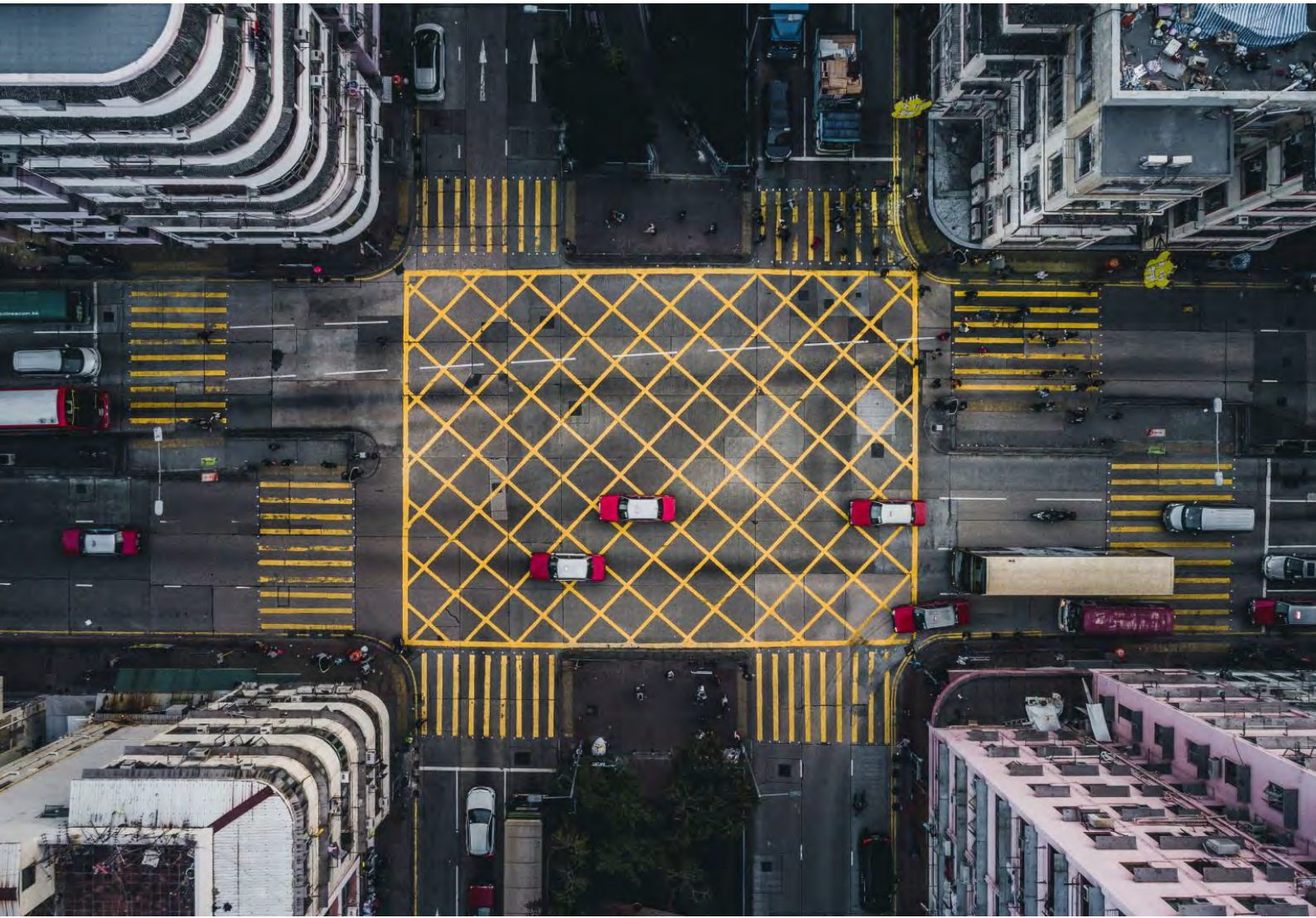
Devon Meadows and Casey Fields South (Employment) PSP

Odour, Dust, and Noise Assessment

Victorian Planning Authority

11 December 2024

→ The Power of Commitment



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1. Introduction

The Victorian Planning Authority's (VPA) Victoria group delivers spatial planning solutions for housing and jobs to manage growth in Victoria's key cities and rapidly growing towns within Melbourne's peri-urban area. The VPA, in collaboration with the Casey City Council (CCC), are undertaking the Casey Fields South (Employment) (CFS) and Devon Meadows (DM) Precinct Structure Plan (PSP). A Land Capability Assessment (SMEC February 2023) was undertaken as part of the development of the PSP. The Land Capability Assessment identified a number of land uses on and adjacent to the Precinct with potential to create adversity amenity impacts on land within the Precinct, and further assessment required to manage these risks and inform planning controls within the PSP.

The EPA was also consulted on the Land Capability Assessment and made recommendations to undertake assessments for the South Gippsland Eggs and D'Alberto Egg Farms and the Clear View Commercial Glass sites.

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

As part of the assessment, GHD has undertaken a separation distance assessment with respect to air quality for the identified industries. The purpose of an air quality buffer assessment is to provide sufficient separation distance 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 for Clear View Commercial Glass site which 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 EPA Victoria Separation Distance Guideline, Clause 53:10 (Uses with Adverse Amenity Potential), EPA Victoria Publication 1518. EPA Victoria Separation Distance Guideline and Egg Industry Environmental Guidelines – Edition II (2018), which provides a methodology for assessing the applicability and suitability of separation distances.

1.1 Purpose of this report

The purpose of this report is to assess the potential for adverse amenity impact from odour, dust and noise emissions to new sensitive receptors that may be planned for within the Precinct. 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 to clarify and confirm objectives, reporting, program and discuss any outstanding issues of queries.
2. Review of any publicly available information pertaining to proposed future changes to land uses within the Precinct and within a 2 km catchment area.
3. Review of identified uses that have the potential to cause an adverse amenity impact (through odour, dust or noise) and then assess risk associated with business/land use name.
4. 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. Review identified separation (buffer) distances for each of the sources.
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 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.
3. 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. Where a medium or high risk is identified through the Level 2 risk assessment, further level 3 assessment in the form of odour surveillance will be required to fully understand risks from the industry.
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.

Reporting

1. Present the findings of the odour, dust and noise assessment with:
    a. Recommendations and identification of risk from intensification of sensitive uses within the PSP, based on field odour surveillance and a desktop review of previously prepared materials.
    b. Considers any recent landowner complaints lodged with the EPA and Council.

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 was utilised from an automatic weather station (AWS) located at a local onsite anemometer on Narre Warren Road approximately 4 km northwest from the site.
– The risk assessment has only assessed risks from the three industries requested, South Gippsland Eggs, D'Alberto Egg Farm and Clear View Commercial Glass. No other industries within the PSP's or surrounding the PSP was included in the risk assessment.
– Where throughputs or capacity of industries within the Precinct are unknown, GHD has taken a conservative approach.
– A phone call to Clear View Commercial Glass was made by GHD but was not successful in obtaining relevant information required. A separation distance of 500 m for dust is based on a conservative assumption that glass, glass products, glass wool or rock wool manufacturing is undertaken at the site using raw materials.
– The 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 of the identified industries are from publicly available information, site visits and planning permit data (where available). Contact was made directly to both South Gippsland Eggs and D'Alberto Egg Farm to request permitted bird numbers. GHD assumes the information provided to GHD is accurate and correct.
– Odour surveillance undertaken for South Gippsland Eggs and D'Alberrto Egg Farm were limited by site access due to the surrounding nature of the PSP area. The areas chosen for the surveillance program is deemed adequate to assess risk for level 3 odour surveillance in accordance with EPA Publication 1883 and 1881.
– The odour surveillance undertaken is assumed to capture normal routine operations the farms. GHD did not have access to information pertaining to specific bird numbers in each shed at the two farms on the days of the surveillance.

2. Existing planning and land use context

2.1 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.

2.1.1 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 facilitate the sustainable growth and development of Victoria and deliver choice and opportunity for all Victorians through a network of settlements. 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.

2.1.2 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). GHD notes that Publication 1518 has been superseded by EPA Separation Distance Guideline at the time of this report.

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.

2.1.3 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.* GHD notes that Publication 1518 has been superseded by EPA Separation Distance Guideline at the time of this report.

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.

2.1.4 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.

2.1.5 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.

2.2 Local planning policy framework

Under the transitional provisions included in Amendment VC148 to the Victorian Planning Provisions, the Municipal Strategic Statement (Clause 21) and Local Planning Policy Framework (Clause 22) within the Casey Planning Scheme must be considered in the absence of a Municipal Planning Strategy.

Relevant provisions of the Municipal Strategic Statement (MSS) and Local Planning Policy Framework (LPPF) to this study are summarised below.

2.2.1 Municipal Strategic Statement

The Municipal Strategic Statement (MSS) sets out the strategic vision for planning at the local level and holds considerable weight in strategic decision making. The MSS is based on the Casey C21 Strategy, which is the main reference document of the Local Planning Policy Framework. Relevant to this study, a local area approach has been taken for Casey Farm (which includes Devon Meadows). Casey Farm is listed as a unique, diverse mix of quality farm land with intensive agricultural activity, large-lot rural-residential and village living, with mixed rural pursuits, as well as genuine rural activities and businesses. Much of the intensive agricultural area in the Farm has been earmarked for urban development by the State Government. Clause 21.13-2 outlines objectives to protect and enhance the qualities, and sense of place of the townships, villages and rural lifestyle communities of Pearcedale, Cranbourne South and Devon Meadows.

Clause 21.13-3 outlines strategies for the Devon Meadows PSP:

– Discourage any further rural-residential development in Devon Meadows, recognising that local infrastructure (roads and drains) cannot cope with additional development
– Undertake improvement works to reduce flooding problems in the area, including upgrading key local drains
– Facilitate the extension of sewer services to the residential areas of Devon Meadows
– Encourage dog breeding and training activities to locate in the precinct identified on the Casey Farm Local Area Map, and protect this area from encroaching rural residential development

2.2.2 Local Planning Policies

Clause 22 of the Casey Planning Scheme contains one local planning policies that are relevant to land in the study area:

– Clause 22.08-1: (Non-agricultural uses in green wedge areas). This policy applies to all land in a Green Wedge Zone where a permit is required to establish a non-agricultural use. The objective of this policy is to discourage the intrusion of urban-type uses into Green Wedge areas.

2.2.3 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*. GHD notes that Publication 1518 has been superseded by EPA Separation Distance Guideline at the time of this report.

3. Legislation, guidelines and reference documents

3.1 Environment Protection Act 2017

EPA Victoria implemented a new legal framework which came into force on 1 July 2018, 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.

3.2 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 $\mu g/m^3$ for an averaging period of one day
  - 20 $\mu g/m^3$ for an averaging period of one year
- Particles as $PM_{2.5}$ (maximum concentration)
  - 25 $\mu g/m^3$ for an averaging period of one day
  - 8 $\mu g/m^3$ for an averaging period of one year
- Odour
  - An air environment that is free from offensive odours from commercial, industrial, trade and domestic activities

3.3 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.

3.4 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.

3.5 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

3.6 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.

3.6.1 Clause 53.09 – Poultry Farm

Clause 53.09 of the VPPs seeks to facilitate the establishment and expansion of poultry farms, including broiler farms, in a manner that is consistent with orderly and proper planning and the protection of the environment. This clause applies to permit applications to use land or construct a building or construct or carry out works for a poultry farm, including to increase the farm capacity of an existing poultry farm. It limits the number of chickens to 5,000 for egg production. The table to the Clause 53.09 includes a minimum distance from sentivie uses and residential zones as follows:

– <1000 chickens:
    - 50 m from sensitive uses
    - 200 m from residential zones
– >1000 chickens:
    - 100 m from sensitive uses
    - 400 m from residential zones

As this clause applies to the establishment and expansion of poultry farms, it has been included by GHD as a guide.

3.6.2 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*. GHD notes that Publication 1518 has been superseded by EPA Separation Distance Guideline at the time of this report.

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

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

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

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

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

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

Summary

The use of the *EPA Victoria - Separation Distances Guideline (August 2024)* is the preferred approach to determining suitable separation distances between existing industrial and proposed new sensitive uses.

3.6.3 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

Separation distances are intended to accommodate both routine emissions and unintended offsite emissions. Where there are routine emissions from an industry, there may still be unintended offsite emissions experienced at or beyond the boundary of the source. Unlike routine emissions, unintended emissions are in addition to routine emissions and are often intermittent or episodic. They may occur due to:

– The nature of the operation
– Minor changes in weather conditions
– Minor accidents
– Minor equipment failure

Unintended offsite emissions may still occur even when an industry is operating in accordance with all relevant statutory obligations, including minimising the risk of harm to human health or the environment from pollution and waste so far as reasonably practicable.

Separation distances are intended to allow unintended emissions to disperse, and in doing so, minimise human health and amenity risks for any nearby sensitive land uses.

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 Separation Distance Guideline 2024 will apply to existing industries in and surrounding the Precinct. The Separation Distance Guideline 2024 seeks to protect for routine operations.

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

3.6.3.1 How to measure separation distances

As defined by the Separation Distance Guideline, August 2024, separation distances for odour and dust are determined by measuring from the activity boundary of the industrial land use to the nearest sensitive land use. The activity boundary is the area that includes all current or proposed industrial activities (including plants, buildings or other sources) that may produce odour or dust emissions (including stockpiles, windrows, leachate ponds, unsealed surfaces and pollution control equipment).

If a business changes its use or moves an activity within the property boundary, the requirement for a planning permit or development licence may trigger a reassessment of adequate separation distances.

Two methods (urban and rural) to measure separation distances for odour and dust are provided in the Separation Distance Guideline, August 2024 to allow consideration of sensitive land uses in different geographical contexts. These methods differ in the measurement point for the nearest sensitive land use.

3.6.3.1.1 Method 1: the urban method

Method 1 measures the separation distance from the activity boundary of the industry/activity to the property boundary of the nearest sensitive land use.

Method 1 should be applied where the nearest sensitive land use is either:

– In an urban area or township, or
– On a site less than 4,000 m^2; or in a zone allowing subdivision to less than 4,000 m^2

Based on the above, the urban method is the relevant form of measurement for the site and has therefore been applied to this assessment.

3.7 Egg Industry Environmental Guidelines – Edition II (2018)

Section 5 of the EPA Separation Distance Guideline (2024) refers to the Egg Industry Environmental Guideline to assign separation distances for chicken eggs farms. The guideline is designed to assist in the establishment of new farms or expansion of existing operations and encourage egg producers to ensure both economically and environmentally sustainable practices. In absence of local or state specified separation distances, section 2 of the guideline recommends a minimum fixed separation distance of:

– 500 m between the impact source and any land use zone that is not compatible with the development (e.g. residential, rural residential)
– 250 m separation distance between the impact source and any sensitive land use (e.g. neighbouring houses) that is located on land that is compatible with the development (e.g. on land designated rural, farming or similar)

These distances can be considered as the recommended default separation distances as per the default separation distances outlined in the EPA Separation distance guideline. To vary a recommended separation distance for odour from a decision maker, EPA recommend a risk assessment is undertaken (section 5.2 of EPA Separation distance Guideline). Section 5.3 of the EPA Separation distance Guideline recommends three key factors to consider when assessing an application to vary a recommended separation distance for odour:

– Environmental and site-specific factors
– Management practices
– Engineered controls

Of particular relevance is specific environmental factors namely; meteorology. Section 5.3.7 of EPA Separation Distance Guideline outlines meteorology as a key factor which can impact the acceptability of a recommended separation distance. The section states: *.Another common factor that can impact the acceptability of a recommended separation distance is the occurrence of prevailing winds that may influence the risk of odour impacts as they can transport odour plumes towards sensitive receptors. A risk assessment may be recommended to consider the strength and frequency of the wind direction towards these sensitive receptors to confirm the acceptability of the recommended separation distance or the need for a more suitable distance to protect sensitive receptors'.*

The Egg Industry Environmental Guideline outlines that an empirical S-factor formula have been developed by McGahan and Galvin (2018) to determine risk based separation distances between layer farms and sensitive land uses (receptors). The S-factor formula approach (see Appendix A of the Egg Industry Environmental Guideline) can be used to assess if the available separation distances would be suitable for a proposed new development or expansion.

