

THE CITY OF
GREATER GEELONG

NORTHERN AND WESTERN GEELONG GROWTH AREAS

—

MAY 2023

DRAFT BIODIVERSITY CONSERVATION STRATEGY

ACKNOWLEDGEMENT OF COUNTRY

Greater Geelong is located on the traditional lands of the Wadawurrung people. The land was created by the great ancestor spirit, Bunjil, the wedge-tailed eagle. Wadawurrung territory extends from the great dividing range in the north to the coast around Port Phillip Bay.

The city acknowledges the Wadawurrung people as the traditional owners of this land who to this day practice their culture and uphold the dignity of their ancestors.

DOCUMENT TRACKING

This document was prepared on behalf of the City of Greater Geelong by Biosis and Open Lines.

PREPARED BY:	
Open Lines, Biosis	
REVIEWED BY:	
Mitchell Deaves (Biosis) Peter Hemphill, Heather Tolley, Tom Holden (Open Lines)	
VERSION CONTROL:	
VERSION:	Public exhibition version
DATE:	May 2023

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Abbreviations and terms

Acronyms	Meaning
BCS	Biodiversity Conservation Strategy
DCCEEW	Commonwealth Government Department of Climate Change, Energy, the Environment and Water (DCCEEW)
DEECA	Victorian Government Department of Environment, Energy and Climate Action
DTP	Victorian Government Department of Transport and Planning
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
FPAL	Finalised priority assessment list
IBRA	Interim Biogeographic Regionalisation for Australia
KPI	Key Performance Indicator
LGA	Local Government Authority
MERI	Monitoring, evaluation, reporting and improvement
MNES	Matters of National Environmental Significance
NGGA	Northern Geelong Growth Area
NVPP	Native Vegetation Precinct Plan
P&E Act	Victorian <i>Planning and Environment Act 1987</i>
PPF	Planning Policy Framework
PSP	Precinct Structure Plan
SAR	Strategic Assessment Report
TEC	Threatened ecological community
ToR	Terms of Reference
UGZ	Urban Growth Zone
VPP	<i>Victoria Planning Provisions</i>
WGGA	Western Geelong Growth Area
WIK	Works in Kind

Terms / Abbreviations	Definition
BCS guiding principles	A set of principles to guide both the preparation of the BCS and the decisions that will need to be made as part of the strategy's implementation
Biodiversity areas	Biodiversity areas support biodiversity values within the Growth Areas and provide opportunities to protect, manage and restore biodiversity. Biodiversity Areas are identified in the BCS as either: <ul style="list-style-type: none"> • Strategic Conservation Areas • Biodiversity Opportunity Areas • Investigation Areas
Biodiversity Opportunity Area	Areas within the Growth Areas which may be suitable for less intensive use or development, such as open space or waterways, and where opportunities may exist for providing co-benefits for biodiversity

Terms / Abbreviations	Definition
City Implementation Group	The primary body responsible for day-to-day implementation of the Plan
Conservation Management Plan	The document used to provide for the protection and ongoing management of the biodiversity values within each strategic conservation area
Construction Environmental Management Plans	A plan developed to ensure appropriate environmental management practices are implemented during the construction phase of a project
Cowies Creek Conservation Area	The section of Cowies Creek within the WGGA to be protected and managed for conservation purposes under the Plan
Development land	Specified land within the Strategic Assessment Area where development under the Plan is proposed to occur
Development under the Plan	The broad term used to describe all development occurring under the Plan. This includes land subject to development within the Growth Areas, the External infrastructure corridors, the NGGA Conservation Area, and Cowies Creek Conservation Area
Evaluation Questions	The questions used to evaluate the Plan in regard to the achievement of outcomes and implementation of commitments
External infrastructure	Development comprising the supporting infrastructure and services class of action and the environmental management class of action that is located outside of Growth Areas but within the Strategic Assessment Area
Investigation Area	Areas in the precincts of WGGA outside of EPBC strategic assessment area where comprehensive field surveys have not been undertaken and where data is not yet sufficient to determine the precise location and type of biodiversity areas. Investigation Areas will be confirmed at the PSP stage as either: <ul style="list-style-type: none"> • Strategic Conservation Areas • Biodiversity Opportunity Areas • Areas not suitable for biodiversity protection and therefore suitable for development
Land subject to development	Development land within the Growth Areas subject to all classes of actions under the Plan
NGGA Conservation Area	Area of land within the NGGA to be avoided for conservation purposes under the Plan
Specific mitigation measures	Additional mitigation measures beyond those delivered through the existing planning system to address specific risks to MNES associated with the implementation of the Plan
Stakeholder engagement strategy	A process for stakeholder engagement to guide the City in undertaking ongoing engagement with key stakeholders over the life of the Plan
Standard mitigation measures	Mitigation measures delivered by the Victorian planning system through the PSP process, existing provisions in the Greater Geelong Planning Scheme, and the planning permit process
Strategic Conservation Area	Areas within the Growth Areas that will be avoided from development and protected and managed for conservation in-perpetuity
The City	The City of Greater Geelong
The Executive Committee	The Northern and Western Geelong Growth Areas EPBC Plan Executive Committee
The Framework Plan	<i>Northern and Western Geelong Growth Area Framework Plan</i>
The Growth Areas	Northern and Western Geelong Growth Areas
The Minister	Commonwealth Minister for the Environment

Terms / Abbreviations	Definition
The Plan	The Northern and Western Geelong Growth Areas EPBC Plan
Works in Kind	A contribution in lieu of payment of the biodiversity levy amount

1 Introduction

The City of Greater Geelong (the City) has identified two key areas for urban growth in Geelong’s northwest, known as the Northern and Western Geelong Growth Areas (the Growth Areas). The Growth Areas were identified through several State planning strategies for future growth. The City subsequently developed the *Northern and Western Geelong Growth Areas Framework Plan* (the Framework Plan) (The City of Greater Geelong, 2021). The Framework Plan describes the existing site context of the Growth Areas and sets out:

- Broad future urban structure of the Growth Areas, including potential areas suitable for environmental protection
- Vision and set of urban development objectives for each Growth Area
- A set of actions to be implemented through future planning processes

Development within the Growth Areas will lead to impacts to biodiversity values of national, State and local significance. This Biodiversity Conservation Strategy (BCS) has been developed to address these impacts and guide the delivery of positive outcomes for the biodiversity values that are present within the Growth Areas.

The Victorian planning system under the *Planning and Environment Act 1987* (P&E Act) is the key delivery framework for the implementation of the BCS and the development within the Growth Areas.

To further support development in the Growth Areas and protect matters of national environmental significance (MNES), the City is undertaking a strategic assessment under Part 10 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This enables a landscape scale assessment and approval of a suite of development actions under the EPBC Act and provides the opportunity to deliver improved environmental and development outcomes compared to project-by-project assessments through strategic consideration of biodiversity issues.

To give effect to the strategic assessment process, the City has prepared the *Northern and Western Geelong Growth Areas EPBC Plan* (the EPBC Plan). The BCS forms an implementation document for this Plan.

For further information and context about the strategic assessment, please refer to the NWGGA:

- [EPBC Plan](#) for a full description of the strategic assessment including development, conservation, and assurance
- [Strategic Assessment Report \(SAR\)](#) for a detailed assessment of the impacts of development in the Growth Areas on MNES and evaluation of the commitments and measures to address these impacts
- [Funding Program](#) for details about how implementation of the Plan will be funded
- [Commitments and Measures document](#) for the specific commitments and measures that will be implemented

1.1 PURPOSE OF THE BCS

The purpose of the BCS is to:

- Identify the national, state and local biodiversity values that are present in the Growth Areas and set out a conservation program for providing genuine, long-term positive results for those biodiversity values
- Set out how the conservation elements of the EPBC Plan for the Growth Areas will be implemented including through avoiding and minimising, mitigating, and offsetting residual impacts in accordance with the mitigation hierarchy (DSEWPC, 2012; DELWP, 2017c)
- Guide the preparation of Precinct Structure Plans (PSPs) and subsequent development within the Growth Areas to ensure the outcomes are consistent with State biodiversity policy

The Growth Areas have been identified as key locations for urban growth in Geelong and some level of impact to biodiversity is unavoidable within this context. This strategy focuses conservation efforts on the most important biodiversity values and integrating actions to improve biodiversity within urban areas where this is appropriate.

The BCS satisfies the delivery of two key actions (Action N1.3.1 and W1.3.1) of the Framework Plan for the protection of biodiversity in the Growth Areas. The Framework Plan states that an “overarching biodiversity conservation strategy will be prepared for the growth area[s] that provides high level guidance for the management of nationally and state significant biodiversity values...The strategy will spatially identify how outcomes for matters of national environmental significance will be delivered...” (The City of Greater Geelong, 2021).

While the BCS helps identify how the conservation elements of the EPBC Plan will be implemented, it does not form part of the Plan to be endorsed by the Minister under Part 10 of the EPBC Act.

1.2 AREA COVERED BY THE BCS

The area covered by the BCS is the same as for the Framework Plan and is shown in Figure 1-1.

The area covers 5,342.8 ha and includes the:

- Northern Geelong Growth Area (NGGA) – this covers 2,103.9 ha and occurs in the Lovely Banks locality
- Western Geelong Growth Area (WGGA) – this covers 3,238.9 ha and occurs in the Bell Post Hill/Batesford localities

Not all the WGGA is addressed in the EPBC Plan which only covers the Creamery Road and Batesford North precincts of that Growth Area. It is envisaged that separate Commonwealth assessment and approval processes will occur for the remaining WGGA land comprising the Batesford South, McCanns Lane, and Merrawarp Road precincts.

The BCS also does not address the area that relates to the external infrastructure class of action which will occur outside the Growth Areas, and which is dealt with in the EPBC Plan.

1.3 OVERVIEW OF IMPLEMENTATION

The Victorian planning system under the P&E Act is the key delivery framework for the implementation of the BCS and the development within the Growth Areas.

The Victorian planning system hierarchy provides a framework for decision-making for the use and development of land in greenfield areas. The hierarchy relevant to the Growth Areas includes:

- The Planning Policy Framework
- *Northern and Western Geelong Growth Area Framework Plan* (the Framework Plan) (The City of Greater Geelong, 2021)
- Greater Geelong Planning Scheme and Urban Growth Zone (UGZ)
- PSPs and Native Vegetation Precinct Plans (NVPPs)
- Planning permits

Table 1-1 summarises how each part of the planning system hierarchy is proposed to be used to implement the BCS. A more detailed description of each of the elements of the hierarchy is provided in [Appendix A](#), along with a description of other regulations and City policies relevant to the BCS and the development in Growth Areas.

Table 1-1: Summary of how each part of the planning system hierarchy will be used to implement the BCS

Part of planning system hierarchy	Summary of implementation approach	Implementation mechanism
PPF	<p>The PPF is the policy content of planning schemes and provides overarching policy to guide land use, subdivision and development in Victoria. The PPF includes Clause 12, which includes an objective and strategies to protect and enhance Victoria's biodiversity</p> <p>A planning authority must take into account the PPF when preparing an amendment to a planning scheme. A responsible authority must take into account and give effect to the PPF when it makes a decision under the planning scheme, such as a decision to grant a permit for development</p>	The PPF will be given effect in the Growth Areas through the development of PSPs, planning permits, and other decision-making
Framework Plan	<p>The Framework Plan was prepared as part of the City's plan to address the long-term growth in Geelong is incorporated into the Greater Geelong Planning Scheme at Clause 11.02</p> <p>The Framework Plan will inform the subsequent preparation of more detailed PSPs to be prepared for each precinct within the Growth Areas</p>	Planning scheme amendment

Part of planning system hierarchy	Summary of implementation approach	Implementation mechanism
	Policy will be introduced into the Greater Geelong Planning Scheme to give effect to the commitments in the BCS	
PSPs	<p>The City will prepare PSPs for each of the nine precincts within the Growth Areas in accordance with the strategies in Clause 11.02-2L 'Northern and Western Geelong Growth Areas' of the Geelong Planning Scheme</p> <p>PSPs will be prepared over approximately 10 to 15 years. Each PSP will be a self-contained project and will be incorporated into the planning scheme via a planning scheme amendment process</p> <p>PSPs will include requirements and guidelines for the development of the precinct to give effect to commitments in the BCS, as appropriate</p> <p>PSPs will also identify the strategic conservation areas (see Chapter 4) as to be protected for conservation in the urban structure maps for the precinct</p> <p>PSPs are implemented primarily through planning permits. They inform the preparation and assessment of permit applications and the conditions that may be placed on planning permits</p>	Planning scheme amendments to incorporate PSPs and NVPPs into the planning scheme
NVPPs	<p>NVPPs will be used to assess and manage the impacts of native vegetation removal in the Growth Areas to meet State biodiversity policy requirements. NVPPs will be prepared for each precinct containing native vegetation in conjunction with the preparation of PSPs</p> <p>The purpose of an NVPP is to ensure no net loss to biodiversity because of the removal of native vegetation. This is to be achieved by applying the three-step approach in the <i>Guidelines for the removal, destruction or lopping of native vegetation</i> (DELWP, 2017c) (Native Vegetation Guidelines), which is:</p> <ul style="list-style-type: none"> • Avoid the removal of native vegetation • Minimise impacts from the removal of native vegetation • Provide an offset to compensate for the residual impacts <p>NVPPs for precincts containing native vegetation will identify the vegetation in the strategic conservation areas as to be retained and the remaining native vegetation as to be removed, and will specify the offsets needed to meet State biodiversity policy</p>	
Planning permits	Planning permits will be granted generally in accordance with the PSP, and in accordance with the requirements of the relevant Urban Growth Zone schedule and other requirements of the planning scheme	-

1.4 STRUCTURE OF THE BCS

The BCS is structured as follows:

- Section 2 defines the biodiversity outcomes that will be delivered and the principles that guide both the preparation and implementation of the BCS
- Section 3 describes the biodiversity values and threats relevant to the Growth Areas
- Section 4 describes the conservation program relating to the Growth Areas
- Section 5 summarises the approach to assurance for the BCS
- The Appendices provide a range of detail to support the BCS

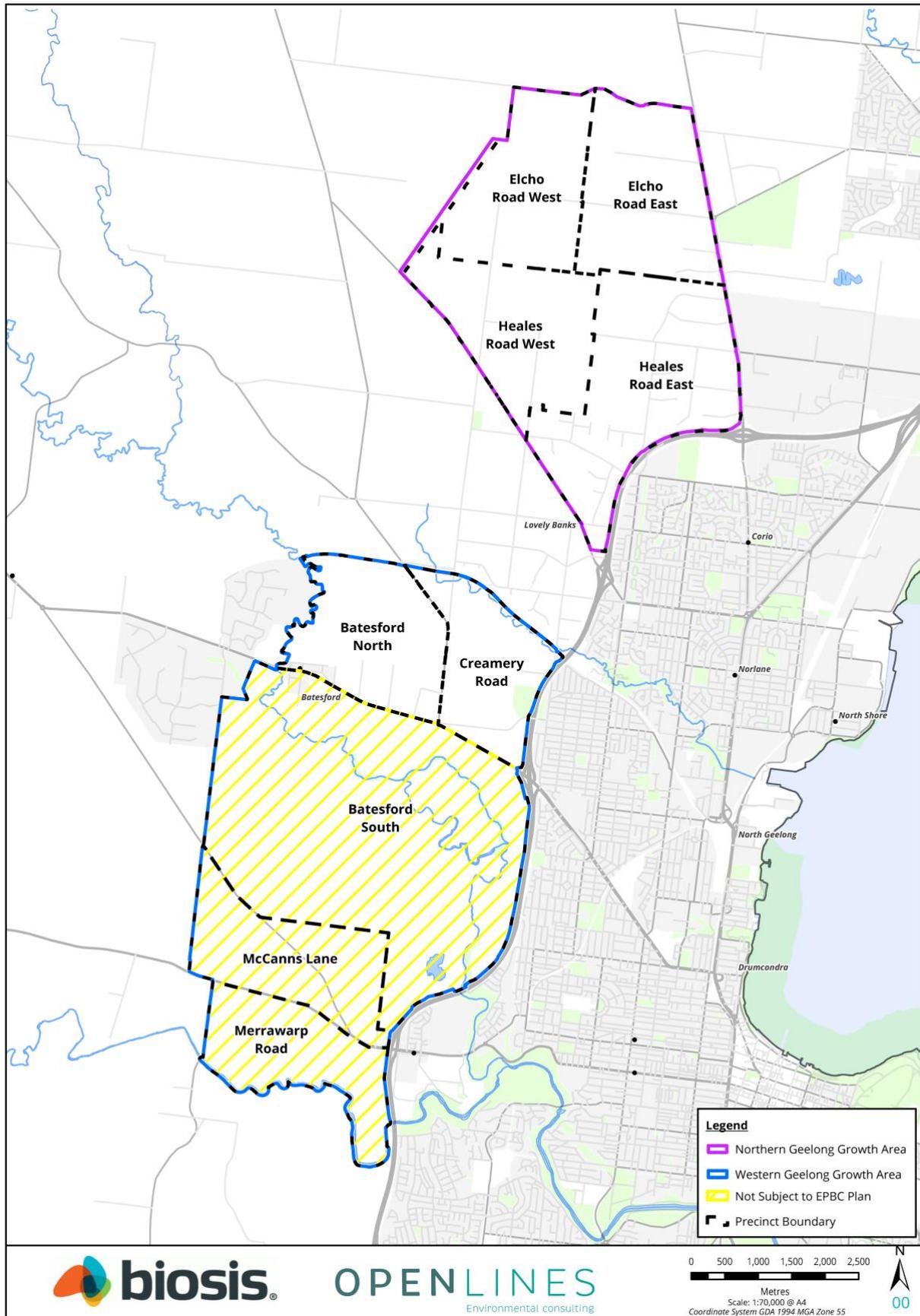


Figure 1-1: Area covered by the BCS

2 Biodiversity outcomes and guiding principles

2.1 BIODIVERSITY OUTCOMES

This section describes the outcomes that will be provided for the biodiversity values within the Growth Areas. It describes the outcomes framework that is used, and sets out the biodiversity outcomes for national, state and local values that will be achieved through implementation of the BCS.

2.1.1 OUTCOMES FRAMEWORK

The BCS applies an outcomes framework to clearly set out what will be achieved for biodiversity. The framework is based on program logic principles and aligns with the framework used in the EPBC Plan. It supports accountability and transparency by providing the basis and set of benchmarks for monitoring, reporting, and ongoing evaluation and adaptive management of the BCS.

The outcomes framework for the BCS is comprised of four components:

- A broad *objective* which identifies the contribution that the outcomes of the BCS will make to biodiversity
- *Outcomes* which are the positive impacts or changes to biodiversity values that are needed to achieve the overall objective of the BCS. The outcomes are set out in relation to:
 - National level biodiversity outcomes (these are taken from the EPBC Plan)
 - State and local biodiversity outcomes which are specific to the BCS
 - An implementation outcome for the BCS
- *Commitments* which are the direct results of implementing the measures that are expected to lead to the achievement of the outcomes. Some commitments are drawn from the EPBC Plan and others are specific to the BCS
- *Measures* which are the specific actions that will be undertaken to meet the commitments. Measures are not defined in the EPBC Plan. The BCS defines the full suite of the measures needed to implement the commitments at all levels

2.1.2 NUMBERING OF OUTCOMES, COMMITMENTS AND MEASURES

To provide clarity, different numbering systems are used to distinguish the national level versus state and local level outcomes, commitments and measures.

National level outcomes and commitments provided in the Plan and their associated measures are identified using cardinal numbers (e.g., 1, 2, 3 etc).

State and local outcomes, commitments provided in the BCS, and their associated measures are identified using Roman numerals (e.g., i, ii, iii etc).

2.1.3 OBJECTIVE

The objective of the BCS is to:

Provide genuine, long-term, positive outcomes for the national, state and local biodiversity values that are present within the Growth Areas

This objective is supported by outcomes, commitments and measures.

2.1.4 NATIONAL LEVEL BIODIVERSITY OUTCOMES

The national level outcomes for biodiversity are defined in the EPBC Plan. Table 2-1 presents the outcomes 1 to 4 from the EPBC Plan that relate directly to biodiversity.

Table 2-1: National level biodiversity outcomes (taken from the EPBC Plan)

No.	Outcome
1	Populations of Golden Sun Moth and Striped Legless Lizard are maintained within the NGGA Conservation Area
2	The long-term viability of the important population of the Growling Grass Frog along Cowies Creek is supported through the protection and enhancement of habitat within the WGGA
3	The protection and management of land outside of the Growth Areas makes an important contribution to the recovery efforts for Natural Temperate Grassland, Golden Sun Moth, and Striped Legless Lizard in Victoria
4	Matters of national environmental significance associated with waterways, riparian areas, and wetlands are protected from any notable adverse impacts of development under the Plan

2.1.5 STATE AND LOCAL LEVEL BIODIVERSITY OUTCOMES

The state and local level biodiversity outcomes that will be achieved through implementation of the BCS are set out in Table 2-2. These outcomes recognise that the national level outcomes will also provide a range of benefits to state and local values and seek to minimise duplication by focusing on the additional positive impacts or changes to biodiversity values that are needed at the state and local level.

Table 2-2: State and local level biodiversity outcomes

No.	Outcome
i	Strategic conservation areas within the Growth Areas are protected and managed to provide for the long-term protection of biodiversity values
ii	Opportunities to further protect and enhance biodiversity and connectivity within the Growth Areas are delivered during precinct planning
iii	Biodiversity offsets for impacts to state values are calculated at the precinct scale and provided as development proceeds

2.1.6 IMPLEMENTATION OUTCOME

The implementation outcome for the BCS is set out in Table 2-3.

Table 2-3: Implementation outcome

No.	Outcome
iv	Implementation of the BCS is effective, timely, and cost efficient

2.1.7 COMMITMENTS AND MEASURES

The commitments and measures to deliver the outcomes are discussed throughout Section 4 and provided in full in the Commitments and Measures document.

2.2 GUIDING PRINCIPLES

A set of principles were developed to help guide both the preparation of the BCS and the decisions that will need to be made as part of the strategy's implementation. The principles build on the work undertaken for the Melbourne Strategic Assessment's BCS (DEPI, 2013) and are consistent with, and support the:

- Goals, principles and directions of the City's Environment Strategy (The City of Greater Geelong, 2020) for protecting and enhancing the region's biodiversity
- Objectives and actions of the Framework Plan (The City of Greater Geelong, 2021) for protecting biodiversity and waterways within the Growth Areas

The guiding principles of the BCS are focused on providing genuine, long-term, positive outcomes for the national, State and local biodiversity values that are present within the Growth Areas. They were applied in preparing the BCS and will also be considered and applied as each precinct is planned. For example, application of the principles led to the design of the NGGA Conservation Area to protect and restore areas of native vegetation, as well as habitat for the Golden Sun Moth and Striped Legless Lizard.

The principles are set out below under the following categories:

- Consultation and engagement
- Decision-making
- Mitigation hierarchy
- Conservation planning
- Implementation

2.2.1 CONSULTATION AND ENGAGEMENT

- Consult with the community during preparation and implementation of the BCS
- Collaborate with the Wadawurrung Traditional Owners and use traditional knowledge of country to improve biodiversity planning and management practices
- Increase community understanding and involvement in biodiversity conservation activities

2.2.2 DECISION-MAKING

- Consider the protection and enhancement of biodiversity early in decision-making processes and at a strategic level to improve biodiversity outcomes and address cumulative impacts of urban development within the Growth Areas
- Use the best available ecological information to make decisions. This includes information from detailed ecological surveys, historical species records, native vegetation and species habitat modelling, and expert advice
- Ensure decisions around protecting and enhancing biodiversity are focused on achieving genuine, long-term biodiversity benefits. This includes the application of conservation planning principles (see Section 2.2.4)
- Consider relevant biodiversity policy guidelines and plans, including actions statements under the FFG Act and conservation advices and recovery plans under the EPBC Act

2.2.3 MITIGATION HIERARCHY

In accordance with both Commonwealth and State biodiversity laws, mitigate impacts on biodiversity through a hierarchy of:

- First – avoid impacts
- Second – minimise impacts
- Third – offset where residual adverse impacts are unavoidable

2.2.4 CONSERVATION PLANNING

STRATEGIC CONSERVATION AREAS

Identify strategic conservation areas within the Growth Areas by prioritising areas that:

- Support remnant biodiversity patches larger than 10 hectares
- Provide connectivity across the landscape. For example, waterways and larger connected patches of vegetation
- Are considered likely to be viable in the long-term. For example, this includes areas that:
 - Are in better condition and trend
 - Have the potential to be restored
 - Have the potential to be managed effectively
- Support threatened ecological communities and/or habitat for threatened species
- Support multiple biodiversity values

BIODIVERSITY OPPORTUNITY AREAS

Identify opportunities for additional biodiversity protection and restoration in the Growth Areas through:

- Integrating biodiversity into urban landscapes through planning and design processes
- Restoring biodiversity to parks, roadsides, reserves, waterways, and streetscapes using Ecological Vegetation Classes, natural regeneration techniques and indigenous plants of local provenance
- Restoring habitat into urban landscapes through the establishment of indigenous tree, shrub and understory plantings and other habitat elements such as wetlands, logs, rocks and stags
- Restoring degraded waterways and wetlands to create habitat and ecologically healthy water flows

STRATEGIC OFFSETS

Where offsets are needed, apply a strategic approach to maximise opportunities for:

- The early delivery of a significant proportion of the offset liability
- Securing and managing areas of land that meet at least one of the following strategic landscape criteria:
 - Protection of larger land parcels compared to typical project-by-project offsets
 - Located within a key biodiversity corridor and improves connectivity across the landscape
 - Connected to an existing conservation reserve

2.2.5 IMPLEMENTATION

Design the BCS to ensure that it will be successfully implemented. This includes consideration of the:

- Administrative efficiency and complexity of the BCS
- Funding arrangements for implementation
- Governance arrangements for implementation
- Risks around the delivery of offsets over the life of the BCS

3 Biodiversity values and threats

This section describes the biodiversity values and the threats to those values within the Growth Areas. It provides:

- Discussion of the landscape context within which the Growth Areas occur
- Description of the national, State and local biodiversity values within the Growth Areas
- An overview of the key threats to biodiversity within the Growth Areas

3.1 LANDSCAPE CONTEXT

3.1.1 BIOREGION

The Growth Areas sit within the Southern Volcanic Plains bioregion. The bioregion is characterised by broad basaltic plains, interspersed with areas of lakes and swamps. Native grasslands occur in areas where basalts are older and more weathered to produce heavy clays which are generally fertile yet poorly drained. Younger occurrences of relatively unweathered lava flows occur as stony rises, and support thin soils and woodland vegetation (Dahlhaus *et al.*, 2003; Williams, 2022).

3.1.2 GEOLOGY AND SOIL

The Victorian Volcanic Plains was created by volcanic activity which occurred between approximately 4.5 million to 10,000 years ago. Volcanic activity was mostly from many small volcanoes which created lava flows of basalt, which filled in valleys and created broad plains. There are some occurrences of more explosive eruptions in the region which created circular craters which today contain lakes and swamps (Williams, 2022).

Today, the geology of the Growth Areas is dominated by areas of basalt, interspersed with areas of alluvial deposits (associated with the Moorabool River) and aeolian deposits (associated with Cowies Creek). The areas of basalt are characterised as plains with poorly developed drainage and with shallow bedrock. Aeolian deposits tend to be characterised as plains with unconsolidated sedimentary deposits, and areas of alluvium are described as unconsolidated sediment occurring as terraces, floodplains, and coastal plains (DELWP, 2022).

3.1.3 TOPOGRAPHY AND SURFACE HYDROLOGY

The topography of the NGGA is varied. A largely flat, elevated area occurs in the north-western and central areas of the Growth Area. Along the eastern section of the Growth Area, an escarpment occurs, with the landscape falling steeply towards the east, draining into the Hovells Creek catchment, upstream of Limeburners Bay. In the south-west of the Growth Area, the land slopes downwards towards the south-west, draining into the Cowies Creek catchment.

The topography of the WGGA is also varied. The central area of the WGGA is largely flat. The north-eastern corner of the Growth Area slopes towards the north-east, draining into the Cowies Creek catchment. The western section of the Growth Area is steep and drains westwards, into the catchment of the Moorabool River. A small section of the south-eastern corner of the Growth Area slopes gently towards the south-east, also flowing into the catchment of the Moorabool River.

There are three catchments which the Growth Areas are hydrologically linked to via overland flow (see Figure 3-1):

- Moorabool River catchment, which occurs to the south of the Growth Areas. The Moorabool River flows south, joining the Barwon River at Fyansford. The Barwon then continues to flow south, into the Lake Connewarre Complex. This wetland complex then drains into the ocean at Barwon Heads
- Hovells Creek catchment, which occurs to the east of the northern half of the Strategic Assessment Area. This catchment contains Limeburners Bay, and drains southward into Corio Bay
- Cowies Creek catchment, which occurs to the east of the central and southern half of the Strategic Assessment Area. This creek does not contain wetlands and drains eastward into Corio Bay

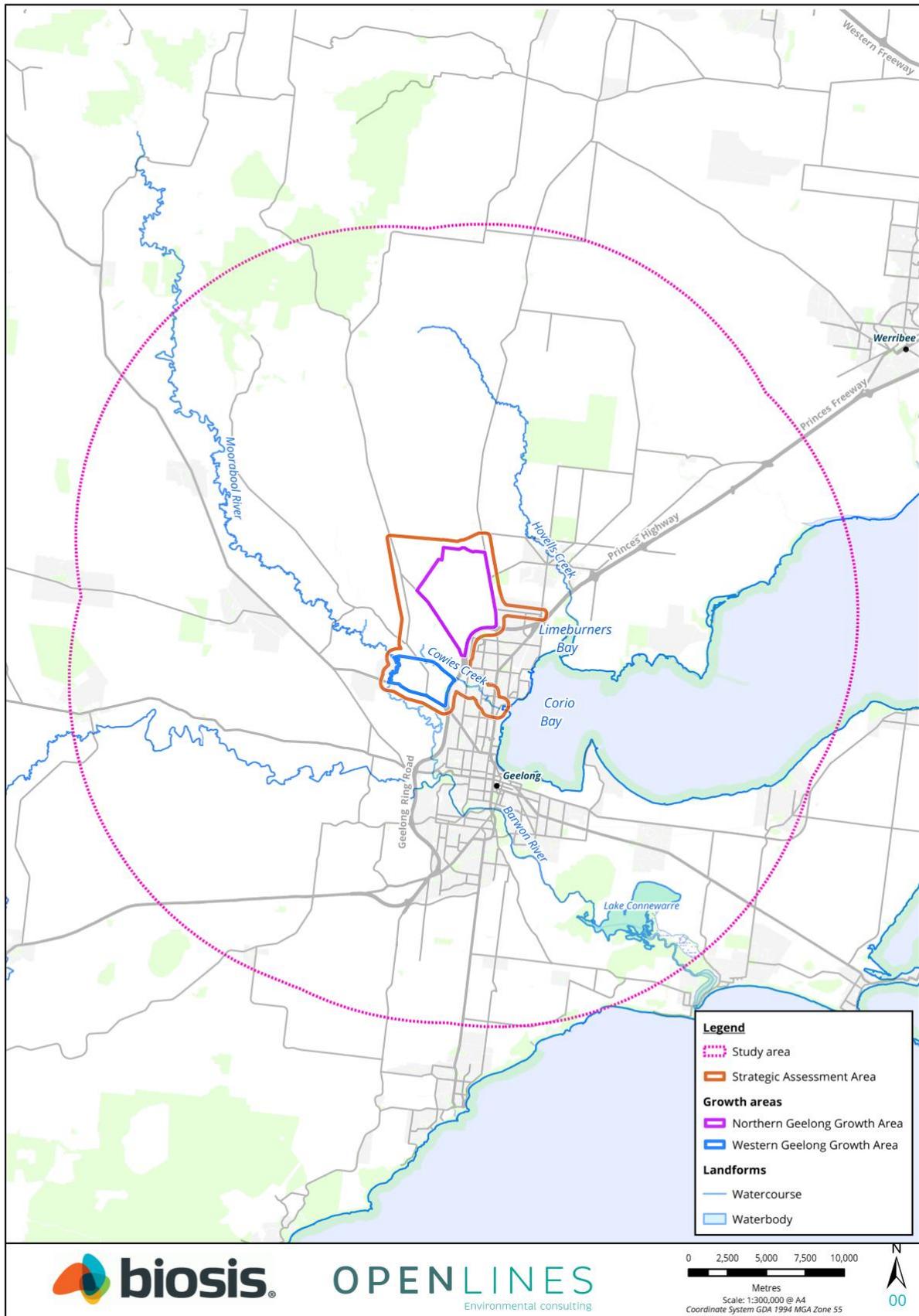


Figure 3-1: Key landforms

3.1.4 PAST AND CURRENT LAND USE

The traditional owners of the land are the Wadawurrung Aboriginal people, a recognised tribe consisting of 25 clans (family groups), which form part of the larger Kulin Nation of Aboriginal people. The Country known now as Geelong was occupied for at least 45,000 years by traditional owners prior to European Settlement (Rowe, 2021).

There are a number of registered Aboriginal places across the Growth Areas, comprised mostly of stone artefacts. There has been limited archaeological investigation within the Growth Areas, and the available data may not accurately reflect land use by the Wadawurrung people. Preliminary Aboriginal site sensitivity mapping has indicated areas of high archaeological potential along the waterways on the WGGA and one area in the NGGA near to a registered stone artefact (The City of Greater Geelong, 2021).

Today, the Growth Areas primarily include land which has been developed for agricultural purposes. The NGGA is largely open treeless pasture, primarily used for pastoral and cropping activities, in conjunction with rural residential housing. The WGGA includes a mix of existing land uses, including agriculture, recreation reserves, Council-managed reserves, rural and medium density housing, and educational facilities. The Batesford quarry is located within the centre of the WGGA, which has been used for mineral extraction since 1888.

3.1.5 PARKS, RESERVES OR OTHER PROTECTED AREAS

Due to substantial agricultural land use and intensification, the Southern Volcanic Plains bioregion has become one of the bioregions most depleted of native vegetation in Victoria. As of 2003, only 4.5 per cent of the bioregion still had a cover of native vegetation. Further, as of 2003, less than 1.2 per cent of the Southern Volcanic Plains bioregion was in a formal conservation reserve (DSE, 2003).

There are minimal parks, reserves or other protected areas within the Growth Areas (see Figure 3-2), however the following do occur:

- A community use recreation area approximately 0.3 hectares in size along the Moorabool River just north of Midland Highway
- Dog Rocks Flora and Fauna Sanctuary – an 83 hectare area of bushland with frontage to the Moorabool River

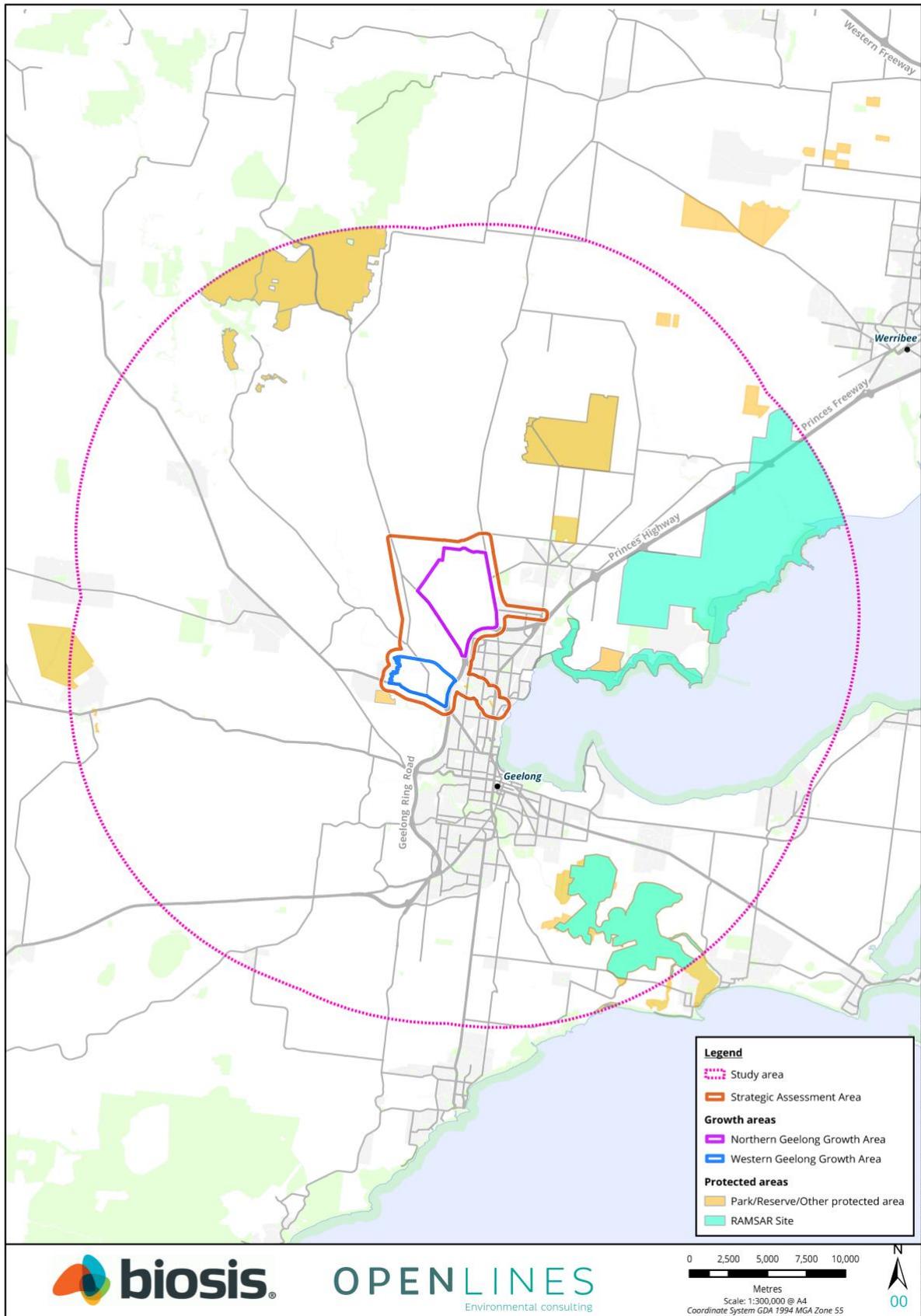


Figure 3-2: Protected areas

3.1.6 BIODIVERSITY CORRIDORS SURROUNDING THE GROWTH AREAS

Biodiversity corridors surrounding the Growth Areas are mostly concentrated along riparian corridors, with remnant grassland occurring in modified agricultural context much like within the Growth Areas.

Cowies Creek and the Moorabool and Barwon Rivers contain several ephemeral and minor tributaries which feed into wetland areas that support native flora and fauna habitat on private and public land with various grades of active conservation management.

Remnant indigenous vegetation and fauna in the Growth Areas are considered important to the biodiversity of the wider locality. Without appropriate management, losses resulting from direct and indirect degradation processes will inevitably mean the loss of most biodiversity. Waterways within the Growth Areas will undoubtedly play a significant role in the conservation and management of vital vegetation and habitat.

3.2 BIODIVERSITY VALUES WITHIN THE GROWTH AREAS

3.2.1 ASSESSMENT OF THE GROWTH AREAS

The biodiversity values of parts of the Growth Areas are documented within *Existing Ecological Conditions: Northern and Western Geelong Growth Areas*, July 2021, prepared by Ecology and Heritage Partners (EHP, 2021).

Between November 2019 and December 2020, over 200 person days were spent surveying native vegetation, ecological communities and significant flora and fauna species. Site assessments were restricted to parcels/properties where access was permitted. These areas are referred to as the 'surveyed areas'. This resulted in a total of approximately 33% of the NGGA and 13% of the WGGA (area subject to the EPBC Plan) not being subject to on-ground assessments, referred to as the 'unsurveyed areas'.

In January 2022, the City provided an opportunity for those with land included within the EHP 2021 assessment area to supply further information for consideration in the development of the Part 10 Strategic Assessment. The intention was for additional information to be submitted for consideration where landholders had concerns with mapping anomalies and/or assumptions. The City assessed submissions against set evaluation criteria, which led to minor changes to the EHP 2021 dataset.

No City-commissioned biodiversity assessments have been undertaken for the southern portion of the WGGA not subject to the EPBC Plan. For this area and for the unsurveyed areas subject to the EPBC Plan, a combination of VBA observations, DEECA modelling, and desktop review and interpretation informs current understandings. Detailed desktop and on-ground assessment will need to occur to better understand the biodiversity values of this area prior to planning and development.

3.2.2 OVERVIEW

The condition of the environment within the Growth Areas varies. Most of the area is highly modified due to agricultural land use and is largely dominated by non-native species. Native vegetation and terrestrial fauna habitat are limited to areas which have not been historically subject to cropping, and to riparian corridors. Where native vegetation is present, much of it is highly modified with a low diversity of native species and lacking in suitable vegetation structure (EHP, 2021).

The existing level of disturbance within the Growth Areas is consistent with the broader landscape trend within the Southern Volcanic Plains bioregion, where the vast majority of the bioregion has been developed for agriculture (DSE, 2003).

Despite this, the Growth Areas support a range of biodiversity values in areas which have been subject to reduced levels of historical disturbance. These values are documented below and are discussed in relation to the following attributes:

- Native vegetation
- Flora
- Fauna
- Waterways and wetlands

3.2.3 NATIVE VEGETATION

ECOLOGICAL VEGETATION CLASSES

Six Ecological Vegetation Classes (EVCs) have been either recorded or are modelled to occur within the Growth Areas. These include:

- Low Rainfall Plains Grassland (EVC_132_63)
 - Contiguous patches mapped within the northern portion of the NGGA. Scattered patches mapped throughout the remaining balance of the NGGA, particularly along the eastern and southern portion of the Growth Area
 - Plains Grassland EVC 132 within the WGGA subject to the Plan is mostly scattered throughout, with some larger patches concentrated in the east, west and southern portion
 - Within the southern portion of the WGGA not subject to the EPBC Plan, Plains Grassland EVC 132 is modelled to occur surrounding the Dog Rocks Flora and Fauna Sanctuary and Moorabool River
- Plains Grassy Woodland (EVC 55)
 - Plains Grassy Woodland EVC 55 was not recorded within the surveyed areas of the Growth Areas. This is consistent with extant (2005) DEECA modelled mapping
 - Fragmented areas of Plains Grassy Woodland EVC 55 are modelled to occur within the southern portion of the WGGA not subject to the EPBC Plan. An isolated area of modelled Plains Grassy Woodland EVC 55 is also located within the north-eastern portion of the WGGA subject to the EPBC Plan. These areas were unable to be accessed to determine their presence as they are contained within private rural properties
 - Extant (2005) DEECA modelled mapping shows that contiguous Plains Grassy Woodland EVC 55 occurs west of the Batesford quarry, and west of the WGGA and Moorabool River which is not subject the EPBC Plan
- Creekline Grassy Woodland (EVC 68) (WGGA)
 - Creekline Grassy Woodland EVC 68 occurs along Cowies Creek frontage within the northern portion of the WGGA subject to the EPBC Plan
 - Creekline Grassy Woodland EVC 68 assessed within the WGGA subject to the EPBC Plan has been recorded with a habitat score of 0.18 (EHP, 2021)
- Grassy Woodland (EVC 175)
 - A large area of contiguous Grassy Woodland EVC 175 is located outside of the WGGA extent that is subject to the EPBC Plan. This area is located 1 kilometre northwest of the Batesford quarry and adjoins to Stream Bank Shrubland EVC 851
- Floodplain Riparian Woodland (EVC 56) (WGGA)
 - Modelled Floodplain Riparian Woodland EVC 56 is mapped along the Moorabool River frontage across the western extent of the WGGA subject to the EPBC Plan. This EVC occurs in conjunction with one or more floodplain wetland communities along the banks of the Moorabool River where the river is generally wider
 - Floodplain Riparian Woodland EVC 56 assessed within the NGGA has been recorded with a habitat score of 0.38 (EHP, 2021)
 - Floodplain Riparian Woodland EVC 56 assessed within the NGGA has been recorded with a habitat score of 0.13 (EHP, 2021)
- Stream Bank Shrubland (EVC 851)
 - Stream Bank Shrubland EVC 851 is modelled to occur within the southern portion of the WGGA not subject to the EPBC Plan, immediately along the Moorabool River frontage where the watercourse consists of rocky and gravel banks that are often dry but are also regularly flooded by fast flowing waters. Its extent is modelled to begin just north-west of the Batesford quarry and continues along the entire extent of the Moorabool River frontage and the Barwon River

Figure 3-3, Figure 3-6 and Figure 3-7 show the mapped EVCs in the surveyed areas as well as (2005) DEECA modelled mapping within the Growth Areas.

A summary of the total area of EVCs present within the Growth Areas is provided in Table 3-1. This includes part of the WGGA that is not subject to the EPBC Plan.

EVCs that were assessed and mapped across the Growth Areas are broadly consistent with extant (2005) DEECA modelled mapping that shows both Growth Areas to contain discrete areas of Plains Grassland (EVC 132), with areas adjacent to the Moorabool River modelled as Floodplain Riparian Woodland (EVC 56) (DELWP, 2005; EHP, 2021).

