

This document was prepared as a background report to input into the preparation of the Growth Corridor Plans.

The report represents the view of the consultant only and not the Government.

Analysis of Opportunities & Priorities for Open Space Network Planning for Melbourne's Growth Areas

14th April 2011

For **Growth Areas Authority**
Tract Consultants

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1. Overview

1.1 Introduction

Memorable cities are known by their open spaces. In particular, by the spatial form and texture that open space impresses on urban areas and residential structure. Open spaces provide a backdrop and buffer to infrastructure and industrial areas; a venue for human experience and recreation; a movement corridor for the community and afford protection to areas of ecological significance. A city's open space system provides cultural identity and the public face of a community.

The outcome of the investigations of this study will prove seminal in shaping communities in the growth areas of Melbourne into the future. It is the quality of that open space that lies at the heart of the physical, social, cultural and economic fabric of a place. The benefits of a well structured and meaningful open space system are very real as reflected in the premiums attached to properties along the open space boundaries. Quality open spaces encourage quality developments and the financial benefits

that flow from that combination support a compelling case for well planned and designed open spaces that capitalise on and showcase an areas natural resources.

1.2 Scope of Work

This report is a technical background report for the Growth Area Authority on the provision for regional open space for each of the expanded growth areas. The analysis undertaken and the resultant open space system is to form a key input to the Growth Area Framework Plans (GAFPs) for Melbourne's new growth areas.

The open space investigation is for the 4 expanded growth areas of Melbourne including:

- South East – Casey and Cardinia
- North – Whittlesea, Hume and Mitchell
- Sunbury/Diggers Rest - Hume and Melton
- West – Melton and Wyndham

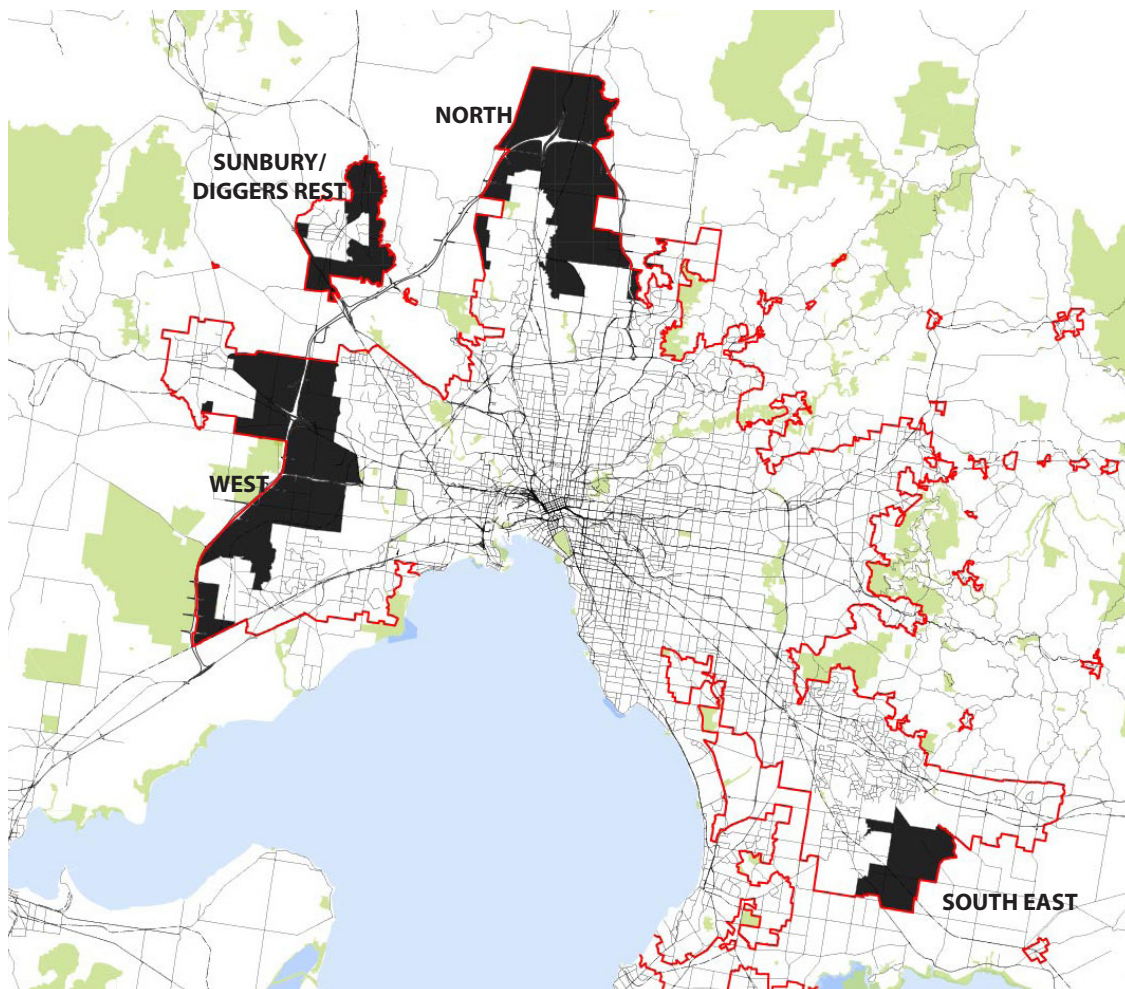


Figure 1 - Study Areas

1.3 Background Review

Background information, technical research and key documents have been reviewed and where appropriate incorporated into this study.

1.4 Approach

The regional open space system for each growth area is comprised of a mix of elements including:

- The broad scale **landscape** features and their **visual** qualities (ridgelines, prominent hills, key viewlines, landscaped buffer zones etc) which will, combined, provide the setting for future open space and urban areas
- The key **conservation** areas, multipurpose regional open spaces and regional scale active recreation areas which will provide future residents of the growth areas with opportunities to access and appreciate a variety of natural environments and recreation opportunities
- **Waterways** and other large areas of open land required primarily for other purposes (such as flood plains or wetlands required for water quality purposes), are potentially able to contribute to conservation, recreation and amenity outcomes for the growth area
- Areas of **cultural** significance including sites of aboriginal **heritage** and heritage pertaining to post European settlement
- **Corridors** of open space which connect larger areas of open space including areas along waterways, corridors required for regional biodiversity purposes, utility corridors where these are potentially able to contribute to open space outcomes

The holistic approach taken in this study addresses the combined functional value of potential open space elements and helps optimise uses and development outcomes to the benefit of the environment and future communities.

The analysis identifies the unique qualities of the four areas under investigation and the resultant open space system is responsive to the individual character of each growth area.

1.5 Overarching Principles

In general the principles for open space provision are set to achieve the following objectives and outcomes:

- Provide for equity of access
- Create equitable distribution of open space and types of open space across the growth areas
- Ensure diversity of provision
- Recognise and allow for a multitude of uses and aspirations
- Ensure appropriate linkages/networks with existing open space systems
- Ensure uses proposed are site responsive
- Conserve and protect the natural and cultural environment
- Ensure that maintenance and future management is considered in allocating appropriate uses and functions
- Ensure flexibility to allow for long term development and change over time
- Respond to and integrate with the physical features, topography and visual character
- Accommodate regional active and passive recreation uses and regional open space networks that respect, reinforce and link with existing uses and open space networks, to form an integrated system
- Align with government policies

The Principles have guided decisions and recommendations for regional open space system design within the new growth areas. Principles are underpinned by the premise that open space should have due regard to the environmental and cultural heritage values embedded in the landscape.

Overarching principles have been grouped as follows:

Equity of Access

Ensure Diversity of Provision. Ensure that open spaces with a wide range of characteristics are provided and that in making this provision, conservation and heritage values are retained and where possible enhanced.

Recreation

- Enhance recreation and tourism opportunities
- Locate complimentary uses in adjacent space. For example, consideration has been given to the collocation of recreation facilities alongside

schools, creek corridors, trail networks, areas of high biodiversity value and natural wetlands or floodplains.

- Deliver functioning open spaces through consideration of interfaces and complimentary adjoining uses
- Optimise the function of recreational active and passive open space by allowing for multiple uses of space
- Integrate with the adjoining open space network
- Provide adequate land for future regional active recreation facilities, maximising land by considering multiple uses and functions
- Achieve a balance between active and passive recreation

Connectivity

- Create strong physical linkages that integrate with urban centres and major destinations (open space and community)
- Create strong linkages to open space in adjoining precincts
- Create strong visual linkages by managing views from key transport corridors and entrance gateways
- Utilise off-road, service corridors and easements for multipurpose connections – bicycle and pedestrian
- Ensure that existing pedestrian and bicycle trail networks are connected and enhanced. Additional provision is made to effectively meet recreation and commuter needs

Landscape Values -‘Sense of Place’ and Regional Character

- Contribute to and protect the individual identity of each of the growth areas
- Influence the character, form and function of the future neighbourhoods
- Consideration of visual buffers in the open space network to uses with adverse amenity
- Consider the protection of cultural and historic landscapes
- Enhance major transport corridors into Melbourne; protect and enhance valuable city gateways & iconic features (green gateways and urban breaks)
- Manage viewing corridors and vistas to key features with the intention of enhancing ‘sense of place’ and regional character.

- Identify key viewing points such as major road corridors e.g. the proposed Outer Metropolitan/ E6 Transport Corridor
- Features contributing to sense of place might include but not restricted to:-
- Topography – rivers, creeks, major waterbodies, hilltops, valleys
- Natural environments such as grasslands and woodlands
- Heritage sites or heritage themes
- Regional Parks

Conservation

- Protect areas of high biodiversity value in the growth areas, specifically:
- Areas protected because of their state or federal biodiversity nature
- National heritage register sites
- Major waterways and adjoining environments

Sustainability

- Plan and design for efficiency of use - collocate complimentary functions to promote multiple use of land
- Site responsive design - ensure that uses of open spaces are appropriate to the nature, sustainable capacity and characteristics of the site
- Consider community gardens - through planning and design
- Climate change - a flexible and ‘long life loose fit’ approach to planning and design

People

- Integrate the aspirations for the open space network with the practical implications for land owners
- Reflect community needs. Open space provision and use will be guided and influenced by, however, not necessarily limited to information from local communities and municipalities
- Encourage the future residents to value the open spaces through planning and design
- Opportunities for partnerships in the provision and management of open space are considered integral to the planning process
- Opportunities for partnerships in the provision, delivery and management of open space are considered integral to the planning process.

1.6 Classification for the Open Space System

The focus of this study is on regional open space, however, in some instances it includes recommendations at a sub-regional and local level. Typically sub-regional and local open spaces and networks will be determined as part of the precinct structure planning process.

Generally regional open space is can be classified as follows:

1.6.1 The Regional System - Characteristics and Values

Regional level open spaces typically draw from a broad catchment. They cater to the needs the metropolitan population, whilst also attracting interstate and international tourists. Visitors are drawn to these open spaces because of their large size; mix of uses; specialisation of use; standard of provision; environmental, heritage, amenity or other special significance. (1)

Typical components of the regional open space system are:

- Regional and metropolitan parks;
- Conservation reserves;
- Botanic gardens;
- State and national competition level sports grounds;
- Major waterways; and
- Long distance linear trails (the Metropolitan Trail Network).

Characteristics of regional open space sites include:

- Catering for large social groups, visitors stay longer
- Often large in scale, they complement and provide a break from urban developed space
- Contain areas of regional, state or internationally significant environmental or cultural values
- Cater for diversity of recreation or tourism opportunities
- Linked by regional shared-use trails. (2)

For the purposes of this study, regional sites both existing and proposed, active or passive, have been referred to as 'major nodes'. The regional scale linear trail is referred to as the 'regional trail network'.

Where appropriate, smaller or sub-regional open spaces have also been nominated and are referred to as minor nodes. Sub-regional scale linear trails or links are referred to as the 'strategic links', these typically feed into regional trails from sub-regional or local catchments. Recommendations at this level are intended to guide the PSP planning process, and build on regional open space system planning.

Sub-regional open spaces attract visitors from a smaller catchment, are smaller in size and cater for more specialised uses than regional open spaces. In comparison to local level open space, visitors stay longer, however visits are less frequent. Typical examples of sub-regional open space include sports facilities, hill top parks, large playgrounds and large informal parks that serve a sub-regional role. (3) (4)

1.6.2 Open Space Categories

Open space categories used on the open space system plans for this study include:

- Regional Active Open Space
- Regional Passive Open Space, which includes:
 - Landscape & Visual Amenity
 - Conservation, Habitat & Heritage
 - Waterways
- Linear and Linkages, which includes:
 - Linear Open Space
 - Key Links

The primary function of a site has been used in applying classifications to open spaces within the system. In practice open spaces will typically have a multitude of overlapping roles and functions. For example, some passive open spaces also have a linear and linkage function and a landscape amenity role. It is acknowledged that whilst this approach most probably understates the complexity and quantity of some open space categories, it was adopted in order to study open space as a complete regional scale system. Subcategories serve to assign value, determine provision and identify opportunities for future development. (5)

(1) Tract Consultants Pty Ltd and HM Leisure Planning (August 2001). City of Greater Geelong Study of Open Space Networks.

(2) Parks Victoria, (2002). Linking People and Spaces: A Strategy for Melbourne's Open Space Network.

(3) Tract Consultants Pty Ltd and HM Leisure Planning (August 2001). City of Greater Geelong Study of Open Space Networks.

(4) Parks Victoria, (2002). Linking People and Spaces: A Strategy for Melbourne's Open Space Network.

(5) Tract Consultants Pty Ltd and HM Leisure Planning (August 2001). City of Greater Geelong Study of Open Space Networks.

The following definitions expand on these classifications:

1.6.3 Active Open Space

The primary purpose of the active open space category is to identify land provision for participation in regional level, structured sporting activity. Active open spaces include sports grounds and the associated facilities for a wide range of team and individual competitions, which are not otherwise provided for in local communities.

Active open spaces are typically linked to other regional level open spaces via the regional trail network. They should also be designed and sited so as to contribute to the passive recreation and environmental values of the area. They can be situated on either publicly or privately owned land. (6)

Regional active open spaces could range from 10ha to more than 50ha. As a general guide 30ha (typically indicated on the open space system plans) will be required to accommodate:

- Active outdoor playing fields (3 full sized AFL Ovals and 3 soccer pitches)
- A typical council leisure centre (including an aquatics component)
- A 10 court tennis facility
- Perimeter pedestrian/bicycle trail and a higher order playground (7)

Dependant on ultimate size and demand, active open spaces may also include other outdoor courts, rowing courses, outdoor pools, lawn bowls, athletics tracks, baseball fields, hockey fields, etc. Support amenities may include halls and sports stadia, club rooms, management buildings, and toilet /change facilities, carparks, playgrounds, BBQ's and informal gardens. (8)

This study identifies opportunities for regional active open spaces of appropriate quality and quantity are provided within the new growth areas, exclusive of provision in adjoining areas. Spatial arrangement and physically suitability of sites is determined using desktop analysis of existing and proposed regional active open spaces (in adjoining areas) in conjunction with broad site analysis.

These opportunities for the siting of regional active open space are identified on the open space system plans for each growth area. Detailed recreation and leisure studies are required to determine precise provision of active recreation and social infrastructure. Large indoor sports facilities and outdoor sports facilities and at schools may also be included; however they are excluded from this study.

Indicative estimates for the provision of regional active open space are outlined below (based on a range of population estimates inside the growth areas only). It should be noted that regional active open space accounts for approximately 25% of all proposed active open space. The balance would be provided at the PSP level as required.

Growth Area	Active Open Space Area (Regional Level)
South East - Casey	40-55 Ha
North - Whittlesea , Hume and Mitchell	90-120 Ha
Sunbury	30-45 Ha
West - Melton and Wyndham	110-150 Ha

Notes

- Active Open Space assumes regional level of active open space only.
- Determining provision of local active open space is outside the scope of this study.
- Active Open Space Areas are based on advice from GAA and Sport and Recreation Victoria. It assumes 0.5ha of regional active open space / 1000 people. This is based SRV figure which assumes 2ha of active open space / 1000 people. Given GAA assumes 1.5ha of active open space / 1000 people will be provided at PSP level, 0.5ha is required at regional level.
- Population Estimates are based on GAA data and assume Population = Residential Land x 65% x 15 Dwellings / HA x 2.8 people / Dwelling.

(6) Tract Consultants Pty Ltd and HM Leisure Planning (August 2001). City of Greater Geelong Study of Open Space Networks.

(7) Australian Social & Recreation Research Pty Ltd (April 2008). Planning for Community Infrastructure in Growth Areas.

(8) Tract Consultants Pty Ltd and HM Leisure Planning (August 2001). City of Greater Geelong Study of Open Space Networks.

1.6.4 Passive Open Space

Passive open space sites are those with the primary purpose of informal, non-competitive recreation and community or cultural events. Activities undertaken can include walking, exercising the dog, cycling, jogging, picnicking, socialising, sightseeing, relaxing, reading, supervising children's and adult play, studying birds, plants or animals to name a few. (9)

Passive open spaces provide many wider benefits; such as a contribution to the amenity and sense of place, protection of environmental and ecological values and educational benefits. They provide opportunities for social interaction, tourism, relaxation and nature appreciation and places for people to connect with the environment.

Regional passive open spaces are typically higher order open space reserves managed by government agencies such as, Parks Victoria, Department of Sustainability and Environment, and Melbourne Water. Sites typically include Parks Victoria managed 'regional' or 'metropolitan' parks, botanic gardens, linear open space corridors along major waterways, conservation bush land and wetlands.

Indoor recreation facilities and support amenities such as halls, tourism destinations, clubs, toilets etc may also be provided in association with the outdoor use areas. (10)

Passive open space use can also by default cover a range of situations where future land use changes are envisaged and a site requires reservation and protection ahead of some other future use.

Appropriate planning scheme zoning of open space is integral to its long term security, Public Park and Recreation Zone or Conservation and Recreation Zone are the most applicable zoning for parkland purposes.

As outlined in the approach (1.4) passive regional open spaces can comprise a mix of elements incorporating landscape and visual qualities, conservation values, cultural and heritage significance. Sites with the primary purpose of providing for waterway health, drainage and flood protection, will also offer opportunities for passive open space uses.

Passive open space can thus comprise one or more of the following subcategories based on qualities of the spaces themselves in addition to the passive activities on offer:

- Landscape and Visual Amenity,
- Conservation, Habitat and Heritage, or
- Waterway.

Landscape and Visual Amenity: Typical examples include enhancement of city gateways & iconic features, preservation of viewing corridors and vistas to key features, rural fringe areas protected to provide scenic views and ridge lines which provide a backdrop to urban land uses. These areas may or may not be suitable for urban development or recreation facilities.

Conservation, Habitat and Heritage: Typical examples include sites of cultural and heritage significance, areas of significant natural vegetation, wildlife habitat areas, grassland, wetlands, open and running water, nature reserves and land set aside for the purpose of wildlife conservation and biodiversity, and scientific features such as geological formations.

Where a large degree of human visitation is designed into a conservation site, the area is included in the passive open space category. Annotations have been made on the open space plans where human visitation is restricted, in keeping with conservation objectives.

Waterways: Major waterways and river corridors are a significant component of the overall open space system, and typically carry a multi-use role. These linear corridors support a variety of functions including protection of natural values and habitat corridors, trail networks, recreational opportunities and water based activity. Water bodies include creeks, rivers, lakes, wetlands and the land areas associated with them (e.g. floodplains)

Typically major waterways and all waterways identified as having a floodway functions have been included for the full corridor width as nominated by Melbourne Water. In some instances alternate corridor widths are nominated, based on high conservation or landscape amenity values. For example Merri Creek includes growling grass frog habitat, Jackson Creek includes steep land /deeply incised river banks, etc.

Increasing expansion of integrated water management practices to reclaim /recycle /reuse storm flows and waste flows offers further opportunities in open space systems to capitalize on the additional landscape and habitat values.

(9) Parks Victoria, (2002). Linking People and Spaces: A Strategy for Melbourne's Open Space Network.

(10) Tract Consultants Pty Ltd and HM Leisure Planning (August 2001). City of Greater Geelong Study of Open Space Networks.

1.6.5 Linear and Linkages

The primary purpose of the linear and linkage category is to provide connectivity and opportunity for leisure activities such as walking, cycling, skating and horse riding.

Linear open spaces and links are typically nominated for human use but may also serve as wildlife habitat and movement corridors.

The focus of the linear and linkage open space category is the provision of regional scale off-road open space trail networks and linkages or the 'Regional Trail Network'.

The Parks Victoria Metropolitan Trail Network provided the initial basis for design and as such has been incorporated into the proposed Regional Trail Network on the Open Space System Plans.

Where appropriate, sub-regional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process as they reinforce the regional open space system planning and design intent.

This study has also examined closing key gaps in existing regional trails outside the growth area and creating extensions in new growth areas, forging links to destinations and to other networks such as the Principal Bicycle Network (PBN). Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.

Trails are mainly located along waterways, easements and traverse parklands. Alignments described and mapped are indicative only – the exact alignment of the proposed trails will be determined during detailed planning or at Precinct Structure Planning level (PSP).

1.6.6 Investigation Open Space (Possible Future Use)

Investigation spaces are sites with potential future regional landscape value or those that have potential to contribute to regional open space system once current uses expire. It is recommended that investigation sites be reserved to ensure adequate future provision in response to changing demographics and needs. The future designation of these sites as open space will be subject future investigation into issues of biodiversity, archaeology, aboriginal and post European contact heritage, soil stability and potential contamination. Investigation open spaces typically include areas of mining activity, extractive industry buffers and airport noise impact zones. (11)

1.7 Base Data and Limitations

Base data includes two draft sub-regional strategies for the growling grass frog and the southern brown bandicoot by the Department of Sustainability & Environment (Digital Data Supplied by the GAA January 2011).

Additional understanding of flora and fauna value is required to fully understand location of open space and associated facilities. Mapped conservation areas (on the base plans) are based on discussions with Department of Sustainability & Environment and the Growth Areas Authority.

Contours were obtained from LIDAR Survey 0.5m & GIS 10m contours. Tract prepared a topographic model and slope analysis from LIDAR (data modified to simplify the file inside the growth area - adjoining areas created using 10m contour intervals).

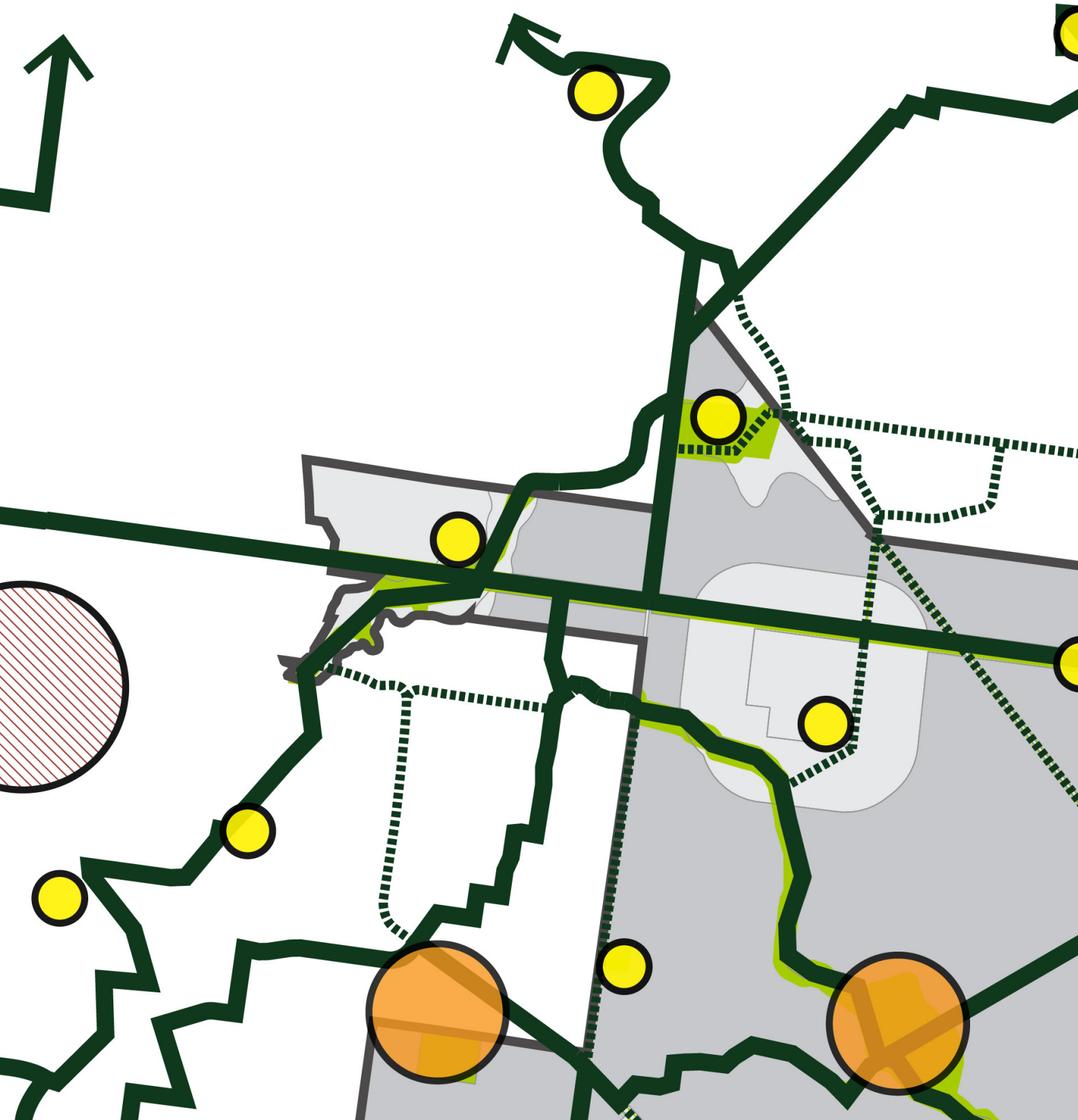
Preliminary drainage and waterway information was supplied by Melbourne Water. This data is being refined and reviewed as more investigation is undertaken, however, it still forms a useful starting point for this study.

The following pages represent an overview of the final resolved open space system framework for each of the four growth areas.

(12) Tract Consultants Pty Ltd and HM Leisure Planning (August 2001). City of Greater Geelong Study of Open Space Networks.

2.0

SOUTH EAST Casey and Cardinia



2.1 Summary

The flat undulating character of Casey, the strong north-west/south-east drainage pattern that traverses the region and the regular road grid combine to create convenient urban precincts within an accessible and integrated open space network.

The Parks Victoria Regional Park investigation area is conveniently located in the north-east of the new growth area on Cardinia Creek. This park will serve the existing and future Casey and Cardinia populations as well as the needs of visitors from further afield. Further investigation is being undertaken by DSE to finalise the park boundary.

The proposed Melbourne Water retarding basin to the south-east offers passive and nature-based recreation opportunities, in particular education and recreation associated with wetlands and wildlife. The Melbourne Water retarding basin and the Parks Victoria Regional Park will be connected via the Regional Trail Network along Cardinia Creek, also via a strategic link (delivered through precinct structure planning) through the growth area.

A number of opportunities for the siting of major active open space (sporting facilities), generally 20 to 40 hectares in size have been identified as suitable to serve the area. In addition Casey City Council proposes to expand Casey Fields to the south. Further investigation and detailed recreation studies are required to establish which of the sites identified will ultimately best serve the community. Sites that are potentially suitable for development of active open space are indicated on the plan.

The centrally located site adjacent to Clyde Creek provides an opportunity for the provision of parkland and active open space. This site has been selected because it is centrally located within the region; it is adjacent to the Clyde Creek and can be collocated with the adjacent Growling Grass Frog habitat. There is some uncertainty as to the ultimate suitability of this site as active open space facilities or Growling Grass Frog habitat. In this event an alternate site has been nominated between the Melbourne Water retarding basin and the urban growth boundary.

Cardinia Creek is the major waterway within this region and is identified as providing an important interface between the communities of Casey and Cardinia. Cardinia Creek defines the north eastern edge of the area, bought into the urban growth boundary (UGB) in 2010, and has been given priority within the regional open space system. The Metropolitan Trail Network is sited along the Cardinia Creek corridor and a network of other trails link the community via this important trail.

To a lesser extent, Clyde Creek will also create an important edge to the urban precincts, within Casey and Cardinia. We recommend this corridor should incorporate a trail as part of the Metropolitan Trail Network. Regular crossing points will ensure that this trail becomes a focal point for communities.

In general, planning for other drainage channels and waterways that have not been identified in this study are to be included as part of the PSP stage of planning. Their widths will meet Melbourne Water's hydraulic, environmental and waterway health recommendations. It is envisaged that these lesser waterways, embedded in the urban fabric will also service an important role. Additional width is not generally required within the regional trail network.

This study shows an indicative alignment for the southern brown bandicoot corridor based on the draft sub-regional strategy for the southern brown bandicoot (Supplied October 2010). The sub-regional strategy recommends that public access to the corridor should be restricted. It is recommended that a trail runs adjacent to the corridor and provides for regular trail crossing points.

2.2 Regional Character

Landscape Character

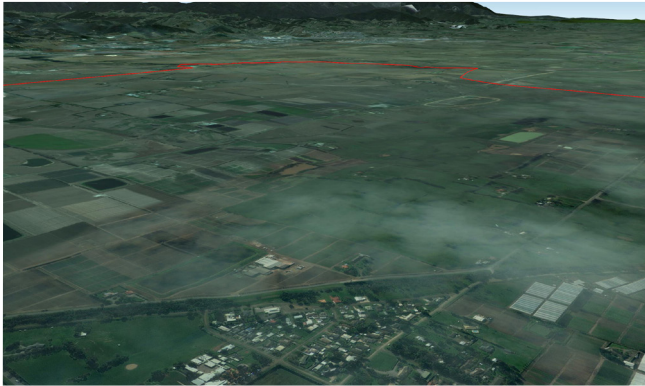
"The South - Eastern Growth Area occupies the undulating to flat rural area between Berwick Springs, Cranbourne urban area, Cardinia Creek and the South Gippsland Highway

The study area occupies the southern lowlands and is part of the Western Port catchment. The land is undulating - mainly in the northern and western sections (closer to Princess Highway and Cranbourne) and graduates to flat land closer to Western port."

