

27 October 2023

3220422

Sarah Doring  
Strategic Planning Manager  
Victorian Planning Authority  
Level 25, 35 Collins Street  
Melbourne VIC 3000

Via email: sarah.doring@vpa.vic.gov.au

Dear Sarah,

**RE: Submission on Amendment C274card Officer South Employment Precinct Structure Plan**

Ethos Urban continue to act on behalf of Galileo Group (Galileo) who control the land holding at 190 Officer South Road (the site) within the Officer South Employment Precinct Structure Plan (PSP).

This submission responds to the release of draft documents relating to Planning Scheme Amendment C274card and the issues and implications for the site.

**Summary**

The following summary details our issues with the documents and is provided in advance of the submission detail. In summary, we raise the following matters:

- Interim access arrangements to Officer South Road should explicitly be acknowledged and considered in the PSP to facilitate and ensure early delivery of initial phases of the development of Stage 1. Specifically, an interim right turn movement from Officer South Road should be identified in the PSP. Galileo intend to commission a traffic engineering memo to provide technical merit on how this can be achieved.
- The use of service lane treatments along Officer South Road should be acknowledged explicitly within the PSP.
- The extent of the Public Acquisition Overlay (PAO) that is designated at the site should be removed or reduced given that the west bound on-ramp to the Princes Highway has now been delivered. We understand that this ramp has been constructed in the ultimate configuration and the balance of the PAO is no longer required. This land should be acknowledged as surplus, removed from the PAO and shown as developable in the PSP. Galileo intend to commission a traffic engineering memo to confirm the strategic justification for the removal of the PAO.
- The location of Local Park 03 (LPO3) should be removed from the 190 Officer South Road landholding and relocated south of the site. This will provide better access and distribution of open space assets within the PSP and ensure that there is no gap in public open space distribution as is evident south of the site.
- Requirement 14 should become a Guideline. This control is too restrictive and is not well considered. We suggest discretion is required and the guideline should read:

***CX: Commercial, industrial and retail premises at-grade parking, including loading and storage areas ~~are to~~ should be provided at either the side or rear of the building where practical, with direct pedestrian paths connecting off-street car parks to the primary entrances of buildings. Carparking provided at the front of buildings should be integrated with landscaping to provide a high quality built form outcome.***

- Galileo reserves the right to further examine the necessary retention of specific trees at the site and will commission an independent arborist report to assess this.
- In determining the separation distance for the South East Water (SEW) Sewer Pump Station (SPS), at no stage has the Victorian Planning Authority (VPA) sought to make its own independent enquiries in relation to determining the appropriate application and separation distances. We request that the VPA commits to a

collaborative process that acknowledges the work commissioned by Galileo and reduces the separation distance accordingly.

- The VPA currently relies on a report prepared by Consulting Environmental Engineers (CEE) prepared for SEW that has not been made public nor been released with the Amendment documentation. This report is not subject to scrutiny or enquiry. This report should be made available immediately and for consideration by a future Panel Hearing.
- The Separation Buffer that applies to the SEW SPS should be reduced to no more than 100m as per the independent advice provided by T&T and commissioned by Galileo.
- The Application Requirements in the Urban Growth Zone (UGZ) (Subclause 3) and Decision Guidelines (Subclause 6) relating to the Separation Buffer within Schedule 7 to Clause 37.07 should remove the reference to applications “for buildings and works” and relate only to permit applications in respect of the “use” of the land. Additionally, these requirements should only be in relation to odour impacts and should not be a requirement for noise impacts.
- There is no basis to prohibit or limit specific uses within the separation buffer to the STP if the catch all nature of the UGZ is to require all permit applications for use to provide an “amenity impact assessment” and to seek the view of SEW within the limit of the separation buffer. We believe this provides adequate guidance and certainty whilst also ensuring sufficient discretion to future decision makers.

## Submission

### Interim Access to Officer South Road

It is anticipated that development at the site will occur early in the life of the precinct and in advance of significant upgrades to Officer South Road. As such, interim access arrangements to Officer South Road should be considered to facilitate early delivery of the initial phases of development of Stage 1. Specifically, a right turn movement from Officer South Road should be provided to the site in the interim. It is recommended this be included as a guideline in the PSP and referred to on Plan 4, Road Network in the PSP.

We also think there is merit in the ultimate road network including a dedicated U-turn in front of the proposed emergency services facility along Officer South Road. This should similarly be acknowledged on Plan 4, Road Network and within a guideline in the PSP.

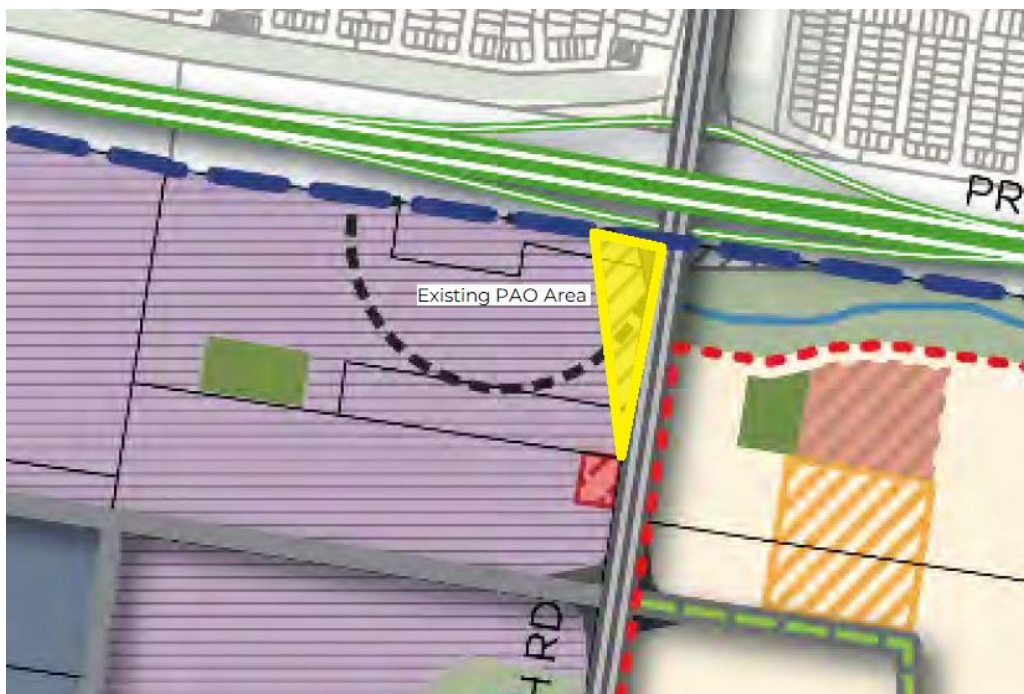
Galileo intend to commission a traffic engineering memo to provide technical merit on how this can be achieved.

### Public Acquisition Overlay

It is understood that the western bound on-ramps to the Princes Freeway from Officer South Road have been delivered. A Public Acquisition Overlay (PAO) remains on the site, despite the ramps having been delivered to an ultimate standard (Figure 1). Given that this ramp has now been constructed in the ultimate configuration the balance of the PAO is no longer required. This land should be acknowledged as surplus, removed from the PAO and shown as developable on the PSP. This should occur as part of this Amendment process and any further consultation required to enable the removal of the PAO should occur prior to gazettal of the PSP.

The PAO at 190 Officer South Road has an approximate area of 6,500m<sup>2</sup>. It also affects the properties to the north and south.

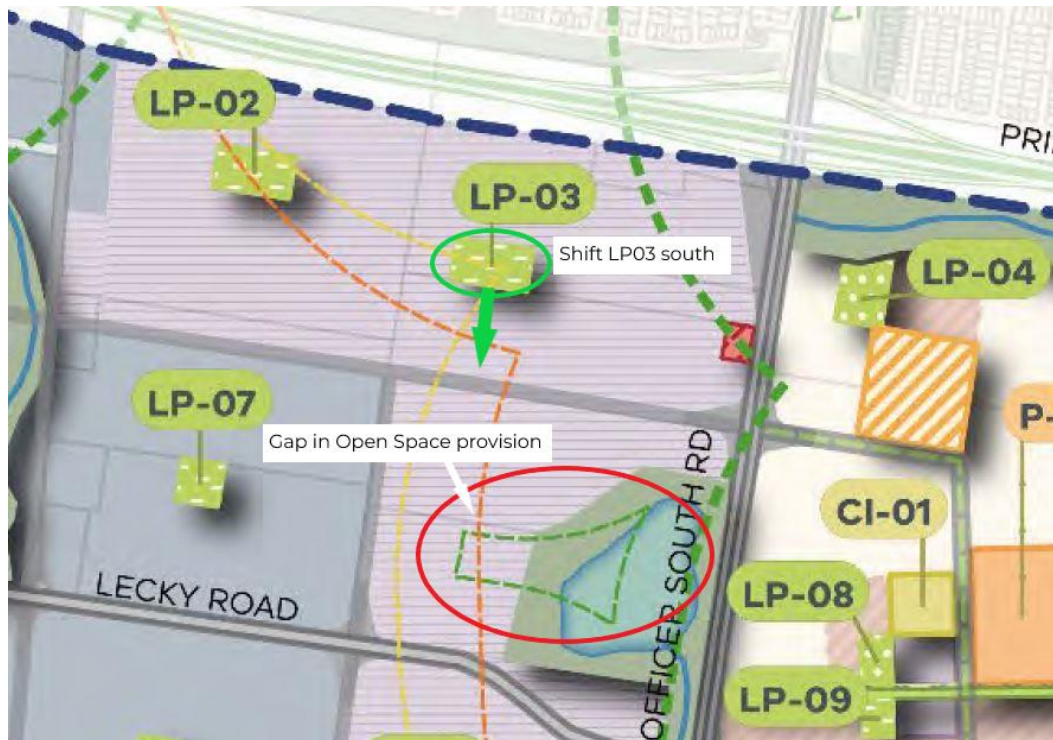
Galileo intend to commission a traffic engineering memo to confirm the strategic justification for the removal of the PAO.



**Figure 1** Existing PAO Area

## Public Open Space

Public Open Space in the form of a Local Park (LP-03) is proposed to be located within the site. The Open Space and Community facilities Plan (Plan 6 of the draft PSP) demonstrates that this does not provide the best access and distribution of open space assets within the PSP and indicates a missing public open space catchment area south of the site and north of Lecky Road. It is submitted that LP-03 should be relocated further south of the site and we suggest a preferable location would be adjacent the future connector road, conceivably aligning with the proposed drainage reserve in this location. The location of LP-03 in this location will provide better distribution and reduce any gap in the public open space catchment further south of the site (Figure 2).



**Figure 2** Gap in Open Space Provision

## General Comments

Requirement 14 (R14) of the Draft PSP states the following:

*Commercial, industrial and retail premises at-grade parking, including loading and storage areas are to be provided at either the side or rear of the building, with direct pedestrian paths connecting off-street car parks to the primary entrances of buildings.*

Requirement 14 should become a Guideline. This control is too restrictive and is not well considered. We suggest discretion is required and the guideline should read:

**GX:** *Commercial, industrial and retail premises at-grade parking, including loading and storage areas ~~are to~~ should be provided at either the side or rear of the building where practical, with direct pedestrian paths connecting off-street car parks to the primary entrances of buildings. Carparking provided at the front of buildings should be integrated with landscaping to provide a high quality built form outcome.*

Approximately 3 trees at 190 Officer South Road have been identified for retention in Plan 7 Native Vegetation Retention & Removal of the PSP. Galileo reserves the right to further examine the necessary retention of specific trees at the site and will commission an independent arborist report to assess this.

## Sewerage Pump Station Separation Distance and Controls

### Background and Context

Plan 3, Place Based Plan, of the Draft PSP identifies a proposed separation area of 180m from the South East Water (SEW) Sewer Pump Station (SPS) located near the corner of Officer South Road and Princes Freeway.

It should be noted that there is no required or recommended threshold distances for Sewer Pump Stations provided by the Planning and Environment Act 1987, Planning Practice Note 92 or in EPA Publication 1518. Therefore, any buffer separation distance is to be determined by a risk assessment.

Ethos Urban on behalf of successive landowners of 190 Officer South Road has, since 2020, requested that the VPA seek independent advice to qualify and enquire as to the appropriate separation distance required from the SEW SPS. The VPA has not sought to undertake an independent risk assessment. To this end, Oreana Property Group (the previous owners of the site) determined to commission a report by Tokin & Taylor (T&T) consultants to examine the SPS and provide an assessment to determine what if any separation distances was required. This information was provided to VPA in mid-2021 (Refer to Attached 1).

This report was prepared at the behest of the then Strategic Planning Manager at VPA who suggested preparing this report as a means of resolving this issue. Oreana in the spirit of collaboration commissioned the report and this was then provided to the VPA in July 2021. The report was provided on the basis that it would be discussed in a collaborative manner with SEW and the EPA.

On receipt of the report the VPA did exactly the opposite and discussed the report with SEW in-camera and without Oreana present. Thereafter, the VPA provided correspondence (on behalf of SEW) that sought to take issue with aspects of the report. Oreana was disappointed at not being able to present their report to SEW directly and hence further requested a meeting to discuss these issues with SEW and VPA. Despite the best effort of Oreana, this meeting was not held until November 2021.

Subsequent to the meeting with Oreana in November of 2021, SEW then set about commissioning a risk assessment report in relation the STP. This report was finalised in May 2022. At no stage was Oreana made aware of this report being commissioned nor were they asked to participate in the preparation of this report. It was only in February 2023 (nearly a year later), that VPA made Galileo (the now owners of the site) aware that SEW had prepared a report and that the VPA intended to utilise this information to inform the PSP. VPA did not offer to circulate this report or request SEW to provide this report to Galileo, despite the fact that this directly impacted their landholding and was in fact a response to the earlier report.

Instead, Ethos Urban had to threaten to issue a Freedom of Information (Fol) request in order for SEW to provide this information. The report *“Recommended Buffer Zone for Officer South Pumping Station”*, prepared by Consulting Environmental Engineers (CEE) May 2022, was received from SEW in May 2023, a full year after having been finalised. We note that this report is the basis upon which the separation distance buffer is derived and has been implemented. Despite this, the only passing mention of this report is provided in the *Officer South Employment PSP Background Report, September 2023* (page 52). This report is not available as a background document and has not been made public nor been released with the Amendment documentation.

