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**Residential Interface Impacts**

**Hopetoun Park North  
Bacchus Marsh**

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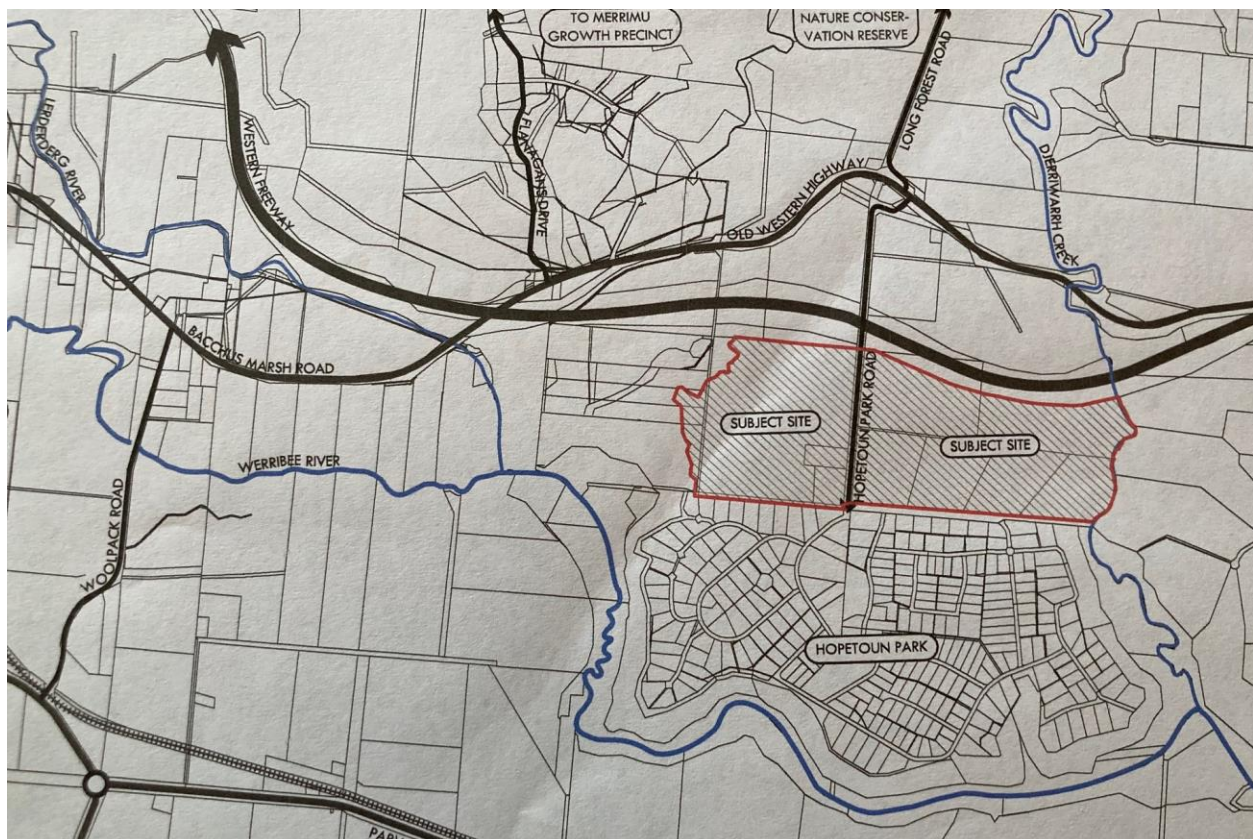
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## 1.0 INTRODUCTION

Hopetoun Park North (HPN) is an identified future residential growth area of Bacchus Marsh. The growth area is located on the plateau immediately east of the Bacchus Marsh Irrigation District and between the Western Freeway to the north and the existing low density residential development of Hopetoun Park, to the south. The total area involved is approximately 149ha of which the subject site will form part.