Pg. 6 Background Technical Report 4: Landscape Values



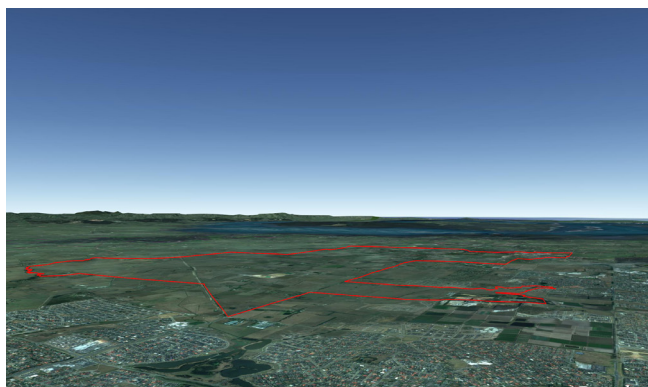
Old South Gippsland NW/SE rail formation



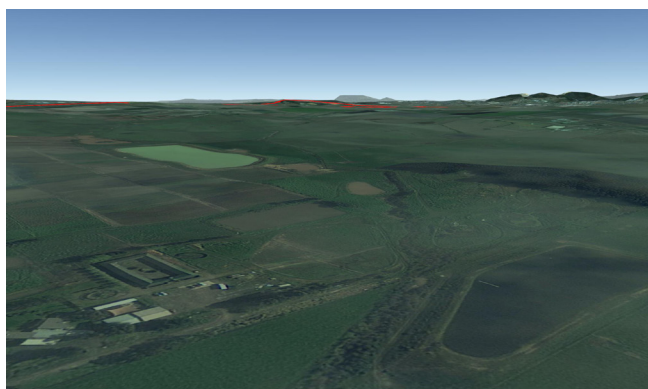
Old South Gippsland NW/SE rail formation



South Gippsland Hwy - Regional Gateway



View to Dandenongs



Clyde Creek



Cardinia Creek

Key Character Elements

Key elements define the landscape and give character to the region. Topography, drainage patterns and waterways, views and vistas are natural assets which combined create the 'genius loci' of place. For Casey and Cardinia the key character elements include:

- Cardinia Creek
- Clyde Creek
- north-west/south-east natural drainage pattern & wetland system
- Wetlands to the north and the proposed retarding basing in the south-east
- Visual catchments include the Great Dividing Range and foothills of the Dandenong Ranges to the north
- Distinct north-south/east-west grid of main roads and property boundaries
- Old South Gippsland north-west/south-east rail formation
- South Gippsland Highway regional gateway
- Broad flat plains
- Wooded high point (Thompsons Road)
- Significant southern brown bandicoot and growling grass frog habitat
- Large areas of industrial and extractive industries
- Thompsons Road major freight route (proposed)
- Views to the higher areas of Cranbourne
- Adjoins major development areas on two sides
- Major service easements (including east-west transmission line)
- Scattered native bush land
- Waterway and riparian vegetation
- Equestrian
- Adjoins rural/green wedge on two sides
- Association with coastal areas
- Close proximity to the Royal Botanic Gardens, Cranbourne
- Various heritage elements, particularly within waterway corridors (eg. significant aboriginal heritage elements)

Visual Analysis

This study has identified regional scale views, hill tops, ridgelines and gateways, in order to guide the future integration of open space design and companion development. Open space areas of significant regional landscape character and/or amenity have also been identified for reservation and protection ahead of use for other purposes. These areas are included in the open space system.

The open space system visual intent aims to guide the detailed design of an open space system that protects access to views that define the regional character and enhance amenity.

Recommendations typically include buffer areas between differing land use zones, rural fringe areas protected to provide scenic views, ridge lines which provide a backdrop to urban land uses, views to and from hills tops and key gateway experiences and where major access routes are directly tied to landscape experience.



Typical landscape along Manks Road

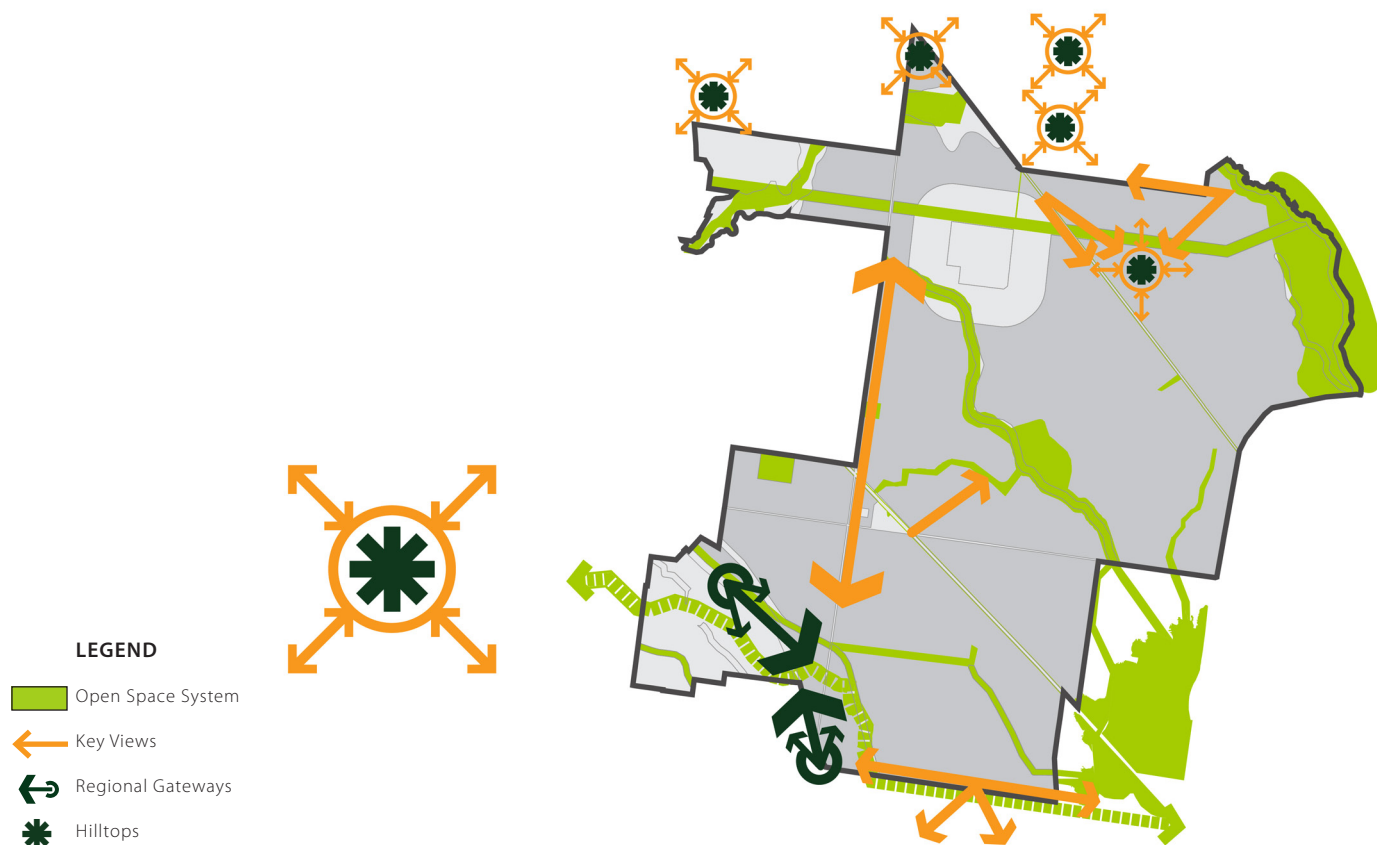
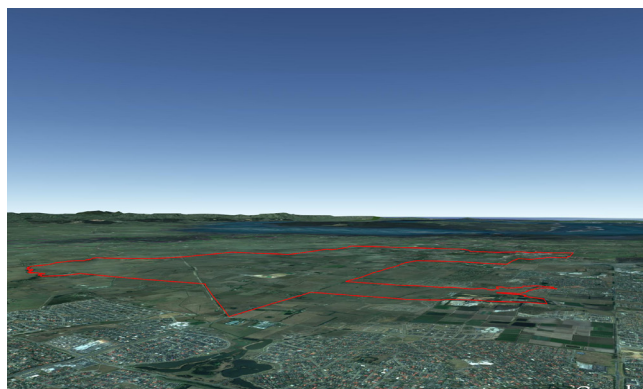


Figure 2: South East (Casey and Cardinia) Visual Intent Diagram

Slope

Slope has been taken into account in assessing boundaries for the allocation of open space. Where steep slopes are collocated or adjacent to specific features of regional significance these areas have been included in the open space system. Slopes of more than 10% are considered difficult for development.

* Refer to 2010 GAA Draft Engineering Design and Construction Manual for 1:10 encumbered land consideration.



Gentle Slopes to Westernport

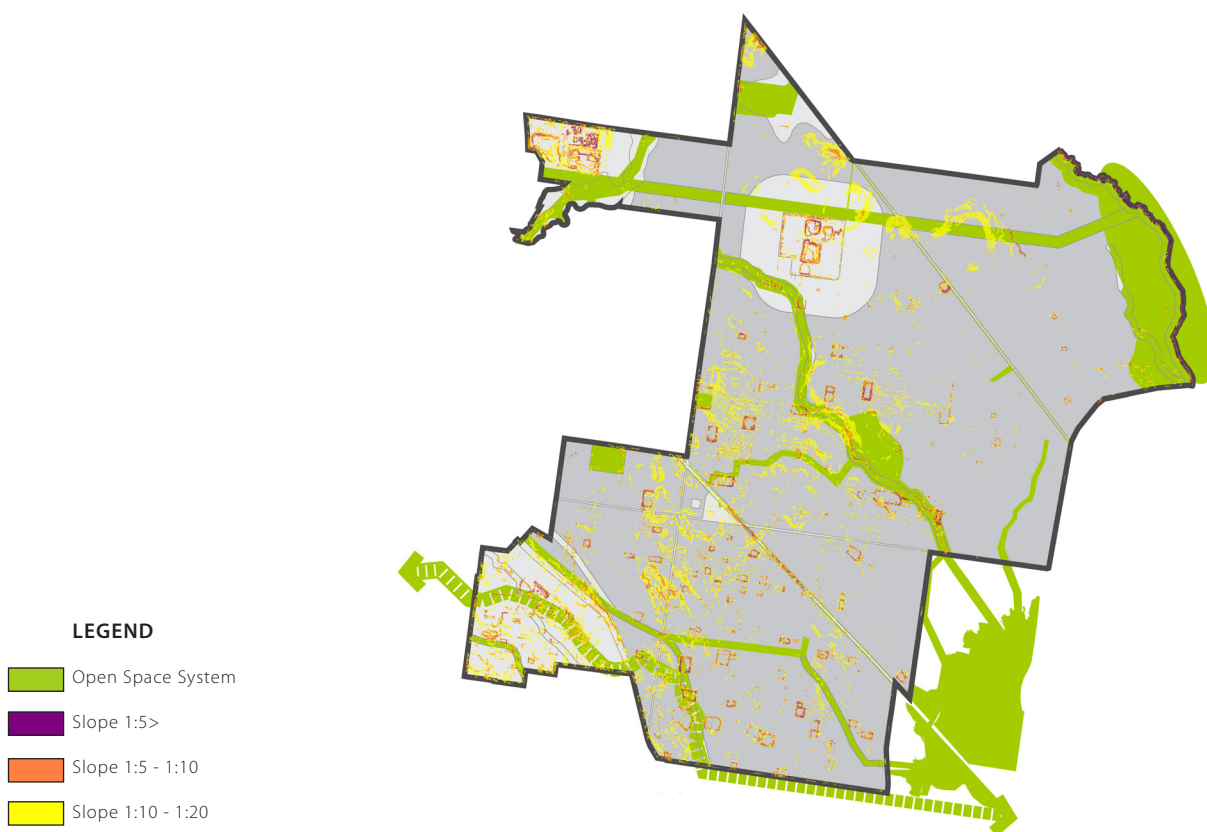


Figure 3: South East (Casey and Cardinia) Slope Analysis Diagram

DISCLAIMER: Slope analysis includes number of large dams which future investigation may conclude to be developable

2.3 Design Response

Major Nodes and Trails

The proposed regional trail network is designed to create a network of safe and convenient (off-road) pedestrian and cycle connections at a regional level. It aims to link existing and proposed open space nodes and trail networks, by closing key gaps in the Metropolitan Trail Network and creating extensions in new growth areas. Also forging links to major destinations and the other networks such as the Principal Bicycle Network (PBN).

Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the on regional open space system planning and design intent.

Major open space nodes are typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.

Minor open space nodes are typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.

Cardinia Creek and Clyde Creek are the main spines of the open space system. Key links in the south east regional trail network include a new connection from the Royal Botanic Gardens Cranbourne to the regional park investigation area on Cardinia Creek, as well as the completion of the Cardinia Creek trail; from the growth area, north to Cardinia Creek Reservoir (and beyond), west to Port Phillip Bay and south to Western Port.

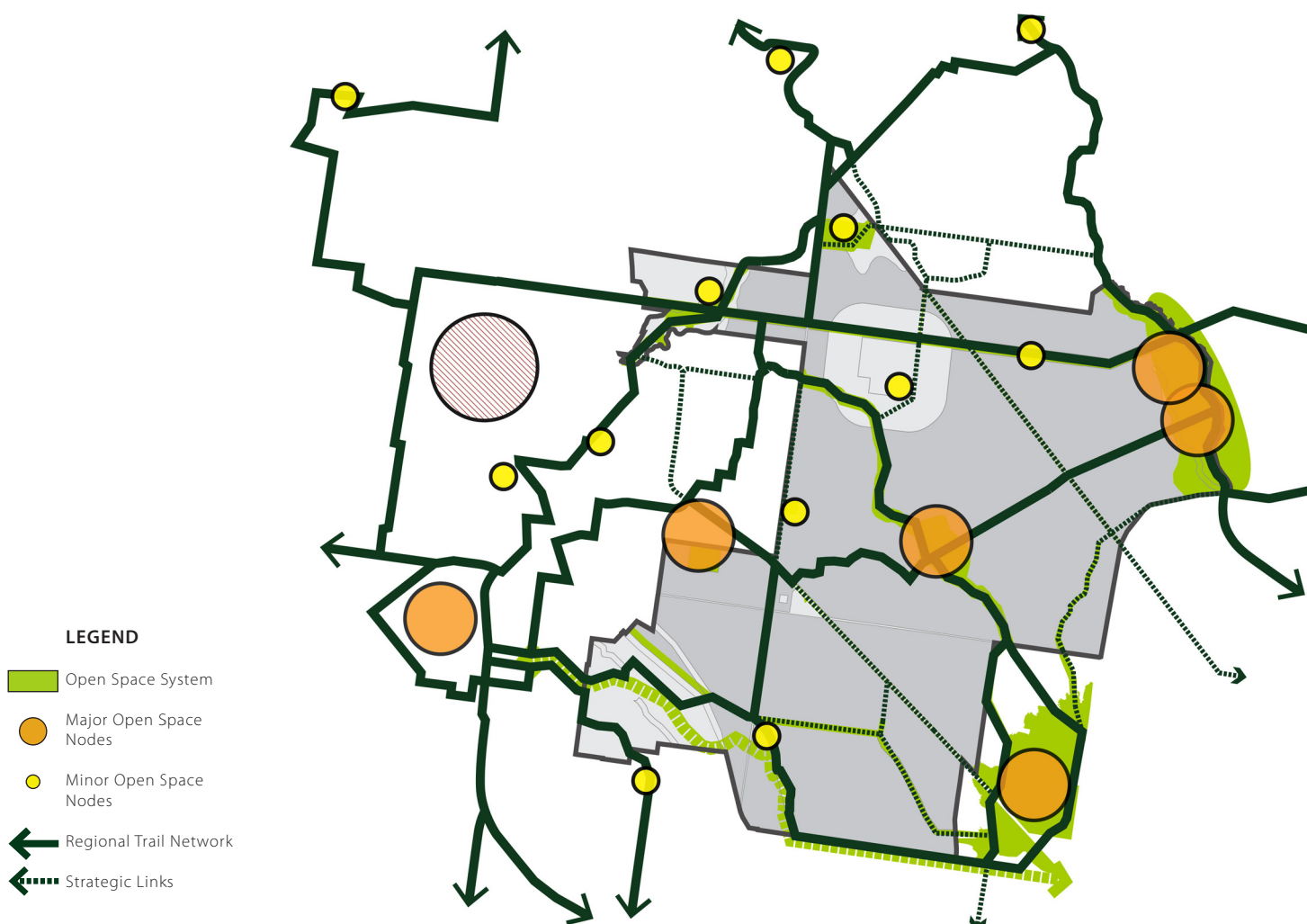


Figure 4: South East (Casey and Cardinia) Design Response, Regional Trail And Open Space Nodes Diagram



Casey Fields















Old South Gippsland rail formation





East West Powerline Easement

SOUTH EAST Casey & Cardinia - DESIGN RESPONSE-REGIONAL TRAIL AND OPEN SPACE NODES

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Future Urban Areas
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Waterbody
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Arterial Road
-  Major Road
-  Railway Line
-  Railway Station
-  **Proposed Regional Open Space**
Parks Victoria
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES

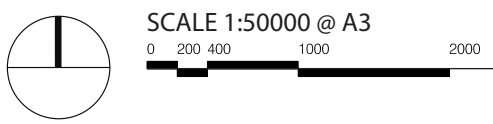
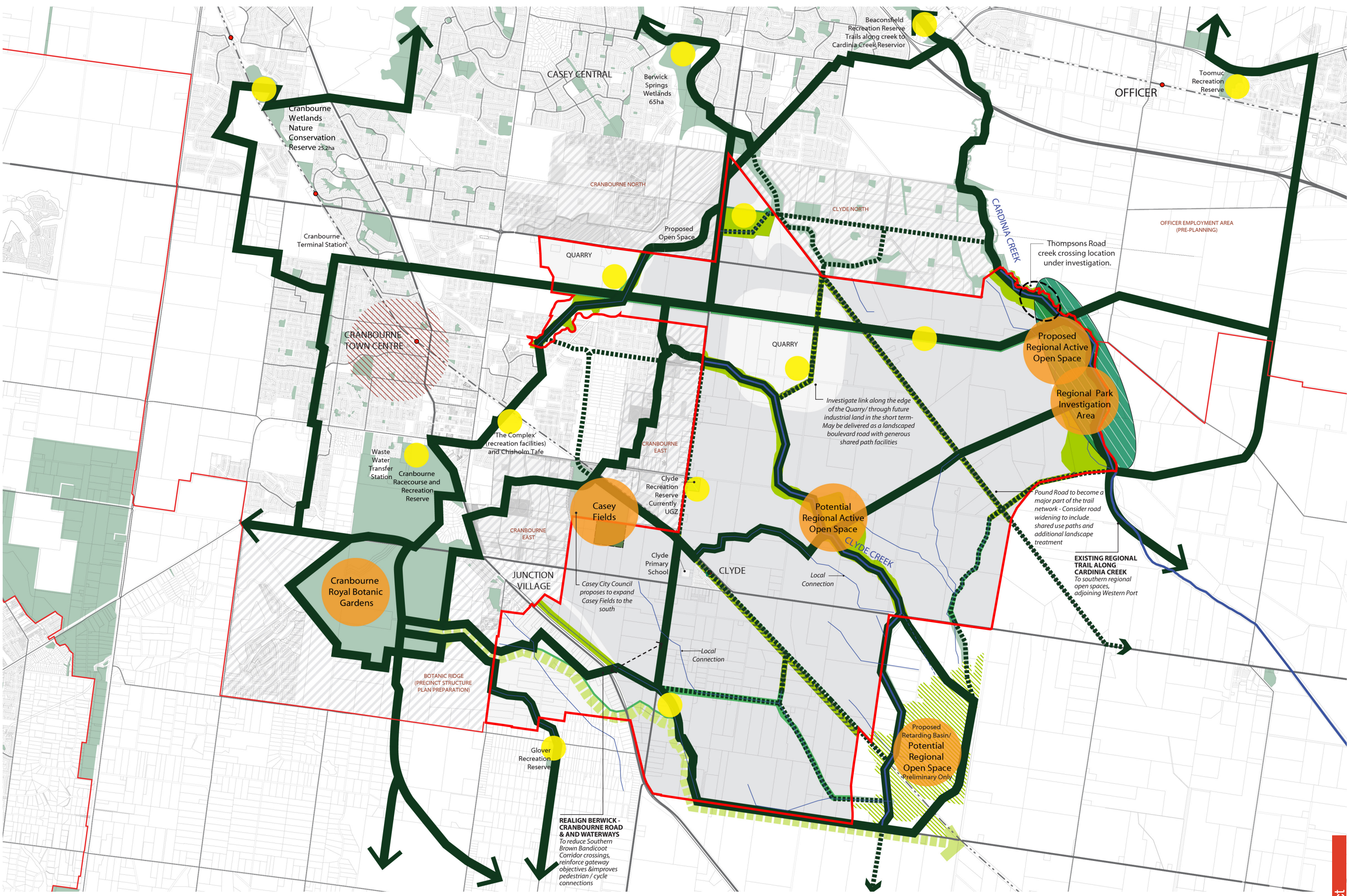
-  **PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER)**
Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management
-  **PROPOSED LINEAR OPEN SPACE**
-  **OPEN SPACE INVESTIGATION ZONE**
Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.
-  **REGIONAL TRAIL NETWORK**
The focus of the regional trail network is the provision of regional scale off road open space trail networks and linkages.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.
-  **STRATEGIC LINK (LOCAL / PSP LEVEL)**
Strategic links are subregional or local level links. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.
-  **NODE - OTHER**
Typically a destination such as a Neighbourhood Activity Centre, a Major Transport Hub or an existing or proposed school.
-  **MAJOR OPEN SPACE NODE**
Typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.
-  **MINOR OPEN SPACE NODE**
Typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.
-  **Southern Brown Bandicoot (*E)**
Indicative preferred alignment - no access permitted based on current draft sub-regional strategy

SOURCE:

- * A - Melbourne Water, March 2011
- * E - DRAFT Southern Brown Bandicoot Sub-Regional Study (Digital Data Supplied by the Department of Sustainability & Environment _Oct. 2010)















N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



SOUTH EAST – Casey and Cardinia DESIGN RESPONSE - REGIONAL TRAIL AND OPEN SPACE NODES

SOUTH EAST Casey & Cardinia - OPEN SPACE SYSTEM PLAN

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Future Urban Areas
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Waterbody
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Southern Brown Bandicoot Corridor (*E)
Indicative preferred alignment - no access permitted based on current draft sub-regional strategy.
-  Growling Grass Frog (Category 1- Strategically Important Habitat and Linkages)(*C)
-  Arterial Road
-  Major Road
-  Railway Line
-  Railway Station
-  **Proposed Regional Open Space**
Parks Victoria
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

SOURCE:

- * A - Melbourne Water, March 2011
- * C - Ecology Partners Growling Grass Frog Survey - Urban Growth Boundary Extensions 24/12/2010 (Digital Data Supplied by the GAA_Jan. 2011)
- * E - DRAFT Southern Brown Bandicoot Sub-Regional Study (Digital Data Supplied by the Department of Sustainability & Environment _Oct. 2010)

N.B.

This study identifies opportunities for the provision of regional active open spaces/facilities within the new growth areas, exclusive of provision in adjoining areas.

All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES



PROPOSED REGIONAL ACTIVE OPEN SPACE

The primary purpose of the active open space category is to identify land provision for participation in regional level, structured sporting activity. Active open spaces include sports grounds and the associated facilities for a wide range of team and individual competitions, which are not otherwise provided for in local communities.

This category identifies opportunities for the siting of regional active open space. Recommendations for spatial arrangement are based on desktop analysis of known regional active open spaces in adjoining areas, and a broad site constraints analysis, to determine physical suitability.

High level estimates for the provision of active open space were based on rough population estimates, **inside the growth areas only**. Detailed recreation and leisure studies are required to determine precise provision of active recreation and social infrastructure.

Nominated active open spaces could range from 10ha to more than 50ha. As a general guide 30ha (typically indicated on plan) will be required to accommodate: Active outdoor playing fields (3 full sized AFL ovals and 3 soccer pitches); A typical council leisure centre (including an aquatics component); A 10 court tennis facility; perimeter pedestrian/bicycle trail & A higher order playground.



PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER) Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management

Passive open space sites are those with the primary purpose of informal, noncompetitive recreation and community or cultural events. Also, sites with the primary purpose of providing for waterway health, drainage and flood protection, which may also offer opportunities for passive and sometimes active open space uses. Passive open spaces provide many wider benefits; such as a contribution to the amenity and sense of place, protection of environmental and ecological values and educational benefits.

Passive open spaces include opportunities for social interaction, tourism, relaxation and nature appreciation. Activities undertaken include walking/walking the dog, cycling, jogging, picnicking, socialising, sightseeing, relaxing, reading, children's and adult play, and studying birds, plants or animals.

LINEAR AND LINKAGES



Proposed Linear Open Space Open space connections



Key Strategic Links Desired alignment for pedestrian and cyclist shared use zone, such as additional road reserve or linear open space connection.

The primary purpose of the linear and linkage category is to provide connectivity and opportunity for leisure activities such as walking, cycling, skating and horse riding. Linear open spaces and links are typically nominated for human use but may also serve as wildlife habitat and movement corridors.

The focus of the linear and linkage open space category is the provision of regional scale off road open space trail networks and linkages or the 'regional trail network'. Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network on the open space system plans. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.

Trails are mainly located along waterways, easements and traverse parklands. Alignments described and mapped are indicative only – the exact alignment of the proposed trails will be determined during detailed planning or at Precinct Structure Planning level (PSP).



OPEN SPACE INVESTIGATION ZONE

Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.



REGIONAL OPEN SPACE TRAIL NETWORK - Outside the Growth Area Boundary

May include on and off road. Interpreted from Parks Victoria Metropolitan Trail Network Data, Cadastral Information and Melways.

Open Space Nodes

Major Active Open Space Nodes

- Existing
- Proposed

Major Passive Open Space Nodes

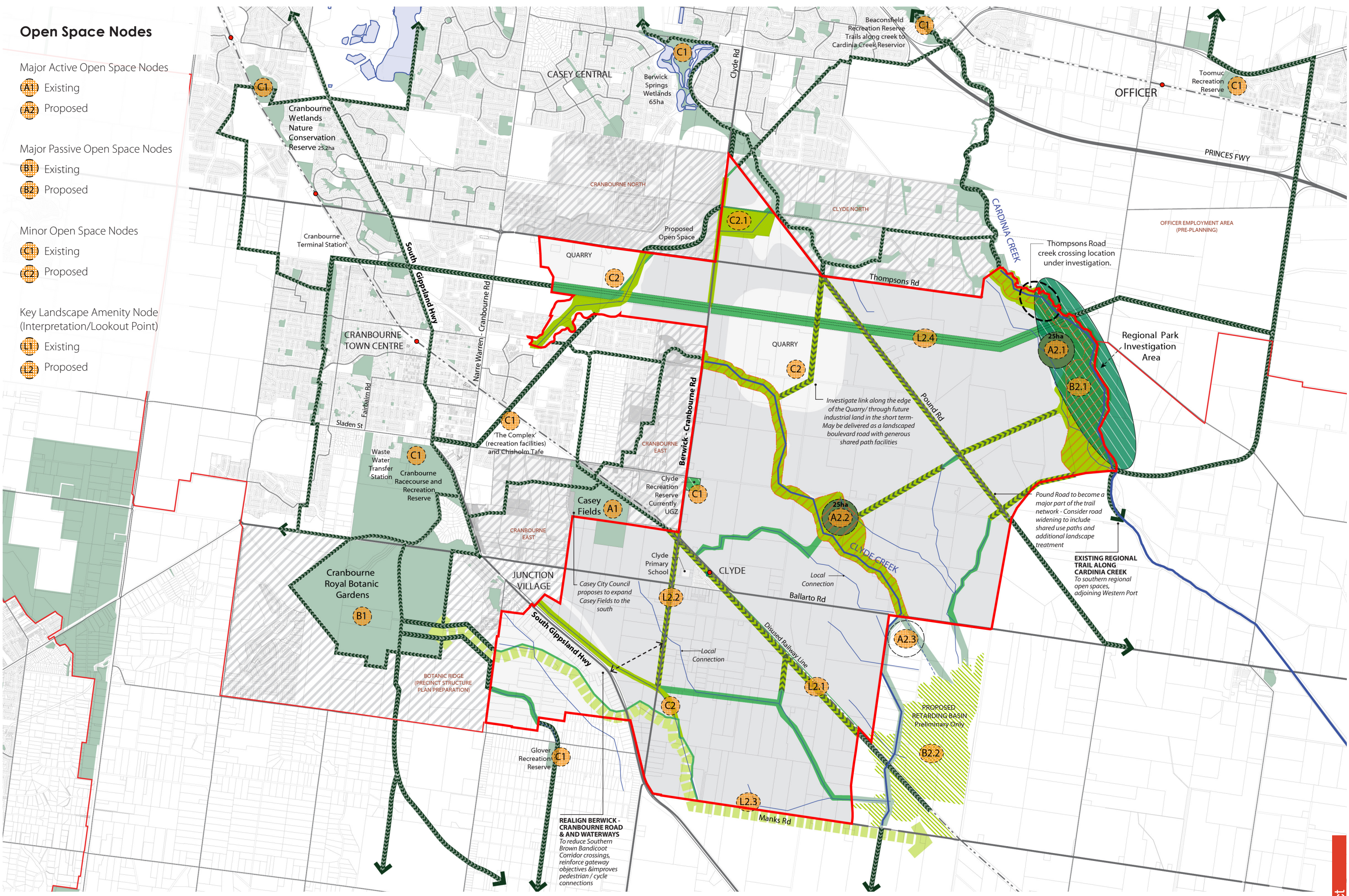
- Existing
- Proposed

Minor Open Space Nodes

- Existing
- Proposed

Key Landscape Amenity Node
(Interpretation/Lookout Point)

- Existing
- Proposed



SOUTH EAST – Casey and Cardinia OPEN SPACE SYSTEM PLAN

2.4 Open Space System Plan - Recommendations

The nature or specific design intent of key nodes recommended for the south east growth area, as part of this report are detailed in the following pages.

Major Active Open Space Nodes

A2.1 Regional Active Open Space Investigation*

- Investigate the location of active open space facilities adjacent to or incorporated in the proposed regional park (under investigation), on the western side of Cardinia Creek.

A2.2 Regional Active Open Space Investigation *

- Central location in the future urban area
- Key node in the regional trail network (halfway between two major passive open space nodes).
- Collocated with Clyde Creek and area of growling grass frog habitat
- Potential to protect areas of heritage significance (heritage homestead)

A2.3 Regional Active Open Space Investigation (Alternate to A2.2)

- Alternate option to A2.2, particularly if the growling grass frog habitat areas on Clyde Creek are not suitable for collocation with active recreation facilities
- Key node in the regional trail network
- High level of access (Ballarto Road)
- Outside the urban growth boundary, subject to further investigations e.g. land ownership.
- Land values might be lower outside the urban growth boundary

** Further investigation required to understand the Growling Grass Frog Habitat - investigate collocation of active open space facilities with habitat.*

Major Passive Open Space Nodes

B2.1 Metropolitan Park Location Investigation*

- The regional park boundary is under investigation by DSE and seeks to incorporate the growling grass frog habitat with a design that will service the existing future Casey and Cardinia populations.
 - Effective community access and urban interface legibility
 - Protect significant area of growling grass frog habitat while utilising areas for appropriate recreation on the flood plain
 - Consider collocation of active recreation and other community facilities with the regional park whilst ensuring the nature-based regional park experience is preserved
 - Key node in the regional trail network (north-south and east-west, to other regional open spaces, local centres and employment areas)
 - Major regional access is via the Princess Freeway and Thompsons Road extension. The park provides a gateway opportunity to enhance the arrival experience. Local access will be enhanced by ensuring boulevards along the park boundary and linked regional trail.

* Retaining a significant portion of parkland on the eastern side of Cardinia Creek. Pedestrian crossing points must be incorporated.

