East of Aberline

Adverse Amenity Impact Assessment

Victorian Planning Authority

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GHD Pty Ltd | ABN 39 008 488 373
180 Lonsdale Street, Level 9
Melbourne, Victoria 3000, Australia
T +61 3 8687 8000 | **F** +61 3 8732 7046 | **E** melmail@ghd.com | **ghd.com**

Executive summary

GHD was engaged by the Victorian Planning Authority (VPA) to prepare an Adverse Amenity Impact Assessment (AAIA) for the East of Aberline Precinct Structure Plan (PSP) and Development Contributions Plan (DCP) to guide the future development of East of Aberline PSP.

Scope of work

Key focus areas of the AAIA assessment include the following:

– Identify industries within the Precinct and within a 2 km catchment area which attract a buffer and/or be a potential air/noise/vibration source which may affect future development of the land.

Air Quality

– Utilise EPA recommended separation distance guideline (Separation Distance Guideline 2024 and Publication 1518) to determine site specific separation distances (buffers) for any industries identified to have potential air quality impacts.
– Undertake a Level 2 odour risk assessment in accordance with EPA Publication 1883 *Guidance for Assessing Odour* and Source-Pathway-Receptor risk assessment in accordance with EPA Publication 1943 *Guidance for Assessing Nuisance Dust* for any industries with separation distances that extend to the Precinct boundary.

Noise/Vibration

– Undertake a review of potential impacts associated with the identified noise and vibration sources.
– Provide general recommendations in relation to noise and vibration to assist with planning, use, design and development of the Precinct.

Mitigation

– Assess which adverse amenity impacts can be mitigated through design and built form interventions.
– Provide high level recommendations on how these can be translated into land use and built form planning controls for the Precinct.

Key findings

Key findings of this report are summarised below:

Air Quality – Odour and dust

Two constraints to the Precinct area were identified. These industries are located east and southeast of the Precinct boundary. The recommended separation distances and varied separation distances are as follows:

– Default Separation Distances:
  - Fulton Hogan asphalt plant, 1,000 m (odour)
  - Wheelie Waste, 500 m (odour) and 250 m (dust) separation distances
– Varied Separation Distances:
  - Fulton Hogan asphalt plant, 350 m (odour)
  - Wheelie Waste, 155 m (odour and dust)

Fulton Hogan asphalt plant

From the Level 2 odour risk assessment, the Fulton Hogan asphalt plant at 20 Mason Street is assessed to pose 'Low' odour risk to sensitive receptors in the Precinct. Further to this, GHD relied on the information and results provided in the Level 3 odour risk assessment undertaken for the asphalt plant by a third-party consultant (AOC) to further understand the odour risk. It demonstrated that the odour risk from the asphalt plant to sensitive receptors in the Precinct to be 'Low'. With obvious odours potentially extending up to 350 m, supporting a reduced varied separation distance.

A 'Low' risk rating means that the risk of odour nuisance is likely to be minimal for sensitive uses (proposed) within the default 1,000 m separation distance. As such sensitive uses can be established within the default separation distance within the Precinct, as the separation distance can effectively be varied to 350 m based on the Level 2 and 3 risk assessments.

Separation distance for dust does not encompass the Precinct indicating the dust risk from the glass crushing activity at the p site to be low. Further to this, GHD relied on an Air Quality Impact Assessment undertaken for the asphalt plant by a third-party consultant (Airlabs Environmental) which concluded that fugitive emissions of particulate matter to be unlikely to cause significant impact to the surrounding environment. Based on the assessment, GHD considers the dust risk from the asphalt plant to be low.

The Air Quality Impact Assessment also assessed the impacts of air emissions which are typically expected to be discharged into air from an asphalt plant. Results from the modelling indicated that the incremental impacts from the facility only at the nearest sensitive receptors were well below the relevant assessment criteria. The overall findings of the impact assessment concluded that air emissions from the asphalt plant are unlikely to cause any significant air quality impacts to the surrounding including the Precinct, with respect to inhalation impacts to human health. The proposed air quality controls are also considered to be in accordance with the GED and commensurate with the level of risk from the asphalt plant.

Wheelie Waste transfer station

The Wheelie Waste transfer station at 10 Mason Street is assessed to pose 'Low' odour risk and 'Moderate' dust risk to the receptors in the Precinct. As such sensitive uses can be established within the respective default separation distances within the Precinct, and the separation distances for Wheelie Waste can effectively be varied to the Precinct boundary based on the Level 2 odour risk assessment and S-P-R assessment for dust. A varied separation distance of 155 m was recommended.

Overall odour and dust risk

The risk assessment undertaken has indicated the risk to the Precinct to be low for both odour and dust emissions from the identified industries. A 'Low' risk rating means that the risk of odour and dust nuisance is likely to be minimal for sensitive uses (proposed) within the respective default separation distances, hence GHD has recommended varied separation distances based on the risk assessments undertaken in accordance with EPA Publication 1883 and 1943.

Air Quality – Vehicle emissions

Eight roads within and bounding the Precinct are identified as transport sources in which vehicle exhaust emissions have the potential to affect the air quality of the Precinct. These roads are Wangoom Road, Horne Road, Dixons Lane, Rodgers Road, Boiling Down Road, Dales Road, Gateway Road and Aberline Road.

Currently, these roads have small amounts of traffic. As such, setting back sensitive development from the identified roads are not required. Traffic volumes on these roads may increase in future if the area will attain more residents and businesses. If the roads are considered to be intermediate volume in the future, then a 10 m set back from the kerb to sensitive uses would be sufficient. If the roads are considered to be high volume traffic routes in the future, a 30 m set back from the kerb to sensitive uses would be sufficient. Note there are no traffic amount definitions for road types.

Noise/Vibration

The following activities and industries may have the potential to impact the Precinct:

– Noise from industries and businesses currently operated or will be operated in the adjacent area (asphalt plant, WRP)
– Noise from industries and businesses that are close to the Precinct boundaries (predominantly southeastern and eastern areas)
– Noise from arterial road and rail to the south of the Precinct boundaries (Princes highway, Geelong-Warrnambool rail)
– Aircraft noise from Warrnambool Airport

Recommendations

The following recommendations are provided within this report:

– Careful strategic planning of land uses to:
  - Implement varied separation distances from the INZ3 industries encroaching southeast area of the Precinct:
    – The encroached areas can be located with open space land use such as car parks or parks to provide a reduction in odour and/or dust impacts through setback distances between the industries and sensitive receptors.
    – The encroached areas can be located with interface land uses such as complimentary commercial and other business uses which do not generate significant odour emissions, nor warrant protection from them.
  - Manage and minimise noise impact from sensitive and non-sensitive land use interfaces including but not limited to consideration of in-principle noise mitigation strategies outlined in this report.
– The implementation of design controls within the Warrnambool Planning Scheme (the planning scheme) and where appropriate development approval process to:
  - Implement application requirements into the planning scheme to appropriately facilitate sensitive uses within any varied separation distance and manage the risk of adverse amenity (i.e. an application requirement to undertake an odour/dust risk assessment).
  - Where appropriate place specific planning requirements as part of planning scheme amendments or planning permit conditions (i.e. control of air quality and noise emission) on proposed sensitive land use and developments in particular areas and implementing varied separation distance areas.
  - Require any proposed sensitive land uses within noise influence zone to undertake noise intrusion assessment to demonstrate that the development is designed and constructed to achieve recommended noise amenity targets outlined in VPP Clauses relevant to noise influence zones and sleep disturbance criteria as defined by World Health Organisation from external noise sources.
  - Require developments with potential to generate noise to undertake further acoustic assessment to demonstrate that the development is designed and constructed to comply with the Noise Protocol requirements at surrounding sensitive uses (including within the Precinct).
  - Current plans of operation of Warrnambool Airport do not include expansion of operation that may significantly affect ambient noise in the Precinct. In case future increase of air traffic represents risk to amenity in the area, future scenarios for Warrnambool Airport operations should be confirmed to identify need for assessment of aircraft noise impact and considering this impact in the planning documents.
– It is recommended to perform noise monitoring to:
  - Estimate existing background levels within the Precinct area and classify background in accordance with the Noise Protocol.
  - Characterise ambient noise from existing transport and industrial noise sources, especially at the southeastern boundaries of the precinct when existing and future industrial developments are in normal operation mode. Ideally this is undertaken during PSP stage but can also be undertaken at permit stage.
  - Identify risks of excessive impact based on observation of existing noise sources in the area.

This report is subject to, and must be read in conjunction with, the limitations set out in sections 1.3 and 1.4 and the assumptions and qualifications contained throughout the Report.

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1. Introduction

The Victorian Planning Authority's (VPA) Regional Victoria group delivers spatial planning solutions for housing and jobs to manage growth in Victoria's key regional cities and rapidly growing towns within Melbourne's peri-urban area. As of 7 September 2019, VPA was appointed Planning Authority responsible for the preparation of the East of Aberline Precinct Structure Plan (PSP) and Development Contributions Plan (DCP). This is to primarily allow for residential development supported by some non-residential land uses such as retail areas or education facilities, additionally to facilitate the conservation and enhancement of existing natural features including Russell Creek and Tozer Reserve. As part of the proposed PSP, GHD was engaged by the VPA to conduct an Adverse Amenity Impact Assessment (AAIA) which will inform the preparation of the East of Aberline PSP and DCP.

GHD has prepared this report assessing potential sources of adverse amenity impacts including noise, dust, odour and air emissions against relevant regulations to assist VPA in their decision-making regarding land use and built form requirements under the proposed structure plan.

The AAIA has taken into consideration the existing land uses within the surrounding areas.

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

This report also includes a desktop noise and vibration impact review of potential noise and vibration sources that may affect development within the Precinct. General advice on mitigation considerations prior to construction is also provided to aid in the development design to mitigate these impacts through the proposed built form.

The report draws upon Clause 53:10 (Uses with Adverse Amenity Potential) and EPA Victoria Publication 1518. GHD notes that EPA Publication 1518 has been replaced by Separation Distance Guideline (2024), which provides a methodology for assessing the applicability and suitability of separation distances. GHD has utilised both Publications in this assessment.

1.1 Purpose of this report

The purpose of this report is to assess the potential for adverse amenity impact from noise, dust, odour and air emissions to new sensitive receptors that may be planned for within the Precinct. The report also investigates potential alternative servicing infrastructure opportunities and key high-level constraints. The assessment in this report has been conducted in accordance with the scope of works presented in Section 1.2 of this report.

The findings, conclusions and recommendations of this assessment should be read in conjunction with the limitations and assumptions presented in Section 1.3 and Section 1.4 of this report, respectively.

1.2 Scope of works

This assessment is prepared in accordance with the following scope of works:

General

1. An inception meeting was held with the VPA and Council to clarify and confirm objectives, reporting, program and discuss any outstanding issues of queries.
2. A site visit was undertaken to inspect the Precinct and identify potential industries within the Precinct and within a 2 km catchment area (surrounding area) which may attract a buffer and/or be a potential noise source which may have the potential to result in adverse amenity impact at the Precinct. The site visit was also supplemented by desktop searches including using National Pollution Inventory (NPI) website, the EPA website, planning permits for identified industries (as supplied by VPA) and complaint history regarding odour, dust and air emissions.
3. Review of any publicly available information pertaining to proposed future changes to land uses within the Precinct and within a 2 km catchment area.

4. Review and identify existing land uses that have the potential to cause an adverse amenity impact (through odour, dust, air or noise) and then create an existing uses table categorising business/land use name, operational overview and operating hours.
5. Review legislative and planning requirements to assess any potential limitations that may apply to the precinct. Legislative and planning requirements to include EP Act obligations, Environment Reference Standard, Victorian Noise Protocol, Victorian Planning Policy, Planning Scheme.

Air Quality

1. Assess and scribe the separation (buffer) distance for each of the sources identified.
2. Provide conclusions as to any buffer constraints that may impact the Precinct in a table that:
    a. Specifically outlines the individual operations of the relevant sources of amenity concerns and identifies adverse amenity impacts.
    b. Considers any recent landowner complaints lodged with the EPA and Council.
    c. Provides recommendations for buffer distances to future sensitive uses and residential encroachment, with consideration to EPA Publication 1518/Separation Distance Guideline and other relevant guidelines and standards (as required).
    d. Outlines any limitations and further work that may be required to further assess the risk within the buffer distances further (refer to provisional item 1).
3. For any buffer that extends to the PSP area GHD will undertake a Level 2 Source-Pathway-Receptor risk assessment in accordance with EPA Publication 1883 Guidance for Assessing Odour and EPA Publication 1943 Guidance for Assessing Nuisance Dust.
4. Identify the requirements for further assessment work at the Precinct with regards to air quality.

Noise and vibration

1. Undertake a review of the relevant noise and vibration guidelines, planning documents and standards applicable to the Precinct and surrounding area.
2. Undertake a review of potential impacts associated with the identified noise and vibration sources.
3. Provide general recommendations in relation to noise and vibration to assist with planning, use, design and development of the Precinct.
4. Identify the requirements for further assessment work at the Precinct with regards to noise.

Mitigation

1. Assess which adverse amenity impacts can be mitigated through design and built form interventions.
2. Provide high level recommendations on how these can be translated into land use and built form planning controls for the Precinct.

Reporting

1. Present the findings of the AAIA.

Provisional Items

1. Provisional Item 1: Where there is insufficient information regarding the PSP and surrounding areas and industries, or further risk assessment is required in line with a Level 3 assessment in EPA Publication 1883, field surveys may be required to be undertaken.
2. Provisional Item 2: Attendance and participation at co-design workshops may be requested, subject to need.

1.3 Limitations

This report has been prepared by GHD for Victorian Planning Authority and may only be used and relied on by Victorian Planning Authority for the purpose agreed between GHD and Victorian Planning Authority as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Victorian Planning Authority 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) 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.4 Assumptions

The following assumptions have been used in this report:

– The most site representative available meteorological data is from the Bureau of Meteorology BoM operated automatic weather station (AWS) located at Warrnambool Airport.
– Where throughputs or capacity of industries within the Precinct are unknown, GHD has taken a conservative approach.
– The Risk Assessment Audit[1] and "Response to Warrnambool City Council re Odour Assessment"[2] undertaken by a third party – Air Odour and Compliance Specialist (AOC) for the asphalt plant at 20 Mason Street, Warrnambool, are free of significant error.
– The surrounding industries site boundaries are based off publicly available information provided by the Victorian State Government Department of Transport and Planning (DTP).
– Information on the operations and throughput of the identified industries are from publicly available information, site visits and planning permit data (where available).

[1] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to Appendix G.
[2] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to "Response to RFI – 12 July 2022".

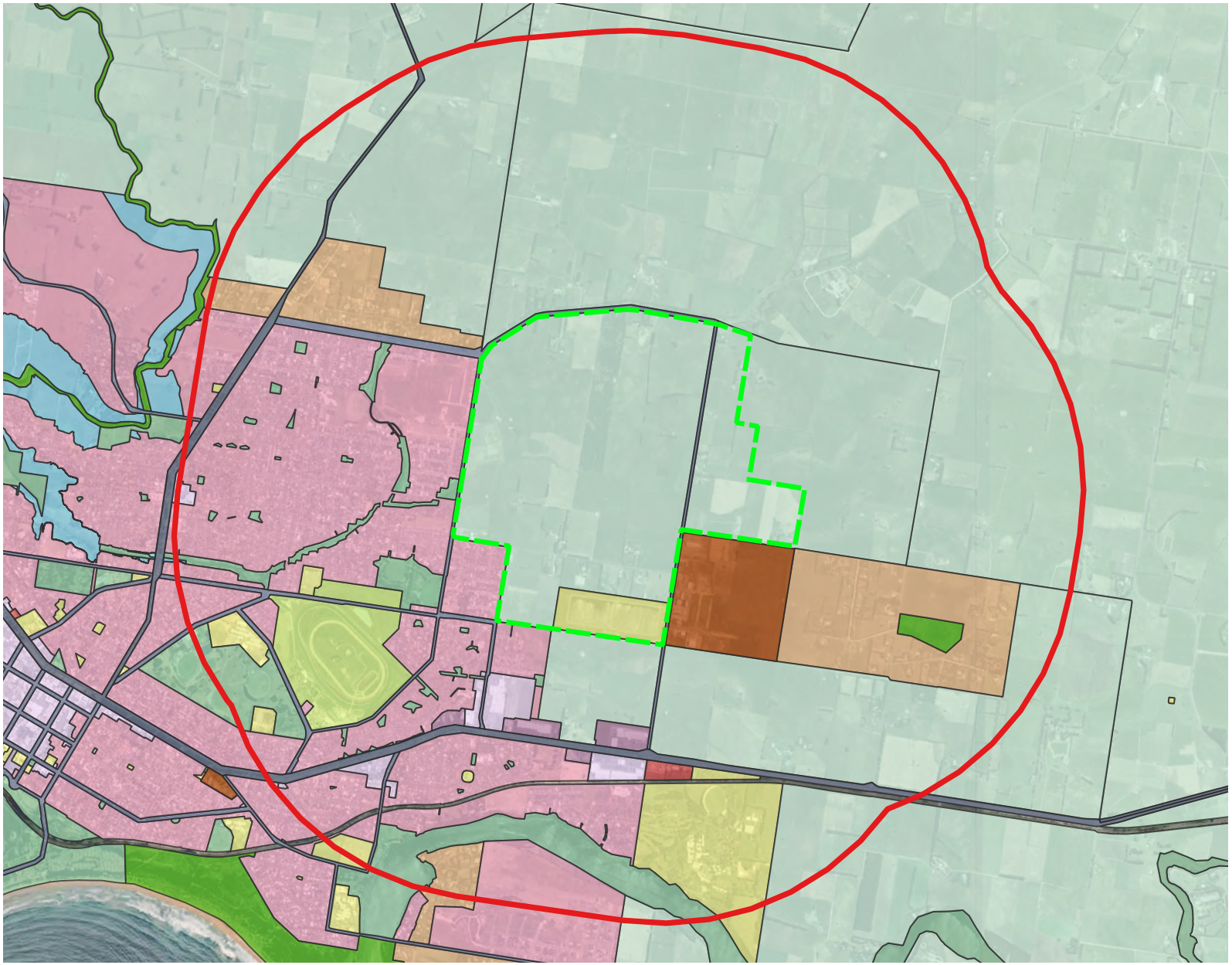
2. Site overview

2.1 Site location and planning

The total study area for the proposed East Aberline PSP totals 409 hectares of land and is situated approximately 4 km north-east of Warrnambool's central business district. The precinct is broadly bounded by Wangoom Road at the north, Dales Road to the south and Aberline Road to the west. The properties of 53 and 75 Rodgers Road bound the precinct to the east.

The core area of the precinct is zoned under Farming Zone (FZ) while a small portion of it is included in Public Use Zone 1 (PUZ1) associated with water storage basins. The eastern areas of 53 & 75 Rodgers Road are also zoned under Farming Zone (FZ).

The precinct is anticipated to primarily consist of residential premises, with other non-residential components such as retail and education facilities. The plan will also facilitate the conservation and enhancement of existing natural features including Russell Creek and Tozer Reserve. The total area, planning zone and 2 km catchment area is displayed in Figure 1.



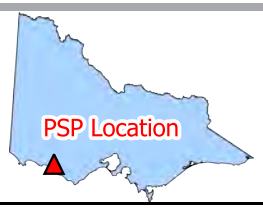
Legend

Precinct boundary

- Precinct
- 2 km PSP Buffer

Planning zone labels

- C1Z - Commercial 1 Zone
- C2Z - Commercial 2 Zone
- FZ - Farming Zone
- FZ - Farming Zone
- GRZ1 - General Residential Zone 1
- IN3Z - Industrial 3 Zone
- MUZ - Mixed Use Zone
- MUZ - Mixed Use Zone
- MUZ - Mixed Use Zone
- NRZ - Neighbourhood Residential Zone
- PCRZ - Public Conservation and Resource Zone
- PPRZ - Public Park and Recreation Zone
- PUZ1 - Public Use Zone-Service and Utility
- PUZ2 - Public Use Zone-Education
- PUZ3 - Public Use Zone-Health & Community
- PUZ5 - Public Use Zone-Cemetery/Crematorium
- PUZ6 - Public Use Zone-Local Government
- PUZ7 - Public Use Zone-Other Public Use
- RLZ - Rural Living Zone
- SUZ - Special Use Zone
- TRZ2 - Principal Road Network
- TRZ3 - Significant Municipal Road
- UFZ - Urban Floodway Zone



Paper Size ISO A4

0 0.75 1.5 km

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54S

GHD

Victorian Planning Authority

East of Aberline Adverse Amenity Impact Assessment

Site Planning and Location

Project No. **12639891**
Revision No. **-**
Date. **04/09/2024**

FIGURE 1.0

Data Source:

Document Path: \\ghdnet\ghd\AU\Melbourne\Projects\31\12639891\GIS\Maps\Working\12639891_East of Aberline AAIA.qgz
Print Date: 04/09/2024

Created By: Cheng Yii Sim

2.2 Surrounding land use

The PSP is surrounded by Allansford to the east, Wangoom to the north, Bushfield to the northwest, Warrnambool to the south and west. Land immediately surrounding the precinct is zoned as a mixture as Farming Zone (FZ), Industrial 3 Zone (IN3Z), General Residential Zone 1 (GRZ1), Transport Zone 3 (TRZ3), Rural Living Zone (RLZ) and Public Park and Recreation Zone (PPRZ).

Land in Allansford to the immediate east of the subject site, is primarily in the farming zone, before transitioning to other residential zone within the township centre further east. Wangoom is zoned under farming zones. Bushfield consists mostly of farming zone and small sections of rural living zones, park and recreation zones transport zones and residential zones. Warrnambool consists of farming zones, general residential zones, urban floodway zones, rural living zones, industrial zones, commercial zones, public conservation zones, transport zones and special use zones.

GHD is aware the Horne Road industrial area is immediately adjacent to the growth corridor to the east but remains mostly underdeveloped at the time of this report. Two large dairy effluent ponds are located 350 m north of Wangoom Road, opposite 270 Wangoom Road. Areas of fill and stockpiles along Russell Creek at the upstream boundary of the growth corridor is located 150 m outside the growth corridor boundary.

2.3 Sensitive receptors

2.3.1 Sensitive land use in the context of odour and dust emissions

The definition of a sensitive receptor or sensitive land use is defined by EPA[3] (2024, p. 43) as:

> *'Any land use that requires a focus on protecting human health and wellbeing, local amenity and aesthetic enjoyment. Examples[4] of such sensitive land uses include, but are not limited to:*
>
> – *Dwellings and private open space (including detached dwellings, multiple dwellings, flat/apartment buildings, row dwellings and semi-detached dwellings)*
> – *Accommodation (exclude caretaker's residence)*
> – *Child care centres*
> – *Education centres*
> – *Informal outdoor recreation that is adjacent to residential zones*
> – *Camping and caravan parks*
> – *Indoor recreation facility*
> – *Medical centres*
> – *Hospitals*
> – *Residential aged care facility and retirement villages*
> – *Outdoor recreation facility, open sports grounds, (regular public use, for example sporting fields) adjacent to residential zones.'*

A sensitive land use is further defined in Publication 1961 (EPA Victoria 2021, p. 8) as:[5]

"A land use where it is 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."

[3] EPA Victoria - Separation distance guideline (2024)
[4] EPA Victoria Separation distance guideline 2024 – Examples are based on the land use terms defined in clause 73.03 (land use terms) of the VPP. If the terms in the VPP do not correspond with this list, contact EPA for advice. For this guideline, the term sensitive land use includes sensitive receptors.
[5] 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.

2.3.2 Noise sensitive area

Environment Protection Regulations 2021 defines a noise sensitive area as:

a) That part of the land within the boundary of a parcel of land that is:

- ***within 10 metres of the outside of the external walls of any of the following buildings***
  - *a dwelling (including a residential care facility but not including a caretaker's house)*
  - *a residential building*
  - *a noise sensitive residential use; or*
- ***within 10 metres of the outside of the external walls of any dormitory, ward, bedroom or living room of one or more of the following buildings***
  - *a caretaker's house*
  - *a hospital*
  - *a hotel*
  - *a residential hotel*
  - *a motel*
  - *a specialist disability accommodation*
  - *a corrective institution*
  - *a tourist establishment*
  - *a retirement village*
  - *a residential village; or*
- ***within 10 metres of the outside of the external walls of a classroom or any room in which learning occurs in the following buildings (during their operating hours):***
  - *a child care centre*
  - *a kindergarten*
  - *a primary school*
  - *a secondary school; or*

b) subject to paragraph (c), in the case of a rural area only, that part of the land within the boundary of

- *a tourist establishment; or*
- *a campground; or*
- *a caravan park; or*

c) despite paragraph (b), in the case of a rural area only, where an outdoor entertainment event or outdoor entertainment venue is being operated, that part of the land within the boundary of the following are not noise sensitive areas for the purposes of that event or venue

- *a tourist establishment*
- *a campground*
- *a caravan park*

Thus, the definition of sensitive receptor or sensitive land use is considered to be that identified by EPA for the purposes of this assessment.

2.3.3 Within the Precinct

Twenty-four (24) residential receptors were identified within the Precinct. All residential receptors are zoned under farming zone (FZ). Non- residential receptor Tozer Reserve is located in the middle of the Precinct and also zoned FZ under the Warrnambool Planning Scheme.

2.3.4 Within 2 km from the Precinct

A total of fifty-three (53) sensitive receptors were identified within the 2 km from the precinct, these receptors include residential areas (RLZ and GRZ1 receptors), education centres, childcare centres, age care centres, retirement villages and communities, nursing home, motels and hotels.