Higher quality patches of Plains Grassland within the NGGA meet the condition thresholds that define the nationally significant Natural Temperate Grassland of the Victorian Volcanic Plain ecological community; while several patches have been classified as the State significant Western (Basalt) Plains Grassland vegetation community (EHP, 2021).

Since the time of the EHP site assessments, subsequent assessments have been undertaken by Biosis which have confirmed that the extent of Plains Grassland (EVC 132) has deteriorated significantly. Successive years of relatively high rainfall has promoted significant grass growth and has been particularly advantageous to high threat perennial grassy weeds such as Toowoomba Canary-grass *Phalaris aquatica* and particularly Chilean Needle-grass *Nassella neesiana*. While subsequent dry years may result in a decline in Toowoomba Canary-grass, without intensive active management the conversion of Plains Grassland to a dominance of Chilean Needle-grass is likely to be permanent.

Commonly observed native flora species recorded in grassland habitats included Short Wallaby-grass *Rytidosperma carphoides*, Striped Wallaby-grass *Rytidosperma racemosum* var. *racemosum* and Veined Spear-grass *Austrostipa rudis* subsp. *rudis*. River Red-gum *Eucalyptus camaldulensis* was the dominant tree species within the WGGA, however several non-indigenous planted eucalypt species also occur throughout the Growth Areas, particularly around dwellings and/or farm sheds/maintenance areas.

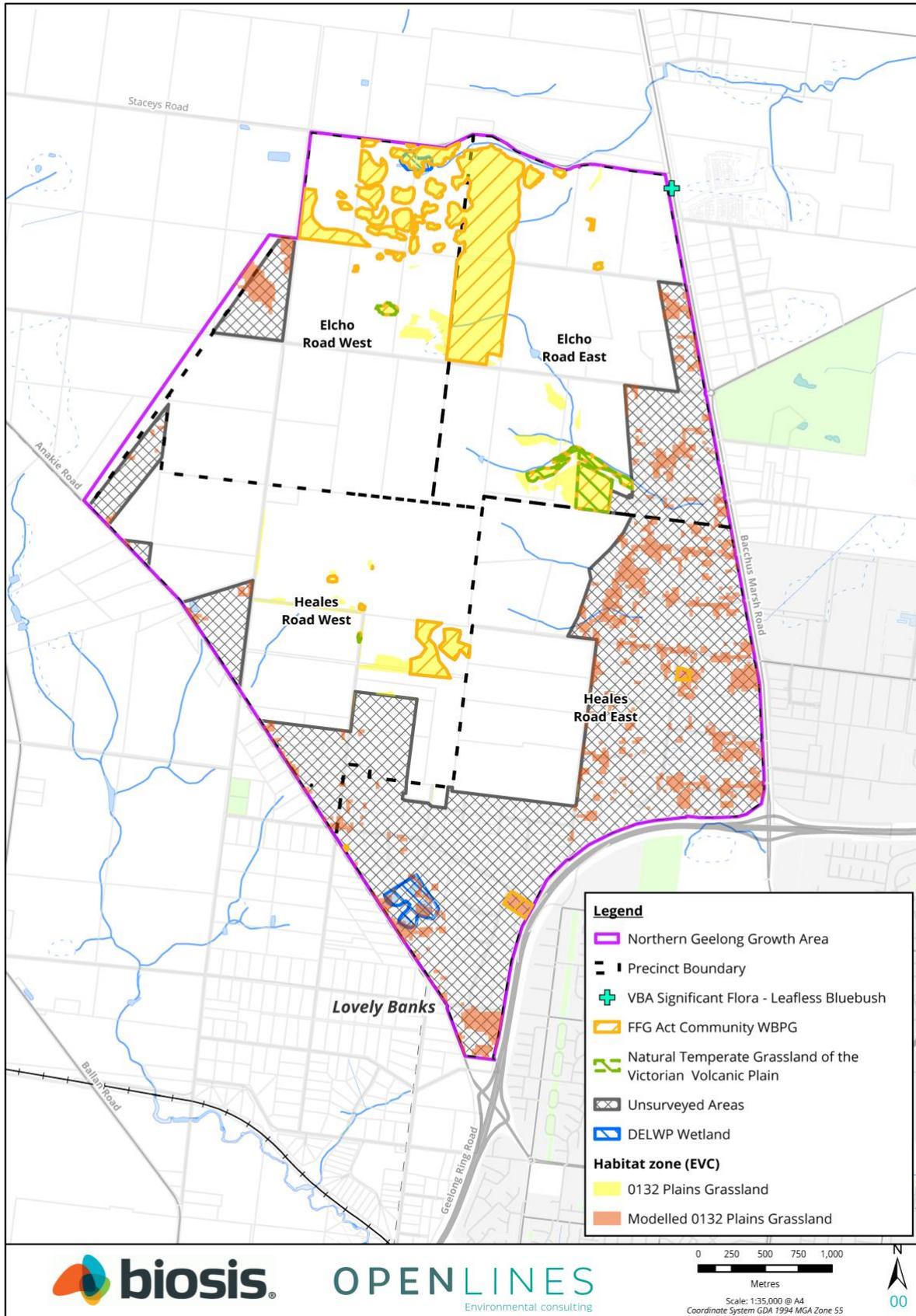


Figure 3-3: Native vegetation, TECs, and threatened flora in the NGGA

Table 3-1: Total area of EVCs present within the Growth Areas

Ecological Vegetation Class	Biodiversity Conservation Status	NGGA assessed areas (hectares)	NGGA unassessed areas (hectares)	WGGA assessed areas (hectares)	WGGA unassessed areas (hectares)	WGGA unassessed area (hectares) (not subject to the EPBC Plan)
Plains Grassland (EVC 132)	Endangered	146 ha	111.959 ha*	41.479 ha	29.399 ha*	127.118 ha*
Floodplain Riparian Woodland (EVC 56)	Endangered	-	-	23.107 ha	2.252 ha*	37.119 ha*
Creepline Grassy Woodland (EVC 68)	Endangered	-	-	4.859 ha	-	-
Grassy Woodland (EVC 175)	Endangered	-	-	-	-	98.430 ha*
Plains Grassy Woodland (EVC 55)	Endangered	-	-	-	-	39.816 ha*
Stream Bank Shrubland (EVC 851)	Endangered	-	-	-	-	66.825 ha*

*2005 DEECA EVC mapping

THREATENED ECOLOGICAL COMMUNITIES

The following threatened ecological communities have been identified within the surveyed areas of the NGGA:

- 12.7 ha of the Commonwealth listed community Natural Temperate Grassland of the Victorian Volcanic Plain
- 123.8 ha of the FFG Act listed ecological community Western (Basalt) Plains Grassland

No threatened ecological communities (either Commonwealth listed or State listed) have been identified within the surveyed areas of the WGGA.

Natural Temperate Grassland of the Victorian Volcanic Plain within the NGGA occurs in a heavily modified form. This is reflected in its Site Condition Habitat Score (a score out of 75) which, when standardised, amounts to totals of either 16 or 24 out of 75 with an understorey score of 5/25. The later reflect the presence of less than 50% of the expected number of lifeforms in this community while still supporting more than a 50% cover of native perennial tussock-grasses.

Examples of Natural Temperate Grassland within the NGGA also typically have a weed cover of greater than 25% of the vegetation present, with high threat weeds such as Chilean Needle-grass being relatively common. Areas of Natural Temperate Grassland vegetation with a relatively extensive cover of high threat, perennial, grassy weeds have relatively low resilience to ongoing weed invasion. This makes Natural Temperate Grassland within the NGGA highly vulnerable to an ongoing rapid decline in condition, to the extent where the Natural Temperate Grassland can be expected to fail the required condition criteria to be defined as the TEC within relatively short timeframes (less than a decade).

There is potential for additional native vegetation and threatened ecological communities to occur within the unsurveyed areas of the NGGA and WGGA.

Figure 3-3, Figure 3-6 and Figure 3-7 show native vegetation and ecological communities within the Growth Areas.

3.2.4 FLORA

Targeted surveys for six Commonwealth listed threatened flora species were undertaken within the surveyed areas of Growth Areas, including: *Lachnagrostis adamsonii* (Adamson's Blown-grass), *Dianella amoena* (Matted Flax-lily), *Glycine latrobeana* (Clover Glycine), *Rutidosia leptorrhynchoidea* (Button Wrinklewort), *Senecio macrocarpus* (Large-headed Fireweed) and *Pimelea spinescens* subsp. *Spinescens* (Spiny Rice-flower).

No Commonwealth listed threatened flora species were recorded within the surveyed areas, although Adamson's Blown-grass has been assumed to be present along the Cowies Creek corridor within the WGGA based on relatively recent historical records, and the presence of suitable habitat (EHP, 2021). One State significant flora species, *Maireana aphylla* (Leafless Bluebush) was recorded at the north-eastern boundary of the NGGA.

It is considered highly unlikely that any additional threatened Commonwealth or State flora species occur within the surveyed areas of the Growth Areas due to the ongoing land use of the site resulting in the absence of suitable habitat, and the highly modified condition of the understory (EHP, 2021) (see Part 4 of the SAR).

Within the unsurveyed areas of the Growth Areas and southern portion of the WGGA four VBA records of Melbourne Yellow-gum exist within the Dog Rocks Flora and Fauna Sanctuary. On-ground assessment will be required to determine the presence or absence of additional flora species within these areas.

3.2.5 FAUNA

Targeted surveys for five Commonwealth listed threatened fauna species were undertaken within the surveyed areas of Growth Areas, including: *Synemon plana* (Golden Sun Moth), *Delma impar* (Striped Legless Lizard), *Litoria raniformis* (Growling Grass Frog), *Prototroctes maraena* (Australian Grayling) and *Galaxiella toourtkoourt* (Little Galaxias).

Targeted surveys recorded the Striped Legless Lizard and Golden Sun Moth within the NGGA. The Growling Grass Frog was recorded in Cowies Creek within the WGGA.

Targeted surveys for the Australian Grayling and Little Galaxias within the WGGA did not identify the species. However, the Australian Grayling is considered likely to be present within the broader catchment area. It is noted that the Corangamite CMA has proposed to remove barriers within the Moorabool River which currently prevent fish accessing habitat further upstream adjacent to the WGGA. Future planning for the WGGA PSPs should assume the presence of the Growling Grass Frog, Australian Grayling and Little Galaxias following the removal of these barriers (EHP, 2021).

A single state significant fauna species *Aythya australis* (Hardhead) was observed within the NGGA during surveys, although it is considered unlikely that the species would maintain a resident population within the Growth Areas. *Ardea modesta* (Eastern Great Egret) and *Falco subniger* (Black Falcon) have recently been recorded in close proximity to the Growth Areas, and it is likely that these species would use to the Growth Areas for opportunistic forage, or as a steppingstone throughout the broader landscape. An active *Ornithorhynchus anatinus* (Platypus) burrow was observed within the Moorabool River. The NGGA is considered to support suitable habitat for the *Pseudemoia pagenstecheri* (Tussock Skink), although the species was not recorded during Striped Legless Lizard surveys (EHP, 2021).

STRIPED LEGLESS LIZARD

Targeted surveys for SLL recorded 45 individuals within the NGGA under ten different tile grids. Sites where the species was recorded generally represent the most suitable areas of habitat for SLL within the NGGA. These areas supported a high cover of surface rock, cracking soils and tussock-forming grasses providing inter-tussock space.

Altogether, approximately 57 ha of confirmed habitat and 50 ha of suitable habitat has been mapped across the surveyed areas of the NGGA.

SLL was not recorded within the WGGA. EHP 2021 found that the removal of native vegetation, high levels of grazing, pasture improvement and cultivation across the WGGA has contributed to the decline of high quality habitat for the species. They concluded that it is highly unlikely that a population of SLL is present within the Creamery Road and Batesford North precincts of the WGGA. Further assessment will be required to determine the presence or absence of SLL within the southern portion of the WGGA.

Approximately 47 ha of habitat for SLL is modelled to occur within the unsurveyed areas of the NGGA.

The following threats to SLL are potentially relevant to implementation of the Plan and BCS:

- Direct habitat removal
- Habitat degradation from rock collection or destruction
- Spread of weeds
- Predation by cats
- Inappropriate fire regimes

Figure 3-4 shows SLL habitat and records within the Growth Areas.

GOLDEN SUN MOTH

Targeted surveys within the Growth Areas recorded GSM within the NGGA. The species was not detected within the WGGA. The results of the targeted surveys have informed baseline habitat mapping for GSM.

The species Conservation Advice notes the importance of native habitat compared to non-native habitat and identifies high quality habitat as “*medium to large sites containing native grassland with an abundant component of larval food species (i.e., Rytidosperma spp. and/or Austrostipa spp.) with low weed cover, inter-tussock spaces, and land-use/management that is consistent with the ecological values of the site*” (DAWE, 2021).

The EHP surveys found the Growth Areas to be dominated by non-indigenous grasses and weeds (i.e., pasture grasses), which reflects the region’s long history of agricultural use. Much of the indigenous vegetation and terrestrial fauna habitat remaining within the Growth Areas was found confined to riparian corridors in the WGGA (i.e., Moorabool River, Cowies Creek), or agricultural areas not subjected to historical cropping. Native vegetation, where present, was highly modified, generally lacking structure and exhibiting a low diversity of native species.

Subsequent site visits as part of the strategic assessment process, as well as the results of landholder surveys, have confirmed these findings and shown an increased prevalence of weeds since the time of the EHP surveys in 2019 and 2020. This indicates a declining trend in the condition of native vegetation (Peter Włodarczyk pers comms.).

Despite the abundance of GSM records within the NGGA, it is unlikely the NGGA would qualify as an important or high-quality area due to the level of weeds, land modification, and rate of decline. To distinguish between native vs non-native habitat for the assessment of impacts to GSM and to reflect this declining trend in condition, habitat within the surveyed areas of the Growth Areas has been mapped according to categories. GSM habitat within the assessed areas therefore comprises (see Figure 3-5):

- 26 ha of higher potential native habitat, which identifies the habitat areas with the greatest likelihood of supporting native vegetation based on the result of EHP surveys and the more recent landholder surveys
- 11 ha moderate potential native habitat, which identifies the habitat areas that have the potential to still support native vegetation identified through the EHP surveys, but recognising the declining trend in condition observed elsewhere in the Growth Areas and lack of more recent surveys for these areas
- 38 ha of lower potential native habitat, which identifies the habitat areas which have likely declined since the time of EHP surveys and are no longer expected to support native vegetation, based on the results of more recent landholder surveys
- 492 ha of non-native habitat, which identifies areas of GSM habitat which do not support native vegetation

Approximately 90 ha of GSM habitat is modelled to occur within the unsurveyed areas of the NGGA.

The following threats to GSM are potentially relevant to implementation of the EPBC Plan and BCS:

- Predation by cats
- Inappropriate fire regimes
- Direct habitat removal

Figure 3-4 and Figure 3-5 shows GSM habitat and records within the Growth Areas.

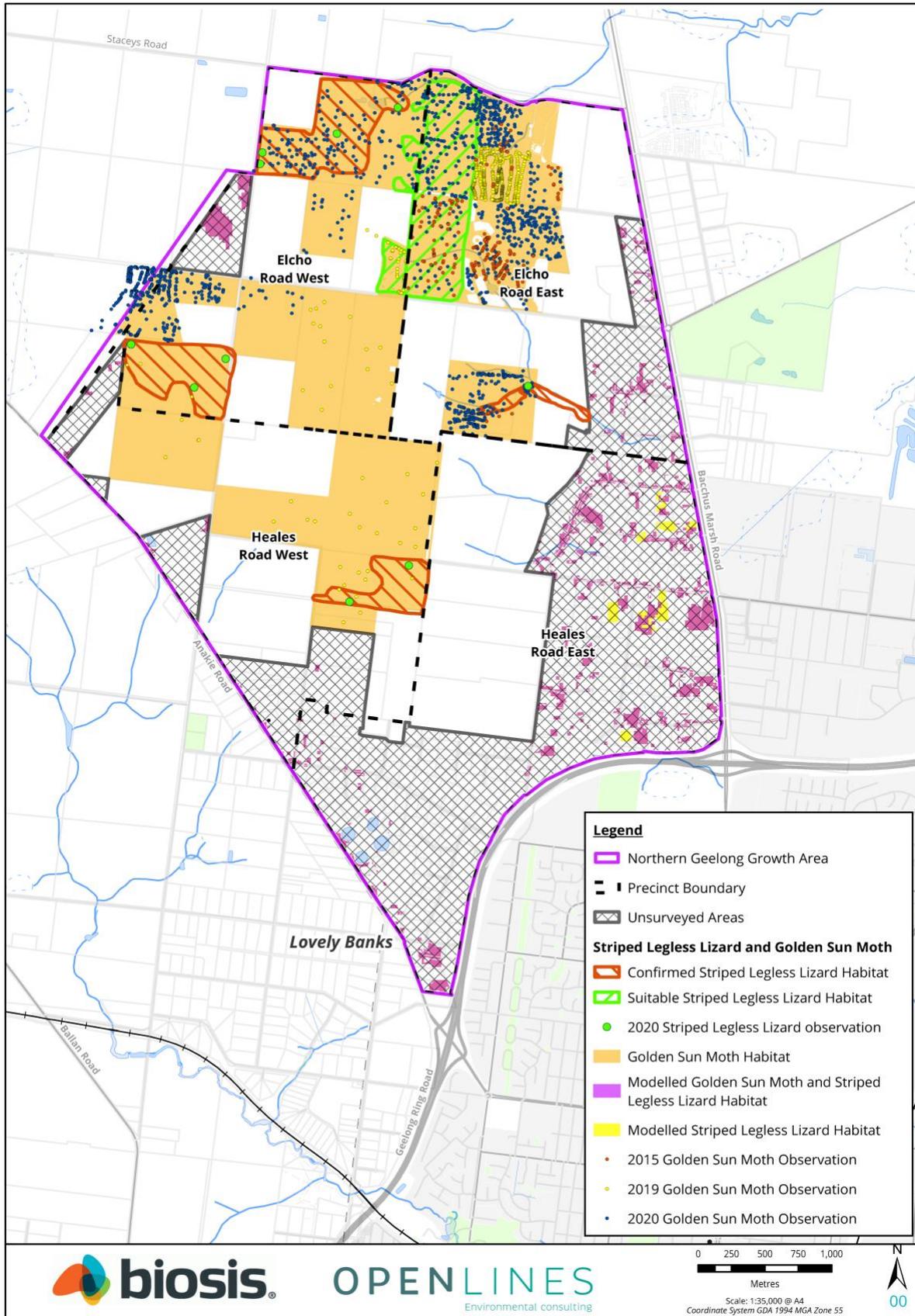


Figure 3-4: Fauna records and habitat in the NGGA

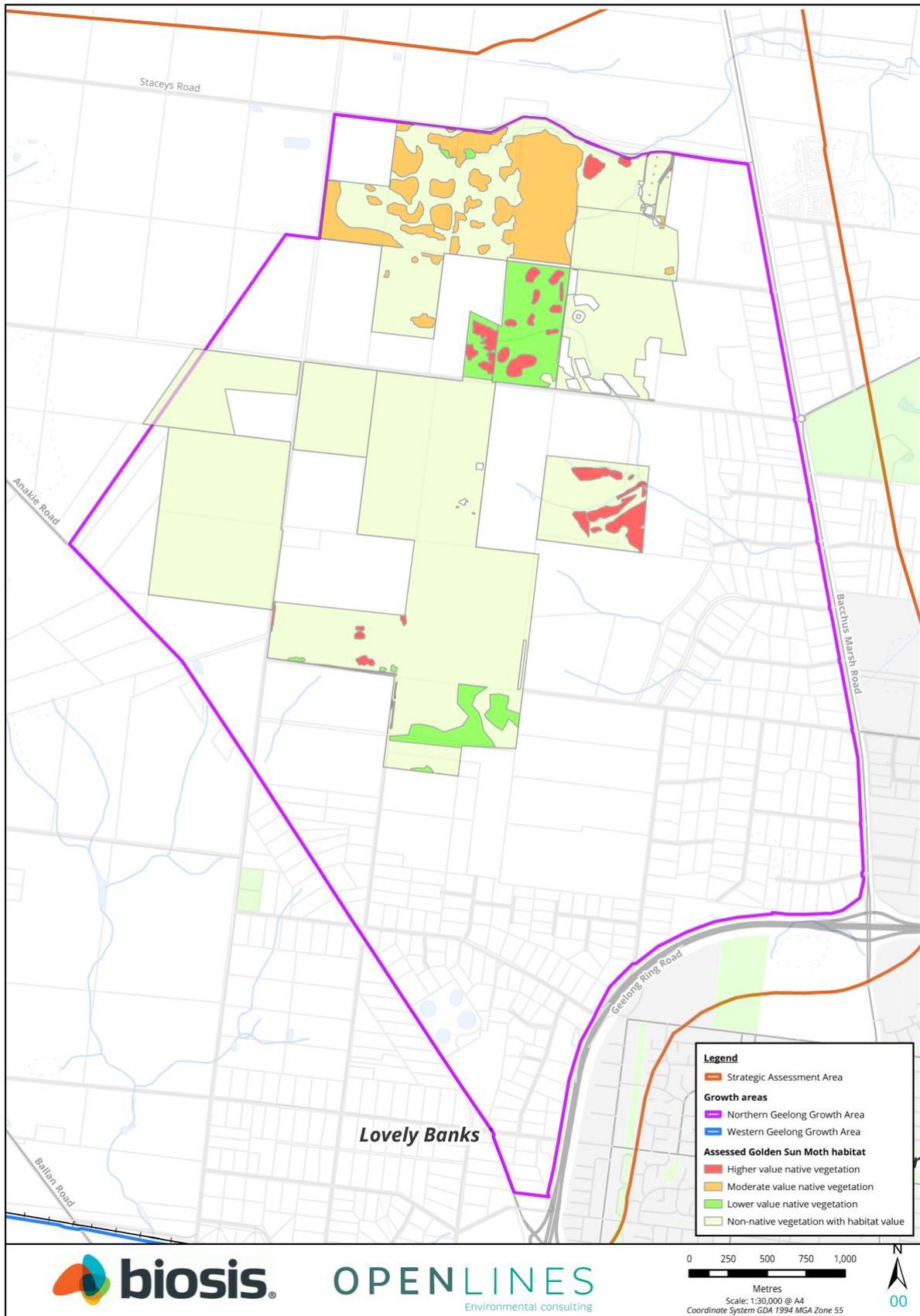


Figure 3-5: Golden Sun Moth habitat categories in the NGGA

GROWLING GRASS FROG

Targeted surveys along Cowies Creek in the WGGGA recorded approximately 50 GGF individuals across four sites. EHP 2021 considered that the area supported an important population (particularly because it contained a range of key habitat attributes) and that Cowies Creek was an important habitat corridor through the growth area.

GGF has also been recorded downstream of the WGGGA within Cowies Creek on several occasions. These records appear to have some level of connectivity with the frogs in the WGGGA and are likely to form part of a larger, connected metapopulation.

The number and location of GGF records within Cowies Creek suggests that the corridor supports an important, connected metapopulation of the species. Records stretch for more than 3.5 km along the creek and suitable habitat extends beyond this distance.

The available information suggests that the Cowies Creek metapopulation is comprised of a range of discrete, breeding populations of GGF that are connected along the creek corridor. Despite previous development in the area the species is persisting and metapopulation dynamics are still operating.

There are no records of the species upstream from the WGGGA and that area appears to have much more limited GGF habitat values due to historic land use. It is considered less likely that the species is present in this location on a permanent basis.

Further assessment will be required to determine the presence or absence of GGF within the southern portion of the WGGGA, particularly along the southern half of the Moorabool River and the Barwon River.

The following threats to GGF are potentially relevant to implementation of the Plan and BCS:

- Habitat degradation and/or modification caused by:
 - Changed hydrological regimes.
 - Deterioration of water quality and any introduction of pollutants and biocides.
- Fragmentation and isolation of populations.
- Increases in artificial lighting.
- Introduction of cats.

Figure 3-6 shows GGF habitat and records within the Growth Areas.

3.2.6 WATERWAYS

At a state and local level, the WGGGA includes three significant waterways, the Moorabool River, Barwon River and Cowies Creek (see Figure 3-8).

Historically, the Moorabool River has been diverted twice from its natural alignment to facilitate limestone extraction at the Batesford quarry. Its current extent runs north-south along the WGGGA's western boundary and continues to dissect the WGGGA in an east-west direction. The Moorabool River departs from the Growth Areas extent in the south-west at the Lewis Bandt Bridge in Herne Hill and flows for approximately 2.3 kilometres before joining the Barwon River.

Cowies Creek runs from the north-west to the south-east for 2.6 kilometres within the northern boundary of the WGGGA that is subject to the EPBC Plan. Cowies Creek originates from a series of wetlands in the Moorabool River north-west of the WGGGA extent. Cowies Creek departs from the WGGGA and enters Port Phillip Bay (Western Shoreline) 3.4 kilometres downstream.

The Barwon River is located along the southern boundary of the Growth Areas with a frontage of 4.8 kilometres of the WGGGA that is not subject to the EPBC Plan. This riparian corridor is well vegetated, with contiguous Floodplain Riparian Woodland EVC 56 modelled along its frontage.

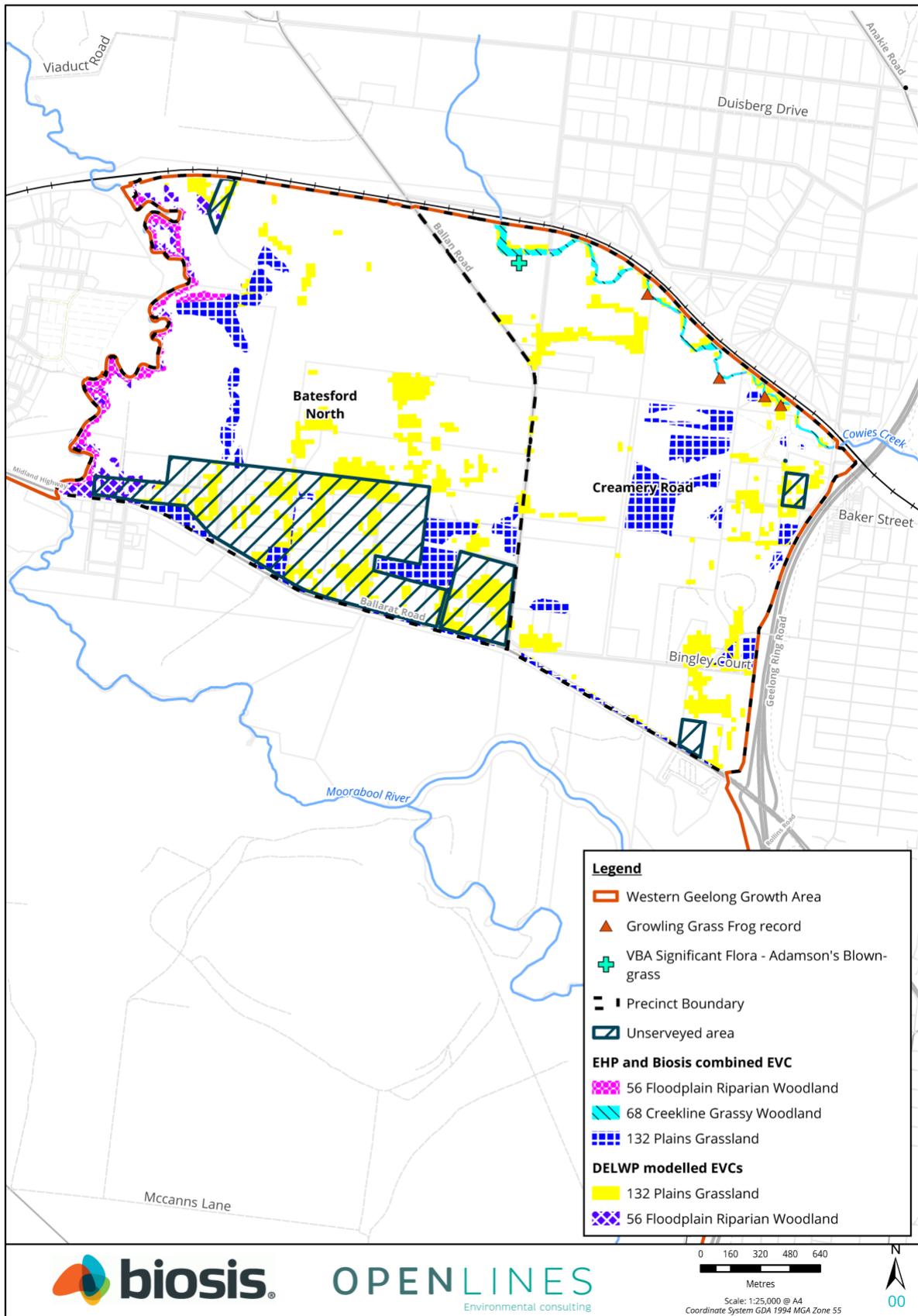


Figure 3-6: Biodiversity values in the portion of the WGA subject to the EPBC Plan

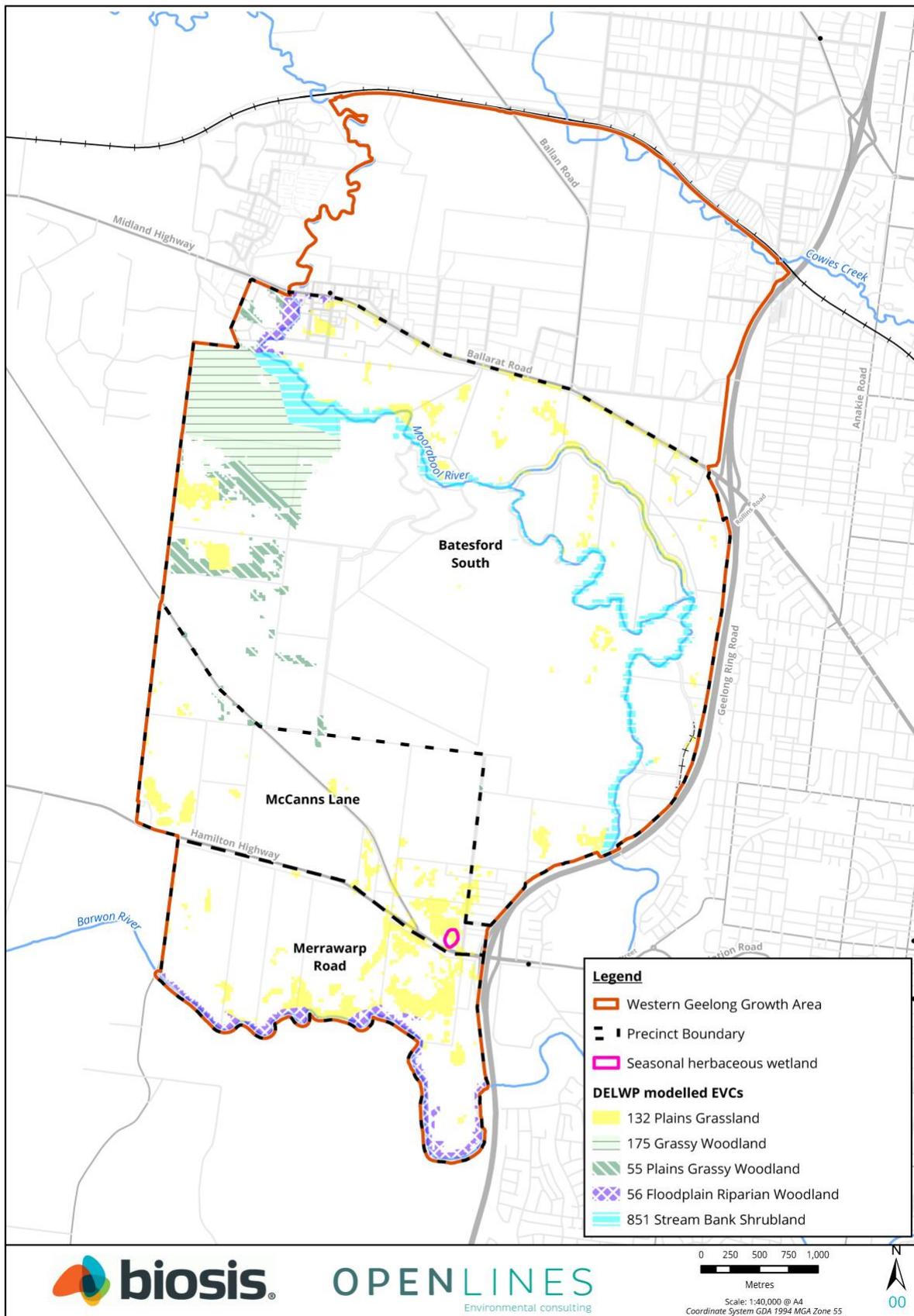


Figure 3-7: Biodiversity values in the southern portion of the WGGA not subject to the EPBC Plan

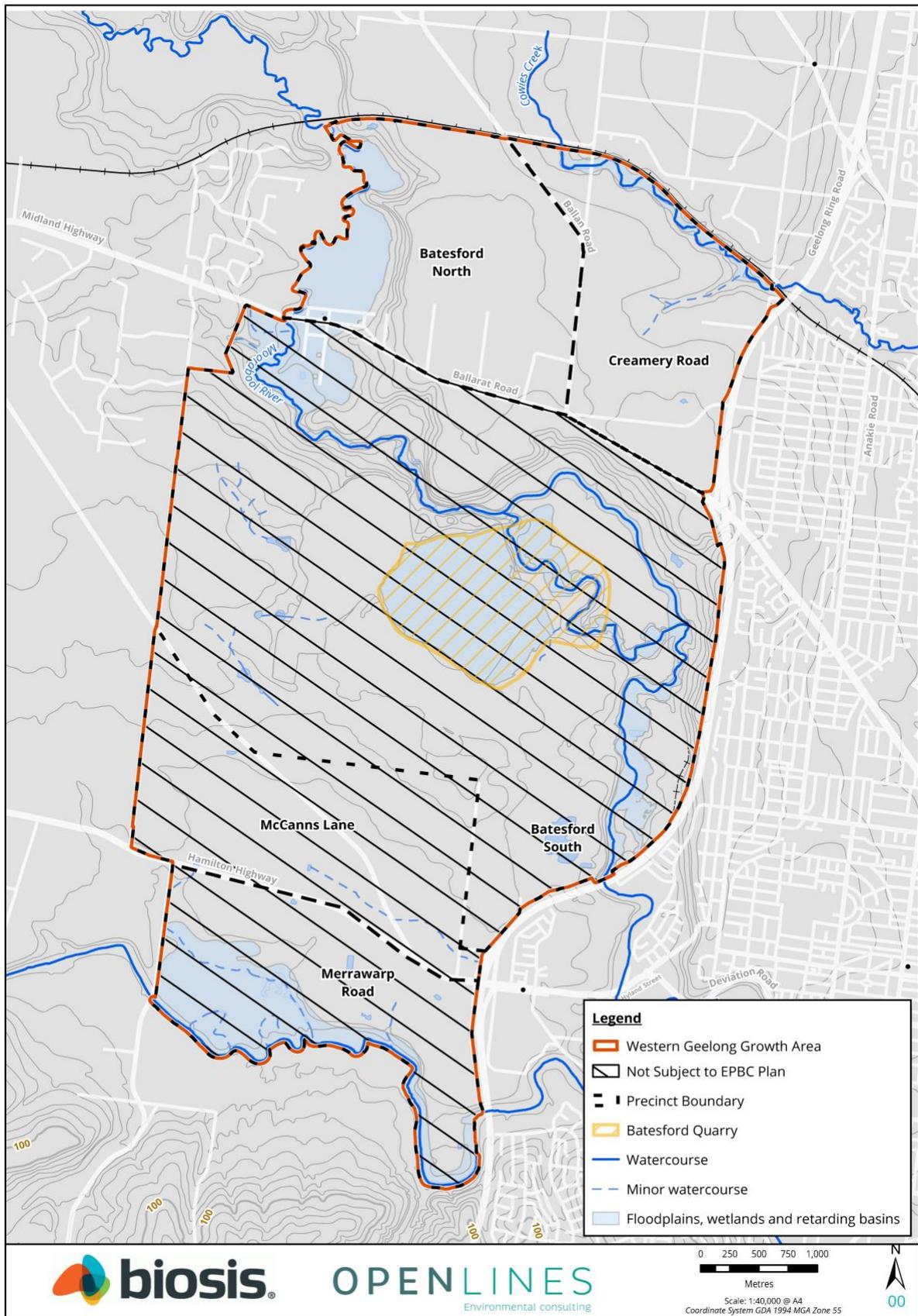


Figure 3-8: Hydrological values of the WGGA

3.2.7 WETLANDS

There are no Ramsar, or nationally significant wetlands mapped within the Growth Areas.

DEECA modelling indicates that the Growth Areas contain seven wetland formations, as well as a number of dams used to support rural residences within the Growth Areas.

The NGGA contains two DEECA modelled wetland formations, totalling 10.38 ha. The first of these corresponds to a wastewater treatment plant adjacent to Anakie Road. The second of these appears to be related to two small farm dams (from aerial observations) located in the NGGA Conservation Area. This area was mapped as Plains Grassland (EVC 132) by EHP (2021a). Overland flows within the NGGA, including ephemeral drainage lines, discharge into Corio Bay, which includes part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, complex of wetlands of international importance. The Bellarine Peninsula Ramsar site is located along the north-eastern shore and extending to the outer harbour.

The WGGA subject to the EPBC Plan does not contain any DEECA mapped wetland formations. The WGGA not subject to the EPBC Plan contains five DEECA mapped wetland formations comprising flooded river flats, inland deep and shallow freshwater marshes and a permanent saline lake (which is associated with the Batesford Quarry). The WGGA DEECA mapped wetlands are approximately 45.77 ha in total area. The Moorabool and Barwon River systems flow into Lake Connewarre further downstream, which is a part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site.

3.3 KEY THREATS TO BIODIVERSITY VALUES WITHIN THE GROWTH AREAS

A key threat to biodiversity values within the Geelong locality is loss of habitat for development. The region surrounding Geelong has historically been heavily developed for agricultural production, resulting in substantial losses of native vegetation (DSE, 2003). The city of Geelong itself has also long been a centre of development in Victoria and has been the second largest city in Victoria since the 1930's (Victorian Places, 2015). Historical development and clearing have resulted in loss of native vegetation and landscape degradation, reducing habitat availability and quality for native species.

Geelong's population is continuing to grow, with an anticipated 2.5 per cent annual growth rate, and is anticipated to have an additional 500,000 residents by 2050 (The City of Greater Geelong, 2021). Careful management is required to minimise impacts of development to support this forecast increase in population.

Other key environmental threats within the region include:

- Invasive species, including pests and weeds
- Modification of water systems, including historical construction of infrastructure such as dams and weirs, ongoing water abstraction, and water pollution from agricultural and urban sources
- Disturbance pressures upon habitats used recreationally, such as estuarine and beach environments
- Climate change

Each of these is discussed briefly below.

3.3.1 INVASIVE SPECIES

As a result of extensive historical development, there is a high density of weeds within the Geelong locality. For instance, surveys conducted within the Growth Areas found a high density of weeds and introduced pasture species across most of the surveyed areas (EHP, 2021). Weeds also pose a threat within the wider region, including within the Port Phillip Bay (Western Shoreline) & Bellarine Peninsula Ramsar site (DELWP, 2020).

Pest animals are also present within the region. Within the Growth Areas, there is evidence the sites are occupied by rabbits, hares and foxes (EHP, 2021). Additionally, foxes, cats, rabbits, deer are identified as invasive species of concern at the Port Phillip Bay (Western Shoreline) & Bellarine Peninsula Ramsar site (DELWP, 2020). Other invasive species, such as pigs, goats, are likely to also be present within the region. It is not considered possible to eradicate existing pests within the region and therefore asset protection approaches are considered the most effective management mechanism to minimise potential impacts to MNES (EHP, 2021).

3.3.2 WATER SYSTEM MODIFICATION

All of the major watercourses within the Geelong region have experienced environmental impacts from development.

In-stream dams or similar barriers are located where the Barwon River discharges into Lake Connewarre, and along the Barwon and Moorabool Rivers (upstream of Geelong) (CCMA, 2014). Dams pose a range of threats to riverine environments, including acting as barriers to fish passage, through altering characteristics of the water (such as water temperature and oxygen content), and through artificially altering water levels.

Water extraction from the Barwon and Moorabool rivers occurs to support consumptive and agricultural purposes. Current environmental water allocations for both of these rivers are not sufficient to meet environmental needs into the future (DELWP, 2021).

The environmental values of the Moorabool River, Barwon River, Hovells Creek, and Lake Connewarre Complex are all threatened by indirect impacts from agricultural and urban development within these catchments, including grazing pressures, invasive species, poor water quality, erosion and sedimentation, and degradation of native vegetation (CCMA, 2014).

3.3.3 RECREATIONAL DISTURBANCE

The Geelong locality is a popular destination for recreational purposes. Development of the Growth Areas will increase human activity in the vicinity of the Growth Areas, which can impact natural areas including conservation areas protected under the EPBC Plan and existing reserves. Recreational disturbance can be caused by:

- Trampling of flora species and disturbance to flora and fauna habitat
- Track creation
- Rock removal and disturbance
- Rubbish dumping and disturbance from associated clean-up activities
- Timber collection and removal of dead wood
- Illegal collection of flora and fauna species
- Dog walking
- Recreational activities such as mountain-biking, four-wheel driving, and horse riding

Recreational activities in estuarine and coastal environments (including dog walking on beaches, driving vehicles off-road, and water-based activities such as jet skiing, kite surfing, kayaking) can also pose a threat of disturbance, particularly to waterbirds and migratory birds which occur in coastal environments and within and near the Port Phillip Bay (Western Shoreline) & Bellarine Peninsula Ramsar site. The consequence of disturbance impacts upon waterbirds and migratory birds (many of which are protected under the EPBC Act) can be significant, leading to nest abandonment, population declines, or potentially reduced migratory success. The impacts of disturbance are forecast to increase as the human population within the region increases (DELWP, 2020). Species and TECs most at risk from this threat occur on land that is publicly accessible.

3.3.4 CLIMATE CHANGE

Climate change is rapidly emerging as one of the most significant threats to ecosystems and biodiversity (Prober *et al.*, 2019). Victoria's climate is among the driest and most variable globally, and ecosystems in Victoria are particularly vulnerable to climate change (Jin, Cant and Todd, 2009). Various changes in Victoria's climate have been recorded in recent decades: temperatures have increased by over 1.0°C since 1910, and fire season length and severity has increased. Future projections forecast that Victoria will continue to experience increased temperatures, in addition to less rainfall and more extreme weather events (DELWP, 2019). Victoria's Climate Change Strategy, released in 2021, outlines the Victorian Government's approach to managing climate change, including emissions reductions targets and measures to build climate resilience (DELWP, 2021).

More locally in the Geelong region, climate change poses specific threats through:

- Sea level rise, which particularly threaten coastal and estuarine habitats, including the Port Phillip Bay (Western Shoreline) & Bellarine Peninsula Ramsar site (DELWP, 2020)
- Increased storm intensity and frequency, which is likely to exacerbate the impacts of sea level rise (DELWP, 2020)
- Decreased water availability, which threatens water supply within the region and environmental values (CCMA, 2014; DELWP, 2021)

4 Conservation program

4.1 INTRODUCTION

This Chapter describes the conservation program of the BCS and how it will be implemented.

The purpose of the conservation program is to:

- Ensure development in the Growth Areas avoids and minimises, mitigates, and offsets impacts to Commonwealth, State and local biodiversity values in accordance with the requirements of the EPBC Act and State biodiversity policy
- Ensure biodiversity-related outcomes in the BCS are achieved
- Implement the EPBC Plan's conservation framework

The conservation program has been developed in accordance with the offset mitigation hierarchy (DSEWPC, 2012; DELWP, 2017c). The mitigation hierarchy requires impacts on biodiversity values to be firstly avoided and minimised to the greatest extent practicable, and then mitigated. The remaining residual impacts can then be offset.

The conservation program sets out commitments and measures that will be delivered for:

- Avoiding and minimising impacts to biodiversity values (see Section 4.2)
- Mitigating impacts to biodiversity values (see Section 4.3)
- Offsetting residual impacts to biodiversity values (see Section 4.4)

The commitments for the conservation program will be implemented through a series of detailed measures that are provided in the Commitments and Measure document.

4.2 AVOIDANCE AND MINIMISATION OF IMPACTS

Avoidance of impacts from development in the Growth Areas is a priority at both a Commonwealth and Victorian level and is the first step in the mitigation hierarchy. The avoidance process provides opportunities to avoid and protect areas of high biodiversity value and is fundamental to a determination that commitments adequately address the likely impacts on biodiversity and in reducing the need for offsets to address the impacts of the development.

There may be a range of reasons why land is avoided and not impacted, including because land:

- Has high biodiversity values and is avoided for biodiversity purposes
- Is not strategically located and is therefore not a priority for development
- Is not generally suitable for development for another reason such as topography or land use conflict

Avoidance is defined in the BCS as any land not directly impacted by development within the Growth Areas.