### *Situation to date*

Galileo (having received the CEE report from SEW) sought to commission T&T to prepare a report responding to the SEW commissioned report. The Tonkin and Taylor (T&T) July 2023 report is provided at Attachment 2. This report was circulated in July 2023 to the VPA, which it has since chosen to ignore.

In summary, the report made the following findings:

- The CEE Report has not adequately demonstrated that General Environmental Duty (GED) has been fulfilled for the SPS operations, especially with the consideration that routine maintenance that can be anticipated and is not an upset condition.
- In the absence of adequate demonstration that GED has been fulfilled the results of the odour field survey are not considered applicable at this stage in establishing the odour buffer.
- SEW needs to adequately demonstrate that so far as reasonably practicable measures have been applied to the SPS, including during routine maintenance where the most odorous activities will take place.
- The excluded high sensitive land uses within the CEE Report do not coincide with the proposed land use at the Subject Land (commercial/light industrial which are considered to be of low to medium sensitivity) and hence there may be a discrepancy in the basis of the recommended 180 m buffer zone (based on odour) in the Report.
- The basis of buffer zones for other sewage pumping stations cannot be established with full confidence due to lack of information in the Report and the public domain. It is also unclear whether there has been a cessation or reduction in complaints since improvement to mitigation measures, which would then indicate the suitability of those distances subject to the implementation of similar mitigation measures. As such, whilst the identified separation from sensitive land use for other sewage pumping stations are useful for reference, it is

T+T's opinion that those distances of separation of sensitive land use are likely to be site-specific and caution is advised in directly applying the same to the SPS.

- The CEE Report has not used the most up-to-date odour risk assessment guideline (EPA Publication 1883) as it was finalised only after the Report was completed. A preliminary odour risk assessment undertaken by T+T based on EPA Publication 1883 showed that the odour risk is High.
- Review of the current 'state of knowledge' from other States and Territories shows that:
  - The odour risk (as per the EPA Tasmania guideline) for the SPS is High, which provides another line of evidence to corroborate the High risk finding from EPA Publication 1883.
  - Separation distances from other jurisdictions exist and range between 50 m to 100 m.
- For conservative purposes, 100 m is recommended to apply to the SPS as the odour buffer zone.

In providing this report to VPA, Ethos Urban at the time made the direct submission that "given there is conjecture from two landowners that have prepared independent reports, we do not consider that the VPA can reasonably apply a buffer in an exhibited plan without receiving their own independent advice". To date VPA have not prepared independent advice or have sought to resolve the issues raised in this correspondence.

#### *Lack of Transparency, Enquiry and Collaboration*

We believe that the above circumstances point to a lack of transparency, enquiry and collaboration on behalf of the VPA. The "Recommended Buffer Zone for Officer South Pumping Station", prepared by Consulting Environmental Engineers (CEE), May 2022 should be subject to scrutiny and enquiry, given it is relied upon to make specific land use decisions. Best practice planning would demand that this document is discoverable and publicly accessible and should have been released as part of the background reports that inform the PSP. It is highly irregular that a report such as this has not been released publicly and displays a lack of transparency that is not in line with the expectations of the community or good governance more generally. This report should be made available immediately and is essential in the consideration of the amendment at a future Panel Hearing.

The failure of VPA to undertake its own enquiries in relation to the SPS and independently verify the required separation distance has plagued this process for nearly 4 years. We note that in almost all other precincts where adverse amenity impacts exist, the VPA has conducted independent studies to determine appropriate buffer and separation distances. We request that the VPA commits to a collaborative process that acknowledges the work commissioned by Galileo and reduces the separation distance accordingly.

#### *Recommendations in relation to separation distance*

In short, Ethos Urban request that the Separation Buffer that applies to the adjacent Sewer Pump Station (SPS) should be reduced to no more than 100m as per the independent advice provided by T&T.

Setting aside the issues above, we also request that the Application Requirements in the Urban Growth Zone (UGZ) (Subclause 3) and Decision Guidelines (Subclause 6) relating to the Separation Buffer within Schedule 7 to Clause 37.07 should remove the reference to applications "for buildings and works" and relate only to permit applications in respect of the "use" of the land. Additionally, we request the requirements to only relate to odour impacts, removing any reference to noise impacts.

Therefore, the Application Requirements at subclause 3 should read as follows:

*An application to use land, ~~or to construct a building or carry out works on land~~ within the South East Water 'proposed separation area (180XXXm)' on Plan 3 – Place Based Plan of the incorporated Officer South Employment Precinct Structure Plan must be accompanied by an amenity impact assessment prepared by a suitably qualified professional which provides for an assessment of the proposed use against the potential for odour ~~and noise~~ impacts to ensure the use within the proposed buildings will experience an appropriate level of amenity.*

The Decision Guidelines at subclause 6 should read as follows:

*Before deciding on an application **for use of the land** ~~to develop land~~ within the South East Water 'proposed separation area (180XXXm)' on Plan 3 – Place Based Plan of the incorporated Officer South Employment Precinct Structure Plan, the responsible authority must consider, as appropriate:*

- *Whether the proposed use may be affected by potential unintended odour ~~and noise~~ impacts from the pump station; and*
- *The view of South East Water Ltd (or their successors).*

We are of the opinion that there is no basis to prohibit or limit specific uses within the separation buffer if the catch all nature of the UGZ (Application Requirements) is to require all permit applications for use to provide an "amenity

impact assessment" and to seek the view of SEW within the limit of the separation buffer. We believe this provides adequate guidance and certainty whilst also ensuring sufficient discretion to future decision makers.

We look forward to resolving these matters with you forthwith. We also reserve the right to raise further matters with the VPA as submissions are received by other parties or issues are raised within a Panel Hearing.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'TP' or 'T. Peggie', written in a cursive style.

**Tim Peggie**  
Director, Planning

[Redacted contact information]

[Redacted contact information]

## **Attachment 1: Desktop Review of Odour Buffer Pump Station, Tonkin and Taylor, July 2021**

Oreana Property Group  
via email

Attention: Pasquale Franzese

Dear Pasquale

**Desktop Review of Odour Buffer of Sewage Pump Station,  
162 - 190 Officer South Road**

Oreana Property Group (Oreana) has commissioned Tonkin & Taylor Pty Ltd (T+T) to undertake a desktop review of the proposed odour buffer of the Officer South sewage pump station (OSSPS) owned by South East Water (SEW), located immediately north of the land owned by Oreana at 162 – 190 Officer South Road, Officer (herein referred to as “the site”).

At this stage, it is understood that the site is being considered for commercial (business) and residential development. The site is located within the proposed Officer South Employment Precinct<sup>1</sup>, and development of the draft Precinct Structure Plan (PSP)<sup>2,3</sup> led by the Victoria Planning Authority (VPA) has indicated that a 200 m odour buffer surrounding the OSSPS is being proposed by SEW.

Environment Protection Authority Victoria (EPA) Publication 1518 *Recommended separation distances for industrial residual air emissions* (March 2013) (“Publication 1518”) is EPA’s guideline document which provides advice on recommended separation distances between industrial land uses that emit odour or dust, and sensitive land uses. Publication 1518 states that in the past, the terms ‘buffer’ and ‘separation distance’ have been used interchangeably, and this document uses the term ‘separation distance’ to mean the space between industrial land uses and sensitive land uses. For the purposes of this report, and in line with the terminology used both in the PSP and Publication 1518, the term ‘buffer’ and ‘separation distance’ will be interchangeably used in this report.

The proposed 200 m odour buffer may have potential implications for the development of the site. As such, we have approached SEW<sup>4</sup> to understand its basis.

This report presents the findings of the odour buffer desktop review of the OSSPS, and the work has been undertaken in accordance with our proposal dated 20 April 2021 (Reference: 1017345).

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<sup>1</sup> Victoria Planning Authority (<https://vpa.vic.gov.au/project/officer-south-employment/>)

<sup>2</sup> Mesh Liveable Urban Communities Pty Ltd, *Officer South Employment Precinct Structure Plan, Place-based Plan Co-design Workshop Summary, February 2021* (<https://vpa-web.s3.amazonaws.com/wp-content/uploads/2021/03/Officer-South-Employment-PSP-Place-based-Plan-Co-design-Workshop-Summary-February-2021.pdf>)

<sup>3</sup> GHD, *Report for Victorian Planning Authority, Officer South Employment PSP Utility Assessment, October 2020* (<https://vpa-web.s3.amazonaws.com/wp-content/uploads/2020/11/Officer-South-Employment-PSP-Situational-Analysis-Report-GHD-October-2020.pdf>)

<sup>4</sup> Email correspondence with Robert de Boos, Process and Odour Engineer, 25 June 2021

## 1 Site overview

### 1.1 Locations of site/OSSPS and the odour buffer

There are two methods to measure separation distances under Publication 1518. Method 1 (activity boundary to property boundary, Figure 1.1), also called the 'urban' method, is applicable where the nearest sensitive land use is either:

- In an urban area or township.
- On a site less than 0.4 hectares, or in a zone allowing subdivision to be less than 0.4 hectares.

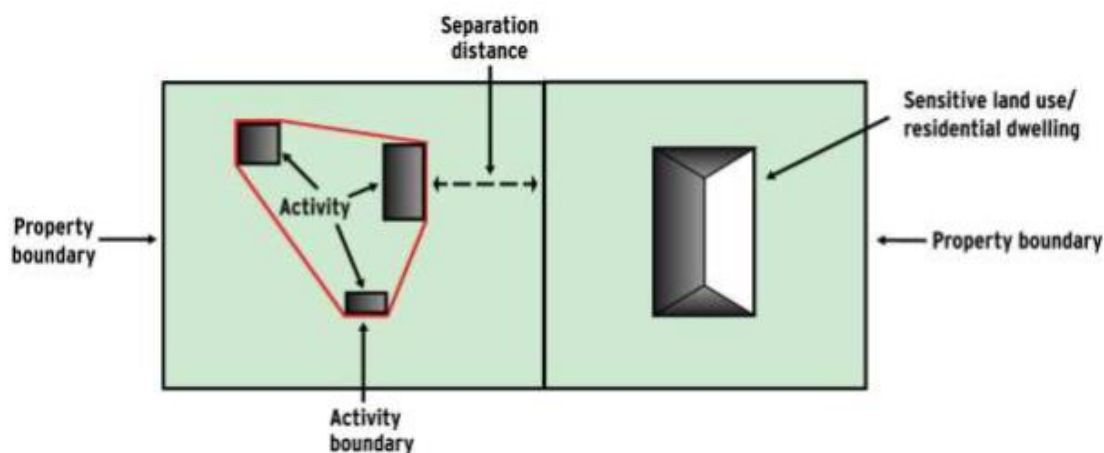


Figure 1.1: Method 1 (Source: Publication 1518)

Method 1 is considered to be applicable due to the township development in the area, and this has been confirmed by SEW as the method that SEW will adopt to measure odour separation distance.

The location of the site and the OSSPS are shown in Figure 1.2, together with the proposed 200 m odour buffer which is measured from the activity boundary of the OSSPS (as estimated based on aerial photography). Based on Method 1, the 200 m odour buffer distance will fall slightly within the property boundary of approximately 20 dwellings in the new residential area currently being developed north of Princes Freeway. The residential area is part of the separate Officer PSP<sup>5</sup> (which differs from the Officer South Employment PSP) and was not subjected to an odour buffer.

### 1.2 Topography and wind conditions at the site

Topography and wind conditions are two main ambient environmental factors that affect the transport and dispersion of odour emissions from a SPS. Topography at the OSSPS/site is flat, as shown in Figure 1.3, which minimises any terrain channelling of odour.

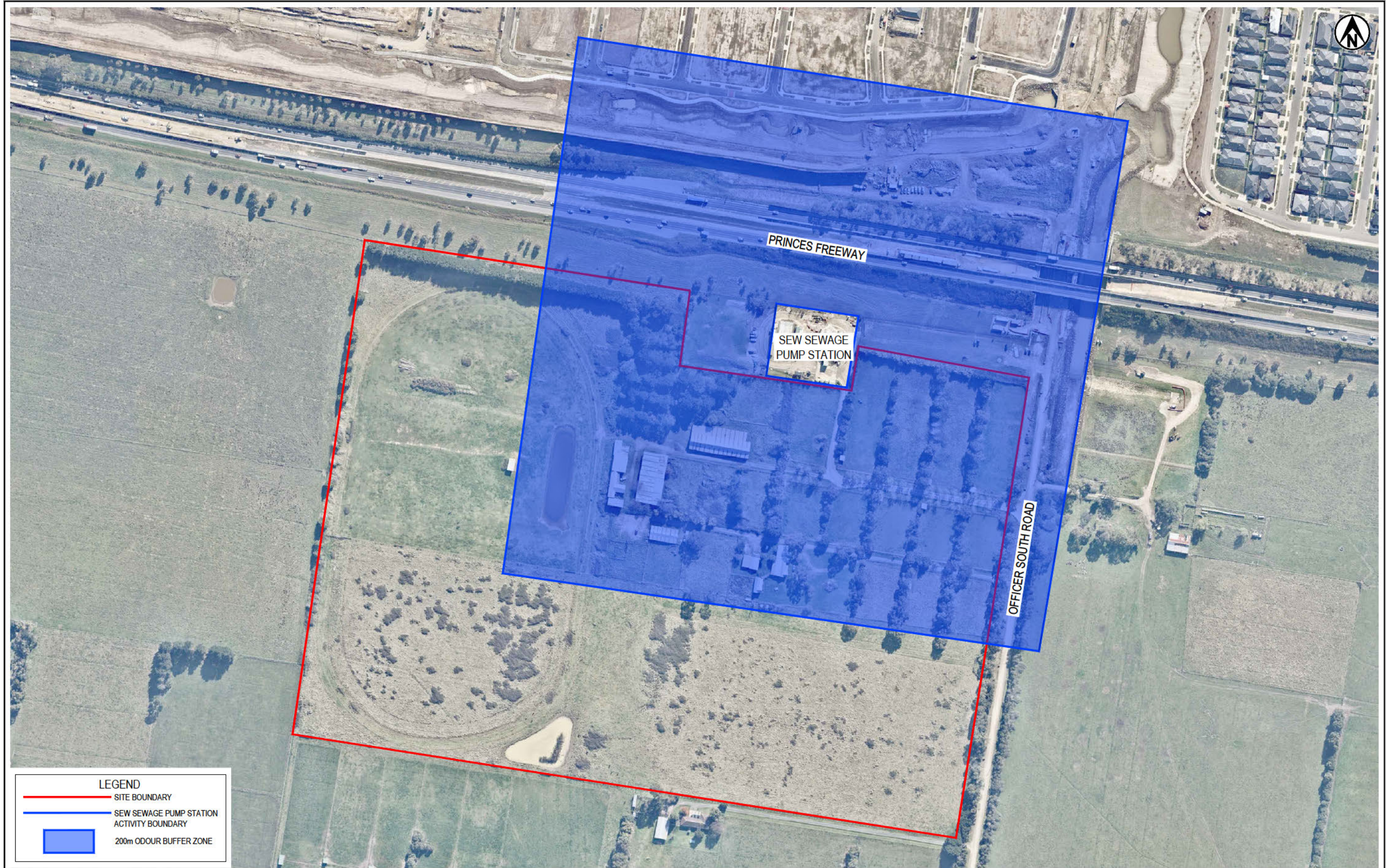
There are no on-site weather stations, and the nearest Bureau of Meteorology automatic weather station at Scoresby Research Institute (approximately 26 km northwest of the site) is unlikely to yield a representative wind rose for the site due to different topography/geographical features affecting wind flows at Scoresby.