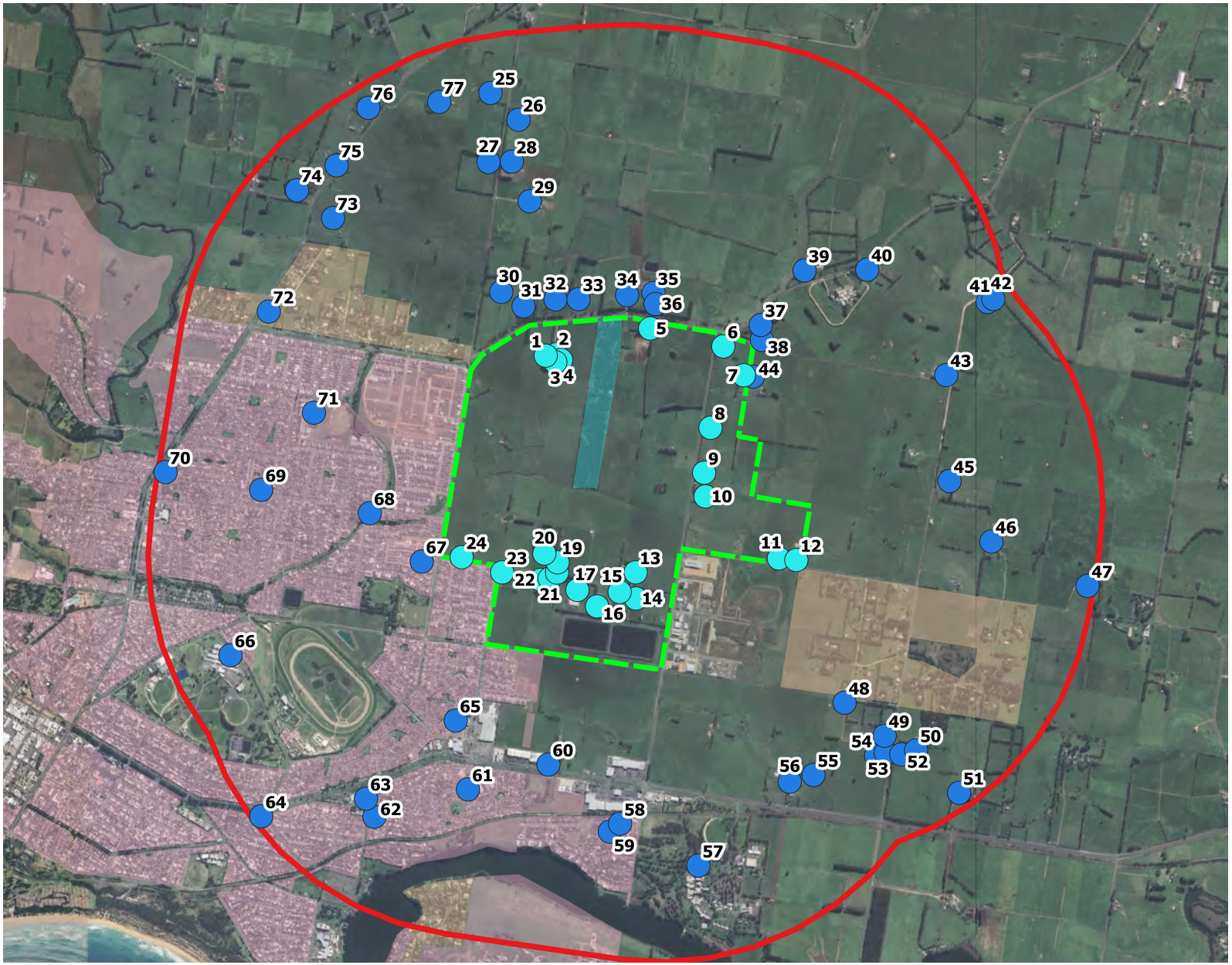
All identified seventy-seven discrete sensitive receptors, receptors within Rural Living Zone and General Residential Zone 1 and non-residential receptor Tozer Reserve have been displayed in Figure 2, and information summarised in Table 1.

Table 1 Closest Sensitive Receptors

ID	X	Y	Address	Category	Approximate distance to Precinct Boundary (m)
Within the Precinct (TBD)					
1	633210.2	5753316.1	220 Wangoom Road	Residential	0
2	633280.9	5753325.0	222 Wangoom Road a	Residential	0
3	633276.0	5753271.7	222 Wangoom Road c	Residential	0
4	633315.2	5753286.7	222 Wangoom Road b	Residential	0
5	633922.9	5753501.5	286 Wangoom Road, Warrnambool 3280	Residential	0
6	634422.3	5753379.1	310 Wangoom Road	Residential	0
7	634561.9	5753182.2	246 Horne Road	Residential	0
8	634334.9	5752824.0	246 Horne Road	Residential	0
9	634291.5	5752517.1	210 Horne Road	Residential	0
10	634300.8	5752355.5	200 Horne Road	Residential	0
11	634801.0	5751932.9	53 Rodgers Road	Residential	0
12	634920.6	5751921.6	75 Rodgers Road	Residential	0
13	633824.0	5751837.6	135 Boiling Down Road	Residential	0
14	633825.8	5751659.2	129 Boiling Down Road	Residential	0
15	633714.7	5751704.0	124 Boiling Down Road	Residential	0
16	633560.7	5751605.4	110 Boiling Down Road	Residential	0
17	633426.6	5751717.2	94 Boiling Down Road	Residential	0
18	633287.5	5751836.3	81 Boiling Down Road	Residential	0
19	633291.4	5751905.9	79 Boiling Down Road	Residential	0
20	633201.1	5751966.2	75 Boiling Down Road	Residential	0
21	633236.8	5751794.9	76 Boiling Down Road	Residential	0
22	633177.3	5751786.4	70 Boiling Down Road	Residential	0
23	632913.5	5751837.5	40 Boiling Down Road	Residential	0
24	632637.0	5751940.9	15 Boiling Down Road	Residential	0

ID	X	Y	Address	Category	Approximate distance to Precinct Boundary (m)
Outside the Precinct (within 2 km of Precinct boundary)					
25	632833.0	5755108.2	185 Wiggs Lane	Residential	1,608
26	633024.7	5754925.1	166 Wiggs Lane	Residential	1,404
27	632819.9	5754636.8	135 Wiggs Lane	Residential	1,149
28	632979.2	5754640.0	136 Wiggs Lane	Residential	1,124
29	633100.8	5754368.8	110 Wiggs Lane	Residential	843
30	632906.8	5753750.9	Wypinga Bed and Breakfast. 44 Wiggs Lane	Motel	296
31	633059.1	5753652.4	195 Wangoom Road	Residential	136
32	633277.6	5753700.0	213 Wangoom Road	Residential	162
33	633434.1	5753700.9	229 Wangoom Road	Residential	150
34	633765.9	5753728.0	269 Wangoom Road	Residential	154
35	633946.1	5753743.1	281 Wangoom Road b	Residential	193
36	633959.9	5753668.4	281 Wangoom Road a	Residential	122
37	634677.7	5753525.0	364 Wangoom Road	Residential	143
38	634685.2	5753423.6	352 Wangoom Road	Residential	66
39	634976.4	5753897.1	417 Wangoom Road	Residential	615
40	635404.2	5753902.7	440 Wangoom Road	Residential	930
41	636225.7	5753682.7	366 Staffords Road	Residential	1,625
42	636264.4	5753702.3	374 Staffords Road	Residential	1,666
43	635943.4	5753183.6	305 Staffords Road	Residential	1,288
44	634623.2	5753172.7	50 Dixsons Lane	Residential	31
45	635965.8	5752460.6	230 Staffords Road	Residential	967
46	636251.6	5752047.7	Lanaud Farm Stay. 105 Drylakes Road	Motel	1,261
47	636907.3	5751745.1	151 Drylakes Road, Allansford VIC 3277	Residential	1,957
48	635249.6	5750948.4	286 Dales Road	Residential	976
49	635522.8	5750722.9	55 Staffords Road	Residential	1,289
50	635737.6	5750623.7	46 Staffords Road	Residential	1,481
51	636030.7	5750333.6	10480 Princes Highway	Residential	1,885
52	635636.9	5750595.7	44 Staffords Road	Residential	1,455

ID	X	Y	Address	Category	Approximate distance to Precinct Boundary (m)
53	635530.5	5750604.5	47 Staffords Road	Residential	1,399
54	635464.8	5750588.0	43 Staffords Road	Residential	1,388
55	635037.5	5750455.4	10570 Princess Highway	Residential	1,265
56	634875.4	5750409.3	10602 Princes Hwy	Hotel	1,165
57	634252.3	5749837.3	Deakin University Warrnambool Campus. Princes Hwy, Warrnambool VIC 3280	Education centre	1,361
58	633718.0	5750122.6	Warrnambool Riverside Care Community. 62-76 Huntingfield Drive	Nursing home	1,080
59	633647.7	5750069.1	Levande Gillin Park Community. 45 Mahoneys Road	Retirement community	1,143
60	633228.5	5750526.9	82 Raglan Parade	Residential	751
61	632680.1	5750356.7	Our Lady Help of Christians Primary School. 28 Selby Road	Education centre	999
62	632041.2	5750170.3	Turn-In. 41 Verdon Street	Hotel	1,406
63	631984.2	5750293.4	Warrnambool Holiday Park and Motel. 83 Simpson Street	Motel and camping ground	1,339
64	631269.2	5750173.4	Comfort Inn on Raglan. 349 Raglan Parade	Hotel	1,938
65	632596.2	5750826.5	Ingenia Gardens Warrnambool. 37 Caroville Drive	Retirement Village	563
66	631059.3	5751271.8	Warrnambool College. Grafton Rd, Warrnambool VIC 3280	Education centre	1,593
67	632364.5	5751911.7	Anchor Point Village. 55 Aberline Road	Retirement Village	140
68	632010.0	5752241.6	Goodstart Early Learning Warrnambool. 121 Whites Road	Childcare	524
69	631269.2	5752400.4	Let's Go Family Daycare. 78 Whites Road	Childcare	1,281
70	630616.5	5752521.3	Hopkins House Motel and Apartments. Unit 2/4 Whites Road	Motel	1,944
71	631628.6	5752926.9	Kings College. 44 Balmoral Rd, Warrnambool VIC 3280	Education centre	1,011
72	631320.7	5753616.9	North Edge Early Learning	Childcare	1,436
73	631759.3	5754254.5	292 Hopkins Highway	Residential	1,380
74	631513.4	5754444.8	309 Hopkins Highway	Residential	1,690
75	631783.4	5754613.9	2 Fala Park Road	Residential	1,631
76	632000.3	5755006.4	383 Hopkins Highway	Residential	1,841
77	632483.7	5755046.6	392 Hopkins Highway	Residential	1,644
Rural Living Zone					Refer to Figure 2
General Residential Zone					Refer to Figure 2
Tozer Reserve (Non-residential receptor)					Refer to Figure 2



Legend

Precinct boundary

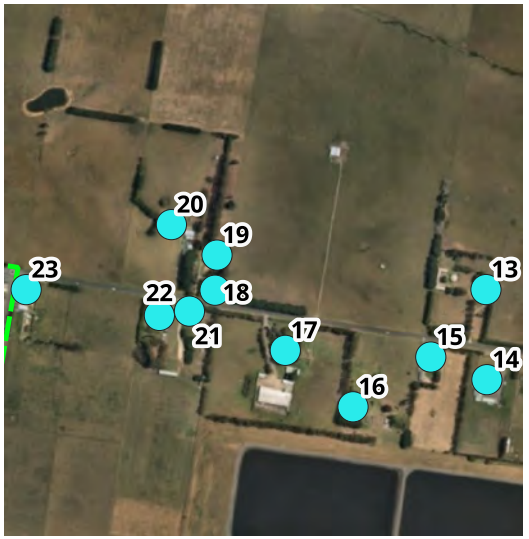
- Precinct
- 2 km PSP Buffer

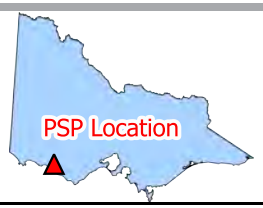
Planning zone labels

- GRZ - General Residential Zone
- RLZ - Rural Living Zone

Sensitive receptors

- Outside Precinct boundary
- Within Precinct boundary
- Torez Reserve (non-residential receptor)





Paper Size ISO A4

0 0.75 1.5 km

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54S

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East of Aberline Adverse Amenity Impact Assessment

Sensitive receptors

Project No. **12639891**
Revision No. **-**
Date. **28/01/2025**

FIGURE 2.0

Data Source:

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3. Existing planning and land use context

3.1 Planning policy framework

The Planning Policy Framework (PPF) includes a number of references to planning for the location of potentially conflicting land uses and their relationship to each other. The following clauses are relevant to this study.

3.1.1 Clause 11 Settlement

Clause 11 seeks to anticipate and respond to the needs of existing and future communities through appropriately zoned and serviced land for housing, employment, recreation and open space, commercial and community facilities and infrastructure.

Clause 11.01-1S identifies the need to focus investment and growth in places of state significance, and to capitalise on development opportunities around planned transport infrastructure. This Clause also highlights the opportunity for urban renewal and infill redevelopment to provide for the needs of a growing Victoria.

Clause 11.02-2S encourages the orderly development of urban areas through the preparation of relevant plans, including structure plans. These plans should support land use and development which considers the strategic and physical context of a location and facilitate both the provision of new infrastructure and continued use of established infrastructure and services as required within a given area.

3.1.2 Clause 13 Environmental risks and amenity

Clause 13 considers environmental risks including reference to land use separation and protection of sensitive uses from adverse impacts caused by other land uses. Policies under this Clause which are of particular relevance to the assessment of adverse amenity impacts are underlined below.

Clause 13.05-1S Noise Guidelines seeks to ensure that development is not prejudiced, and community amenity is not reduced by noise emissions, using a range of building designs, urban designs and land use separation techniques as appropriate to the land use functions and character of the area. The policy considers the following policy guidelines (considered relevant to this study).

– The noise requirements in accordance with the Environment Protection Regulations under the Environment Protection Act 2017.
– Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues (Publication 1826.2, Environment Protection Authority, March 2021) (the Noise Protocol, now superseded by version 1826.4, May 2021).

Clause 13.06-1S Air Emissions Guidelines relates to air quality management and aims to assist in the protection and improvement of air quality. This clause seeks to ensure, wherever possible, that there is suitable separation between land uses that reduce amenity and sensitive land uses. The policy considers the following policy guidelines (as considered relevant to this study).

– Recommended Separation distances for industrial residual air emissions (Publication 1518, Environment Protection Authority, March 2013).

Clause 13.07-1S Land Use Compatibility seeks to safeguard community amenity while facilitating appropriate commercial, industrial, or other uses with potential off-site effects.

This can be achieved by ensuring the compatibility of a use or development as appropriate to the land use functions and character of the area by:

– Directing land uses to appropriate locations
– Using a range of building design, urban design, operational and land use separation measures

Clause 13.07-2S seeks to minimise the potential for human and property exposure to risk from incidents that may occur at major hazard facilities.

3.1.3 Clause 17 Economic development

Clause 17 aims to provide for a strong and innovative economy by supporting economic growth and development. This is to be achieved by providing land, facilitating decision-making and resolving land use conflicts, so that each district may build on its strengths and economic potential.

Clause 17.03-1S seeks to ensure the adequate supply of land for industry in appropriate locations. This can be achieved by protecting existing industrial areas to, where possible, facilitate further industrial development; and to avoid locating non-industrial land uses in locations identified for future industrial use. The policy considers the following guidelines:

– *Recommended separation distances for industrial residual air emissions – EPA Publication Number 1518 March 2013*

Clause 17.03-2S refers to the siting of industrial development. It encourages the sustainable development and operation of industry by protecting industrial activity in industrial zones from encroachment of commercial, residential, and other sensitive uses that would adversely affect industry viability. This can be achieved by the provision of adequate separation and buffer areas between sensitive uses and offensive and dangerous industries to ensure existing or future residents are not affected by adverse environmental effects, nuisance or exposure to hazards.

3.1.4 Clause 18 Transport

Clause 18 seeks to achieve an integrated and sustainable transport system which facilitates economic prosperity, contributes to environmental sustainability, and is accessible and safe.

3.1.5 Clause 19 Infrastructure

Clause 19 considers the efficient and adequate provision of infrastructure to support the growth and redevelopment of settlements.

Clause 19.03-5S seeks to reduce waste and maximise resource recovery so as to reduce reliance on landfills and minimise environmental, community amenity and public health impacts. In relation to planning for urban renewal Precincts, the policy encourages future waste and resource recovery infrastructure needs to be identified and planned for, to safely and sustainably manage all waste and maximise opportunities for resource recovery.

Buffers should be implemented to protect any existing or planned waste and resource recovery infrastructure from encroachment from incompatible land uses, and waste and resource recovery facilities should be sited, designed, and operated to minimise impacts on surrounding communities.

3.2 Strategies and plans

3.2.1 Warrnambool City-Wide Housing Strategy (2013)

The city's strategic documents envisage growth of population up to 50,000 residents. The Warrnambool City-Wide Housing Strategy was introduced to address future challenges in providing adequate housing for the projected population growth.

The Warrnambool City-Wide Housing Strategy has recommendation to undertake structure planning for land east of Aberline Road to inform future use and development. It also considers investigations to pinpoint areas with housing potential to accommodate future population growth of the city. The strategy aims to:

– Develop a contemporary land use framework to guide future population growth
– Identify opportunities for more efficient use of existing urban areas
– Identify future land use needs to accommodate projected population growth
– Identify the need for more diversity in future housing stock
– Explore opportunities to facilitate walkable communities adjacent to activity centres, open space and public transport corridors

It is understood that the intended rezoning of the Precinct will address some of the strategic directions and goals outlined in the Warrnambool City-Wide Housing Strategy.

4. Identified industries and existing uses

A review of industries surrounding the project site with an EPA Victoria licence and of the National Pollutant Inventory (NPI) was undertaken and presented in this section.

4.1 National Pollutant Inventory (NPI)

One industry is listed on the NPI to be located within 2 km of the Precinct:

– Warrnambool Potable Water Treatment Plant is located at Grieve Street, Warrnambool.
It is classed under “Water Supply, Sewerage and Drainage Services” with the listed main activity of potable water treatment.

4.2 EPA Victoria Licence

EPA Licenced facilities – The following industries currently have an active EPA development licence, operating licence, permit, or registration and can be found within the Precinct and surrounding 2 km catchment area. These industries may have potential to emit odour, dust or noise. EPA Victoria Licences can be found on EPA Victoria Permissioning Decisions Register[6].

Table 2 EPA Victoria Licences

Industry Name	Address	Licence Number	Licence Type	Activity
Wheelie Waste Pty Ltd	10 Mason Street, Warrnambool, VIC 3280, Australia	R000307173	Registration	A13c (Waste and resource recovery - small)
		R000307229	Registration	A13c (Waste and resource recovery - small)
Gerard Bouchier	10677 Princes Highway, Warrnambool, VIC 3280, Australia	R000303591	Registration	A13c (Waste and resource recovery - small)
		R000303613	Registration	A13c (Waste and resource recovery - small)
Fulton Hogan Industries Pty Ltd	80 Rodgers Road[7], Warrnambool Victoria 3280, Australia	DL000300029	Development Licence[8]	H02 (Bitumen or asphalt batching) at 20 Mason Street.
	Mason Street, Warrnambool, VIC 3280, Australia	R000308489	Registration	A13c (Waste and resource recovery - small)
	20 Mason Street, Warrnambool VIC 3280, Australia	R000308776	Registration	H05c (Glass works – small reprocessing)
Fairbrother Pty Ltd	Lodge Drive, Warrnambool VIC 3280, Australia	WD000300344	Waste Designation	Non-scheduled Activity

[6] https://www.epa.vic.gov.au/about-epa/public-registers/permissions
[7] The location shown in this development license is 20 Mason Street.
[8] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981

4.3 Complaint history

Information regarding air quality or noise complaints from residents living in the area was requested from Council and EPA between 1 January 2019 – 1 June 2024.

Council reported a total of 249 complaints within the area, 89 pertaining to odour and 159 pertaining to noise. Of the complaints surrounding odour, all were lodged to the west side of the Precinct and none within the Precinct area.

Sixteen odour complaints were located within the 2 km boundary of the Precinct border and these were considered close to the precinct. They were mostly of the category, 'ROADS/STREETS - Clean/Sweep Roads (Roads/Streets)' or HEALTH - General (Health). Upon review of the complaints, they were most likely reporting the Midfield Meats site (located at the corner of Scott Street and McMeekin Road, Warrnambool), rubbish removal as these trucks are mobile or litter on the street.

Thirty-two of the 159 noise complaints were located within the 2 km precinct boundary. Most of the 32 complaints were again located on the west side of the precinct and most pertained to 'POLLUTION - Entertainment Noise (Pollution) or ROADS/STREETS' - Construction/Development (Roads/Streets). It is assumed the construction complaints were lodged against temporary road upgrades. When considering the location of the noise complaints regarding Entertainment Noise within the precinct boundary, these were all located relatively close to the Racing Grounds and presumably, the noise source would be originating from there.

4.4 GHD's site visit

A site visit was conducted on 3 June 2024. The purpose of the site visit was to verify the following industries:

– Industries listed in the NPI (summarised in Section 4.1)
– Industries with EPA licences (summarised in Section 4.2)
– Industries which have the potential to emit odour, dust, noise, or vibration, within a 2 km radius of the PSP

At the site visit conducted on the 3 June 2024, the following observations regarding odour and dust were made:

– No significant odour was observed at any of the industries identified in the desktop assessment.
– The ambient noise environment within the Precinct area at the time was observed to be predominantly influenced by traffic, which included a mix of domestic vehicles and vehicles servicing industrial facilities.
– Noise from the existing businesses at the southeast boundary of the site was not audible during the visit. However, it does not mean that the area may not be affected by operation of the businesses at times.

4.5 Identified industry and existing land use operations

A summary of industries identified during the site visit to have the potential to emit odour, dust, noise, or vibration, within a 2 km radius of the Precinct is listed in Table 3 and presented in Figure 3. A 2 km radius was chosen as only two industry categories in Publication 1518 and the Separation Distance Guideline require a separation distance of greater than 2 km, namely "paper and paper pulp manufacture by other methods" and "large dairy stock feedlot" which require separation distance of 5 km for each industry. As no industries which fall under these categories are located in this area, a 2 km radius will identify all relevant industries.

For each identified industry, Table 3 shows the company, type of operation, street address, potential sources, primary concern (dust, odour, noise and/or vibration), and location of the industry with respect to the Precinct.

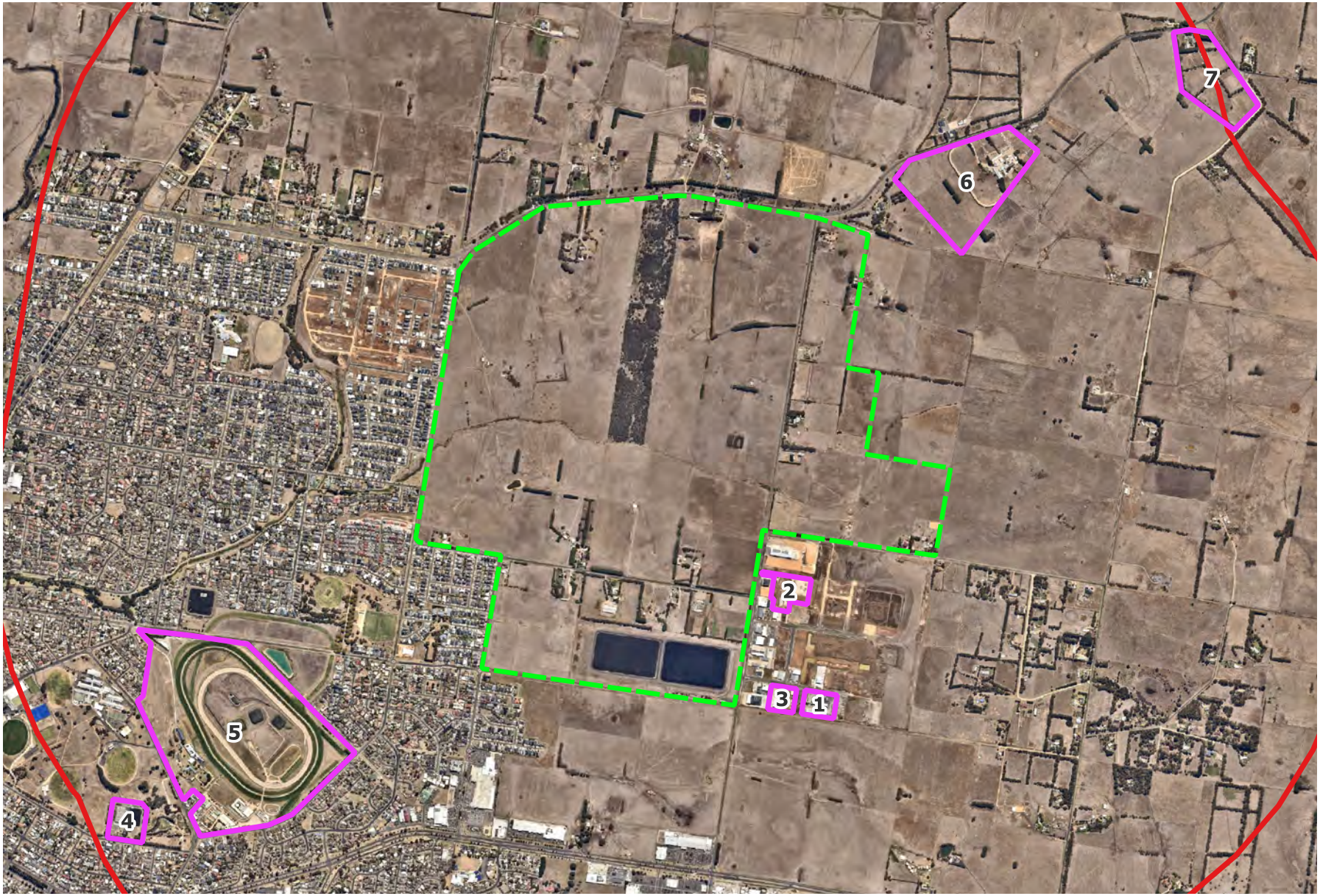
General factories and warehouses have not been included, as they do not attract an odour/dust buffer under the EPA separation distance guidelines, hence likely to be a low risk to air quality and not considered further in the air quality assessment.

