cranbourne east
precinct structure plan

KEY ISSUES PAPER

CEUGP/KIP1A

September 2007

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1 BACKGROUND

Section 1 outlines the background to the Cranbourne West Urban Growth Plan project, including:

- Structure of Report
- A Brief Planning History
- The Cranbourne West Growth Area
- Vision, Goals and Outcomes
- Study Process

The Key Issues Paper (KIP) is based on executive summaries prepared for each of the Cranbourne West Urban Growth Plan Final Specialist Reports (September 2007). Refer to the final report for further detail regarding any of the key issues contained in this report.

1.1 Structure of the Report

This report is structured in six parts:

Section 1 outlines the background to the Cranbourne West Urban Growth Plan project.

Sections 2-5 summarise the findings of a series of Specialist Reports prepared for the project. These findings are grouped and synthesised in order to facilitate the development of plans for the growth area, as follows:

Section 2 identifies the key site conditions that will influence the growth plan and, in particular, its developable area.

Section 3 identifies relevant aspects of the planning, social and economic context, which will influence the land use budget for the development.

Section 4 identifies the existing capacity of transport and utility networks in the area, which will inform the identification of new infrastructure requirements.

Section 5 summarises the concerns and aspirations of landowners and community members in relation to the project.

Section 6 provides a summary of the key issues identified in this report.

This structure is illustrated in Figure 1.

Figure 1—Structure of report

1.2 A Brief Planning History

In 2002, an interim Urban Growth Boundary (UGB) was established in association with the release of *Melbourne 2030—Planning for sustainable growth*. This boundary identified the land within the Cranbourne East study area as part of Melbourne's future urban area.

Also in 2002, Council released a whole-of-city strategy entitled *Casey C21—A vision for our future* (Refer to Figure 2). The development of the C21 commenced in 1998, before the implementation of *Melbourne 2030*.

The *C21* Plan designated portions of land within Cranbourne East for both proposed rural residential and proposed large lot suburban residential areas. It includes a *C21* Major Open Space link running through Casey Fields, and a future arterial road link running north from east of Junction Village. The Plan also indicates a 'Community Place' and a 'Primary Learning Centre' for the area.

In realizing the development aspirations of the *C21* Plan, *C21* contains a vision for Cranbourne East which seeks to establish 'a quality treed, suburban environment, with a country feel and strong links to Cranbourne and benefiting from unique access to extensive parkland areas'.

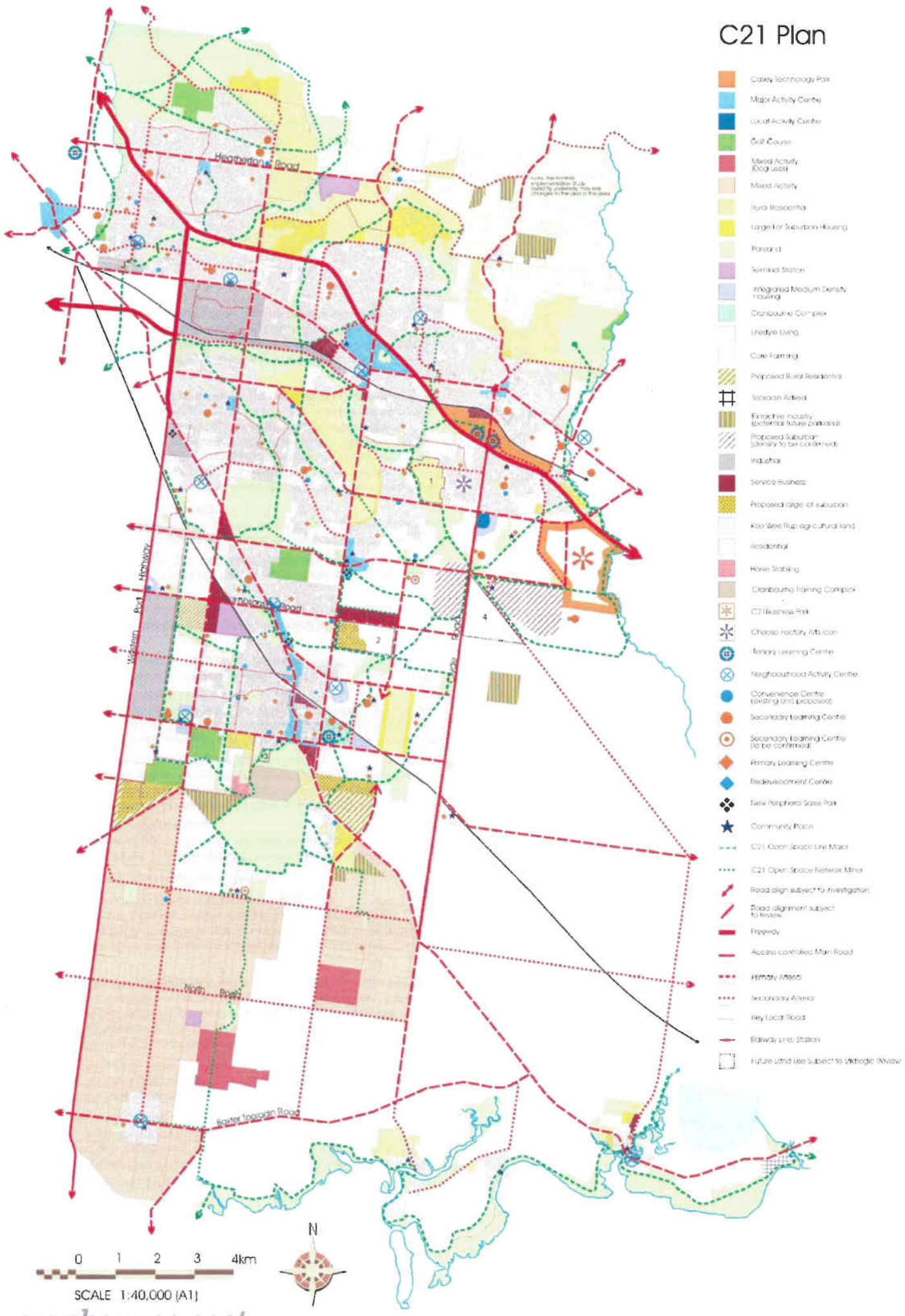
The goals set for Cranbourne East in *C21* are:

- **Treed image.** Extend Cranbourne's treed image into Cranbourne East and establish links in the suburban area to the surrounding parkland and country-side.
- **Strong links to Cranbourne**. Establish a large range of local and community level access to activity centres, learning centres and community places – with a reliance on the Cranbourne Town Centre for subregional and higher services and facilities.
- **Diverse suburban housing and lifestyle opportunities**. Provide the full range of suburban housing and lifestyle opportunities throughout the new suburban area, with areas of larger allotments to provide required diversity for Cranbourne.
- **Expansive active parkland to service the region**. Development of the Casey Fields for regional and district level outdoor sports and recreation.
- **New public spaces, parkland, facilities and services**. Development of new people spaces, places and programs to reflect rapid population expansion.
- **A new transport network**. New main roads/intersections, safer local streets, convenient bus services and safe trail network.

The aspirations for the Cranbourne East area identified in C21 led to the preparation of the Cranbourne East Development Plan, which was adopted by Council in 2005 (Refer to Figure 3).

In 2003, Smart Growth Committees were appointed to oversee a review of the existing growth area plans for each of Melbourne's five growth areas. The Casey-Cardinia Smart Growth Committee recommended the extension of the UGB at Cranbourne West to Ballarto Road, in line with the *C21 Plan*. It also provided a *Growth Area Framework Plan* which supported much of the indicative urban structure suggested by the *C21 Plan*, with the key difference that more employment land was shown. The *Growth Area Framework Plan* is shown in Figure 4.

In 2006, a Growth Areas Authority (GAA) was established to guide sustainable development in Melbourne's growth areas. The GAA views the Cranbourne West Urban Growth Plan as a 'flagship project', which will establish a model for future sustainable urban development in Melbourne's growth areas.



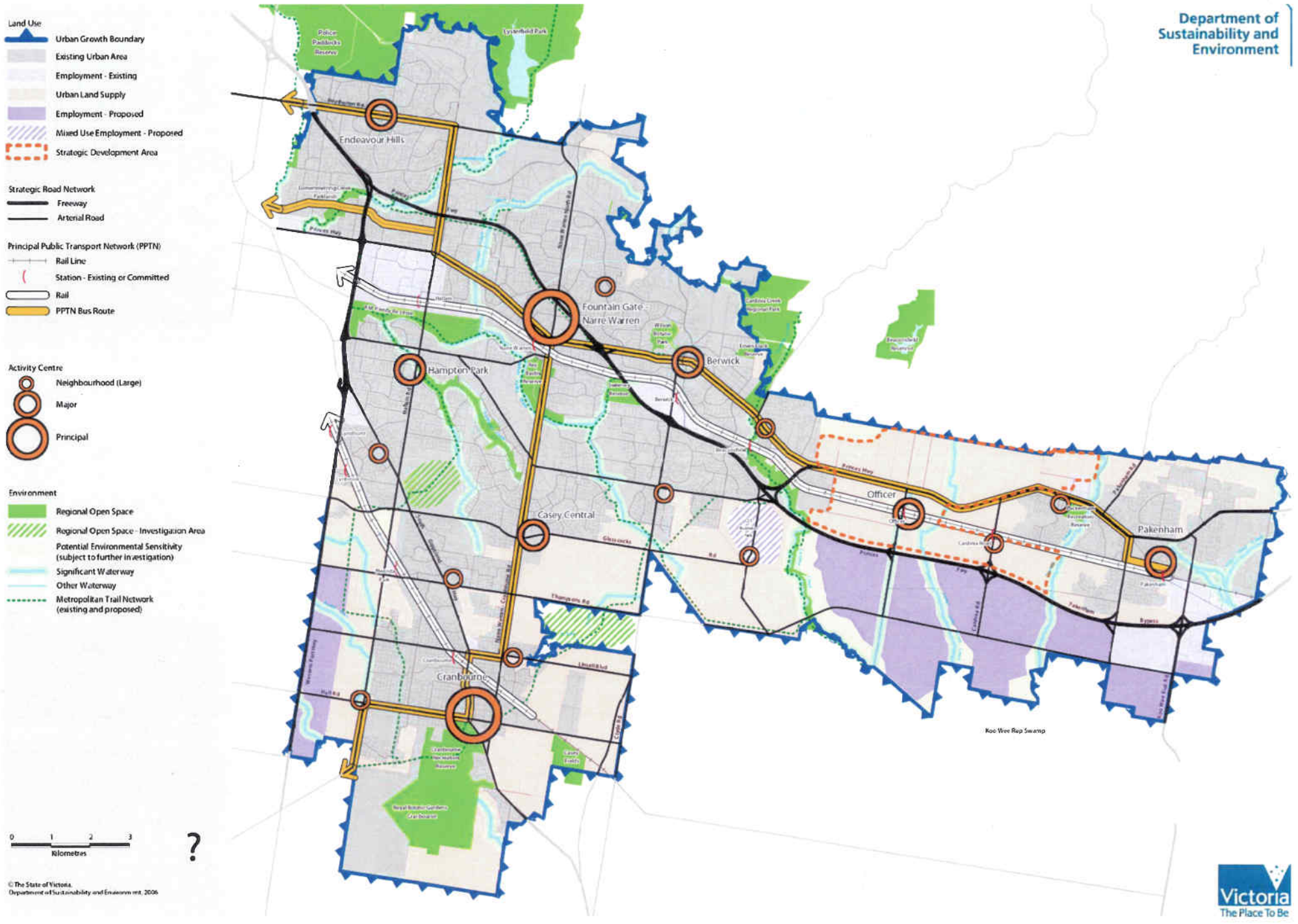
cranbourne east

Figure 2

cranbourne east *Figure 3*

cranbourne east

Figure 4



1.3 The Cranbourne East Growth Area

This is a summary of the Cranbourne East Urban Context Specialist Report (September 2007) prepared by David Lock Associates, which should be referred to for further detail.

The Cranbourne East Urban Growth Area is located at the eastern edge of the City of Casey and forms an interface to the Urban Growth Boundary to the east and south.

The subject area is identified in Figure 5. It is approximately 870 hectares in area, and is in part bounded by:

- Thompsons Road to the north
- Berwick-Cranbourne Road (Clyde Road) to the east
- South Gippsland Highway to the south west

The following provides a summary of the key features of the urban pattern surrounding the growth area at a sub-regional and local scale. The site's context is analysed in greater detail in Parts C and D of this report.

1.3.1 Sub-Regional Context

Figure 6 highlights the sub-regional context within which the growth area sits.

The key features of urban development surrounding the growth area are:

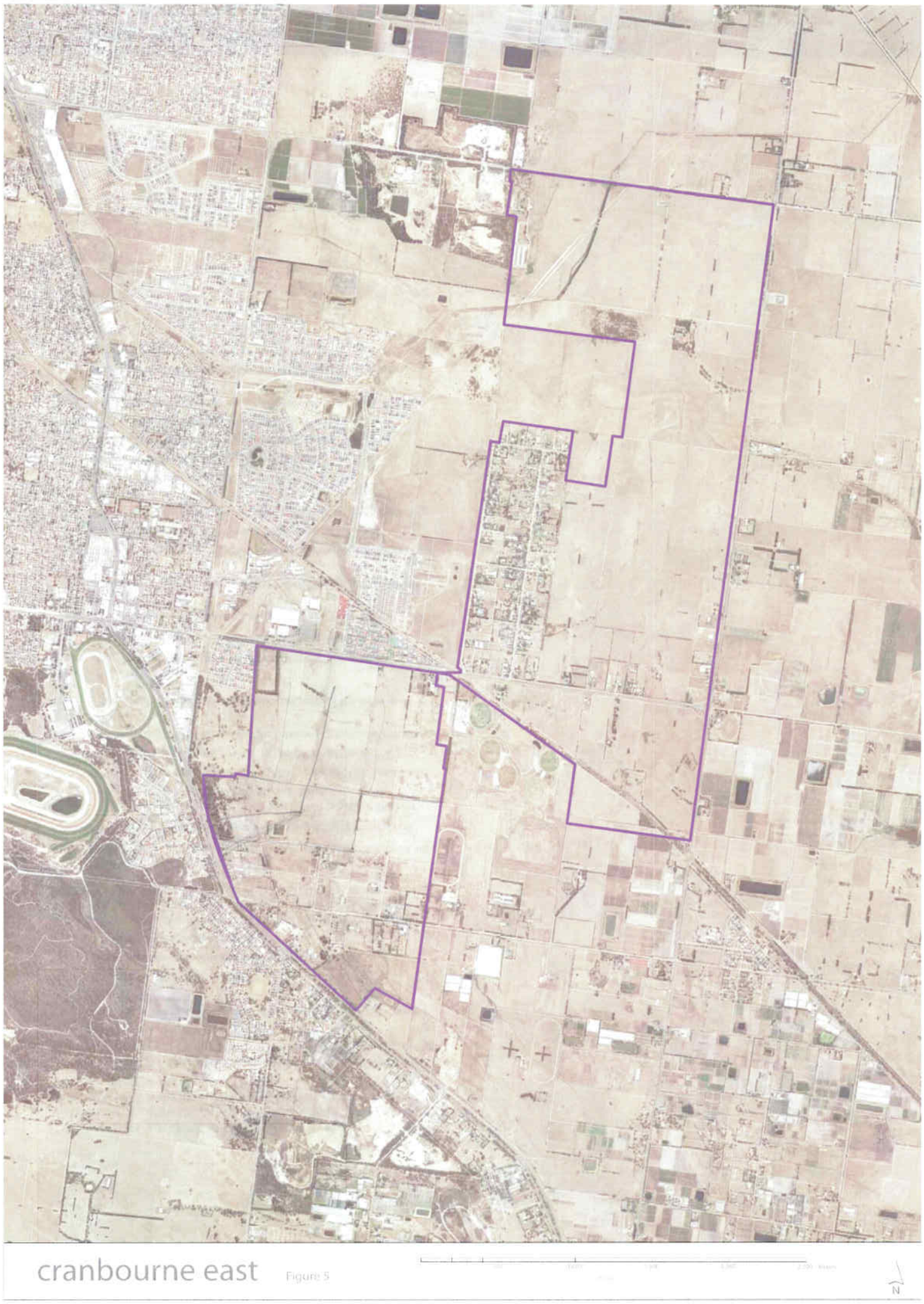
- Urban land generally to the north and west of the subject site and non-urban land generally to the east and south;
- Four principal activity centres within 15 kilometres of the subject site;
- Four major activity centres within 12 kilometres of the subject site;
- Two other significant activity centres relatively close to the subject site;
- Parks Victoria Regional Park site mooted north of the study area.

1.3.2 Local Context

Figure 7 highlights the local context within which the growth area sits.

The key features of urban development surrounding the study area are:

- The Cranbourne Rail line, runs diagonally through the subject site (currently disused);
- A number of freeways and highways relatively close to the subject site;
- A number of significant regional open spaces close to the subject site;
- Cranbourne principal activity centre 2km away to the west;
- A grid of existing and proposed main roads bounding and dissecting the subject site, including:
    - Thompsons Road,
    - Linsell Boulevard (under construction),
    - The Berwick – Cranbourne Road (Clyde Road), and
    - The South Gippsland Highway.
- A transmission line traversing the subject site on an east-west alignment;
- A number of small local parks in the established and developing Cranbourne East area.



cranbourne east Figure 5

N

figure 6
sub-regional context

- Site
- Railway Line
- Possible Future Rail Line
- Arterial Roads
- Main Roads
- Municipal Boundaries
- Key Open Space
- Principal Activity Centres
- Other Significant Activity Centres
- Major Activity Centres
- Major Industrial Area
- Principal Public Transport Network
- Urban Growth Area
- Rural Area
- Urban Growth Boundary

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AUGUST 2007

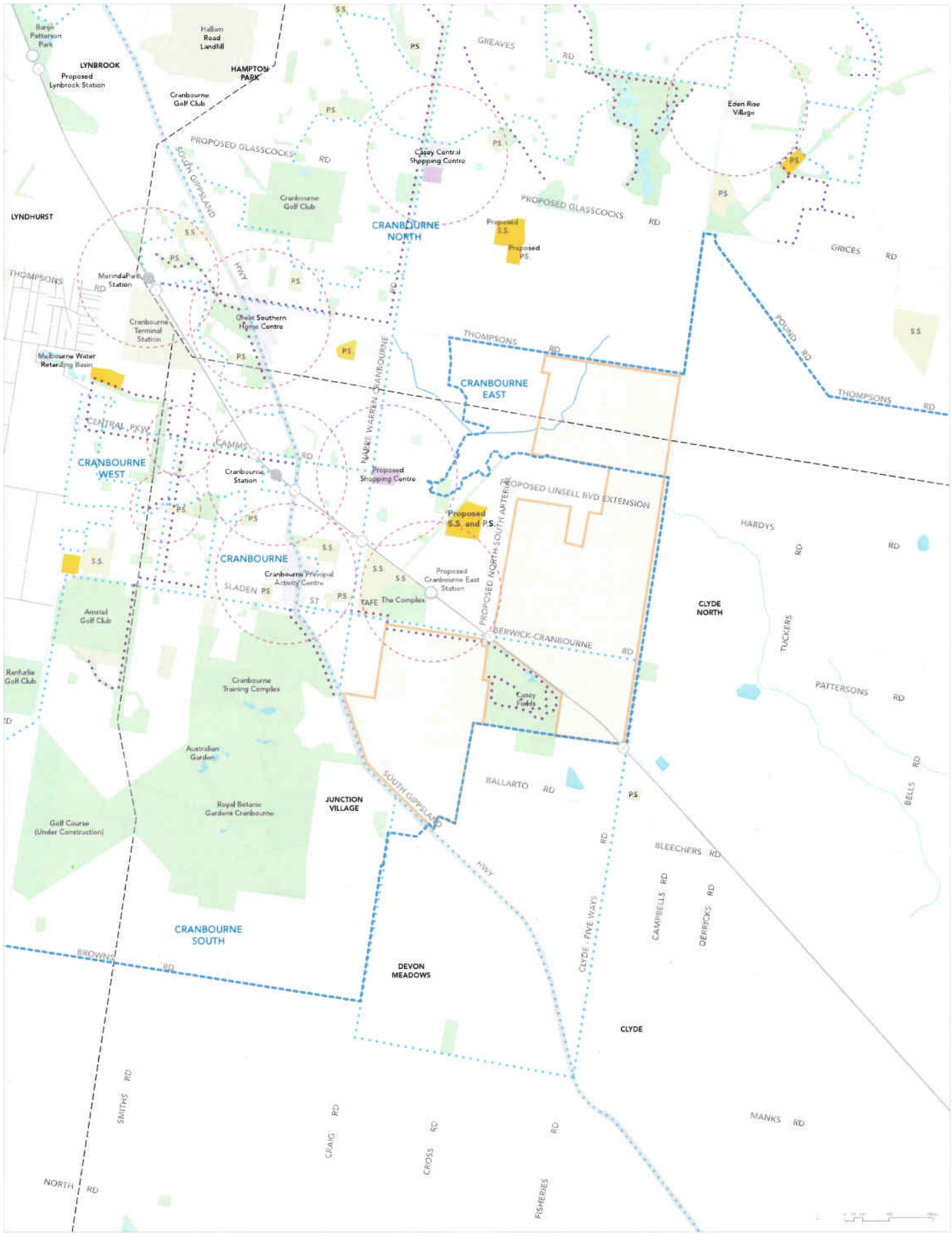

figure 7
local context plan

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2 SITE CONDITIONS

Section 2 identifies the key site conditions that will influence the growth plan and, in particular, its developable area. It commences with an analysis of the key features of urban development within and abutting the site, and natural features that contribute to its character. This is followed by analysis of the following aspects of the site:

- Amenity buffers
- Contaminated land
- Land capability
- Flooding and drainage
- Flora and fauna
- Tree health
- Cultural Heritage

Finally, the constraints arising from these analyses are synthesised to identify the area of developable land.