Based on local knowledge from previous project experience, the local wind conditions at Officer are likely to be dominantly blowing from the general eastern and northwestern directions. These dominant wind directions are likely due to the geographical features as shown in Figure 1.4:

<sup>5</sup> Originally completed in 2011, and subsequently amended in 2019/2020 (<https://vpa.vic.gov.au/project/officer-precinct-structure-plan/>).

- The northwesterly winds may be due to downslope winds from the mountain ranges to the north/northwest of the site.
- The easterly winds may be due to some degree of funnelling effect from winds blowing from the Latrobe Valley towards Officer.

Overall, if dominant winds at the site are blowing from the northwest or from the east, some sections of the site will be directly downwind of the OSSPS.





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NOTES:

1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD. IMAGERY DATE: 29/04/2021.

A3 SCALE 1:3000





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PROJECT No. 1017345		
DESIGNED	SYLO	Jun.21
DRAWN	KMJA	Jun.21
CHECKED		
APPROVED		DATE

CLIENT **OREANA PROPERTY GROUP**

PROJECT **162-190 OFFICER SOUTH ROAD, OFFICER**

TITLE **EXTENT OF SITE, LOCATION OF SEWAGE PUMP STATION AND 200m ODOUR BUFFER AROUND THE PUMP STATION**

SCALE (A3) 1:3000

FIG No. **FIGURE 1.2**

REV **1**



Figure 1.3: Surrounding topography (blue dot denotes the OSSPS)

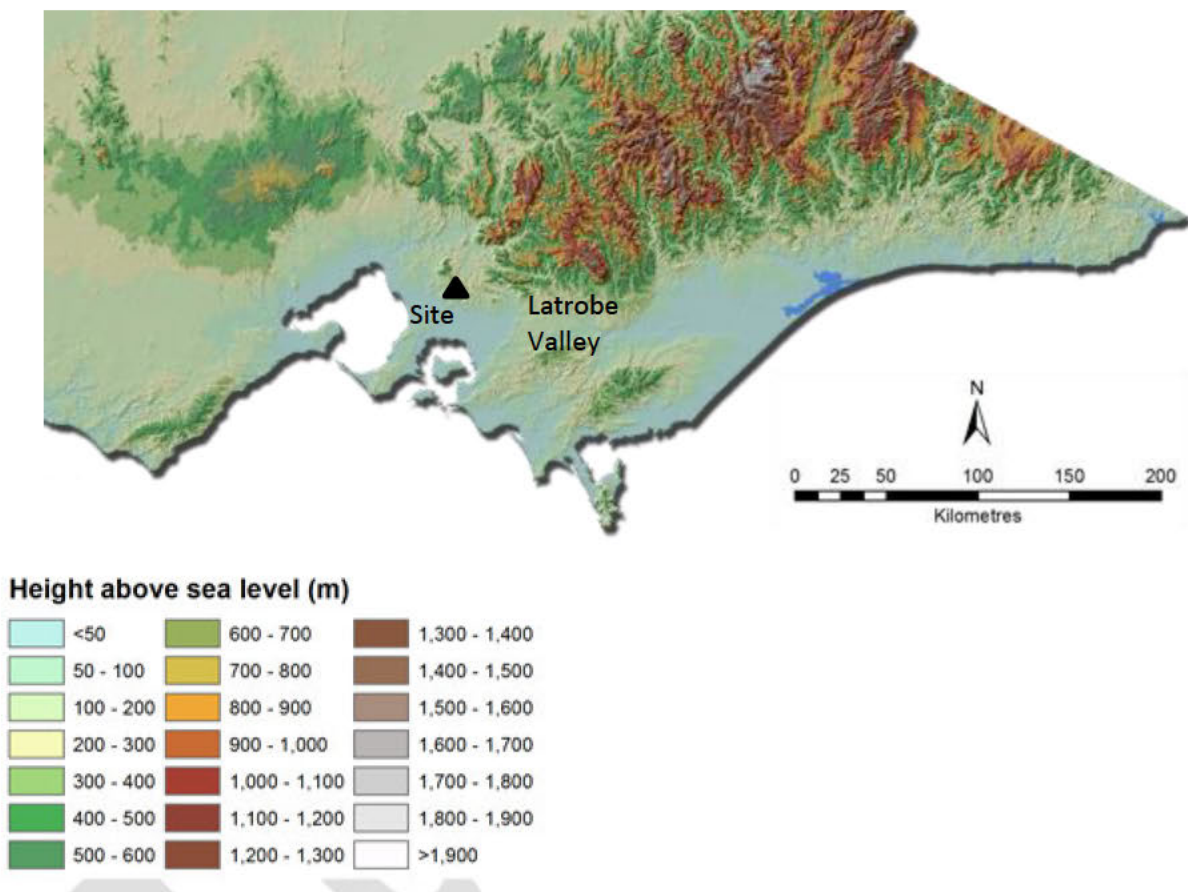


Figure 1.4: Geographical features around site location likely influencing wind flows (Source: Elevation map from Victorian Resources Online, <http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vic-elevation-map>)

### 1.3 Background information of OSSPS from SEW

According to SEW, the OSSPS is one of the largest sewage pump stations owned and operated by SEW. The OSSPS forms a key link in the sewer servicing of the eastern growth corridor, with plans to transfer sewage from Officer, Clyde and Pakenham.

The wet well of the OSSPS is hexagonal in shape and about 13.5m across. The wet well is split into three chambers consisting of an inlet chamber and two pump wells, split by internal walls. The station currently pumps at about 300 L/s but has significant provision for future upgrade. The volume and quality of sewage pumped day-to-day varies on a seasonal basis, dependent on weather conditions within the catchment and recycled water demands in the area.

#### 1.3.1 Odour risk

SEW has identified that the OSSPS poses a risk of emitting offensive odours generated by sewage, particularly as the catchment grows and more areas are connected to the OSSPS. The catchment includes industrial areas such as those that will be built in Officer, therefore domestic sewage and trade waste will be pumped through the OSSPS. SEW has indicated that the nature/ volume of trade waste for an area cannot be predicted prior to the industries moving in and applying for their trade waste licences.

According to SEW, due to the nature of sewage, there are more odorous compounds contained within and generated by the sewage than can be currently quantified. Of these the most common and well-studied is hydrogen sulphide ( $H_2S$ ) which has the smell of rotten eggs.  $H_2S$  is generated in anaerobic (no oxygen) conditions by bacteria growing within the sewage and on the walls of the

pipes. The likelihood of anaerobic conditions developing and generating significant concentrations of reduced sulphur compounds such as H<sub>2</sub>S is dependent on factors such as the strength of the sewage (trade waste versus domestic sewage is a simplification of this), the presence and length of pressure mains or siphons, the speed of sewage running through gravity mains etc.

Once odorous compounds are generated in the sewage the rate at which they are transferred to the air is dependent on the surface area (station size) and turbulence. With an industrial catchment such as the industrial areas in Officer, the prediction of odour becomes even more difficult as the different trade waste types, when mixed together can produce unique odorous products.

As a result, according to SEW, it is not possible to estimate odour generation rates for use in air dispersion models with any degree of accuracy by assessing the pump station in isolation. Large scale process models can be used to estimate H<sub>2</sub>S concentrations across simple networks however, these are only accurate enough to identify where odour mitigation works are likely to be required.

SEW has not relied on dispersion modelling to estimate future odour contours for sewage pump stations. This is due to the difficulty in estimating an emission rate as described above, as well as their opinion that air dispersion models such as AERMOD are not useful over short distances.

SEW is mitigating the odour risk with upgrades to the pump station currently underway to improve ventilation and to allow for further air treatment to remove odour as required; however, SEW noted that no treatment for odour is 100% effective. Due to the size of the pump station, SEW has proposed a buffer area around the pump station to further mitigate the odour risk by excluding uses of the land that may be particularly sensitive to odour such as residential dwellings and restaurants.

#### **1.4 Basis of proposed odour buffer**

From the discussion with SEW, the proposed odour buffer distance of 200 m has been derived based on the following:

- As a starting point, SEW has made reference to minimum separation distance recommended for offensive odour generating industries in Publication 1518, i.e. 250 m. As sewer pump stations are not listed in Publication 1518, SEW has referenced the following industries within Publication 1518 as a guide for the 250 m separation distance:
  - Formaldehyde production
  - Rubber products production using organic solvents
  - Food and beverage manufacturing with the exception of bakeries (as bakeries are not a source of offensive odour)
  - Manufacturing using resin
  - Leather tanning
  - Storage of hides
  - Dyeing, finishing and scouring of textiles
  - Transfer stations for solid waste.
- SEW has considered the distance to sensitive uses (residential dwellings currently being constructed) north of the Princes Freeway (being approximately 200 m as shown in Figure 1.2), and therefore proposes the separation distance of 200 m.

According to the background document to the draft PSP written by GHD (*Officer South Employment PSP Utility Assessment Situational Analysis Report, October 2020*), the 200 m buffer proposed by SEW prohibits the following land uses:

- Residential development
- Restaurants and take-away shops

- Food-based retail
- Community facilities such as libraries
- Education facilities including childcare centres, schools and universities
- Any other uses that may be sensitive to odour.

## 2 Planning provisions for threshold distance/separation distance

### 2.1 Statutory framework

State planning policy sets out broad principles for use and development in the state, include consideration of encroachment and land use compatibility. Specifically, Clause 53.10<sup>6</sup> of the Victorian Planning Provisions (VPPs) sets out threshold distances for different types of uses and activities with potential adverse impacts. Establishing land uses known to pose potential off-site impacts must respond to threshold distances contained in Clause 53.10. However, there is no specified threshold distance for a sewage pump station within Clause 53.10<sup>7,8</sup>.

Under Clause 13.07-1S (Land use compatibility) of the VPPs, the EPA Publication 1518 is included as a relevant policy document for consideration. According to its scope of application, EPA Publication 1518 is to be used for:

- Planning authorities, responsible authorities, EPA, industry, developers and the community, to be used in the preparation and consideration of planning scheme amendments and planning permit applications.
- Industry, EPA and the community, to be used in the application for, and consideration of, works approvals and licences for scheduled premises.

Clause 53.10 is different in its intent to EPA Publication 1518. Specifically, Clause 53.10 sets up threshold triggers, for referral to EPA, where a new industry is proposed in proximity to a sensitive land use. While these threshold distances relate to a potential odour risk, they do not always coincide with established separation distances<sup>9</sup>.

Scheduled premises are activities that are considered to pose a significant risk to human health and/or the environment. The *Environment Protection (Scheduled Premises) Regulation 2017* prescribes the types of premises as 'scheduled premises' for the purposes of the *Environment Protection Act 1970*. Under EPA Publication 1518, a scheduled premise has an associated recommended minimum separation distance to avoid the consequence of industrial residual air emissions (IRAEs). The separation distance aims to minimise the off-site impacts on sensitive land uses arising from unintended, industry-generated odour (and dust) emissions by allowing IRAEs to dissipate without adverse impacts on sensitive land uses.

Separation distances are not meant to account for routine emissions, and hence are not an alternative to source control. Instead, they are applicable to **unintended emissions** (IRAEs) which are often intermittent or episodic, and may originate at or near ground level. IRAEs may originate from

<sup>6</sup> [https://planning-schemes.api.delwp.vic.gov.au/schemes/vpps/53\\_10.pdf](https://planning-schemes.api.delwp.vic.gov.au/schemes/vpps/53_10.pdf)

<sup>7</sup> Clause 53.10 makes reference to the activity of 'sewage treatment plant, exceeding a design or actual flow rate of 5,000 litres per day' with no specified threshold distance.

<sup>8</sup> Planning Practice Note 92 (March 2021) from the Department of Land, Water and Planning ([https://www.planning.vic.gov.au/\\_\\_data/assets/pdf\\_file/0018/467010/PPN92-Managing-buffers-for-land-use-compatibility.pdf?\\_ga=2.177346469.1013160542.1623772598-1363364083.1621324510](https://www.planning.vic.gov.au/__data/assets/pdf_file/0018/467010/PPN92-Managing-buffers-for-land-use-compatibility.pdf?_ga=2.177346469.1013160542.1623772598-1363364083.1621324510)) further expands the description of sewage treatment plant activity within Clause 53.10 to include 'vacuum/wastewater/sewage pumping station'.

<sup>9</sup> <https://www.epa.vic.gov.au/for-business/find-a-topic/planning-guidance/guidance-and-epa-guidelines#buffers-and-encroachment-and-sensitive-uses>

equipment failure, accidents and abnormal weather conditions which may affect sensitive land uses beyond the boundary of the source premises.