It should be noted that depending on the type of activities and distance to the subject site, these could result in potential low to medium noise impact on the subject site.

Table 3 Identified industry and existing uses details

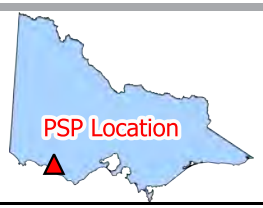
ID	Company	Address	Operations	Operating hours	Potential sources of amenity impact	Primary concern
Non-metallic Mineral Products						
1	Fulton Hogan –asphalt batch plant	20 Mason Street and 80 Rodgers Road Warrnambool 3280	Hot mix asphalt batching plant	6 am to 3 pm (Mon – Sat)	Asphalt production	Odour, noise
2	Concrete batching plant[9]	104 Horne Road, Warrnambool	Production of concrete – size of plant production is unclear.	Unknown.	Production of concrete	Dust, noise
Waste facility						
3	Wheelie Waste Pty Ltd	10 Mason Street, Warrnambool 3280	Waste acceptance with glass recycling facility.	9 am to 5 pm on weekdays	Waste transfer station and glass recycling facility	Odour, dust, noise
Water treatment plant						
4	Wannon Water – Warrnambool Water Treatment Plant	18 – 58 Grieve Street, Warrnambool 3280	Water Treatment Plant	24 hours	Water treatment	Odour, noise
Racecourse and equine industries						
5	Warrnambool Racing Club	2/64 Grafton Road, Warrnambool 3280	Racing club	9 am to 5 pm on weekdays	Manure odour and dust from unpaved surfaces	Odour, dust, noise
6	Matthew Williams Racing	418 Wangoom Road, Warrnambool 3280	Training complex	Not specified	Manure odour and dust from unpaved surfaces	Odour, dust, noise
7	Cumberland Equine	516 Wangoom Road, Warrnambool 3280	Equine body therapy and services	Not specified	Manure odour	Odour

[9] Planning application PP2024-0020 received by Warrnambool Council. Based on Council's email response received on 2 August 2024, further information of site layout has also been supplied to GHD by VPA on 3 April 2025, however they have not been endorsed by council.



Legend

- Precinct
- 2 km PSP Buffer



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Victorian Planning Authority

East of Aberline Adverse Amenity Impact Assessment

All identified industries

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FIGURE 3.0

Data Source:

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Created By: Yvonne Lim

4.5.1 Summary of identified industries

A brief company overview and description of the manufacturing process for the above identified industries is provided in this sub-section. The following descriptions are based on GHD's understanding of the process at each industry from a typical industry of the type identified, planning permits, an examination of the facilities' website where available, a roadside site inspection and not through direct contact with local industry or industry bodies.

Non-metallic mineral products

Fulton Hogan Asphalt Batching Plant[10]

Fulton Hogan asphalt batching plant is located at 20 Mason Street, southeast of the Precinct Boundary. The site holds EPA registrations for small glass works reprocessing and a planning permit for construction of footing and slab for glass processing building and aggregate bunkers. Under registration licence R000308489[11], it is licensed to accept waste types:

– Z100: Glass
– Y140: Asphalt

The facility is estimated to operate between 6 am and 3 pm between Monday and Saturday but may operate longer hours based upon client demand. It produces up to approximately 50,000 – 100,000 tonnes per annum (approximately 1,900 tonnes per week) of asphalt. The facility utilises both raw aggregate materials and recycled asphalt pavement materials for asphalt production.

A typical asphalt plant contains silos, storage bins, truck parking area and raw feed stockpiles. Typical operations for an asphalt plant include sand and aggregate are transferred by truck from the on-site stockpiles or bins. Transfer from the bins is typically dried to remove moisture, mixed with the desired aggregate sizes, and stored in hot bins until ready to use. Onsite emission controls include the use of fabric filter and baghouse for the exhaust stack.

During GHD's site visit, active constructions were observed at 20 Mason Street.

Concrete Batching Plant

Rapidmix Concrete operate a concrete batching plant at 104 Horne Road, southeast of the Precinct Boundary. GHD acknowledges that Rapidmix Concrete have been issued a planning permit by Warrnambool Council however endorsed plans have not been issued to date.

VPA has provided a location[12] of the batching plant, further assessment of the plant has been based off this location. However, GHD notes that this location has not been endorsed by council and may have the potential to change in the future. No further relevant information on the size and detail information on the operating activities of the plant have been provided to date.

Waste/Recycling Services

Wheelie Waste Pty Ltd

Wheelie Waste provides waste management and recycling services to local government, commercial, and private customers. Some services include bin hire, recycling and recovery as well as waste treatment and disposal. At 10 Mason Street, Wheelie Waste holds two registration licences for a Waste and resource recovery – small facility. It is a waste transfer station with glass recycling services. At the site visit conducted on the 3 June 2024, a signage at the entrance of this facility indicates that this facility is a glass recycling facility for Warrnambool.

Under registration licence R000307173[13], one of the registration conditions states that it must notify the authority if the volume of waste stored on the activity site exceeds 4,500 m^3 at any time.

[10] More information on https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981
[11] https://www.epa.vic.gov.au/about-epa/public-registers/permissions/public-register-details?id=R000307229
[12] Information provided by VPA in an email dated for the 3 April 2025.
[13] EPA Permission Decision Register website: https://www.epa.vic.gov.au/about-epa/public-registers/permissions/public-register-details?id=R000307173

Under registration licence R000307229[14], it is licensed to accept waste types:

– W_1: Municipal Waste – waste from a municipal kerbside collection
– W_3 Industrial Waste (Commercial and industrial) – Waste from commercial and industrial sources that includes putrescible waste
– Z100: Glass
– Z400: Cardboard
– Z420: Newsprint and magazines
– Z500: Plastics, PIC #1 through #7

Water treatment

Warrnambool Water Treatment Plant

Warrnambool Potable Water Treatment Plant is located at 18 – 58 Grieve Street. It is listed in NPI and classed under "Water Supply, Sewerage and Drainage Services" with the listed main activity of potable water treatment. There is no amenity separation applicable to the potable water treatment plant.

GHD also notes that there is a drinking water storage reservoir operated by Wannon Water located on Dales Road at the southern end of the Precinct. There is no amenity separation applicable to the drinking water reservoir.

Racecourses and equine industry

Warrnambool Racing Club, Matthew Williams Racing and Cumberland Equine have the potential for odour emissions from waste materials such as manure, washdown water and dust emissions from any unpaved surfaces. There is no amenity separation applicable to the equine industry. The racecourse will be required to mitigate their odour and dust impacts with the following likely controls to form part of any management plan for the facility:

– Frequent (daily) removal of solid/liquid waste
– Temporary storage of waste would be in storage bins with lids
– The bins will be kept clean when not in use
– Stables washed down on daily basis
– Wash down water likely to be drained to subsurface drains and foul water drains

A brief summary of Warrnambool Racing Club, Matthew Williams Racing and Cumberland Equine are presented as follows:

– Warrnambool Racing Club is located at 2/64 Grafton Road, southwest of the Precinct boundary. The club hosts up to 18 race meetings a year.
– Matthew Williams Racing is a training complex located at 418 Wangoom Road, north of the Precinct boundary, which can accommodate up to 40 horses.
– Cumberland Equine is located at 516 Wangoom Road, north of the Precinct Boundary and it provides equine body therapy and services.

In addition, there are two disused dairy ponds to the north of the Precinct. These are just clean water ponds with no impact from an odour perspective.

[14] EPA Permission Decision Register website: https://www.epa.vic.gov.au/about-epa/public-registers/permissions/public-register-details?id=R000307229

4.6 Transport and civil infrastructure related sources

4.6.1 Vehicle emissions

The main potential concern from roads on air quality is vehicle exhaust 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[15]:

– 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[16] of air quality near major roads in Melbourne 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

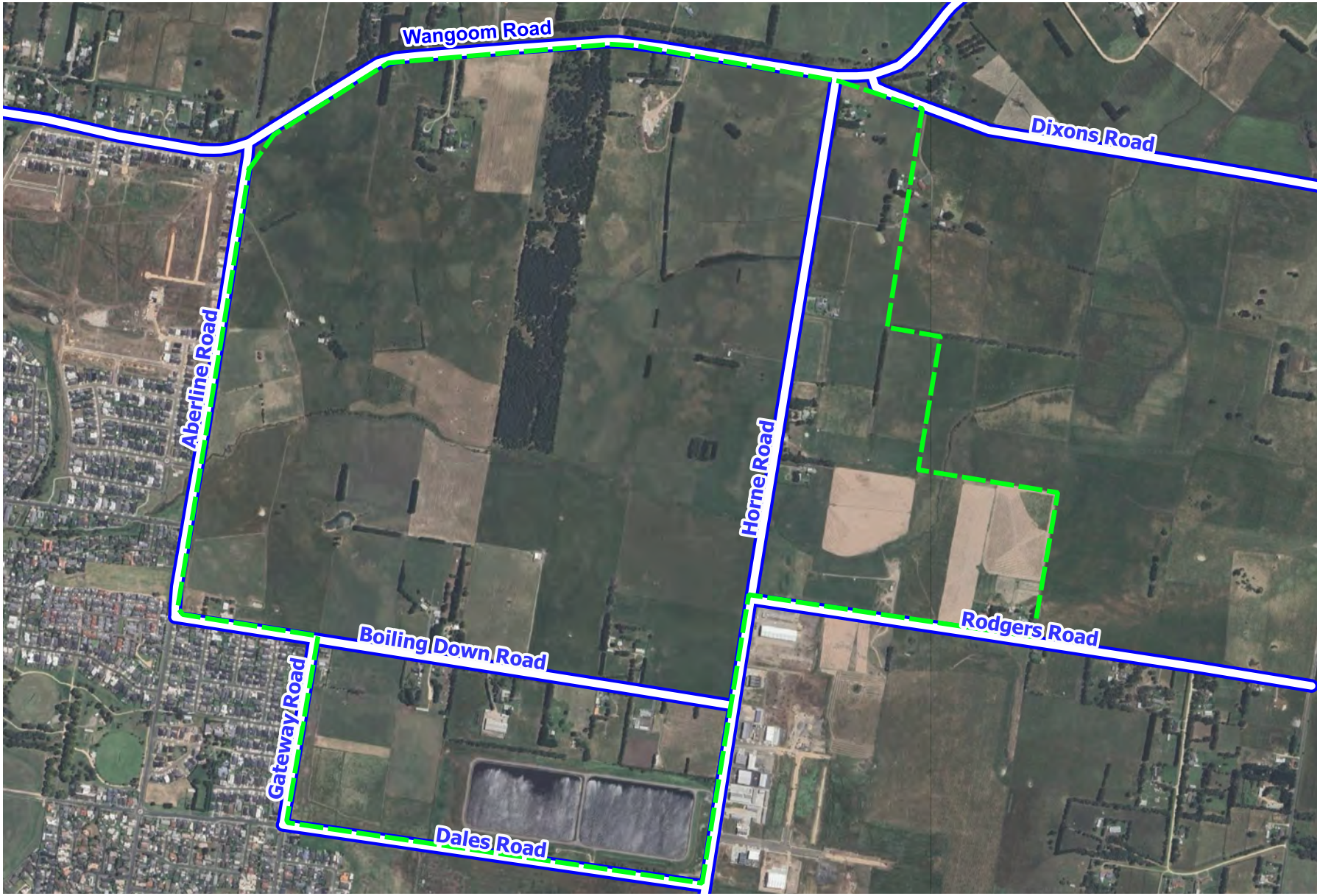
Further, there is currently a parliamentary inquiry into the Health Impacts of Air Pollution in Victoria, with one of the focus areas being vehicle emissions. The report prepared as part of the inquiry notes that heavy vehicles, diesel vehicles and idling of vehicles have the largest impact on air quality. 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.

The transport sources in which vehicle exhaust emissions have the potential to affect the air quality of the Precinct are summarised in Table 4 and displayed in Figure 4. There are no current traffic count data for the roads within and bounding the Precinct presented in Table 4, which typically means that the traffic volume is low.

Table 4 Main vehicle exhaust emission contributors

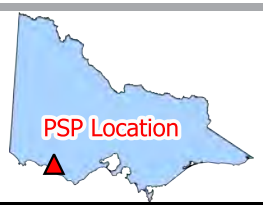
Road names	Location relative to Precinct boundaries
Wangoom Road	Bordering north of Precinct boundary
Horne Road	Within Precinct and extends to east of Precinct boundary
Dixons Lane	North of Precinct boundary
Rodgers Road	Bordering east of Precinct boundary
Boiling Down Road	Within Precinct
Dales Road	Bordering southern Precinct boundary
Gateway Road	Bordering western Precinct boundary
Aberline Road	Bordering western Precinct boundary

[16] 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



Legend

- Precinct
- 2 km PSP Buffer
- Roads



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East of Aberline Adverse Amenity Impact Assessment

Main vehicle exhaust emission sources

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Date. **04/09/2024**

FIGURE 4.0

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4.6.2 Noise and vibration from transport sources

Major transport sources of noise and vibration may impact on future sensitive developments from the following transport associated (mobile) activities and air traffic within and surrounding the Precinct, as shown in Table 5.

A brief overview and description of the major identified noise and vibration sources is provided below.

Princes Highway

The Precinct does not have arterial roads that carry a high volume of road traffic. Description of roads within and adjacent to the Precinct can be found in the previous section. There are also no busy roads close to the Precinct. There are no current traffic count data[17] for the roads within and bounding the Precinct, which typically means that the traffic volume is insignificant.

Princes highway, which is classified as an arterial road, carries 17,000 AADT with 10% of heavy vehicles. It is separated from the southern boundary of the precinct by approximately 770 m buffer.

This is expected to be the major transport noise contributor at the southern boundary of the Precinct due to the relatively large volume of daily traffic.

Warrnambool V-Line

The Warrnambool V-Line is located further south from the Princes Highway and the Precinct. Separation buffer is even greater than for the highway. The rail is not characterised by substantial amount of vehicles movement. The rail line is scheduled to reopen at the end of August 2024 following Waurn Ponds duplication, rail noise impact is not expected to be significant with separation buffer exceeding 800 m.

Warrnambool Airport

The Precinct is located at significant separation distance from Warrnambool Airport (more than 8 km). Recent Australian Noise Exposure Forecast (ANEF) contours for the airport are not assessed, perhaps due to low number of flights and expected noise impact. ANEF assessment was performed in 2002 for the Council and VIC Department of State and Regional Development (Warrnambool Regional Airport: Airport Development Plan, AirPlan, Feb. 2002). The assessment shows that ANEF 20 contours are close to the airport runways (refer to section 6.4.5 for details on aircraft noise). Taking into account the substantial separation buffer to the Precinct, it is unlikely that current or future operations of the airport will represent a risk for amenity of the Precinct. If the airport will expand their operations, it should be confirmed that buildings developed within the Precinct are acceptable for noise sensitive uses such as residential, accommodation, educational and health uses in accordance with the AS 2021 and Warrnambool planning provisions. The potential for impact from aircraft noise on the Precinct has not yet been established, and it is not known whether specific noise mitigation measures to manage noise will be required.

Table 5 Identified transport noise sources

Source	Location	Operations	Operating hours	Potential sources of amenity impact	Primary concern	Location
Princes Highway	To the south of the Precinct	Freeway	Constant	Vehicle noise	Noise	Outside Precinct
Warrnambool-Geelong rail	To the south of the Precinct	Rail	TBC	Rail noise	Noise	Outside Precinct
Warrnambool Airport	Northwest of the Precinct	Local airport	N/A	Aircraft noise	Noise	Outside Precinct

[17] To identify freeway and arterial roads, GHD refers to The Department of Transport open data portal https://vicroadsopendata-vicroadsmaps.opendata.arcgis.com/datasets/traffic-volume/explore?location=-38.368163%2C142.533927%2C14.92 For roads without a count generally indicates the roads are not Arterial or busy roads. This road planning classification is not listed in any traffic standards, but is useful to understand classification of non-arterial roads. https://planning-schemes.app.planning.vic.gov.au/Victoria%20Planning%20Provisions/ordinance/56.06

5. Amenity impact assessment

5.1 Legislation and guidelines

5.1.1 Environment Protection Act 2017

EPA Victoria implemented a new legal framework which came into force on 1 July 2021, with the intention for this framework to drive environmental improvements in industrial operations. The cornerstone of the Environment Protection 2017 (Act) is the general environmental duty (GED). The GED requires all Victorian businesses and individuals to prevent and minimise harm to the environment and human health as far as reasonably practicable. Any new or existing plant or development will be required to meet the GED. The expectation is that individuals will manage their activities to avoid the risk of environmental damage. There is also a requirement to quickly and appropriately respond if pollution does occur.

For businesses already managing their environmental risks, the GED generally means little to no change to how they operate. Most businesses already follow good management practices. This will make complying with the GED easier. EPA Victoria has committed to working with industry to help them understand how to fulfil their obligations, by providing guidance, advice and other support. Complying with the GED is about taking reasonable proactive steps and employing good environmental work practices. Compliance with the GED can be through following responsibilities under occupational health and safety (OHS) laws, meeting industry standards, adopting industry better management practices, and following other relevant legislation related to the environment. In effect, the GED makes it clear that it is the individual businesses' responsibility to reduce risk to the environment and to protect it.

5.1.2 Environment Reference Standard

The EP Act's environment protection framework includes the Environment Reference Standard (ERS). This identifies environmental values, air indicators and objectives that set the benchmark for the quality of the air environment needed to protect environmental values. The environmental values identified include:

- Life, health and wellbeing of humans
- Life, health and well-being of other forms of life, including the protection of ecosystems and biodiversity
- Local amenity and aesthetic enjoyment
- Visibility
- The useful life and aesthetic appearance of buildings, structures, property and materials
- Climate systems that are consistent with human development, the life, health and well-being of humans, and the protection of ecosystems and biodiversity

The ERS is a reference standard, not a 'compliance standard' for businesses i.e. it relates to ambient air and not any individual facility. The ERS replaces SEPP (AQM) and generally adopts the objectives in the National Environment Protection Measure (Ambient Air Quality) (NEPM AAQ) with some modifications.

The following air quality indicators, and resepctive objectives, relevant to this assessment are outlined below:

- Particles as PM_{10} (maximum concentration)
  - 50 µg/m^3 for an averaging period of one day
  - 20 µg/m^3 for an averaging period of one year
- Particles as $PM_{2.5}$ (maximum concentration)
  - 25 µg/m^3 for an averaging period of one day
  - 8 µg/m^3 for an averaging period of one year
- Nitrogen Dioxide (maximum concentration)
  - 0.08 ppm for averaging period of one hour
  - 0.015 ppm for averaging period of one year

– Sulfur dioxide (maximum concentration)
  - 0.075 ppm for averaging period of one hour
  - 0.02 ppm for averaging period of one day
– Odour
  - An air environment that is free from offensive odours from commercial, industrial, trade and domestic activities

5.1.3 EPA Publication 1961

EPA Publication 1961 Guideline for Assessing and Minimising Air Pollution provides businesses and risk assessors with a framework for evaluating and minimising air pollution in accordance with the requirements of the GED.

This guideline forms part of Victoria's environmental protection framework that establishes the state of knowledge to protect the environmental values of the ambient air environment. The guideline describes the General Environmental Duty (GED) which requires anyone engaging in any activity that may give rise to risks of harm to human health or the environment from pollution or waste to minimise those risks, so far as reasonably practicable.

As such, emitters of pollution to air have a responsibility to put in proportionate controls to eliminate or minimise risks to human health or the environment. Being proportionate and preventative requires duty holders to:

– Understand their risks
– Actively seek out ways to eliminate or minimise these risks, so far as reasonably practicable
– Ensure any risks remaining after the implementation of all controls are within acceptable limits

The purpose of the guideline is to provide a framework to assess and control risks associated with air pollution. However, EPA Publication 1961 does not address odour or nuisance dust. These are dealt with via EPA Publications 1943 and EPA Publication 1883.

5.1.4 Separation distance 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.

5.1.4.1 Clause 53.10 – Threshold distances

Victorian Planning Schemes seek to ensure that planning resolves and does not create land use conflicts. This is typically acheived 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 with no threshold distance specified or if the threshold distacne is not to be 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*.

5.1.4.2 EPA separation distances (Publication 1518 and Separation Distance Guideline 2024)

In the case of an existing industrial use, the EPA recommends buffer distances should be considered when preparing a planning scheme, planning scheme amendment or planning permit application. A buffer distance is a planning instrument used to provide separation of sensitive land uses (i.e. residential, schools, hospitals) from existing premises with the potential for off-site emissions (odour or dust) that can cause dis-amenity in the event of unintended emissions. The use of separation distances can:

– Prevent land use conflict
– Help protect the health and amenity of sensitive land uses
– Minimise risks and mitigate odour and dust impacts from certain industries and activities
– Help protect industrial and commercial land uses and activities
– Provide local government, industry, developers and the community with some certainty about future land use

Recent advice from EPA regarding Separation Distance Guideline 2024 noted that the separation distances are not a substitution for pollution controls. The industry should still be minimising risks of odour and dust so far as reasonably practical based on the current state of knowledge in that sector, (i.e., meeting the GED for that sector). Therefore, the separation distance is not a substitution for pollution controls and complying with the GED.

The purpose of the EPA separation distance guideline is to provide recommended minimum separation distances between odour or dust emitting industrial land uses and sensitive land uses. The guideline is to support land use and development decisions that:

– Protect the community from human health and amenity risks associated with unintended offsite odour and dust impacts generated by industry
– Protect industry from inappropriate land use and development nearby that may constrain operations

In the case of the Precinct, the EPA recommended separation distance guideline (Separation Distance Guideline 2024) will apply to existing industries in and surrounding the Precinct. GHD notes that one major change between the two publications is that EPA Publication 1518 seeks to protect for upset conditions while the latest Separation Distance Guideline 2024 seek to protect for routine operations.

Note that noise, vibration, ambient and hazardous air pollutants, and light spill are not considered in the separation guideline

5.1.4.3 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 EPA 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*

5.1.4.4 Summary

The use of the *EPA Guideline – Separation Distance Guideline (August 2024)* is the preferred approach to determining suitable separation distances between existing industrial and proposed new sensitive uses. GHD notes that this guideline supersedes Publication 1518: *Recommended Separation Distances for industrial residual air emissions 1518 (March 2013)* which has been included as a reference during this assessment.

5.1.5 Risk assessment guidelines

5.1.5.1 EPA Publication 1943

Section 13.7 of EPA Publication 1961 describes a nuisance dust risk assessment and directs the user to the *EPA Publication 1943 Guidance for Assessing Nuisance Dust*. Nuisance dust is different to the air pollutants of particulate matter such as PM_{10} which are assessed under the health criteria within EPA Publication 1961. Nuisance dust generally comprises larger dust particles which create visible impacts when emitted.

The purpose of Publication 1943 is to:

– "Provide methods for assessing the impacts of nuisance dust on human health and wellbeing, including site specific risk assessment methods" (EPA 2022)
– "Provide guidance on what to include in any report relating to the assessment of nuisance dust in Victoria" (EPA 2022)

The agent of change has the responsibility to assess the risk of nuisance dust, with the following responsibilities:

– Consider their obligations under the GED including the implications of the proposal on human health and amenity
– Avoid land use conflict
– Ensure potential impacts on nearby land uses are appropriately mitigated and managed

EPA Publication 1943 uses four-steps to assess the risk of nuisance dust impacts from an emission source, as follows:

– Step 1: Dust source hazard potential
– Step 2: Exposure pathway effectiveness
– Step 3: Receiving environment sensitivity
– Step 4: Overall risk of dust impacts (combining steps 1 to 3)

The publication allocates a quantitative value to the outcome of each assessment step, to obtain an overall level of risk encompassing each aspect. The allocations are selected for several components contributing to the risk factor in each step, using the examples given by EPA.

5.1.5.2 EPA Publication 1883

Publication 1883 provides information on how to assess the risk posed by odour emission sources and to understand the receiving environment where effects might occur. This guidance is focused on the assessment of odour under the provisions of the EP Act, including the GED, which requires all Victorians to take precautionary and reasonable actions to avoid hazards causing harm. The guideline is primarily intended for government, the planning sector, practitioners, and specialists, who need to understand offensive odours that are associated with a development proposal, investigation, or study where an odour assessment is required. Risk assessment is related to whether the risk of harm can be easily understood through the assessment framework. The publication provides a framework for three levels of risk assessment, according to the odour impact potential of an industry or site. Publication 1883 is to be utilised once an assessment of the separation distance has been undertaken to assess for any potential constraints. The three levels of assessment include:

– Level 1 – Gateway assessment of emissions duration, wind direction and cumulative odour sources
– Level 2 – Source-Pathway-Receptor assessment
– Level 3 – Detailed risk assessment that could include:
    - Comparisons with similar operations or case studies
    - Risk assessment using field odour surveillance data
    - Complaint assessment
    - Community odour surveys/questionnaires and odour diaries

5.2 Separation distance assessment

The industrial premises and uses identified in Section 4.5 to have the potential to emit odour, dust, noise, or vibration, within a 2 km radius of the Precinct are assessed against EPA Publications 1518 and Separation Distance Guideline 2024, and threshold distances under Clause 53.10 applicable to the identified industries are also presented as a reference.

