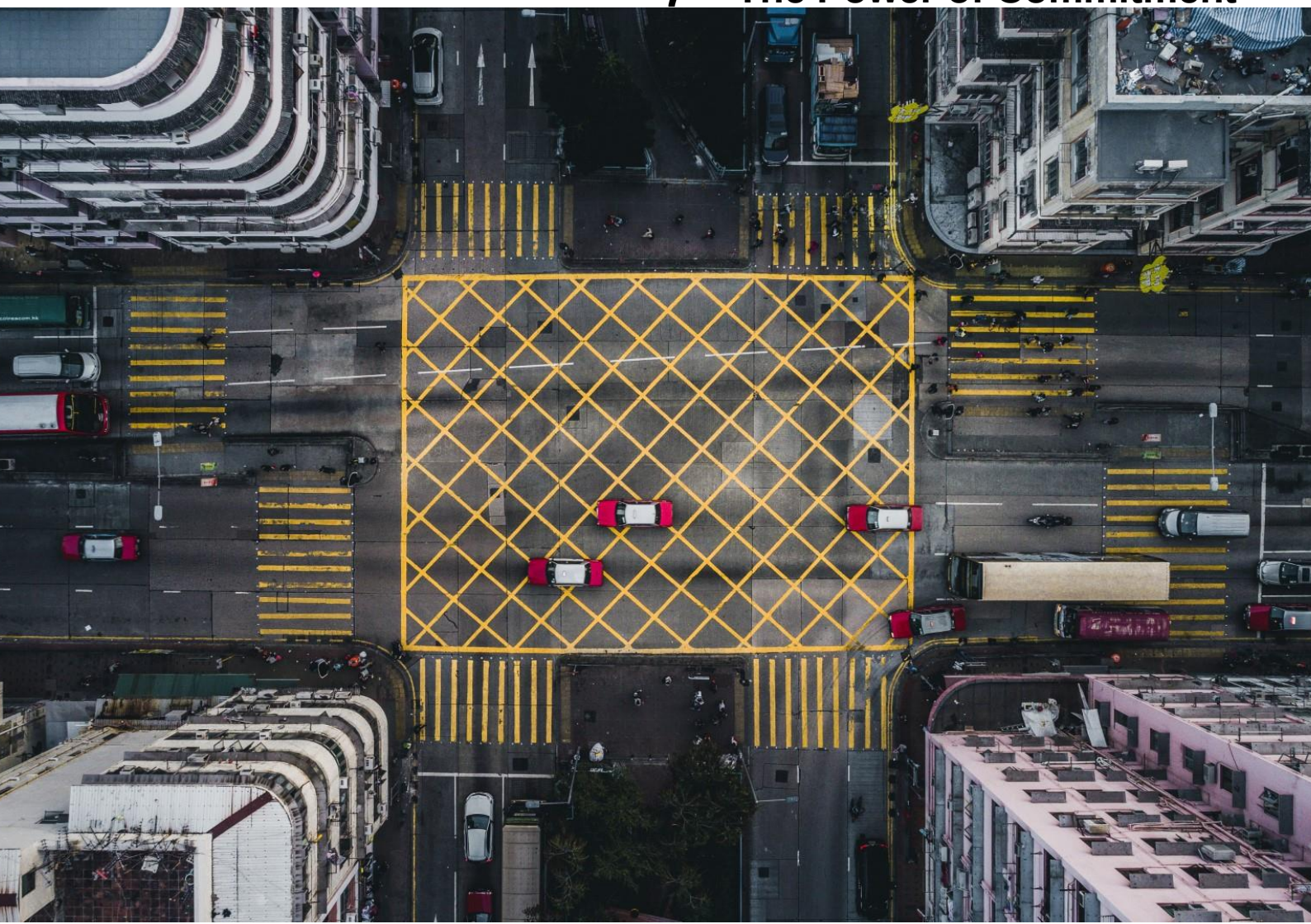
# Shepparton South East Precinct Structure Plan

## Amenity Impact Assessment

Greater Shepparton City Council

24 January 2022

→ The Power of Commitment



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# Executive summary

The Victorian Planning Authority (VPA), in consultation with Greater Shepparton City Council (GSCC) is preparing the Shepparton South East Precinct Structure Plan (PSP) to guide new urban development in Shepparton.

GHD has been engaged by GSCC to prepare an Amenity Impact Assessment (AIA), to assess potential sources of adverse amenity impacts in relation to air quality including dust, odour and air emissions against relevant regulations to assist VPA and GSCC in their decision making regarding land use and built form requirements under the proposed structure plan. The assessment area included the Precinct itself and features within a 2 km radius of the Precinct boundary.

As part of the AIA, GHD has undertaken a separation distance assessment with respect to air quality. The purpose of an air quality separation distance assessment is to provide sufficient separation between sensitive land uses (such as residences) and land uses that have the potential to generate emissions of dust, odour and/or air emissions so that on the occasion of an upset or malfunction, any off-site adverse amenity is minimised.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

## Industry

Industries with the potential to emit odour, dust and/or air emissions within the Precinct and 2 km catchment area were identified. The application of separation distances from EPA Publication 1518 and DWER Odour emissions guideline found that the Precinct was not constrained by any of the identified industries.

The industries with the largest separation distances were identified to be SPC and Shepparton Regional Saleyard, both of which had a recommended separation distance of 500 m. However as both industries are located approximately 2 km from the Precinct, the recommended separation distances do not extend to the Precinct.

A 250 m separation distance was applied to Future Recycling Metals and found to not extend to the Precinct.

The remaining four industries: Civilmart Shepparton Precast, Civilmart Shepparton Pipes, Boral Concrete and Freedom Foods all had separation distances of 100 m, which do not extend to the Precinct.

Directionally dependent buffers were developed to account for the local meteorology and the dispersive ability of the atmosphere for all industries with a recommended separation distance. The application of the directional buffer found that the Precinct was not constrained.

## Agriculture

A number of row crop / orchard farms were identified to be located within and to the east of the Precinct. Use of chemical sprays at these farms has the potential to result in “spray drift” which can be harmful to surrounding sensitive land uses.

A 40 m separation distance was applied to agricultural farms located in the southern and northern sections of the Precinct, which slightly constrained the Precinct. However, these farms are likely to transition out of the Precinct based on the proposed PSP. Once they transition out, they will no longer pose a constraint. The 40 m separation distance applied to agricultural farms located outside of the Precinct to the east, resulted in a slight constraint of the eastern edge of the Precinct.

GHD recommends that GSCC and VPA contact the agricultural uses placing buffer constraints on the Precinct in order to implement a staged implementation plan. This should allow for a smooth transition of land use to sensitive land use over an appropriate period of time. Further recommendations are provided in Section 7.2.2.

# Transport

As part of the PSP, residential housing is proposed to be located west of Doyles Road and may therefore be subject to air quality impacts resulting from vehicle emissions.

It is widely recognised that traffic pollutants reduce as distance from the road kerb increases. Thus, setting back sensitive development as far as practicable from Doyles Road will provide the best outcome for the health and well-being of occupants.

A set-back distance separating the sensitive use from the kerb (for a high-volume traffic route) of 20 m is recommended for Doyles Road.

Where the development cannot meet the recommended separation distance from the kerb, alternatives include built form mitigation such as installing ducted mechanical ventilation and particle filtration at sensitive uses.

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# 1. Introduction

## 1.1 Purpose of this report

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As part of the AIA, GHD has undertaken a separation distance assessment with respect to air quality. The purpose of an air quality separation distance assessment is to provide sufficient separation between sensitive land uses (such as residences) and land uses that have the potential to generate emissions of dust, odour and/or air emissions so that on the occasion of an upset or malfunction, any off-site adverse amenity is minimised.

The report draws upon Clause 53.10 of the Victorian Planning Provisions (VPP) 'Uses with Adverse Amenity Potential' and the EPA separation distance guideline, Publication 1518 dated March 2013, as part of this assessment.

In reading this report, it is important to note that the terms 'buffer distance' and 'separation distance' have been used interchangeably in this report – the former is the commonly understood term while the latter was introduced in 2013 and is currently the latest EPA guideline.

## 1.2 Purpose

The purpose of this report is to assess the potential for adverse amenity impacts from dust, odour and air emissions to future sensitive land uses within the Precinct. The assessment in this report has been conducted in accordance with the scope of works presented in Section 1.3 of this report.

The findings, conclusions and recommendations of this assessment should be read in conjunction with the limitations presented in Section 1.4 of this report.

## 1.3 Scope of works

The scope of works for this assessment was as follows:

1. An inception meeting was held with GSCC and VPA to clarify and confirm objectives, reporting, program and discuss any outstanding issues or queries.
2. A site visit was undertaken to inspect the areas surrounding the Precinct and identify potential industries within the Precinct and within a 2 km catchment area (surrounding area) which may attract a separation distance and/or be a potential odour/dust source which may have the potential to result in adverse amenity impact to the Precinct. The site visit was also supplemented by desktop searches including using the NPI website and the EPA website.
3. Assess any constraints on the Precinct from any existing industry and plot the relevant separation distances.
4. Based on existing industry sizes and known or estimated throughputs, review any options for de-rating the individual industries default separation distances.
5. Characterise the meteorology at the site by means of wind roses. This enables directions of good and poor dispersion to be developed.
6. Use the site-representative meteorological data and dispersion modelling to develop directional buffers for the identified industries and plot on an aerial image.
7. Provide conclusions as to any amenity constraints that may impact the Precinct.

8. Identify any recommended mitigation measures and any requirements for further assessment work at the Precinct with regards to air quality.
9. Present the findings of the Shepparton South East PSP Amenity Impact Assessment.

## 1.4 Limitations

*This report has been prepared by GHD for Greater Shepparton City Council and may only be used and relied on by Greater Shepparton City Council for the purpose agreed between GHD and Greater Shepparton City Council as set out in section 1.2 of this report.*

*GHD otherwise disclaims responsibility to any person other than Greater Shepparton City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.*

*The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1.5 of this report). GHD disclaims liability arising from any of the assumptions being incorrect. The results of the analysis presented in this report are also subject to any limitations of the AERMOD modelling software package*

*The opinions, conclusions and any recommendations in this report are based in part on an onsite inspection undertaken by GHD in October 2021, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.*

*Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.*

*Site conditions (including the presence of air emissions and odours) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.*

## 1.5 Assumptions

The following assumptions have been used in this report:

– The ambient environment on the day of the site visit is representative of typical conditions in the area.
– The most site representative available meteorological data is from the Bureau of Meteorology (BoM) automatic weather station (AWS) located at Shepparton Airport.
– The surrounding industries site boundaries are based off publicly available information provided by the Victorian State Government Department of Environment, Land, Water and Planning (DELWP).
– Information on the operations and throughput of the identified industries are from publicly available information, site visits, planning permit data (where available) and not through direct contact with local industry or industry bodies.

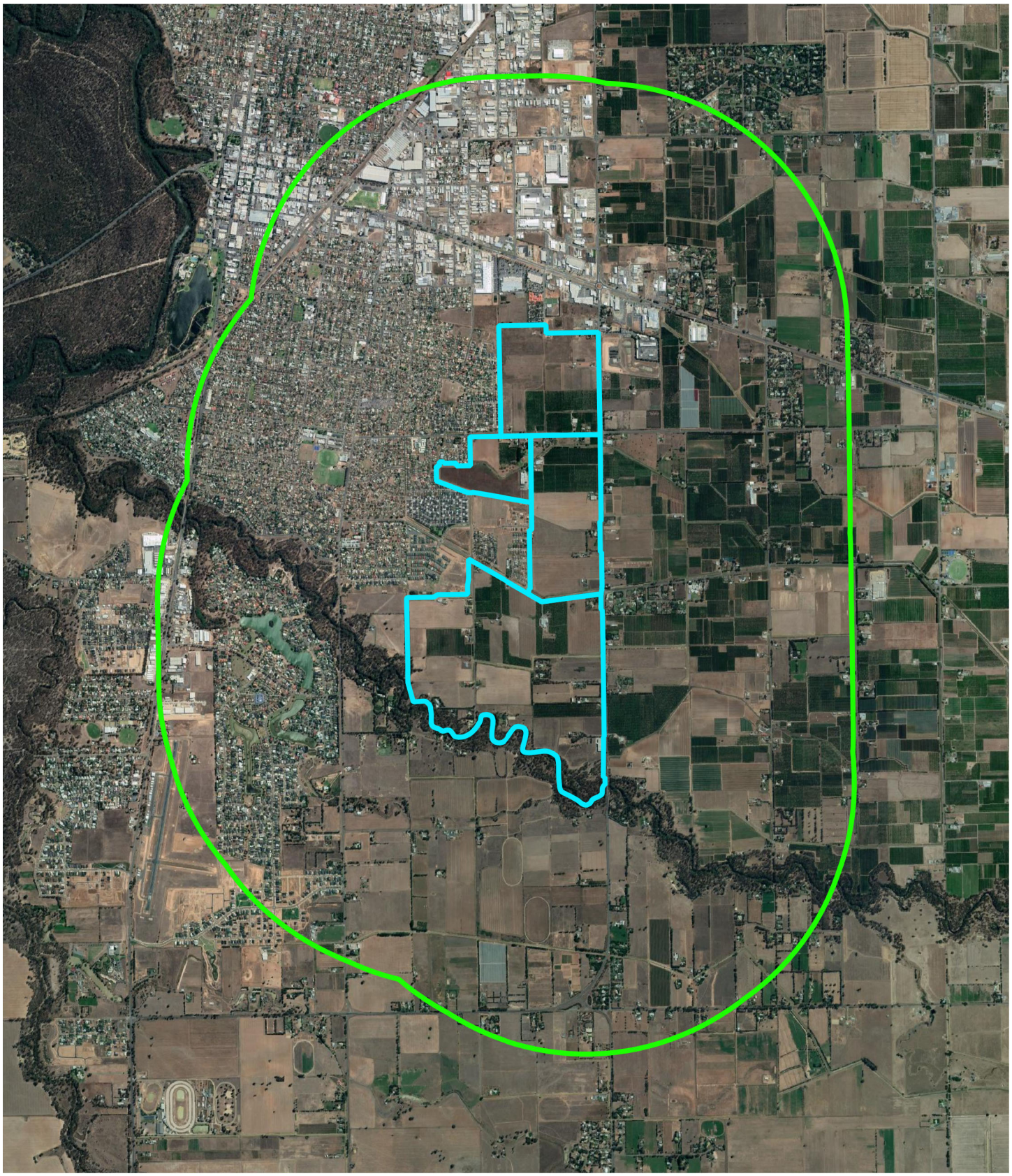
# 2. Project description

## 2.1 Location and land use

The Precinct is located in the southeast of Shepparton and encompasses the land bordered by Doyles Road to the east, Broken River to the south and is located within Archer Road and Midland Highway. The Precinct is zoned under Farming Zone 1 (FZ1).