Being a relatively small premise compared to a sewage treatment plant, a sewage pump station is not considered to be a scheduled premise, and hence there is no corresponding recommended minimum separation distance contained within EPA Publication 1518.

## **2.2 Example from East Werribee Employment PSP (Hoppers Crossing Sewage Pump Station)**

Melbourne Water operates the Hoppers Crossing sewage pump station, which is one of Australia's largest sewage pumping stations capable of pumping more than 5000 L/s of sewage<sup>10</sup>.

Similar to the OSSPS, the Hoppers Crossing sewage pump station is located within an employment precinct (East Werribee Employment Precinct). The East Werribee Employment PSP did not specify an odour separation distance for the Hoppers Crossing sewage pump station, and allowed adjacent development, as shown in the PSP<sup>11</sup> (Figure 2.1).

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<sup>10</sup> <http://www.waterstory.melbournewater.com.au/content/our-sewerage-story/a-new-pumping-station-for-the-west>

<sup>11</sup> <https://vpa.vic.gov.au/wp-content/uploads/2012/11/East-Werribee-Employment-Precinct-PSP-Part-three.pdf>

Figure 3 Concept and Character Plan for the University Village Centre



Figure 2.1: Concept and character plan surrounding Melbourne Water's Hoppers Crossing sewage pump station ((Source: Figure 3, Section 3.3, East Werribee Employment PSP)

### 3 Discussion and findings

Based on our review of Clause 53.10 of the VPPs and EPA Publication 1518 pertaining to threshold distances/separation distances for odour, there is no published distance specifically targeting sewage pump stations in Victoria.

The discussion below focuses on reviewing the technical basis for the proposed 200 m odour buffer based on the information provided by SEW:

- SEW has derived the 200 m odour buffer based on first considering a 'generic' minimum 250 m buffer which was then adjusted to account for consideration of sensitive receptors (dwellings) that are currently being constructed.
  - Since Publication 1518 does not refer to sewage pump stations and does not provide a 'generic' minimum separation distance (recommended distances are specific to the types of industry), SEW has sought to establish a minimum separation distance based on other selected industries in Publication 1518 that they deem to generate offensive odours (as listed in Section 1.4).
  - However, these selected industries are different from a sewage pump station process and correspondingly have different odour generation potential, odour source strength, and odour characteristics. As such, it is not immediately evident that an equivalent minimum separation distance can be established between those selected industries and the OSSPS.
  - We note that under Method 1 the property boundaries of approximately 20 residential dwellings will fall within this proposed 200 separation distance (Figure 1.2).
  - It is unclear to us at this stage whether SEW has sought independent verification that the modified approach of using the separation distances from the Publication 1518 as described above is considered acceptable as a starting basis for deriving the buffer distance for the OSSPS.
- SEW has indicated that upgrades are currently being undertaken at the OSSPS to mitigate odour risk with upgrades to improve ventilation and to allow for further air treatment to remove odour as required.
  - It is unclear to us how the odour risk reduction from these measures has been considered in the proposed 200 m odour buffer, and whether these upgrades will reduce odour risk to ALARP (as low as reasonably practicable) under the new General Environmental Duty (GED) of the Environment Protection (EP) Act 2017 which came into force 1 July 2021. Part 3.2 Condition 25 of the EP Act 2017 defines the GED which requires that "*A person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable.*"
- SEW has indicated that there is difficulty in deriving an accurate odour emission rate for sewage pump stations in isolation and hence dispersion modelling is not typically relied upon to generate odour contours (which are used to inform odour separation distances).
  - In principle, we agree that if a representative odour emission rate (as one of the key model inputs) cannot be reliably estimated, it would increase the uncertainty of the dispersion modelling results such that derivation of an odour buffer zone based on odour contours may not be reliable.
  - However, there is insufficient information from SEW on whether alternative assessment methods have been considered, such as:
    - o Comparison with other sewage pumping stations of similar capacity, sources of sewage, and their operational parameters and their potential for odour emissions

e.g. the Hoppers Crossing sewage pump station within the East Werribee Employment PSP (Section 2.2) did not have a prescribed odour buffer, although it has a larger capacity.

- o Odour investigation (e.g. complaints reviews, odour field surveillance) of other sewage pumping stations of similar capacity and operational parameters.

Overall, based on our findings as described above, a robust technical basis of the 200 m odour buffer has not been adequately demonstrated by SEW.

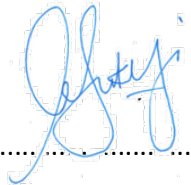
#### **4 Applicability**

This report has been prepared for the exclusive use of our client Oreana Property Group, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Pty Ltd

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## **Attachment 2: Review of proposed Buffer Area Overlay for odour, Tonkin and Taylor, July 2023**



# Review of proposed Buffer Area Overlay for odour

## Officer South Sewage Pumping Station

**Prepared for**

Galileo 190 Officer South Nominee Pty Ltd

**Prepared by**

Tonkin & Taylor Pty Ltd

**Date**

July 2023

**Job Number**

1091476 v2



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## Document control

Title: Review of proposed Buffer Area Overlay for odour					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
4/7/23	1	Draft for client comments	SYLO/IMC	LSD	IMC
19/7/23	2	Final	SYLO	IMC	IMC

### Distribution:

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Tonkin & Taylor Pty Ltd (FILE)

1 electronic copy

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# 1 Introduction

Galileo 190 Officer South Nominee Pty Ltd (Galileo) owns land at 162-190 Officer South Road (Subject Land). To the north of the Subject Land is Officer South sewage pumping station (SPS), on which the operator (South East Water – SEW) wishes to place a Buffer Area Overlay (BAO).

Galileo has engaged Tonkin & Taylor Pty Ltd (T+T) to complete a technical review of the report titled “*Recommended Buffer Zone for Officer South Pumping Station*” dated May 2022 (Report) completed by Consulting Environmental Engineers Pty Ltd (CEE) (CEE Report). The CEE Report details the approach used by SEW’s consultants to define an appropriate distance for the BAO.

The SPS is located immediately north of the Subject Land and immediately south of the Princes Freeway adjacent to Officer South Road (Figure 1.1). The Subject Land is located within the proposed Officer South Employment Precinct Structure Plan (PSP) in the municipality of Cardinia. In accordance with State Government strategic planning policy directions, the precinct will deliver a State Significant Industrial Precinct and Regionally Significant Commercial business with a residential precinct that incorporates natural and historic heritage features as well as places for people to live, creating a dynamic precinct, responding to future employment needs<sup>1</sup>. As such, whilst the current setting immediately surrounding the SPS is mostly considered as rural, the rapid development of the Officer South area (such as the residential development north of the Princes Freeway and the Officer South Road new freeway ramps) will mean that the surroundings of the SPS will be urbanised in the future under the PSP.

T+T have been instructed that Galileo does not intend to develop residences at the Subject Land and instead intends to build a mix of commercial / light industrial uses which would include (but may not be limited to):

- Offices;
- Light warehousing; and
- Restricted retail.

The aims of this assessment are to review the CEE Report, with respect to odour impacts, the merits of:

- The proposed BAO of 180 m; and
- The building height restriction of 10 m within 300 m of the BAO.

The assessment has been undertaken in the context of reviewing whether the BAO and the building height are warranted, and if so whether the proposed buffer distance and building height are appropriate or whether they can be reduced.

In the review, relevant Victorian planning and environmental legislation/guidance, as well as ‘state of knowledge’ relating to similar facilities in Melbourne and separation distances from other States and Territories have been considered.

The technical review documented in this report has been undertaken as per T+T’s proposal (reference 1091476.0000) of 6 June 2023.

## 1.1 Report structure

This report has been structured as follows:

- Section 2 – Definitions of separation distance, threshold distance and buffer.

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<sup>1</sup> <https://vpa.vic.gov.au/project/officer-south-employment/>

- Section 3 – Overview of the SPS and Subject Land.
- Section 4 – Current relevant environmental legislation governing the operation of the pumping station and the obligations on the operator to eliminate risk or where this is not possible minimise that risk so far as reasonably practicable.
- Section 5 – Relevant planning framework which govern the development of land as it pertains to use around a known odour source and the use of buffers.
- Section 6 – Relevant environmental guidance on the use of separation distances and odour risk assessment.
- Section 7 - Review of the CEE Report dated May 2022.
- Section 8 - Consideration of the state of knowledge as to a suitable separation distance for a pumping station of the designed capacity.
- Section 9 – Summary and conclusions.



*Figure 1.1: Location of SPS and Subject Land*

## 2 Separation distance, threshold distance and buffer

This report refers to separation distance, threshold distance and buffer in different sections. Although they are similar in concept, there have specific meanings and are different for key reasons as outlined in Table 2.1.

**Table 2.1: Definitions of threshold distance, separation distance and buffer**

	Description	Policy reference
Threshold distance	<ul style="list-style-type: none"> <li>A trigger for further detailed assessment of potential adverse offsite impacts via a planning permit.</li> <li>Based on a broader range of risks than those covered in the EPA guideline (odour and dust). For example, noise and hazardous air pollutants.</li> <li>Applies to planning permit applications for new industries, but does not apply in reverse for existing industries.</li> </ul>	<ul style="list-style-type: none"> <li>Clause 53.10 of the Victorian Planning Provisions (see Section 5) sets out the threshold distances for different types of uses and activities with potential adverse impacts.</li> <li>Referral to EPA is triggered under Section 55 of the Planning and Environment Act 1987 if a threshold distance is not met or an industry is listed with no threshold distance specified.</li> </ul>
Separation distance	<ul style="list-style-type: none"> <li>A distance between incompatible land uses where there is potential for adverse human health or amenity impacts during upset conditions.</li> <li>Typically occurs between an industrial (or sometimes commercial) land use and a sensitive land use.</li> <li>Used as a tool to determine whether the siting of a proposed land use or development is suitable in the context of surrounding land uses.</li> <li>Should be measured either according to the urban method or rural method of EPA Publication 1518 <i>Recommended separation distances for industrial residual air emissions</i> (or EPA Publication 1949 <i>Separation distance guidance</i> once it is finalised and replaces EPA Publication 1518. Both publications have the same methodology for the urban/rural method).</li> </ul>	<ul style="list-style-type: none"> <li>EPA Publication 1518, and its successor EPA Publication 1949 (currently under draft version).</li> <li>EPA Publication 1949 sets out recommended separation distances for odour and dust for industries.</li> </ul>
Buffer	<ul style="list-style-type: none"> <li>Land used to separate or manage incompatible land uses, often industrial uses and sensitive uses, to ensure land use compatibility and avoid land use conflict.</li> <li>May contain multiple separation distances that respond to various risks to human health and amenity - for example, where a buffer is made up of separation distances that respond to odour, dust and landfill gas migration, the buffer will extend to the largest of these separation distances.</li> <li>Does not need to stop the use and development of land – instead, it ensures land use and development responds to the risks posed and allows for a transitional area of land between two</li> </ul>	Planning Practice Note (PPN) 92 (see Section 5) provides guidance on the planning provisions relating to buffer management, including the BAO.

	Description	Policy reference
	distinct land uses to lessen the risk of harm posed by one land use type on another.	

Source: Draft EPA Publication 1949 – Separation distance guideline, December 2022.

### 3 Description and environmental setting of the SPS

The Report provided an overview of the SPS and the following subsections provide a summary of T+T understanding of the SPS.

#### 3.1 Wet well at the SPS

The SPS is SEW's largest sewage pumping station. Sewage from residential and commercial properties in the region collect in the wet well from where the sewage is then pumped westwards to trunk sewers that lead to the Eastern Treatment Plant. The wet well is a 12-sided concrete structure approximately 14 m in diameter that extends 10 m down below ground level and 1 m above ground level. There are 13 large opening lids on the top of the wet well to provide access for maintenance activities, including:

- Checking, removing and replacing pumps;
- Checking, adjusting and cleaning sewage level sensors and other control equipment; and
- Monthly cleaning of the inside walls of the wet well to remove grease and debris that accumulate over time.

The monthly cleaning is carried out with pressure water sprays and involves opening the lids over a period of 2 days. Figure 3.1 shows the location of the wet well within the SPS and a plan view of the wet well with the 13 opening lids (indicated with light blue boxes).



Figure 3.1: Plan view of the SPS wet well (Source: Nearmap; wet well plan view sourced from the CEE Report, May 2022)

### 3.2 Topography and wind conditions

Topography and wind conditions are two main ambient environmental factors that affect the transport and dispersion of odour emissions. Topography at the location of the SPS (and Subject Land) is generally flat (i.e. no steep terrain changes), as shown in Figure 3.2. However, aerial/ground photography shows that the Princes Highway slopes downwards towards the SPS so there may be some localised channelling of odour since the odour sources of the SPS are mainly ground level (wet well).



Figure 3.2: Surrounding topography (blue dot denotes the SPS)

There are no on-site weather stations. The two nearest Bureau of Meteorology (BoM) automatic weather station at Scoresby Research Institute (approximately 26 km northwest of the SPS) and Frankston Ballam Park (approximately 23 km southwest of the SPS) are unlikely to yield representative wind roses for the SPS due to the large distances and different topography/geographical features affecting wind flows at Scoresby/Frankston.

The CEE Report included a wind rose from Pakenham based on data from the Bureau of Meteorology (BoM) (Figure 3.3). Review of the BoM website indicates that a station at Pakenham is not part of the BoM automated weather station network and hence the Pakenham data is not publicly available. Although the Pakenham wind data cannot be independently verified, based on local knowledge from T+T's previous project experience in the area, the local wind conditions at Officer South are likely to be dominantly blowing from the eastern and northwestern directions, thereby exhibiting a stronger bi-directional wind rose than currently shown in the Pakenham wind rose. These dominant wind directions are likely influenced by the geographical features as shown in Figure 3.4:

- The northwesterly winds may be due to winds from the western directions as they funnel into the La Trobe Valley as a result of the mountains to the north and the Strzelecki Ranges to the south.
- The easterly winds may be due to some degree of funnelling effect from winds blowing from the Latrobe Valley towards Officer.

