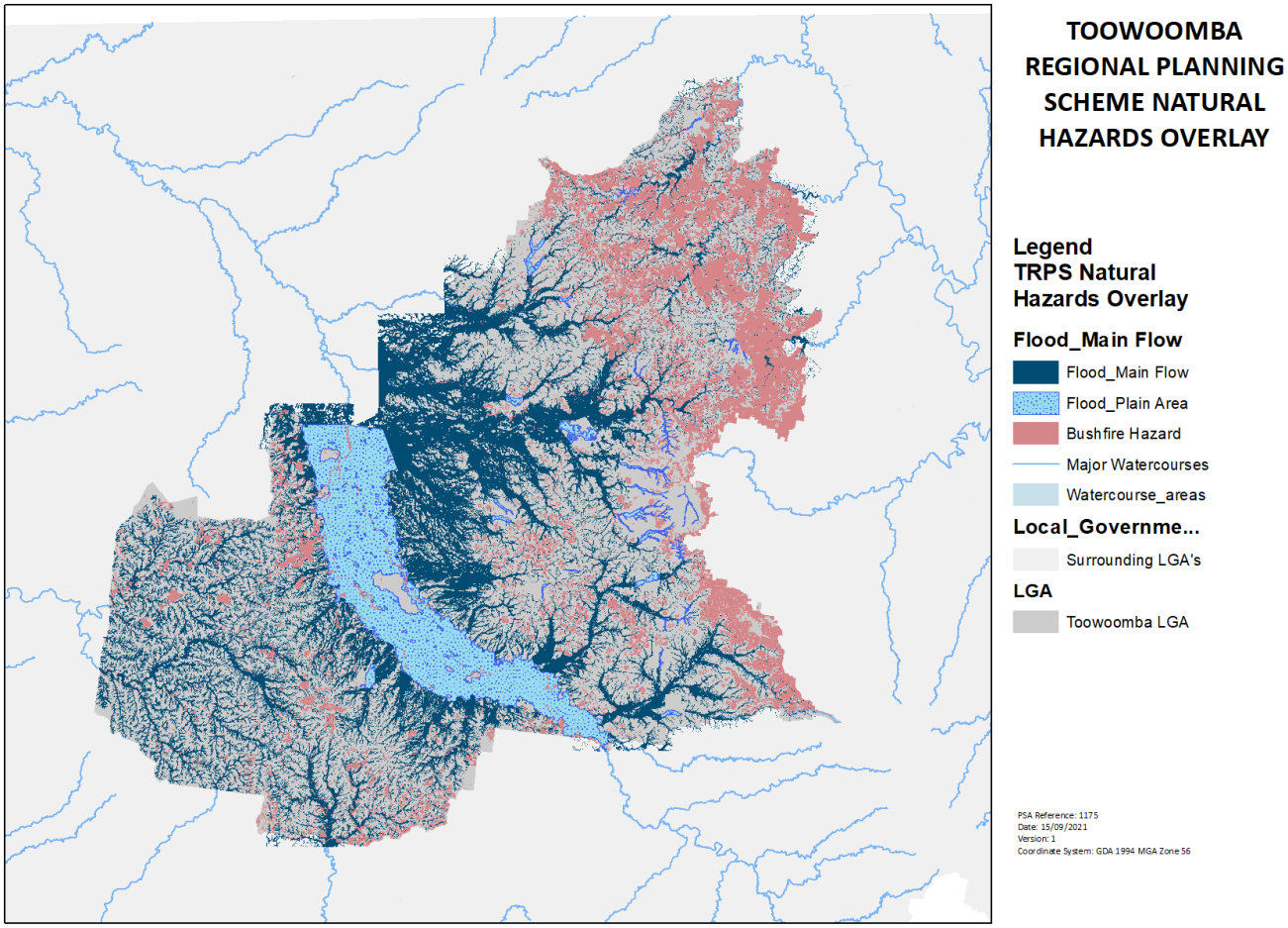


Figure 7. Natural hazards overlay

Overlay components of any planning scheme are applied to safely plan for and manage development outcomes in areas at risk from natural hazards – bushfire, flooding, landslide. Highest risk areas are often the result of particular conditions in green infrastructure connectors and spaces. High fuel loaded vegetated areas on slopes create high potential risk of bushfire and low-lying lands around watercourses can be at greater risk of flooding with certain rainfall events.

While concurrent studies are being undertaken to assess and make recommendations for bushfire hazard management in the new Planning Scheme (refer to Section 3.2.1), green infrastructure outcomes to protect and enhance natural areas are not intended to interfere with the bushfire or hazard overlay intents to protect life and property as a priority. However, it is considered that the facilitation of improved green infrastructure outcomes will assist in safer and better outcomes in natural areas.

It is understood that the Bushfire Hazard and Flood Overlays will continue to be applied in supplement to the recommended incorporation of green infrastructure provisions.

Green infrastructure is proposed to increase the natural occurrences of ecosystem services that, where properly maintained, will decrease localised natural hazard risks. Green infrastructure is proposed as a fundamental part of building climate adaptation and resilience in the Region.

3.4.5 Development and Use Codes

The current Planning Scheme includes the following use codes:

- Centre activities
- Community and recreation uses
- Extractive industries
- Home based business
- Industry uses

- Markets
- Medium density residential
- Rural
- Sales office
- Small lot housing design
- Telecommunications facilities

Use codes generally have the purpose of guiding development of respective uses to *facilitate their establishment in a manner that minimises impacts on other surrounding uses.* This overall purpose will continue to align with the green infrastructure development outcomes.

The design provisions in the different use codes should be reviewed to ensure they are consistent with the intents for green infrastructure (form) development outcomes. A review of these is considered in Section 4 of this report.

Additional development codes are incorporated in the current Planning Scheme for the following matters:

- Advertising devices
- Environmental standards
- Integrated water cycle management
- Landscaping
- Reconfiguring a lot
- Transport, access and parking
- Works and services

In considering the different codes, relevant provisions were found, noted as providing for green infrastructure outcomes.

Table 6. Review of green infrastructure-relevant development code provisions

DEVELOPMENT CODE	ECOSYSTEM SERVICE	HOW CURRENTLY APPLIED IN PLANNING SCHEME *(excerpts from TRPS)*
Integrated Water Cycle Management Code	**GREEN CONNECTORS – Natural wetlands and waterways** While the primary function for natural wetlands and waterways identified in Table 1 is for movement/ genetic diversity, the integrated water cycle management code supports ecosystem services for clean water, water conveyance, and water supply amenity	• *Ensure water and related infrastructure are sustainably managed on a total water cycle basis to maintain the wellbeing of the community and the environment* • *Avoid disturbance of wetlands, water courses and riparian zones*
	GREEN CONNECTORS – Constructed waterways and water bodies • Water conveyance • Clean water • Water supply	• *Artificial Waterways and Water Bodies: the waterway or water body is designed to integrate multiple functions* • *The waterway is located and designed to be responsive to natural drainage features* • *The waterway or water body is designed to minimise whole of lifecycle costs*
	GREEN FORM – Stormwater management/ WSUD • Water conveyance • Clean water • Amenity	• *Quality of surface and groundwater is protected* • *Protect aquatic ecosystems and natural hydrological functions* • *Consistent with established values and objectives* • *Artificial Waterways and Water Bodies: the waterway or water body is designed to integrate multiple functions*

DEVELOPMENT CODE	ECOSYSTEM SERVICE	HOW CURRENTLY APPLIED IN PLANNING SCHEME *(excerpts from TRPS)*
		• *Flooding and drainage characteristics upstream or downstream of the site are not worsened* • *The drainage networks has sufficient capacity* • *Efficient use of water resources* • *Adverse impacts as a result of flooding and the effects of drainage are avoided*
Landscaping Code	**GREEN FORM – Landscape on structure** • Green roofs, green walls, biophilic design of buildings is enabled and encouraged	• *Facilitate landscaping which is an integral component of urban design, contributing to the creation or enhancement of quality places and spaces* • *Street tree planting does not require minimum planting (refers to PSP 8 for Street Trees – see Section)*
	GREEN FORM – Trees (urban) • Cooling shelter • Habitat • Soil formation • Clean air • Carbon storage • Amenity	• *Location, design and provision of planting in carparks and internal roadways achieve a high degree of shade, amenity and safety* • *One planting bay per eight (8) carparking spaces* • *Location and habit of tree planting must not interfere with the function and accessibility of any adjacent utility services. - AO7.1 Species mature height and siting must not interfere with or compromise overhead and underground utility assets including stormwater inlet pits. - AO7.2 Tree planting must be a minimum of 2m from any mains water easements and offset 4m from any sewer main or inspection chamber.*
	GREEN FORM – Parks and Private open space • Recreation • Amenity • Habitat • Soil formation • Clean air • Carbon storage • Cooling/ shelter	• *On-site stormwater harvesting is to be maximised for irrigating landscaping in development with reuse measures and amelioration of stormwater impacts provided.* • *Minimising impervious surfaces and incorporating semi-permeable paving* • *Maximise opportunities for turf and planting areas* • *Provision for drainage is incorporated through treatments such as subsurface drains, swales, ponds and infiltration cells* • *Planter boxes on podiums and building forecourts are plumbed to stormwater*
Reconfiguring a Lot Code	**GREEN CONNECTORS – Biodiversity corridors** • Movement/ genetic diversity • Habitat • Soil formation • Amenity	• *Lot reconfiguration is responsive to the local environment, including its topography, natural drainage systems, vegetation and habitat, cultural heritage features, streetscape character, landmarks, views and vistas.* • *Areas containing important ecological values and cultural values are protected.* • *PO 1 mitigates any adverse impacts on areas of ecological significance* • *AO1 – master plan* • *PO 3 minimising vegetation loss and/or fragmentation*

DEVELOPMENT CODE	ECOSYSTEM SERVICE	HOW CURRENTLY APPLIED IN PLANNING SCHEME *(excerpts from TRPS)*
		• *AO3 – slope response – does not otherwise address matters* • *PO38 The reconfiguration provides for lot sizes that ensure areas of ecological significance remain intact as part of common property or within large lots.* • *PO39 The layout of roads, driveways and other infrastructure avoids crossing or otherwise fragmenting waterways, wetlands, habitat areas or ecological corridors.*
	GREEN SPACES – Agricultural Land • Food • Timber • Soil formation • Amenity	• *Lot reconfiguration facilitates the protection and sustainable use of rural land resources.*
	GREEN FORM – Trees • Cooling shelter • Habitat • Soil formation • Clean air • Carbon storage • Amenity	• *Good neighbourhood design, consistent with the character and environmental values of the overlay, zone and precinct, and local plan area in which the land is located* • *PO7 In a reconfiguration that involves the creation of a new street (other than in a Rural Zone or the Rural Residential Zone) streetscape and landscape treatments are provided* • *is not explicit about new streets maximising street trees but does require maximum stormwater infiltration*
	GREEN FORMS – Parks and Private open space • Recreation • Amenity • Habitat • Soil formation • Clean air • Carbon storage	• *Public open space is attractive and accessible and equitably meets user requirements for recreational, social and cultural activities* • *PO6 The development is integrated with the surrounding urban or rural environment, having regard to: open space networks, retained habitat areas or corridors, landscape features and views and vistas; - No AO* • *PO30 open space network is provided for in accordance with LGIP* • *PO32 respects and retains existing natural elements; and protects biodiversity values and features.*
	GREEN FORMS – Stormwater management/ WSUD • Water conveyance • Clean water • Amenity	• *Infrastructure is supplied to all lots in a safe, efficient, coordinated and sequenced manner which minimises whole of life cycle costs and is sensitive to the environment in which they are provided.* • *stormwater drainage systems protect people and the built and natural environments in a cost effective manner;* • *PO 5 Reconfiguration avoids risk to human safety and the environment from natural hazards and contaminated land.*

DEVELOPMENT CODE	ECOSYSTEM SERVICE	HOW CURRENTLY APPLIED IN PLANNING SCHEME *(excerpts from TRPS)*
		• *PO41 Services, including water supply, stormwater management, sewage disposal, waste disposal, drainage, electricity and telecommunications, are provided in a manner that: (a) is efficient; (b) minimises risk of adverse environmental or amenity related impacts; (c) promotes total water cycle management and the efficient use of water resources; and (d) minimises whole of life cycle costs.*
Works and Services Code	**GREEN FORM – Trees** • Cooling shelter • Habitat • Soil formation • Clean air • Carbon storage • Amenity	• *Construction Management: PO25 Work is undertaken in a manner which minimises adverse impacts on vegetation that is to be retained.*
	GREEN FORM – Stormwater managements/ WSUD • Water conveyance • Clean water • Amenity	• *Ensure development is provided with a level of infrastructure which supports the achievement of ecological sustainability and maintains or enhances community health, safety and amenity* • *Provision of infrastructure, services and utilities needed to service development does not detract from environmental values or from the desired character and amenity of the locality*

GAPS Overall outcomes of development codes and assessment benchmarks will need to be reviewed for calibration to align with green infrastructure intents. “Whole of life cycle costs” and “cost effective” quantification of naturalised stormwater management systems needs to be investigated and benefits promoted for industry recognition.

GAPS Significant trees are not currently defined for retention through development and works and the prioritisation of trees and vegetation cover is considered an imperative to realise the benefits that green infrastructure can deliver. This will also need to be optimised by ensuring the right types of trees are regulated, providing sufficient height and canopy cover for benefits.

PLANNING SCHEME INTEGRATION OPTION Fundamental to development codes are provisions for what occurs on the ground of any development site: for green infrastructure alignment, the prioritisation of green open space and tree retention or planting must be articulated in these codes. Requirements for green open space and tree retention would be the most relevant provisions to incorporate into the development codes, however, these important outcomes should be reinforced in all aspects of the Planning Scheme.

In particular it is recommended that green infrastructure is recognised through the Planning Scheme as critical infrastructure and is included in all relevant provisions for delivery of services. This will be supported through investigation and testing of how naturalised stormwater systems/WSUD can be shown to be efficient and cost effective and how these systems can be financially valued to improve on business as usual outcomes.

3.4.6 Planning Scheme Policies

While the planning scheme does not include any specific environmental (biodiversity, vegetation, landscape or waterway) planning scheme policies, guidance on the green infrastructure matters can be found in the following PSPs:

- No. 1 Development Application Requirements
- No. 2 Roads and Drainage
- No. 8 Street Trees

These are reviewed in Table 7.

Table 7. Planning Scheme Policies review matrix

PSP	ECOSYSTEM SERVICE OUTCOME	DETAILED APPLICATION
	Outcomes as described in Table 1	*Summary of PSP performance*
No. 1 *Development Application Requirements*	• **PARTIAL** movement/ genetic diversity • **PARTIAL** habitat	This PSP includes guidance on the preparation of Ecological Assessment Reports but doesn't set any requirements for development to respond to assessment findings. While this does provide a consistent reference for the assessment of biodiversity corridor values it doesn't facilitate any protections
No. 2 Roads and Drainage	• Clean water • Water conveyance • Water supply • Movement/ genetic diversity	Within the drainage sections of this PSP stormwater quality and water-sensitive urban design standards are provided. The standards *aim to minimise the impact of urban development on the natural water cycle.* This provides comprehensive guidance on the facilitation of WSUD however it could be better prioritised in the planning scheme and incorporated in a PSP that more directly reflects the integrated functionality this infrastructure.
No. 8 Street Trees	• Cooling/ shelter • Clean air • Carbon storage • Habitat • Soil formation • Amenity • Clean water	Street tree planting and maintenance standards are outlined in this PSP however there are no minimum requirements for street trees or large canopy tree provision, and this is considered to be an important and valuable development outcome for the region.

GAPS Guidance for WSUD – as a preferred ecosystem outcome of green infrastructure – is contained in the PSP for roads and drainage and should be brought forward as a core planning scheme mechanism for green infrastructure policy.

PLANNING SCHEME INTEGRATION OPTION With the breadth and interconnectedness, of green infrastructure outcomes, a planning scheme policy may be an effective mechanism to provide guidance on development responses to green infrastructure provisions. There are several green infrastructure matters that are envisioned as warranting support through a PSP:

- WSUD
- Multi-purpose open space
- Local offsets policy

A local offsets PSP is suggested for the purpose of facilitating agreed offset opportunities for clearing of MLES, mature tree removal or stormwater quality treatments in supplement to the State Offsets Policy. This will require investigation into the appropriate offset requirements relevant to each matter, and the confirmation of preferred areas for offsets, where able to contribute to the enhancement of the Green Infrastructure Network.

A PSP could also be considered for an overview of all green infrastructure and the envisioned network for the Region, including homing the Green Infrastructure Network Plan. A green infrastructure PSP could provide the integration guidance for WSUD and multi-purpose open space, as well as adopting/ replacing existing PSP guidance on other drainage matters, street trees and development application requirements for ecological assessments.

3.4.7 Local Government Infrastructure Plan

Under the Local Government Infrastructure Plan (LGIP), Council establishes its framework for the planned provision of trunk infrastructure for the Toowoomba Region.

The LGIP includes Parks and Open Space and Stormwater infrastructure networks to support and manage expected growth. The LGIP plans for trunk parks and land for community facilities as an accessible network; and plans for stormwater management (quantity) networks that include natural urban channels and waterways and the possibility to integrate stormwater with open space/ natural environment.

Stormwater quality is not included in the LGIP but it is a requirement for all urban development to provide this on-site to meet the SPP and SC6.2 PSP No. 2 - Engineering standards - Roads and Drainage Infrastructure requirements. Implementation guidance on the SPP allows for local governments to consider offset arrangements (monetary contribution in lieu of post construction stormwater quality treatments) with developers, should on-site treatments not be possible.

The approach for developing an LGIP is very methodical and must be transparent, however, this can be a limiting factor for innovative ways of delivering infrastructure. With the opportunities for integrated outcomes and the important benefits that can be realised by green infrastructure, capacity within the LGIP should be explored to incorporate and align infrastructure provision for green infrastructure elements.

It has been noted that the potential for green infrastructure to be counted as essential infrastructure suggests the potential to expand trunk infrastructure elements in the LGIP. An example of this could be considered with regard to the trunk park network. Brisbane City Council incorporates an element for recreation (natural) spaces within its park trunk networks. Recreation (natural) spaces are required as local or district/ metropolitan hierarchy and are typically classified as:

- Corridor – Access/ Recreation Corridor
- Natural Area – Visitor Node
- Natural Area – Nature Recreation

The corresponding desired standards of service (DSS) for these trunk assets are summarised here for consideration:

- **Accessibility** is within 750m for local needs, and every 3-5km for district/ metropolitan needs.
- **Size** is 0.8ha for local needs, and 3ha for district/ metropolitan needs
- **Embellishment standards** are scheduled for provision through conditions of development

GAPS There are examples of other Council areas encapsulating more naturalised areas within their park trunk infrastructure networks, which is not seen in the Toowoomba Regional Council LGIP.