The BCS considered the proposed development for the Growth Areas set out in the Framework Plan and applied a strategic planning process to consider and resolve conflicts between areas identified as high biodiversity value and areas proposed for development in the Framework Plan. This avoidance planning comprised three processes:

- Strategic level planning to locate the Growth Areas and identify initial avoidance priorities
- Locating and designing the development within the Growth Areas to avoid impacts
- Future precinct and site-scale planning

These three steps are described in detail in [Appendix B](#).

The strategic planning process at the Growth Area level led to the identification in the BCS of biodiversity areas that support biodiversity values and provide opportunities to protect, manage and restore biodiversity within the Growth Areas (see Section 4.2.1). The biodiversity areas include four strategic conservation areas that will be avoided from development and protected and managed for conservation in-perpetuity, as well as biodiversity opportunity areas and investigation areas where further consideration of avoidance will be undertaken through precinct planning.

This further consideration of avoidance and biodiversity protection at the precinct scale during precinct planning complements and supports the broader strategic planning process undertaken for the Growth Areas. It allows the benefits of strategic planning to be realised while ensuring issues that cannot be addressed adequately through strategic planning, such as precinct or site-scale considerations, are able to be properly addressed.

The BCS includes commitments and measures to protect and manage the four strategic conservation areas and to consider further avoidance within biodiversity opportunity areas and investigation areas during precinct planning. These are described in Section 4.2.2 and Section 4.2.3 and set out in the Commitments and Measures document.

4.2.1 DESCRIPTION OF BIODIVERSITY AREAS

Biodiversity areas support biodiversity values within the Growth Areas and provide opportunities to protect, manage and restore biodiversity. They provide a key contribution to the delivery of the BCS outcomes set out in Section 2.1.

Through the application of the guiding principles (Section 2.2), the BCS identifies three categories of land within the Growth Areas that relate to biodiversity. They are:

- Strategic conservation areas which represent the most important locations for protecting biodiversity
- Biodiversity opportunity areas which represent locations that are primarily used for another purpose (e.g., to manage stormwater) but that provide opportunities for providing co-benefits for biodiversity
- Investigation areas which are locations that require further work or studies to determine their suitability as either a strategic conservation area or biodiversity opportunity area

The boundaries of the biodiversity areas (except one of the strategic conservation areas – the NGGA Conservation Area) requires confirmation and finalisation during precinct planning through the PSP processes (see Section 4.2.3).

It is important to note that only two of the strategic conservation areas (see below) contribute to the avoidance and/or offset outcomes under the EPBC Part 10 strategic assessment, which is given effect through the EPBC Plan. Although the biodiversity opportunity areas and investigation areas may lead to further conservation benefits to Commonwealth listed matters, these potential benefits will be additional to what is provided by the EPBC Plan.

TYPES OF BIODIVERSITY AREAS

Strategic conservation areas

The primary purpose of the strategic conservation areas is the protection, management and restoration of biodiversity values within key locations of the Growth Areas. The identification of these areas requires a sufficient level of data to provide confidence in the conservation outcomes that can be delivered and support and justify the necessary level of commitment to protect these areas. The guiding principles around conservation planning in the BCS (see Section 2.2) were applied to identify the strategic conservation areas. These include consideration of:

- Biodiversity values
- Connectivity
- Ecological viability

Secondary uses within the strategic conservation areas may be possible where these do not compromise the biodiversity values or reduce the ability to manage the areas. For example, secondary uses may include social infrastructure such as walking trails, or infrastructure to manage stormwater.

Biodiversity opportunity areas

Biodiversity opportunity areas are locations within the Growth Areas which may be suitable for less intensive use or development, such as open space or waterways, and where opportunities may exist for providing co-benefits for biodiversity. Their primary purpose is not conservation. However, they may provide a contribution to biodiversity protection and enhancement where that is complementary to the primary purpose of the area.

A sufficient level of data is needed to identify suitable biodiversity opportunity areas. Adequate data for this purpose currently exists for the NGGA and the precincts of the WGGA that occur within the EPBC strategic assessment area (Creamery Road and Batesford North). Further work will be needed as part of precinct planning to understand the feasibility for biodiversity enhancement and define the objectives that might be achieved for biodiversity in these areas.

The guiding principles around conservation planning were applied to identify the biodiversity opportunity areas. The principles relate to the integration and restoration of biodiversity in urban landscapes.

Investigation areas

Investigation areas are identified where data is not yet sufficient to determine the precise location and type of biodiversity areas. This occurs in the precincts of the WGGA outside of the EPBC strategic assessment area where comprehensive field surveys have not been undertaken. The investigation areas identified for this section of the WGGA reflect the areas considered most likely to meet the guiding principles for both strategic conservation areas and biodiversity opportunity areas based on the information that is currently available.

The investigation areas will be confirmed at the PSP stage for the relevant precincts as either:

- Strategic conservation areas
- Biodiversity opportunity areas
- Areas not suitable for biodiversity protection and therefore suitable for development

NGGA BIODIVERSITY AREAS

The biodiversity areas within the NGGA are identified in Figure 4-1. They include:

- A strategic conservation area – the NGGA Conservation Area
- A range of biodiversity opportunity areas
- A range of potential biodiversity linkages across the Growth Area

NGGA Conservation Area

The NGGA Conservation Area is a strategic conservation area in the north-west of the Growth Area. It is 109 ha in size and supports the following biodiversity values:

- 55 ha of mapped native vegetation (Plains Grassland EVC 132)
- 108 ha of habitat for the Golden Sun Moth
- 74 ha of habitat for the Striped Legless Lizard

The conservation area forms part of the avoidance and offset commitments for the EPBC Plan (see Section 4.4.1).

The key aim of the conservation area will be to protect and manage native vegetation and habitat for Striped Legless Lizard and Golden Sun Moth in perpetuity. It will do this by:

- Protecting habitat supporting populations of the Striped Legless Lizard and Golden Sun Moth
- Improving the condition of habitat for the Striped Legless Lizard and Golden Sun Moth
- Where possible, increasing the area of occupied habitat for the Striped Legless Lizard through regeneration or restoration of any potentially suitable areas

The NGGA Conservation Area will be a success if:

- The populations of Striped Legless Lizard and Golden Sun Moth persist and remain viable over the long term
- Habitat for Striped Legless Lizard and Golden Sun Moth is retained and condition improves over time

The NGGA Conservation Area was confirmed by the City through a Structured Decision Making process that led to confirmation of an area for conservation that was not identified in the Framework Plan, and which:

- Supports multiple important biodiversity values
- Focuses on the largest habitat area for Striped Legless Lizard within the NGGA and a substantial area of habitat for the Golden Sun Moth
- Provides the best opportunities for protecting and managing viable areas of biodiversity in the long term due its suitable shape, area, and condition of the vegetation

A description of the commitments and measures for the NGGA Conservation Area, including how the area will be protected and managed, is provided in Section 4.2.2 and Section 4.2.3.

Biodiversity opportunity areas

There are seven biodiversity opportunity areas within the NGGA. The majority of these relate to drainage areas that are likely to be required for various types of stormwater related infrastructure. However, these areas may also be appropriate for providing co-benefits to biodiversity by retaining or enhancing habitat values and potential movement corridors for threatened fauna across the Growth Area, as well as improving stream flow and water quality outcomes.

The key biodiversity values to promote or support in these areas include:

- Grassland ecosystems, particularly areas that have retained some extent of native flora. Area 2 in Figure 4-1 may provide some of the best opportunities for this. Planning and design within these areas should consider revegetation using native grasses with local provenance and avoiding the introduction of trees as part of landscaping
- The State listed Leafless Bluebush record within Area 1
- Habitat features which would support dispersal, refuge or movement of grassland fauna species, including the Striped Legless Lizard and the Golden Sun Moth

In addition to drainage lines, there are three areas of known habitat for the Striped Legless Lizard (outside the NGGA Conservation Area) that should be prioritised for sympathetic land uses such as open space or community parks as part of precinct planning. The species has been known to persist in small areas within urban environments and it may be possible to co-locate community spaces with habitat for the species.

Potential biodiversity linkages

Three potential MNES linkages have also been identified for the NGGA to further enhance the functioning of the biodiversity opportunity areas. These linkages may support the periodic movement or dispersal of fauna such as the Striped Legless Lizard or Golden Sun Moth where sympathetic landscaping, selection of materials and footpath or road-side management is undertaken. Opportunities for the movement of individuals could play a helpful role in supporting population resilience within the strategic conservation areas.

There are also a range of other potential linkages in the Growth Area that may provide a benefit to biodiversity through appropriate design of the urban form.

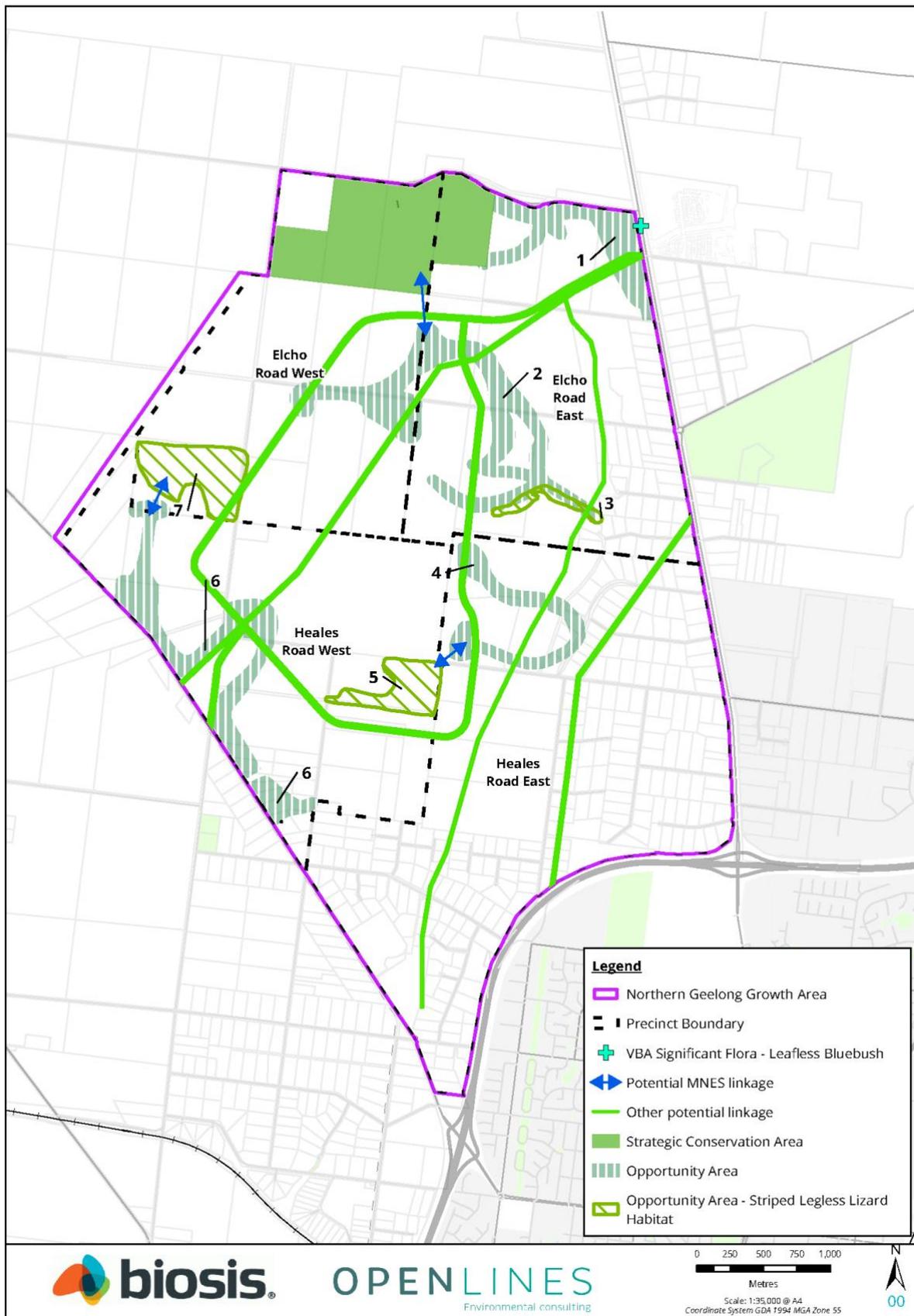


Figure 4-1: Biodiversity areas within the NGGA

WGGA BIODIVERSITY AREAS

The biodiversity areas within the WGGA are identified in Figure 4-2. They include:

- Cowies Creek, the Moorabool River and the Barwon River as strategic conservation areas
- A range of biodiversity opportunity areas
- A range of investigation areas in the precincts outside of the EPBC strategic assessment area
- A range of other potential biodiversity linkages across the Growth Area

Strategic conservation areas

The WGGA includes three strategic conservation areas. They are:

- Cowies Creek Conservation Area in the Creamery Road precinct
- Moorabool River Corridor in the Batesford North and Batesford South precincts
- Barwon River Corridor in the Merrawarp Road precinct

These three strategic conservation areas will be established to:

- Protect and regenerate biodiversity values along the creek/river corridors. This supports one of the Framework Plan's urban development objectives which identifies Cowies Creek, Moorabool River and Barwon River as priorities for the protection and regeneration of creek and river corridors
- Protect cultural heritage values. There are a range of sites of cultural heritage significance in the creek/river corridors and the conservation area will provide a level of protection for these. This supports the same urban development objective in the Framework Plan as the one that relates to biodiversity
- Provide for some social and stormwater infrastructure within the precinct that is sympathetic to the protection of biodiversity and heritage values. Social infrastructure may include walking trails and some open space facilities

Cowies Creek Conservation Area

The Cowies Creek Conservation Area supports:

- An important population of the Growling Grass Frog that is connected to a larger metapopulation downstream
- A previously known record of Adamson's Blown-grass
- Areas of mapped Creekline Grassy Woodland (EVC 68)

The conservation area will be established to protect, manage, and where possible restore these values.

The conservation area forms part of the avoidance commitments for the EPBC Plan (see Section 4.2.1).

Along with the broad aims of the three strategic conservation areas in the WGGA (see above), a key aim of the conservation area will be to support the persistence of the Growling Grass Frog within the WGGA and maintain the metapopulation dynamics with the broader Cowies Creek metapopulation downstream. It will do this by:

- Protecting high quality instream habitat
- Helping to improve the condition of lower quality instream habitat
- Protecting terrestrial habitat in buffer areas adjacent to the creek
- Regenerating areas of terrestrial habitat that are degraded through historical land uses
- Potentially providing for the creation of off-stream habitat

The Cowies Creek Conservation Area will be a success if:

- The population of GFF persists and remains viable over the long term
- Habitat for GFF and potential habitat for Adamson's Blown-grass is retained and condition improves over time
- Metapopulation dynamics of GFF are retained with downstream populations of the species

A description of the commitments and measures for the Cowies Creek Conservation Area, including how the area will be protected and managed, is provided in Section 4.2.2 and Section 4.2.3.

Moorabool River Corridor

The Moorabool River Corridor is located alongside the Batesford North precinct and through the Batesford South precinct and joins with the Barwon River downstream of the Merrawarp Road Precinct.

The avoidance and protection of the Moorabool River Corridor will protect a range of state and local biodiversity values.

The Moorabool River is an important biodiversity habitat corridor between the Brisbane Ranges National Park and the Barwon River, and sustains critical ecological processes for native fish, macroinvertebrates, mammals, birds, and vegetation communities (CCMA, 2016). The river supports a diversity of native vegetation along the length of the waterway. EVCs which have been modelled adjacent to the Moorabool River include Low Rainfall Plains Grassland (EVC 132_63), Plains Grassy Woodland (EVC 55), Floodplain Riparian Woodland (EVC 56) and Stream Bank Shrubland (EVC 851) (DELWP, 2005). The river also provides habitat for a number of native fish, including the Tupong (*Pseudaphritis urvillii*), Southern Pygmy Perch (*Nannoperca australis*), Australian Grayling (*Nannoperca obscura*), Common Galaxias (*Galaxias maculatus*) and Spotted Galaxias (*Galaxias truttaceus*) (CCMA, 2022). The river also supports the state significant Eastern Grey Egret (*Ardea alba modesta*) (CCMA, 2014).

The avoidance and protection of the Moorabool River Corridor will contribute to landscape connectivity between the upper reaches of the Moorabool, through to the Barwon River and the downstream Lake Connewarre Wetland Complex (this forms part of the Port Phillip (Western Shoreline) and Bellarine Peninsula Ramsar Site).

Barwon River Corridor

The Barwon River Corridor is located in the Merrawarp Road precinct.

The avoidance and protection of the Barwon River Corridor will protect a range of state and local biodiversity values.

The Barwon River supports aquatic vegetation communities and provides important breeding and feeding habitat for wetland dependant birds and native fish (CCMA, 2014). EVC modelling suggests that most of the corridor supports native vegetation, including Floodplain Riparian Woodland (EVC 56), and Stream Bank Shrubland in the upper reaches (DELWP, 2005). A range of birds are supported by the river, including the Magpie Goose (*Anseranas semipalmata*), Eastern Great Egret (*Ardea modesta*), Lewin's Rail (*Rallus pectoralis*), Australasian Bittern (*Botaurus poiciloptilus*), Caspian Tern (*Hydroprogne caspia*) and Nankeen Night Heron (*Nycticorax caledonicus*). The river also supports native fish including the Australian Grayling (*Prototroctes maraena*), Australian Mudfish (*Neochanna cleaveri*), and Yarra Pygmy Perch (*Nannoperca obscura*) (CCMA, 2022).

The avoidance and protection of the Barwon River Corridor will contribute to landscape connectivity between the upstream Moorabool River, and downstream Lake Connewarre Wetland Complex (this forms part of the Port Phillip (Western Shoreline) and Bellarine Peninsula Ramsar Site).

Biodiversity opportunity areas

Four biodiversity opportunity areas are identified within Creamery Road and Batesford North. These relate to drainage areas that are likely to be required for various types of drainage infrastructure. However, these areas may also be appropriate for providing co-benefits to biodiversity and providing biodiversity links across the Growth Area.

In particular (see Figure 4-2):

- Area 1 may provide substantial opportunities for adding to and enhancing the Moorabool River Corridor
- Area 3 may provide an important opportunity for habitat creation and enhancement for the Growling Grass Frog, connecting through to the Cowies Creek Conservation Area. For example, the species has been known to occupy suitably designed urban stormwater basins. The potential development of this tributary of Cowies Creek in a way that supports movement or provides refuge for the Growling Grass Frog could play a helpful role in supporting the long-term viability of the Cowies Creek metapopulation

Investigation areas

Eight investigation areas are identified for the precincts outside the area of the EPBC strategic assessment where comprehensive field surveys are yet to occur. These include:

- Woodland adjacent to the existing Dog Rocks Flora and Fauna Sanctuary
- Other drainage lines within the precincts
- A potential Commonwealth listed threatened ecological community (Seasonal Herbaceous Wetlands) in McCanns Lane
- The area around the existing Batesford Quarry

Woodland adjacent to the existing Dog Rocks Flora and Fauna Sanctuary

The Dog Rocks Flora and Fauna Sanctuary is an area of open eucalypt woodland of 83 ha with a frontage to the Moorabool River. The area is protected and managed by a Trust for Nature covenant. It supports rare local native vegetation such as Yellow Gum, Rock Correa, and Chocolate Lily, and old growth trees (Batesford Fyansford Stonehaven Landcare Group, 2020, 2021). The area provides habitat for a diversity of birdlife, including Tawny Frogmouth, Nankeen Kestrel, and Sacred Kingfisher. The area also supports small families of koalas and kangaroos, and a number of lizards and snakes (Batesford Fyansford Stonehaven Landcare Group, 2020).

Investigation area 8 in the Batesford North precinct includes areas adjacent to the Dog Rocks Flora and Fauna Sanctuary. Aerial imagery suggests that these areas support remnant woodland vegetation, and modelled EVCs indicate that most of this area comprises Grassy Woodland (EVC 175) and Plains Grassy Woodland (EVC 55). The protection and management of this area would provide biodiversity benefits to this area as well as to Dog Rocks by increasing the area of land protected for conservation, providing a buffer to the sanctuary, and improving connectivity.

Other drainage lines within the precincts

Several drainage lines are identified as investigation areas. The existing values of these drainage lines are not currently well understood and will require further investigation. However, sympathetic design and management of these areas may provide important co-benefits to biodiversity, in particular by improving connectivity across the Growth Area.

Potential Seasonal Herbaceous Wetlands

The Framework Plan identified an area that potentially supports an occurrence of the Seasonal Herbaceous Wetland community in the McCanns Lane precinct near the intersection of McCanns Lane and the Hamilton Highway (The City of Greater Geelong, 2021). The community is listed as Critically Endangered under the EPBC Act. It is comprised of temporary freshwater wetlands which are seasonally inundated, typically filling after rains in winter and spring, and then drying out. Many occurrences of this community are very small (less than 1 hectare in size) (DSEWPaC, 2012).

Further survey and investigation are required to confirm the presence of the TEC in this area. If the TEC is identified in this area, it is important that it is protected from direct and indirect impacts due to development.

The area around the existing Batesford Quarry

The Batesford Quarry covers an area of roughly 190 hectares. The area is highly disturbed and is unlikely to support biodiversity values at present. The Framework Plan identifies the area as a potential lake or waterbody. If the quarry is filled in, this will create an opportunity to establish wetland and water habitat for biodiversity.

Protection and management of the area surrounding the Batesford Quarry will be important to support the ecological functioning of the wetland area and provide fauna habitat values.

Potential biodiversity linkages

There are a range of potential linkages in the Growth Area that may provide a benefit to biodiversity through appropriate design of the urban form.

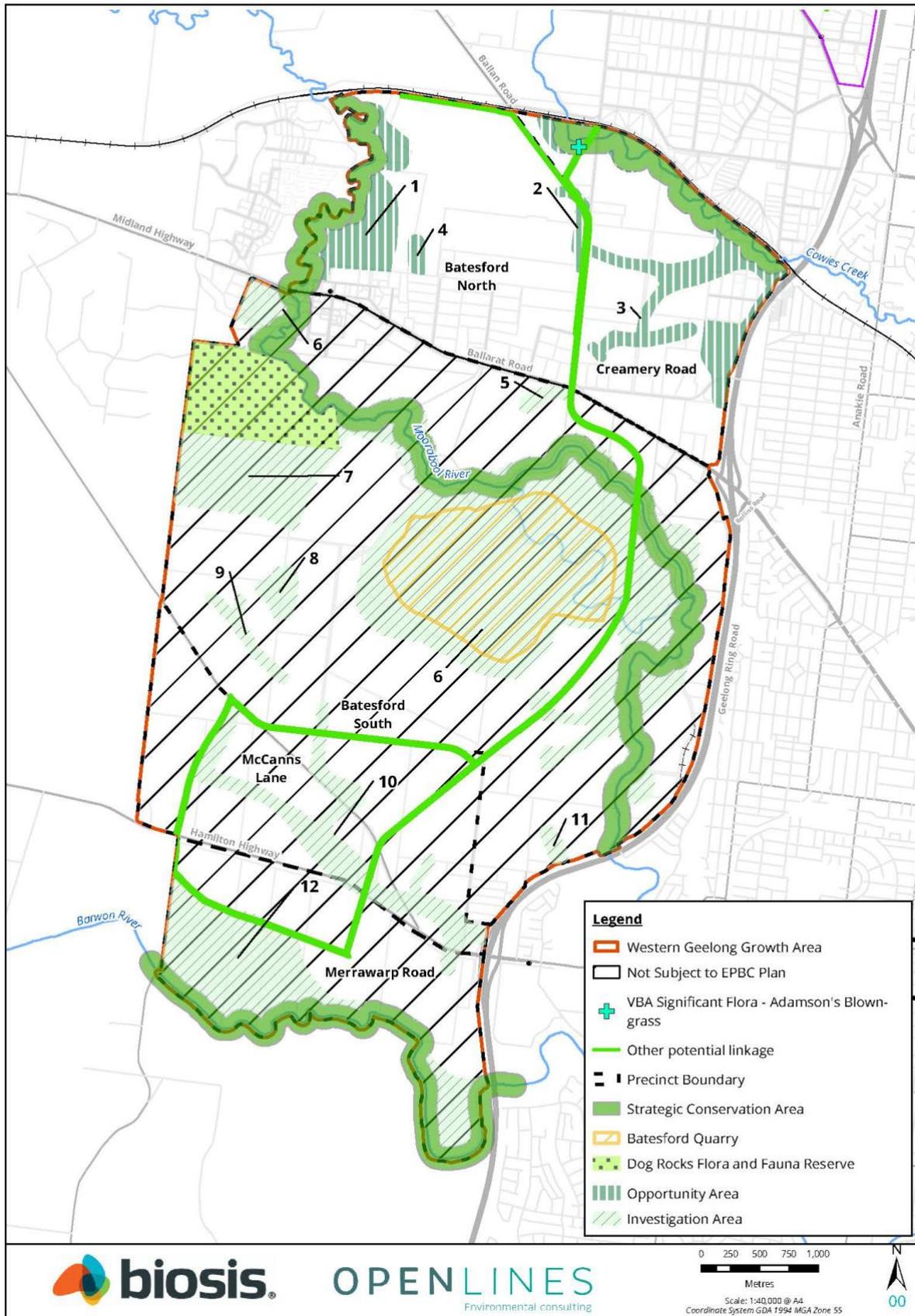


Figure 4-2: Biodiversity areas within the WGGGA

4.2.2 COMMITMENTS FOR AVOIDANCE

The following national level commitments are made in relation to avoidance:

Table 4-1: National level commitments in relation to avoidance

No.	Commitment
3	The NGGA Conservation Area will be established in perpetuity to avoid and protect 74 ha of habitat for Striped Legless Lizard and 108 ha of habitat for Golden Sun Moth
4	A Conservation Management Plan will be prepared and implemented for the protection and ongoing management of Striped Legless Lizard and Golden Sun Moth within the NGGA Conservation Area
5	The Cowies Creek Conservation Area will be established in perpetuity to avoid and protect habitat needed to support the continued persistence of the Growling Grass Frog in the WGGA
6	A Conservation Management Plan will be prepared and implemented for the protection and ongoing management of Growling Grass Frog and areas of potential habitat for Adamson's Blown-grass within the Cowies Creek Conservation Area

The following State level commitments are made in relation to avoidance:

Table 4-2: State level commitment in relation to avoidance

No.	Commitment
i	Strategic Conservation Areas will be confirmed and protected through the PSP process
ii	Opportunities for further avoidance of impacts to biodiversity values within the biodiversity opportunity areas will be considered through the PSP process
iii	Investigation areas within the WGGA will be confirmed as either: <ul style="list-style-type: none"> • Strategic conservation areas • Biodiversity opportunity areas • Areas not suitable for biodiversity protection and rather suitable for development

4.2.3 IMPLEMENTATION PROCESSES AND MECHANISMS TO PROTECT AND MANAGE BIODIVERSITY AREAS

The BCS includes several implementation processes and mechanisms to protect, manage, and where appropriate, restore biodiversity values in the biodiversity areas. This includes:

- Planning to finalise strategic conservation area boundaries
- Planning controls and mechanisms to secure land within strategic conservation areas
- Preparation and implementation of Conservation Management Plans for strategic conservation areas
- Further consideration of biodiversity opportunity areas and investigation areas

PLANNING TO FINALISE STRATEGIC CONSERVATION AREA BOUNDARIES

The boundaries of the Cowies Creek Conservation Area, Moorabool River Corridor and Barwon River Corridor are indicative in the BCS and will be finalised during precinct planning through the preparation of PSPs.

Cowies Creek Conservation Area

The boundary of the Cowies Creek Conservation Area will be finalised to ensure the conservation area includes all areas of habitat that may be needed to support the continued persistence of the Growling Grass Frog within the WGGA, including areas of habitat that may be used for breeding, foraging and movement.

One of the key considerations in finalising the boundary will include maintaining an appropriate corridor width to protect terrestrial habitat and buffer the instream habitat for Growling Grass Frog. Two guiding documents will be used for designing and managing the conservation area in relation to Growling Grass Frog – Growling Grass Frog Habitat Design Standards (DELWP, 2017b) and the Growling Grass Frog Crossing Design Standards (DELWP, 2017a).

It is also noted that the Growling Grass Frog Significant Impact Guidelines (DEWHA, 2009):

- Identify removal or degradation of habitat within 200 m of a water body as a likely significant impact to the species
- Recommend that buffer zones of at least 200 m around water bodies and dedicated terrestrial habitat corridors of at least 100 m be retained in avoiding and land from development and designing conservation areas

The topography of Cowies Creek and the current land use within the Creamery Road Precinct is not considered conducive to a buffer distance of 200 m. There is a significant break of slope at approximately 100 m from the creek line which is likely to represent the edge of the potential terrestrial habitat for the species. Beyond the break of slope there are significant areas of cropping and a lack of suitable habitat. This suggests that a layout that is based on the break of slope as the edge of the conservation area would be appropriate. This would maintain an average corridor width of approximately 100 m from the stream. Given the current use of Cowies Creek by the species, this is considered appropriate for the long term protection of the population in the WGGA.

The decision on the boundary of the conservation area would also consider the ephemeral stream that runs into Cowies Creek in the precinct, and the potential for that area to provide additional habitat for the species.

Moorabool River Corridor and Barwon River Corridor

The boundary of the Moorabool River Corridor and Barwon River Corridor will be finalised to ensure the corridors:

- Incorporate as much of the key biodiversity values associated with each river corridor as possible
- Reflect the relevant priorities or standards in the Corangamite Waterway Strategy 2014-2022
- Include a minimum of 50 m of riparian land from the top of bank either side of the waterways

Individual detailed master plans that outline the protection and enhancement of river and creek corridors within the Growth Areas will also be prepared and incorporated within the relevant PSPs, including:

- Barwon River, between Geelong Ring Road and Merrawarp Road
- Moorabool River, between Midland Highway and Geelong-Ballarat Railway
- Moorabool River (and deviation channel), between Geelong Ring Road and Midland Highway and including Dog Rocks Sanctuary and Moorabool River Reserve

PLANNING CONTROLS AND MECHANISMS TO SECURE LAND

The NGGA Conservation Area and Cowies Creek Conservation Area will be purchased and/or vested in the City as reserves to be managed for conservation purposes.

The strategic conservation areas will also be protected through several planning controls as well as security agreements to ensure the protection of the land for conservation in-perpetuity.

The planning controls include:

- Identifying the strategic conservation areas in relevant PSPs as land to be protected for conservation in the urban structure maps of the precinct. This will provide protection to the strategic conservation areas by directing development away from the conservation areas. Responsible authorities can only approve planning permits for subdivision and development that are generally in accordance with the relevant PSP that applies to the land
- Applying an appropriate environment zone to the strategic conservation areas under the Greater Geelong Planning Scheme. The zoning will limit the use and development that can occur within the strategic conservation area. The decision on the appropriate environment zone will be made by the City of Geelong during precinct planning and will take into account the future land tenure of the conservation area, the intended uses within the conservation area, and the guidance on environment zoning in *Planning for biodiversity: guidance* (DELWP, 2017d)
- Identifying the native vegetation in the strategic conservation areas as 'to be retained' within the relevant NVPPs. This will provide protection to the native vegetation within the strategic conservation area by requiring that a permit is obtained to remove that native vegetation under the Greater Geelong Planning Scheme

The NGGA Conservation Area will also be secured as an offset site under an in-perpetuity, on-title agreement consistent with the security requirements of the Native Vegetation Guidelines (DELWP, 2017). For private land, these requirements specify that land can be secured by entering into a security agreement with a relevant statutory body that:

- Contains a legally enforceable provision
- Has no termination date
- Is registered on the land title
- Contains an offset management plan as detailed in Section 9.3 of the Native Vegetation Guidelines

Agreements that comply with these requirements include:

- An agreement with the Secretary to DEECA under section 69 of the *Conservation Forest and Lands Act 1987*
- An agreement with a responsible authority under section 173 of the *Planning and Environment Act 1987*
- An agreement with Trust for Nature to register an offset covenant under the *Victorian Conservation Trust Act 1972*

CONSERVATION MANAGEMENT PLANS

The City will prepare and implement Conservation Management Plans to provide for the protection and ongoing management of the biodiversity values within each strategic conservation area.

Conservation Management Plans will be prepared in accordance with the Commonwealth Environmental Management Plan Guidelines (DoE, 2014). The Conservation Management Plan for Cowies Creek will also be prepared in accordance with the Growling Grass Frog Habitat Design and Crossing Standards (DELWP, 2017b, 2017a).

Each Conservation Management Plan will include the following information, as relevant:

- Objectives of the Conservation Management Plan. These will be developed consistent with the aims of the conservation area set out in Section 4.2.1
- Boundaries of the conservation areas
- Native vegetation to be retained as identified in the relevant NVPP for the precinct
- Extent and condition of biodiversity values in the areas, including habitat and records
- Management actions and arrangements to protect, and where appropriate, restore, the biodiversity values of the conservation areas, including management methods, standards and techniques, roles and responsibilities, timing for implementation, funding and monitoring and reporting
- For the Cowies Creek Conservation Area, Moorabool River corridor and Baron River corridor, identify any locations suitable for public access points, walking paths/trails, and passive recreation, and any locations suitable for water management assets and associated infrastructure

Monitoring will be undertaken as part of the implementation to ensure that performance of each Conservation Management Plan is understood, and to ensure that management is responsive and adapts to any changing circumstances.

For the Growling Grass Frog in the Cowies Creek Conservation Area, a measure is included to undertake restorative actions if declines in the species are observed through monitoring. If declines are observed:

- The City will instigate further information gathering to try and determine the causes of the declines
- Restorative actions will be determined based on the causes of any declines. These may include measures such as:
 - Changes to how water quantity and/or quality are managed
 - Management actions in the corridor to restore habitat
 - Creation of new habitat features (e.g., off-stream ponds)
- Monitoring intensity will be increased to determine if the restorative actions are working

A draft of each Conservation Management Plan will be provided to DCCEEW for consideration and comment prior to its finalisation and approval by the City of Geelong.

FURTHER CONSIDERATION OF BIODIVERSITY OPPORTUNITY AREAS AND INVESTIGATION AREAS

Opportunities for further avoidance of impacts to biodiversity values within the biodiversity opportunity areas will be considered during precinct planning through the preparation of PSPs.

Biodiversity opportunity areas

As defined in Section 4.2.1, the primary purpose of the biodiversity opportunity areas is not conservation. However, they may provide a contribution to biodiversity protection and enhancement where that is complementary to the primary purpose of the area.

The biodiversity areas will be confirmed at the PSP preparation stage for the relevant precincts to confirm the biodiversity values of these areas. These decisions will be made by the City through application of the BCS guiding principles relating to biodiversity opportunity areas and consideration of the guidance relating to opportunity areas in the precinct profiles in Section 4.5 of the BCS. The precinct profiles identify the currently known biodiversity values within the biodiversity opportunity areas and the priorities that should be considered in making decisions on these areas during precinct planning.

For any locations within biodiversity opportunity areas that are determined as providing co-benefit opportunities for biodiversity, the City will determine the purpose, biodiversity management actions and design requirements for these locations and incorporate these into permit conditions or similar.

Native vegetation to be retained in the biodiversity opportunity areas will be identified as such in the relevant NVPP.

Investigation areas

The City will undertake ecological surveys within the investigation areas at the PSP preparation stage for the relevant precincts to confirm the biodiversity values of these areas, in accordance with relevant survey guidelines.

Ecological data will be used to inform decisions about whether any investigation areas should be confirmed as either strategic conservation areas or biodiversity opportunity areas during precinct planning.

These decisions will be made by the City through application of the BCS guiding principles relating to strategic conservation areas and biodiversity opportunity areas and consideration of the guidance relating to investigation areas in the precinct profiles in Section 4.5 of the BCS. The BCS will be amended to confirm the location of any investigation areas that are confirmed as new strategic conservation areas or biodiversity opportunity areas.

Any investigation areas confirmed as strategic conservation areas will be protected for conservation in the same way as the other strategic conservation areas (see above), including by applying planning controls and mechanisms to secure the land and preparing Conservation Management Plans to manage these areas in the long term.

4.3 MITIGATION OF IMPACTS

Mitigating impacts to biodiversity values is the second step in the mitigation hierarchy. The mitigation process reduces how likely or significant unavoidable impacts may be and further reduces the need for offsets.

Development within the Growth Areas has the potential to lead to a range of indirect impacts that may adversely affect biodiversity values. These indirect impacts relate to:

- Altered fire regimes
- Changes to water flows and water quality
- Disturbance due to noise, dust, or light
- Disturbance from increased public access to natural areas
- Fauna mortality and barriers to movement
- Inadvertent impacts on adjacent habitat or vegetation
- Predation or competition by pest or domestic fauna
- Spread of infection or disease
- Spread of weeds

4.3.1 COMMITMENTS FOR MITIGATION

The national and State level commitments for mitigation are set out in Table 4-3 and Table 4-4 respectively. They include:

- Requirements to implement standard mitigation measures to ensure potential indirect impacts from development are controlled
- Additional specific mitigation measures to address key environmental values and protect the strategic conservation areas
- Requirements to prepare CMPs for each of the strategic conservation areas

There is some overlap in the commitments relating to the strategic conservation areas (both in this section relating to mitigation and with other commitments for avoidance and offsets). This is deliberate to ensure that all strategic conservation areas (including those to be defined in the future in the southern precincts of the WGGA) are appropriately protected.

Table 4-3: National level commitments in relation to mitigation

No.	Commitment
7	Standard mitigation measures will continue to be implemented to minimise the indirect impacts of the development on MNES in accordance with the requirements of the <i>Greater Geelong Planning Scheme</i> (The City of Greater Geelong, 2022), as updated from time to time, and generally in accordance with the Framework Plan (The City of Greater Geelong, 2021)
8	The following additional specific mitigation measures will be implemented to minimise the indirect impacts of the development on the NGGA Conservation Area and Cowies Creek Conservation Area: <ul style="list-style-type: none"> • Establish a conservation interface for the conservation areas • Design and baffle public lighting to prevent light spill and glare within the Cowies Creek Conservation Area • Prepare Construction Environmental Management Plans for construction works on land immediately adjacent to the conservation areas
9	Additional specific mitigation measures will be implemented to minimise the indirect impacts of the development on MNES associated with waterways, riparian areas and wetlands including: <ul style="list-style-type: none"> • EPBC listed threatened and migratory birds • <i>Galaxiella toourtkoourt</i> (Little Galaxias) • <i>Litoria raniformis</i> (Growling Grass Frog) • <i>Nannoperca obscura</i> (Yarra Pygmy Perch) • <i>Prototroctes maraena</i> (Australian Grayling) • <i>Lachnagrostis adamsonii</i> (Adamson's Blown Grass) • Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site

Table 4-4: State level commitments in relation to mitigation

No.	Commitment
iv	Conservation Management Plans will be prepared and implemented for the protection and ongoing management of biodiversity values within each of the strategic conservation areas
v	The following additional specific mitigation measures will be implemented to minimise the indirect impacts of the development on the environmental values of the strategic conservation areas: <ul style="list-style-type: none"> • Establish a conservation interface for each strategic conservation area • Design and baffle public lighting to prevent light spill and glare within the strategic conservation areas • Prepare Construction Environmental Management Plans for construction works on land immediately adjacent to the strategic conservation areas

4.3.2 IMPLEMENTATION OF MITIGATION

Mitigation measures for biodiversity values will mostly be determined and implemented through the Victorian planning system as development proceeds (see [Appendix A](#)). This will deliver a range of standard mitigation measures that will address many of the potential indirect impacts of development within the Growth Areas.

The assessment of potential indirect impacts to MNES in the EPBC Strategic Assessment Report identified several additional specific mitigation measures beyond those that will be delivered through the existing planning system. These are required to address specific risks to MNES associated with waterways, riparian areas and wetlands, as well as other environmental values within conservation areas. The specific mitigation measures will also mostly be delivered through the existing planning system and will provide additional protection to State and local biodiversity values.

Any potential indirect impacts of development on Victorian biodiversity values will be assessed under the planning permit process at the time development is proposed. While the additional specific mitigation measures are expected to benefit and minimise impacts to the key environmental values (both MNES and Victorian values), the planning permit process may determine further additional mitigation measures are needed to address specific matters.

IMPLEMENTATION OF STANDARD MITIGATION MEASURES

The Victorian planning system will deliver a range of standard mitigation measures through the PSP process, existing provisions in the Greater Geelong Planning Scheme, and the planning permit process. This standard mitigation includes measures such as stormwater management, erosion control, and management of construction sites.

PSP process

PSPs will be prepared for each precinct within the Growth Areas. They include requirements and guidelines for the use and development of a precinct, including actions to manage and mitigate the impacts. Preparation of PSPs is informed through several key steps, including:

- Preparation of technical studies and reports to understand key issues and constraints for the precinct and inform planning and management responses to be addressed in the PSP
- An opportunity for stakeholders to raise concerns and make submissions through public exhibition
- An independent planning panel hearing to consider and resolve key technical, planning and stakeholder issues

The City will prepare PSPs with consideration of the Framework Plan and the *Precinct Structure Planning Guidelines: New Communities in Victoria* (Victorian Planning Authority, 2021).

The Framework Plan includes a range of mitigation-related actions. These are summarised in Table 4-6 against each of the relevant potential indirect impact types associated with the development. The City will be responsible for making decisions about how the mitigation-related actions in the Framework Plan will be addressed and implemented through each PSP. Clause 11.02 specifies that PSPs should be prepared generally in accordance with the Framework Plan map.

Table 4-5: Mitigation-related actions in the Framework Plan

Indirect impact type	Action	Description	Relevant Growth Area
Changes to water flows and quality	N1.2.1 - N1.2.9 W1.2.1 - W1.2.11	Various actions to maintain water flows and quality, including riparian buffers and stormwater standards	Northern Western
	N1.3.6 W1.3.7	Manage stormwater to minimise downstream impacts to Ramsar site	Northern Western
	N1.3.8 W1.3.9	Establish riparian reserves in Plan 7 (Northern Growth Area) and Plan 15 (Western Growth Area)	Northern Western
	N1.6.9 W1.6.6	Manage land contamination in high risk areas	Northern Western

Indirect impact type	Action	Description	Relevant Growth Area
	W1.3.2	Prepare Masterplans for Cowies Creek and Barwon and Moorabool rivers for integrated water management and to protect riparian corridors along waterways	Western
Spread of infection/disease	-	-	-
Spread of weeds	N1.3.3 W1.3.4	Manage incompatible neighbouring land uses	Northern Western
	N1.3.5 W1.3.6	Use revegetation to buffer natural areas	Northern Western
	N1.3.10 W1.3.11	Use indigenous species for plantings	Northern Western
Predation/competition/land degradation by pests / domestic fauna	N1.3.3 W1.3.4	Manage public access and pests	Northern Western
	N1.7.3 W1.7.4	Protect native fauna from domestic and feral pests	Northern Western
Altered fire regimes and increased fire risk	-	-	-
Disturbance from increased public access to natural areas	N1.3.3 W1.3.4	Manage public access and pests	Northern Western
	N1.3.9 W1.3.10	Promote and manage access to natural areas	Northern Western
	N1.7.3 W1.7.4	Minimise rubbish dumping and illegal clearing	Northern Western
Fauna mortality, displacement, and barriers to movement	N1.3.2 W1.3.3	Establish habitat corridors in Plan 9 (Northern Growth Area) and Plan 17 (Western Growth Area)	Northern Western
	N1.3.4 W1.3.5	Limit road crossings of waterways	Northern Western
	N1.3.5 W1.3.6	Use revegetation to buffer natural areas	Northern Western
	N1.3.8 W1.3.9	Establish riparian reserves in Plan 7	Northern Western
	N1.3.11 W1.3.12	Promote native vegetation in the creative corridor	Northern Western
Fauna disturbance due to noise, dust and light	-	-	-
Inadvertent impacts on adjacent habitat or vegetation	-	-	-

Greater Geelong Planning Scheme

Table 4-6 summarises the key existing provisions in the Greater Geelong Planning Scheme that will lead to the implementation of standard mitigation measures against each of the relevant indirect impact types.

These existing provisions include policy directions under the PPF and specific provisions under the planning scheme.

Planning permit process

Both PSPs and the provisions in the Greater Geelong Planning Scheme are implemented primarily through the planning permit process. Clause 37.07-14 specifies that in deciding on permit applications within the UGZ, responsible authorities should consider several matters, including any relevant growth area Framework Plan or PSP that applies to the land.