A planning scheme amendment request to rezone land in Hopetoun Park North from Farming Zone (FZ) to the Neighbourhood Residential Zone (NRZ) of the Moorabool Planning Scheme was lodged in September 2021.

**Figure 1: Future Residential Growth Area.**



Council have responded to the application with a request for further information which states:

*“Undertake, as part of a land capability study, an assessment of land that has an interface with the Bacchus Marsh Irrigation District (BMID) to determine if there are any potential impacts on land within strategic outcome areas associated with the ongoing operations within BMID, and likewise the impact of this future development on land within the BMID”.*

This report addresses those requirements. It has as its Terms of Reference the following steps:

- Provide a brief review of the natural features of Hopetoun Park North that influence its development characteristics.
- Describe the key elements of the residential development being proposed and the interface issues that are likely to arise.
- Undertake a similar review of the potential impacts agricultural practices being conducted at the eastern interface of the BMID might have on future residents of Hopetoun Park North.

## **2.0 RELEVANT NATURAL FEATURES**

The natural features of the site, particularly landform, determine the suitability of the site for residential and other uses. A brief description of relevant features that are influential to the site's development are as follows.

### ***Landform***

The study area occupies a broad volcanic plateau which includes gullies and escarpments that fall steeply to the west and east. The elevation of the central plateau is 140m AHD, 50m higher than the western alluvial plains of the BMID and Pyrites Creek which is the eastern boundary of the proposed growth area. The following three photos show the western landform interface between the site and BMID, from north to south. Photo 1 is the northern interface of the escarpment and its intersection with the alluvial flats of the BMID.

**Photo 1: Escarpment interface north**



Photo 2 is taken from the same position but extending west looking over the Dellios orchard.

**Photo 2: Orchard production looking west**



Photo 3 looks to the south-west, capturing the remaining part of the valley.

**Photo 3: South-West to the Werribee River**



### ***Other natural features***

The geology of the study area consists of Ordovician basement rock overlain by sedimentary and volcanic formations. The soils of the plateau are derived from the basalt cap which have formed brown volcanic clay loams overlying weathered rock at 2-3m and then fractured clay to about 5m. Below are Ordovician base materials which represent most of the escarpment.

By way of contrast, the Bacchus Marsh Irrigation District (BMID) has a commandable area of approximately 2000ha and an irrigatable area of 1000ha. It is an alluvial valley that lies between the Werribee and Lerderberg Rivers with soils that are red brown earths, fertile and well drained. This enables intensive agriculture to be practised providing irrigation is available.

The climate for both areas is the same where annual rainfall is low and variable in the 450-500mm range<sup>1</sup>. However, the significant difference is the availability of irrigation. The plateau country is dryland and suited only to broadacre cropping and grazing whereas the BMID can be intensively cropped.

## **2.1 Summary**

Natural feature characteristics have resulted in the following residential design initiatives:

- The direct elevation of the plateau is 50m higher than the BMID near Cowans Road. When slope is taken into account, the distance between the BMID and the plateau varies between 100-220m. Even at the closest escarpment distance (100m), after road reserves and dwelling setbacks are included, the distance from the orchards is greater than 150m.
- The steepness of slope results in the escarpment being mostly un-tractable. However, it is fully vegetated with native grasses, shrubs and small trees keeping the site dust free and relatively free of weeds.
- The prevailing winds are mostly from the south-west. Under these conditions, good noise abatement is provided from residential development.

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<sup>1</sup> Bacchus Marsh monthly rainfall, BOM

### **3.0 RESIDENTIAL DEVELOPMENT PROPOSAL POTENTIAL IMPACTS**

#### **3.1 Proposal description**

The proposal is to rezone the growth precinct to Neighborhood Residential Zone (NRZ) from its current zoning of Farming Zone (FZ). The minimum subdivision area for the NRZ is to be 800 square meters but with lot variation between 800-1500m<sup>2</sup>.