Appendix A also details a method for calculating minimum separation distances using the S-Factor method and taking account of local meteorological conditions. This approach is consistent with EPA Victoria approach outlined above and in Section 6.9.3 of EPA Publication 1883. Section 6.9.3 of EPA Publication 1883 Guidance for assessing odour which states the following: '*Meteorological modelling tools are useful in understanding dispersion patterns from sources, such as the shape of emission contours, when assessing frequency of odour exposure. These tools may be applied using the minimum separation distance as an input to determine its shape by keeping the total area contained by the separation distance constant. These techniques are also known as determination of directional buffers as the buffer would expand or contract in accordance with the local weather patterns*'.

GHD has therefore undertaken a risk assessment in accordance with the S-Factor method to account for local meteorological conditions and other site-specific factors such as surface roughness and terrain features.

Appendix A of the guideline details the procedure for calculating the S-Factor formula which gives a separation distance provided between egg industry facilities and land uses depending on:

– Size (defined as the number of birds in the complex)
– Farm site, considering:
  - Proximity to a sensitive land use (within a rural zone)
  - Proximity to a non-rural zone
  - Land surface roughness (vegetation and other features) between the layer farm and the sensitive land use
  - Terrain effects around the site that particularly influence local meteorology of the area
  - Wind frequency in the direction of a sensitive receptor

The separation distance is calculated by the following formula:

$$Separation\ Distance = \left(\frac{Number\ of\ birds}{1000}\right)^{0.63} * S1 * S2 * S3 * S4\ (optional)$$

Where:

– S1: Sensitive land use factor for estimating the relative odour impact potential of a development
– S2: Land surface roughness factor for estimating the potential changes to odour dispersion due to changes in the roughness of the land surface
– S3: Terrain weighting factor for estimating the potential changes to odour dispersion in situations where meteorological conditions may be influenced by local terrain features
– S4: Wind frequency factor (optional) for estimating the relative odour impact due to the frequency of wind direction for wind speeds less than 3 m/s

The guideline specifies that where the calculated separation distances cannot be met through the s-factor method, site specific odour impact assessment may be required in the form of an appropriate odour model, that uses odour emission rates and hourly meteorological data.

3.8 Casey Fields South (Employment) & Devon Meadows PSP Co-Design Summary

The Vision Plan for the CFS PSP and DM PSP has been documented and mapped in Figure 1. Development for economic and employment purposes, local parks, wetland and draining channels has been planned for the CFS PSP. While the DM PSP will see development for community life, providing local opportunities for shopping, education, community services, entertainment and recreation.

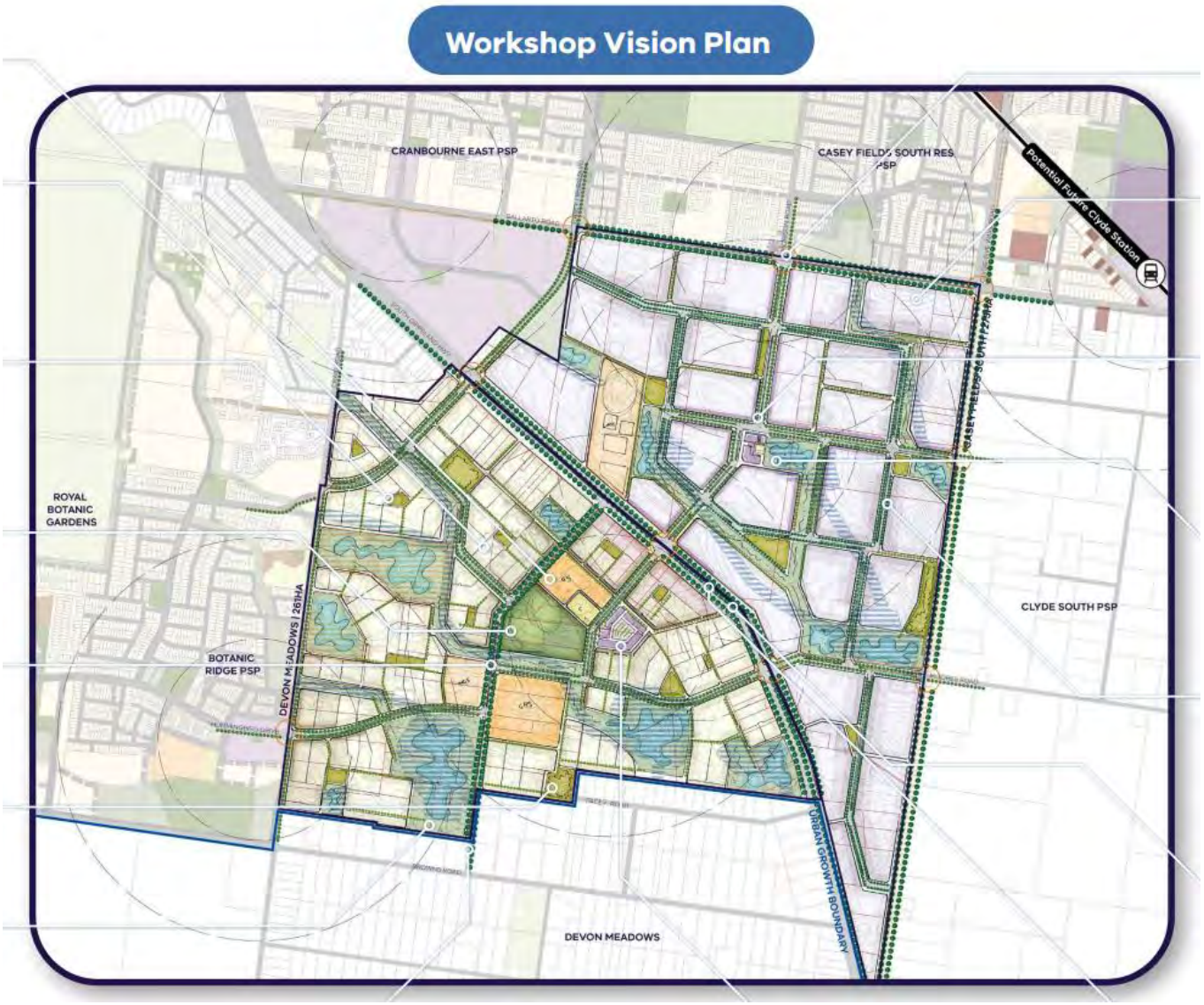


Figure 1 Workshop Vision Plan (Extracted from Co-Design Summary 2023)

3.9 Casey Fields South and Devon Meadows PSP Land Capability Assessment (2024)

A Land Capability Assessment (LCA) for the Casey Fields South and Devon Meadows Precinct Structure Plan (PSP) was undertaken by SMEC in July 2024. As part of the LCA, preliminary air quality/odour and noise investigations were undertaken in the form of desktop reviews, site investigations and monitoring.

Air Quality

The LCA notes that the major sources of air emissions in the study area include the industrial, commercial activities and vehicles. Visible dust and odour were observed at the time of site investigations with a recorded total of 25 locations to have observed odours. Out of the 25 locations, 17 of the locations were related to specific businesses included flower farms/nurseries, poultry farms and construction materials. Dust was observed during the site visit at four of the 53 locations that were surveyed and all related to vehicle generated emissions.

A total of six industries were identified to have potential separation distances in accordance with the Separation Distance Guideline (previously EPA Publication 1949), EPA Publication 1518 and Clause 53.10. The separation distances assigned and plotted have been included in Figure 2.

Noise

The LCA reported South Gippsland Highway and main roads to have moderate to loud traffic noise. It was noted that commercial enterprises along Devon Road had low to moderate noise levels associated with machinery, vehicles and processes at these sites. With potential for land use changes in the future, noise amenity impacts was noted to be considered.

The study suggested qualitative observation of noise from roads and businesses, however the report does not include data that would allow to quantify impact from these sources. Noise monitoring along the South Gippsland Highway and other major roads (Ballarto Road, Clyde-Five Ways Road, Craig Road, and Fisheries Road) has been recommended to inform future planning decisions, plans and designs. It was not included in the scope of the current study.

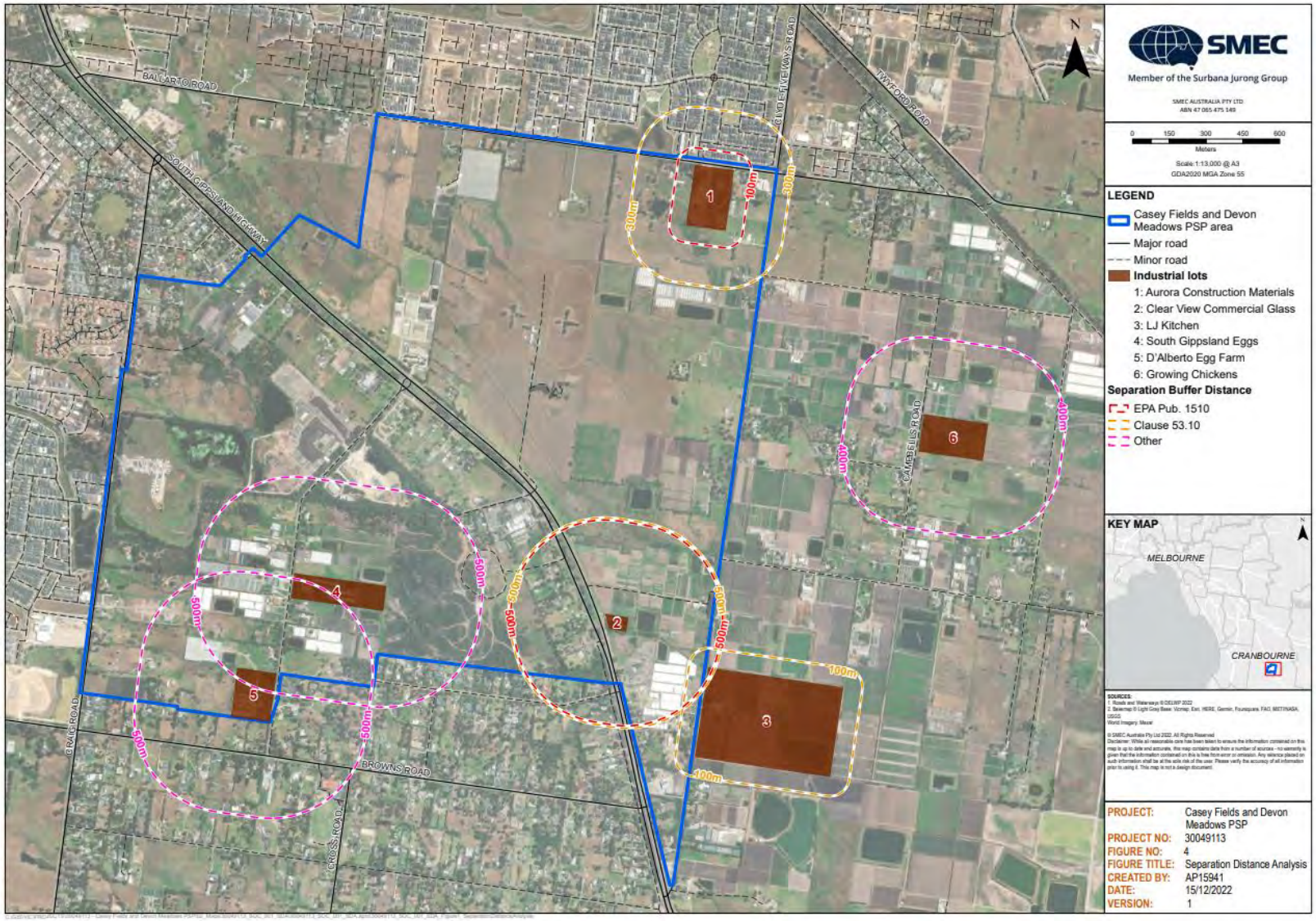


Figure 2 *Separation Distance Analysis (Extracted from LCA)*

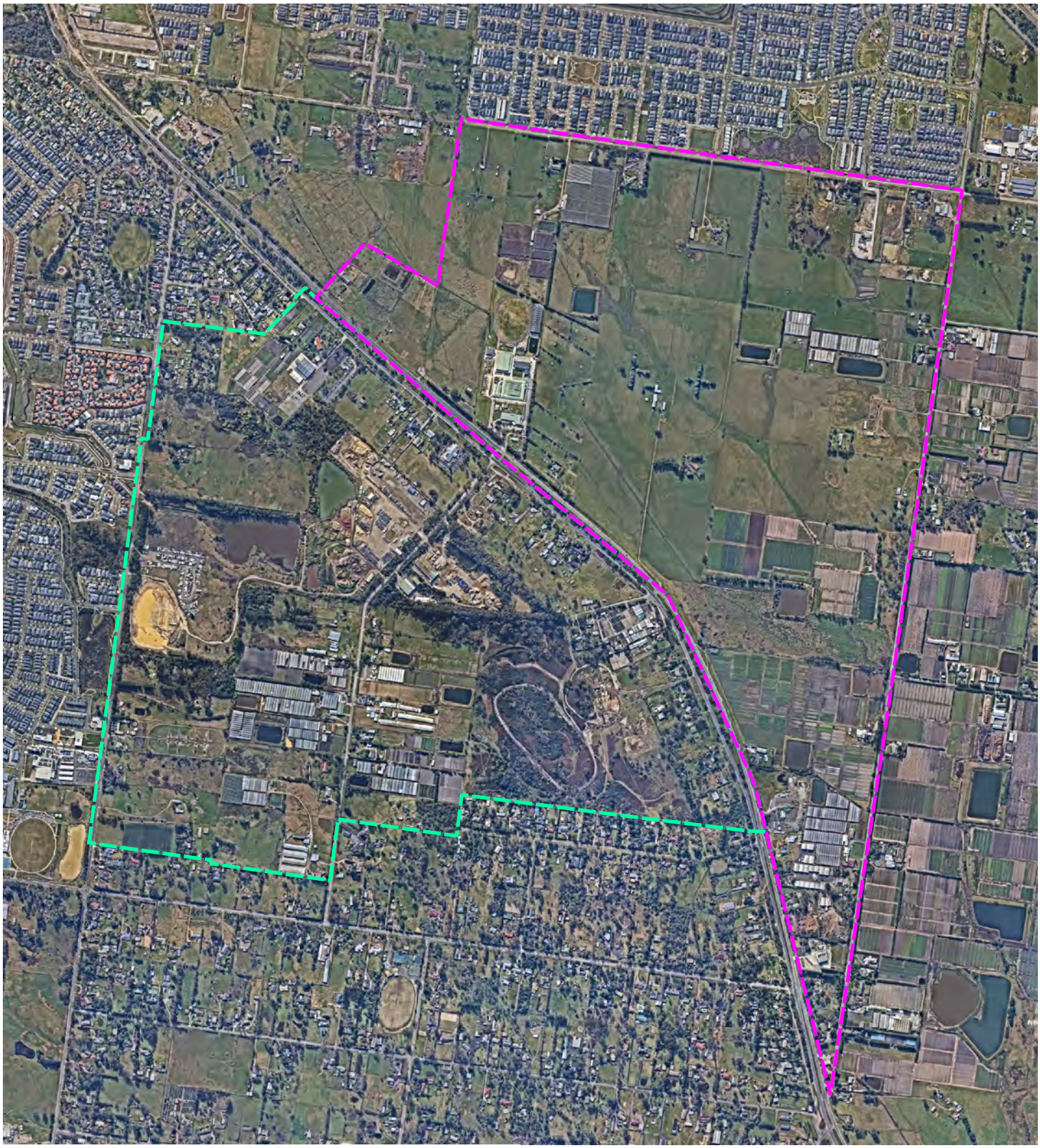
4. Site overview

4.1 Site location and planning

The total study area for the proposed CFS PSP and DM PSP totals 536 hectares of land and is situated approximately 45 kilometres southeast of Melbourne central business district. CFS Precinct comprises approximately 275 hectares, and the DM Precinct comprises approximately 261 hectares. The CFS Precinct is bounded by the South Gippsland Highway to the southeast, Clyde-Fiveways Road to the east and Ballart Road to the north. The DM Precinct is bounded by the South Gippsland Highway to the north and east, Worthing Road to the south and Craig Road to the west.