PLANNING SCHEME INTEGRATION OPTION Including urban bushland as trunk infrastructure could provide greater scope for development to deliver or contribute to urban bushland in major infill developments.

Council could consider similar expansion of its trunk park network to require more diverse green spaces and naturalised areas such as urban bushland, for potential inclusion within its LGIP.

3.4.8 Overall Scheme Alignment

The ability of the Planning Scheme to regulate development most effectively for green infrastructure outcomes will be dependent on aligning intents and outcomes through all relevant components. Creating efficient alignment of the overarching strategic intents for green infrastructure matters from the Strategic Framework across zone codes, local plans, overlay codes, use and development codes will be a fundamental objective of policy recommendations going forward.

Based on the alignment review, it is evident that in the first instance, calibration of certain outcomes to green infrastructure intents will be needed. This will benefit from a strong green infrastructure Strategic Framework intent statement leading the Planning Scheme. With a leading strategic foundation for green infrastructure in the Planning Scheme, consideration may then be given to building green infrastructure specific components into other Planning Scheme provisions, a Green Infrastructure Planning Scheme Policy or a Green Infrastructure Overlay Code, if warranted. Other options may also exist to integrate specific outcomes for green infrastructure into relevant zone (or other) codes, where a dedicated code or PSP is not warranted.

It is noted that new 'green infrastructure' policy could be perceived as an additional burden to development should it not be sensitively developed and communicated to the community. It will be important to demonstrate that existing planning scheme provisions already support many of the desired ecosystem services – a holistic approach through a clearly communicated green infrastructure network to further support these provisions will bring significant and critical benefits to the Region.

This work recognises that the planning framework will be only one part of a comprehensive program to deliver these green infrastructure benefits for the Region. Guidelines, pilot projects, educational campaigns and other programs will not just provide context to green infrastructure but will also create important opportunities to demonstrate positive behavioural change within the community. It is anticipated that Planning Scheme integration of green infrastructure will be transitional and will rely on extrinsic materials to lay the foundations for effective change in the region, supported by residents, developers and industry.

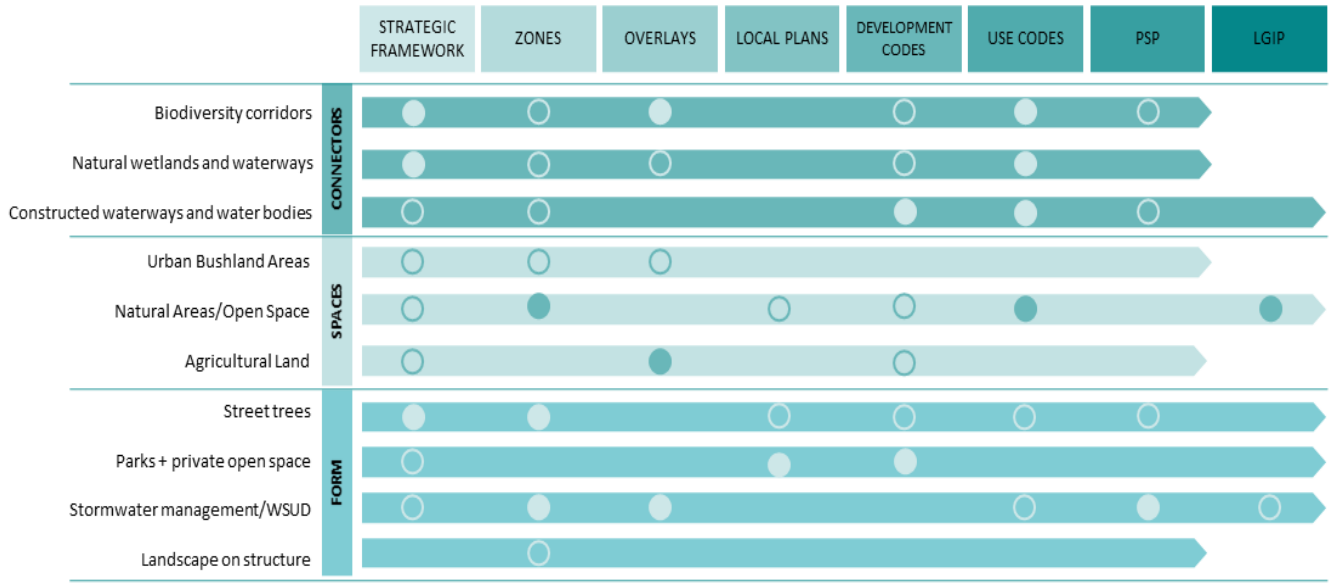


Figure 8. Planning Scheme review of green infrastructure matters and current provisions

3.5 EXEMPLAR PLANNING PRACTICE

Further to the policy context of Toowoomba's existing planning frameworks, the preceding GRISPI Background Report and preliminary investigations provided considerations of how other agencies have applied green infrastructure policy and strategic intents.

There are no outstanding examples of green infrastructure policy (as per this definition) currently enacted in a regulatory framework.

There are many examples of regulatory inclusions for waterways or biodiversity or WSUD but none that outline development outcomes as an integrated network of ecosystem services. While Victoria has some policy requirements for integrated blue and green infrastructure, this is typically focused on infill development and sustainable buildings (e.g. the State Government of Victoria's Sustainable Building (Amendment C376) Policy).

As such, exemplar planning practice has considered the strategic directions which are extensively applied in different governing agencies (both state and local) and aligned these with various examples of how different elements are regulated in Queensland and in other states.

	NSW	VIC	QLD	SA
SKILLS/ KNOWLEDGE	STATE ● Risk-based Framework for Waterway Health ● Greener Places (2020)	STATE ● ● Planning a Green-Blue City LOCAL ● City of Melbourne Urban Forest Strategy (2012)	LOCAL ● ● Green Infrastructure Strategy 2012-2031	STATE ● Green Adelaide Regional Landscape Plan LOCAL ● Green Infrastructure Directions 2015
POLICY/ DELIVERY	STATE ● Design and Place SEPP (Draft) proposed policy 2021	STATE ● Planning Provisions (Stormwater requirements for commercial, public, and multiple dwellings uses) LOCAL ● ● Sustainable building design	LOCAL ● Draft Caboolture West Local Plan – Green Infrastructure Precinct	
ADVOCACY/ EDUCATION		STATE ● ● Inquiry into Environmental Infrastructure for Growing Populations (2020)		

● Focus on green infrastructure
● Focus on blue infrastructure

4 DELIVERY MECHANISM OPTIONS

In light of the above analysis undertaken in relation to the current policy framework and how it seeks to address green infrastructure policy, this section will begin to order the gaps and opportunities for each of the green infrastructure matters and will analyse the effectiveness of the potential delivery mechanisms to inform options for a comprehensive green infrastructure policy framework.

Table 8 first provides a summary of green infrastructure matters and develops these into strategic outcomes and measures of success that can inform the details of how these matters could be integrated into the new Planning Scheme.

It provides a description of the green infrastructure function and other development matters that indicatively frame the delivery of outcomes. Issues are identified for business as usual development responses to amplify the reason that green infrastructure policy should be a key focus for the Planning Scheme. Furthermore, by identifying the function and the benefits of green infrastructure the value of green infrastructure as critical infrastructure is demonstrated.

Section 4.1 to 4.4 then presents a more in-depth discussion of the integration detail.

This discussion considers how green infrastructure outcomes could be calibrated through the new Planning Scheme, building off existing provisions where necessary to describe how the outcomes might be aligned through the different components (e.g. assessment benchmarks, overall outcomes, categories of assessment etc.).

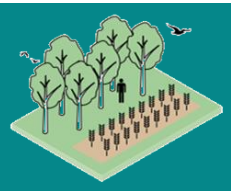
Limitations

The scope of development outcomes that could be considered as part of green infrastructure policy is wide and varied. As such, this report proposes to focus on the options for the higher level planning scheme components as delivery mechanisms. For example, how the Strategic Framework, overall outcomes of key zones and planning scheme policies may be utilised, revised or otherwise applied to support green infrastructure outcomes. Within the scope of this project, it will not be practical to draft specific planning scheme provisions for individual development outcomes. Outcomes will also need to be reviewed and integrated with the findings of a wide range of studies being undertaken through the Toowoomba Region Futures Program and will be subject to further consultation with the community.

Table 8. Preliminary green infrastructure matters and relevant outcomes

GREEN INFRASTRUCTURE MATTER	PRIMARY FUNCTION	KEY REQUIREMENTS	RISKS	PRELIMINARY STRATEGIC OUTCOMES	POTENTIAL MEASURE OF SUCCESS
GREEN CONNECTORS	**Strategic outcome sought: Functioning network of integrated corridors providing ecosystem services and supporting movement and resilience of local flora and fauna populations**. **Primary development outcome:** Ensure development does not impact on movement of species along corridors or corridor function.				
Biodiversity corridors	Connections between 'green spaces' to support safe movement and improve biodiversity resilience and species diversity by supporting geneflow, migration and allowing re-population following natural disasters/ disturbances	Appropriate structures (e.g. vegetation, fauna friendly crossings) and width to provide safe movement of fauna between 'green spaces'	• Barriers created along connectors • Removal of structures required for movement	Enhanced connectivity: • Safe and unimpeded movement of fauna along the corridor	Measure of connectivity (width and length of connector) [8] E.g.: Min. widths for: • Regional ecological corridors = 2,000m • Local wildlife corridors = 200m
Natural wetlands and waterways	Waterways and floodplain wetlands and their riparian buffers providing ecological services such as water conveyance, water treatment, and habitat for native aquatic flora and fauna	Healthy aquatic environments which are well connected both longitudinally along the waterway and laterally with the floodplain	• Barriers created along waterways and between it and the floodplain • Degradation of in-stream water quality and habitat either directly or indirectly (e.g. removal of riparian zone or poor water quality inflows)	Protect waterway function: • Preserving riparian buffers and floodplain connectivity • Provision of fish passage • Preserve lower order streams as natural systems	Measure of connectivity (width and length of connector)[1] E.g.: Min. buffer widths for: • Stream order 1 & 2 = 25m • Stream order 3 & 4 = 50m • Stream order >4 = 100m width

[8] *Refer to Mapping Matters of Local Environmental Significance (MLES) for the Toowoomba Region Technical Report, RedLeaf June 2020 for more information on requirements.*

GREEN INFRASTRUCTURE MATTER	PRIMARY FUNCTION	KEY REQUIREMENTS	RISKS	PRELIMINARY STRATEGIC OUTCOMES	POTENTIAL MEASURE OF SUCCESS
Constructed waterways and water bodies	• Waterways and waterbodies designed to manage stormwater flows to protect property and downstream environments • Also potential for these to provide alternative source of water	Designed to safely manage flows and provide functioning connections with surrounding natural waterways and wetlands	• Hardstand channelling increases flow velocities, volumes and pollutants entering downstream natural environments • Poorly designed waterbodies provide ongoing risk in terms of water quality and maintenance requirements	Protect waterway health: • Natural channel design • Provision of fish passage	Measure of connectivity and flow management
GREEN SPACES 	**Strategic outcome sought:** Maintain and enhance healthy natural areas providing ecosystem services and supporting diverse and resilient local flora and fauna populations. **Primary development outcome**: Ensure development does not impact on the habitat value and functioning of green spaces.				
Natural biodiversity areas	Areas of vegetation providing safe habitat (or refuge) to support local species diversity	Large areas of vegetation which can support diverse, resilient and/ or unique populations of native flora and fauna	• Clearing for rural and urban purposes • Bushfire management requirements to protect people and property • Edge effects/ invasion of pest species	Protect and enhance natural areas: • No net loss	Measure of remnant vegetation size (area) to ensure it can support ecosystem services
Urban bushland	Areas of vegetation in urban areas providing safe habitat (or refuge) to support species diversity	Supports local populations of native flora and fauna	• Vegetation clearing • Edge effects/ invasion of pest species	Protect and enhance existing bushland areas: • No net loss	Measure of size (area) to ensure it can support ecosystem services:

GREEN INFRASTRUCTURE MATTER	PRIMARY FUNCTION	KEY REQUIREMENTS	RISKS	PRELIMINARY STRATEGIC OUTCOMES	POTENTIAL MEASURE OF SUCCESS
			• Ongoing maintenance / bushfire management requirements		• Minimum area of 1,000m^2 (local urban bushland); 30,000m^2 (district/metropolitan urban bushland)
Open spaces and parks	Urban green spaces providing a range of services that can support community, physical and mental wellbeing	Public Multi-functional spaces that use vegetation to provide people with areas to relax, recreate and enjoy. Recreation inclusions are designed to be fit for purpose (i.e. not everywhere will be suitable for high-impact recreation)	• Designed for single purpose resulting in lack of integrated outcomes • LGIP does not currently distinguish DSS for natural parks and this could be incorporated to support urban foresting strategies	• Provision of multi-functional green spaces for the community • Contributions to the open space network are varied and incorporate green infrastructure in varying formats (i.e. individual trees to species habitat) wherever possible	• Measure of size (area) and functions to optimise number of functions provided in the space • 20% of open space in new local centres contains high quality vegetation • Creation of micro-forests as per TRUFF project guidelines
Private Yards	Urban green spaces providing a range of services that can support community, physical and mental wellbeing	Private multi-functional spaces that use vegetation to provide people with private areas to relax, recreate and enjoy and that also contribute to providing for tree canopy cover, species refuge in urban areas and permeable services	• Market trends for larger houses resulting in smaller backyards and diminishing areas that can allow for deep planting • Growth and densification resulting in smaller lots	• Development to provide minimum of 4mx4m 'deep soil' tree space. • Front yards should include at least one medium or large-sized tree and retain	• 50% of low density residential zone to have less than 50% impervious cover to encourage stormwater infiltration in line with TRUFF recommendations • At least 30% of land between building and site

GREEN INFRASTRUCTURE MATTER	PRIMARY FUNCTION	KEY REQUIREMENTS	RISKS	PRELIMINARY STRATEGIC OUTCOMES	POTENTIAL MEASURE OF SUCCESS
				significant trees and vegetation • Incorporate natural features that contribute to WSUD networks	frontage is soft landscaped in private lots
Agricultural land and timber reserves	Vegetated areas where the vegetation can be used as a consumable product as well as provide other ecosystem services	Continued productivity of the vegetation and soils in the area through good land management	• Poor land management resulting in loss of good quality soil and downstream waterway impacts • Removal of native trees and ground covers	Protection of native vegetation and productive soils	
GREEN FORMS		**Strategic outcome sought:** Integrate well designed green forms into urban and rural areas to support a range of ecosystems services to support the surrounding land use. **Primary development outcome**: Ensure development integrates green forms into new development.			
Trees – urban (private land and street trees)	Urban trees provide shade and amenity which improve conditions for the local community	Provision of healthy urban trees which support increased canopy cover outcomes	• Vegetation clearing for development • Excessive pruning for infrastructure • Impeded health due to limited soil and water availability	Protect and enhance urban canopy cover: • Requirements for new trees in development • Protection of existing trees	Canopy targets (e.g. 40% for greenfield areas recommended in TRUFF project)/ minimum tree requirements for new development: • Street trees • Trees on-lot

GREEN INFRASTRUCTURE MATTER	PRIMARY FUNCTION	KEY REQUIREMENTS	RISKS	PRELIMINARY STRATEGIC OUTCOMES	POTENTIAL MEASURE OF SUCCESS
					Retention of significant[9] trees
Trees – rural	Trees in rural areas providing shelter/ soil stabilisation/ buffers for livestock, crops and waterways	Provision of vegetation along waterways and through properties to provide effective buffering	• Net loss of rural trees	Protect and enhance rural canopy cover: • Protection of existing trees • Incentives for new tree plantings (offsets etc)	• Retention of significant trees • Planting of new trees
Landscape on structure (green walls and roofs)	Vegetation on buildings (such as green roofs and walls) to support a range of ecosystem services	Design landscapes to be resilient to highly modified landscape (e.g suitable soil volume, provision of water, can withstand wind and heat exposure)	• Lack of reliable water supply or soil volume to support resilient landscapes	• Enhance urban greening outcomes	Green cover targets for buildings and/ or higher density development
Urban gardens and community farms	Urban landscaping which provides amenity and/ or food production	Design landscapes to be resilient to changing climate (etc. provision of alternative water, use of native vegetation)	• Vegetation reliant on potable water for irrigation • Use of weedy species increases potential risk of invasion into natural areas	• Enhance urban greening outcomes	Increased biodiversity observed in urban areas

[9] *Significant trees include significantly-sized trees being any tree that is 4m height and 40cm DBH; and/or significant heritage value trees (remnants of the bush, plantings by early settlers, Aboriginal sacred trees, important landscape or streetscape elements, or trees planted to commemorate important people or events as outlined by the National Trust Queensland)*

GREEN INFRASTRUCTURE MATTER	PRIMARY FUNCTION	KEY REQUIREMENTS	RISKS	PRELIMINARY STRATEGIC OUTCOMES	POTENTIAL MEASURE OF SUCCESS
Stormwater management/ WSUD	Stormwater treatment provided by natural vegetation and soil in an asset which has been well integrated into the urban landscape	Designed to capture and treat stormwater to improve water quality	• WSUD asset not well integrated into landscape • WSUD asset doesn't achieve desired treatment effectiveness due to poor design, construction, establishment and/ or maintenance	Protect waterway health: • Stormwater quality and quantity management	Measure of stormwater quality treatment and landscape design: • E.g. Water quality requirements as per State Planning Policy (SPP) Integration of WSUD in both existing (infill) development, street upgrades and greenfield development

4.1 GREEN CONNECTORS

Green connectors are described as living connected networks such as waterways and ecological corridors.

Green infrastructure matters relative to green connectors include:

- Biodiversity corridors
- Natural wetlands
- Natural waterways
- Constructed waterways and water bodies

Each of these matters are considered here in terms of how the planning policy framework may be applied to facilitate development that supports the connective functions of these infrastructure components while maintaining their inter-relationship to green spaces and green forms.