B2.2 Proposed Retarding Basin

- Proposed retarding basin to protect downstream areas from flooding.
- Potential opportunity for secondary functions such as providing flora and fauna habitat, nature trails, viewing tower, boardwalks, bird watching, playground, picnic, interpretation and education facilities.
- Potential interpretation centre for Dandenong Valley and catchment to Western Port Bay.
- Key node in the regional trail network.

Minor Open Space Nodes

C2 Recommended locations for local open space provision at PSP level. Subject to detailed investigation of local values and compatibility of land uses and functions. Sites are primarily nominated at key convergence points in the regional trail network. In addition sites will typically have one or more of the following qualities:

- High level of vehicle access/exposure
- Adjoin areas of landscape character significance
- Adjoin areas of conservation value
- Adjoin natural wetlands
- Investigate capability of these uses within or overlapping waterway buffer area, with Melbourne Water

C2.1 Wetland Extension Investigation

Potential to build on the already significant wetlands to the north, create a regional asset and retain the local landscape character.

- Key link in the regional trail network (several major existing connections intersect in this area)
- Bound by major access routes
- Adjoins minor high point in a typically flat landscape. Opportunity to incorporate hill top and contribute to the local character.
- Alternative active open space location subject to compatibility of land uses and functions

Key Landscape Amenity Node

(Interpretation/Lookout Point)

L2.1 Key Landscape Character

- Proposed linear park along side the disused railway line (outside the existing railway reserve), if the service re opens in the future this connection will continue to function as an important linear connection.
- Improve access and legibility
- Dominant regional landscape character element
- Key node in the regional trail network (connects Casey Fields and the Royal Botanic Gardens, to the possible future retarding basin and Cardinia Creek, via local centres).

L2.2 Berwick - Cranbourne Road.

- Key Landscape Character & Edge
 - Protect and enhance the existing landscape character
 - Investigate suitability of off-road pedestrian and cycle paths for its length

L2.3 Manks Road

- Key Landscape Character & Edge
 - Protect & enhance the existing landscape character
 - Investigate suitability of off road pedestrian and cycle paths for its length
 - Key link between the Royal Botanic Gardens, Cranbourne and potential regional open space at the proposed retarding basin

L2.4 Wooded High Point / Hill Top Park

- In the typically flat landscape of the south-east, this high point provides and opportunity for a 'green' focal point.
- Potential to align with future Thompsons Road extension and create a gateway vista (also secondary vistas via Pound Road)

3.0 NORTH - Whittlesea, Hume and Mitchell



3.1 Summary

The landscape of the north is characterised by the upper catchment of the Merri Creek which forms the central spine within an otherwise broad and flat valley.

The Great Dividing Range to the north provide an important visual backdrop and gives definition to the valley. The volcanic cones of Mt Frazer, Bald Hill and Hayes Hill are scattered along the valley floor and create distinctive elements within an otherwise featureless valley.

Wallan lies to the north of the growth area. This study recommends that a green space be provided between the north growth area and Wallan to create a distinct break between the two urban areas. Opportunities for siting major active open spaces within the urban break have been identified and are indicated on the plan (A2.1 and an alternate site, A2.2). Provision of active open space and sports facilities within the urban break would serve both Wallan and the north. This will facilitate connectivity between the communities, whilst allowing for distinct development of the two.

The adjoining hills and ridgeline to the west form a strong topographic feature and are key to the visual sense of enclosure that defines the northern growth area. The foothills east of Old Sydney Road (boundary to the growth area) are sloped gently and development on them may not effect the overall visual character of this area. It is recommended that a detailed visual assessment be undertaken to determine impacts of development on these foothills.

Mt Frazer (L2.2) at the northern end provides a natural and dramatic visual gateway to the region and reinforces the urban break between the north and Wallan. Opportunities exist to reinforce this gateway through the provision of visitor facilities and access to the top of the cone. This will allow for a spectacular 360 panorama and visual command of the entire region.

Bald Hill has been recommended to be retained as open space and hilltop park also providing views and vistas of the region. Green space south of Bald Hill connects to Merri Creek and a strategic link under the freeway allows for northerly connection. Hayes Hill (L2.5) similarly is considered appropriate to become a hilltop park.

A number of opportunities for the siting of major active open space and sporting facilities have been identified as suitable to serve the area. In particular, the site adjacent to Hayes Hill (A2.3) off Donnybrook Road is considered an ideal location situated central within the urban precinct.

Sports ovals and other active recreation facilities can be collocated adjacent to an existing natural wetland and hilltop park. Further investigation and detailed recreation studies are required to establish which of the sites identified will ultimately best serve the community. Other sites suitable for development of active open space are indicated on the plan.

Merri Creek is central to the valley and is a key defining waterway in the landscape. Proposed extension of the Merri Creek Trail north will provide a focal point for leisure and lifestyle activities. This will become the central spine, communicating with other trails and recreational nodes throughout the region. Over time, Merri Creek will become an important edge to the developing urban fabric and a focal point for community activity. Where Merri Creek traverses through natural environments, such as adjacent to the Craigieburn Grasslands, the corridor can be expanded to incorporate habitat values.

In general, planning for other drainage channels and waterways that have not been identified in this study are to be included as part of the PSP stage of planning. Their widths will meet Melbourne Water's hydraulic, environmental and waterway health recommendations. It is envisaged that these lesser waterways, embedded in the urban fabric will also service an important role. Additional width is not generally required within the regional trail network.

The regional trail network allows for a number of strategic links to other major nodes in the region including an easterly trail from Merri Creek via Grassy Eucalypt Woodlands and Darebin Creek to Quarry Hills park, proposed by the City of Whittlesea and beyond to Plenty Gorge. To the west, the trail links with other major recreation and open space nodes such as the Kalkallo Retarding Basin, Mount Ridley Nature Reserve and Greenvale Reservoir.

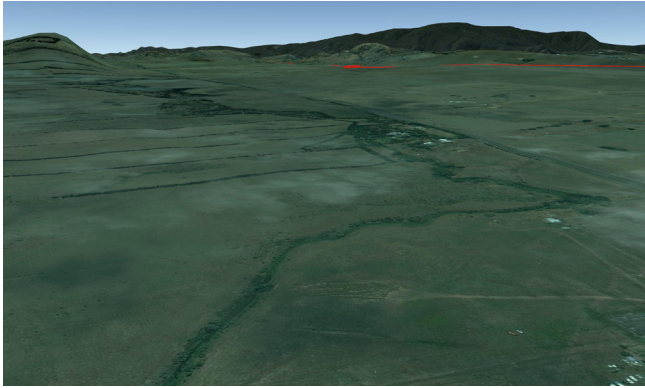
3.2 Regional Character

Landscape Character

"The northern growth area covers the northern reaches of the volcanic plains between the already densely developed Craigieburn area (south) and the foothills of the Great Dividing Range at rapidly expanding Wallan. The subject area is bounded to the east by the hills abutting Wallan East/ Upper Plenty - that strike south following (and intersecting with) the Epping Kilmore Road. To the west the boundary is Mickleham road and the escarpment of Deep Creek and undulating hills further north.

Central in this landscape is the upper catchment of the Merri Creek which occupies a broad flat central valley. The valley is bisected by the Hume Highway and the Melbourne Sydney Railway Line."

Pg. 16 Background Technical Report 4: Landscape Values



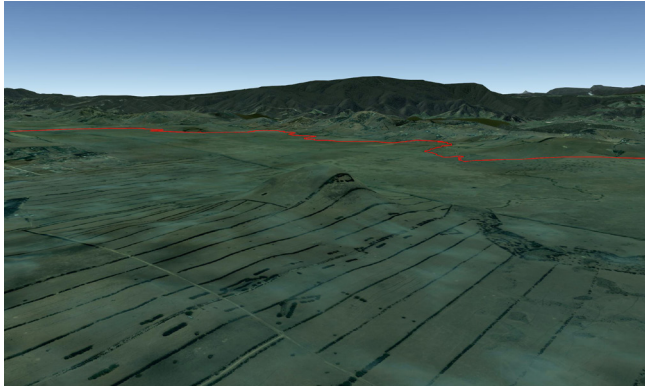
Merri Creek



Near Donnybrook Road



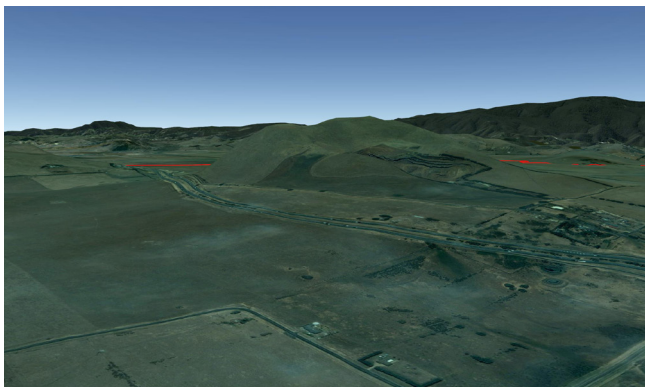
Craigieburn Grasslands



Bald Hill



Bald Hill



Mt Frazer

Key Character Elements

Key elements define the landscape and give character to the region. Topography, drainage patterns and waterways, views and vistas are natural assets which combined create the 'genius loci' of place. For the North, the key character elements include:

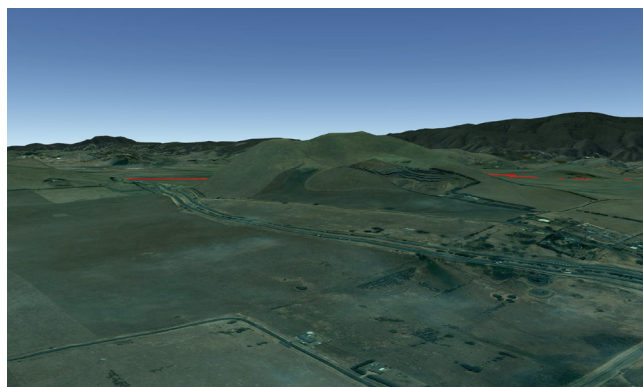
- Merri Creek
- Kalkallo Creek
- Darebin Creek
- Prominent volcanic cones, particularly Bald Hill and Mt Frazer, also including Mt Ridley (outside the study area) and Hayes Hill
- Regional Gateway (Mt Frazer and Wallan urban break)
- Visual catchments include the Great Dividing Range and foothills to the north, smaller ranges to the east and west and the broad flat central valley
- Internal vistas to major landforms (Mt Frazer and Bald Hill)
- Dramatic sense of enclosure, created by the strong north-south edge (east and west) to the valley floor
- Strong north-south/east-west grid of main roads and property boundaries
- Site bisected by major physical infrastructure (defined edges and barriers)
 - north-south Hume Highway
 - north-south Melbourne-Sydney railway line
 - east-west Proposed Metropolitan Ring Road/E6 Transport Corridor
- Craigieburn Grassland Nature Conservation Reserve
- Mount Ridley Grasslands
- Other various areas of high biodiversity value (eg. Red Gum Woodlands/River Red Gums)
- Quarry Hills Park
- Proposed major wetland and regional parkland (Melbourne Water retarding basin)
- Major urban break at Wallan
- Merri Creek Trail
- Future Darebin Creek Trail
- Large areas of industrial and extractive Industries
- Massive high KVA power lines
- Various heritage elements, particularly within waterway corridors (eg. significant Aboriginal heritage elements)
- Major service easements
- Adjoins rural/green wedge on three sides
- Various heritage landscape elements within waterway corridors (bridges, significant aboriginal heritage elements, etc.)

Visual Analysis

This study has identified regional scale views, hill tops, ridgelines and gateways, in order to guide the future integration of open space design and companion development. Open space areas of significant regional landscape character and/or amenity have also been identified for reservation and protection ahead of use for other purposes. These areas are included in the open space system.

The open space system visual intent aims to guide the detailed design of an open space system that protects access to views that define the regional character and enhance amenity.

Recommendations typically include buffer areas between differing land use zones, rural fringe areas protected to provide scenic views, ridge lines which provide a backdrop to urban land uses, views to and from hills tops and key gateway experiences, where major access routes are directly tied to landscape experience.



Mt Frazer

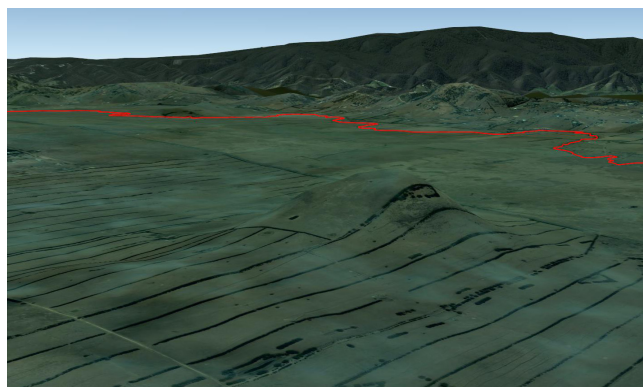


Figure 5: North (Whittlesea, Hume and Mitchell) Visual Intent Diagram

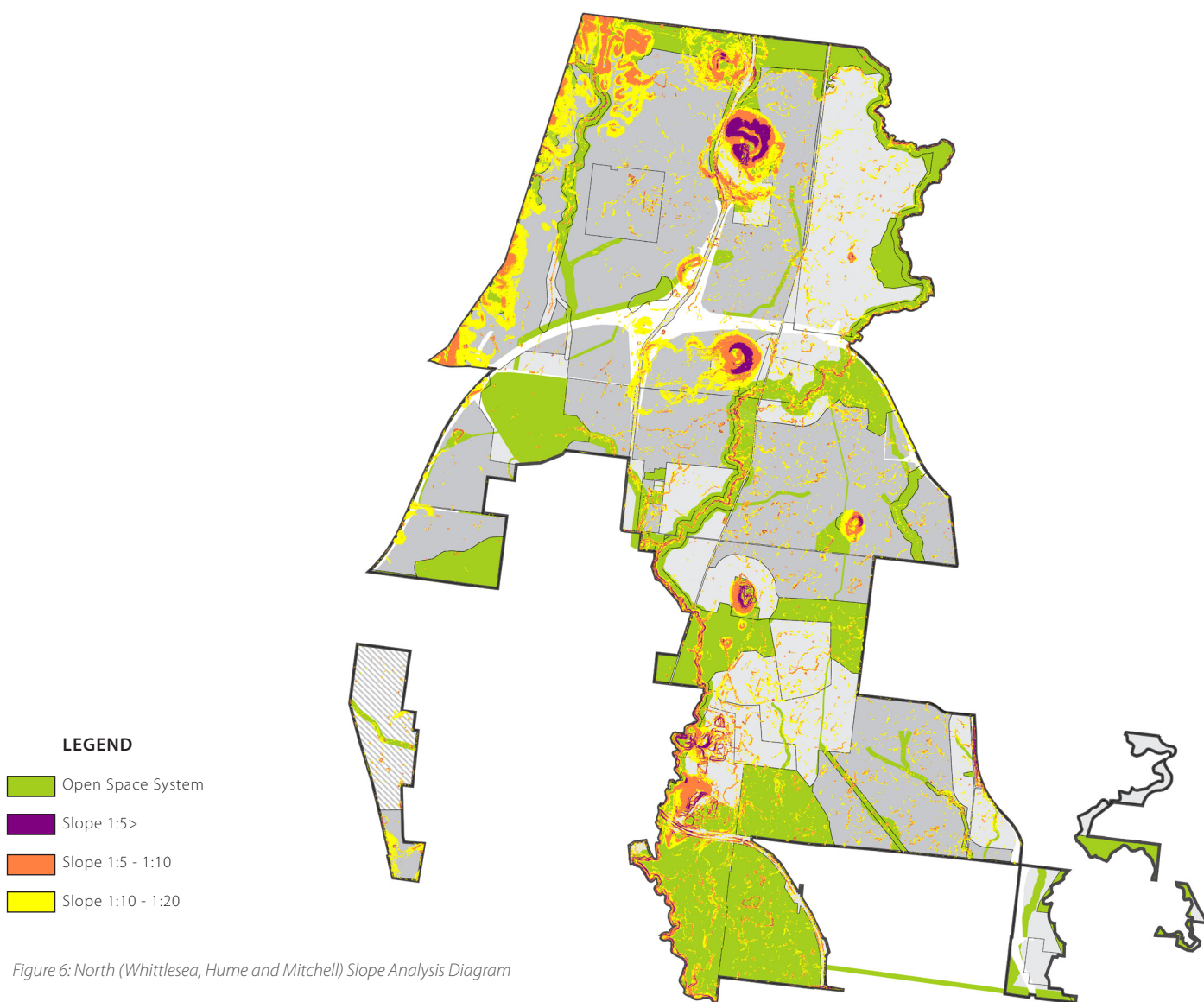
Slope

Slope has been taken into account in assessing boundaries for the allocation of open space. Where steep slopes are collocated or adjacent to specific features of regional significance these areas have been included in the open space system. Slopes of more than 10% are considered difficult for development.

* Refer to 2010 GAA Draft Engineering Design and Construction Manual for 1:10 encumbered land consideration.



Bald Hill



3.3 Design Response

Major Nodes and Trails

The proposed regional trail network is designed to create a network of safe and convenient (off-road) pedestrian and cycle connections at a regional level. It aims to link existing and proposed open space nodes and trail networks, by closing key gaps in the Metropolitan Trail Network and creating extensions in new growth areas. Also forging links to major destinations and the other networks such as the Principal Bicycle Network (PBN).

Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the on regional open space system planning and design intent.

Major open space nodes are typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.

Minor open space nodes are typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.

The major links in the north regional trail network include:

- A new recreation trail between Plenty River and Merri Creek utilising the Darebin Creek Trail through the proposed Grassy Woodlands Reserve.
- The extension and completion of the Merri Creek trail, particularly from the northern extents of the growth area to the Craigieburn Grasslands and other existing nodes (south).

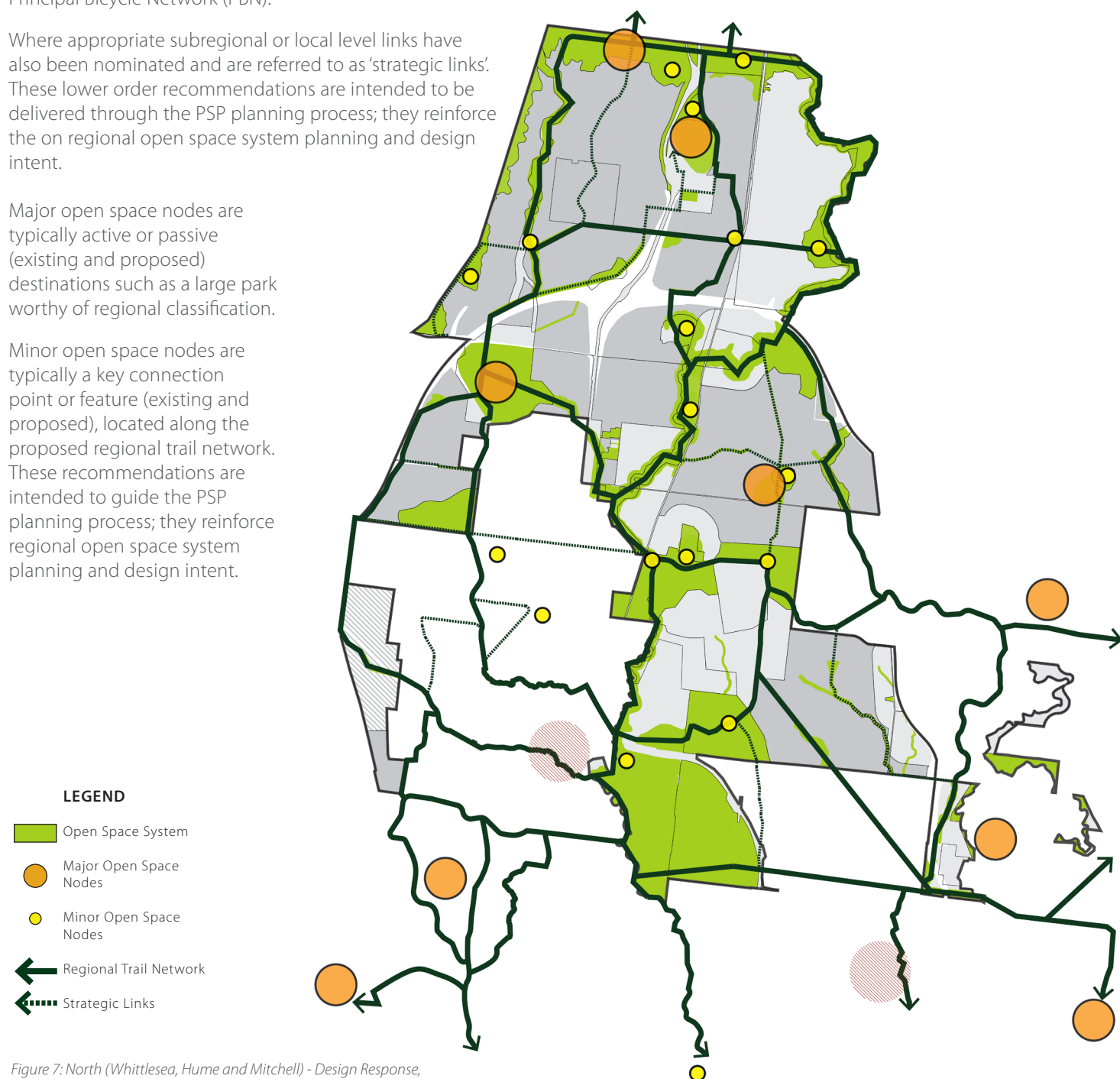
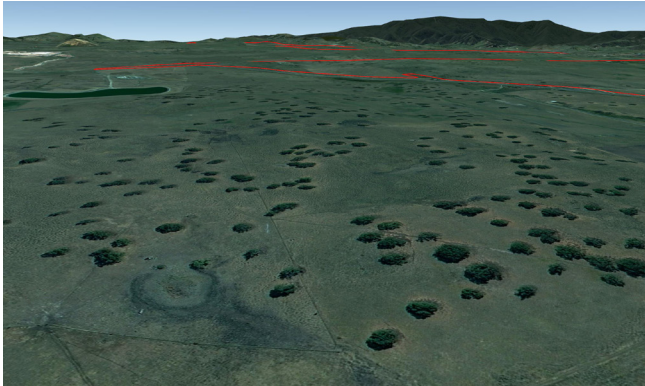


Figure 7: North (Whittlesea, Hume and Mitchell) - Design Response, Regional Trail And Open Space Nodes Diagram



Grassy Eucalypt Woodland


















Greenvale future urban development areas







Greenvale Lake





NORTH Whittlesea, Hume and Mitchell - DESIGN RESPONSE-REGIONAL TRAIL AND OPEN SPACE NODES

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Future Urban Areas
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Waterbody
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Existing Natural Wetland Area (*A)
Development and multi-use potential subject to further investigation of environmental values.
-  Proposed Outer Metropolitan Ring Road/E6
-  Arterial Road
-  Major Road
-  Proposed E14
-  Railway Line
-  Railway Station
-  **Proposed Regional Open Space**
Melbourne Water
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES

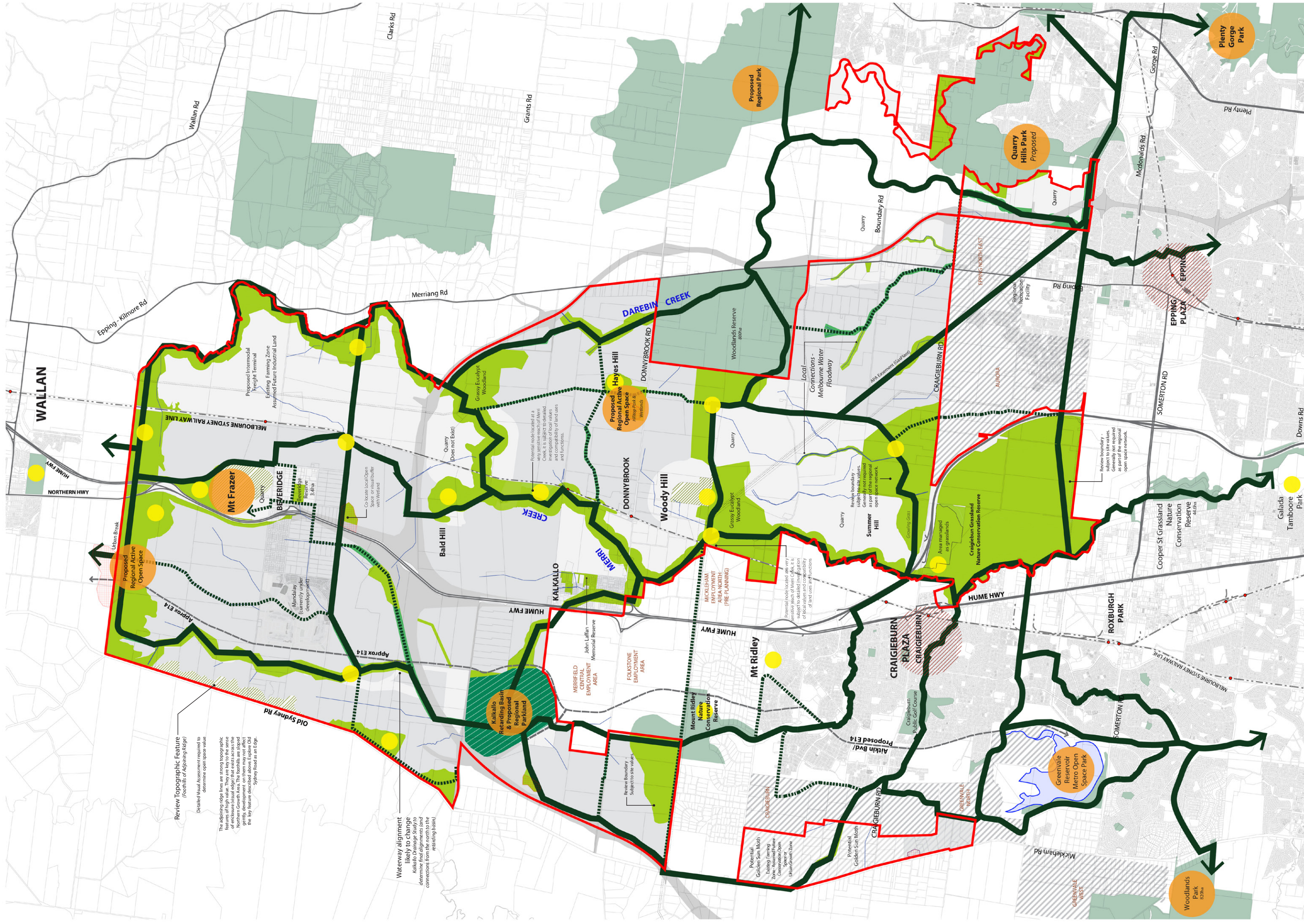
-  **PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER)**
Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management
-  **PROPOSED LINEAR OPEN SPACE**
-  **OPEN SPACE INVESTIGATION ZONE**
Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.
-  **REGIONAL TRAIL NETWORK**
The focus of the regional trail network is the provision of regional scale off road open space trail networks and linkages.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.
-  **STRATEGIC LINK (LOCAL / PSP LEVEL)**
Strategic links are subregional or local level links. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.
-  **NODE - OTHER**
Typically a destination such as a Neighbourhood Activity Centre, a Major Transport Hub or an existing or proposed school.
-  **MAJOR OPEN SPACE NODE**
Typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.
-  **MINOR OPEN SPACE NODE**
Typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.

SOURCE:
















* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



NORTH Whittlesea, Hume and Mitchell - OPEN SPACE SYSTEM PLAN

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Future Urban Areas
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Waterbody
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Existing Natural Wetland Area (*A)
Development and multi-use potential subject to further investigation of environmental values.
-  Growling Grass Frog (Category 1- Strategically Important Habitat and Linkages)(*C)
-  Proposed Outer Metropolitan Ring Road/E6
-  Arterial Road
-  Major Road
-  Railway Line
-  Railway Station
-  **Proposed Regional Open Space**
MAB/Melbourne Water
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

SOURCE:

- * A - Melbourne Water, March 2011
- * C - Ecology Partners Growling Grass Frog Survey - Urban Growth Boundary Extensions 24/12/2010 (Digital Data Supplied by the GAA_Jan. 2011)

N.B.

This study identifies opportunities for the provision of regional active open spaces/facilities within the new growth areas, exclusive of provision in adjoining areas.

All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES



PROPOSED REGIONAL ACTIVE OPEN SPACE

The primary purpose of the active open space category is to identify land provision for participation in regional level, structured sporting activity. Active open spaces include sports grounds and the associated facilities for a wide range of team and individual competitions, which are not otherwise provided for in local communities.

This category identifies opportunities for the siting of regional active open space. Recommendations for spatial arrangement are based on desktop analysis of known regional active open spaces in adjoining areas, and a broad site constraints analysis, to determine physical suitability.

High level estimates for the provision of active open space were based on rough population estimates, **inside the growth areas only**. Detailed recreation and leisure studies are required to determine precise provision of active recreation and social infrastructure.

Nominated active open spaces could range from 10ha to more than 50ha. As a general guide 30ha (typically indicated on plan) will be required to accommodate: Active outdoor playing fields (3 full sized AFL ovals and 3 soccer pitches); A typical council leisure centre (including an aquatics component); A 10 court tennis facility; perimeter pedestrian/bicycle trail & A higher order playground.



PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER) Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management

Passive open space sites are those with the primary purpose of informal, noncompetitive recreation and community or cultural events. Also, sites with the primary purpose of providing for waterway health, drainage and flood protection, which may also offer opportunities for passive and sometimes active open space uses. Passive open spaces provide many wider benefits; such as a contribution to the amenity and sense of place, protection of environmental and ecological values and educational benefits.

Passive open spaces include opportunities for social interaction, tourism, relaxation and nature appreciation. Activities undertaken include walking/walking the dog, cycling, jogging, picnicking, socialising, sightseeing, relaxing, reading, children's and adult play, and studying birds, plants or animals.

LINEAR AND LINKAGES



Proposed Linear Open Space Open space connections



Key Strategic Links Desired alignment for pedestrian and cyclist shared use zone, such as additional road reserve or linear open space connection.

The primary purpose of the linear and linkage category is to provide connectivity and opportunity for leisure activities such as walking, cycling, skating and horse riding. Linear open spaces and links are typically nominated for human use but may also serve as wildlife habitat and movement corridors.

The focus of the linear and linkage open space category is the provision of regional scale off road open space trail networks and linkages or the 'regional trail network'. Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network on the open space system plans. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.

Trails are mainly located along waterways, easements and traverse parklands. Alignments described and mapped are indicative only – the exact alignment of the proposed trails will be determined during detailed planning or at Precinct Structure Planning level (PSP).



OPEN SPACE INVESTIGATION ZONE

Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.



REGIONAL OPEN SPACE TRAIL NETWORK - Outside the Growth Area Boundary

May include on and off road. Interpreted from Parks Victoria Metropolitan Trail Network Data, Cadastral Information and Melways.