Currently, land uses within the Precinct are predominantly of farming nature. Land uses and infrastructure include, sheds, pasture, farming land and orchards. A handful of residential premises and industries are currently present within the Precinct.

The Precinct site boundary and 2 km radius are shown in Figure 1.



**Legend**

- 2km radius
- Precinct boundary

Paper Size ISO A4

0 1 2 km

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

GHD

**Greater Shepparton City Council**

**Amenity Impact Assessment**

**Site Overview**

Project No. **12556721**
Revision No. **-**
Date. **05/11/2021**

**FIGURE 1**

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Print Date: 05/11/2021

Data Source: Google Earth Imagery 2021.
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## 2.2 Surrounding land use

The Precinct is surrounded by Grahamvale to the north, Shepparton to the west, Kialla to the south and Shepparton East to the east. The majority of land to the north of the precinct is zoned as Industrial Zone 1 (IN1Z), with some land zoned as Public Use Zone – Service and Utility (PUZ1) and Activity Centre Zone 1 (ACZ1). West of the Precinct is majority residential (zoned General Residential Zone 1 (GRZ1)) and south of the Precinct is zoned Urban Growth Zone (UGZ). East of the Precinct is zoned as Farming Zone 1 (FZ1), as shown in Figure 2.

Existing land uses surrounding the Precinct are as follows:

To the north of the Precinct:

– Is the Marketplace Shopping Centre, the Homemaker Centre and other associated commercial/ retailing uses along Midland Highway. North of Midland Highway is an industrial estate.

To the south of the Precinct (south of Broken River):

– Land use to the south and southwest consists of small to mid sized rural landholdings predominantly used for cropping, grazing and/or small clusters of rural residential type dwellings.
– Further to the southwest is the Kialla Lakes residential estate.

To the east of the Precinct (east of Doyles Road):

– Orchard farming is the predominant activity.
– A business/commercial strip is located to the corner of Doyles Road and the Midland Highway, with the Greater Shepparton Operations Centre (Council depot) located immediately to the south.
– A small cluster of residences are located to the south side of Channel Road extending east, which also includes Orrvale Primary School.

To the west of the Precinct:

– The existing eastern residential edge of the Shepparton township, however some undeveloped rural land parcels are located to the southeast adjacent to Broken River.

## 2.3 Sensitive land use

The definition of a sensitive receptor or sensitive land use is defined by the EPA as (EPA Victoria 2013, p. 17)[1]:

*'any land uses which require a particular focus on protecting the beneficial uses of the air environment relating to human health and well-being, local amenity and aesthetic enjoyment, for example residential premises, child care centres, pre-schools, primary schools, education centres or informal outdoor recreation sites'.*

A sensitive land use is further defined in Publication 1961 (EPA Victoria 2021, p. 8) as:[2]

*"A land use where is it plausible for humans to be exposed over durations greater than 24 hours, such as residential premises, education and childcare facilities, nursing homes, retirement villages, hospitals."*

Current sensitive land uses within the Precinct are isolated rural dwellings. Outside of the Precinct sensitive receptors include residential housing to the west and small clusters of rural residential type dwellings to the south and east.

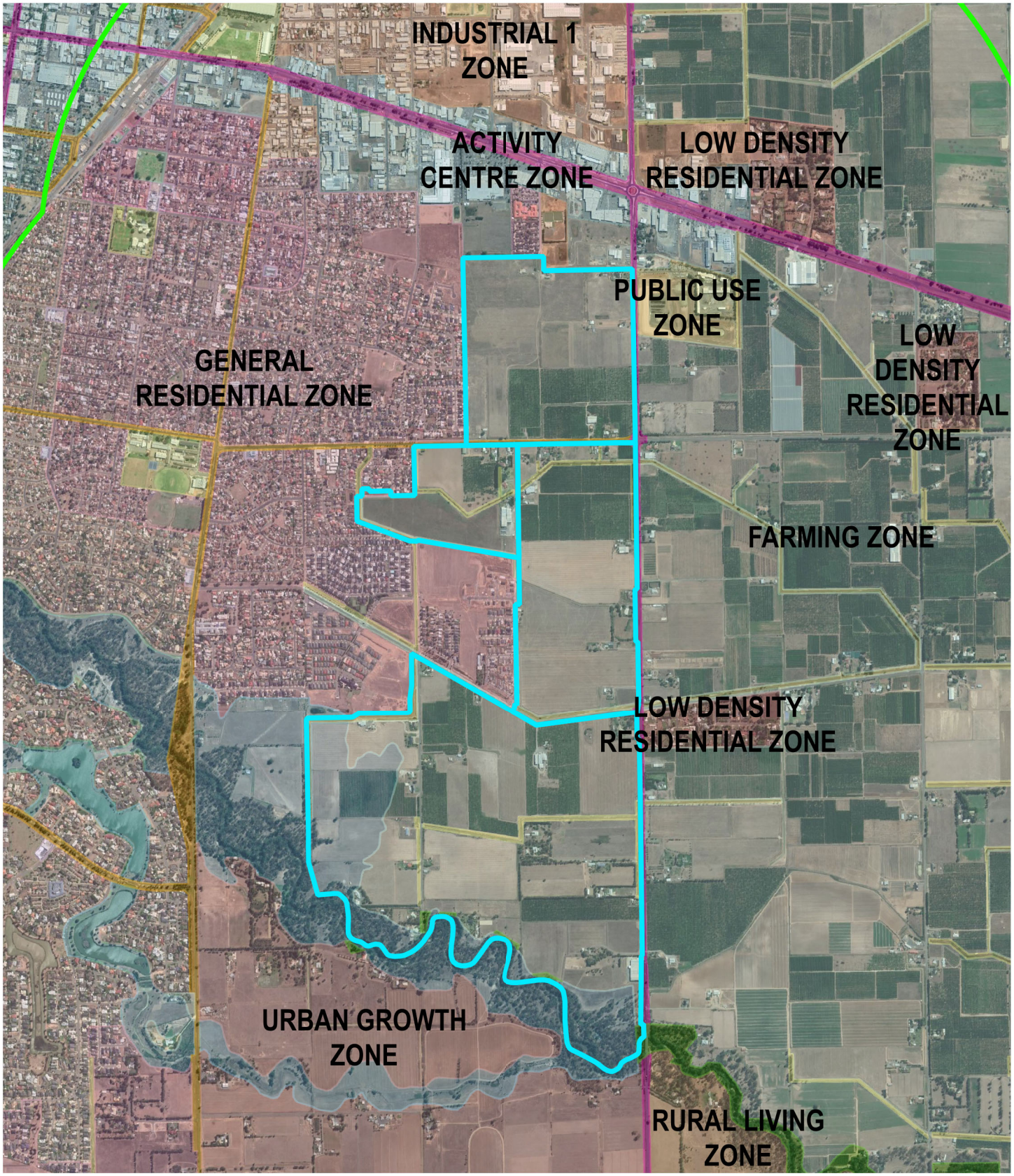
## 2.4 Proposed future urban structure

The key elements of the draft PSP relevant to this AIA include:

– A residential area that will accommodate approximately 2,500 homes
– A local convenience centre that will accommodate small scale shopping opportunities
– A new community centre and a potential primary school

The draft PSP is provided in Figure 3.

[1] EPA 2013 "Recommended separation distances for industrial residual air emissions" Publication. 1518, March 2013
[2] The definition provided in the Consultation Draft version of EPA Publication 1961 may change in the final revision of the guideline, however any changes are not expected to affect the outcomes of this assessment.




**Legend**

- 2km radius
- Precinct boundary

Paper Size ISO A4

0 0.5 1 km

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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**Greater Shepparton City Council**

**Amenity Impact Assessment**

**Planning Zones**

Project No. **12556721**
Revision No. **-**
Date. **18/11/2021**

**FIGURE 2**

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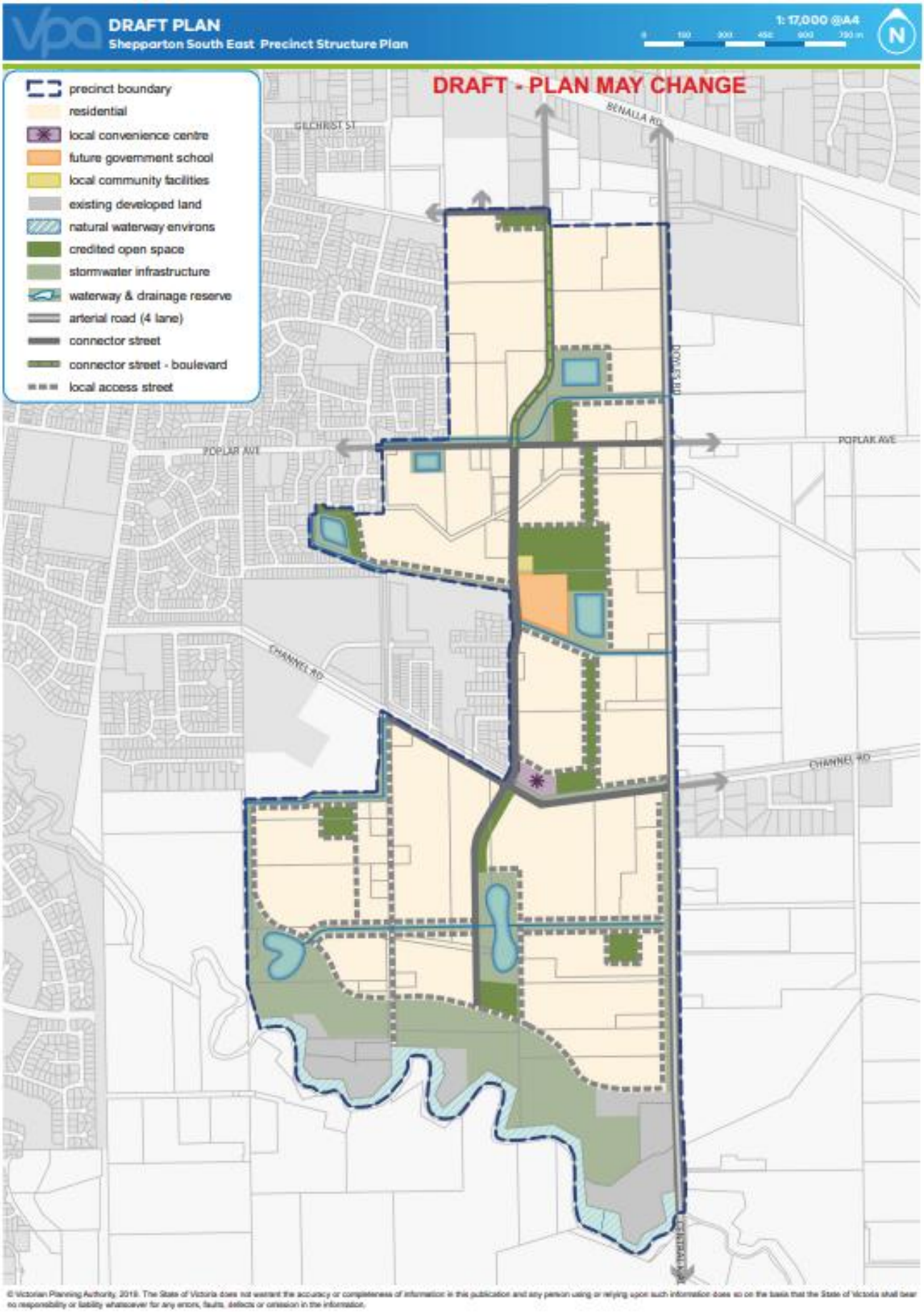



*Figure 3* *Draft Shepparton South East PSP (VPA 2019)*

# 3. Separation distance legislation, policy and guidelines

Two classes of buffer/separation distance guidelines are relevant in the context of planning in Victoria, namely threshold distances and buffer (or separation) distances.

## 3.1 Clause 53.10 – Threshold distances

Victorian Planning Schemes seek to ensure that planning resolves and does not create land use conflicts. This is typically achieved by providing separation distances between potentially conflicting land use zones that may result in incompatable uses.

Clause 53.10 of the VPPs seeks to define those types of industries and warehouses which if not appropriately designed and located may cause offence or unacceptable risk to the neighbourhood.

The clause sets out the threshold distance that is the minimum distance from any part of the land of the proposed use of or buildings and works for specified uses that have adverse amenity potential.

The table to the Clause 53.10 includes three columns that refer to the type of production or use or storage (purpose) which may result in adverse amenity potential and includes the threshold distance in metres and notes:

– **Note 1** is where the threshold distance is variable, dependent on the process to be used and the materials to be processed or stored.
– **Note 2** is where an assessment of risk to the safety of people located off the land may be required.

Clause 53.10 does not itself trigger the need to obtain a permit, however Clause 66.02 – 7 (use and development referrals) requires that an application is referred to the EPA as the determining referral authority if the proposal is to use land for an industry or warehouse for a purpose listed in the table to Clause 53.10 shown with a Note 1 or if the threshold distance is not met.

Over the years there have been a number of VCAT, Planning Panel and Advisory Committee reports and recommendations in relation to the use and operation of the threshold distances (separation distances) included in under clause 53.10 – Uses with adverse amenity potential.

The following Planning Panel commentary provides a snapshot as to the recent application of the threshold distances listed under Clause 53.10 and the separation distances included in the EPA Guidelines 1518 – *Recommended Separation Distances for Industrial Residual Air Emissions – Guidelines (IRAE)*.

**Melbourne Planning Scheme Amendment C221 – West Melbourne Waterfront (26 January 2017)**

The purpose of the Panel Hearing was to consider submissions in response to a rezoning application to facilitate a mixed use development of approximately 2.8 hecatres comprising substantial residential, retail, commercial and open space land uses. The subject land is proximate to both the Footscray Major Activty Centre and the Melbourne's Central Business District.