4.1.1 Biodiversity Corridors

4.1.1.1 Requirements for development assessment

Applicable mapping: Biodiversity corridors as shown on MLES maps ecological corridors (1.1), MLES wildlife corridors (1.2), MSES and MNES

Delivered through: All development within biodiversity corridors

Development outcomes: Development is managed within biodiversity corridors to enhance fauna movement

Offset possible: *Enhancement* can be delivered to corridors as an offset from development that impacts on high value MLES where an offset policy is applied

Table 9. Biodiversity corridor outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS

Assessment benchmarks	• Development will be managed within biodiversity corridors identified in the Green Infrastructure Network Plan or proposed environmental significance/ biodiversity overlay maps (refer Appendix 2) supporting average biodiversity corridor widths as follows:
	  • Regional ecological corridors of 2000m
	  • Local wildlife corridors of 200m
	• Development will be setback from waterways, avoid corridors of highest value, or will be managed within lower order biodiversity corridors to enhance movement of local fauna
	• Setback or development management areas within biodiversity corridors will be appropriately vegetated to enhance primary functions (e.g.) fauna movement
	• Development management area guidance (what constitutes appropriate development) will need to be incorporated into the Planning Scheme e.g. potentially in a Green Infrastructure PSP

Overall outcomes	• Development within biodiversity corridors identified in the Green Infrastructure Network Plan or proposed environmental significance/ biodiversity overlay maps (refer Appendix 2) will be managed to enhance primary functions in accordance with Table 8. • Relevant note may be included to reference guidance material on how to meet overall outcome (what constitutes appropriate, what development is permitted within a corridor, what fauna movement is required for) • Guidance may be provided in a relevant biodiversity/ environmental significance overlay • A Green Infrastructure PSP may otherwise be considered to provide this guidance and its relationship to other green infrastructure components within the Green Infrastructure Network Plan

	PLANNING SCHEME OPTIONS
Categories of assessment	• Ensure development is **assessable** if impacts on areas of high value are proposed
Other planning scheme alignment	• Outcomes need to be supported through guidance material, either through the proposed Green Infrastructure PSP or through suitable updates to the environmental significance overlay (refer to Section 3.4.4) • Align with green infrastructure intents of the Strategic Framework

4.1.2 Natural wetlands and waterways

Applicable mapping: MLES 1.3, MSES and MNES

Delivered through: MCU, RaL, OPW development within wetland/ waterway buffer areas

Development outcomes: Appropriate buffers are provided to wetlands and waterways

Development protects the natural hydrological and geomorphological processes of the waterway and wetland

Offset possible: Physical offset of waterways and wetlands not possible

Table 10. Waterways and wetlands outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Environmental significance overlay adopts MLES (refer to Section 3.4.4) including identifying and defining areas of high value wetland or waterways as well as buffer extents.
Overall outcomes	• Overall outcomes for wetlands and buffer areas could be reflected in environmental zones (refer to Section 3.4.2), where, if environmental zone were to be adopted, the significance of high value areas of MLES for waterways and wetlands could be prioritised.
Categories of assessment	• Development is made *assessable* against the new environmental significance overlay where development proposes mitigation of impacts instead of avoiding impact on waterways or wetlands
Other planning scheme alignment	• Align with green infrastructure intents of the Strategic Framework

4.1.3 Constructed waterways and water bodies

Applicable mapping: No

Delivered through: MCU and RaL development adjacent/ adjoining constructed waterways, Building Works, Operational Works adjacent/ adjoining constructed waterways, Public works

Development outcomes: Community access to constructed waterways and water bodies is provided in a safe and inclusive manner where possible

Offset possible: N/A

Table 11. Constructed waterways and water bodies outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Environmental significance overlay adopts MLES including identifying and defining areas of high value biodiversity corridors where naturalised waterways will play an important role
Overall outcomes	• Community access to constructed waterways and water bodies is provided in a safe and inclusive manner where possible • Constructed waterways are designed and/ or rehabilitated using natural channel design approaches • Delivery of multi-functional waterway corridors and water bodies which manage water as well as other ecosystem services such as habitat, recreation and amenity
Categories of assessment	No change
Other planning scheme alignment	• Align with green infrastructure intents of the Strategic Framework

4.2 GREEN SPACES

Green Spaces constitute lands and uses that utilise or protect natural processes and functions such as parks, open spaces, community gardens, farms and bushland.

Green infrastructure matters relative to green spaces include:

- Natural biodiversity areas
- Urban bushland
- Open spaces, parks & backyards
- Agricultural land & timber reserves

Each of these matters are considered here in terms of how the planning policy framework may be applied to facilitate development that supports the natural spaces and process functions of these infrastructure components and doesn't compromise their inter-relationship to green connectors and green forms.

4.2.1 Natural biodiversity areas

Applicable mapping: MLES natural areas (2.1, 2.2, 2.3, 2.4, 3.2, 3.4, 3.5), MSES, MNES[10]

Planning Scheme Open space zone
SF Map 1 – Settlement Pattern – Nature conservation and open spaces

Delivered through: MCU and RaL development adjacent/ adjoining natural biodiversity areas,

Building Works, Operational Works adjacent/ adjoining natural biodiversity areas,

Public works

Development outcomes: No net loss of natural biodiversity areas

Increase in natural biodiversity areas to minimum contiguous area target (remnant vegetation area that can support diverse resilient and/ or unique populations of native flora and fauna

[10] *For the purposes of this policy report recommendations are only applicable for lands to which the Planning Scheme applies and is not expected to have effect on Crown lands managed under separate legislation such as National Parks or resource reserves.*

Offset possible: Not preferred unless development is essential and cannot avoid area of natural biodiversity

Table 12. Natural biodiversity areas outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Development will be setback from mapped natural biodiversity areas ecological (areas of significance) identified in the Green Infrastructure Network Plan or proposed Environmental significance/ Biodiversity overlay maps (refer Appendix 2) • Enhancement of natural biodiversity areas will be provided by development where needed to contribute to achieving a remnant vegetation size (area) that can support ecosystem services • Setbacks to mapped natural biodiversity areas (areas of ecological significance) will be appropriately vegetated to enhance primary functions (e.g.) habitat (or refuge) to support local species diversity • Protection of remnant and regrowth forest (RaL Code) • Site context plan is required for sites of greater area than 1Ha.
Overall outcomes	• No net loss of natural biodiversity areas • Increase in natural biodiversity areas to minimum contiguous area target (remnant vegetation area that can support diverse resilient and/ or unique populations of native flora and fauna)
Categories of assessment	• Development is made *assessable* against the new Environmental significance overlay where development proposes mitigation of impacts instead of avoiding impact on waterways or wetlands
Other planning scheme alignment	• Outcomes for protection and assessment of suitable area sizes need to be supported through guidance material, either through the proposed Green Infrastructure PSP or through suitable updates to the Environmental significance overlay (refer to Section 3.4.4) • Option for Green Infrastructure PSP could incorporate current PSP *SC6.1.6 Additional Information Required by Development Overlay Codes* for preparation of Ecological Assessment Reports, to include requirements to advise on development responses to potential impacts and proposed mitigation • Define function of inter-urban breaks relative to the locality and open space/ natural area values • Align with green infrastructure intents of the Strategic Framework

4.2.2 Urban Bushland Areas

"Vegetative cover is one of the most important factors that can ameliorate the urban microclimate. However, in the Toowoomba Region's case the projected decreasing rainfall and increasing temperature both present challenges to keeping green spaces green and adding green canopy to urban environments. Air movements over areas of vegetation such as forest canopy can also bring cooler air into urban environments. However, major changes to vegetation through land-clearing affect air quality, soil structure and exposure to drying winds." (Pudmenzky, C. et al., 2021)

The statement above puts an imperative on protecting and enhancing Toowoomba's forest areas and it is suggested that more targeted zoning may be needed i.e. through application of an environmental zone or conservation zone (in conjunction with updates to the Environmental significance overlay code), which will be an important first step in retaining and increasing effective forest cover. Within highly urban environments, such as the city centre, the value of urban forest requirements is even more challenged and opportunities for "bushland" in urban areas should be considered. This will contribute to re-balancing priorities between built and natural environments in development of urban areas. Through urban development and encroachment, urban bushland is often replaced with smaller,

fragmented, more sanitised, open spaces. More valuable to biodiversity richness is the green diversity and greater ecosystem service outcomes that urban bushland can provide through trees with understorey.

Applicable mapping: None currently – could be identified in Strategic Framework Map for Settlement Pattern and Natural Environment (or equivalent under new Planning Scheme)

Delivered through: Greenfield development and RaL
MCU Major projects
Public works

Development outcomes: Protect and enhance existing bushland areas
Support local populations of native flora and fauna

Offset possible: Consider creation of urban bushland/ urban forest as option to meet private open space offsets

Table 13. Urban bushland outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Major projects are required to contribute to making land available for a viable urban bushland area in accordance with any adopted local plan, structure plan or master plan • Retention, regeneration and ongoing management of mature and significant trees should be required of development in urban areas
Overall outcomes	• In accordance with local planning of urban areas, a minimum area of 1,000m^2 is provided for local urban bushland; and 3ha is provided for district urban bushland • Development to contribute to tree canopy target for urban areas and the Region • Overall outcomes for urban bushland areas could be reflected in environmental zones (refer to Section 3.4.2), where, if an environmental zone were to be adopted, the significance of requiring development to contribute to urban bushland outcomes could be prioritised • Incorporate as overall outcome in suitable zone codes (residential, mixed use, centre)
Categories of assessment	• No change
Other planning scheme alignment	• Incorporation of a PSP that provides a local offset framework could incorporate allowance for contributions to urban bushland for private open space offsets • Tree canopy target is set for the Region • Consider LGIP alignment to identify urban bushland sites as part of trunk park network or through non-trunk bushland park typology • Align with green infrastructure intents of the Strategic Framework

4.2.3 Open Spaces and Parks

Applicable mapping: Trunk infrastructure open spaces and parks shown in LGIP network plans

Delivered through: Greenfield development
MCU Major projects
Public works – Council project

Development outcomes: Provision wherever possible, of multi-functional green spaces (green and recreation) for the community, and in particular low impact, sensitively designed recreation is highly desirable.

Offset possible: No

Table 14. Open spaces and parks outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Retention, regeneration and ongoing management of mature and significant trees is required of development in urban areas • Public access, WSUD, rain harvesting, tree retention are simultaneously provided in open spaces, parks and backyards wherever possible
Overall outcomes	• Open spaces, parks and backyards are provided as multi-functional spaces where possible (in accordance with WSUD guidelines) • Open spaces and parks are protected from urban encroachment (not intended to be redeveloped) unless suitable offset of areas can be achieved • Development contributes to a tree canopy target
Categories of assessment	• No change
Other planning scheme alignment	• Define function of inter-urban breaks relative to the locality and open space/ natural area values • Guidance material for the appropriate delivery of multi-functional spaces should be referred to in the Planning Scheme (either existing material e.g. Water by Design publications or to be incorporated in new material such as the recommended Green Infrastructure PSP) • Align with green infrastructure intents of the Strategic Framework

4.2.4 Private Yards

Applicable mapping: Potential for significant trees in private allotments to be mapped for inclusion in proposed Neighbourhood Character Overlay Areas (NOCA) – *refer to TRUFF*

Delivered through: Greenfield development
Infill development

Development outcomes: Provision wherever possible, of multi-functional green spaces (green and recreation) for the residents and contribution to tree canopy and species refuge in urban areas.

Offset possible: Where requirements for provision of private open space or backyards cannot be met, offsetting through a local offset policy that supports the Green Infrastructure Network Plan could provide contributions to enhance identified connectors and spaces, or could help create new green spaces such as urban bushland (see previous section).

Table 15. Open spaces, parks and backyards outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Development to provide minimum of 4mx4m 'deep soil' tree space. • Front yards should include at least one medium or large-sized tree and retain existing mature trees and significant vegetation • At least 30% of land between building and site frontage is soft landscaped in private lots • Minimum percentage of overall development site is provided for private/ communal open space with permeable surface
Overall outcomes	• WSUD, rain harvesting and medium and large-sized trees are simultaneously provided in private yards wherever possible (in accordance with WSUD guidelines) • Private open space is of a suitable minimum size for different building typologies

	PLANNING SCHEME OPTIONS
	• 50% of low density residential zone to have less than 50% impervious cover to encourage stormwater infiltration in line with TRUFF recommendations • Development contributes to a tree canopy target through retention of significant trees and planting of new trees that will mature to provide shade and greening
Categories of assessment	• No change
Other planning scheme alignment	• Guidance material for the appropriate delivery of multi-functional spaces should be referred to in the Planning Scheme (either existing material e.g. Water by Design publications or to be incorporated in new material such as the recommended Green Infrastructure PSP or potential for standalone guideline for landscape in private developments) • Align with green infrastructure intents of the Strategic Framework

4.2.5 Agricultural Land and Timber Reserves

Applicable mapping: SF Map 4 – Natural Resources and Landscape – Agricultural land + Water supply catchment

Delivered through: Assessable RaL and MCU developments in areas that can affect agricultural land or timber reserves

Development outcomes: Significant trees and productive soils are protected

Offset possible: No

Table 16. Agricultural land and timber reserves outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Development does not cause ongoing degradation of productive soils • Development does not impact on native vegetation
Overall outcomes	• Significant trees and productive soils are protected
Categories of assessment	• Improve functionality of PSP No. 1 Development Assessment Requirements for preparation of Ecological Assessment Reports – may be considered for incorporation into proposed Green Infrastructure PSP
Other planning scheme alignment	• Proposed Green Infrastructure PSP as reference to greater benefits and interconnectedness of natural systems, including benefits to lands and soils and water management. • Align with green infrastructure intents of the Strategic Framework

4.3 GREEN FORMS

Green Forms, which are natural elements, built or planted in urban environments such as green roofs, green walls, Water Sensitive Urban Design (WSUD) elements, trees and backyards.

Green infrastructure matters relative to green forms include:

- Trees – urban (private land & street trees)
- Trees – rural
- Landscape on structure (green walls & roofs)

- Urban gardens & community farms
- Stormwater management / WSUD assets

Each of these matters are considered here in terms of how the planning policy framework may be applied to facilitate development that supports natural elements in urban environments and doesn't compromise the inter-relationship of green forms to green connectors and green spaces.

4.3.1 Trees – Urban (private land & street trees)

Applicable mapping: Not currently mapped, although significant trees[11] should be identified and mapped for protection

Delivered through: All assessable development in urban areas
All RaL

Development outcomes: Protect and enhance urban canopy cover through requirements for new trees in development and the protection of existing trees

Offset possible: Not preferred – while removal of trees may be proposed as part of development, the planting of new trees does not provide the equivalent ecosystem services as a large, mature tree. Should significant trees (needs to be defined in the Planning Scheme) be proposed for removal, offsets should be required in line with the existing Council Policy and Procedure (loss of amenity calculation) for tree removal, or new local offsets policy.

Table 17. Trees (urban) outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Retention, regeneration and ongoing management of mature and significant trees is required of development in urban areas • Minimum percentage of development site is provided for deep planting (residential and non-residential development) • TRUFF recommendation for greenfield development to include 4m x 4m deep soil space in front gardens to accommodate trees • Minimum planting is required for street trees at 1 every 15m for all new roads resulting from residential subdivision (in accordance with Planning Regulation Schedule 12A) • Minimum planting is required for street trees with at least 1 street tree provided and then 1 every 15m for all non-residential development • Street tree planting spaces are to be appropriately sized and free of services to facilitate desirable large tree canopy *Additional assessment benchmarks for the provision of street trees may be provided through the TRUFF*
Overall outcomes	• Development contributes to tree canopy target for urban areas and the Region • Stronger overall outcome for tree retention and planting of mature trees as part of development, relevant to type of tree (a small tree does not equal a large canopy tree)
Categories of assessment	• Removal of significant trees is made *assessable* for MCU, RaL and OPW
Other planning scheme alignment	• Include definition for significant trees triggering assessment where clearing is proposed • Tree canopy target is set for the Region • Align with green infrastructure intents of the Strategic Framework

[11] *Significant trees include significantly-sized trees being any tree that is 4m height and 40cm DBH; and/or significant heritage value trees (remnants of the bush, plantings by early settlers, Aboriginal sacred trees, important landscape or streetscape elements, or trees planted to commemorate important people or events as outlined by the National Trust Queensland)*

4.3.2 Trees – rural

Applicable mapping: Not currently mapped, although significant trees[12] should be identified and mapped for protection where not already regulated as MSES or MNES

Delivered through: All assessable development in rural areas

Development outcomes: Protect and enhance rural canopy cover through the protection of existing trees and the provision of new tree plantings where not already protected by MNES, MSES or MLES

Offset possible: Offsetting for removal of trees in rural landscapes could be effective in contributing to the enhancement of green connectors, in line with the existing Council Policy and Procedure (loss of amenity calculation) on tree removal

Table 18. Trees (rural) outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Retention, regeneration and ongoing management of mature and significant trees where not already regulated as MSES or MNES is required of development in rural areas • Removal of trees in rural landscape is avoided where possible or offset in accordance with proposed Offset PSP • New trees in rural landscapes are provided as part of development to enhance green connectors
Overall outcomes	• Development contributes to an identified tree canopy target for rural areas and the Region • Protect and enhance rural canopy cover through the protection of existing trees and the provision of new tree plantings
Categories of assessment	• Removal of significant trees is made *assessable*
Other planning scheme alignment	• Include definition for significant trees triggering assessment where clearing is proposed • Tree canopy target is set for the Region • Align with green infrastructure intents of the Strategic Framework

4.3.3 Landscape on structure (green walls & roofs)

Applicable mapping: No

Delivered through: All assessable development in urban areas
Public works for Parks (LGIP)

Development outcomes: Enhance urban greening outcomes

Offset possible: N/A

[12] *Significant trees include significantly-sized trees being any tree that is 4m height and 40cm DBH; and/or significant heritage value trees (remnants of the bush, plantings by early settlers, Aboriginal sacred trees, important landscape or streetscape elements, or trees planted to commemorate important people or events as outlined by the National Trust Queensland)*

Table 19. Landscape on structure outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	As per TRUFF recommendations: • Maximise green plot ratio • Minimise impervious surfaces
Overall outcomes	• Opportunities to provide urban greening outcomes are optimised • Green roofs and walls are encouraged as an alternative solution for additional reduction of stormwater run-off and pollution
Categories of assessment	• No change
Other planning scheme alignment	• Align with green infrastructure intents of the Strategic Framework • Practical guidance on landscape on structure and climate-responsive buildings incorporated in proposed Green Infrastructure PSP or TRUFF guideline • Inclusion of standard drawings could help developers take up the use of landscape on structure

4.3.4 Urban gardens & community farms

Mapping / overlays: No

Delivered through: Where part of any assessable development in urban areas
Public works for Parks (LGIP)

Development outcomes: Enhance productive open space in urban areas

Offset possible: No

Table 20. Urban gardens and community farms outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS[13]
Assessment benchmarks	• Where proposed urban gardens and community farms are suitably manages (avoids, treats) the occurrence of weed plant species
Overall outcomes	• Landscapes are designed to be resilient to changing climate (e.g. provision of alternative water, use of native vegetation) • Opportunities to provide urban greening outcomes are optimised • Productive use of open space areas is sustainable and inclusive
Categories of assessment	• No change
Other planning scheme alignment	• Align with green infrastructure intents of the Strategic Framework

[13] *While encouraged as an important ecosystem service in urban areas these uses will likely be delivered through other approval processes (not development approval)*

4.3.5 Stormwater and WSUD

Applicable mapping: No

Delivered through: All assessable development in urban areas

Public works for Parks (LGIP)

Development outcomes: Protect waterway health through stormwater treatment for quality and quantity management

Alternative, fit-for-purpose water supply is incorporated and used for irrigation

Flood mitigation

Offset possible: Potential for a local offset policy to allow and manage offset of stormwater quality treatments (would depend on water quality network plan within which to offset)

Table 21. Stormwater and WSUD outcomes for planning scheme integration

	PLANNING SCHEME OPTIONS
Assessment benchmarks	• Development integrates vegetated landscapes which capture and treat stormwater on-site as well as provide other ecosystem services such as amenity and local habitat (e.g. passively irrigated street trees) • Site planning encourages permeable ground cover that catches and retains moisture • Development looks to optimise re-use of water on-site to provide fit-for-purpose alterative water supplies as part of a total water cycle management plan • Stormwater management is provided to achieve the water quality requirements in accordance with the SPP
Overall outcomes	• Protect waterway health through stormwater treatment for quality and quantity management • Alternative, fit-for-purpose water supply is incorporated and used for irrigation • Flood mitigation
Categories of assessment	• No change
Other planning scheme alignment	• Align with green infrastructure intents of the Strategic Framework • WSUD is incorporated in the proposed Green Infrastructure PSP or as its own PSP • Standard drawings for WSUD assets would provide clear references for the conditioning of development. This should provide landscape design guidance on how these systems should be integrated into the surrounding landscapes.