A draft Concept Plan has been prepared with some of the key elements that affect this report being:

- Residential lots are proposed to have a minimum frontage width of between 10-35m depending on lot size and location. It is proposed that lot frontage for 800m<sup>2</sup> lots are to be generally 20m while 1500m<sup>2</sup> lots are to be greater than 30m. In addition, there is to be a minimum linear reserve from the top of the escarpment of 20m and road reserve of 17.3m. This provides an escarpment distance between the orchards and residential of at least 100m but up to 220m.
- The stormwater management strategy is designed to control water flow, maintain water quality and avoid erosion. Retarding basins and treatment areas are to be installed throughout the study area. The final outfall of runoff and treated water is to the Werribee River but beyond the BMID.
- The growth precinct be appropriately serviced with drainage, water, gas, electricity and reticulated sewerage.

#### **3.2 Proposed buffer distances**

An effective buffer distance between residential and agriculture is an essential requirement to the control or elimination of a number of potential impacts which might include noise, odour, wastewater, drainage, weeds, pests, fire, visual amenity and security. Unfortunately there is no definitive planning document that is able to apply minimum separation distances for the impacts listed. A consultation report<sup>2</sup> has undertaken a review on the management of buffer distances in the Victorian planning system but stopped short of specific guidelines other than those of the EPA.

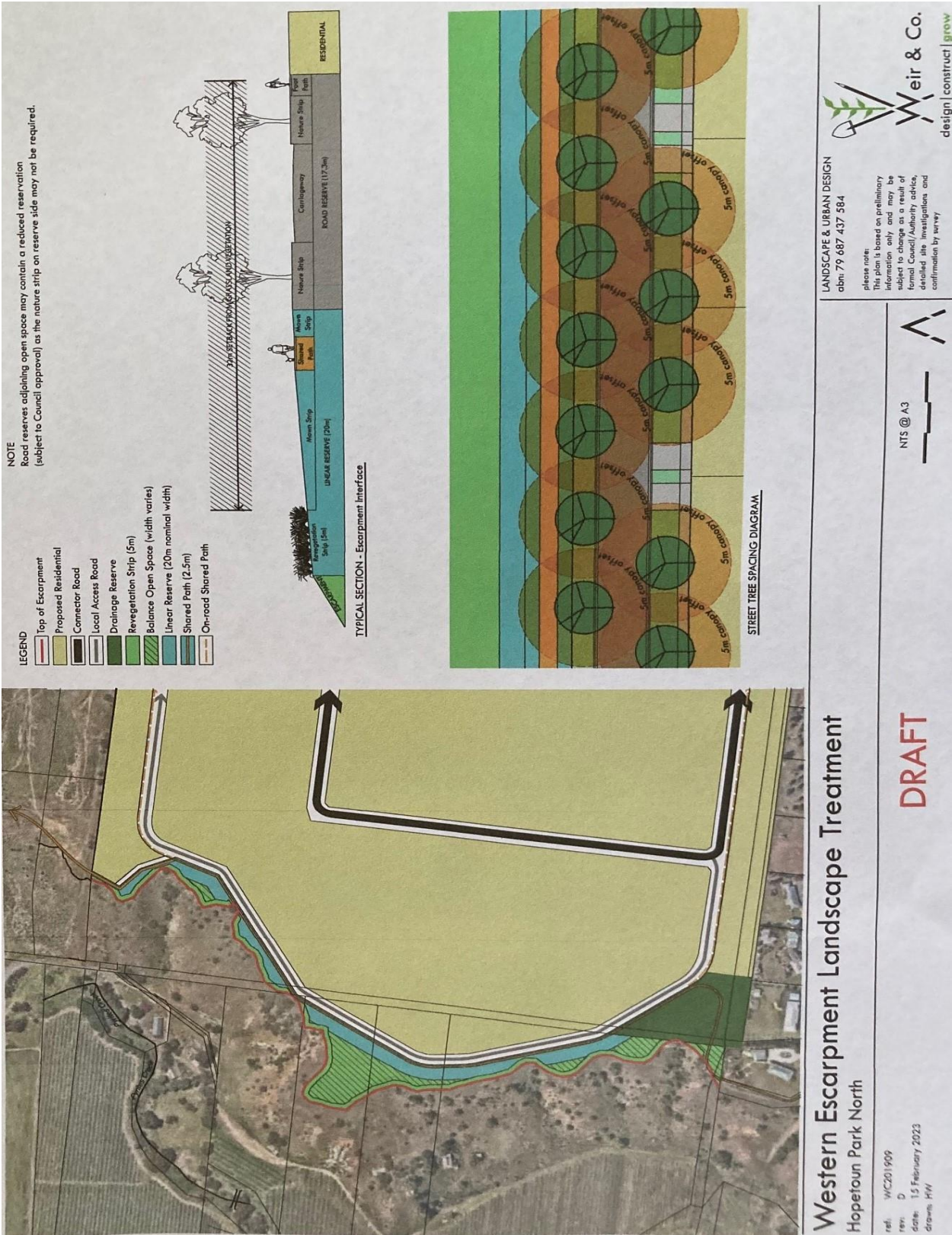
As noted in Section 2.1, the direct elevation of the plateau is 50m higher than the BMID near Cowans Road and when slope of the escarpment is considered, the distance between the two uses varies between 100-220m. Even at the closest escarpment distance after road reserves and dwelling setbacks are included, the distance from orchards to the first residence is greater than 150m. Figure 2 shows the proposed Western Escarpment Landscape Treatment<sup>3</sup> which highlights the interface distances of the different uses between the escarpment and residential development.