The Panel considered odour and dust impacts from surrounding industry and considered whether the site could achieve adequate separation distances. The following commentary in relation to the application of Clause 53.10 and EPA 1518 Guidelines are as follows:

– *The Panel reiterates that it is satisfied that the most relevant consideration in the establishment of appropriate separation distances between existing industries and proposed new sensitive land uses are the EPAV 1518 Guidelines.*
– *The Panel agrees with the views of the Advisory Committee, which notes that Clause 52.10 (now 53.10) does not act as a 'reverse buffer' (the concept of 'reverse buffer' is where an impact generating use is protected from encroachment by sensitive uses, rather than the sensitive use being protected from encroachment by a use with adverse impacts). It does not provide a statutory buffer for the location of residential uses that is a suitable distance from existing industries. Industries are not therefore completely protected from encroachment of residential uses.*

In considering the evidence, the Panel made the following conclusion:

– *The Panel considers that the EPAV 1518 Guideline is the relevant guideline to inform separation distances between existing commercial/industrial uses and proposed sensitive uses. Informed by these Guidelines and the testing of the evidence, the Panel is satisfied that, subject to further assessment and detailed site planning, the introduction of sensitive uses on [sic] subject site can be accommodated in a manner that will afford adequate separation distances from existing commercial and industrial operations in the Dynon Precinct*

**Summary**

The use of the *EPA Guideline - Recommended Separation Distances for industrial residual air emissions 1518 (March 2013)* is the preferred approach to determining suitable separation distances between existing industrial **land uses and** sensitive **receptors.**

# 3.2 EPA Victoria Publication 1518

## 3.2.1 Overview

The EPA Victoria *Recommended separation distances for industrial residual air emissions*, 2013, Publication 1518 (EPA Separation distance guideline) provides advice on recommended separation distances between industrial land uses that emit odour or dust, and sensitive land uses.

The guideline aims to support effective decision-making regarding land uses, to:

– Protect local amenity
– Protect existing industry from encroachment by sensitive uses
– Prevent land adjacent to industry from being underutilised

## 3.2.2 Purpose

The EPA Separation distance guideline is a planning instrument used to provide recommended minimum separation distances between sensitive land uses (i.e. residential, schools, hospitals and recreation reserves) and industrial premises with the potential for off-site emissions (odour or dust) that can cause disamenity in the event of an upset/malfunction (nuisance dust or odour). Equipment failure, accidents and abnormal weather conditions are among the causes that can lead to emissions affecting sensitive land uses beyond the boundary of the source premises. While it is an objective to eliminate emissions, even with the best of technologies and controls facilities are not always guaranteed to achieve this 100% of the time.

The purpose of the guideline is as follows:

– Provide clear direction on which land uses require separation
– Inform and support strategic land use planning decisions and the consideration of planning permit applications
– Prevent new sensitive land uses from impacting on existing industrial land uses
– Prevent new or expanded industrial land uses from impacting on existing sensitive land uses
– Identify compatible land uses that can be established within a separation distance area

It is noted that the separation distances outlined in the EPA Separation distance guideline are for upset/malfunction conditions resulting in amenity impacts only, i.e. nuisance dust (deposited dust) and odour. Emissions to air (odour or dust) occurring under routine operations should not be used to determine separation distances as they are required to meet health standards.

Under routine operations the industry's General Environmental Duty (GED) and any relevant licence conditions (if the industry is a scheduled premises) should be met and odour/dust should be confined on-site by the implementation of environmental management practices.

Unlike routine emissions, unintended emissions are often intermittent or episodic and may originate at or near ground level. Separation distances seek to avoid the consequence of upset industrial residual air emissions.

### 3.2.3 Agent of change principle

It is the responsibility of the 'agent of change' to provide evidence to the relevant authorities that a variation from the recommended separation distances is appropriate. The EPA Separation distance guideline (Section 9) outlines the 'agent of change' principle which is defined as the proponent of the proposed land use (i.e. change) that will give rise to the consideration of separation distances. In this case the VPA is proposing sensitive land uses which are considered the 'agent of change'.

The EPA Separation distance guideline discusses the agent of change principle. It identifies six criteria to consider (at Table 4 of the guideline) that allow for a site-specific variation to the default separation distances outlined in Section 9 of the document. These criteria and an explanation for each criterion has been reproduced in Figure 4 below.

The application of these criteria will be subject to the separation distances from nearby industries not being met at the Precinct.

| Criteria | Explanation |
|---|---|
| Transitioning of the industry | Existing industry has formally indicated that it will transition out of an area and over a specified timeframe. |
| Plant equipment and operation | The industrial plant and equipment have an exceptionally high standard of emission control technology. |
| Environmental risk assessment | An environmental risk assessment of IRAEs has been completed that demonstrates a variation is justified. |
| Size of the plant | The plant is significantly smaller or larger than comparable industries. |
| Topography or meteorology | There are exceptional topographic or meteorological characteristics which will affect dispersion of IRAEs. |
| Likelihood of IRAEs | Particular IRAEs are either highly likely or highly unlikely to occur. |

***Figure 4 Criteria for site-specific variation (Table 4 of EPA Publication 1518)***

### 3.2.4 Interface land uses

Section 10.2 of the EPA Separation distance guideline discusses interface land uses which describes land uses that can be located within the specified separation distances (between industrial land uses and sensitive land uses).

Table 5 in the guideline provides examples of interface land uses and their suitability (to be encouraged, considered or prevented). Examples of interface land uses to be encouraged, which may be relevant to the Precinct include business, recreation and conservation and public open spaces.

Interface land uses assist to reduce odour and dust impact dispersing from the industry to the sensitive receptor.

# 4. Identified land uses

## 4.1 Industry

A site inspection of the Precinct and surrounding 2 km catchment area was conducted by GHD on 21 October 2021. This was supplemented by research using aerial imagery from Google Earth and Google Street View and research of the National Pollutant Inventory (NPI)[3] database and the EPA website for licenced facilities[4].

GHD conducted the following searches:

– NPI database – one industry – SPC – was identified, who produce a range of products such as fruits, tomatoes, spreads, jams, prepared meals, snack foods, sauces and condiments. SPC is listed under the Fruit and Vegetable Processing class. Key emissions reported to the NPI include oxides of nitrogen, carbon monoxide, particulate matter and total volatile organic compounds.
– EPA Licenced facilities – no industries within the Precinct or the surrounding 2 km catchment area were identified.

From GHD's site visit, the following identified industries listed in Table 1 were identified to have the potential to emit odour, dust and/or air emissions, within the Precinct and within a 2 km radius of the Precinct. A 2 km radius was chosen as the number of existing sensitive uses nearby would limit any new heavy industry that requires a larger buffer (which are normally reserved for IN2Z areas) from operating in the vicinity. Further, only two categories in Publication 1518 require a buffer distance of greater than 2 km, namely "paper and paper pulp manufacture by other methods" and a dairy stock feedlot, both of which require a separation distance of 5 km. As neither of these industry types are located in Shepparton, a 2 km radius will identify all relevant industries.

For each identified industry, Table 1 shows the company, type of operation, street address, potential sources, primary concern (dust, odour, air emissions), and location of the industry with respect to the Precinct. Refer to Figure 5 for locations of the industries that have been identified. These industries will then be assessed to determine whether they require a separation distance in Section 5.

Auto facilities, service stations, general factories and warehouses have not been included, as they do not attract an odour/dust buffer under the EPA Publication 1518, hence are a low risk to air quality impact and not considered further in this AIA.

During the site visit conducted by GHD, no odour or dust was observed to be emanating from any of the industries within and surrounding the Precinct. Some wheel generated dust from heavy vehicles was noted on Carroll Road.

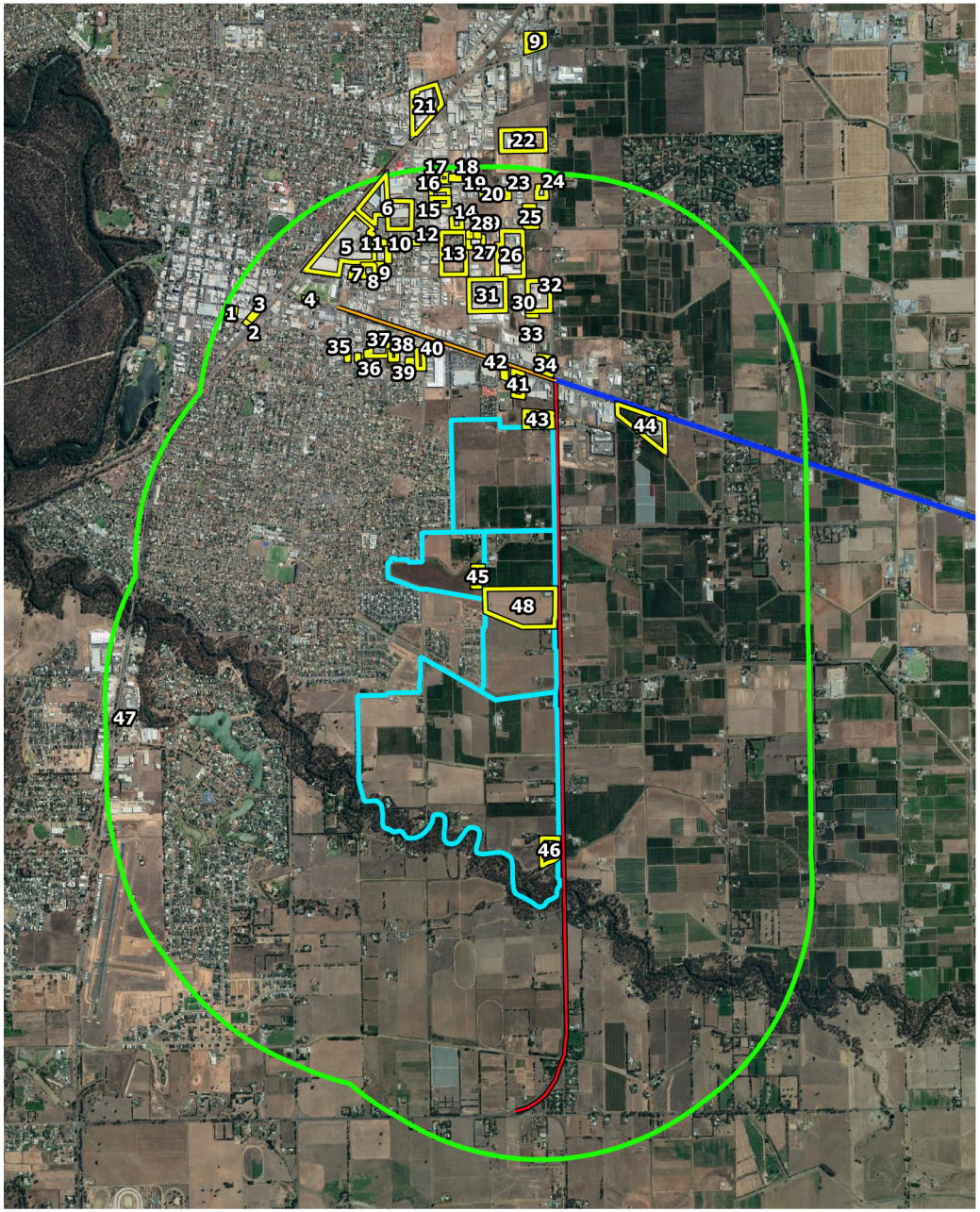
[3] If the substances emitted by an industry exceed the relevant emission threshold (as specified in legislation), then that industry is required to report their emissions to the NPI database, which is available to be viewed by the general public.
[4] The EPA website for licenced facilities allows the licences of scheduled premises to be searched for and viewed by the general public.