2.1 Site Features

This is a summary of the Cranbourne West Urban Context Report and Landscape Character Final Specialist Reports prepared by David Lock Associates, which should be referred to for further detail.

2.1.1 Urban development

Figure 8 identifies the development pattern within the growth area.

The key features of urban development within and abutting the subject site are:

- A large number of low density residential lots located on the western edge of the northern section of the subject site, known as the Collison Estate;
- A number of slightly larger farming zoned lots located in the southern section of the subject site around Ballarto Road;
- Remainder of the subject site is made up with relatively large lots within either a farming or green wedge zone;
- Land within the subject site used predominately for farming purposes;
- Land abutting the subject site used predominately for farming purposes to the east and south and residential purposes to the north and west, except for Casey Fields to the southern edge;
- A proposed North-South Arterial Road abutting much of the western edge of the northern section.

2.1.2 Natural features

Figure 8 identifies the natural features within the growth area.

The key natural features within and abutting the subject site are:

- A small but significant hill just east of the proposed North-South Arterial Road;
- Two local high points in the south-east corner of the subject site abutting Clyde Road;
- A watercourse which flows in a north-east directions from the Hunt Club development to Thompsons Road and beyond; and
- A few scattered stands of trees and permitter planting.

2.1.3 Character

Figure 9 identifies the landscape character of the growth area.

The general landscape character can be described as open, affording long views across subtle topography with only slight variation between the two largest zones. The other two zones were more local areas with a more intimate viewshed and characterized more by trees. All areas were traversed or defined by constructed landscapes of straight lines of trees, giving most of the area a sense that nature has been subjugated but with the apparent decline of farming the sense of orderedness is declining.

figure 8
urban
context
plan

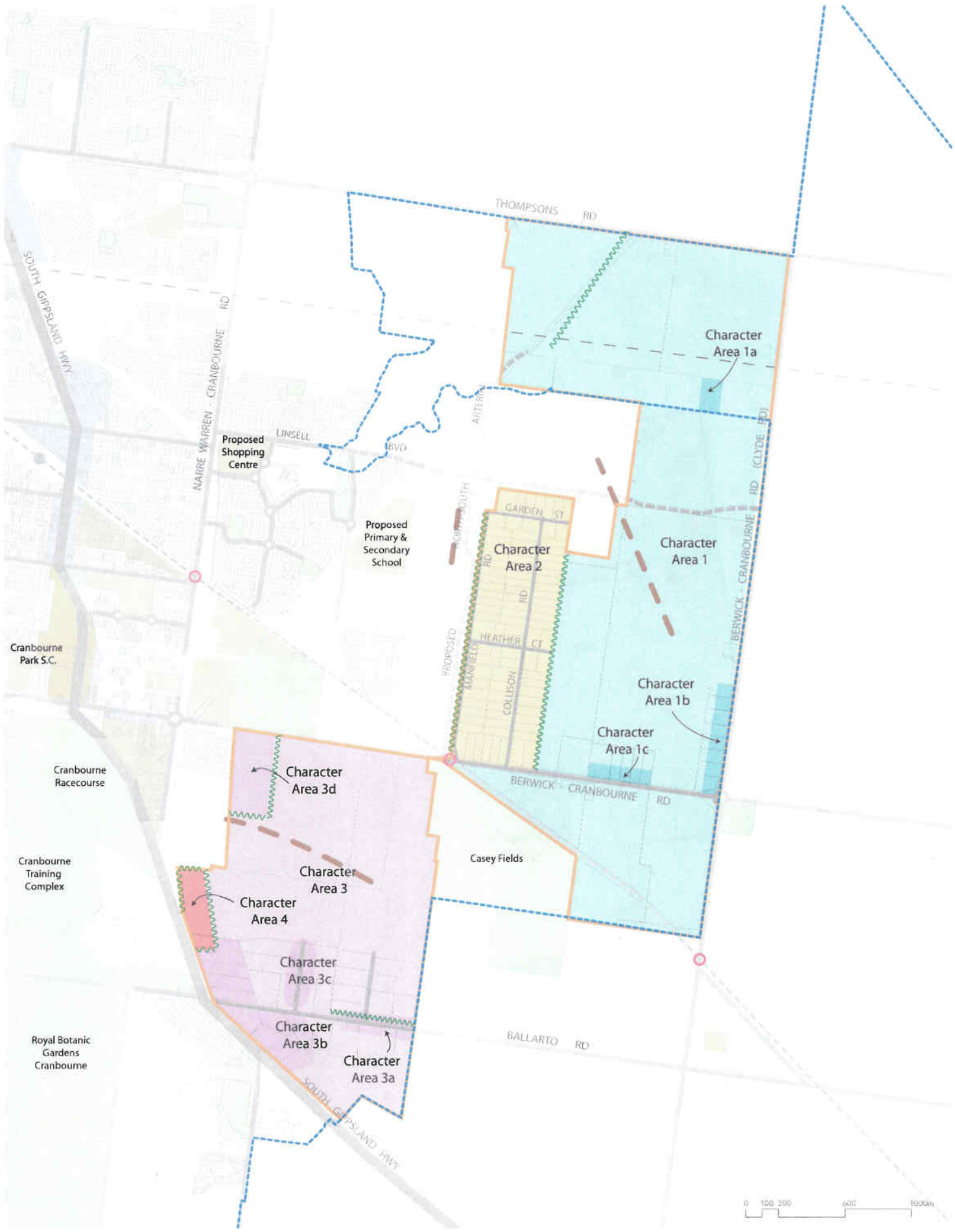

figure 9
landscape assessment

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2.2 Amenity Buffers

This is a summary of the Cranbourne East Buffer Distance Review Final Specialist Report prepared by SKM, which should be referred to for further detail.

Figure 10 identifies the buffers affecting the growth area.

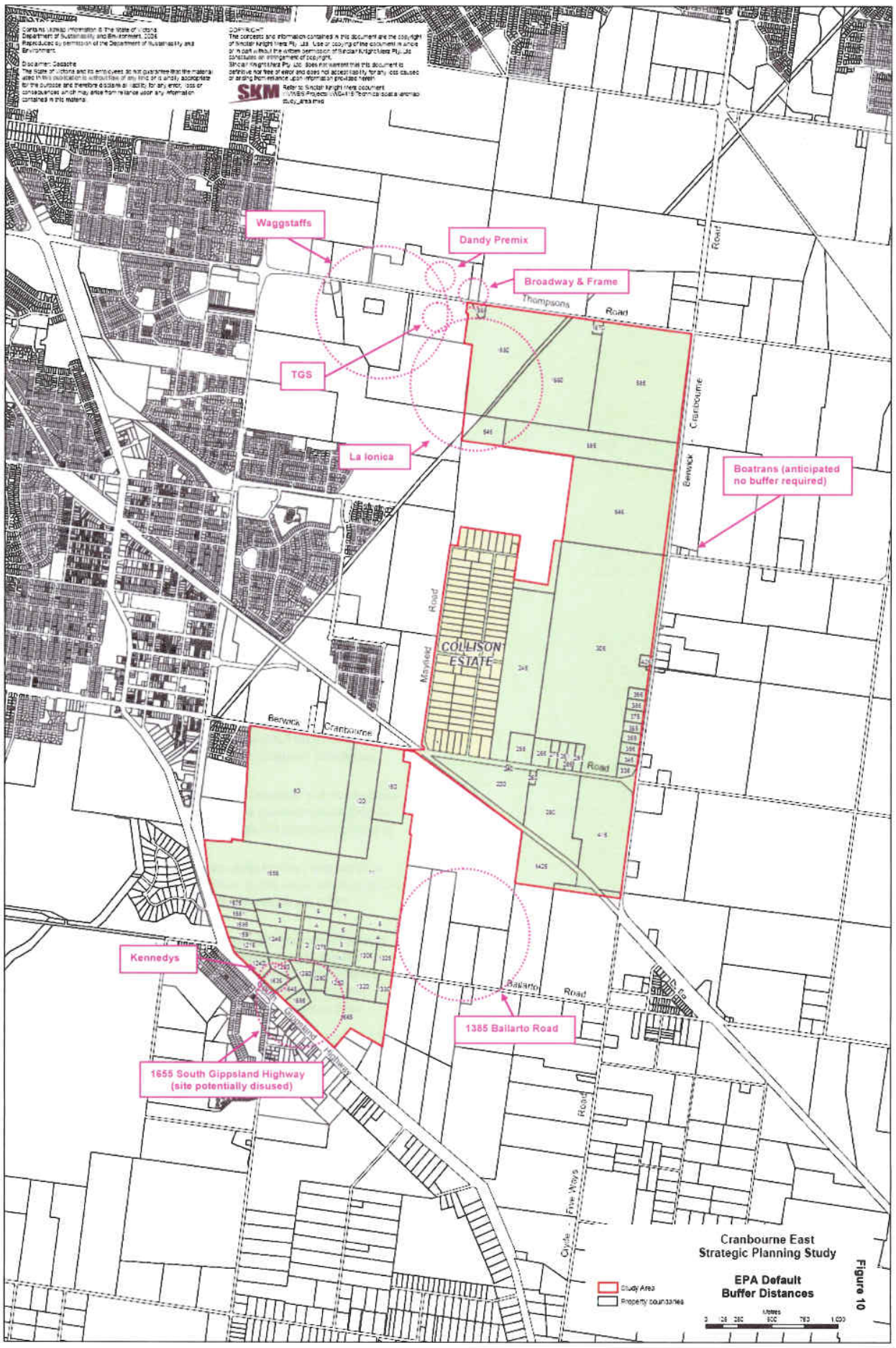
Buffer distances based on EPA guidelines have been assessed associated with a number of industries either located within the study area of within the immediate surrounding area.

A summary of the Buffer Study findings is as follows:

- Industries requiring EPA buffers included poultry farms, concrete batching plants, an abattoir, metal products fabrication and green housing.
- Default EPA buffers ranging from 100 to 500 metres have been allocated to the industries encountered. The main areas of land affected by the buffers included within the Cranbourne East Study Area B are in the north-west corner of the study area (La Ionica poultry farm), and on the southern boundary (green housing located at 1655 South Gippsland Highway.
- It is understood that the area of the site affected by the buffer associated with the La Ionica poultry farm, in the north-western corner of the study area, is proposed to remain undeveloped and will form part of a parks and recreation area.
- The buffer associated with the concrete batching activities located at 1575 Thompsons Road (Broadway & Frame Premix) encroaches on the extreme northern boundary of the site. However, it is understood that this activity is soon to be discontinued.
- It is understood that boat transport business Boatrans, located on Hardys Road on the eastern boundary of the study area will not require a buffer as based on our current understanding of the site no metal fabrication takes place at the facility. If metal fabrication is undertaken at the site a default buffer of 500m would be required, which would impact on the development area. It is recommended that further investigation into site practices should be carried out to determine if a buffer is required, further investigation should also enable a significant reduction of the EPA default buffer presently allocated, given the size of the facility.
- The buffer associated with the green houses located at 1655 South Gippsland Highway, affects a significant area of the southern portion of the study area, of which much is already sub-divided and occupied by residential properties. Inspection of this site (from the perimeter) indicated that the site is no longer in operation and maybe precluded from requiring a buffer. It should also be noted that existing residential development is located adjacent to the property. This, however, does not necessarily preclude the requirement for a buffer and it is recommended that further investigation would be required to confirm this.

2.2.1 Summary

The small component of the growth area affected by the buffers is located within the proposed Parks Victoria Regional Park area – this land is outside the growth boundary and outside the study area.


Waggstaffs
Dandy Premix
Broadway & Frame
Thompsons Road
TGS
La Ionica
Boatrans (anticipated no buffer required)
Berwick Cranbourne
Clyde Road
COLLISON ESTATE
Berwick Cranbourne Road
Kennedys
1385 Ballarto Road
1655 South Gippsland Highway (site potentially disused)
Ballarto Road
Five Ways Road
Cranbourne East Strategic Planning Study
EPA Default Buffer Distances
Study Area
Property boundaries
Figure 10

2.3 Contaminated Land

This is a summary of the Cranbourne East Phase 1 Environmental Assessment Final Specialist Report prepared by SKM, which should be referred to for further detail.

Figure 11 identifies the potential on-site contamination sources.

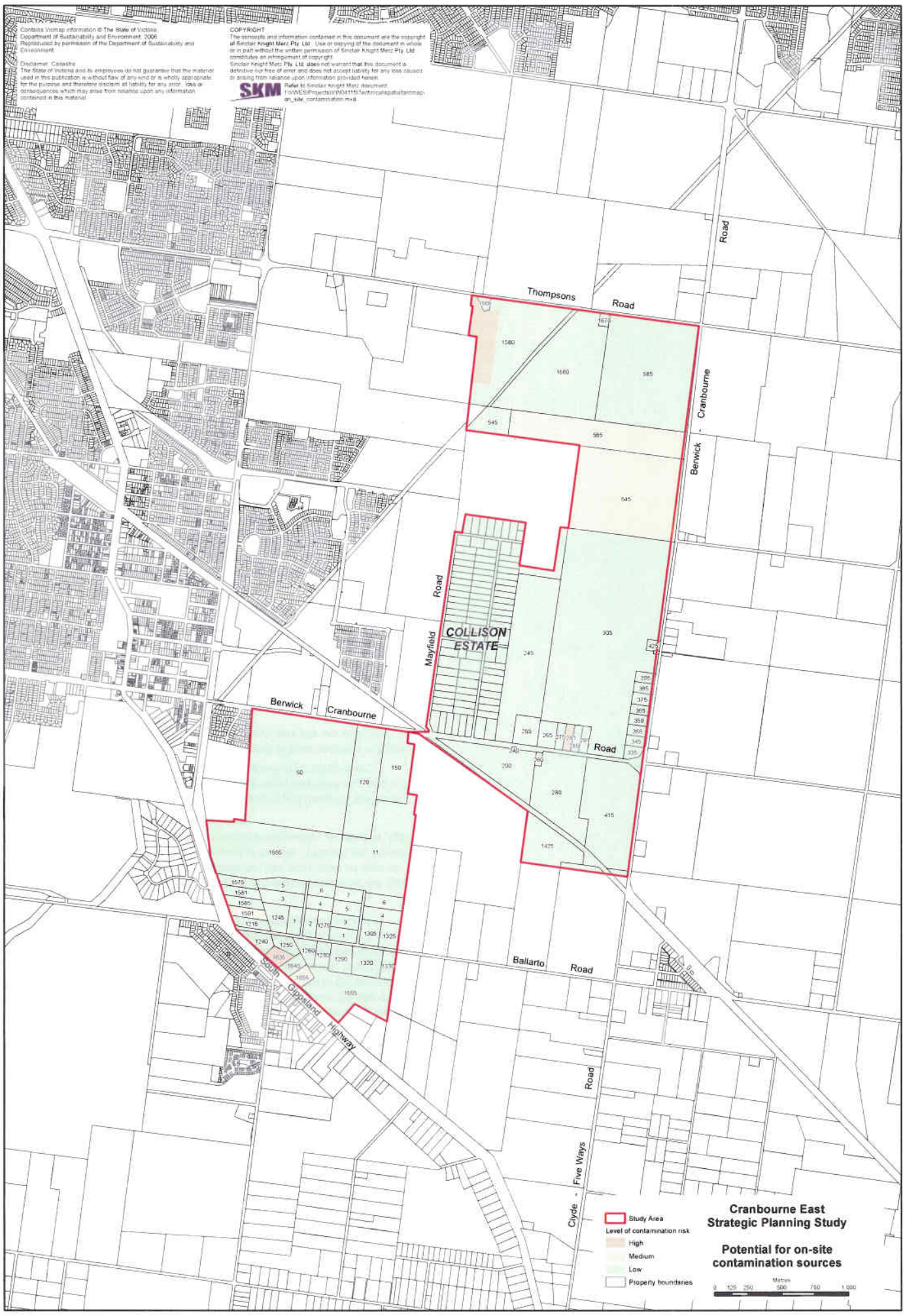
Figure 12 identifies the potential off-site contamination sources.