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<sup>2</sup> Planning for buffers and separation distances, DELWP May 2019

<sup>3</sup> Weir & Co, Landscape & Urban Design, 15 February 2023

Figure 2: Western Escarpment Landscape Treatment



### **3.3 Other potential residential impacts**

The impacts that may need to be contained include noise, weeds, pests, fire, visual amenity and security. Odour, wastewater and drainage are addressed within the design of the development and do not require amelioration.

Comments on the relevant impacts are:

- Noise: the disturbance from residential noise is unlikely to impact on the BMID due to the buffer distances that exist and the south-west direction of the prevailing wind.
- Weeds and pests: The control of weeds and pests is a management activity, seasonal in nature and not influenced by the width or presence of a buffer. Weeds can be easily managed by hand held spraying while there is well established control procedures for pests such as rabbits.
- Fire: Fire is a major potential risk factor and best managed within the buffer zone through good herbage control and having access to any outbreaks. A Bushfire Risk Assessment<sup>4</sup> has been completed which concluded the bushfire landscape risk of the site to be low and could be readily mitigated by building setbacks and future construction standards. The escarpment treatment design addresses this requirement through a mown linear reserve (20m) and road reserve (17.3m) which together provides a fire break and ready access to any point of the escarpment.
- Visual amenity: The escarpment is the buffer zone. It is an excellent platform to provide landscape views of the BMID.
- Security: Fencing of the boundary between the proposed Residential Development and the BMID is a simple management tool to restrict access between residential and agriculture. An 8 wire farm fence at the base of the escarpment is all that would be required.

## **4.0 BMID POTENTIAL IMPACTS**

### **4.1 District and property overview**

Current land use of the BMID is vegetable production (50%), fruit production (25%) while pasture, vines and nurseries represent the remainder (25%). The district is serviced by an irrigation scheme, supplemented by ground water pumping.

The eastern area which abuts the proposed residential development is orchard (pome and stone fruit) owned by the Dellios family. The total farm management area of Dellios orchards is 200ha but spread across several allotments in different locations. A grading, packaging facility and cool store is at a central location serving the property and well removed from the proposed residential growth area.