*Table 1 Identified industries*

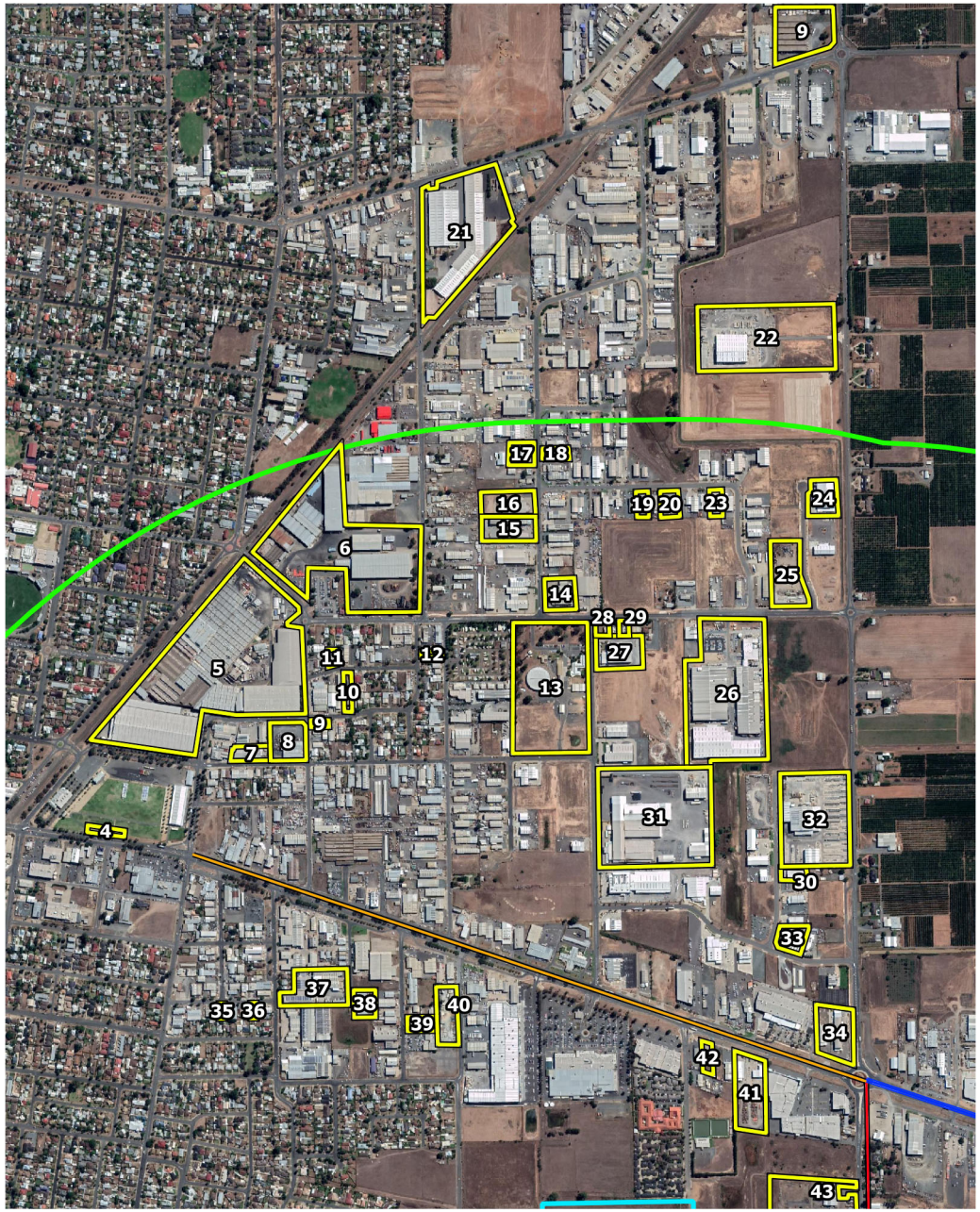
| ID in Figure 5 | Industry Name | Address | Operations | Operating hours | Potential sources of amenity impact | Primary concerns |
|---|---|---|---|---|---|---|
| **Within Precinct** | | | | | | |
| 45 | Rendevski Transport | 32 Feiglin Rd, Shepparton | Trucking company | Unknown | Vehicles | Air emissions |
| 46 | JDK Cold Storage Warehouse | 630B Doyles Rd, Shepparton | Cold storage facility | Unknown | Transfer and storage | Air emissions |
| 48 | KNM Shelving | 420 Doyles Rd, Shepparton | Shelving supplier | Monday to Friday 9 am – 5 pm<br>Saturday 9 am to 12:30 pm<br>Sunday Closed | Storage and material handling | Air emissions |
| **Outside Precinct** | | | | | | |
| 1 | SPC factory sale | 197-205 Corio St, Shepparton | Food factory outlet | Monday to Friday 9 am – 6 pm<br>Saturday to Sunday 9 am – 5 pm | Transfer and storage | Air emissions |
| 2 | Shepparton Light Freight Centre | 25 Hoskins St, Shepparton | Transport and storage services | Unknown | Transport and handling of cargo | Air emissions |
| 3 | V/line Freight Australia Shepparton | 23 Hoskins St, Shepparton | Transport and storage services | Unknown | Transport and handling of cargo | Air emissions |
| 4 | Shepparton showgrounds | Shepparton Showgrounds, 275 High St, Shepparton | Recreation centre for the showgrounds | Unknown | Recreational activity | Dust, odour |
| 5 | SPC Ardmona Limited - Manufacturing | Andrew Fairley Ave, Shepparton | Fruit and vegetable packaging and processing | Monday to Friday 9 am–6 pm<br>Saturday to Sunday 9 am–5 pm | Food processing activities | Air emissions |
| 6 | SPC Ardmona Limited - Packing house | | | | | |
| 7 | PFD food services | 5 Williams Rd, Shepparton | Food distribution centre | Monday to Friday 8 am–5 pm<br>Saturday to Sunday Closed | Transfer and storage | Air emissions |
| 8 | CME Steel-Con | 30-38 Lockwood Rd, Shepparton | Metal fabrication | Monday to Friday 9 am–5 pm<br>Saturday to Sunday Closed | Steel handling | Air emissions |
| 9 | HM transport maintenance | 21 Lockwood Rd, Shepparton | Auto radiator repair service and parts storage | Monday to Friday 9 am–5 pm<br>Saturday 9 am–12 pm<br>Sunday Closed | Material storage | Air emissions |
| 10 | Jmar Engineering | 6 Broomfield St, Shepparton | Laser cutting, folding, machining, fabrication of mild steel, stainless steel and aluminium. | Open 24 hours | Metal fabrication | Air emissions |
| 11 | Midland Plastering | 1 Broomfield St, Shepparton | Provision of plastering services and supplies. | Unknown | Material storage | Dust |
| 12 | Sim Ford Welding Services | 4 Mitchell St, Shepparton | Welding Services for vehicles and various structures: | Unknown | Handling, processing and transport of metals | Air emissions |
| 13 | Shepparton Water | 70 Old Dookie Rd, Shepparton | Water distribution and storage complex. | Unknown | Water storage | Air emissions |
| 14 | GV Crop Protection | 101-103 Drummond Rd, Shepparton | Provision of agricultural supplies. | Monday to Friday 8 am–5 pm<br>Saturday to Sunday Closed | Storage and transport of farming supplies | Air emissions, dust |
| 15 | Dahlsens Shepparton (Truss and Frame) | 94-96 Drummond Rd, Shepparton | Provision of building material supplies. | Unknown | Building material handling, storage and transport | Dust, Air emissions |
| 16 | GV packaging | 86 Drummond Rd, Shepparton | Provision of packaging supplies. | Monday to Friday 7:30 am–5 pm<br>Saturday to Sunday Closed | Food handling activities | Air emissions |
| 17 | GV Hydraulink | 80 Drummond Rd, Shepparton | Provision of hydraulic equipment supplies. | Monday to Friday 8 am–5 pm<br>Saturday to Sunday Closed | Equipment handling | Air emissions |
| 18 | Maxam Printing | 79 Drummond Rd, Shepparton | Printing | Unknown | Printer emissions | Air emissions, odour |
| 19 | MetalStation Shepparton | 14 Telford Dr, Shepparton | Provision of stock yards and rural fencing equipment. | Monday to Friday 9 am–5 pm<br>Saturday 9 am–1 pm<br>Sunday Closed | Material handling, storage and transport | Air emissions |

| ID in Figure 5 | Industry Name | Address | Operations | Operating hours | Potential sources of amenity impact | Primary concerns |
|---|---|---|---|---|---|---|
| 20 | VICMESH Concrete Reinforcing Products | 18 Telford Dr, Shepparton | Steel reinforcing depot. | Monday to Thursday 7 am–4 pm<br>Friday 7 am–3 pm<br>Saturday to Sunday Closed | Steel handling and storage | Air emissions |
| 21 | Shepparton Regional Saleyards | 48 New Dookie Rd, Shepparton | Stock saleyards -Sheep/lamb/cattle sales. | Typical sale times are as follows:<br>Tuesdays 10 am (Calves)<br>Tuesday 8 am (Cattle – bulls)<br>Friday 10 am (Sheep/lambs) | Emissions from livestock | Dust, odour |
| 22 | Civilmart Shepparton Precast | 80 Doyles Rd, Shepparton | Manufacture and supply of precast concrete | Monday to Friday 7 am–4:30 pm<br>Saturday to Sunday Closed | Precast concrete production, storage and transport | Dust |
| 23 | Animal Mineral Solutions | 24 Telford Dr, Shepparton | Provision of dairy minerals for animal feed. | Monday to Thursday 9 am–5 pm<br>Friday 9 am–4:30 pm<br>Saturday to Sunday Closed | Produce handling, storage and transport | Dust |
| 24 | Seed Force | 13 Future Ct, Shepparton | Seed wholesaler and storage facilities | Monday to Friday 9 am–5 pm<br>Saturday to Sunday Closed | Agriculture supply handling and storage | Dust |
| 25 | Future Recycling Metals | 121-135 Old Dookie Rd, Shepparton | Metal recycling and waste transfer stations. | Monday to Friday 8 am–4:30 pm<br>Saturday to Sunday Closed | Materials recovery and recycling | Dust |
| 26 | Freedom Foods | 1/102 Old Dookie Rd, Shepparton | Production of dairy products | 24 hours | Dairy products | Odour |
| 27 | InfraBuild Steel Centre | 74-80 Florence St, Shepparton | Steel distribution centre. | Monday to Friday 8 am–5 pm<br>Saturday to Sunday Closed | Steel distribution | Dust, air emissions |
| 28 | M1 Traffic & Labour Shepparton | 76 Old Dookie Rd, Shepparton | Construction services | 24 hours | Transport | Dust |
| 29 | Goulburn Valley Water Operations Centre | 80 Florence St, Shepparton | Provision of water and wastewater services. | Unknown | Emissions associated with moving vehicles | Air emissions |
| 30 | Gv Stone Works | 14 Provincial Cres, Shepparton | Marble/Granite retailer. | Unknown | Marble/granite material handling | Dust |
| 31 | Telfords Building Systems | 30 Florence St, Shepparton | Provision of building systems and supplies. | Unknown | Material handling, storage and transport | Dust |
| 32 | Civilmart Shepparton Pipes | 16 Provincial Cres, Shepparton | Precast concrete manufacturing | Monday to Friday 7 am–4:30 pm<br>Saturday to Sunday Closed | Precast concrete production, storage and transport | Dust |
| 33 | Aquatec | 2 Provincial Cres, Shepparton | Water and wastewater solution services. | Monday to Thursday 8 am–5 pm<br>Friday 8 am–4:30 pm<br>Saturday to Sunday Closed | Material handling, storage and transport | Air emissions |
| 34 | Nutrien Ag Solutions | 295 Benalla Rd, Shepparton | Distributor of farming supplies and fertiliser. | Monday to Friday 8 am–5:30 pm<br>Saturday to Sunday Closed | Agricultural material handling | Dust |
| 35 | G V Soda & Sand Blasting | 16 Keppel St, Shepparton VIC 3630 | Blast cleaning service, for vehicles, timber, stainless, aluminium | Unknown | Cleaning services | Dust, odour |
| 36 | Bean Around Coffee Roasters | 26 Keppel St, Shepparton VIC 3630 | Coffee roasting. | Unknown | Coffee roasting | Dust, odour |
| 37 | JDK cold storage | 14 Smythe St, Shepparton VIC 3630 | Cold storage facility | Unknown | Transfer and storage | Air emissions |
| 38 | Challenge Steel | 9 Smythe St, Shepparton | Steel fabrication. | Unknown | Steel handling, storage and transport | Air emissions |
| 39 | Shepperton Food Service | 21 Watson St, Shepparton | Provision of dry food, paper and packaging, cleaning products | Monday to Friday 8 am–4 pm<br>Saturday to Sunday Closed | Food and product transport and storage | Odour, air emissions |
| 40 | Boral Concrete | 74 Benalla Rd, Shepparton | Concrete batching | Monday to Friday 7 am – 5 pm<br>Saturday 7 am – 12 pm<br>Sunday Closed | Concrete batching | Dust |
| 41 | BOC Gas & Gear | 220 Benalla Rd, Shepparton | Provision of compressed and bulk gases, chemicals and equipment. | Monday to Friday 8 am–5 pm<br>Saturday to Sunday Closed | Chemical handling | Air emissions |

| ID in Figure 5 | Industry Name | Address | Operations | Operating hours | Potential sources of amenity impact | Primary concerns |
|---|---|---|---|---|---|---|
| 42 | Pro Dairy | 190 Benalla Rd, Shepparton VIC 3630 | Provision of veterinary services and customised animal health treatment protocols for cows. | Unknown | Food processing activities | Air emissions |
| 43 | ECR Landscape & Garden Supplies | 288 Doyles Rd, Shepparton | Provision of landscaping supplies. | Monday to Friday 7 am–5 pm<br>Saturday to Sunday 9 am–4 pm | Landscape tool, material handling | Dust |
| 44 | Radevski Coolstores | 360 Midland Hwy, Shepparton East | Fruit packing and storage. | Monday to Friday 8:30 am–4:30 pm<br>Saturday to Sunday Closed | Produce packing and storage | Dust, odour |
| 47 | A One Landscape supplies | 7984 Melbourne Rd, Kialla | Provision of landscaping supplies. | Monday to Saturday 8 am–4:30 pm<br>Sunday 10 am–3 pm | Garden, building supplies, equipment hire | Dust |




2 km radius




Zoomed to the north of precinct

Left 0 0.3 0.6 km | Right 0 0.15 0.3 km

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 55

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LEGEND
- Identified Industries
- 2km radius
- Precinct boundary

Roads
- Doyles Road
- Midland Highway
- Benella Road

**Greater Shepparton City Council**

**Identified industries**

Project No. 12556721
Revision No. B
Date. 16/11/2021

**FIGURE 5**

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## 4.2 Agriculture

As discussed in Section 2.2, parcels of land within and surrounding the Precinct are currently used for agricultural farms including row crops and orchards (as shown in Figure 5). As part of farm management, chemical sprays may be used to prevent pests and disease on crops/produce. The chemical sprays used have the potential to produce droplets which can remain suspended in the air. In the presence of winds, these droplets can be blown away from the targeted areas which is known as 'spray drift'. The deviation of chemicals can have an effect on human, animal and produce health when drifting to untargeted areas. It is noted that the agricultural farms identified in Figure 5 have been identified based on aerial imagery and not through direction contact with the farm owners. Chemical sprays may not be used at some of these farms in which case the below text would not be applicable.

A number of row crop / orchard farms are located within and to the east of the Precinct. There is no separation distance specified in EPA Publication 1518 for spray drift.

The Agriculture Victoria department provides a definition of a buffer zone:

– "An area left designated as a no spray zone between a sensitive area and a crop being sprayed is known as a buffer zone. A buffer zone often forms a strip of unsprayed paddock, but may also contain a vegetative barrier within it" (Agriculture Victoria, 2019[5])

This buffer distance, or buffer zone, is however not quantified as it "will vary a great deal and may be different from day to day".

There are a number of different guidance documents in relation to spray drift within Australia, as outlined below.

### 4.2.1 New South Wales

The NSW Department of Primary Industry (DPI) provides a discussion around downwind buffer zones from the position of the spray applicant (DPI, 2019[6]):

– "Maintain a downwind buffer."
– "This may be incrop, for example keeping a boom's width from the downwind edge of the field."

A 'boom', or equivalent, in an orchard is likely to be less than tree height and row separation that would be less than broad-acre booms in use.

### 4.2.2 Queensland

#### Planning Guidelines, Separating Agricultural and Residential Land Use

The Queensland Natural Resources document 'Planning Guidelines, Separating Agricultural and Residential Land Uses'[7] and provides advice on agricultural chemical spray drift in relation to development assessments. The document notes that there is insufficient knowledge to settle on a single distance for a buffer zone and that evidence indicates that buffer zones need to be chemical/formulation specific, based on supporting data. However, it is further noted that from a planning perspective, it is not practical to base buffer area dimensions on individual chemicals or formulations.

Therefore, based on available research on chemical spray drift, the following is outlined:

– A minimum width of 300 m where open ground conditions apply
– A minimum width of 40 m where a vegetated buffer element can be satisfactorily implemented and maintained

[5] https://agriculture.vic.gov.au/farm-management/chemicals/spraying-agricultural-chemicals/resources-for-managing-spraydrift
[6] https://www.dpi.nsw.gov.au/biosecurity/weeds/weed-control/herbicides/spray-drift
[7] Planning Guidelines Separating Agricultural and Residential Land Uses (psu.edu)

### Guide to Planning for Healthy Agriculture in Queensland

The Queensland Farmers' Federation document 'Guide to Planning for Healthy Agriculture in Queensland' provides land use advice in relation to locating future housing, industry and infrastructure near agricultural uses. The document does not outline specific separation distances for spray drift. However, implementation strategies and checklists are provided in relation to a number of areas such as managing existing land use conflicts.

## 4.2.3 Western Australia

The Guidelines for Separation of Agricultural and Residential Land Uses (Western Australian Government) specifies that a 40 m separation distance may be used between an orchard and sensitive land use "where a vegetative buffer has been adequately designed, implemented and maintained" (Department of Health, WA). In replacement of a vegetative buffer, the guideline also says that a "suitably designed constructed buffer with 50 per cent porosity and of sufficient height" may be used. The guideline recommends that the height of the physical barrier must be twice the height of the spray release height.