4.4 GREEN INFRASTRUCTURE NETWORK

The Green Infrastructure Network has been referred to throughout this report and is a spatial acknowledgement of green infrastructure. It shows green connectors and green spaces across the local government area. At this scale the mapping cannot function as regulatory mapping, owing to the following:

- Several connector values are broadly and uniformly applied; and
- Both connector and space areas are amalgamated from various values and would therefore not apply uniformly.

It is recommended that the Green Infrastructure Network Plan in its current format could be considered for integration with the Planning Scheme in the following ways:

As a Strategic Framework map	• Would need to relate to strategic theme • Would replicate/ replace elements of the current Natural Environment, Settlement Pattern, Community Identity and Diversity and/ or Infrastructure and Services Themes
As part of a planning scheme policy, for example the proposed Green Infrastructure PSP	• Would be a reference for guidance material on how to respond and assess green infrastructure development
As a reference in the TRUFF	• With regard to spatially identifying areas of biodiversity, movement and subsequent streetscape character

The building blocks of the Green Infrastructure Network Plan are environmental values identified through the MLES mapping. It is proposed that the MLES will provide the protection of green infrastructure high value areas through its incorporation into the Environmental Significance Overlay.

As the concept of green infrastructure encompasses elements beyond the MLES, it is considered most practical and efficient to retain the environmental significance overlay for these functions, as discussed in Section 3.4.4.

Suggestions for a Green Infrastructure Overlay would create the following complexities:

- Green infrastructure occurs at the regional, town/neighbourhood and urban scales and would be a complex layering of intents, outcomes and assessment benchmarks to cohesively draft as a single overlay code.
- In the immediate term there is a functionality to the Planning Scheme and where/ how different requirements are applied. These varied requirements can still be calibrated to an overall green infrastructure strategic intent to be effective without creating a completely new component for community and the development industry to navigate.

As such it is recommended that the Green Infrastructure Network Plan is considered for application as part of a planning scheme policy for green infrastructure and as a comprehensive reference for development and Council.

5 RECOMMENDATIONS

5.1 PLANNING PRINCIPLES FOR TOOWOOMBA GREEN INFRASTRUCTURE

In the future drafting of Planning Scheme provisions, the following planning principles have been proposed from the perspective[14] of:

- the purpose of drafting green infrastructure planning provisions
- the systemic planning principles to support intended green infrastructure strategic outcomes
- the green infrastructure planning principles that respond to identified green infrastructure matters and issues

Purpose Principles

- Improve development response to incorporate green infrastructure for more resilient development and environmental outcomes

Systems Principles

- Promote community engagement for increased understanding and support for green infrastructure outcomes
- Monitor green infrastructure provisions

Issues Principles

- Design urban structures to relate built form and public realm using living assets for ecosystem services
- Integrate infrastructure and land use
- Protect and restore areas of environmental value including connectors, spaces and forms in accordance with the Green Infrastructure Network Plan
- Foster resilient, healthy urban form through addressing land use hazards

These principles are recommended for ensuing drafting processes but are considered here for context to the recommended framework options.

5.2 GRISPI RECOMMENDATIONS' OVERVIEW

Table 22 proposes recommendations to calibrate green infrastructure outcomes across the various Planning Scheme components, including the Strategic Framework, overlays, use and development codes, and PSPs. This would address some current gaps in the planning scheme – for example the introduction and referencing of Matters of Local Environmental Significance – as well as improve the regulation of high value green infrastructure outcomes – such as greater protection of inter-urban breaks. The recommendations are made based on the following primary changes:

1. MLES mapping is adopted into the Environmental Significance Overlay

Recommended options for the adoption of MLES mapping as part of the new Environmental Significance Overlay include a series of map outputs proposed for ecological corridors, waterways and wetlands, and areas of ecological significance. The different options are provided for Council consideration and present highest priority MLES values in different combinations with other MLES values.

2. Incorporate Environmental management zone for management of development areas

Applying the Environmental management zone to connector elements of the Green Infrastructure Network (i.e. not mapped as significant biodiversity corridors but as regional connector or inter-urban break) will allow for development to occur where appropriate and where more detailed responses are required. Regional connectors are very wide areas identified in the Green Infrastructure Network Plan for fauna movement but which are not expected to be clear of development. Inter-urban breaks are identified in the Toowoomba Region Scenic Amenity Study and have an important function for scenic amenity, visual separation of urban areas; and provision of green connection and space in accordance with the Green Infrastructure Network Plan.

[14] *This structure is based on planning principle framework endorsed by the Planning Institute of Australia.*

3. Calibrate assessment benchmarks, overall outcomes and strategic intents across the Planning Scheme for strong policy outcomes and reinforced green infrastructure policy messaging

This recommendation proposes to build on the existing outcomes and benchmarks that facilitate green infrastructure policy and that already exist in the Planning Scheme. The work should address the gaps identified in this report and utilise the Planning Scheme integration options that are identified for optimal responsiveness.

Communication is an important drafting component to the work as the Planning Scheme doesn't currently frame or refer to the various components that comprise green infrastructure as 'green infrastructure'. Where possible, existing locations and names for different outcomes should be retained, however these should be presented more clearly to introduce the links between green connectors, green spaces and green forms (for example, through the overall outcomes in relevant codes).

4. Draft a Green Infrastructure planning scheme policy

With the essential calibration of benchmarks, outcomes and intents across the Planning Scheme, a dedicated Green Infrastructure PSP is recommended as a formal reference for development proposals and assessment against requirements to further the green infrastructure policy. The Green Infrastructure PSP would provide guidance on appropriate development outcomes in biodiversity areas, other guidance material for green infrastructure functions, and include the Green Infrastructure Network Plan. It should include:

- Green Infrastructure Network Plan and explanatory notes
- Guidance for the management of development in green connectors
- Guidance for creating multi-functional green environments and integrated natural systems
- Guidance for ecological assessment reports references to TRUFF for any green 'form' outcomes (e.g. landscape on structure)
- WSUD design/ drawing references

5. Draft a Local Offsets planning scheme policy

A Local Offsets PSP will articulate the value of MLES and opportunities for local lands to be valued as potential offset sites where suitable. It is proposed as a stand-alone PSP for the purpose of facilitating agreed offset opportunities for clearing of MLES, mature tree removal or stormwater quality treatments in supplement to the State Offsets Policy. This will require investigation into the appropriate offset requirements relevant to each matter, and the confirmation of preferred areas for offsets, where able to contribute to the enhancement of the Green Infrastructure Network. It is noted that policy intents and frameworks for local values' offsetting could also sit as part of the recommended Green Infrastructure PSP (recommendation 4), having direct correlation to green infrastructure planning intents to enhance identified parts (spaces and connectors) of the green infrastructure network.

6. Adopt tree canopy targets

In accordance with the findings of the TRUFF, the new Planning Scheme should adopt a strong strategic position on increasing tree canopy cover across both rural and urban areas. It is acknowledged that the practicalities of enhancing tree canopy will vary according to environmental conditions, and guidance through the TRUFF will inform this action. Current recommendations for a tree canopy target of 30% for greenfield development could be supplemented in existing urban or infill areas through policy for a net increase to tree canopy cover applied to development in these areas. In urban areas, a target should be to increase tree canopy (measured as a percentage of total urban areas) year on year; across the region there should be no net loss of tree canopy cover, if not an actual increase.

Tree canopy targets could be included in the Strategic Framework and referred to in overall outcomes for relevant codes (e.g. zone codes and development codes).

An urban forest strategy for the Toowoomba City Centre should also be adopted (e.g. as part of the City Centre Master Plan) to increase tree canopy cover.

7. Revise the Strategic Framework to include a green infrastructure theme

The Strategic Framework will play an important role in establishing green infrastructure policy and while the calibration steps would include aligning strategic intent statements in the Strategic Framework to green infrastructure policy, this recommendation proposes to completely redraft the Strategic Framework to incorporate a specific green infrastructure theme. This will require reviewing the purpose and overlap of existing strategic themes: with green infrastructure based on a much broader, comprehensive interconnectedness of different outcomes – e.g. connectors, spaces, form. A dedicated Strategic Framework theme for green infrastructure communicates a strong backing from Council and the

community that green infrastructure is a fundamental issue for the Region that needs to be appropriately managed. While it is understood that the Strategic Framework is currently being re-drafted by Council, this may be a consideration for future iterations of the Planning Scheme, as green infrastructure approaches to development are more widely accepted.

8. Definitions are included as follows:

- **Significant tree** – includes significantly-sized trees being any tree that is 4m height and 40cm DBH; and/or significant heritage value trees (remnants of the bush, plantings by early settlers, Aboriginal sacred trees, important landscape or streetscape elements, or trees planted to commemorate important people or events as outlined by the National Trust Queensland)
- **Inter-urban breaks** – define in terms of ecosystem services i.e. important green space between urban areas, predominantly undeveloped, and having the function of reducing edge effects and providing safe passage for species from predation
- **Major projects** – projects above a determined value, intensity and size of lot as could be determined through analysis of development data or other development benchmarking as available to Council

Final definitions will need to be further determined through drafting of relevant guidelines.

Table 22 following provides a detailed breakdown of the GRISPI recommendations as they relate to integration in the new Planning Scheme and as rationalised through the investigations of this report.

Table 22. GRISPI Summary Table

GRISPI COMPONENT	RECOMMENDATIONS				
	STRATEGIC FRAMEWORK	ZONE CODES	OVERLAY CODES	USE CODES	DEVELOPMENT CODES
CONNECTORS					
Biodiversity corridors *TRIGGER*: All development within biodiversity corridors identified in the new Environmental Significance Overlay *ASSESSMENT*: Ensure development is **assessable** if impacts on areas of high value as identified in the new Environmental Significance Overlay are proposed	Include strategic intent to enhance connectivity for safe and unimpeded movement of fauna between 'green spaces' *Land Use Strategy* Development within biodiversity corridors identified in the Green Infrastructure Network Plan is managed to enhance primary functions (movement of local fauna), supporting average biodiversity corridor widths as follows: • regional ecological corridors of 2000m • local wildlife corridors of 200m "Managed" development means development appropriate to its zone and overlay intents, and if not intending protection of high value areas, retaining significant trees, inclusion of deep planting areas in front and back yards and requirements for planting of new street trees of appropriate species	**PROPOSED ENVIRONMENTAL MANAGEMENT ZONE** *Mapping* Greenfield development should consider use of Environmental management zone for private lots that are intersected with biodiversity corridors that might not be identified in the MLES/ new environmental significance overlay. This would provide opportunities to enhance biodiversity corridors while allowing for ecologically sustainable development (e.g. inter-urban breaks where some development may be allowed). *Overall Outcome* Development is limited to a low scale that does not result in adverse impacts on areas of environmental significance **EMERGING COMMUNITY ZONE AND RURAL RESIDENTIAL ZONE** Ensure that overall outcomes for these zones align with the need to manage urban encroachment/ edge effects at high-value inter-urban breaks where shown as Environmental Management Zone or where otherwise shown on Strategic Framework map	**NEW ENVIRONMENTAL SIGNIFICANCE OVERLAY** *Mapping* Adopt MLES ecological corridors mapping options 1 or 2 to identify biodiversity corridors that require protection measures (avoid, mitigate, offset) from development *Overall outcome* Development within biodiversity corridors identified in the new overlay maps (refer Appendix 2) is managed to enhance primary functions (including MSES and MNES) *Assessment Benchmark* – Development will be setback from waterways, avoid corridors of highest value, or will be managed within lower order biodiversity corridors to enhance movement of local fauna **SCENIC AMENITY OVERLAY** *Mapping* Align mapped areas of scenic amenity with biodiversity corridors where relevant, to increase multi-functional outcomes of fauna movement and improved scenic amenity	**EXTRACTIVE INDUSTRY CODES** • Revise overall outcomes to elevate priority for the *protection of environmental values* (otherwise intended to be *balanced with the operation of extractive industries*) • Ensure rehabilitation within biodiversity corridors identified in the new Environmental Significance Overlay provides suitable enhancement of movement corridors (vegetation, water quality)	**RaL CODE** • Retain existing requirements that lot reconfiguration is *responsive to the local environment*, and *areas containing important ecological values and cultural values are protected*. • The master plan assessment benchmark is supported as a response that *mitigates any adverse impacts on areas of ecological significance*
Natural wetlands & waterways *TRIGGER*: All assessable development within buffer areas to natural wetlands and waterways identified in the new Environmental Significance Overlay *ASSESSMENT*: Ensure development is **assessable** against the new environmental significance overlay where development proposes mitigation of impacts instead of avoiding impact on waterways or wetlands	Include strategic intent to protect waterway and wetland functions by: • Preserving riparian buffers and floodplain connectivity • Providing for fish passage • Preserving lower order streams as natural systems	**OPEN SPACE ZONE CODE** *Assessment benchmarks* • Community access to natural waterways and wetlands is provided in a safe and inclusive manner where possible	**ENVIRONMENTAL SIGNIFICANCE OVERLAY** *Mapping* Adopt MLES Waterways and Wetlands Mapping (Single Option) to identify waterways, floodplain wetlands and riparian buffers *Overall Outcome* development does not impact on natural wetlands or waterways identified in the new Environmental significance overlay and appropriate buffers are provided to wetlands and waterways to enhance primary functions *Assessment Benchmark* Development must avoid impacts on waterways and wetlands by ensuring buildings or structures are located outside of buffer areas or mitigate impacts where it is not possible to avoid	Design provisions in the different use codes should be reviewed to ensure they are consistent with the intents for natural wetlands and waterways e.g. design of building interfaces to waterways in urban areas	**RECONFIGURING A LOT CODE** • Natural wetlands and waterways and riparian buffer areas are included as environmental precincts in lot design

GRISPI COMPONENT	RECOMMENDATIONS				
	STRATEGIC FRAMEWORK	ZONE CODES	OVERLAY CODES	USE CODES	DEVELOPMENT CODES
Constructed waterways & water bodies *TRIGGER*: MCU and RaL assessable development adjacent/ adjoining constructed waterways Building Works, Operational Works adjacent/ adjoining constructed waterways Public works where involving an existing constructed waterway *ASSESSMENT*: No change	Include strategic intent to protect waterway health by adopting natural channel design where possible and providing for fish passage	**IN URBAN ZONE CODES, OPEN SPACE ZONE CODE** *Assessment benchmarks* • Community access to constructed waterways and water bodies is provided in a safe and inclusive manner where possible • Naturalisation of existing constructed waterways is facilitated through development where possible • Delivery of multi-functional waterway corridors and water bodies which manage water as well as other ecosystem services such as habitat, recreation and amenity	**ENVIRONMENTAL SIGNIFICANCE OVERLAY** *Overall outcomes* Development is required to naturalise any existing constructed waterways where identified in a high value waterway corridor in the new Environmental significance overlay and where safe conveyance of water can be provided	Design provisions in the different use codes should be reviewed to ensure they are consistent with the intents for natural channel design and providing for riparian zones and fish passage e.g. site planning and design of development interfacing with constructed waterways in the City Centre.	**INTEGRATED WATER CYCLE MANAGEMENT CODE** *Overall Outcomes* • Naturalisation of existing constructed waterways is facilitated through development where possible *Assessment Benchmarks* • Include provisions for urban environments to be designed for water collection and storage • Designed to safely manage flows and provide functioning connections with surrounding natural waterways and wetlands.
SPACES					
Natural biodiversity areas *TRIGGERS*: MCU and RaL development within and/ or adjacent natural biodiversity areas Building Works, Operational Works adjacent/ adjoining natural biodiversity areas Public works adjacent/ adjoining natural biodiversity areas *ASSESSMENT*: Development is made *assessable* against the new environmental significance overlay where development proposes mitigation of impacts instead of avoiding impact on natural biodiversity areas	• Include strategic intent to enhance areas of vegetation, providing safe habitat (or refuge) to support local species diversity • Include tree canopy target for the region to align with TRUFF recommendations (e.g. 40% tree canopy cover for greenfield areas, and net increase in urban areas)	**PROPOSED CONSERVATION ZONE** *Mapping:* Consider use of Conservation Zone to protect highest value local biodiversity areas (e.g. Local Koala Habitat). **PROPOSED MINOR TOURISM ZONE** *Mapping:* Consider use of Minor Tourism Zone to integrate economic functions into natural areas that have high visitor attraction, simultaneously contributing to ecosystem services, in particular for 'supporting' (movement/ genetic diversity, habitat, soil formation) and 'cultural' (recreation, amenity) ecosystem services. **EMERGING COMMUNITY ZONE AND RURAL RESIDENTIAL ZONE** Ensure that overall outcomes for these zones align with the need to manage urban encroachment/ edge effects at high-value inter-urban breaks	**ENVIRONMENTAL SIGNIFICANCE OVERLAY** *Mapping* Adopt MLES mapping for Green Spaces (options 1, 2 or 3) to identify where significant biodiversity areas are located that need to be protected *Overall outcomes* • No net loss of natural biodiversity areas • Increase in natural biodiversity areas to minimum contiguous area target as per MLES (remnant vegetation area that can support diverse resilient and/ or unique populations of native flora and fauna) *Assessment Benchmarks* • Development will be setback from mapped natural biodiversity areas (MLES areas of ecological significance) identified in the Green Infrastructure Network Plan or new Environmental significance overlay maps • Development can contribute to the enhancement of natural biodiversity areas to achieve a remnant vegetation size (area) that can support ecosystem services • Setbacks to mapped natural biodiversity areas (MLES areas of ecological significance) identified in the Green Infrastructure Network Plan or new Environmental significance overlay maps will be appropriately vegetated to enhance primary	Design provisions in the different use codes should be reviewed to ensure they are consistent with the intents that protect natural biodiversity areas, in particular Extractive industry, Industry uses, Rural uses codes where impacts could be more significant.	**RaL CODE** *Assessment Benchmark* • Site context plan is required for sites of greater area than 1Ha, addressing minimum inclusions of open space including deep planting, tree retention or new canopy cover. • Define inter-urban breaks: function, extent of development permitted