Open Space Nodes

Major Active Open Space Nodes

Existing

Proposed
(A2)

Major Passive Open Space Nodes

(B1) Existing

(B2) Proposed

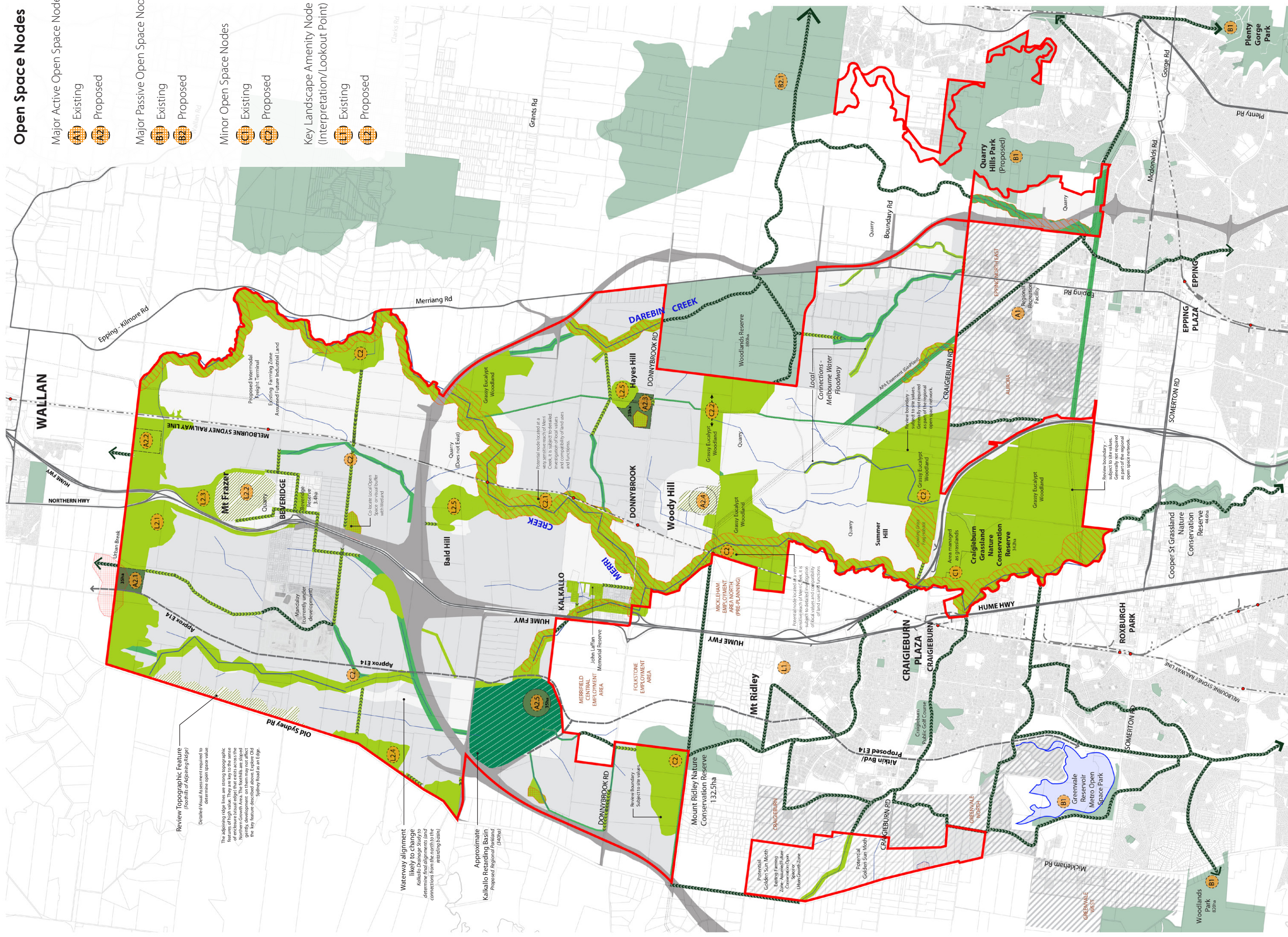
Minor Open Space Nodes

(C1) Existing

Proposed (C2)

Key Landscape Amenity Node
(Interpretation/Lookout Point)

(L1) Existing

Proposed
(L2)

3.4 Open Space System Plan - Recommendations

The nature or specific design intent of key nodes recommended for the north growth area, as part of this report are detailed in the following pages.

Major Active Open Space Nodes

A2.1 Regional Active Open Space Investigation

- Suitable topography for active parkland in a unique regional landscape setting.
- Collocated with large natural wetlands (potential for integrated passive recreation uses)
- Contributes to urban break objectives
 - Key node in the regional trail network
 - High level of access via the proposed E14

A2.2 Regional Active Open Space Investigation

- Alternate site to A2.1 with similar qualities - potential to create a key link to Wallan and future communities to the north

A2.3 Regional Active Open Space Investigation *

- Collocated with Hayes Hill and existing natural wetland.
- Potential to protect an area of Aboriginal Cultural Heritage Significance (wetland)
- High level of access via Donnybrook Road
- Key intersection of regional Trails (that utilise natural waterways and existing easements)
- Centrally located in future urban area, provides an inward focus (away from the OMR)

* Further investigation required to ensure sensitive development occurs

A2.4 Regional Active Open Space Investigation (long term)

- Alternate site to A2.3
- Woody Hill is no longer a topographic asset due to quarry activity.
- Suitable location, high level of access and opportunities for integrated activity
 - Proximity to Merri Creek and the Grassy Eucalypt Woodland Reserve.
 - Potential to become key node in the regional trail network.

A2.5 Kalkallo Retarding Basin/proposed parkland

- Significant active and passive open space potential
- Potential to contribute to gateway objectives
- Melbourne Water land/developer proposal for parkland (included in the active open space calculations, assumes 35ha, however, this may be subject to change following investigation)
- Key node in the regional trail network
- Heritage overlay (house)

Major Passive Open Space Nodes

B2.1 This grassy eucalypt woodland conservation area is under investigation for regional passive open space.

Minor Open Space Nodes

C2 Recommended locations for local open space provision at PSP level. Subject to detailed investigation of local values and compatibility of land uses and functions. Sites are primarily nominated at key convergence points in the regional trail network. In addition sites will typically have one or more of the following qualities:

- High level of vehicle access/exposure
- Adjoin areas of landscape character significance
- Adjoin areas of conservation value
- Adjoin natural wetlands
- Investigate capability of these uses within or overlapping waterway buffer area, with Melbourne Water
-

C2.1 Urban Park Investigation

- Recommended for use as an urban park to compliment adjoining development
- Investigate compatibility of these uses within or overlapping the waterway buffer area with Melbourne Water and DSE.

C2.2 Considered to be the entire grassy eucalypt woodland conservation area, through to the woodlands reserve and grassy eucalypt reserves to the east of the growth area.

- Key link in the connection of Merri Creek (trail) and Quarry Hills Park
- Recommended high quality trails and passive recreation facilities - proposed nature based recreation and tourism opportunities including nature trails, viewing tower, boardwalks, bird watching, playground, picnic, interpretation and education facility.
- This area adjoins a sensitive reach of Merri Creek, we suggest picnic, BBQ and education facilities be located outside creek corridor.

Key Landscape Amenity Node

(Interpretation/Lookout Point)

L2.1 Proposed Recreational Hill Top Park

- Key regional views to and from, that reinforce the proposed regional gateway and urban break objectives.
- Suitable grades for vehicle access
- Large flat area at the summit, suitable for parking areas and active recreational facilities.
- Key node in the regional trail network

L2.2 Mt Frazer

- The largest and most prominent volcanic cone in all of the growth areas. It is recommended that following the quarry uses, that Mt Frazer be free from development and its open space potential assessed.
 - Opportunities include a publicly accessible hilltop park with trails, lookout points, car parking and minor active recreation facilities.

L2.3 Regional Gateway & Urban Break

- Reinforce the proposed regional gateway and urban break by creating undisturbed views from the major transport route to Mt Frazer, possibly suitable for local open space provision.

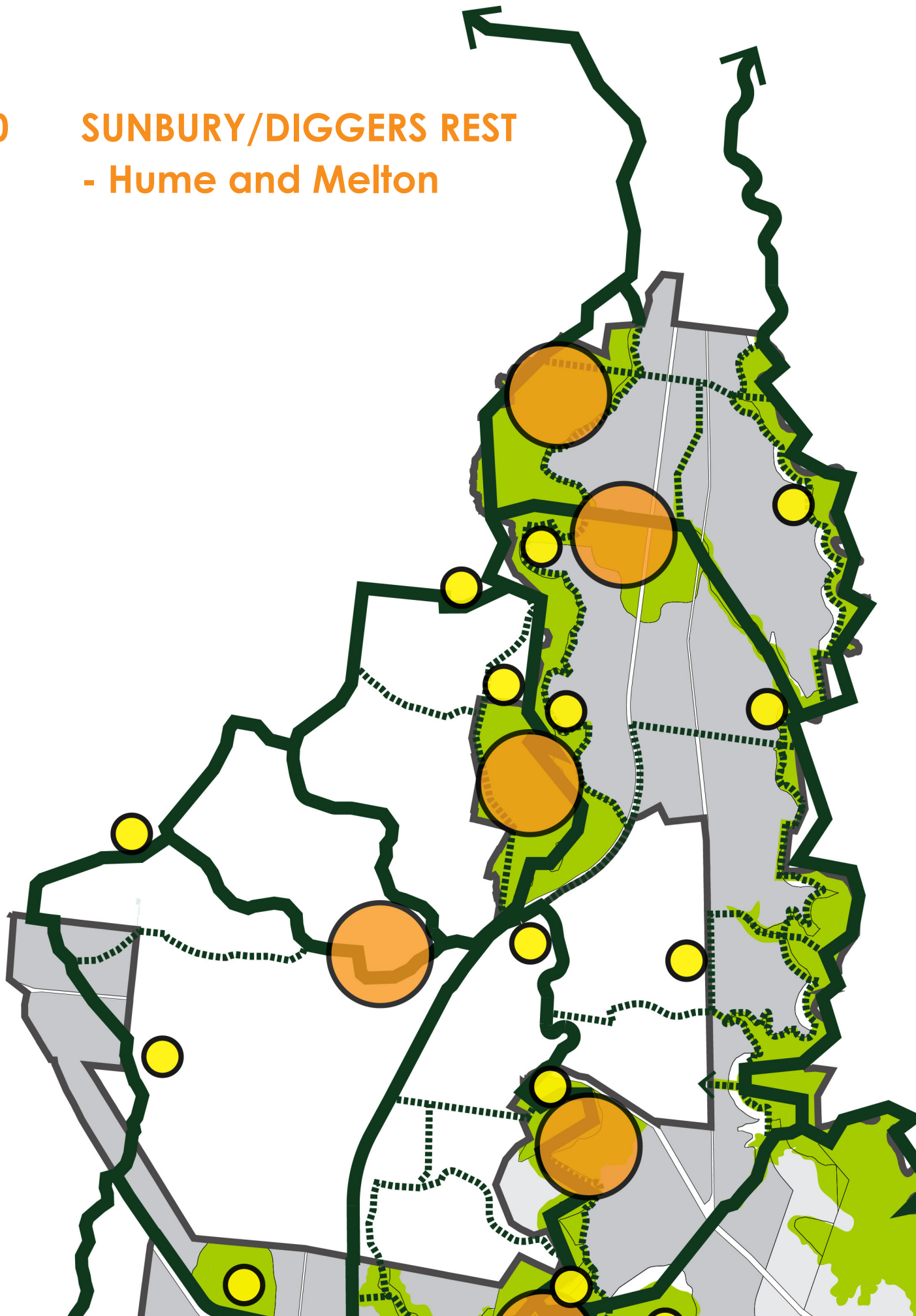
L2.4 Open Space Investigation

- Existing topographic feature, suitable location for a hill top park.
- Regional landscape/interpretation lookout point
- Key node in the regional trail network

L2.5 Proposed Hill Top Park

- Key regional views to and from (in particular to Merri Creek) and suitable topography, e.g. flat summit and grades for vehicle access.
- Collocated with recommended regional active park and existing natural wetland.
- High level of access via Donnybrook Road
- Key intersection of regional trails (that utilise natural waterways and easements)
- Centrally located in future urban area, it will provide an inward focus for the community (away from the OMR).

4.0 SUNBURY/DIGGERS REST - Hume and Melton



4.1 Summary

The landscape of the Sunbury/Diggers Rest growth area is characterised by a number of dominant topographic features. This compact growth area is surrounded by an elevated volcanic plateau punctuated by a number of volcanic cones. Jacksons Creek and its tributaries have carved into the plateau and resultant deep valleys and valley escarpments are dominant in the landscape. Jacksons Creek and its escarpments are a defining element in the landscape and pivotal to the character of the Sunbury area.

Traversing in a generally north-south alignment, Jacksons Creek becomes the backbone for the regional trail network taking in numerous conservation, heritage and scenic elements along the way. The trail offers opportunity to link from the Organ Pipes National Park in the south to the proposed regional park in the north. Along its length, open space has been collocated to integrate with other significant reserves such as Holden Flora and Fauna Reserve, Rupertswood, Emu Bottom Wetland Reserve and Emu Bottom Homestead.

East-west connections will be crucial to maintaining connectivity, integration and a cohesion of the urban fabric. The regional trail network provides for a number of east-west connections, in particular to the south via Redstone Hill, and to the north via the proposed regional active open space site. Strategic links have also been provided west to Sunbury Recreation Reserve and beyond. Other east-west strategic links are indicated on the plan.

The creek corridor and escarpment create a visually sensitive and diverse riverine environment. Furthermore, the steep slopes can be problematic for development. As such, a comparatively large portion of the allocation of open space resides along the Jacksons Creek corridor.

Jacksons Creek and Emu Creek escarpments are major parts of the regional landscape, however, parts of the linear open space along the creeks are too steep to enable easy access or an opportunity to experience the landscape for people of all abilities. While the metropolitan trail network will run along the creek, it is recommended that local strategic trail nodes be sited on the top of the escarpments to provide opportunities for people of all abilities.

Redstone Hill offers viewing opportunities with 360 degree views of the regional landscape and is suitable for development of a hilltop park. The boundary of that park should be based on slope analysis and requires further visual assessment

Big Hill situated adjacent to the Calder Freeway offers the opportunity to be managed as a natural topographic gateway. Extensions of a strategic green links to Kororoit Creek and to Diggers Rest would create an integrated trail network.

Opportunities for the siting of major active open space and sporting facilities have been identified, where suitable, to serve the growth area. In particular the site (A2.3) immediately south of Macedon Street is considered a suitable location. This site is relatively flat but surrounded by steep land and thus, subject to further investigation to determine vehicle accessibility. The site adjoins Jacksons Creek, is located along the regional trail route, and is in close proximity to public transport and a potential tourism hub.

Sports ovals and other active recreation facilities can also be suitably located at a site to the north (A2.2) where there is a large area of relatively flat land adjoining Jackson Creek, the regional trail route and the proposed regional park site. This location is central to the northern precincts of Sunbury and is in close proximity to public transport. Further investigation and detailed recreation studies are required to establish which of the sites identified will ultimately best serve the community. Other sites suitable for development of active open space are indicated on the plan.

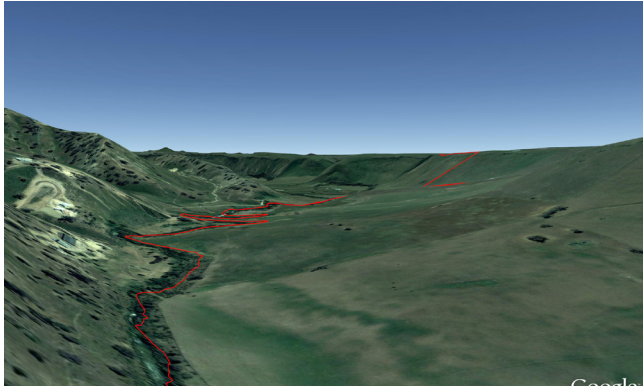
In general, planning for other drainage channels and waterways that have not been identified in this study are to be included as part of the PSP stage of planning. Their widths will meet Melbourne Water's hydraulic, environmental and waterway health recommendations. It is envisaged that these lesser waterways, embedded in the urban fabric will also service an important role. Additional width is not generally required within the regional trail network.

4.2 Regional Character

Landscape Character

"The comparatively compact Sunbury growth area is situated east of Calder Highway and west of Romsey/Lancefield Road. The underlying landscape is complex; it is surrounded by a number of old volcanic cones rising out of an extensive volcanic plain. That feature has been severely down cut locally by Jackson's Creek and its tributaries, which permeates Sunbury's urban area. The combination of steep hills, deep valleys and elevated plateau creates a visually diverse and varied landscape with visual characteristics largely determined by viewer location."

Pg. 16 Background Technical Report 4: Landscape Values



Jacksons Creek



Wetlands



Emu Bottom Wetlands



Jacksons Creek



Goonawarra



Rupertswood Mansion

Key Character Elements

Key elements define the landscape and give character to the region. Topography, drainage patterns and waterways, views and vistas are natural assets which combined create the 'genius loci' of place. For Sunbury, the key character elements include:

- Jacksons Creek and escarpment
- Emu Creek & Emu Bottom Wetlands
- Varied visual catchments determined by viewer location
 - River valley and hills/plateau, as well as beyond the growth area
- Redstone Hill
- Big Hill
- Rural township values (defined edges)
- Vineyards and agricultural setting
- Two regional gateways
 - Entering the growth area from the north via the rail line or Melbourne -Lancefield Road
 - Adjoining the growth area at Calder Freeway, where the topography reveals regional views eg. Melbourne CBD
- Holden Flora and Fauna Reserve
- Calder Freeway
- Strong north-south riparian vegetation/habitat linkages
- Various heritage elements within waterway corridors (bridges, significant aboriginal heritage elements, etc.)
- Adjoins rural/green wedge on three sides
- Dominant landscape and features
 - Volcanic cones
 - Steep hills
 - Deep valleys
 - Elevated plateaus
 - Valley escarpments
- Operating vineyard (of cultural heritage significance)
- Scattered native bush land
- National and regionally significant environmental site and significant areas of growling grass frog habitat

Visual Analysis

This study has identified regional scale views, hill tops, ridge lines and gateways, in order to guide the future integration of open space design and companion development. Open space areas of significant regional landscape character and/or amenity have also been identified for reservation and protection ahead of use for other purposes, these areas are included in the open space system.

The open space system visual intent aims to guide the detailed design of an open space system that protects access to views that define the regional character and enhance amenity.

Recommendations typically include buffer areas between differing land use zones, rural fringe areas protected to provide scenic views, ridge lines which provide a backdrop to urban land uses, views to and from hills tops and key gateway experiences, where major access routes are directly tied to landscape experience.



Jacksons Creek Escarpment

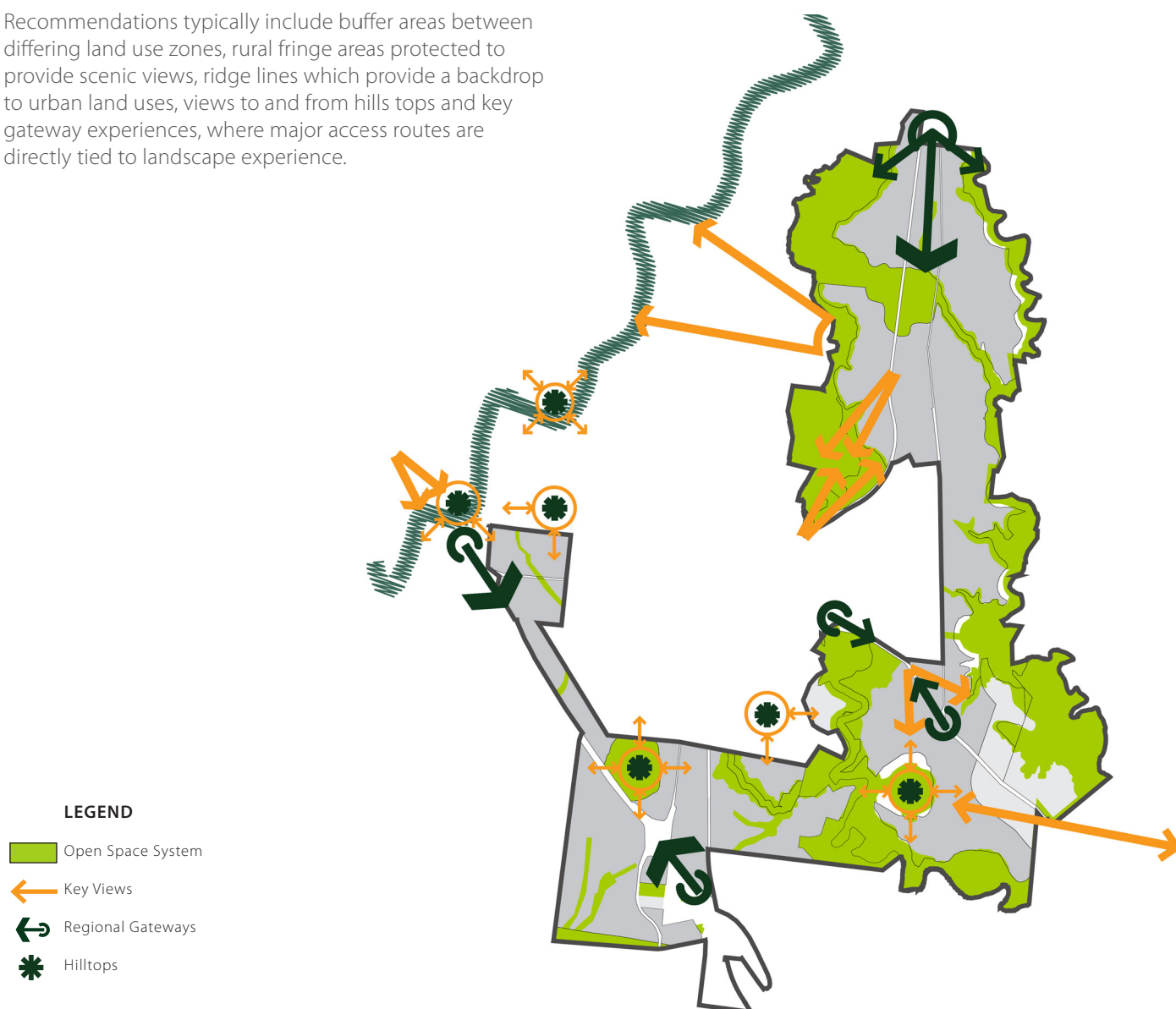


Figure 8: Sunbury (Hume and Melton) Visual Intent Diagram

Slope

Slope has been taken into account in assessing boundaries for the allocation of open space. Where steep slopes are collocated or adjacent to specific features of regional significance these areas have been included in the open space system. Slopes of more than 10% are considered difficult for development.

* Refer to 2010 GAA Draft Engineering Design and Construction Manual for 1:10 encumbered land consideration.



Jacksons Creek

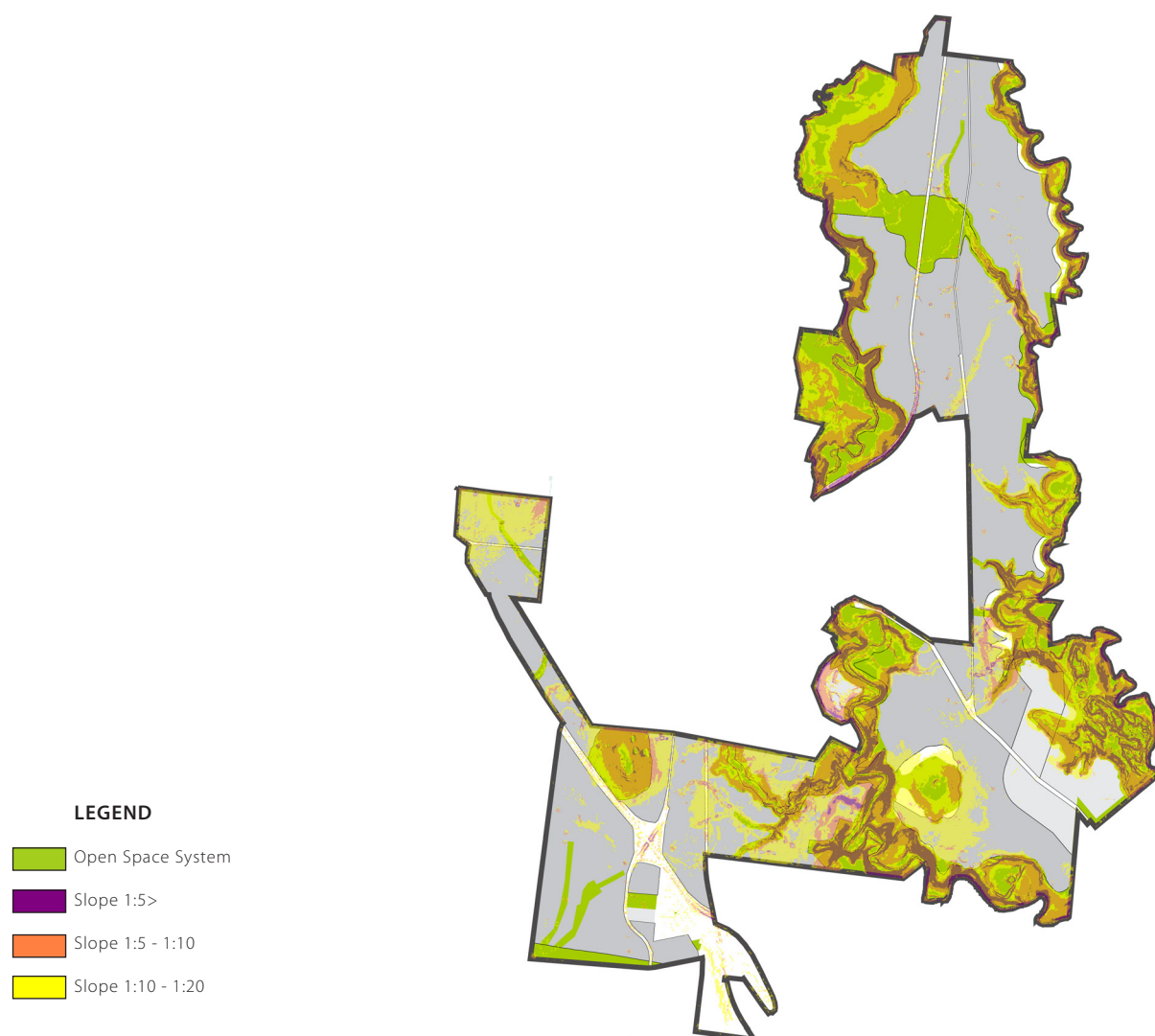


Figure 9: Sunbury (Hume and Melton) Slope Analysis Diagram

4.3 Design Response

Major Nodes and Trails

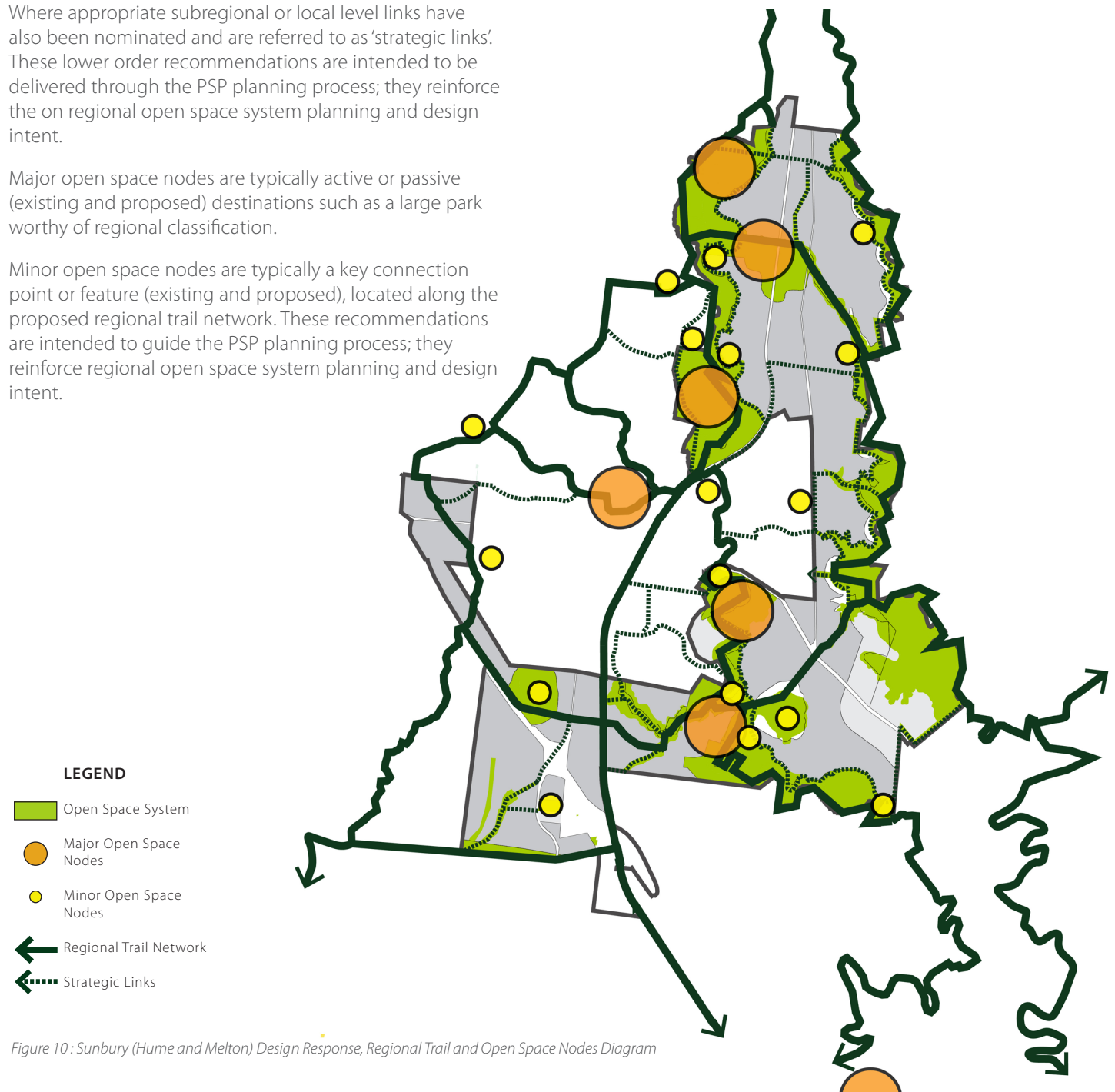
The proposed regional trail network is designed to create a network of safe and convenient (off-road) pedestrian and cycle connections at a regional level. It aims to link existing and proposed open space nodes and trail networks, by closing key gaps in the Metropolitan Trail Network and creating extensions in new growth areas. Also forging links to major destinations and the other networks such as the Principal Bicycle Network (PBN).

Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the on regional open space system planning and design intent.

Major open space nodes are typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.












Minor open space nodes are typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.

The major links in the Sunbury regional trail network include a shared use trail connecting Holden Flora and Fauna Reserve to the Sunbury Recreation reserve, along Jacksons Creek. In addition, linear parklands the length of Emu and Jacksons Creek escarpments could provide a continuous trail, at a grade suitable for all abilities. This will provide a unique opportunity for all to access this key regional landscape asset.