Published geological information indicates that the northern area of the site is predominantly underlain by Tertiary age sediments of the Baxter Sandstone which largely comprises ferruginous (iron-rich) sandstone, sand, sandy clay and occasional gravel. The southern area of the site is underlain by lower Tertiary Older Volcanics comprising basalt lava flows;

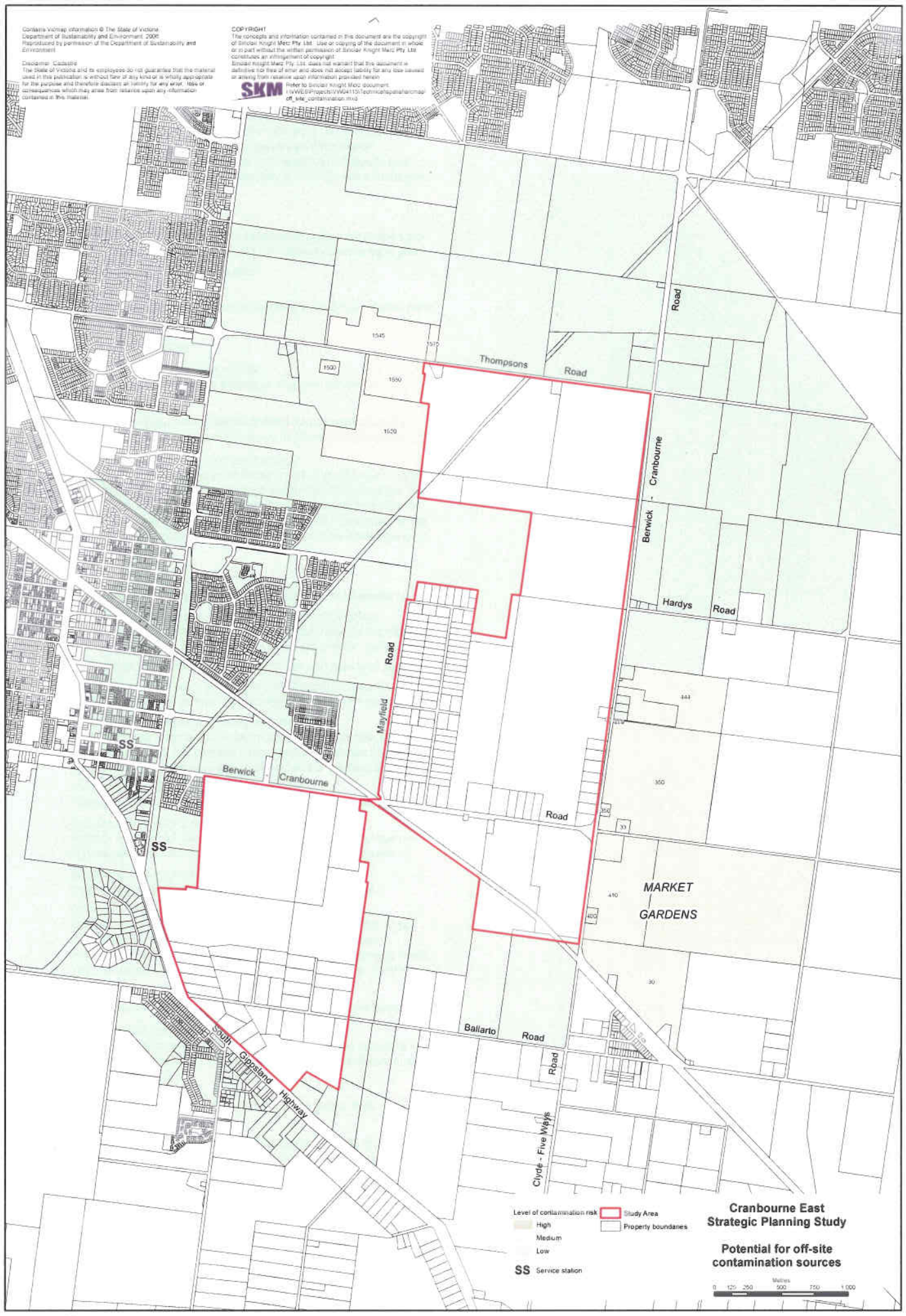
The site history indicates that the majority of the site has historically been utilised for farming, cropping and grazing land. This remains the use of most of the site. More recently a large area of the site adjacent to the western boundary has been sub-divided for residential use and further residential properties have been constructed generally adjacent to the main roads on the site boundaries. Commercial use on the site is generally limited to a poultry farm, stabling, a new homes display, limited market garden use and a landscaping materials supplier;

The site history indicates that the majority of the surrounding area has also historically been used for farming or residential use apart from an area of open-cast sand quarrying to the north-west of the site. Present day off-site commercial use includes concrete/cement batching works, an abattoir, light commercial businesses and market gardens;

- Based on the results of the site inspection and historical review of information, areas both on and off-site were classified as being of low, medium or high risks for potential sources of contamination;
- On-site contamination issues considered to have medium or higher risk potential to human (future occupants and site workers) and environmental receptors include:
    - Poultry farm located at 1580 Thompsons Road (high risk);
    - Fuel AST, fill and farm dam located at 2/585 Berwick-Cranbourne Road (medium);
    - Fuel AST, fill and farm dam located at 305 Berwick-Cranbourne Road (medium);
    - Fuel UST and vehicle workshops located at 281 Berwick-Cranbourne Road (high);
    - Potential fuel AST and vehicle workshops located at 1591 South Gippsland highway (medium); and
    - Fuel AST/UST, vehicle maintenance and concrete/cement batching located at 1635 South Gippsland Highway (high).
- Off-site contamination issues considered to have medium or higher risk potential to human and environmental receptors on the subject site include:
    - Potential fuel UST/AST, vehicle maintenance and concrete/cement batching located at 1550 and 1545 and Thompsons Road (medium risk);
    - Service station located at the intersection of Cameron Street and the South Gippsland Highway (medium); and
    - Market garden use of land to the south-east (medium).
- The above areas of environmental concern are based on the site history and a limited site inspection which in most cases was limited to observation from off-site as approval to gain entry to privately owned sites within the subject area and off-site areas was not given. SKM consider that the following program of works would be required to fully categorise the site especially if an environmental audit was required for change of land use to a more sensitive use:
    - Separate more detailed Phase 2 investigations, including soil and groundwater sampling and analysis, of areas within the site categorised as being of medium or high risk of having potential contamination issues if these individual areas are to be redeveloped for a more sensitive use;
    - Phase 2 investigations of areas of the site adjacent to those medium or high risk areas above or potentially impacted by off-site sources, to ascertain extent of contamination (if any);
    - General less intensive intrusive soil investigation of areas of the site having a lower potential for contamination to allow areas to be more accurately categorised; and
    - Broad groundwater investigation to gain information on the general chemical characteristics of the groundwater and to ascertain groundwater flow patterns beneath the site.



cranbourne east *Figure 11*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SKM
Refer to Sinclair Knight Merz document
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Thompsons Road
Cranbourne - Berwick Road
Hardys Road
Mayfield Road
Berwick Cranbourne Road
Ballarto Road
South Gippsland Highway
Clyde - Five Ways Road
SS
MARKET GARDENS
Level of contamination risk
High
Medium
Low
SS Service station
Study Area
Property boundaries
Cranbourne East Strategic Planning Study
Potential for off-site contamination sources
Metres
0 125 250 500 750 1,000

 Figure 12

2.4 Groundwater and Salinity

This is a summary of the Cranbourne East Groundwater and Salinity Final Specialist Report prepared by SKM, which should be referred to for further detail.

Figures 13-15 identify the groundwater condition in the growth area.

2.4.1 Existing conditions

The objective of this project is to undertake a preliminary investigation of the hydrogeological conditions and land salinisation potential in the vicinity of the Cranbourne East Urban Growth Area.

The following conclusions are made from data sets that reflect the current conditions of catchment hydrology at Cranbourne East.

- The Cranbourne East study area spans across two major drainage basins, Port Phillip and Westernport. A northern subcatchment drains to Port Phillip, while three southern subcatchments drain to Westernport. The land surface slopes at a gradient of about 1:100 across the catchment study area.
- Small pockets of higher permeability geological units occur: Quaternary Dune sands and near-surface sands.
- In general the geological units are of low permeability (Silurian bedrock, Quaternary swamp deposits, Older Volcanics (weathered and fresh) and unweathered Baxter Sandstone).
- Junctions of sand units and low permeability units may provide conditions for shallow watertables to develop.
- Groundwater is expected to flow from the west to the east of the study area. Some higher permeability sand layers may provide pathways for groundwater flow but these layers have a limited spatial extent and terminate in less permeable basalt and sandstone.
- Areas prone to shallow watertable conditions (depth to watertable <= 2 m below surface) occur in a number of locations on the site.
- The majority of the study area falls within the Koo Wee Rup WSPA.
- Groundwater salinity is low over most of the study area. Slightly higher groundwater salinities to the eastern boundary do not appear to be associated with sites where shallow watertables occur.
- Groundwater bore hydrographs show a response to variations in rainfall.

2.4.2 Opportunities

Extraction and use of groundwater may be an opportunity for management to reduce the risk of shallow watertables in Cranbourne East. The nature of the groundwater system may be suited to this sort of management and it should be further investigated. It is expected that if groundwater use is feasible, only low volumes of groundwater would be expected to be available on a long term basis, as the site is part of the Koo Wee Rup WSPA.

Long term monitoring of groundwater conditions in critical locations would improve understanding of the groundwater system and provide warning of rising watertable conditions.

Additional pre-emptive management options to minimise the risks of increased net groundwater recharge include;

- non-residential land use;
- increased tree canopy cover;
- reticulation systems constructed to higher standard within these areas to minimise leakage
- install subsurface drainage systems
- use area as 'green space' with high tree canopy cover or other 'low net recharge' option (possibly an impervious surface with subsurface drains)

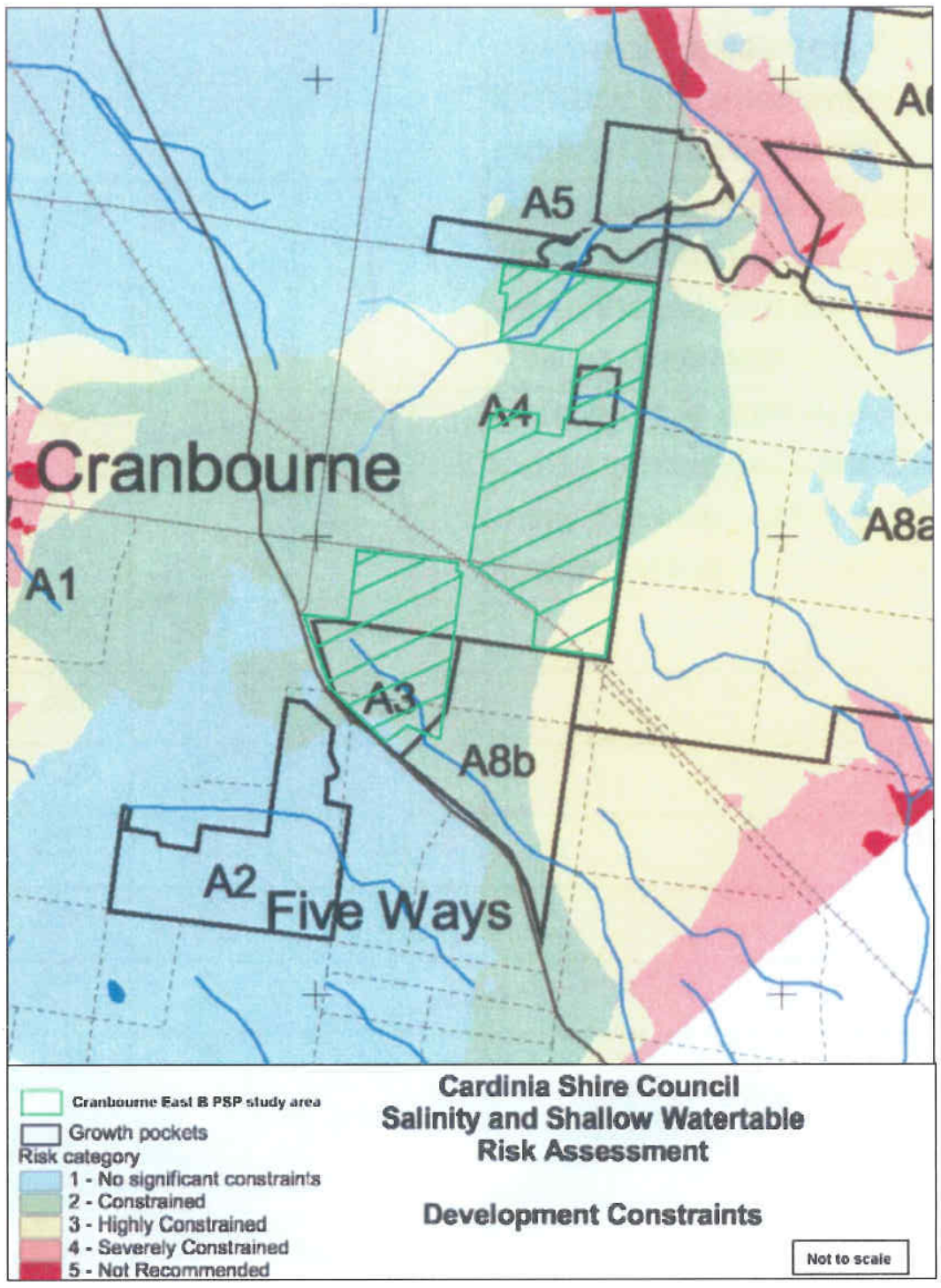
2.4.3 Constraints

The current catchment conditions do not appear to preclude any current land use within the Cranbourne East study area (e.g. residential dwellings and major roads are present). Furthermore, guidelines for appropriate construction of buildings, roads, and services exist for a range of different environments (including shallow saline watertables – for examples see Western Sydney and Wagga Wagga).

However, the catchment hydrology will change with development of Cranbourne East. In areas currently with a shallow watertable it is recommended that development aims to avoid land uses/management that could promote or create shallow watertable conditions

It should be noted that other parts of the Cranbourne East study area may be susceptible to shallow watertable conditions, in addition to the areas identified in this report. Further investigations may locate additional areas with requirements for particular land uses or land management.

Figure 13 Groundwater constraints to urban development in area surrounding Cranbourne East (detail of figure from SKM, 2005).



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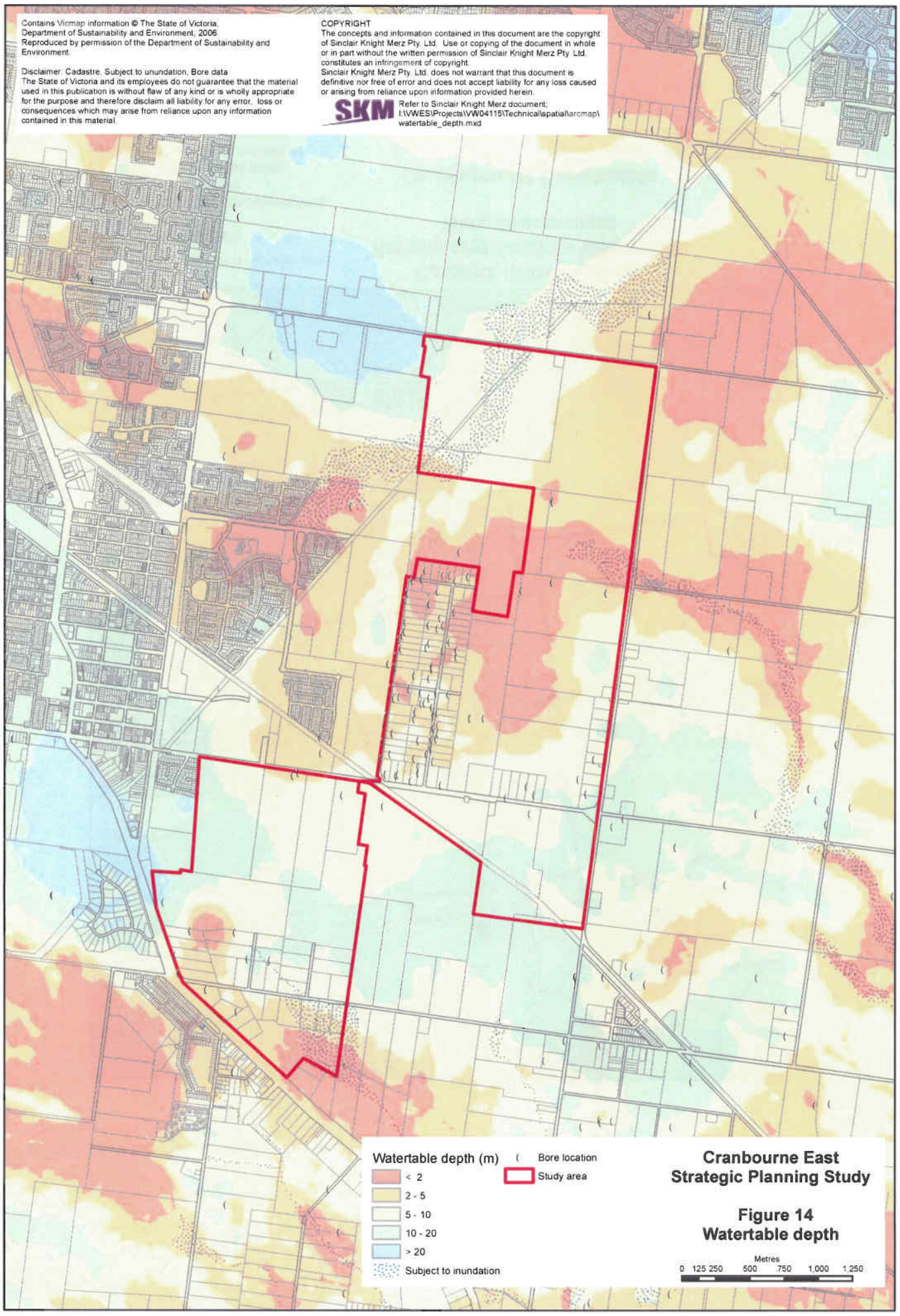

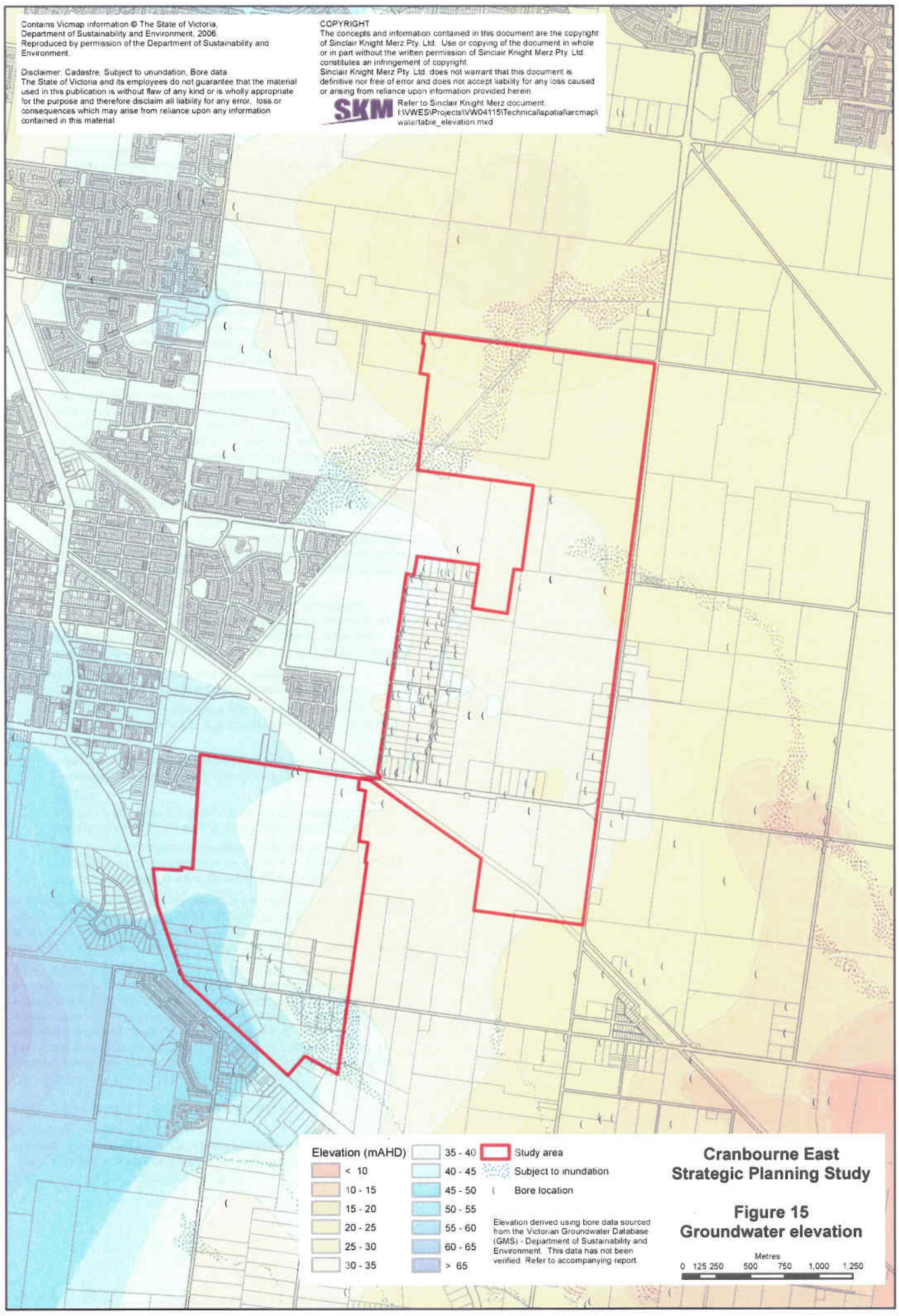
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Elevation (mAHD)
< 10
10 - 15
15 - 20
20 - 25
25 - 30
30 - 35
35 - 40
40 - 45
45 - 50
50 - 55
55 - 60
60 - 65
> 65
Study area
Subject to inundation
Bore location
Elevation derived using bore data sourced from the Victorian Groundwater Database (GMS) - Department of Sustainability and Environment. This data has not been verified. Refer to accompanying report.
Cranbourne East Strategic Planning Study
Figure 15
Groundwater elevation
Metres
0 125 250 500 750 1,000 1,250

2.5 Flooding and Drainage

This is a summary of the Cranbourne East Water Sensitive Urban Design and Flooding Specialist Final Reports prepared by EDAW, which should be referred to for further detail.

Figures 16-19 identify drainage and retarding basins.

2.5.1 Water Sensitive Urban Design (WSUD)

A WSUD approach will be adopted for water management at Cranbourne East which encompasses all aspects of integrated urban water cycle managements including water supply, sewerage and stormwater management. The principles of WSUD are focused on minimising potable water use and dependence on natural resources, maximising water reuse within the built environment and protecting and enhancing aquatic ecosystem health through improved stormwater quality and flow management.