The guideline also states that 'natural geographical features (watercourses and ridge lines), public open spaces and road reserves can be used to meet the required separation distances. Areas reserved for public open spaces should not be designed for recreational use (for example playgrounds, community facilities) until agricultural activities are ceased.'

## 4.2.4 Australian Capital Territory

In addition to the WA guidance, the ACT Government *Separation Distance Guidelines for Air Emissions*, 2018 specifies separation distances for the category "agricultural chemical spray drift":

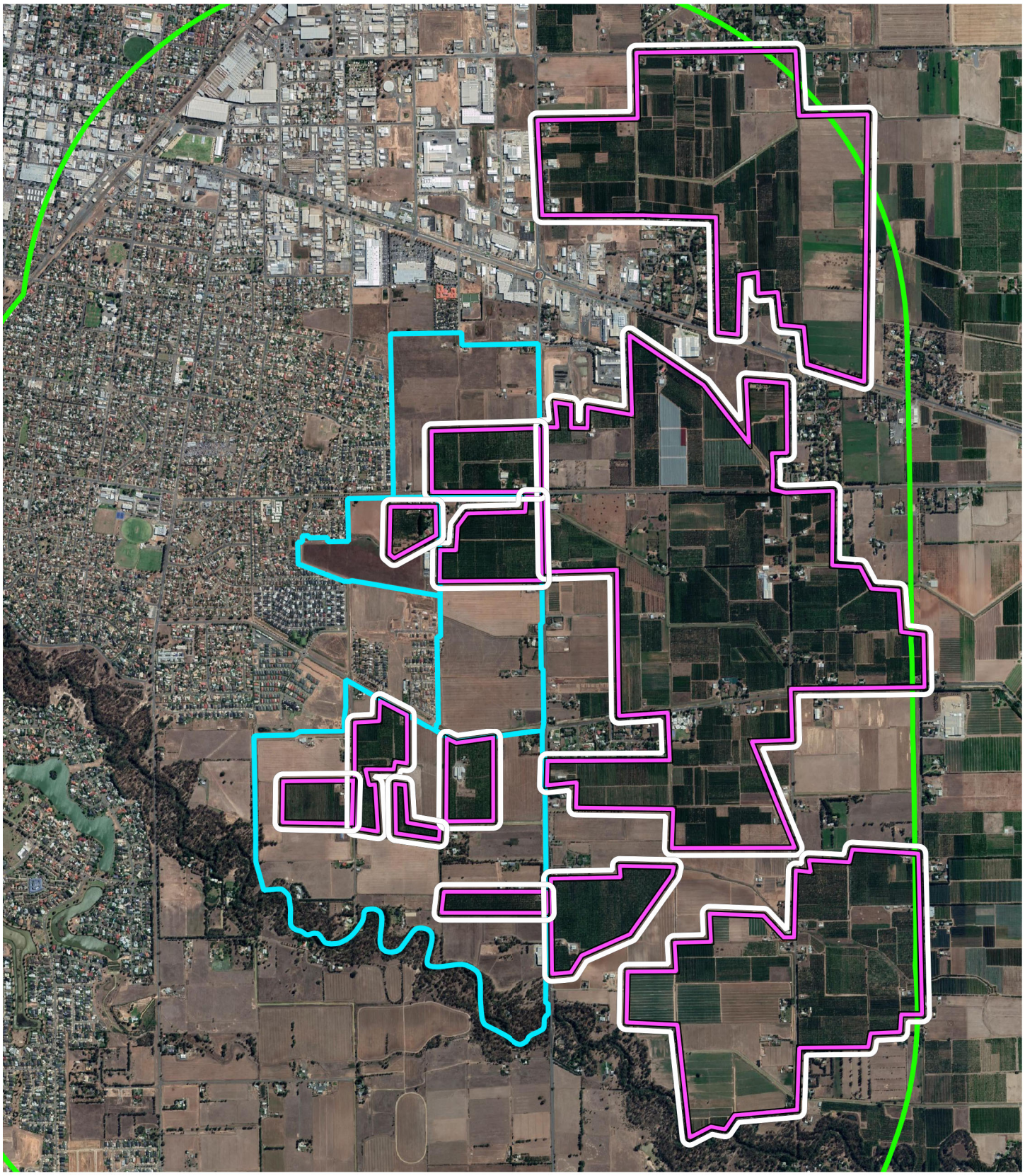
– 300 metres for open grounds conditions
– 40 metres for vegetated buffer

## 4.2.5 Application to Precinct

Given that the Precinct will include residential areas, separation distances should also be considered from agricultural farms within and surrounding the Precinct as per the above advice. A 40 m separation distance has been applied to the identified agricultural farms, as shown in Figure 6. From Figure 6 it can be seen that the 40 m separation distance applied to agricultural farms located in the southern and northern sections of the Precinct, result in a slight constrain the Precinct. From discussions with VPA and Council, GHD understands that some of these orchards will be transitioning out of the Precinct in the near future. Once they transition out, they will no longer pose a constraint.

The 40 m separation distance applied to agricultural farms located outside of the Precinct to the east, result in a slight constraint of the eastern edge of the Precinct.

However, it is noted that as the types of chemical sprays and locations they are being used is unknown, it is difficult to assess the risk from these sites. Should a 40 m buffer not be met from an orchard farm to future sensitive use, then it is recommended that a solid fence (a higher than a standard residential fence) be implemented between the orchard and residences. In the event both of these options are not possible then further work is recommended to be undertaken to gain an understanding of the types of chemical sprays, the locations they are being used, frequency of spraying and application, meteorology implications and the future plans of the agricultural farms in order to assess the risk to the Precinct.



**Legend**

- 2km radius
- Precinct boundary
- Agricultural area
- 40 m spray drift separation distance

Paper Size ISO A4

0 0.25 0.5 km

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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**Greater Shepparton City Council**

**Amenity Impact Assessment**

**Potential Spray Drift Agricultural Areas with 40 m Separation Distance**

Project No. **12556721**
Revision No. **-**
Date. **17/11/2021**

**FIGURE 6**

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Print Date: 17/11/2021

Data Source: Google Earth Imagery 2021.
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## 4.3 Transport

This section concerns air quality impacts on proposed residential properties within the Precinct from transport emissions.

Doyles Road is a secondary arterial and heavy vehicle bypass of Shepparton, which forms the eastern boundary of the Precinct (refer to Figure 5). Doyles Road between Midland Highway and New Dookie Road currently carries 6,600 vehicles per day of which 26% are heavy vehicles. Its role as a freight route is set to increase with its future duplication. The duplication, which forms part of the Bypassing Shepparton - Shepparton Alternative Route Program, may extend approximately 35 m to 40 m into the eastern boundary of the Precinct.

As part of the PSP, residential housing is proposed to be located west of Doyles Road and may be subject to air quality impacts resulting from vehicle emissions.

### 4.3.1 Vehicle emissions

The EPA has identified motor vehicles as being a major source of urban air pollution. In Melbourne in 2006, motor vehicle emissions contributed the following levels of pollutants to the overall air quality[8]:

– 72 per cent of all carbon monoxide (CO) emissions
– 70 per cent of all nitrogen oxides (NOx) emissions
– 28 per cent of all volatile organic compounds (VOC) emissions
– 31 per cent of all emissions of $PM_{2.5}$
– 27 per cent of all emissions of $PM_{10}$
– 6 per cent of all sulphur dioxide ($SO_2$) emissions

The EPA conducted a four year review[9] of air quality near major roads in Melbourne (including the Westgate Freeway) and Geelong in 2006. That study concluded:

– Particles measured as $PM_{10}$ and $PM_{2.5}$ generally remained below intervention (criteria) levels
– In general, particle levels were similar to or slightly above background levels
– Carbon monoxide, nitrogen dioxide and sulphur dioxide were below intervention (criteria) levels
– Carbon monoxide, nitrogen dioxide and sulphur dioxide were similar to background site monitored
– Benzene levels were at intervention (criteria) levels
– Benzene levels were above background levels
– Within a short distance from the road, the air quality objectives are generally met, for example, the level of $PM_{10}$ declined by 50% within 20 m of the roadside
– Improved fuel standard and vehicle design is expected to improve air quality near roads despite increased vehicle usage

Further, there is currently a parliamentary inquiry into the Health Impacts of Air Pollution in Victoria, with one of the focus areas being vehicle emissions. The report prepared as part of the inquiry notes that heavy vehicles, diesel vehicles and idling of vehicles have the largest impact on air quality. Various recommendations are outlined in the inquiry related to diesel vehicle emissions standards, guidelines to assist with the location of facilities (such as childcare centres) and methods to reduce vehicle idling.

In the absence of local policy, the policy outlined by the Brisbane City Council can be utilised as a guide. The Brisbane City Council planning scheme includes a transport air quality corridor planning scheme policy that provides guidance on best-practice built form and landscape design elements to

1. Minimise the impacts of air pollution from vehicle traffic on the health and wellbeing of users of a child care centre, multiple dwelling, residential care facility or retirement facility,
2. Maximise wind movement around buildings and the dispersion of traffic air pollutants and

[9] EPA Victoria (2006) Publication 1025: *Environmental Report - Review of air quality near major roads*. Retrieved from: https://www.epa.vic.gov.au/-/media/epa/files/publications/1025.pdf

3. Minimise the impacts of air pollution from a tunnel ventilation stack on the health and wellbeing of occupants of sensitive uses.

### 4.3.2 Application to the Precinct

Although none of the categories strictly apply to the Shepparton South East PSP development site, the first category can be used as a general principal to minimise impacts of air pollution from vehicle traffic (specifically from Doyles Road). It is widely recognised that traffic pollutants reduce as distance from the road kerb increases. Thus, setting back sensitive development as far as practicable from Doyles Road will provide the best outcome for the health and well-being of occupants. Brisbane City Council recommend separation distances for the different traffic route types which are based on best available air quality roadside monitoring data and air quality modelling predictions.

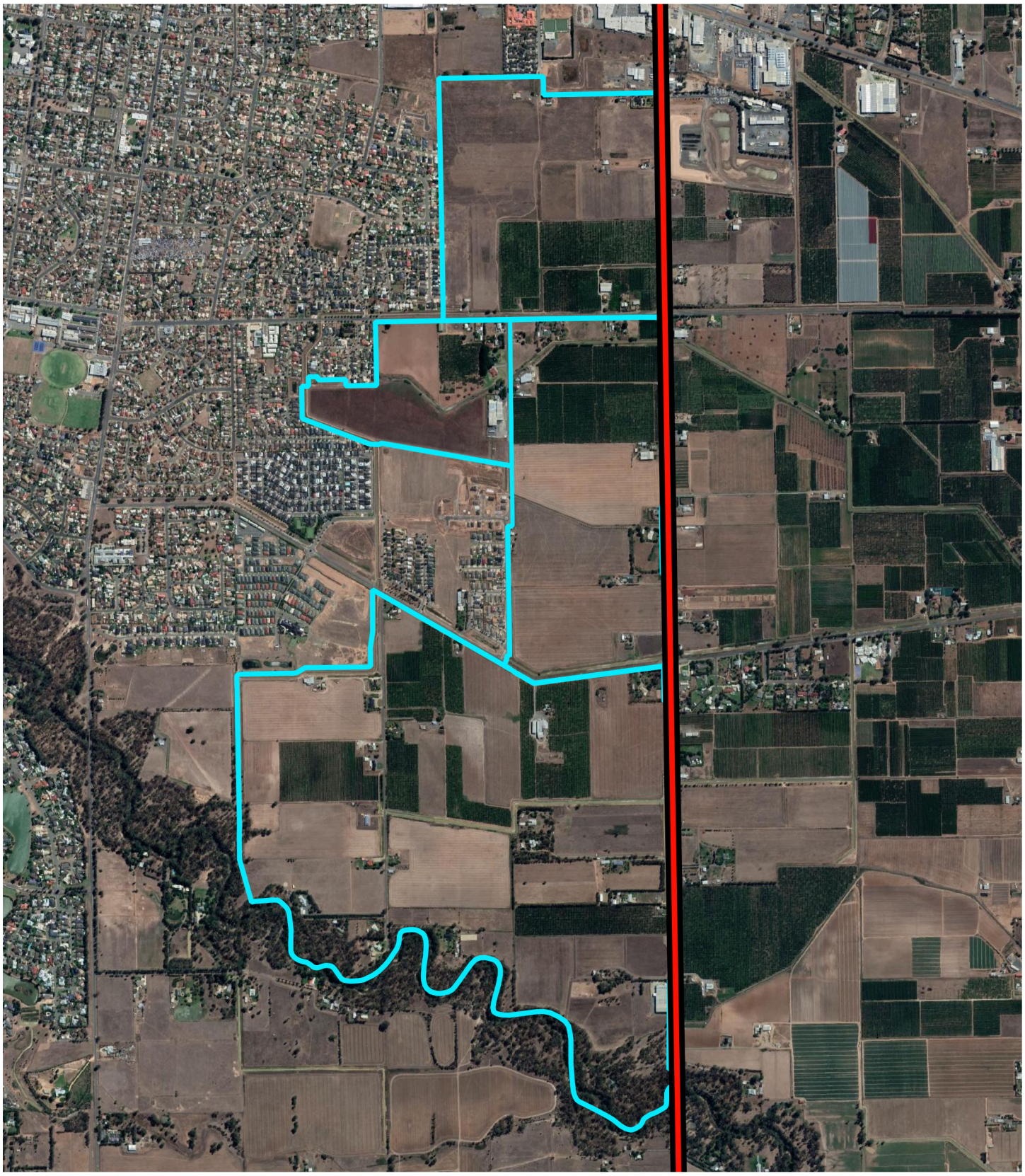
The Brisbane City Council policy outlines the following acceptable outcome which can be applied to Doyles Road:

– Development for a multiple dwelling, residential care facility, rooming accommodation where accommodating six people or more, or retirement facility.
– A set back distance separating the sensitive use from the kerb in accordance with recommended separation distances for the different traffic route types. A minimum of 30 m is recommended for a motorway, 20 m for a high-volume traffic route and 10 m for an intermediate volume traffic route.

If Doyles Road is considered to be a high-volume traffic route then a 20 m set back from the kerb to sensitive uses would be sufficient, as shown in Figure 7. From Figure 7 it can be seen that a 20 m set back applied to Doyles Road, results in a slight constraint of the eastern edge of the Precinct.

It is noted that in the future if the proposed duplication of Doyles Road takes place, then a 20 m set back will still likely be applicable. Further, if the duplication, results in Doyles Road extending approximately 35 m to 40 m into the eastern boundary of the Precinct, then the 20 m separation distance will need to be re-measured from the new road boundary.

Where the development cannot meet the recommended separation distance from the kerb, the policy includes an alternative to install ducted mechanical ventilation with the supply of clean outdoor air. Where the ventilation outdoor air intakes cannot be sufficiently separated from the kerb, a third alternative for achieving clean air for building occupants is provided. This involves installing particle filtration in combination with ducted mechanical ventilation.