The Pakenham wind rose from the CEE Report shows dominant north westerlies and easterlies to a lesser degree; further analysis is provided in Section 7.3.3. Overall, if dominant winds at Officer

South are blowing from the northwest or from the east, some sections of the Subject Land will be directly downwind of the SPS, meaning that there is a higher potential of odour impacts than if the Subject Land is upwind of the SPS most of the time.

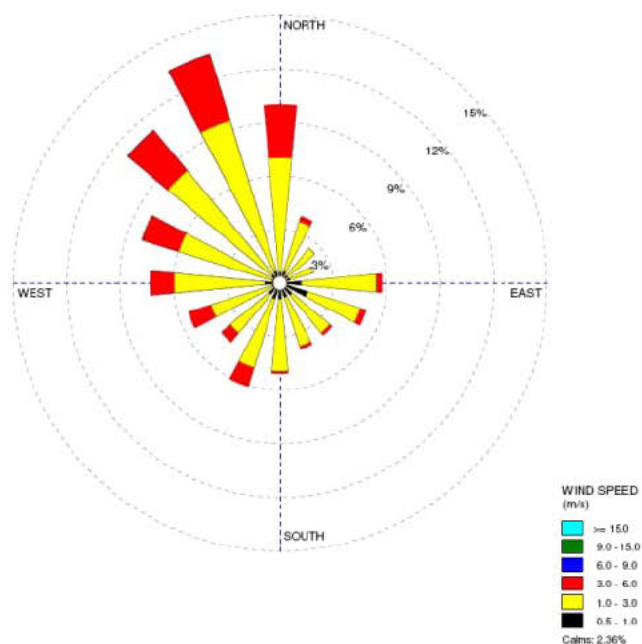


Figure 3.3: Pakenham wind rose (Source: CEE Report, May 2022)

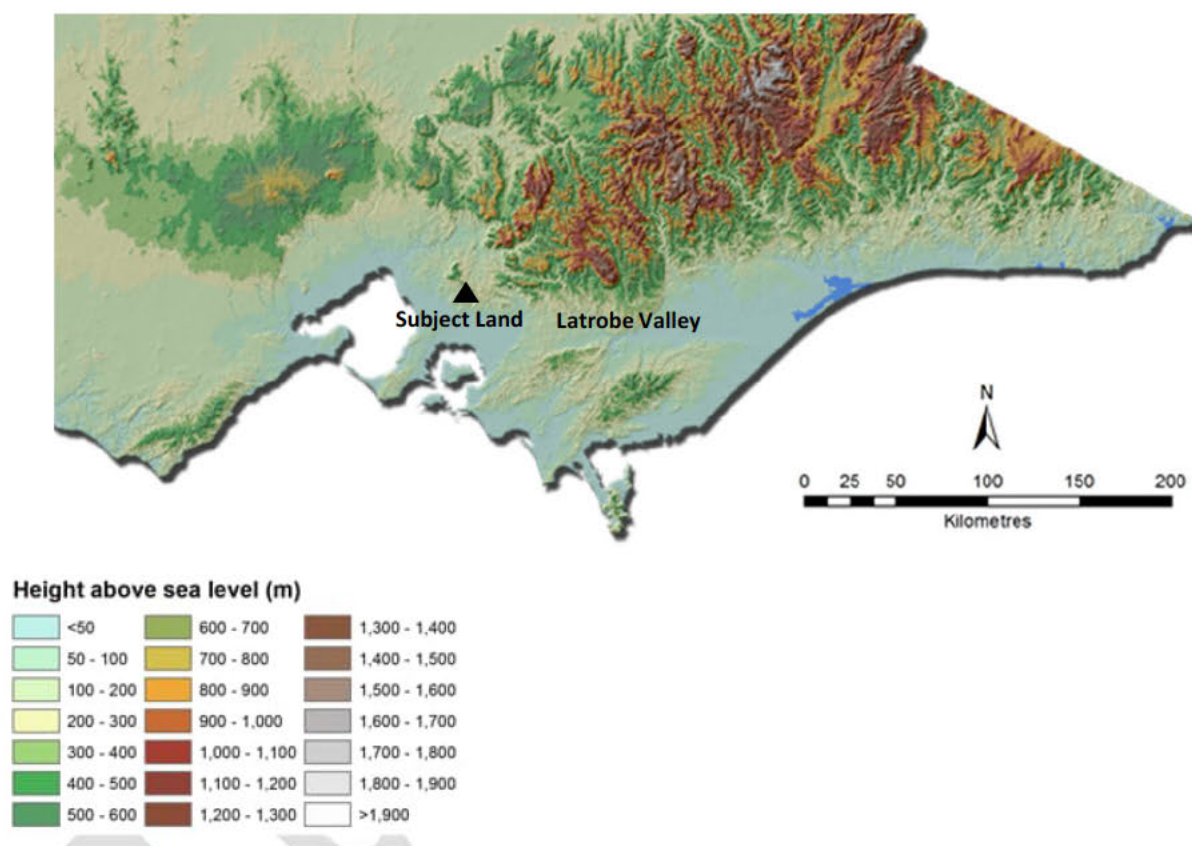


Figure 3.4: Geographical features likely influencing wind flows around SPS/Subject Land (Source: Elevation map from Victorian Resources Online, <http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vic-elevation-map>)

### 3.3 Odour from the sewage

#### 3.3.1 Current

The SPS currently accepts sewage from Officer via gravity flow, the Mary Street catchment on the border of Officer and Pakenham, as well as Pakenham via a pumping station located at the Pakenham Treatment Plant. The Pakenham Treatment Plant has insufficient capacity to treat the full sewage inflow, and hence the SPS is required to transfer most of the sewage for treatment at the Eastern Treatment Plant.

According to the CEE Report, pumped flows which are particularly septic<sup>2</sup> and odorous have led to significant works over the past year (based on the date of the CEE Report being May 2022) to repair the SPS's damaged internal liner, install increased ventilation of the well and upgrade mechanical and electrical equipment to improve the reliability of the pumping station. Although further information cannot be found on the public domain (SEW website), it is assumed that the repairs have now been completed.

At the date of the CEE Report (May 2022), the operation at the SPS has resulted in odour complaints from the horse stables at 160 m from the SPS, although none were received from residences of which the nearest ones are at 200 m, 220 m and 270 m. Details of the complaints, however, were not provided in the CEE Report.

#### 3.3.2 Future

Future arrangements include connecting the sewage from the Ballarto Road pumping station to the SPS which will include more sewage with long retention times and high levels of hydrogen sulphide (H<sub>2</sub>S) and odour. It is not stated within the CEE Report when this is anticipated to occur.

In the short to medium term, it is expected that sewage entering the Officer South pumping station will continue to be extremely septic and odorous due to exceptionally long retention time (6 – 8 hours) as SEW starts servicing development in the Casey-Clyde growth areas. The limited occupancy of the development area means that for the first decade, sewage flows are well below the ultimate flows, with a corresponding long retention time in sewers and pumping stations. Hence, there is greater potential for septic and odorous conditions to develop.

Allowance has been made by SEW in the ventilation upgrades in 2022 for future addition of an air treatment facility to treat these odours. This will be timed to coincide with the connection of a rising main from Ballarto Road pumping station, or development of the surrounding land, whichever comes sooner. The Report contends that irrespective of the timeline, a buffer area will be required for all regular and irregular maintenance periods, when the covers must be lifted and the air capture system will be ineffective.

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<sup>2</sup> Septic is taken to mean the anaerobic bacterial environment that develops in the system.

## 4 Legislation

### 4.1 Environment Protection Act

Under the Environment Protection Act 2017 (the Act), every Victorian now has an obligation under the General Environmental Duty (GED). The GED applies to:

*"A person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable".*

As per EPA Publication 1741.1 *Industry guidance: supporting you to comply with the general environment duty*, 'reasonably practicable' means putting in controls that are proportionate to the risk. It relates to the chance of harm occurring and potential impacts on the environment. It also relates to what controls are available, their cost, and considers what an industry generally knows or should know about the risk of their operation and control options. This is termed the 'state of knowledge'. Having defined the risks, it is incumbent on an industry to reduce those risks so far as reasonably practicable.

In relation to development of land, it is incumbent on the developer to ensure that any risks of harm to human health that result from pollution or waste from surrounding land uses must minimise those risks so far as reasonably practicable.

### 4.2 Environment Reference Standard

The Environment Reference Standard (ERS) is made under Section 93 of the Act and it seeks to set out the environmental values of the ambient air, ambient sound, land and water environments that are sought to be achieved or maintained in Victoria and standards to support those values.

Of relevance to the SPS are the environmental values for local amenity and aesthetic enjoyment through maintaining air quality that supports lifestyle, recreation and leisure.

To achieve these goals, the ERS sets out indicators and objectives. Whilst these indicators and objectives are not a compliance standard, they are indicative, where exceeded, that the environmental values are being compromised. In relation to the SPS, there is an objective of maintaining:

*"An air environment that is free from offensive odours from commercial, industrial, trade and domestic activities".*

The ERS also specifies the environmental values that apply to different land uses (Figure 4.1). Aesthetics (which include odour) do not apply to industrial land use but will apply to commercial land use. This relates to the low and medium sensitivities of the receptors that are expected at an industrial setting and a commercial setting, respectively.

		Parks and reserves	Agricultural	Sensitive use		Recreation / Open space	Commercial	Industrial
				High density	Other (lower density)			
Land dependent ecosystems and species	Natural ecosystems	✓						
	Modified ecosystems	✓	✓		✓	✓		
	Highly modified ecosystems		✓	✓	✓	✓	✓	✓
Human health		✓	✓	✓	✓	✓	✓	✓
Buildings and structures		✓	✓	✓	✓	✓	✓	✓
Aesthetics		✓		✓	✓	✓	✓	
Production of food, flora and fibre		✓	✓		✓			

Figure 4.1: Environmental values that apply to land use categories (Source: Table 4.2, ERS)

## 5 Victorian planning policy

### 5.1 Overview

The establishment of a BAO around the SPS is provided for under Clause 44.08 in the Victorian Planning Policy Framework (PPF), provided certain conditions are met. This section explores the Victorian planning policy (and by extension the Cardinia Planning Scheme which incorporates relevant clauses from state policy) with respect to establishment of an odour buffer around a sewage pumping station.

### 5.2 Planning framework

The Planning and Environment Act 1987 establishes standard provisions for local planning schemes, previously known as the Victoria Planning Provisions (VPP). The main goal of these provisions is to ensure compatibility between land uses, minimising conflicts that could affect the operations of industries and put communities at risk (such as amenity risks and human health risks).

To enhance the effectiveness of planning policies in Victoria, and achieve better alignment between state and local policies, the PPF was introduced into the Victoria Planning Provisions on July 31, 2018. The translation process is currently underway to convert individual planning schemes from the VPP to the PPF, including the Cardinia Council where the SPS is located. At the time of writing, the Cardina planning scheme has not been translated to the PPF, however it is expected that this will occur imminently.

The Cardinia Planning scheme incorporates specific clauses from the VPP, which are also part of the PPF and will remain relevant even after the translation process. Table 5.1 summarises the VPP clauses to provide the planning context for the assessment of an proposed BAO at the SPS.

Table 5.1: Planning context for the assessment of proposed odour buffer at the SPS

Clause	Currently Incorporated into the Cardinia Planning Scheme?	Description	Considerations/implications for the assessment of odour buffer at the SPS
Clause 13.06-1S – Air quality management	Yes	<ul style="list-style-type: none"> <li>Aims to assist in the protection and improvement of air quality.</li> <li>Part of the strategies used by the Clause is to:  <i>“Ensure, wherever possible, that there is suitable separation between land uses that pose a human health risk or reduce amenity due to air pollutants, and sensitive land uses (residential use, childcare centre, school, education centre, residential aged care centre or hospital)”.</i> </li> </ul>	<ul style="list-style-type: none"> <li>EPA Publication 1518 is included under this Clause as a policy document, and the assessment of the odour buffer for the SPS needs to refer to EPA Publication 1518 (and any future updates).</li> </ul>
Clause 17.03-1S – Industrial land supply	Yes	<ul style="list-style-type: none"> <li>Aims to ensure availability of land for industry.</li> <li>The strategy aims to: <ul style="list-style-type: none"> <li>Provide appropriate buffer areas between the proposed industrial land and nearby sensitive land uses.</li> <li>Avoid approving non-industrial land uses that will prejudice the availability of land in identified industrial areas for future residential use.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>The clause supports establishment of an appropriate odour buffer for the SPS.</li> </ul>
Clause 17.03-2S – Sustainable industry	Yes	<ul style="list-style-type: none"> <li>Aims to: <ul style="list-style-type: none"> <li>Protect industrial activity in industrial zones from the encroachment of commercial, residential and other sensitive uses that would adversely affect industry viability.</li> <li>Provide adequate separation and buffer areas between sensitive uses and offensive or dangerous industries and quarries to ensure that residents are not affected by adverse environmental effects, nuisance or exposure to hazards.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>EPA Publication 1518 is included under this Clause as a policy document, and the assessment of the odour buffer for the SPS needs to refer to EPA Publication 1518 (and any future updates).</li> <li>The operations of the SPS need to be protected from encroachment to prevent adverse effect on its viability.</li> </ul>