GRISPI COMPONENT	RECOMMENDATIONS				
	STRATEGIC FRAMEWORK	ZONE CODES	OVERLAY CODES	USE CODES	DEVELOPMENT CODES
			functions (e.g.) habitat (or refuge) to support local species diversity • Protection of remnant and regrowth forest (RaL Code) • Site context plan is required for sites of an area greater than 1Ha to demonstrate all development aspects can avoid natural biodiversity areas **BUSHFIRE HAZARD OVERLAY CODE** • *Assessment Benchmark* – Asset protection zones are not to occur in mapped natural biodiversity areas		
Urban bushland *TRIGGER*: Greenfield development MCU Major projects in city centre Public works – Council project *ASSESSMENT*: No Change	• Include strategic intent to protect and enhance existing urban bushland areas and ensuring there is no net loss of urban bushland areas • Include tree canopy target of an overall net increase to tree canopy coverage in urban areas	**IN URBAN ZONE (RESIDENTIAL, MIXED USE, CENTRE) CODES, TOWNSHIP ZONE CODE, OPEN SPACE ZONE CODE** *Overall outcomes* • Development to contribute to tree canopy target for urban areas and the Region to align with TRUFF recommendations (e.g. 40% tree canopy cover for greenfield areas, and net increase in urban areas) **PROPOSED ENVIRONMENTAL MANAGEMENT ZONE** • *Overall outcomes* for urban bushland areas could be reflected in environmental management zone, where the significance of requiring development to contribute to urban bushland outcomes could be prioritised	-	Design provisions in the different use codes should be reviewed to ensure they are consistent with the intents for green infrastructure development outcomes.	**RaL CODE** *Assessment Benchmark* • In accordance with local planning of urban areas, a minimum area of 1,000m^2 is provided for urban bushland • Retention, regeneration and ongoing management of mature and significant trees should be required of development in urban areas
Open spaces, parks *TRIGGERS*: Greenfield development MCU Major projects Public works – Council project *ASSESSMENT*: No Change	• Include strategic intent for the provision of multi-functional green spaces for the community • Include tree canopy target for the region that responds appropriately to different typologies e.g. greenfield, infill, streets etc.	**IN URBAN ZONE CODES, OPEN SPACE ZONE CODE** *Overall outcomes* Multi-functional spaces that use vegetation to provide people with areas to relax, recreate and enjoy *Assessment Benchmarks* • The total area of open spaces and parks is maintained or increased in urban areas • Open spaces and parks are provided as safe and efficient multi-functional spaces where possible	-	Consider the following use codes to reflect zone intents for development to incorporate multi-functional green spaces for the community • Centre activities • Community and recreation uses • Markets • Medium density residential *Assessment benchmarks* • Retention, regeneration and ongoing management of mature and significant trees is required of development in urban areas • Minimum percentage of development site is provided for permeable open space e.g. 50% of low density residential zone to have less than 50% impervious cover • Public access, WSUD, rain harvesting, tree retention are simultaneously	-

GRISPI COMPONENT	RECOMMENDATIONS				
	STRATEGIC FRAMEWORK	ZONE CODES	OVERLAY CODES	USE CODES	DEVELOPMENT CODES
				provided in open spaces, parks and backyards wherever possible	
Private yards *TRIGGERS*: Greenfield development MCU Major projects Public works – Council project *ASSESSMENT*: No Change	• Include strategic intent for the provision of multi-functional green spaces • Include tree canopy target for the region including describing opportunities from private yards	**IN URBAN ZONE CODES, OPEN SPACE ZONE CODE** *Overall outcomes* Multi-functional spaces that use vegetation to provide people with areas to relax, recreate and enjoy *Assessment Benchmarks* • The total area of open space, parks and backyards is maintained or increased in urban areas • Private yards are provided as safe and efficient multi-functional spaces where possible	-	Consider the following use codes to reflect zone intents for development to incorporate multi-functional green spaces for the community • Centre activities • Community and recreation uses • Markets • Medium density residential *Assessment benchmarks* • Retention of mature and significant trees is required of development in urban areas • Minimum percentage of development site is provided to be permeable e.g. 50% of low density residential zone to have less than 50% impervious cover • WSUD, rain harvesting, tree retention are provided in private yards wherever possible	-
Agricultural land & timber reserves *TRIGGERS*: Assessable RaL and MCU developments in areas that can affect agricultural land or timber reserves *ASSESSMENT*: No Change	• Include strategic intent for the protection of significant trees and productive soils • Define function of inter-urban breaks relative to the locality and open space/ natural area values	**RURAL ZONE CODE** *Overall Outcomes* • Continued productivity of the vegetation and soils in the area through good land management • Significant trees and productive soils are protected	**AGRICULTURAL LAND OVERLAY CODE** Review Agricultural Land Overlay Code to align with Green Infrastructure Network Plan and recognise ecosystem services provided by vegetation and biodiversity for enhancing productive soils	Design provisions in the Rural use codes should be reviewed to ensure they are consistent with the intents for integrating green infrastructure with productive land management and that the codes acknowledge the benefits of green infrastructure protection and enhancement for productive land (soil and water quality).	-
FORMS					
Trees - urban (private land & street trees) *TRIGGERS*: All assessable development in urban areas *ASSESSMENT*: Removal of significant trees is made *assessable** *Requires definition for significant trees*	Include strategic intent to protect and enhance urban canopy cover by incorporating: • requirements for new trees in development and • the protection of existing trees	**IN URBAN ZONE (RESIDENTIAL, MIXED USE, CENTRE, INDUSTRIAL, COMMUNITY FACILITIES) CODES, TOWNSHIP ZONE CODE, SPORT AND RECREATION ZONE CODE, OPEN SPACE ZONE CODE** *Overall outcomes* • Provision of healthy urban trees which support increased canopy cover outcomes. • Development contributes to tree canopy target for urban areas and the Region • Stronger overall outcome for tree retention and planting of mature trees as part of development, relevant to type of tree (a small tree does not equal a large canopy tree) *Assessment Benchmarks*	-	Revise design provisions in the different use codes to be consistent with the intents for green infrastructure (form) development outcomes	**LANDSCAPING CODE, WORKS AND SERVICES CODE** *Assessment Benchmarks* • Minimum planting for street trees is required at a rate of 1 tree every 15m for all new roads resulting from residential subdivision (in accordance with Planning Regulation Schedule 12A) • Significant heritage value trees can be remnants of the bush, plantings by early settlers, Aboriginal sacred trees, important landscape or streetscape elements, or trees planted to commemorate important people or events (National Trust Queensland) are retained on site

GRISPI COMPONENT	RECOMMENDATIONS				
	STRATEGIC FRAMEWORK	ZONE CODES	OVERLAY CODES	USE CODES	DEVELOPMENT CODES
		• Retention, regeneration and ongoing management of mature and significant trees is required of development in urban areas • Minimum area of development site is provided for deep planting e.g. 4m x 4m in accordance with TRUFF			• Trees that are greater than 4 m in height with a DBH of 40 cm (significantly-sized tree) are retained on site
Trees – rural *TRIGGERS*: All assessable development in rural areas *ASSESSMENT*: Removal of significant trees is made *assessable*	Include strategic intent to protect and enhance rural canopy cover by incorporating: • Protection of existing trees and • Incentives for new tree plantings (offsets etc)	**RURAL ZONE CODE** *Overall outcome* Rural tree canopy cover is enhanced to meet regional targets *Assessment Benchmarks* • Provision of vegetation along waterways and through properties is required to provide effective buffering • Protect and enhance rural canopy cover through the protection of existing trees and the provision of new tree plantings • Retention, regeneration and ongoing management of mature and significant trees is required of development in rural areas • Removal of trees in rural landscape is avoided where possible or offset in accordance with proposed Offset PSP	**AGRICULTURAL LAND OVERLAY CODE** *Overall outcome* Essential agricultural ecosystem services are enhanced *Assessment Benchmark* New trees in rural landscapes are provided as part of development to enhance agricultural soil quality through improved biodiversity	-	**LANDSCAPING CODE, WORKS AND SERVICES CODE** *Assessment Benchmarks* • Significant heritage value trees can be remnants of the bush, plantings by early settlers, Aboriginal sacred trees, important landscape or streetscape elements, or trees planted to commemorate important people or events (National Trust Queensland) are retained on site • Trees that are greater than 4 m in height with a DBH of 40 cm (significantly-sized tree) are retained on site
Landscape on structure (green walls & roofs) *TRIGGERS*: All assessable development in urban areas Public works for Parks (LGIP) *ASSESSMENT*: No change	Include strategic intent to enhance urban greening outcomes	-	-	Revise design provisions in the different use codes to be consistent with the intents for green infrastructure (form) development outcomes	**LANDSCAPING CODE** *Overall Outcomes* Opportunities to provide urban greening outcomes are optimised *Assessment Benchmarks* • Design landscapes to be resilient to highly modified landscape (e.g. suitable soil volume, provision of water, can withstand wind and heat exposure) • Other assessment benchmarks to be informed by relevant outcomes of the TRUFF
Urban gardens & community farms *TRIGGERS*: Where part of any assessable development in urban areas[15] Public works for Parks (LGIP)	Enhance productive open space in urban areas	**IN URBAN ZONE (RESIDENTIAL, MIXED USE, CENTRE, INDUSTRIAL, COMMUNITY FACILITIES) CODES, TOWNSHIP ZONE CODE, SPORT AND RECREATION ZONE CODE, OPEN SPACE ZONE CODE** • Overall outcomes for urban zones need to re-frame built form and	-	Consider the following use codes to encourage/incorporate urban gardens or community farms for community benefit/ meeting open space requirements • Centre activities • Community and recreation use • Markets	**LANDSCAPING CODE** *Overall Outcomes* • Landscapes are designed to be resilient to changing climate (e.g. provision of alternative water, use of native vegetation)

[15] *While encouraged as an important ecosystem service in urban areas these uses will likely be delivered through other approval processes (not development approval)*

GRISPI COMPONENT	RECOMMENDATIONS				
	STRATEGIC FRAMEWORK	ZONE CODES	OVERLAY CODES	USE CODES	DEVELOPMENT CODES
ASSESSMENT: No change		natural area/ open space priorities so that ecosystem services are emphasised as a priority requirement • Landscapes are designed to be resilient to changing climate (etc. provision of alternative water, use of native vegetation)		• Medium density residential	• Opportunities to provide multi-functional urban greening outcomes are optimised • Productive use of open space areas is sustainable and inclusive *Assessment Benchmarks* • Where proposed urban gardens and community farms are suitably managed (avoids, treats) the occurrence of weed plant species
Stormwater management / WSUD assets *TRIGGERS*: All assessable development in urban areas Public works for Parks (LGIP) *ASSESSMENT*: No change	Ensure strategic intents to protect waterway health are retained and incorporate: • Stormwater quality and quantity management • Flood mitigation measures • Support for WSUD and the naturalisation where possible of constructed waterways	-	-	Consider the following use codes to encourage/incorporate WSUD as an option for stormwater treatment and multi-functional open space • Centre activities • Community and recreation uses • Industry uses • Medium density residential	**WORKS AND SERVICES CODE** *Overall outcomes* • Protect waterway health through stormwater treatment for quality and quantity management *Assessment benchmarks* • Development integrates vegetated landscapes which capture and treat stormwater on-site as well as provide other ecosystem services such as amenity and local habitat (e.g. passively irrigated street trees) • Site planning encourages permeable ground cover that catches and retains moisture • Development looks to optimise re-use of water on-site to provide fit-for-purpose alterative water supplies as part of a total water cycle management plan • Stormwater management is provided to achieve the water quality requirements in accordance with the SPP

In addition to the recommendations above for integration of specific GRISPI components, the following general recommendations for overall integration of green infrastructure into the new Planning Scheme are made:

PROPOSED GREEN INFRASTRUCTURE PSP

Draft a new Green Infrastructure PSP to include the following:

- Reference to greater benefits and interconnectedness of natural systems, including benefits to lands and soils and water management Guidance on “development management areas” and reasons and requirements for development within biodiversity corridors
- Reasons for the required management of development in relevant areas should demonstrate relationships to other green infrastructure components (connectors, spaces, forms) within the Green Infrastructure Network Plan
- Editorial notes are included in any relevant codes to refer to PSP guidance material on how development should comply with green infrastructure intents (what constitutes appropriate, what development is permitted within a corridor, what fauna movement is required for)
- Revise current PSP SC6.1.6 Additional Information Required by Development Overlay Codes for preparation of Ecological Assessment Reports and incorporate in Green Infrastructure PSP, to include requirements to advise on development responses to potential impacts and proposed mitigation
- Guidance material for the appropriate delivery of multi-functional spaces including WSUD guidance (currently included in PSP2 Engineering Standards – Roads and Drainage Infrastructure)
- Standard drawings for WSUD assets would provide clear references for the conditioning of development. This should provide landscape design guidance on how these systems should be integrated into the surrounding landscapes.
- Proposed Green Infrastructure PSP could include practical guidance on landscape on structure and climate-responsive buildings OR should refer to TRUFF guidelines where landscape on structure is suitably guided
- Inclusion of standard drawings could help developers take up the use of landscape on structure

PROPOSED LOCAL OFFSET PSP

Draft a new Local Offset PSP to include the following:

- Identified, preferred offset lands that contribute to **biodiversity corridor** and **biodiversity area** functions
- A framework for the appropriate offsetting of **significant trees** being removed in urban and rural zones
- Identified lands suitable for **urban bushland specifically** for **private open space** offsets
- Reference to the **tree canopy target** aligned with recommendations through the TRUFF

EXISTING PSP No. 8 STREET TREES

- Revise street tree planting PSP to include minimum number requirements for street trees or large canopy tree provision

LGIP

- Consider LGIP alignment to identify **urban bushland sites** for trunk park contribution
- Major projects are required to contribute to making land available for viable urban bushland areas in accordance with any adopted local plan, structure plan or master plan

REFERENCES

Australian Standard for Climate Change (AS 5334—2013)

E2, Lat27 and PSA Consulting *GRISPI Background Report*, 2021

Jensen Plus and Ethos Urban, *Toowoomba Region Urban Form Framework,* 2021

Lat27, *Toowoomba Region Scenic Amenity Study and Regional Landscape and Urban Character Study*, 2021

Meridian Urban, *Toowoomba Region Bushfire Risk Analysis,* 2021

Millennium Ecosystem Assessment, https://www.millenniumassessment.org/en/About.html#

PSA Consulting, *Toowoomba Region Growth Plan,* 2021

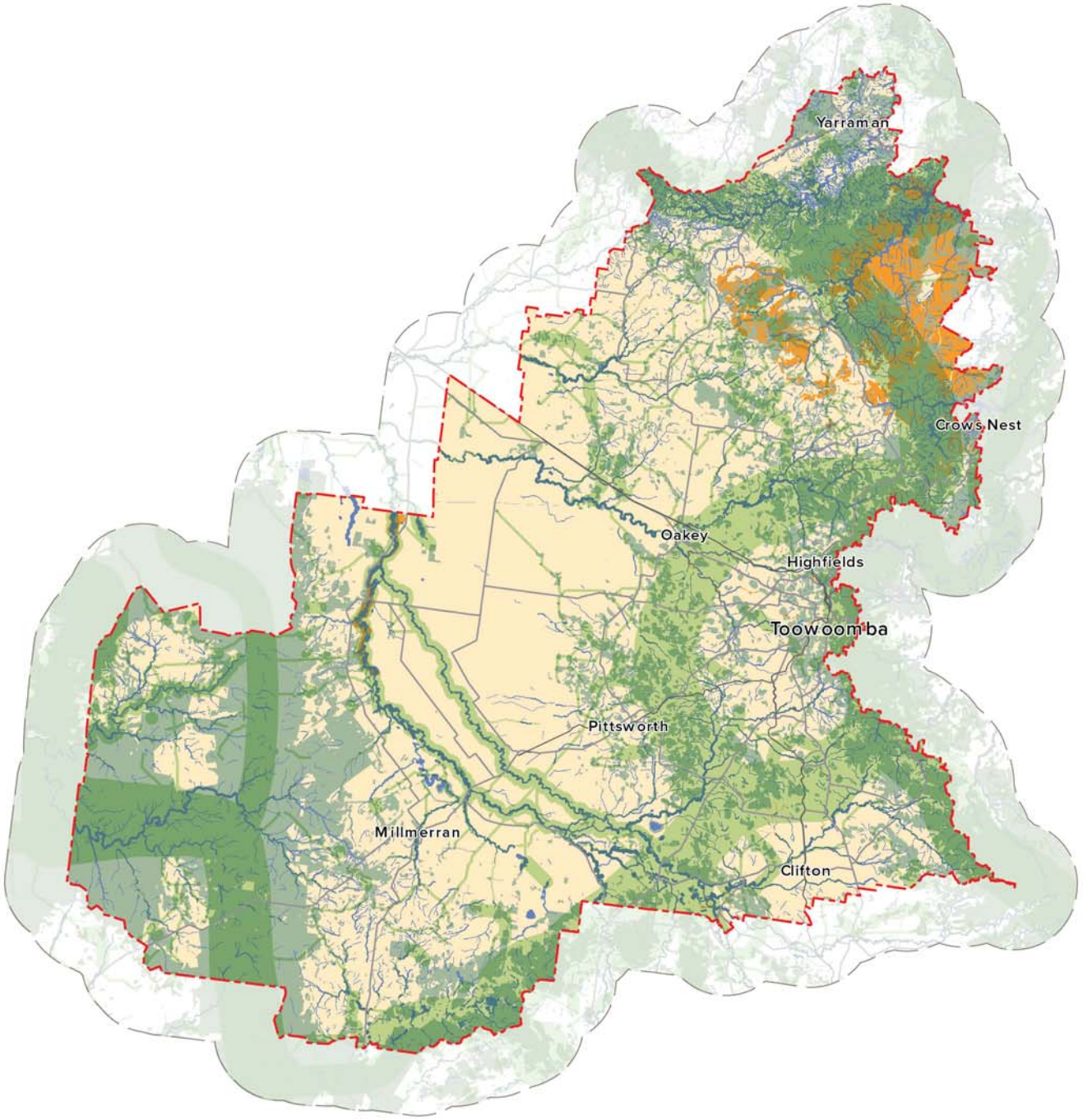
Pudmenzky, C. et al*, Phase One Report: Defining the Warm Temperate,* March 2021