The industrial premises and uses identified in Section 4.5 which attract separation distances under EPA publications 1518 and Separation Distance Guideline 2024 are summarised in Table 6 and presented in Figure 5. Industrial premises which have the potential for odour/dust impact but do not attract separation distances are also presented in Table 6.

Industries with separation distances

Fulton Hogan Asphalt Batch Plant (separation distance of 1,000 m for odour and 250 m for dust)

Fulton Hogan asphalt batching plant is located at 20 Mason Street, southeast of the Precinct Boundary. The site holds EPA registrations for small glass works reprocessing and a planning permit for construction of footing and slab for glass processing building and aggregate bunkers.

Based on publicly available information[18], it is understood that the asphalt plant produces up to approximately 50,000 – 100,000 tonnes per annum (approximately 1,900 tonnes per week) of asphalt. Approximately 5,000 tonnes per annum of glass is crushed and screened at the site, in which approximately 2,000 tonnes per annum of the glass is reused in asphalt. The proposed facility utilises both raw aggregate materials and recycled asphalt pavement materials for asphalt production. During GHD's site visit, active constructions were observed at 20 Mason Street. No construction activities were observed at 80 Rodgers Road.

[18] Development Licence application available at https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981

Separation distance for odour

The potential amenity impact from the asphalt plant relates to odour. The previous EPA separation distance applicable for Fulton Hogan asphalt plant in Publication 1518 recommends a 500 m separation distance. The new Separation Distance Guideline 2024 updates the recommended separation distance for asphalt plant with a production greater than 100 tonnes per week to 1,000 m.

Separation distance for dust

The potential amenity impact for glass re-processing works to be undertaken at the site relates to dust. GHD considers it appropriate to be classified under “Materials recovery and recycling facility” as the site collects, processes, stores and recycles glass for asphalt production. The separation distance applicable for glass re-processing activity is 250 m.

It is expected that the asphalt plant has appropriate odour and dust controls in place during current operations.

Rapidmix Concrete –concrete batching plant (separation distance 100 m for dust)

Under Separation Distance Guideline 2024, a 100 m separation distance for concrete batching plant which produces greater than 5,000 tonnes per year of concrete is required. As no information is available during the time of assessment, GHD has assumed that the concrete batching plant produces 5,000 tonnes per year and that a separation distance of 100 m applies.

Wheelie Waste (separation distance of 500 m for odour and 250 m for dust)

Separation Distance Guideline 2024 specify a 500 m separation distance in relation to odour for Transfer station accepting organic/putrescible wastes. Given the facility is primarily a glass recycling facility, GHD considers odour to be minor however given the site is licensed to accept a small amount of putrescible waste GHD has applied the odour separation distance to be conservative.

Publication 1518 and Separation Distance Guideline 2024 specify a 250 m separation distance in relation to dust for Transfer station “material recovery and recycling facilities” which involve collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials.

GHD has applied a separation distance of 250 m for dust and 500 m for odour to Wheelie Waste at 10 Mason Street.

Industries with no separation distances

Warrnambool water treatment plant

There is no amenity separation applicable to potable water treatment plant and no separation distance has been applied.

Racecourse and equine industries

There is no amenity separation applicable to the racecourse and equine industry and no separation distance has been applied.

5.2.1 Separation distances encroaching the Precinct

The separation distances should be scribed from the envelope of potential sources within the premises as per the EPA separation guidelines (Method 1 – Urban method). GHD notes that the separation distances should be drawn from the activity boundary relevant to that separation distance, based on aerial imagery and site layouts provided by VPA, separation distances has been scribed from the activity boundary.

In total, two industries with separation distances encompassing the southeast area of the Precinct were identified. The two industries with their separation distances are displayed in Figure 5.

The impact of each of the identified separation distances can be seen in Table 6 and displayed in Figure 6.

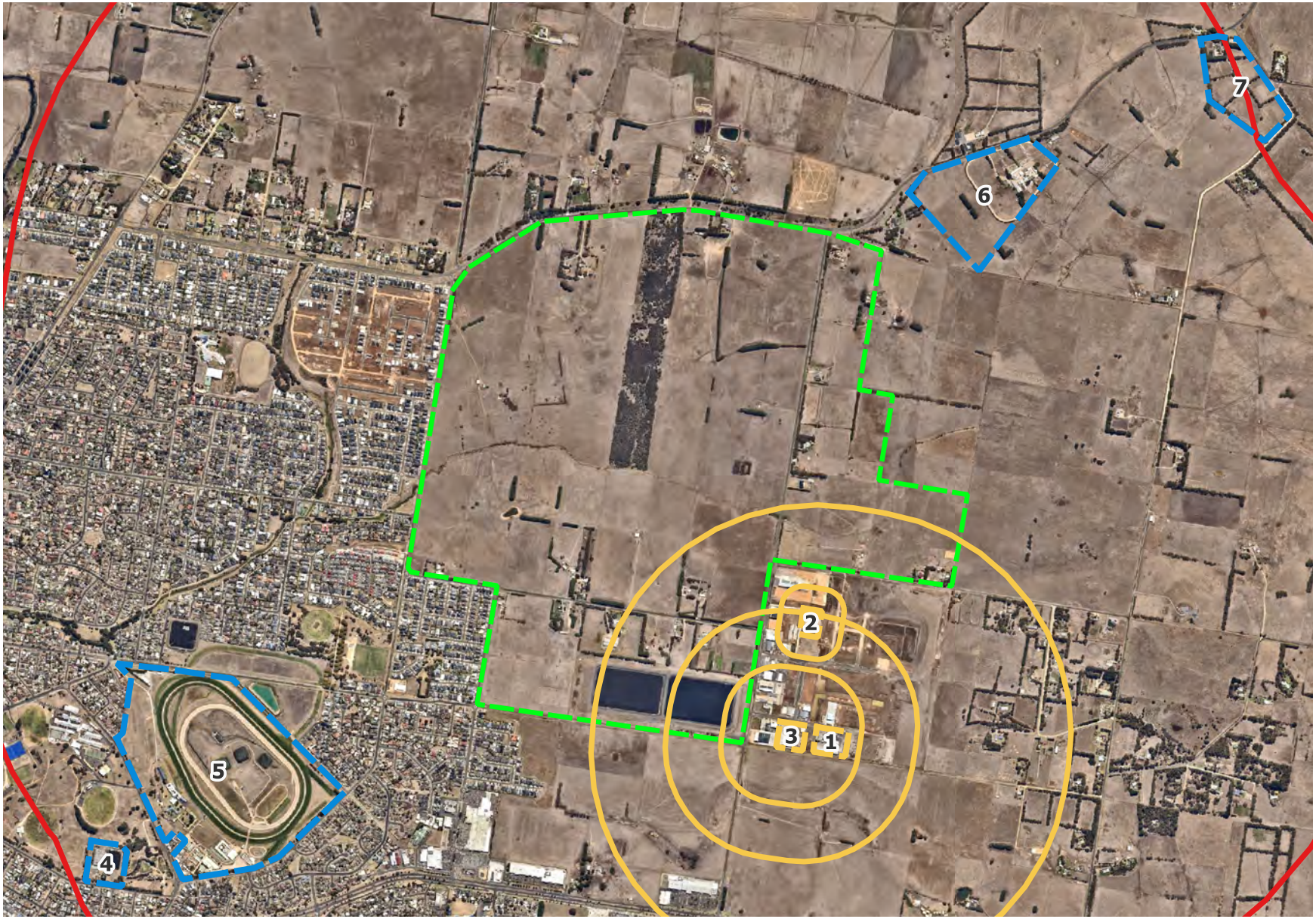
Based on Figure 6, the following are observed:

– The separation distance for odour from the asphalt plant encompasses the southeast area of the Precinct by a maximum of 662 m from the east of the Precinct boundary. Its separation distance for dust does not encompass the Precinct.
– The Waste facility (Wheelie Waste) 500 m separation distance for odour encompasses the southeast area of the Precinct by a maximum of 290 m from the east of the Precinct boundary. The 250 m separation distance for dust marginally encompasses the southeast area of the Precinct by approximately 94 m.

Table 6 Default separation distances for identified industries

ID	Company	Industry type and activity/definition	EPA 1518 Guideline separation distance (m)	Separation distance guideline 2024 (m)	Clause 53.10	Applied Separation distance	Impact Precinct (Y/N)
Non-metallic Mineral Products							
1	Fulton Hogan Pty Ltd –asphalt batch plant	**ODOUR** Hot mix asphalt batching plant	500 m For asphalt production of >100 tonnes per week	1,000 m For asphalt plants which have >100 tonnes of production per week. 250 m For glass re-processing activities - classified under “Materials recovery and recycling facility for collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials”.	1,000 m For bitumen batching plants a 1,000 m separation distance is applied.	1,000 m	Y
2	Rapidmix Concrete – concrete batching plant	**DUST**	100 m For concrete production of >5,000 tonnes per year	100 m For concrete production of >5,000 tonnes per year.	300 m For concrete production of >5,000 tonnes per year.	100 m	N

ID	Company	Industry type and activity/definition	EPA 1518 Guideline separation distance (m)	Separation distance guideline 2024 (m)	Clause 53.10	Applied Separation distance	Impact Precinct (Y/N)
Waste facility							
3	Wheelie Waste Pty Ltd	**ODOUR** Transfer station	250 m Transfer station	500 m Transfer station	500 m Transfer station (other than Automated collection point and Container deposit scheme centre) – accepting organic wastes.	500 m	Y
		DUST Glass recycling facility – Collection and storage of glass waste.	Case by case Collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials.	250 m Classified under Materials recovery and recycling facility for collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials	200 m Transfer station	250 m	Y
Water Treatment Plant							
4	Warrnambool	**ODOUR** Potable water treatment	NA	NA	NA	NA	NA
Racecourse and equine industries							
5	Warrnambool Racing Club	**ODOUR/DUST** Racecourse	NA	NA	NA	NA	NA
6	Matthew Williams Racing	**ODOUR/DUST** Training facility	NA	NA	NA	NA	NA
7	Cumberland Equine	**ODOUR** Equine body therapy and services	NA	NA	NA	NA	NA



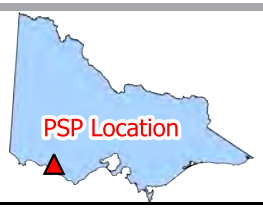
Legend

Precinct boundary

- Precinct
- 2 km PSP Buffer

Identified industries

- Industries which attract separation distances
- Industries which do not attract separation distances
- Default separation distances



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Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54S

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GHD

Victorian Planning Authority

East of Aberline Adverse Amenity Impact Assessment

Default separation distances from identified industries

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FIGURE 5.0

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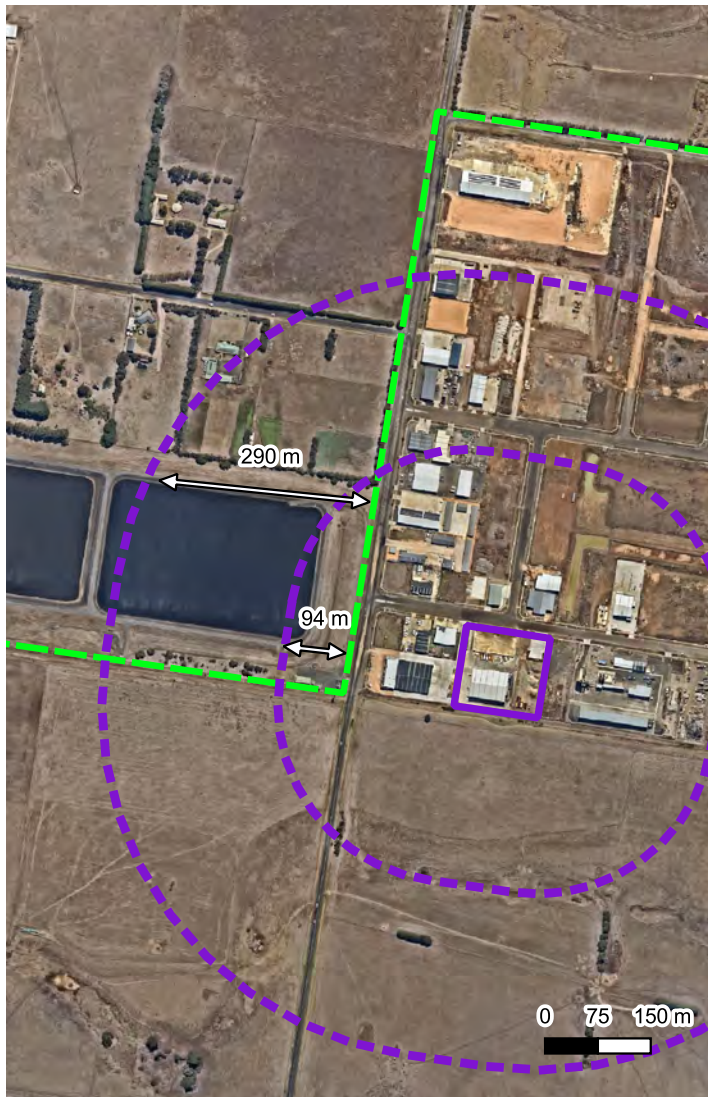
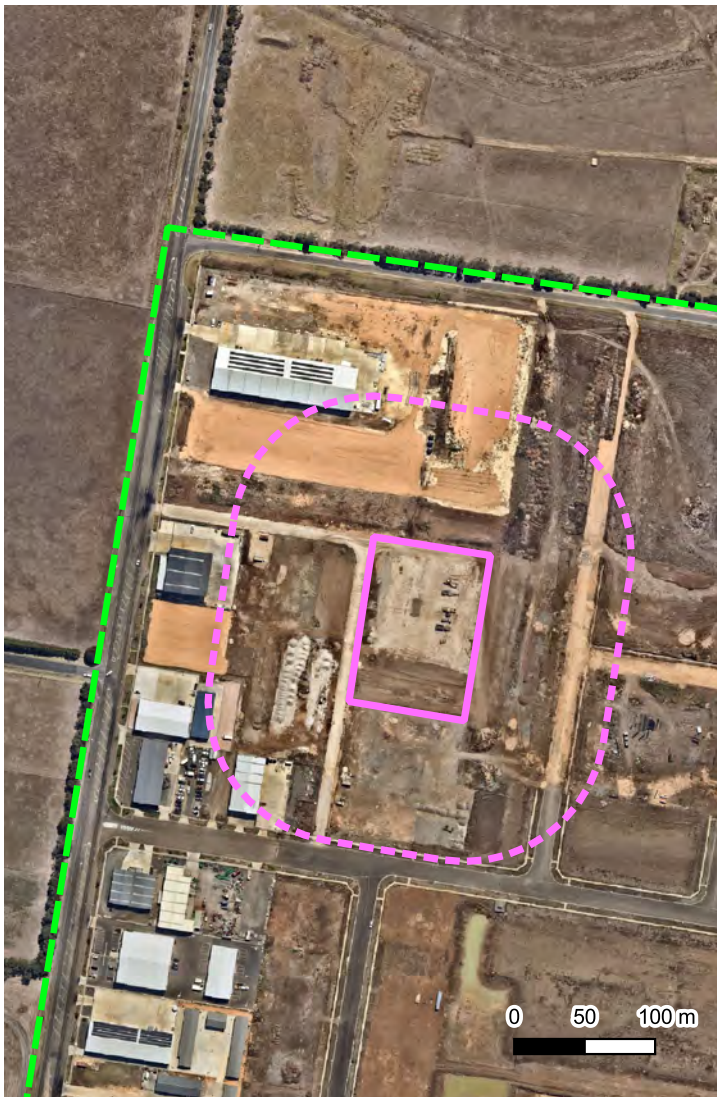
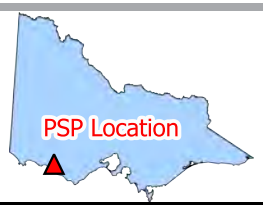
Proposed asphalt plant - Fulton Hogan
(separation distance: 1000 m (Odour))
(separation distance: 250 m (Dust))



Waste facility - Wheelie Waste
(separation distance: 500 m (Odour))
(separation distance: 250 m (Dust))



Concrete Batching Plant - Rapidmix Concrete
(separation distance: 100 m (Dust))



Legend

Precinct boundary

Precinct

Paper Size ISO A4

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54S

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Victorian Planning Authority

East of Aberline Adverse Amenity Impact Assessment

Default separation distances encroaching the Precinct

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FIGURE 6.0

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5.2.2 Future uses

Review of the Engage Victoria website and EPA website, at the time of preparing this report, indicates that there are no new uses proposed for the area that were seeking EPA approvals.

GHD notes that any future changes to the sites, which may impact the buffers will be subjected to further assessment through relevant departments or agencies: guidance and practice notes, strategies or documents.

As per EPA guidance 1518 and Separation Distance Guideline 2024, 'it should be the responsibility of the 'agent of change' to provide evidence to the planning authority or other responsible authorities that a variation from the recommended separation distances is appropriate. The 'agent of change' is the proponent of the land use that will give rise to the consideration of separation distances. In this case, as the Industrial Zone exists, then any future zoning changes to the Precinct to contain sensitive uses would be the 'agent of change' and development needs to accommodate the industrial zone.

GHD also notes that the Industrial 3 zoned (IN3Z) land to the east of Precinct is generally zoned to provide a buffer between Industrial 1 Zone or Industrial 2 Zone and local communities as these industrial zones normally contain heavy types of industries requiring large separation distances. This strategy to zone IN3Z seeks to allow for industries and associated uses compatible with the nearby communities. Therefore, GHD considers it unlikely that industries requiring large separation distances will be approved in this IN3Z land.

5.3 Risk assessment

Given the separation distance assessment results presented in Section 5.2, two industries were identified to have separation distances that encroach the Precinct. This means that there are risk of odour or dust impacts from the two identified industries. The risks of odour or dust will need to be further assessed in accordance with EPA Publication 1883 *Guidance for Assessing Odour* and EPA Publication 1943 *Guidance for Assessing Nuisance Dust* to understand the nature and impact of potential odour/dust emissions from the identified industries and ultimately understand the overall risk to amenity impact from these industries.

The odour and dust risk assessments will entail source-pathway-receptor assessments (S-P-R) which allow for a prediction of the odour or dust impact based on the 'magnitude of source release, the effectiveness of the pathway and sensitivity of the receptor'. The following risks assessments are undertaken for the identified industries:

– Odour risk assessments on Fulton Hogan Asphalt Plant, and Wheelie Waste (glass waste recycling and transfer station)
– Dust risk assessments on Wheelie Waste (glass waste recycling and transfer station)

It is to GHD's knowledge that an Air Quality Impact Assessment[20] was undertaken by a third party – Airlabs Environmental to support the Development Licence application for the asphalt plant at 20 Mason Street, Warrnambool. The assessment assessed the potential impacts of typical air emissions from the asphalt plant on its receiving environment. The overall findings of this assessment are summarised in Section 5.3.3 of this report.

5.3.1 Odour risk assessment

Two industries, Fulton Hogan Asphalt Plant and Wheelie Waste, were identified in Section 5.2.1 to have separation distance that encroaches the Precinct. As such, odour risk assessment has been undertaken for each of the identified industry using the Level 2 odour risk assessment (S-P-R assessment) in accordance with EPA Publication 1883.

[20] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to Appendix F of the Development Licence Application.

The Level 2 odour risk assessment (S-P-R assessment) uses a source/pathway/receiving environment tool to assess the level of risk from the odour source. This is a qualitative method; however the outcome of the assessment is quantified with the use of scores determined by the EPA. The scoring of the assessment outcome is based on three attributes:

– Hazard potential of the source (odour source score – OSS)
– Exposure pathway between the source and sensitive locations (odour pathway score – OPS)
– Sensitivity of the receiving environment (odour receiving environment score – ORS)

GHD has applied the steps and tools in the S-P-R assessment for odour risk for Fulton Hogan Asphalt Plant, and Wheelie Waste that have separation distances which encompass the Precinct.

The outcome of the Level 2 odour assessment for each industry identified is summarised in Table 7 while the detailed assessment can be found in Appendix B to Appendix C.

Table 7 Summary of Source-Pathway-Receptor Assessment (odour) for identified industries

Industries	OSS	OPS	ORS	Overall Score	Rating	GHD Comments
Fulton Hogan Asphalt Plant	2	2	3	7	Low	Level 3 odour risk assessment has been undertaken by third party, see Appendix B-5 for more information. The Level 3 assessment concluded that obvious odour is unlikely to be observed beyond 350 m from the proposed plant and the low frequency of easterly winds, which would place the sensitive receptors downwind of the proposed plant, further reduces the frequency of odour impacts on the potential sensitive receptors at the Precinct. Based on the Level 3 odour risk assessment results, GHD considers the odour risk to sensitive receptors in the Precinct to be 'Low'. This assessment supports the risk as 'Low' as per the Level 2 assessment.
Wheelie Waste	2	2	3	7	Low	No further assessment required

5.3.2 Nuisance dust risk assessment

The Wheelie Waste glass recycling facility was identified in Section 5.2.1 to have separation distance that encroaches the Precinct. As such, nuisance dust risk assessment has been undertaken using the S-P-R assessment in accordance with EPA Publication 1943.

EPA Publication 1943 uses four-steps to assess the risk of nuisance dust impacts from an emission source, as follows:

– Step 1: Dust source hazard potential
– Step 2: Exposure pathway effectiveness
– Step 3: Receiving environment sensitivity
– Step 4: Overall risk of dust impacts

EPA Publication 1943 allocates a quantitative value to the outcome of each assessment step, to obtain an overall level of risk encompassing each aspect.

GHD has applied the steps and tools in the S-P-R assessment for nuisance dust risk for Wheelie Waste glass recycling facility and the concrete batching plant. The outcome of the S-P-R assessment identified is summarised in Table 8 while the detailed assessment can be found in Appendix D.

Table 8 Summary of Source-Pathway-Receptor Assessment (dust) for identified industries

Industries	S	P	R	Overall Score	Rating	Separation Distance Guideline 2024 explanation
Wheelie Waste	5	7	8	20	Moderate. However, the Precinct area encompassed by the separation distance for dust from Wheelie Waste is where the water treatment ponds are located. As such, GHD considers that the dust impact on sensitive receptors within the Precinct to be "Low".	Dust impacts only likely to occur on rare occasions. As the Low area only extends to the water treatment ponds, dust impacts are considered to be not likely to any sensitive receptors.

5.3.3 Impacts of other air emissions

The Air Quality Impact Assessment[21] undertaken by a third party – Airlabs Environmental in 2021 assessed the impacts of air emissions which are typically expected to be discharged into air from an asphalt plant. The emissions assessed were particulate matter (PM_{10} and $PM_{2.5}$), SO_2, CO, NO_2, lead, acetaldehyde, benzene, formaldehyde, toluene, xylene, arsenic, cadmium, chromium copper, manganese, mercury, nickel and zinc from baghouse stack, asphalt loadout and silo filing, and particulate matter from stockpiles as fugitive emissions. Results from the modelling indicated that the incremental impacts from the proposed facility only at the nearest sensitive receptors were well below the relevant assessment criteria. The cumulative impact (facility plus background levels) also showed compliance for all of the modelled pollutants at all identified receptors. It is noted that the cumulative impacts are significant, 91.2% and 97.4% of the criterions for 24-hour averaged PM_{10} and $PM_{2.5}$ respectively. This is due to elevated background levels of particulates observed across the air monitoring stations adopted. This is considered conservative as the background levels observed at the monitoring stations are likely to be significantly higher than what would typically be expected of background levels at Warrnambool and its surrounds leading to worst case results.

The overall findings of the impact assessment concluded that air emissions from the asphalt plant are unlikely to cause any significant air quality impacts to the surrounding area, including the Precinct, with respect to inhalation impacts to human health. The proposed air quality controls are also considered to be in accordance with the GED and commensurate with the level of risk from the asphalt plant.

5.4 Variation to separation distance

Based on the risk assessment undertaken in Section 5.3 for the two industries with separation distances which encroach the Precinct, a variation to separation distance has been proposed. A summary of the applied varied separation distance has been summarised in Table 9 with further details in Section 5.4.1 to 5.4.2.

Table 9 Varied Separation Distance

Industries	Amenity Impacted	Separation Distance Guideline 2024 – Default Separation	Varied Separation Distance	Rationale
Fulton Hogan Asphalt Plant	Odour	1,000 m	350 m	Based on Level 2 and 3 risk assessments in accordance with EPA Publication 1883. See Section 5.4.1
Wheelie Waste	Odour	500 m	155 m	Based on Level 2 risk odour assessment in accordance with EPA Publication 1883 and S-P-R risk assessment in accordance with EPA Publication 1943. See Section 5.4.2
	Dust	250 m	155 m	

[21] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to Appendix F of the Development Licence Application.

5.4.1 Fulton Hogan asphalt plant

5.4.1.1 Odour risk

During the site visit conducted on 3 June 2024, active construction was observed at 20 Mason Street. The odour risk assessment is undertaken based on the activities proposed to be undertaken at 20 Mason Street when the plant becomes operational.