The CFS and DM precincts are zoned under Urban Growth Zone (UGZ), Farming Zone (FZ) and Urban Floodway Zone (UFZ). Currently, the land within the PSP is noted to have uses including industrial, low and high density residential, rural living, commercial, agricultural and education.

The CFS PSP is expected to predominantly comprise industrial land use, and the DM PSP will likely comprise residential and commercial land uses. The total area, planning zone and 2 km catchment area is displayed in Figure 3.



Legend

PSP Boundary

- Devon Meadows PSP Boundary
- Casey Field South PSP Boundary

Paper Size ISO A4

0 250 500 m

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

N

GHD

Victorian Planning Authority

Deavon Meadows PSP Assessment

PSP Boundary and Location

Project No. **12647547**
Revision No. **-**
Date. **01/11/2024**

FIGURE 3.0

Document Path: \\ghdnet\ghd\AU\Melbourne\Projects\31\12647541\GIS\Maps\Working\12647547_Devon Medows.qgz
Print Date: 01/11/2024

Data Source:NearMap 2024.
Created By: ylim

4.2 Surrounding land use

The PSP is surrounded by Junction Village to the northwest, Clyde to the east, Warneet to the south and Cranbourne South to the west. Land immediately surrounding the precinct is zoned as a mixture as Urban Growth Zone 4 (UGZ4) to the west, UGZ2 and UGZ8 to the north, UGZ to the east and Green Wedge 5 (GW5) to the south. Roads surrounding the PSP are classified under Transport Zone 2 and 3 (TRZ2 and TRZ3).

Land in Junction Village to the immediate north of the subject site, is primarily in the UGZ2 and UGZ4. Clyde is a mixture of UGZ, UGZ2 UGZ7 and UGZ8 before transitioning to GWZ6 further east. Cranbourne South is zoned under GWZ2 before transitioning to Low Density Residential Zone (LDRZ). Warneet consists mostly of rural conservation zone (RCZ) public conservation and resource zone (PCRZ).

4.3 Sensitive receptors

4.3.1 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[1] (2022, p. 46) as:

> *'Any land use that requires a focus on protecting human health and wellbeing, local amenity and aesthetic enjoyment. Examples[2] 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:[3]

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

[1] EPA Publication 1949, Separation distance guideline (2022)
[2] EPA Draft Publication 1949 – 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.
[3] 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.

4.3.2 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.

4.3.3 Proposed sensitive uses within DM PSP and CFS PSP

A draft DSS was provided in October 2024 by VPA. This draft is subject to change as the PSP project progresses, however this assessment has been based on the proposed layout provided. The following sensitive uses are proposed by VPA in the DM PSP:

– Primary School/Community facility
– Secondary School
– Non-government school
– Active open area
– Residential

4.4 Identified Industries

Of the six identified industries in the LCA report with separation distances, three industries (South Gippsland Eggs, D'Alberto Egg Farm and Clear View Commercial Glass) have been assessed in this report. The following sections summarises each industry relevant to this report.

4.4.1 South Gippsland Eggs

South Gippsland Eggs is located at 100 Devon Road, Devon Meadows. The site is currently used as a chicken egg farm and are permitted to have 40,000 birds on site[4]. Based on a review of aerial imagery and a site visit, South Gippsland Eggs appears to have a total of five sheds which are naturally ventilated through side curtains.

4.4.2 D'Alberto Egg Farm

D'Alberto Egg Farm is located at 135 Devon Road, Devon Meadows. The site is currently used as a chicken egg farm and hydroponic tomato farm. They are permitted to have 70,000 birds on site[5]. Based on a review of aerial imagery and a site visit, D'Alberto Egg Farm appears to have five enclosed sheds, however the specific sheds used for the egg farm is unknown.

4.4.3 Clear View Commercial Glass

Clear View Commercial Glass is located at 1925 South Gippsland Highway, Clyde. The site is listed to provide commercial services as well as domestic works which include glass splashbacks, shower screens, mirrors as well as any type of glass replacement.

From GHD's site visit, no visible dust was observed from the site. Noise above ambient levels was not observed from the boundary of the site and from neighbouring locations. No further information on operations, throughput or previous background studies was available.

GHD notes that the facility does not report to the NPI and does not hold an EPA licence. Therefore the throughput is assumed to be a small facility. Given there is no EPA licence, it is possible for Clear View to not manufacture any glass onsite, and instead prepare glass products for installation which may include activities such as glass cutting. GHD was however unable to confirm operations at the time of this assessment, therefore a conservative assumption has been made to assume the site manufactures glass.

[4] Confirmed via phone discussion with the farm on 22/10/2024
[5] Confirmed via phone discussion with the farm on 21/10/2024

5. Separation distance analysis

5.1 Default separation distance

The three identified industries have relevant separation distances as identified in the LCA. The following section details the separation distance analysis with a summary of the identified distances in Table 1 and separation distances plotted in Figure 6.

Table 1 Default separation distances for identified industries

Company	Industry type and activity/definition	EPA 1518 Guideline separation distance (m)	EPA Separation Distance Guideline(m)	Clause 53.10	Applied Separation distance	Impact Precinct (Y/N)
South Gippsland Eggs	**ODOUR/DUST** Egg farm	Environmental Guidelines for the Australian Egg Industry, Australian Egg Corporation Limited, 2008	Egg Industry Environmental Guidelines – Edition II (2018)	NA	Refer to Table 4	Y
D'Alberto Egg Farms	**ODOUR/DUST** Egg farm				Refer to Table 5	Y
Clear View Commercial Glass Manufacturer	**DUST** Glass product manufacturer	500 m	500 m	500 m	500 m	Y

5.2 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. The closest meteorological data from the Bureau of Meteorology (BoM) operated automatic weather station (AWS) is Frankston[6] (18 km west of the site[7]). However this is not considered representative of the area due to the coastal nature of the AWS.

GHD has access to meteorological data (ten months at five minute intervals, between 18 July 2017 and 28 May 2018) from a local onsite anemometer located on Narre Warren Road approximately 4 km northwest from the site. This data has been used to understand the meteorology and the implications for dispersion of odour and dust.

5.2.1 Wind pattern

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 more stable light wind conditions, and (iii) good dispersion conditions with winds over 5 m/s. Directional frequencies of the annual and seasonal wind roses for the Project site are presented in Appendix for reference.

[6] BoM site 86371
[7] This is within the 25km radius identified in EPA Publication 1550 Guidelines for input meteorological data for AERMOD (September 2014)

5.2.1.1 Patterns in wind

Figure 4 presents the average wind rose for the available data period (18 July 2017 – 28 May 2018) and shows the following features:

- The predominant wind directions are from the west and northwest quadrant comprising 37% of all incident winds.
- Easterly and southeast quadrant winds are also prevalent, although to a lesser extent than winds from the west and northwest comprising 32% of all incident winds.
- The incidence of southerly winds (~5.6%) is greater than northerlies, occurring < 3% of the time.
- Winds from north and northeast sector are minimal.
- The average wind speed measured to date was a moderate 3.9 m/s.
- The observed wind speed distribution indicates that the largest proportion of high wind speeds (> 10 m/s) are from the west to the north-northwest, while the largest proportion of light winds (< 2 m/s) is from the east to the east-southeast. This indicates that the good dispersion conditions (winds >5 m/s) would blow dust particles to the east and southeast more than any other direction, while for poor dispersion conditions associated with high stability (winds < 2 m/s), odour is likely to disperse to the west and northwest more than any other direction.

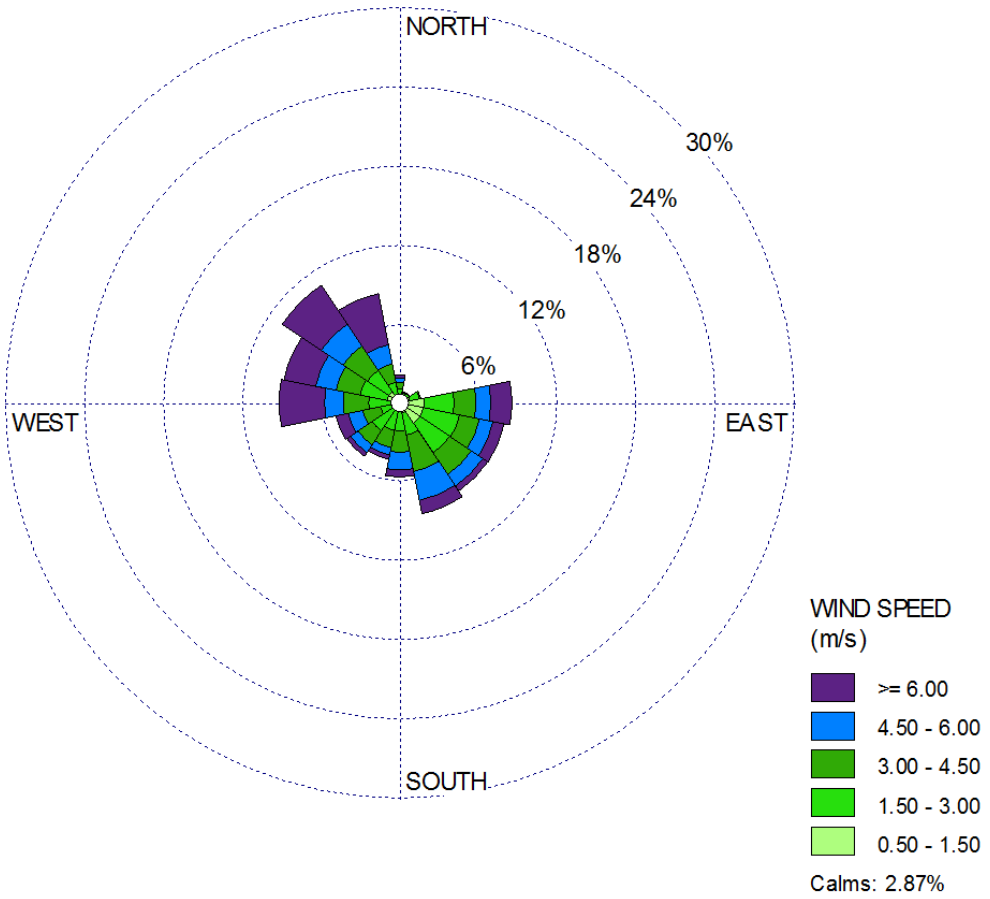


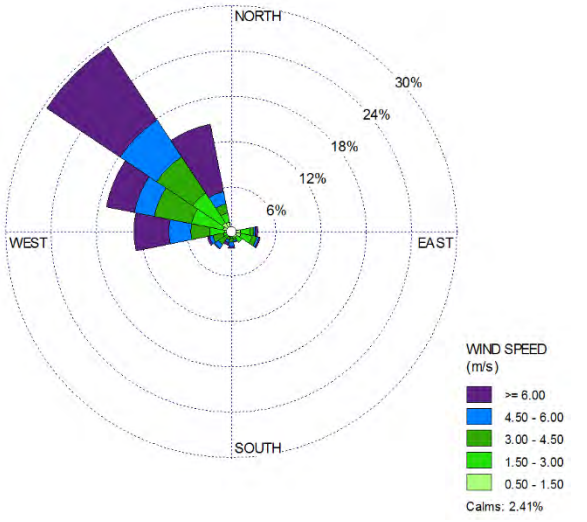
Figure 4 *Wind rose (18 July 2017– 28 May 2018) for Narre Warren Road*

5.2.1.2 Seasonal variation in wind pattern

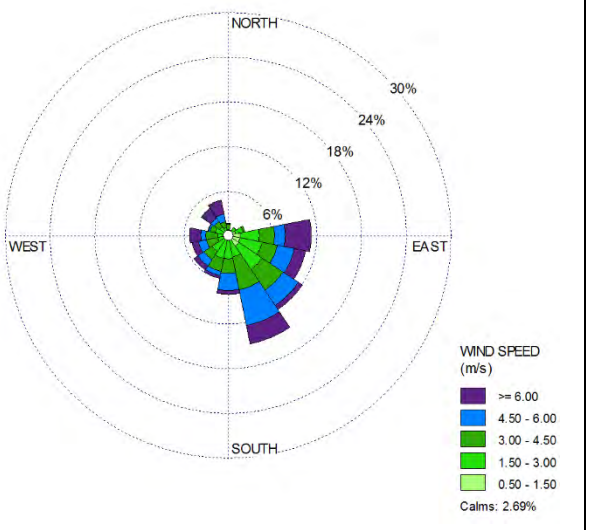
The seasonal wind roses for the same period are presented in Figure 5. Figure 5 shows that:

– During winter (July and August), northwesterly winds are the most dominant - aligning to the Dandenong Creek axis, synoptic winds and the presence of pre-frontal northerlies. They comprise ~29% of incident winds.
– During summer the influence of the sea breeze is evident, as a result of sea breezes experienced in the late afternoon and evening from the coast. The predominant wind direction is southeasterly and south-southeasterly which comprises of 27% of total winds. The summer wind rose also includes winds from the south and south-southwest.
– Autumn and spring are transitional periods. During these months both summer and winter patterns are observed. During autumn (28 February 2018 to 28 May 2018) there is a large influence of northwesterly winds, similar to the winter wind rose.
– The seasonal incidence of high winds (> 10 m/s) is greatest in winter and lowest in spring.
– The incidence of light (< 2 m/s) winds is greatest in autumn and relatively uniform across the remaining seasons.
– As with the wind rose for the available data period, there is a lack of north and northeasterly winds in all observed seasons.
– Light northwesterly and southeasterly winds occur across all seasons. The direction of these drainage flows (southeast and northwest, respectively) are likely to be associated with high stability and are the directions of poor dispersion.