RedLeaf, *Mapping Matters of Local Environmental Significance (MLES) for the Toowoomba Region Technical Report*, June 2020

Toowoomba Regional Planning Scheme Version 26 (commenced on 30 April 2021)

APPENDIX 1
DRAFT GREEN INFRASTRUCTURE PLAN

Draft Green Infrastructure Network Plan



Legend

Toowoomba LGA boundary

10km LGA boundary offset

CONNECTORS

Grey Connectors

Operational rail network

State-controlled roads

Blue Connectors

Watercourses

Waterbodies and wetlands

Green Connectors

Green Connectors (ecological and wildlife corridos)

SPACES

Agricultural Land

Productive agricultural land

Non-agricultural land

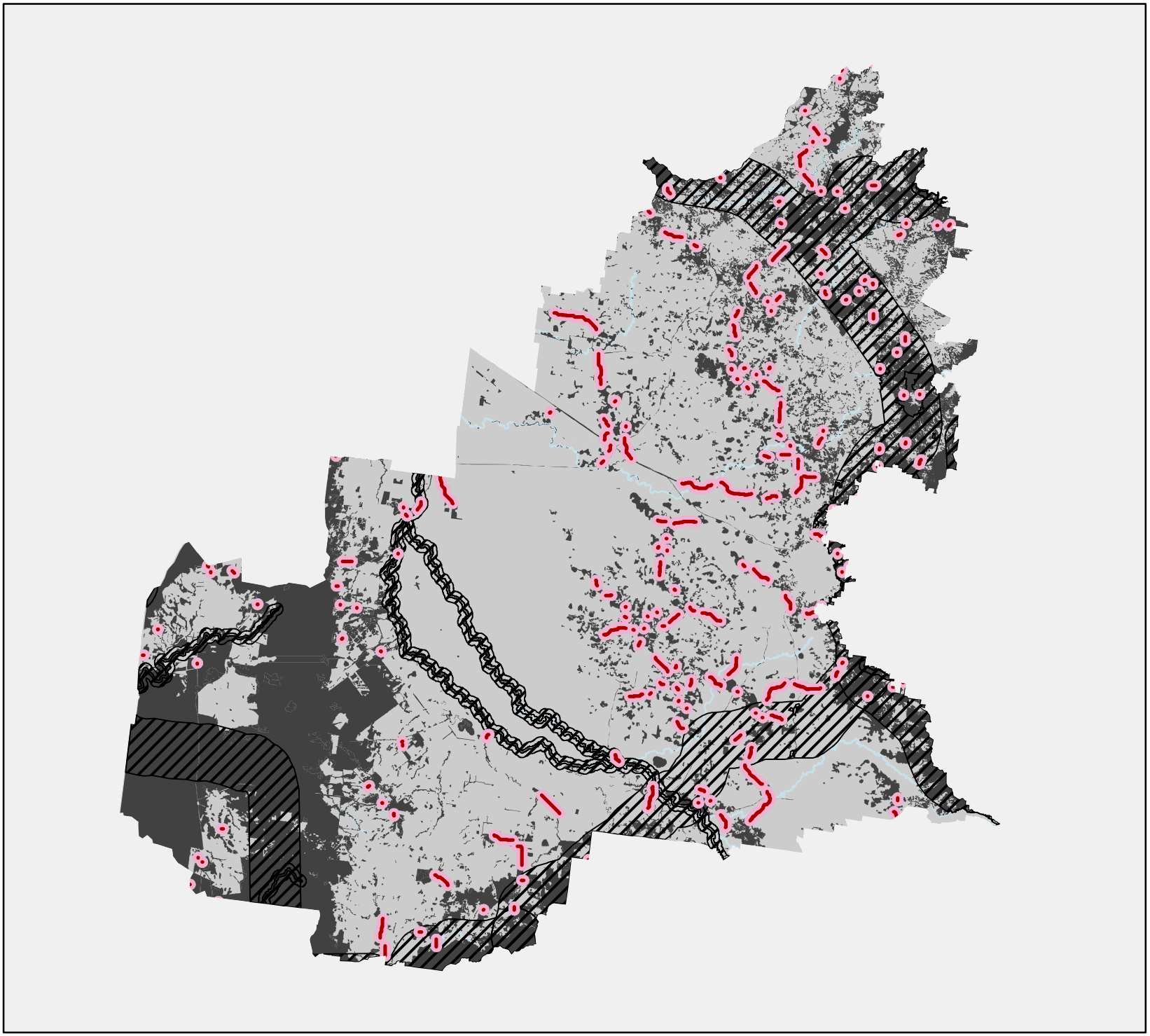
Green Spaces

Green Spaces (natural, reserves and open spaces)

FORMS

- not illustrated at this scale -

APPENDIX 2
MLES OVERLAY MAPS



Option 1 - Ecological corridors

Legend

MLES

- 1.1 Ecological Corridors LCPs
- 1.1 LCP Buffer

TRC Planning Scheme Overlays

- TRC Biodiversity Corridors
- TRC Areas of Ecological Significance

Waterways

- Major Watercourses
- Watercourse areas

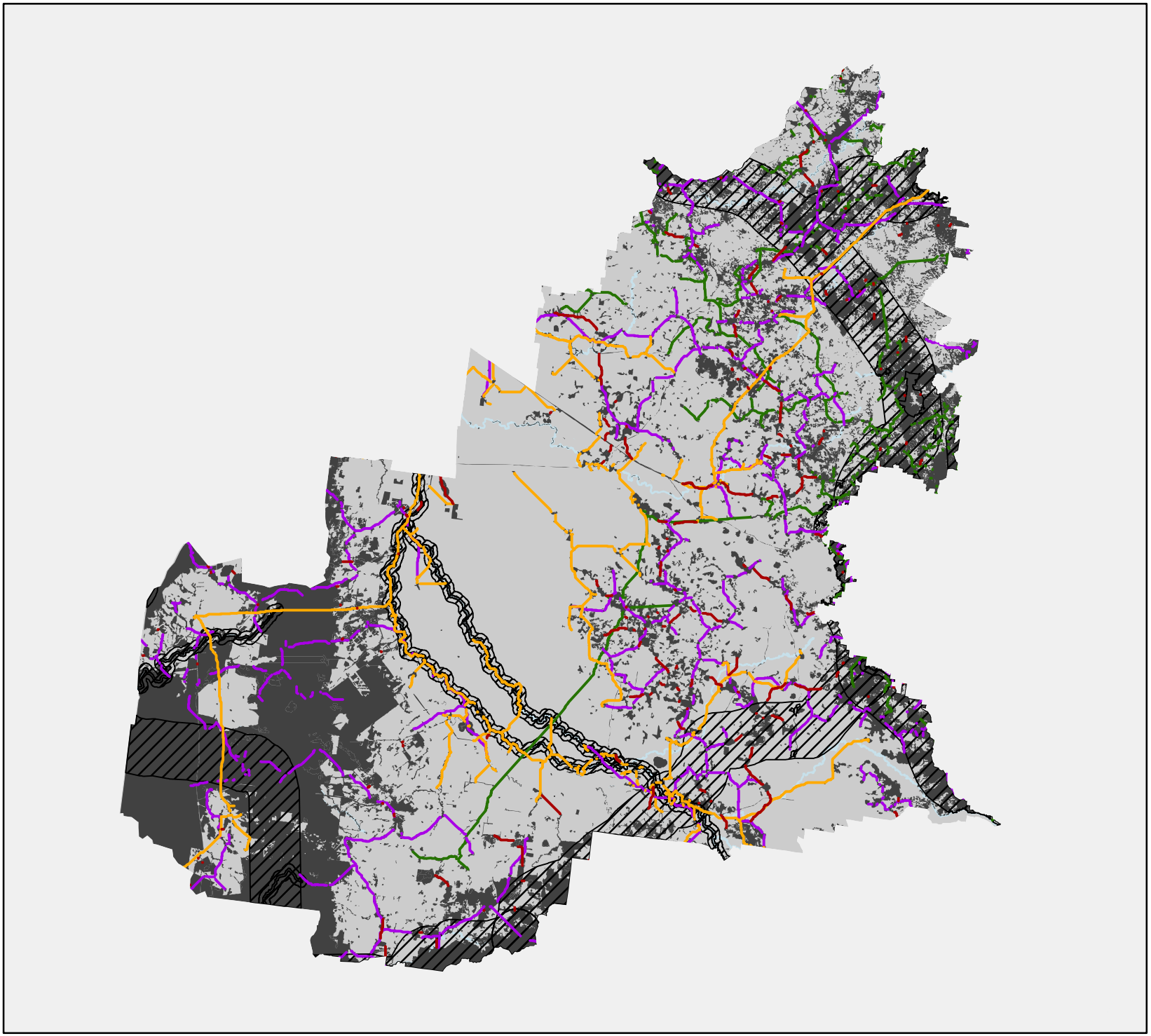
Local Government Areas

- Surrounding LGAs
- Toowoomba LGA

0 10 20 30 40 km

PSA Reference: 1175
Date: 10/09/2021
Version: 3
Coordinate System: GDA 1994 MGA Zone 56

Option 2 - Ecological and wildlife corridors



Legend

MLES

- 1.1 Ecological Corridors LCPs
- 1.2 Wildlife Black Soil Herps LCPs
- 1.2 Wildlife Mammals LCPs
- 1.2 Wildlife Vine Forest LCPs

TRC Planning Scheme Overlays

- TRC Biodiversity Corridors
- TRC Areas of Ecological Significance

Waterways

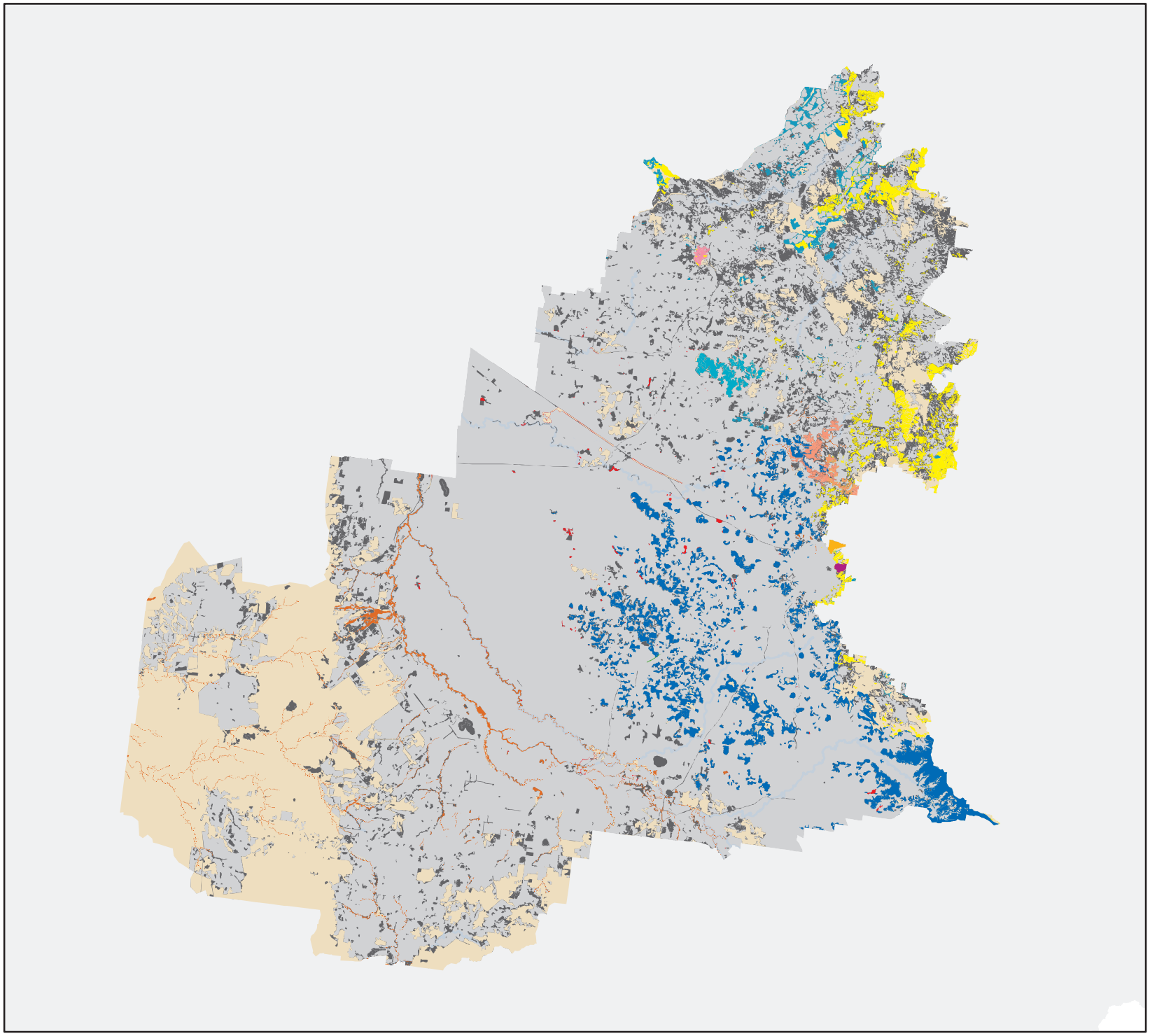
- Major Watercourses
- Watercourse areas

Local Government Areas

- Surrounding LGAs
- Toowoomba LGA

0 10 20 30 40 km

PSA Reference: 1175
Date: 10/09/2021
Version: 3
Coordinate System: GDA 1994 MGA Zone 56



Areas of Ecological Significance Option 1 - Focus on significant vegetation and special features

Legend

MLES

- MLES01 - Redwood
- MLES02 - Rifle Range
- MLES03 - Broxburn Pittsworth
- MLES04 - Basalt Hills
- MLES05 - Sandstone Wildflowers
- MLES06 - Cooby Corridor
- MLES07 - Wet Sclerophyll
- MLES08 - River Red Gum
- MLES09 - Muntapa Tunnels
- MLES10 - Notophyll/Microphyll
- 2.1 Biodiversity Areas
- 3.2 Grasslands

TRC Planning Scheme Overlays

- TRC Areas of Ecological Significance

Waterways

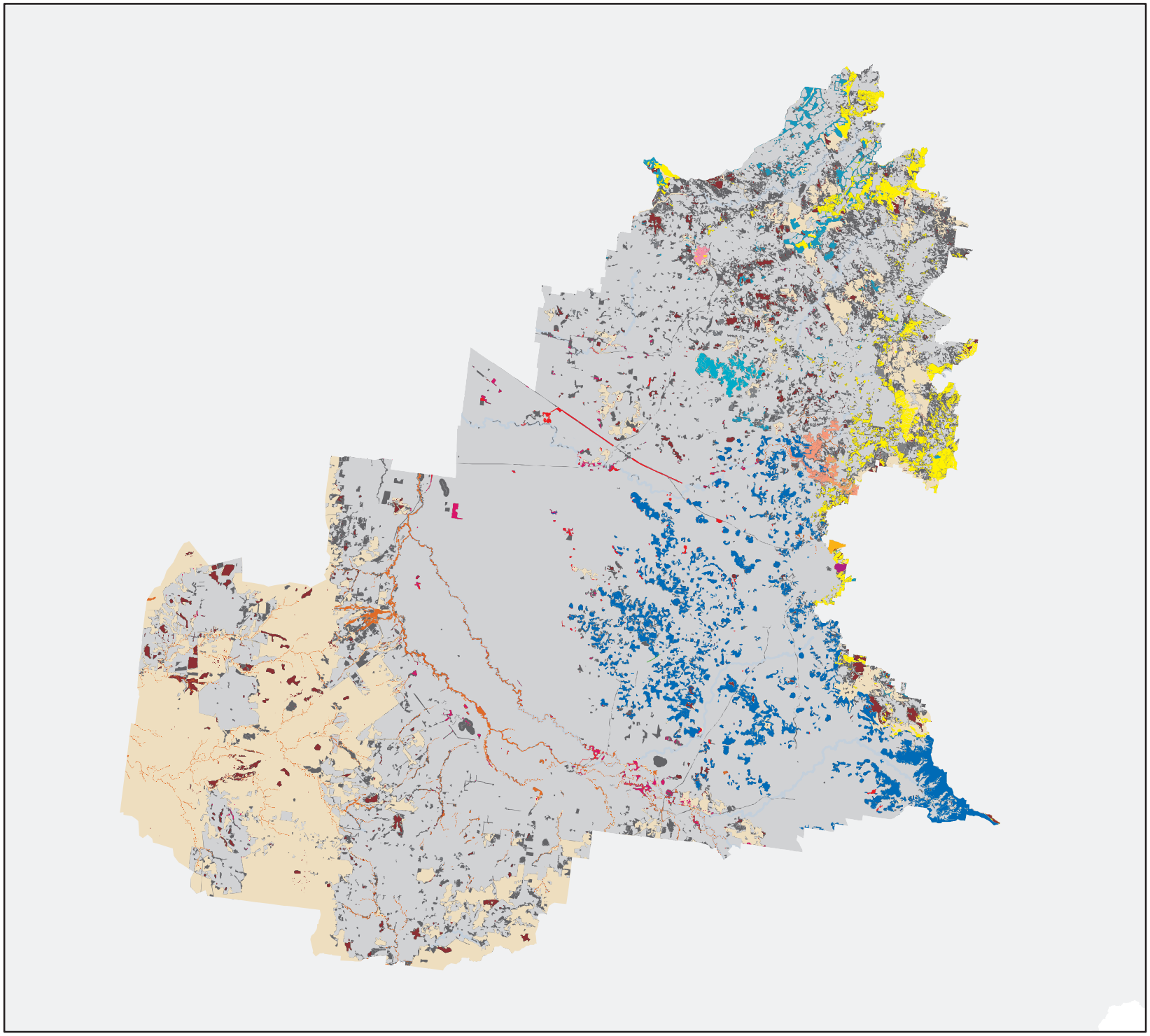
- Major Watercourses
- Watercourse areas