The Level 2 odour risk assessment concludes that the Fulton Hogan Asphalt Plant has a 'Low' odour risk. Given the Level 2 odour risk assessment results in a low risk, the EPA Publication 1883 does not require further odour risk assessment.

It is to GHD's knowledge that an Odour Assessment[22] (equivalent to a Level 3 odour assessment) and a "Response to Warrnambool City Council re Odour Assessment"[23] were undertaken by a third party – Air Odour and Compliance Specialist (AOC) to support the Development Licence application for the asphalt plant at 20 Mason Street, Warrnambool.

The odour assessment was undertaken at a reference plant, which has a considerably higher throughput than the proposed facility, to determine the extent of the odour plume from a similar asphalt plant. The overall finding of the odour assessment was that obvious odour related to asphalt plant, that was mainly transient, could be detected within 350 m radius of the reference plant and no odour was detected beyond 350 m from the reference plant. Further, there were no odour complaints from the established sensitive receptors 370 m – 400 m from the reference plant.

Applying the odour assessment findings to the asphalt plant site at 20 Mason Street, the assessment concluded that obvious odour is unlikely to be observed beyond 350 m from the plant. The low frequency of easterly winds, which would place the sensitive receptors downwind of the plant, further reduces the frequency of odour impacts on the potential sensitive receptors at the Precinct. This supports a reduced varied separation for the facility to 350 m.

Figure 7 shows the area within 350 m radius from the asphalt plant boundary where obvious odour related to asphalt plant is likely to be observed. The area where obvious odour is likely to be observed marginally encompasses the southeast area of the Precinct where the water ponds are located. Based on the Level 2 and 3 odour risk assessment results, GHD considers the odour risk to the Precinct to be 'Low'.

A 'Low' risk rating means that the risk of odour nuisance is likely to be minimal for sensitive uses (proposed) within the recommended default 1,000 m separation distance. As such sensitive uses can be established within the default separation distance within the Precinct, as the default separation distance can effectively be varied to 350 m based on the Level 2 and 3 risk assessments. Figure 7 shows the varied 350 m separation distance.

5.4.1.2 Other air emissions

The Air Quality Impact Assessment assessed the impacts of air emissions which are typically expected to be discharged into air from an asphalt plant. The overall findings of the impact assessment concluded that air emissions from the asphalt plant are unlikely to cause any significant air quality impacts to the surrounding, including the Precinct, with respect to inhalation impacts to human health. The proposed air quality controls are also considered to be in accordance with the GED and commensurate with the level of risk from the asphalt plant.

5.4.2 Wheelie Waste transfer station

The Level 2 odour risk assessment concluded that Wheelie Waste has a 'Low' odour risk.

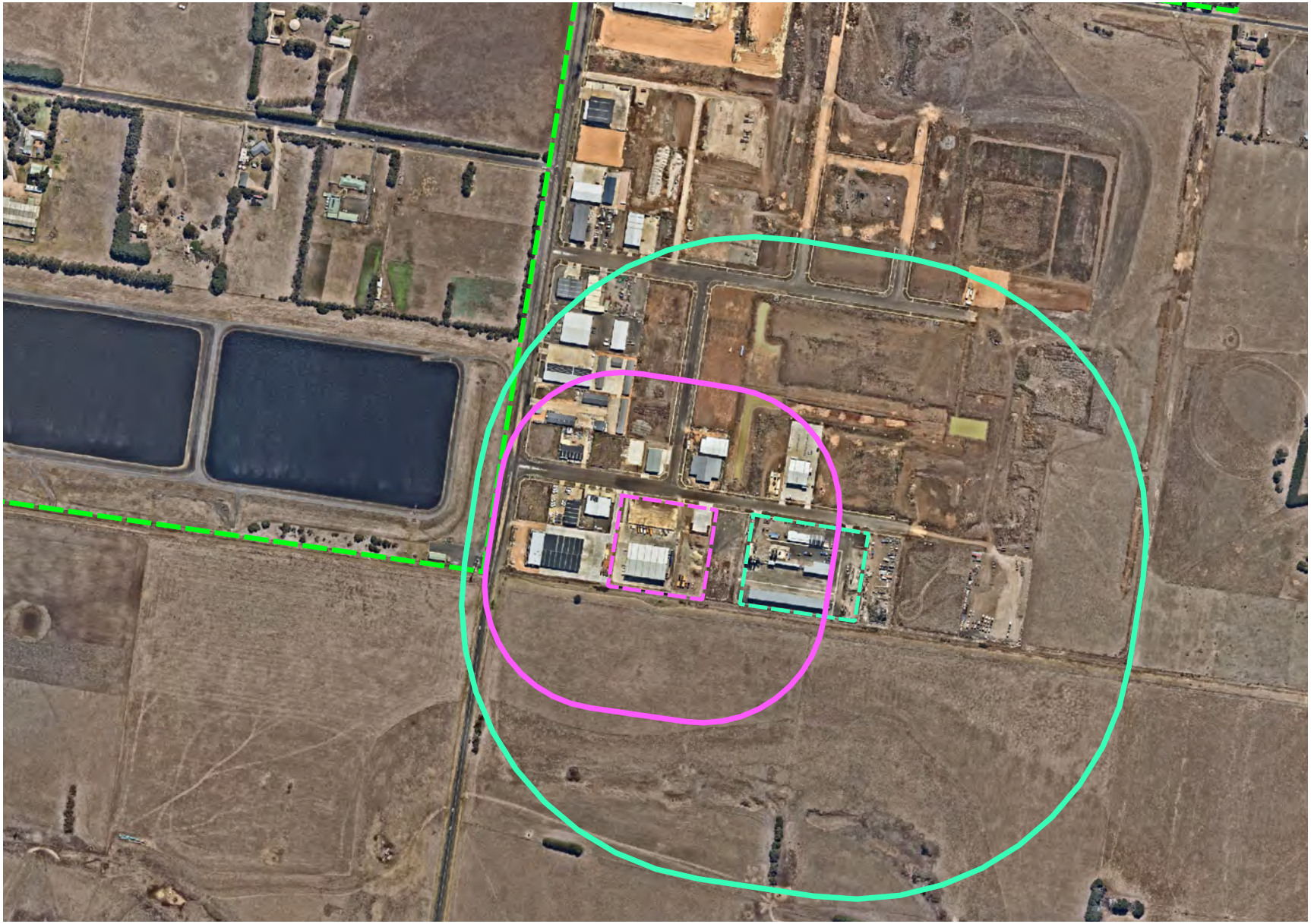
The S-P-R dust risk assessment concluded that Wheelie Waste has 'Moderate' dust risk rating – Dust impacts only likely to occur on rare occasions.

A 'Low' risk rating means that the risk of odour nuisance is likely to be minimal for sensitive uses (proposed) within the respective separation distance, thus no further assessments (i.e. Level 3 assessment) are required.

[22] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to Appendix G of the Development Licence Application.
[23] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to "Response to RFI – 12 July 2022".

For dust risk, a ‘Moderate’ risk rating means although there may be some residual risk of nuisance dust, it is possible it can be practically and effectively managed.

As such sensitive uses can be established within the respective default separation distances within the Precinct, and they can effectively be varied to the Precinct boundary based on the Level 2 risk assessments. Figure 7 shows the varied separation distance of 155 m for both odour and dust.



Legend

Precinct

Industries

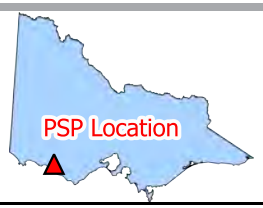
Fulton Hogan Proposed Asphalt Batch Plant

Wheelie Waste Pty Ltd

Varied Separation Distances

Fulton Hogan (350m)

Wheelie Waste (155m)



Paper Size ISO A4

0 150 300 m

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54S

Victorian Planning Authority

East of Aberline Adverse Amenity Impact Assessment

Variation to separation distances

Project No. **12639891**
Revision No. **-**
Date. **09/04/2025**

FIGURE 7.0

Data Source:

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5.5 Transport sources

5.5.1 Vehicle emissions

In Section 4.6.1, eight roads within and bounding the Precinct are identified as transport sources in which vehicle exhaust emissions have the potential to affect the air quality of the Precinct. These roads are Wangoom Road, Horne Road, Dixons Lane, Rodgers Road, Boiling Down Road, Dales Road, Gateway Road and Aberline Road.

With respect to major roads there are no published Victorian policy or guidance in relation to the specific impacts of air quality near major roads nor are there any setback requirements. The EP Act's environment protection framework includes the Environment Reference Standard (ERS). This identifies environmental values, air indicators and objectives that set the benchmark for the quality of the air environment needed to protect the environmental values. Emissions from vehicles are required to meet the ERS objectives.

To improve vehicle emissions specifically, the EPA[25] undertakes the following:

– The EPA enforce the Environment Protection (Vehicle Emissions) Regulations 2013. These cover fuel and exhaust emissions. The Environment Protection (Vehicle Emissions) Regulations 2013 aim to minimise the negative impacts of air emissions from motor vehicles, and the release of petrol vapours related to the production of fuel. The Regulations do this through:
    - Specifying vehicle emission and noise standards, and test procedures for in-service vehicles (vehicles in use as opposed to vehicles manufactured or imported prior to being offered to the market)
    - Setting fuel standards for vapour pressure and fuel reporting requirements
    - Setting exhaust and emission control system construction requirements
    - Setting emission and noise control maintenance requirements
    - Prohibiting tampering of (i.e. illegally modifying) emission and noise control systems
    - Specifying labelling requirements for petrol pumps and motor vehicles
– EPA helps develop and put in place Australian Design Rules (ADRs) for new vehicles. Improvements in ADRs mean new cars emit less pollution than older versions.
– The EPA help develop and put in place national fuel quality standards and work with National Environment Protection Measures that aim to improve diesel emissions.
– EPA monitors areas where vehicle emissions may impact air quality and make the monitoring results and expertise available to help reduce vehicle emission impact.

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:

– Minimise the impacts of air pollution from vehicle traffic on the health and wellbeing of users of a childcare centre, multiple dwelling, residential care facility or retirement facility
– Maximise wind movement around buildings and the dispersion of traffic air pollutants
– Minimise the impacts of air pollution from a tunnel ventilation stack on the health and wellbeing of occupants of sensitive uses

Although none of the categories strictly apply to the Precinct, the first category can be used as a general principle to minimise impacts of air pollution from vehicle traffic. 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 the identified roads 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.

[25] **https://www.epa.vic.gov.au/for-community/environmental-information/air-quality/vehicle-emissions-air-quality/how-we-improve-vehicle-emissions**

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

– Development for a multiple dwelling, residential care facility, rooming accommodation where accommodating six people or more, or retirement facility.
– A setback 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.

There are no current traffic count data for the identified roads which typically means that the traffic volume is low. Based on GHD site visit on 3 June 2024, these roads are considered to be local roads with small amounts of traffic and do not require setbacks.

Traffic volumes on these roads may increase in future if the area will attain more residents and businesses. If the roads are considered to be intermediate volume in the future, then a 10 m set back from the kerb to sensitive uses would be sufficient. If the roads are considered to be high volume traffic routes in the future, a 30 m set back from the kerb to sensitive uses would be sufficient. Note there are no traffic count definitions of a motorway, high-volume traffic route and intermediate volume traffic route. This is a subjective description based on road types only[26].

[26] Refer to the BCC Road hierarchy overlay map located at **Map - Brisbane City Council City Plan 2014**, it lists the types of routes classified as each route type. While it is classified only for Brisbane, the type of routes are comparable to routes found in Victoria. Definition of the road hierarchy can also be found here: **https://ehq-production-australia.s3.ap-southeast-2.amazonaws.com/6898653c4d1acdc099d73aaeea90f2c76395f857/original/1698296165/e13d83ddef638bb0a2a995cf36c3a900_Road_Classification_Community_Factsheet.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIA4KKNQAKIFWFOUYFI%2F20250203%2Fap-southeast-2%2Fs3%2Faws4_request&X-Amz-Date=20250203T032932Z&X-Amz-Expires=300&X-Amz-SignedHeaders=host&X-Amz-Signature=27414d6e214d46d903fa4f6f16cd46ea6eafb2e81367be1ef0f258a892468021**

5.5.2 Noise and vibration from transport sources

The Precinct does not include arterial roads that carry a high volume of road traffic. There are also no busy roads surrounding the Precinct. Princess highway, which is classified as an arterial road, carries 17,000 AADT with 10% of heavy vehicles. It is separated from the southern boundary of the precinct by approximately 770 m buffer. The traffic volumes may increase in future if the area will attain more residents and businesses. Even with increased traffic volume this buffer is significant and is expected to be sufficient even envisaging future growth in traffic volumes. The buffer should be sufficient to meet 65 dB(A) $L_{A10,18hrs}$ criterion in accordance with recommendations in VicRoads Traffic Noise Reduction Policy 2005. It should be noted that the noise criterion is relevant to development of new arterial roads and not directly applicable to new sensitive land uses encroaching upon existing roads, but can be used as a benchmark to ensure reasonable acoustic amenity for future residents.

If the Precinct attains more residents it may increase traffic volume on the local roads, however it is not expected that the growth in the local traffic will significantly increase noise impact. There are no current traffic count data for the roads within and bounding the Precinct, which typically means that the traffic volume is insignificant. There are also no specific setback or design requirements in the considered planning documents that envisage specific noise mitigation measures to control traffic noise impact on sensitive receptors.

5.6 Air quality mitigation strategies

To reduce disamenity (odour and dust impacts) to the proposed sensitive uses in the Precinct, the following potential mitigation measures are outlined for consideration where appropriate. Note that these are general in nature and a detailed assessment should be undertaken as required to quantify the nature of the impact and adequacy of any proposed mitigation measures.

Interface Land Uses

Interface land uses are those that can be located within separation distances between industrial land uses and sensitive land uses. Interface land uses neither generate significant odour emissions, nor warrant protection from them.

Table 3 from EPA Separation Distance Guideline 2024 is reproduced here as Table 10 which provides examples of activities and their suitability as interface land uses. This is not intended to be an exhaustive list of all activities. Other activities not listed should be assessed in accordance with the principles contained in this document.

Table 10 Interface land uses

Suitability	Land use
To be encouraged	Agriculture, car parks, emergency services facilities, natural systems, service stations, garden supplies, plant nursery, veterinary centre.
To be considered (subject to assessment)	Industry with no adverse amenity potential/risk of harm to human health and the environment, utilities (except for sewage works) offices, research centres, retail premises, informal outdoor recreation.
To be prevented	Land uses sensitive to odour and dust - including dwellings, hospitals, aged care facilities, education centres, childcare centres, places of worship, corrective institutions

Control of air quality emissions through built form

The principal option is to limit the exposure of air emissions to residential openable windows/balconies. This can be dealt with in the design and orientation of buildings through urban design measures:

– Mechanical ventilation for rooms facing the potential source
– Locate air intakes away from the potential source i.e. on the lee wind side of the building
– Use of a filtration unit on heating, ventilating and air conditioning (HVAC) systems
– Non-openable windows facing the potential source

Control at source

Odour/dust emissions at source in an industrial premises can be reduced by odour/dust treatment/control. This can be requested for new industries as part of best practice or required by EPA. For those industries identified to cause a constraint, it is the EPA's responsibility to enforce compliance with Environmental Reference Standard (ERS) and the General Environmental Duty (GED) so that these sites do not cause off-site adverse impacts or odour/dust complaints under normal operations. EPA is also responsible for validating and investigating any odour/dust complaints that they receive.

It is recognised that where there are industrial air emissions from a premises, even with good pollution control technology and practice, there may still be unintended emissions which must be anticipated and allowed for. Recent advice from EPA regarding Separation Distance Guideline 2024 noted that the separation distances are not a substitution for pollution controls. The industry should still be minimising risks of odour and dust so far as reasonably practical based on the current state of knowledge in that sector, i.e., meeting the GED for that sector. The separation distance is not a substitution for pollution controls and complying with the GED. Under the VPPs, industrial land uses have use rights which enable the industry to operate, provided they comply with relevant regulations.

6. Noise and vibration impact

6.1 What is noise

Noise is generally defined as unwanted sound, which may be hazardous to health, interfere with speech, normal activities and could potentially be disturbing, irritating, or annoying. Noise can be generated from various sources, such as industrial/commercial premises and transport operations.

Noise sources may have certain characteristics, such as tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content. These characteristics may evoke penalties in accordance with Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues (Publication 1826.4, Environment Protection Authority, May 2021) (the Noise Protocol). These characteristics may cause greater annoyance than noise without these characteristics at the same noise level.

6.2 Potential major noise sources

Industrial and commercial noise sources, which could have potential noise impacts on the amenity of noise sensitive uses within the Precinct are mainly located at the boundary of the Precinct area and at the southern boundary of the Precinct. List of industries that may impact on future sensitive land uses can be found in section 4.5.

There are insignificant road noise sources within the PSP and at the site boundary. They are expected to impact on areas that are adjacent to the roads (west, north, and east of the Precinct). Aircraft flyovers from Warrnambool Airport may be audible across the area.

Groups of major existing noise sources are summarised in Table 11. Noise monitoring program was not carried out for the entire area. Therefore, it is difficult to suggest what noise levels may be typical for inner and boundary areas of the Precinct. However, noise monitoring was performed at the southeastern boundary of the precinct as part of impact assessment for Fulton Hogan's asphalt batching plant at 20 Mason Street, Warrnambool[27]. Nearest sensitive receptor within the Precinct was identified at 140 Boiling Down Rd Warrnambool, which is located approximately 650 m to the west north of the plant (Report No.21098.4, Audiometric & Acoustic Services, June 2022). The available report notes that most of the noise monitoring period was affected by adverse environmental conditions and only one day of data acquisition is suitable for determining background noise levels. The reported background noise levels at the sensitive receptor are relatively low:

– Day: LA90 43 dB(A)
– Evening: LA90 38 dB(A)
– Night: LA90 33 dB(A)

The background is classified as "Low" under the Noise Protocol. The applicable noise criteria were derived in accordance with Part I A.1 of the Noise Protocol- Urban Area Method:

– Day noise limit: LAeq 56 dB(A)
– Evening: LAeq 49 dB(A)
– Night: LAeq: 44 dB(A)

Current zoning shows that the noise source zoning and the receptor zoning are both outside the major urban area. Therefore, Part I A.2 of the Noise Protocol – Rural Area Method would be applicable under the current zoning. The noise criteria above may be applicable if the Precinct is included in the major urban area where Part I A.1 of the Noise Protocol is applicable. Noise assessment for the asphalt plant shows that the development is expected to comply with the noise criteria above without specific noise mitigation measures even if the plant is operated at night.

[27] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to Appendix I of the Development Licence Application

The noise assessment also details noise criteria for noise sensitive receptor at 21 Veal Rd, Warrnambool and two other virtual receptors outside the Precinct. It is understood that indication from another logger position was used to derive noise limits applicable at these receptors. The second monitoring location is shown at the western interface of the Industrial Zone and the Precinct rather than at any of the sensitive receptors. Results of the background noise monitoring are consistent with levels reported for receptor at 140 Boiling Down Rd. They are 1 dB greater for day and evening time. The night time background level is notably greater at 37 dB(A). The applicable noise limits for receptors outside the Precinct are also derived based on assumption that the Urban Method of the Noise Protocol is applicable, which is not the case under the current planning zones. Results of the noise prediction from the asphalt plant operations show that noise from the plant is expected to comply with noise limits if operated during day time. Full production of the plant may require noise mitigation measures if evening or night time operations are permitted.

It should be noted that findings in the asphalt batching plant noise assessment report were not independently assessed and verified, but have been assessed by the EPA as part of the DLA for the plant. Also, Environment Protection Regulations 2021 (Regulation 119) requires that cumulative noise from multiple noise sources meets applicable noise limits. Cumulative noise assessment was not performed as part of the noise report from the asphalt plant. Cumulative impact may affect buffer and noise mitigation requirements for existing and future noise sources impacting on the Precinct should noise sensitive developments be developed closer to the industrial zone.

A noise monitoring programme may need to be performed in future to characterise existing ambient and background noise levels in different parts of the Precinct to suggest applicable noise criteria and analyse suitability of land for particular use.

Table 11 Potential noise impacts from existing sources

Location	Source	Description	Part of the Precinct impacted
To the southern boundary of the Precinct	Princess Highway Warrnambool V-Line	Distant road and rail traffic noise	Southern part of the Precinct
To the eastern and southeastern boundary of the Precinct	Horne Road Local businesses at the southeastern and eastern boundary of the Precinct	Local and business traffic noise Noise from businesses during operation hours	Eastern and south eastern parts of the Precinct
To the western boundary of the Precinct	Aberline Road	Traffic noise	Western part of the Precinct
To the northern boundary of the Precinct	Wangoom road Local businesses	Local and business traffic noise Noise from businesses during operation hours	Northern part of the Precinct
All site	Warrnambool Airport	Aircraft noise from flyovers	All Precinct
Within the Precinct, adjacent southern, northern and eastern farmlands	Agricultural industries and activities	Mechanical equipment, harvesting, loading and delivery activities	All Precinct

6.3 Existing potential primary vibration sources

Potential vibration sources within and adjacent to the PSP may result from the following features:

– Pass-buys of heavy vehicles on the local roads
– Warrnambool Airport

It should be noted that vibration impact may be noticeable in close proximity to road with traffic of heavy vehicles. It is not expected to be significant at larger separation distances. The Precinct is not bounded by arterial roads and separation distance to Princess Highway is significant to rule out propagation of vibration from traffic of heavy vehicles.

Airplane flights at lower altitudes may cause structural response of affected buildings like rattle of window panes. This effect is not expected in the area if flights are performed in accordance with conventional air traffic rules.

6.4 Legislation, guidelines and standards

6.4.1 The Noise Protocol

Noise associated with commercial, industrial and entertainment premises is managed under the EPA Victoria Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (the Noise Protocol).

The Noise Protocol provisions have been incorporated into the Environment Protection Regulations 2021 (EP Regulations 2021). The Noise Protocol provides a procedure for the purpose of determining noise limits for new and existing commercial, industrial and trade premises and entertainment venues as defined by the EP Regulations 2021. It sets the methodology for assessing the effective noise level to determine unreasonable noise under the provisions of EP Regulations 2021.

The Noise Protocol sets the maximum effective noise level allowed in a noise-sensitive area from commercial/industrial premises depending on the time of day, land use zoning and existing background noise levels. It should be noted that rezoning of part of the PSP or any part of adjacent land within 200 m radii from a sensitive receptor to other types of the zones may change noise criteria applicable to existing or future industry or commercial facilities, which may require revision of applicable noise limits for existing and future noise generating activities.

It should be noted that meeting limits in the Noise Protocol does not eliminate need for consideration of general environmental duty in the Environment Protection Act 2017. Potential environmental noise emissions from individual developments in the Precinct should be assessed in accordance with the requirements of the Noise Protocol during planning approval stages and where relevant planning conditions incorporated to require individual developments to demonstrate compliance with the Noise Protocol noise limits at the surrounding noise sensitive areas.

6.4.2 Victoria Planning Provisions (VPP)

Current intention of the precinct is predominantly residential neighbourhoods and housing. Current zoning for most of the land is farming zone (FZ). Warrnambool Planning Scheme does not have specific provisions for noise control in the farming zone since it is not promoted for a higher density residential developments. There are general recommendations in the decision guidelines section (Clause 35.07-6) for subdivision of land, however there are no specific noise exposure limits or other relevant recommendations.

If the Precinct will be rezoned to general residential zone (GRZ1) or similar, there are also no specific requirements for noise control in this zone either.

Warrnambool Planning Scheme includes development standards for dwellings and buildings. Clause 52.20-6.14 (Development standards for dwellings and buildings) contains general requirements on location of noise sensitive rooms and positioning of mechanical plant. They are expected to be taken into account for future residential and other noise sensitive developments.

Since industry at the southeast boundary of the Precinct is zoned industrial (IN3Z), sensitive developments within 300 m from the boundary may be positioned in a noise influence area (Clauses 52.20-7.7, 55.07-07, 58.04-03: apartment developments). As such internal noise criteria in Table 12 may be applicable. Similar provisions are triggered if affordable housing is planned on behalf of Homes Victoria (Clause 53.20-7.7).

In 2017, DELWP released a practice note for *Assessing External Noise Impacts for Apartments – Planning Practice Note 83* (August 2017) (PPN 83) to provide guidance about the operation of the VPP Clause 58.04-3. It is unlikely that these noise requirements will be applicable to noise sensitive developments unless new planning documents will envisage apartment or similar developments.