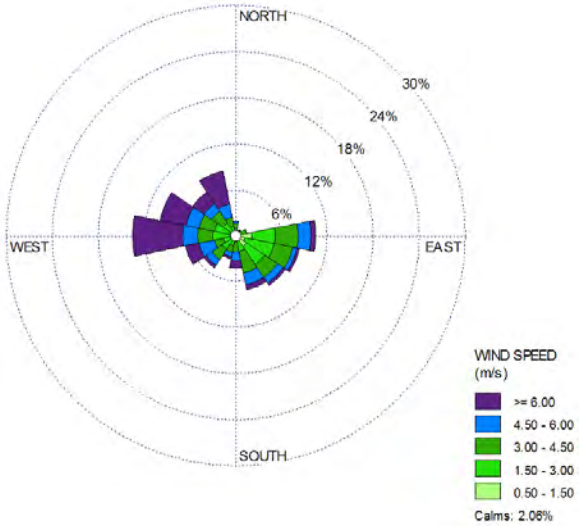
Winter - 18 July 2017 to 31 August 2017 (average wind = 4.5 m/s



Summer - 1 December 2017 to 28 February 2018 (average wind = 3.8 m/s)



Spring – 1 September 2017 to 30 November 2017 (average wind = 4 m/s)



Autumn – 28 February 2018 to 28 May 2018 (average wind = 3.5 m/s)

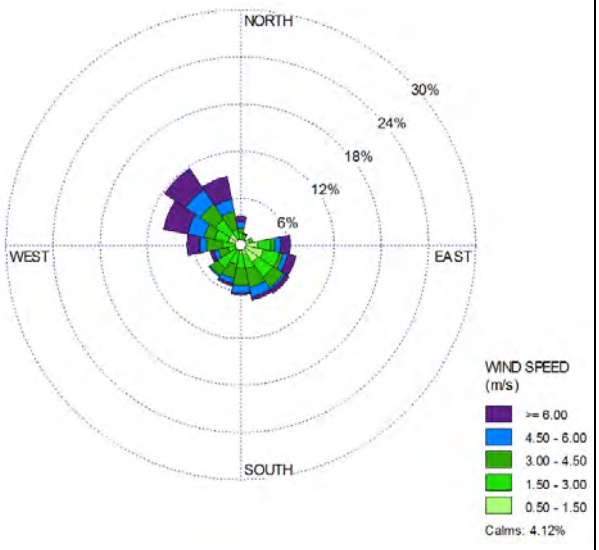


Figure 5 ***Seasonal wind roses for Narre Warren Road***

5.3 Egg Industry Environmental Guideline 2018

5.3.1 Derivation of S1 – S4

5.3.1.1 S1 – S3 applicable to this assessment

To determine the separation distance required from the existing egg layer sheds, the S-Factor method is implemented as described in Appendix A of the EPA Egg Industry Environmental Guideline. Table 2 presents the derivation of S1 – S3.

Table 2 Derivation of S1 – S3

S-Factor	Description	Selected/ Calculated factor
S1	Sensitive land use within a non-rural zone	30
S2	Limited groundcover/cropland/grass, few trees - Open country with few or scattered tree. Topography would be predominantly flat to slightly undulating	1.0
S3	Flat terrain <2% from source to sensitive land use	1.0

5.3.1.2 Derivation of S4

The optional wind frequency factor (S4) within the S-factor method has been applied to the wind direction frequencies for the 16 compass points which considers the percentage of the wind direction for wind speeds below 3 m/s. Wind speeds above 3 m/s are excluded from the analysis, as the dispersion conditions predicting the greatest odour impact occur under low-wind-speed conditions. Further, the meteorological data used to derive S4 has an applied 20% safety factor as recommended in the Egg Industry guideline.

Table 3 presents the S4 derived for each wind direction. An S4 factor will be selected based on the wind direction(s) that will put the receptor of interest downwind of the sheds.

Note, any of the 16 directions that have a wind frequency value greater than 1.0 after the addition of a safety factor have been adjusted to a value of 1.0 as per Step 5 on page A5 of the Egg Guideline.

Table 3 Wind frequency factor S4 applicable to this assessment

Wind direction (blowing from)	Wind direction frequency (%) (<3m/s)	Wind frequency factor	S4 – Adjusted wind frequency factor (20% safety factor applied)
N	2.8%	0.46	0.55
NNE	2.2%	0.46	0.55
NE	2.5%	0.54	0.65
ENE	4.2%	0.34	0.40
E	10.7%	0.51	0.62
ESE	12.1%	0.65	0.78
SE	11.6%	0.63	0.76
SSE	6.5%	0.34	0.41
S	5.6%	0.23	0.28
SSW	5.5%	0.18	0.22
SW	6.5%	0.21	0.25
WSW	4.1%	0.35	0.41
W	6.2%	0.88	1.00
WNW	7.9%	1.00	1.00
NW	7.7%	0.96	1.00
NNW	4.1%	0.54	0.65

5.3.2 Separation distance for current operations

As the modules on each farm are located in close proximity, the potential odour impact on sensitive land use calculated in this assessment is considered to be the sum of the potential individual impacts from each module. The number of birds in this calculation is therefore the total bird count for each farm.

D'Alberto Egg farm has a maximum capacity of 70,000 birds while South Gippsland Egg Farm has a maximum capacity of 40,000 birds. GHD notes that the separation distance must be calculated based on the maximum permitted number of birds for each farm. Even in the event current bird numbers are lower than the maximum permitted value, the separation distance needs to account for the future possibility the site may hold the permitted maximum numbers.

Using the S1, S2 and S3 values derived in Section 5.1.1, the separation distance results in the following calculation:

Separation distance (m) = (Number of birds/1,000)$^{0.63}$ x S1 x S2 x S3 x S4 (optional)

South Gippsland Egg Farm Separation distance (m) = (40,000/1,000)$^{0.63}$ x 30 x 1.0 x 1.0 x S4 (optional)

D'Alberto Egg Farm Separation distance (m) = (70,000/1,000)$^{0.63}$ x 30 x 1.0 x 1.0 x S4 (optional)

For this assessment, both egg farms are situated within the Devon Meadows Precinct which is surrounded by proposed sensitive uses. When selecting a representative separation distance for the site, the direction of the closest receptor to each module are considered. The closest proposed sensitive uses to the egg farms are presented below, along with the wind directions which would result in these receptors being downwind of the modules:

– Proposed primary school or community facility
  - 161 m northwest of South Gippsland Egg Farm and will be downwind of the current module during the occurrence of southeasterly winds
  - 601 m north of D'Alberto Egg Farm and will be downwind of the current module during the occurrence of southerly winds
– Proposed secondary school
  - 57 m west of South Gippsland Egg Farm and will be downwind of the current module during the occurrence of easterly winds
  - 334 m north of D'Alberto Egg Farm and will be downwind of the current module during the occurrence of southerly winds
– Proposed non-government school
  - 121 m south of South Gippsland Egg Farm and will be downwind of the current module during the occurrence of northerly winds
  - 197 m northeast of D'Alberto Egg Farm and will be downwind of the current module during the occurrence of south-westerly winds
– GHD has included proposed sensitive receptors as outlined in Section 4.3 and assumed for proposed residential receptors as areas marked as "residential" and "area of increased density".

GHD has utilised the wind frequency factor S4 from Table 3 to calculate a separation distance from the farms in all wind directions. The separation distances for the egg farms have been calculated in Table 4 and Table 5 with the separation distance in each direction plotted in Figure 6. To visually show the separation distance each individual calculated separation direction has been joined to create a variable distance separation distance based on local meteorology. The greatest calculated separation distances were 306 m from the boundary of South Gippsland Eggs and 436 m from the boundary of D'Alberto Egg Farm to the northwest.

GHD has included proposed sensitive receptors as outlined in Section 4.3 and Figure 4 and assumed for proposed residential receptors as areas marked as "residential" and "area of increased density".

From Figure 6, and following the approach outlined in Appendix A of the Egg Guideline, it can be seen that the S-Factor distances for the two farms do not overlap therefore cumulative odour effects are not considered to be an issue for the two farms. Therefore cumulated effects are not considered further in this assessment.

Table 4 Separation distance for South Gippsland Eggs

Wind direction	S4	Calculated separation distance (m)	Proposed sensitive receptor downwind	Distance from farm	Receptor encompassed by separation distance (Y/N)
N	0.55	169	Residential	-	Y
NNE	0.55	169	Residential	-	Y
NE	0.65	199	Residential	-	Y
ENE	0.40	123	Residential	-	Y
E	0.62	190	Residential	-	Y
ESE	0.78	239	Residential	-	Y
SE	0.76	233	Residential	-	Y
SSE	0.41	126	Residential	-	Y
S	0.28	86	Non-government school	121 m	N
SSW	0.22	67	Non-government school	121 m	N
SW	0.25	77	Secondary School	57 m	Y
WSW	0.41	126	Secondary School	57 m	Y
W	1.00	306	Secondary School	57 m	Y
WNW	1.00	306	Secondary School	57 m	Y
NW	1.00	306	Primary school or community facility	161 m	Y
NNW	0.65	199	Primary school or community facility	161 m	Y

Table 5 Separation distance for D'Alberto Egg Farm

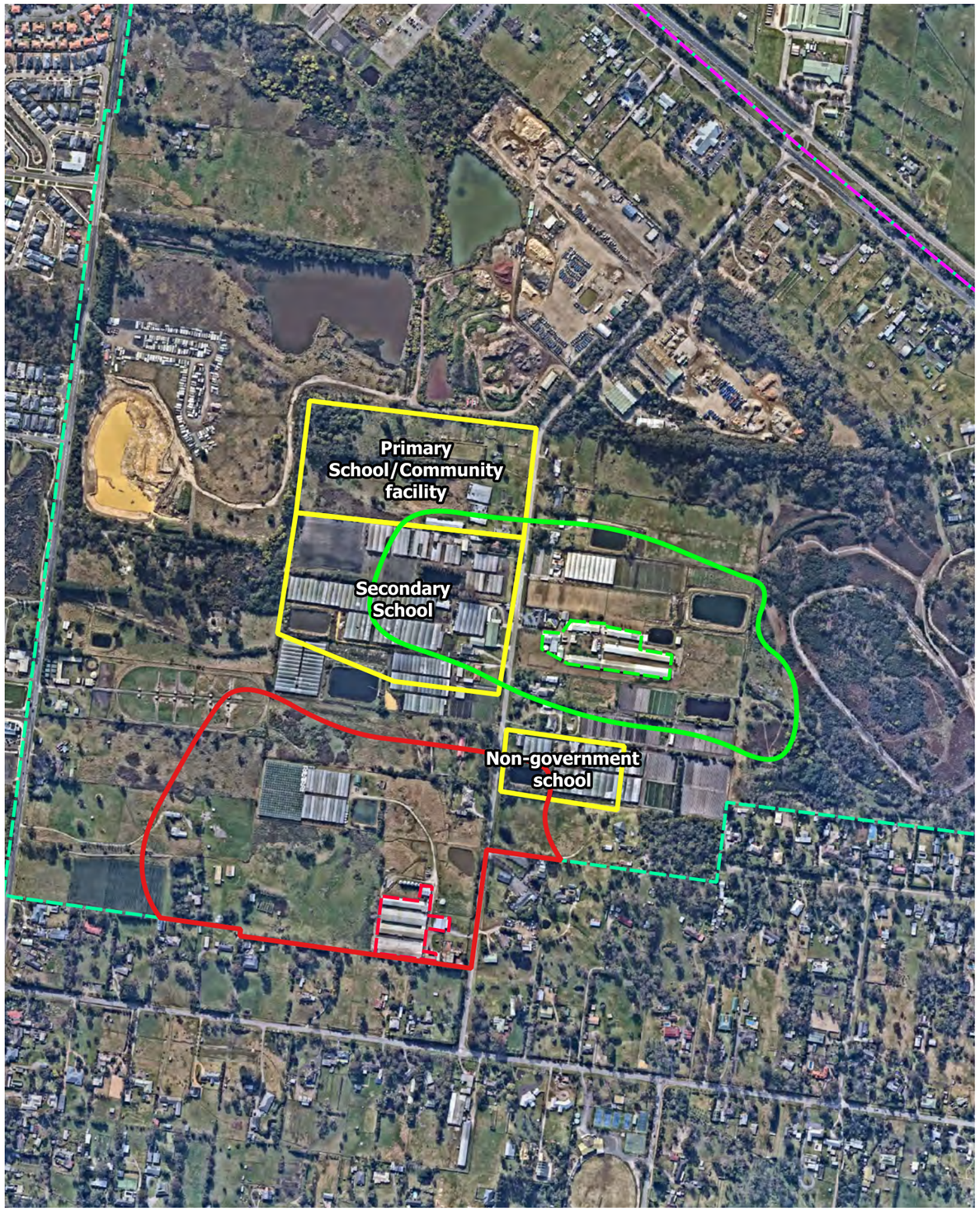
Wind direction	S4	Calculated separation distance (m)	Proposed sensitive receptor downwind	Distance from farm	Receptor encompassed by separation distance (Y/N)
N	0.55	240	Secondary School	334 m	N
NNE	0.55	240	Secondary School	334 m	N
NE	0.65	283	Non-government school	197 m	N
ENE	0.40	174	Non-government school	197 m	Y
E	0.62	270	-	-	-
ESE	0.78	340	-	-	-
SE	0.76	331	-	-	-
SSE	0.41	179	-	-	-
S	0.28	122	-	-	-
SSW	0.22	96	-	-	-
SW	0.25	109	-	-	-
WSW	0.41	179	-	-	-
W	1.00	436	Residential	-	Y
WNW	1.00	436	Residential	-	Y
NW	1.00	436	Residential	-	Y
NNW	0.65	283	Residential	-	Y

5.4 Clear View Commercial Glass

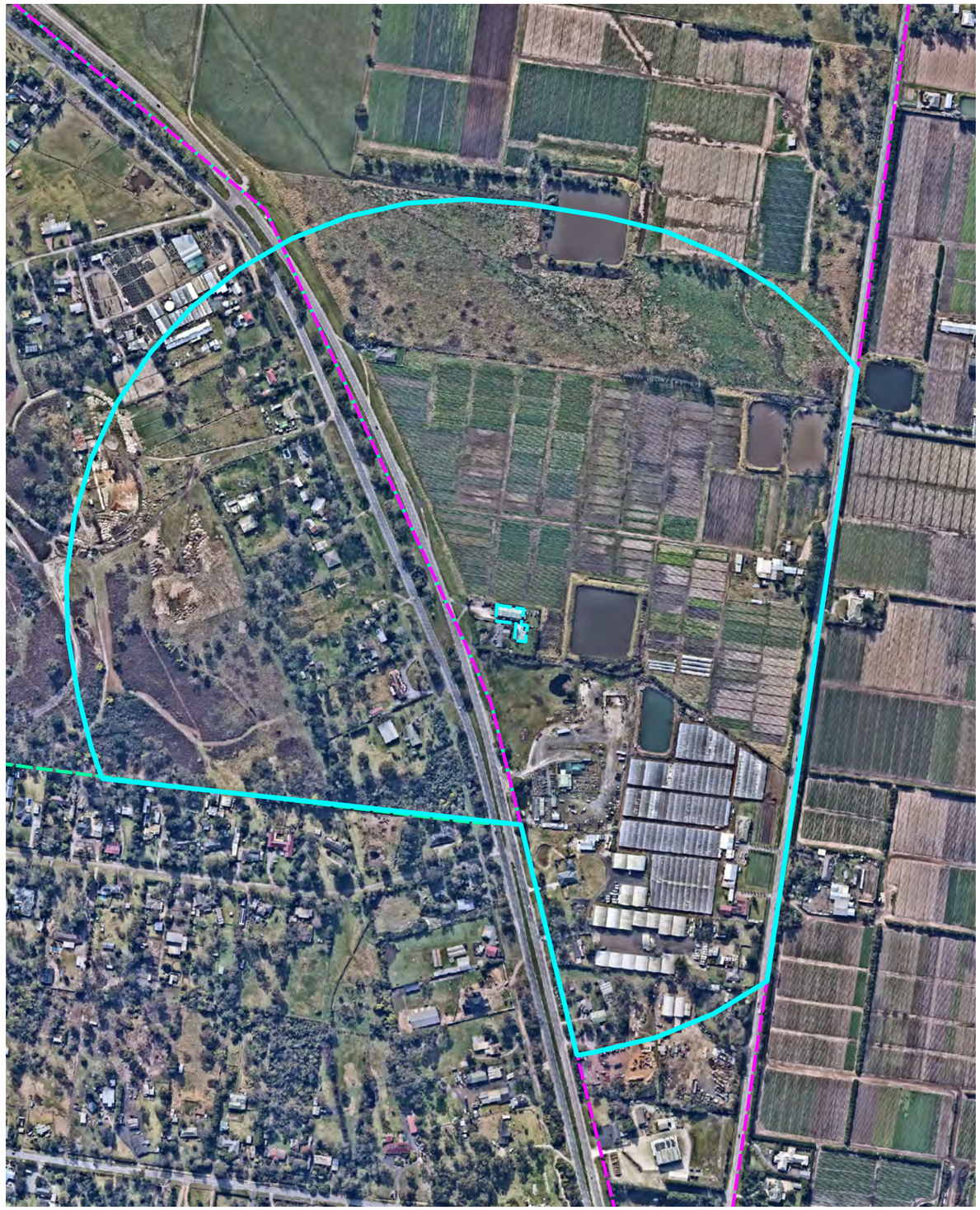
Under EPA Publication Separation Distance Guideline, a 500 m separation distance is applicable for industries undertaking glass, glass products, glass wool or rock wool manufacturing. This separation distance remains consistent with both the superseded EPA Publication 1518 and Clause 53.10. There are no throughput limits for this category, therefore GHD has applied a 500 m separation distance for Clear View.