The City will be responsible for making most decisions about how existing provisions in the Greater Geelong Planning Scheme relevant to mitigating the impacts of the development will be addressed and implemented through the planning permit process. These decisions will be made in accordance with the requirements of the planning scheme and the specific characteristics of the proposed subdivision or development and the site and surrounding environment. The UGZ requires permits granted for subdivision and development to:

- Be generally in accordance with the PSP
- Include any conditions or requirements specified in the schedule to the UGZ or the PSP

The permit process includes the following steps relevant to the implementation of mitigation measures:

- Preparation of technical studies and reports that support the application and inform the planning decision, including plans to address the potential impacts of the development
- Referral of the application to specialist referral authorities for advice and comment where required – these may object to the permit or specify conditions to be included on a permit to address potential impacts
- An opportunity for stakeholders to raise concerns and make submissions through a notification process
- Inclusion of conditions on permits to address the potential impacts of the development
- An opportunity to review the merits of a permit decision at the Victorian Civil and Administrative Tribunal

The City has also developed a template of standard conditions to be included on permits where appropriate. These are shown in Table 4-7 against each of the relevant indirect impact types associated with the development. This template of conditions is updated from time to time to reflect changes in requirements and standards.

IMPLEMENTATION OF ADDITIONAL SPECIFIC MITIGATION MEASURES

Waterways, riparian areas and wetlands commitment

The commitment relating to mitigating impacts on waterways, riparian areas and wetlands will be implemented through the preparation of technical studies to understand the key risks from development on MNES associated with Hovells Creek, Cowies Creek and the Moorabool River. These studies aim to:

- Address risks associated with changes to water quality and hydrology from the development in the Growth Areas
- Identify measures, standards or targets to mitigate impacts on MNES including, as relevant:
 - Water quality parameters
 - Water retention and flow management requirements
 - Limits on extraction or use
 - Habitat buffer requirements
 - Monitoring and reporting

Guidelines will be prepared based on the results of these studies to guide the preparation of PSPs and decisions on planning permits and permit conditions to ensure risks to MNES in relation to these impacts are adequately managed. A planning scheme amendment or other appropriate process will be undertaken to ensure the guidelines are considered during the preparation of PSPs and in decisions on planning permits and permit conditions.

Stormwater infrastructure and ongoing stormwater management will also be designed to be sympathetic to and not notably alter habitat for the Growling Grass Frog within downstream reaches of Cowies Creek.

To ensure an appropriate level of assurance for this commitment, monitoring and reporting on the inclusion of these specific mitigation measures in PSPs and/or as conditions on permits will be undertaken as part of the monitoring program and annual progress reporting under the Plan's MERI program.

Commitments to protect strategic conservation areas

The commitments relating to mitigating impacts in the NGGA Conservation Area, Cowies Creek Conservation Area, and other strategic conservation areas will be implemented by including the mitigation measures as requirements and guidelines in PSPs and/or as conditions on permits for land use, subdivision and development.

Implementation of the management actions in the CMPs for the NGGA Conservation Area and Cowies Creek Conservation Area will be funded using the implementation fund established under the Funding Program (as described in the EPBC Plan).

The City will be responsible for implementing most of these mitigation measures.

Table 4-6: Mitigation-related actions in the NWGGA Framework Plan to be addressed through PSPs

Indirect impact type	Action	Description	Relevant Growth Area
Changes to water flows and quality	N1.2.1 - N1.2.9 W1.2.1 - W1.2.11	Various actions to maintain water flows and quality, including riparian buffers and stormwater standards	Northern Western
	N1.3.6 W1.3.7	Manage stormwater to minimise downstream impacts to Ramsar site	Northern Western
	N1.3.8 W1.3.9	Establish riparian reserves in Plan 7 (Northern Growth Area) and Plan 15 (Western Growth Area)	Northern Western
	N1.6.9 W1.6.6	Manage land contamination in high risk areas	Northern Western
	W1.3.2	Prepare Masterplans for Cowies Creek and Barwon and Moorabool rivers for integrated water management and to protect riparian corridors along waterways	Western
Spread of infection/disease	-	-	-
Spread of weeds	N1.3.3 W1.3.4	Manage incompatible neighbouring land uses	Northern Western
	N1.3.5 W1.3.6	Use revegetation to buffer natural areas	Northern Western
	N1.3.10 W1.3.11	Use indigenous species for plantings	Northern Western
Predation/competition/land degradation by pests / domestic fauna	N1.3.3 W1.3.4	Manage public access and pests	Northern Western
	N1.7.3 W1.7.4	Protect native fauna from domestic and feral pests	Northern Western
Altered fire regimes and increased fire risk	-	-	-
Disturbance from increased public access to natural areas	N1.3.3 W1.3.4	Manage public access and pests	Northern Western

Indirect impact type	Action	Description	Relevant Growth Area
	N1.3.9 W1.3.10	Promote and manage access to natural areas	Northern Western
	N1.7.3 W1.7.4	Minimise rubbish dumping and illegal clearing	Northern Western
Fauna mortality, displacement, and barriers to movement	N1.3.2 W1.3.3	Establish habitat corridors in Plan 9 (Northern Growth Area) and Plan 17 (Western Growth Area)	Northern Western
	N1.3.4 W1.3.5	Limit road crossings of waterways	Northern Western
	N1.3.5 W1.3.6	Use revegetation to buffer natural areas	Northern Western
	N1.3.8 W1.3.9	Establish riparian reserves in Plan 7	Northern Western
	N1.3.11 W1.3.12	Promote native vegetation in the creative corridor	Northern Western
Fauna disturbance due to noise, dust and light	-	-	-
Inadvertent impacts on adjacent habitat or vegetation	-	-	-

Table 4-7: Key existing provisions in the Greater Geelong Planning Scheme relevant to mitigation of indirect impacts

Indirect impact type	Existing provision in the planning scheme	Relevant strategies, guidelines or standards specified in the planning scheme that need to be considered in decision-making	Relevant standard permit condition from the City's template
Changes to water flows and quality	Clause 14.02-1S, PPF Retain natural drainage corridors with vegetated buffer zones at least 30 metres wide to maintain natural drainage function and reduce polluted runoff	<ul style="list-style-type: none"> Urban Stormwater - Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999) 	<ul style="list-style-type: none"> Prepare Stormwater Management Plan prior to commencement of development Design stormwater drainage systems to meet objectives for stormwater quality in <i>Urban Stormwater Best Practice Environmental Management Guidelines</i> (Victorian Stormwater Committee, 1999)
	Clause 19.03-3S, PPF Ensure development protects and improves the health of waterways by minimising stormwater quality and quantity related impacts	<ul style="list-style-type: none"> Environment Protection Authority <i>Environment Reference Standard</i> (Gazette No. S 245, May 2021) <i>Urban Stormwater – Best Practice Environmental Management Guidelines</i> (Victorian Stormwater Committee, 1999) 	
	Clause 56.07-4, Particular Provision An application for subdivision or development must meet stormwater objectives and standards, including objectives for stormwater quality in the <i>Urban Stormwater – Best Practice Environmental Management Guidelines</i> (Victorian Stormwater Committee, 1999)	<ul style="list-style-type: none"> <i>Urban Stormwater – Best Practice Environmental Management Guidelines</i> (Victorian Stormwater Committee, 1999) 	
	Clause 13.04-1S, PPF Facilitate the remediation of contaminated land to make the land suitable for future development	<ul style="list-style-type: none"> Ministerial Direction No. 1 - Potentially Contaminated Land <i>National Environment Protection (Assessment of Site Contamination) Measure</i> (National Environment Protection Council, 1999) 	-
	Clause 13.04-2S, PPF Prevent inappropriate development and promote vegetation retention, planting and rehabilitation in areas prone to erosion and landslip	<ul style="list-style-type: none"> Relevant regional catchment strategy or special area plan approved under the <i>Catchment and Land Protection Act 1994</i> 	<ul style="list-style-type: none"> Use methods in <i>Urban Stormwater Best Practice Environmental Management Guidelines</i> (Victorian Stormwater Committee, 1999) to minimise sediment laden runoff from leaving the site
	Clause 13.04-3L, PPF	<ul style="list-style-type: none"> <i>Salinity Information Kit: Volume 1 - A Local Government Planning Guide for Dryland</i> 	-

Indirect impact type	Existing provision in the planning scheme	Relevant strategies, guidelines or standards specified in the planning scheme that need to be considered in decision-making	Relevant standard permit condition from the City's template
	Discourage development that aggravates existing salinity impacts or leads to new impacts, particularly through rising groundwater levels	<i>Salinity</i> (Department of Conservation and Natural Resources, 1995)	
	Clause 12.02-1S, PPF Avoid disturbance of acid sulfate soils	<ul style="list-style-type: none"> • <i>Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils</i> (Department of Environment, Land, Water and Planning, 2010) 	-
Spread of infection/disease	PPF, Clause 12.01-1S Decision-making should account for the impacts of development on the spread of pathogens	-	<ul style="list-style-type: none"> • Prepare Construction Environmental Management Plan prior to commencement of development • Prepare Weed Management Plan prior to commencement of development • Prepare Environmental Management Plan prior to commencement of development, including: <ul style="list-style-type: none"> ○ Protection of any significant vegetation ○ Methods for control of weeds and pest animals ○ Use of fencing that is permeable to native fauna • Prior to the removal, destroying or lopping of vegetation, all vegetation to be retained must be clearly marked • Design, baffle and locate lighting to prevent adverse effects on adjoining properties
	Particular Provision, Clause 56.08 Subdivision applications should describe how the construction site will be managed to protect the surround area from environmental degradation	-	
Spread of weeds	PPF, Clause 12.01-1S Decision-making should account for the impacts of development on the spread of weeds	-	
	Particular Provision, Clause 56.08 Subdivision applications should describe how the construction site will be managed to protect the surround area from environmental degradation	-	
Predation/competition/ and degradation by pests/domestic fauna	PPF, Clause 12.01-1S Decision-making should account for the impacts of development on the spread of pest animals	-	
Altered fire regimes and increased fire risk	PPF, Clause 13.02-1S Ensure development can implement bushfire protection measures without unacceptable impacts to biodiversity through appropriate planning	-	

Indirect impact type	Existing provision in the planning scheme	Relevant strategies, guidelines or standards specified in the planning scheme that need to be considered in decision-making	Relevant standard permit condition from the City's template
Fauna mortality and barriers to movement Fauna disturbance due to noise, dust and light	Clause 21.05-3 – biodiversity Decision-making should account for the impacts of development on fragmentation of habitat Assist in the establishment and protection of links between important areas of biodiversity	<ul style="list-style-type: none"> • Relevant biodiversity strategies, including the relevant Regional Catchment Strategy • <i>Protecting Victoria's Environment – Biodiversity 2037</i> (Department of Environment, Land, Water and Planning, 2017) • <i>Victorian Waterway Management Strategy</i> (Department of Environment and Primary Industries, 2013) 	
Inadvertent impacts on adjacent habitat or vegetation	Particular Provision, Clause 52.16 Permit is required to remove the vegetation if it is identified in any relevant NVPP as to be retained	<ul style="list-style-type: none"> • Native Vegetation Guidelines 	
	Particular Provision Clause 56.08 Subdivision applications should describe how the construction site will be managed to protect the surround area from environmental degradation	-	

4.4 RESIDUAL IMPACTS AND OFFSETS

Offsetting impacts to biodiversity is the final step in the mitigation hierarchy. It is intended to compensate for any residual adverse impacts that remain after impacts have been avoided, minimised and mitigated. Offsets are required in relation to both Commonwealth and State regulatory processes.

4.4.1 COMMONWEALTH OFFSETS PACKAGE

Offsets are a requirement under the EPBC Act for residual adverse impacts to MNES. The EPBC Plan establishes a strategic offsets package which is designed to meet the principles of the EPBC Act Offsets Policy (Commonwealth of Australia, 2012) and maximise the benefits to MNES from applying a strategic approach. It does this through prioritising early offsetting with good landscape context.

Conservation planning science (e.g., (Gordon *et al.*, 2011; Gordon and Peterson, 2019)) confirms the benefits of these approaches and supports the premise that the EPBC Plan's approach to offsets will be substantially stronger than what would occur under standard project-by-project approvals.

A detailed description of the EPBC offsets package is provided at [Appendix C](#) of the BCS, and a brief summary is provided here.

IMPACTS TO MNES THAT REQUIRE OFFSETS

Clearance and direct loss of the following listed threatened species habitat within the NGGA require offsets:

- 18.6 ha of NTG
- 153.4 ha of SLL habitat
- 651.7 ha of GSM habitat. The majority of which (>95%) occurs in non-native or lower quality areas

No offsets are required for development within the WGGA.

NATIONAL LEVEL OFFSET COMMITMENTS

The EPBC Plan makes several national level commitments in relation to offsets (Table 4-1). These commitments will lead to:

- Protection and management of the NGGA Conservation Area to provide benefits for SLL and GSM
- Protection and management of the remaining offsets outside the Growth Areas
- A commitment to substantial offsetting early in the life of the EPBC Plan
- Offset delivery keeping pace with and occurring ahead of impacts

Table 4-8: National level commitments in relation to offsets

No.	Commitment
3	The NGGA Conservation Area will be established in perpetuity to avoid and protect 74 ha of habitat for Striped Legless Lizard and 108 ha of habitat for Golden Sun Moth
4	A Conservation Management Plan will be prepared and implemented for the protection and ongoing management of Striped Legless Lizard and Golden Sun Moth within the NGGA Conservation Area
10	Offset sites will be established in strategic locations to protect and manage a minimum of the following amounts of habitat to support the following MNES: <ul style="list-style-type: none"> • 45 ha of Natural Temperate Grassland • 375 ha of known habitat for Striped Legless Lizard • 585 ha of known habitat for Golden Sun Moth

No.	Commitment
11	<p>Within the first five years of Plan implementation the City of Greater Geelong will secure the following offsets at a minimum:</p> <ul style="list-style-type: none"> • 100% of the offset requirement for Natural Temperate Grassland • 70% of the offset requirement for Striped Legless Lizard • 50% of the offset requirement for Golden Sun Moth
12	Offset delivery will keep pace with and occur ahead of impacts within the NGGA

IMPLEMENTATION OF THE EPBC OFFSETS PACKAGE

The EPBC offsets package will be implemented through a set of detailed measures which are set out in the Commitments and Measures document and are discussed in detail in [Appendix C](#). In summary, implementation is designed to ensure successful delivery and address the risks associated with a large scale, strategic approaches to offsets.

In particular, implementation of the offsets package will:

- Be coordinated and managed by the City
- Focus on offset sites that are as large as possible and well placed in the landscape to maximise the long term conservation outcomes
- Use accepted mechanisms to secure and manage sites in-perpetuity
- Apply a set of contingency steps if offsets are not tracking appropriately

4.4.2 STATE OFFSETS

In addition to MNES, residual adverse impacts will also occur to native vegetation protected by State biodiversity policy. In order to ensure a gain to Victoria's biodiversity that is equivalent to the loss resulting from the proposed removal of native vegetation, compensatory offsets are required. Losses and gains are measured in general habitat units (GHUs) and species habitat units (SHUs).

State biodiversity policy requires native vegetation offsets to be secured within the same local government area or CMA region in which the impacts occur. For the Growth Areas this includes the Greater Geelong LGA or the Corangamite CMA.

However, at the Commonwealth level, offsets are only required to be like-for-like in terms of the values (or MNES) that are being impacted. This means that suitable offsets can be delivered some distance from development as long as they are protecting the same MNES and associated habitat that is being impacted.

The co-location of State offsets with Commonwealth offsets is preferable in terms of cost efficiencies (i.e., reducing the need to purchasing separate offsets). However, potential third-party offset sites supporting the MNES that are being impacted within the Growth Areas are either extremely scarce or unavailable elsewhere within the Greater Geelong LGA or Corangamite CMA. Competing interests such as other preferable land-uses and high land values contribute to this issue.

It is therefore intended that State offsets will be decoupled from the Commonwealth offsets and delivered separately.

IMPACTS TO STATE VALUES THAT REQUIRE OFFSETS

Within the NGGA, development will result in residual adverse impacts to 91.1 ha of *Low rainfall* Plains Grassland (EVC 132_63). Within the WGGA, development within Creamery Road and Batesford North will result in residual adverse impacts to 44.19 ha of *Low rainfall* Plains Grassland (EVC 132_63).

Given the earlier stage of planning for the other precincts in the WGGA (outside the area covered by the EPBC strategic assessment), potential residual impacts in these areas are unknown at this stage. However, it is likely that some level of offsets will be required. The requirements for these offsets will be resolved as planning and biodiversity approvals proceed.

The impacts presented here are calculated conservatively by assuming that any land outside of the strategic conservation areas will be impacted. It is likely that there will be additional avoidance within the biodiversity opportunity areas for some of these values.

STATE LEVEL OFFSET COMMITMENT

The following State level commitment is made in relation to offsets:

Table 4-9: State level commitment in relation to offsets

No.	Commitment
vi	State offsets to compensate for the loss to biodiversity from the removal of native vegetation will be provided in accordance with the <i>Guidelines for the removal, destruction or lopping of native vegetation</i> (DELWP, 2017c)

IMPLEMENTATION OF STATE OFFSETS

As per the commitment, State offsets and will be delivered according to the requirements of the *Guidelines for the removal, destruction or lopping of native vegetation*. The detailed measures to implement the State offset commitment are set out in the Commitments and Measures document.

In summary, NVPPs will be prepared as part of each PSP process, which will identify native vegetation to be retained and removed across each precinct. NVPPs will outline the offset requirements for native vegetation that can be removed and will detail the obligations for each property within the precinct. NVPPs and planning permits issued for use and development will require offset obligations to be met prior to impacts occurring.

The securing of State offsets will be the responsibility of the individual proponent based on their proposed level of impact. It is expected that proponents will secure offsets through the existing Victorian Native Vegetation Credit Register (NVCR).

Ongoing management, monitoring and reporting on the secured offsets will occur through DEECA's standard processes.

4.4.3 RISKS ASSOCIATED WITH OFFSET AVAILABILITY AND DELIVERY CERTAINTY

One of the key risks in relation to both Commonwealth and State offsets are potential challenges in finding and securing suitable offsets over time. It is anticipated that there will be a diminishing supply of suitable offset sites over time due to declining environmental values and competition in the offset market as other large projects also seek to offset their impacts.

At a minimum, the delivery of offsets will need to keep pace with the timing of impacts. There is a risk that development could be stalled where there is a delay in finding and securing offsets.

To minimise this risk eventuating, the EPBC Plan commits to securing a significant proportion of Commonwealth offsets early when it is anticipated that the offset market will be less constrained. As discussed in Section 4.4.1 this also drives improved conservation outcomes due to the benefits of advanced offsetting. Analysis about likely State offsetting requirements suggests that risks around offset availability is likely to be substantially lower.

4.5 PRECINCTS WITHIN THE GROWTH AREAS

This section provides a brief profile of each precinct within the Growth Areas from a biodiversity perspective to help guide precinct design. It draws on and summarises the information presented throughout the BCS and makes it specific to each precinct. The following information is provided as part of each profile:

- The indicative timing for release of each precinct, where available
- A summary of the key known biodiversity values
- An outline of the biodiversity intent of each of the strategic conservation areas, biodiversity opportunity areas and investigation areas
- The biodiversity related studies or investigations needed to support precinct design, including those required as part of the commitments and measures under the BCS

- A checklist of the commitments and measures that are relevant to the design of each precinct from a biodiversity perspective

The profiles have been designed to integrate the relevant considerations of the guiding principles relating to conservation planning set out in Section 2 of the BCS.

4.5.1 NGGA: ELCHO ROAD EAST

PRECINCT PROFILE FOR ELCHO ROAD EAST – GAZETTAL PLANNED FOR 2024
Summary of key biodiversity values
<ul style="list-style-type: none"> • Mapped biodiversity values in the surveyed areas: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132) ○ EPBC listed Natural Temperate Grassland ○ State listed TEC Western Basalt Plains Grassland ○ Known records and habitat for Golden Sun Moth and Striped Legless Lizard ○ Known record of State-listed Leafless Bluebush • Modelled biodiversity values in the unsurveyed areas: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132) ○ Potential EPBC listed Natural Temperate Grassland ○ Potential habitat for Golden Sun Moth and Striped Legless Lizard
Relevant biodiversity areas and their intent
<p><u>Strategic conservation areas</u></p> <ul style="list-style-type: none"> • Eastern portion of the NGGA Conservation Area: <ul style="list-style-type: none"> ○ To be protected and actively managed in accordance with a Conservation Management Plan in order to reduce threats and maintain and restore habitat values for Golden Sun Moth and Striped Legless Lizard ○ Only development activities that fit within the scope of the Environmental Management Class of Action permitted within the Conservation Area boundary ○ Establish a suitable conservation interface between urban development and the boundary of the Conservation Area <p><u>Biodiversity opportunity areas</u></p> <ul style="list-style-type: none"> • Area 1, look for opportunities to: <ul style="list-style-type: none"> ○ Retain the known record of the Leafless Bluebush and associated habitat along the eastern boundary ○ Restore and/or retain habitat features necessary for the persistence of Golden Sun Moth. For example, non-shaded grassy verges or corridors that retain larval food species and are designated for sympathetic land management ○ Restore and/or retain habitat features that might support Striped Legless Lizard dispersal or refuge. For example, rocks and grassland patches or corridors designated for sympathetic land management • Areas 2 and 3, look for opportunities to: <ul style="list-style-type: none"> ○ Restore and/or retain native grasslands, including areas of Natural Temperate Grassland ○ Restore and/or retain habitat features necessary for the persistence of Golden Sun Moth. For example, non-shaded grassy verges or corridors that retain larval food species and are designated for sympathetic land management ○ Restore and/or retain habitat features that might support Striped Legless Lizard dispersal or refuge. For example, rocks and grassland patches or corridors designated for sympathetic land management ○ Provide a level of grassland connectivity along the drainage lines and through to the NGGA conservation area. For example, through sympathetic landscaping, selection of materials and verge management
Biodiversity studies required as part of precinct planning
<ul style="list-style-type: none"> • Detailed ecological assessments within any unsurveyed areas to support the development of the NVPP

PRECINCT PROFILE FOR ELCHO ROAD EAST – GAZETTAL PLANNED FOR 2024	
<ul style="list-style-type: none"> Preparation of relevant technical water studies to understand the key risks from development on protected matters associated with Hovells Creek (Commitment 9) 	
BCS checklist of commitments and measures	
<p>EPBC</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 3; Measures 10–15 <input type="checkbox"/> Commitment 4; Measures 16-19 <p><u>Mitigation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 7; Measure 30 <input type="checkbox"/> Commitment 8, Measures 31-34 <input type="checkbox"/> Commitment 9; Measures 35-37 <p><u>Offsets</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 10; Measures 39-43 <input type="checkbox"/> Commitment 11; Measures 44-48 	<p>STATE</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment i; Measures i-iv <input type="checkbox"/> Commitment ii; Measures viii-x <p><u>Mitigation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment iv; Measures xv and xvi <input type="checkbox"/> Commitment v; Measures xvii-xx <p><u>Offsets</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

4.5.2 NGGA: ELCHO ROAD WEST

PRECINCT PROFILE FOR ELCHO ROAD WEST
Summary of key biodiversity values
<ul style="list-style-type: none"> Mapped biodiversity values in the surveyed areas: <ul style="list-style-type: none"> Native vegetation (EVC 132) EPBC listed Natural Temperate Grassland State listed TEC Western Basalt Plains Grassland Known records and habitat for Golden Sun Moth and Striped Legless Lizard Modelled biodiversity values in the unsurveyed areas: <ul style="list-style-type: none"> Native vegetation (EVC 132) Potential EPBC listed Natural Temperate Grassland Potential habitat for Golden Sun Moth and Striped Legless Lizard DELWP modelled wetland
Relevant biodiversity areas and their intent
<p><u>Strategic conservation areas</u></p> <ul style="list-style-type: none"> Western portion of the NGGA Conservation Area: <ul style="list-style-type: none"> To be protected and actively managed in accordance with a Conservation Management Plan in order to reduce threats and maintain and restore habitat values for Golden Sun Moth and Striped Legless Lizard Only development activities that fit within the scope of the Environmental Management Class of Action permitted within the Conservation Area boundary Establish a suitable conservation interface between urban development and the boundary of the Conservation Area <p><u>Biodiversity opportunity areas</u></p> <ul style="list-style-type: none"> Area 2, look for opportunities to: <ul style="list-style-type: none"> Restore and/or retain native grasslands Restore and/or retain habitat features necessary for the persistence of Golden Sun Moth. For example, non-shaded grassy verges or corridors that retain larval food species and are designated for sympathetic land management

PRECINCT PROFILE FOR ELCHO ROAD WEST	
<ul style="list-style-type: none"> ○ Restore and/or retain habitat features that might support Striped Legless Lizard dispersal or refuge within the drainage lines. For example, rocks and grassland patches or corridors designated for sympathetic land management ○ Provide a level of grassland connectivity along the drainage lines and through to the NGGA conservation area – again looking to enable dispersal or refuge. For example, through sympathetic landscaping, selection of materials and verge management ● Area 7, investigate the continued presence of Striped Legless Lizard and if present: <ul style="list-style-type: none"> ○ Look to restore and/or retain habitat features within grassland areas that might support the persistence of the lizard ○ Provide a level of grassland connectivity through to the drainage lines in the south. For example, through sympathetic landscaping, selection of materials and verge management 	
Biodiversity studies required as part of precinct planning	
<ul style="list-style-type: none"> ● Detailed ecological assessments within any unsurveyed areas to support the development of the NVPP ● Preparation of relevant technical water studies to understand the key risks from development on protected matters associated with Hovells Creek and the Moorabool River (Commitment 9) ● Seek guidance and input from a Growling Grass Frog expert relating to the design of stormwater infrastructure to ensure no notable alterations to habitat within downstream reaches of Cowies Creek (Measure 38) ● Consider investigating the continued presence of Striped Legless Lizard within biodiversity opportunity area 10 	
BCS checklist of commitments and measures	
<p>EPBC</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 3; Measures 10 - 15 <input type="checkbox"/> Commitment 4; Measures 16-19 <p><u>Mitigation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 7; Measure 30 <input type="checkbox"/> Commitment 8, Measures 31-34 <input type="checkbox"/> Commitment 9; Measures 35-38 <p><u>Offsets</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 10; Measures 39-43 <input type="checkbox"/> Commitment 11; Measures 44-48 	<p>STATE</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment i; Measures i-iv <input type="checkbox"/> Commitment ii; Measures viii-x <p><u>Mitigation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment iv; Measures xv and xvi <input type="checkbox"/> Commitment v; Measures xvii-xx <p><u>Offsets</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

4.5.3 NGGA: HEALES ROAD WEST

PRECINCT PROFILE FOR HEALES ROAD WEST
Summary of key biodiversity values
<ul style="list-style-type: none"> ● Mapped biodiversity values in the surveyed areas: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132) ○ EPBC listed Natural Temperate Grassland ○ State listed TEC Western Basalt Plains Grassland ○ Known records and habitat for Golden Sun Moth and Striped Legless Lizard ● Modelled biodiversity values in the unsurveyed areas: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132) ○ Potential EPBC listed Natural Temperate Grassland ○ Potential habitat for Golden Sun Moth and Striped Legless Lizard

PRECINCT PROFILE FOR HEALES ROAD WEST	
Relevant biodiversity areas and their intent	
<u>Biodiversity opportunity areas</u>	
<ul style="list-style-type: none"> • Area 5, consider investigating the continued presence of Striped Legless Lizard and native grassland and if present: <ul style="list-style-type: none"> ○ Look to restore and/or retain habitat features within grassland areas that might support the persistence of the lizard ○ Provide a level of grassland connectivity through to the drainage lines in Heales Road East. For example, through sympathetic landscaping, selection of materials and verge management • Area 6, look for opportunities to: <ul style="list-style-type: none"> ○ Restore and/or retain biodiversity along and adjacent to the drainage lines using Ecological Vegetation Classes, natural regeneration techniques and indigenous plants of local provenance ○ Provide a level of grassland connectivity through to areas of Striped Legless Lizard habitat that may have been retained within Elcho Road West ○ Restore and/or retain habitat features that might support Striped Legless Lizard dispersal or refuge if there is any evidence that the species persists in the area. For example, rocks and grassland patches or corridors designated for sympathetic land management 	
Biodiversity studies required as part of precinct planning	
<ul style="list-style-type: none"> • Detailed ecological assessments within any unsurveyed areas to support the development of the NVPP • Preparation of relevant technical water studies to understand the key risks from development on protected matters associated with Hovells Creek (Commitment 9) • Seek guidance and input from a Growling Grass Frog expert relating to the design of stormwater infrastructure to ensure no notable alterations to habitat within downstream reaches of Cowies Creek (Measure 38) • Consider investigating the continued presence of Striped Legless Lizard and native grassland within biodiversity opportunity area 5 	
BCS checklist of commitments and measures	
EPBC <u>Mitigation</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 7; Measure 30 <input type="checkbox"/> Commitment 9; Measures 35-38 	STATE <u>Avoidance</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment ii; Measures viii-x <u>Offsets</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

4.5.4 NGGA: HEALES ROAD EAST

PRECINCT PROFILE FOR HEALES ROAD EAST – GAZETTAL PLANNED FOR 2033
Summary of key biodiversity values
<ul style="list-style-type: none"> • Modelled biodiversity values in the unsurveyed areas: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132) ○ State listed TEC Western Basalt Plains Grassland ○ Potential EPBC listed Natural Temperate Grassland ○ Potential habitat for Golden Sun Moth and Striped Legless Lizard ○ DELWP modelled wetland
Relevant biodiversity areas and their intent
<u>Biodiversity opportunity areas</u>
<ul style="list-style-type: none"> • Area 4, look for opportunities to: <ul style="list-style-type: none"> ○ Restore and/or retain biodiversity along and adjacent to the drainage lines using Ecological Vegetation Classes, natural regeneration techniques and indigenous plants of local provenance

- Provide a level of grassland connectivity through to areas of Striped Legless Lizard habitat that may have been retained within Heales Road West
- Restore and/or retain habitat features that might support Striped Legless Lizard dispersal or refuge if there is any evidence that the species persists in the area. For example, rocks and grassland patches or corridors designated for sympathetic land management

Biodiversity studies required as part of precinct planning

- Detailed ecological assessments within any unsurveyed areas to support the development of the NVPP
- Preparation of relevant technical water studies to understand the key risks from development on protected matters associated with Hovells Creek (Commitment 9)
- Seek guidance and input from a Growling Grass Frog expert relating to the design of stormwater infrastructure to ensure no notable alterations to habitat within downstream reaches of Cowies Creek (Measure 38)

BCS checklist of commitments and measures

EPBC

Mitigation

- Commitment 7; Measure 30
- Commitment 9; Measures 35-38

STATE

Avoidance

- Commitment ii; Measures viii-x

Offsets

- Commitment vi; Measures xxi-xxiv

4.5.5 WGGA: CREAMERY ROAD

PRECINCT PROFILE FOR CREAMERY ROAD – GAZETTAL PLANNED FOR 2024

Summary of key biodiversity values

- Mapped biodiversity values in the surveyed areas:
 - Native vegetation (EVC 132 and EVC 68)
 - Known records and habitat for Growling Grass Frog and Adamson’s Blown-grass
- Modelled biodiversity values in the unsurveyed areas:
 - Native vegetation (EVC 132)

Relevant biodiversity areas and their intent

Strategic conservation area

- Entirety of the Cowies Creek Conservation Area
 - To be protected and actively managed in accordance with a Conservation Management Plan in order to reduce threats and maintain and restore habitat values for the Growling Grass Frog and Adamson’s Blown-grass
 - Only development activities that fit within the scope of the environmental management class of actions and limited activities under the supporting infrastructure and services class of actions permitted (refer to Section 4.3.4 of the Plan for further guidance)
 - Establish a suitable conservation interface between urban development and the boundary of the Conservation Area

Biodiversity opportunity area

- Area 3, look for opportunities to:
 - Create and enhance movement, breeding and foraging habitat for the Growling Grass Frog within the tributary connected to the Cowies Creek Conservation Area through the design of stormwater infrastructure and sympathetic management of the drainage line
 - Restore and/or retain native grasslands
 - Improve water quality and stream flow outcomes for Cowies Creek through the tributary
 - Provide biodiversity linkages across the Growth Area

PRECINCT PROFILE FOR CREAMERY ROAD – GAZETTAL PLANNED FOR 2024	
Biodiversity studies required as part of precinct planning	
<ul style="list-style-type: none"> Detailed ecological assessments within any unsurveyed areas to support the development of the NVPP Seek guidance and input from a Growling Grass Frog expert relating to the design of stormwater infrastructure to ensure no notable alterations to habitat within downstream reaches of Cowies Creek (Measure 38) 	
BCS checklist of commitments and measures	
EPBC <u>Avoidance</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 5; Measures 20-25 <input type="checkbox"/> Commitment 6; Measures 26-29 <u>Mitigation</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment 7; Measure 30 <input type="checkbox"/> Commitment 8; Measures 31-34 <input type="checkbox"/> Commitment 9; Measure 38 	STATE <u>Avoidance</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment i; Measures i-iv <input type="checkbox"/> Commitment ii; Measures viii-x <u>Mitigation</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment iv; Measures xv and xvi <input type="checkbox"/> Commitment v; Measures xvii-xx <u>Offsets</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

4.5.6 WGGA: BATESFORD NORTH

PRECINCT PROFILE FOR BATESFORD NORTH – GAZETTAL PLANNED FOR 2025
Summary of key biodiversity values
<ul style="list-style-type: none"> The Moorabool River Corridor, which sustains critical ecological processes for native fish, mammals, macro invertebrates, birds and vegetation communities, and provides an important linkage between the Brisbane Ranges National Park and the Barwon River Mapped biodiversity values in the surveyed areas: <ul style="list-style-type: none"> Native vegetation (EVC 132 and EVC 56) Modelled biodiversity values in the unsurveyed areas: <ul style="list-style-type: none"> Native vegetation (EVC 132 and EVC 56)
Relevant biodiversity areas and their intent
<u>Strategic conservation area</u> <ul style="list-style-type: none"> Section of the Moorabool River adjacent to Batesford North: <ul style="list-style-type: none"> To be protected and actively managed in accordance with a Conservation Management Plan Boundary of the strategic conservation area to: incorporate as much of the key biodiversity values associated with the river corridor as possible; reflect the relevant priorities or standards in the Corangamite Waterway Strategy; and include a minimum of 30m of riparian land from the top of bank either side of the waterway Only development activities that fit within the scope of the environmental management class of actions and limited activities under the supporting infrastructure and services class of actions permitted (refer to Section 4.3.4 of the Plan for further guidance) Establish a suitable conservation interface between urban development and the boundary of the Conservation Area Maintain and enhance the habitat for native fish species within the river Support landscape connectivity between the upper reaches of the Moorabool River, and downstream to the Barwon River and Lake Connewarre Complex <u>Biodiversity opportunity areas:</u> <ul style="list-style-type: none"> Area 1, look for opportunities to: <ul style="list-style-type: none"> Add to and enhance the Moorabool River Corridor Restore and/or retain native grasslands Improve water quality and stream flow outcomes for the Moorabool River

PRECINCT PROFILE FOR BATESFORD NORTH – GAZETAL PLANNED FOR 2025	
<ul style="list-style-type: none"> • Area 2, look for opportunities to: <ul style="list-style-type: none"> ○ Enhance connectivity throughout the Growth Area between opportunity area 3 and the Cowies Creek Conservation Area • Area 4, look for opportunities to: <ul style="list-style-type: none"> ○ Restore and/or retain native grasslands 	
Biodiversity studies required as part of precinct planning	
<ul style="list-style-type: none"> • Detailed ecological assessments within any unsurveyed areas to support the development of the NVPP • Preparation of relevant technical water studies to understand the key risks from development on protected matters associated with the Moorabool River (Commitment 9) 	
BCS checklist of commitments and measures	
EPBC <u>Mitigation</u> <input type="checkbox"/> Commitment 7; Measure 30 <input type="checkbox"/> Commitment 9; Measures 34, 35 and 37	STATE <u>Avoidance</u> <input type="checkbox"/> Commitment i; Measures i-iv, vii <input type="checkbox"/> Commitment ii; Measures viii-x <u>Mitigation</u> <input type="checkbox"/> Commitment iv; Measure xv-xvi <input type="checkbox"/> Commitment v; Measures xvii-xx <u>Offsets</u> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

4.5.7 WGGA: BATESFORD SOUTH

PRECINCT PROFILE FOR BATESFORD SOUTH
Summary of key biodiversity values
<ul style="list-style-type: none"> • The Moorabool River Corridor, which sustains critical ecological processes for native fish, mammals, macro invertebrates, birds and vegetation communities, and provides an important linkage between the Brisbane Ranges National Park and the Barwon River • The Dog Rocks Flora and Fauna Sanctuary, an 88 ha reserve which supports native vegetation, and a diversity of fauna habitat • Remnant vegetation adjacent to the Dog Rocks Flora and Fauna sanctuary (DELWP modelled EVC 175 and 55) • Other modelled biodiversity values: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132, 56, 85, 55, 175)
Relevant biodiversity areas and their intent
<u>Strategic conservation area</u> <ul style="list-style-type: none"> • Moorabool River: <ul style="list-style-type: none"> ○ To be protected and actively managed in accordance with a Conservation Management Plan ○ Boundary of the strategic conservation area to: incorporate as much of the key biodiversity values associated with the river corridor as possible; reflect the relevant priorities or standards in the Corangamite Waterway Strategy; and include a minimum of 30m of riparian land from the top of bank either side of the waterway ○ Only development activities that fit within the scope of the environmental management class of actions and limited activities under the supporting infrastructure and services class of actions permitted (refer to Section 4.3.4 of the Plan for further guidance) ○ Establish a suitable conservation interface between urban development and the boundary of the Conservation Area ○ Where possible and beneficial to biodiversity, look to restore river values, flow paths and connectivity that have been altered historically

PRECINCT PROFILE FOR BATESFORD SOUTH	
<ul style="list-style-type: none"> ○ Maintain and enhance the habitat for native fish species, wetland dependant birds, and native vegetation within the river ○ Support landscape connectivity between the Moorabool River, and downstream to the Lake Connewarre Complex <p><u>Biodiversity investigation areas:</u></p> <ul style="list-style-type: none"> • Area 5, investigate the potential biodiversity values of the area and the opportunities to restore and/or retain any values identified • Area 7: <ul style="list-style-type: none"> ○ Investigate the biodiversity values of the area and determine, with reference to the guiding principles set out at section 3.4, whether the area, or part of the area, should be confirmed as either a strategic conservation area to be protected and managed as an extension of the Dog Rocks Flora and Fauna Reserve, and/or if any of the values can be restored and/or retained within a biodiversity opportunity area • Area 6, investigate the potential biodiversity values of the area and look for opportunities to: <ul style="list-style-type: none"> ○ Add to and enhance the biodiversity values of the Moorabool River Corridor ○ Restore and/or retain native vegetation and restore the drainage lines using Ecological Vegetation Classes, natural regeneration techniques and indigenous plants of local provenance ○ Improve water quality and stream flow outcomes for the Moorabool River Corridor ○ Support the future management and functioning of the Batesford Quarry as an ecological wetland ○ Provide co-benefits for biodiversity through sympathetic design and management particularly in relation to connectivity across the Growth Area • Areas 8, 9 and 11, investigate the potential biodiversity values of the area and look for opportunities to: <ul style="list-style-type: none"> ○ Restore and/or retain any biodiversity values identified ○ Support biodiversity connectivity across the precinct 	
Biodiversity studies required as part of precinct planning	
<ul style="list-style-type: none"> • Detailed ecological surveys required to understand the location and extent of biodiversity values and support State and Commonwealth biodiversity assessment and approval processes 	
BCS checklist of commitments and measures	
EPBC N/A –EPBC assessment and approval is yet to occur	STATE <u>Avoidance</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment i; Measures i-iv, vii <input type="checkbox"/> Commitment iii; Measures xi-xiv <u>Mitigation</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment iv; Measure xv-xvi <input type="checkbox"/> Commitment v; Measures xvii-xx <u>Offsets</u> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

4.5.8 WGGA: MCCANNS LANE

PRECINCT PROFILE FOR MCCANNS LANE
Summary of key biodiversity values
<ul style="list-style-type: none"> • Modelled biodiversity values: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132 and EVC 55) ○ Potential occurrence of the EPBC listed Seasonal Herbaceous Wetland ecological community

PRECINCT PROFILE FOR MCCANNS LANE	
Relevant biodiversity areas and their intent	
<p><u>Biodiversity investigation areas:</u></p> <ul style="list-style-type: none"> • Area 10, investigate the potential biodiversity values of the area and look for opportunities to: <ul style="list-style-type: none"> ○ Restore and/or retain any biodiversity values identified ○ Support biodiversity connectivity across the precinct ○ Protect and enhance the area of Seasonal Herbaceous Wetlands, if confirmed through survey 	
Biodiversity studies required as part of precinct planning	
<ul style="list-style-type: none"> • Detailed ecological surveys required to understand the location and extent of biodiversity values and support State and Commonwealth biodiversity assessment and approval processes 	
BCS checklist of commitments and measures	
<p>EPBC N/A –EPBC assessment and approval is yet to occur</p>	<p>STATE</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment i; Measures i-iv, vii <input type="checkbox"/> Commitment iii; Measures xi-xiv <p><u>Mitigation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment iv; Measure xv-xvi <input type="checkbox"/> Commitment v; Measures xvii-xx <p><u>Offsets</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

4.5.9 WGGA: MERRAWARP ROAD

PRECINCT PROFILE FOR MERRAWARP ROAD	
Summary of key biodiversity values	
<ul style="list-style-type: none"> • The Barwon River Corridor, which supports aquatic vegetation, provides important habitat for native fish and wetland dependant birds, and provides important landscape connectivity • Modelled biodiversity values in the unsurveyed areas: <ul style="list-style-type: none"> ○ Native vegetation (EVC 132 and EVC 56) 	
Relevant biodiversity areas and their intent	
<p><u>Strategic conservation area</u></p> <ul style="list-style-type: none"> • Barwon River <ul style="list-style-type: none"> ○ To be protected and actively managed in accordance with a Conservation Management Plan ○ Boundary of the strategic conservation area to: incorporate as much of the key biodiversity values associated with the river corridor as possible; reflect the relevant priorities or standards in the Corangamite Waterway Strategy; and include a minimum of 30m of riparian land from the top of bank either side of the waterway ○ Only development activities that fit within the scope of the environmental management class of actions and limited activities under the supporting infrastructure and services class of actions permitted (refer to Section 4.3.4 of the Plan for further guidance) ○ Establish a suitable conservation interface between urban development and the boundary of the Conservation Area ○ Maintain and enhance the habitat for native fish species, wetland dependant birds, and native vegetation within the river <p><u>Biodiversity investigation areas:</u></p> <ul style="list-style-type: none"> • Area 12, investigate the potential biodiversity values of the area and look for opportunities to: <ul style="list-style-type: none"> ○ Add to and enhance the Barwon River Corridor 	

PRECINCT PROFILE FOR MERRAWARP ROAD	
<ul style="list-style-type: none"> ○ Restore and/or retain native vegetation ○ Improve water quality and stream flow outcomes for the Barwon River 	
Biodiversity studies required as part of precinct planning	
<ul style="list-style-type: none"> • Detailed ecological surveys required to understand the location and extent of biodiversity values and support State and Commonwealth biodiversity assessment and approval processes 	
BCS checklist of commitments and measures	
<p>EPBC N/A –EPBC assessment and approval is yet to occur</p>	<p>STATE</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment i; Measures i-iv, vii <input type="checkbox"/> Commitment iii; Measures xi-xiv <p><u>Mitigation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment iv; Measure xv-xvi <input type="checkbox"/> Commitment v; Measures xvii-xx <p><u>Offsets</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Commitment vi; Measures xxi-xxiv

5 Assurance

Delivery of the BCS is supported by, and builds on, the assurance framework set out in Section 6 of the EPBC Plan to help ensure that implementation is successful. There are significant efficiencies in applying the same assurance approach to deliver both the national and State level commitments and measures that are set out in the BCS.

A high-level summary of the approach to assurance is presented here with details provided in the EPBC Plan and the Commitments and Measures document.

The key elements of assurance are:

- A strong set of governance arrangements to support delivery of the commitments and measures. The City will lead implementation and work with regulators, developers, landholders and other stakeholders to implement the BCS
- A funding program established by the EPBC Plan to implement the national level commitments and measures. This will be supported by additional funding through standard PSP and development processes to implement State level commitments and measures
- Implementation of a monitoring, evaluation, reporting and improvement (MERI) program to provide a system for understanding if outcomes and commitments are being achieved, communicating to regulators and the public, and adapting implementation as needed. The State level outcomes, commitments and measures will be integrated into the MERI program established by the EPBC Plan
- A compliance program to ensure commitments and measures that relate to third-parties are implemented appropriately

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THE CITY OF
GREATER GEELONG

NORTHERN AND WESTERN GEELONG GROWTH AREAS

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MAY 2023

DRAFT BIODIVERSITY CONSERVATION STRATEGY

APPENDIX A: PLANNING AND REGULATORY
CONTEXT

DOCUMENT TRACKING

This document was prepared on behalf of the City of Greater Geelong by Biosis and Open Lines.