Local Government Areas

- Surrounding LGAs
- Toowoomba LGA

0 10 20 30 40 km

PSA Reference: 1175
Date: 28/02/2022
Version: 3
Coordinate System: GDA 1994 MGA Zone 56



Areas of Ecological Significance Option 2 - Inclusion of critical habitat areas

Legend

MLES

- MLES01 - Redwood
- MLES02 - Rifle Range
- MLES03 - Broxburn Pittsworth
- MLES04 - Basalt Hills
- MLES05 - Sandstone Wildflowers
- MLES06 - Cooby Corridor
- MLES07 - Wet Sclerophyll
- MLES08 - River Red Gum
- MLES09 - Muntapa Tunnels
- MLES10 - Notophyll/Microphyll
- 2.1 Biodiversity Areas
- 3.2 Grasslands
- 3.4 m5 VF Habitat
- 3.4 m5 Herps Habitat
- 3.4 m10 Mammal Habitat
- 3.5 m5 VF Population
- 3.5 m5 Herps Population
- 3.5 m10 Mammal Population

TRC Planning Scheme

- TRC Areas of Ecological Significance

Waterways

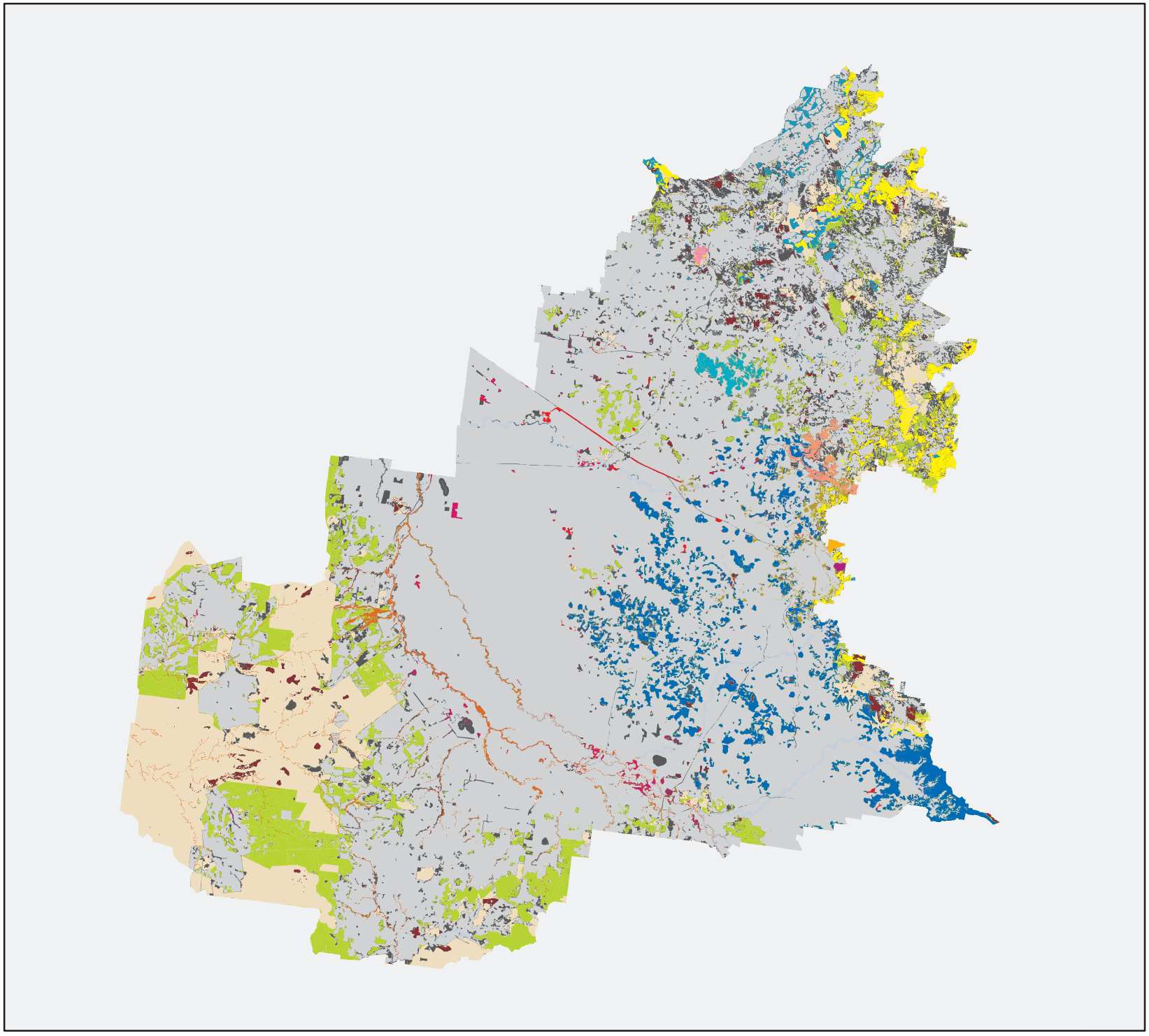
- Major Watercourses
- Watercourse areas

Local Government Areas

- Surrounding LGAs
- Toowoomba LGA

0 10 20 30 40 km

PSA Reference: 1175
Date: 28/02/2022
Version: 3
Coordinate System: GDA 1994 MGA Zone 56



Areas of ecological significance Option 3 - Inclusion of other vegetated areas

Legend

MLES

- MLES01 - Redwood
- MLES02 - Rifle Range
- MLES03 - Broxburn Pittsworth
- MLES04 - Basalt Hills
- MLES05 - Sandstone Wildflowers
- MLES06 - Cooby Corridor
- MLES07 - Wet Sclerophyll
- MLES08 - River Red Gum
- MLES09 - Muntapa Tunnels
- MLES10 - Notophyll/Microphyll
- 3.1 VMA LC MSES Forest
- 3.2 Grasslands
- 3.3 Urban Bushland
- 3.4 m5 VF Habitat
- 3.4 m5 Herps Habitat
- 3.4 m10 Mammal Habitat
- 3.5 m5 VF Population
- 3.5 m5 Herps Population
- 3.5 m10 Mammal Population
- 2.1 Biodiversity Areas

TRC Planning Scheme Overlays

- TRC Areas of Ecological Significance

Waterways

- Major Watercourses
- Watercourse areas

Local Government Areas

- Surrounding LGAs
- Toowoomba LGA

0 10 20 30 40 km

PSA Reference: 1175
Date: 28/02/2022
Version: 3
Coordinate System: GDA 1994 MGA Zone 56

APPENDIX 3
SPP ALIGNMENT REVIEW

GRISPI State Planning Policy Review

All of the following state interest policies must be appropriately integrated in planning and development outcomes, where relevant (SPP, 2017).

THEME 1 Planning for liveable communities and housing

Planning for housing supply and diversity	GRISPI considerations for alignment
(1) Land for housing development and redevelopment in areas that are accessible and well-connected to services, employment and infrastructure are identified.	Green Infrastructure Network Plan (connectors and spaces) should be factored into the GMP to inform the allocation of growth lands in terms of potential impacts on high value GI areas.
(2) The development of residential land is facilitated to address and cater for all groups in the current and projected demographic, economic and social profile of the local government area, including households on low to moderate incomes.	Land development ensures equitable access to infrastructure including green infrastructure such as natural corridors and areas, as well as equitable investment in green infrastructure (form) in public spaces (e.g. street trees).
(3) A diverse, affordable and comprehensive range of housing options in accessible and well-serviced locations, is facilitated through: (a) appropriate, responsive and proactive zoning (b) supporting an appropriate mix of lot sizes and dwelling types, including housing for seniors and people requiring assisted living (c) considering incentives to promote affordable and social housing outcomes, particularly in areas in close proximity to services and amenities.	Land development ensures equitable access to infrastructure including green infrastructure such as natural corridors and areas, as well as equitable investment in green infrastructure (form) in public spaces (e.g. street trees).
(4) Best practice, innovative, and adaptable housing design and siting is provided for and encouraged.	Opportunities for building design – particularly in multiple dwelling and mixed use development – that encourages naturalised service systems as part of building (e.g. landscape on structure, WSUD, multi-purpose open space) is a preferred outcome for green infrastructure.
(5) Sufficient land for housing is provided in appropriate locations to support the projected nonresident workforce population associated with approved largescale mining, agriculture, industry or infrastructure projects.	Green Infrastructure Network Plan (connectors and spaces) should be factored into the GMP to inform the allocation of growth lands in terms of potential impacts on high value GI areas.

Planning for liveable communities	GRISPI considerations for alignment
Built and natural environments	

Planning for liveable communities	GRISPI considerations for alignment
(1) High quality urban design and place making outcomes are facilitated and promote: (a) affordable living and sustainable and complete communities (b) attractive, adaptable, accessible and inclusive built environments (c) personal safety and security (d) functional, accessible, legible and connected spaces (e) community identity through considering local features, character, needs and aspirations.	Green infrastructure aims to protect and enhance ecosystem services for the Region and promotes community access to its living assets (where safe and equitable), complying with this state interest.
(2) Vibrant places and spaces, and diverse communities that meet lifestyle needs are facilitated by: (a) good neighbourhood planning and centre design (b) a mix of land uses that meet the diverse demographic, social, cultural, economic and lifestyle needs of the community (c) consolidating urban development in and around existing settlements (d) higher density development in accessible and well-serviced locations (e) efficient use of established infrastructure and services (f) supporting a range of formal and informal sporting, recreational and community activities.	Green infrastructure aims to protect and enhance ecosystem services for the Region and promotes community access to its living assets where safe and equitable, complying with this state interest and in particular with the provision of efficient use of infrastructure and services and supporting formal and informal recreational and community activities.
(3) Development is designed to: (a) value and nurture local landscape character and the natural environment (b) maintain or enhance important cultural landscapes and areas of high scenic amenity, including important views and vistas that contribute to natural and visual amenity (c) maintain or enhance opportunities for public access and use of the natural environment.	Green infrastructure aims to protect and enhance ecosystem services for the Region and promotes community access to its living assets where safe and equitable, complying with this state interest, in particular contributing to natural and visual amenity and maintaining/ enhancing opportunities for public access and use of the natural environment.
Infrastructure and services:	
(4) Connected pedestrian, cycling and public transport infrastructure networks are facilitated and provided.	Green infrastructure (connectors) will integrate where safe and practical with movement networks in particular supporting environments that encourage more active transport.
(5) Community facilities and services, including education facilities (state and non-state providers), health facilities, emergency services, arts and cultural infrastructure, and sport, recreation and cultural facilities are well-located, cost-effective and multi-functional.	Opportunities for integrated building design – including community facilities and services – encourages naturalised service systems as part of design and construction (e.g. landscape on structure, WSUD, multi-purpose open space).
(6) Connection to fibre-optic telecommunications infrastructure (e.g. broadband) is supported in greenfield areas.	*Not applicable*

Planning for liveable communities	GRISPI considerations for alignment
(7) All development accessed by common private title is provided with appropriate fire hydrant infrastructure and has unimpeded access for emergency service vehicles to protect people, property and the environment.	Green Infrastructure Network Plan (connectors and spaces) will need to comply with access requirements for emergency services where relevant to the protection of people property and the environment.

THEME 2 Planning for economic growth

Planning for agriculture	GRISPI considerations for alignment
(1) Agriculture and agricultural development opportunities are promoted and enhanced in important agricultural areas (IAAs).	Green infrastructure aims to protect and enhance ecosystem services, ultimately improving environmental conditions for land. The Green Infrastructure Network Plan includes Toowoomba's agricultural lands, recognising them as a functioning component of the network. It is envisioned that agricultural land use will support relevant aspects of GI (overland flow water quality, tree planting) and will contribute to improving the effects of GI being guided to improved land management practices.
(2) Agricultural Land Classification (ALC) Class A and Class B land is protected for sustainable agricultural use by: (a) avoiding fragmentation of ALC Class A or Class B land into lot sizes inconsistent with the current or potential use of the land for agriculture; (b) avoiding development that will have an irreversible impact on, or adjacent to, ALC Class A or Class B land; (c) maintaining or enhancing land conditions and the biophysical resources underpinning ALC Class A or Class B land..	Green infrastructure aims to protect and enhance ecosystem services, ultimately improving environmental conditions for land. The Green Infrastructure Network Plan includes Toowoomba's agricultural lands, recognising them as a functioning component of the network. The useability or suitability of agricultural land will not be negatively affected by green infrastructure.
(3) Fisheries resources are protected from development that compromises long-term fisheries productivity, sustainability and accessibility.	Green infrastructure provides for improved ecosystem services including the protection and enhancement of water quality and waterways, such that any downstream fisheries are better supported.
(4) Growth in agricultural production and a strong agriculture industry is facilitated by: (a) promoting hard to locate intensive agricultural land uses, such as intensive animal industries, aquaculture, and intensive horticulture in appropriate locations (b) protecting existing intensive agricultural land uses, such as intensive animal industries, aquaculture, and intensive horticulture, from encroachment by development that is incompatible and/or would compromise the safe and effective operation of the existing activity (c) locating new development (such as sensitive land uses or land uses that present biosecurity risks for agriculture) in areas that avoid or minimise potential for conflict with existing agricultural uses through the provision of adequate separation areas or other measures (d) facilitating opportunities for co-existence with development that is complementary to agricultural uses that do not reduce agricultural productivity (e.g. on-farm processing, farm gate sales, agricultural tourism etc) (e) considering the provision of infrastructure and services necessary to support a strong agriculture industry and associated agricultural supply chains (f)	Green infrastructure aims to protect and enhance ecosystem services, ultimately improving environmental conditions for land. The Green Infrastructure Network Plan includes Toowoomba's agricultural lands, recognising them as a functioning component of the network. Planning that enables agricultural production in appropriate locations and mitigates risks to both productivity and the environment will be supported by green infrastructure.

Planning for agriculture	GRISPI considerations for alignment
ensuring development on, or adjacent to, the stock route network does not compromise the network's primary use for moving stock on foot, and other uses and values including grazing, environmental, recreational, cultural heritage, and tourism values.	

Planning for development and construction	GRISPI considerations for alignment
(1) A sufficient supply of suitable land for residential, retail, commercial, industrial and mixed use development is identified that considers: (a) existing and anticipated demand (b) the physical constraints of the land (c) surrounding land uses (d) the availability of, and proximity to, essential infrastructure required to service and support such development.	Green infrastructure is proposed as a complement to development in urban areas. Specifically green infrastructure (form) provisions will seek to support opportunities for development that integrates living assets and naturalised systems design with built form, providing essential infrastructure as efficient and sustainable components of the Green Infrastructure Network.
(2) Appropriate infrastructure required to support all land uses is planned for and provided.	Green infrastructure is proposed as a complement to development in urban areas, protecting and enhancing existing living assets. It will provide opportunities for living assets and naturalised systems to provide essential infrastructure services (stormwater management, climate resilience etc.) for benefits to individual development and regional settlement. Specifically, green infrastructure (form) includes specific elements, such as trees, green roofs, urban parks and water sensitive urban design as integral infrastructure to Toowoomba's urban form.
(3) Mixed use development is achieved by appropriately zoning the land.	*Not applicable*
(4) An appropriate mix of lot sizes and configurations for residential, retail, commercial, mixed use and industrial development is provided for in response to the diverse needs of these uses and ancillary activities.	*Not applicable*
(5) Efficient delivery of development is facilitated by the adoption of the lowest appropriate level of assessment for development that is consistent with the purpose of the zone.	Any changes to categories of assessment determined to be necessary for the planning scheme facilitation of green infrastructure will be established for the lowest appropriate level of assessment and only where consistent with the purpose of the respective zones.
(6) Land uses are consistent with the purpose of the zone.	Appropriateness of green infrastructure elements – from connectors, to spaces and forms – will be

Planning for development and construction	GRISPI considerations for alignment
	assessed with respect to anticipated areas of change (both land use and location) and its recommended integration into the planning scheme will be considered for consistency with the purpose of zones where relevant.
(7) State development areas and Priority Development Areas are: (a) identified and appropriately considered in terms of their planning intent (b) supported by compatible and complementary land uses and services on surrounding land.	The Green Infrastructure Network will be considered as a holistic system for the Region and as such will be equally relevant to the Toowoomba Railway Parkland PDA. Council may submit on any future amendments of the relevant development scheme advocating for the similar integration of green infrastructure.
(8) Public benefit outcomes on state-owned land are achieved by appropriately zoning the land.	State-owned land often contains high value green spaces and the appropriate zoning of land for public benefit aligns with green infrastructure intents.

Planning for mining and extractive resources	GRISPI considerations for alignment
(1) Key resource areas (KRAs) are identified, including the resource/processing area, separation area, transport route and transport route separation area.	In relevant locations, green infrastructure will be required to mitigate any impacts on the function of KRAs or associated infrastructure.
(2) KRAs are protected by: (a) maintaining the long-term availability of the extractive resource and access to the KRA (b) avoiding new sensitive land uses and other incompatible land uses within the resource/ processing area and the related separation area of a KRA that could impede the extraction of the resource (c) avoiding land uses along the transport route and transport route separation area of a KRA that are likely to compromise the ongoing use of the route for the haulage of extractive materials (d) avoiding new development adjacent to the transport route that is likely to adversely affect the safe and efficient transportation of the extractive resource	In relevant locations, green infrastructure will be required to mitigate any impacts on the function of KRAs or associated infrastructure.
(3) The importance of areas identified as having valuable minerals, coal, petroleum and gas resources, and areas of mining and resource tenures are considered.	The Green Infrastructure Network Plan (connectors and spaces) has been drafted using multiple biodiversity and environmental layers and GI outcomes in relevant locations will be assessed according to local, regional and national priorities, such as valuable mining resources.
(4) Opportunities for mutually beneficial co-existence between coal, minerals, petroleum and gas resource development operations and other land uses are facilitated.	*Not applicable*

Planning for mining and extractive resources	GRISPI considerations for alignment
(5) The location of specified petroleum infrastructure is considered.	The Green Infrastructure Network Plan (connectors and spaces) has been drafted using multiple biodiversity and environmental layers and GI outcomes in relevant locations will be assessed according to local, regional and national priorities, such as specified petroleum infrastructure.