GHD notes that the facility does not report to the NPI and do not hold an EPA licence therefore the throughput is assumed to be a small facility. Given there is no EPA licence, it may also not actually manufacture glass onsite but instead prepare glass products for installation with some glass cutting onsite. Given the unknown nature of operations GHD has conservatively applied the 500 m separation distance.

It is possible that glass manufacturing does not occur on site, thus in the event it is confirmed that glass manufacturing does not occur onsite then the separation distance would not apply.



D'Alberto/South Gippsland Separation Distance



Clear View Commercial Glass Manufacturer Separation Distance

Paper Size A3

0 0.1 0.2 km

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

N

GHD

LEGEND

Boundaries
- Devon Meadows PSP Boundary
- Casey Fields South PSP Boundary
- Proposed uses

Industry Activity Boundary
- South Gippsland Eggs
- D'Alberto Egg Farm
- Clear View Commercial Glass

Separation Distances
- South Gippsland Eggs (S-Factor)
- D'Alberto Egg Farm (S-Factor)
- Clear View Commercial Glass (500 m)

Victorian Planning Authority

Deavon Meadows PSP Assessment

Separation Distances

Project No. **12647547**
Revision No. **-**
Date. **09/12/2024**

FIGURE 6

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Data source: Google Earth Imagery 2024.
Created By: ylim

6. Air Quality Risk Assessment

6.1 Level 2 Risk Assessment

An odour and dust risk assessment has been undertaken for both South Gippsland Eggs and D'Alberto Egg Farm in accordance with EPA Publication 1883 and EPA Publication 1943 respectively. A dust risk assessment has been undertaken for Clear View Commercial Glass in accordance with EPA Publication 1943.

A summary of the outcomes of the risk assessments are outlined in Table 6. The full risk assessment for each industry is attached as Appendix A (South Gippsland Eggs), Appendix B (D'Alberto Egg Farm) and Appendix C (Clear View Commercial Glass).

The odour risk assessment for both egg farms indicates a high risk of odour impacts while the dust risk assessment found a medium risk for D'Alberto Egg Farms and Medium Risk for South Gippsland Eggs. To fully understand odour risks from the egg farms a further Level 3 assessment is required by EPA Publication 1883. This has been undertaken in the form of odour surveillance and complaint analysis in Section 6.2.

A medium dusk risk was found for Clear View Commercial Glass, this indicates that dust generation is likely from the facility and it can be expected for some nuisance dust to occur. Without careful and considered application of mitigation measures it is likely to cause impacts to the surrounding proposed uses. As such focus should be placed on what can be done to break the source-pathway-receiving environment chain. However no further assessment is required.

Table 6 Odour and Dust Risk Assessment outcome summary

Company	Odour Risk Assessment Outcome	Dust Risk Assessment Outcome
D'Alberto Egg Farms	High Risk	Medium Risk
South Gippsland Eggs	High Risk	Medium Risk
Clear View Commercial Glass	NA	Medium Risk

6.2 Level 3 Assessment

A level 3 assessment is defined by EPA in Draft Publication 1883 as "*a detailed risk assessment for issues that are complex or where the other levels of assessment have been exhausted because there is not enough evidence to establish what the odour risk is".* A level 3 assessment has been undertaken to fully understand risk.

EPA recommends that an assessment includes multiple tools in the risk assessment for applications or proposals for new developments where there may be potentially significant odour impacts. This should include the use of site-specific data where possible. The level of detail provided in the detailed assessment should be commensurate with the potential for odour impacts. Table 5 of EPA Publication 1883 (provided as Figure 7) provides an overview of the level 3 assessment tools and their applicable scenarios.

Level 3 assessment	Description	When the tool is applicable
Comparison with similar operations	Analysis of data from facilities of similar size, throughput, operational conditions, technology, processes, topography, meteorology and emission sources. This should incorporate assessments from a literature review.	• A new facility is proposed. • Best used in conjunction with odour field assessment.
Risk assessment using field odour surveillance data	Survey of odour levels in the field provide an indication of odour frequency, intensity and character (FIC) from: • existing premises • odour surveillance of a reference facility • surveillance that includes other odour generating premises or sources in the area.	• For most scenarios where there are existing odour sources. • Rezoning or precinct structure planning. • Characterising odour sources impacting a community. • Assessment of a reference facility or scenario that has similar attributes to the development proposal in question.
Complaint data analysis	Analysis of odour complaint histories to provide an indication of odour frequency, intensity and character (FIC) from: • existing premises • other odour generating premises or sources in the area • complaint histories from a reference site.	• Sensitive use proposals around existing facilities where there are already sensitive uses. • Assessment of odour reports around similar industries in the absence of the above.
Community surveys	Survey of community members to identify current or past odour issues related to the existing premises and other premises/sources in the area.	• A proposed sensitive use in an area where there is existing industry. • To aid in verifying complaints data. • To compliment surveillance data.
Dispersion modelling	Computer modelling to compare different emissions scenarios through the analysis of the relative variations in predicted ground level odour concentrations. Odour modelling should not be used as the only evidence of an assessment and modelled results need to be validated against field assessment results.	• A proposed change or upgrade to premises to look at expected. change in emission pattern. • To understand the relative contribution of multiple sources to a subject site. • To understand the dispersion pattern of a proposed industry based on a reference site. • This approach uses field surveillance data (where available) to verify modelling at the reference site.

Figure 7 Level 3 assessment tools and applicable scenarios (Reproduced from Table 5 of Publication 1883)

From the above, GHD has provided the following in the following sections below:

– Risk assessment using field odour surveillance
– Complaints data analysis

6.2.1 Odour surveillance

EPA Publication 1883 nominates field odour surveillance to determine odour levels in the field to provide an indication of odour frequency, intensity and character from an existing facility.

This section provides a summary of odour surveillance undertaken by GHD. All odour surveillance figures have been also attached as Appendix D. A total of ten odour surveys were undertaken over two days (7 October 2024 and 21 October 2024). Due to restricted land access to sites surrounding both farms, all surveys were targeted under southerly winds with surveys undertaken at sites to the north of the farms. Due to limitations in accessible land, four of the surveys targeted D'Alberto Egg Farms while six of the surveys targeted South Gippsland eggs.

6.2.1.1 EPA Publication 1881

All odour surveillance was undertaken in accordance with EPA Publication 1881 (EPA 2021). EPA describes three characteristics of odour that should be recorded during an odour survey.

Odour Intensity

Odour intensity is the strength of the odour at a location (i.e. how easily it can be smelt). This should be described using the EPA categories presented in Table 7.

Table 7 Odour intensity descriptors (EPA, 2021)

Descriptor	Description
Obvious	Odour is easily recognised, can be described and may be attributed to a source. The assessor can smell it without any effort or focus on it.
Subtle	Odour can be recognised only when focusing. For example, by standing still, inhaling slowly and concentrating.
No odour	No odour, or odour is not strong enough to be recognised.

Odour Character

Odour characters are shown in Figure 8 as described by EPA.

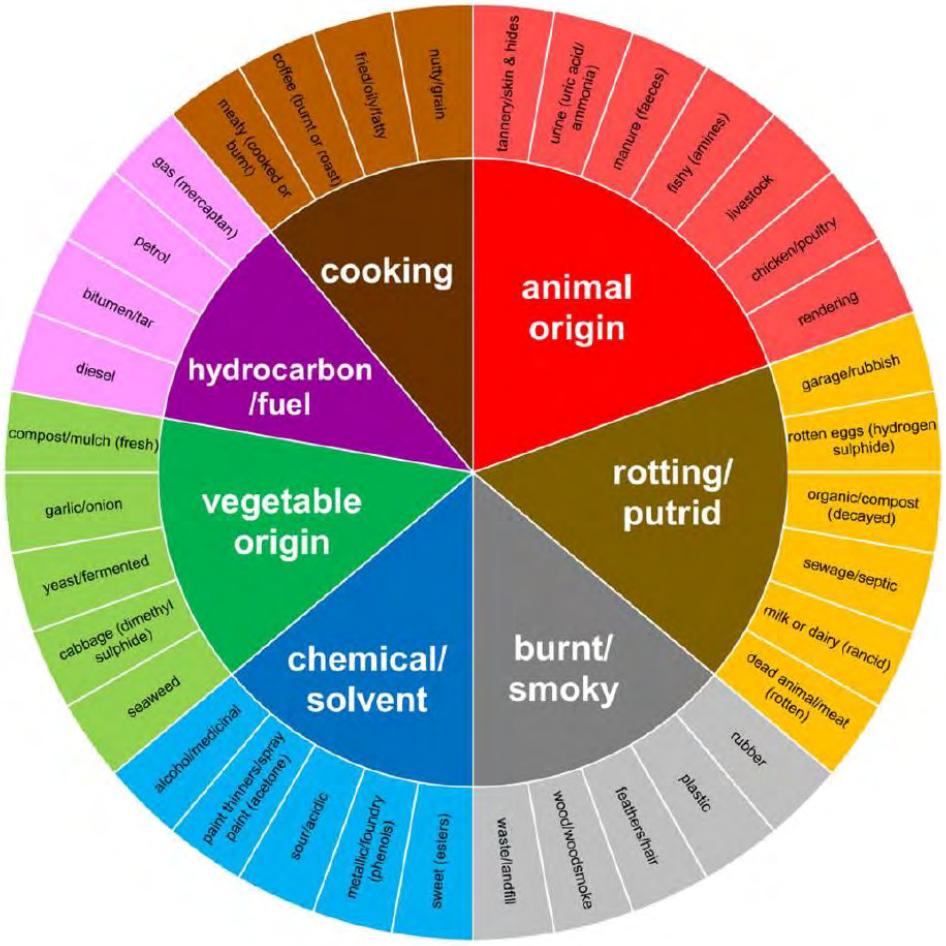


Figure 8 EPA's odour wheel with odour character descriptors (EPA 2021)

Odour Presence

The descriptors in Table 8 identify how long the odour is present for during the survey. In other words, if it is continuously smelt or is only briefly smelt.

Table 8 Odour presence descriptors (EPA, 2021)

Description	Duration of odour	Rating
Constant	Can smell it constantly or almost constantly (>80% of the time).	C
Frequent/ Repetitive	On and off extended periods with recognised odour (10-80% of the time).	F
Transient	On and off with significant periods with no odour or no recognised odour (<10% of the time).	T

6.2.1.2 Odour survey results

The EPA odour surveillance method section 5.2 Plume tracing:

'Data from a single plume trace will establish the width, length and area of a plume downwind from the source. This process can be repeated to establish the frequency by which odour persists downwind from a source, where the average width, length and area of a plume can be calculated.

Combining plume tracing with modelling or a meteorological analysis can enable the prediction of odour frequency and duration for areas within reach of the odour plume.

It is recommended at least 10 plume traces are completed when determining average plume frequencies".

In accordance with EPA guidance 1881, GHD undertook 10 odour surveys to target both egg farms individually and to capture an accurate representation of odour emissions for typical site operation. As the egg farms are located within a largely residential and small business area, land access remained a limitation for recorded surveys. All surveys were taken north of both egg farms under winds varying from light (>0.5 m/s) to moderate speeds (3 m/s).

Odour emanating from D'Alberto Egg Farm was only marginally observed during one survey of three at a neighbouring residential area, however GHD notes that with limitation to land access closer observations could not be undertaken. Odour emanating from South Gippsland Eggs was observed during all seven surveys with the maximum distance at which odour observed extending to the border of accessible land in one survey. On average obvious chicken odour was observed from 130 m to 180 m while subtle odour ranged from 160 m to 210 m. Due to access constraints, odour beyond 220 m could not be surveyed. However, it was noted that this was the distance at which no odour or very subtle odour was generally observed.

Descriptions of the individual surveys with figures outlining the survey routes and observations are provided in Appendix D and summarised below.

Table 9 Odour surveillance summary

Survey Number	Farm	Wind Direction	Wind Speed	Maximum distance 'obvious' odour observed	Maximum distance 'subtle' odour observed
1	D'Alberto Egg Farm	SSW	2-3 m/s	-	-
2		SSW	2 m/s	-	-
3	South Gippsland Eggs	S/SSW	2-3 m/s	180 m	210 m
4		SSW	2 m/s	-	160 m
5		SSW	2-3 m/s	180 m	190 m
6	D'Alberto Egg Farm	SSW	1.5-3 m/s	-	135 m
7	South Gippsland Eggs	SSW	2 m/s	160 m	180 m
8		SSW	2-3m/s	160 m	210 m
9		S	2-3m/s	170 m	200 m
10		SSW	2-3m/s	130 m	205 m

Odour survey 1

Survey 1 was undertaken under light-moderate winds (2-3 m/s) from south-southwest directions, between 10 and 10:30 am. This survey was conducted in the field north of D'Alberto Egg Farm. No odour was detected during this survey. The closest observation was 120 m from the D'Alberto Egg Farm site boundary, and the furthest was taken 200 m from D'Alberto Egg Farm site boundary.

Odour survey 2

Survey 2 was undertaken under light winds (2 m/s) from south-southwest directions, between 10 and 10:30 am. No odour was detected in the field north of D'Alberto Egg Farm where this survey was conducted. The closest observation was recorded 130 m from the site boundary, and the furthest observation taken 200 m north of the site boundary.

Odour survey 3

Survey 3 was undertaken under light-moderate winds (2-3 m/s) from south to south-southwest direction, between 10:30 and 11 am. This survey was conducted in the field north of the South Gippsland Egg Farm. Obvious chicken odour was detected 180 m north of the South Gippsland Eggs site boundary. The odour became subtle 190 m to 210 m north of the South Gippsland Eggs Farm. Due to land access surveys could not continue further north to confirm where no odour could be observed. The odour was frequent and repetitive for most of survey 3.

Odour survey 4

Survey 4 was undertaken at 11 am under light winds (2 m/s) from south-southwest directions. Only subtle to no odour was detected in the field north-northeast of the South Gippsland Eggs farm. Subtle odour was detected 160 m north-northeast of the farm. Any odour detected was considered transient. No odour was detected from 210 m in the same direction.

Odour survey 5

Survey 5 was undertaken under light-moderate winds (2-3 m/s) from south and south-southwest directions, between 11-11:15 am. This survey was conducted in the field north of the South Gippsland Eggs farm. Obvious, but transient, chicken odour was detected 180 m north of the South Gippsland Eggs site boundary. This odour became subtle and frequent at 190 m north of the South Gippsland Eggs site boundary. No odour was detected from 210 m.