PREPARED BY:	
Tom Holden (Open Lines)	
REVIEWED BY:	
Peter Hemphill (Open Lines) Mitchell Deaves (Biosis)	
VERSION CONTROL:	
VERSION:	Public exhibition version
DATE:	May 2023

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1 Introduction

The BCS has been developed within and will be implemented through a complex planning and regulatory context. This appendix provides an overview of this context to help understand the BCS and how it will be implemented. It discusses:

- The Plan
- The planning context and framework for implementation
- Other relevant regulations
- Relevant City of Greater Geelong policies

2 The Plan

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Commonwealth Government's principal environmental legislation and provides for the protection of matters of national environmental significance (MNES). Under Part 10, section 146 of the Act, the Commonwealth Environment Minister may agree to undertake a strategic assessment of the impacts of actions delivered under a policy, plan or program on MNES.

On 27 January 2022, the City and the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) agreed to undertake the Geelong Growth Areas strategic assessment.

Strategic assessments enable a landscape scale assessment and approval of a suite of development actions under the EPBC Act and provide the opportunity to deliver improved environmental and development outcomes compared to project-by-project assessments through strategic consideration of biodiversity issues.

Strategic assessments also remove the need for individual assessments under Part 7-9 of the EPBC Act, provided proposed projects are undertaken in accordance with the endorsed Plan and any class of action approval conditions.

The Geelong strategic assessment is given effect through the *Northern and Western Geelong Growth Areas EPBC Plan* (the Plan). The Plan ensures development within the Growth Areas and associated infrastructure development outside the Growth Areas protects MNES and proceeds in accordance with the requirements of the EPBC Act. The Plan:

- Describes the development (classes of actions) that approval is being sought for under Part 10 the EPBC Act
- Sets out an objective, and a series of outcomes and commitments to define what the Plan will achieve
- Sets out a conservation framework to address the impacts of the development on MNES, including through avoiding and minimising, mitigating and offsetting residual impacts
- Sets out an assurance and implementation framework to implement the Plan

A key purpose of the BCS is to set out how the conservation elements of the Plan will be implemented, including through avoiding and minimising, mitigating, and offsetting residual impacts in accordance with the mitigation hierarchy (DSEWPC, 2012; DELWP, 2017a). The Plan is also supported by:

- A Commitments and Measures document that sets out the commitments made in the Plan and BCS to address the impacts of the development on biodiversity values and the measures to deliver those commitments
- A Funding Program that sets out how the implementation of the Plan will be funded

As part of the strategic assessment process, a Strategic Assessment Report has also been prepared to assess the impacts of development under the Plan on MNES. The Strategic Assessment Report evaluates the adequacy of the Plan's outcomes and commitments in protecting MNES over the life of the Plan.

Figure 1 shows the relationship between the documents associated with the strategic assessment.

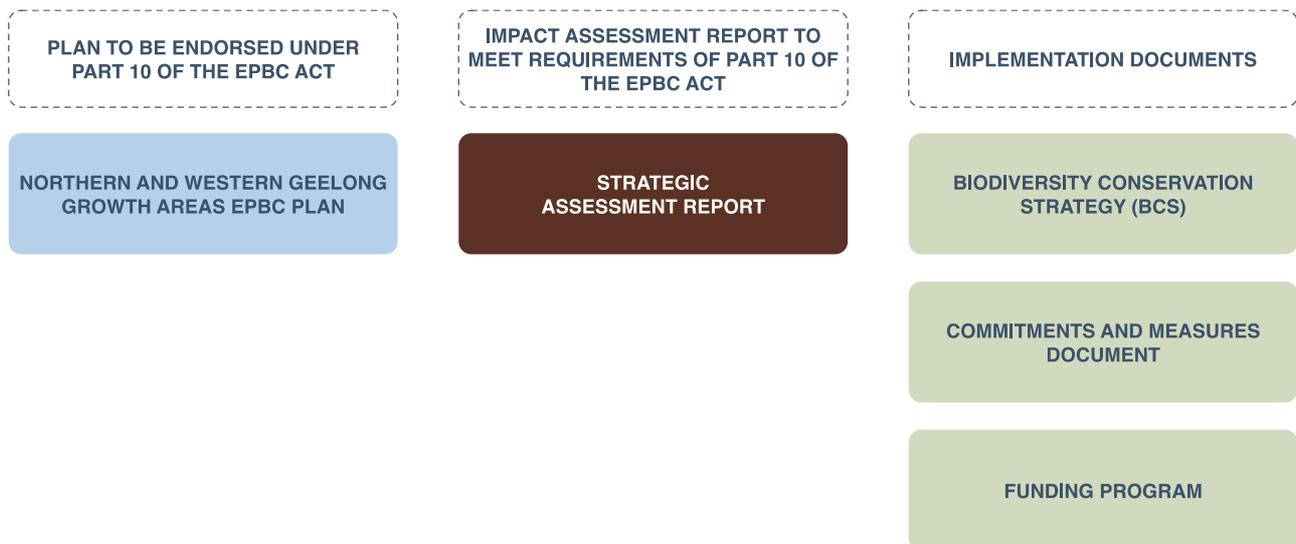


Figure 1: Strategic assessment documents

3 Planning context and framework for implementation

The Victorian planning system under the *Planning and Environment Act 1987* (P&E Act) is the key delivery framework for development within the Growth Areas and the implementation of the BCS.

The Victorian planning system hierarchy provides a framework for decision-making for the use and development of land in greenfield areas. The hierarchy relevant to the Growth Areas includes:

- The Planning Policy Framework
- *Northern and Western Geelong Growth Area Framework Plan* (the Framework Plan)
- Greater Geelong Planning Scheme and Urban Growth Zone (UGZ)
- Precinct Structure Plans (PSPs)
- Planning permits

3.1 PLANNING POLICY FRAMEWORK

The Planning Policy Framework (PPF) is the policy content of planning schemes and provides overarching policy to guide land use, subdivision and development in Victoria. The PPF is informed by Victorian Government policy.

The PPF includes planning policies under three tiers:

- State-wide – policies of state significance that apply in all planning schemes in Victoria
- Regional – policies of state significance that apply to allied planning schemes based on geographic groupings
- Local – policies of local significance that apply to an individual local planning scheme

Several policies under the PPF are relevant to the protection of biodiversity values in the Growth Areas, including:

- Clause 12.01 – aims to protect and enhance environmental and landscape values, including biodiversity
- Clause 12.03 – aims to protect and enhance river corridors, waterways, and wetlands
- Clause 13.02 – aims to manage fire risks without unacceptable impacts to biodiversity
- Clause 13.04 – aims to manage soil degradation and contaminated land
- Clause 14.02 – aims to protect water quality
- Clause 19.03 – aims to sustainably manage water through integrated water management

The PPF will be given effect in the Growth Areas through the development of PSPs, planning permits, and other decision-making related to the Growth Areas. A planning authority must take into account the PPF when preparing an amendment to a planning scheme. A responsible authority must take into account and give effect to the PPF when it makes a decision under the planning scheme, such as a decision to grant a permit for use or development.

3.2 FRAMEWORK PLAN

The Framework Plan (The City of Greater Geelong, 2021) was prepared as part of the City’s plan to address the long-term growth in Geelong. The plan describes the existing site context of the Growth Areas and sets out:

- Broad future urban structure of the Growth Areas, including potential areas suitable for environmental protection
- Vision and set of urban development objectives for each Growth Area
- A set of actions to be implemented through future planning processes

The Framework Plan will inform the subsequent preparation of more detailed PSPs.

The overarching vision of the Framework Plan is:

“By 2047, Greater Geelong will be internationally recognised as a clever and creative city-region that is forward looking, enterprising and adaptive, and cares for its people and environment”

The biodiversity-related urban development objectives of the Framework Plan for each Growth Area are:

“Protect and regenerate biodiversity and cultural heritage values of the natural and constructed waterways along the Lovely Banks monocline and heritage values of the Elcho Homestead”

“Protect and regenerate biodiversity and cultural heritage values along the Barwon and Moorabool Rivers, Cowies Creek and the Dog Rocks Sanctuary and establish vegetated constructed waterways”

Other key biodiversity actions in the Framework Plan are summarised in Table 1.

The Framework Plan is incorporated into the Greater Geelong Planning Scheme at Clause 11.02.

Table 1: Key biodiversity actions from the Framework Plan for the Growth Areas

Action	Growth Area
A network of linear corridors will be created to promote biodiversity linkages within neighbourhoods that connect between conservation areas, waterways and the open space network. Corridors may be located as illustrated in Plan 9 and Plan 17 of the Framework Plan	Northern Western
Any conservation areas that are identified will prioritise the protection and enhancement of local indigenous flora and fauna species	Northern Western
The integrated transport network will protect, minimise impacts and revegetate roadside vegetation	Northern Western
Stormwater drainage management will minimise the downstream impacts on the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site	Northern Western

Action	Growth Area
A Native Vegetation Precinct Plan will be prepared for each precinct to determine the presence and management of significant flora, fauna and ecological communities	Northern Western
'Green-blue' connections will be designed to promote flora and fauna by distributing water to soil through natural infiltration and irrigation. Waterways illustrated on Plan 7 and Plan 15 of the Framework Plan will be designed to provide sufficient corridor width to establish continuous riparian reserves that allow for biodiversity values to thrive	Northern Western
Individual detailed master plans that outline the protection and enhancement of river and creek corridors will be prepared and incorporated within the relevant precinct structure plan including: <ul style="list-style-type: none"> • Cowies Creek, between Geelong Ring Road and Geelong-Ballan Road • Barwon River, between Geelong Ring Road and Merrawarp Road • Moorabool River, between Midland Highway and Geelong-Ballarat Railway • Moorabool River (and deviation channel), between Geelong Ring Road and Midland Highway and including Dog Rocks Sanctuary and Moorabool River Reserve 	Western

3.3 GREATER GEELONG PLANNING SCHEME AND URBAN GROWTH ZONE

The Greater Geelong Planning Scheme sets out objectives, strategies and policy for the use, development and protection of land in the City of Greater Geelong, including the Growth Areas.

The planning scheme includes the PPF and applies a zone (the UGZ) to land within the Growth Areas.

A key purpose of the UGZ is to manage the transition of non-urban land identified for urban growth into urban land.

Within the UGZ, a PSP must be prepared before non-urban land can be converted into urban land. The UGZ allows detailed planning requirements for the precinct to be specified in schedules to the zone to ensure development proceeds generally in accordance with the PSP. The schedules incorporate the future structure plan of each PSP and allow:

- Zones to be applied to the land consistent with the urban structure in the PSP and/or specific provisions as an alternative to zones or alongside zones that control land-uses and development
- Requirements for permit applications for subdivision and development
- Conditions or requirements that must be included on a permit
- Decision guidelines that must be considered in granting a permit

3.4 PRECINCT STRUCTURE PLANS AND NATIVE VEGETATION PRECINCT PLANS

3.4.1 PRECINCT STRUCTURE PLANS

PSPs are high-level strategic plans that set out the preferred spatial location of land uses and infrastructure within each precinct, including details of the future urban structure of the precinct. This helps to stage development within an area and guide provision of subdivision permits, building permits and infrastructure delivery. Although PSPs provide a level of certainty for development, they are intended to be flexible to allow for site specific considerations.

The City will prepare PSPs for each of the nine precincts within the Growth Areas in accordance with the strategies in Clause 11.02-2L 'Northern and Western Geelong Growth Areas' of the Geelong Planning Scheme. These strategies require the development to be generally in accordance with the Framework Plan map and sequenced generally in accordance with the Development Sequencing maps that form part of the clause. PSPs will also consider the *Precinct Structure Planning Guidelines: New Communities in Victoria* (Victorian Planning Authority, 2021).

PSPs will be prepared over approximately 10 to 15 years. Each PSP will be a self-contained project and will be incorporated into the planning scheme via a planning scheme amendment process.

The PSP process involves several key steps, including:

- Early consultation with stakeholders to develop a vision for the precinct

- Preparation of technical studies and reports to understand key issues and constraints for the precinct, and to inform planning and management responses to be addressed in the PSP
- An opportunity for stakeholders to raise concerns and make submissions through public exhibition
- An independent planning panel hearing to consider and resolve key technical, planning and stakeholder issues
- Approval of the PSP and incorporation into the Geelong Planning Scheme through a planning scheme amendment

PSPs include requirements and guidelines for the development of the precinct and are implemented primarily through planning permits. They inform the preparation and assessment of permit applications and the conditions that may be placed on planning permits.

Once a PSP has been incorporated into the planning scheme by a planning scheme amendment, planning permits can be granted by the responsible authority for urban development as set out in the UGZ.

3.4.2 NATIVE VEGETATION PRECINCT PLANS

A permit is usually required to remove native vegetation in Victoria. Removal of native vegetation is regulated through clause 52.16 'Native Vegetation Precinct Plan' and clause 52.17 'Native vegetation' of planning schemes.

NVPPs will be used to assess and manage the impacts of native vegetation removal in the Growth Areas. They provide for the strategic management of native vegetation within a precinct. NVPPs identify the native vegetation to be retained and that can be removed, and the offset requirements for the vegetation to be removed. NVPPs switch off the need for a permit to remove native vegetation where removal is in accordance with an NVPP.

NVPPs will be prepared for each precinct within the Growth Areas containing native vegetation in conjunction with the preparation of PSPs. They are established via a planning scheme amendment to incorporate the NVPP in the schedule to Clause 52.16

The purpose of an NVPP is to ensure no net loss to biodiversity because of the removal of native vegetation. This is to be achieved by applying the three-step approach in the Native Vegetation Guidelines (DELWP, 2017a), which is:

- Avoid the removal of native vegetation
- Minimise impacts from the removal of native vegetation that cannot be avoided
- Provide an offset to compensate for the impact of the removal of native vegetation

NVPPs must be prepared in accordance with Clause 52.16, including the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a) (Native Vegetation Guidelines), and in consideration of the Greater Geelong Planning Scheme, including (DELWP, 2017b):

- Planning Policy Framework Clause 12.01-1S – 'Protection of biodiversity'
- Other relevant plans, strategies or policies that are incorporated in the Greater Geelong Planning Scheme, including the Framework Plan and any relevant PSP

NVPPs may also be prepared in consideration of the EPBC Act, FFG Act and Wildlife Act (DELWP, 2017b).

The preparation of an NVPP requires an assessment of the importance of the native vegetation for biodiversity, land and water protection, landscape and cultural values. This information is provided as part of the planning scheme amendment material that justifies the NVPP. A site assessment report must be prepared to include information on the native vegetation proposed to be removed and retained, including:

- A habitat hectare assessment, including information on the condition, extent, Ecological Vegetation Class and bioregional conservation status of the native vegetation
- Information on large trees within patches and scattered trees
- Information on rare and threatened species habitat derived from habitat importance maps

The site assessment report can include an on-site habitat assessment that determines whether habitat at the site is consistent with the habitat requirements of the rare or threatened species mapped by DEECA at the site. While targeted species surveys are not required, this information can be used to inform the preparation of the NVPP (DELWP, 2017b).

3.5 PLANNING PERMITS

Responsible authorities approve planning permits for subdivision and development that are consistent with the Greater Geelong Planning Scheme and generally in accordance with the relevant PSP that applies to the land.

The permit application process involves several key steps, including:

- Preparation of technical studies and reports that support the application and inform the planning decision, including plans to address the potential impacts of the development
- Referral of the application to specialist referral authorities for advice and comment where required – these may object to the permit or specify conditions to be included on a permit to address potential impacts
- An opportunity for stakeholders to raise concerns and make submissions through a notification process
- Inclusion of conditions on permits to address the potential impacts of the development
- An opportunity to review the merits of a permit decision at the Victorian Civil and Administrative Tribunal

The Urban Growth Zone requires that, before deciding on an application for subdivision or development the responsible authority must consider, in addition to a general set of decision guidelines in Clause 65:

- The Municipal Planning Strategy and the Planning Policy Framework
- Any relevant Growth Area framework plan, such as the Framework Plan
- Any PSP applying to the land, including the vision and objectives of the plan

Furthermore, permits granted for subdivision must:

- Be generally in accordance with the PSP
- Include any conditions or requirements specified in the schedule to the Urban Growth Zone or the PSP

4 Other relevant regulations

Several other regulatory frameworks are relevant to the development in the Growth Areas and the implementation of the BCS. Table 2 summarises these regulatory frameworks and their relevance to the BCS.

Where these regulations require authorisations or permits prior to development proceeding, proponents of development in the Growth Areas will be responsible for seeking these authorisations and meeting any other requirements.

Table 2: Summary of other regulatory frameworks relevant to the Growth Areas and implementation of the BCS

Regulatory framework	Description and relevance to implementation of the BCS	Regulatory authority
<i>Aboriginal Heritage Act 2006</i>	The Act provides for the protection of Aboriginal cultural heritage in Victoria. <i>The Aboriginal Heritage Regulations 2018</i> give effect to the Act through procedures linked to the Victorian planning system Cultural Heritage Management Plans and the Cultural Heritage permit process may be relevant for development in the Growth Areas to manage activities that impact Aboriginal cultural heritage	Victorian Aboriginal Heritage Council Registered Aboriginal Parties Authorised Officers and Aboriginal Heritage Officers
<i>Conservation Forests and Lands Act 1987</i>	The Act provides for the making of Section 69 agreements that can be used to secure land for conservation Section 69 agreements may be used to secure offsets under the BCS	DEECA
<i>Victorian Conservation Trust Act 1972</i>	The Act provides for the making of Trust for Nature covenants that can be used to secure land for conservation Trust for Nature covenants may be used to secure offsets under the BCS	Trust for Nature

Regulatory framework	Description and relevance to implementation of the BCS	Regulatory authority
<i>Catchment and Land Protection Act 1994</i>	<p>Landowners must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals. The State is responsible for eradicating State prohibited weeds from all land in Victoria</p> <p>The Act is relevant to the management of offset sites as well as the protection of targeted future offset sites prior to being secured</p>	DEECA
<i>Water Act 1989</i>	<p>The Act provides a framework for the allocation and management of surface water and groundwater in Victoria. Under the Act, works over designated waterways require a permit from the relevant Catchment Management Authority – the Corangamite CMA</p> <p>The Act is relevant to minimising the indirect impacts of the development in the Growth Areas, including on waterways and riparian areas and the ecological character of The Port Phillip Bay (Western Shoreline) & Bellarine Peninsula Ramsar Site</p>	Corangamite CMA
<i>Flora and Fauna Guarantee Act 1988</i>	<p>Section 4B of the FFG Act applies a duty on public authorities to ‘give proper consideration to’ the Act’s objectives in performing any of their functions that may impact on biodiversity, as well as to consider several other additional matters. The Act also requires that a permit is obtained to ‘take’ protected flora species. A permit is generally only required to take flora on public land, except where flora is taken for commercial purposes or where ‘critical habitat’ has been declared. A permit is also required to impact listed fish on private or public land</p> <p>The duty applies to the City in relation to the development of the BCS as there is a reasonable expectation that the carrying out of this function may impact biodiversity. Appendix B describes how the FFG Act duty was considered by the City in developing the BCS</p>	DEECA
<i>Environment Protection Act 2017</i>	<p>The Act establishes a duty for all Victorians and businesses to manage activities to avoid the risk of damage to the environment from pollution or waste and manage pollution events if they occur</p> <p>While not being incorporated into the <i>Environment Protection Transitional Regulations 2021</i>, provisions under State Environment Planning Protection Policy SEPP (Waters) remain relevant to development in the Growth Areas as they provide guidance for compliance with the duty under the Act, including:</p> <ul style="list-style-type: none"> • Clause 42 – Construction activities <ul style="list-style-type: none"> ○ Minimise soil erosion, land disturbance and discharge of sediment and other pollutants to surface waters ○ Where construction activities impinge on surface waters, construction managers need to monitor affected surface waters to assess whether beneficial uses are being protected • Clause 45 – Native vegetation protection and rehabilitation: <ul style="list-style-type: none"> ○ Minimise the removal of and rehabilitate native vegetation within or adjacent to surface waters <p>The Act is relevant to minimising the indirect impacts of the development in the Growth Areas, including on waterways and riparian areas and the ecological character of The Port Phillip Bay (Western Shoreline) & Bellarine Peninsula Ramsar Site</p>	EPA

Regulatory framework	Description and relevance to implementation of the BCS	Regulatory authority
<i>Pipelines Act 2005</i>	The <i>Pipelines Act 2005</i> regulates the construction and operation of certain pipelines and includes assessment and licencing processes to ensure pipelines minimise impacts to the environment The Act is relevant to minimising the indirect impacts of the development in the Growth Areas on biodiversity values	DTP
<i>Crown Land Reserves Act 1978</i>	The Act enables Crown land to be reserved and protected for a public purpose, including for conservation The Act is relevant to the protection of the strategic conservation areas in the Growth Areas. The NGGA Conservation Area will be acquired by or transferred to the City and become Crown land to be reserved and managed under the <i>Crown Land Reserves Act 1978</i>	DTP
<i>Environment Effects Act 1978</i>	The Act establishes a process to assess the environmental impacts of a project. If applicable, the Act requires that an Environment Effects Statement (EES) be prepared by the proponent. The EES is submitted to the Minister for Planning and enables them to assess the potential environmental effects of the proposed development The <i>Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978</i> (DSE, 2006) provide a range of criteria that can be used to determine whether an EES may be required for a project. These criteria relate to individual potential environmental effects and a combination of (two or more) potential environmental effects The referral criteria include impacts >10 ha of an endangered EVC, potential long-term loss of a significant proportion (e.g. 1-5 percent) of the remaining habitat of a threatened species, or the potential long-term change to the ecological character of a Ramsar wetland	DTP

5 Relevant City of Greater Geelong policies

5.1 CITY OF GREATER GEELONG ENVIRONMENT STRATEGY

The Environment Strategy 2020-2030 sets out how the City will protect the region's environment. The strategy defines five key goals to guide planning and decision making and targets, guiding principles and directions under each goal.

Goal 4 of the strategy is:

Protect, enhance and restore our region's biodiversity.

Key targets under this goal include:

- Establish conservation protection for all remnant biodiversity patches larger than 10 hectares by 2025
- Establish an additional 1,000 hectares of protected natural habitat by 2030
- Prevent any new indigenous species or habitat area extinctions during the term of this strategy
- Achieve a net gain of biodiversity within Greater Geelong during the term of this strategy

Key principles and directions in the Environment Strategy are summarised in Table 3.

Table 3: Key principles and directions in the Environment Strategy

Principle	Key Directions
Protect and enhance indigenous biodiversity	<ul style="list-style-type: none"> • Protect and enhance indigenous biodiversity prioritising: <ul style="list-style-type: none"> ○ Remnant biodiversity patches larger than 10 hectares ○ Threatened indigenous biodiversity species and communities ○ Under-represented Ecological Vegetation Classes ○ Establishment of biolinks to reduce habitat fragmentation ○ Protection of remnant old trees • Expand indigenous biodiversity patches through natural regeneration and revegetation programs • Restore indigenous biodiversity and habitat to support ecologically healthy waterways, estuaries and wetlands • Increase works to control pest plant and animal impacts on indigenous biodiversity • Ensure the protection of threatened species and habitats through the development of conservation action plans
Restore biodiversity in modified urban landscapes	<ul style="list-style-type: none"> • Restore habitat into urban landscapes through the establishment of indigenous tree, shrub and understory plantings and other habitat elements such as wetlands, logs and stags • Restore degraded waterways and wetlands to create habitat and ecologically healthy water flows

5.2 PLAN FOR NATURE

The City is currently preparing a Plan for Nature to update the City's Biodiversity Strategy and to set in place a program to protect, restore and manage the regions nature by 2030. The Plan supports the 30-year community vision within *Greater Geelong: A Clever and Creative Future* and is a key action of the *City's Sustainability Framework 2020*.

The Plan for Nature will include a new strategic policy framework, action plan and monitoring program.

References

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THE CITY OF
GREATER GEELONG

NORTHERN AND WESTERN GEELONG GROWTH AREAS

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MAY 2023

DRAFT BIODIVERSITY CONSERVATION STRATEGY

APPENDIX B: ASSESSMENT AGAINST STATE
PLANNING AND REGULATORY REQUIREMENTS
FOR BIODIVERSITY

DOCUMENT TRACKING

PREPARED BY:	
Tom Holden (Open Lines)	
REVIEWED BY:	
Heather Tolley, Peter Hemphill (Open Lines) Mitchell Deaves (Biosis)	
VERSION CONTROL:	
VERSION:	Public exhibition version
DATE:	May 2023

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1 Introduction

This appendix to the Northern and Western Geelong Growth Areas (NWGGA) Biodiversity Conservation Strategy (BCS) assesses the BCS against key State planning and regulatory requirements for biodiversity, including:

- Planning Policy Framework (PPF) Clause 12.01 'Biodiversity', including:
 - Clause 12.01-1S – 'Protection of biodiversity'
 - Clause 12.01-1L – 'Protection of biodiversity'
 - Clause 12.01-2S – 'Native vegetation management'
- Native Vegetation Removal Regulations, including the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a) (the Native Vegetation Guidelines)
- Environmental Significance Overlay 4 – Grasslands within the Werribee Plains hinterland, within the Greater Geelong Planning Scheme (Planning Scheme)
- Section 4B of the *Flora and Fauna Guarantee Act* (FFG Act) (the FFG Act 'biodiversity duty')

The purpose of the analysis is to demonstrate how these key State planning and regulatory requirements for biodiversity have been considered by the City of Greater Geelong (the City) in developing the BCS.

While each of these requirements has a specific set of considerations that need to be addressed, there are several common themes across them. Section 2 of this appendix describes how these themes have been considered in the BCS through a strategic biodiversity planning approach.

Section 3 of this appendix provides responses to each of the specific requirements in a series of tables. This section draws on the discussion around the common strategic biodiversity planning themes presented in Section 2.

1.1 SUMMARY OF THE ASSESSMENT

The BCS establishes the over-arching conservation strategy for the Growth Areas and facilitates ongoing consideration of biodiversity as detailed planning progresses. Implementation of the BCS has been designed to meet key State planning and regulatory requirements for biodiversity, and the assessment presented in this appendix supports this.

The BCS reflects the outcomes of a comprehensive strategic biodiversity planning process for the NWGGA.

This process has led to a BCS that:

- Uses the best available information to identify the biodiversity values across the Growth Areas, prioritise high biodiversity value areas for ongoing protection and management, and guide future biodiversity decisions and processes where further, detailed biodiversity information is needed
- Provides for strategic avoidance, protection, management and restoration of areas that contain the most important Commonwealth, State and local biodiversity values in the Growth Areas. These areas provide ecosystem function and are likely to be viable in the long-term because of their size, condition, shape and location in the landscape. This will lead to improved biodiversity outcomes compared to standard, smaller-scale approaches to avoidance planning and assessment, which can result in small and disconnected fragments of unmanaged, lower condition habitat
- Takes into account existing threatening processes, and contains commitments and measures to address the direct, indirect and cumulative impacts of the development in the Growth Areas
- Delivers a suite of offsets to address unavoidable impacts that meet State and Commonwealth regulatory requirements and provide strategic, landscape-scale biodiversity outcomes

Implementation of the BCS will occur primarily through the Victorian planning system, and further details and justification around key State planning and regulatory requirements for biodiversity will be provided as planning proceeds. While the BCS has been developed through a strategic biodiversity planning process at the Growth Area scale, implementation will occur at the precinct scale through Precinct Structure Plans (PSPs) and Native Vegetation Precinct Plans (NVPPs), comprising a series of separate planning projects. This is consistent with State planning and regulatory requirements for biodiversity and previous large scale urban development projects in Victoria.

2 Strategic planning for biodiversity

2.1 INTRODUCTION

This section describes how the City has addressed considerations that are common across the key State planning and regulatory requirements for biodiversity in developing the BCS through a strategic biodiversity planning approach.

The BCS is part of a broad strategic planning process undertaken by the City to identify areas for development and growth to meet economic, social and planning challenges and protect high biodiversity value areas.

The BCS reflects the outcomes of this strategic planning process for the Growth Areas. It identifies national, State and local-level biodiversity outcomes to be achieved for the Growth Areas, and a set of commitments and measures to deliver these outcomes and ensure the impacts of the development are avoided, minimised and offset consistent with Commonwealth and State regulatory requirements.

The former Department of Environment, Land, Water and Planning (DELWP) prepared guidelines for strategic planning for biodiversity in Victoria. They are *Planning for biodiversity: guidance* (DELWP, 2017c). The purpose of the guidelines is to assist local government to use the planning system to meet the objectives of the PPF in relation to the protection and conservation of Victoria's biodiversity. The guidelines refer to *Protecting Victoria's Environment – Biodiversity 2037* (DELWP, 2017e) and recognise that strategic planning plays an important role in achieving biodiversity outcomes in Victoria. The guidelines state that strategic planning is the most effective process under the planning system to protect and conserve biodiversity (DELWP, 2017c). Strategic planning provides many benefits to biodiversity, including the:

- Ability to identify high biodiversity value areas at a landscape scale
- Best opportunity to effectively avoid and minimise impacts by directing development away from high biodiversity value areas and co-ordinating offsets to compensate for impacts strategically
- Ability to understand and address cumulative impacts of multiple developments within an area

The strategic planning guidelines set out a series of steps for effective strategic planning. Key steps include considering broader strategic policies and strategies, identifying areas of high biodiversity value, identifying where there is demand for development and resolving conflicts between development and biodiversity values, and choosing planning tools to protect high biodiversity value areas (DELWP, 2017c).

The development of the BCS was undertaken consistent with these key steps, and involved:

- Considering broader strategies, policies and processes relating to biodiversity
- Identifying areas of high biodiversity value within the Growth Areas
- Resolving conflicts between development and biodiversity values through avoidance planning and protecting areas of high biodiversity value through planning mechanisms
- Further minimising impacts on biodiversity values through planning mechanisms
- Offsetting unavoidable impacts on biodiversity values

The following sections describe how these steps were considered in developing the BCS.

The strategic planning guidelines also refer to the ability for strategic planning to effectively enable consideration of cumulative impacts of multiple developments within an area compared to planning processes that operate at a site-scale (DELWP, 2017c). A description of how the BCS addresses cumulative impacts is provided in Section 2.7.

2.2 CONSIDERATION OF BROADER STRATEGIES, POLICIES AND PROCESSES

The BCS was developed in consideration of a range of broader strategies, policies and processes relating to biodiversity relevant to the Growth Areas, including:

- Strategic assessment process under Part 10 of the EPBC Act. This includes a wide range of associated EPBC Act policies, guidelines, and statutory documents relevant to biodiversity within the Growth Areas
- *Northern and Western Geelong Growth Area Framework Plan* (the Framework Plan) (The City of Greater Geelong, 2021)
- *Protecting Victoria's Environment – Biodiversity 2037* (DELWP, 2017e)

- Planning Policy Framework, including Clause 12.01-15 – ‘Protection of biodiversity’
- Corangamite Regional Catchment Strategy
- Biodiversity values and potential impacts on Ramsar sites

2.2.1 STRATEGIC ASSESSMENT UNDER PART 10 OF THE EPBC ACT

The City is undertaking a strategic assessment under Part 10 of the EPBC Act to address the impacts of development on Matters of National Environmental Significance (MNES) protected under the EPBC Act.

The strategic assessment enables a landscape scale assessment and approval of a suite of development actions under the EPBC Act and provides the opportunity to deliver improved environmental and development outcomes compared to project-by-project assessments through strategic consideration of biodiversity issues.

As part of the strategic assessment process, the City prepared the *Northern and Western Geelong Growth Areas Strategic Assessment Report* to assess the impacts of the development in the Growth Areas on MNES.

The City also prepared the *Northern and Western Geelong Growth Areas EPBC Plan* (the EPBC Plan). The EPBC Plan gives effect to the outcomes of the strategic assessment process. The EPBC Plan has been prepared in accordance with the Endorsement Criteria in the Strategic Assessment Agreement (27 January 2022) between the Commonwealth Minister for the Environment (the Minister) and the City.

A key purpose of the BCS is to set out how the conservation framework in the EPBC Plan for the Growth Areas will be implemented including through avoiding and minimising, mitigating, and offsetting residual impacts in accordance with the mitigation hierarchy (DSEWPC, 2012a; DELWP, 2017a).

2.2.2 FRAMEWORK PLAN

The Framework Plan represents a key response by the City to the planning and growth challenges facing the Geelong region. It is incorporated into the Greater Geelong Planning Scheme and implemented at Clause 11.02-2L Northern and Western Geelong Growth Areas. It includes a range of urban and other planning objectives, and outlines the land uses and development which will deliver new communities, infrastructure and services within the Growth Areas in order to provide for the future population growth of the Geelong region.

The Framework Plan was developed in consideration of biodiversity values and identifies biodiversity priorities that are reflected in a set of actions. The BCS satisfies the delivery of three key actions (Action N1.3.1, N1.3.2 and W1.3.1) under the Framework Plan for the protection of biodiversity in the Growth Areas. The Framework Plan says an “*overarching biodiversity conservation strategy will be prepared for the growth area[s] that provides high level guidance for the management of nationally and state significant biodiversity values...The strategy will spatially identify how outcomes for matters of national environmental significance will be delivered...*” (The City of Greater Geelong, 2021).

2.2.3 OTHER STRATEGIES AND POLICIES

A description of how the BCS considered the other broader strategies and policies above is provided in Section 3.

2.3 IDENTIFYING AREAS OF HIGH BIODIVERSITY VALUE

The BCS uses the best available information to understand biodiversity values, identify priority areas and support decision making. The key information sources are described in the following sections and include ecological survey data, species database records, habitat and vegetation modelling and relevant literature and government policy or guidance documents.

High biodiversity value areas were identified by considering several matters affecting the value of biodiversity, including the matters set out in the strategic planning guidelines. This included:

- Patch size – larger, well-connected areas of native vegetation are generally of higher value
- Condition – native vegetation in good condition is generally of high value
- Areas with higher strategic biodiversity value scores
- Areas that are habitat for rare or threatened species, particularly for multiple species
- Waterways

2.3.1 ECOLOGICAL SURVEYS BY ECOLOGY AND HERITAGE PARTNERS

The City commissioned Ecology and Heritage Partners (EHP) to undertake detailed ecological surveys within the NGGA and the northern portion of the WGGA (Creamery Road and Batesford North precincts). The southern precincts in the WGGA (Batesford South, McCanns Lane and Merrawarp Road) were not subject to surveys, with the intention of undertaking detailed ecological investigations of these precincts at a later date, closer to the time of planning and development. The BCS will be updated to incorporate the results of those surveys.

The surveys aimed to identify and map the presence of State and Commonwealth listed threatened species, ecological communities, and native vegetation to inform the Part 10 Strategic Assessment for the Growth Areas.

Field surveys were undertaken between November 2019 and December 2020. The methods and results of these surveys are described in *'Existing Ecological Conditions: Northern and Western Geelong Growth Areas'* (EHP, 2021).

Two-hundred-person days were spent surveying the Growth Areas. Surveys were limited to properties where access was permitted, which totalled an area of over 2,075.3 ha, or just over 72 percent of the Growth Areas. Around 33 per cent of the NGGA and 13.2 per cent of the WGGA were not subject to site surveys due to a lack of access.

Botanists (who were accredited by DELWP in the habitat hectare methodology) undertook detailed ecological assessments to quantify the extent and quality of native vegetation values in the growth areas (EHP, 2021).

Qualified flora and fauna ecologists undertook targeted surveys for the following Commonwealth listed threatened flora and fauna species and threatened ecological communities (TECs) (EHP, 2021):

- *Delma impar* (Striped Legless Lizard)
- *Dianella amoena* (Mated Flax-lily)
- *Galaxiella toourtkoourt* (Little Galaxias)
- *Glycine latrobeana* (Clover Glycine)
- *Lachnagrostis adamsonii* (Adamson's Blown-grass)
- *Litoria raniformis* (Growling Grass Frog)
- *Pimelea spinescens* subsp. *spinescens* (Spiny Rice-flower)
- *Prototroctes maraena* (Australian Grayling)
- *Rutidosia leptorrhynchoides* (Button Wrinklewort)
- *Senecio macrocarpus* (Large-headed Fireweed)
- *Synemon plana* (Golden Sun Moth)
- Natural Temperate Grassland of the Victorian Volcanic Plain

Surveys were generally undertaken in accordance with the relevant State and Commonwealth guidelines for vegetation, TECs, and threatened species surveys (EHP, 2021). Any deviations from relevant guidelines, including an explanation and justification for the methods used, are detailed in the EHP (2021) report. The methods and report underwent a process of peer and regulator review as part of developing and finalising the findings.

2.3.2 INDIVIDUAL SURVEYS UNDERTAKEN BY LANDHOLDERS WITHIN GROWTH AREAS

The City provided an opportunity for landholders that had their properties surveyed during the period of the EHP surveys to provide additional information for consideration. The purpose of this process was to collect additional information where landholders had concerns with mapping inaccuracies and/or assumptions.

The additional information was reviewed against a set of criteria to help inform and guide decisions on appropriate changes to the dataset. Changes were considered appropriate where any of the following occurred:

- Landowner surveys addressed the relevant guidelines and were undertaken in the same survey season as EHP 2021. This recognises that native grasslands are a dynamic system that display natural variation from season to season. It is noted EHP undertook Vegetation Quality Assessment (VQA) surveys between November 2019 and January 2020
- EHP has acknowledged they were in error
- Small scale refinements were needed to address mapping anomalies and inaccuracies (e.g., mapped native grassland over buildings or driveways)

Four separate surveys were commissioned by individual landholders within the NGGA as part of this process. Surveys mainly focussed on the mapping of native vegetation. These surveys covered an area of approximately 55 per cent (approximately 1,170 ha) of the NGGA. One survey was commissioned within the WGGA, covering an area of approximately 38 ha (approximately 5 per cent of the Growth Area).

All surveys were undertaken by DELWP accredited botanists according to relevant guidelines.

Most landholder submissions documented changes in site conditions (including increased weed cover, unsuitable/incompatible species, and altered land management practices) and/or seasonal variability. However, none of the surveys were carried out during the same season as the EHP surveys. As a result, it was not possible to make a valid comparison of the native grassland extent and condition for the purposes of amending the EHP dataset based on the first criterion. Instead, this information provides a useful and relevant indication of the changes in extent and condition of the grasslands for the purposes of understanding ecological trend within the Growth Areas.

The process led to several minor changes to the extent of mapped native vegetation and species habitat in the Growth Areas where the other two criteria were met. These changes led to a revised Project Dataset, which was used as part of the baseline information for the assessment of impacts to MNES in the NWGGA Strategic Assessment Report.

2.3.3 SPECIES RECORDS OBTAINED THROUGH THE VICTORIAN BIODIVERSITY ATLAS (VBA) (DELWP, 2022B)

VBA records were used to supplement survey records within the Growth Areas, and to contribute to an understanding of presence within the unsurveyed areas of the Growth Areas and the broader Study Area.

2.3.4 DEECA HABITAT AND VEGETATION MODELLING

Consideration of DEECA habitat and vegetation modelling included:

- Habitat importance models (HIMs) (DELWP, 2017b). HIMs provided a useful planning tool for understanding the potentially important areas of a species' habitat distribution across the landscape. The models indicate the relative importance of habitat areas from low through to high
- Modelled Ecological Vegetation Classes (EVCs) (DELWP, 2005). Modelled EVCs were used to inform the potential occurrence of native vegetation and TECs where survey data was unavailable

2.3.5 KEY COMMONWEALTH, STATE AND LOCAL POLICY OR REGULATORY DOCUMENTS

Key policy and regulatory documents that were considered included relevant EPBC Act guidance documents, Commonwealth listed threatened species Recovery Plans and Conservation Advices, and State listed threatened species action statements.

2.4 AVOIDANCE OF IMPACTS

The BCS considered the proposed development for the Growth Areas set out in the Framework Plan and applied an avoidance planning process to consider and resolve conflicts between areas identified as high biodiversity value and areas proposed for development in the Framework Plan.

Avoidance planning for the Growth Areas comprises three processes:

- Strategic level planning to locate the Growth Areas and identify initial avoidance priorities
- Locating and designing the development within the Growth Areas to avoid impacts
- Future precinct and site-scale planning

2.4.1 STRATEGIC LEVEL PLANNING

The avoidance process commenced at a landscape scale and informed the location of the Growth Areas.

The process was undertaken through a range of regional and State-scale processes. Relevant documents associated with this process include the G21 Regional Growth Plan (Geelong Region Alliance, 2013) and Plan Melbourne 2017–2050 (Victoria State Government, 2017). This process considered a wide range of factors across the broader region, including:

- The locations and characteristics of landscape features including protected matters and environmental values

- The locations of existing development and infrastructure
- The overall suitability of the site for delivering development objectives

Once the location of the Growth Areas was determined, high level strategic planning was completed through preparation of the Framework Plan. This process was based around urban development objectives and planning themes. Consideration of biodiversity values was one of the factors involved in planning decisions during this process. The Framework Plan identifies priorities for avoidance and minimisation that are reflected in a set of actions.

Key actions relating to avoidance of biodiversity in each of the Growth Areas are presented in Table 1 including when each action will be implemented through the planning process for the Growth Areas.

Table 1: Key actions from the Framework Plan relating to avoidance of biodiversity in each of the Growth Areas

Action #	Action text	Implementation stage
Northern Geelong Growth Area		
N1.3.2	<i>A network of linear corridors will be created to promote biodiversity linkages within neighbourhoods that connect between conservation areas, waterways and the open space network</i>	<ul style="list-style-type: none"> • Indicative planning through the Framework Plan process • Refined and confirmed during precinct planning
N1.3.3	<i>Any conservation areas that are identified will prioritise the protection and enhancement of local indigenous flora and fauna species</i>	<ul style="list-style-type: none"> • Indicative planning through the Framework Plan process • Refined during the strategic assessment process • Confirmed during precinct planning
N1.3.7	<i>A Native Vegetation Precinct Plan will be prepared for each precinct to determine the presence and management of significant flora, fauna and ecological communities</i>	<ul style="list-style-type: none"> • During precinct planning
Western Geelong Growth Area		
W1.3.2	<i>Individual detailed master plans that outline the protection and enhancement of river and creek corridors will be prepared and incorporated within the relevant precinct structure plan including [within the Strategic Assessment Area]:</i> <ul style="list-style-type: none"> • Cowies Creek, between Geelong Ring Road and Geelong-Ballan Road • Moorabool River, between Midland Highway and Geelong-Ballarat Railway 	<ul style="list-style-type: none"> • Indicative planning through the Framework Plan process • Refined during the strategic assessment process • Confirmed during precinct planning
W1.3.3	<i>A network of linear corridors will be created to promote biodiversity linkages within neighbourhoods that connect between conservation areas, waterways and the open space network</i>	<ul style="list-style-type: none"> • Indicative planning through the Framework Plan process • Refined and confirmed during precinct planning
W1.3.4	<i>Any conservation areas that are identified will prioritise the protection and enhancement of local indigenous flora and fauna species</i>	<ul style="list-style-type: none"> • Indicative planning through the Framework Plan process • Refined during the strategic assessment process • Confirmed during precinct planning
W1.3.8	<i>A Native Vegetation Precinct Plan will be prepared for each precinct to determine the presence and management of significant flora, fauna and ecological communities</i>	<ul style="list-style-type: none"> • During precinct planning

2.4.2 GROWTH AREA LEVEL PLANNING

The Framework Plan includes plans for future urban structure which identify areas proposed for development and areas proposed for avoidance. Following adoption of the Framework Plan, the City undertook a more detailed level of biodiversity planning to refine the outcomes at a Growth Area level. This included:

- Detailed ecological surveys across the NGGA and the northern portion of the WGGA between November 2019 and December 2020 by Ecology and Heritage Partners (EHP) (described previously in section 2.3.1)
- Consideration of the need for further avoidance based on the results of surveys
- Detailed analysis of a range of avoidance alternatives to inform decisions on the optimal layout for the Growth Areas

The detailed ecological surveys identified a range of biodiversity values across the Growth Areas including:

- Habitat for the Golden Sun Moth (GSM), Striped Legless Lizard (SLL), areas of Natural Temperate Grassland of the Victorian Volcanic Plain (NTG) and remnant patches of native grasslands within the NGGA
- Habitat for Growling Grass Frog (GGF) and small remnants of native grasslands within the northern portion of the WGGA

In considering these survey results, it was found that:

- Further avoidance and minimisation of impacts to high biodiversity value areas was required within the NGGA
- The indicative avoidance outcomes within the Framework Plan for WGGA were broadly appropriate in the context of the biodiversity values in the northern portion of the WGGA.
- Further ecological investigations and confirmation of avoidance planning would be needed in the southern precincts of the WGGA closer to the time of planning and development for these areas

A key aim of the City in defining further areas for avoidance within the NGGA was to identify high value biodiversity with the best potential for long term viability. The existing level of threats, in particular from high priority weeds, is leading to rapid environmental decline in many parts of the NGGA. This has meant that merely avoiding impacts to biodiversity by not allowing development to occur is unlikely to provide a conservation outcome for those values as there is a high likelihood they will degrade over time without intervention. Instead, protection, restoration and ongoing management of these areas is needed to ensure their long-term viability.

It was recognised that identifying additional areas for avoidance to those already identified within the Framework Plan would have significant social and economic implications. The City used a decision making framework, known as structured decision making (SDM), to help define priority areas for further biodiversity avoidance while also understanding and accounting for the social and economic ramifications of any decision.