The WSUD objectives proposed for Cranbourne East are based on identified existing site conditions, environmental values and policies. Site wide strategies have been formulated as a response to the objectives. The proposed water management strategies for the Cranbourne East study are:

- Incorporate integrated water cycle management into the urban planning process. This includes the use of rain, storm and recycled water in order to reduce the demand on potable mains water.
- Meet best practice objectives for stormwater quality and quantity runoff by incorporating a treatment train of stormwater structural controls.
- Remediate the main drainage system through the site to a healthy ecosystem, including a 30m riparian/buffer zone either side of the low flow channel.
- Integrate open space areas with conservation corridors, stormwater management controls and social and community objectives.

In particular, the following opportunities and constraints for water management at Cranbourne East have been identified:

- A dual pipe system using recycled water from the Eastern Treatment Plant will be mandated throughout the subdivisions within the development area for non-potable water demands such as toilet flushing, cold washing machine tap and irrigation (subject to groundwater conditions).
- Rainwater and stormwater harvesting could be employed on site to further reduce demands on potable water. Rainwater can be used in hot water systems and rain and stormwater harvesting can provide an additional water source for irrigation purposes.
- Clause 56 of the Victorian Planning Provisions require best practice water quality treatment in all residential subdivisions. Even though the majority of the study area falls within the Collison Road Drainage Sheme, it iis recommended that best practice targets be met within all residential subdivisions within the entire study area thereby endorsing a focus on water quality and quantity controls throughout the development. The regional level treatments identified in this report can ultimately be used for further polishing of the stormwater and for storage for re-use purposes.
- It is proposed to remediate the main drainage channel through the site at a healthy waterway. The waterway will form the main drainage pathway of the site post development and will be remediated to achieve a healthy ecosystem underpinned by good water quality (through adoption of WSUD in individual subdivisions) and geomorphic structure that is compatible with the change in hydrologic conditions for the low flow channel be provided. In addition, this waterway will be linked to the Cranbourne Gardens via a terrestrial environment corridor.
- There retarding basins are required within the study area. Preliminary estimates of the site areas required for the basins are provided.
- Information is provided on indicative alignments and widths of reserves requires to provide safe conditions for overload flow during major storm events.

Sewerage and potable water supply are beyond the scope of this report; however are to be considered in parallel with issues discussed in this report. Refer to *Hydrogeology Assessment – Groundwater and Salinity (**SKM**) and Services Infrastructure Conditions (**SKM**).*

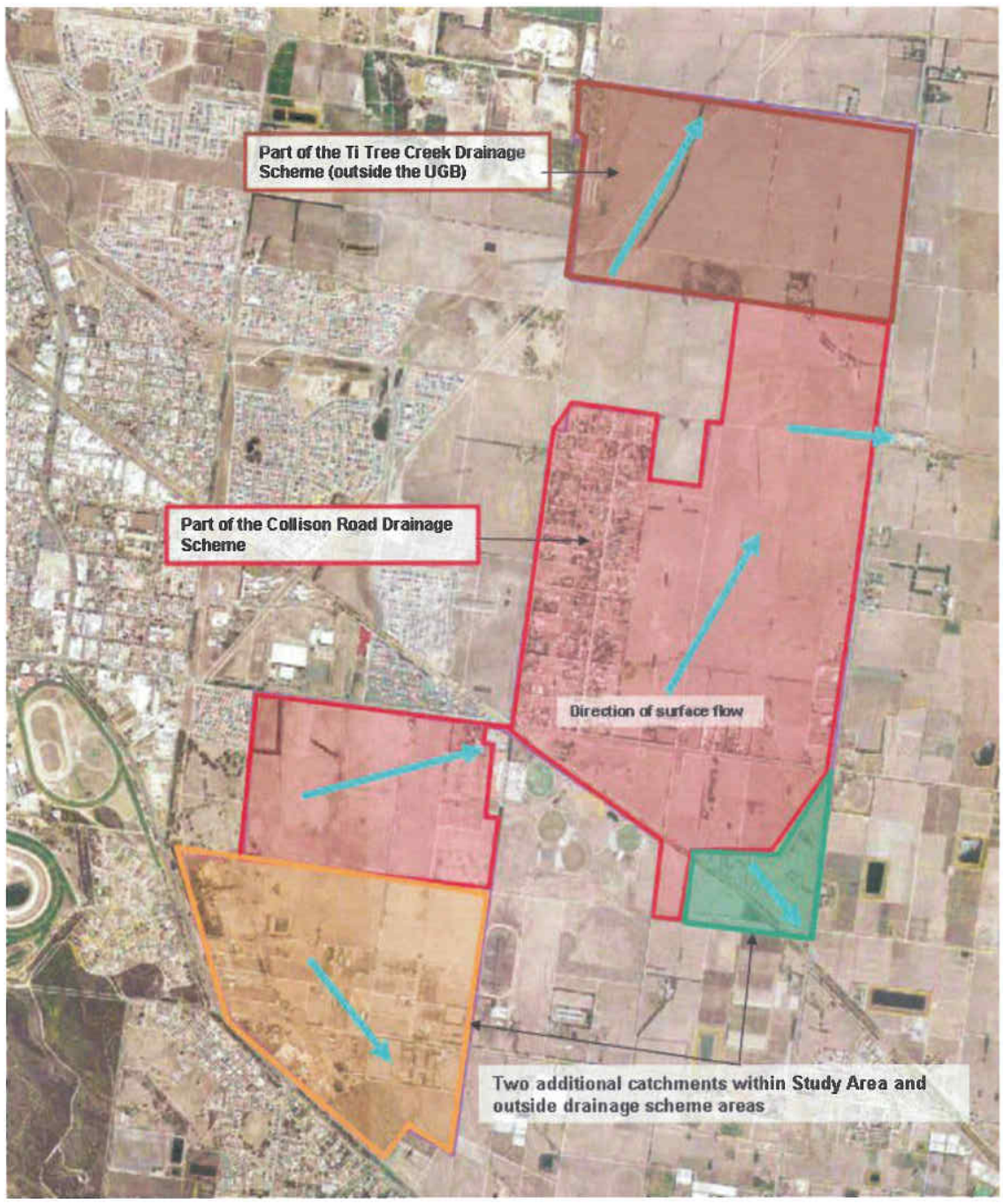

Figure 16 Study Area divided in to surface water catchments

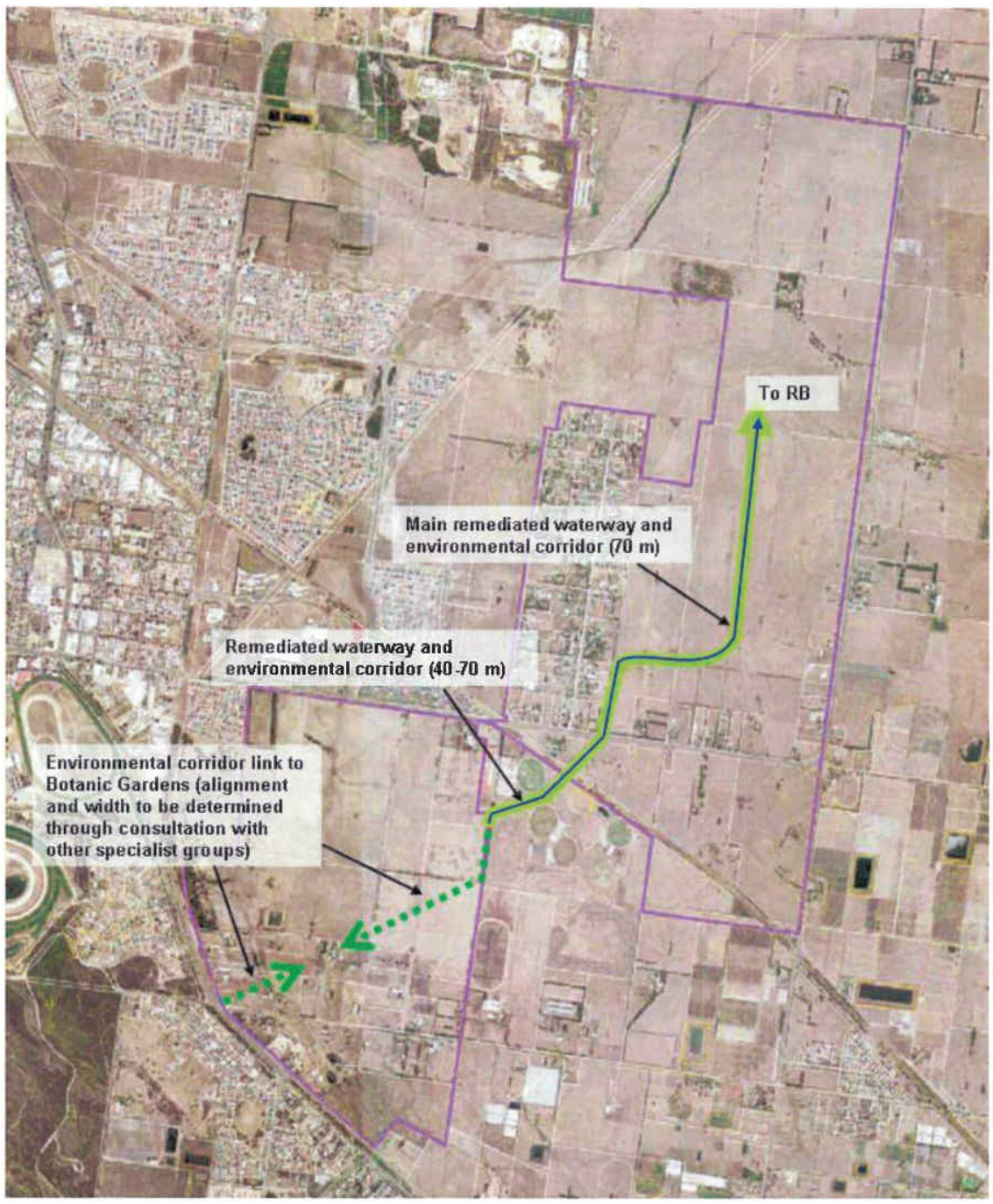

Figure 17 Proposed main waterway (option 1)

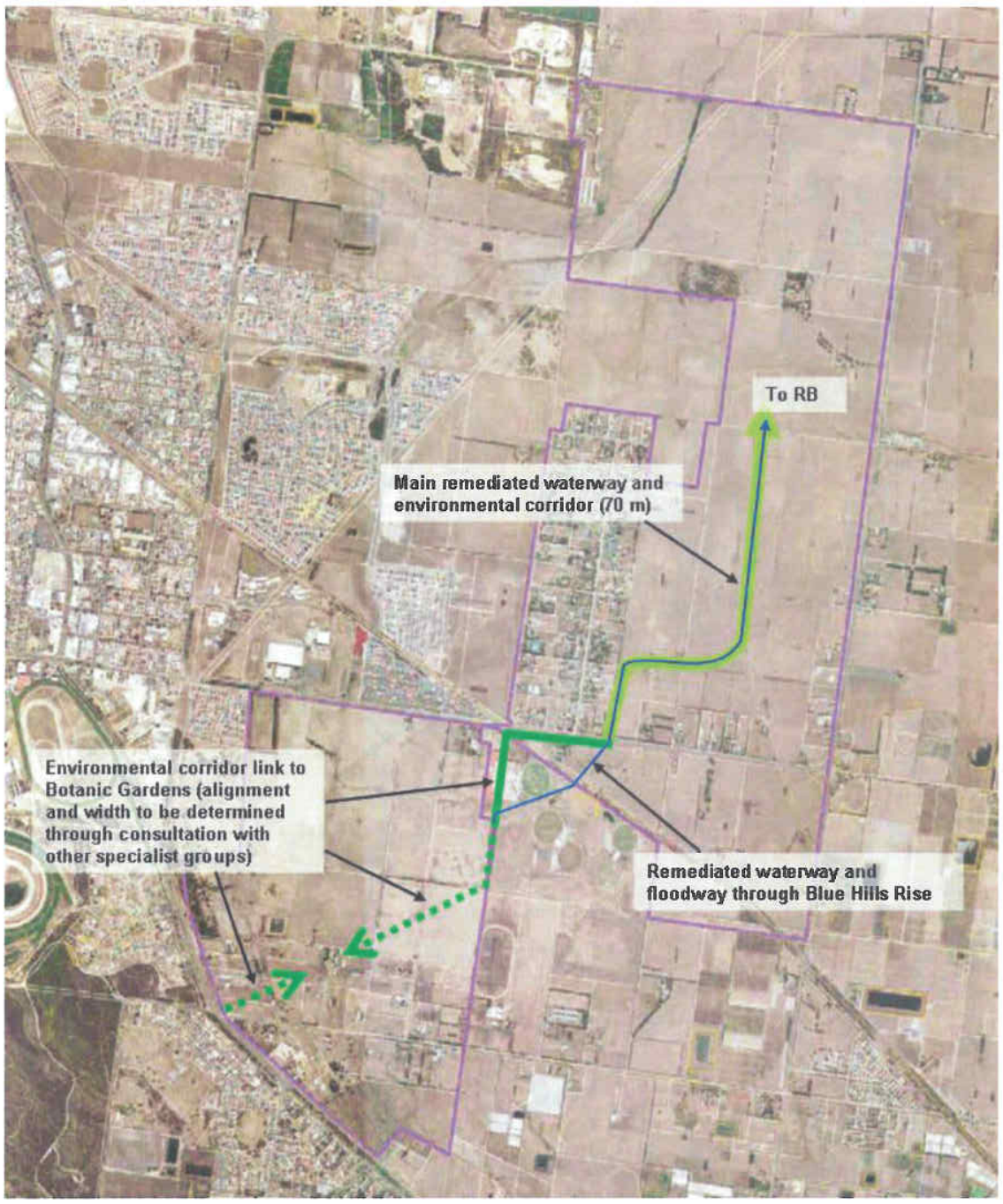

Figure 18 Proposed main waterway (option 2)

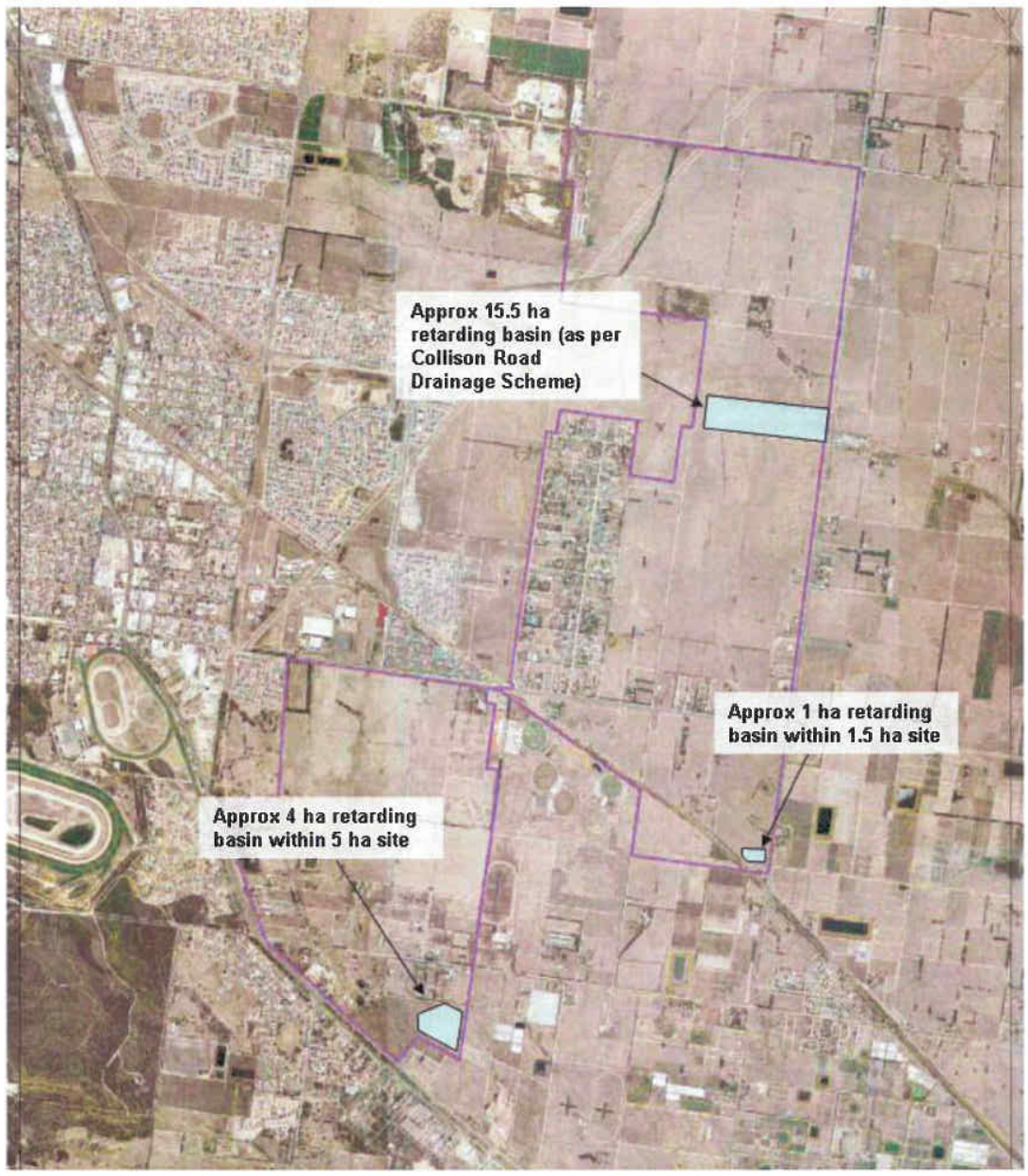

Figure 19 Indicative locations of proposed Retarding Basins

2.6 Flora and Fauna

This is a summary of the Cranbourne East Flora and Fauna Final Specialist Report prepared by Golder Associates, which should be referred to for further detail.

Figure 20 identifies the native vegetation in the growth area.

2.6.1 Overview

The purpose of this technical report is to document the existing flora and fauna values of the Cranbourne East precinct. The report includes a review of existing data from State databases, the Federal EPBC Protected Matters database, and other consultants' reports. Field site assessments conducted during the project provided further data enabling the distribution, abundance and condition of native vegetation, terrestrial fauna and fauna habitat to be documented and mapped. The synthesis of flora and fauna data review and field assessment forms the basis of a constraint mapping exercise, which will inform the consultant team during the design workshop, and will also provide geographic and ecological data for inclusion in the resulting Precinct Native Vegetation Management Plan (PNVMP).

2.6.2 Legislative and Policy context

Federal *Environment Protection & Biodiversity Conservation Act* 1999 (EPBC)

No plant communities listed under the EBPC Act have been confirmed as occurring in the study area. One plant species, River Swamp Wallaby-grass, has been confirmed as occurring at one site within the precinct (Blue Hills); the development area has been assessed and referred under the EPBC Act, and the development deemed 'not a controlled action' under the Act.

Three EPBC-listed fauna species – Southern Brown Bandicoot, Growling Grass Frog and Dwarf Galaxias – are regarded as of negligible – low likelihood of regularly occurring in the study area. The Grey-headed Flying-fox is likely to pass through the area on larger movements throughout the district, but not sustain important populations in the precinct. The nature and extent of habitat within the precinct is not regarded as important or limiting for any EPBC-listed threatened or migratory fauna species.

The study area falls within the upper catchments of two Ramsar wetlands: (i) Western Port, and (ii) Edithvale Seaford Wetlands. It is not considered likely that there will be any significant downstream impacts arising from future urbanisation of the precinct, due to the long distance from source to receiving waters, and the numerous storm-water treatment facilities that fall between the two extremes.

Victorian *Flora & Fauna Guarantee Act* 1988 (FFG)

No threatened plants listed under the FFG were detected during fieldwork, or are regarded as at least moderately likely to occur in the precinct.

Two FFG-listed fauna species – Growling Grass Frog and Dwarf Galaxias – are regarded as of negligible – low likelihood of regularly occurring in the study area. The Grey-headed Flying-fox is only likely to pass through the area on larger movements throughout the district, but not sustain important populations in the precinct. The nature and extent of habitat within the precinct is not regarded as important or limiting for any FFG-listed threatened species.

Net Gain

Specific requirements for the protection and removal of native vegetation within the study area are not addressed in this report. A Native Vegetation Precinct Plan (NVPP) is to be developed that will account for potential losses of native vegetation (remnant patch and scattered trees) within the Cranbourne East precinct. However, habitat hectare scores have been provided (Table 3) as an indication of the extent and condition of remnant vegetation and scattered trees within the study area.