Clause	Currently Incorporated into the Cardinia Planning Scheme?	Description	Considerations/implications for the assessment of odour buffer at the SPS
		<ul style="list-style-type: none"> <li>- Encourage manufacturing and storage industries that generate significant volumes of freight to locate close to air, rail and road freight terminals.</li> </ul>	
Planning Practice Note 92 (PPN92)	Not applicable – used for guidance on the implementation of Clause 53.10 and 44.08.	<ul style="list-style-type: none"> <li>• PPN92 provides guidance on both Clause 44.08 and Clause 53.10 by specifying the reasons for setting a threshold distance or for requiring a BAO for certain industries.</li> <li>• PPN92 states that:  <i>“Although buffers are not a substitute for best practice management of off-site impacts by industry, it is recognised that even ‘state of the art’ facilities are not always able to eliminate the potential for unintended off-site impacts. Buffers are often still needed to protect sensitive uses from these impacts and provide certainty for industry operators”.</i></li> <li>• Due to the potential for unintended emissions, PPN92 further states that buffers are important to:  <i>“...separate or manage incompatible land uses, often industrial uses and sensitive uses, to ensure land use compatibility and avoid land use conflict”.</i></li> <li>• Sensitive uses as listed in the PPN92 are dwelling, residential aged care facility, child care centre, hospital, place of assembly and school.</li> </ul>	<ul style="list-style-type: none"> <li>• It is expected that SEW would fulfil their GED under the Act in operating the SPS, and that a buffer should not be used in place of that obligation.</li> <li>• The proposed uses (commercial/light industrial) by Galileo are not sensitive uses and could be built within any proposed BAO, subject to other lines of evidence on the level of risk.</li> </ul>
Clause 44.08 – Buffer area overlay	No (as of July 2023), likely because the Planning Scheme is in transition.	<ul style="list-style-type: none"> <li>• New clause within the PPF.</li> <li>• Allows for the identification of areas where there is potential for off-site impacts on human health or safety, or significant off-site impacts on amenity, from industry, warehouse, infrastructure or other uses.</li> <li>• Aims to ensure that use and development within the buffer areas is compatible with potential off-site impacts.</li> </ul>	<ul style="list-style-type: none"> <li>• A BAO for the SPS is supported by planning policy.</li> <li>• The BAO for the SPS is to be determined based on the potential for off-site impacts on amenity.</li> </ul>

Clause	Currently Incorporated into the Cardinia Planning Scheme?	Description	Considerations/implications for the assessment of odour buffer at the SPS
Clause 53.10 – Uses with adverse amenity impact	Yes	<ul style="list-style-type: none"> <li>Provides the basis for the implementation of threshold distances that apply where industries wish to locate adjacent to sensitive uses.</li> <li>PPN92 seeks to further explain the reasons for the threshold distances listed in Clause 53.10:  <i>“An application to use land for an industry, utility installation or warehouse for a purpose listed in the table to this clause must be referred to the Environment Protection Authority under section 55 of the Act if the threshold distance is not to be met or no threshold distance is specified”.</i> </li> </ul>	<ul style="list-style-type: none"> <li>The threshold distance does not apply to the SPS as it is an existing facility, hence it is not “an application to use land for an industry, utility installation...”</li> <li>The nature of the application by Galileo to use land to build offices, light warehouses and restricted retail does not meet the land use purposes listed under Clause 53.10 and hence a threshold distance does not apply.</li> <li>Notwithstanding the above, Clause 53.10 can, however, be useful as a starting point when considering whether a buffer might be needed and what the buffer might need to be under Clause 44.08.</li> <li>Clause 53.10 lists a sewerage treatment plant, exceeding a design or actual flow rate of 5,000 litres per day as requiring a threshold distance. PPN92 further describes that a pumping station is considered to be a sewerage treatment plant under Clause 53.10. However, no threshold distance is specified under Clause 53.10.</li> </ul>

### 5.3 Implementation of a BAO

A BAO is a new clause within the PPF will be incorporated to the Cardinia Planning Scheme once the transition from the VPP is completed. PPN92 provides guidance on when the BAO should be implemented and lists ten steps that should be followed:

- Step 1 – Consider compliance and impacts:
  - The use must be compliant with existing regulations and standards relating to off-site impacts or land use compatibility, such as those of EPA Victoria and other regulatory authorities.
  - The BAO does not duplicate or replace existing laws, regulations and standards relating to off-site impacts or land use compatibility, the BAO identifies areas where, despite compliance with these laws, regulations or standards, unintended off-site impacts may still occur and those residual risks may be required to be managed through land use and development controls.
- Step 2 – Discussion with Council and relevant authorities:
  - Operators should have an initial discussion with council and relevant authorities about the proposed application of the BAO noting that they will need:
    - o a documented history of compliance with all relevant laws, regulations and standards (and any applicable licences or approvals) relating to off-site impacts or land use compatibility, such as those administered by EPA Victoria and other relevant authorities;
    - o that all reasonably practicable measures to minimise future off-site impacts have been considered and exhausted;
    - o consideration of potential unintended off-site impacts.
- Step 3 – Advise on compliance and potential off-site impacts:
  - The relevant authority, such as EPA, should provide advice about known historical impacts and understood potential risks based on information supplied by the operator.
  - Application of the BAO to land uses must be based on evidence – demonstrating the types of potential off-site impacts, the spatial extent of those impacts (the buffer area) and appropriate requirements for land use and development within the buffer area.
- Step 4 – Prepare assessment:
  - An assessment of the potential off-site impacts of the use must be undertaken to inform preparation of the BAO schedule and decision on the amendment. The assessment must be undertaken by a qualified professional and demonstrate:
    - o the potential of the land use for off-site safety, human health or significant amenity impacts, such as blast, hazardous air pollutants, noise or odour;
    - o the spatial extent of relevant potential impacts (reflecting current or approved operations), i.e. the buffer area;
    - o based on potential impacts, what future land uses need to be managed or prohibited in the buffer area. This could include incompatible industrial uses.
    - o based on potential impacts, what future buildings and works need to be managed or prohibited in the buffer area;
    - o based on potential impacts, how future subdivision needs to be managed or prohibited in the buffer area.
- Step 5 – Advise on recommendations in assessment:

- The relevant authority, such as EPA, should provide advice on findings and recommendations in the assessment.
- Step 6 – Discuss implementation
  - Operators and councils should discuss the recommendations in the site-specific assessment and how they can be implemented through a schedule(s) to the BAO.
- Step 7 - Draft schedule(s) informed by evidence base
  - Councils should draft a BAO schedule or schedules based on the recommendations in the assessment.
- Step 8 - Submit application for authorisation with required information
  - Councils should submit an application for authorisation to prepare an amendment to the Minister for Planning.
- Step 9 - Planning scheme amendment process
  - Implementation of the BAO schedule(s) via the standard planning scheme amendment process.
- Step 10 - Periodically review application of the BAO
  - Operators should inform councils about anything that may trigger the need to review application of the BAO, such as closure or significant changes in operations.
  - Councils should review BAO schedules as part of regular planning scheme reviews and when otherwise required.
  - If a BAO schedule needs to be modified, Step 4 to Step 9 above should be followed to inform changes.

The CEE Report should contain detail on steps 1 to 4 (as relevant), with Steps 5 to 10 to follow to allow implementation of the recommendations in the assessment. The review of the CEE Report against steps 1 to 4 is provided in Section 7.

## 6 Environmental guidance

### 6.1 EPA separation distance guidelines

The current separation distance guideline is EPA Publication 1518, and this is referred to under the relevant Clauses 13.06-1S, 13.07-1S, 17.03-1S and Clause 17.03-2S of the VPP (incorporated to the Cardinia Planning Scheme) and will remain after the transition of the Cardinia Planning Scheme to the PFF.

In December 2022, EPA issued Draft EPA Guideline 1949 *Separation distance guideline*. The document states that it was prepared to:

*"...support state agencies, local government, community and industry to make informed land use decisions under the Planning and Environment Act 1987 (P&E Act) and the Environment Protection Act 2017 (EP Act)".*

It is understood that it is intended that this document will replace EPA Publication 1518 and the relevant planning schemes will be updated to reflect this change. The current timeline on the Engage Victoria Website<sup>3</sup> indicates that the guideline will be finalised by middle to late 2023. The Draft Guideline is already being considered as relevant in VCAT hearings.

#### 6.1.1 EPA Publication 1518

EPA Publication 1518 is a guideline which provides '*Recommended Separation Distances for Industrial Residual Air Emissions*', however these residual air emissions are limited to odour and dust emissions and do not consider noise (unlike a threshold distance under Clause 53.10). They also relate to amenity impacts and not impacts on human health.

EPA Publication 1518 is considered to be a relevant consideration of Clauses 13.06-1S, 13.07-1S, 17.03-1S and Clause 17.03-2S with the intent of separating sensitive land use from industrial land which has the potential to result in amenity impact to that sensitive use. There are no uses under EPA Publication 1518 which would apply to a sewage pumping station, and as such under the relevant Clauses 13.06-1S, 13.07-1S, 17.03-1S and Clause 17.03-2S where EPA Publication 1518 is referenced, no further assessment would be required.

#### 6.1.2 Draft EPA Publication 1949

At this stage, whilst EPA Publication 1518 is still considered valid, the document was published in March 2013 and refers to outdated regulatory frameworks. EPA issued an updated draft separation distance guideline in December 2022. This is known as Draft EPA Publication 1949.

In general, Draft EPA Publication 1949 is similar to EPA Publication 1518. However, there are some key differences:

- The publication specifically states that it applies equally to the development of industry adjacent to sensitive uses and sensitive uses in proximity to existing industry.
- The publication differentiates between threshold distances, separation distances and buffers (Section 2).
- Sets out the concept of the 'agent of change' as applying to both the development of industry and the development of land for sensitive use, where the applicant seeking to change the status quo is being considered as the agent of change, who must demonstrate that they have minimised any potential risk so far as reasonably practicable in accordance with the GED under the Act.

<sup>3</sup> <https://engage.vic.gov.au/project/separation-distances-and-landfill-buffers/timeline>

- Some separation distances have been changed from that listed in EPA Publication 1518. In addition, separation distances are now split into dust separation distance and odour separation distance (with the implication that if both risks are applicable to an industry, the more conservative one would apply).
- Where an industry is not listed or a separation distance is not listed and where there is potential for odour or dust emissions from that industry, then a risk assessment needs to be completed to define a relevant separation distance and demonstrate that there is no adverse risk of impact from that industry on the proposed development.

There are no specified separation distances for a sewage pumping station under Draft EPA Publication 1949. However, as it is a listed activity under Clause 53.10 as defined in PPN92, the implication is that there is potential for noise, odour and other risks such as loss of containment and hazardous air pollutants<sup>4</sup>. Consequently, it is considered that as Clause 53.10 and PPN92 list the use as potentially causing a risk including from odour, this should be considered as state of knowledge of a potential amenity impact from odour. Under EPA Publication 1949, a risk assessment would need to be completed to define the relevant separation distance.

As the Cardinia Planning Scheme refers to EPA Publication 1518 in Clauses 13.06-1S, 13.07-1S, 17.03-1S and Clause 17.03-2S, it is considered that a risk assessment of odour would be required to satisfy these clauses in reference to the imminent finalisation of Draft EPA Publication 1949 and its supersedence of EPA Publication 1518.

## 6.2 EPA odour risk assessment guidance

EPA Publication 1883 *Guidance for assessing odour* provides guidance on risk assessments for odour in Victoria using a three-level approach:

- Level 1 – Gateway assessment using three tests performed in sequence or in parallel. Where the activity is low risk for odour there is no need to progress to Level 2 and Level 3 assessments.
- Level 2 – Screening assessment using information on the level of hazard of the odour source, the effectiveness of the exposure pathway and the sensitivity of the receiving environment. Dependent on the score from the risk assessment, a level 3 assessment may be required.
- Level 3 – Detailed assessment using odour survey information and is usually reserved for complex industries or where there is more than one odour source.

The application of this risk assessment process for the SPS is discussed in Section 8.1.

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## 7 Review of CEE report

### 7.1 Overview of findings

T+T have completed a technical review of the CEE Report and make the following findings:

- The CEE Report has not fully followed the guidance in PPN92 on the designation of a BAO (steps 1 to 4), specifically the assessment does not work through the guidance contained in PPN92 on the implementation of Clause 44.08 to (Section 7.2):
  - Adequately demonstrate that the SPS complies with current legislation with respect to GED.
  - Consider the impact of upset conditions compared to normal operations.
- The odour risk assessment requires further information (see Section 7.3 for additional detail) as it:
  - Has insufficient clarity on whether the odour field surveys were completed during the maintenance phase or at other times and therefore it is difficult to understand what the results represent.
  - Does not use the odour risk assessment methodology from EPA Publication 1883 (as it was finalised only after the CEE Report was completed).
  - Contains a wind rose from Pakenham which, in the experience by the authors of this report is broadly representative of Officer South, although the winds are more bi-directional and influenced by the La Trobe Valley than shown by the provided wind rose in the CEE Report (Section 3.2).
  - Contains statements which need further justification.
- The review of separation distances at other facilities as additional lines of evidence may be misleading as (Section 7.4):
  - There appears to be a discontinuity between the extent of odour compared to flows at Grices Road and Officer South for points being made about the required buffer.
  - Comparison is made to other pumping stations in Melbourne, but the evidence around continued odour impact since upgrades at these facilities is unclear.
- Proposed land use within the proposed buffer zone (commercial/light industrial) is not within list of excluded uses in the CEE Report (land uses with an expectation of high amenity such as residences, motels, hotels, places of assembly, schools) and hence it is unclear how the discrepancy between the proposed land use by Galileo and the assessed land use in the CEE Report would affect the recommended buffer distance (Section 7.5).
- No technical justification is provided for limiting the height of the building to 10 m within 300 m of the BAO (Section 7.6).

Further details for the above findings are provided in the following subsections.

### 7.2 Designation of a BAO using PPN92

#### 7.2.1 Compliance with current legislation

As per Section 4.1, the Act requires compliance with the GED which requires the risk of harm to human health and the environment to be minimised so far as reasonably practicable. In addition, as discussed in Section 4.2, to preserve the stated environmental values in the ERS, it is the goal to have an atmosphere which is free from offensive odours. Together this means that all potential options for reduction of risk of amenity from odour at the SPS must be considered and an assessment provided as to whether these options are practicable at the present time (and reasons

provided if options are not practicable). The guidance provided in PPN92 would require this information to be provided when determining whether a BAO should be applied. This approach has not been demonstrated in the Report.

The CEE Report states that:

*"Complaints have been received about odour in the stables at 160 m from the Officer South pumping station",*

and:

*"The occupier of the stables has complained to South East Water about odour from the pumping station, particularly during monthly maintenance events when the covers are removed to clean the wet well and check the pump equipment".*

This indicates that there is a current odour impact to the surrounding land use meaning that the environmental values within the ERS are not being met for the existing surrounding land use as a result of current operations. Furthermore, in light of the potentially 10-year timeframe where the sewage may remain extremely septic and odorous due to sewage flows well below the ultimate flows as development of the sewage catchment areas increases over time (Section 3.3.2), odour issues will likely have an impact on the Subject Land for an extended period of time if not well managed.