**Legend**

- Precinct boundary
- Doyles Road
- 20 m transport set back

Paper Size ISO A4

0 0.25 0.5 km

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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**Greater Shepparton City Council**

**Amenity Impact Assessment**

**Doyles Road 20 m transport set back**

Project No. **12556721**
Revision No. **-**
Date. **17/11/2021**

# FIGURE 7

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Print Date: 17/11/2021

Data Source: Google Earth Imagery 2021.
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# 5. Applicable separation distances

GHD undertook a review of the identified land uses as identified in Section 4 to assess the relevant separation distances as outlined in EPA Publication 1518. It is noted that separation distances are typically applicable for industries where production/manufacture is occurring at the site. Warehouses/storage facilities typically do not attract a separation distance.

A detailed explanation of the industries requiring a separation distance is provided in Section 5.2, with a summary provided in Section 5.1.

## 5.1 Summary

The land uses that were identified as requiring a separation distance in EPA Publication 1518 are outlined in Table 2.

It is noted that although SPC reports to the NPI (as discussed in Section 4.1), no separation distance is outlined in EPA Publication 1518. Instead, GHD has referred to the Western Australia Department of Water and Environmental Regulation (DWER) Odour emissions guideline which outlines a 500 m separation distance for food processing. Therefore, a 500 m separation distance has also been applied to SPC.

All industries identified within the Precinct area have been determined to not require a separation distance, while a number of industries outside the Precinct were identified as requiring a separation distance.

The recommended separation distances are plotted on an aerial image in Figure 8. From Figure 8 it can be seen that the industries with the largest separation distances were identified to be SPC and Shepparton Regional Saleyard, both of which have a recommended separation distance of 500 m. However as both industries are located approximately 2 km from the Precinct, the recommended separation distances do not extend to the Precinct.

A 250 m separation distance was applied to Future Recycling Metals and found to not extend to the Precinct.

The remaining four industries: Civilmart Shepparton Precast, Civilmart Shepparton Pipes, Boral Concrete and Freedom Foods all have separation distances of 100 m, which do not extend to the Precinct.

***Table 2 Recommended separation distances for identified industries***

| Industry | Operations | Address | Adopted separation distance (m) | Distance from Precinct (m) |
|---|---|---|---|---|
| Boral Limited | Concrete batching plant | 74 Benalla Rd, Shepparton | 100 m | 460 |
| Maxam Printing | Printing | 79 Drummond Rd, Shepparton | Not applicable[10] | 1,760 |
| Future Recycling Metals | Recycling facility | 121-135 Old Dookie Rd, Shepparton | 250 m | 1,550 |
| Civilmart Shepparton Precast | Precast concrete | 80 Doyles Rd, Shepparton | 100 m | 2,140 |
| Civilmart Shepparton Pipes | Concrete factory | 16 Provincial Cres, Shepparton | 100 m | 900 |
| Shepparton Regional Saleyards | Stock saleyard | 16 Provincial Cres, Shepparton | 500 m | 2,280 |
| Freedom Foods | Dairy product manufacturer | 102 Old Dookie Rd, Shepparton | 100 m | 1,100 |
| Bean Around Coffee Roasters | Coffee roaster | 26 Keppel St, Shepparton | Not applicable[11] | 670 |
| SPC | Fruit and vegetable processing | Andrew Fairley Ave, Shepparton | 500 m | 1,460 |

[10] Maxam Printing does not report to the NPI as an emitter of Volatile Organic Compounds and therefore it is unlikely that the 100 kg per day threshold is met. Therefore, no separation distance has been applied to Maxam Printing.
[11] It is likely that this coffee roasting separation distance is intended for larger coffee roasting industries, not small coffee roasting facilities such as Bean Around Coffee Roasters. Therefore, no separation distance been applied.

## 5.2 Industries with separation distances

### 5.2.1 Boral Concrete

**Operations**

The Boral Concrete facility in Shepparton is located on 74 Benalla Road and operates batching plants to produce 'pre-mixed' concrete for use in building and construction. The typical operating hours occur from 7:00 am to 5:00 pm on weekdays, 7:00 am to 12:00 pm on Saturdays and is closed on Sundays.

**Sources**

Potential dust sources are expected to occur from:

- Dust generation from vehicle movement
- Delivery of raw materials
- Storage of raw material in bunkers and stockpiles
- Transfer of material to the batching plant
- Transfer of material by mobile plant, conveyors, hoppers and agitators
- Leakage or spills from silos
- Rupture of fabric filter

No odour emissions are expected to occur from the site.

**Separation distances**

Under EPA Publication 1518, operations at Boral Concrete is classified under non-metallic mineral products – concrete plant. The recommended separation distance is 100 m for throughputs of greater than 5,000 tonnes per year. The throughput of the facilities is not known, however it is likely greater than 5,000 tonnes per year. A 100 m separation distance has therefore been applied. This separation distance does not extend to the Precinct.

### 5.2.2 Maxam Printing

**Operations**

Maxam Printing is a Shepparton based printing and design company located at 79 Drummond Road. Maxam Printing produce business cards, books, magazines, letterheads, brochures.

**Sources**

Odour emissions from volatile organic compounds occurring from printing operations may occur at the site.

**Separation distances**

Under EPA Publication 1518, Maxam Printing falls under the category of miscellaneous manufacturing – printing. Printing works have the potential to emit volatile organic compounds, therefore a separation distance of 500 m is recommended for printing industries with an emission of more than 100 kg per day. Maxam Printing does not report to the NPI as an emitter of Volatile Organic Compounds and therefore it is unlikely that the 100 kg per day threshold is met. Therefore, no separation distance has been applied to Maxam Printing.

It is noted that Maxam Printing is located approximately 1.8 km from the Precinct boundary and therefore if a 500 m separation distance was applied, it would not extend to the Precinct.

### 5.2.3 Future Recycling Metals

**Operations**

Future Recycling Metals is a ferrous and non-ferrous metal recycling business with recycling centres located in Dandenong, Hallam and Shepparton. Future Recycling Metals provides services for the commercial, industrial and residential sectors. Services include resource recovery, metal recycling and waste transfer stations.

The Shepparton facility is located at 121-135 Old Dookie Road with operations occurring from 8:00 am to 4:30 pm from Mondays to Fridays.

**Sources**

Potential dust sources are expected to occur from:

– Dust emissions associated with the storage and handling of recycling material
– Dust generation from vehicle movement
– Transfer of recycled material

**Separation distance**

Under EPA Publication 1518, Future Recycling Metals falls under the category of waste management - materials recovery and recycling. No distance is specified under this category and instead separation distances are determined for these facilities on a case-by-case basis depending on the activities at the site. It is stated that the distance varies on a case-by-case basis. It was considered that Future Recycling Metals has similar operations to that of a transfer station, which requires a 250 m separation distance. Therefore a 250 m separation has been applied to Future Recycling Metals. This separation distance does not extend to the Precinct.

### 5.2.4 Civilmart Shepparton Precast/Pipes

**Operations**

Civilmart operates two facilities in Shepparton, Civilmart Shepparton Precast (80 Doyles Road) and Civilmart Shepparton Pipes (16 Provincial Crescent). It is noted that Civilmart Shepparton Precast is located beyond the 2 km catchment area, however has been considered alongside Civilmart Shepparton Pipes.

Both facilities operate 7:00 am to 4:30 pm from Mondays to Fridays.

Based on aerial imagery, it was determined that concrete batching activities occur at both facilities. This was unable to be confirmed during GHD's site visit. It is expected that dust emissions will be similar to that of a concrete batching plant.

**Sources**

Potential dust sources are expected to occur from:

– Dust generation from vehicle movement
– Delivery of raw materials
– Storage of raw material in bunkers and stockpiles
– Transfer of material to the batching plant
– Transfer of material by mobile plant, conveyors, hoppers and agitators
– Leakage or spills from silos
– Rupture of fabric filter

No odour emissions are expected to occur from the site.

**Separation distance**

Under EPA Publication 1518, both Civilmart Shepparton Precast and Civilmart Shepparton Pipes fall under the category of non-metallic mineral products - concrete and stone article manufacture. A separation distance of 100 m is recommended for industries with a throughput of greater than 5,000 tonnes per year. The throughput of the facilities is not known; however, it is likely greater than 5,000 tonnes per year. Therefore, a 100 m separation distance has been applied to both facilities. This separation distance does not extend to the Precinct.

### 5.2.5 Shepparton Regional Saleyards

**Operations**

The Shepparton Regional Saleyards facility is located at 48 New Dookie Road and hosts livestock sales (calves, cattle, bulls, sheep and lamb). It is noted that Shepparton Regional Saleyards is located beyond the 2 km catchment area, however, has been included as it is considered a major industry.

**Sources**

Odour and dust emissions are expected to occur from

– Odour emissions from livestock
– Dust emissions associated with the transport of livestock
– Odour emissions from livestock holds

**Separation distance**

Under EPA Publication 1518, Shepparton Regional Saleyards falls under the category of agriculture – stock saleyard. A separation distance of 500 m is recommended for saleyards with sales of greater than 500 head of livestock. A 500 m separation distance has been applied to Shepparton Regional Saleyards. This separation distance does not extend to the Precinct.

### 5.2.6 Freedom Foods

**Operations**

Freedom Foods is a dairy products supplier located at 1/102 Old Dookie Road. Freedom Foods receives milk from dairy farmers within the area to produce long-life dairy products such as:

– Dairy milk
– Lactose-free milk
– Flavoured milk
– Fortified/specialty milk
– Protein drinks/dietary enhancements
– Cream
– Drinking yoghurt

**Sources**

Odour emissions are expected to occur from:

– Odour emissions from production of goods
– Fugitive odour emissions from storage of produce
– Fugitive odour emissions from waste produced during production of goods

No dust emissions are expected to occur from the site.

**Separation guideline**

Under EPA Publication 1518, Freedom Foods falls under the category of food, beverages and manufacturing – milk products. A separation distance of 100 m is recommended for industries with a production greater than 200 tonnes per year and has been applied for this facility. This separation distance does not extend to the Precinct.

## 5.2.7 Bean Around Coffee Roasters

**Operations**

Bean Around Coffee Roasters has been in-house roasting coffee beans since 2005. The site is located at 26 Keppel Street adjacent to The Last Straw café which is also run by Bean Around Coffee Roasters. Typical operational hours are from 8:00 am to 3:00 pm from Tuesdays to Fridays, 9:00 am to 2:00 pm on Saturdays, and closed on Mondays and Sundays.

**Sources**

Odour emissions are expected to occur from

– Odour emissions associated with the roasting of coffee beans

No dust emissions are expected to occur from the site.

**Separation Distance**

Under EPA Publication 1518, Bean Around Coffee Roasters falls under the category of coffee roasting – roasting of coffee beans. A separation distance of 250 m is recommended for industries with a production greater than 200 tonnes per year. It is likely that this separation distance is intended for larger coffee roasting industries, not small coffee roasting facilities such as Bean Around Coffee Roasters. Therefore, no separation distance been applied.

It is noted that Bean Around Coffee Roasters is located approximately 800 m from the Precinct boundary and therefore if a 250 m separation distance was applied, it would not extend to the Precinct.

## 5.2.8 SPC

**Operations**

SPC produce a range of products such as fruits, tomatoes, spreads, jams, prepared meals, snack foods, sauces and condiments. The Shepparton facility has two separate sites located on Andrew Fairley Avenue. The western site operates as a production/manufacture facility and the eastern site operates as a packing house. Typical operational hours are 9:00 am to 6:00 pm on weekdays and 9:00 am to 5:00 pm on weekends.

SPC reports to the NPI under the Fruit and Vegetable Processing class. Key emissions reported to the NPI include oxides of nitrogen, carbon monoxide, particulate matter and total volatile organic compounds.

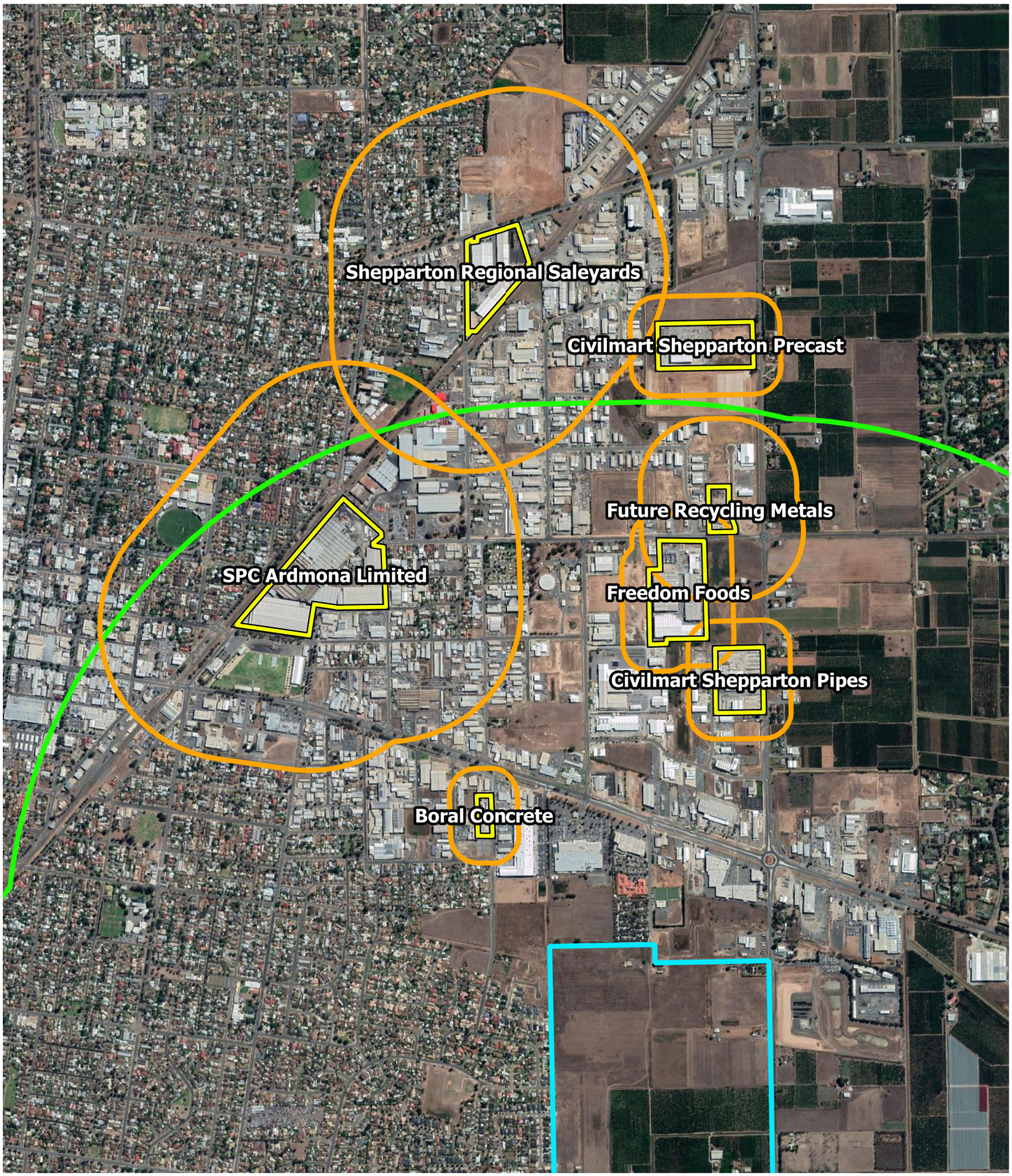
**Sources**

Emissions are expected to occur from:

– Odour emissions (such as volatile organic compounds) associated with manufacturing of vegetables

**Separation Distance**

Although SPC reports to the NPI, EPA Publication 1518 does not outline a recommended separation distance for the processing of fruit. Instead, GHD has referred to the Western Australia Department of Water and Environmental Regulation (DWER) Odour emissions guideline which outlines a 500 m separation distance for food processing. Therefore, a 500 m separation distance has been applied to SPC. This separation distance does not extend to the Precinct.