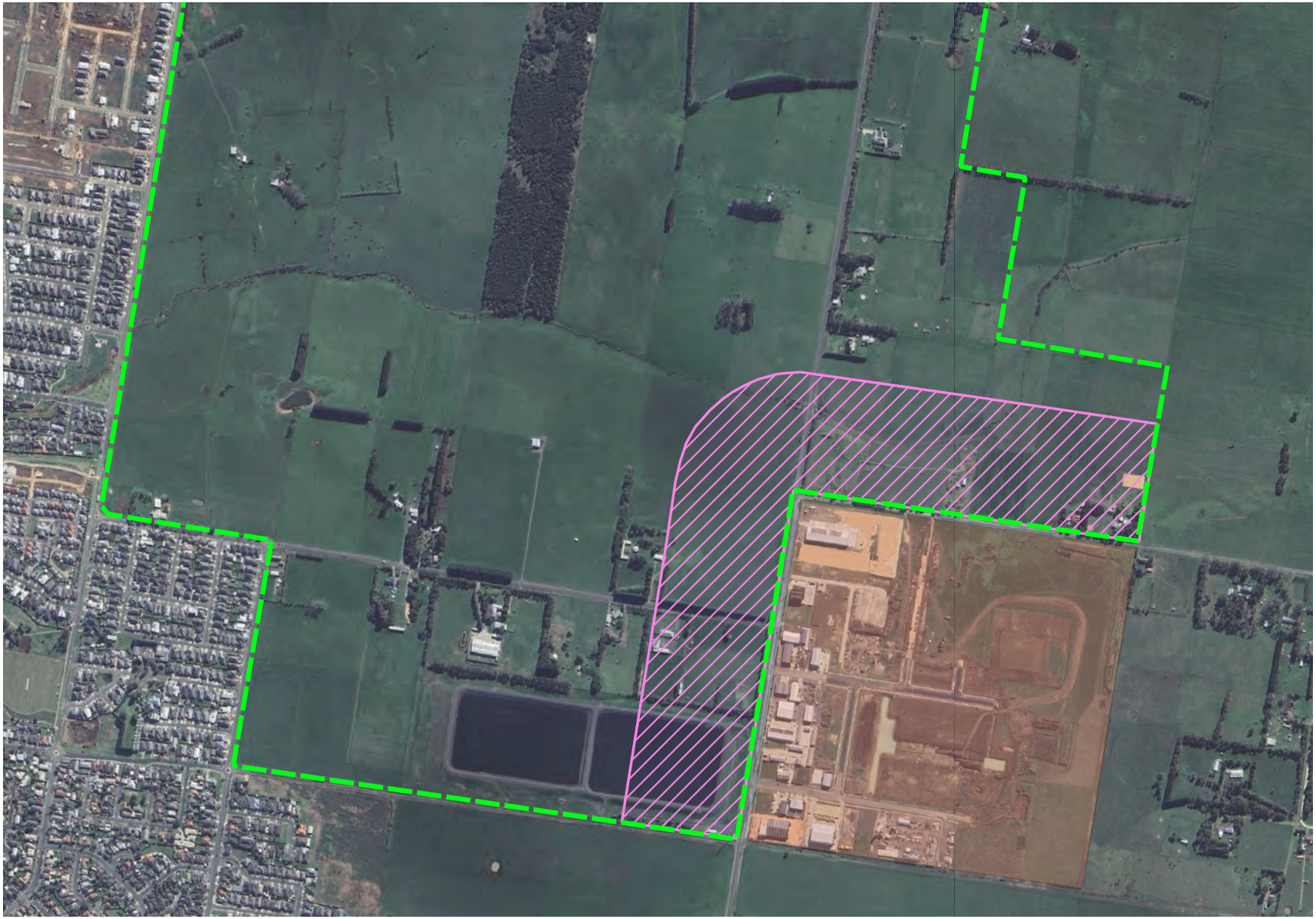
Table 12 VPP Clauses 52.20-7.7 and similar: Noise influence area and indoor design noise criteira

Noise source	Noise influence area	Indoor noise criteria
Zone interface		Not greater than 35 dB(A) for bedrooms, assessed as a $L_{Aeq,8hr}$ from 10 pm to 6 am. Not greater than 40 dB(A) for living areas, assessed $L_{Aeq,16hr}$ from 6 am to 10 pm.
Industry	300 metres from the industrial 1, 2 and 3 zone boundary	
Roads		
Freeways, tollways and other roads carrying 40,000 Annual Average Daily Traffic (AADT) Volume	300 metres from the nearest trafficable lane	

Note that the *noise influence area* should be measured from the closest part of the building to the noise source.

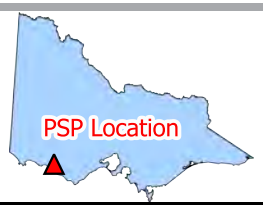
It should be noted that only southeastern part of the PSP area is formally classified as a “noise influence area” under definitions in Table 12. Distance 300 m from IN3Z zone may trigger specific noise control provisions for apartment developments or dwellings under Homes Victoria affordable housing programmes. There are no noise influence zones required from arterial roads.

The area within the Precinct which may trigger specific noise control provisions for apartment developments or dwellings under Homes Victoria affordable housing programmes is presented in Figure 8.



Legend

- Precinct
- 2 km PSP Buffer
- Industrial area under zoned IN3Z
- Noise influence zone



Paper Size ISO A4

0 200 400 m

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Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54S

Victorian Planning Authority

East of Aberline Adverse Amenity Impact Assessment

Noise influence zone of the Precinct and Expanded Area

Project No. **12639891**
Revision No. **-**
Date. **03/02/2025**

FIGURE 8

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6.4.3 Indoor sound levels – AS/NZS 2107

It is recommended the indoor sound levels of any building comply with the Australian Standard AS/NZS 2107:2016 "*Acoustics – Recommended design sound levels and reverberation times for building interiors*" (AS/NZS 2107: 2016). It should be considered as a supplimentary requirement to acoustic specification in relevant VPP clauses.

Table 1 of AS/NZS 2107: 2016 outlines recommended internal design sound levels and reverberation times for residential buildings, as reporoduced in Table 13. It should be noted that these recommendations are not applicable to rail or aircraft noise.

Table 13 Table 1 of AS/NZS 2107: 2016 Design sound levels for residential buildings

Type of occupancy/activity	Design sound level ($LA_{eq,t}$) range
Houses and apartments in suburban areas or near minor roads	
Apartment common areas (e.g. foyer, lift lobby)	45 to 50
Living areas	30 to 40
Sleeping areas (night time)	30 to 35
Work areas	35 to 40

6.4.4 Sleep disturbance

Impact of noise on sleep quality is greatly studied from long term effects perspective and sleep disturbance due to intermittent events is better correlated with maximum noise levels. Long term effects are typically addressed via design of average noise levels (such as $L_{Aeq,8hr}$), whereas sleep disturbance is better correlated to the maximum noise levels per event (i.e. L_{Amax}). Sleep disturbance can occur via changes in sleep state and awakening is more related to subjective assessments of sleep quality [NSW Road Noise Policy 2011 (NSW RNP)].

The World Health Organisation (WHO) *Guidelines for Community Noise* recommend a maximum internal noise level of L_{Amax} 45 dB(A) for sleeping areas and can be considered as equivalent to 60 dB(A) external noise level on a 15 dB outside and inside conversion for partially open windows. It is noted that a level of L_{Amax} 45 dB(A) is based on the noise level at which effects of noise induced awakenings are observed.

Studies by the EnHealth Council documented report titled *The health effects of environmental noise – other than hearing loss* dated May 2004 and also referenced in NSW RNP states that for short term events for good sleep over eight hours the indoor sound pressure level measured as a maximum instantaneous value should not exceed approximately L_{Amax} 45 dB(A) more than 10 or 15 times per night.

The NSW RNP also provides a summary of research in relation to noise induced sleep disturbance to date including the WHO and enHealth concluding the following:

– Maximum internal noise levels below 50–55 dB(A) are unlikely to awaken people from sleep
– One or two noise events per night, with maximum internal noise levels of 65–70 dB(A), are not likely to affect health and wellbeing significantly

A summary of the discussed sleep disturbance criteria is presented in Table 14. The NSW RNP approach has been previously accepted by Victorian Civil and Administrative Tribunal (VCAT) in relation to sleep disturbance. It should be noted sleep disturbance effects are usually taken into account in setting noise limits in regulatory and planning documents and is not considered separately.

Table 14 Summary of L_{max} Criteria for Sleep Disturbance

Source	Recommended internal L_{Amax}	Equivalent recommended external level(1)	Comment
WHO	45 dB(A)	60 dB(A)	Level at which the effects of noise induced sleep disturbance are observed.
enHealth Council	45 dB(A)	60 dB(A)	Recommended maximum noise level not exceed more than 10 – 15 times per night for a good sleep over eight hours.
NSW RNP	50 – 55 dB(A)	65 – 70 dB(A)	Level below unlikely to awaken people from sleep
	65 – 70 dB(A)	80 – 85 dB(A)	Level that not likely to affect health and wellbeing significantly if only occur one or two events per night.
[1]Equivalent external level based on a typical outdoor to indoor conversion of 15 dB for partially open windows. This is adopted by WHO guidelines.			

6.4.5 Aircraft noise – AS 2021:2015

Warrnambool Airport is located to the north west of the Precinct, approximately 8.5 km from the Precinct boundary.

Aircraft noise impact is typically assessed against the requirements of the Australian Standard AS 2021 – *Acoustics – Aircraft Noise Intrusion – Building Siting and Construction*.

In accordance with the AS 2021, the acceptability of the location of building is dependent on the applicable ANEF (Australian Noise Exposure Forecast) from aircraft noise to the site as outlined in Table 15. Typically ANEF contours cover area adjacent to an airport and show expected severity of aircraft noise impact. Depending on predicted ANEF magnitudes, areas can be acceptable, conditionally acceptable or not acceptable for particular types of developments.

Table 15 AS2021 Building Acceptability based on Aircraft noise exposure

Building type	Site ANEF		
	Acceptable	Conditionally Acceptable	Unacceptable
House, home unit, flat, caravan park	< 20 ANEF	20 – 25 ANEF	>25 ANEF
Hotel, motel, hostel	< 25 ANEF	25 – 30 ANEF	>30 ANEF
School, university	< 20 ANEF	20 – 25 ANEF	>25 ANEF
Hospital, nursing home	< 20 ANEF	20 – 25 ANEF	>25 ANEF
Public building	< 20 ANEF	20 – 30 ANEF	>30 ANEF
Commercial building	< 25 ANEF	25 – 35 ANEF	>35 ANEF
Light industrial	< 30 ANEF	30 – 40 ANEF	>40 ANEF
Other industrial	Acceptable in all ANEF Zones		

Acceptable sites

For a building site that is classified as ‘acceptable’, there is usually no need for the building design and construction to provide protection specifically against aircraft noise. However, it should not be inferred that aircraft noise will be unnoticeable in areas with ANEF 20 contour or lower.

Conditionally acceptable sites

For a building site that is classified as ‘conditionally acceptable’, the maximum aircraft noise levels for the relevant aircraft within the proposed development should achieve the recommended AS 2021 indoor design aircraft noise levels.

Unacceptable sites

For a building site that is classified as 'unacceptable', construction of the proposed building should not normally be considered. Where in the community interest development is to occur in such areas where the relevant planning authority determines that a development may be necessary within existing built-up areas designated as unacceptable, then constructions should consider attenuation measures to achieve the recommended AS 2021 indoor design aircraft noise levels.

The Warrnambool Airport is owned and operated by the Council. Warrnambool Regional Airport Development Plan (Specialist Airport Solutions, Oct. 2021) states that capacity of the two runways and the taxi layout allows for handling over 100,000 aircraft movements per annum. Estimated number of annual aircraft movements is approximately 15,000 for year 2008, more recent data is not available. A scheduled airline service was provided for a few years but ceased operations in 2020. The Warrnambool Regional Airport Development Plan does not contain ANEF contour assessment or other noise related metrics. Perhaps scale of the current airport operations and associated noise impact is not significant to trigger aircraft noise impact assessment. ANEF assessment was performed in 2002 for the Council and VIC Department of State and Regional Development (Warrnambool Regional Airport: Airport Development Plan, AirPlan, Feb. 2002). The assessment shows that ANEF 20 contours are close to the airport runways. Taking into account approximately 8 km buffer to the Precinct, it is unlikely that current or future operations of the airport will impose risk on amenity of the Precinct.

Warrnambool Planning Scheme has provisions for aircraft noise that are consistent with Australian standard AS 2021 and have additional requirements. Clause 18.02-7S Airports and Airfields states the following:

"Avoid zoning or overlay changes that allow noise-sensitive land uses outside the Urban Growth Boundary, and encourage measures to reduce the impact of aircraft noise in planning for areas within the Urban Growth Boundary, where ultimate capacity or long-range noise modelling indicates an area is within 'number above' contours (N Contours) representing:

– 20 or more daily events greater than 70 dB(A). 50 or more
– Daily events of greater than 65 dB(A). 100 or more daily
– Events greater than 60 dB(A)
– Six events or more between the hours of 11 pm to 6 am greater than 60 dB(A)."

It is understood that the airport may include helicopter facilities in future. Helicopter noise assessment may need to be carried out in this case. EPA Publication 1254.2 (May 2021) gives guidance on appropriate noise criteria for helicopter operations. If Warrnambool operation expands in future, which will increase risk of greater aircraft noise impact, ANEF contours may need to be predicted to ensure that ANEF 20 zone and above does not overlap with residential and other noise sensitive areas. Additional aircraft noise study may be required to ensure that noise impact does not exceed recommendations in the Warrnambool Planning Scheme.

6.4.6 National Airport Safeguarding Framework

The *National Airports Safeguarding Framework* (NASF) developed by the Department of Infrastructure, Regional Development and Cities provides guidance on planning requirements for development that affects aviation operations. This includes building activities around the airport that might impact airport operations.

Guideline A of the NASF provides advice on the use of a supplementary suite of noise metrics, including the Australian Noise Exposure Forecast (ANEF) system and frequency-based noise metrics (N-contours), to inform strategic planning and provide communities with comprehensive and understandable information about aircraft noise.

6.5 Discussion of potential noise impacts from existing sources

Significant Industrial and commercial noise sources, which could have potential noise impacts on the amenity of noise sensitive uses within the Precinct are mainly located outside of the area except the southern part. There are no significant transport noise sources within the Precinct area and at the area boundary.

Most of the Precinct is currently zoned as Farming zone (FZ) and there are some noise sources associated with agricultural activities. It is understood that these sources may not impact on amenity of the area if changes of the zoning to predominantly residential will be implemented. Even if the Precinct will consist of significant number of dwellings, it is not expected that the adverse impact will be caused by significant vehicular traffic, from an existing or proposed industry operation. It is expected that operations of existing industries at the southeastern and eastern boundary of the Precinct may be perceivable and impose some restrictions on noise sensitive development in the area adjacent to the industry.

Warrnambool Planning Scheme has specific requirements for noise within noise influence zones, which are located adjacent to the rail corridor, arterial roads or within 300 m from Industrial 1, 2 and 3 zones. Recommended indoor noise limits for new dwellings outlined in relevant planning scheme clauses are as follows:

– Not greater than 35 dB(A) for bedrooms, assessed as an LAeq,8h from 10 pm to 6 am
– Not greater than 40 dB(A) for living areas, assessed LAeq,16h from 6 am to 10 pm

These requirements may be applicable either to apartment developments or developments under Homes Victoria programmes at the southeastern boundary of the Precinct. They are formally not applicable to typical residential developments. Due to the relatively quiet rural nature of the area within the Precinct, it is recommended that the above indoor noise limits are met within noise influence zone. This includes consideration of small industrial and commercial establishments such as auto and repair facilities.

6.6 Discussion of potential noise emissions

East of Aberline PSP intends to designate the area for predominantly residential developments, which are considered as noise sensitive land uses. New and existing industrial and business/commercial premises have the potential to emit noise which may impact existing and future sensitive uses within the Precinct.

Clause 13.05-1S Noise management of the Warrnambool Planning Scheme, gives reference to the following policy documents:

– Environment Protection Regulations under the Environment Protection Act 2017
– Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues (Publication 1826.4, Environment Protection Authority, May 2021)
– Environment Reference Standard (Gazette No. S 245, 26 May 2021)
– Passenger Rail Infrastructure Noise Policy (Victorian Government, 2013)
– VicTrack Rail Development Interface Guidelines (VicTrack, 2019)

Taking into account substantial buffer from the Precinct to the nearest arterial road and rail corridor, it is unlikely that the transport noise policies and guidelines will be relevant. Any proposed development within the Precinct should be designed and constructed such that the environmental noise emissions comply with the requirements of the Noise Protocol at the relevant surrounding noise sensitive receptors. This also includes new small commercial establishments such as petrol stations, auto facilities, workshops, and the like.

Where relevant, the planning authority should ensure that appropriate planning conditions are imposed to require prospective developments to demonstrate compliance with the Noise Protocol at surrounding noise sensitive areas. This involves requiring an acoustic assessment by a qualified acoustic engineer or other suitably skilled person to the satisfaction of the responsible authority, to demonstrate that the proposed noise generating development complies with the requirements of the Noise Protocol.

Precautionary approach should be taken if operations of Warrnambool Airport will be expanded in future. ANEF contours may need to be predicted to ensure that ANEF 20 zone and above does not overlap with residential and other noise sensitive areas within the Precinct. If the airport will include helicopter operations, helicopter noise study may be necessary to ensure that impact on future noise sensitive development is acceptable. The study may need to refer to EPA Noise control guidelines (EPA Publication 1254.2) to establish appropriate noise criteria.

6.7 Discussion of potential vibration impacts

Pass-bys of heavy vehicles on arterial and local roads may induce ground borne vibration if sensitive receptors are located close to a road. Associated vibration may cause intermittent vibration nuisance to occupants of the surrounding sensitive receptors. Vibration levels at sensitive receptors would depend on various factors such as source type, distance to receptors and ground/soil properties. It should be noted that Victoria's regulatory documents do not contain ground borne vibration and noise criteria. NSW Rail Infrastructure Noise Guideline 2013 suggest criteria for ground- borne noise (measured inside buildings), they are summarised in the table below.

Table 16 Summary of ground- borne trigger levels $L_{Amax,Slow}$ for rail projects

Sensitive use	Time of day	Internal noise limit
Residential	Day (7 am- 10 pm)	40 dB(A)
	Night (10 pm- 7 am)	35 dB(A)
School, educational institutions, places of worship	When in use	40 – 45 dB(A)

The Guideline references NSW DEC Assessing Vibration: A Technical Guideline (2006) for vibration limits that may be applicable to rail projects.

It is understood that current agricultural operations will cease if the land is rezoned to residential or similar use. The Precinct is not characterised by substantial traffic of heavy vehicles. It is unlikely that future noise sensitive developments will be exposed to perceivable vibration impacts.

Eastern and southeastern area of the precinct is close to existing businesses. There is no information about vibration impact that may result from their operations, therefore it is difficult to recommend buffer for sensitive developments due to dependence of the impact on multiple factors.

The asphalt batch plant is supposed to be located close to the eastern boundary of the Precinct. It is unknown if equipment of the plant may generate excessive vibration. Current buffer to the precinct, which exceeds 200 m is sufficient to mitigate vibration from the site. Based on nature of operation of other existing industries operating at the boundaries of the precinct risk of a high vibration impact for new sensitive developments in the area is low.

It is known that sometimes noise from low flying aircraft may cause structural response of buildings such as rattling of window panes. Operation of aircraft from Warrnambool Airport is not expected to cause such effects if operation of aircraft is carried out in accordance with air safety rules and approved aviation practices.

6.8 General noise and vibration mitigation strategies

This section provides general guidance on potential mitigation strategies that could be implemented to control noise within prospective noise sensitive developments within the Precinct and could be considered for control of external noise sources such as industrial noise, traffic and aircraft applicable to the proposed PSP.

Relevant in-principle noise mitigation strategies include:

– Land use controls (separating the location of noise-producing activities from sensitive areas, prohibiting new noise generating activities close to sensitive land uses)
– Control in transmission (reduce noise level at the receptor but not necessarily the environment surrounding the source, e.g. noise barrier, earth mounds etc.)
– Receptor control (localised acoustic treatment at sensitive receptor, sound proof insulation and glass, etc)

More details on noise mitigation strategies may be provided as PSP progresses and more information is available for analysis of possible environmental impacts.

6.9 Noise and vibration impact assessment summary

A summary of the noise assessment and recommendations for possible land uses that may be located within the Precinct are presented in Table 17.

Table 17 Noise assessment summary

Item	Assessment Item	Report Section	Summary	Recommendation for proposed uses to be located within the Precinct
1	**Warrnambool Planning Scheme**			
1.1	Clause 13.05-1S Noise Abatement	6.4.1	Noise emissions from external plants associated with proposed developments within the Precinct (prospective industrial, commercial, residential, etc.) should comply with the requirements of the Noise Protocol.	Appropriate planning permit conditions are imposed to require prospective developments to demonstrate compliance with the Noise Protocol at surrounding noise sensitive areas. Consideration of an acoustic assessment required by planning authority as part of the development approval process.
1.2	Clause 18.02-7S Airport and airfields	6.4.5	Currently noise impact from Warrnambool Airport operations is not known. If increase in the airport operations is planned, care should be taken that ANEF 20 contours or greater do not cover sensitive developments in the Precinct and other criteria for aircraft noise exposure are met.	If operations at the aerodrome will be expanded in future, aircraft noise assessment should be carried out to ensure that sensitive developments in the Precinct do not fall into area with ANEF exceeding 20 and other aircraft noise criteria are also satisfied.
1.3	Clauses 52.20-7.7, 55.07-07, 58.04-03 Clause 53.20-7.7	6.5	May be applicable to future apartment developments, affordable housing funded by Victoria Homes if current zones are changed to residential or other relevant zones.	The clauses contain internal noise requirements for housing within noise influence zones. Proposed noise sensitive development within 300 m from existing industrial zone should be required to undertake a detailed noise intrusion assessment to demonstrate that the proposed design meets the internal noise limits.
2	**The Noise Protocol**	6.4.1 6.6	Applicable to industrial, commercial and entertainment premises	Refer to Items 1.1 and 1.3 above.
3	**AS/NZS 2107 Indoor Sound Levels**	6.4.3	Recommended as supplementary design internal noise level for residential dwellings in addition to provisions of Clauses 52.20-7.7, 55.07-07, 58.04-03 and 53.20-7.7	
4	**Sleep disturbance**	6.4.4	External sources such as road traffic and industries/businesses can generate high levels of short term noise events that could result in sleep disturbance at night.	Satisfaction of the sleep disturbance criteria in the bedrooms or sleeping areas of the noise sensitive development as defined by the limits recommended by the World Health Organisation.

Item	Assessment Item	Report Section	Summary	Recommendation for proposed uses to be located within the Precinct
5	**AS 2021 Aircraft noise**	6.4.5	The Precinct is located at significant separation distance from Warrnambool Airport. ANEF assessment was performed in 2002 for the Council and VIC Department of State and Regional Development (Warrnambool Regional Airport: Airport Development Plan, AirPlan, Feb. 2002). The assessment shows that ANEF 20 contours are close to the airport runways. Taking into account approximately 8 km buffer to the Precinct, it is unlikely that current or future operations of the airport will impose risk on amenity of the Precinct. If the airport will expand their operations, it should be confirmed that buildings developed within the Precinct are acceptable for noise sensitive uses such as residential, accommodation, educational and health uses in accordance with the AS 2021.	If air traffic operation will be expanded at Warrnambool Airport, the aerodrome operator should produce ANEF contours to verify that sensitive land uses in the Precinct PSP do not lay in the areas with ANEF exceeding 20.
6	**National airport safeguarding network**	6.4.6	Refer to Item 1.2 above	Refer to Item 1.2 and 5
7	**Vibration impact**	6.7	Vibration from heavy vehicles movements associated with existing or future businesses may impact a part of the PSP adjacent to roads carrying heavy vehicles.	Vibration assessment is recommended before application approval is lodged in the event sensitive developments are planned close to roads with heavy vehicles.

7. Future land use planning considerations

7.1 Key findings and development constraints

The key findings from each of the assessments are detailed below.

7.1.1 Odour and dust

Two constraints to the Precinct area were identified. These industries are located east and southeast of the Precinct boundary and their recommended separation distances encroach the Precinct.

– Fulton Hogan asphalt plant, 1,000 m (odour)
– Wheelie Waste, 500 m (odour) and 250 m (dust) separation distances

Based on the outcomes of the Level 2 and Level 3 odour risk assessment and S-P-R dust risk assessment, varied separation distances have been recommended as follows:

– Fulton Hogan asphalt plant, 350 m (odour)
– Wheelie Waste, 155 m (odour and dust)

Fulton Hogan asphalt plant

From the Level 2 odour risk assessment, the Fulton Hogan asphalt plant at 20 Mason Street is assessed to pose 'Low' odour risk to sensitive receptors in the Precinct. Further to this, GHD relied on the information and results provided in the Level 3 odour risk assessment undertaken for the asphalt plant by a third-party consultant (AOC) to further understand the odour risk. It demonstrated that the odour risk from the asphalt plant to sensitive receptors in the Precinct to be low, with obvious odours potentially extending up to 350 m, supporting a reduced separation distance.

A 'Low' risk rating means that the risk of odour nuisance is likely to be minimal for sensitive uses (proposed) within the recommended default 1,000 m separation distance. As such sensitive uses can be established within the default separation distance within the Precinct, as the separation distance can effectively be varied to 350 m based on the Level 2 and 3 risk assessments.

Separation distance for dust does not encompass the Precinct indicating the dust risk from the glass crushing activity at the proposed site to be low. Further to this, GHD relied on an Air Quality Impact Assessment undertaken for the asphalt plant by a third-party consultant (Airlabs Environmental) which concluded that fugitive emissions of particulate matter to be unlikely to cause significant impact to the surrounding environment. Based on the assessment, GHD considers the dust risk from the asphalt plant to be low.

The Air Quality Impact Assessment also assessed the impacts of air emissions which are typically expected to be discharged into air from an asphalt plant. Results from the modelling indicated that the incremental impacts from the proposed facility only at the nearest sensitive receptors were well below the relevant assessment criteria. The overall findings of the impact assessment concluded that air emissions from the asphalt plant are unlikely to cause any significant air quality impacts to the surrounding including the Precinct, with respect to inhalation impacts to human health. The proposed air quality controls are also considered to be in accordance with the GED and commensurate with the level of risk from the asphalt plant.