2.6.3 Existing conditions

Flora

Remnant indigenous vegetation occurs to varying degrees throughout the Cranbourne East precinct in the form of isolated, highly degraded remnant patches and scattered trees and shrubs. Remnant patches are comprised of three Ecological Vegetation Classes (EVCs): EVC 48 Heathy Woodland, EVC 175 Grassy Woodland and EVC 53 Swamp Scrub. EVC 48 Heathy Woodland has a conservation status of Least Concern within the Gippsland Plain Bioregion while EVC 175 Grassy Woodland and EVC 53 Swamp Scrub both have a conservation status of Endangered within the bioregion. Remnant scattered trees occur infrequently throughout the study area in roadsides, as isolated paddock trees or scattered amongst highly degraded patches of remnant vegetation.

A population of the nationally significant River Swamp Wallaby-grass was recorded from a farm dam within the study area in April 2006 (Biosis Research 2006).

Remnant vegetation in the region is considered to be of at least Local conservation significance.

Fauna

A total of 87 fauna species (11 exotic) were recorded within the fauna Data Review Area (DRA) prior to 2004. This total comprised 68 bird species, 11 mammal species, six reptile species, and two frog species (Appendix 2). An additional nine fauna species (eight birds, one mammal; of these two were exotic) were recorded during field work for this project.

The fauna habitats of the Cranbourne East precinct can be broadly defined as an agricultural landscape containing small, widely-separated pockets of degraded remnant vegetation. The area is highly modified and has undergone a substantial loss of habitat and biodiversity values. The rural and rural residential habitats of the precinct support a suite of abundant, generalist fauna species typical of urban fringe and rural areas.

Some of the remaining scattered old trees may develop hollows, and though these will to some extent be monopolised by aggressive, exotic hollow-nesting birds such as *Common Starlings and *Common Mynas, they are also likely to used by native hollow-nesting birds such as Galahs, cockatoos, parrots and owls, as well as hollow-dependent mammals such as possums and microbats.

Biosites

DSE Sites of Biological Significance (BioSites) mapping (DSE 2005a) identifies 'BioSite 8095 - Royal Botanic Gardens - Cranbourne Annexe' as occurring adjacent to the southwest of the Cranbourne East Precinct. This BioSite is of State significance, and is only separated from the study area by the South Gippsland Highway. This is the only BioSite recorded by DSE (2005a) as occurring within or adjacent to the Cranbourne East precinct.

2.6.4 Opportunities

The greater proportion of this study area is situated in dryland areas in which the habitat values have been greatly reduced, principally due to land clearing and agricultural practices. Remnant vegetation along roadside corridors has therefore become valuable in terms of its value to biodiversity, and as a link (even if fragmented) to important habitat areas such as the Royal Botanic Gardens – Cranbourne Annexe.

There is an opportunity for development within the Cranbourne East precinct to take advantage of these existing native vegetation patches and linear fragments to

- protect existing habitat values;
- develop linkages that enhance habitat values and provide movement corridors for fauna (e.g. between the study area an the Cranbourne Botanic Gardens; and
- these linkages could also provide amenity value to other user groups i.e. bike paths/walking trails.

2.6.5 Constraints

The vast majority of the study area contains no native vegetation. As the remaining native vegetation is overwhelmingly discrete and clustered (see Figure 3), the opportunity to retain most or all of it without constraining other opportunities is considerable. Development within the vicinity of extant remnant indigenous vegetation may negatively impact the vegetation which remains, but this can be minimised by appropriate buffering.

The most significant potential impacts to biodiversity values from development within the Cranbourne East precinct are associated with:

- potential impacts to State and Nationally listed species (low); and
- potential loss of scattered old trees in pasture and woodland vegetation on roadsides and the disused rail reserve (moderate).

2.6.6 Recommendations

- retain remnant native vegetation patches and scattered trees within the study area, and where feasible incorporate into reserves;
- avoid woody native vegetation removal along roadsides, and of scattered old indigenous trees;
- ensure 'BioSite 8095 - Royal Botanic Gardens - Cranbourne Annexe' is not negatively impacted by development within the Cranbourne East UGP study area;
- undertake control of environmental weed species, particularly in and adjacent to remnant vegetation patches;
- utilise locally indigenous plant species in landscaping and revegetation exercises.
- undertake pest animal control programs;

- undertake revegetation work along drains and roadsides to provide habitat corridors for local fauna;
- any standing dead indigenous trees, with at least moderate structural integrity (subject to arboricultural safety standards), and which occur in or close to any proposed linear reserves or easements, should be prioritised for retention as fauna habitat (hollows, fissures and cracks used by hollow-dependant fauna); and
- use principles from the construction and operation of the Evan's Road wetland in Cranbourne West to guide similar developments within the Cranbourne East precinct.

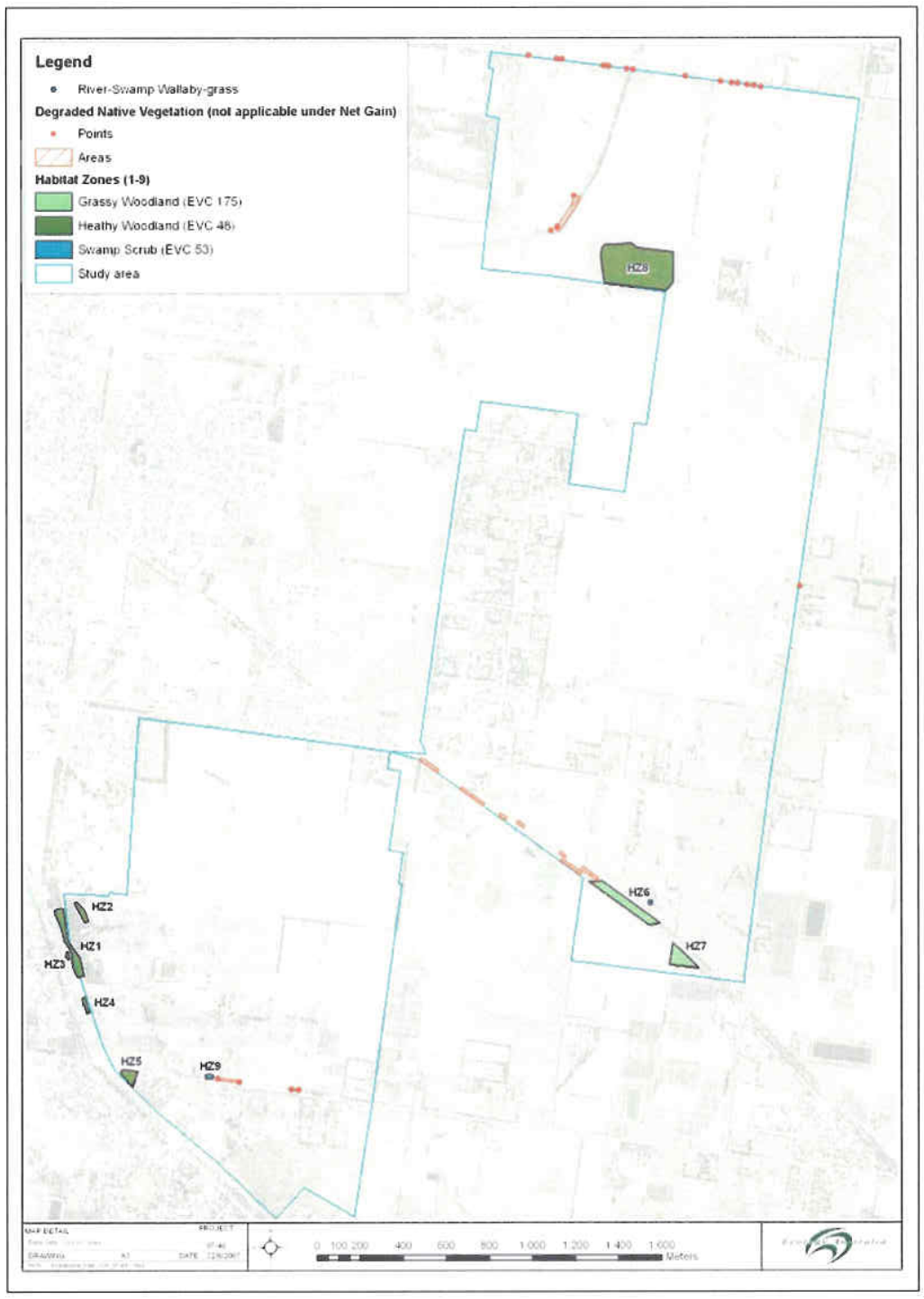

Figure 20: Native vegetation (excluding scattered trees) within the Cranbourne East precinct, July 2007.

2.7 Trees

This is a summary of the Cranbourne East Aboricultural Conditions prepared by Greenwood Consulting, which should be referred to for further detail.

Figure 21 identifies the tree area features by value.

2.7.1 Existing conditions

The arboreal population of this site is generally of poor quality with very few trees of high value being found on the site. A total of 25 high value individual tree features 12 high value tree area features, 136 moderate value tree features and 207 low or very low value tree features were located and assessed across the entire study area.

The vast majority of the trees on this site are of moderate, low or very low value and should either be removed prior to development or should not constitute a material constraint on development of the site.

2.7.2 Constraints

There are very few trees of high value on the site and these can generally be incorporated into the development of the site without any significant loss of developable land.

Provided that the retention of the high value trees can be addressed at each of the major stages of the development process the successful retention of the vast majority of these trees is probable.

The development of the site is essentially unconstrained in any material sense. While the 37 high value tree features should be incorporated into the development of the site this is not expected to cause any significant difficulty or reduction in the potential yield of the site.

The distribution of moderate and high value trees across the site is shown below (Figure 21).

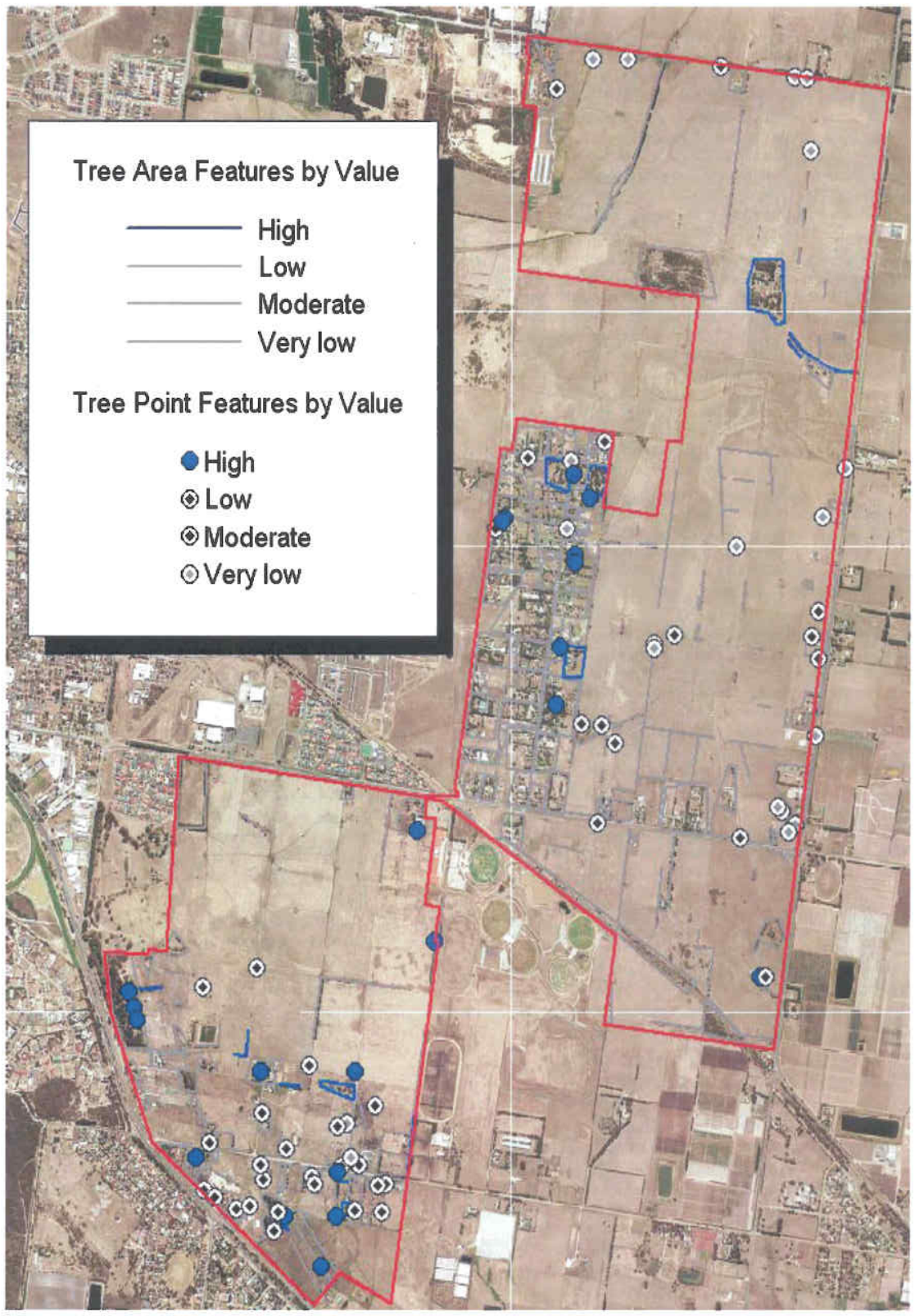

Figure 21 Tree features by value

2.8 Indigenous and Non-Indigenous Heritage

This is a summary of the Cranbourne East Existing Conditions and Archaeological Survey Final Specialist Report prepared by Heritage Insight, which should be referred to for further detail.

Figure 22 identifies the cultural heritage significant locations in the study area.

2.8.1 Indigenous Heritage

The traditional Indigenous owners of the growth area were clans of the Boon wurrung people. There are currently two communities claiming to represent traditional Boon wurrung owners. These are the Bunurong Land Council Aboriginal Corporation (BLAC) and the Boonerwrung Foundation Pty Ltd (BF).

The growth area was separated into two study areas for the survey. Study area 1 is bounded by Berwick-Cranbourne Road to the east and south, Thompsons Road to the north, and Mayfield Road to the west, and covers approximately 600ha of land. Study area 2 is bounded by the South Gippsland Highway and Cameron Road to the west, Berwick-Cranbourne Road to the north, Casey Fields Regional Sports Fields and open paddocks to the east, and covers approximately 360ha of land.

A total of 8 Indigenous archaeological sites were located during the field survey, comprising a scarred tree and seven surface scatters of stone artefacts.

All of the surface scatters of stone artefacts were found on high points, such as sandy rises and the crests of dunes in Study Area 1 along the margins of swamps and floodplains. Most of the surface scatters were eroding from dunes which had been disturbed by stock grazing and are likely to be components of larger buried sites, which have been exposed on the surface by soil erosion. Most of the surface scatters of stone artefacts were located within 200 metres of former swamps or ephemeral drainage lines.

The survey results are constrained by poor ground surface visibility over must of the growth area. Poor ground visibility, usually due to dense vegetation cover, can conceal Aboriginal cultural materials present on the surface. Although no archaeological sites were located in the Study Area 2 of the growth area, there was virtually no soil exposure beneath dense pasture matting on this landform, and the survey was constrained by access restrictions. The lack of soil exposure significantly reduced the probability of locating archaeological sites on the surface.

The major sources of land disturbance with the growth area were clearing of native vegetation and grazing. While vegetation clearance would have significantly impacted on scarred trees, buried remains of past Indigenous campsites are less likely to have been severely impacted by this activity.

No new historic sites were located within the growth area and no areas of potential sensitivity for historic sites were identified.

2.8.2 Issues, Opportunities and Constraints

The main findings from the field survey are as follows:

- Surface remains associated with past Indigenous campsites occur in most properties within Study Area 1. These indicate that the traditional Boon wurrung owners utilised most portions of land within the growth area in the past.
- The surface scatters of stone artefacts are likely to be small exposures eroding from buried archaeological sites, which can only be fully documented in future by programmes of excavation.
- Remains of past Aboriginal campsites are generally located on rises and sand dunes, near ephemeral watercourses or the margins of swamps. Site are generally within 200 metres of a former water source.
- The sand dune within Study Area 1 is likely to have significant heritage issues associated with any future development. The sand dune was effectively an 'island' surrounded by swampland and would have served as a significant place from which to utilise natural resources available in the swamps and on the plain to the northeast, south and west. There is likely to be a large number of diverse range of stone artefacts contained in the soils of this area, and there is potential for deeply buried and intact archaeological sites to occur.
- Under the new Aboriginal Heritage Act (2006) any future urban development within the growth area will require the preparation of a Cultural Heritage Management Plan (CHMP). The field survey has indicated that there is a very high potential for buried Indigenous archaeological sites in many parts of the growth area. Such sites can only be located by excavation / sub-surface testing. Any future Indigenous heritage assessments which are carried out for the preparation of the CHMP's, will need to be Complex Archaeological Assessments, involving excavation and sub-surface testing, to standards defined in the Regulations of the Act (2006).
- Bryan Powell, City of Casey Cultural Heritage Officer, commented that a CHMP should be prepared for the entire growth area. The CHMP should use Complex Archaeological Assessment to identify areas of high potential archaeological sensitivity that may be developed in the future. This document will act as:
    - Establish a series of procedures for the future development of sensitive landforms within the growth area;
    - Establish contingency procedures for undiscovered Indigenous sites within the growth area;
    - Reduce the financial costs to individual developers; and
    - Reduce the replication of information.
- The results of the archaeological survey reinforce the need for the allocation of a large area of public open space to serve as a repository for cultural material salvaged from Indigenous archaeological sites that are destroyed by future development. Examples of land which may be appropriate for heritage interpretation include the sand dune in the northwest of Study Area 1, the Clyde Creek floodplain, the sand hill and former swampland in the southern section of Study Area 1 and an area of the western boundary of Study Area 2, ephemeral drainage courses and the intersection of two historically-documented pathways used by Boon wurrung people on sand dunes in the northwest of Study Area2.
- An area of parkland is proposed in the northwest corner of the Study Area 1. This parkland should include the large sand dune on which artefacts are exposed in several locations, and one of the few remaining stands of native vegetation within the growth area. Access should be restricted until the exposed sand within the sand dune has been stabilised and re-vegetated. Indigenous plant species native to the region should be used in the re-vegetation of the sand dune. Any ground disturbance works within the sand dune should be guided by the CHMP.
- The area of Indigenous flora situated on a large remnant sand dune adjacent to the South Gippsland Highway in the northwest corner of Study Are 2, should be retained. This area is located within the vicinity of the intersection of two Boon wurrung pathways and although no sites were located on areas of exposed sand, it is likely that the dune will contain significant Indigenous sites.
- An interpretative trail should be constructed from the sand dune comprising CE1 along Clyde Creek and continue along the major open space link that traverses Study Area 2 and ends at the South Gippsland Highway at the area of Indigenous flora discussed above, opposite the Botanic Gardens. This walking trail can be used to interpret the traditional and contemporary culture of Boon wurrung people to the public. The area bordering the possible future interpretative trail contains a range of different landforms, such as sand dunes, drainage lines and swampland, which illustrate the different dimensions of the land, that were important to traditional Boon wurrung owners. Further consultation with contemporary Indigenous communities will be required regarding the provision of Interpretation areas.
- Because of a significant loss of Indigenous archaeological sites on surrounding land within the past c.10 years, any archaeological sites within the growth area which are destroyed by development, will need to be documented to an extremely high standard. Site documentation will need to include detailed excavation and dating of significant sites and detailed analysis of site contents.
- Once the Registered Aboriginal Parties (RAP's) for the growth area are determined, the individual land owners would be advised to consult with RAP or RAP's for the growth area about any proposed development and issues which the RAP's would like to see addressed in a CHMP.

2.8.3 Non – Indigenous Heritage

- There are two buildings listed on the City of Casey Heritage Overlay within the growth area, to which controls on the Heritage Overlay will apply. Apart from these two buildings, there does not appear to be any significant non-Indigenous heritage issues within the growth area. It is unlikely that there will be any constraints on development posed by historic sites or places.