The CEE Report also states that:

*"Allowance has been made in the ventilation upgrades currently being installed for future addition of an air treatment facility to treat these odours. This will be timed to coincide with the connection of a rising main from Ballarto Rd SPS, or development of the surrounding land, whichever comes sooner. Nonetheless, the buffer area will be required for all regular and irregular maintenance periods, when the covers must be lifted and the air capture system will be ineffective".*

This indicates that there is more that can be done to alleviate odour impacts during routine/non-routine maintenance, however there is no justification within the CEE Report as to why these improvements are not practicable and implemented now, whereas they will be in the future. Such a justification is required, before consideration of the need for a BAO as minimisation of risk so far as reasonably practicable is a central tenet under the Act.

In addition, no consideration is given to how the BAO may be affected by potential upgrades to the SPS which would prevent impact to the local area both under normal operations (including during routine maintenance). It is noted that the sites to which the CEE Report refers to at Brooklyn and Hoppers Crossing are within enclosed buildings (as observed from aerial photos). Enclosure and treatment of the odorous air has not been considered/discussed within the CEE Report as an option for preventing impact to the surrounding land use for the SPS.

### 7.2.2 Consideration of upset conditions

The CEE Report repeatedly considers the need for a buffer as a result of monthly routine maintenance due to 13 large opening lids which are required to be opened monthly for:

*"...checking, removing and replacing pumps, checking, adjusting and cleaning sewage level sensors and other control equipment and a monthly clean of the inside walls of the wet well, to remove grease and debris that accumulate over time. The cleaning is carried out with pressure water sprays and involves opening the lids over a period of 2 days".*

The assessment goes on to state that:

*"...the buffer area will be required for all regular and irregular maintenance periods, when the covers must be lifted and the air capture system will be ineffective",*

and that:

*"...the BAO is required for monthly maintenance events when the lids of the pumping station are open".*

Guidance for Clause 44.08 is given in PPN92, which as discussed in Table 5.1 considers that buffers are not a substitute for best practice management of off-site impacts. Further guidance is given in EPA Publication 1518 which states that:

*"It needs to be recognised that where there are industrial air emissions from premises, even with good pollution control technology and practice, there may still be unintended emissions which must be anticipated and allowed for. While it is an objective of the SEPP(AQM)<sup>5</sup> that such emissions should be eliminated, it is recognised that even 'state of the art' facilities are not always guaranteed to achieve this goal 100 per cent of the time. Equipment failure, accidents and abnormal weather conditions are among the causes that can lead to emissions affecting sensitive land uses beyond the boundary of the source premises".*

As it occurs monthly, routine maintenance is not considered to be an upset condition as the maintenance protocols can generally be anticipated. Hence, the monthly maintenance at the SPS should be properly considered as part of normal operations to have the facility continue to operate. It is incumbent upon SEW under the GED to manage the emissions to minimise the risk to the surrounding land use so far as reasonably practicable. As such, in accordance with PPN92, until it can be demonstrated that the facility is operating in accordance with the legislation, and that residual emissions cannot be further controlled, a BAO should not be considered. Once all practicable mitigation has been installed, then a BAO should be considered for any residual emissions or identified upset conditions.

### 7.3 Odour risk assessment

It is considered that the odour risk assessment requires updating to:

- Adopt the approach for the designation of a BAO in PPN92 (Section 5.3);
- Provide clarity as to whether odour observations were conducted during routine maintenance or at other times (Section 7.3.1);
- Consider the approach used in EPA Publication 1883 to define the extent of the BAO after consideration of practicable mitigation measures (Section 7.3.2); and
- Provide clarity around the provenance and applicability of the meteorological data from Pakenham used in the Report (Section 7.3.3).

#### 7.3.1 Clarity on when odour observations were completed

The CEE Report does not provide sufficient clarity on the operation conditions at the SPS when the odour observations were completed, and it is necessary that this information is available to determine whether the assessment is appropriate.

As discussed in Section 7.2, in accordance with PPN92, prior to consideration of a BAO and the assessment demonstrating the need for it, consideration of all possible mitigation of risk during normal operations should have been undertaken and implemented. As routine maintenance is not

<sup>5</sup> The State Environment Protection Policy (Air Quality Management) has been replaced by the Environment Protection Act 2017;

an upset condition, unless it can be demonstrated that further mitigation measures are not reasonably practicable, odour observations during routine maintenance should be excluded from consideration as the legislative requirement of GED has not been met. Upon re-assessment, if further mitigation measures are deemed reasonably practicable, repeat odour observations may then need to be considered post-implementation of such measures to assess the extent of odour impacts from the SPS operations.

### 7.3.2 Use of EPA Publication 1883

At the time of writing of the CEE Report, the EPA Publication 1883 has not been finalised, hence the odour risk assessment adopted the risk matrix contained in PPN92. Further information about EPA Publication 1883 is provided in Section 8.1.1.1. As the significance of the odour risk affects the decision of a BAO, it is considered important that the latest guideline be used. It is T+T's recommendation that the report needs to be updated with an odour risk assessment that follows the methodology in EPA Publication 1883.

Whilst the approach used within the CEE Report is not clear on how the odour observations have been used within the odour risk assessment, it appears as though the assessment considers only whether odour was detected on at least one occasion out of the 10 visits at a location, and does not consider the frequency of:

- Odour observations at each observation and location and cumulatively over the 10 surveys; or
- Wind direction to the different location of odour observations to determine the likely risk to the surrounding land use.

As such it is considered that the CEE Report has not appropriately/adequately characterise the risk of odour impact to the surrounding land use.

### 7.3.3 Wind rose

The CEE Report uses a wind rose from Pakenham located 8 km east of the Pumping Station, reportedly from the BoM. As discussed in Section 3.2, there are several concerns with the use of this data.

Further detail is required on the provenance of this data to determine whether it is appropriate for use in designating a BAO.

## 7.4 Review of separation distances at other sewage pumping stations

The CEE Report has used a review of separation distances at other sewage pumping stations as a second line of evidence for the need for a BAO. The conclusions of these evaluations may be summarised as:

- SEW receives complaints up to 180 m from the Grices Road pumping station, although it is noted that Grices Road sewage flow is half that of the SPS.
- The Brooklyn pumping station, operated by Melbourne Water, has a minimum buffer from residential properties of 180 m.
- The Hoppers Crossing pumping station, operated by Melbourne Water, received odour complaints up to 400 m away until they installed a major odour treatment facility last year. It is unclear from the CEE Report whether the complaints are now fully resolved.

These lines of evidence indicating the need for a BAO at the SPS are not considered appropriate as:

- None of the PSPs relating to Grices Road pumping station (Clyde North Precinct), Brooklyn pumping station (Brooklyn Industrial Precinct) and Hoppers Crossing pumping station (East

Werribee Employment Precinct) explicitly shows a buffer zone for odour around the pumping stations.

- Complaints in relation to a pumping station at Grices Road during normal operation indicate that the pumping station is being operated in a manner that does not achieve the intent of the ERS and is causing harm (amenity impacts) to the surrounding land use. PPN92 states that a BAO should not be used as a substitute for compliance with the GED or for good practice. In addition, Grices Road has a different sewage flow rate and hence different odour release rate. Although the CEE Report alluded to adjustments have been made to the Grices Road data in deriving the 180 m BAO, it is unclear how this adjustment was done. Hence, usage of Grices Road as a reference site for odour impacts in the CEE Report is not considered wholly applicable.
- The Brooklyn pumping station, operated by Melbourne Water, is situated in an enclosed building within an industrial estate, whilst the SPS is not enclosed within a building and is currently located in open fields with no plans stated to enclose the facility within a building as the development of the PSP progresses. The site selection process for the Brooklyn Pumping Station is unknown, and therefore it is not possible to say whether the specific distance from housing featured in the decision making process or whether indeed the pumping station could have been closer to sensitive receptors given that it is enclosed.
- Similar to the Brooklyn pumping station, the Hoppers Crossing pumping station, also operated by Melbourne Water, is situated within an enclosed building. Rather than being 400 m from a sensitive receptor as stated in the CEE Report, the Hoppers Crossing pumping station is located 200 m from a Women's Health Hub and St Vincent's Private Hospital. The CEE Report notes that there were complaints related to this facility until it was upgraded with a major odour treatment facility. This indicates that the pumping station was causing a risk to the surrounding land use and that this risk has been mitigated. It is therefore unclear whether after this upgrade a separation distance is still required and shows that there are options involving enclosure of the SPS and provision of an odour treatment facility, similar to that used for the Hoppers Crossing pumping station, which must be considered prior to the application of the BAO.
- There is no information either within the CEE Report or in the public domain on whether the siting of the three pumping stations in the CEE Report (Grices Road, Brooklyn and Hoppers Crossing) was purposefully selected to create a buffer for odour following an assessment, or whether it is coincidental that the separation exists. As such, direct application of any existing separation from these stations onto the SPS without understanding the basis of their derivation, is cautioned.

## 7.5 Future land uses to be managed or prohibited within the buffer area

Section 13 of the CEE Report includes a subsection which considers future land uses to be managed or prohibited within the buffer area. The section states that the following uses should be prohibited:

- Residential development;
- Motels;
- Hotels;
- Nursing homes;
- Hospitals;
- Places of assembly;
- Child care centres;
- Cafes; and

- Restaurants.

The CEE Report further states that the following uses could be acceptable:

- Stables;
- Horse agistment;
- Cattle grazing;
- Container storage;
- Car parking (for the Officer South station);
- Concrete or pavement recycling;
- Secure storage with incidental public access; or
- Some heavy industry.

Whilst the CEE Report has listed land uses to be encouraged or prohibited (as above) and these are not necessarily incorrect, T+T considers that more properly, the assessment should refer to EPA guidance. Currently, Table 5 contained in EPA Publication 1518 (reproduced for clarity as Table 7.1) shows the types of land use to be encouraged and discouraged. Whilst EPA Publication 1949 is under draft version, a similar recommendation of land use types to be encouraged/discouraged is also available and reproduced as Table 7.2. Both versions are mostly the same, with a notable exception of offices being moved from the category of 'to be encouraged' in EPA Publication 1518 to 'to be considered (subject to assessment)' in EPA Publication 1949. As the finalisation of EPA Publication 1949 is imminent, it is considered that EPA Publication 1949 would apply in this particular instance.

**Table 7.1: Examples of interface land uses and their suitability (Table 5 of EPA Publication 1518)**

Suitability	Examples of interface land use
To be encouraged	Agriculture, car parks, cinema-based entertainment facilities, emergency services facilities, natural systems, offices, research centres, service stations and veterinary clinics.
To be considered subject to assessment	Light industry with no adverse amenity potential and utilities (except for sewage works).
To be prohibited	Sensitive land uses and industrial land uses that require separation distances as listed in the Index.

**Table 7.2: Suitable activities as interface land uses within an odour separation distance (Table 3 of EPA Publication 1949)**

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

As discussed in Section 1, Galileo wishes to develop the following land uses:

- Offices;

- Light warehousing; and
- Restricted retail.

In accordance with Draft EPA Publication 1949, all land uses as proposed by Galileo can be considered within an odour separation distance, subject to assessment. T+T's understanding is that this additional assessment required under Draft EPA Publication 1949 is to prevent the overlapping of any applicable odour separation distance of the different proposed land uses that could push out the combined buffer. In addition, T+T recommends the following:

- Air intakes for all buildings are positioned either in an elevated location or away from the direction of the SPS.
- Office windows (if any) are unopenable subject to building ventilation requirements.
- Retail be restricted to those which tend to sell large, bulky items such as furniture and are therefore not visited frequently by the public.

The layout of the future land uses on the Subject Land should also take into account the environmental values of the ERS (Figure 4.1), whereby low sensitivity land uses are recommended to be situated nearer to the SPS compared to medium sensitivity land uses, where possible.

## 7.6 Height restrictions

Section 13 of the CEE Report includes a statement that:

*"It is important that the wind flow across the pumping station from the south is not impeded by a line of high-rise development. Therefore, buildings more than 10 m high should be discouraged within 300 m of the BAO".*

Whilst the intent behind this statement is understood to be that it is ideal that the wind speed around the SPS is not impacted by buildings<sup>6</sup>, there is no evidence presented in the Report to support the validity of the recommended height (10 m) or distance (300 m).

A brief review of literature indicates that the building wake (the area of reduced wind speed downwind of a building) is dependent on the height of the building:

- Hertwig et al.<sup>7</sup> found in wind tunnel and modelling experiments that a building with a height of 81 m had a building wake that extended from the base downwind approximately 60 % of the height (approximately 50 m), whilst a building of 134 m height had a building wake which extends up to 190 % of its height (approximately 254.6 m).
- Guidance material for building induced wake effects at airports<sup>8</sup> found that:
  - The maximum magnitude of wind speed after the building wake will be approximately the same as the magnitude of the approach wind speed at the same height, regardless of the actual building height.
  - The distance of building wake is related both to the ratio between the height of the building and the downstream width of the building.
  - With a ratio of building width to height of 1, there are negligible reductions in wind speed at a distance of 5 times the height of the building meaning that a building that is 20 m high and 20 m wide would impact an area up to 100 m from the base.

<sup>6</sup> Lower wind speeds result in poorer dispersion and hence greater ground level concentration.

<sup>7</sup> Hertwig, D., Gough, H.L., Grimmond, S. et al. Wake Characteristics of Tall Buildings in a Realistic Urban Canopy. Boundary-Layer Meteorol 172, 239–270 (2019). <https://doi.org/10.1007/s10546-019-00450-7>. Last accessed 21.06.23

<sup>8</sup> From [https://www.infrastructure.gov.au/sites/default/files/migrated/aviation/environmental/airport\\_safeguarding/nasf/files/Guidance\\_Material\\_for\\_Building\\_Induced\\_Wake\\_Effects\\_at\\_Airports.pdf](https://www.infrastructure.gov.au/sites/default/files/migrated/aviation/environmental/airport_safeguarding/nasf/files/Guidance_Material_for_Building_Induced_Wake_Effects_at_Airports.pdf).