**Legend**

- 2km radius
- Precinct boundary
- Identified industry
- Recommended Separation Distances

Paper Size ISO A4

0 0.25 0.5 km

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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**Greater Shepparton City Council**

**Amenity Impact Assessment**

**Recommended Separation Distances**

Project No. **12556721**
Revision No. **-**
Date. **18/11/2021**

**FIGURE 8**

Document Path: \\ghdnetghd\AU\Melbourne\Projects\31\12556721\GIS\Maps\Working\12556721-QGIS_Site location.qgz
Print Date: 18/11/2021

Data Source: Google Earth Imagery 2021.
Created By: ylim

# 6. Variation to recommended separation distances

As discussed in Section 3.2.3, the EPA allows for site-specific variation to the recommended separation distance for a given industry with six criteria to consider. The applicability of these criteria are addressed below:

– Transitioning of the industry – This criterion allows for a variation (i.e. a reduction) to the recommended separation distance for site specific cases where industries have been identified or confirmed that they plan to transition out of the area. This criterion may need to be considered when assessing the future impact of agricultural spray drift on the Precinct (as discussed in Section 4.2).
– Plant equipment and operation – If the plant has a high standard of emission technology or has evidence of no upset or malfunctions occurring then a reduced buffer may be more appropriate. As the specific operational details of the identified industries is not known by GHD, no site-specific variation to default buffer distances has been made on this basis nor are they required given there is no constraint posed to the Precinct.
– Environmental risk assessment (ERA) – An ERA would need to be completed to assess this option, this would require specific knowledge of process operations and emission rates. An ERA may also consist of onsite odour surveillance. This is not required as no industries as identified in EPA Publication 1518 posed a constraint to the Precinct. In relation to spray drift impacts from nearby orchards, if the recommended separation distance outlined in section 4.2 cannot be met, then it a risk assessment of spray drift impacts may be necessary.
– Size of the plant – If the throughput is small compared to large examples within the same industry then it may be possible to de-rate the buffers based on throughput. Based on the information provided to GHD, site visit and desktop searches, no site-specific variation to default buffers has been made on this basis as the throughputs identified in Publication 1518 are considered to be exceeded, with the exception of Maxam Printing and Bean Around Coffee Roasters.
– Topography or meteorology – This has been assessed in section 6.1 to produce directional buffers, which consider the influence of topography or meteorology on the dispersion of IRAEs, for identified industries with a default buffer located nearby or impacting on the Precinct. With regards to the word 'exceptional', Publication 1518 does not provide a definition, however GHD is of the opinion that the local meteorological effects should always be taken into account when assessing potential air quality impacts including in the form of buffers as the local wind conditions across Victoria are vastly different. This approach is supported by Planning Practice 92 *Managing buffers for land use compatibility* which requires prevailing weather conditions and topography to be considered as part of any site-specific assessment to assess the extent of a buffer area. In addition, Draft EPA Publication 1961 *Guideline for assessing and minimising air pollution in Victoria (May 2021)* requires meteorology to be characterised as part of the hazard identification process. Specifically, Publication 1961 states; "*Meteorology plays a key role in the dispersion of airborne pollutants. In some cases, meteorology can also play a role in the generation of pollutants. While meteorology is explicitly and quantitatively considered in air dispersion modelling reports, it is important that it is understood and described in all air quality reports."*
– Likelihood of industrial residual air emissions (IRAEs) – The likelihood of residual emissions from the identified industries would need to be assessed once specific operational information was obtained regarding their operations including how frequently upset conditions occur and the assessment would rely on a detailed complaint history from the residential area encompassed within the default buffer. As specific operational details such as how frequently upset conditions occur is not known for the identified industries, no buffer distances were able to be reduced on this basis. Complaint history for the Precinct and surrounding 2 km catchment area was obtained and is described in section 6.1.

Based on the information available to GHD and the results of the buffer assessment, the relevant site-specific criteria addressed as part of this assessment are:

– Meteorology (all industries with an identified separation distance, outlined in section 5.2)
– Complaint history (all land uses, forms part of the likelihood of IRAEs criterion)

The site-specific criteria that may be required to be addressed in the future are:

– Transitioning of the industry (agricultural land uses, outlined in section 4.2)
– Environmental risk assessment (agricultural land uses if the required separation distance cannot be met, outlined in section 4.2)

## 6.1 Complaint history

The past performance of surrounding industry is a good indicator of the level of off-site amenity protection needed. EPA Victoria has provided a list of all odour, dust and air complaints within a 2 km radius of the Precinct between 1 July 2016 to 30 June 2021. Six odour complaints were made during this period, four of which were attributed to large businesses. The remaining two complaints were attributed to an unknown source and a residential location. The alleged source for all complaints was unknown.

Further, Council reviewed the industries identified as requiring a separation distance and found that there were no complaints on file for these businesses.

## 6.2 Meteorology

### 6.2.1 Long term pattern in wind

Local meteorology affects the pattern of offsite impact. The characterisation of local wind patterns requires accurate site-representative hourly recordings of wind speed and direction over a period of at least 12 months.

High quality, meteorological data (five years 2016 – 2020) at hourly intervals from the Shepparton Airport Automatic Weather Station (AWS), operated by the BoM was used for this assessment. The Shepparton Airport AWS is located approximately 2 km from the southern edge of the Precinct.

The effect of wind on dispersion patterns can be examined using the general wind climate and atmospheric stability class distributions. The general wind climate at a site is displayed by means of wind rose plots, giving the incidence of winds from different directions for various wind speed ranges.

The features of particular interest in this assessment are: (i) the prevailing wind directions and (ii) the relative incidence of more stable light wind conditions.

A distinction can be made for fugitive deposited dust entrained in strong winds (greater than 5 m/s), as opposed to dust emissions from process sources where the emission rate is independent of local wind conditions (light stable winds).

The average wind rose for the period 2016- 2020 is shown in Figure 9 and has the following features:

– The average wind speed for the monitoring period is 3.7 m/s
– The predominant wind directions are from the south and south-southwest occurring for approximately 11% and 13% of the monitoring period respectively.
– The direction with the lowest frequency of winds is southeast and east-southeast, from which incident winds occur 2% of the time
– Light winds (<2 m/s) occur approximately 14% of the time
– High wind speeds (>6 m/s) occur approximately 18% of the time

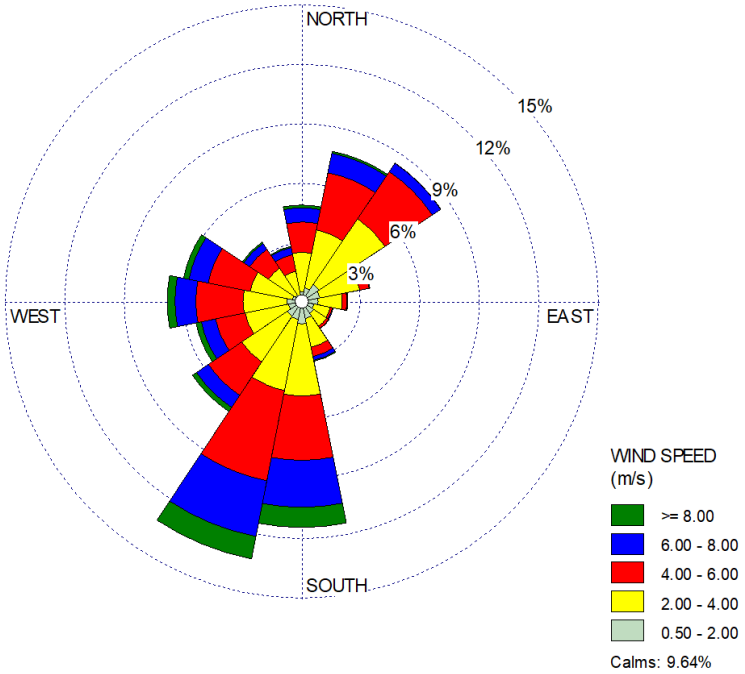



*Figure 9* *Annual wind rose at Shepparton Airport (2016 – 2020)*

## 6.2.2 Seasonal pattern in wind

The wind roses for each season are given in Figure 10 and show that:

- The predominant wind direction in summer is south-southwest, occurring approximately 21% of the time.
- Light winds (<2 m/s) occur approximately 10% of the time in summer.
- The predominant wind direction in winter is northeast, occurring approximately 10% of the time.
- Light winds occur approximately 19% of the time in winter.
- Autumn and spring contain characteristics of both summer and winter. The predominant wind direction in autumn is south, occurring for approximately 11% of the time. In spring, the predominant wind direction is south-southwest, occurring for approximately 14% of the time.
- Light winds occur approximately 17% of the time in autumn and 11% of the time in spring.

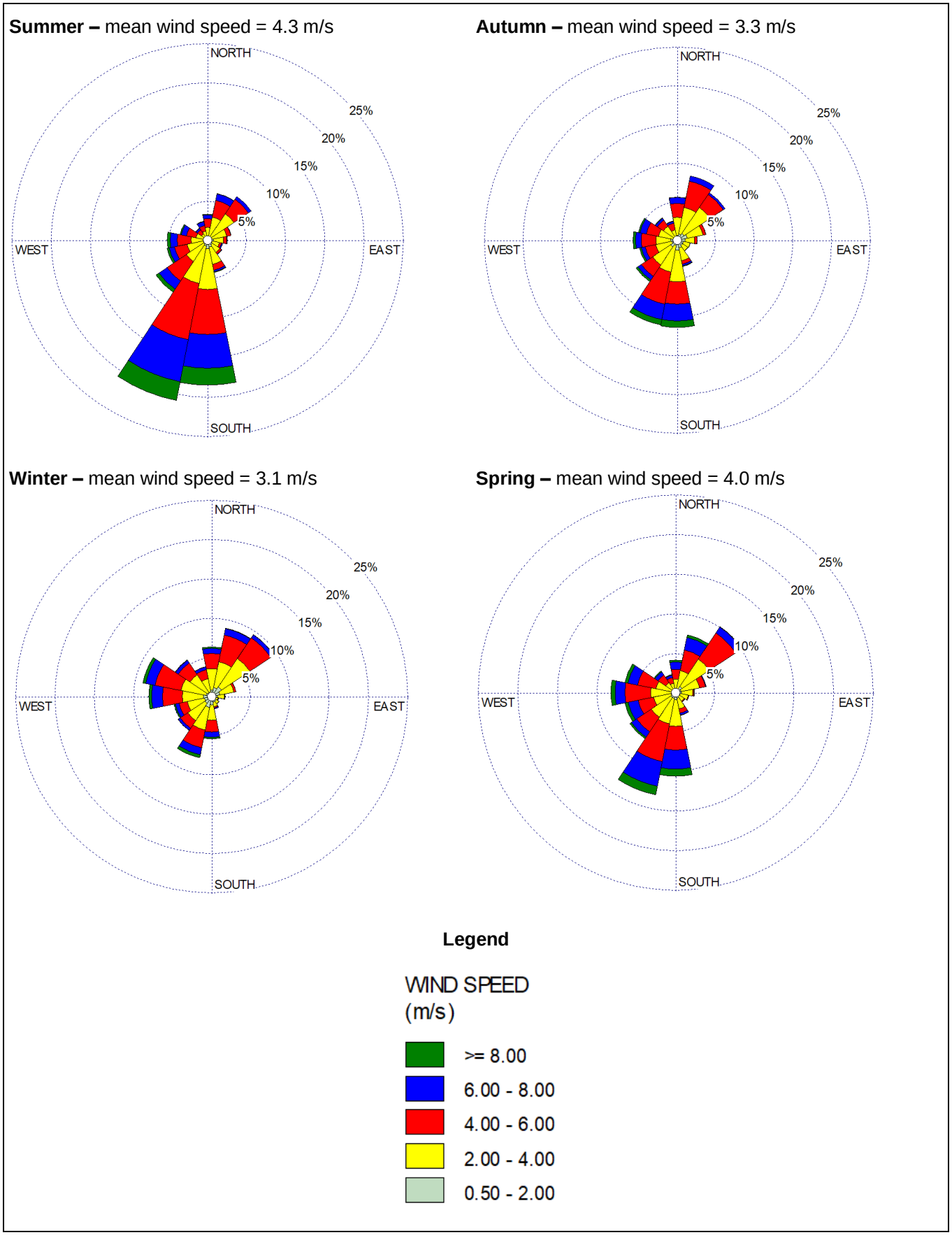



*Figure 10* *Seasonal wind roses at Shepparton Airport*

### 6.2.3 Directional buffer

**Methodology**

Section 9.2 of the EPA Publication 1518 allows for site-specific variation on the basis of topographical or meteorological features which will affect the dispersion of industrial residual air emissions. GHD has developed an approach to provide directionally dependent buffers on the basis of the dispersive ability of the atmosphere, as assessed using atmospheric dispersion modelling (Clarey & Pollock, 2004).

Where site-representative meteorological data is available, the direction of good and poor dispersion can be identified as shown above. Further, if the five-year dataset is configured into dispersion modelling format then dispersion modelling (using EPA regulatory model AERMOD) can be conducted using a nominal air source emission rate to assess the directional change in the buffer extent from a default radial buffer[12]. The directional buffer adapts the default radial buffer to take account of the directions of good and poor dispersion – found from the meteorological data representative of local conditions.