Page redacted due to Aboriginal cultural sensitivity

2.9 Summary: Developable Land

This section summarises the constraints on development identified in the preceding sections in Part B. These include:

- Floodprone land
- Land required for drainage
- Significant flora and fauna habitats
- Valuable trees
- Potential Indigenous heritage sites
- Non-Indigenous heritage sites

These constraints are mapped in Figure 22.

The developable land is shown in the Table below. This distinguishes between that land which is relatively free of constraint, that which is significantly constrained, and that which is undevelopable as a result of these constraints.

Table 1—Developable land

TOTAL SITE AREA (ha) *Excludes rail reserve*	**815**
UNDEVELOPABLE LAND (ha)	
Outside UGB	
A - Outside UGB, W of and incl UFZ	58
B - Outside UGB, E of UFZ	108
Total	**166**
Clyde Road Upgrade (within UGB)	
N of Berwick-Cranbourne Rd	13
S of Berwick-Cranbourne Rd	22
Total	**35**
CONSTRAINED LAND (ha)	
Collison Estate	
C - Collison Estate	82
Berwick - Cranbourne Rd	6
Total	**88**
RELATIVELY UNCONSTRAINED LAND (ha)	
D - N of B-C Rd, E of Collison	210
E - Blue Hills expansion	15
F - E of Blue Hills	29
G - S of rail line	12
H - S of B-C Rd	260
Total	**527**

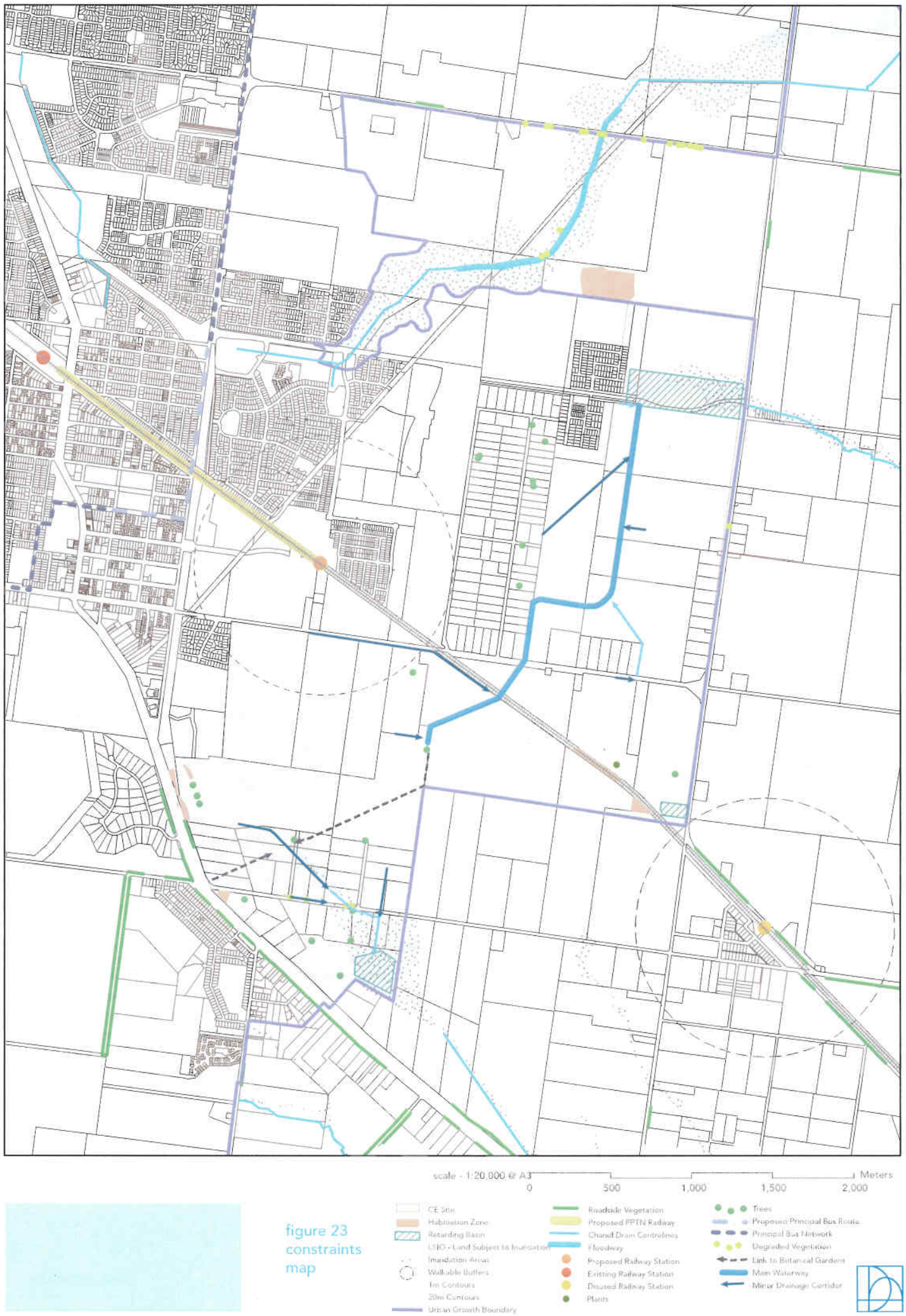

figure 23
constraints
map

3 PLANNING, SOCIAL AND ECONOMIC CONTEXT

Section 3 identifies relevant aspects of the planning, social and economic context, which will influence the land use budget for the development.

3.1 Planning Policy Context

This is a summary of the Cranbourne East Planning Policy Context Final Specialist Report prepared by David Lock Associates, which should be referred to for further detail.

Figures 2-4 identify the key policy drivers influencing the growth area.

There is a considerable amount of existing planning policy that is relevant to the preparation of the Cranbourne East Urban Growth Plan. The key documents are outlined in this section. Relevant details are contained within the Final Specialist Report

Planning policy development in Casey has been influenced by two major policy documents: *Melbourne 2030* at the State level, and *Casey 21* at the local level. In general, these policies are supportive of one another, aiming to achieve the same broad goals. *Melbourne 2030* focuses on improving environmental performance through built form measures, increased economic prosperity through participation in the knowledge economy, and improving the liveability of the city. *Casey 21* supports these objectives, but places more emphasis on local issues, seeking to overcome the negative image of Casey, and develop it into a city in its own right by providing increased cultural, entertainment, housing, working and social opportunities as well as promoting high quality design of the built environment.

The two overarching strategic plans of *Melbourne 2030* and *Casey 21* form the policy basis for numerous, more focused policy documents at both the State and local levels respectively. An analysis of these documents has revealed a number of emergent policy directions or themes, evident in most of the reviewed policy. These directions are as follows:

- Increasing local employment opportunities, with an emphasis on creating higher order jobs.
- Creating more sustainable and efficient patterns of urban development
- Preserving and enhancing the natural environment and greening the city
- Providing efficient and timely infrastructure roll-out
- Improving housing diversity and affordability
- Improving image and quality of built environment through design
- Improving access and equity
- Promoting education and cultural opportunities
- Promoting health and well-being,
- Encouraging efficient and sustainable transport modes

3.2 Community Context

This report comprises an assessment of the social aspects of urban development and includes:

- the scope of investigations into the social aspects of planning;
- an overview of social aspects of urban development;
- community, health and recreation facility gap analysis;
- indicative requirements for community, health and recreation facilities, services and coordination processes;
- interim findings on affordable housing; and
- key opportunities and issues.

There is a range of city wide and local facilities and services that will be accessible to the future community of Cranbourne East including central cultural and civic facilities, regional recreation facilities, government and Catholic schools, community, and district and regional recreation and health facilities.

The range of community and recreation facilities considered for inclusion in Cranbourne East were:

- Community transport
- Government and non-government education
- Health and medical facilities
- Family and Children's Services
- Youth Services
- Recreation, leisure facilities, formal open space and public spaces.
- Community facilities
- Emergency Services, and
- Community development.

Affordable housing provision was also addressed, in view of the decreasing affordability of housing in the City.

A literature review of best practice in new urban developments revealed that there would need to be an emphasis on the following social aspects in planning:

- diverse housing options;
- early provision of essential social infrastructure when needed;
- connectivity in the provision of pedestrian and cycle movement routes; and
- a focus on collocation and sharing of facilities with innovative governance and funding mechanisms.

However an analysis of gaps in existing provision in surrounding areas and in the City as a whole revealed the need to ensure that Cranbourne East included:

- an expanded range of open space, neighbourhood and recreation facilities;
- a network of pathways for pedestrian and cyclists linking residents with other communities, community facilities and public transport;
- support for new residents in accessing facilities and services;
- application of guidelines for health and safety in the planning and design of new areas;
- accessibility of a range of health and medical services, including sites for GPs and specialists;
- recreation, support, and development programs for primary aged school children;
- increased child care and kindergarten places;
- youth facilities and services within 500 metres of all homes;
- more affordable housing options, including social and rental housing, particularly for sole parents with children and single people.

An indicative range of facilities and services for inclusion in Cranbourne East subject to land availability are:

- an expanded community transport service;
- a network of shared pathways connecting the regional park, via linear parks and major roads to all community facilities, activity centres and existing neighbourhoods;
- at least 30 consulting rooms for GPs and Specialists;
- A community health facility
- two Government primary schools, a Catholic P-12 School, an Independent P-12 School and a Steiner Pre-School and Secondary School;
- an Integrated Community Facility including youth services, kindergarten, occasional child care, possible child care, primary school aged services, maternal and child health centre,
- community meeting spaces, consulting room space for the non-government sector agencies providing a range of family, youth and children's support services and space for a
- Community Development Worker;
- recreation and sports facilities including 2 District level facilities each with 2 ovals for AFL and Cricket, 2 netball courts and pavilion with public toilets and informal passive open space for barbecues and playgrounds, 1 District level facility for 3 soccer pitches and pavilion with passive open space for barbecues and playgrounds, 1 synthetic hockey field, 3 bowling greens and pavilion, 6 tennis courts and pavilion;
- a Town Square within any Neighbourhood Activity Centre and Village Greens in Convenience Activity Centres for special events, cultural activities and public art;
- neighbourhood Parks including facilities such as skate park, bmx, barbecue, playground, public toilet and space for special events and public art;
- local parks with play facilities and spaces for public art, cultural activities and public toilet; and
- affordable housing as a proportion of all residential land, and provision for residential aged care, clusters of housing for older people and not-for-profit organizations and emergency and transitional accommodation for young people.

Key opportunities and constraints associated with the provision of community and recreation facilities and affordable housing include:

- achievement of an Integrated Community Facility with shared facilities and innovative governance;
- demand for a collocation of government and non-government schools;
- joint community/education use of schools;
- appropriate recreation, open space and shared paths provision;
- youth inclusive planning and design;
- provision of adequate space for the non-government family, children's and youth support services;
- community transport model to augment public transport provision in the early stages of development; and
- affordable housing through land allocation and a range of partnerships and mechanisms.

3.3 Housing

3.3.1 Policy Context

At the metropolitan level, Melbourne 2030 sets the policy context for development up to 2030, with a substantial proportion of housing earmarked for locations in and around activity centres, urban expansion accommodated within growth areas, and an increase in the supply of affordable housing. Casey is designated as a growth area, and it seeks an increase in residential densities and greater housing diversity.

Council's Casey 21 strategy identifies the suburban lifestyle as a community aspiration, and sets out a range of housing options including rural residential, large lot suburban and integrated medium density housing. It promotes housing and lifestyle choice via delivery of lot size variations, and suggests lot sizes for parts of the study area.

The Casey Housing Strategy recognises the vital role of housing in delivering a liveable city, and introduces a range of policy options including increasing diversity, ensuring that 70% of Greenfield supply is for the traditional lot size (550 – 700 sq m), support for affordable housing, and recognising the need to provide appropriate housing for the elderly.

The Cranbourne East Development Plan reveals Council's vision for the area is "a quality treed, suburban environment, with a country-feel and strong links to Cranbourne and benefiting from unique access to extensive parkland areas." It proposes an average lot size of no less than 600 sq m for the area, and larger lots in excess of 4,000sq m for the southern part of the precinct.

Other relevant documents include the Cranbourne West Draft Precinct Structure Plan, which specifies 20 dwellings per hectare within 200 metres of Activity Centres, with an average lot size of 360 sq m, whilst in the rest of the site the density is set at 14 lots per hectare, an average lot size of 550 sq m. On the southern interface with the Urban Growth Boundary, the plan specifies dwellings of no less than 1,000 sq m.

The Collison Estate Background Paper introduces the issues of redevelopment for the estate which is situated in the Cranbourne East B Study Area, and outlines 5 options for the redevelopment of the estate.

3.3.2 Existing Conditions

Demographic analysis of the region revealed rapid growth in Casey – Cranbourne SLA, with growth between 2001 and 2006 even outstripping the broader Casey – Cardinia Growth Region. At the more local level, much of this growth has been in Cranbourne East, which grew from 523 in 2001 to 4,859 in 2006.

Cranbourne SLA has a large proportion of young couples aged 30-39 and children aged 0-14, mostly residing in households sized between two and four people, with a large share of middle income earners on a weekly income of between $700 and $1,999 per household, often employed in the regional manufacturing and retail trade sectors.

From an occupation perspective there is a tendency towards the tradespersons, intermediate clerical sales and services workers, intermediate production and transport workers, and labourers, educated to certificate, advanced diploma and diploma level. This middle income, new family segment is reflected in the area's built environment which is dominated by detached dwellings, and it is likely that this pattern of income and family structure will continue in the future.

Newcomers to Cranbourne SLA are mostly drawn from Greater Dandenong and other middle and outer eastern municipalities such as Monash, Knox, Kingston and Frankston. There is also a significant level of overseas migrants moving into the SLA. This suggests that people are drawn to the area because of cheaper land providing the opportunity for second and third homeowners to upsize.

3.3.3 Opportunities

Cranbourne East offers the opportunity to fulfil metropolitan and local level policies regarding residential development. Increasing dwelling diversity by incorporating a mix of lot sizes is in alignment with both Melbourne 2030, which is seeking to increase residential density in growth areas, and Casey Housing Strategy, which seeks to increase housing choice. This might also retain residents who are leaving Cranbourne SLA, as those who leave are 10 percent less likely to move into a separate house than those who move into the SLA. As the population of Cranbourne matures, with a future increase in empty nesters likely in a decade or so, this segment will be looking locally for opportunities to downsize, as will their more senior counterparts.

Two modelling scenarios were undertaken utilising the VIF population projections for Cranbourne SLA. The first scenario, the base case, considered dwelling preference changes reflected in the current Cranbourne SLA data. It estimated that in Cranbourne SLA an additional 34,000 dwellings would be required between 2001 and 2031, with the following breakdown of additional dwelling stock:

- Separate houses: 87.4%
- Semi-detached, row or terraced housing: 5.3%
- Flat, unit or apartments: 7.2%
- Other dwelling: 0.1%

Scenario two used the preference changes observed in Berwick SLA, where a shift was witnessed towards a greater diversity of dwelling stock in synchrony with Melbourne 2030, because the base case does not account for future shifts in dwelling preferences, except as reflected in historical trends. It forecasted an additional 33,400 dwellings, with an alternative additional dwelling breakdown of:

- Separate houses: 83.1%
- Semi-detached, row or terraced housing: 16.11%
- Flat, unit or apartments: 0.1%
- Other dwelling: 0.6%

This indicates that there is the potential for greater dwelling diversity within Casey SLA, if a similar demographic to that residing in Berwick SLA can be attracted to Cranbourne East. There are a range of dwelling types and products which can be developed within the lot sizes specified, which can attract and retain a diverse community within Cranbourne East. By increasing dwelling diversity, which fulfils both metropolitan and local level policy ambitions, a wider range of tastes and budgets can be catered for. The upper income segment is likely to be drawn to a master-planned 'lifestyle product', which combines a sense of place with provision of extensive community facilities, to foster a dynamic community.

Increasing residential density in close proximity to neighbourhood activity centres and public transport corridors can offer increased choice, as well as opportunities for retirement villages or accommodation for smaller households. This is predicted in the Victoria In Future population projections, with the average household size in Cranbourne SLA forecast to decline from 2.8 in 2006 to 2.4 in 2031.

There is acknowledgement in the Casey Housing Strategy that there is a need for continued supply of conventional suburban lots sized between 550 and 700 sq m from 70 percent of Greenfield lots. It also supports the notion of integrated housing with Greenfield areas in Cranbourne, an outcome which will enhance social sustainability. This can be realised via the fine-grained approach to densities within the site, with different targets for individual neighbourhoods, including local precincts with larger lots to capture the segment of the family market looking to upscale to larger dwellings. This will also prevent the development of large precincts without diversity. There are a range of housing products available from various suppliers, which can be built on lots sized up to 700sq m. Smaller family homes and townhouses can be built on lots sized between 170 sq m to 512 sq m.

Cranbourne East's neighbourhood character should incorporate best practice, Ecologically Sustainable Development principles as well as building on Cranbourne's image of tree-lined streetscapes. There is the opportunity for larger lots along the Urban Growth Boundary in order to provide a transition from an urban environment to the rural countryside. The area can be further enhanced by master-planned developments, which can deliver a holistic environment, thus promoting the site as a 'green place', maximising its position at the urban-rural interface.

3.3.4 Constraints

The buffer suggested in the Cranbourne East Development Plan, immediately to the east of the Collison Estate requiring 1,000 sq m lots should be carefully considered. By buffering the estate from new development it could prevent its redevelopment by supporting existing densities, which poses challenges for the upgrade of roads and services to the estate and would be unviable if the current situation persists.

The Collison Estate is strategically placed in close proximity to the proposed Catholic School on the north of the Berwick – Cranbourne Road, which offers the potential for co-locating a convenience activity centre with it. Because of its access potential and central position in relation to the rest of the study area, it is better suited to conventional residential lots of 600 sq m.

As residential development occurs in Cranbourne East, it is likely that the value of land on the Collison Estate will increase to the extent that it is uneconomic to retain large lots, prompting its future development, which might be piecemeal and poorly integrated with its surroundings if its long term future is not resolved in this planning exercise.

3.4 Employment

3.4.1 Policy context

In September 2002 Council adopted a municipal strategy entitled *Casey C21 A vision for our future (Casey C21)*. The opportunities for Casey are identified below:

Monash University, together with Chisholm Institute and the new hospital will provide a foundation upon which to build diverse, dense, knowledge intensive business and industry. This precinct is to be known as the Casey Technology Park. The opportunity exists to create at least 10,000 jobs in this precinct in the long term.

Another opportunity, that will be able to build on the success of the Casey Technology Park is the proposed Fountain Gate Business Park, this is part of the Fountain Gate/Narre Warren CBD. This large business precinct has the potential to provide more than 20,000 jobs in the longer term.

If the development of these two precincts can be achieved, an array of benefits will flow to the whole Casey community. Equally, in the longer term, development may spill over into other precincts as opportunities are realised. There are opportunities for redevelopment along the Princes Highway or 'C21 corridor'. Achieving the development of these precincts will require a sustained local commitment and leadership.

3.4.2 Opportunities

The Cranbourne East study area is designated as a residential extension to Cranbourne. There would be some scope for jobs in the area but this is likely to be very limited. With the proposed Cranbourne West and Cranbourne North industrial precincts in close proximity, Cranbourne East will provide residential opportunities for this expanding local workforce.

In developing Cranbourne East, it is important to plan for the job demand generated by the new residential population. There is little provision in the study area for employment floorspace, apart from the opportunities provided within the activity centres. Therefore we have estimated the number of people who will require jobs and the types of jobs split by import, export and construction. Table 1 below summarises the demand for jobs based on the population scenarios.

Table 2: Job type Split Scenarios (2031)

Job Type	Casey-Cranbourne SLA	Cranbourne East 2031 (1)	Cranbourne East 2031 (2c)	Cranbourne East 2031 (2d)
Exports	18%	1,637	1,883	1,821
Local	64%	5,779	6,644	6,427
Construction	9%	784	902	872
50:50 (export:local)	10%	876	1,007	974
Total	**100%**	**9,077**	**10,436**	**10,095**

Source: SGS Estimate

It is expected that approximately 784 to 902 construction jobs will be required to service the future population of Cranbourne East. Similarly between 5,770 and 6,644 local jobs will need to be provided, as well as between 1,637 and 1,883 export based jobs, with the remainder split between export and local jobs.