Odour survey 6

Survey 6 was undertaken under light-moderate winds (1.5-3 m/s) from south-southwest directions between 11:10-11:20 am. This survey was conducted in the field north of the D'Alberto Egg Farm. Subtle but transient odour was detected under stronger winds (3 m/s), 135 m north of the D'Alberto Egg Farm site boundary. No odour was detected otherwise.

Odour survey 7

Survey 7 was undertaken under light winds (2m/s) from south-southwest directions between 11:45 am – 12 pm. This survey was conducted in the field north of the South Gippsland Eggs farm. Obvious and frequent odour was detected 110 m to 160 m northeast of the South Gippsland Eggs farm. This odour became subtle and transient 180 m in the same direction. No odour was detected past 220 m.

Odour survey 8

Survey 8 was undertaken under light-moderate winds (2-3 m/s) from south-southwest directions between 12 – 12:15 pm. This survey was conducted in the field northeast of the South Gippsland Eggs farm. Obvious, frequent odour was detected 120 m to 160 m to the northeast of the South Gippsland Eggs farm but became transient at 170 m. No odour was detected from 210 m north-northeast the South Gippsland Eggs farm site boundary.

Odour survey 9

Survey 9 was undertaken under light-moderate winds (2-3 m/s) from south directions between 12:30 – 12:40 pm. This survey was conducted in the field north of the South Gippsland Eggs farm. Obvious, transient odour was detected 170 m north the South Gippsland Eggs farm. Subtle odour was detected when surveying odour coming from the more eastern part of the site 200 m in the same direction.

Odour survey 10

Survey 10 was undertaken under light-moderate winds (2-3 m/s) from south-southwest and south-southeast directions between 12:40-12:50 pm. This survey was conducted in the field north of the South Gippsland Eggs farm. Obvious, frequent odour was detected 130 m north-northeast of the South Gippsland Eggs farm site boundary, becoming subtle and transient 140 m to 205 m north of the This survey was conducted in the field north of the South Gippsland Eggs farm.

6.2.2 Complaint data analysis

Noise, Dust and Odour complaints have been provided by both EPA Vicotria and Council. The EPA Victoria complaint data has not been verified. It is common practice for EPA to provide unverified reports as EPA does not generally respond or investigate every report made.

A total of 198 complaints were received from January 2021 to February 2024. Of these complaints a majority (130 complaints) haven been attributed to SBI Landfills in relation to odour. Of the remaining complaints, 20 were attributed to noise, 11 were attributed to dust and 37 were attributed to odour.

A total of 16 complaints were alleged to be from the two Egg Farms located on Devon Road with descriptions of ammonia and manure odour detected. The remaining complaints for odour were unlikely to be attributed to the farms.

Of the 10 dust complaints, no complaints could be attributed to the farms or glass manufacturing industry. A majority of dust complaints were related to dust from road traffic or construction within the Devon Meadow and Clyde area.

Of the 20 noise complaints, no complaints could be attributed to the glass manufacturing industry. A majority of complaints were related to noise from sports clubhouses, construction or vehicles.

6.3 Summary and recommendations

Based on the Level 2 odour and dust risk assessment outcome, the high odour risk and the medium dust risk calculated for both egg farms, further level 3 assessment was undertaken. Figure 9 plots the risk rating identified through the Level 2 Odour and Dust assessment for all three industries. It can be seen for the proposed sensitive uses (schools, residential and community facilities) to be encompassed by the high odour risk and the medium dust risk from the two egg farms.

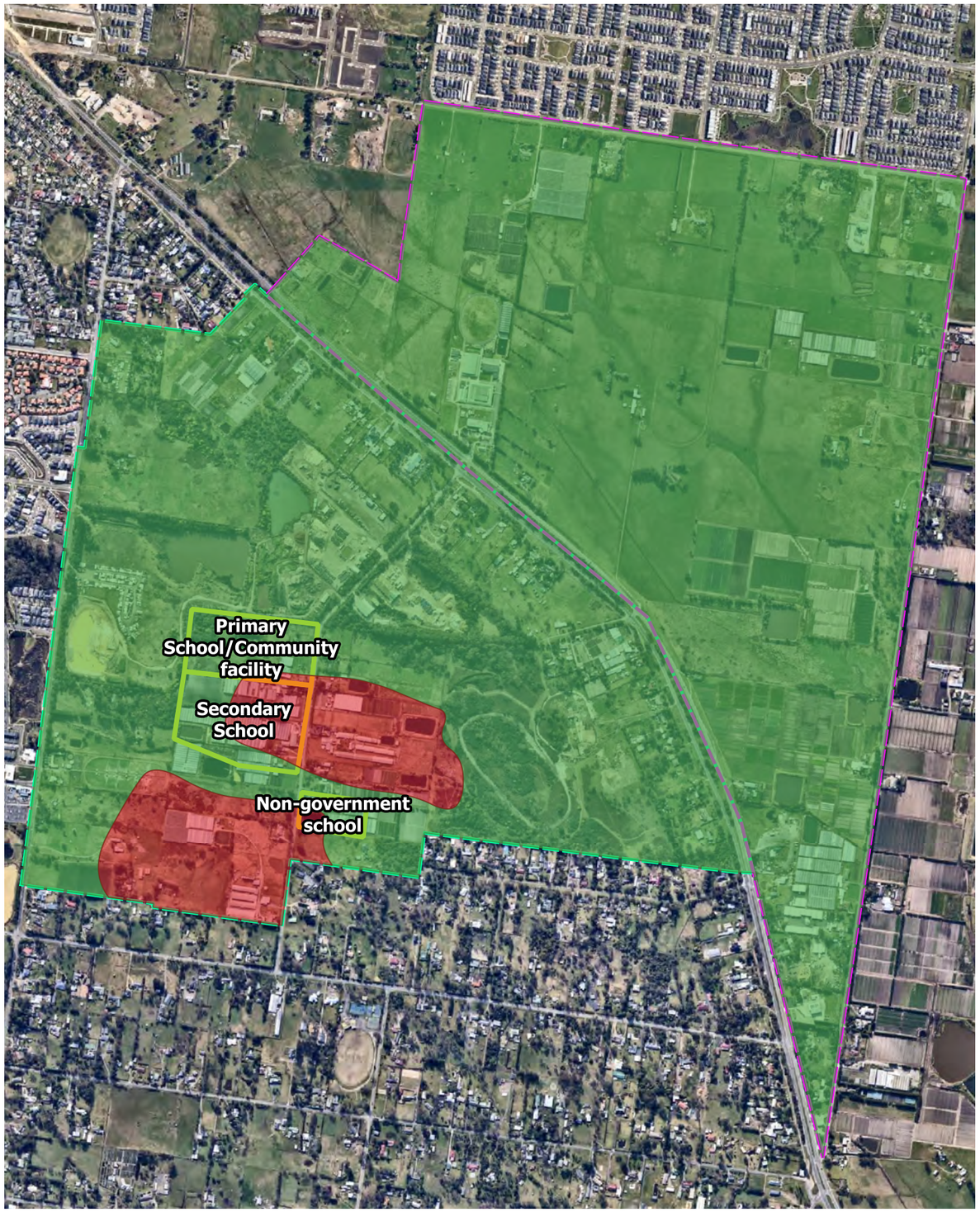
It is apparent that odour from the two egg farms is present and observable in the area surrounding the industries with the history of recorded complaints. This has been confirmed through odour surveillance with obvious odour detected from 130 m to 180 m while subtle odour ranged from 160 m to 210 m.

Observations also remain consistent with separation distances calculated in Section 5.3. Using the S-Factor Formula the greatest separation distances calculated was 306 m from the boundary of South Gippsland Eggs and 436 m from the boundary of D'Alberto Egg Farm based on the number of birds permitted at each site. GHD notes that the calculated 169 m separation distance to the north from South Gippsland Eggs aligns well with observations made during odour surveillance undertaken in the northern fields under southerly winds.

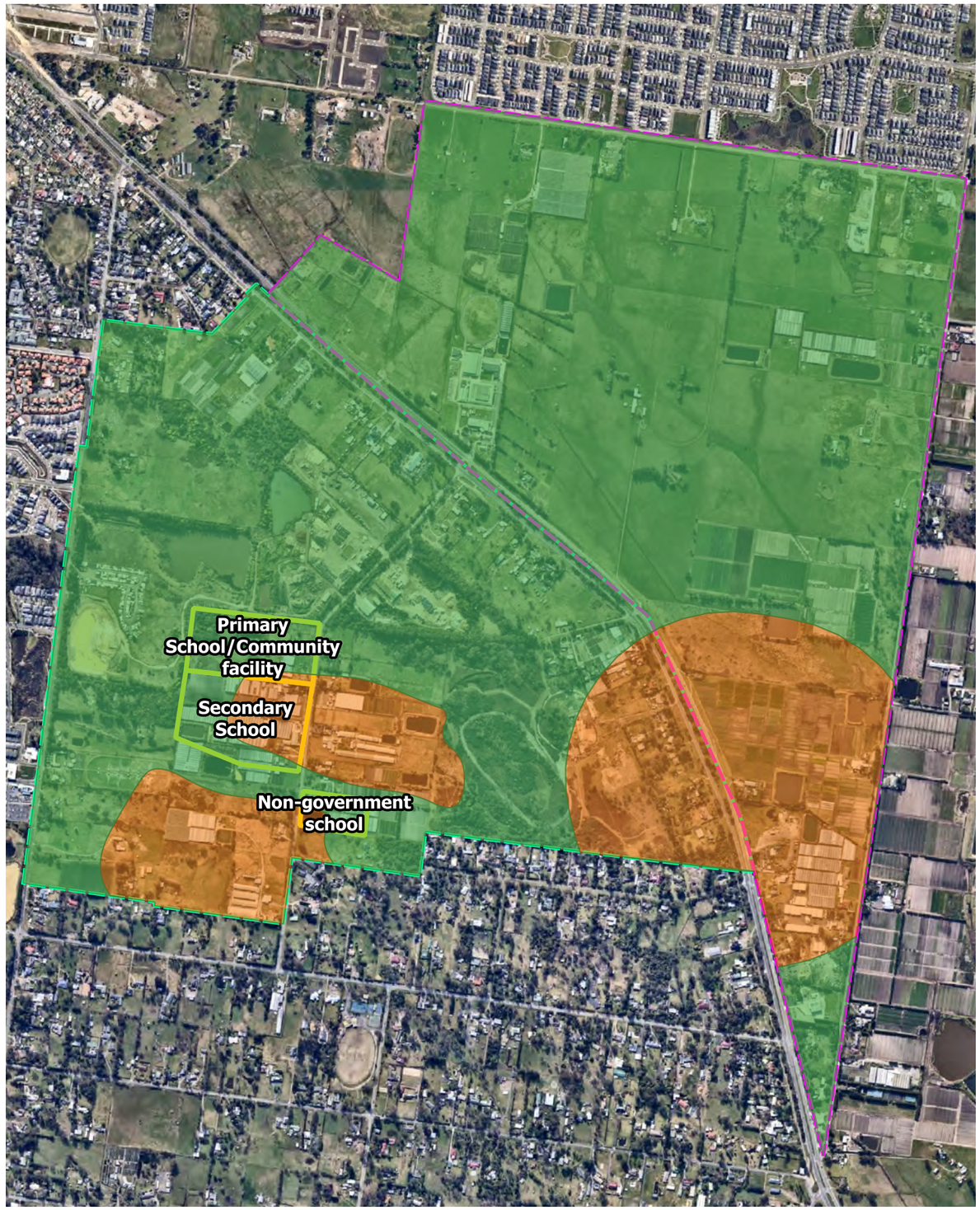
As such it is not recommended for the primary school, secondary school or community facility or other sensitive uses to be developed within the S-factor separation distance while the farms continue to be in operation. The proposed locations of the primary school, secondary school and community facility all fall within the separation distance of South Gippsland Eggs and will likely experience odour or dust impacts from the industries while they continue to operate in the Precinct. Land to the north of the current proposed locations within the DM PSP will be preferred for sensitive uses as this land is outside of the recommended separation distances.

The 500 m separation distance for dust from Clear View Commercial Glass should be adopted to prevent any potential dust impacts. This separation distance does not extend to the proposed locations of the schools or community facilities however it should be noted that future proposed sensitive receptors would not be recommended to be proposed within the separation distance. If sensitive uses are proposed within the 500 m separation distance, targeted mitigation measures would need to be applied to break the source-pathway-receiving environment chain such as planting and or bunding to decrease the pathway effectiveness.

It is recommended for VPA to designate this 500 m separation distance as "area for investigation" with further stakeholder investigations to be undertaken to determine the nature of operations undertaken on site. In the event it is confirmed that glass manufacturing does not occur onsite, then the separation distance would not apply, and the risk assessment would result in a low risk of dust impacts.



Odour Risk Plot



Dust Risk Plot

Paper Size A3

0 0.1 0.2 km

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

N

GHD

LEGEND

Boundaries

- Devon Meadows PSP Boundary
- Casey Fields South PSP Boundary
- Proposed uses

Industry Boundary

- High Risk
- Medium Risk
- Low Risk

Victorian Planning Authority

Deavon Meadows PSP Assessment

Area of Risk Plot

Project No. 12647547
Revision No. -
Date. 04/12/2024

FIGURE 9

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Data Source: Google Earth Imagery 2024.
Created By: ylim

7. Noise and vibration impact

7.1 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, which exacerbate perception of the noise. These characteristics may evoke penalties in accordance with relevant regulations.

7.2 Potential major noise sources

Industrial and commercial noise sources, which could have potential noise impacts on the amenity of noise sensitive uses are located throughout the Precinct. List of industries that may impact on future sensitive land uses can be found in CFS and DM PSP Land Capability Assessment (SMEC, July 2024). The report also contains qualitative observation of noise from industries in the precinct, however acoustic measurements were not taken or reported.

The area also may be impacted by road traffic noise. Based on observations in CFS and DM PSP Land Capability Assessment (SMEC, July 2024), major roads impacting on acoustic amenity in the area include:

– South Gippsland Highway
– Clyde- Five Ways road
– Devon road
– Craig road
– Fisheries road
– Ballarto Road

There are other 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. Groups of major existing noise sources are summarised in Table 10. A long term noise monitoring program was not carried out for the entire area to characterise typical background in the area, therefore it is difficult to suggest what noise levels may be typical for different parts of the precinct and around the Clear View glass facility.

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 10 Potential noise impacts from existing sources

Location	Source	Description	Part of the Precinct impacted
All site	South Gippsland Highway	Traffic noise from a major road	All Precinct
To the eastern boundary of the Precinct	Clyde Five Ways Road Fisheries Rd Local businesses at the eastern boundary of the Precinct	Local and business traffic noise Noise from businesses during operation hours	Eastern parts of the Precinct
To the western boundary of the Precinct	Craig road	Traffic noise Noise from businesses during operation hours	Western part of the Precinct

Location	Source	Description	Part of the Precinct impacted
To the northern boundary of the Precinct	Ballarto road	Local and business traffic noise Noise from businesses during operation hours	Northern part of the Precinct
All site	Multiple businesses and industries	Aircraft noise from flyovers	All Precinct
Within the Precinct, adjacent northern and eastern farmlands	Agricultural industries and activities	Mechanical equipment, harvesting, loading and delivery activities	All Precinct

7.3 Clear View Commercial Glass

Scope of this study is focused on possible restrictions imposed on future developments by operation of Clear View Commercial Glass (1925 South Gippsland Highway).