The SDM project addressed the following question: *What is the optimal layout of development and avoidance within the Northern Geelong Growth Area?* It did this by considering five decision objectives and eleven performance criteria. The decision objectives covered environmental, social, and economic issues and were:

- Avoid and minimise the loss of biodiversity
- Maximise the protection and management of biodiversity
- Maximise community access to infrastructure and the delivery of 20 minute neighbourhoods
- Minimise the cost of the conservation program
- Maximise the supply of affordable housing delivered in the precinct

The social and economic objectives reflected the broader planning objectives relating to the Growth Area from state and local policy, and the Framework Plan.

The project considered five alternative layouts and scales of avoidance across the Growth Area. The avoidance layout that performed the best and has been carried forward meets the guiding principles outlined in the BCS for a strategic conservation area. It:

- Increases the area of avoidance to biodiversity within the NGGA compared to the Framework Plan

- Focuses on the largest habitat area for Striped Legless Lizard and a substantial area of habitat for the Golden Sun Moth, and provides the best opportunities for protecting and managing viable areas of biodiversity in the long term due to the shape, area, and condition of the native vegetation
- Provides appropriate outcomes for the urban form of the Growth Area and implementation costs

STRATEGIC CONSERVATION AREAS

Altogether, the BCS identifies four ‘strategic conservation areas’ in the NGGA and WGGA that will be avoided from development and will be protected and managed for conservation in-perpetuity. The strategic conservation areas are:

- In the NGGA: the NGGA Conservation Area defined through the structured decision making process described above
- In the WGGA:
 - Cowies Creek Conservation Area
 - Moorabool River Corridor
 - Barwon River Corridor

The primary purpose of the strategic conservation areas is the protection, management and restoration of biodiversity values. These areas represent high biodiversity value areas that contain the most important Commonwealth, State and local biodiversity values in the Growth Areas, and are the areas considered most likely to be viable in the long-term because of their size, condition, shape and location in the landscape.

The strategic conservation areas were identified in consideration of the high level of existing threats in the Growth Areas, which are leading to a rapid decline of biodiversity values. While the extent of Plains Grassland (EVC 132) identified by EHP (2021) was considered in locating the conservation areas, weed invasion and cropping have resulted in a deterioration of this EVC in the Growth Areas, and there are several examples of where this vegetation has been cropped or substantially degraded by weed invasion since the EHP mapping. None of the Plains Grassland within the WGGA was identified as the Commonwealth listed NTG, and this vegetation was of low retention value given its degraded state, low value for other biodiversity values, and poor persistence potential in the absence of expensive, high intensity, restoration management. Where NTG is present within the NGGA, it occurs in a heavily modified and degraded form and was not considered suitable for long-term conservation.

The Commonwealth, State and local biodiversity values that occur within the strategic conservation areas are described in the BCS. Together, these areas avoid impacts to and will protect and manage:

- The largest habitat area for Striped Legless Lizard within the NGGA
- A substantial area of habitat for the Golden Sun Moth within the NGGA
- All habitat for Growling Grass Frog within the WGGA
- Multiple other Commonwealth, State and local biodiversity values
- Areas of key habitat connectivity across the Growth Areas
- Riparian areas that will help maintain ecological processes and water flows and quality

The State and local biodiversity values within the strategic conservation areas include:

- Within the NGGA Conservation Area:
 - 73 ha of habitat for the FFG Act listed Striped Legless Lizard
 - 108 ha of habitat for the FFG Act listed Golden Sun Moth
 - 55 ha of *Low Rainfall* Plains Grassland (EVC 132_63) and FFG Act listed Western (Basalt) Plains Grassland Community
 - 2.3 ha of Current Wetlands (DELWP)
- Within the Cowies Creek Conservation Area:
 - Habitat for the FFG Act listed Growling Grass Frog
 - 4.9 ha of Creekline Grassy Woodland (EVC 68)
- Within the Moorabool River corridor:
 - Habitat for FFG Act listed aquatic species

- 22.1 ha of Floodplain Riparian Woodland (EVC 56)
- Within the Barwon River Corridor:
 - Aquatic vegetation communities
 - Floodplain Riparian Woodland (EVC 56)
 - Habitat for several wetland dependant birds and native fish

The BCS includes commitments and measures to protect, manage and restore biodiversity values in the strategic conservation areas. These include the use of planning mechanisms and processes to protect these areas, including:

- Identifying the strategic conservation areas as land to be protected in the relevant PSPs
- Applying an appropriate environment zone to the strategic conservation areas
- Identifying native vegetation in the strategic conservation areas as to be retained within the relevant NVPP
- Securing the strategic conservation areas in perpetuity under an on-title agreement
- Preparing and implementing Conservation Management Plans for the strategic conservation areas

2.4.3 FUTURE PRECINCT AND SITE-SCALE PLANNING

The avoidance planning process at the Growth Area level will be supported by future biodiversity decision-making through precinct planning and site-scale planning controls. This further consideration of biodiversity at the precinct scale complements and supports the broader strategic planning process undertaken for the Growth Areas. It allows the benefits of strategic planning to be realised while still enabling site scale issues to be resolved.

The City will prepare PSPs for each of the nine precincts within the Growth Areas in accordance with the strategies in Clause 11.02-2L 'Northern and Western Geelong Growth Areas' of the Greater Geelong Planning Scheme. These strategies require the development to be generally in accordance with the Framework Plan map and sequenced generally in accordance with the Development Sequencing maps that form part of the clause.

PSPs will be prepared over approximately 10 to 15 years. Each PSP will be a self-contained project and will be incorporated into the planning scheme via a planning scheme amendment process. NVPPs will be prepared for each precinct containing native vegetation in conjunction with the preparation of PSPs.

BIODIVERSITY OPPORTUNITY AREAS AND INVESTIGATION AREAS

The BCS identifies several further opportunities to restore biodiversity values in the Growth Areas through precinct planning and delivery. These opportunities are identified within:

- Biodiversity opportunity areas: these are locations that are primarily used for another purpose (e.g. to manage stormwater) but that provide opportunities for co-benefits to biodiversity
- Investigation areas: these are locations that require further ecological surveys or studies to determine their suitability as either a strategic conservation area or biodiversity opportunity area. The investigation areas will be confirmed at the precinct planning stage for the relevant precincts as either:
 - Strategic conservation areas
 - Biodiversity opportunity areas
 - Areas not suitable for biodiversity protection and therefore suitable for development

The guiding principles for conservation planning in the BCS were applied to identify the biodiversity opportunity areas. The investigation areas reflect the areas considered most likely to meet the guiding principles for both strategic conservation areas and biodiversity opportunity areas based on current information.

Biodiversity opportunity areas and investigation areas are identified in the BCS and include:

- In the NGGA: Seven biodiversity opportunity areas. The majority of these relate to drainage areas that are likely to be required for various types of stormwater related infrastructure. These areas may also provide co-benefits to biodiversity by retaining or enhancing habitat values and potential movement corridors for threatened fauna across the growth area, as well as improving stream flow and water quality outcomes

- In the WGGGA:
 - Four biodiversity opportunity areas. These relate to drainage areas that are likely to be required for various types of drainage infrastructure. These areas may also provide co-benefits to biodiversity and provide biodiversity links and habitat connectivity across the growth area
 - Seven investigation areas, including around the Batesford Quarry, opportunities for expanding the existing Dog Rocks Flora and Fauna Sanctuary, and other opportunities for additional avoidance

The BCS includes commitments and measures to consider further avoidance within biodiversity opportunity areas and investigation areas during precinct planning (see the Commitments and Measures document). To support these commitments and measures, the BCS includes precinct profiles that identify the currently known biodiversity values within the biodiversity opportunity areas and investigation areas, and the opportunities and priorities that should be considered in making decisions on further avoidance of these areas during precinct planning.

2.5 MINIMISATION OF IMPACTS

In addition to minimising impacts through the avoidance planning process, impacts on biodiversity values will be further minimised by managing development to mitigate indirect impacts on biodiversity values that are avoided or that occur outside the Growth Areas. Development within the Growth Areas has the potential to lead to a range of indirect impacts that may adversely affect surrounding biodiversity values. These impacts relate to:

- Altered fire regimes
- Changes to water flows and water quality
- Disturbance due to noise, dust, or light
- Disturbance from increased public access to natural areas
- Fauna mortality and barriers to movement
- Inadvertent impacts on adjacent habitat or vegetation
- Predation or competition by pest or domestic fauna
- Spread of infection or disease
- Spread of weeds

The BCS includes commitments (see the Commitments and Measures document) to minimise these impacts, including requirements to implement:

- Standard mitigation measures delivered through the planning system. The Victorian planning system will deliver a range of standard mitigation measures through the development and implementation of PSPs and the provisions of the Greater Geelong Planning Scheme. These include measures such as stormwater management, erosion control, and management of construction sites. The BCS includes a commitment to ensure these standard measures continue to be implemented. The process for identifying and implementing these measures is described in the BCS
- Additional specific mitigation measures to address key biodiversity values associated with waterways, riparian areas and wetlands, and to protect the strategic conservation areas. These additional specific mitigation measures were defined through the assessment of the indirect impacts of the development on MNES in the EPBC Strategic Assessment Report. While these address specific risks to MNES associated with waterways, riparian areas and wetlands, and other biodiversity values within the strategic conservation areas, these additional measures will also minimise impacts to State and local biodiversity values
- Requirements to prepare and implement Conservation Management Plans for each of the strategic conservation areas

The measures in the BCS to deliver these commitments include incorporating these standard and additional specific mitigation measures as requirements and guidelines in PSPs and/or as conditions on permits, as appropriate.

2.6 OFFSETTING IMPACTS

Both State and Commonwealth level offsets will be delivered through implementation of the BCS.

At the State level, offsets for the removal of native vegetation within the Growth Areas will be established in accordance with the requirements of the Native Vegetation Guidelines through the preparation of NVPPs.

NVPPs will outline the offset requirements for native vegetation that can be removed and detail the obligations for each property within the precinct in accordance with the Native Vegetation Guidelines.

The securing of offsets will be the responsibility of the individual proponent. It is expected that proponents will secure offsets through the existing Victorian Native Vegetation Credit Register.

NVPPs and planning permits issued for use and development will require offset obligations to be met prior to the removal of native vegetation in accordance with the Native Vegetation Guidelines. Ongoing management, monitoring and reporting on offsets will occur in accordance with the Native Vegetation Guidelines.

Biodiversity offsets are also required at the Commonwealth level for residual adverse impacts within the NGGA to the following MNES:

- Natural Temperate Grassland of the Victorian Volcanic Plan (listed as critically endangered)
- Striped Legless Lizard (listed as vulnerable)
- Golden Sun Moth (listed as vulnerable)

The EPBC offsets package is presented in Appendix C to the BCS and was developed to provide strong, positive outcomes for the three relevant MNES by:

- Ensuring the offsets are in accordance with the principles of the EPBC Act Environment Offsets Policy (DSEWPC, 2012b)
- Maximising the opportunities that are provided by taking a strategic approach to offsetting rather than the usual site-by-site approach
- Mitigating the risks associated with strategic offsetting

The EPBC offsets package will also benefit native vegetation and State-listed matters (including Striped Legless Lizard and Golden Sun Moth, which are both Commonwealth and State-listed).

2.7 CONSIDERATION OF CUMULATIVE IMPACTS

The cumulative impacts of development in the Growth Areas are required to be considered under:

- The Native Vegetation Guidelines
- PPF Clause 12.01-1S – ‘Protection of biodiversity’
- The FFG Act ‘biodiversity duty’

2.7.1 CUMULATIVE IMPACTS IN RELATION TO THE NATIVE VEGETATION GUIDELINES

The Native Vegetation Guidelines (DELWP, 2017a) require the following to be taken into account in the context of the cumulative impacts of development on native vegetation:

- Past removal of native vegetation
- Assumed losses of native vegetation
- Consequential losses of native vegetation

These requirements aim to ensure cumulative impacts are taken into account if permits are split and projects involving the removal of native vegetation are staged over time, and that vegetation removal resulting from proposed use and development is considered holistically and broadly (DELWP, 2018).

PAST REMOVAL OF NATIVE VEGETATION

Past removal of native vegetation refers to vegetation removed ‘*on the same property or on contiguous land in the same ownership as the applicant, in the five-year period before the application for a permit is lodged*’ (DELWP, 2017a).

Past removal of native vegetation is considered when determining the assessment pathway of an application to remove native vegetation and determining the proportional impact on habitat for rare or threatened species.

ASSUMED LOSS OF NATIVE VEGETATION

Assumed loss of native vegetation refers to losses that are likely to occur because of (DELWP, 2018):

- Excessive lopping of trees for maintenance or encroachment of development within tree protection zones or structural root zones that cause damage to the trees
- Proximity of native vegetation to dwellings
- Indirect impacts due to shading, stormwater runoff, changes to hydrology and other indirect impacts

CONSEQUENTIAL LOSS OF NATIVE VEGETATION

Consequential loss of native vegetation refers to losses that are likely to occur because of access to exemptions in Clause 52.16 and 52.17 as a consequence of a permit approval (DELWP, 2018).

This includes, for example, the approval of a subdivision that creates lots smaller than 0.4 ha, which allows a proponent to access an exemption to remove the vegetation within those lots.

APPLICATION OF PAST REMOVAL AND ASSUMED AND CONSEQUENTIAL LOSSES IN THE GROWTH AREAS

The City will consider cumulative impacts in the context of past removal of native vegetation and assumed and consequential losses at a precinct scale through the preparation of PSPs and NVPPs for each precinct.

Justification for this precinct scale approach to cumulative impacts is provided in Section 3.3.

2.7.2 OTHER CUMULATIVE IMPACT REQUIREMENTS

The relevant strategy that sits under Clause 12.01-1S of the PPF requires the following in relation to cumulative impacts:

“Ensure that decision making takes into account the impacts of land use and development on Victoria’s biodiversity, including consideration of:

- *Cumulative impacts...*”

Similarly, the FFG Act ‘biodiversity duty’ includes a requirement for public authorities to consider the potential impacts on biodiversity, including cumulative impacts.

There is no guidance as to how cumulative impacts should be considered to meet either of these requirements; including how cumulative impacts should be defined or the scale at which these impacts should be assessed. The City has therefore sought to meet these obligations relating to cumulative impacts in three different ways:

- By meeting the cumulative impact requirements relating to past vegetation removal that are set out in the Native Vegetation Guidelines (see Section 3, Table 5 under the response in relation to offsets)
- In developing the BCS and implementing the strategic biodiversity planning steps at the Growth Area scale. By planning for biodiversity at this scale, as opposed to site or precinct scale planning, this process has delivered some of the key elements of cumulative impact assessments. Namely, understanding how biodiversity values are represented and distributed at a broader landscape scale in order to:
 - Avoid and manage the most important and viable areas for long-term protection
 - Identify corridors or linkages across the landscape
 - Most appropriately focus development and impacts on the areas with the least biodiversity value
- In undertaking a cumulative impact assessment as part of the strategic assessment under Part 10 of the EPBC Act. This assessment is presented in the Strategic Assessment Report and aimed to:
 - Understand cumulative impacts and threatening processes to MNES in the Study Area, which included the NGGA, the northern two precincts in the WGGA, the bordering ‘strategic assessment area’ and the landscape within a 20 km radius of that area
 - Understand how development under the Plan may contribute to or exacerbate these threatening processes
 - Evaluate the adequacy of the EPBC Plan's proposed avoidance, mitigation, and offset commitments in relation to these threatening processes

3 Assessment against each specific requirement

3.1 INTRODUCTION

This section provides responses to each of the specific requirements of:

- PPF Clause 12.01 'Biodiversity'
- Native Vegetation Removal Regulations
- Environmental Significance Overlay 4
- Section 4B of the *Flora and Fauna Guarantee Act* (FFG Act) (the FFG Act 'biodiversity duty')

It draws on and refers to the more detailed descriptions for how the City has addressed considerations that are common across these key State planning and regulatory requirements for biodiversity in Section 2.

It is important to note that this is not a complete assessment against each key State planning and regulatory requirement for biodiversity that may be needed to support permit applications or to justify an NVPP and incorporate it into the Greater Geelong Planning Scheme. This further assessment and justification will be completed during precinct planning or at the permit application stage in accordance with the requirements of the planning scheme and other relevant requirements, such as the Native Vegetation Guidelines.

3.2 PLANNING POLICY FRAMEWORK CLAUSE 12.01 'BIODIVERSITY'

The PPF is the policy content of planning schemes. The PPF provides context for spatial planning and decision-making by planning and responsible authorities. A planning policy includes objectives (a statement of what a policy seeks to achieve) and strategies (statements that outline how an objective is to be achieved). A planning policy may also include policy guidelines, which indicate how an objective can be met and how a strategy can be implemented.

A planning authority must take into account the PPF when preparing an amendment to a planning scheme. A responsible authority must take into account and give effect to the PPF when it makes a decision under the planning scheme, such as a decision to grant a permit for use or development.

3.2.1 CLAUSE 12.01-1S

Clause 12.01-1S – 'Protection of biodiversity' includes an objective to 'protect and enhance Victoria's biodiversity' and identifies a range of strategies to achieve this objective, and is assessed in Table 2.

Table 2: Assessment against Clause 12.01-1S

Strategies	Response
Use biodiversity information to identify important areas of biodiversity, including key habitat for rare or threatened species and communities, and strategically valuable biodiversity sites	<p>The City has considered this PPF strategy in developing the BCS. The BCS uses the best available biodiversity information to identify important areas of biodiversity and inform decisions to protect biodiversity within the Growth Areas (see Section 2). This information included:</p> <ul style="list-style-type: none"> • Ecological surveys across the majority of the Growth Areas by Ecology and Heritage Partners (EHP, 2021) • Species records obtained through the VBA (DELWP, 2022) • DELWP habitat and vegetation modelling (DELWP, 2005, 2017b) <p>State and local biodiversity values will be further considered during precinct planning through the preparation of NVPPs and to meet any additional requirements of the Greater Geelong Planning Scheme</p> <p>NVPPs will be prepared in accordance with Clause 52.16, including the Native Vegetation Guidelines (DELWP, 2017a)</p>
Strategically plan for the protection and conservation of	The City has considered this PPF strategy in developing the BCS. The BCS is part of a strategic planning process undertaken by the City to identify areas for

Strategies	Response
<p>Victoria's important areas of biodiversity</p>	<p>development and growth to meet economic, social and planning challenges and protect high biodiversity value areas (see Section 2)</p> <p>The strategic planning process for the Growth Areas involved several key steps that are consistent with the steps outlined in <i>Planning for biodiversity: guidance</i> (DELWP, 2017c). It has led to the avoidance of the most important biodiversity in the Growth Areas within strategic conservation areas. These are high biodiversity value areas that contain the most important Commonwealth, State and local biodiversity values in the Growth Areas and are considered likely to be viable in the long-term because of their size, condition, shape and location in the landscape</p> <p>Furthermore, the City's strategic approach to offsetting MNES under the EPBC Plan aims to protect and conserve important areas of biodiversity outside the Growth Areas and maximise the biodiversity benefits of offsetting MNES. This approach will also benefit State biodiversity values with habitat in the Growth Areas, including Golden Sun Moth and Striped Legless Lizard. This strategic approach to offsetting will be achieved through two key approaches:</p> <ul style="list-style-type: none"> • Prioritising advanced offsetting, early in the life of the Plan • Strategic site selection that focuses on large sites that are well located in the landscape. Priority will be given to offset sites that are larger and adjacent to and/or connected to other patches of habitat (including reserves) and that could form broad habitat corridors across the landscape <p>The strategic delivery of offsets is described in the NWGGA Strategic Assessment Report (see Chapter 29.3)</p>
<p>Ensure that decision making takes into account the impacts of land use and development on Victoria's biodiversity, including consideration of:</p> <ul style="list-style-type: none"> • Cumulative impacts • Fragmentation of habitat • The spread of pest plants, animals and pathogens into natural ecosystems 	<p>The City has considered this PPF strategy in developing the BCS. The BCS was informed by a strategic assessment process that assessed the impacts of the development in the Growth Areas on MNES in the NWGGA Strategic Assessment Report and informed the development of the commitments and measures in the BCS to address these impacts. This included long and short-term impacts, direct and indirect impacts, and cumulative impacts. The NWGGA Strategic Assessment Report also considers potentially threatening processes including the fragmentation of habitat and the spread of pest plants and animals and pathogens. The overall beneficial and detrimental impacts of the development and BCS, taking into account the commitments and measures in the BCS to address these, are also evaluated</p> <p>The impacts of the development on State biodiversity values, including cumulative impacts in the context of past native vegetation removal, will be assessed during precinct planning through the preparation of NVPPs and to meet any additional requirements of the Greater Geelong Planning Scheme</p> <p>NVPPs will be prepared in accordance with Clause 52.16, including the Native Vegetation Guidelines (DELWP, 2017a)</p>
<p>Avoid impacts of land use and development on important areas of biodiversity</p>	<p>The City has considered this PPF strategy in developing the BCS. The BCS was informed by an avoidance planning process undertaken for the development within the Growth Areas to avoid and minimise impacts to biodiversity values (see Section 2). The BCS avoids and protects 'strategic conservation areas', which contain the most important Commonwealth, State and local biodiversity values in the Growth Areas and are considered most likely to be viable in the long-term because of their size, condition, shape and location in the landscape</p> <p>The BCS identifies several further opportunities to avoid and minimise impacts on biodiversity values in the Growth Areas within biodiversity opportunity areas and investigation areas. Opportunities for further avoidance and minimisation within these areas will be considered further during precinct planning through the preparation of NVPPs and to meet any additional requirements of the Greater Geelong Planning Scheme. The BCS includes commitments and measures to consider further avoidance within these areas, and identifies through precinct profiles the opportunities and priorities that should be considered in making decisions on further avoidance of these areas during precinct planning</p>

Strategies	Response
<p>Consider impacts of any change in land use or development that may affect the biodiversity value of national parks and conservation reserves or nationally and internationally significant sites, including Ramsar, JAMBA, CAMBA, and ROKAMBA sites</p>	<p>The City has considered this PPF strategy in developing the BCS. There are several reserves within the vicinity of the Growth Areas. These are identified in Chapter 3.3.5 of the NWGGA Strategic Assessment Report, and include:</p> <ul style="list-style-type: none"> • Cowies Creek Frontage – A small (approximately 0.9 ha) Natural Feature Reserve occurring adjacent to Cowies Creek downstream from the WGGA • Moorabool River Water Frontage – A Natural Feature Area which follows the Moorabool River, occurring adjacent to the WGGA • Brisbane Ranges National Park – occurs approximately 15 km north of the Strategic Assessment Area <p>Three areas of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site occur within the Study Area (Point Wilson/Limeburners Bay, Werribee/Avalon, and Lake Connearre Complex). The potential impacts of the development on the ecological character of this site are assessed in Chapter 22 of the NWGGA Strategic Assessment Report and relate to:</p> <ul style="list-style-type: none"> • Changes to water flows and quality • Disturbance from increased public access to natural areas <p>The BCS includes commitments and measures that are expected to adequately manage the potential indirect impacts of the development on the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site. These include:</p> <ul style="list-style-type: none"> • Continuing to implement standard mitigation measures to minimise the indirect impacts of the development in accordance with the requirements of the Greater Geelong Planning Scheme • Implementing specific mitigation measures to minimise the indirect impacts of the development on protected matters associated with waterways, riparian areas and wetlands including: <ul style="list-style-type: none"> ○ <i>Galaxiella toourtkoourt</i> (Little Galaxias) ○ <i>Litoria raniformis</i> (Growling Grass Frog) ○ <i>Prototroctes maraena</i> (Australian Grayling) ○ <i>Lachnagrostis adamsonii</i> (Adamson’s Blown-grass) ○ Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site

Table 3: Response to relevant policy documents listed in Clause 12.01-1S

Policy documents	Response
<p>Any applicable biodiversity strategies, including the relevant Regional Catchment Strategy</p>	<p>The City has considered its Environment Strategy and the Corangamite Regional Catchment Strategy in developing the BCS.</p> <p>The goals, principles and directions of the Environment Strategy for protecting and enhancing the region’s biodiversity, and the outcomes and priority directions in the Corangamite Regional Catchment Strategy, were considered in developing the guiding principles for the BCS and are particularly reflected in the principles for conservation planning. These were also considered in determining the strategic conservation areas and the biodiversity opportunity areas and investigation areas.</p> <p>Key relevant near-term outcomes and priority directions in the Regional Catchment Strategy include:</p> <ul style="list-style-type: none"> • Land use change including urban expansion does not occur to the detriment of biodiversity and other natural assets (L6) <p>By 2027:</p> <ul style="list-style-type: none"> • There is an overall net gain of habitat for all flora and fauna species within the region (BO3)

Policy documents	Response
	<ul style="list-style-type: none"> • Threats to biodiversity from pest species are recognised and controlled in priority locations across all land tenures (B04) • 4,500 hectares of revegetation in priority locations for habitat connectivity is established (B08) • There is an improvement in riparian extent and condition, hydrological regime and water quality compared to 2022 baselines in priority waterways in Corangamite Waterway Strategy (WO1) • Waterway amenity will be improved for high priority urbanised waterways to enhance the user experience and connection to the natural landscape, compared to 2021 baseline (WO3) • There is an increase in the extent of in-stream habitat compared to 2021 baseline in priority waterways for resilience of threatened native fish and waterway dependent species (WO9) <p>Priority locations are the areas across Victoria where management actions maximise benefits to threatened and other species. The Growth Areas include priority locations for the management of several threats, including:</p> <ul style="list-style-type: none"> • Pest herbivore control • Weed control • Revegetation <p>The BCS includes commitments and measures consistent with these near-term outcomes and priority directions. This includes the protection and management of the NGGA Conservation Area, Cowies Creek Conservation Area, Moorabool River Corridor and Barwon River Corridor. The NGGA Conservation Area overlaps with a priority location for revegetation, and the Moorabool River Corridor overlaps with priority locations for revegetation, pest herbivore and weed control</p>
<p><i>Biodiversity Conservation Strategy for Melbourne's Growth Corridors (DEPI, 2013)</i></p>	<p>The <i>Biodiversity Conservation Strategy for Melbourne's Growth Corridors</i> was prepared as part of an EPBC Part 10 strategic assessment for four new growth corridors in the Melbourne area. The key purpose of this strategy was to:</p> <ul style="list-style-type: none"> • Guide the preparation of the Growth Corridor Plans for Melbourne • Outline how conservation outcomes for MNES in the Program Report that was prepared for the growth corridors as part of the EPBC Part 10 strategic assessment will be achieved spatially within the growth corridors and how impacts on these matters will be mitigated • Identify the land within the growth corridors that is required to be protected due to the sub-regional species strategies and the prescriptions that both set out protection requirements for MNES <p>The Growth Areas occur outside the area covered by the <i>Biodiversity Conservation Strategy for Melbourne's Growth Corridors</i> as defined in section 1.3 of the strategy. However, the Program Report includes targets to protect 80% of 'confirmed high persistence habitat' for Golden Sun Moth, Spiny Rice-flower and Matted Flax-lily on the Victorian Volcanic Plain. Some of these mapped areas may occur within the Growth Areas.</p> <p>Detailed ecological surveys have confirmed that Spiny Rice-flower and Matted Flax-lily are not present within the Growth Areas. These species will not be affected by development.</p> <p>Golden Sun Moth has been confirmed within the Growth Areas. A detailed planning and assessment process has been undertaken to ensure that the avoidance, mitigation and offsets provided for this species are appropriate.</p>
<p><i>Guidelines for the removal, destruction or lopping of native vegetation</i></p>	<p>The City's consideration of Native Vegetation Guidelines is described in Section 3.3</p>

Policy documents	Response
<p><i>Protecting Victoria's Environment – Biodiversity 2037</i></p>	<p>The City has considered <i>Protecting Victoria's Environment – Biodiversity 2037</i> (DELWP, 2017e) in developing the BCS. This strategy establishes a long-term vision, and goals, targets and priorities. The overall statewide targets for the goal 'Victoria's natural environment is healthy' include:</p> <ul style="list-style-type: none"> • A net improvement in the outlook across all species by 2037, so that: <ul style="list-style-type: none"> ○ No vulnerable or near-threatened species will become endangered ○ All critically endangered/endangered species will have at least one option available for being conserved ex situ or re-established in the wild (where feasible under climate change) should they need it • A net gain of the overall extent and condition of habitats across terrestrial, waterway and marine environments <p>Contributing targets in <i>Protecting Victoria's Environment</i> that are expected to help achieve these overall statewide targets are:</p> <ul style="list-style-type: none"> • 1.5 million ha of pest predator control and 1.5 million hectares of weed control in priority locations sustained for 20 years • 4 million ha of pest herbivore control in priority locations for 20 years • 200,000 ha of revegetation in priority locations for habitat connectivity by 2037 (an average of 10,000 ha per year) <p>Priority locations are the areas across Victoria where management actions maximise benefits to threatened and other species. The Growth Areas include priority locations for the management of several threats, including:</p> <ul style="list-style-type: none"> • Pest herbivore control • Weed control • Revegetation <p>The BCS includes commitments and measures consistent with these goals and targets. This includes the protection and management of the NGGA Conservation Area, Cowies Creek Conservation Area, Moorabool River Corridor and Barwon River Corridor. The NGGA Conservation Area overlaps with a priority location for revegetation, and the Moorabool River Corridor overlaps with priority locations for revegetation, pest herbivore and weed control</p>

3.2.2 CLAUSE 12.01-1L

Clause 12.01-1L – 'Protection of biodiversity' includes a single strategy, and is assessed in Table 4.

Table 4: Assessment against Clause 12.01-1L

Strategy	Response
<p>Ensure that land use and development enhances areas of native vegetation and other habitats</p>	<p>The City has considered this PPF strategy in developing the BCS. The BCS establishes a set of outcomes and commitments and measures that will protect and restore and enhance biodiversity and ecological processes. These are set out in the BCS and include the protection and management of the:</p> <ul style="list-style-type: none"> • NGGA Conservation Area • Cowies Creek Conservation Area • Moorabool River Corridor • Barwon River Corridor <p>Together, these areas will protect:</p> <ul style="list-style-type: none"> • The largest habitat area for Striped Legless Lizard in the NGGA • A substantial area of habitat for Golden Sun Moth in the NGGA

Strategy	Response
	<ul style="list-style-type: none"> • All habitat for Growling Grass Frog within the WGGA • Multiple other Commonwealth, State and local biodiversity values • Areas of key habitat connectivity across the Growth Areas • Riparian areas that will help maintain ecological processes and water flows and quality

3.2.3 CLAUSE 12.01-2S

Clause 12.01-2S – ‘Native vegetation management’ includes an objective to ‘ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation’ and a single strategy to achieve this objective, which is:

Ensure decisions that involve, or will lead to, the removal, destruction or lopping of native vegetation, apply the three-step approach in accordance with the Guidelines for the removal, destruction or lopping of native vegetation (Department of Environment, Land, Water and Planning, 2017):

- Avoid the removal, destruction or lopping of native vegetation
- Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided
- Provide an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation

An assessment of the BCS against the three-step approach is provided in Section 3.3.

3.3 NATIVE VEGETATION REMOVAL REGULATIONS

A permit is usually required to remove native vegetation in Victoria. Removal of native vegetation is regulated through clause 52.16 (NVPP) and clause 52.17 (Native vegetation) of planning schemes.

NVPPs will be used to assess and manage the impacts of native vegetation removal in the Growth Areas. NVPPs will be prepared for each precinct within the Growth Areas containing native vegetation in conjunction with the preparation of PSPs. NVPPs will be incorporated into the Greater Geelong Planning Scheme and will switch off the need for a permit to remove native vegetation where removal is in accordance with an NVPP.

The purpose of a NVPP is to ensure no net loss to biodiversity because of the removal of native vegetation. This is to be achieved by applying the three-step approach in the Native Vegetation Guidelines (DELWP, 2017a), which is:

- Avoid the removal of native vegetation
- Minimise impacts from the removal of native vegetation that cannot be avoided
- Provide an offset to compensate for the impact of the removal of native vegetation

An assessment against the three-step approach is provided in Table 5.

NVPPs must be prepared in accordance with Clause 52.16, including the Native Vegetation Guidelines, and in consideration of the Greater Geelong Planning Scheme, including (DELWP, 2017d):

- Planning Policy Framework Clause 12.01 – ‘Biodiversity’
- Other relevant plans, strategies or policies that are incorporated in the Greater Geelong Planning Scheme, including the *Northern and Western Geelong Growth Area Framework Plan* (the Framework Plan) (The City of Greater Geelong, 2021) and any relevant PSP

The preparation of an NVPP requires an assessment of the importance of the native vegetation for biodiversity, land and water protection, landscape and cultural values. This information is provided as part of the planning scheme amendment material that justifies the NVPP. A site assessment report must be prepared to include information on the native vegetation proposed to be removed and retained, including:

- A habitat hectare assessment, including information on the condition, extent, Ecological Vegetation Class and bioregional conservation status of the native vegetation
- Information on large trees within patches and scattered trees

- Information on rare and threatened species habitat derived from habitat importance maps

The site assessment report can include an on-site habitat assessment that determines whether habitat at the site is consistent with the habitat requirements of the rare or threatened species mapped by DEECA at the site. While targeted species surveys are not required, this information can be used to inform the preparation of the NVPP (DELWP, 2017d).

The *Assessor's Handbook – applications to remove, destroy or lop native vegetation* (DELWP, 2018) (Assessor's Handbook) guides the assessment of applications for a planning permit to remove native vegetation under clauses 52.16 and 52.17.

Responsible and referral authorities should use the Assessor's Handbook when assessing clause 52.16 or 52.17 permit applications and when providing information to applicants about the requirements of the Native Vegetation Guidelines.

Table 5: Assessment against the three-step approach in the Native Vegetation Guidelines

Requirement	Response
<p>Avoid</p> <p>Efforts to avoid the removal of and minimise the impacts on native vegetation should be commensurate with the biodiversity and other values of the native vegetation and focus on areas of native vegetation that have the most value</p> <p>An application to remove native vegetation must demonstrate that no options exist to avoid and minimise native vegetation removal that will not undermine the objectives of the development</p>	<p>The BCS was informed by an avoidance planning process undertaken for the development within the Growth Areas to avoid and minimise impacts to biodiversity values (see Section 2)</p> <p>Efforts to avoid the removal of and minimise the impacts on native vegetation through the avoidance planning process were commensurate with the biodiversity and other values of the native vegetation and focused on areas of native vegetation that have the most value. The BCS will protect and manage strategic conservation areas, which contain the most important Commonwealth, State and local biodiversity values in the Growth Areas and are considered most likely to be viable in the long-term because of their size, condition, shape and location</p> <p>The biodiversity outcomes that will be delivered as a result of the avoidance planning undertaken at the Growth Areas scale will provide for more meaningful and longer-term results. This is because the process has allowed cumulative prioritisation and investment in the best biodiversity areas, compared to the alternative precinct scale avoidance planning which results in smaller fragments of unmanaged, lower condition vegetation.</p> <p>The Growth Areas represents the strategic prioritisation and delivery of new development as part of the long-term growth of the Geelong region. The need for the Growth Areas has been justified as part of a broader and long-term strategic planning process for Geelong that aims to address a range of key planning challenges facing the region, including population growth, and housing affordability and availability. The outcomes of this process are reflected in the <i>Northern and Western Geelong Growth Areas Framework Plan</i> (The City of Greater Geelong, 2021)</p> <p>The Framework Plan represents a key response by the City to the planning and growth challenges facing the Geelong region and is incorporated into the Greater Geelong Planning Scheme at Clause 11.02. It includes a range of urban and other planning objectives and outlines the land uses and development to deliver the new communities, and essential infrastructure and services needed to provide for the future population growth of the Geelong region</p> <p>The City considers that no further avoidance options beyond the strategic conservation areas exist without undermining the urban and other planning objectives of the Growth Areas as outlined in the Framework Plan</p>
<p>Minimise</p> <p>An application to remove native vegetation must demonstrate that no options exist to avoid and minimise native vegetation removal that will not undermine the objectives of the development</p>	<p>Part of the response to this requirement is set out above under 'avoidance'</p> <p>In addition to minimising impacts through the avoidance planning process to locate and design the development footprint, minimisation can occur by managing development in the Growth Areas to mitigate impacts to native vegetation that is avoided or that occurs outside the Growth Areas</p> <p>The BCS includes commitments and measures to minimise impacts to native vegetation that is avoided or that occurs outside the Growth Areas</p>

Requirement	Response
	It is not expected that further mitigation measures will be needed to minimise impacts beyond the standard mitigation measures that will be delivered through PSPs and the provisions of the Greater Geelong Planning Scheme and the additional specific mitigation measures identified in the BCS. However, the PSP and planning permit process may determine further mitigation measures are needed to address specific State and local biodiversity values. The City, as the responsible authority for most development in the Growth Areas, will make decisions about what standard mitigation is implemented through PSPs and the planning permit process, and whether any additional measures are needed to address impacts on specific State and local biodiversity values. This will be done in accordance with the Greater Geelong Planning Scheme and precinct or site-specific circumstances
<p>Offset</p> <p>An application to remove native vegetation must include an offset strategy that includes evidence that an offset that meets the offset requirements for the proposed native vegetation removal is available, and explains how the offset will be secured if a permit is granted</p>	<p>Offsets for the removal of native vegetation within the Growth Areas will be established in accordance with the requirements of the Native Vegetation Guidelines through the preparation of NVPPs</p> <p>NVPPs will outline the offset requirements for native vegetation that can be removed and detail the obligations for each property within the precinct in accordance with the Native Vegetation Guidelines</p> <p>The securing of offsets will be the responsibility of the individual proponent. It is expected that proponents will secure offsets through the existing Victorian Native Vegetation Credit Register</p> <p>NVPPs and planning permits issued for use and development will require offset obligations to be met prior to the removal of native vegetation in accordance with the Native Vegetation Guidelines. Ongoing management, monitoring and reporting on offsets will occur in accordance with the Native Vegetation Guidelines</p>

3.3.1 PAST REMOVAL OF NATIVE VEGETATION AND ASSUMED AND CONSEQUENTIAL LOSSES

The City will consider cumulative impacts in the context of past removal of native vegetation and assumed and consequential losses at a precinct scale through the preparation of PSPs and NVPPs for each precinct (see Section 2.7).

State policies in relation to native vegetation removal, including the Native Vegetation Guidelines, do not provide for the assessment of native vegetation removal at a Growth Area scale. To the extent that the policies set out in the Native Vegetation Guidelines are relevant in a strategic planning context, they are applicable at a precinct scale.

The Growth Areas comprise nine PSP and NVPP areas. Each PSP and NVPP will be the subject of a separate planning approval process under the *Planning and Environment Act 1987* (PE Act), and relevant policies in the Native Vegetation Guidelines in relation to native vegetation removal will be considered and applied at that stage of the planning process.

The Native Vegetation Guidelines are required to be considered by the City when preparing each of the planning scheme amendments for the nine PSPs within the Growth Areas, and are required to be applied by the City when developing each of the NVPPs. In these circumstances, the Growth Areas are best understood as a series of separate projects comprising each PSP, NVPP and associated planning scheme amendment.

This precinct-scale approach further supported by guidance in the Assessor's Handbook (DELWP, 2018). The Assessor's Handbook includes a set of criteria in Table 11 of the handbook and descriptions and examples at pages 48 to 50 to help determine if development should be considered as a single project or multiple separate projects.

The criteria in Table 11 of the Assessor's Handbook and a brief response to each is set out in Table 6. The guidance in the handbook supports the consideration of State policies in relation to native vegetation removal at a precinct scale.

This precinct-scale approach is also consistent with the current approach across Victoria in areas of large scale urban development, where in practice, individual PSP and NVPPs are commonly treated as a separate project in the application of State policies in relation to native vegetation removal.

Table 6: Consideration of criteria in Table 11 of the Assessor's Handbook

Criteria	Response
Is the entire project planned by one applicant?	The City is preparing a series of separate and distinct PSPs and NVPPs which will be the subject of individual planning scheme amendments within the Growth Areas over a period of approximately 10 to 15 years
Will the project receive a single approval?	Each PSP and NVPP will receive a single approval via an associated planning scheme amendment (rather than the Growth Areas receiving a single approval)
Will the project be funded to meet a single objective?	Each PSP will be prepared and funded to achieve multiple objectives, and those objectives will not be defined until the relevant PSP is prepared. Funding agreements with different landholders will facilitate the individual PSPs
Were all components or stages of the project planned together?	All components of an individual PSP and NVPP will be planned together at a level of detail that allows an assessment of native vegetation removal. Conversely, when the Framework Plan was implemented in the planning scheme, the components of the Growth Areas were not planned together at a level enabling this assessment
Are all components or stages of the project reliant on each other?	All components of an individual PSP and NVPP are reliant on each other and are planned together and introduced via a specific planning scheme amendment. The nine PSPs within the Growth Areas are not wholly reliant on each other, and can progress individually in the absence of the other PSPs
Are the individual components or stages or the project in close proximity?	The components of the individual PSPs and NVPPs are interconnected and in close proximity to each other. The individual precincts which make up the Growth Areas are not all in close proximity to each other

3.4 ESO4 – GRASSLANDS WITHIN THE WERRIBEE PLAINS HINTERLAND

An Environmental Significance Overlay (ESO) is a complementary planning control to a zone that seeks to control a specific aspect of the development of land to better protect the environment. An overlay contains purposes that specify the outcome sought by the overlay and to be achieved through the application of planning controls in the overlay.

Schedule 4 to clause 42.01 ESO 'Grasslands within the Werribee Plains Hinterland' is an overlay shown on the Greater Geelong planning scheme map as ESO4. The ESO was applied by the Victorian Government in 2010 through planning scheme amendment VC68. This was introduced to support the objectives of *Delivering Melbourne's Newest Sustainable Communities*, which included a review of Melbourne's urban growth boundary and the identification of four new growth areas for Melbourne, and the outcomes of the Melbourne Strategic Assessment conducted under Part 10 of the EPBC Act. Melbourne's new growth areas are resulting in impacts to native grasslands of the Victorian Volcanic Plain. ESO4 applies to areas of native grasslands and associated vegetation communities within the City of Greater Geelong and a similar control applies to several other local government areas on the volcanic plain to provide an additional level of protection to these areas. The ESO was intended to be revised within a few years on the basis of more detailed mapping of native grasslands across the Werribee Plains, to better target the ESO to the most important areas (DSE, 2009).

As part of the permit application process for use of development or to subdivide land, the ESO requires proponents to prepare a flora and fauna assessment for the land, including a flora and fauna survey and habitat hectare assessment, and a land and environmental management plan, including measures for revegetation, and weed and pest animal management. In granting a permit within ESO4, the responsible authority must consider a range of matters in addition to other matters required to be considered elsewhere under the planning scheme.

The statement of environmental significance for ESO4 states the native vegetation of the Victorian Volcanic Plain is some of the most depleted vegetation in Victoria. The Werribee Plains hinterland, which is part of the volcanic plain, formerly supported extensive areas of native grasslands that integrated with other vegetation communities, including woodland communities in riparian areas. Although the vegetation has been extensively cleared, some large areas of native vegetation remain that are also important for several threatened species, including Spiny Rice-flower and Striped Legless Lizard. The Statement of environmental significance concludes:

[Despite the loss and degradation of native vegetation] ... a range of conservation assets are present and significant opportunities exist to establish relatively large areas and networks of areas that are managed sympathetically for conservation. Such networks could include a range of vegetation types and land tenures and relatively large and intact areas of open grassland, grassy woodland and wetland communities.

Development within the Growth Areas consistent with the biodiversity outcomes of the BCS would lead to the removal of native vegetation and habitat on some land within ESO4. This would comprise land that is not included in areas to be avoided and protected under the BCS through strategic conservation areas, or areas that are further avoided and protected within biodiversity opportunity areas or investigation areas during precinct planning.

Despite the BCS leading to the removal of native vegetation and habitat within the ESO, the City considers the BCS is consistent with the environmental objectives of the ESO4 (see Table 7). The City also considers the BCS is likely to improve outcomes for native grasslands compared to individual permit applications under the ESO 4 requirements, as the detailed ecological assessment and avoid, minimise and offset requirements have been applied in a strategic planning context (see Table 7 and further discussion of the benefits of strategic planning in Section 2).

ESO4 is proposed to be removed from areas identified for urban development in the Framework Plan as part of the planning scheme amendment to implement the BCS and the outcomes from the EPBC Plan (see Section 1.3 of the BCS). The ESO4 will be retained on the land within the NGGA Conservation Area to provide additional protection to this area.

The existing and proposed new extent of ESO 4 is shown in Figure 1 and Figure 2.