Wheelie Waste transfer station

The Wheelie Waste transfer station at 10 Mason Street is assessed to pose 'Low' odour risk and 'Moderate' dust risk to the receptors in the Precinct. As such sensitive uses can be established within the default separation distances within the Precinct, and the default separation distances for Wheelie Waste can effectively be varied to the Precinct boundary based on the Level 2 odour risk assessment and S-P-R assessment for dust. A varied separation distance of 155 m was recommended.

7.1.2 Vehicle emissions

Eight roads within and bounding the Precinct are identified as transport sources in which vehicle exhaust emissions have the potential to affect the air quality of the Precinct. These roads are Wangoom Road, Horne Road, Dixons Lane, Rodgers Road, Boiling Down Road, Dales Road, Gateway Road and Aberline Road.

Currently, these roads have small amounts of traffic[28]. As such, setting back sensitive development from the identified roads are not required. Traffic volumes on these roads may increase in future if the area will attain more residents and businesses. If the roads are considered to be intermediate volume in the future, then a 10 m set back from the kerb to sensitive uses would be sufficient. If the roads are considered to be high volume traffic routes in the future, a 30 m set back from the kerb to sensitive uses would be sufficient.

7.1.3 Noise and vibration

The following activities and industries may have the potential to impact the Precinct:

– Noise from industries and businesses operated within the Precinct. It is understood that agricultural operations may not be carried out anymore if the Precinct is rezoned for a residential use. However existing agricultural businesses within and around the Precinct still may generate noise.
– Noise from industries and businesses that are close to the Precinct boundaries (predominantly eastern and south eastern area).
– Aircraft noise from Warrnambool Airport.

Noise monitoring programme was not performed to characterise existing noise impact from industries and transport or background in the area. It may be beneficial to carry out unattended and attended noise measurements in line with requirements in EPA Victoria Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (the Noise Protocol). Noise monitoring should be executed when existing and planned industrial and business noise sources are in normal operation mode ideally during preparation of the PSP but could also occur during permit stage. It will allow to obtain additional information on classification of background in the area and existing impact from industries and roads especially at the southern boundary of the Precinct.

Sensitive land uses adjacent to arterial roads or industrial zones are subject to noise control requirements in Warrnambool Planning Scheme and other regulatory documents as described in section 6.4. Proposed noise sensitive developments in a noise influence area should be required to undertake a detailed noise intrusion assessment by a qualified acoustic engineer or other suitably skilled person to the satisfaction of the responsible authority, to demonstrate that the proposed design meets the following internal noise limits from external noise sources:

– Recommended indoor noise limits outlined in relevant VPP Clauses as follows:
    - Not greater than 35 dB(A) for bedrooms, assessed as an LAeq,8h from 10 pm to 6 am
    - Not greater than 40 dB(A) for living areas, assessed LAeq,16h from 6 am to 10 pm

Formally recommendations above are applied to apartment developments and dwellings built as part of Homes Victoria programme. Due to the mostly quiet rural nature of the area within most of the Precinct, it is recommended that the above indoor noise limits are met within noise influence zone, regardless of the type of sensitive use proposed. This includes consideration of noise from small industrial and commercial establishments such as auto, repair facilities and the like.

Any proposed development within the Precinct should be designed and constructed such that the environmental noise emissions comply with the requirements of the Noise Protocol at the relevant surrounding noise sensitive receptors. This also includes new small commercial establishments such as petrol stations, auto facilities, workshops, and the like.

[28] To identify freeway and arterial roads, GHD refers to The Department of Transport open data portal https://vicroadsopendata-vicroadsmaps.opendata.arcgis.com/datasets/traffic-volume/explore?location=-38.368163%2C142.533927%2C14.92 For roads without a count generally indicates the roads are not Arterial or busy roads. This road planning classification is not listed in any traffic standards, but useful to understand classification of non-arterial roads.
https://planning-schemes.app.planning.vic.gov.au/Victoria%20Planning%20Provisions/ordinance/56.06

Where relevant, the planning authority should ensure that appropriate planning conditions are imposed to require prospective developments to demonstrate compliance with the Noise Protocol at surrounding noise sensitive areas. This involves requiring an acoustic assessment by a qualified acoustic engineer or other suitably skilled person to the satisfaction of the responsible authority, to demonstrate that the proposed development comply with the requirements of the Noise Protocol.

7.2 Mitigation measures

It is assumed that the development of the site will occur incrementally over time, and therefore it is important that the management of the transition from existing to proposed uses minimises short term impacts of non-compatible uses.

Land use controls

Separating odour and/or dust producing activities from sensitive areas using a setback strategy (e.g. open space design adjacent to odour and/or dust sources to provide a reduction through setback distances to sensitive uses) is commonly adopted and recommended in locating sensitive uses outside the identified separation distance areas of existing industries.

The varied separation distances proposed by GHD, indicate where the establishment of sensitive uses should be avoided to reduce potential adverse amenity issues.

The risk assessment undertaken has indicated the risk to the Precinct to be low for both odour and dust emissions from the identified industries. A ‘Low’ risk rating means that the risk of odour and dust nuisance is likely to be minimal for sensitive uses (proposed) within the respective default separation distances and varied separation distances have therefore been recommended.

Use of interface land uses located within varied separation distances between industrial land uses and sensitive land uses is another measure that can be utilised. Interface land uses neither generate significant odour emissions, nor warrant protection from them. Table 3 from EPA Separation Distance Guideline 2024 (reproduced as Table 18 of this report) provides examples of activities and their suitability as interface land uses. Other activities not listed should be assessed in accordance with the principles contained in this document.

Table 18 Table 3 from EPA Separation Distance Guideline 2024

Suitability	Land use
To be encouraged	Agriculture, car parks, emergency services facilities, natural systems, service stations, garden supplies, plant nursery, veterinary centre.
To be considered (subject to assessment)	Industry with no adverse amenity potential/risk of harm to human health and the environment, utilities (except for sewage works) offices, research centres, retail premises, informal outdoor recreation.
To be prevented	Land uses sensitive to odour and dust - including dwellings, hospitals, aged care facilities, education centres, childcare centres, places of worship, corrective institutions.

Control through built form

Some possible air and noise mitigation strategies that are available include (see sections 5.6 and 6.8 for further detail):

– Control in transmission i.e. noise barriers, buffers from interface with noise generating land uses
– Control at receptor i.e. building orientation, building façade and roof acoustic treatment, sound proof insultation and glass, mechanical ventilation for rooms facing away from the potential source etc

Implementation of application requirements for sensitive uses

If any sensitive uses are to be considered inside the varied separation distances of constraining industries, application requirements should be implemented into the planning scheme to appropriately facilitate sensitive uses within the separation distances and manage the risk of adverse amenity. Such application requirements could be implemented within proposed zoning controls (or schedule within). The requirement would apply to any application to develop land for a sensitive use which includes:

– Sensitive uses:
  - Accommodation
  - Residential premises
  - Child care centre
  - Pre-schools
  - Primary schools
  - Education centres
  - Hospitals
  - Place of assembly
  - Aged care facility

The following requirement is recommended for further consideration:

– Application requirement:

  While the industries continue to operate, an application to use or develop land for a sensitive use which includes accommodation, residential premises, child care centres, pre-schools, primary schools, education centres, hospitals, place of assembly and aged care facility within the varied separation distances as shown in Section 5.4 must be accompanied by the following information:

  - *An odour/dust risk assessment in accordance with EPA Separation Distance Guideline 2024 – Recommended separation distances for industrial residual air emissions, December 2022 or as Amended, prepared by a suitably experienced and qualified person to the satisfaction of the responsible authority, in consultation with the Environment Protection Authority.*

  Before deciding on an application, the responsible authority must consider, as appropriate:

  - *The impacts of uses with adverse amenity potential on a proposed use or development for a sensitive use where the land to which the application applies is within the separation distance for the identified industries.*

– A similar requirement but for an acoustic assessment can be also included to require any proposed sensitive land uses within noise influence zone to undertake external noise intrusion assessment to demonstrate that the development is designed and constructed to achieve recommended noise amenity targets outlined in VPP Clauses relevant to noise influence zones and sleep disturbance criteria as defined by World Health Organisation from external noise sources.

7.3 Recommended actions

There is a number of different types of planning controls that could be implemented to assist in mitigating the potential for adverse amenity impacts.

Based on the above investigations, the following recommendations should be considered:

– Careful strategic planning of land uses to:
  - Implement the varied separation distances from the INZ3 industries encroaching southeast area of the Precinct:
    – The encroached areas can be located with open space land use such as car parks or parks to provide a reduction in odour and/or dust impacts through setback distances between the industries and sensitive receptors.

    - The encroached areas can be located with interface land uses such as complimentary commercial and other business uses which do not generate significant odour emissions, nor warrant protection from them.
  - Manage and minimise noise impact from sensitive and non-sensitive land use interfaces including but not limited to consideration of in-principle noise mitigation strategies outlined in this report.
  - Confirm future scenarios for Warrnambool Airport operations to evaluate risk of aircraft noise impact and need for assessment of aircraft noise for future noise sensitive developments.
- The implementation of design controls within the Warrnambool Planning Scheme (the planning scheme) and where appropriate development approval process to:
  - Implement application requirements into the planning scheme to appropriately facilitate sensitive uses within any varied separation distance and manage the risk of adverse amenity (i.e. an application requirement to undertake an odour/dust risk assessment).
  - Where appropriate place specific planning requirements as part of planning scheme amendments or planning permit conditions (i.e. control of air quality and noise emission) on proposed sensitive land use and developments in particular areas and implementing varied separation distance areas.
  - Require any proposed sensitive land uses within noise influence zone to undertake external noise intrusion assessment to demonstrate that the development is designed and constructed to achieve recommended noise amenity targets outlined in VPP Clauses relevant to noise influence zones and sleep disturbance criteria as defined by World Health Organisation from external noise sources.
  - Require developments with potential to generate noise to undertake further acoustic assessment to demonstrate that the development is designed and constructed to comply with the Noise Protocol requirements at surrounding sensitive uses (including within the Precinct).
- It is recommended to perform noise monitoring to:
  - Estimate existing background levels within the Precinct area and classify background in accordance with the Noise Protocol.
  - Characterise ambient noise from existing transport and industrial noise sources, especially at the southeastern boundaries of the precinct when existing and future industrial developments are in normal operation mode. Ideally this is undertaken during PSP stage but can also be undertaken at permit stage.
  - Identify risks of excessive impact based on observation of existing noise sources in the area.

Appendices

Appendix A

Meteorology

The characterisation of local wind pattern requires accurate site-representative hourly recordings of wind speed and direction over a period of at least 12 months. Meteorological data from the Bureau of Meteorology (BoM) operated automatic weather station (AWS) at Warrnambool Airport[29] (11.5 km north-west of the site[30]) is considered representative of the area due to the similar topography.

GHD has access to meteorological data (five years at one-hour intervals, between 1 January 2018 and 31 December 2022[31] from the Warrnambool Airport AWS to understand the meteorology and the implications for dispersion of odour and dust.

The local meteorology largely determines the pattern of off-site dust and odour impact. 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 most readily 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. Prevailing wind directions.
ii. The relative incidence of light wind conditions (<2 m/s) as these are considered poorly dispersive conditions in which odour emitted from odour source is not able to disperse quickly.
iii. The relative incidence of strong wind conditions (>5 m/s) as dust pick-up (or dust entrainment) is usually significant at wind speeds above 5 m/s.

A-1 Lond term pattern in wind

Figure A.1 presents the five-year wind rose while Table A1 presents the frequency of occurrence of winds (over five years) from various wind directions and wind speeds and shows the following features:

– The average measured wind speed 5.3 m/s
– Calm winds comprised 1.2% of the time
– The predominant wind direction is from the north and occur 10.6% of the time
– Easterly winds were less frequent than other wind directions, occurring approximately less than 5% of the time
– Low wind speeds (wind speeds less than 2 m/s) occur 5.3% of the time, predominantly from the east and east-southeast southeast
– High wind speed (wind speeds greater than 5 m/s) occurs 49.8% of the time, predominantly from the north and southwest

[29] BOM station ID 90186
[30] This is within the 25km radius identified in EPA Publication 1550 Guidelines for input meteorological data for AERMOD (September 2014)
[31] 2023 data incomplete – No available data between 1 January and 24 May 2023

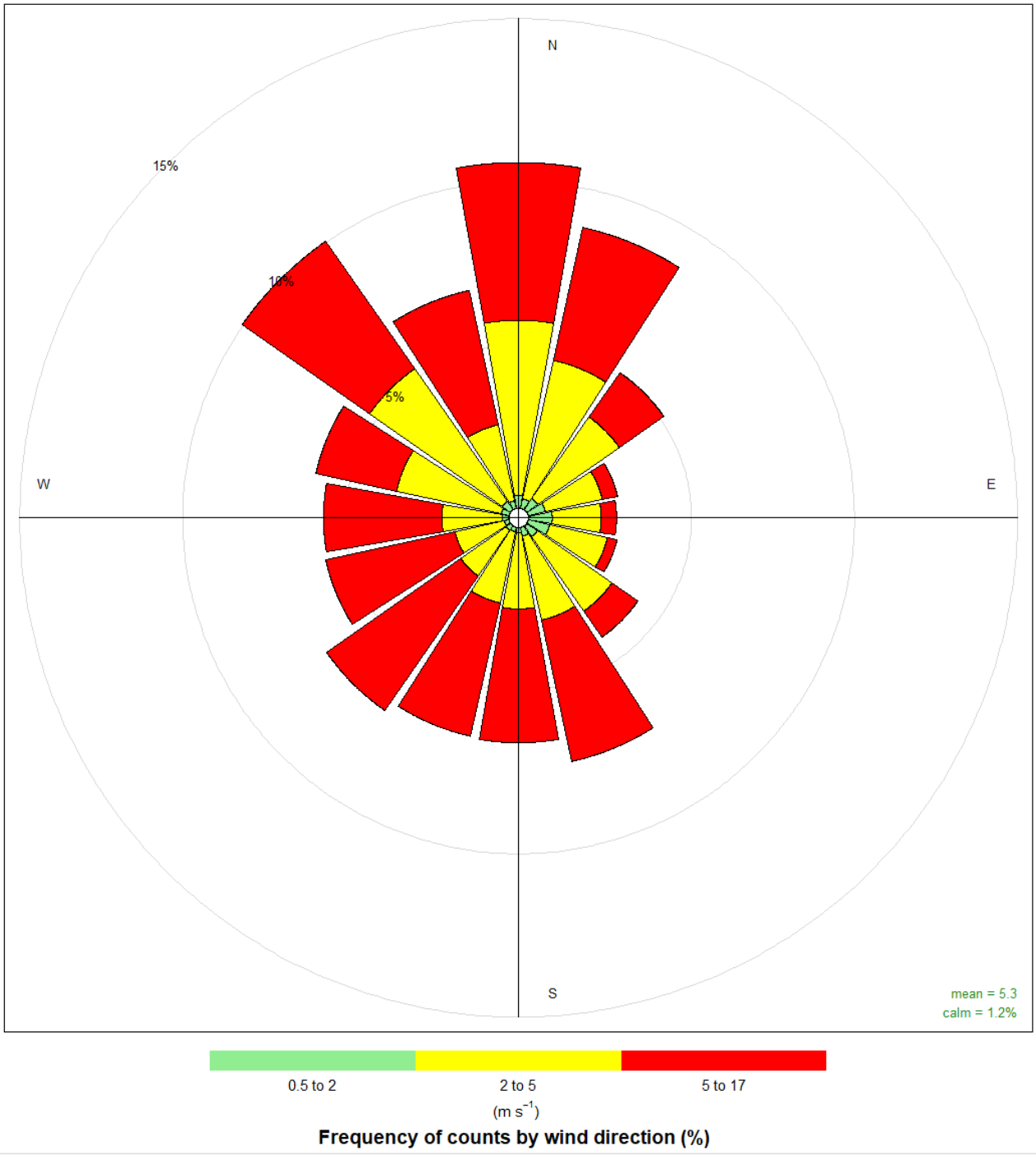

Figure A.1 *Wind rose for the Warrnambool Airport AWS (1 Jan 2018 – 31/12/2022)*

Table A.1 Frequency of occurrence for winds between 2018 and 2022

Wind directions	Light winds	Moderate winds	High winds	Total (%)
	0.50 – 2.00 m/s	2.00 – 5.00 m/s	> 5.00 m/s	
N	0.4	5.4	4.8	10.6
NNE	0.3	4.4	4.2	8.8
NE	0.4	3.1	1.7	5.1
ENE	0.5	1.8	0.5	2.8
E	0.7	1.5	0.5	2.7
ESE	0.7	1.8	0.3	2.8
SE	0.4	2.8	1.0	4.2
SSE	0.3	2.6	4.4	7.3
S	0.2	2.3	4.1	6.6
SSW	0.1	2.2	4.2	6.6
SW	0.2	1.7	5.0	6.9
WSW	0.2	1.6	4.1	5.8
W	0.2	1.9	3.6	5.7
WNW	0.3	3.3	2.5	6.1
NW	0.3	5.0	4.8	10.1
NNW	0.2	2.4	4.2	6.8
Subtotal	5.3	43.6	49.8	98.8
			Calm	1.2
			Total	100.0

A-2 Seasonal variation in wind pattern

The seasonal wind roses for the same period (2018 - 2022) are presented in Figure A.2. Figure A.2 shows that:

– During summer, the predominant wind direction is from the south-southeast, which comprises 15% of the total winds.
– During winter, the predominant wind direction is from the north due to pre-frontal northerlies and cool air drainage from the hills and mountains, which comprises 19.1% of all incident winds.
– Autumn and spring are transitional periods. During these months both summer and winter patterns are observed. In this case, both autumn and spring wind patterns are characteristically similar to winter, generally consisting of high frequencies of northerly component winds.
– The seasonal incidence of light (< 2 m/s) wind speeds are greatest in autumn, comprising 6.3% of incident winds in autumn.
– The seasonal incidence of high (> 5 m/s) wind speeds are greatest in summer, comprising 52.5% of incident winds in summer.

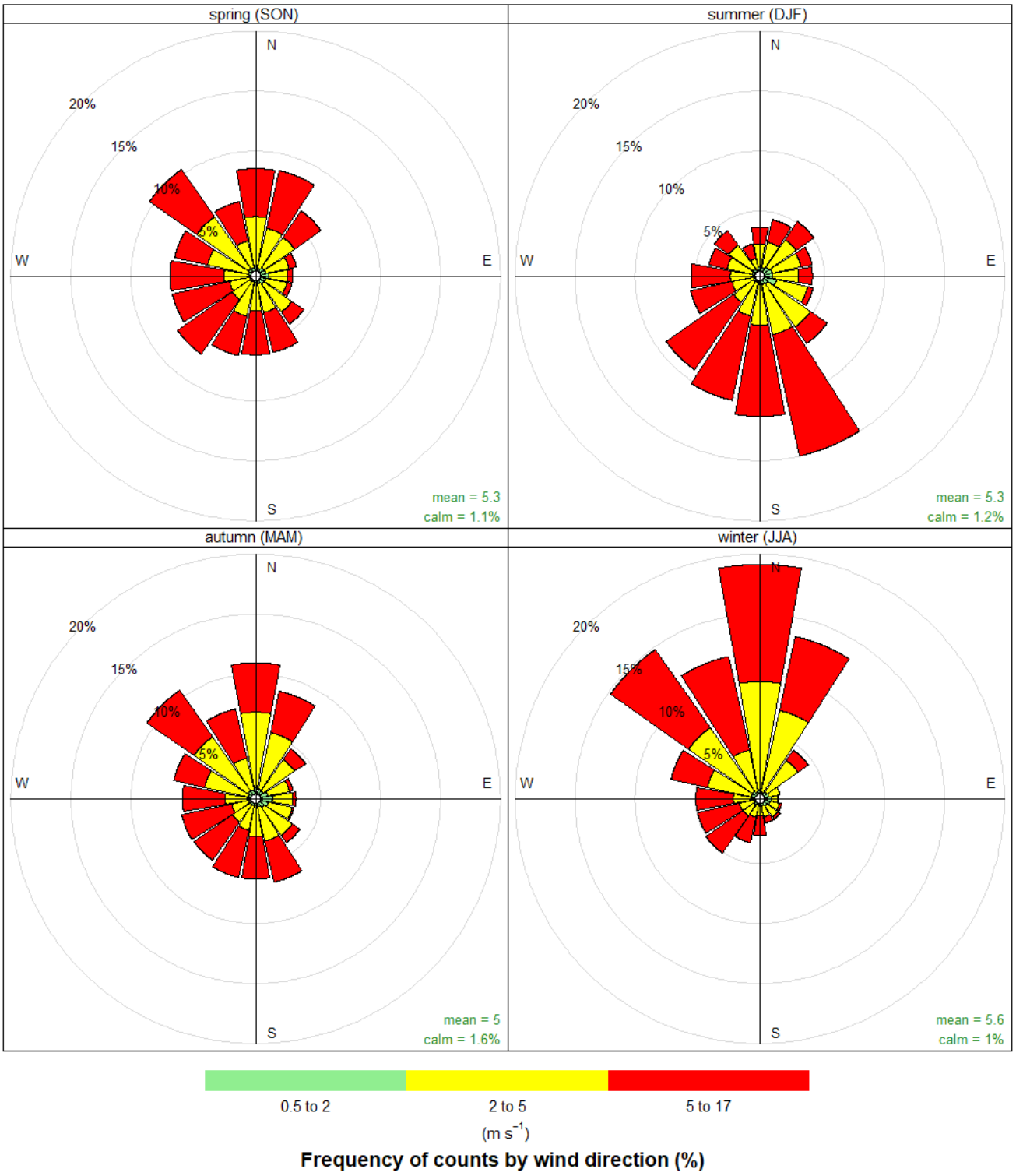

Figure A.2 *Seasonal windrose between 1 January 2018 and 31 December 2022*

Appendix B

Fulton Hogan Asphalt - Level 2 Odour Risk Assessment

B-1 Odour Source Score (OSS)

To determine the odour potential of the source, the nature and size of the site along with the type of odour emissions are required to be categorised. The guideline refers the reviewer to *Table 1*, *Appendix A* and *Appendix B* of the EPA Publication 1883 – *Guidance for Assessing Odour*.

Odour source hazard potential (outcome summarised in Table B.1 below)

- **Activity type**: The asphalt production facility can be categorised under "Asphalt Plant" odour source, as such a "moderate odour potential" has been applied to the site. This has a score of 2.
- **Size of odour hazard**: The material usage of the asphalt plant is approximately hundreds of thousands of tonnes per year and is considered as "Large". This has a score of 3.
- **Offensiveness potential**: The Asphalt/bitumen odour character can be classified to have "Unwelcome" character. This has a score of 2.
- **The highest score from each of the above category is 3**.

Degree of effectiveness of control (outcome summarised in Table B.2 below)

Based on publicly available information[32], it is expected that the asphalt plant will implement standard practice of new asphalt plant in controlling odour emissions which include the use of low sulfur bitumen, ducting fumes through jet gas/oil burner to reduce the discharge of Volatile Organic Compounds and producing asphalt at a temperature below the threshold for blue smoke emissions. Further, the asphalt plant will be maintained at a negative pressure to reduce fugitive emissions and will have a fabric filter/baghouse installed onsite.

Mitigation and control measurements are proposed to be implemented in accordance with standard practice for new asphalt plant. A High weighting has been selected. This has a score of -1.

Applying the above rating, the OSS score is 3 + (-1) = 2.

[32] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981 – Refer to Appendix F and Appendix G of the Development Licence Application.

Table B.1 Derivation of scores for odour source hazard potential (Table 1 of EPA Publication 1883)

Score	Activity type	Size of odour hazard	Offensiveness potential
1	**Low odour potential:** Column 1, Appendix A	**Small size:** Materials usage hundreds of tonnes/m3 per year Area sources of tens of m2.	**Innocuous** Most people would not be bothered by the odour; however, prolonged or frequent exposure may cause adverse reactions.
2	**Moderate odour potential:** Column 2, Appendix A	**Medium size:** Materials usage thousands of tonnes/m^3 per year Area sources of hundreds of m^2.	**Unwelcome** Unpleasant odour range: although not likely to be perceived as toxic or unsafe, these odours are usually unwelcomed for most people.
3	**High odour potential:** Column 3, Appendix A	**Large size:** Materials usage hundreds of thousands of tonnes/m3 per year, or Area sources of thousands of m2.	**Unsafe** Likely to trigger adverse responses as people are likely to perceive odour/s as unsafe or toxic. Most people would adversely react to these odour types.
4	Very high odour potential, Column 4 in Appendix A of EPA Publication 1883.		

Table B.2 Odour control effectiveness weighting (Table 2 of EPA Publication 1883)

Degree of effectiveness of odour control			
Category	**High:** – Tangible mitigation measures in place leading to little or no residual odour; releases only due to plant failure. – Fully enclosed operations with extraction and treatment equipment utilising best available technology and techniques.	**Moderate:** – Some mitigation measures in place, but significant residual odour remains. – Some areas of the site may be controlled but there are areas not addressed. – There is a lack of maintenance or monitoring of equipment.	**Ineffective:** – Open air operation with no containment – Reliance solely on management techniques requiring human intervention – Composting technology not commensurate with risk of feedstock.
Weighting	-1	0	+1

B-2 Odour Pathway Score (OPS)

To determine the effectiveness of the transmission of odour from the potential source to receiving environment, the following categories are considered:

– Distance of receiving environment to the source
– Meteorology of receiving environment to the source
– Terrain and built form within the area
– Hours of operation of odour generating activities

The derivation of the OPS score for the asphalt plant is presented below and summarised in Table B.3:

– **Distance**: Receiving environment is tens to hundreds of metres from source. Separation distance has not been met or only just met at the threshold distances This has a score of 2.
– **Meteorology**: Based on meteorological assessment presented in Appendix A of this report, the predominant winds which would place the source upwind of the receptors is from southeast, south and southwest, occurring 4.2%, 6.6% and 6.9% of the time, respectively. Therefore, a score of 1 has been allocated.
– **Terrain & built form**: There is intervening land use zone contains other non-odorous industry or smaller businesses. This has a score of 2.
– **Hours of operation**: Based on information provided, that usual plant operations occur between 6 am and 3 pm from Monday to Saturday. The hours may increase depending on demand. As such a “moderate frequency” has been applied to the site. This has a score of 2.