SUNBURY/DIGGERS REST Hume and Melton - DESIGN RESPONSE-REGIONAL TRAIL AND OPEN SPACE NODES

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Existing Natural Wetland Area (*A)
Development and multi-use potential subject to further investigation of environmental values.
-  Proposed Outer Metropolitan Ring Road/E6
-  Arterial Road
-  Major Road
-  Railway Line
-  Railway Station
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES

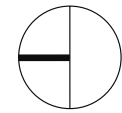
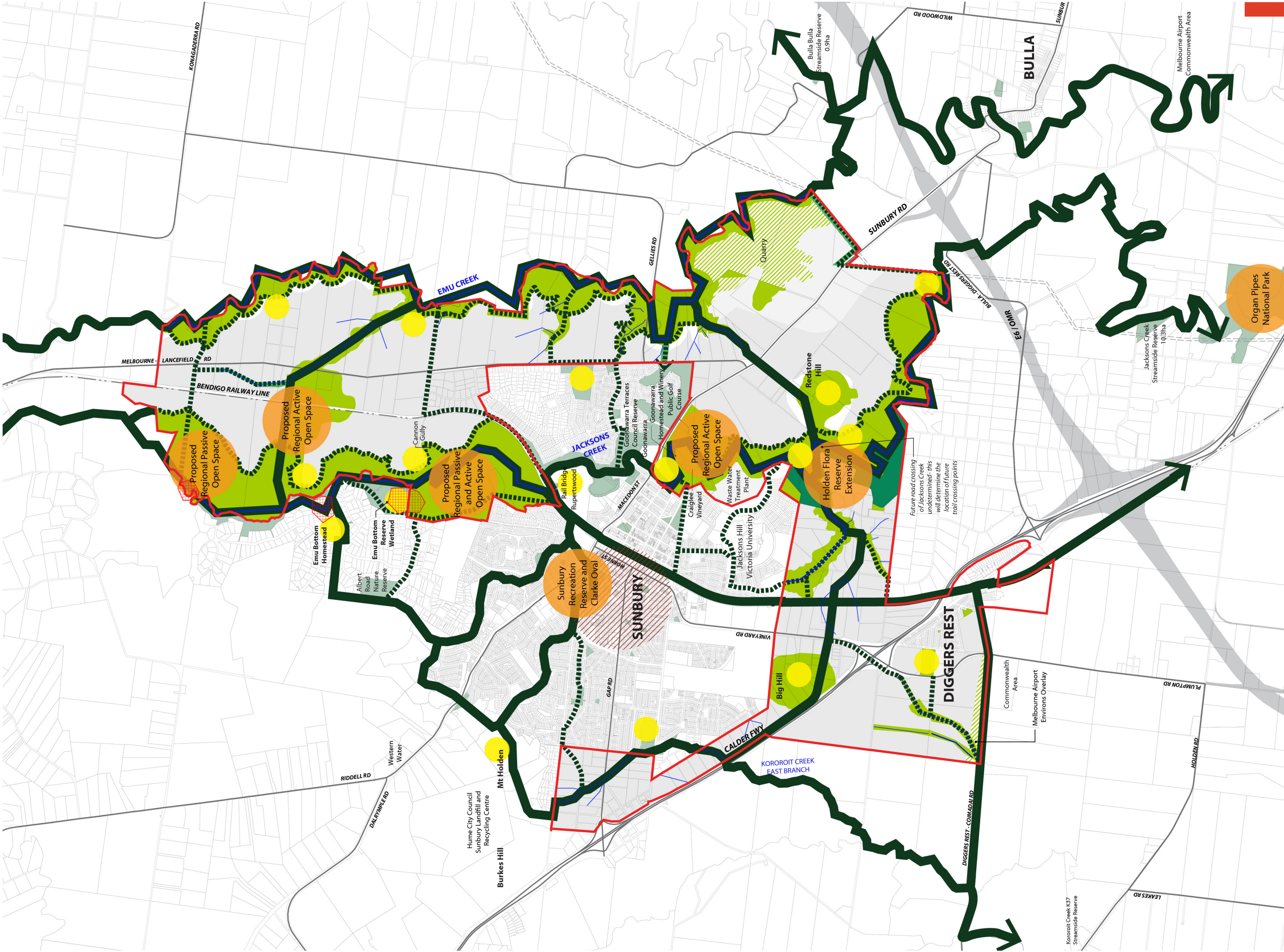
-  **PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER)**
Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management
-  **PROPOSED LINEAR OPEN SPACE**
-  **OPEN SPACE INVESTIGATION ZONE**
Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.
-  **REGIONAL TRAIL NETWORK**
The focus of the regional trail network is the provision of regional scale off road open space trail networks and linkages.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.
-  **STRATEGIC LINK (LOCAL / PSP LEVEL)**
Strategic links are subregional or local level links. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.
-  **NODE - OTHER**
Typically a destination such as a Neighbourhood Activity Centre, a Major Transport Hub or an existing or proposed school.
-  **MAJOR OPEN SPACE NODE**
Typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.
-  **MINOR OPEN SPACE NODE**
Typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.

SOURCE:

* A - Melbourne Water, March 2011













N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



SCALE 1:50000 @ A3
0 200 400 1000 2000

SUNBURY/DIGGERS REST Hume and Melton - OPEN SPACE SYSTEM PLAN

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Existing Natural Wetland Area (*A)
Development and multi-use potential subject to further investigation of environmental values.
-  Growling Grass Frog (Category 1- Strategically Important Habitat and Linkages)(*C)
-  Proposed Outer Metropolitan Ring Road/E6
-  Arterial Road
-  Major Road
-  Railway Line
-  Railway Station
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

SOURCE:

* A - Melbourne Water, March 2011
* C - Ecology Partners Growling Grass Frog Survey - Urban Growth Boundary Extensions 24/12/2010 (Digital Data Supplied by the GAA_Jan. 2011)

N.B.

This study identifies opportunities for the provision of regional active open spaces/facilities within the new growth areas, exclusive of provision in adjoining areas.

All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES



PROPOSED REGIONAL ACTIVE OPEN SPACE

The primary purpose of the active open space category is to identify land provision for participation in regional level, structured sporting activity. Active open spaces include sports grounds and the associated facilities for a wide range of team and individual competitions, which are not otherwise provided for in local communities.

This category identifies opportunities for the siting of regional active open space. Recommendations for spatial arrangement are based on desktop analysis of known regional active open spaces in adjoining areas, and a broad site constraints analysis, to determine physical suitability.

High level estimates for the provision of active open space were based on rough population estimates, **inside the growth areas only**. Detailed recreation and leisure studies are required to determine precise provision of active recreation and social infrastructure.

Nominated active open spaces could range from 10ha to more than 50ha. As a general guide 30ha (typically indicated on plan) will be required to accommodate: Active outdoor playing fields (3 full sized AFL ovals and 3 soccer pitches); A typical council leisure centre (including an aquatics component); A 10 court tennis facility; perimeter pedestrian/bicycle trail & A higher order playground.



PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER) Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management

Passive open space sites are those with the primary purpose of informal, noncompetitive recreation and community or cultural events. Also, sites with the primary purpose of providing for waterway health, drainage and flood protection, which may also offer opportunities for passive and sometimes active open space uses. Passive open spaces provide many wider benefits; such as a contribution to the amenity and sense of place, protection of environmental and ecological values and educational benefits.

Passive open spaces include opportunities for social interaction, tourism, relaxation and nature appreciation. Activities undertaken include walking/walking the dog, cycling, jogging, picnicking, socialising, sightseeing, relaxing, reading, children's and adult play, and studying birds, plants or animals.

LINEAR AND LINKAGES



Proposed Linear Open Space Open space connections



Key Strategic Links Desired alignment for pedestrian and cyclist shared use zone, such as additional road reserve or linear open space connection.

The primary purpose of the linear and linkage category is to provide connectivity and opportunity for leisure activities such as walking, cycling, skating and horse riding. Linear open spaces and links are typically nominated for human use but may also serve as wildlife habitat and movement corridors.

The focus of the linear and linkage open space category is the provision of regional scale off road open space trail networks and linkages or the 'regional trail network'. Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network on the open space system plans. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.

Trails are mainly located along waterways, easements and traverse parklands. Alignments described and mapped are indicative only – the exact alignment of the proposed trails will be determined during detailed planning or at Precinct Structure Planning level (PSP).



OPEN SPACE INVESTIGATION ZONE

Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.



REGIONAL OPEN SPACE TRAIL NETWORK - Outside the Growth Area Boundary

May include on and off road. Interpreted from Parks Victoria Metropolitan Trail Network Data, Cadastral Information and Melways.

Open Space Nodes

Major Active Open Space Nodes

-  Existing
-  Proposed

Major Passive Open Space Nodes

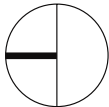
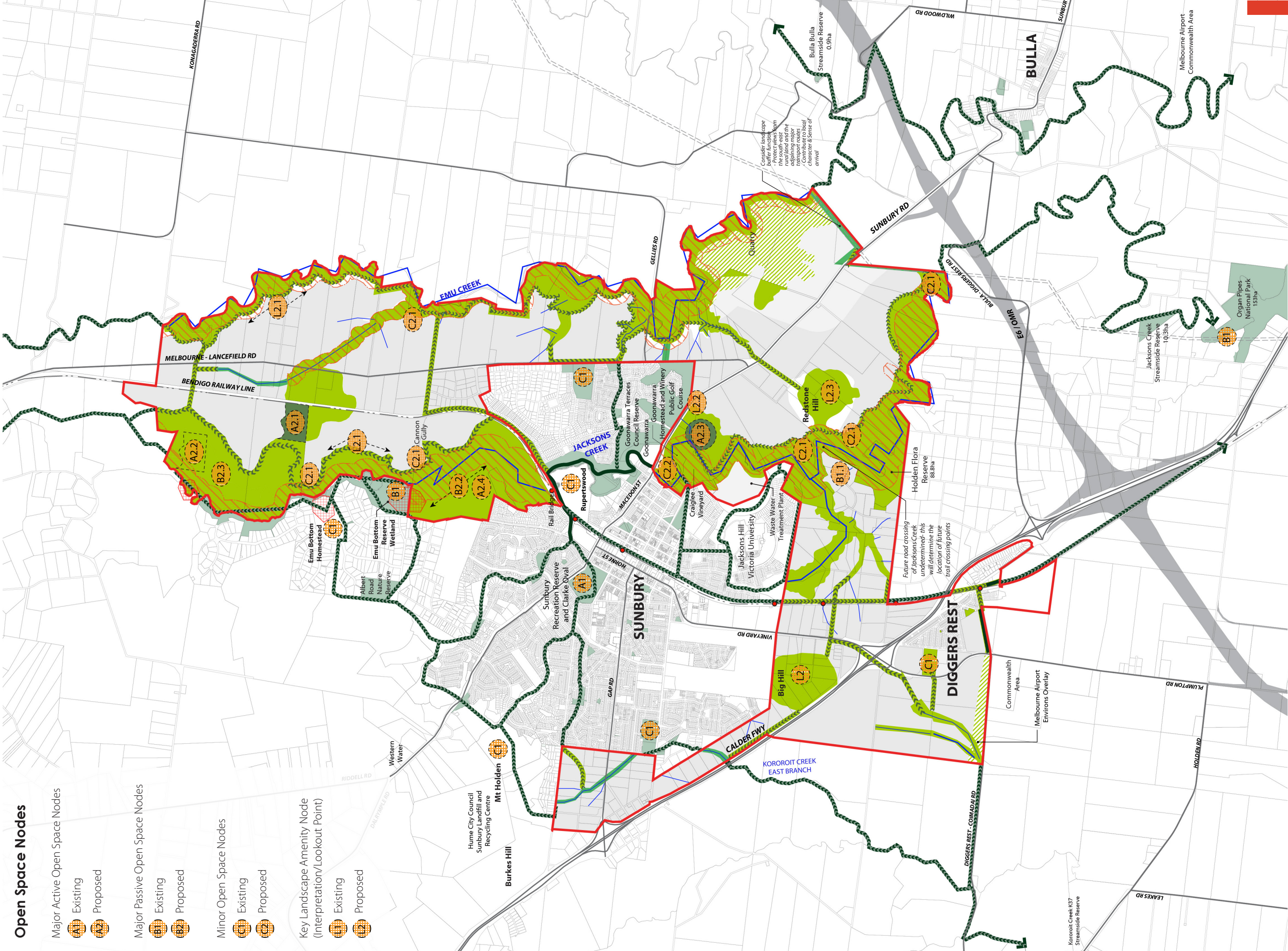
-  Existing
-  Proposed

Minor Open Space Nodes

-  Existing
-  Proposed

Key Landscape Amenity Node
(Interpretation/Lookout Point)

-  Existing
-  Proposed



4.4 Open Space System Plan - Recommendations

The nature or specific design intent of key nodes recommended for the Sunbury/Diggers Rest growth area, as part of this report are detailed in the following pages.

Major Active Open Space

A2.1 Regional Active Open Space Investigation

- Large area of relatively flat land adjoining Jacksons Creek
- Key link in the regional trail network
- Close proximity to major access/public transport
- Central to northern residential community
- Adjoins large conservation areas of open space.

A2.2 Regional Active Open Space Investigation(Alternate site to A2.1 with similar qualities)

Large area of relatively flat land adjoining Jacksons Creek, surrounded by steep land (generally undevelopable) with no other known constraints.

- Key link in the regional trail network
- Close proximity to major access/public transport
- Alternate development options may be explored in this area, however, key regional views (to Jacksons Creek and the plateau edge to the west) must be protected
- Further investigations requires to determine vehicle accessibility

A2.3 Regional Open Space Investigation

- Large area of relatively flat land adjoining Jacksons Creek, surrounded by steep land with no other known constraints
- Subject to further investigations to determine vehicle accessibility
- Open space extended to Macedon Street/ Sunbury Road to create a green gateway (in conjunction with the golf course. This area may also be suitable for active open space facilities eg. parking and buildings.
- Key link in the regional trail network
- Close proximity to heritage sites and potential tourism hub
- Close proximity to major access/public transport
- Alternate development options may be explored in this area, however, key regional views to Jacksons Creek must be protected

A2.4 Regional Open Space Investigation (Alternate Site to A2.1, A2.2 and A2.3) with similar qualities.

Potential within recommended major passive open space for collocation of active open space facilities.

- Subject to detailed investigation of local values and compatibility.
- Subject to investigation to determine vehicle access.
- May be suitable for local open space provision if regional is not adopted/required.

Major Passive Open Space Nodes

B2.1 Proposed extension of Holden Flora and Fauna Reserve

Opportunity to expand on existing regional asset, to develop a major open space node adjacent to the existing Holden Flora and Fauna Reserve

- Investigate potential for improved pedestrian crossings of Jacksons Creek, nearby, subject to investigation
- Connection/collocation with proposed tourism hub and proposed active regional open space via Jacksons Creek

B2.2 Emu Bottom Wetlands Extension - considered to be the entire bulge adjoining Jacksons Creek *

Recommended high quality trails and passive recreation facilities - nature based recreation and tourism opportunities including nature trails, viewing tower, boardwalks, bird watching, playground, picnic, interpretation and education facility subject to detailed investigation of local values and compatibility.

- Proximity to Sunbury centre, regionally significant heritage sites and the environment of Jacksons Creek.
- Potential to collocate with active open space facilities

B2.3 Proposed regional passive open space, collocated with Jacksons Creek

- Similar site values to B2.2
- Subject to detailed investigation of local values and compatibility.

Minor Open Space Nodes

C2 Recommended locations for local open space provision at PSP level. Subject to detailed investigation of local values and compatibility of land uses and functions. Sites are primarily nominated at key convergence points in the regional trail network. In addition sites will typically have one or more of the following qualities:

- High level of vehicle access/exposure
- Adjoin areas of landscape character significance
- Adjoin areas of conservation value
- Adjoin natural wetlands
- Investigate capability of these uses within or overlapping waterway buffer area, with Melbourne Water

C2.1 Key Open Space Sites

- Key nodes in the regional trail network with particular landscape amenity (interpretation lookout point) qualities
 - Promote visual connection to Emu and Jacksons Creeks from these locations
 - Investigate connection/links to Holden Flora and Fauna Reserve, Redstone Hill, Emu Bottom Homestead, Emu Bottom Wetlands and other low areas around Jacksons Creek (and Emu Creek) from these locations

C2.2 Key Open Space/Alternate (Tourism) Development Site

Opportunity to build on existing regional tourist attractors and developments to create a tourism hub in this area.

- Pedestrian connections and visual access to Jacksons Creek
- Collocation with proposed active regional open space connections via Jacksons Creek
- High level of access (Sunbury/Macedon Street)
- Proximity to Sunbury centre
- Proximity to multiple built and natural heritage sites
- Investigate a reduction in the waterway buffer around this node

Key Landscape Amenity Node

(Interpretation/Lookout Point)

L2.1 Jacksons Creek and Emu Creek Linear Open Space/Local Trail Network

Jacksons Creek and Emu Creek escarpments are a major part of the regional landscape character, however, parts of the linear open space along the creeks are too steep to allow access or an opportunity to experience the landscape for people of all abilities.

While the metropolitan trail network will be adjacent to the creek, it is recommended that a more local or strategic network and linear open space be included, that run along the top of the escarpments.

- Allows for access for the disabled
- Local open spaces or small parks should be included along the linear open space at key view points or where community facilities are provided
- Links down to environment of the creeks should also be provided, although these are most likely to be too steep for access for the disabled

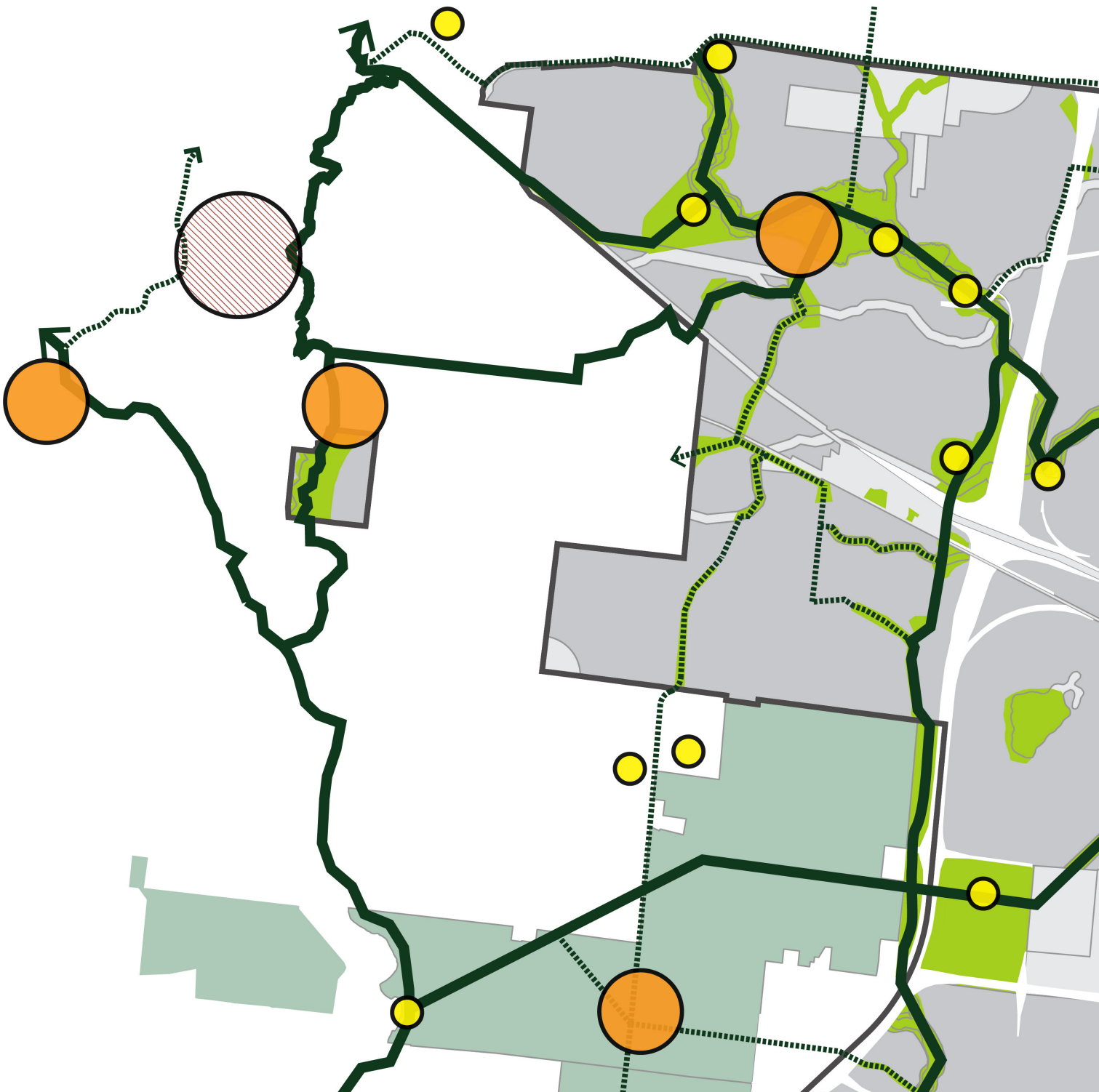
L2.2 Regional Character/Gateway

- Consider the role of linear open spaces and connections to create green breaks and key development sites along Sunbury Road
 - Deliver a 'green' gateway experience
 - Improves regional trail links to connect Sunbury Regional Parkland, Sunbury town centre, Holden Flora and Fauna Reserve, Jacksons Creek, Emu Creek and the future regional open spaces.

L2.3 Proposed Hill Top Park and Local Character

- Key regional views to and from that reinforce the proposed regional gateway
 - Rationalised boundary based on visual assessment and slope analysis

5.0 West - Melton and Wyndham



5.1 Summary

The west is characterised by its vast and extensive volcanic basalt plains imparting a sense of flatness and visual expanse. The horizon is marked by important topographic features including the Great Dividing Range to the north and the You Yangs and Brisbane Ranges to the west. These features provide visual background and some sense of broad visual enclosure, giving meaning, character and context to the plains. Identification and management of views to these topographic landmarks is central to retaining the character of the west. Regional viewing opportunities have been considered in the open space plan from topographic features such as Mt Cottrell, which creates an opportunity to view and interpret the landscape at a regional scale and to assist comprehension of the regional character. Similarly, “iconic” views to the You Yangs do not need to be entirely built out. Views across the Western Grasslands Reserve west towards the You Yangs and elsewhere allow for dramatic and distinctive interpretation of this otherwise flat landscape. Edges too are important, and sensitive treatment of the visual edges around these grasslands will be important to the development of the urban interface.

The western plains support the catchments of Werribee River, Skeleton Creek, Dry Creek and Kororoit Creek. These waterways tend to carve out a north west to south east drainage pattern in the landscape. They follow a general drop in elevation from the foothills of the Great Divide around Melton to the coastal plains around Werribee. The pattern of drainage and waterways combined with the strong north south/east west road grid offers opportunity to create accessible and distinct urban precincts, with the focus of community activity centred around the main waterways. A number of major structures traverse the region. The Western Freeway to the north, the railway line and the imposing KVA towers, all dominate the landscape and assert a strong visual and functional presence as will the OMR once constructed.

The Werribee River with its incised valley and gorges offers a significant visual and recreation environment to the region. As part of the proposed metropolitan trail network, the Werribee River trail will link the coast to the ranges, taking in major open space parks such as Werribee Metropolitan Park, Presidents Park, the Proposed Werribee Township Park (B2.3) and other open space as it winds its way through the spectacular riverine environment to Toolern, Melton and beyond.

Skeleton & Dry Creeks also offer opportunities as recreational environments, it is recommended that a trail follows the creek valleys from Point Cook in the south to other trails and strategic links to the north. Ultimately the trail will access the Western Grassland Reserves and Mt Cottrell. An active open space opportunity (A2.4) has been identified at the confluence of Dry Creek and Skeleton Creek, situated at a key node along the regional trail network and offering access via Dohertys and Derrimut Road.

To the north, the proposed Kororoit Creek Regional Park and Kororoit Creek will serve as a major regional passive open space. The Kororoit Creek Trail will follow the creek line linking Caroline Springs and other communities to the Melton tourism precinct and the proposed regional network via strategic links identified in this plan.

A number of opportunities for the siting of major active open space and sporting facilities have been identified as suitable to serve the region. In particular, the site immediately north of Kororoit Creek Regional Park is considered a suitable location (A 2.1). Sports ovals and other active recreation facilities can be suitably collocated adjacent to an existing natural wetland, Kororoit Creek and the regional park. An alternative location (A2.2), also collocated with Kororoit Creek is identified to the west of the proposed regional park. Further investigation and detailed recreation studies are required to establish which of the sites identified will ultimately best serve the community. A second major active open space facility for the north has been recommended at the Leakes Road floodplain (A 2.3). Other sites suitable for development of active open space in the south of the growth area are indicated on the plan.

In general, planning for other drainage channels and waterways that have not been identified in this study are to be included as part of the PSP stage of planning. Their widths will meet Melbourne Water’s hydraulic, environmental and waterway health recommendations. It is envisaged that these lesser waterways, embedded in the urban fabric will also service an important role. Additional width is not generally required within the regional trail network.

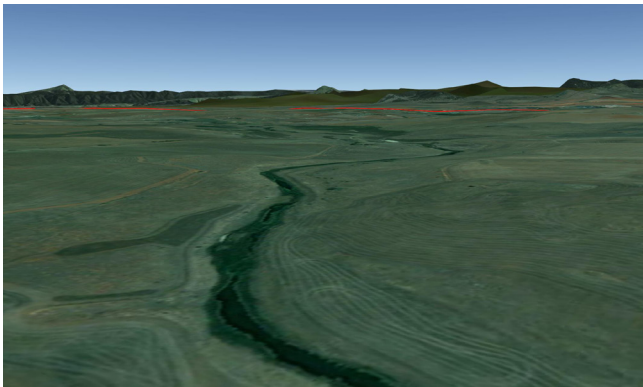
5.2 Regional Character



View From Mt Cottrell (east)



Western Grasslands



Kororoit Creek

Landscape Character

"The Western Growth Area is located on the volcanic plains to the west and north-west of Melbourne's Werribee Growth Area. This area comprises of the catchments of the Kororoit Creek, Skeleton Creek and the Werribee River. Whilst it is flat to undulating, a number of large hills punctuate this landscape; the You Yangs (west), Brisbane Ranges (west) and the Great Dividing Range (north) create a broad visual enclosure to the area.

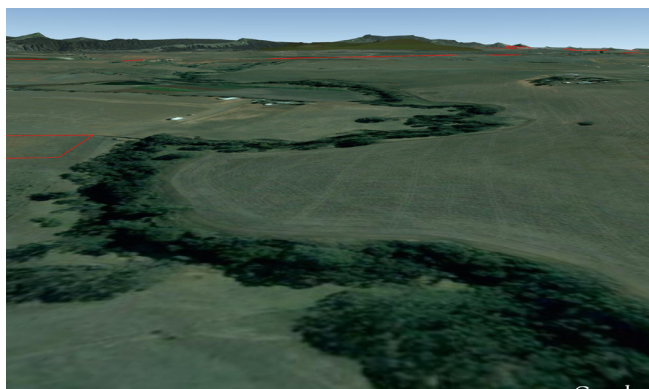
There is a clear south-east/north-west progression in elevation from the coastal plains around Werribee and Point Cook to the Great Divide Foothills beyond Melton and Bacchus Marsh. In the south, which is relatively flat, there are subtle water courses that have cut through this basalt landscape and created delightful riverine environments.

A number of major linear structures bisect the area. In the north are the Adelaide Railway and Western Freeway, in the middle north the massive high KVA powerlines dominate the landscape and parallel to it, the Princess Freeway makes a strong visual impression

Pg. 16 Background Technical Report 4: Landscape Values



Mt Cottrell



Werribee River



Mt Cottrell Drystone Wall

Key Character Elements

Key elements define the landscape and give character to the region. Topography, drainage patterns and waterways, views and vistas are natural assets which combined create the 'genius loci' of place. For the West the key character elements include:

- Kororoit Creek in the north
- Werribee River in the south
- Skeleton Creek through the centre
- Dry Creek through the centre
- Deeply incised river valleys and more subtle creek lines, wetlands and swamps (high conservation values and aboriginal cultural significance)
- Located on volcanic plains, some low volcanic cones (eg. Mt Atkinson within the area and Mt Cottrell directly adjacent)
- South-east/north-west progression in elevation
- Directly adjoining significant Western Grassland Reserves
- North-west to south-east drainage pattern
- Broad visual enclosure (created by adjoining ranges)
- Strong north-south/east-west grid of main roads and property boundaries
- Proposed Metropolitan Ring Road/E6 transport corridor, the western edge of the growth area
- Proposed Regional Rail Link
- Existing Adelaide railway, east west through to Melton
- Massive high KVA powerlines from the north to the south
- Princess Freeway
- Western Freeway
- Proposed Kororoit Creek Regional Park
- Propose Werribee Township Regional Park
- Large areas of industrial and extractive Industries
- Internal views to the natural waterways
- Adjoins major development areas
- Major linear structures bisect the area
- Major physical Infrastructure features (defined Edges)
- Regional gateway/green break role
- Operating vineyard (of cultural heritage significance)
- Adjoins existing townships and various regional parkland
- Association with coastal areas

Visual Analysis

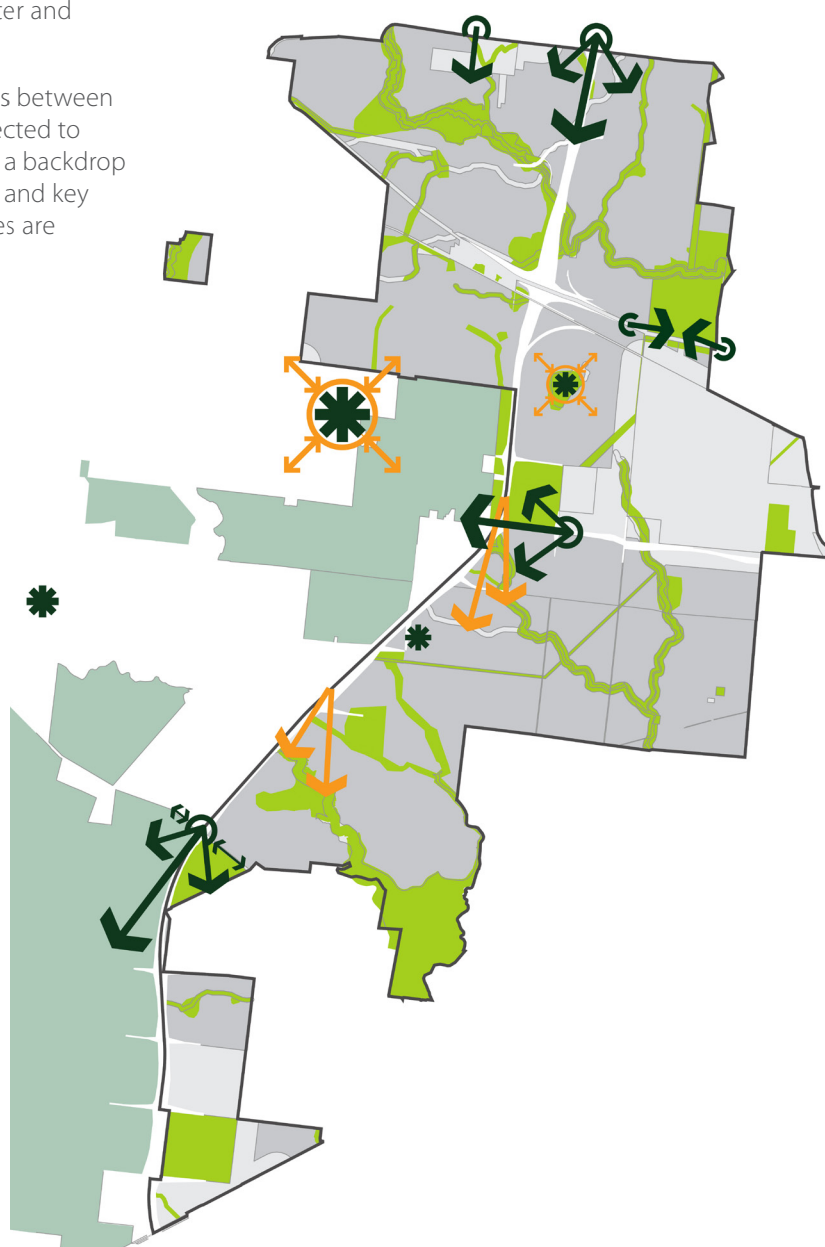
This study has identified regional scale views, hill tops, ridge lines and gateways, in order to guide the future integration of open space design and companion development. Open space areas of significant regional landscape character and/or amenity have also been identified for reservation and protection ahead of use for other purposes, these areas are included in the open space system.