3.5 Retail

3.5.1 Policy Context

Council has adopted the Activity Centres Strategy to guide the planning of activity centres in Casey. The Strategy documents the future directions for the City regarding sustainability, urban form and character, population, housing, public amenity, employment, transport, physical infrastructure and provisions of development infrastructure, services and facilities.

The Strategy is a response to the State Government's Melbourne 2030 policy and incorporates a number of significant policy elements contained in local strategies including Casey C21 Strategy, Casey Business Development Strategy, Casey Municipal Strategic Statement and policy objectives for individual activity centres.

In terms of activity centres, the Strategy provides a general hierarchy of centres to guide planning including:

- **Principal Activity Centres** – represent municipal wide and regional level catchment in terms of population, employment, service provisions and also contain regional level entertainment, retailing, commercial, and community opportunities to the residents. These centres are expected to cater for a population of over 100,000 persons. Fountain Gate, a nominated principal activity centre will have an additional 105,200 sqm of retail floorspace and 31,300 sqm of commercial floorspace by 2021.1
- **Major Activity Centres** – Likely to serve a population of 50,000 to 75,000 persons. The purpose of these centres is to provide a major employment and mixed activity precinct. It specifies that retail development in the form of discount department store and supermarket will be promoted, and the centres are also to serve as a day-to-day destination for shopping, commercial and community goods and services. Casey Central as a Major Activity Centre is projected to accommodate up to 50,000 sqm of retail floorspace and a significant amount of office development.
- **Neighbourhood Centres** – Designed with the aim of forging a community identity and to service the day-to-day retail needs of households. It is proposed they have a catchment population of 10,000 to 25,000 persons. Supermarkets will be the key anchor for the convenience-shopping component of the centre and, in addition, up to 12-20 retail and other tenancies are expected to be developed.
- **Convenience Centres** – In residential-based locations, these centres would form the basic unit of the activity centre network by serving a population of up to 4,000. Retail development in the form of a convenience store will have a community focus and up to five shops are expected to be on-site.
- **Peripheral Sales Precincts** – Specifically designed to house large bulky good tenancies in an integrated and defined precinct. Retail floorspace in the order of over 1,000 sqm per tenant is envisaged with complementary office floorspace.

3.5.2 Opportunities

Table 3 below presents the floorspace demand estimates based on various population scenarios. All the scenarios presented do not change the floorspace demand to a great extent. It is proposed, within all the scenarios, to provide 2 supermarkets (7,369-9,309sqm approx), clothing stores (472-596sqm) plus a variety of food, clothing and other retail of about 10,000sqm of floorspace. No department stores/discount department stores would be necessary.

Table 3: Net Floorspace Demand/Retained Demand, 2006-31, Sqm

	Net Floorspace Demand/Retained Demand, 2006-31, Sqm										
Income Profile	Lynbrook			Cranbourne East			Casey-Cranbourne				
Population Scenario	1	2c	2d	1	2c	2d	1	2c	2d	MIN	MAX
Supermarkets	8,097	9,309	9,006	7,685	8,836	8,547	7,369	8,473	8,197	7,369	9,309
Department Stores	0	0	0	0	0	0	0	0	0	0	0
Other Food	2,084	2,397	2,318	1,978	2,275	2,200	1,897	2,181	2,110	1,897	2,397
Clothing	519	596	577	492	566	548	472	543	525	472	596
HH Goods	970	1,115	1,079	921	1,059	1,024	883	1,015	982	883	1,115
Other Retail	2,457	2,825	2,733	2,332	2,681	2,594	2,236	2,571	2,487	2,236	2,825
Hospitality and Services	2,681	3,082	2,982	2,544	2,926	2,830	2,440	2,806	2,714	2,440	3,082
Total	16,808	19,325	18,695	15,953	18,342	17,743	15,298	17,589	17,015	15,298	19,325

3.5.3 Existing Conditions

The Cranbourne East B Study area being in two separate parts with a challenging interface, 'guarded by retirement living' (existing and proposed) along with the proximity to the Cranbourne Town Centre and the location and diversity of existing residential development that are indicative of the issues in terms of existing conditions that will impact on the Cranbourne East Part B Activity Centre Network.

3.5.4 Opportunities

In an Activity Centre context Cranbourne East Part B has a pivotal role in that it forms the link between The Cranbourne North and south Development Areas. As such while it is strongly influenced by the Cranbourne Town Centre (PAC) it will also respond to Casey Central (MAC), the Hunt Club (NAC) proposal and the future Activity Centre provision in 'Cranbourne South'. As such the Cranbourne East Part B Activity Centre Network has to serve the future population, complement the existing Activity Centre Network and proposals (expansions and new centres) and allow for the future development at Cranbourne South.

As noted in the report a preliminary assessment of the potential AC network for Cranbourne East Part B, incorporating the distribution of the capacity population over the two parts of the Study Area (SGS), suggests two NACs one in each part of the study area (larger in the north and smaller in the south) supported by CACs. The number and composition of CACs will in part be determined by the location of the NACs, the transport network and the options with regard to community services and education.

3.5.5 Constraints

Apart from the existing arterial roads the location of major roads and environment corridors within the two study areas, connections with the existing urban infrastructure, and the expectations of major investors/stakeholders (in Activity Centres and their components) that have the potential to constrain the future Activity Centre network. The impacts of these constraints were evidenced in Cranbourne West and have the potential to constrain the Cranbourne East Part B proposals.

These constraints can impact any or all of the following Activity Centre elements; location, composition and economic sustainability of the resulting network and its ability to effectively meet the needs of both existing and future residents.

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[1] City of Casey, (2006) Development Contributions Plan for Precinct Structure Plan 4 Cranbourne District Centre

3.6 Open Space

This is a summary of the Cranbourne East Open Space Context Final Specialist Report prepared by David Lock Associates, which should be referred to for further detail.

Figure 24 identifies existing open space within the growth area.

3.6.1 Existing Conditions

Cranbourne East is positioned within close proximity to two major regional open space assets: the Cranbourne Royal Botanic Gardens and Casey Fields. These assets will provide the study area with good access to high quality passive and active open space.

C21 shows a large rectangular area in the north of the study area as a proposed regional park area. Recent developments with Parks Victoria have suggested that this is area is no longer likely to be used as the park's location, and that it is much more likely that it will be located somewhere within the Urban Floodway Zone. Although Parks Victoria does intend to deliver a regional park in the area, albeit a smaller version of the one indicated, the exact location, size and timing of this park remains uncertain

A proposed retarding basin within the Cascades on Clyde Estate along Clyde Road, has the potential to provide the study area with a sizable, district park. The amount and quality of this space is dependent on its design.

The Cranbourne East Development Plan defines a local park as a 1 hectare park serving a 500 m radius. There are limited local parks in and around the study area, and additional open space will need to be provided.

As indicated in both *C21* and the Cranbourne East Development Plan, there are a number of strategic open space links proposed, to connect major open space destinations and create an open space network. The major link shown in *C21* runs from the Royal Botanic Gardens to Casey Fields, then north into the indicated Parks Victoria investigation area.

The Cranbourne East Development Plan also indicates another major link beginning in the southern portion of the study area, running north from the link mentioned above and continuing north to the rail line, into the Cranbourne Complex. From here, the link runs along the transmission line easement, and into the northern portion of the study area.

3.6.2 Policy Context

Melbourne 2030 recognises open space as an important function in terms of both the environment and health and well-being. The Strategy promotes a metropolitan-wide network of high-quality open spaces. This is supported by the Parks Victoria Strategy *Linking People and Places* which sets out a number of open space principles to guide the strategic development of open space.

Local policy relating to open space is led by *C21* which outlines strategic open spaces and the required links. The Casey Planning Scheme highlights again highlights the need for quality open space and gives effect to open space provision, requiring new developments to provide a certain amount and type of open space. The *Casey Open Space Strategy* provides guidance to the planning and design of open space, and aims to achieve at least 5ha of open space per 1000 people: 3ha for outdoor recreational facilities and 2ha for outdoor sporting facilities.

3.6.3 Standards

Council wishes to see a significant proportion of open space provided in Cranbourne East. The standards which best meet this aim will be used as a starting point for determining open space provision. The implications of the precinct's proximity to the regional facility at Casey Fields will also need to be considered.

The Casey Planning Scheme standards are as follows:

within 2 kilometres of all dwellings	**Regional Parks**	**At least 3 hectares, combining passive and active use**
within 500 metres (safe walking distance) from all dwellings	Large Local Parks	At least 1 hectare for active and passive use
within 150 metres to 300 metres safe walking distance of all dwellings	Small Local Parks	Not specified

The Casey Open Space Strategy standards are as follows:

within 500 metres of most residences	• **a park catering for informal, outdoor recreation activities** • **access to a safe pedestrian/ cycle path network** • **a playground catering to toddler, junior and senior age groups**
within 1 kilometre of most residences	• a multipurpose sportsground suitable for community events, training and junior sports • access to a municipal wide lineal open space network
within 2 kilometres of most residences	• district level sports fields with a public transport connection • a major park or foreshore reserve with a public transport connection
within 10 kilometres of most residences	• a regional recreational facility providing for a non sporting recreation in a range of natural and cultural landscape settings

The Casey Planning Scheme does not indicate a percentage of required open space contribution for the study area. However, areas outside of the study area, but within Cranbourne East, require a 7.5% open space contribution, except for Collison Estate which requires only a 5% contribution.

In relation to the use of wetland areas being credited as open space contribution, there is currently a case being made at VCAT to decide how much of these areas will be accepted. The results of this case could be significant for open space planning.

The Open Space Strategy cites Cranbourne as having a significant under supply of active and passive open space. It will therefore be important to provide a significant level of open space within the Cranbourne East Precinct, and the open space standards will need to be considered in this context.

The Precinct Structure Planning process will determine the location and quanta of open space provision, using the standards contained in the planning scheme and open space strategy as a starting point. Options for achieving open space provision will be:

- the provision of linear trails as part of the Casey Trails Network, and linking the Royal Botanic Gardens to Casey Fields and up towards the north of the precinct;
- the provision of a series of accessible large and small local parks for passive open space throughout the precinct;
- the provision of active open space designed to work in association with passive open space;
- the provision of a new regional park to the north of the precinct;
- the provision of improvements to Casey Fields.

Council would expect the provision of regional facilities, such as the new Regional Park or improvements to the existing Casey Fields, to complement, rather than replace local open space provision.

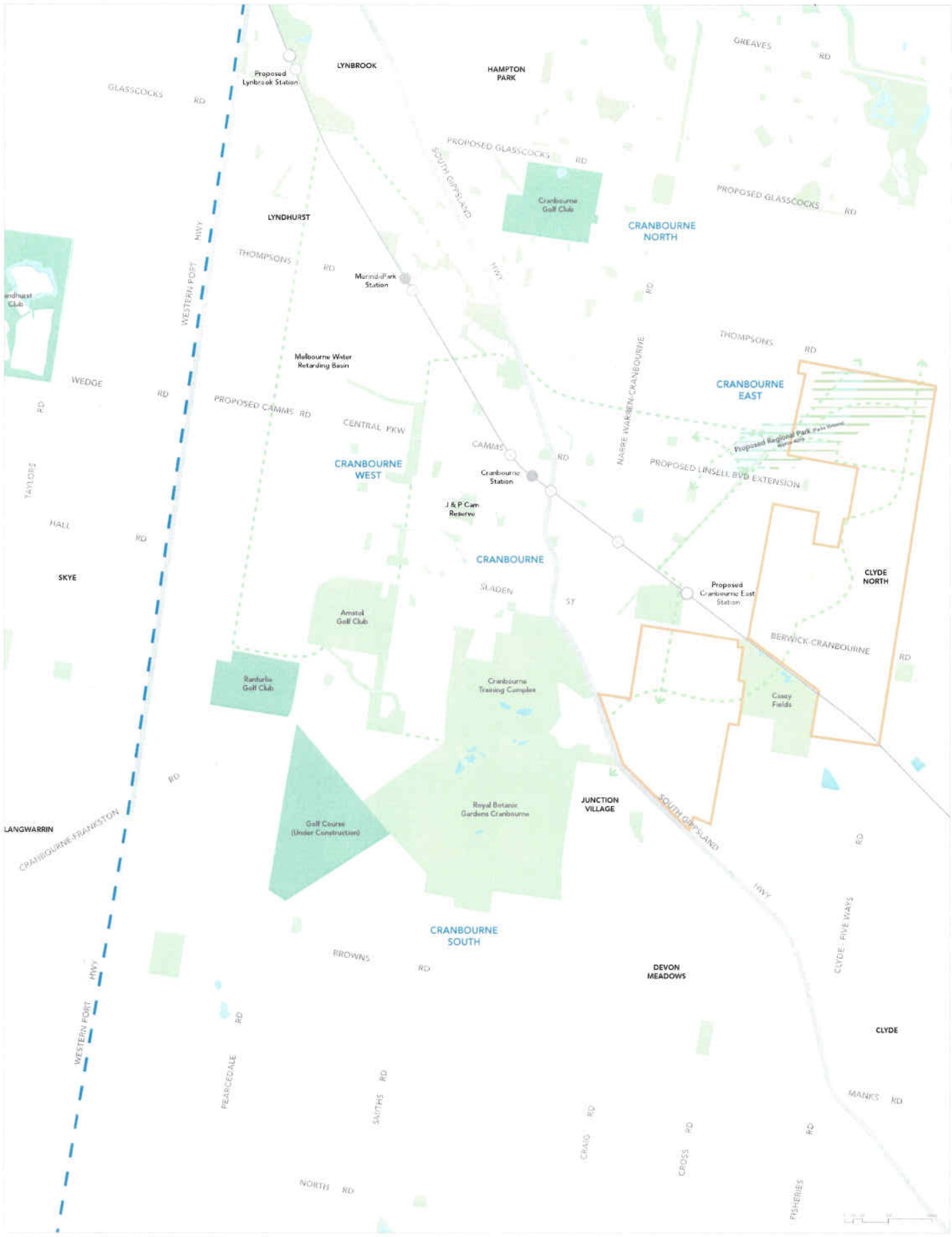


figure 24
existing
open
space

CEUGP/SR12A/001
AUGUST 2007

3.7 Summary: land use budget

The findings contained within the above sections have enabled preliminary land use budgets to be prepared for the Cranbourne West growth area. Table 4 indicates a number of potential land use budgets depending on the importance given to job-creation versus residential growth.

Table 4—Preliminary land use budget scenarios

SCENARIOS	A		B		C		D	
Average gross residential density (dw/ha)	12		12		15		15	
Collison Estate av gr resid density (dw/ha)[1]	1.7		8		1.7		8	
AREAS	Gross Area	%	Gross Area	%	Gross Area	%	Gross Area	%
TOTAL DEVELOPABLE LAND EXCL COLLISON[2]	527	100%	527	100%	527	100%	527	100%
PRIMARY INFRASTRUCTURE								
Retarding basins	22.0	4%	22.0	4%	22.0	4%	22.0	4%
Waterways	9.3	2%	9.3	2%	9.3	2%	9.3	2%
Main road reserves[3]	28.7	5%	28.7	5%	28.7	5%	28.7	5%
Total	**60.0**	**11%**	**60.0**	**11%**	**60.0**	**11%**	**60.0**	**11%**
ACTIVITY CENTRES								
Neighbourhood centres (no.)	2		2		2		2	
Retail & office	5.0	1%	5.0	1%	5.0	1%	5.0	1%
Integrated Community Facility	0.5	0%	0.5	0%	0.5	0%	0.5	0%
Health facilities	0.9	0%	0.9	0%	0.9	0%	0.9	0%
Youth accommodation	0.2	0%	0.2	0%	0.2	0%	0.2	0%
Total	**6.6**	**1%**	**6.6**	**1%**	**6.6**	**1%**	**6.6**	**1%**
Convenience centres (no.)	2		2		3		3	
Retail	0.5	0%	0.5	0%	0.7	0%	0.7	0%
Total	**0.5**	**0%**	**0.5**	**0%**	**0.7**	**0%**	**0.7**	**0%**
EDUCATION								
State primary schools	7.0	1%	7.0	1%	7.0	1%	7.0	1%
Independent & Catholic 2° schools	28.0	5%	28.0	5%	28.0	5%	28.0	5%
Independent & Catholic 1° schools	4.0	1%	4.0	1%	4.0	1%	4.0	1%
Pre-school	0.5	0%	0.5	0%	0.5	0%	0.5	0%
Total	**39.5**	**7%**	**39.5**	**7%**	**39.5**	**7%**	**39.5**	**7%**
RECREATION[4]								
Outdoor sporting facilities	25.6	5%	29.8	6%	30.7	6%	34.7	7%
Outdoor recreational facilities	38.4	7%	44.6	8%	46.0	9%	52.0	10%
Total	**64.0**	**12%**	**74.4**	**14%**	**76.7**	**15%**	**86.7**	**16%**
RESIDENTIAL NEIGHBOURHOODS								
Total land excl Collison Estate	356	68%	346	66%	343	65%	333	63%
Total land in Collison Estate	82		82		82		82	
Total number of dwellings[5]	4,412		4,802		5,287		5,651	
Total population[6]	12,796		13,926		15,332		16,388	

Notes:

1. 1.7 based on LDRZ; 8 based on R1Z with 1000sqm lots.
2. Excludes area outside the UGB, Collison Estate and the rail reserve.
3. Allows for indicative arterial & connector roads.
4. Based on Council policy of 5ha per 1000 pop
5. Includes existing Collison Estate dwellings.
6. Assumes average household size of 2.9. (Lower HH size in Blue Hills expansion offset by higher density.)

4 TRANSPORT AND SERVICES CAPACITY

Section 4 identifies the existing capacity of transport and utility networks in the area, which will inform the identification of new infrastructure requirements.

4.1 Movement and Access

This is a summary of the Cranbourne East Sustainable Transport Context and Traffic Context Final Specialist Reports prepared by PBAI Australia and Veitch Lister Consulting respectively, which should be referred to for further detail.

4.1.1 Walking, cycling and public transport

The site is located to the East of the existing Cranbourne Town centre and is mostly undeveloped with some road infrastructure in place with significantly more proposed including various upgrades to roads. A major road upgrade is proposed for Clyde Road which borders the eastern side of the site.

A disused railway line dissects the study area with various at-grade crossing points located in or near to the site. The rail corridor is disused however it has been retained by the Department of Infrastructure to ensure that the line could be re-opened.

The rail line extension and new stations offer a rare opportunity for this growth area to design and include both road and rail public transport into the overall transport network and provide real mode choice to the future residents. The Cranbourne East development combined with the Berwick-Cranbourne/Clyde-Fiveways road realignment potentially increases the opportunity to develop the rail network by undertaking some of the works at the same time

Investigations are underway into the possible vertical alignment of this rail corridor that will require several grade-separated intersections. Other public transport adjacent to the study area is poor and will require significant improvements to accommodate for the level of urban growth being proposed.

Casey Fields is a large recreational facility located just south of the Berwick-Cranbourne/Clyde-Fiveways Road and is adjacent to the study area. Cranbourne town centre is a Principal Activity Centre as defined in Melbourne 2030 and therefore acts as a significant draw for services and shopping from the surrounding area. Further north, Narre Warren Fountain Gate is a regional attractor and the regional towns of Dandenong and Frankston also play a regional role and will act as key destinations to potential residents.

These locations and others will be considered in terms of their importance and their accessibility in the development of local and regional transport networks.

Walking and cycling should be promoted and provided for as the first and second choice of modes of transport and should receive the same level of priority. Developing minimum standards for walking and cycling provision will ensure good quality pedestrian and cycle linkages exist along all roads as well as through open spaces and wherever demand exists. This can be presupposed by providing connections between residential areas, activity areas and public transport nodes and ensuring they are attractive, safe and efficient.

4.1.2 Roads and traffic

In 2002 the City of Casey released its C21 Strategy - A Vision for the City of Casey. The strategy presented a blueprint for the future development of this rapidly developing Municipality, which it is envisaged will ultimately accommodate over 300,000 residents.

One of the key objectives of the C21 Strategy is the creation of an Accessible City. The strategy recognised that "Accessibility to goods, services, jobs and facilities is a fundamental right of people in the community. It is a social objective not an infrastructure goal. Casey's location on Melbourne's fringe requires innovative planning if the needs of the community are to be met".