Table 7: Response against each environmental objective of ESO4

Objective of ESO4	Response
To prevent a decline in the extent and quality of native vegetation and native fauna habitat of the Victorian Volcanic Plain	<p>The City considers that the BCS will ensure the development in the Growth Areas does not lead to a decline in the extent and quality of native vegetation and fauna habitat of the Victorian Volcanic Plain. This outcome is being achieved through:</p> <ul style="list-style-type: none"> • Strategic planning – the BCS was developed as part of a strategic planning process (see Section 2). Strategic planning is the most effective planning process to protect and conserve biodiversity (DELWP, 2017c). The strategic planning process has led to the avoidance and protection of the most important biodiversity in the Growth Areas within four strategic conservation areas. These are high biodiversity value areas that contain important Commonwealth, State and local biodiversity values and are considered likely to be viable in the long-term because of their size, condition, shape and location in the landscape. Strategic planning has also enabled a strategic approach to offsetting MNES under the EPBC Plan (see NWGGA Strategic Assessment Report Chapter 29.3), which aims to protect and conserve important areas of biodiversity outside the Growth Areas and maximise the biodiversity benefits of offsetting MNES. This approach will also benefit State biodiversity values with habitat in the Growth Areas, including Golden Sun Moth and Striped Legless Lizard. This strategic approach to offsetting will be achieved through two key approaches: <ul style="list-style-type: none"> ○ Prioritising advanced offsetting, early in the life of the Plan ○ Strategic site selection that focuses on large sites that are well located in the landscape from a biodiversity perspective. Priority will be given to offset sites that are larger and adjacent to and/or connected to other patches of habitat (including existing reserves) and that could form broad habitat corridors across the landscape • Assessing the impacts of the development on biodiversity values and understanding the implications of these impacts for the persistence of biodiversity values in the Growth Areas. For Commonwealth-listed matters, this was done through the NWGGA Strategic Assessment Report. For State and local biodiversity values, this will be done during precinct planning through the preparation of NVPPs and to meet any additional requirements of the Greater Geelong Planning Scheme. NVPPs will be prepared in accordance with Clause 52.16, including the Native Vegetation Guidelines (DELWP, 2017a)

Objective of ESO4	Response
	<ul style="list-style-type: none"> Establishing a set of outcomes and commitments and measures in the BCS to address the impacts of the development on biodiversity values and the implications of these impacts for the persistence of biodiversity values <p>The outcomes, commitments and measures will be monitored and adaptively improved if necessary over time to ensure they are achieved and that biodiversity values are protected in the long-term</p>
To enhance the environmental and landscape values of the area	<p>The City considers that the BCS will enhance the environmental and landscape values of the Geelong area. The BCS establishes a set of outcomes and commitments and measures that will protect and enhance biodiversity values and ecological processes within the landscape</p> <p>These include the protection and management of the strategic conservation areas within the Growth Areas. The primary purpose of these conservation areas is the protection, management and restoration of biodiversity values, including native grasslands and fauna habitat. Conservation Management Plans will be prepared and implemented for the areas that will include management actions to improve the condition of habitat for Striped Legless Lizard and Golden Sun Moth in the northern Growth Area, and Growling Grass Frog along riparian corridors in the Western Growth Area</p> <p>The BCS also provides for a strategic approach to offsetting MNES under the EPBC Plan (see NWGGA Strategic Assessment Report Chapter 29.3). This approach will also benefit State biodiversity values with habitat in the Growth Areas, including Golden Sun Moth and Striped Legless Lizard. This approach improves the outcomes of offsetting and ensures the BCS contributes to this ESO objective of enhancing the landscape values of the area</p>
To avoid the fragmentation of contiguous areas of native vegetation or native fauna habitat	<p>The City considers the BCS avoids fragmentation of the most important areas of native vegetation and fauna habitat in the Growth Areas. The BCS was informed by an avoidance planning process undertaken for the development within the Growth Areas to avoid and minimise impacts to biodiversity values (see Section 2). The BCS will protect and manage strategic conservation areas, which contain the most important Commonwealth, State and local biodiversity values in the Growth Areas and are considered most likely to be viable in the long-term because of their size, condition, shape and location in the landscape</p> <p>The strategic conservation areas will avoid and protect:</p> <ul style="list-style-type: none"> The largest habitat area for Striped Legless Lizard in the NGGA A substantial area of habitat for Golden Sun Moth in the NGGA All habitat for Growling Grass Frog within the WGGA Multiple other Commonwealth, State and local biodiversity values Areas of key habitat connectivity across the Growth Areas Riparian areas that will help maintain ecological processes and water flows and quality <p>The BCS identifies several further opportunities to avoid and minimise impacts on biodiversity values in the Growth Areas within biodiversity opportunity areas and investigation areas. Opportunities for further avoidance and minimisation within these areas will be considered further during precinct planning through the preparation of NVPPs and to meet any additional requirements of the Greater Geelong Planning Scheme. The BCS includes commitments and measures to consider further avoidance within these areas, and identifies through precinct profiles the opportunities and priorities that should be considered in making decisions on further avoidance of these areas during precinct planning</p> <p>The BCS also includes commitments and measures to minimise the impacts of the development on surrounding native vegetation and other biodiversity values, including requirements to implement:</p> <ul style="list-style-type: none"> Standard mitigation measures delivered through the planning system

Objective of ESO4	Response
	<ul style="list-style-type: none"> • Additional specific mitigation measures to address key biodiversity values associated with waterways, riparian areas and wetlands, and to protect the strategic conservation areas • Requirements to prepare and implement conservation management plans for each of the strategic conservation areas
To ensure that any use, development or management of the land is compatible with the long-term conservation, maintenance and enhancement of the grasslands	The City considers that the BCS will ensure the development in the Growth Areas is compatible with long-term conservation and enhancement of native grasslands. This outcome is being achieved through the key processes identified above in the response to the first ESO objective
To avoid the destruction of habitat for native fauna resulting from the modification of land form and disturbance of surface soils and rocks	The City considers that the BCS avoids and minimises impacts to the most important areas of native fauna in the Growth Areas within the four strategic conservation areas (see response to the third ESO objective above). It also identifies several further opportunities to avoid and minimise impacts on native vegetation in biodiversity opportunity areas and investigation areas
To enable areas of environmental significance, due to their native vegetation or habitat values, to be identified	<p>The City considers that the BCS uses the best available biodiversity information to identify important areas of native grasslands and associated vegetation communities that are the focus of protection under the ESO (see Section 2). This information included:</p> <ul style="list-style-type: none"> • Ecological surveys across the majority of the Growth Areas by Ecology and Heritage Partners (EHP, 2021) • Species records obtained through the VBA (DELWP, 2022) • DELWP habitat and vegetation modelling (DELWP, 2005, 2017b) <p>State and local biodiversity values will be further considered during precinct planning. This includes through the preparation of NVPPs and any additional requirements of the Greater Geelong Planning Scheme</p> <p>NVPPs will be prepared in accordance with the requirements of Clause 52.16 and the Native Vegetation Guidelines, which specify the biodiversity information required to prepare these plans</p>

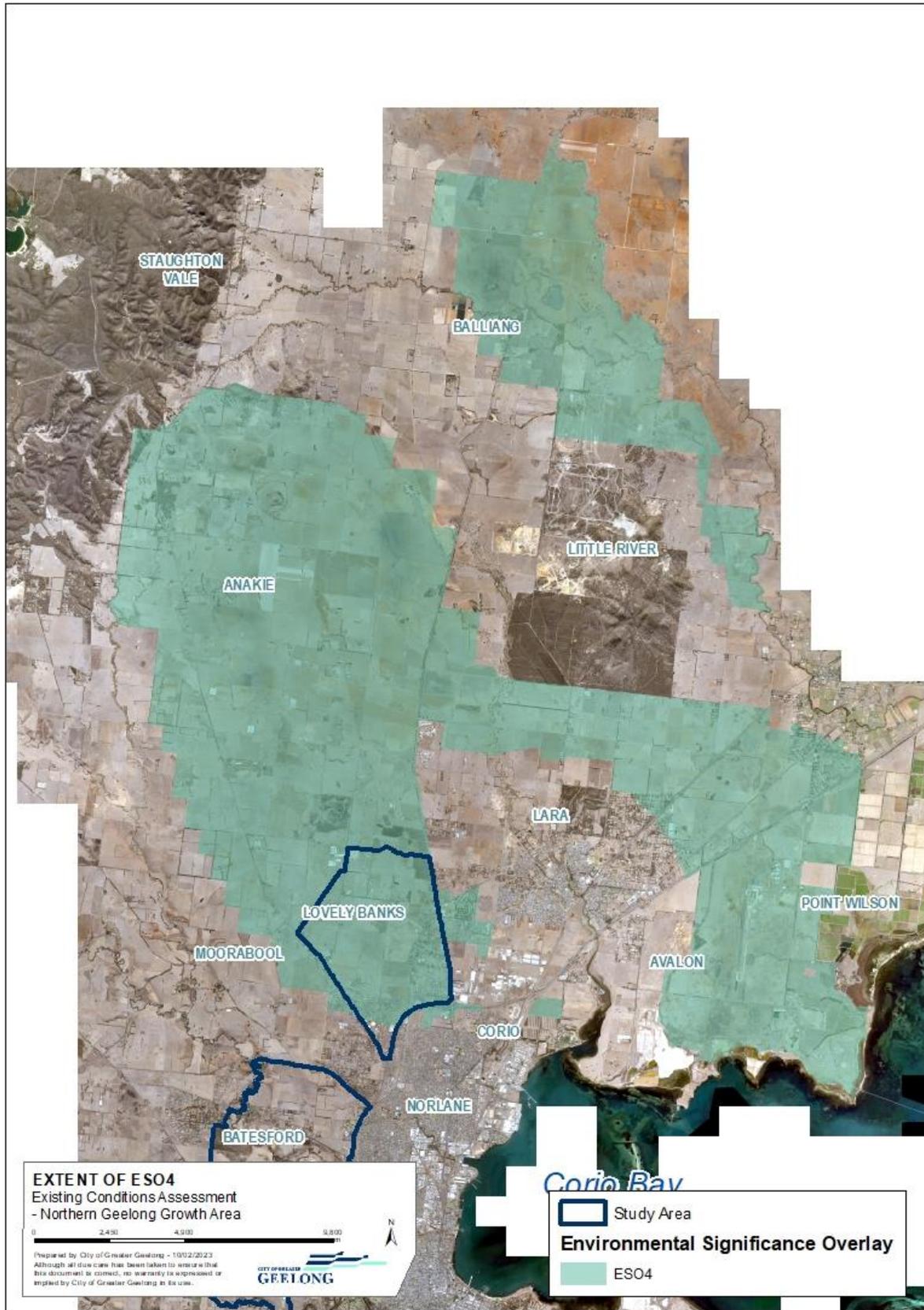


Figure 1: Existing extent of ESO 4 within the Study Area

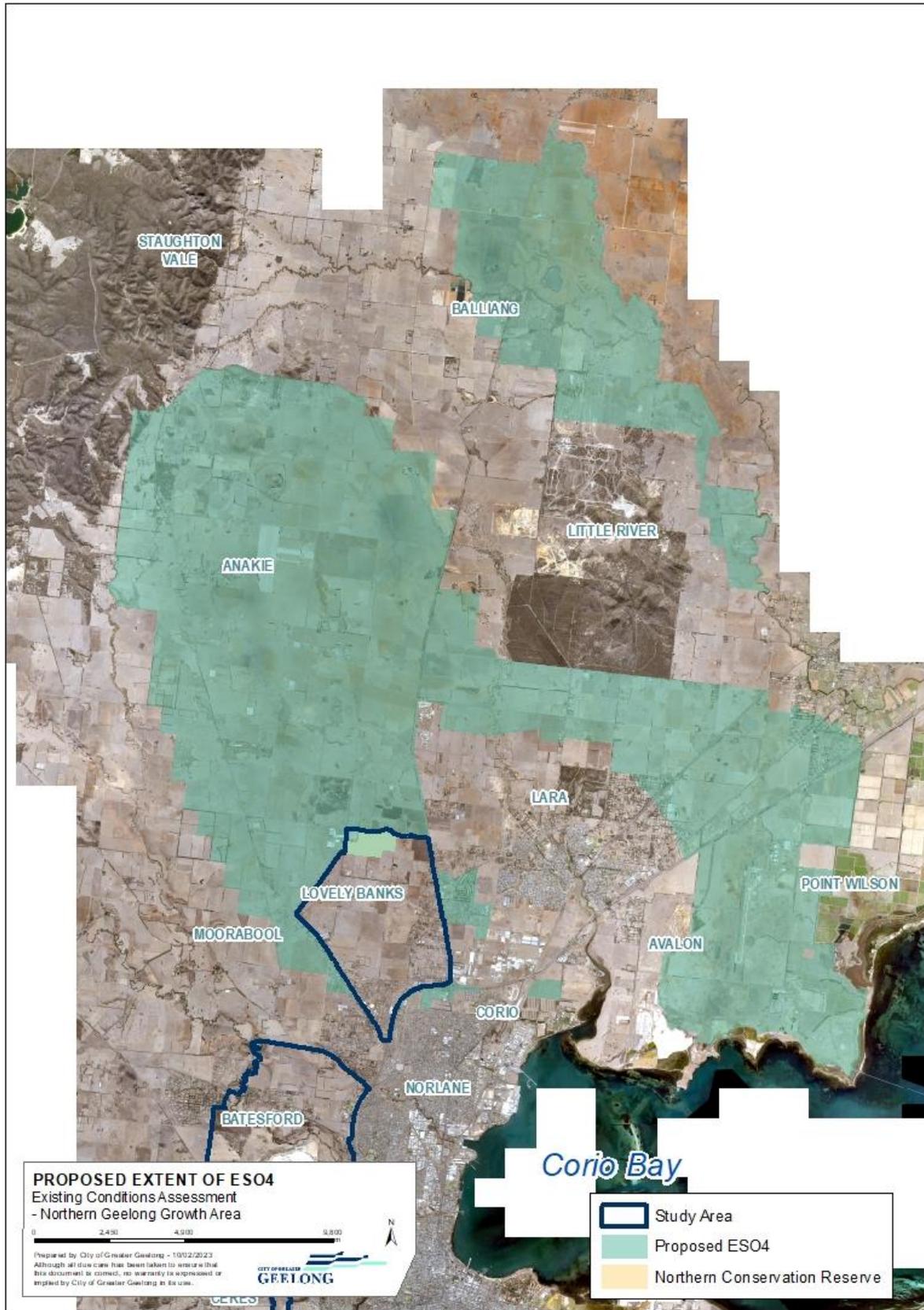


Figure 2: Proposed new extent of ESO 4 within the Study Area

3.5 FFG ACT ‘BIODIVERSITY DUTY’

The FFG Act imposes a duty on public authorities to ‘give proper consideration to’ the Act’s objectives in performing any of their functions that may impact on biodiversity, as well as consider several other additional matters. The intent of the duty is to:

- Strengthen government leadership and accountability for biodiversity outcomes in Victoria (Parliament of Victoria, 2018), which is a key theme of *Protecting Victoria’s Environment – Biodiversity 2037* (DELWP, 2017e)
- Ensure whole-of-government consideration of biodiversity in decision-making (Parliament of Victoria, 2018)
- Support regulatory frameworks for assessing and minimising impacts to biodiversity by encouraging early consideration of biodiversity in decision making, before regulatory approval is required (DELWP, 2021)

The new duty came into effect on 1 June 2020 and applies to all levels of the Victorian Government, including an administrative office, government department, council, public entity and state-owned enterprises.

The duty applies to the City of Greater Geelong in relation to the development of the BCS as there is a reasonable expectation that the carrying out of this function may impact biodiversity. It is important to note that:

- Meeting the duty requires the City to give ‘proper consideration’ to the Act’s objectives and several other matters rather than mandating specific outcomes that the City must achieve for biodiversity
- The City is required to comply with the duty in a manner which is consistent with the proper exercise of its functions under any other Act. The duty does not override the City’s other statutory obligations. The duty does not prevent the City from exercising its statutory powers and discretion to weigh biodiversity matters against other matters it is required to consider when making decisions, such as social or economic objectives under the *Planning and Environment Act 1987*

The FFG Act provides that the Minister may make guidelines in relation to the proper consideration of the Act’s objectives and help define what is reasonably expected under the duty. No guidelines have currently been made.

Assessment against the FFG Act ‘biodiversity duty’

Section	Response
4B (1) A Minister and a public authority must give proper consideration to the objectives of this Act, so far as is consistent with the proper exercising of their functions The objectives of this Act are—	-

Section	Response
<p>(a) To guarantee that all taxa of Victoria's flora and fauna, other than taxa specified in the Excluded List, can persist and improve in the wild and retain their capacity to adapt to environmental change</p>	<p>The City has given proper consideration to this objective in developing the BCS. This has been done through:</p> <ul style="list-style-type: none"> • Strategic planning – the BCS was developed as part of a strategic planning process (see Section 2). Strategic planning is the most effective planning process to protect and conserve biodiversity (DELWP, 2017c). The strategic planning process has led to the avoidance and protection of the most important biodiversity in the Growth Areas within four strategic conservation areas. These are high biodiversity value areas that contain important Commonwealth, State and local biodiversity values and are considered likely to be viable in the long-term because of their size, condition, shape and location in the landscape, including their connectedness to other areas of native vegetation and habitat. Strategic planning has also enabled a strategic approach to offsetting MNES under the EPBC Plan (see NWGGA Strategic Assessment Report Chapter 29.3), which aims to protect and conserve important areas of biodiversity outside the Growth Areas and maximise the biodiversity benefits of offsetting MNES. This approach will also benefit State biodiversity values with habitat in the Growth Areas, including Golden Sun Moth and Striped Legless Lizard • Assessing the impacts of the development on biodiversity values and understanding the implications of these impacts for the persistence of biodiversity values in the Growth Areas. For Commonwealth-listed matters, this was done through the NWGGA Strategic Assessment Report. For State and local biodiversity values, this will be done during precinct planning through the preparation of NVPPs and to meet any additional requirements of the Greater Geelong Planning Scheme. NVPPs will be prepared in accordance with Clause 52.16, including the Native Vegetation Guidelines (DELWP, 2017a) • Establishing a set of outcomes and commitments and measures in the BCS to address the impacts of the development on biodiversity values and the implications of these impacts for the persistence of biodiversity values <p>For Commonwealth-listed matters impacted by the development, the outcomes and commitments aim to ensure that these persist within the Growth Areas and their long-term viability will be supported, and that matters associated with waterways, riparian areas, and wetlands are protected from any notable adverse impacts. Unavoidable impacts on Commonwealth-listed matters will be offset outside the Growth Areas. The outcome for these offsets in the BCS is that they will make an important contribution to the recovery efforts for these matters</p> <p>For State and local biodiversity values, the outcomes and commitments are designed to ensure no net loss to biodiversity because of the removal of native vegetation. This is consistent with the objectives of State planning policy set out in the PPF and this FFG Act objective</p> <p>The outcomes, commitments and measures will be monitored and adaptively improved if necessary over time to ensure they are achieved and that biodiversity values are protected in the long-term</p>

Section	Response
<p>(b) To prevent taxa and communities of flora and fauna from becoming threatened and to recover threatened taxa and communities so their conservation status improves</p>	<p>The City has given proper consideration to this objective in developing the BCS through the steps outlined above in relation to FFG Act objective (a), including strategic planning, assessing impacts and establishing a set out outcomes and commitments and measures to address the impacts of the development on biodiversity values</p> <p>For State and local biodiversity values, the outcomes and commitments are designed to ensure no net loss to biodiversity because of the removal of native vegetation. This is consistent with the objectives of State planning policy set out in the PPF and this FFG Act objective</p> <p>Unavoidable impacts on Commonwealth-listed matters will be offset outside the Growth Areas. The outcome for these offsets in the BCS is that they will make an important contribution to the recovery efforts for these matters consistent with this FFG Act objective to recover threatened species and communities so their status improves</p>
<p>(c) To protect, conserve, restore and enhance biodiversity, including—</p> <ul style="list-style-type: none"> ○ flora and fauna and their habitats ○ genetic diversity ○ ecological communities ○ ecological processes 	<p>The City has given proper consideration to this objective in developing the BCS by establishing a set of outcomes and commitments and measures that will protect and restore and enhance biodiversity and ecological processes. These are set out in the BCS and include the protection and management of the:</p> <ul style="list-style-type: none"> • NGGA Conservation Area • Cowies Creek Conservation Area • Moorabool River Corridor • Barwon River Corridor <p>Together, these areas will protect:</p> <ul style="list-style-type: none"> • The largest habitat area for Striped Legless Lizard in the NGGA • A substantial area of habitat for Golden Sun Moth in the NGGA • All habitat for Growling Grass Frog within the WGGGA • Multiple other Commonwealth, State and local biodiversity values • Areas of key habitat connectivity across the Growth Areas • Riparian areas that will help maintain ecological processes and water flows and quality
<p>(d) To identify and mitigate the impacts of potentially threatening processes to address the important underlying causes of biodiversity decline</p>	<p>The City has given proper consideration to this objective in developing the BCS by identifying potentially threatening processes that may cause biodiversity decline and putting in place a set of commitments and mitigation measures to address these. The threatening processes that are impacting biodiversity values within and surrounding the Growth Areas are identified in the BCS (see Chapter 4.3), and are:</p> <ul style="list-style-type: none"> • Climate change • Habitat loss and fragmentation • Invasive weeds • Pest animals • Recreational disturbance • Water system modification <p>These relate to several potentially threatening processes listed under the FFG Act. The BCS recognises that the effective management of threatening processes is critical to its successful delivery. The City has made a range of commitments to reduce these threats, including:</p> <ul style="list-style-type: none"> • Continuing to implement standard mitigation measures to minimise the indirect impacts of the development in accordance with the requirements of the Greater Geelong Planning Scheme

Section	Response
	<ul style="list-style-type: none"> • Implementing specific mitigation measures to minimise the indirect impacts of the development on biodiversity values associated with waterways, riparian areas and wetlands • Implementing specific mitigation measures to minimise the indirect impacts of the development on the NGGA Conservation Area and Cowies Creek Conservation Area <p>These commitments are set out in the BCS</p>
(e) To ensure the use of biodiversity as a natural resource is ecologically sustainable	This objective is not relevant to the BCS – the BCS is not facilitating the use of biodiversity as a natural resource
(f) To identify and conserve areas of Victoria in respect of which critical habitat determinations are made	This objective is not relevant to the BCS – no critical habitat determinations are currently made under the FFG Act
4B (2) A Minister and a public authority, so far as is consistent with the proper exercising of their functions, must give proper consideration to any instrument made under this Act, including—	-
<i>Protecting Victoria's Environment – Biodiversity 2037</i> (DELWP, 2017)	<p>The City has given proper consideration to <i>Protecting Victoria's Environment – Biodiversity 2037</i> (DELWP, 2017e) in developing the BCS. This strategy establishes a long-term vision, and goals, targets and priorities. The overall statewide targets for the goal 'Victoria's natural environment is healthy' include:</p> <ul style="list-style-type: none"> • A net improvement in the outlook across all species by 2037, so that: <ul style="list-style-type: none"> ○ No vulnerable or near-threatened species will become endangered ○ All critically endangered/endangered species will have at least one option available for being conserved ex situ or re-established in the wild (where feasible under climate change) should they need it • A net gain of the overall extent and condition of habitats across terrestrial, waterway and marine environments <p>Contributing targets in <i>Protecting Victoria's Environment</i> that are expected to help achieve these overall statewide targets are:</p> <ul style="list-style-type: none"> • 1.5 million ha of pest predator control and 1.5 million hectares of weed control in priority locations sustained for 20 years • 4 million ha of pest herbivore control in priority locations for 20 years • 200,000 ha of revegetation in priority locations for habitat connectivity by 2037 (an average of 10,000 ha per year) <p>Priority locations are the areas across Victoria where management actions maximise benefits to threatened and other species. The Growth Areas includes priority locations for the management of several threats, including:</p> <ul style="list-style-type: none"> • Pest herbivore control • Weed control • Revegetation <p>The BCS includes commitments and measures consistent with these goals and targets. This includes the protection and management of the NGGA Conservation Area, Cowies Creek Conservation Area, Moorabool River Corridor and Barwon River Corridor. The NGGA Conservation Area overlaps with a priority location for</p>

Section	Response
	<p>revegetation, and the Moorabool River Corridor overlaps with priority locations for revegetation, pest herbivore and weed control</p>
<p>Action Statements</p>	<p>Action Statements have been prepared for four State-listed species known to occur (as indicated by records or mapped habitat) in the Growth Areas. These are:</p> <ul style="list-style-type: none"> • Golden Sun Moth • Striped Legless Lizard • Spiny Rice-flower • Adamson’s Blown Grass <p>The EHP report (EHP, 2021) identified several other State-listed species with a high likelihood of occurrence in the Growth Areas, however, none of these species have Action Statements prepared for them</p> <p>The City has given proper consideration to these Action Statements in developing the BCS. The City considers that the commitments in the BCS to address the impacts of the development in the Growth Areas are consistent with the conservation objectives of the Actions Statements and will not undermine or prevent the achievement of these objectives</p> <p>Golden Sun Moth</p> <p>The major conservation objective of the Action Statement (DSE, 2004b) is to protect known populations of Golden Sun Moth by:</p> <ul style="list-style-type: none"> • Maintaining the seven extant colonies with greater than 500 individuals • Increasing the number of known populations • Maximising grassland habitat at the seven sites • Protecting and enhancing suitable habitat areas to ensure that the percentage cover of Austroanthonia is greater than 40% <p>Note that information in the Action Statement is outdated and the species is now known from 164 sites (DAWE, 2021). Of these, 104 sites occur in Victoria</p> <p>The EPBC Strategic Assessment Report assessed the impacts of development in the Growth Areas on Golden Sun Moth and concluded that the commitments in the EPBC Plan and BCS relating to the avoidance and offsetting of impacts to habitat for the species are expected to maintain a viable population for the species in both the local area and more broadly through the protection and management of strategic offsets. This will be delivered through:</p> <ul style="list-style-type: none"> • The management and restoration of habitat values within the NGGA Conservation Area to the point where habitat condition, and therefore the viability of the population improves, and the area is regarded as important to the conservation of the species in the region. In the absence of urban development within the NGGA, the condition of the grassland habitat in the Growth Area is likely to continue to decline and the probability of the NGGA Golden Sun Moth population persisting over the long-term is uncertain • The delivery of strategic offsets external to the Growth Areas, which will identify, protect and manage higher quality areas of Golden Sun Moth habitat that are likely to be important to maintaining the long-term presence of the species across its range into the future <p>These commitments in the EPBC Plan and BCS to address the impacts of the development in the Growth Areas are considered to be consistent with the conservation objectives of the Action Statement. Further information justifying this conclusion and the adequacy of the commitments for Golden Sun Moth is provided in Part 4 of the EPBC Strategic Assessment Report</p>

Striped Legless Lizard

The major conservation objective of the Action Statement (DSE, 2003) is to:

- Ensure the Striped Legless Lizard can survive, flourish and maintain its potential for evolutionary development in the wild

The interim target is to:

- Maintain or establish a minimum of five areas of suitable habitat where threats to the species are removed or minimised, with each area supporting a viable population, and the total population being not less than 1000 individuals

The EPBC Strategic Assessment Report assessed the impacts of development in the Growth Areas on Striped Legless Lizard and concluded that the commitments in the EPBC Plan and BCS will avoid and protect the largest area of confirmed habitat for SLL in the Growth Areas within the NGGA Conservation Area, which will provide for the long-term persistence of the local population. Furthermore, the management of this area will support population recovery by improving connectivity to enable the species to colonise areas of habitat in the conservation area where the species has not yet been recorded. While development under the Plan will lead to the loss of the remaining three populations in the Growth Areas, the habitat condition and viability of these areas is more marginal compared with the area to be avoided and protected. Despite this, these populations are considered important and their loss will lead to a residual adverse impact on the species. The EPBC Plan and BCS includes commitments to offset this residual impact, including:

- Protection and ongoing management of 74 ha of Striped Legless Lizard habitat within the NGGA Conservation Area
- Protection and ongoing management of 301 ha of Striped Legless Lizard habitat outside the Growth Areas

These offsets will be delivered strategically, with a significant proportion secured early and in advance of impacts to the species' habitat. This package will make an important and positive contribution to the long-term viability of the species and is considered to appropriately compensate for the residual impacts of development

These commitments in the EPBC Plan and BCS to address the impacts of the development in the Growth Areas are considered to be consistent with the conservation objectives of the Action Statement. Further information justifying this conclusion and the adequacy of the commitments for Striped Legless Lizard is provided in Part 4 of the EPBC Strategic Assessment Report

Spiny Rice-flower

The long-term objective of the Action Statement (DSE, 2008) is to:

- Ensure the Spiny Rice-flower can survive, flourish and maintain its potential for evolutionary development in the wild

Other specific objectives include to:

- Secure populations or habitat from incompatible land use
- Improve the condition of habitat

The EPBC Strategic Assessment Report assessed the impacts of development in the Growth Areas on Spiny Rice-flower and concluded that the development is not expected to adversely influence the long-term viability of the Spiny Rice-flower

The assessment determined that Spiny Rice-flower has not been recorded within the Growth Areas, despite targeted surveys. The condition and habitat attributes across the Growth Areas are generally considered to be suboptimal for the species. While there are several records within the broader study area outside the Growth Areas, these populations are unlikely to be adversely affected by development in the Growth Areas. There is some potential for the species to occur within the external infrastructure footprints outside the Growth Areas, noting that existing land use and development within the Strategic Assessment Area reduces the likelihood of an unknown population occurring within these corridors

Section	Response
	<p>The EPBC Plan and BCS includes a commitment to ensure that any new population identified through surveys within the external infrastructure corridors will be appropriately avoided and managed to ensure the persistence of any such population in the long-term</p> <p>This commitment in the EPBC Plan and BCS to address the impacts of the external infrastructure development outside the Growth Areas is considered to be consistent with the conservation objectives of the Action Statement. Further information justifying this conclusion and the adequacy of the commitments for Spiny Rice-flower is provided in Part 4 of the EPBC Strategic Assessment Report</p> <p>Adamson's Blown-grass</p> <p>The long term objective of the Action Statement (DSE, 2004a) is to:</p> <ul style="list-style-type: none"> • Allow for an average population size above 250,000 plants, with a minimum of 10 large populations (> 5,000) and with no reduction in extent of occurrence <p>Other specific objectives include to:</p> <ul style="list-style-type: none"> • Protect as far as possible all large or strategic populations • Provide sufficient secure habitat on private land to allow for natural recolonisation from existing roadside populations or introduction <p>The EPBC Strategic Assessment Report assessed the impacts of development in the Growth Areas on Adamson's Blown-grass and concluded that development in the Growth Areas is unlikely to adversely influence the long-term viability of the species. The development will not impact the species directly and the EPBC Plan and BCS includes several commitments to protect the species from any potential impacts from changes in hydrology or the spread of weeds within marginal potential habitat along Cowies Creek in the WGGA</p> <p>These commitments include protecting and managing the Cowies Creek Conservation Area, including managing potential habitat for Adamson's Blown-grass within this area to maintain the suitability of the habitat in the long-term. This will positively contribute to the protection of the species in the region</p> <p>These commitments in the EPBC Plan and BCS to address the impacts of the development in the Growth Areas are considered to be consistent with the conservation objectives of the Action Statement. Further information justifying this conclusion and the adequacy of the commitments for Adamson's Blown-grass is provided in Part 4 of the EPBC Strategic Assessment Report</p>
Critical habitat determinations	No critical habitat determinations have been made under the FFG Act
Management plans	No management plans have been made under the FFG Act
4B (3) Without limiting subsections (1) and (2), consideration must be given to the potential impacts on biodiversity, including—	-
<p>(a) Long and short-term impacts; and</p> <p>(b) Beneficial and detrimental impacts; and</p> <p>(c) Direct and indirect impacts; and</p> <p>(d) Cumulative impacts; and</p> <p>(e) Impacts of potentially threatening processes</p>	<p>The City has given proper consideration to the potential impacts of the development in the Growth Areas in developing the BCS consistent with this requirement and in accordance with Commonwealth and State regulatory requirements for assessing biodiversity impacts</p> <p>For Commonwealth-listed matters, this assessment was done through the NWGGA Strategic Assessment Report. The NWGGA Strategic Assessment Report assesses long and short-term impacts and direct and indirect impacts, and considers potentially threatening processes (see Chapters 19 to 24) and cumulative impacts (see Chapter 25). The overall beneficial and detrimental impacts, taking into account the commitments and measures to be put in place to address impacts, are also evaluated (see Chapter 29)</p>

Section	Response
	<p>For State and local biodiversity values, this assessment, including cumulative impacts in the context of past native vegetation removal, will be done during precinct planning through the preparation of NVPPs and to meet any additional requirements of the Greater Geelong Planning Scheme</p> <p>NVPPs will be prepared in accordance with Clause 52.16, including the Native Vegetation Guidelines (DELWP, 2017a)</p>
<p>4) The Minister may make guidelines in relation to the proper consideration of the objectives of this Act and the instruments made under it by public authorities.</p>	<p>No guidelines have been made under the FFG Act</p>

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THE CITY OF
GREATER GEELONG

NORTHERN AND WESTERN GEELONG GROWTH AREAS

MAY 2023

DRAFT BIODIVERSITY CONSERVATION STRATEGY

APPENDIX C: EPBC OFFSETS PACKAGE

DOCUMENT TRACKING

This document was prepared on behalf of the City of Greater Geelong by Biosis and Open Lines.

PREPARED BY:	
Peter Hemphill, Heidi Birkby (Open Lines)	
REVIEWED BY:	
Mitch Deaves (Biosis), Peter Hemphill (Open Lines)	
VERSION CONTROL:	
VERSION:	Public exhibition version
DATE:	May 2023

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1 Introduction

This appendix to the Northern and Western Geelong Growth Areas (NWGGA) Biodiversity Conservation Strategy (BCS) describes the biodiversity offsets package for the NWGGA strategic assessment under Part 10 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The strategic assessment is being undertaken by the City of Greater Geelong (the City).

Biodiversity offsets are required for residual adverse impacts within the Northern Geelong Growth Area (NGGA) to the following Matters of National Environmental Significance (MNES):

- Natural Temperate Grassland of the Victorian Volcanic Plan (NTG) (listed as critically endangered)
- Striped Legless Lizard (SLL) (listed as vulnerable)
- Golden Sun Moth (GSM) (listed as vulnerable)

No offsets are required for development within the Western Geelong Growth Area (WGGA).

This appendix sets out:

- The context and approach to developing the offsets package
- The offset targets to be delivered over the life of the Plan
- The approach to implementing the offset package
- An evaluation of the offset package against the EPBC offset principles at [Attachment A](#)

For further information and context about the strategic assessment, please refer to the NWGGA:

- [The Plan](#) for a full description of the strategic assessment including development, conservation, and assurance
- [Strategic Assessment Report \(SAR\)](#) for detailed descriptions and analysis of the environment including the three MNES that require offsets
- [BCS](#) for a full description of the outcomes and approaches to biodiversity conservation that will be applied within the Growth Areas. This includes a description of the approach to offsets under State regulation which are not discussed in this appendix
- [Funding Program](#) for details about how the offsets will be funded
- [Commitments and Measures](#) document for the specific commitments and measures that will be implemented in relation to the EPBC offsets package

2 Context and approach to developing the EPBC offsets package

Offsetting impacts to MNES is the final step in the mitigation hierarchy. It is intended to compensate for any residual adverse impacts that remain after impacts have been avoided, minimised and mitigated.

The EPBC offsets package was developed to provide strong, positive outcomes for the three relevant MNES by:

- Ensuring the offsets are in accordance with the principles of the EPBC Act Environment Offsets Policy (DSEWPC, 2012)
- Maximising the opportunities that are provided by taking a strategic approach to offsetting rather than the usual site-by-site approach
- Mitigating the risks associated with strategic offsetting

2.1 PRINCIPLES OF THE EPBC OFFSETS POLICY

The EPBC Act environmental offsets policy (DSEWPC, 2012) outlines the Australian Government's approach to the use of biodiversity offsets under the Act. The policy establishes ten principles for offsetting which are set out in Table 1.

Clause 3(d) of the endorsement criteria for the Plan (see Attachment 2 to the Strategic Assessment Agreement), states that *"The Plan must... provide for appropriate offsets in accordance with the principles of the EPBC Act Environment Offsets Policy..."*.

The EPBC offsets policy is accompanied by the offset assessment guide. The guide was developed in order to give effect to the requirements of the policy for site-by-site projects, using a balance sheet approach to estimate impacts and offsets for threatened species and ecological communities. The guide is an Excel spreadsheet with embedded formula and is essentially an impact and offset calculator.

It is important to note that the guide was not developed for strategic assessments and is not considered appropriate to use to calculate the offset requirements for the NWGGA strategic assessment. This is because the guide does not adequately consider key issues relevant to strategic assessments that have a significant effect on the conservation outcomes to be delivered, such as:

- The timing of impacts and offset delivery over the life of the Plan
- Environmental trend over the life of the Plan
- The conservation benefits of advanced offsets
- The landscape context of offset sites
- The risk of loss values for offset sites and how they may change over the life of the Plan
- The confidence ratings for risk of loss and the predicted quality of offset sites and how they may change over the life of the Plan
- The fact that the majority of offset sites for the strategic assessment are not specifically known during the assessment phase of the project
- The benefits of coordinating the delivery of offsets as part of a strategic offsets package

As a consequence, the principles were used to design and prepare the offsets package while the guide was used to test and validate the proposed offset targets. This is consistent with the policy which states, *"strategic assessments may consider alternative metrics other than the Offset assessment guide (e.g. if a jurisdiction has developed a metric tailored to their needs) provided the principles of this policy are met"*. Further information about the approach to design the offset package is provided in Section 3, and an evaluation of how the package meets each of the principles is provided in [Attachment A](#).

Table 1: Principles of the EPBC Act Environmental Offsets Policy

Offset principles	
<p>Suitable offsets must:</p> <ol style="list-style-type: none"> 1. Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action 2. Be built around direct offsets but may include other compensatory measures 3. Be in proportion to the level of statutory protection that applies to the protected matter 4. Be of a size and scale proportionate to the residual impacts on the protected matter 5. Effectively account for and manage the risks of the offset not succeeding 6. Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action, see section 7.6 [of the offset policy]) 	<ol style="list-style-type: none"> 7. Be efficient, effective, timely, transparent, scientifically robust and reasonable 8. Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced <p>In assessing the suitability of an offset, government decision-making will be:</p> <ol style="list-style-type: none"> 9. Informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty 10. Conducted in a consistent and transparent manner

2.2 MAXIMISING THE OPPORTUNITIES OF STRATEGIC OFFSETS

Strategic assessments offer a range of opportunities to design and implement an offset package that achieves better conservation outcomes than can be achieved through site-by-site assessments. The EPBC Act Guide to Undertaking Strategic Assessments (DSEWPC, 2011) states that the advantages of strategic assessments include the:

- *“Capacity to achieve better environmental outcomes and address cumulative impacts at the landscape level*
- *Coordinated establishment and management of offsets”*

Conservation planning science supports the potential benefits of strategic approaches to offsetting. In particular, improved conservation outcomes (compared to site-by-site projects) that are driven by the opportunities to secure offsets:

- Earlier than would be delivered through site-by-site assessments which helps promote greater improvements to biodiversity (e.g. by the earlier management of threats)
- With better landscape context which also improves conservation outcomes. For example, larger sites and/or sites that are located strategically to enhance biodiversity (e.g. within a biodiversity corridor or adjacent to an existing reserve)

These two factors lead to improved conservation outcomes over time. For example, modelling of the potential benefits of strategic offsetting (early, well located) in a grassland context similar to Geelong showed approximately a 40% better conservation outcome when compared to normal site-by-site offsetting (Gordon *et al.*, 2011). It is important to note that this assumed all offsets being delivered at the commencement of the modelling period.

The EPBC Advanced Offsets Policy (DoEE, 2017) also supports the benefit of earlier offsetting and states that *“Advanced offsets [i.e., offsets delivered ahead of impacts] generally have greater conservation benefits”* and that consequently *“the magnitude of the offset required [to deliver the same conservation outcome] is less”*.

The offsets package was developed with an emphasis on both early offsetting and better landscape context to maximise the opportunities of the strategic assessment.

2.3 MITIGATING THE RISKS OF STRATEGIC OFFSETS

In 2010 the Melbourne Strategic Assessment was the first project to be endorsed under Part 10 of the EPBC Act. Since that time a range of strategic assessments have been endorsed around Australia and there are clear lessons learnt about the risks associated with strategic offsets.

The risks include:

- Offset delivery not keeping pace with the rate of impacts from development because of some combination of:
 - Inadequate funding to secure the necessary offsets over the life of the strategic assessment. This risk has been realised for a number of other projects due to offset land prices increasing faster than the rate of funding
 - Lack of available offsets in the region of the strategic assessment. This has often been driven by high competing demand for offsets from other large scale projects in a region
 - Inappropriate governance and/or mechanisms to adaptively manage offset delivery to ensure the offset program stays on track should challenges arise
- The quality of potential offset sites declining before they are secured

These risks were considered and addressed in designing the offset package to ensure it has the greatest chance of success.

3 Offset targets

The offset package is based on the delivery of “direct offsets” for each of the three MNES which is consistent with Principle 2 of the EPBC offset policy. The policy defines direct offsets as “actions that provide a measurable conservation gain for an impacted [MNES]” and provides the following examples around conservation gain that are relevant to this project:

- Improving existing habitat for the MNES
- Creating new habitat for the MNES
- Reducing threats to the MNES
- Averting the loss of an MNES or its habitat that is under threat

Based on the focus on direct offsets, the following offset targets are established for each MNES:

- Area targets which specify the area of known habitat that must be protected and managed in perpetuity using an appropriate offset mechanism
- Early delivery targets which specify the percentage of the overall area target that must be delivered by the end of year five of implementation of the Plan

3.1 IMPACTS THAT REQUIRE OFFSETS

Table 2 sets out:

- The impacts to the three MNES that require offsets. This includes:
 - Known impacts within surveyed areas
 - Predicted impacts in unsurveyed areas
 - Total impacts within the NGGA
- The average quality score for the impact areas (or impact quality score)
- The relevant section of the SAR that provides the detailed assessment for each MNES. This information should be read in conjunction with this EPBC offsets package

Table 2: Impacts that require offsets

MNES	IMPACTS		AVERAGE IMPACT QUALITY SCORE ¹	RELEVANT SECTION OF THE SAR
	NGGA location	Area (ha)		
NTG	Surveyed land	12.7	3	Section 21.1
	Unsurveyed land	5.9		
	Total	18.6		
SLL habitat	Surveyed land	106.4	7	Section 19.3
	Unsurveyed land	47.0		
	Total	153.4		
GSM habitat ²	<u>No-Low habitat</u>		2	Section 19.1
	Surveyed land	530.1		
	Unsurveyed land	90.0		
	Total	620.1		
	<u>Mod-High habitat</u>		5	
	Surveyed land	37.6		
	Unsurveyed land	0.0		
Total	37.6			

MNES	IMPACTS		AVERAGE IMPACT QUALITY SCORE ¹	RELEVANT SECTION OF THE SAR
	NGGA location	Area (ha)		
	<u>Combined habitat</u>			
	<i>Total</i>	657.7	N/A	

TABLE NOTES:**1. Impact quality score**

Impact quality score is a parameter that is used in the EPBC offset assessment guide which was used to test and validate the offset package. The score is a measure of how well a site supports a particular threatened species or ecological community and contributes to its ongoing viability. As described in the guide, there are three components that contribute to the calculation of habitat quality: site condition, site context, and species stocking rates. The score is determined separately for each MNES with consideration of these components. See [Attachment C](#) for details about NTG, SLL and GSM.

2. GSM habitat categories

As described in the Strategic Assessment Report (Chapter 19, Section 19.1.2), habitat for GSM was mapped into four categories. The relevant text from the SAR is as follows:

Much of habitat within the NGGA is unlikely to represent an important or high quality area necessary for the long-term maintenance of the species (as described in the Conservation Advice (DAWE, 2021a), due to the level of weeds, land modification, and rate of decline. To distinguish between native vs non-native habitat for the assessment of impacts to GSM and to reflect this declining trend in condition, habitat within the surveyed areas of the Growth Areas has been mapped according to the following categories:

- [High] Higher potential native habitat, which identifies the habitat areas with the greatest likelihood of supporting native vegetation based on the result of EHP surveys and the more recent landholder surveys
- [Mod] Moderate potential native habitat, which identifies the habitat areas that have the potential to still support native vegetation identified through the EHP surveys, but recognising the declining trend in condition observed elsewhere in the Growth Areas and lack of more recent surveys for these areas
- [Low] Lower potential native habitat, which identifies the habitat areas which have likely declined since the time of EHP surveys and are no longer expected to support native vegetation, based on the results of more recent landholder surveys
- [No] Non-native habitat, which identifies areas of GSM habitat which do not support native vegetation

The offsets work has grouped Mod-High habitat and No-Low habitat in order to understand impacts and determine the appropriate quantum of offsets.

3.2 AREA TARGETS

Area targets were determined for each MNES to establish the overall quantum of offsets that need to be delivered over the life of the Plan (see Table 3). These targets are included as commitments in the Plan. Information about delivery of the offsets is provided in Section 3.4 below.