The open space system visual intent aims to guide the detailed design of an open space system that protects access to views that define the regional character and enhance amenity.

Recommendations typically include buffer areas between differing land use zones, rural fringe areas protected to provide scenic views, ridge lines which provide a backdrop to urban land uses, views to and from hills tops and key gateway experiences, where major access routes are directly tied to landscape experience.



View From Mt Cottrell (east)



LEGEND

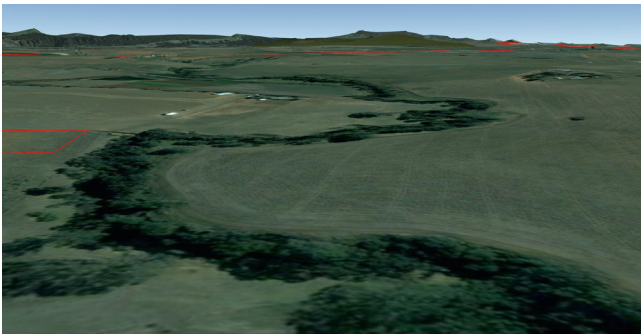
- Open Space System
- Key Views
- Regional Gateways
- Hilltops

Figure 11: West (Melton and Wyndham) Visual Intent Diagram

Slope

Slope has been taken into account in assessing boundaries for the allocation of open space. Where steep slopes are collocated or adjacent to specific features of regional significance these areas have been included in the open space system. Slopes of more than 10% are considered difficult for development.

* Refer to 2010 GAA Draft Engineering Design and Construction Manual for 1:10 encumbered land consideration.



Werribee Rover

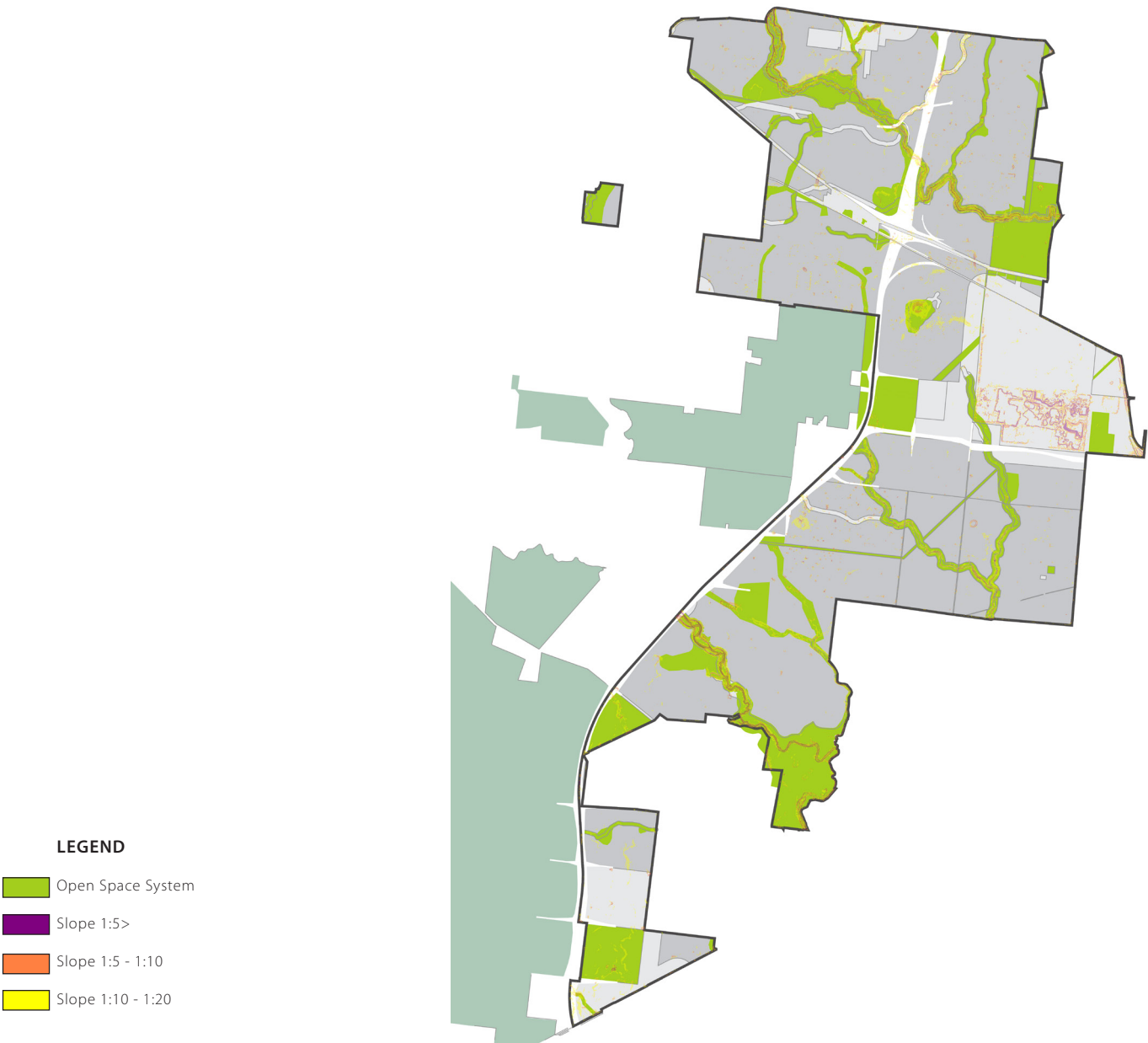


Figure 12 : West (Melton and Wyndham) Slope Analysis Diagram

5.3 Design Response

Major Nodes and Trails

The proposed regional trail network is designed to create a network of safe and convenient (off-road) pedestrian and cycle connections at a regional level. It aims to link existing and proposed open space nodes and trail networks, by closing key gaps in the Metropolitan Trail Network and creating extensions in new growth areas. Also forging links to major destinations and the other networks such as the Principal Bicycle Network (PBN).

Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the on regional open space system planning and design intent.

Major open space nodes are typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.

Minor open space nodes are typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.

The major links in the West Regional Trail Network include trail development from the bay to the ranges along key waterways, including Werribee River, Maribyrnong River, Skeleton Creek, Dry Creek Jacksons Creek, Merri Creek and Kororoit Creek, will be extended. Also, a proposed recreation trail throughout the western grassland reserves.

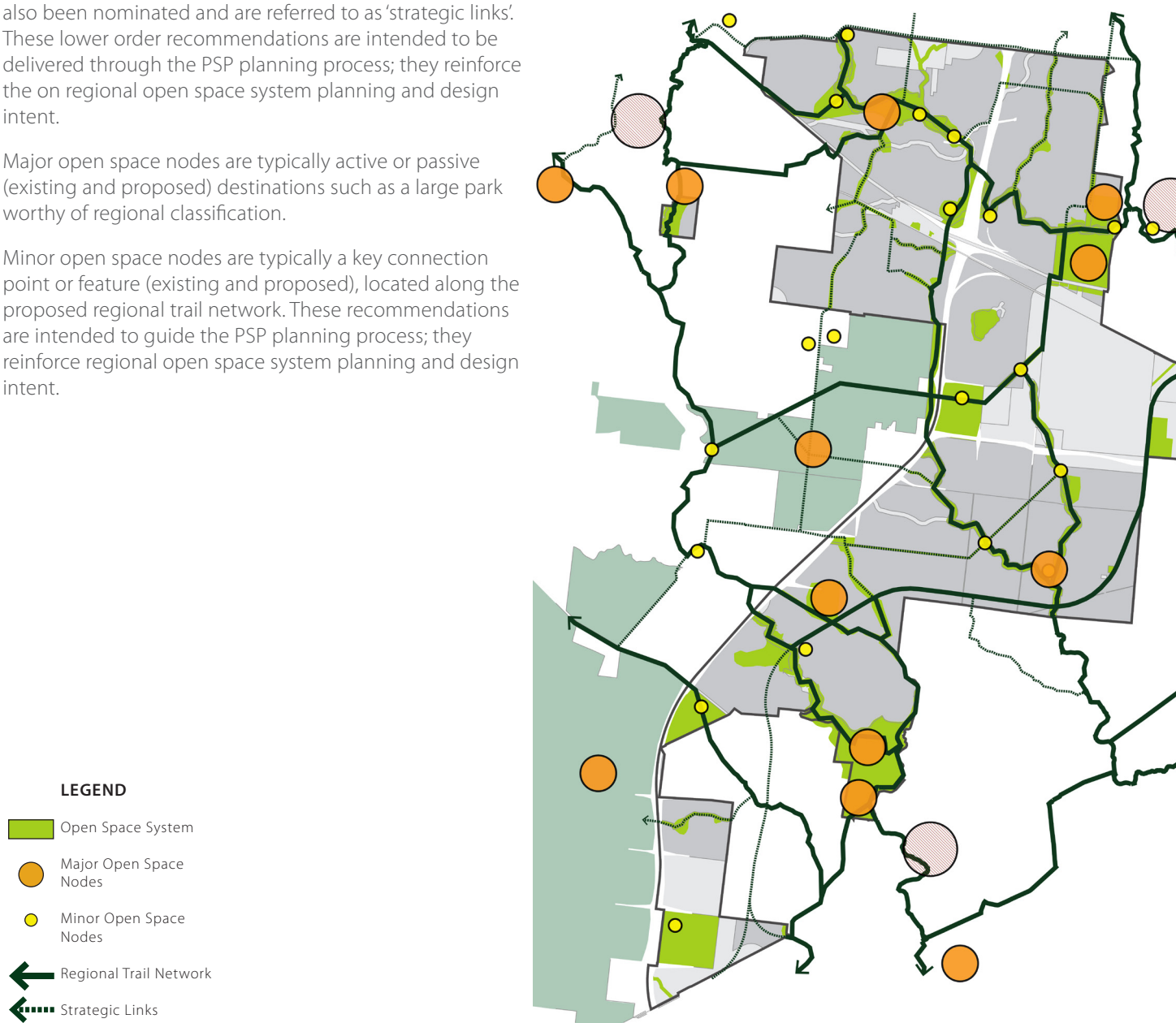


Figure 13 : West (Melton and Wyndham) Design Response, Regional Trail And Open Space Nodes Diagram



Presidents Park - Existing Active Open Space


















KVA North-South powerlines





WEST Melton and Wyndham





- DESIGN RESPONSE-REGIONAL TRAIL AND OPEN SPACE NODES

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Future Urban Areas
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Waterbody
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Existing Natural Wetland Area (*A)
Development and multi-use potential subject to further investigation of environmental values.
-  Proposed Outer Metropolitan Ring Road/E6
-  Arterial Road
-  Major Road
-  Proposed Regional Railway Line
-  Railway Line
-  Railway Station
-  **Proposed Regional Open Space**
Parks Victoria
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES

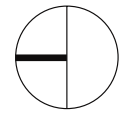
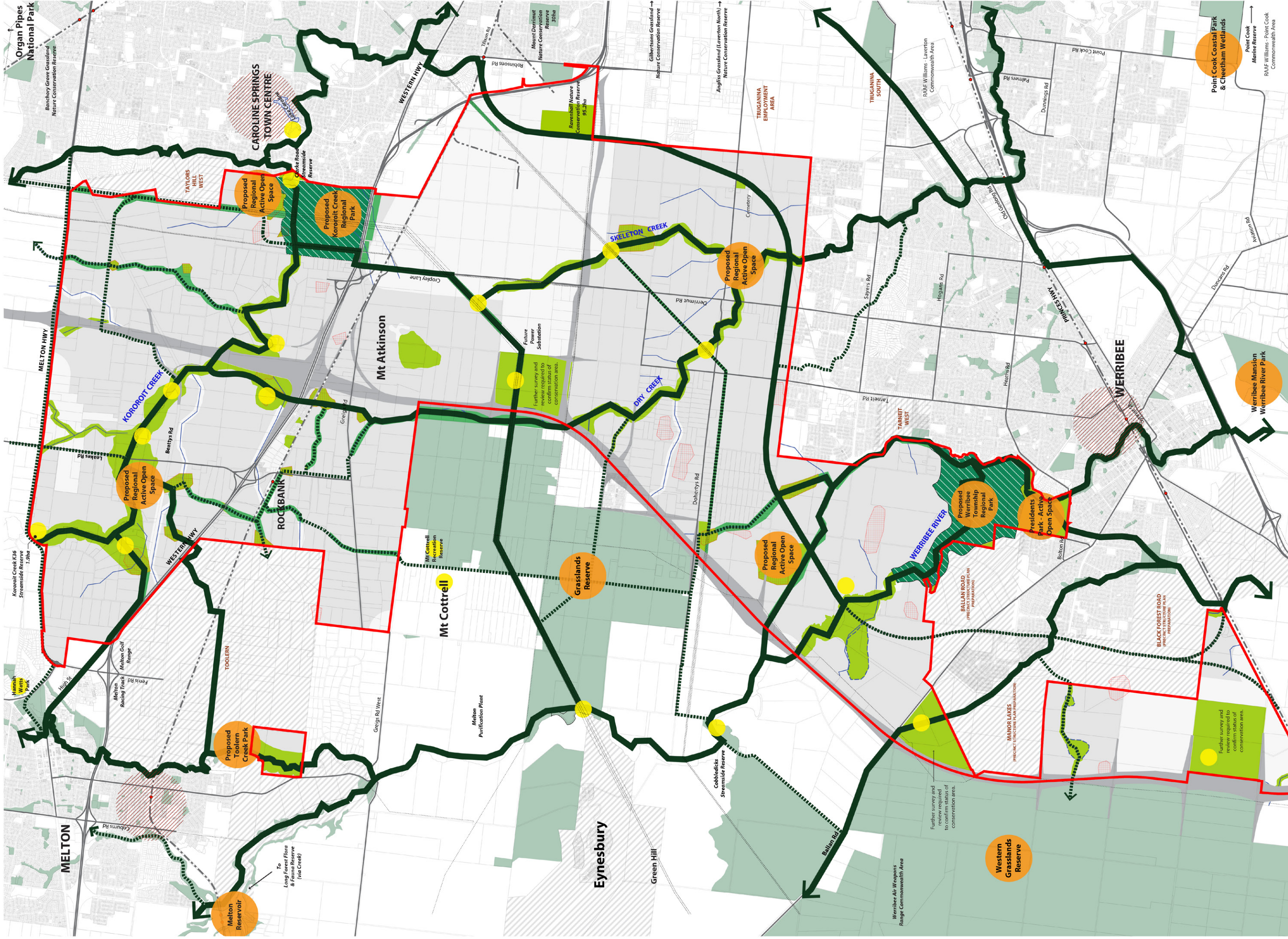
-  **PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER)**
Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management
-  **PROPOSED LINEAR OPEN SPACE**
-  **OPEN SPACE INVESTIGATION ZONE**
Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.
-  **REGIONAL TRAIL NETWORK**
The focus of the regional trail network is the provision of regional scale off road open space trail networks and linkages.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.
-  **STRATEGIC LINK (LOCAL / PSP LEVEL)**
Strategic links are subregional or local level links. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.
-  **NODE - OTHER**
Typically a destination such as a Neighbourhood Activity Centre, a Major Transport Hub or an existing or proposed school.
-  **MAJOR OPEN SPACE NODE**
Typically active or passive (existing and proposed) destinations such as a large park worthy of regional classification.
-  **MINOR OPEN SPACE NODE**
Typically a key connection point or feature (existing and proposed), located along the proposed regional trail network. These recommendations are intended to guide the PSP planning process; they reinforce regional open space system planning and design intent.

SOURCE:

* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



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WEST Melton and Wyndham DESIGN RESPONSE, REGIONAL TRAILS AND OPEN SPACE

GAA OPEN SPACE SYSTEM

















PROJ/DWG NO 0310-0485 SA 04 . 14B

REV 02 DRWN EF CHKD VS DATE 12.04.2011

Tract

WEST Melton and Wyndham - OPEN SPACE SYSTEM PLAN

LEGEND

-  Growth Area Boundary
-  Urban Growth Zone (UGZ)
Approximate location of future population
-  Future Urban Areas
-  Other Areas
Excludes areas identified as residential areas or open space.
-  Waterbody
-  Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
-  Existing Natural Wetland Area (*A)
Development and multi-use potential subject to further investigation of environmental values.
-  Growling Grass Frog (Category 1- Strategically Important Habitat and Linkages)(*C)
-  Proposed Outer Metropolitan Ring Road/E6
-  Arterial Road
-  Major Road
-  Proposed Regional Railway Line
-  Railway Line
-  Railway Station
-  **Proposed Regional Open Space**
Parks Victoria
-  **Existing Open Space - Outside the Growth Area Boundary**
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

SOURCE:

- * A - Melbourne Water, March 2011
- * C - Ecology Partners Growling Grass Frog Survey - Urban Growth Boundary Extensions 24/12/2010 (Digital Data Supplied by the GAA_Jan. 2011)

N.B.

This study identifies opportunities for the provision of regional active open spaces/facilities within the new growth areas, exclusive of provision in adjoining areas.

All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.

TRACT RECOMMENDATIONS - OPEN SPACE CATEGORIES



PROPOSED REGIONAL ACTIVE OPEN SPACE

The primary purpose of the active open space category is to identify land provision for participation in regional level, structured sporting activity. Active open spaces include sports grounds and the associated facilities for a wide range of team and individual competitions, which are not otherwise provided for in local communities.

This category identifies opportunities for the siting of regional active open space. Recommendations for spatial arrangement are based on desktop analysis of known regional active open spaces in adjoining areas, and a broad site constraints analysis, to determine physical suitability.

High level estimates for the provision of active open space were based on rough population estimates, **inside the growth areas only**. Detailed recreation and leisure studies are required to determine precise provision of active recreation and social infrastructure.

Nominated active open spaces could range from 10ha to more than 50ha. As a general guide 30ha (typically indicated on plan) will be required to accommodate: Active outdoor playing fields (3 full sized AFL ovals and 3 soccer pitches); A typical council leisure centre (including an aquatics component): A 10 court tennis facility; perimeter pedestrian/bicycle trail & A higher order playground.



PROPOSED REGIONAL PASSIVE OPEN SPACE (OTHER) Includes Landscape Amenity, Conservation, Heritage, Waterway and Drainage Management

Passive open space sites are those with the primary purpose of informal, noncompetitive recreation and community or cultural events. Also, sites with the primary purpose of providing for waterway health, drainage and flood protection, which may also offer opportunities for passive and sometimes active open space uses. Passive open spaces provide many wider benefits; such as a contribution to the amenity and sense of place, protection of environmental and ecological values and educational benefits.

Passive open spaces include opportunities for social interaction, tourism, relaxation and nature appreciation. Activities undertaken include walking/walking the dog, cycling, jogging, picnicking, socialising, sightseeing, relaxing, reading, children's and adult play, and studying birds, plants or animals.

LINEAR AND LINKAGES



Proposed Linear Open Space Open space connections



Key Strategic Links Desired alignment for pedestrian and cyclist shared use zone, such as additional road reserve or linear open space connection.

The primary purpose of the linear and linkage category is to provide connectivity and opportunity for leisure activities such as walking, cycling, skating and horse riding. Linear open spaces and links are typically nominated for human use but may also serve as wildlife habitat and movement corridors.

The focus of the linear and linkage open space category is the provision of regional scale off road open space trail networks and linkages or the 'regional trail network'. Where appropriate subregional or local level links have also been nominated and are referred to as 'strategic links'. These lower order recommendations are intended to be delivered through the PSP planning process; they reinforce the regional open space system planning and design intent.

The Parks Victoria Metropolitan Trail Network was the basis for design and as such it has been incorporated into the proposed Regional Trail Network on the open space system plans. Knowledge of local and district level off-road and on-road trail networks have also been used to inform the regional network design.

Trails are mainly located along waterways, easements and traverse parklands. Alignments described and mapped are indicative only – the exact alignment of the proposed trails will be determined during detailed planning or at Precinct Structure Planning level (PSP).



OPEN SPACE INVESTIGATION ZONE

Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.



REGIONAL OPEN SPACE TRAIL NETWORK - Outside the Growth Area Boundary

May include on and off road. Interpreted from Parks Victoria Metropolitan Trail Network Data, Cadastral Information and Melways.

Open Space Nodes

Major Active Open Space Nodes

- (A1) Existing
- (A2) Proposed

Major Passive Open Space Nodes

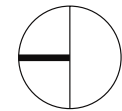
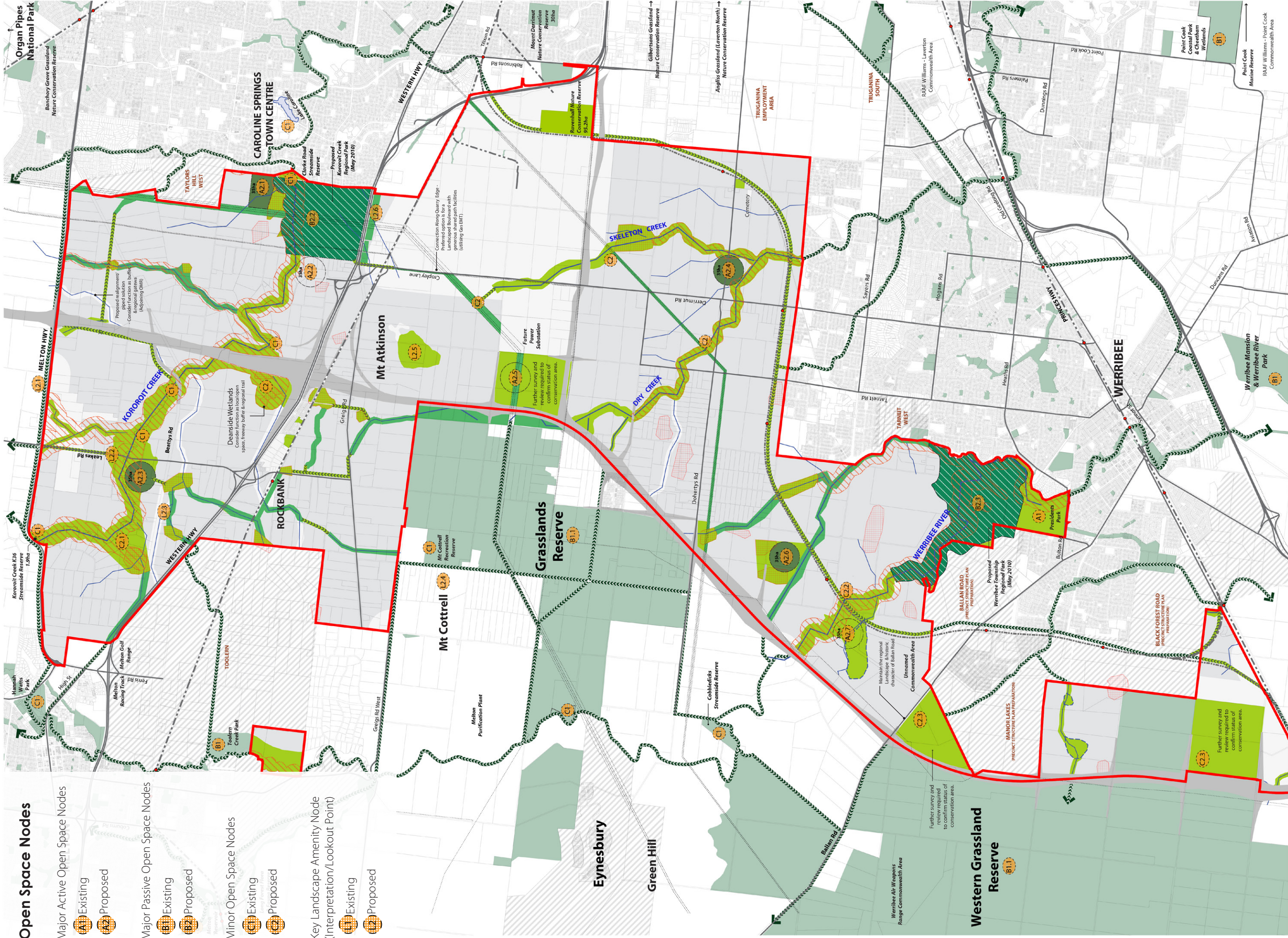
- (B1) Existing
- (B2) Proposed

Minor Open Space Nodes

- (C1) Existing
- (C2) Proposed

Key Landscape Amenity Node
(Interpretation/Lookout Point)

- (L1) Existing
- (L2) Proposed



SCALE 1:75000 @ A3

WEST Melton and Wyndham OPEN SPACE SYSTEM PLAN

GAA OPEN SPACE SYSTEM

PROJ/DRG NO 0310-0485 SA 04 - 12B REV 02 DRWN EF CHKD VS DATE 12.04.2011

5.4 Open Space System Plan - Recommendations

The nature or specific design intent of key nodes recommended for the west growth area, as part of this report are detailed in the following pages.

Major Active Open Space Nodes

A2.1 Proposed Regional Active Open Space, collocated with Kororoit Creek Regional Park (alternate to site A2.2)

- Suitable topography for active facilities
- Adjoins key regional landscape feature, Kororoit Creek.
- Collocated with large natural wetlands and recreation / conservation park (potential for integrated passive recreation uses)
- Key node in the regional trail network
- High level of access via the Western Freeway
- Proximity and potential connections with Caroline Springs town centre.

A2.2 Proposed Regional Active Open Space collocated with Kororoit Creek (alternate to site A2.1)

Similar characteristics to A2.1, however, it has a higher level of access via the Western Freeway and a more central location to the new residential areas.

A2.3 Regional Active Open Space Investigation

This location is likely to be a centre for activity, consider the buffering and amenity values of open space in this area, in protecting the existing character and tourism industry.

- Suitable topography for active facilities
- Proximity to regional landscape feature, Kororoit Creek
- Collocated with or utilises flood plain (additional land may be required outside the floodplain for siting of facilities outside the Q10)
- Key node in the regional trail network
- High level of access via the Western Freeway and Melton Freeway (via Leakes Road)

A2.4 Regional Active Open Investigation

Convergence point of Skeleton Creek.

- Potentially central to future residential population
- High level of access via Dohertys and Derrimut Roads
- Key node in the regional trail network

A2.5 Alternate Site to A2.3 or A2.2 - Regional Open Space Park Investigation and north south Connection

- Investigate compatibility of regional parkland with golden sun moth habitat (only if the UGZ surrounding Mt Atkinson remains residential)
 - Promote connections to the western grasslands reserves
 - Key link in the north south trail network (industrial land and quarry create a barrier)
 - Consider acquisition strategy for public access

A2.6 Regional Open Space Investigation

- Suitable topography for active facilities
- Adjoins the regionally significant landscape of the Werribee River
- Potential proximity to future centre and public transport
- High level of access via the OMR
- Key node in the regional trail network, strong connections to the proposed Werribee Township Regional Park, Presidents Park and the Western Grasslands
- Subject to detailed investigation of local values and compatibility of land uses and functions

A2.7 Regional Open Space Investigation (alternate to A2.6 with similar site values)

- Collocated with or utilises flood plain, subject to detailed investigation of local values and compatibility of land uses and functions

Major Passive Open Space Nodes

B1.1 Western Grassland Reserves

Investigate suitability for public access and define suitable locations for trails/passive recreation facilities

B2.2 Proposed Kororoit Creek Regional Park, regional gateway and north south connection

- Opportunity to create a regional active parkland that contributes to regional gateway objectives
 - Promote landscaping that buffers views to/reduces the severity of views to the power lines
 - Define areas for conservation (Golden Sun Orchid Regional Park, boundary under investigation by DSE)
 - Areas adjoining to park boundaries should be developed along boulevards to encourage community access, engagement and activity
 - Key link in the north south trail network: connects north eastern communities to southern communities and major landscape nodes (Western Grasslands)
 - Opportunity to create comfortable pedestrian scale for movement

B2.3 Proposed Werribee Township Regional Park

- Opportunity to extend parkland activity/facilities in a linear fashion and connect the proposed active open space to the west with Presidents Park.
 - Areas adjoining to park boundaries should be developed along boulevards to encourage community access, engagement and activity
 - Key link in the trail network

Minor Open Space Nodes

C2 Recommended locations for local open space provision at PSP level. Subject to detailed investigation of local values and compatibility of land uses and functions. Sites are primarily nominated at key convergence points in the regional trail network. In addition sites will typically have one or more of the following qualities:

- High level of vehicle access/exposure
- Adjoin areas of landscape character significance
- Adjoin areas of conservation value
- Adjoin natural wetlands
- Investigate capability of these uses within or overlapping waterway buffer area, with Melbourne Water

C2.1 Open Space Opportunity

- Large area outside of the core of Kororoit Creek that has been defined by growling grass frog habitat
 - Suitable for local open space (active/passive facilities), subject to detailed habitat investigations

C2.2 Open Space Opportunity

- Build on transport node to promote strong connections with Werribee River and future regional parkland
 - Strong relationship with public transport and possible future activity centre
 - Strong visual and physical connection with Werribee River

C2.3 Open Space Opportunity and Grasslands Connection

- Further survey and review required to confirm status of conservation area
 - Investigate compatibility of parkland facilities with golden sun moth habitat
 - Key link to the Western Grasslands Reserve
 - Consider acquisition strategy for public access/use

Key Landscape Amenity Node

(Interpretation/Lookout Point)

L2.1 Melton Highway an the rural landscape/distant ranges in the north

- Key regional landscape character experience and residential edge.
 - Major views and experience of landscape character, as a driver or a pedestrian.
 - Promote uniform setbacks to development, generous shared path facilities, landscaping guidelines and orientation of development to front the highway.