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<sup>4</sup> Bushfire Risk Assessment-Response to Clause 13.03-Hopetoun Park North, South Coast Bushfire Consultants, July 2021

## 4.2 Farming practices

There are numerous farm practises that are considered essential to the industry that have the potential to cause aggravation to urban development which has little knowledge or tolerance of such activities. In respect to intensive agriculture these can include:

- Spray drift when treating orchard or vegetable crops.
- Water drift from spray irrigation particularly when using recycled water.
- Irrigation and drainage water runoff contributing to nutrient and chemical loadings.
- Dust arising from cultivation or through the spreading soil additives such as lime.
- Noise associated with irrigation pumping or machinery activity, particularly at night.
- The loss of visual amenity through the construction of cool stores, packing sheds and other farm buildings.
- Odour associated with spreading organic manures such as poultry litter.
- Farm machinery movement on local roads.

A brief discussion of each of these potential issues in the context of the proposed residential development is provided below.

### *Spray drift*

The Code of Practice for Farm Chemical Spray Application has been developed to provide a standard for the safe and effective application of farm chemicals for farmers. The code is linked to legislative requirements and training courses are provided to practitioners. Spray drift can be controlled to within acceptable limits providing the correct equipment is used, only conducted under suitable weather conditions and appropriate buffer zones are applied. Recommended buffer zones are site specific and distances vary according to open ground or where permeable vegetative barriers are established. Usual distances are in the range of 40-60m. Given the minimum distance from the top of the escarpment is 100m and to any dwelling is 150m, spray drift is not expected to be an issue.

### *Water drift from irrigation*

Irrigation spray drift causes more concern where treated wastewater is being used to supplement irrigation supplies. Treated wastewater is not used in BMID but does occur in Werribee South. Southern Rural Water has prepared a regional Environmental Management Plan (EMS) and a Customer Site Management Plan, essentially centred around good irrigation practise placing emphasis on wind conditions and using the correct equipment rather than buffer distances. Given that treated wastewater is not used for irrigation in the BMID, then water drift from irrigation is not expected to be an issue.

### *Nutrient and chemical runoff*

Farm fertiliser runoff can raise nutrient levels in water ways due to the movement of soil colloids. Orchard production is a perennial crop, usually with a fully vegetated surface area which has a low risk to nutrient runoff. Any runoff would be directed to low level wetland areas which are well removed from the proposed residential growth area.

### *Dust*

Soil cultivation and bared soil surfaces are the primary sources of dust arising from agricultural activities. The amount is dependent upon weather conditions and can be controlled through the timing of operations and maintaining where possible, a vegetative cover on paddocks that are out of the cropping phase. The impact of dust under orchard conditions is low as it is a perennial crop not subject to cultivation.

### *Noise*

The background noise associated with orchard activities are primarily those of tractor, vehicle movement and irrigation pumping. Current activity levels are minor given the nature of the farming system, the scale of operation and the distance from proposed residential development.

### *Other*

Loss of visual amenity through expansion of items such as cool stores, processing facilities and machinery sheds are expected to be low to negligible as the property is fully developed. Strong odours created from fresh, uncovered heaps of manure is more a characteristic of soil based vegetable farming rather than fruit production. Farm traffic on local roads has a low impact due to the affected roads being isolated from the proposed residential development. Most of the traffic is directed westwards.

## **5.0 SUMMARY AND CONCLUSION**

Hopetoun Park North (HPN) is an identified future residential growth area of Bacchus Marsh. It lies immediately east of the Bacchus Marsh Irrigation District (BMID) on an elevated plateau. This report considers the interface issues that might arise between the two uses.

The direct elevation of the plateau is 50m higher than the BMID. A significant buffer exists between residential and the BMID through direct elevation, slope, lineal and road reserves and dwelling setbacks. Even at the closest escarpment distance after road reserves and proposed dwelling setbacks are included, the distance from orchards to the first residence will be greater than 150m.

This report concludes that the physiographic characteristics of the site, particularly the inherent buffer distances contained within the escarpment, including lineal and road reserves and dwelling setbacks, means that neither use of future residential and existing orchard will unreasonably impact on each other.



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**4 March 2023**