Current zoning shows that the Clear View Commercial Glass (noise source) zoning is urban growth (UGZ) and the nearest receptor zoning are farming zone (FZ3) to the west of the facility and also urban growth to the east of the facility. Both the nearest receivers and the facility are located within the urban zone, therefore, Part I A.1 of the Noise Protocol – Urban Area Method applies. Residential receivers to the south of the Clear View site are located outside the major urban area, therefore applicable noise limits must be derived in accordance with Part I A.2 of the Noise Protocol – Rural Area Method.

Table 11 summarises noise criteria based on current planning zones. Background noise monitoring was not performed at these receivers. It can be assumed that nearest receivers to the west and south of the facility may experience greater background noise levels due to proximity to South Gippsland Highway, therefore applicable noise limits may be also greater than in the table should background noise acquisition be performed at the receivers. Clyde- Five Ways is a relatively busy road with average annual daily traffic volume (AADT) 8100 vehicles and 18.5% of trucks, which also may cause elevated background in the area especially during day and evening times. The traffic noise also may change applicable noise limits to a greater magnitude.

Rezoning of land around Clear View may change applicable noise limits in the area adjacent to the facility. Significance of the change will depend on classification of the receptors' zones under the Noise Protocol and background noise in the area.

Table 11 Noise limits based on planning zones

Receptors	Part of Noise Protocol	Noise limit $L_{Aeq,30\ min}$, dB(A)		
		Day	Evening	Night
West (1924 South Gippsland Hwy)	Urban method	58	52	47
East (125 Clyde Five Ways Rd)	Urban method	51	45	40
South (10 Facey Rd)	Rural method	45	38	33
Note. Environment Protection Regulations 2021 define day periods as follows: Day- Monday to Saturday (except public holidays) from 7 am to 6 pm Evening- Monday to Saturday, from 6 pm to 10 pm; and Sunday and public holidays, from 7 am to 10 pm Night- Any day of the week, 10 pm to 7 am the following day				

Subjective assessment of noise from the site was conducted during air quality survey on 10 October 2024. Offsite noise impact at the boundary was comparable with ambient noise in the area and was mixed with contribution from other noise sources. It was noted that noise from South Gippsland Highway was dominating in the area adjacent to the western part of the site.

7.4 Existing potential primary vibration sources

Potential vibration sources within and adjacent to the PSP may result from pass-buys of heavy vehicles on the local and arterial roads. 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.

Information about vibration intensive equipment installed on business or industrial sites is not available at the moment. Similarly to the traffic vibration, if there is a reasonable separation distance to the sensitive receivers, vibration is not expected to be perceivable.

7.5 Legislation, guidelines and standards

7.5.1 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. Noise limits for operation of Clear View Commercial Glass are summarised in section 7.3. They are based on planning zones and may change if background noise measurements will be carried out at the affected receptors.

7.5.2 Victoria Planning Provisions (VPP)

Currently a number of activities is promoted in the precinct and land has different zoning classifications. Most of the land is zoned as farming (FZ3), urban growth (UGZ). Casey 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.

Urban growth zone description (Clause 37.07) also promotes a number of different uses. It does not contain any specific requirements as relevant to noise or vibration control in the zone.

Casey Planning Scheme includes development standards for dwellings and buildings funded by Victoria's Big Housing Build program. Clause 52.20-6.14 (noise impacts) 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.

Casey Planning Scheme has noise control provisions for sensitive uses in noise influence zones (Clauses 52.20-7.7, 55.07-7, 58.04-03: apartment and building setbacks). Internal noise criteria in Table 12 may be applicable. Similar provisions are triggered if apartments are planned in the area (Clause 53.20-7.7). Current zoning within the precinct does not include industrial areas. South Gippsland Highway is an arterial road, but available traffic count data from VicRoads shows that two way average annual daily traffic count (AADT) is 14,000 for the part of the highway that crosses the precinct. It is unlikely that any of the requirements for noise influence zones will be applicable to sensitive land uses unless some areas within the precinct or in adjacent areas are rezoned into industrial planning areas.

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.

7.5.3 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

7.5.4 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.			

7.5.5 Traffic noise

There are no obligations for developers to meet additional noise requirements if a noise sensitive development is not within a noise sensitive area (refer to section 7.5). VicRoads Traffic Noise Reduction Policy 2005 is not formally applicable to new sensitive receivers encroaching upon existing arteria roads. Taking into account that South Gippsland Highway is a significant noise source in the area, care should be taken when considering sensitive land uses close to the highway. The policy recommends 63 dB(A) L_{A10}criterion for new or redeveloped arterial roads. This criterion is applicable to facades of the houses impacted by the project. VicRoads guidelines Requirements of Developers – Noise Sensitive Uses also indicate that the developer shall attenuate traffic noise from a freeway to a level of 63 dB(A) or less at the most exposed façade of the noise sensitive building. It is recommended that these recommendations are considered in case new sensitive land uses are allowed close to the highway.

7.6 Discussion of potential noise impacts from existing sources

Industrial and commercial noise sources, which could have potential noise impacts on the amenity of noise sensitive uses within the precinct are located both within and outside of the area. There are multiple industrial and road traffic noise sources within the precinct and at the area boundary.

The precinct area currently has variety of zonings. If current zoning of the central area will not change from the Industrial Zone, then the internal noise requirements would be applicable to apartment and Homes Victoria developments within 300 m from the Industrial Zone boundary since they are will be located in “noise influence area”. Provisions of the Clause 52.20.-7.7 of the Casey Planning Scheme and similar (refer to section 7.5.2) may applicable to sensitive developments depending on future zoning of the adjacent land.

The planning scheme has specific requirements for noise within noise influence zones, which are located adjacent to a rail corridor, arterial road or within 300 m from Industrial 1, 2 and 3 zones.

Recommended indoor noise limits for new dwellings outlined in relevant PSP 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

The requirements above are formally not applicable to typical residential developments. Due to relatively high expected ambient noise in the area, it may be difficult to achieve noise levels in some areas of the precinct that would be expected in a residential area if the existing industries will continue to operate. Therefore it can be recommended that the above indoor noise limits are met, regardless of whether the proposed dwelling is located within relevant zones as per relevant clauses or not to provide high level of acoustic amenity inside residences or other noise sensitive buildings.

In addition to existing industrial/business noise sources South Gippsland Highway may impact on future developments. It is recommended to carry out a noise monitoring programme to identify separation buffer requirements to ensure that acoustic environment at sensitive land uses will be acceptable.

7.7 Discussion of potential noise emissions

The precinct may include noise sensitive developments. New and existing industrial and business/commercial dwellings 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 Casey 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, 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)

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 receivers. This also includes new small commercial establishments such as petrol stations, auto facilities, workshops, and the like.

Where relevant, the planning authority may need to 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 complies with the requirements of the Noise Protocol.

Taking into account that future noise sensitive land uses in the Precinct may be close to arterial roads, considerations may need to be given to VicRoads Traffic Noise Reduction Policy 2005 even if the document is not directly applicable to new developments near busy roads. VicRoads Requirements of Developers – Noise Sensitive Uses may be taken as a guidance for sensitive developments adjacent to arterial roads.

7.8 Discussion of potential vibration impacts

Pass-bys of heavy vehicles on arterial and local roads may induce ground borne vibration if sensitive receivers are located close to a road. Associated vibration may cause intermittent vibration nuisance to occupants of the surrounding sensitive receivers. Vibration levels at sensitive receivers would depend on various factors such as source type, distance to receivers 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 15 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.

In view that noise sensitive developments in the Precinct may be positioned close to roads carrying heavy vehicles, there is a risk of vibration impact from passing by trucks. Vibration impact from operating equipment of industries and business is unknown, but it is assumed that vibration is below structural integrity limits and does not present risk of adverse reaction to sensitive land that are separated by a buffer from the sites.

It is difficult to recommend buffer for sensitive developments due to dependence of the impact on multiple factors. Vibration assessment carried out by a qualified acoustic engineer during development assessment stage is recommended in case sensitive developments are planned close to industrial sites that may contain vibrating equipment or roads that may carry substantial traffic volume of heavy vehicles.

7.9 Summary

A summary of the noise assessment and recommendations for possible land uses that may be located within the Precinct are presented in Table 16.

Table 16 Noise assessment summary

Item	Assessment Item	Report Section	Summary	Recommendation for proposed uses to be located within the Precinct
1	**Casey Planning Scheme**			
1.1	Clause 13.05-1S Noise Abatement	7.5.1	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. Noise from entertainment venues should comply with requirements and recommendations in the Noise Protocol, Planning Practice Note 81 and VIC EPA Entertainment venue and outdoor event music noise guidelines.	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 or permit conditions for entertainment venues.
1.3	Clauses 52.20-7.7, 53.20-7.7, 55.07-7, 58.04-3	7.5.2	May be applicable to housing funded by Victoria's Big Housing Build program and future apartment developments if industrial zoning for the part of the Precinct is not changed.	The clauses contain internal noise requirements. They should be met for noise from mechanical plants or buildings located within a noise influence area. Proposed noise sensitive development within the precinct to be required to undertake a detailed noise intrusion assessment to demonstrate that the proposed design meets the internal noise limits.
2	**The Noise Protocol**	7.5.1	Applicable to industrial, commercial and entertainment premises	Refer to Items 1.1 and 1.3 above.
3	**AS/NZS 2107 Indoor Sound Levels**	7.5.3	Recommended as supplementary design internal noise level for residential dwellings in addition to provisions of Clauses 52.20-7.7, 53.20-7.7, 55.07 and 58.04-3.	
4	**Sleep disturbance**	7.5.4	External sources such as traffic and industrial noise can generate high levels of noise or 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.
5	**Traffic noise**	7.5.5	VicRoads Requirements of Developers – Noise Sensitive Uses are applicable to new noise sensitive land uses encroaching upon existing arterial roads.	The guideline contains recommended external noise criteria to protect future sensitive land uses built close to roads from traffic noise.
6	**Vibration impact**	7.4, 7.8	Vibration from heavy vehicles movements potentially impact a part of the precinct adjacent to arterial roads. Helicopter flyovers may cause structural response.	Vibration assessment is recommended before application approval is lodged in the event sensitive developments are planned close to arterial roads.

8. Summary

Based on the investigations and assessments, the following can be concluded:

- D'Alberto Egg Farm has a high risk of odour impacts and a medium risk of dust impacts.
- South Gippsland Eggs has a high risk of odour impacts and a medium risk of dust impacts.
- Clear View Commercial Glass has a medium risk of dust impacts.
- Separation distances calculated through the S-factor method should be adopted for both D'Alberto Egg Farm and South Gippsland Eggs to prevent odour or dust impacts from the two farms. As such it is not recommended for the primary school, secondary school or community facility or other sensitive uses to be developed within the S-factor separation distance while the farms continue to be in operation.
- The adoption of the S-factor separation distances for the two farms are supported by the odour surveillance that was undertaken of the two farms, with obvious odour detected from 130 m to 180 m while subtle odour ranged from 160 m to 210 m.
- The 500 m separation distance for dust from Clear View Commercial Glass should be adopted to prevent any potential dust impacts. This separation distance does not extend to the proposed locations of the schools or community facilities, however it should be noted that future proposed sensitive receptors would not be recommended to be proposed within the separation distance. If sensitive uses are proposed within the 500 m separation distance, targeted mitigation measures would need to be applied to break the source-pathway-receiving environment chain such as planting and or bunding to decrease the pathway effectiveness. It is recommended for VPA to designate this 500 m separation distance as "area for investigation" with further stakeholder investigations to be undertaken to determine the nature of operations undertaken on site. In the event it is confirmed that glass manufacturing does not occur onsite given it does not report to the NPI nor hold an EPA licence, then the separation distance would not apply, and the risk assessment would result in a low risk of dust impacts.
- Current zoning shows that the Clear View Commercial Glass (noise source) zoning is urban growth (UGZ) and the nearest receptor zoning are farming zone (FZ3) to the west of the facility and also urban growth to the east of the facility. Both the nearest receivers and the facility are located within the urban zone, therefore, Part I A.1 of the Noise Protocol – Urban Area Method applies. Residential receivers to the south of the Clear View site are located outside the major urban area, therefore applicable noise limits must also be derived in accordance with Part I A.2 of the Noise Protocol – Rural Area Method. Noise criteria based on current planning zones have been provided in Section 7.8. A summary of the noise assessment and recommendations for possible land uses that may be located within the Precinct are presented in Section 7.9.

As part of next steps, GHD has prepared a separate memorandum of advice which summarises likely adverse amenity impacts and makes clear recommendations on how best to manage the identified odour, dust and noise risks in the form of planning controls.

Appendices

Appendix A

South Gippsland Eggs Risk Assessment

A-1 Odour Risk Assessment

A-1-1 Odour Source Score (OSS)

To determine the odour potential of the source, the nature and size of site along with the type of odour emissions are required to be categorised. Table A1 summarises the derivation of OSS for South Gippsland Egg farm.

Table A1 Derivation of scores for OSS

Category applicable to Nathalia egg farm	Score
There is no applicable category for an egg layer farm in Appendix A of EPA Publication 1883. The intensive farming category (score of 4) for pigs, sheep and chickens applies to the growing of these animals, not layers for growing eggs. Hence GHD's opinion is that a score of 3 (high odour potential) would be more suitable for an egg layer farm.	3
GHD considers the site to have ineffective odour controls. There are no known odour control management systems with open air operations from the barns.	1
Total OSS	**4**

A-1-2 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

Table A2 summarises the derivation of OPS for South Gippsland Egg farm.

Table A2 Derivation of scores for OPS

Category type	Selected Category	Score
Distance	Receiving environment is adjacent to the source/site Distance well below (less than half) separation distances.	1
Meteorology	Neutral – The winds from N, E and SE which will place the proposed school locations downwind of the site have frequency of occurrence between 2.8%, 10.7% and 11.6%.respectively.	2
Terrain	Neutral – The site is on the same altitude as the receiving environment.	2
Hours of operation	High frequency – The odour sources from the site are continuous as birds will be present on site over extended periods.	3
OPS score (Taken as the maximum score of all the categories)		**3**

A-1-3 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 +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) groups, which are grouped into three categories.

The proposed uses surrounding the site boundary are will be residential and schools so it can be assumed the receiving environment falls within the residential areas VPP land use term. The receiving environment is therefore classified as high sensitivity, which has a score of 3.

Applying the above rating, the ORS score is 3.

A-1-4 Final score

A level 2 source pathway receiving environment score (SPR) is achieved by adding the ORS, OSS and OPS scores together. Therefore, based on the above:

– OSS = 4
– OPS = 3
– ORS = 3

The overall level 2 assessment score = 10, meaning activity is high risk. This indicated that further assessment in the form of a Level 3 Assessment outlined in Publication 1883 is required to fully understand risks from South Gippsland Egg Farm.

A-2 Dust Risk Assessment

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

Source hazard potential (outcome summarised below)

- **Size of dust emitting source**: The egg farm does not report to the NPI and licenced to have 40,000 birds on site, therefore the farm is considered to be of a small size. This has a score of 1.
- **Activities being undertaken**: Based on a typical egg farm activities, it is expected for raw materials such as feedstock and bedding material to be utilised. It is expected to have a low potential for dust emissions and enclosed within the barns. This has a score of 1.
- **Type of dust emission**: Fugitive dust is unlikely to be expected. Type of dust from bedding and manure load out may be fine. This has a score of 3.
- **Level of control**: Processes at the egg farms are expected to be enclosed within barns or warehouses. This has a score of 1.

Adding the above ratings, the S score is 1 + 1 + 3+ 1 = 6

Table A3 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.