Applying the above rating (taken as the maximum score of all the categories), the OPS score is 2.

Table B.3 Derivation of scores for odour exposure pathway effectiveness (Table 3 of EPA Publication 1883)

Score	Category			
	Distance	**Meteorology**	**Terrain & Built From**	**Hours of Operation**
1	**Long distance:** Receiving environment is kilometres or hundreds of metres from source.	**Favourable**: Winds rarely (<10%) blow from source away from receiving environment.	**Favourable:** Highly built-up intervening zone with multiple non-sensitive uses that have no emissions of their own. Densely forested. Source is downslope of receiving environment (or located in a valley or quarry hole).	**Low frequency:** Emissions are rare and only occur if there is a significant upset or multiple lines of failure. Emissions related to specific infrequent planned (monthly or annual) activities).
2	**Medium distance:** Receiving environment is tens to hundreds of metres from source. Separation distance has not been met or only just met at the threshold distances.	**Neutral:** Even distribution of winds (10-20%) from source to receiving environment.	**Neutral:** Moderate vegetation, source is on same altitude as receiving environment. Intervening land use zone contains other non odorous industry or smaller businesses.	**Moderate frequency:** Emissions or operations not continuous, typically confined to business hours during the day. Reasonably regular in frequency (once per day to several times per week).
3	**Short distance:** Receiving environment is adjacent to the source/site. Distance well below (less than half) separation distance).	**Unfavourable** High frequency (>20%) of winds from source to receiving environment.	**Unfavourable:** Flat cleared land. Source is upslope of receiving environment, with isolated dwellings or structures in pathway. Receiving environment abuts source.	**High frequency:** Emissions continuously occurring 24/7 or for long periods at a time (e.g. Landfills, oil refineries, sewage treatment plants etc.

B-3 Odour Receiving Environment Score (ORS)

The sensitivity of the receiving environment has two aspects: the overall land use in the receiving environment and the compliance history, social or historical context experienced by people in the receiving environment (where a +1 is added to the odour receiving environment score (ORS)).

Land use is based on the land use terms and nesting diagrams in the Victoria Planning Provisions (VPP) land use terms. These are grouped into three categories, which are fully detailed in Table B.4 below. Assessment is based on the most sensitive land-use within (or proposed to be within) the separation distance or two kilometres, whichever is closest.

In this case, the most sensitive land is proposed in the Precinct. GHD is unaware of any compliance, social or historical issues experienced by people in the receiving environment, therefore the additional (+1) is not required to be added.

Applying the above rating, the ORS score is 3.

Table B.4 Derivation of scores receiving environment sensitivity

Score	Sensitivity	VPP Land use term or nesting group (number in bold)	Existing Uses
1	Low	– 73.04-3 Agriculture group (sub-group animal production) – 73.04-2 Agriculture group – 73.04-10 Recreational boat facility group – 73.04-15 Warehouse group – 73.04-5 Industry group – 73.04-7 Earth and energy resources group – 73.04-13 Transport terminal group – 73.04-14 Utility installation group – 73.04-16 Renewable energy group – Car park – Saleyard – Tramway – Natural systems – Freeway service centre – Service station	– Industrial use or equivalent rural use (in the case of agricultural odours). No population nearby or uses are transient (e.g., state parks etc.). – Exposure to odours can easily be avoided.
2	Medium	– Research centre – Winery – Cemetery – Crematorium – Emergency services facility – 73.04-8 Office group – 73.04-6 Leisure and recreation group – 73.04-9 Place of assembly group – 73.04-11 Retail premises group – 73.04-12 Retail Premises group (sub-group of shop) – Brothel – Art and craft centre – 73.04-4 Education centre group	– Business areas: exposure can typically be controlled by mitigation at the receptor (incorporated health ventilation and air conditioning systems etc.). – Receptors that are single dwelling or isolated rural dwellings receptor is business/commercial. – Enjoyment of the outdoors: recreational activities, playing sport, populations can move on or plan around exposure.
3	High	– Rural living zones – Hotels/motels – Hospital – Prison – Mixed use zones with residential apartments (at ground or 2 to 3 storeys). – 73.04-1 Accommodation group – Residential areas	– Built up area, towns, many dwellings with backyards and outdoor living areas. – Rural residential, schools, childcare or apartments. – Permanent populations where avoiding exposure is not possible.

B-4 Overall S-P-R score (odour)

A source pathway receiving environment score (SPR) is achieved by adding the ORS, OSS and OPS together. Therefore, based on the above:

– OSS = 2
– OPS = 2
– ORS = 3

The overall S-P-R assessment score = 7, meaning activity is low risk in accordance with the Level 2 odour risk assessment. Given the Level 2 odour risk assessment results in a low risk, the EPA Publication 1883 does not require further odour assessment with directions to proceed to reporting.

It is to GHD's knowledge that an Odour Assessment[33] (equivalent to a Level 3 odour assessment) and a "Response to Warrnambool City Council re Odour Assessment[34] were undertaken by a third party – Air Odour and Compliance Specialist (AOC) to support the Development Licence application for the asphalt plant at 20 Mason Street, Warrnambool. The findings of the Odour Assessment support the low-risk designation. A summary of this Odour Assessment is presented in Section B-5 below.

[33] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to Appendix G of the Development Licence Application.
[34] https://engage.vic.gov.au/fulton-hogan-industries-pty-ltd-APP010981. Refer to "Response to RFI – 12 July 2022".

B-5 Level 3 odour risk assessment

The Odour Assessment (equivalent to a Level 3 odour assessment) was undertaken at a reference plant, which has a considerably higher throughput than the proposed facility, to determine the extent of the odour plume from a similar asphalt plant. The overall finding of the odour assessment was that obvious odour related to asphalt plant, that was mainly transient, could be detected within 350 m radius of the reference plant and no odour was detected beyond 350 m from the reference plant. Further, there were no odour complaints from the established sensitive receptors 370 m – 400 m from the reference plant. This supports a reduction in separation distance to 350 m.

Applying the odour assessment findings to the asphalt plant site at 20 Mason Street, the assessment concluded that obvious odour is unlikely to be observed beyond 350 m from the proposed plant. The low frequency of easterly winds, which would place the sensitive receptors downwind of the proposed plant, further reduces the frequency of odour impacts on the potential sensitive receptors at the Precinct.

The area where obvious odour related to asphalt plant activity (within 350 m radius from the asphalt plant boundary) marginally encompasses the southeast area of the Precinct where the water treatment ponds are located (Figure 7 in Section 5.3.3). Based on the Level 3 odour risk assessment results, GHD considers the odour risk to sensitive receptors in the Precinct to be ‘Low’.

Appendix C

Wheelie Waste – Level 2 odour risk assessment

C-1 Odour Source Score (OSS)

To determine the odour potential of the source, the nature and size of the site along with the type of odour emissions are required to be categorised. The guideline refers the reviewer to *Table 1*, *Appendix A* and *Appendix B* of the EPA Publication 1883 – *Guidance for Assessing Odour*.

Odour source hazard potential (outcome summarised in Table C.1 below)

- **Activity type**: Wheelie Waste is a glass recycling facility and is considered a small facility. The main waste accepted is glass waste, which has low odour potential. Wheelie Waste facility is also licensed to accept small amount of waste that includes putrescible waste which has "high odour potential". Overall, the odour potential from Wheelie Waste is considered to have "moderate odour potential". This has a score of 2.
- **Size of odour hazard**: Wheelie Waste is registered to undertake "Waste and resource recovery – small" activity at the site and is therefore considered as "Small". This has a score of 1.
- **Offensiveness potential**: The "Transfer station with organic" odour character can be categorised as "Fresh compost" with "Unwelcome" character. This has a score of 2.
- **The highest score from each of the above category is 2**.

Degree of effectiveness of control (outcome summarised in Table C.2 below)

Based on the site visit undertaken on 3 June 2024, the site is semi enclosed, and activities are mainly undertaken within the semi-enclosed facility. No obvious odour was observed outside Wheelie Waste facility at 10 Mason Street.

There are no publicly available documents detailing the mitigation or control measures at 10 Mason Street. During the site visit on 3 June 2024 (outside of the property boundary), no obvious odour related to waste transfer station were observed indicating that standard mitigation practices and control measures have been undertaken at the site to control odour. A moderate weighting has been selected. This has a score of 0.

Applying the above rating, the OSS score is 2 + (0) = 2.

Table C.1 Derivation of scores for odour source hazard potential (Table 1 of EPA Publication 1883)

Score	Activity type	Size of odour hazard	Offensiveness potential
1	**Low odour potential:** Column 1, Appendix A	**Small size:** Materials usage hundreds of tonnes/m3 per year Area sources of tens of m2.	**Innocuous** Most people would not be bothered by the odour; however, prolonged or frequent exposure may cause adverse reactions.
2	**Moderate odour potential:** Column 2, Appendix A	**Medium size:** Materials usage thousands of tonnes/m^3 per year Area sources of hundreds of m^2.	**Unwelcome** Unpleasant odour range: although not likely to be perceived as toxic or unsafe, these odours are usually unwelcomed for most people.
3	**High odour potential:** Column 3, Appendix A	**Large size:** Materials usage hundreds of thousands of tonnes/m3 per year, or Area sources of thousands of m2.	**Unsafe** Likely to trigger adverse responses as people are likely to perceive odour/s as unsafe or toxic. Most people would adversely react to these odour types.
4	Very high odour potential, Column 4 in Appendix A of EPA Publication 1883.		

Table C.2 Odour control effectiveness weighting (Table 2 of EPA Publication 1883)

Degree of effectiveness of odour control			
Category	**High:** – Tangible mitigation measures in place leading to little or no residual odour; releases only due to plant failure. – Fully enclosed operations with extraction and treatment equipment utilising best available technology and techniques.	**Moderate:** – Some mitigation measures in place, but significant residual odour remains. – Some areas of the site may be controlled but there are areas not addressed. – There is a lack of maintenance or monitoring of equipment.	**Ineffective:** – Open air operation with no containment – Reliance solely on management techniques requiring human intervention – Composting technology not commensurate with risk of feedstock.
Weighting	-1	0	+1

C-2 Odour Pathway Score (OPS)

To determine the effectiveness of the transmission of odour from the potential source to receiving environment, the following categories are considered:

- Distance of receiving environment to the source
- Meteorology of receiving environment to the source
- Terrain and built form within the area
- Hours of operation of odour generating activities

The derivation of the OPS score for the asphalt plant is presented below and summarised in Table C.3:

- **Distance**: A score of 2 was determined as the site boundary is located more than 200 m from the Precinct boundary. It is understood that the water treatment ponds located within the southeast corner of the Precinct will remain at their present locations. As such, the nearest receptors within the Precinct would be located north of the ponds. Note that the separation distance from Wheelie Waste for odour encompasses into the area where the water treatment ponds are currently located and to the north of the ponds.
- **Meteorology**: Based on meteorological assessment presented in Appendix A of this report, Wheelie Waste is located southeast of the nearest future Precinct (north of the water treatment ponds). This would place the Precinct downwind of Wheelie Waste approximately 4.2% of the year under southeasterly winds. Therefore, a score of 1 has been allocated.
- **Terrain & built form**: A score of 2 was determined as there are intervening, non-odorous land use between the site and the Precinct.
- **Hours of operation**: Based on information provided, that usual plant operations occur between 9 am and 5 pm on weekdays. As such a “moderate frequency” has been applied to the site. This has a score of 2.

Applying the above rating (taken as the maximum score of all the categories), the OPS score is 2.

Table C.3 Derivation of scores for odour exposure pathway effectiveness (Table 3 of EPA Publication 1883)

Score	Category			
	Distance	**Meteorology**	**Terrain & Built From**	**Hours of Operation**
1	**Long distance:** Receiving environment is kilometres or hundreds of metres from source.	**Favourable**: Winds rarely (<10%) blow from source away from receiving environment.	**Favourable:** Highly built-up intervening zone with multiple non-sensitive uses that have no emissions of their own. Densely forested. Source is downslope of receiving environment (or located in a valley or quarry hole).	**Low frequency:** Emissions are rare and only occur if there is a significant upset or multiple lines of failure. Emissions related to specific infrequent planned (monthly or annual) activities).
2	**Medium distance:** Receiving environment is tens to hundreds of metres from source. Separation distance has not been met or only just met at the threshold distances.	**Neutral:** Even distribution of winds (10-20%) from source to receiving environment.	**Neutral:** Moderate vegetation, source is on same altitude as receiving environment. Intervening land use zone contains other non odorous industry or smaller businesses.	**Moderate frequency:** Emissions or operations not continuous, typically confined to business hours during the day. Reasonably regular in frequency (once per day to several times per week).
3	**Short distance:** Receiving environment is adjacent to the source/site. Distance well below (less than half) separation distance).	**Unfavourable** High frequency (>20%) of winds from source to receiving environment.	**Unfavourable:** Flat cleared land. Source is upslope of receiving environment, with isolated dwellings or structures in pathway. Receiving environment abuts source.	**High frequency:** Emissions continuously occurring 24/7 or for long periods at a time (e.g. Landfills, oil refineries, sewage treatment plants etc.

C-3 Odour Receiving Environment Score (ORS)

The sensitivity of the receiving environment has two aspects: the overall land use in the receiving environment and the compliance history, social or historical context experienced by people in the receiving environment (where a +1 is added to the odour receiving environment score (ORS)).

Land use is based on the land use terms and nesting diagrams in the Victoria Planning Provisions (VPP) land use terms. These are grouped into three categories, which are fully detailed in Table C.4 below. Assessment is based on the most sensitive land-use within (or proposed to be within) the separation distance or two kilometres, whichever is closest.

In this case, the most sensitive land is proposed in the Precinct. GHD is unaware of any compliance, social or historical issues experienced by people in the receiving environment, therefore the additional (+1) is not required to be added.

Applying the above rating, the ORS score is 3.

Table C.4 Derivation of scores receiving environment sensitivity

Score	Sensitivity	VPP Land use term or nesting group (number in bold)	Existing Uses
1	Low	– 73.04-3 Agriculture group (sub-group animal production) – 73.04-2 Agriculture group – 73.04-10 Recreational boat facility group – 73.04-15 Warehouse group – 73.04-5 Industry group – 73.04-7 Earth and energy resources group – 73.04-13 Transport terminal group – 73.04-14 Utility installation group – 73.04-16 Renewable energy group – Car park – Saleyard – Tramway – Natural systems – Freeway service centre – Service station	– Industrial use or equivalent rural use (in the case of agricultural odours). No population nearby or uses are transient (e.g., state parks etc.). – Exposure to odours can easily be avoided.
2	Medium	– Research centre – Winery – Cemetery – Crematorium – Emergency services facility – 73.04-8 Office group – 73.04-6 Leisure and recreation group – 73.04-9 Place of assembly group – 73.04-11 Retail premises group – 73.04-12 Retail Premises group (sub-group of shop) – Brothel – Art and craft centre – 73.04-4 Education centre group	– Business areas: exposure can typically be controlled by mitigation at the receptor (incorporated health ventilation and air conditioning systems etc.). – Receptors that are single dwelling or isolated rural dwellings receptor is business/commercial. – Enjoyment of the outdoors: recreational activities, playing sport, populations can move on or plan around exposure.

Score	Sensitivity	VPP Land use term or nesting group (number in bold)	Existing Uses
3	High	– Rural living zones – Hotels/motels – Hospital – Prison – Mixed use zones with residential apartments (at ground or 2 to 3 storeys). – 73.04-1 Accommodation group – Residential areas	– Built up area, towns, many dwellings with backyards and outdoor living areas. – Rural residential, schools, childcare or apartments. – Permanent populations where avoiding exposure is not possible.

C-4 Overall S-P-R score (odour)

A source pathway receiving environment score (SPR) is achieved by adding the ORS, OSS and OPS together. Therefore, based on the above:

– OSS = 2
– OPS = 2
– ORS = 3

The overall S-P-R assessment score = 7, meaning activity is low risk in accordance with the Level 2 odour risk assessment. Given the Level 2 odour risk assessment results in a low risk, GHD does not consider necessary for further assessment for Wheelie Waste at 10 Mason Street. The EPA Publication 1883 also does not require further assessment with directions to proceed to reporting.

Appendix D

Wheelie Waste Dust Risk Assessment

D-1 Source hazard potential (S)

To determine the source hazard potential of Wheelie Waste, the guideline refers the reviewer to *Table 1* of the EPA Publication 1943 – *Guidance for Assessing Nuisance Dust*.

Source hazard potential (outcome summarised in Table D.1 below)

- **Size of dust emitting source**: Wheelie Waste is licensed to be a small waste and resource recovery facility. This has a score of 1.
- **Activities being undertaken**: Collection and storage of glass waste. It is to GHD's knowledge there will be no handling or crushing of glass at the site. GHD site visit on 3 June 2024 (outside of the property boundary), did not observe dusty activities related to the waste transfer station. This has a score of 1.
- **Type of dust emission**: Fugitive dust is expected to be coarse. This has a score of 1.
- **Level of control**: There are areas with unsealed grounds adjacent to the facility where bins are placed. It is expected that, without dust controls at this area, fugitive dust emissions are likely. This has a score of 2.

Adding the above ratings, the S score is 1 + 1 + 1 + 2 = 5.

Table D.1 Hazard potential effectiveness weighting

Score	Size of dust emitting source	Activities being undertaken	Type of dust emission	Level of control
1	**Small**: materials usage in the order of hundreds of tonnes/m^3 per year; area sources of tens m^2.	**Low potential for dust emissions**: Dust not generated by activity per-se (car yards, auto recyclers, washing and cleaning leads to sediments. Sites with exposed areas without activity (typically vacant yards, lots etc).	**Coarse**: only larger stony materials on site, very coarse sand, blue metal.	**Full control or containment**: Fully sealed areas and/or highly effective, tangible measures in place leading to little or no residual dust. Releases only due to plant failure. Good housekeeping, enclosed operation with extraction and treatment equipment.
2	**Medium**: materials usage in the order of thousands of tonnes/m^3 per year; area sources of hundreds of m^2	**Moderate potential for dust emissions**: activities on unsealed sites, i.e., container parks, or other access roads, leading to track-out onto external roads. Cement and building products manufacturing.	**Intermediate**: crushed rock, beach and builders' sands, or fine stone, aggregates.	**Partial Control or containment**: Some areas of the site may be controlled or sealed but there are areas not addressed (e.g., haul roads or car parks). Reliance on management and housekeeping (i.e., water carts, keeping tip-faces small, wheel washes etc.
3	**Large**: Materials usage in the order of hundreds of thousands of tonnes/m^3 per year; area sources of thousands of m^2.	**High potential for dust emissions**: grinding, blasting, material handling in open air, crushing, screening, haul roads for heavy vehicles, agricultural activities (ploughing fields).	**Fine**: Very fine dusts that can readily become airborne (i.e., silt clay, coal dust, dried tracked out mud, gypsum, cement etc.)	**No effective control or containment**: Large exposed stockpiles or unsealed areas, specifically dry conditions, open air operation with no containment, management controls not maintained.

D-2 Pathway effectiveness (P)

To determine the pathway effectiveness, the guideline refers the reviewer to *Table 2* of the EPA Publication 1943 – *Guidance for Assessing Nuisance Dust*.

Dust Exposure Pathway Effectiveness (outcome summarised in Table D.2 below)

- **Distance**: A score of 2 was determined as the site boundary is located more than 200 m from the Precinct boundary. It is understood that the water treatment ponds located within the southeast corner of the Precinct will remain at their present locations. As such, the nearest receptors within the Precinct would be located north of the ponds. Note that the separation distance from Wheelie Waste for odour encompasses into the area where the water treatment ponds are currently located and to the north of the ponds.
- **Orientation of receptors relative to prevailing wind direction**: Based on meteorological assessment presented in Appendix A of this report, Wheelie Waste is located southeast of the nearest future Precinct (north of the water treatment ponds). This would place the Precinct downwind of Wheelie Waste approximately 4.2% of the year under southeasterly winds. Therefore, a score of 1 has been allocated.
- **Terrain**: The activity is on the same altitude as receiving environment. This has a score of 2.
- **Intervening land use**: There are intervening land uses in between nearest future sensitive receptors in the Precinct and Wheelie Waste. This has a score of 2.

Adding the above ratings, the P score is 2 + 1 + 2 + 2 = 7.

Table D.2 Dust Exposure Pathway effectiveness

Score	Distance	Orientation of receptors relative to the prevailing wind direction	Terrain	Intervening land use
1	– Receptors are hundreds of metres or kilometres from source or – Separation distance has been met easily	– Winds rarely (<10%) blow from source to receptor or – Source is upwind, winds are of low speed	– Source located in a valley or quarry hole, downslope from receptor or highly undulating terrain between source and receptor	– High vegetation, i.e., densely forested or – Highly built-up or intervening zone with multiple non-sensitive uses that have no dust emissions of their own
2	– Receptors are tens or hundreds of metres from source or – Separation distance has not been met or met but only just at the threshold distances	– Even distribution of winds (10-20%) from source to receptor or – Source is upwind, winds are of moderate speed – High frequency (>10%) of stable weather conditions with low dispersion	– Source is on same altitude as receiving environment, generally flat land	– Moderate vegetation and/or – Intervening land use zone contains other non-sensitive industry or smaller businesses
3	– Receptors are adjacent to the source/site or – Distance well below (less than half) separation distances	– High frequency (>20%) of winds from source to receptor or source is upwind, winds are of high speed	– Source is upslope of receiving environment and/or located in the same valley	– Open land and cleared of obstacles and/or – Isolated dwellings or structures in pathway

D-3 Receiving environment sensitivity (R)

To determine the pathway effectiveness, the guideline refers the reviewer to *Table 3* of the EPA Publication 1943 – *Guidance for Assessing Nuisance Dust*.

Receiving environment sensitivity (outcome summarised in Table D.3 below)

- **Historical context**: Information about dust complaints from residents living in the area was requested from the council and EPA. No complaints were made against the operation at Wheelie Waste. A score of 2 is assigned.
- **Land use**: The majority of the Precinct, may be comprised of residential dwellings that will have a high expectation of amenity. This has a score of 6.

Adding the above ratings, the R score is 2 + 6 = 8.

Table D.3 Receiving environment sensitivity

Score	Historical context	Land use
2	**No previous history:** no incidents or non-compliance. Only single isolated reports. Generally, the public is unconcerned.	**Low general expectation of amenity** – Exposure can be easily avoided – Dust doesn't have an impact in any lasting way on. appearance, aesthetics or value of property by soiling or, locations where human exposure is transient or, areas of low ecological value – E.g., footpaths, walking or bike trails, farmland (unless sensitive horticultural land,) short term car parks, roads, no nearby waterways, dry arid areas, or waste land (abandoned paddocks etc.)
4	**Some history:** Occasional complaints, history of the industry causing problems elsewhere. Some concern in immediate area but not widespread	**Moderate general expectation of amenity** – People can move on, can potentially avoid exposure. – Dust could impact on appearance, aesthetics or value of property, locations where people are occupationally exposed over a full working day but not in a home setting or, areas of moderate ecological value – E.g., enjoyment of the outdoors, recreational activities, playing sport, offices, warehouses and industrial units, playgrounds, shopping areas, longer term vehicle storage, peri-urban or outer suburban nature areas, somewhat modified water ways
6	**Significant history**: Community has had regular impacts of dust and is highly sensitised. Regular or repeated non-compliance, past enforcement activity	**High general expectation of amenity** – Exposure cannot be avoided. – Dust is likely to impact on damage to property, clothes, vehicles, affects food preparation, etc. or, individuals may be exposed for over eight hours or more in a day, areas of high ecological value – E.g., residential properties with backyards and open living areas, rural living zones, hospitals, schools, prisons, accommodation, residential care homes, car parks associated with workplace or residential parking

D-4 S-P-R score (dust risk)

In step 4, the overall risk of dust impact is assigned by adding the results from step 1 to step 3 and referring to *Table 3* of the EPA Publication 1943 – *Guidance for Assessing Nuisance Dust*.

Adding the S-P-R scores, the total score is 5 + 7 + 8 = 20.

The results of steps 1 to 3 add up to a total score of 20. This equates to a "Moderate" risk rating for overall risk of dust impacts (outcome summarised in Table D.4 below). A moderate risk rating equates to dust impacts being likely to occur on rare occasions.

Table D.4 Overall risk of dust impact

Score	Descriptor	Comment
32-36	Very high	Dust impacts almost certain
27-31	High	Dust impacts highly likely to occur
22-26	Medium	Dust impacts likely
17-21	Moderate	Dust impacts only likely to occur on rare occasions
12-16	Low	Dust impacts are not likely

D-5 Comments on dust risk rating

The Precinct area encompassed by the separation distance for dust from Wheelie Waste is where the water treatment ponds are located. As such, GHD considers that the dust impact on sensitive receptors within the Precinct to be "Low" – Dust impacts are not likely to occur. Therefore, no further assessment is required.

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