Planning for tourism	GRISPI considerations for alignment
(1) The findings of state endorsed tourism studies and plans are considered and reflected where relevant.	Green infrastructure supports (protects and enhances) flora and fauna biodiversity for the Region improving its capacity as the 'Garden City' and in turn supporting tourism for the Region
(2) Existing and potential opportunities, localities or areas appropriate for tourism development are identified and protected.	Natural area tourist attractions can be identified, protected and enhanced through the Green Infrastructure Network.
(3) The delivery of sustainable tourism development is facilitated where it: (a) is complementary to and compatible with other land uses, including sensitive land uses (b) promotes the protection or enhancement of the character, landscape and visual amenity, and the economic, social, cultural and environmental values of the natural and built assets associated with the tourism development.	Sustainable tourism development can be considered as part of green infrastructure.
(4) Appropriate infrastructure to support and enable tourism development is planned for.	Green Infrastructure (connectors, spaces and forms) will protect and enhance existing green spaces and promote the creation of high quality new green spaces and built form that has the potential to create new recreational tourism attractions.

THEME 3 Planning for the environment and heritage

Planning for biodiversity	GRISPI considerations for alignment
(1) Development is located in areas to avoid significant impacts on matters of national environmental significance and considers the requirements of the Environment Protection and Biodiversity Conservation Act 1999.	Green Infrastructure seeks to protect and enhance biodiversity areas across the Toowoomba LGA. The Plan should allow for the improvement of connectors and spaces identified in the EPBC Act, such as through the use of offsets.
(2) Matters of state environmental significance are identified and development is located in areas that avoid adverse impacts; where adverse impacts cannot be reasonably avoided, they are minimised.	The Green Infrastructure Network Plan will protect existing matters of state environmental significance without creating opportunities for unsuitable development in such areas.
(3) Matters of local environmental significance are identified and development is located in areas that avoid adverse impacts; where adverse impacts cannot be reasonably avoided, they are minimised.	The Green Infrastructure Network Plan will protect existing matters of local environmental significance without creating opportunities for unsuitable development in such areas.
(4) Ecological processes and connectivity is maintained or enhanced by avoiding fragmentation of matters of environmental significance.	The Green Infrastructure Network Plan should promote the consolidation and protection of ecologically valuable land and discourage further fragmentation of such land.
(5) Viable koala populations in South East Queensland are protected by conserving and enhancing koala habitat extent and condition.	Green Infrastructure will promote the planting and protection of trees, providing valuable habitat for koalas.

Planning for coastal environment	GRISPI considerations for alignment
Not applicable	

Planning for cultural heritage	GRISPI considerations for alignment
Aboriginal and Torres Strait Islander cultural heritage (1) Matters of Aboriginal cultural heritage and Torres Strait Islander cultural heritage are appropriately conserved and considered to support the requirements of the Aboriginal Cultural Heritage Act 2003 and the Torres Strait Islander Cultural Heritage Act 2003.	Green infrastructure will carefully protect Aboriginal and Torres Strait Islander cultural heritage sites and infrastructure. Any provisions should be drafted in accordance with the Aboriginal Cultural Heritage Act 2003 and the Torres Strait Islander Cultural Heritage Act 2003.
World and national cultural heritage: (2) Adverse impacts on the cultural heritage significance of world heritage properties and national heritage places prescribed under the Environment	Green infrastructure will carefully protect world and national cultural heritage sites and infrastructure. Any provisions should be drafted in accordance with

Planning for cultural heritage	GRISPI considerations for alignment
Protection and Biodiversity Conservation Act 1999 are avoided.	the Environment Protection and Biodiversity Conservation Act 1999.
State cultural heritage: (3) Adverse impacts on the cultural heritage significance of state heritage places are avoided.	*Not applicable.*
Local cultural heritage: (4) Local heritage places and local heritage areas important to the history of the local government area are identified, including a statement of the local cultural heritage significance of the place or area.	Green infrastructure (form) will seek to implement well designed green spaces and green built form that responds to the cultural heritage of the building or site.
(5) Development of local heritage places or local heritage areas does not compromise the cultural heritage significance of the place or area by: (a) avoiding adverse impacts on the cultural heritage significance of the place or area; or (b) minimising and mitigating unavoidable adverse impacts on the cultural heritage significance of the place or area.	Green infrastructure (form) will seek to implement well designed green spaces and green built form that responds to the cultural heritage of the building or site.
(6) The conservation and adaptive reuse of local heritage places and local heritage areas are facilitated so that the cultural heritage significance is retained.	*Not applicable.*

Planning for water quality	GRISPI considerations for alignment
(1) Development facilitates the protection or enhancement of environmental values and the achievement of water quality objectives for Queensland waters.	Green infrastructure seeks to enhance the connectors and spaces, including the waterways and surrounding natural areas. The Condamine River and associated watercourses are a key focus of the plan as it seeks to improve and protect the green and blue infrastructure in and around it.
(2) Land zoned for urban purposes is located in areas that avoid or minimise the disturbance to: (a) high risk soils (b) high ecological value aquatic ecosystems (c) groundwater dependent ecosystems (d) natural drainage lines and landform features.	Zoning and spatial decisions should be informed by the Green Infrastructure Network Plan to ensure high value, water oriented ecosystems are consistently identified and appropriately planned (e.g. avoided as necessary) with regard to urban purpose zones.
(3) Development is located, designed, constructed and operated to avoid or minimise adverse impacts on environmental values of receiving waters arising from: (a) altered stormwater quality and hydrology (b) waste water (other than contaminated	Green Infrastructure Network Plan statutory requirements should clarify the water quality requirements contained in other parts of the scheme.

Planning for water quality	GRISPI considerations for alignment
stormwater and sewage) (c) the creation or expansion of non-tidal artificial waterways (d) the release and mobilisation of nutrients and sediments.	
(4) At the construction phase, development achieves the applicable stormwater management design objectives in table A (appendix 2).	*Not applicable*
(5) At the post-construction phase, development: (a) achieves the applicable stormwater management design objectives on-site, as identified in table B (appendix 2); or (b) achieves an alternative locally appropriate solution off-site that achieves an equivalent or improved water quality outcome to the relevant stormwater management design objectives in table B (appendix 2).	*Not applicable.*
(6) Development in water resource catchments and water supply buffer areas avoids potential adverse impacts on surface waters and groundwaters to protect drinking water supply environmental values.	Green Infrastructure Network Plan statutory requirements should clarify the water quality requirements contained in other parts of the scheme.

THEME 4 Planning for safety and resilience to hazards

Planning for emissions and hazardous activities	GRISPI considerations for alignment
Protection from emissions and hazardous activities: (1) Industrial development, major gas, waste and sewerage infrastructure, and sport and recreation activities are located, designed and managed to avoid or mitigate adverse impacts of emissions on sensitive land uses and the natural environment.	*Not applicable*
(2) Activities involving the use, storage and disposal of hazardous materials and prescribed hazardous chemicals, dangerous goods, and flammable or combustible substances are located and managed to minimise the health and safety risks to communities and individuals.	*Not applicable*
(3) Prescribed hazardous chemicals, stored in a flood hazard area (where exceeding the hazardous chemicals flood hazard threshold), are located to minimise the risk of inundation and dispersion.	Green infrastructure outcomes for more naturalised hydrological systems including flood water conveyance across the region will need to be considered to ensure safe thresholds are maintained to protect people and property.
(4) Sensitive land uses are protected from the impacts of previous activities that may cause risk to people or property including: (a) former mining activities and related hazards (e.g. disused underground mines, tunnels and shafts) (b) former landfill and refuse sites (c) contaminated land.	*Not applicable*
Protection of industrial development, major infrastructure, and sport and recreation facilities from encroachment: (5) Protect the following existing and approved land uses or areas from encroachment by development that would compromise the ability of the land use to function safely and effectively: (a) Medium-impact, high-impact and special industries. (b) Extractive industries. (c) Hazardous chemical facilities. (d) Explosives facilities and explosives reserves. (e) High pressure gas pipelines. (f) Waste management facilities. (g) Sewage treatment plants. (h) Industrial land in a state development area, or an enterprise opportunity area or employment opportunity area identified in a regional plan. (i) Major sport, recreation and entertainment facilities. (j) Shooting facilities. (k) Motor sport facilities.	*Not applicable*
Mitigation of adverse impacts from emissions and hazardous activities:	Not applicable

Planning for emissions and hazardous activities	GRISPI considerations for alignment
(6) Development that is incompatible with the existing and approved land uses or areas included in policy 5 above, is located to avoid adverse impacts of environmental emissions, or health and safety risks, and where the impacts cannot be practicably avoided, development is designed to minimise the impacts.	
Acid sulfate soil affected areas: (7) Protect the natural and built environment, and human health from potential adverse impacts of acid sulfate soils by: (a) identifying areas with high probability of containing acid sulfate soils (b) providing preference to land uses that will avoid, or where avoidance is not practicable, minimise the disturbance of acid sulfate soils (c) including requirements for managing the disturbance of acid sulfate soils to avoid or minimise the mobilisation and release of acid, iron or other contaminants.	Will be applicable in optimising protections of natural areas

Planning for natural hazards, risk and resilience	GRISPI considerations for alignment
(1) Natural hazard areas are identified, including: (a) bushfire prone areas (b) flood hazard areas (c) landslide hazard areas (d) storm tide inundation areas (e) erosion prone areas.	Green infrastructure as a connected network of systems proposes to identify and work with natural hazard areas such that resilience is improved and risk can be potentially reduced.
(2) A fit-for-purpose risk assessment is undertaken to identify and achieve an acceptable or tolerable level of risk for personal safety and property in natural hazard areas.	*Not applicable.*
Bushfire, flood, landslide, storm tide inundation, and erosion prone areas: (3) Land in an erosion prone area is not to be used for urban purposes, unless the land is located in: (a) an urban area in a planning scheme; or (b) an urban footprint identified in a regional plan.	*Not applicable.*
(4) Development in bushfire, flood, landslide, storm tide inundation or erosion prone natural hazard areas: (a) avoids the natural hazard area; or (b) where it is not possible to avoid the natural hazard area, development mitigates the risks to people and property to an acceptable or tolerable level.	Green infrastructure as a connected network of systems proposes to identify and work with natural hazard areas such that resilience is improved and risk can be potentially reduced, and through integration with the planning scheme can reinforce critical management of development in natural hazard areas.

Planning for natural hazards, risk and resilience	GRISPI considerations for alignment
(5) Development in natural hazard areas: (a) supports, and does not hinder disaster management capacity and capabilities (b) directly, indirectly and cumulatively avoids an increase in the exposure or severity of the natural hazard and the potential for damage on the site or to other properties (c) avoids risks to public safety and the environment from the location of the storage of hazardous materials and the release of these materials as a result of a natural hazard (d) maintains or enhances the protective function of landforms and vegetation that can mitigate risks associated with the natural hazard.	Green infrastructure as a connected network of systems proposes to identify and work with natural hazard areas such that resilience is improved and risk can be potentially reduced.
(6) Community infrastructure is located and designed to maintain the required level of functionality during and immediately after a natural hazard event.	*Not applicable.*
(7) Coastal protection work in an erosion prone area is undertaken only as a last resort where coastal erosion or inundation presents an imminent threat to public safety or existing buildings and structures, and all of the following apply: (a) The building or structure cannot reasonably be relocated or abandoned. (b) Any erosion control structure is located as far landward as practicable and on the lot containing the property to the maximum extent reasonable. (c) Any increase in coastal hazard risk for adjacent areas from the coastal protection work is mitigated.	*Not applicable.*
Erosion prone areas within a coastal management district: (8) Development does not occur unless the development cannot feasibly be located elsewhere and is: (a) coastal-dependent development; or (b) temporary, readily relocatable or able to be abandoned development; or (c) essential community infrastructure; or (d) minor redevelopment6 of an existing permanent building or structure that cannot be relocated or abandoned.	*Not applicable.*
(9) Development permitted in policy 8 above, mitigates the risks to people and property to an acceptable or tolerable level.	*Not applicable.*

THEME 5 Planning for infrastructure

Planning for energy and water supply	GRISPI considerations for alignment
(1) Existing and approved future major electricity infrastructure locations and corridors (including easements and electricity substations), and bulk water supply infrastructure locations and corridors (including easements) are protected from development that would compromise the corridor integrity, and the efficient delivery and functioning of the infrastructure.	*Not applicable.*
(2) Major electricity infrastructure and bulk water supply infrastructure such as pump stations, water quality facilities and electricity substations, are protected from encroachment by sensitive land uses where practicable.	*Not applicable.*
(3) Development of major electricity infrastructure and bulk water supply infrastructure avoids or otherwise minimises adverse impacts on surrounding land uses and the natural environment.	Green infrastructure mapping will reinforce natural environmental areas that need protection from development and other infrastructure impacts.
(4) The development and supply of renewable energy at the regional, local and individual scale is enabled in appropriate locations.	*Not applicable.*

Planning for infrastructure integration	GRISPI considerations for alignment
(1) The outcomes of significant infrastructure plans and initiatives by all levels of government are considered and reflected, where relevant.	Green infrastructure integration with planning regulatory policy seeks to clarify the statutory and non-statutory requirements present across multiple plans and guidelines for green and blue infrastructure (connectors, spaces and forms).
(2) Development achieves a high level of integration with infrastructure planning to: (a) promote the most efficient, effective and flexible use of existing and planned infrastructure (b) realise multiple economic, social and environmental benefits from infrastructure Investment (c) ensure consideration of future infrastructure needed to support infill and greenfield growth areas (d) optimise the location of future infrastructure within communities to provide greater access to facilities and services and enable productivity improvements.	Green infrastructure is proposed as critical infrastructure and seeks integration with other infrastructure services through the naturalisation of systems for improved, integrated benefits.
(3) Development occurs: (a) in areas currently serviced by state and/or local infrastructure and	*Not applicable*

Planning for infrastructure integration	GRISPI considerations for alignment
associated services; or (b) in a logical and orderly location, form and sequence to enable the cost effective delivery of state and local infrastructure to service development.	
(4) Existing and planned infrastructure is protected from development that would compromise the ability of infrastructure and associated services to operate safely and efficiently.	*Not applicable*

Planning for transport infrastructure	GRISPI considerations for alignment
(1) Transport infrastructure and existing and future transport corridors are reflected and supported through compatible land uses.	Green infrastructure is proposed to include regional corridors (grey infrastructure) as part of the Green Infrastructure Network, facilitating multi-purpose use of existing corridors for improved outcomes.
(2) Development is located in areas currently serviced by transport infrastructure, and where this cannot be achieved, development is facilitated in a logical and orderly location, form and sequence to enable cost-effective delivery of new transport infrastructure to service development.	*Not applicable*
(3) Development achieves a high level of integration with transport infrastructure and supports public passenger transport and active transport as attractive alternatives to private transport.	Green infrastructure proposes multi-purpose use of existing grey, green and blue corridors and seeks to increase active transport opportunities through these connectors.
(4) Development is located and designed to mitigate adverse impacts on development from environmental emissions generated by transport infrastructure.	Green infrastructure is proposed to include regional corridors (grey infrastructure) as part of the Green Infrastructure Network, facilitating multi-purpose use of existing corridors for improved outcomes.
(5) A road hierarchy is identified that reflects the role of each category of road and effectively manages all types of traffic.	Green infrastructure network planning will respond to road hierarchy.
State transport infrastructure: (6) Development in areas surrounding state transport infrastructure, and existing and future state transport corridors, is compatible with, or support the most efficient use of, the infrastructure and transport network.	While green infrastructure network planning seeks to integrate outcomes (naturalised stormwater management, rain harvesting, living assets) within grey corridors also, it is proposed only where it would be compatible to do so.
(7) The safety and efficiency of existing and future state transport infrastructure, corridors, and networks is not adversely affected by development.	While green infrastructure network planning seeks to integrate outcomes (naturalised stormwater management, rain harvesting, living assets) within

	grey corridors also, it is proposed only where it would be compatible to do so.

Planning for strategic airports and aviation facilities	GRISPI considerations for alignment
(1) Strategic airports and aviation facilities are identified, including the associated Australian Noise Exposure Forecast (ANEF) contours, obstacle limitation surfaces or height restriction zones, public safety areas, lighting area buffers, light restriction zones, wildlife hazard buffer zones, and building restricted areas.	Green infrastructure network planning will ensure wildlife hazard areas are not created within zones associated with aviation facilities in the Region.
(2) The safety, efficiency and operational integrity of strategic airports are protected. Development and associated activities: (a) do not create incompatible intrusions, or compromise aircraft safety, in operational airspace (b) avoid increasing risk to public safety in a public safety area (c) are compatible with forecast levels of aircraft noise within the 20 ANEF contour or greater [as defined by Australian Standard 2021–2015: Acoustics—Aircraft noise intrusion—Building siting and construction (AS 2021), adopted 12 February 2015] and mitigate adverse impacts of aircraft noise.	Green infrastructure network planning will ensure to maintain the safety, efficiency and operational integrity of strategic airports.
(3) Development complements the role of a strategic airport as an economic, freight and logistics hub, and enhances the economic opportunities that are available in proximity to a strategic airport.	*Not applicable*
(4) Aviation facilities are protected by avoiding development and associated activities within building restricted areas that may affect the functioning of the aviation facilities.	*Not applicable*
(5) Key transport corridors (passenger and freight) linking strategic airports to the broader transport network are identified and protected.	*Not applicable*

Planning for strategic ports	GRISPI considerations for alignment
Not applicable	

This report has been prepared by:

PSA CONSULTING

Level 11 / 270 Adelaide Street Brisbane QLD 4000
PO Box 10824 Adelaide Street Brisbane QLD 4000
Ph: (07) 3220 0288 Fax: (07) 3220 0388
psaconsult.com.au

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