L2.2 Melton Tourism Precinct

Activity Centre and Regional Active Parkland

- Leaks Road, from Melton Highway to Beattys Road should functions as the central focus/access for the new community.
 - Natural linear parkland in this area support density and public realm opportunities

L2.3 Western Freeway and Beattys Road

- To be managed at PSP level , mostly piped solutions preferred
 - Where above ground solutions implemented, drainage open space should function as local off road trails and landscaped buffers to Western Freeway and Beattys Road (or major east-west connection).
 - Drainage open spaces and landscape buffers should also be utilised as edges/ buffers between conflicting land uses (residential/highway commercial / industrial)

L2.4 Mt Cottrell

- Investigate public access & hilltop park
 - Key regional landmark and viewing location.
 - It would be a regional asset to have a park/lookout point at the top of Mt Cottrell

L2.5 Mt Atkinson

- Alternate landscape treatment dependant on future adjoining land uses (boundary currently rationalised based on slope and potential as a hill top park)

L2.6 Non-urban Break Investigation

- Opportunity to create a non-urban or green break that contributes to regional gateway objectives
- Symbolically represents the historic urban break between Melton and Melbourne

APPENDIX A

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APPENDIX B - OPEN SPACE SYSTEM SUPPORTING PLAN SETS - A3 FOLDOUT

South East – Casey & Cardinia

North – Whittlesea, Hume and Mitchell

Sunbury / Diggers Rest

West – Melton and Wyndham

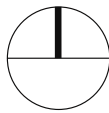
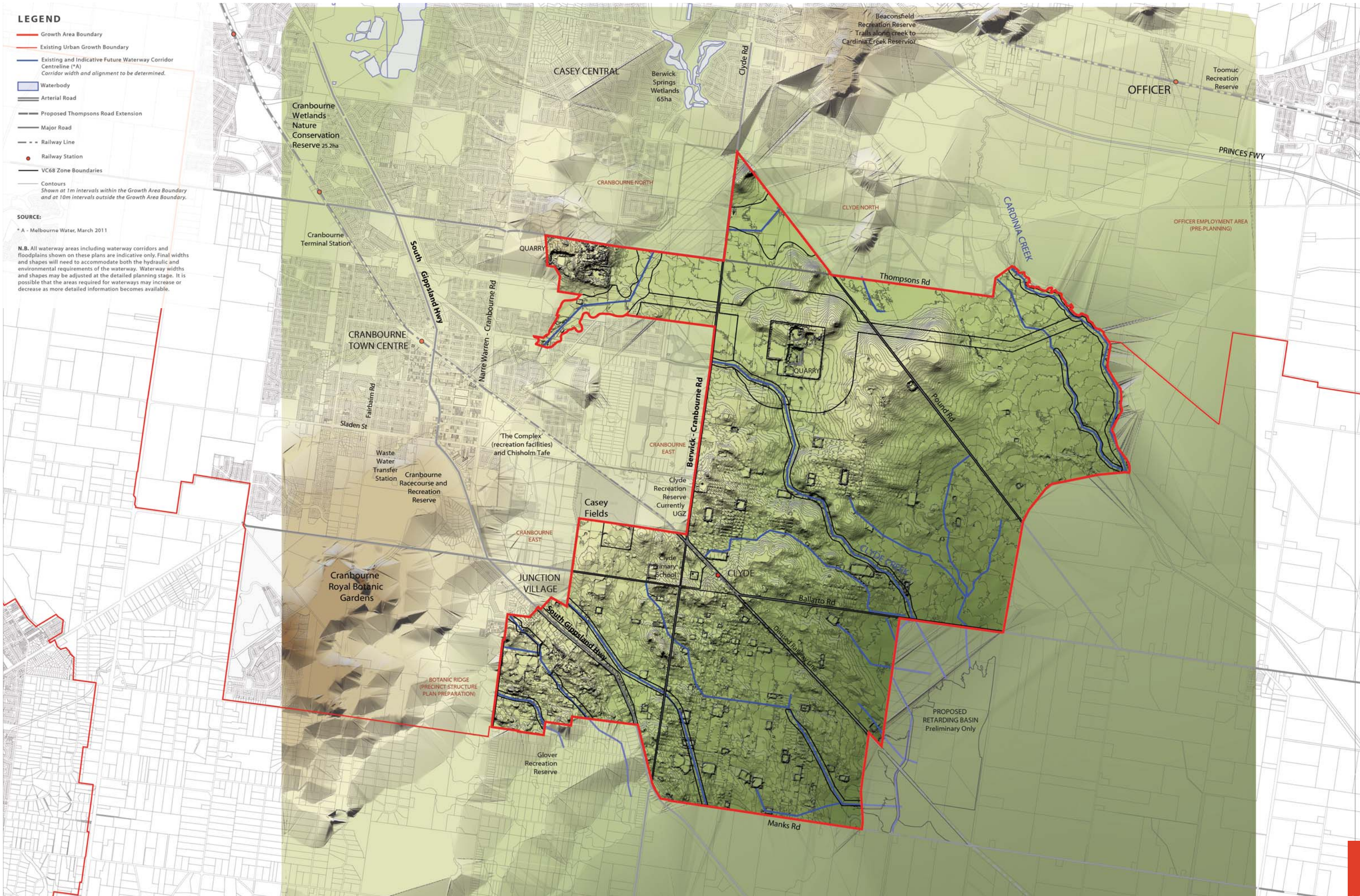
LEGEND

- Growth Area Boundary
- Existing Urban Growth Boundary
- Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
- Waterbody
- Arterial Road
- Proposed Thompsons Road Extension
- Major Road
- Railway Line
- Railway Station
- VC68 Zone Boundaries
- Contours
Shown at 1m intervals within the Growth Area Boundary
and at 10m intervals outside the Growth Area Boundary.

SOURCE:

* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



SCALE 1:50000 @ A3

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SOUTH EAST – Casey and Cardinia BASE PLAN - TOPOGRAPHY

GAA OPEN SPACE SYSTEM PROJ/DRG NO 0310-0485 SA 03.12 REV B DRWN EF CHKD VS DATE 14.04.2011

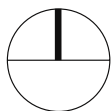
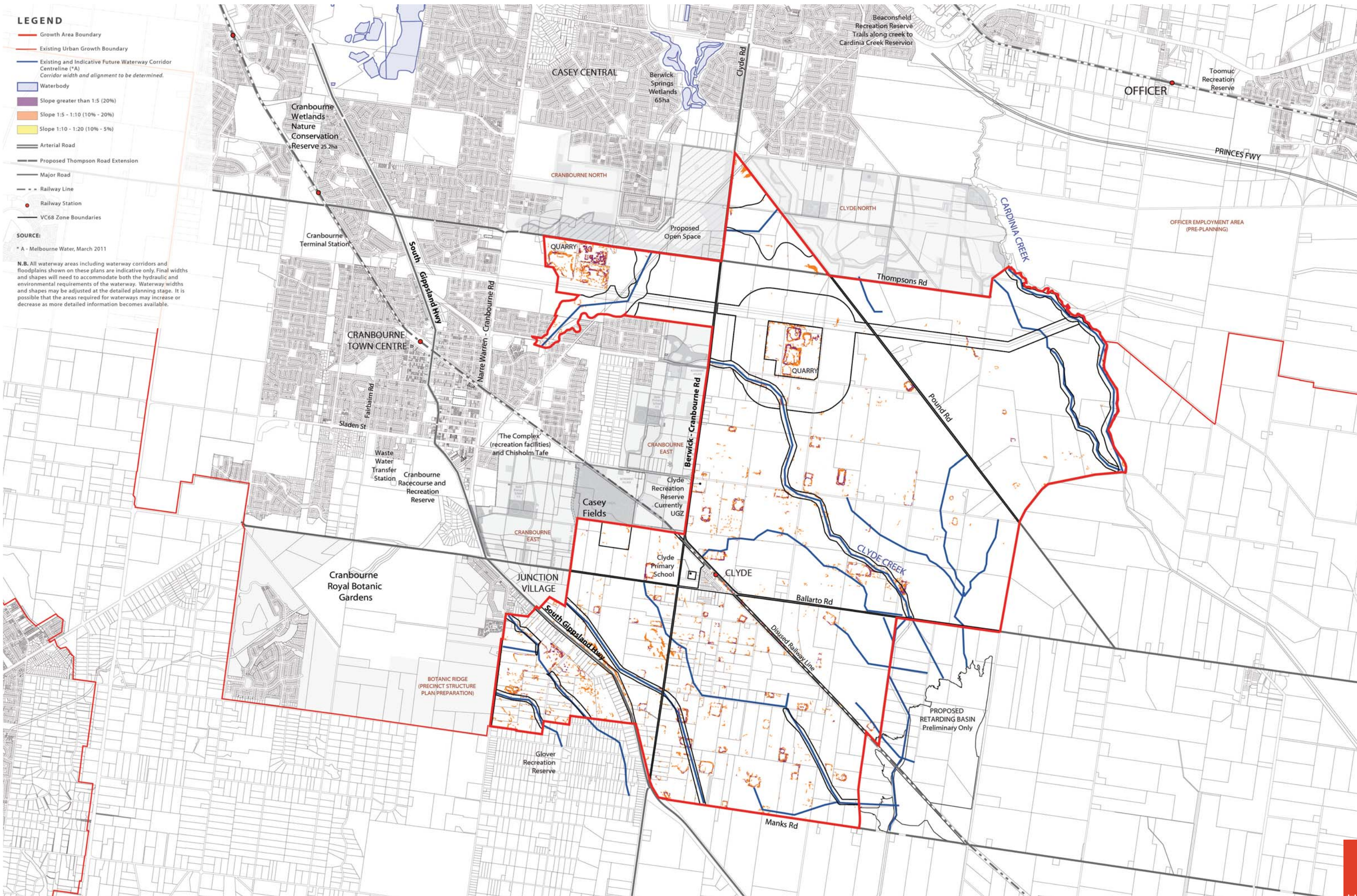
LEGEND

- Growth Area Boundary
- Existing Urban Growth Boundary
- Existing and Indicative Future Waterway Corridor Centreline (*A)
Corridor width and alignment to be determined.
- Waterbody
- Slope greater than 1:5 (20%)
- Slope 1:5 - 1:10 (10% - 20%)
- Slope 1:10 - 1:20 (10% - 5%)
- Arterial Road
- Proposed Thompson Road Extension
- Major Road
- Railway Line
- Railway Station
- VC68 Zone Boundaries

SOURCE:

* A - Melbourne Water, March 2011

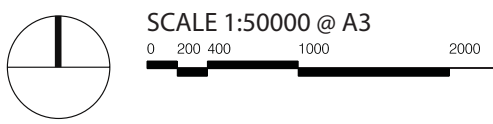
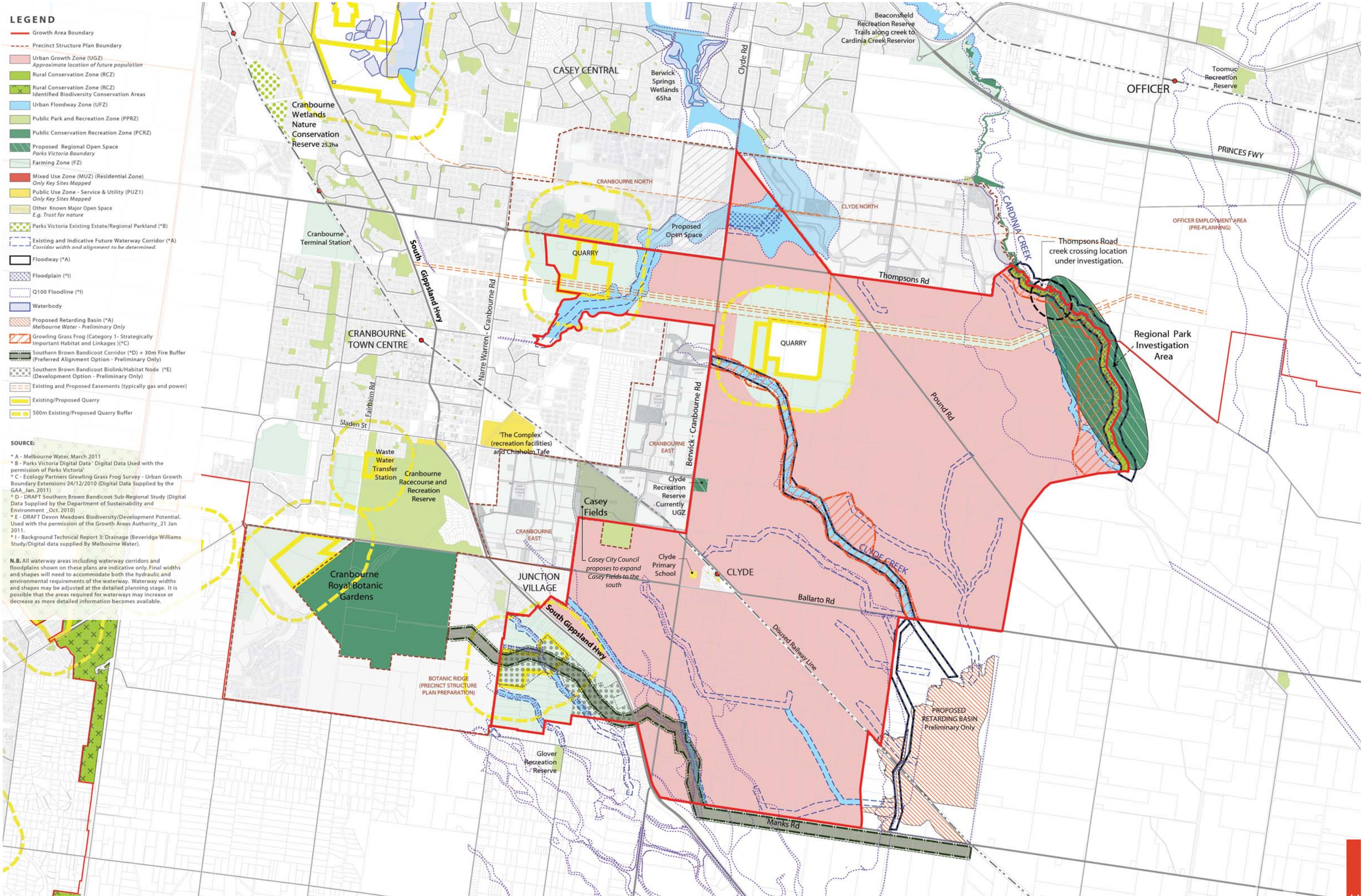
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SCALE 1:50000 @ A3

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SOUTH EAST – Casey and Cardinia BASE PLAN - SLOPE ANALYSIS



SOUTH EAST – Casey and Cardinia BASE PLAN

LEGEND

- Growth Area Boundary
- Existing Urban Growth Boundary
- Urban Growth Zone (UGZ)
- Approximate location of future population
- Future Urban Area
- Other Area
Excludes areas identified as residential areas or open space.
- Existing and Indicative Future Waterway Corridor
Centreline (*A)
Corridor width and alignment to be determined.
- Waterbody
- Arterial Road
- Proposed Thompsons Road Extension
- Major Road
- Railway Line
- Railway Station



Proposed Regional Open Space
Parks Victoria

Existing Open Space -
Outside the Growth Area Boundary
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

TRACT RECOMMENDATIONS

PROPOSED OPEN SPACE SYSTEM
Includes Proposed Regional Active Open Space, Proposed Regional Passive Open Space (Other) and Proposed Linear Open Space Categories.



Regional Gateway
Located on highways entering the growth area where views towards landscape and topographic features define regional character and topography.

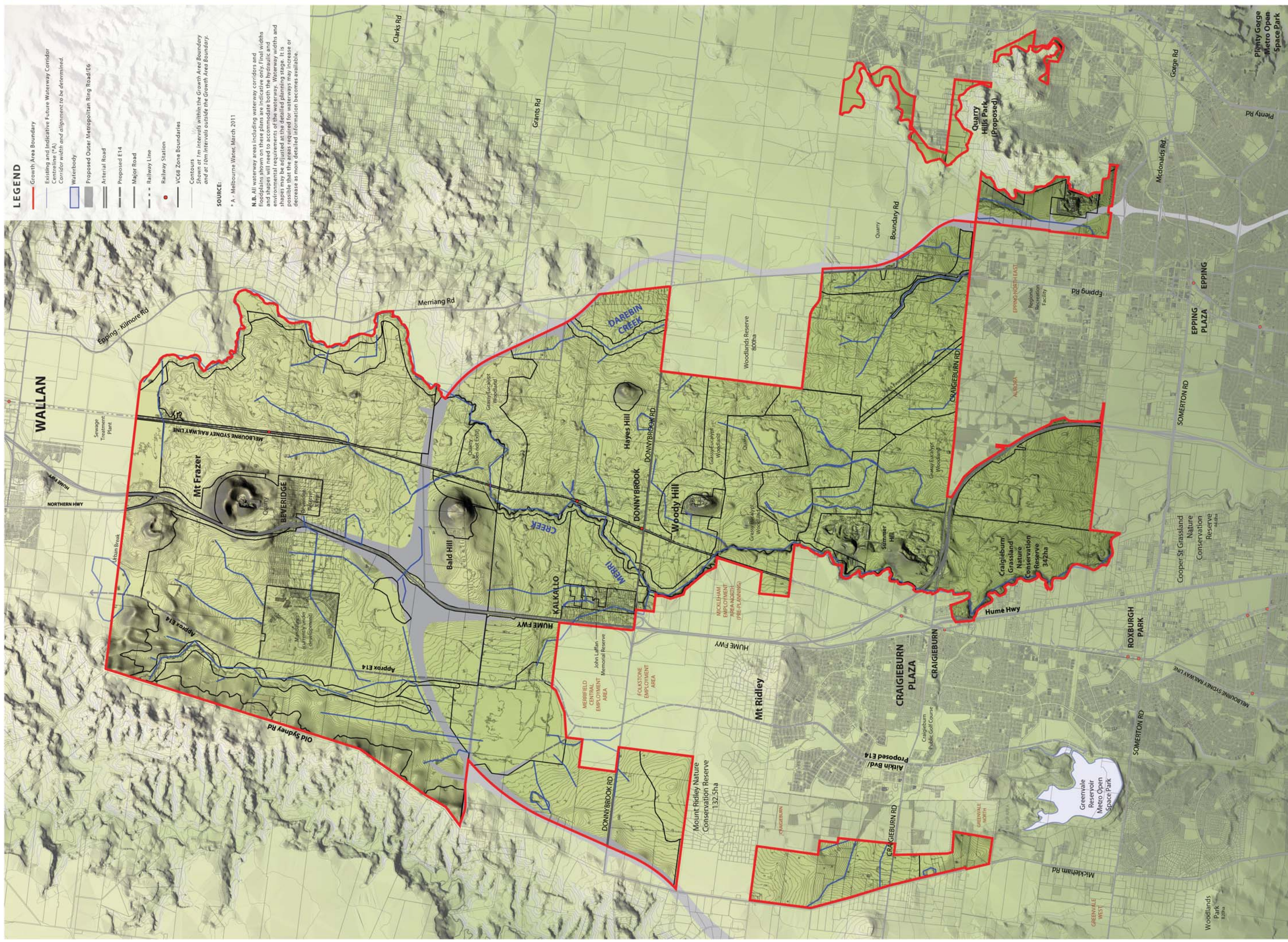
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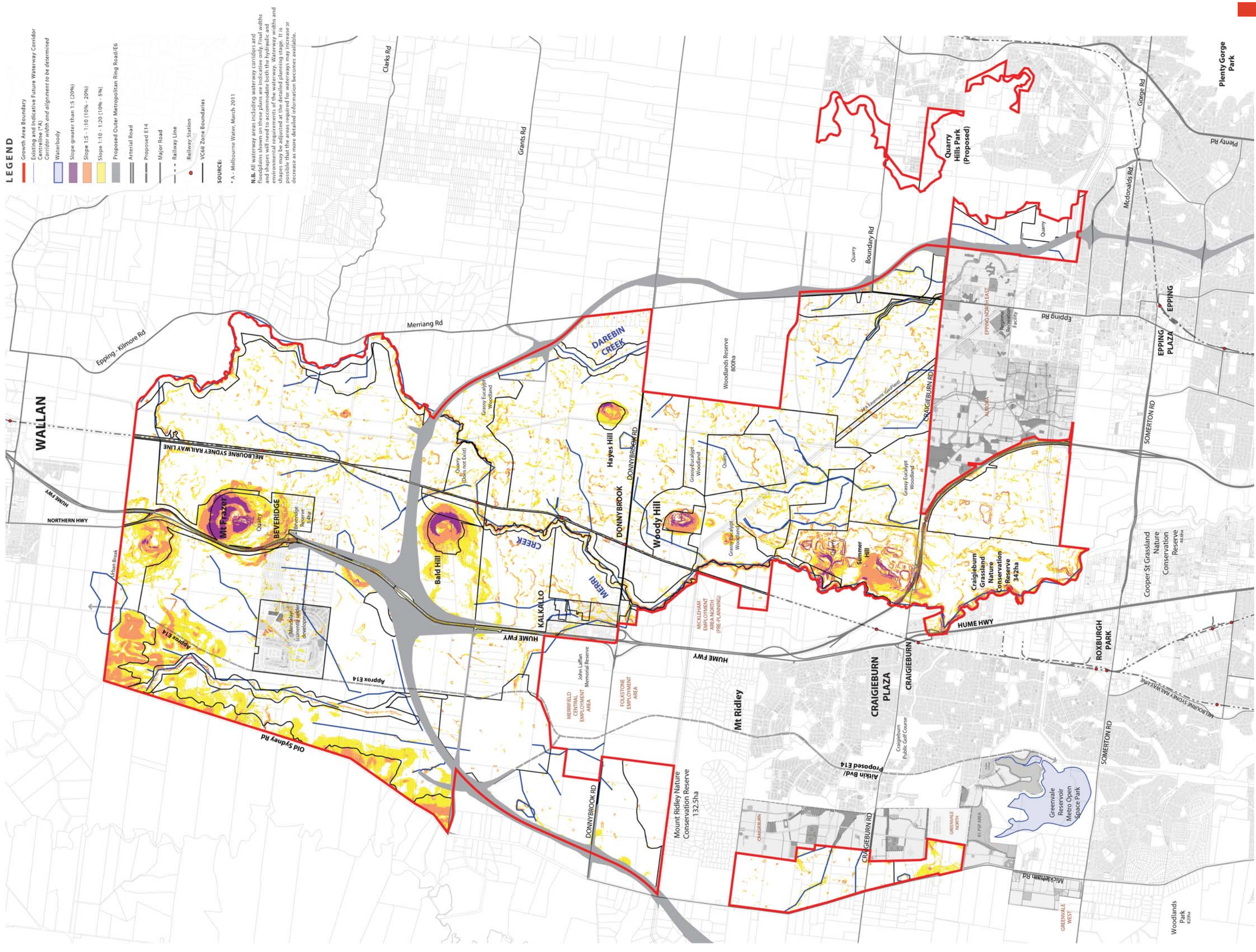
* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



SOUTH EAST - Casey and Cardinia DESIGN RESPONSE, VISUAL INTENT





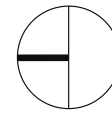
LEGEND

- Growth Area Boundary
- Existing and Indicative Future Waterway Corridor
- Centreline ("A")
- Corridor width and alignment to be determined
- Waterbody
- Slope greater than 1:5 (20%)
- Slope 1:5 - 1:10 (10% - 20%)
- Slope 1:10 - 1:20 (10% - 5%)
- Proposed Outer Metropolitan Ring Road/E6
- Arterial Road
- Proposed E14
- Major Road
- Railway Line
- Railway Station
- VC68 Zone Boundaries

SOURCE:

- * A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.

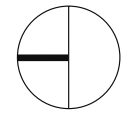


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NORTH - Whittlesea, Hume and Mitchell BASE PLAN - SLOPE ANALYSIS



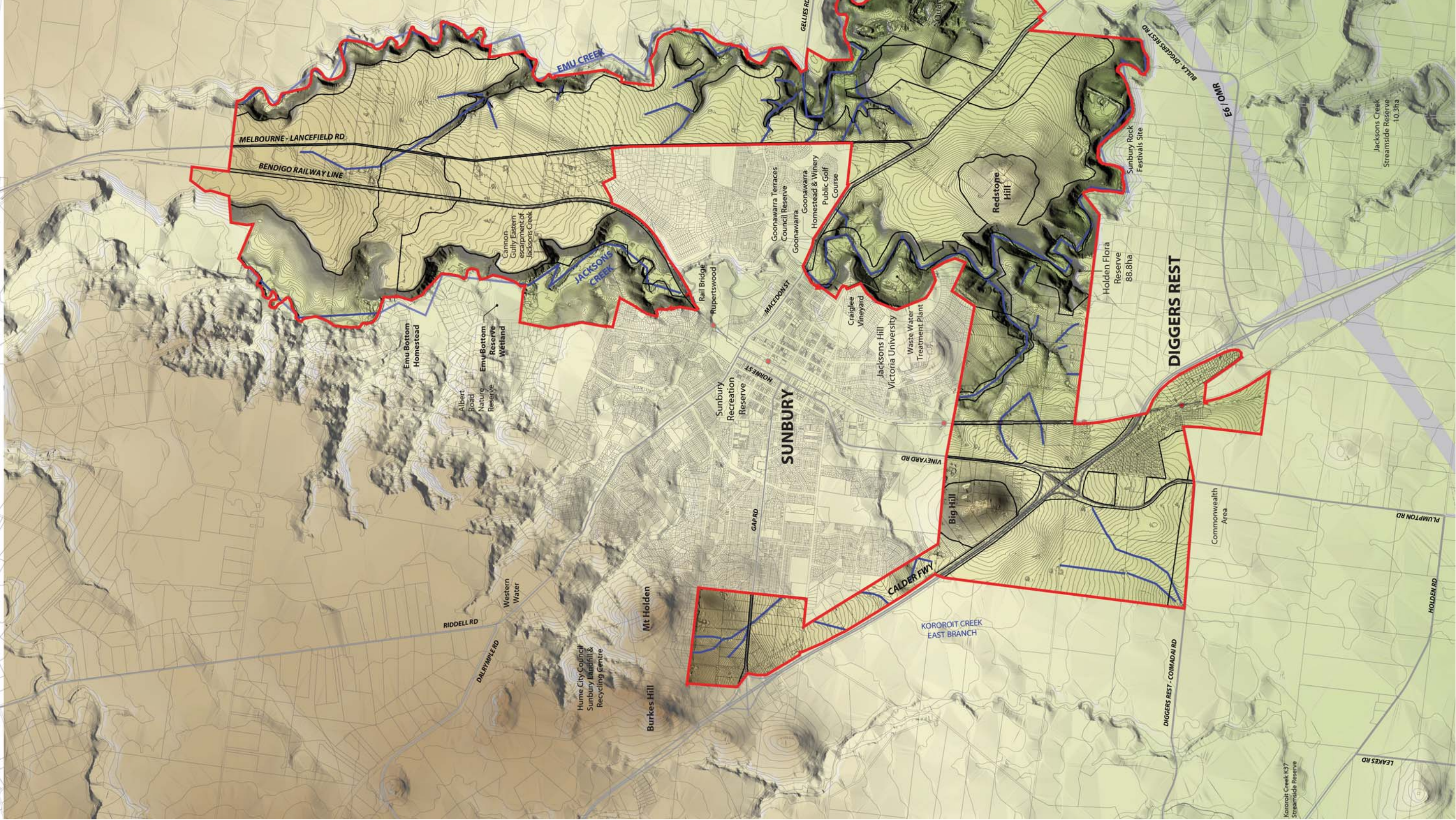
- LEGEND**
- Growth Area Boundary
 - Precinct Structure Plan Boundary
 - Urban Growth Zone (UGZ)
 - Approximate location of future population
 - Rural Conservation Zone (RCZ)
 - Rural Conservation Zone (RCZ)
 - Identified Biodiversity Conservation Areas
 - Urban Floodway Zone (UFZ)
 - Public Park and Recreation Zone (PPRZ)
 - Public Conservation Recreation Zone (PCRZ)
 - Proposed Regional Open Space
 - Mt/Melbourne Water
 - Farming Zone (FZ)
 - Other Known Major Open Space
 - E.g. Trust for nature
 - Parks Victoria Existing Estate/Regional Parkland (PB)
 - Woolan Rd
 - Existing and Indicative Future Waterway Corridor (A)
 - Corridor width and alignment to be determined.
 - Floodway (A)
 - Floodplain (A)
 - Q100 Floodline (D)
 - Existing Natural Wetland Area (A)
 - Boundaries and role to be determined
 - Growing Grass Frog (Category 1 - Strategically Important Habitat and Linkages) (C)
 - Existing and Proposed Easements (typically gas and power)
 - Existing/Proposed Quarry
 - 500m Existing/Proposed Quarry Buffer
- SOURCE:**
- * A - Melbourne Water, March 2011
 - * B - Parks Victoria Digital Data - Digital Data Used with the permission of Parks Victoria
 - * C - Ecology Partners Growing Grass Frog Survey - Urban Growth Boundary Extensions 2012/2016 (Digital Data Supplied by the Ecology Partners)
 - * D - Bursfield Technical Report 3, Drainage (Beveridge Williams Study/Digital data supplied by Melbourne Water)
- N.B.** All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to be determined to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



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NORTH - Whittlesea, Hume and Mitchell BASE PLAN



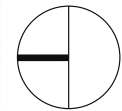
LEGEND

- Growth Area Boundary
- Existing and Indicative Future Waterway Corridor Centreline (*A)
- Corridor width and alignment to be determined.
- Proposed Outer Metropolitan Ring Road/E6
- Arterial Road
- Major Road
- Railway Line
- Railway Station
- VC68 Zone Boundaries
- Contours
- Shown at 1m intervals within the Growth Area Boundary and at 10m intervals outside the Growth Area Boundary.