A-2-1 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 below)

- **Distance**: The egg farm is located within the DM PSP, a score of 3 was designated.
- **Orientation of receptors relative to prevailing wind direction**: The egg farm is located within the DM PSP with proposed school uses to the west, northwest and south. Considering these sensitive uses, winds from the east to southeast and north would places these areas downwind. This would place the sensitive areas downwind of the egg farm approximately 8.6% of the year under easterly winds and 11.6% under southeasterly winds and 2.8% under northerly winds. Therefore, a score of 2 has been allocated.
- **Terrain**: The activity is on the same altitude as receiving environment. This has a score of 2.
- **Intervening land use**: As the proposed uses are located adjacent to the egg farm, there is no intervening land uses. This has a score of 3.

Adding the above ratings, the P score is 3 + 2 + 2 + 3 = 10.

Table A4 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

A-2-2 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 below)

- **Historical context**: No dust complaints were made against the egg farm. 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 A5 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

A-2-3 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 6 + 10 + 8 = 24.

The results of steps 1 to 3 add up to a total score of 24. This equates to a "Medium" risk rating for overall risk of dust impacts (outcome summarised below). A medium risk rating equates to dust impacts being likely.

Table A6 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

A-2-4 Comments on dust risk rating

GHD considers that the dust impact on the proposed sensitive receptors within the encompassed area in the Precincts to be "Medium" – Dust impacts likely. This indicates that it can be expected for some nuisance dust to occur. Without careful and considered application of mitigation measures it is likely to cause impacts. EPA indicates that focus should be placed on measures to break the source-pathway-receiving environment chain.

There is no separation distance required in EPA Separation Distance Guideline for dust from egg farms. A separation distance however has been assigned for odour generation based on the S-Factor Formula outlined in the Egg Industry Environmental Guideline 2018. As the outcome of the dust impact assessment indicates that dust impacts are likely, GHD recommends this separation distance calculated to be considered to reduce dust amenity impacts from the egg farm.

Appendix B

D’Alberto Egg Farm

B-1 Odour Risk Assessment

B-1-1 Odour Source Score (OSS)

To determine the odour potential of the source, the nature and size of site along with the type of odour emissions are required to be categorised. Table B1 summarises the derivation of OSS for D'alberto Egg farm.

Table B1 Derivation of scores for OSS

Category applicable to Nathalia egg farm	Score
There is no applicable category for an egg layer farm in Appendix A of EPA Publication 1883. The intensive farming category (score of 4) for pigs, sheep and chickens applies to the growing of these animals, not layers for growing eggs. Hence GHD's opinion is that a score of 3 (high odour potential) would be more suitable for an egg layer farm.	3
GHD considers the site to have ineffective odour controls. There are no known odour control management systems with open air operations from the barns.	1
Total OSS	**4**

B-1-2 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

Table B2 summarises the derivation of OPS for D'Alberto Egg farm.

Table B2 Derivation of scores for OPS

Category type	Selected Category	Score
Distance	Receiving environment is adjacent to the source/site Distance well below (less than half) separation distances.	1
Meteorology	Neutral – The winds from N, E and SE which will place the proposed school locations downwind of the site have frequency of occurrence between 2.8%, 10.7% and 11.6%.respectively.	2
Terrain	Neutral – The site is on the same altitude as the receiving environment.	2
Hours of operation	High frequency – The odour sources from the site are continuous as birds will be present on site over extended periods.	3
	OPS score (Taken as the maximum score of all the categories)	**3**

B-1-3 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 +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) groups, which are grouped into three categories.

The proposed uses surrounding the site boundary are will be residential and schools so it can be assumed the receiving environment falls within the residential areas VPP land use term. The receiving environment is therefore classified as high sensitivity, which has a score of 3.

Applying the above rating, the ORS score is 3.

B-1-4 Final score

A level 2 source pathway receiving environment score (SPR) is achieved by adding the ORS, OSS and OPS scores together. Therefore, based on the above:

– OSS = 4
– OPS = 3
– ORS = 3

The overall level 2 assessment score = 10, meaning activity is high risk. This indicated that further assessment in the form of a Level 3 Assessment outlined in Publication 1883 is required to fully understand risks from D'Alberto Egg Farm.

B-2 Dust Risk Assessment

To determine the source hazard potential of the D'Alberto Egg Farm, the guideline refers the reviewer to *Table 1* of the EPA Publication 1943 – *Guidance for Assessing Nuisance Dust*.

Source hazard potential (outcome summarised below)

– **Size of dust emitting source**: The egg farm does not report to the NPI and licenced to have 70,000 birds on site, therefore the farm is considered to be of a small size. This has a score of 1.
– **Activities being undertaken**: Based on a typical egg farm activities, it is expected for raw materials such as feedstock and bedding material to be utilised. It is expected to have a low potential for dust emissions and enclosed within the barns. This has a score of 1.
– **Type of dust emission**: Fugitive dust is unlikely to be expected. Type of dust from bedding and manure is fine. This has a score of 3.
– **Level of control**: Processes at the egg farms are expected to be enclosed within barns or warehouses. This has a score of 1.

Adding the above ratings, the S score is 1 + 1 + 3 + 1 = 6

Table B3 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.

B-2-1 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 below)

- **Distance**: The egg farm is located within the DM PSP, a score of 3 was designated.
- **Orientation of receptors relative to prevailing wind direction**: The egg farm is located within the DM PSP with proposed school uses to the north and northeast. Considering these sensitive uses, winds from the south and southwest would places these areas downwind. This would place the sensitive areas downwind of the egg farm approximately 5.6% of the year under southerly winds and 6.5% under south-westerly 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 the proposed sensitive receptors in the Precinct. This has a score of 2.

Adding the above ratings, the P score is 3 + 1 + 2 + 2 = 8.

Table B4 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

B-2-2 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 below)

- **Historical context**: No dust complaints were made against the egg farm. 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 B5 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

B-2-3 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 6 + 8 + 8 = 22.

The results of steps 1 to 3 add up to a total score of 22. This equates to a "Medium" risk rating for overall risk of dust impacts (outcome summarised below). A medium risk rating equates to dust impacts being likely.

Table B6 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

B-2-4 Comments on dust risk rating

GHD considers that the dust impact on the proposed sensitive receptors within the encompassed area in the Precincts to be "Medium" – Dust impacts likely. This indicates that it can be expected for some nuisance dust to occur. Without careful and considered application of mitigation measures it is likely to cause impacts. EPA indicates that focus should be placed on measures to break the source-pathway-receiving environment chain.

There is no separation distance required in EPA Separation Distance Guideline for dust from egg farms. A separation distance however has been assigned for odour generation based on the S-Factor Formula outlined in the Egg Industry Environmental Guideline 2018. As the outcome of the dust impact assessment indicates that dust impacts are likely, GHD recommends this separation distance calculated to be considered to reduce dust amenity impacts from the egg farm.

Appendix C

Clear View Commercial Glass

C-1 Dust Risk Assessment

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

Source hazard potential (outcome summarised below)

- **Size of dust emitting source**: The glass facility does not report to the NPI and do not hold an EPA licence therefore the throughput is assumed to be a small facility. This has a score of 1.
- **Activities being undertaken**: Based on a typical glass manufacturing industries, it is expected for raw materials such as soda and limestone to be utilised within the glass making process. This generally comprises of batching of raw materials, melting, floating, and shaping/cutting of glass products. It is expected to have a low potential for dust emissions as all processes will be undertaken within an enclosed facility which are expected to have good housekeeping and dust mitigation measures such as baghouse. This has a score of 1.
- **Type of dust emission**: Fugitive dust is expected to be intermediate fine (raw materials can be ground to fine particles during manufacturing). This has a score of 3.
- **Level of control**: It is assumed that the glass facility will be implementing best industry practice of dust control. This has a score of 1.

Adding the above ratings, the S score is 1 + 1 + 3 + 1 = 6

Table C1 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.

C-1-1 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 below)

- **Distance**: The glass manufacturing industry is located within the CFS PSP, a score of 3 was designated.
- **Orientation of receptors relative to prevailing wind direction**: Based on meteorological assessment presented in section 4 of this report, the glass manufacturing industry is located on the southwest border of the CFS PSP and to the east of the DM PSP. Considering the proposed residential areas in the DM PSP as well as sensitive uses, winds from the east to east-southeast would places these areas downwind. This would place the sensitive areas downwind of the glass manufacturing industry approximately 8.6% of the year under easterly winds and 8.1% under east-southeasterly winds. Therefore, a score of 2 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 the glass manufacturing industry. This has a score of 2.

Adding the above ratings, the P score is 3 + 2 + 2 + 2 = 9.

Table C2 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

C-1-2 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 below)

- **Historical context**: No dust complaints were made against the industries in the area. 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 C3 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

C-1-3 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 6 + 9 + 8 = 23.

The results of steps 1 to 3 add up to a total score of 23. This equates to a "Medium" risk rating for overall risk of dust impacts (outcome summarised below). A medium risk rating equates to dust impacts being likely.

Table C4 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

C-1-4 Comments on dust risk rating

It is important to note that no information related the glass facility was provided during the time this assessment was undertaken and that a separation distance of 500 m for dust is based on a conservative assumption that glass, glass products, glass wool or rock wool manufacturing is undertaken at the site using raw materials.

It is also possible that glass manufacturing does not occur on site, thus in the event it is confirmed that glass manufacturing does not occur onsite then the separation distance would not apply.

Based on conservative assumption, the Casey Fields Precinct area and Devon Meadows Precinct area will be encompassed by the separation distance for dust from the glass facility by approximately 0.53 km^2 and 0.25 km^2 respectively. GHD considers that the dust impact on sensitive receptors within the encompassed area in the Precincts to be "Medium" – Dust impacts likely. This indicates that it can be expected for some nuisance dust to occur. Without careful and considered application of mitigation measures it is likely to cause impacts. EPA indicates that focus should be placed on measures to break the source-pathway-receiving environment chain, such as planting and or bunding to decrease the pathway effectiveness.

Again in the event that glass manufacturing does not occur on site, then the risk assessment would result in a low risk of dust impacts.

Appendix D

Odour Surveillance

Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

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Victorian Planning Authority

Deavon Meadows PSP Assessment

Odour Survey 1

Project No. 12647547
Revision No. -
Date. 01/11/2024

APPENDIX D.1

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

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Deavon Meadows PSP Assessment

Odour Survey 2

Project No. 12647547
Revision No. -
Date. 01/11/2024

APPENDIX D.2

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

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Deavon Meadows PSP Assessment

Odour Survey 3

Project No. 12647547
Revision No. -
Date. 01/11/2024

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

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Deavon Meadows PSP Assessment

Odour Survey 4

Project No. 12647547
Revision No. -
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APPENDIX D.4

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

N

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Victorian Planning Authority

Deavon Meadows PSP Assessment

Odour Survey 5

Project No. 12647547
Revision No. -
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APPENDIX D.5

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

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Deavon Meadows PSP Assessment

Odour Survey 6

Project No. 12647547
Revision No. -
Date. 01/11/2024

APPENDIX D.6

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

N

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Victorian Planning Authority

Deavon Meadows PSP Assessment

Odour Survey 7

Project No. 12647547
Revision No. -
Date. 01/11/2024

APPENDIX D.7

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

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Deavon Meadows PSP Assessment

Odour Survey 8

Project No. 12647547
Revision No. -
Date. 01/11/2024

APPENDIX D.8

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Legend

Industry Boundary
- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity
- No odour
- Obvious
- Subtle

Points
- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

N

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Deavon Meadows PSP Assessment

Odour Survey 9

Project No. 12647547
Revision No. -
Date. 01/11/2024

APPENDIX D.9

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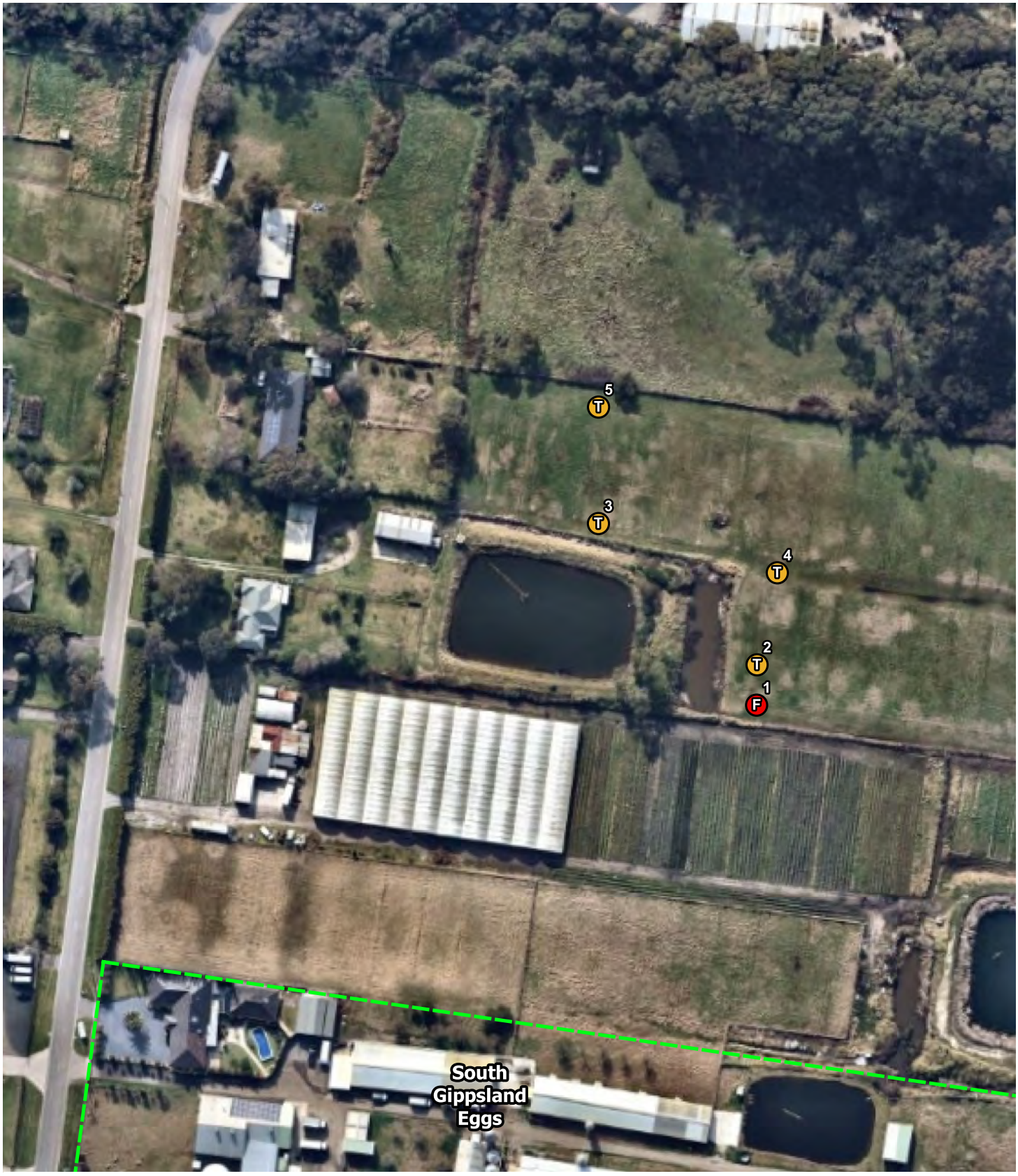

Legend

Industry Boundary

- D'Alberto Egg Farm
- South Gippsland Eggs

Odour Intensity

- No odour
- Obvious
- Subtle

Points

- C - Constant
- F - Frequent
- T - Transient

Paper Size ISO A4

0 25 50 m

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: WGS 84
Grid: WGS 84 / UTM zone 55S

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Victorian Planning Authority

Deavon Meadows PSP Assessment

Odour Survey 10

Project No. 12647547
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Date. 01/11/2024

APPENDIX D.10

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The Power of Commitment