The area targets were determined by:

- Considering the scale and quality of the residual impacts to each MNES (consistent with Principle 4)
- Considering the conservation status for each MNES (consistent with Principle 3)
- Considering the conservation outcome (or gain) that is required to improve or maintain the viability of each MNES (consistent with Principle 1). This step included evaluation of the different elements of conservation gain that are defined in the offsets policy including:
 - Improving existing habitat for each MNES within the offset sites through appropriate management actions
 - Where possible, creating new habitat for each MNES. A key focus for this will be the parts of the NGGA Conservation Area that currently provide suitable but not confirmed habitat for SLL
 - Reducing threats to each MNES within the offset sites through appropriate management actions
 - Averting the loss of an MNES or its habitat that is under threat. This is particularly relevant to the part of the NGGA Conservation Area that currently occurs within the Urban Growth Zone which supports habitat for both SLL and GSM
- Accounting for the risks of some proportion of the offsets not succeeding (consistent with Principle 5). This step considered risks around adequate offset availability and risks around management actions at offset sites being unsuccessful

Testing and validation of the area targets was done by applying the offsets calculator against the alternative scenario of offsets being delivered under Part 9 of the EPBC Act over the life of the Plan. This was done to ensure that the targets (in combination with the overall design of the offsets program) will lead to equivalent or better conservation outcomes than can be achieved through site-by-site assessments. Sensitivity analysis was undertaken by varying parameters within the calculator to understand the outcomes under a range of different scenarios.

The results of the testing confirm that the area targets are appropriate and broadly equivalent to what could be required if the strategic assessment was not in place and offsets were applied under Part 9 of the Act.

Table 3: Offset targets

MNES	Area target (ha)
NTG	45
SLL	375
GSM	585

3.3 EARLY DELIVERY TARGETS

Given the opportunities provided by a strategic approach to offsets and the conservation benefits of advanced offsetting, early delivery targets are established for each MNES (see Table 4). These targets are included as commitments in the Plan.

Early offsetting is defined as delivery by the end of year 5 of the Plan. Considerations for establishing the early delivery targets included:

- The predicted rate of impacts to each MNES within the NGGA as each precinct is released
- Maximising the potential conservation outcomes associated with advanced offsetting
- Minimising the risks around offset availability becoming more limited over time by securing a substantial proportion of the offsets early in the life of the Plan
- The conservation status of each MNES
- The scale of offsets required for each MNES
- Challenges around funding early offsets

Processes around the delivery of both the early and remaining offsets are set out in Section 4.

Table 4: Early delivery targets

MNES	Early delivery target (%)	Early delivery target (ha)
NTG	100%	45.0
SLL	70%	262.5
GSM	50%	292.5

3.4 PREDICTED AVERAGE OFFSET QUALITY

The predicted average quality of the offset sites was considered to help understand the conservation outcomes to be delivered through the offsets package. This process evaluated:

- The known quality of other offset sites for each MNES within Victoria over recent years
- The appropriate starting quality of offset sites to provide the opportunity for good conservation gains through management actions

The predicted average quality of habitat to be protected within the offset sites is set out in Table 5. It is noted that the start quality of sites is expected to vary which is appropriate when a number of sites will be secured that will provide a range of different opportunities for conservation gain.

Table 5: Predicted average start quality of offset sites

MNES	Average start quality of offset sites *
NTG	6
SLL	7
GSM	6

* Quality score based on the approach set out in the EPBC offset assessment guide and the associated method for each MNES set out in [Attachment C](#)

4 Approach to implementing the offset package

The approach to implementing the offset package is designed to ensure successful delivery and address the risks associated with a large scale, strategic approaches to offsets.

4.1 GOVERNANCE FOR THE OFFSET PACKAGE

Strong governance arrangements are critical for the successful delivery of the offsets package and are consistent with Principle 8 of the offsets policy. The overall governance framework for the strategic assessment is described in Section 6 of the Plan and is not repeated here in detail. However, governance for the offset package sits within this overall framework and the key elements relating to offsets are described below.

The delivery of the offset package will be coordinated by the City. As approval holder for the strategic assessment, the City will be responsible for ensuring the commitments and measures relating to offsets are met. Central coordination by the City:

- Allows for the aggregation of funds to facilitate securing larger and better offset sites
- Enables the ability to secure a significant proportion of offsets ahead of impacts occurring
- Maximises the efficiency of the delivery of offsets

The City will be responsible for:

- Securing offsets in accordance with the commitments of the Plan
- Securing funding to pay for the offsets (see Section 4.6 below)
- Working with support partners to help deliver the offset package (see below)
- Monitoring and reporting on the:
 - Implementation of offsets to ensure delivery is on track (see Section 4.4 below)
 - Ongoing improvement and management of the secured offset site/s
- Implementing contingency steps (see Section 4.5 below) if monitoring indicates that offsets are not being delivered successfully

Support partners for the offset package include:

- The Victorian Government Department of Energy, Environment and Climate Action (DEECA) or Trust for Nature who manage mechanisms to secure offset land
- Developers within the NGGA who may help secure suitable offset sites as part of a works in kind (WIK) contribution in lieu of other funding options (see Section 4.6 below)
- Private landholders who may enter into on-title management agreements to secure their land for offsets
- Wadawurrung Traditional Owners Aboriginal Corporation who may provide advice and assistance in relation to the management of the NGGA Conservation Area

4.2 OFFSET SITE SELECTION

Offset sites will be selected to maximise the conservation outcomes of the offset package and provide for the in-perpetuity protection and management of sites.

At the time of the preparing the Plan, the NGGA Conservation Area was the only confirmed offset site. Other sites to meet the offset commitments will be identified external to the NGGA as part of implementation of the Plan.

4.2.1 NGGA CONSERVATION AREA

GENERAL DESCRIPTION

The NGGA Conservation Area is 108.6 ha in size and is located in the northwest corner of the NGGA (see maps at [Attachment B](#)). The site was surveyed as part of the EHP surveys (EHP, 2021) for the strategic assessment and supports habitat values for SLL and GSM as set out in Table 6 and Table 7 respectively. There is no NTG present within the Conservation Area.

The Conservation Area will be delivered in two stages as follows:

- Stage 1 which is 82.3 ha will be delivered by the end of year 5 of the Plan. This area was identified for conservation in the NWGGA Framework Plan (The City of Greater Geelong, 2021) and is currently zoned farming and urban growth zone
- Stage 2 which is 26.3 ha will be delivered by the end of year 11 of the Plan. This area was identified for inclusion to the Conservation Area as part of the strategic assessment process and is currently zoned as Urban Growth Zone

Table 6: SLL values of the NGGA Conservation Area

Habitat type	Area of habitat (ha)			Description
	Stage 1	Stage 2	Total	
Confirmed habitat	47.0	0	47.0	The confirmed habitat (all of which occurs in the Stage 1 area) is the largest confirmed patch of habitat within the NGGA, supporting multiple remnants of native grassland. Eleven individuals of SLL were recorded as part of the EHP surveys. The area (in addition to the adjacent suitable habitat) is likely to be considered critical to the survival of the species based on the definition outlined in the species Conservation Advice (TSSC, 2016). The offset start quality score for the confirmed habitat area is calculated at 8.
Suitable habitat	3.6	23.8	27.4	The suitable habitat is adjacent to the confirmed habitat and occurs in a patch of native grassland. It represents an important opportunity to expand a known area for SLL. The offset start quality score for the suitable habitat area is calculated at 5. This lower score is driven by a lack of records during the EHP surveys. However, the overall score for the NGGA conservation area is calculated at 7 based on the relative areas of the confirmed and suitable habitat.
Total habitat	50.6	23.8	74.4	

Table 7: GSM values of the NGGA Conservation Area

Habitat type	Area of habitat (ha)			Description
	Stage 1	Stage 2	Total	
Mod-High habitat	33.3	21.8	55.1	Approximately half of the GSM habitat in the Conservation Area is currently Mod-High quality. All of this area is mapped as moderate. This habitat occurs in a number of discrete patches interspersed with non-native habitat. EHP recorded the species across large parts of this habitat. The offset start quality score is calculated at 5 and is applied across the whole Conservation Area.

Habitat type	Area of habitat (ha)			Description
	Stage 1	Stage 2	Total	
No-Low habitat	49.0	4.6	53.5	The other half of the GSM habitat in the Conservation Area is mapped as No-Low quality. The vast majority of this is mapped as non-native. The No-Low quality habitat occurs in between the patches of Mod-High, and supports a wide range of records of GSM. Weed management and restoration of the non-native habitat offers a critical opportunity for a conservation gain for GSM.
Total habitat	82.3	26.3	108.6	

MAINTAINING THE VALUES OF THE CONSERVATION AREA BEFORE IT IS SECURED

Given the conservation area will not be secured until the end of year 5 for Stage 1 and year 11 for Stage 2, it is critical that the MNES values are maintained until that point.

The Stage 1 area is existing rural land and it is expected that the historical management regime that has supported the MNES values will be maintained until the land is purchased by the City. Given the land was identified for conservation in the NWGGA Framework Plan and is identified in the Plan, there are no incentives for the current landholders to alter their management. The City has worked, and will continue to work with the landholders to ensure land management is appropriate.

For the Stage 2 area the City is liaising with the current landholder to implement actions to help maintain the values of the land. This will comprise either:

- Managing the land on behalf of the owner, or
- Providing funding and expertise to assist the landholder manage the land appropriately.

It is expected that the approach to both Stage 1 and 2 will maintain the MNES values until the land can be formally secured.

MECHANISMS TO SECURE THE CONSERVATION AREA

The Conservation Area will be secured by acquisition and vesting of the land to the City. It will be zoned appropriately for conservation and managed to protect its biodiversity values.

MANAGEMENT OF THE CONSERVATION AREA

The Conservation Area will be managed in-perpetuity to maintain and improve the MNES values that are present.

Aims of the conservation area

The key aims of the conservation area will be to protect and manage native vegetation and 74 ha of habitat for SLL and 108 ha of habitat for GSM in perpetuity. It will do this by:

- Protecting habitat supporting populations of SLL and GSM
- Improving the condition of habitat for SLL and GSM
- Where possible, increasing the area of occupied habitat for the SLL through regeneration or restoration of any potentially suitable areas

Conservation Management Plan

The Plan includes a commitment to prepare and implement a conservation management plan (CMP) for the Conservation Area. The CMP will be prepared to give effect to the aims of the conservation area (discussed above) and in accordance with the Commonwealth Environmental Management Plan Guidelines (DoE, 2014). It will include the following information:

- Boundary of the conservation area

- Native vegetation to be retained
- Extent and condition of habitat and records for SLL and GSM
- Management actions and arrangements to protect SLL and GSM, including management methods, standards and techniques, roles and responsibilities, timing for implementation, funding and monitoring and reporting

Given the currently degraded state of parts of the grassland habitat, there are significant opportunities to improve the condition of habitat within the Conservation Area. Rehabilitation and regeneration of habitat will be a priority of the CMP.

Ongoing monitoring of species and species habitat within the Conservation Area will be important to ensure that performance of the CMP is understood, and to ensure that management is responsive and adapts to any changing circumstances. See Section 4.4 below for a discussion about monitoring.

Detailed costing for implementation of the CMP will be undertaken when it is developed. However, indicative costing was undertaken as part of preparing the Plan. It is estimated that management and monitoring over the first 10 years would cost in the order of \$6 million. This includes the establishment management actions for the Conservation Area but does not include the cost of acquisition.

What does success look like in the NGGA Conservation Area?

The NGGA Conservation Area will be a success if:

- The populations of SLL and GSM persist and remain viable over the long term
- Habitat for SLL and GSM is retained and condition improves over time

4.2.2 EXTERNAL OFFSET SITES

The external offset area targets for each MNES (after the delivery of the NGGA Conservation Area) are:

- NTG = 45 ha
- SLL = 301 ha
- GSM = 477 ha

These offsets will be delivered outside of the NGGA.

SITE SELECTION

In order to ensure sites are appropriate and contribute to the strategic benefit of the offset package, sites will be selected that meet at least one of the following strategic landscape criteria:

- Protection of areas of habitat that would be considered large for each MNES
- Located within a key biodiversity corridor and improves connectivity across the landscape
- Connection to an existing conservation reserve

Surveys by an appropriately qualified ecologist applying the appropriate survey techniques will be undertaken for each site prior to it being secured. Only sites with confirmed values for each MNES will contribute to meeting the offset targets.

OFFSET AVAILABILITY

Offset availability or the potential lack of availability is a key risk. The ability to meet the commitments in the Plan is dependent on sufficient offset sites being available to secure.

In developing the offset package, the City commissioned a range of analysis to ensure that there is confidence in the current and future supply of offset sites. This analysis included:

- Review of the offset sites that were on the market at the time of preparing the Plan
- Discussions with offset brokers in Victoria to understand their views on the market and the potential availability of sites for the three MNES

- Discussions with those developers who have insight into offsets in the region. Some of the developers had identified potential offset sites relating to development in the NGGA
- Evaluation of the broader landscape to understand the potential quantum of available offsets over the life of the Plan

The analysis suggests that there is sufficient availability. Particularly because:

- There were a number of suitable sites on the market at time of preparing the Plan
- The Plan's focus on early offsetting helps mitigate the risk of offsets becoming less available as time progresses
- The long life of the Plan allows for other offset sites to come onto the market

However, the analysis also emphasised that securing offsets early will be important and coordination by the City to find offsets will be critical.

MECHANISMS TO SECURE AND MANAGE SITES

Offset sites outside the NGGA will be secured and managed using standard offsetting approaches in Victoria including mechanisms such as Section 69 agreements prepared under the *Conservation Forests and Lands Act 1987* or Trust for Nature covenants prepared under the *Victorian Conservation Trust Act 1972*.

These mechanisms:

- Provide for the in-perpetuity protection of sites
- Are accepted by DCCEEW as appropriate mechanisms for EPBC offsets
- Facilitate the necessary management, monitoring and reporting to ensure a conservation gain for each MNES

4.3 TIMING OF DELIVERY

The Plan includes two commitments around the timing of offset delivery. They are commitments to:

- Ensure that the delivery of offsets remains ahead of the level of impacts over the life of the Plan
- Deliver early offsets (by the end of year 5) for each MNES

These commitments are important to help maximise the benefits of the strategic approach to offsets, and deliver a conservation outcome that improves or maintains the viability of each MNES (consistent with Principle 1).

Offset delivery occurring ahead of impacts will be tracked and calculated as follows:

- Impacts will be tracked as development proceeds. This will be done by:
 - Tracking planning permits
 - Calculating the impact area for NTG, SLL and GSM as it relates to each planning permit. The baseline data for the strategic assessment will be used for these calculations
 - Keeping a running record of total impacts to NTG, SLL and GSM as planning permits are issued
- Calculating the running offset target for each MNES. This will be done by multiplying the running record of total impacts for each MNES by the ratio of total offset area to total impact area
- Tracking offset delivery and keeping a running record of the total offsets delivered for NTG, SLL and GSM
- Ensuring that total offset delivery is always ahead of the running offset target for each MNES

4.4 MONITORING AND REPORTING

The City will monitor and report on the offsets package through the Plan's MERI framework (see Section 6 of the Plan). This process will include:

- Tracking impacts and offset delivery as outlined above
- Monitoring the NGGA Conservation Area and the implementation of the CMP
- Evaluating the ongoing success of the external offset sites in protecting biodiversity and their contribution to the biodiversity outcomes of the Plan

For the purposes of tracking offset delivery, offsets will be considered secured when the appropriate mechanism (e.g. Trust for Nature covenant) has been finalised.

4.5 CONTINGENCY STEPS

To help mitigate risks around offset delivery, the Plan includes a measure to implement contingency steps if the early offset targets are not on track, or the rate of offsets is not ahead of the rate of impacts.

The contingency steps are:

- The City will notify DCCEEW about the shortfall and outline proposed steps to remedy the issue
- The City will make every effort to secure the necessary offsets within 12 months of a shortfall being identified
- If the necessary offsets cannot be secured within the 12 month period, the City will pause planning permits within the NGGA until sufficient offsets are secured to address the level of impact to MNES

4.6 FUNDING

Sufficient funding is another key aspect of the offset package. As outlined in Section 6 of the Plan, the Plan includes a funding framework that will provide funding for implementation of all of the commitments (including offsets).

From an offsetting perspective, offsets will be funded through a biodiversity levy on developers which will be indexed over the life of the Plan. The City is also considering providing the option for developers to make a works in kind (WIK) contribution in lieu of payment of the biodiversity levy amount. Under a WIK contribution, a developer would agree that they will provide offsets and/or works in full or partial satisfaction of the requirement to pay the biodiversity levy amount. The WIK contribution would be limited to certain circumstances to ensure commitments for offsets under the Plan can be effectively delivered (e.g. any offset site would have to meet the offset site selection criteria and be secured using an appropriate mechanism).

The City has prepared a Funding Program to implement the conservation program related to the strategic assessment. The Funding Program will be implemented into the Greater Geelong Planning Scheme by inclusion as a mandatory requirement in the urban growth zone. All proponents undertaking development will need to fulfil the requirements of the EPBC Plan and funding contribution.

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Attachment A: Evaluation against the EPBC offset policy

The offset package meets the principles of the EPBC offset policy as set out in Table 8.

Table 8: Evaluation of the offset package against the principles of the EPBC offset policy

EPBC offset principles	How the offsets package meets each principle
Suitable offsets must:	
<p>1. Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action</p>	<p>The offset package will help deliver an overall conservation outcome that improves or maintains the viability of NTG, SLL and GSM. This is based on:</p> <ul style="list-style-type: none"> • The focus on direct offsets (as per Principle 2) which provides the most tangible conservation gains for MNES • Delivery of the offsets by the City as part of a coordinated program (as per Principle 8) which will ensure efficient, effective, timely, and transparent outcomes (as per Principle 7) • Appropriate area targets for each MNES that: <ul style="list-style-type: none"> ○ Consider conservation status (as per Principle 3) ○ Are proportionate to the size and scale of residual impacts (as per Principle 4) ○ Account for the risk of offsets not succeeding (as per Principle 5) • Consideration of the predicted average quality of the offset sites • Delivery of offsets that are additional to what is already required (as per Principle 6) • The landscape nature of the offset package which improves the conservation outcome of offsets. This includes focusing on sites that: <ul style="list-style-type: none"> ○ Will protect areas of habitat that would be considered large for each MNES ○ Are located within a key biodiversity corridor and improves connectivity across the landscape ○ Connect to an existing conservation reserve • The focus on early offsetting for each MNES which will provide the conservation benefits of substantial advanced offsetting • The fact that testing and validation of the offset targets using the offset calculator showed that the targets are appropriate and sit within the range of what would be potentially required if the strategic assessment was not in place and offsets were applied under Part 9 of the Act <p>This meets Principle 1.</p>

EPBC offset principles	How the offsets package meets each principle
2. Be built around direct offsets but may include other compensatory measures	The offset package is entirely based on direct offsets. This meets Principle 2.
3. Be in proportion to the level of statutory protection that applies to the protected matter	<p>The offsets are proportional to the conservation status of each of the MNES. Both the area and early delivery targets were developed with consideration of conservation status. Where a higher status (e.g. critically endangered versus vulnerable) led to proportionally higher area targets and a greater emphasis on early offsets.</p> <p>While the offset calculator was not used to develop the targets, it was used to test and validate the targets (as described in Section 3.2 above). The calculator uses conservation status to help determine the appropriate level of offsets, and the results of the testing confirm that the area targets are appropriate and sit within the range of what would be potentially required if the strategic assessment was not in place and offsets were applied under Part 9 of the Act.</p> <p>This meets Principle 3.</p>
4. Be of a size and scale proportionate to the residual impacts on the protected matter	<p>The offsets are proportionate in size and scale to the residual impacts to NTG, SLL and GSM. This is reflected by the area targets for each MNES which were developed against the criteria set out in Section 3.2 above. These criteria included:</p> <ul style="list-style-type: none"> • The scale and quality of the residual impacts to each MNES. These impacts are described and assessed fully in the SAR • The conservation status for each MNES • The conservation outcome that is required to improve or maintain the viability of each MNES <p>This meets Principle 4.</p>
5. Effectively account for and manage the risks of the offset not succeeding	<p>The offsets package accounts for and manages the risks of the offsets not succeeding. These risks are set out in Section 2.3 above and are mitigated through the design of the package. In particular, key aspects of risk mitigation include:</p> <ul style="list-style-type: none"> • An appropriate funding framework and program to ensure the offsets can be purchased (Section 4.6 above) • Analysis of the availability of offsets that provides confidence in the implementability of the package (Section 4.2.2 above), combined with a set of contingency steps to ensure offsets are delivered if challenges arise in implementation (Section 4.5 above) • An appropriate governance framework to ensure implementation is successful (Section 4.1 above) • Mechanisms to maintain the values of the NGGA Conservation Area prior to it being secured (Section 4.2.1 above) <p>This meets Principle 5.</p>

EPBC offset principles	How the offsets package meets each principle
<p>6. Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action, see section 7.6)</p>	<p>The proposed offsets are all additional to what is already required. This includes:</p> <ul style="list-style-type: none"> • The NGGA Conservation Area which will be protected and managed as a conservation reserve in-perpetuity. This was not planned prior to the commencement of the strategic assessment • The external offset sites which will only be selected where they don't have an existing level of protection <p>This meets Principle 6.</p>
<p>7. Be efficient, effective, timely, transparent, scientifically robust and reasonable</p>	<p>The offset package is designed to be efficient, effective, timely, transparent, scientifically robust and reasonable as follows:</p> <ul style="list-style-type: none"> • The package is based on scientifically robust information about each MNES (as set out in the SAR) and about the potential offsets sites. Further scientific information will be collected during implementation to help establish, monitor and manage sites • The commitments and measures to deliver the offsets package meet the SMART principle (Specific, Measurable, Achievable, Relevant, and Time-Bound). This ensures that there is clarity around the implementation of the package and that the offsets will be efficient, effective and timely • The process to develop the offset package is transparent (as discussed for Principle 10) and implementation of offsets will be based on transparent governance, monitoring and reporting (as discussed for Principle 8) • The offset package is designed to provide a positive conservation outcome for MNES and be reasonable to fund and deliver. Testing and validation of the offset targets using the offset calculator showed that the targets are appropriate (and reasonable) and sit within the range of what would be potentially required if the strategic assessment was not in place and offsets were applied under Part 9 of the Act <p>This meets Principle 7.</p>
<p>8. Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced</p>	<p>As discussed in Sections 4.1 and 4.4 above, implementation of the offset package is supported by appropriate governance, monitoring, and reporting arrangements. This meets Principle 8.</p>

EPBC offset principles	How the offsets package meets each principle
In assessing the suitability of an offset, government decision-making will be:	
9. Informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty	This principle is largely a matter for DCCEEW as it relates to government decision-making. However, preparation of the documents for the strategic assessment (including the offsets package) is based on scientifically robust information and processes. In addition, the precautionary principle has been applied appropriately to the project as set out in Part 5 of the SAR. This meets Principle 9.
10. Conducted in a consistent and transparent manner	This principle is largely a matter for DCCEEW as it relates to government decision-making. However, the City is working with stakeholders throughout the strategic assessment to ensure transparency and the project will meet all of its statutory obligations around consultation. This meets Principle 10.

Attachment B: Maps of the NGGA Conservation Area



Figure 1: NGGA Conservation Area

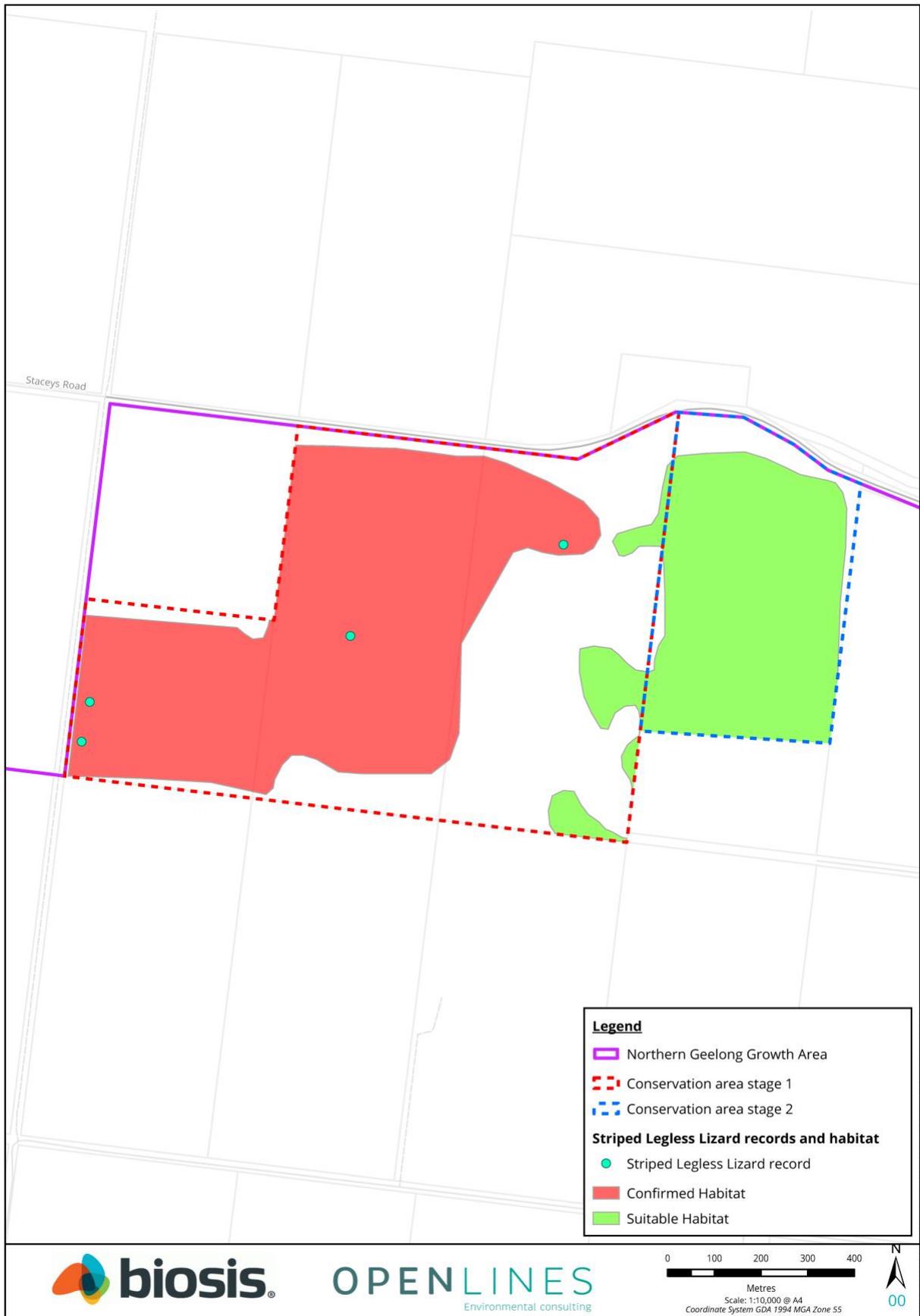


Figure 2: SLL habitat and records in the NGGA Conservation Area

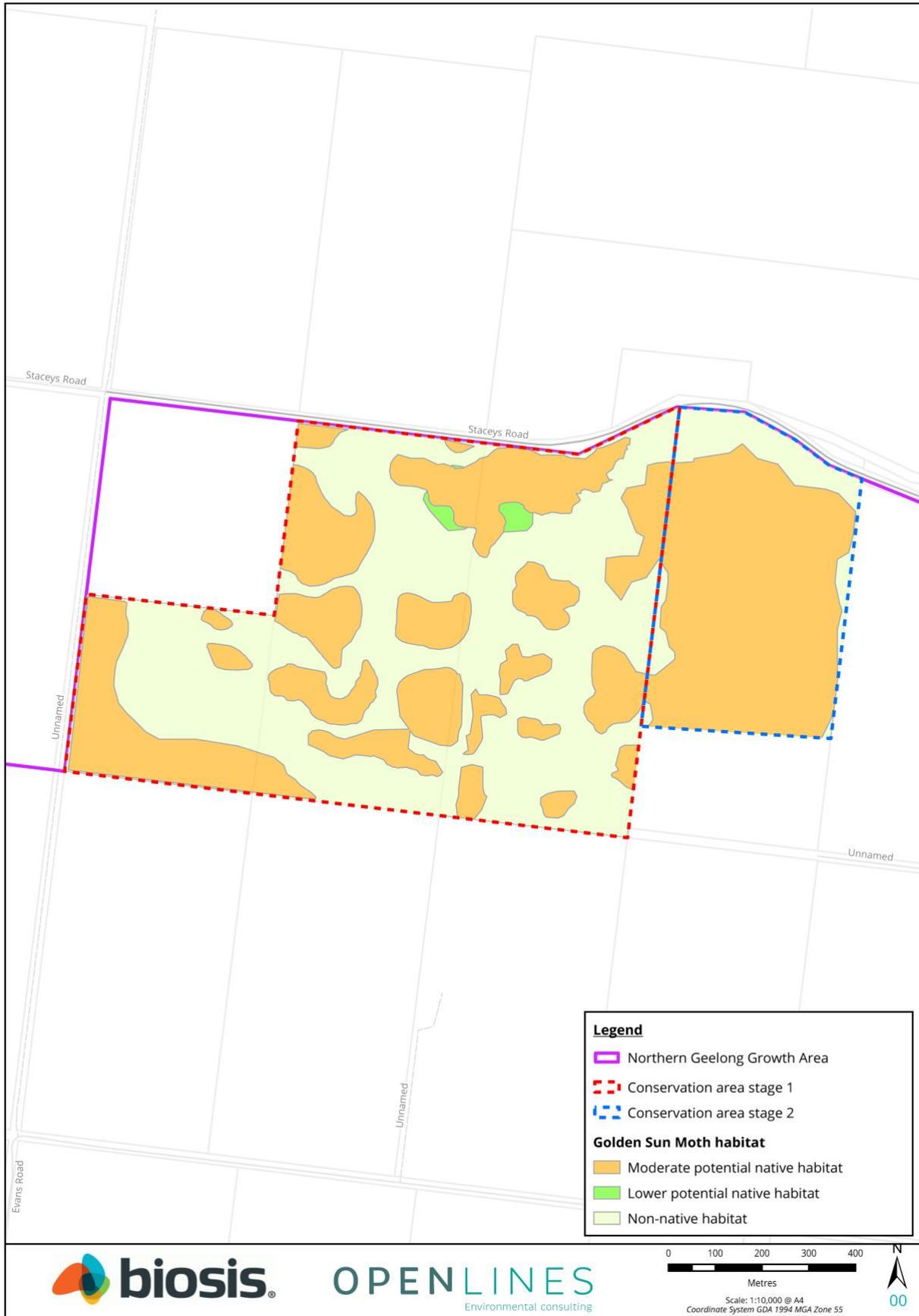


Figure 3: GSM habitat in the NGGA Conservation Area

Attachment C: Impact and offset quality scores

QUALITY SCORES

Quality scores are parameters that are used in the EPBC offset assessment guide (Commonwealth of Australia, 2012) which was used to test and validate the offset package. Scores are applied to both the impact and offset sites.

The scores are a measure of how well a site supports a particular threatened species or ecological community and contributes to its ongoing viability. As described in the guide, there are three components that contribute to the calculation of habitat quality: site condition, site context, and species stocking rates. The scores are determined separately for each MNES with consideration of these components.

NATURAL TEMPERATE GRASSLAND

For NTG, impact quality is based on the habitat hectare scores calculated by EHP (EHP, 2021) using a weighted average for each habitat zone rounded to the nearest equivalent quality value. The weighted average score for all NTG was 3.

A starting offset quality score of 6 for NTG is assumed based on the average rounded habitat hectare score assessed for other offset sites in Victoria.

STRIPED LEGLESS LIZARD

QUALITY PARAMETER	DESCRIPTION / METHOD	IMPACT QUALITY SCORE	OFFSET START QUALITY SCORE
Site context (X/4)	<p>Connectivity</p> <p>The habitat of SLL (natural temperate grassland and grassy woodland) is severely depleted and fragmented, which means many populations are now functionally isolated. Nevertheless, SLL populations are known to persist in very small habitat fragments, including sites less than 1 ha. These isolated sites can still support high densities of the species. For example, 86 individuals were trapped in a 0.4 ha grassland remnant in Keilor Downs in Melbourne (Megan O'Shea, pers. comm.). This grassland remnant had been isolated from nearby populations by urban development for at least 40 years.</p> <p>Low landscape and functional connectivity is now typical for most sites occupied by SLL. However, surveys and research has demonstrated that in many cases SLL appear to be able to persist in these isolated remnants. Therefore, connectivity to other populations may not necessarily be essential for the persistence of a population in the medium term, provided habitat structure remains suitable and existing and future threats are appropriately managed.</p> <p>'Connectivity' has therefore been scored out of 2 according to the size of the habitat remnant, as follows.</p> <ul style="list-style-type: none"> • 1/2= Site < 0.5 ha • 2/2 = Site equal to or 0.5 ha <p>The site context assessment includes the total area of known or suspected SLL habitat within the impact site and connected to that habitat (i.e. including contiguous habitat offsite).</p> <p>Based on the results of EHP, the NGGA is scored at 2.</p>	2	2
	<p>Importance of the site</p> <p>The Conservation Advice for the species states that:</p> <p>"All populations of the SLL are likely to be important for the species recovery. The basis for this is the major loss and degradation of its grassland habitat, the ongoing pressures in remaining habitat and the highly fragmented nature of known habitat and populations".</p> <p>and</p> <p>"The understanding of fine scale population structure is limited and difficult to assess given the fragmented and disturbed nature of the species habitat and the difficulty in detecting the species due to its cryptic nature. For these reasons it is considered that when one or more individuals are found on a site that they are a member/s of an important population."</p> <p>Therefore, all potential impact sites with confirmed SLL are likely to support an important population and 'importance' is not given any weighting for site context.</p>	N/A	N/A
	<p>Threats</p> <p>Threats impacting SLL and their approximate severity of risk, are listed in Table 1 of the Conservation Advice for the species. All SLL populations are likely to be subject to varying levels of cat and fox predation and this threat, which is difficult to compare between sites, is not used when scoring the 'threat' component of Site Context.</p>	1	1

QUALITY PARAMETER	DESCRIPTION / METHOD	IMPACT QUALITY SCORE	OFFSET START QUALITY SCORE
	<p>Fire and grazing have both been shown to be positively correlated with the persistence of SLL, by maintaining an appropriate grassland structure and floristic diversity. However, sites that are subject to intensive and concurrent application of these disturbance regimes have been shown to have lower population persistence (Scroggie <i>et al.</i>, 2019).</p> <p>Similarly, low or no biomass reduction is also considered to be a threat to the species, as it can result in a dense sward that has reduced structural complexity and floristic diversity (Scroggie <i>et al.</i>, 2019). The build-up of biomass can also lead to more intense and extensive uncontrolled fires, which could lead to increased mortality and habitat deterioration.</p> <p>Threats are defined as follows:</p> <ul style="list-style-type: none"> • Site currently subject to continuous, intensive grazing by livestock or kangaroos, thereby reducing the floristic and structural complexity of the habitat. • Site subject to frequent, widespread and intense fires, including deliberate burns that are not sympathetic to the maintenance of Striped Legless Lizard habitat • Site subject to historical or ongoing ploughing, pasture improvement and agricultural intensification • Site subject to historical or ongoing removal of surface and/or embedded or rock • Site subject to frequent slashing or thereby reducing the structural complexity of the habitat • Site dominated by exotic grasses to the extent that the majority of the site is no longer defined as native vegetation • Site currently not subject to any form of appropriate biomass reduction (e.g. low-moderate intensity grazing or sympathetic ecological burns to maintain structural and floristic diversity of the habitat) <p>'Threats' have been scored as follows:</p> <ul style="list-style-type: none"> • 0/2 = Site subject to 5 or more of the above threats • 1/2 = Site subject to between 1 and 4 of the above threats • 2/2 = Site subject to none of the above threats <p>Based on the results of EHP, the NGGA is scored at 1.</p>		
Site condition (X/3)	<p>Sites that have the best potential to support viable SLL populations are located in areas that supported or once supported native grasslands or grass woodlands. These areas must contain suitable tussock structure, appropriate soil type and minimal major disturbance such as ploughing(Coulson, 1990; Hadden, 1995; O'Shea, 1996; Dorrough and Ash, 1999). Sites that are rich in native tussock-forming grass species (often >20-50% cover) such as Kangaroo Grass <i>Themeda triandra</i>, Spear-grasses <i>Austrostipa</i> spp. and Poa tussocks <i>Poa</i> spp. provide good habitat for SLL, although the species can also inhabit areas dominated by introduced grass species where the site has a history of grazing and pasture improvement(Coulson, 1990; Dorrough and Ash, 1999; Smith and Robertson, 1999; Commonwealth of Australia, 2011). The species tends to find shelter within grass tussocks, thick ground cover, soil cracks, rocks and ground debris such as timber(Smith and Robertson, 1999).</p> <p>Site condition is assessed as a score out of three (of the overall total of 10), following the conditions below:</p> <ul style="list-style-type: none"> • 1/3 = Poor - Site (on average) supports a species-poor ground flora with low structural complexity (reflecting inadequate biomass management). Dominated by a few native or predominantly introduced tussock-forming grasses with no or very few native forbs with or without embedded and/or surface rock 	2	2

QUALITY PARAMETER	DESCRIPTION / METHOD	IMPACT QUALITY SCORE	OFFSET START QUALITY SCORE
	<ul style="list-style-type: none"> • 2/3 = Satisfactory - Site (on average) supports a moderately diverse ground flora with good structural complexity (reflecting some biomass management). Dominated by an average diversity of native tussock-forming grasses and average diversity of native forbs with or without embedded and/or surface rock • 3/3 = Good - Site (on average) supports a species-rich and structurally complex ground flora (reflecting appropriate biomass management). Dominated by an above average diversity of native tussock-forming grasses and above average native forbs, together with embedded and/or surface rock <p>Based on the results of EHP, the NGGA is scored at 2.</p>		
Species Stocking Rate (X/3)	<p>SLL is a cryptic species and has the potential to go undetected despite presence at a site, even with suitable survey methods outlined by the survey guidelines. Recapture rates can be very low and therefore cannot be a true representation of the size of a population (Smith & Robertson 1999). Density within populations is highly variable and has been reported ranging from 0.78 SLL/ha to 155 SLL/ha, but typically less than 30 SLL/ha (ARAZPA, 1996; Biosis, 2012; O'Shea, 2016). The scoring of stocking rate set out here contributes a potential 3 points out of the overall total of 10 points.</p> <p>Artificial shelter (tile) surveys for SLL are generally conducted to detect the presence of the species at impact and offset sites. Rarely is the technique used for estimating site level densities to calculate 'stocking rates'. This is because estimating density requires SLL encountered under the tiles to be captured and photographed so that they can be reliably identified from the unique scale pattern on their head.</p> <p>The technique necessitates a degree of skill and training. Capturing and processing the animals is time consuming. It also involves a level of risk to SLL as they sometimes drop their tail during capture and may be unduly stressed.</p> <p>Therefore, an alternative method using the maximum number of SLL detected at a tile grid during any one site survey is used as a surrogate for density. This includes counts of sloughs as well as actual lizards (sloughs are routinely encountered under artificial shelters).</p> <p>The following rationale has been used to derive an approximate density rate of SLL per hectare. It assumes that habitat and distribution of SLL are relatively uniformly distributed across the subject site. While it is recognised that those assumption may not hold across all sites, they are necessary underlying assumption of all survey techniques that involve representative sampling of a site, including the use of tile grids.</p> <p>A grid of 50 tiles set out at 5 metre intervals has the assumption that each tile has a 'capture' or 'encounter' area for SLL that covers 25m² (i.e., a tile in the middle of a 5 x 5 metre square), hence the entire 50 tiles cover a total capture area of 1250m² (i.e., including the external capture area of each tile on the outside perimeter of the grid). The entire grid of 50 tiles is thus sampling one eighth (12.5%) of a hectare. Hence, for the present purposes, we can assume that the maximum number of SLL encountered under the tile grid during any one of the seven monitoring events can be multiplied by 8 to provide an approximate density of lizards per hectare. By this reckoning, if the maximum number of SLL encountered during any one monitoring event is one, we can assume a density of between 1 and 8 animals per hectare. If the maximum number encountered during any one monitoring event is two, we can assume a density of between 8 and 16 animals per hectare. If the number encountered as greater than 2, we can assume a density of greater than 16 animals per hectare.</p> <p>These rates conform quite closely with densities described for eight sites by (O'Shea, 2016). Four of those sites had density rates of between 1.2 and 4.9 SLL per hectare; while the other four sites had densities of 17.5, 18.8, 44 and 156 per hectare.</p> <p>On the basis of this reckoning, the scoring method for 'stocking rate' is as follows:</p> <ul style="list-style-type: none"> • 1/3 = A maximum of 1 individual, or slough encountered under the tile grid during any one of 7 monitoring events • 2/3 = A maximum of 2 individuals or sloughs encountered under the tile grid during any one of 7 monitoring events 	2	2

QUALITY PARAMETER	DESCRIPTION / METHOD	IMPACT QUALITY SCORE	OFFSET START QUALITY SCORE
	<ul style="list-style-type: none"> 3/3 = Three or more individuals or sloughs encountered under the tile grid during any one of 7 monitoring events <p>Surveys must be carried out as per the survey standards in the referral guidelines, including the minimum number of grids based on the area of the site. This standard requires fortnightly tile grid checks between 1 September and 31 December (a minimum of 7 checks). More frequent checks can be undertaken (e.g. weekly), but this is not mandatory. All sloughs must be removed during each check.</p> <p>Based on the results from EHP, the NGGA is scored at 2.</p>		
	Total impact quality score for SLL out of 10	7	7

GOLDEN SUN MOTH

QUALITY PARAMETER	SCORING RANGE	NOTES	IMPACT QUALITY SCORE		OFFSET START QUALITY SCORE
			No-low habitat	Mod-High habitat	
Site context (max. 3 points)					
Connectivity with other suitable/known habitat or remnants?	0-1	<p>Noting that while there is a general lack of survey for GSM across the Study Area, GSM habitat in the NGGA is likely to be connected (or partially connected) to habitat within the broader agricultural landscape in the region. Habitat modelling for the species shown in Figure 19-1 of the SAR supports this and provides an indication of the potential connectivity.</p> <p>Given the fragmented and disturbed nature of the landscape, connectivity is scored at 0.75.</p>	0.75	0.75	0.75
Importance of the site in relation to the overall species population?	0-1	<p>Consistent with the notes for the previous parameter, there are likely to be significant areas of GSM habitat across the region's agricultural landscape. This reduces the importance of the site in relation to the overall species population.</p> <p>Mod-High habitat which supports areas of native vegetation is scored more highly at 0.75.</p> <p>No-Low habitat which is dominated by exotic vegetation and part of a declining trend across the landscape is scored at 0.1.</p>	0.1	0.75	0.75
Threats that occur on or near site?	0-1	<p>The Conservation Advice for GSM identifies a range of different threats (e.g. soil disturbance, lack of biomass removal, and weed invasion). A higher score for this parameter indicates lower threats.</p> <p>The declining trend in the condition of grasslands in the NGGA is evidence of a high level of threat. In particular, weed invasion appears to be a significant issue.</p> <p>Mod-High habitat is scored at 0.5.</p> <p>No-Low habitat is scored at 0.1.</p>	0.1	0.5	0.7
Site condition (max. 3 points)					
What is the structure and condition of the vegetation on the site?	0-1	<p>The vegetation structure and condition across the NGGA is generally poor and declining. EHP reported that:</p> <ul style="list-style-type: none"> Condition varies across the Growth Area and is mostly degraded The landscape is highly modified due to agricultural land use and is largely dominated by non-native species <p>No-Low is scored at 0.1 and Mod-High is scored at 0.5.</p>	0.1	0.5	0.75

QUALITY PARAMETER	SCORING RANGE	NOTES	IMPACT QUALITY SCORE		OFFSET START QUALITY SCORE
			No-low habitat	Mod-High habitat	
What is the diversity of relevant habitat species present (including both endemic and non-endemic)?	0-1	Similar to structure and condition, the diversity of relevant habitat species is affected by the declining trend in the environment within the NGGA. No-Low is scored at 0.1 and Mod-High is scored at 0.75.	0.1	0.75	0.75
What relevant habitat features are on the site?	0-1	Similar to the previous two parameters, the quality of relevant habitat features is affected by the declining trend in the environment within the NGGA. No-Low is scored at 0.25 and Mod-High is scored at 0.75.	0.25	0.75	0.75
Species stocking rate (max. 4 points)					
What is the presence of the species on the site (i.e. confirmed / modelled)?	N/A	This parameter is not used for scoring given that the species is present, and the parameter about density (see below) addresses the question of abundance.	N/A	N/A	N/A
What is the density of species known to utilise the site?	0-4	Scoring for density is based on the following: <ul style="list-style-type: none"> 0/4 = species not present 1/4 = 0-5 males per hectare 2/4 = >5-20 males per hectare 3/4 = >20-50 males per hectare 4/4 = >50 males per hectare Averaged results from the EHP surveys found less than 5 males per hectare. Both No-Low and Mod-High habitat are scored at 1.	1	1	2
What is the role of the site population in regards to the overall species population?	N/A	This parameter is not used for scoring given that the importance of the site to the overall species population is addressed under Site Context.	N/A	N/A	N/A
Total quality score for GSM out of 10 (rounded)			2	5	6