SOURCE:

* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and geomorphic characteristics of the waterway. The final widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



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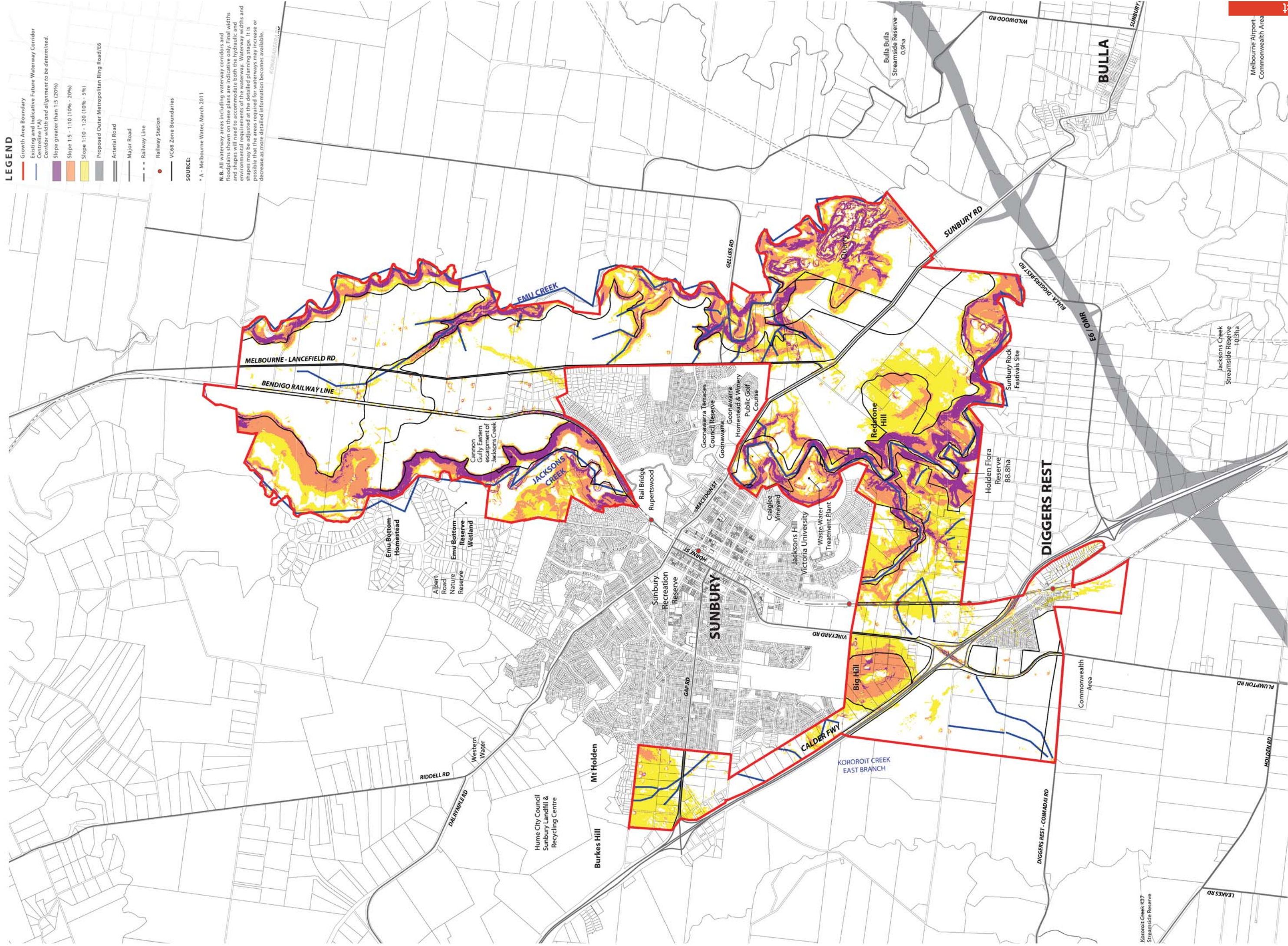
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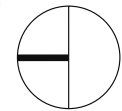
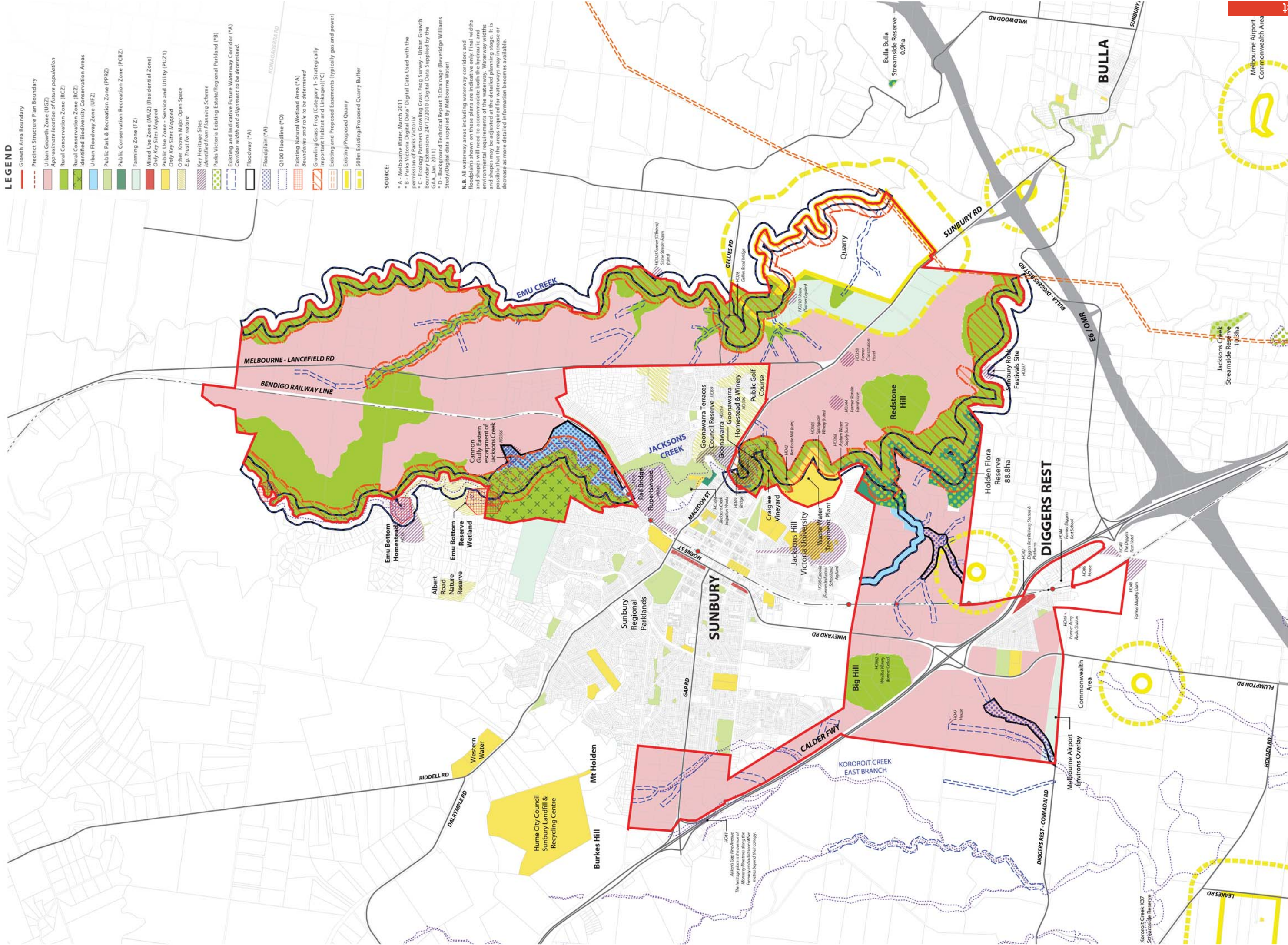
2000 **SUNBURY/DIGGERS REST - Hume and Melton BASE PLAN - TOPOGRAPHY**

GAA OPEN SPACE SYSTEM

PROJ/DWG NO 0310-0485 SA 02 . 1B REV 02 DRWN EF CHKD VS DATE 14.04.2011

Tract





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SUNBURY/DIGGERS REST - Hume and Melton BASE PLAN

GAA OPEN SPACE SYSTEM

PROJ/DWG NO 0310-0485 SA 02 . 13

REV B

DRWN EF

CHKD VS

DATE 14.04.2011

Tract

LEGEND

- Growth Area Boundary
- Urban Growth Zone (UGZ)
- Approximate location of future population
- Other Area
- Excludes areas identified as residential areas or open space.
- Existing and Indicative Future Waterway Corridor
- Centreline ('A')
- Corridor width and alignment to be determined.
- Existing Natural Wetland Area ('A')
- Development and multi-use potential subject to further investigation of environmental values.
- Proposed Outer Metropolitan Ring Road/E6
- Arterial Road
- Major Road
- Railway Line
- Railway Station
- Key View
- Hill
- Major Ridgelines

Existing Open Space - Outside the Growth Area Boundary
Includes Rural Conservation Zone (RCZ), Public Park and Recreation Zone (PPRZ), Public Conservation and Recreation Zone (PCRZ), Urban Floodway Zone (UFZ), Parks Victoria Existing Estate and Trust For Nature Reserves.

TRACT RECOMMENDATIONS

Proposed Open Space System
Includes Proposed Regional Active Open Space, Proposed Regional Passive Open Space (Other) and Proposed Linear Open Space Categories.

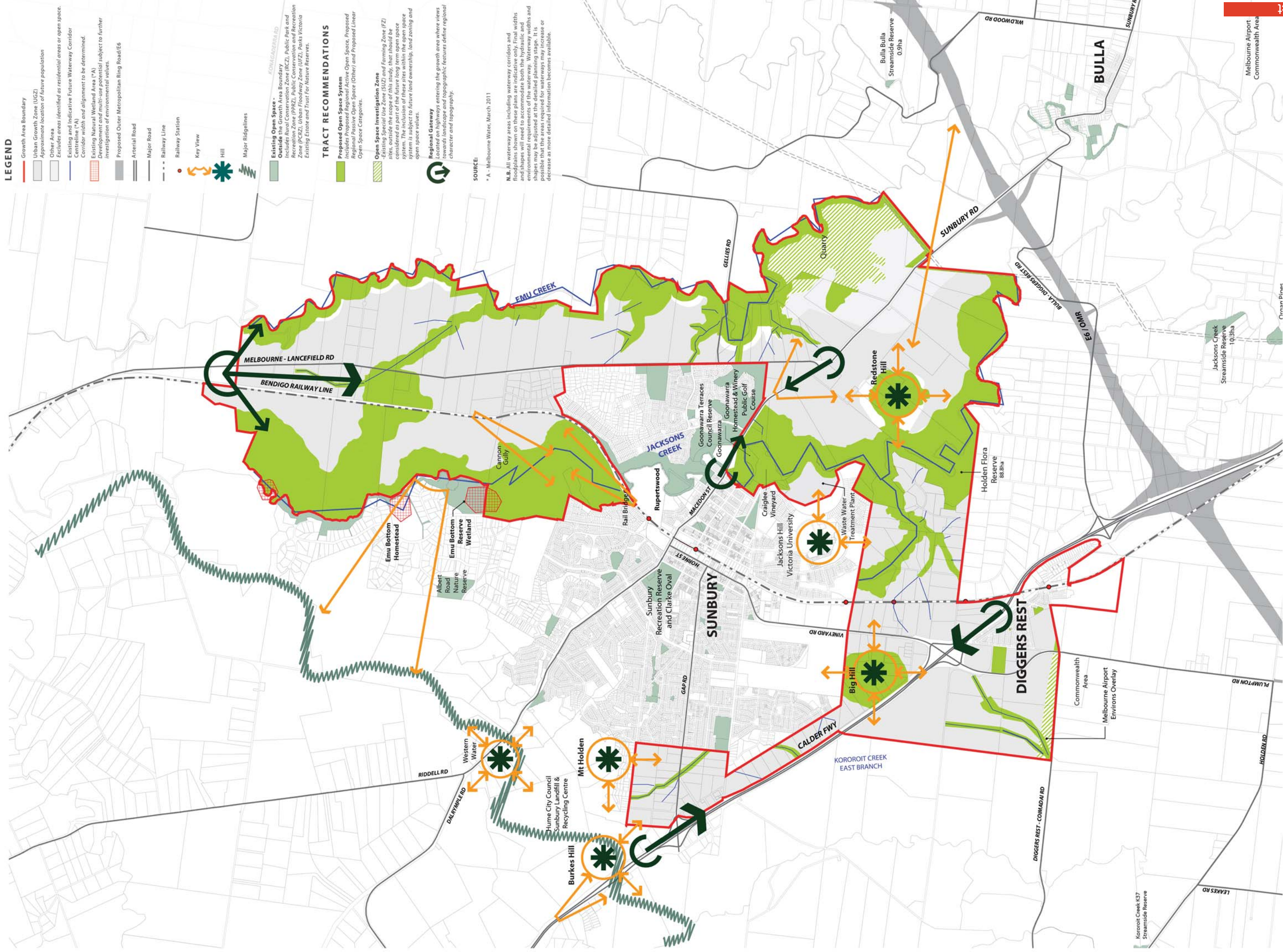
Open Space Investigation Zone
Existing Special Use Zone (SUZ) and Farming Zone (FZ) sites, outside the scope of this study, that should be considered as part of the future long term open space system. The inclusion of these sites within the open space system is subject to future land ownership, land zoning and open space values.

Regional Gateway
Located on highways entering the growth area where views towards landscape and topographic features define regional character and topography.

SOURCE:

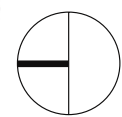
* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.



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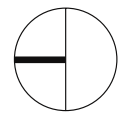
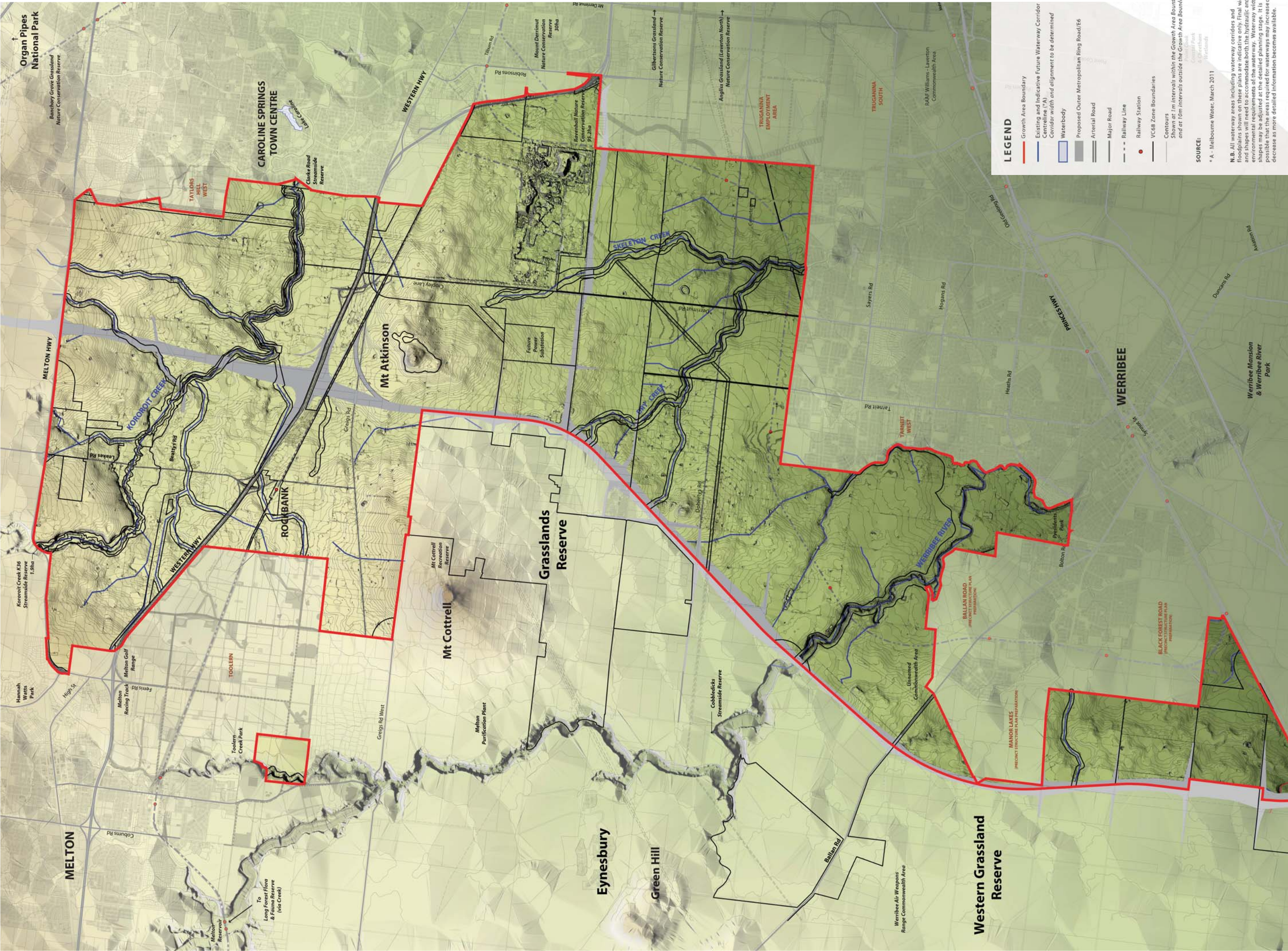
SUNBURY/DIGGERS REST - Hume and Melton DESIGN RESPONSE, VISUAL INTENT

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PROJ/DRG NO 0310-0485 SA 02.11B REV 02 DRWN EF CHKD VS DATE 14.04.2011

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WEST Melton and Wyndham BASE PLAN - TOPOGRAPHY

GAA OPEN SPACE SYSTEM

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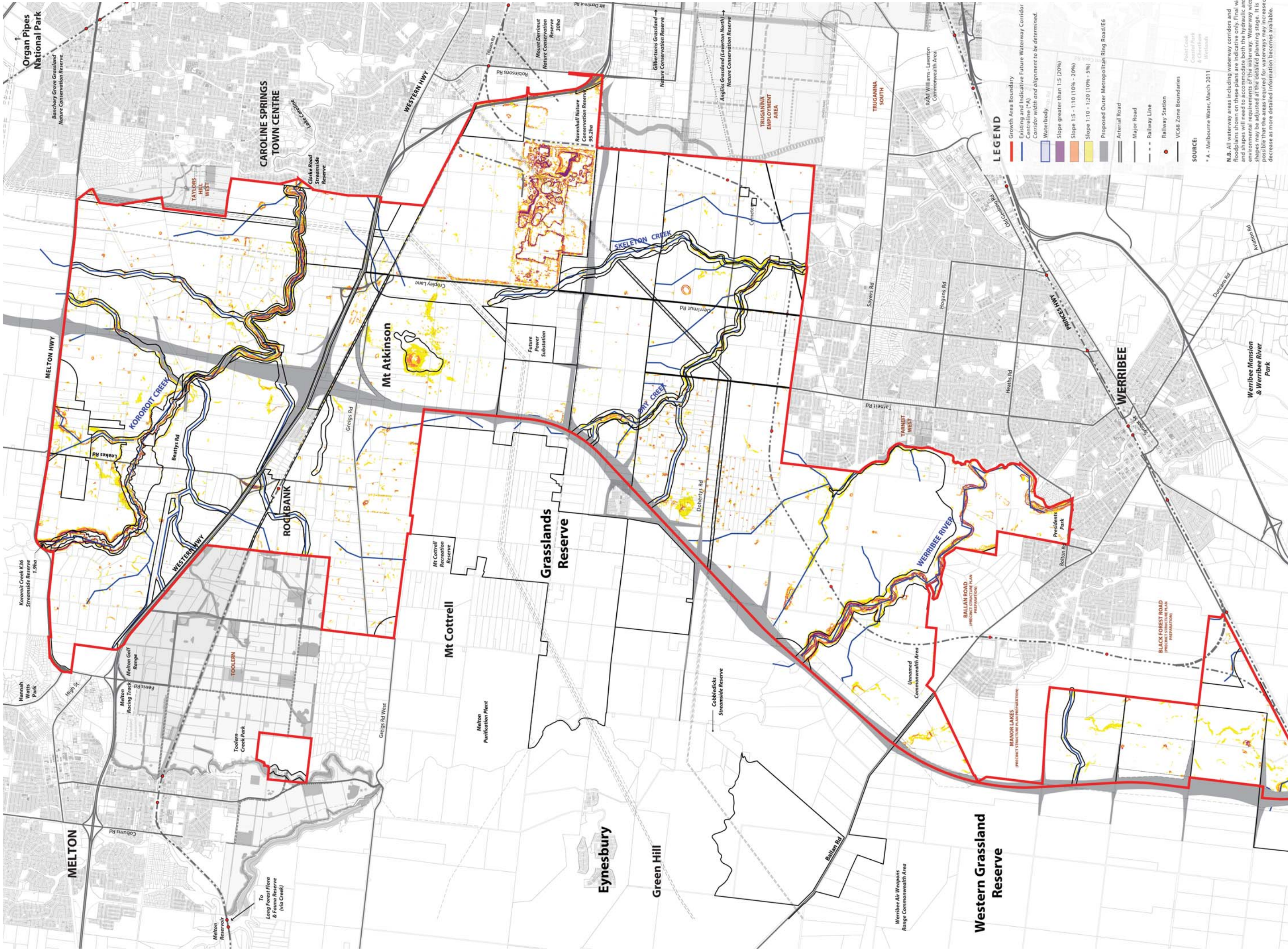
LEGEND

- Growth Area Boundary
- Existing and Indicative Future Waterway Corridor Centreline (CA)
- Corridor width and alignment to be determined
- Waterbody
- Proposed Outer Metropolitan Ring Road/E6
- Arterial Road
- Major Road
- Railway Line
- Railway Station
- VC68 Zone Boundaries
- Contours
- Shown at 1m intervals within the Growth Area Boundary and at 10m intervals outside the Growth Area Boundary.

SOURCE:

* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is acknowledged that waterway widths may increase or decrease as more detailed information becomes available.



LEGEND

- Growth Area Boundary
- Existing and Indicative Future Waterway Corridor
- Centreline ("A")
- Corridor width and alignment to be determined.
- Waterbody
- Slope greater than 1:5 (20%)
- Slope 1:5 - 1:10 (10% - 20%)
- Slope 1:10 - 1:20 (10% - 5%)
- Proposed Outer Metropolitan Ring Road/E6
- Arterial Road
- Major Road
- Railway Line
- Railway Station
- VC68 Zone Boundaries

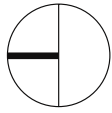
SOURCE:

* A - Melbourne Water, March 2011

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes may be adjusted at the detailed planning stage. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.

SCALE 1:75000 @ A3

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WEST Melton and Wyndham BASE PLAN - SLOPE ANALYSIS

GAA OPEN SPACE SYSTEM

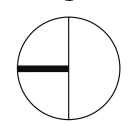
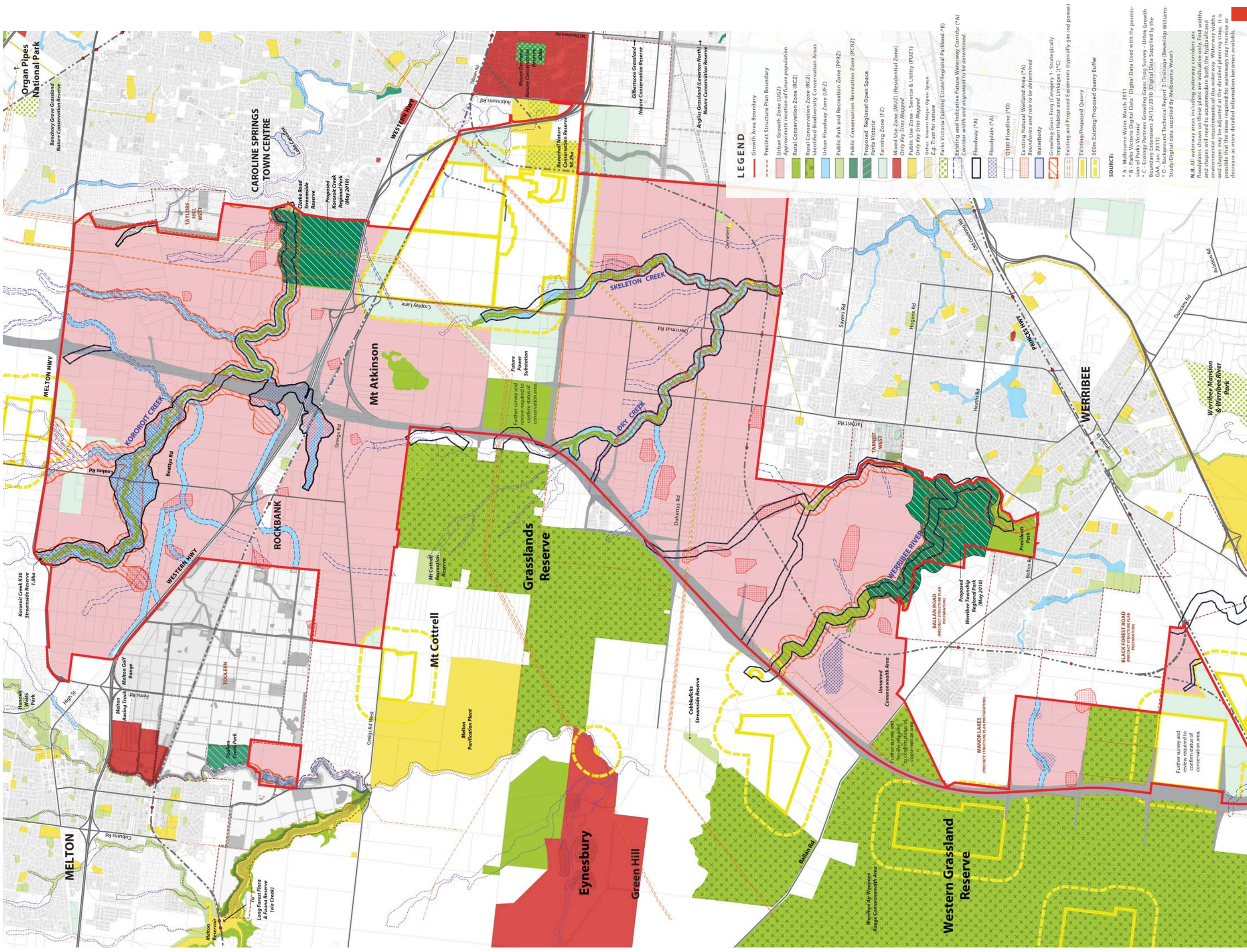
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REV A

DRWN EF

CHKD VS

DATE 14.04.2011



SCALE 1:75000 @ A3

WEST Melton and Wyndham BASE PLAN

GAA OPEN SPACE SYSTEM

PROJ/DRG NO 0310-0485 SA 04 . 13

REV B

DRWN EF

CHKD VS

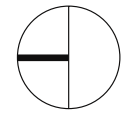
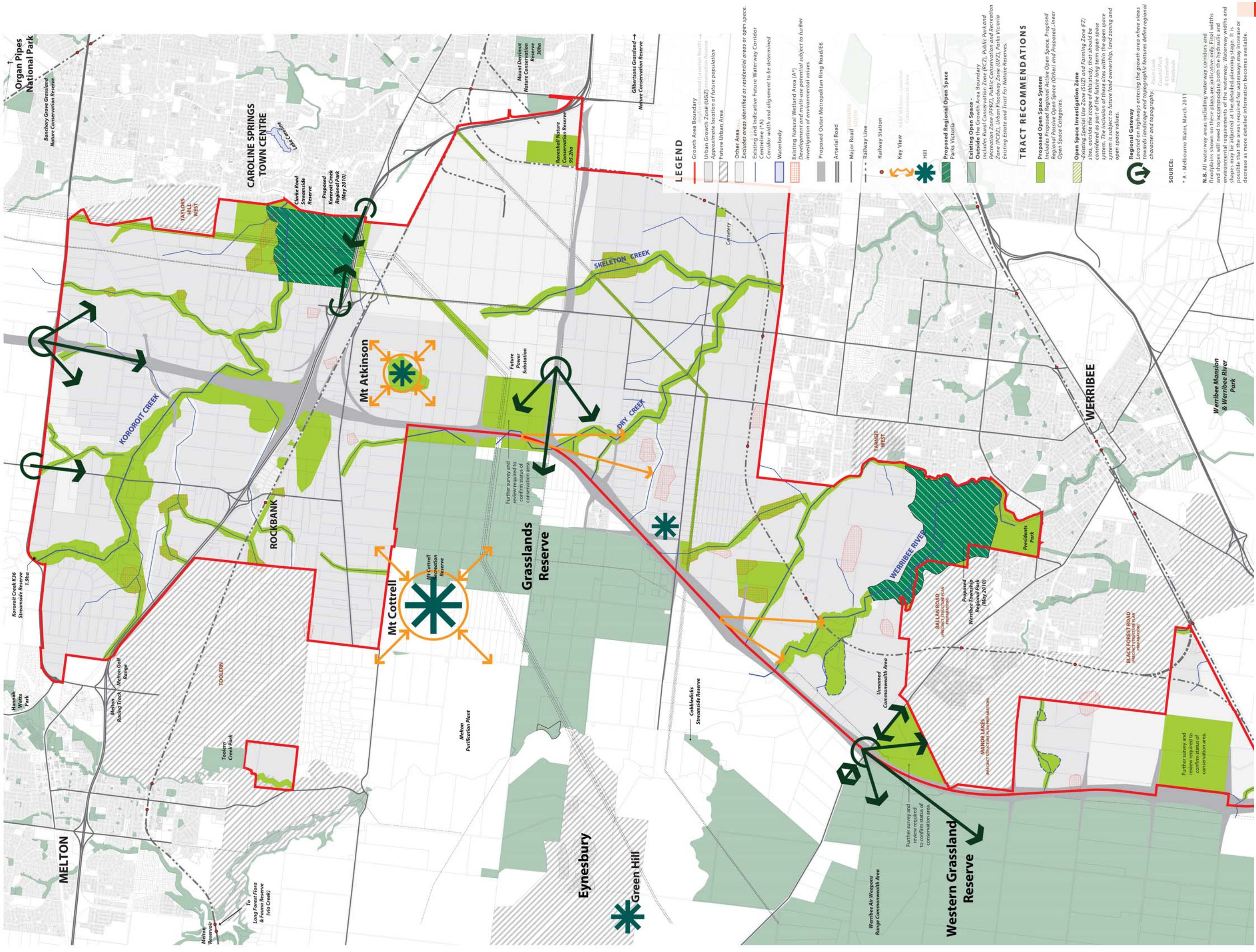
DATE 14.04.2011

Tract

SOURCE:
* A - Melbourne Water, March 2011
* B - Digital Data Used with the permission of Parks Victoria
* C - Ecology Partners Growing Grass Frog Survey - Urban Growth Boundary Extensions 24/12/2010 (Digital Data Supplied by the GAA, Jan. 2011)
* D - Background Technical Report 3: Drainage (Beweridge Williams Study/Digital data supplied by Melbourne Water)

N.B. All waterway areas including waterway corridors and floodplains shown on these plans are indicative only. Final widths and shapes will need to accommodate both the hydraulic and environmental requirements of the waterway. Waterway widths and shapes are indicative only. It is possible that the areas required for waterways may increase or decrease as more detailed information becomes available.

- LEGEND**
- Growth Area Boundary
 - Precinct Structure Plan Boundary
 - Urban Growth Zone (UGZ)
 - Approximate location of future population
 - Rural Conservation Zone (RCZ)
 - Rural Conservation Zone (RCZ)
 - Identified Biodiversity Conservation Areas
 - Urban Floodway Zone (UFZ)
 - Public Park and Recreation Zone (PPRZ)
 - Public Conservation Recreation Zone (PCRZ)
 - Proposed Regional Open Space
 - Parks Victoria
 - Farming Zone (FZ)
 - Mixed Use Zone (MUZ) (Residential Zone)
 - Only Key Sites Mapped
 - Public Use Zone - Service & Utility (PUZ1)
 - Only Key Sites Mapped
 - Other Known Major Open Space
 - E.g. Trust for Nature
 - Parks Victoria Existing Estate/Regional Parkland (#B)
 - Existing and Indicative Future Waterway Corridors (*A)
 - Corridor width and alignment to be determined.
 - Floodway (*A)
 - Floodplain (*A)
 - Q100 Floodline (*D)
 - Existing Natural Wetland Area (*A)
 - Boundaries and role to be determined
 - Waterbody
 - Growing Grass Frog (Category 1 - Strategically Important Habitat and Linages) (*C)
 - Existing and Proposed Easements (typically gas and power)
 - Existing/Proposed Quarry
 - 500m Existing/Proposed Quarry Buffer



SCALE 1:75000 @ A3
0 400 1000 2000

WEST Melton and Wyndham DESIGN RESPONSE, VISUAL INTENT