In the directions of poor dispersion, the buffer is extended and in the directions of good dispersion the buffer is retracted. The effect is to produce the same degree of protection from exposure to impact as the default buffer but shaped by the local meteorology to represent a more realistic site specific buffer in the event of a process upset.

**Application to the Precinct**

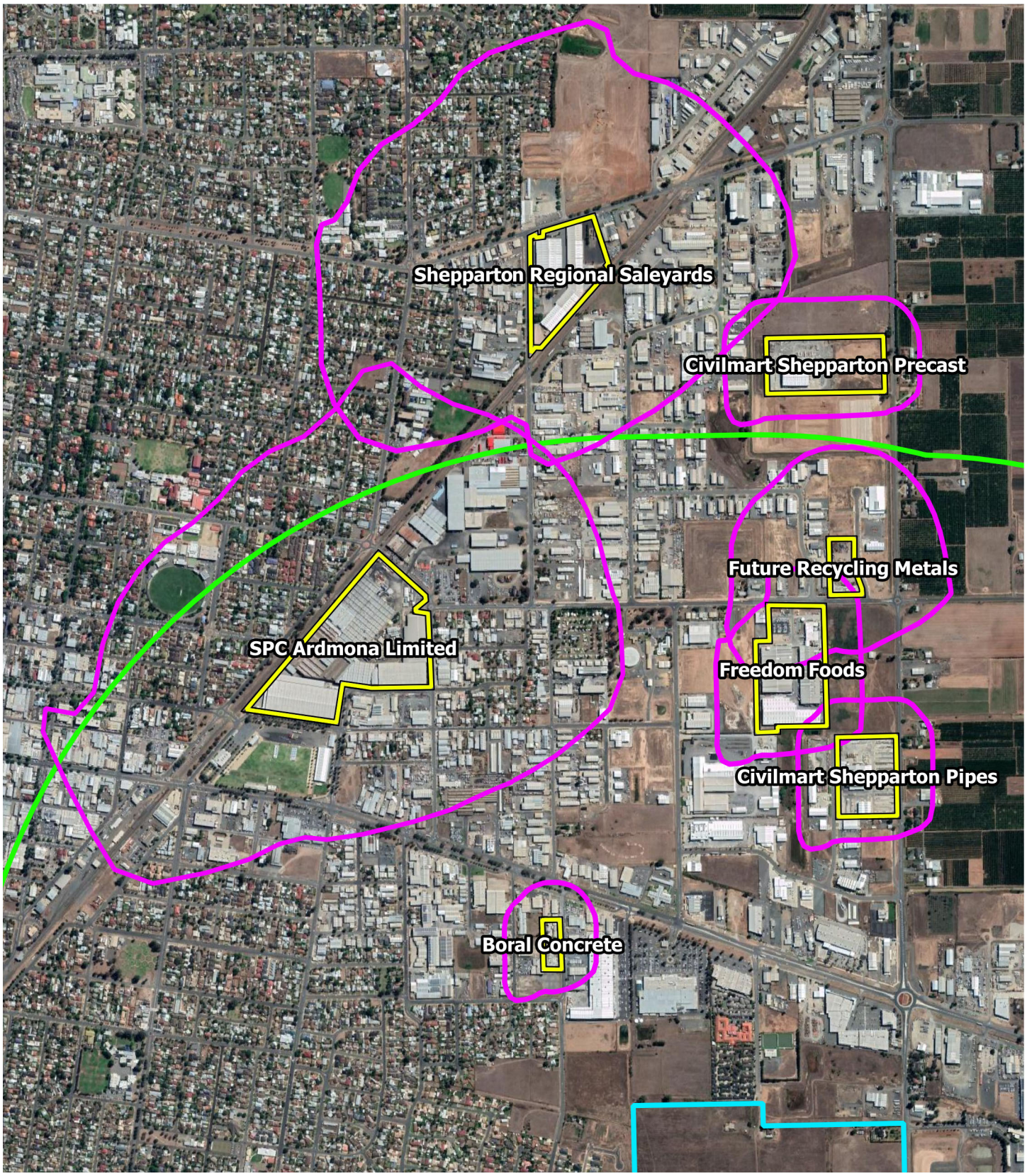
Directional buffers are plotted in Figure 11 for the industries identified in Section 5.2. From the figure it can be seen that, as with the default separation distances, all directional buffers do not extend to the Precinct. The directional buffers tend to extend on the northeast-southwest axis as consistent with the wind directions shown in Section 6.2.1.

The directional buffer for Boral Concrete, which is the closest to the Precinct, does not extend to the Precinct. Instead, it contracts slightly in the southeast quadrant, putting the directional buffer slightly further from the Precinct than the default separation distance.

The envelope of sources for both SPC and Shepparton Regional Saleyards extend along the northeast-southwest axis. This has resulted in an extension of the directional buffers in these directions. However as both industries are located approximately 2 km from the Precinct the directional buffer does not impact the Precinct.

The directional buffers for Civilmart Shepparton Pipes, Civilmart Shepparton Precast, Future Recycling Metals and Freedom Foods are all similar to that of the recommended separation distances and do not impact the Precinct.

[12] Clarey P, Pollock T "Integrating Separation Distances with Dispersion Modelling" Enviro 04, 28 Mar – 1 April 2004, Darling Harbour, Sydney




**Legend**

- 2km radius
- Precinct boundary
- Identified industry
- Directional buffer

Paper Size ISO A4

0 0.25 0.5 km

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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**Greater Shepparton City Council**

**Amenity Impact Assessment**

**Directional Buffers**

Project No. **12556721**
Revision No. **-**
Date. **16/11/2021**

**FIGURE 11**

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Print Date: 16/11/2021

Data Source: Google Earth Imagery 2021.
Created By: ylim

# 7. Future land use planning considerations

## 7.1 Key findings and development constraints

### 7.1.1 Industry

Seven industries within the assessment area (2 km radius from the Precinct boundary) were identified as requiring a separation distance based on the EPA Publication 1518 and the DWER Odour emissions guideline.

The application of separation distances from EPA Publication 1518 and DWER Odour emissions guideline found that the Precinct was not constrained by any of the identified industries.

The industries with the largest separation distances were identified to be SPC and Shepparton Regional Saleyard, both of which had a recommended separation distance of 500 m. However as both industries are located approximately 2 km from the Precinct, the recommended separation distances do not extend to the Precinct.

A 250 m separation distance was applied to Future Recycling Metals and found to not extend to the Precinct.

The remaining four industries: Civilmart Shepparton Precast, Civilmart Shepparton Pipes, Boral Concrete and Freedom Foods all had separation distances of 100 m, which do not extend to the Precinct.

Directionally dependent buffers were developed to account for the local meteorology and the dispersive ability of the atmosphere for all industries with a recommended separation distance. The application of the directional buffer found that the Precinct was not constrained.

### 7.1.2 Agriculture

A number of row crop / orchard farms were identified to be located within and to the east of the Precinct. Use of chemical sprays at these farms have the potential to result in “spray drift” which can be harmful to surrounding sensitive land uses. A review of relevant guidance indicates that a 40 m separation distance with a vegetated buffer is recommended from the orchards to sensitive uses. A 40 m separation distance was applied to agricultural farms located in the southern and northern sections of the Precinct, which slightly constrained the Precinct. However, these farms are likely to transition out of the Precinct based on the proposed PSP (as discussed in Section 2.4). Once they transition out, they will no longer pose a constraint. The 40 m separation distance applied to agricultural farms located outside of the Precinct to the east, resulted in a slight constraint of the eastern edge of the Precinct. The agriculture separation distances are shown in Figure 12.

### 7.1.3 Transport

As part of the PSP, residential housing is proposed to be located west of Doyles Road and may therefore be subject to air quality impacts resulting from vehicle emissions.

It is widely recognised that traffic pollutants reduce as distance from the road kerb increases. Thus, setting back sensitive development as far as practicable from Doyles Road will provide the best outcome for the health and well-being of occupants.

The Brisbane City Council policy outlines that a set back distance separating the sensitive use from the kerb (for a high-volume traffic route) of 20 m. A 20 m set back was applied to Doyles Road, which resulted in a slight constraint of the eastern edge of the Precinct, as shown in Figure 12.

## 7.2 Recommended mitigation measures

### 7.2.1 Industry

Given there were no constraints identified to the Precinct from surrounding industries no mitigation measures are required concerning the identified industries.

### 7.2.2 Agriculture

A separation distance of 40 m should be utilised as a setback strategy (e.g. open space design adjacent to orchards to provide a reduction in risk through setback distances to sensitive uses) is commonly adopted and recommended as part of this study locating sensitive uses outside the recommended buffer.

A staged development approach to the extent possible is also recommended as the area is predominantly in private ownership – so that sensitive uses are not developed within separation distance areas until the agricultural uses adequately reduces the off-site impacts or provides information pertaining to transitioning out of the area. Planning policy may be introduced to support this approach and put the onus on ensuring appropriate separation rests with the encroaching sensitive land use.

GHD recommends that GSCC and VPA contact the agricultural uses placing buffer constraints on the Precinct in order to implement a staged implementation plan. This should allow for a smooth transition of land use to sensitive land use over an appropriate period of time.

Where setbacks are not feasible built form mitigation is recommended in the form of a solid fence (a higher than a standard residential fence) be implemented between the orchard and residences.

In the event both (set-back and built form mitigation) options are not possible then further work is recommended to be undertaken to gain an understanding of the types of chemical sprays, the locations they are being used, frequency of spraying and application, meteorology implications and the future plans of the agricultural farms in order to assess the risk to the Precinct.

### 7.2.3 Transport

A set-back distance separating the sensitive use from the kerb (for a high-volume traffic route) of 20 m is recommended for Doyles Road.

Where the development cannot meet the recommended separation distance from the kerb, alternatives include built form mitigation such as installing ducted mechanical ventilation and particle filtration at sensitive uses.

## 7.3 Recommended planning controls

A summary of the identified setback distances which extend into the Precinct are shown in Figure 12 (namely, the 20 m setback distance from Doyles Road and the 40 m setback from orchards).

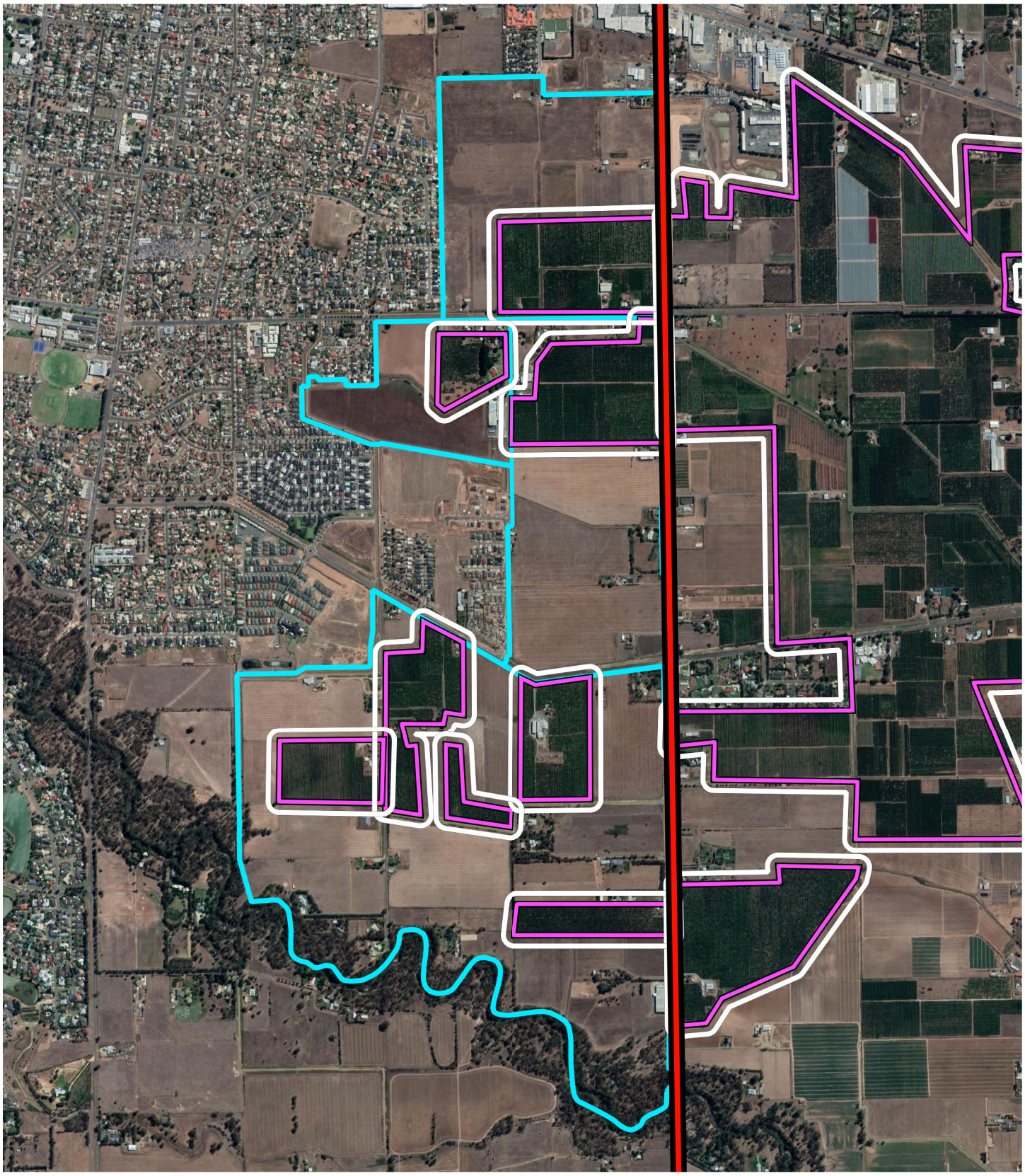
To assist in mitigating the potential for adverse amenity within Precinct, the following planning controls are recommended to be incorporated within the PSP or via proposed zoning controls (or schedule within).

**Setback distances**

No sensitive uses (as defined in section 2.3) are to be located within the setback distances shown in Figure 12.

**Transitioning of land use**

If existing land use with a specified separation distance has formally indicated that it will transition out of an area over a specified timeframe, then this provision can be used to sequence any proposed sensitive use development within the existing separation distance.



**Legend**

- Precinct boundary
- Agricultural area
- 40 m spray drift separation distance
- Doyles Road
- 20 m transport set back

Paper Size ISO A4

0 0.25 0.5 km

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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**Greater Shepparton City Council**

**Amenity Impact Assessment**

**Setback distances which extend into the Precinct**

Project No. **12556721**
Revision No. **-**
Date. **21/01/2022**

**FIGURE 12**

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Print Date: 21/01/2022

Data Source: Google Earth Imagery 2021.
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