The strategy identified 10 goals aimed at achieving its Accessibility Objective, as follows:

- Integration of land use and transport outcomes
- Mile grid of arterial roads
- Public transport friendly suburb design
- A shift to public transport
- New east-west arterial road links
- Key regional transport links
- Upgrade local roads
- Casey Trail Network
- Regional through routes
- Safer local roads

Of note, Berwick-Cranbourne Road forms part of the Principle Road Network identified in the Government's Metropolitan Transport Plan, and is part of the strategic road network in the Casey-Cardinia Growth Area Framework Plan.

4.1.3 2031 Land Use and Network Assumptions

2031 Land Use

VLC has updated DSE 2031 population and employment projections across the modelled area in consultation with the City of Casey for the establishment of a 2031 Base Case Model. This model includes the proposed development of Cranbourne West, as set out in the Cranbourne West Urban Growth Plan, but does not include the development of Cranbourne East. Development scenarios for Cranbourne East will be the subject of subsequent reports.

Within Casey the updated projections translate into the 2031 population and employment totals by SLA as shown in Table 4

Table 5: 2031 DSE Population and Employment Projections

SLA	2005 Population	2005 Employment	2031 Population	2031 Employment
Casey (C) - South	12,177	2,621	37,957	8,749
Casey (C) - Cranbourne	63,820	8,729	136,182	29,238
Casey (C) - Hallam	49,661	9,467	58,258	15,194
Casey (C) - Berwick	86,312	14,511	109,714	24,479
Total	211,970	35,328	342,111	77,660
% Increase from 2005			**61%**	**119%**
Note: Cranbourne projection includes future ultimate development at Cranbourne West				

Transport Network Assumptions

The base 2031 road network includes a hypothetical programme of works, prepared by VicRoads Transport modelling unit, to upgrade the arterial road system across Melbourne. The aim of including these improvements is to provide a degree of realism when modelling long term land use/transport scenarios. Modelling the future without improvements to the transport system can result in significant (and unrealistic) distortions in the travel patterns predicted by the models.

One of the improvement projects included is a proposal to duplicate Berwick-Cranbourne Road and Clyde-Fiveways Road, on its current alignment. VicRoads, however, now proposes to realign Clyde-Fiveways Road. The impact, if any, of this realignment will be considered in a future report that assesses the transport impacts of the proposed structure plan.

The proposed north-south route through and adjacent to the study area has also been included in the 2031 base case road network.

The Department of Infrastructure's future intentions with respect to upgrading of the public transport system were also included in the 2031 Base Case Zenith model. These included:

- Increased train frequencies and additional express running made possible by the third-tracking of key sections of the rail network.
- Increased tram frequencies
- Increased bus frequencies
- Smart Bus initiatives

4.1.4 2031 Travel Forecasts (Base Case Scenario)

2031 Travel Demands and Patterns
Weekday travel for 2031 has been estimated based on the 2031 population and employment projections and the assumed 2031 base road network. Key outcomes of the investigation are:

1. residents of Casey in 2031 are expected to make about 576,000 journeys commencing at their home each weekday (refer Table 5(a)). This is 69 percent higher than in 2005, and does not include any travel associated with future development at Cranbourne East.
2. about 64% of the journeys made from home by residents of Casey (about 360,000 journeys) will be made to destinations within the Municipality, while the balance (approximately 205,000 journeys) will be to destinations external to the Municipality This level of travel self-containment is similar to the present day.
3. Of the journeys made to external destinations, the overwhelming majority will be to Greater Dandenong (32 percent of external journeys) and the inner eastern suburbs of Melbourne (29 percent).
4. As for the 2005 situation, very few external journeys will be made to the City of Melbourne (only 3.6 percent of external journeys).
5. Travel interaction with Frankston is expected to nearly double by 2031, while interaction with Cardinia will treble.
6. By 2031 the number of journeys made by residents living outside the Municipality that have their destination in Casey is expected to increase from 68,000 each weekday (2005) to 135,000.
7. Journeys into the Municipality generated by external residents will be from fairly widespread origins - but the largest influx will be from Cardinia, followed by Dandenong and Frankston.
8. It is expected that, in 2031, 36 percent of resident workers will be employed locally (up from 30 percent in 2005). The predicted main external employment destinations for the resident workforce in 2031 are:
   - The inner eastern suburbs of Melbourne (34%)
   - Dandenong (30%)
   - Frankston (10%)
   - Knox (8%)
   - Cardinia (6%), and
   - City of Melbourne (6%)
9. The private motor vehicle is predicted to remain the dominant mode of travel for Casey residents in 2031, accounting for 87.3 percent of all journeys (86.7 percent in 2005). Public transport's share of the travel market is expected to decline slightly under the Base Case Scenario, from 3.7 percent of journeys in 2005 to 3.6% in 2031. This is not really surprising as the Base Case Scenario does not include any revolutionary change to, or restructuring of, the public transport system in Casey.

The 2031 Base Case Scenario model run suggests that the travel market generated by Casey will become even more diverse in the future. This has ramifications in terms of how we might plan, configure and deliver public transport services in the future.

4.1.5 2031 Traffic Demand (Base Case Scenario)

Figure 24 presents the Zenith model's weekday (24-hour) traffic forecasts for the 2031 Base Case Scenario in the vicinity of the study area. The resultant volume/capacity ratio plot in Figure 25 pinpoints where the road network is expected to be under duress.

4.1.6 Anticipated Traffic Growth (2005 – 2031)

A series of key screenlines on the periphery of Casey have been identified so as to gauge the likely level of traffic growth that will occur on the approaches to the Municipality in the period 2005 to 2031. Refer Figure 26.

Forecast traffic growth on the screenlines for the 2031 Base Case Scenario is presented in Table 5 below.

Screenline	2005	2031	% Growth
North-West	239,380	281,980	17.8
South-West	29,180	48,370	65.8
West	104,060	170,730	64.1
North	16,630	28,820	73.3
East	75,660	166,370	219.9
South-East	20,920	31.240	49.3
All Screenlines	**485,830**	**727,510**	**49.7**

The main points to note from Table 5 above are as follows:

1. The screenlines in combination essentially form a cordon around Casey. By 2031 the total traffic expected to cross this cordon each day is expected to increase by 70 percent.
2. The largest percentage and absolute increase in traffic is on the Eastern screenline, due to large scale of planned development in Cardinia.
3. Traffic on the Western and South-Western Screenlines increases substantially, due to increasing interaction with Frankston and Mornington.

4.1.7 Key Considerations

Key transport issues of relevance to the Cranbourne East Structure Plan fall into two broad categories.

4. Land use/transport issues internal to the site; and
5. External issues.

Internal Issues
As Cranbourne East is essentially a greenfield site, the planning team has considerable flexibility in terms of identifying an appropriate distribution and intensity of land use, and the transport infrastructure and services needed to support it. These will be addressed in the next phase of the study.

Clearly, within site network of collector roads, bus routes and connections to the peripheral arterial road network will need to be tailor-made for the types of land use envisaged for the site.

Precisely how the identification of an optimal strategy for promoting pedestrian, cycle and public transport usage will evolve will also depend heavily on the types of land use.

There are a number of specific internal transport issues that will have a major impact on planning for Cranbourne East. These include the need to consider:

- The appropriate role/location/function/reserve width for the proposed north-south road. The 2031 base modelling indicates that this may be an attractive route for travel through the Cranbourne East growth area;
- The configuration of the new intersection between the proposed north-south road, Berwick-Cranbourne Road and the railway line;
- The need for/feasibility of any other north-south roads, particularly given issues associated with the crossing of the railway line;
- The role/function/reserve width of Ballarto Road;
- East-west access through the Collison Estate

A further issue that will have a significant influence on the proposed street layout is the need to consider the development of rail infrastructure through the study area.

External Issues
Most external issues cannot be addressed independently from the broader planning issues in Casey. However, how some issues are addressed will have specific implications for the development of Cranbourne East.

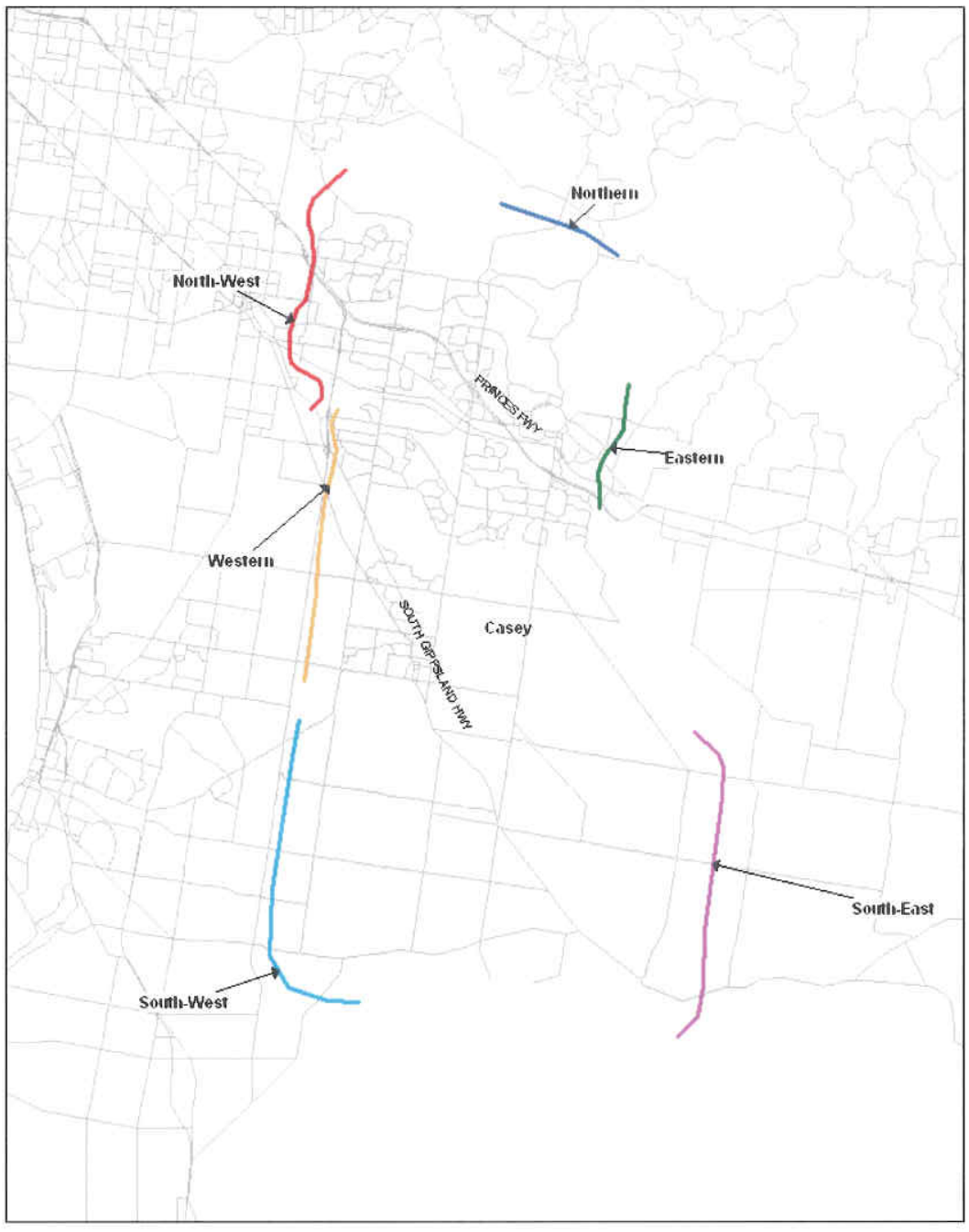
Other key external transport issues include:

- How best to configure the road system to encourage community cohesion with existing adjacent communities;
- Identifying appropriate reservation widths for transport corridors should buses running in their own right-of-way, or transit lanes, be found to be an important element of the optimal land use/transport strategy for the area.

Figure 25 2031 Weekday Traffic Forecasts (Base Case Scenario)

Figure 26 2031 Volume/Capacity Ratio Plot (Base Case Scenario)

Figure 27 Casey External Screenlines



4.2 Utility Services

This is a summary of the Cranbourne East Service Infrastructure Conditions Final Specialist Report prepared by SKM, which should be referred to for further detail.

A preliminary servicing investigation to identify existing infrastructure services in the near vicinity of the Cranbourne East B study area and report on anticipated works to service the development has reviewed key services including electricity, telecommunications, sewer reticulation, water supply and gas supply.

In consultation with relevant Authorities regarding standards, capacity of existing services and proposed upgrades to existing services or the requirement of new facilities the following has been identified:

- Electricity
  - Adequate capacity for supply to the development is possible via existing 66/22kV Clyde North Zone Substation (CLN) which has been design for expansion;
  - High voltage and Low voltage Electrical cabling works and installation of kiosk substations will be required throughout the development;
  - Solar powered initiatives could potentially reduce the required electrical infrastructure throughout the proposed development region
- Telecommunications
  - Telstra are responsible for ensuring provisions for supply to the development. They are additionally responsible for the installation of any new telecommunication infrastructure.
  - Application for Reticulation must be made to Telstra to ensure services are available when required.
  - Cables and servicing pits will be required throughout the development, with property connections provided to each allotment. Cabling will typically follow the same route as the electrical reticulation cables.
  - Existing main telecommunications service along Berwick-Cranbourne Road may provide a likely connection point into the development.
  - Specific telecommunication requirements for the site should be considered including fibre optic access, and other specialist telecommunication services. Additional costs may be associated with the provision of these services to the site.
- Sewer Reticulation
  - Significant additional infrastructure will be required to service the development.
  - South East Water are aware of the requirement for new infrastructure and have a planned strategy for extension of the network. New infrastructure will consist of a combination of gravity reticulation and branch sewers, rising mains and pump stations.
  - Optimal staging of development for sewerage services is from the north
- Water Supply
  - Significant additional infrastructure will be required to service the development
  - South East Water are aware of the requirement for new infrastructure and have a planned strategy for extension of the network.
  - Dual pipe system will be installed, providing potable water for domestic use and recycled water for irrigation and fire-fighting. It is likely that the use of recycled water for these purposes will be mandatory.
  - South East Water have indicated their preference to stage development for water from the south to allow progressive upgrade of their systems. This is in conflict with installation of sewer services. It is envisaged the upgrade cost for sewerage service provision will be of a larger magnitude than water service provision. Therefore, overall, staging from the north is preferable.
  - To reduce the demand and reliance on potable water, consideration of roof runoff re-use and grey water re-use for residential properties is recommended. Reticulated recycled water is currently utilised in the Cranbourne Region, however it could be beneficial to reduce the need for installation of significant infrastructure.
- Gas Supply
  - Based on residential development of the subject site (no commercial or industrial loads), duplication and extension of the existing gas network to distribute supply throughout the development is expected.
  - An application for connection will need to be submitted to Envestra Ltd. when the subdivision layout is finalised to ensure that services are available when required.
  - Extension of the existing 180mm diameter supply main in Linsell Boulevard will be required eastwards to Clyde Road.
  - Secondary or intermediate mains will need to be laid in a north-south alignment from the extended 180mm main in Linsell Boulevard to supply the region south of Linsell Boulevard.
  - Further duplication of the 150mm main in Narre Warren-Cranbourne Road will be necessary to support growth within the Cranbourne East B study area.
  - A new 200mm or 180mm diameter gas main will be required along Clyde Road in the longer term.

5 CONSULTATION

5.1 A Snapshot

The Landowner and Community Forums provided an opportunity for the Cranbourne community to have a role in the future development of Cranbourne East. Over 250 people attended four separate forums during August 2007. These forums were designed to explore key issues facing the community and to clarify issues and aspirations for the future of the area.

Issues and opportunities identified during the forum process will be further explored during the design and planning phases of the project to determine those that are feasible and those that can be addressed.

In summary, the landowners and the community;

- Believe road quality and traffic management is the priority issue in the future planning of the local area.
- Value the rural feel of the local area and want to see this maintained through the provision of appropriate buffering, landscaping and extensive open space networks.
- Understand the importance of sustainable transport options including increased public transport and the provision of pedestrian and bike trails.
- Believe Cranbourne East should have a range of lot sizes and dwelling types to cater for broad community needs.
- Identified the need for an entertainment precinct that could include a cinema, theatre and youth facilities.
- Believe the staging of the development should provide soft and hard infrastructure prior to the new community moving to the area.
- Identified that there should be a balance between passive recreation and formal sports opportunities.
- See any proposed activity centre as a place that combines retail, commercial and social functions and which is easily accessible by the whole community by forms of sustainable transport.

5.2 Take Home

The Landowner and Community Forums have indicated that a series of key prevailing socio cultural drivers are present in the local area can be classified into:

- **Choice:** Provide current and future generations genuine housing choices;
- **Connection:** Create and promote connectivity to facilities, places, people and futures;
- **Local Employment**: Facilitate real local employment choices and alternatives; and
- **Holistic Planning**: Provide for our 'whole of life' social, cultural and recreational needs - now and in the future.

6 SUMMARY

Section 6 provides a summary of the key issues identified in this report.

6.1 Key opportunities

6.1.1 Site conditions

The key opportunities arising from the natural features and patterns of urban development outlined above are:

- To pursue best practice in urban development due to the scale of the subject site.
- To deliver sustainable neighbourhoods.
- To integrate the site with surrounding residential development fronts through clear east-west connections and synergy in land uses.
- To enable transit-oriented development.
- To take advantage of the existing road access and rail corridor.
- To facilitate opportunities for further subdivision of the Collison Estate where possible.
- To improve upon the range of community facilities available to existing Cranbourne East residents.
- To capitalise on any latent demand for services within the established part of Cranbourne East to support higher order facilities within the subject site.
- To provide new neighbourhood activity centres located to take advantage of high levels of accessibility and to promote sustainable transport.
- To capitalise on the existing Casey Fields regional sporting facility and any future plans for expansion of activities.
- To provide a linear connection with attractive walking and cycling trail, linking the Cranbourne Botanic Gardens to the proposed new regional park via Casey Fields.
- To create attractive linear parks along natural drainage lines.
- To build in mechanisms to respond to, and anticipate, existing and future development plans in key growth corridors to the north and the south.
- To embrace existing character elements where possible.

6.2 Key Challenges

6.2.1 Site condition

The key challenges arising from the natural features and patterns of urban development outlined above include:

- Achieving coordinated development across fragmented land ownership.
- Overcoming the limitation of access from the west due to the existing low density Collison Estate and the proposed North-South Arterial Road.
- Determining appropriate interfaces with the Collison Estate and other existing residential developments immediately abutting the subject site.
- Managing interfaces with sensitive uses.
- Avoiding the creation of new barriers to movement created by new roads
- Retaining and protecting the natural values of significant vegetation.
- Protecting the natural values of existing watercourses and water bodies.
- Ensuring adequate provision of higher order facilities and services given the scale of the subject site.
- Establishing an identity distinct from that of the established area of Cranbourne East, while ensuring that new development is integrated with it.
- Addressing the interface with the Green Wedge (to the east and south)-particularly in relation to the visual impact of development with Cranbourne East.
- Balancing the need to maintain the integrity of some ongoing uses within the area and the need to plan for urban development.
- Managing land use and access relationships with the Clyde township.

6.2.2 Transport

The key challenges arising from the transport situation include:

- Provision of north-south and east-west pedestrian and cycling movements.
- Provision of PPTN to serve the growth area.
- Resolving the future status of the railway line and the Cranbourne East Station, and any relevant development or access implications.
- Avoiding the creation of a barrier to movement by any upgrade to the Berwick – Cranbourne Road, particularly given the benefits of integration between the established and new parts of Cranbourne East.
- Determining appropriate interfaces with the South Gippsland Highway and mooted Clyde Road 'freeway upgrade' in terms of land use, vehicular access and visual impact.
- Overcoming the limitation of access from the east-particularly if the Clyde Road 'freeway upgrade' occurs.
- Overcoming the barrier created by the Berwick – Cranbourne Road to movement across it.

7.1 Technical stakeholders

The technical stakeholders involved in the preparation of background analyses which have informed this report have included:

- City of Casey
- Growth Areas Authority
- Bicycle Victoria
- Cranbourne Royal Botanic Gardens
- Cranbourne Transit
- Department of Education and Training
- Department of Human Services
- Department of Industry, Innovation and Regional Development
- Department of Infrastructure
- Department of Sustainability and Environment
- Department of Victorian Communities
- Envestra
- Environment Protection Authority
- Melbourne Water
- South East Water
- Southern Health
- Sport & Recreation Victoria
- Telstra
- TSQRD Electricity
- VicRoads

7 APPENDICES