- With a ratio of building width to height of 8, there are negligible reductions in wind speed at a distance of 32 times the height of the building so a building that is 80 m wide at the downstream face and 10 m high would impact airflow up to 320 m.

Further evidence is required with regards to the proposed restrictions of building height (10 m) and distance (300 m).

## 8 State of knowledge

This section considers the current state of knowledge based on information from Australian States and Territories on:

- Likelihood of potential for odour impact from sewage pumping stations;
- Options for treatment of odorous emissions; and
- Required separation distances to sensitive land uses.

### 8.1 Potential risk of odour impact from sewage pumping stations

#### 8.1.1.1 EPA Publication 1883 Level 1 – Gateway assessment

The SPS could potentially not be a minor odour source based on the following:

- The potential odour sources at the SPS as a whole are unlikely to emit odour emissions less than 200 hours within a year (monthly maintenance currently exposes the odour within the wet well to atmosphere for 2 days each).
- As the dominant wind direction is from the northwestern direction, prevailing wind patterns may direct odorous emissions towards the receiving environment more than 200 hours per year (>2% of the time) (Figure 3.3).
- The SPS abuts the Subject Land on flat terrain (Section 3.2).

Based on the above, the Level 1 assessment findings showed that a Level 2 assessment is triggered and this is presented in following sub-section.

#### 8.1.1.2 Level 2 – Screening assessment

Table 8.1 summarises the findings of the Level 2 screening assessment. It is noted that the assessment assumes the current risk of the SPS (i.e. before any mitigation under GED obligations is implemented).

**Table 8.1: Level 2 screening assessment for odour**

Overall risk score (Level 2 assessment)		
	Industrial	Commercial
Receiving environment	Light industrial (e.g. warehousing)	Offices, restricted retail etc
Odour source pathway	4 (3 high odour potential) (+1 no mitigation)	4 (3 high odour potential) (+1 no mitigation)
Odour exposure pathway	3 (short distance for receiving environment, favourable winds being downwind of the SPS, flat terrain)	3 (short distance for receiving environment, favourable winds being downwind of the SPS, flat terrain)
Receiving environment sensitivity	2 (1 industrial use) (+1 history of odour complaints)	3 (2 commercial use) (+1 history of odour complaints)
Overall score	9	10
Overall risk	Medium	High

Based on the above, the Level 2 assessment findings showed that there is a High risk of odour impacts on commercial land use from the SPS, as strictly speaking odour amenity does not apply in

an industrial land use (Section 4.2). The High risk findings further support the need for SEW to assess the need for additional mitigation measures at the SPS under GED obligations.

### 8.1.2 Level 3 – Detailed assessment

The CEE Report details the results of an odour field survey at the SPS (and also at Grices Road pumping station) according to EPA Publication 1881 *Guidance for field odour surveillance*. However, the CEE Report did not provide the details of the monitoring plan and some of the odour results (Figure 8-1 of the CEE Report) have been redacted. The results of the odour field survey were not assessed using the risk matrix in EPA Publication 1883 (Level 3 assessment).

Notwithstanding this and the issues previously identified in Section 7.3.1, the odour field survey results provided in the CEE Report identify existing odour impacts of the SPS and further mitigation is needed by SEW of the SPS prior to the application of a BAO in accordance with the approach outlined in PPN92.

### 8.1.3 EPA Tasmania guidance

EPA Tasmania provides additional 'state of knowledge' regarding the assessment of odour risk from a sewage pumping station, via the *Sewage Pumping Station Environmental Guidelines* (October 2019). The odour hazard identification criteria from this guideline are shown in Table 8.2.

**Table 8.2: Odour hazard identification criteria (from Table 7.1, EPA Tasmania *Sewage Pumping Station Environmental Guidelines*)**

Risk	Topography	Buffer zone	Residence time	Trade waste
Description	Level height difference between top of pumping station vent and residence, public building or business floor	Distance between the pumping station and the nearest business, public building or residence	Residence time in sewage system, including upstream reticulation system and pumping station wet well, based on average dry weather flow	Trade waste constituents in sewage to be pumped
Low	5 metres or more	30 metres or more	2 hours or less	Insignificant
Medium	Between 2 and 5 metres	Between 20 and 30 metres	Between 2 and 5 hours	Food or beverage producers
High	2 metres or less	20 metres or less	5 hours or more	Tanneries, large food or beverage producers

Based on the information known about the SPS from the previous sections, the analysis based on the EPA Tasmania guideline is as follows:

- **Topography** – High odour hazard due to flat nature of land on which the SPS/Subject Land is situated (Section 3.2).
- **Buffer zone** – The SPS abuts the Subject Land and hence there is High odour hazard (Figure 1.1).
- **Residence time** – Based on the current sewage flow rates being below the ultimate design flows, the residence time is likely to be high (5 hours or more), resulting in a High odour hazard.

- Trade waste – Since the SPS will be located with an Employment Precinct, it is likely that the odour hazard will range between Medium and High.

### 8.1.4 Conclusion on potential risk

Overall, the EPA Victoria and EPA Tasmania guidelines show that the potential odour hazard/risk from the SPS is High.

## 8.2 Options for treatment

Odour management for sewage pumping stations is in most cases achieved by control of sewage septicity and provision of appropriate ventilation. Where possible, eliminating potential for odour generation at the source should be the first aim. Odour treatment options are needed if odour prevention measures have no reasonable prospect of achieving the performance objectives of no odour beyond the site boundary.

Table 8.3 shows the recommended odour control measures based on EPA Tasmania's *Sewage Pumping Station Environmental Guidelines*.

**Table 8.3: Odour control measures (from Table 7.2, EPA Tasmania *Sewage Pumping Station Environmental Guidelines*)**

Hazard	Control measure	Common applications
Low	<ul style="list-style-type: none"> <li>• Natural stack ventilation induct/educt system and plume dispersion to atmosphere</li> <li>• Forced stack ventilation and plume dispersion to atmosphere</li> </ul>	Sewage pumping stations without extended network retention times or high trade waste flows, discharge manholes
Medium	<ul style="list-style-type: none"> <li>• Ventilation stack with odour filter treatment (including carbon filters)</li> <li>• Biological filter treatment bed</li> </ul>	Sewage pumping stations and rising main discharge manholes with increased odour risk
High	<ul style="list-style-type: none"> <li>• Odour scrubber system</li> <li>• Chemical dosing system</li> </ul>	Larger sewage pumping stations, high risk of septicity, problematic trade waste contributions

Based on the High risk profile of the SPS, an odour scrubber system and/or a chemical dosing system is needed. The CEE Report has stated that at the time of writing (May 2022), ventilation upgrades were being undertaken with future allowance included for addition of an air treatment facility which is to be timed to coincide with the connection of a rising main from Ballarto Road sewage pumping station, or development of the surrounding land, whichever comes sooner. However, as odour impacts are currently experienced during the monthly maintenance, it is incumbent upon SEW to undertake further assessment of mitigation measures to reduce the risk so far as reasonably practicable, including assessing the suitability of enclosing the wet well within a building where air is extracted to a treatment system, to account for the times when the air capture system is ineffective when the wet well covers must be lifted for maintenance. Reliance upon an odour buffer to minimise odour impacts should only apply for equipment failure, accidents and abnormal weather.

## 8.3 Separation distance

This section considers guidance within Victoria and for other States and Territories which include separation distances within their separation distance guideline. Where a State or Territory is not

discussed within this section, a relevant separation distance guideline was either not found or sewage pumping stations were not discussed within any guideline found.

### 8.3.1 Victorian guidance

#### 8.3.1.1 Planning guidance

As per Table 5.1, PPN92 which provides guidance on the implementation of the BAO under Clause 44.08 of the PPF, does not specify what the buffer should be. PPN92 also provides guidance in relation to Clause 53.10 of the Cardinia Planning Scheme, which provides threshold distances within which further evaluation is required for sensitive land uses. Whilst Clause 53.10 is only invoked where a new industrial activity is established, it can be useful in determining a starting point for the establishment of a BAO. Unfortunately, for a sewage pumping station Clause 53.10 states that the threshold distance is 'none specified'.

#### 8.3.1.2 EPA guidance

EPA Publication 1518 and Draft EPA Publication 1949 were discussed in sections 6.1.1 and 6.1.2 respectively and the considerations may be summarised as:

- Both EPA Publication 1518 and Draft EPA Publication 1949 are clear that separation distances are not to be used to prevent impact during normal operations, and it is expected that during normal operations facilities are compliant with current legislation. The separation distances are to prevent impact during system upsets or unusual meteorological conditions. We consider routine/planned maintenance to be covered under normal operations.
- There is no separation distance listed for sewage pumping stations in either EPA Publication 1518 or Draft EPA Publication 1949.
- Separation distance calculations are listed for wastewater treatment plants in both EPA Publication 1518 and Draft EPA Publication 1949; however, the calculations do not include processes for sewage pumping which could be used to indicate the required separation distance.
- Draft EPA Publication 1949 states that if no separation distance is listed but there is a potential risk of harm (as indicated by the listed threshold distance in Clause 53.10), then a risk assessment should be completed.

Thus, it may be concluded that:

- Under EPA Publication 1518, as a separation distance is not listed, the risk should be considered low during normal operation provided the site is compliant with legislation.
- Under Draft EPA Publication 1949, as other guidance (i.e. Clause 53.10) indicates a potential risk, a risk assessment should be completed to define whether a separation distance is warranted and what that separation distance should be. However, the separation distance should be for upset conditions or the impact of unusual meteorology on normal operations only and that normal operations under normal meteorology should not be considered in the definition of a separation distance.
- Draft EPA Publication 1949 and EPA Publication 1518 contradict each other in the case of the SPS. As the finalisation of Draft EPA Publication 1949 is imminent and it takes into account the current legislative requirements of Victoria, it is considered that Draft EPA Publication 1949 should apply in terms of defining whether a separation distance is warranted based on an odour risk assessment.
- The odour risk assessment conducted by T+T (using EPA Publication 1883, and further corroborated by the EPA Tasmania *Sewage Pumping Station Environmental Guidelines*) shows

that there is a High risk of odour. However, a separation distance is not able to be ascertained from EPA Publication 1518/Draft EPA Publication 1949. Hence for state of knowledge reference, separation distances from other States and Territories should be used if available.

### 8.3.2 Guidance from other States and Territories

#### 8.3.2.1 Australian Capital Territory

The Separation Distance Guidelines for Air Emissions dated November 2018 (ACT SDGs) provides separation distances for a number of industries and provides a method for adjustment of that separation distance dependent on surrounding land use.

The ACT SDGs apply to new industries/activities and the redevelopment of existing industries/activities for which a development application is required. The ACT SDGs specifically state that the guidelines are not to be used retrospectively to an existing industry/activity. The ACT SDGs do go on to state that:

*"The guidelines may be used as a tool to assist in the planning and assessment of development proposals by the planning and land authority, developers and planning consultants. Proposed residential development near an existing industry may be assessed using the guidelines to ensure that the development does not have unsatisfactory environmental impacts and does not unduly affect the existing industry".*

As a basis for 'state of knowledge', the ACT SDGs provide an indication of what a separation distance should be for a modern well-run industry which does not impact the surrounding land use under normal operations (including during routine maintenance), which is a requirement under the GED in Victoria. Consequently, it is considered that the ACT SDGs provide a good frame of reference.

The ACT Separation Distance uses Equation 8-1 to specify the site-specific separation distance.

Equation 8-1 ACT Separation Distance equation

$$SD_{Final} = SD_{Industry} \times SR_{Factor} \times TW_{Factor}$$

Where:

$SD_{Final}$  is the final separation distance to be applied

$SD_{Industry}$  is the separation distance specified in Appendix 1 of the ACT SDGs

$SR_{Factor}$  is the surface roughness factor for surrounding land use taken from Table 1 in the ACT SDGs

$TW_{Factor}$  is the terrain weighting factor for the surrounding land and whether the sensitive land use is uphill or downhill from the industry taken from Table 2 of the ACT SDGs

For the SPS, application of the ACT SDGs would result in a separation distance of 100 m as:

- The  $SD_{Industry}$  is 100 m – Appendix 1 of the SDGs;
- The  $SR_{Factor}$  is 1 – the surrounding land use is currently open grassland to the south and built up to the north with planned construction to the south. Both open grassland and built up areas attract an  $SR_{Factor}$  of 1
- The  $TW_{Factor}$  is 1 – the surrounding terrain is flat.

#### 8.3.2.2 Northern Territory

The Northern Territory Guideline: Recommended Land Use Separation Distances (NT SDGs) are designed to:

*"...assist an operator or proponent of an activity to undertake site planning ensuring adequate separation distances are in place. In addition to adequate pollution control technology and environmental management practices the implementation of separation*

*distances assists an operator to demonstrate compliance with section 12 of the WMPC Act as well as reasonable diligence (providing a defence for an environmental offence)".*

In addition, the NT SDGs note that:

*"The proponent of any new development that may give rise to land use conflicts has the onus to avoid land use conflict in their site planning.*

*The new development is the trigger for considering and applying separation distances (regardless of whether the development requires development consent). The proponent for the new development needs to draw on this Guideline to inform site design and planning.*

*The agent of change may be a proponent of a (for example) new industrial land use, or expansion or change to an existing industrial land use, or it may be the proponent of a proposed sensitive land use adjacent to an existing industrial land use".*

It is therefore considered that the NT SDGs provide a 'state of knowledge' for the appropriate separation distance for a sewage pumping station where adequate pollution control technology and environmental management practices have been employed.

The NT SDGs recommend a 100 m separation distance.

#### 8.3.2.3 Western Australia

The Western Australian Guidance for the Assessment of Environmental Factors – Separation Distances between Industrial and Sensitive Land Uses dated 2005 (WA SDGs) provides a variety of recommended separation distances depending on the size of the pumping station. The guidance states that:

*"The distances outlined in Appendix 1 are not intended to be absolute separation distances, rather they are a default distance for the purposes of:*

- *identifying the need for specific separation distance or buffer definition studies; and*
- *providing general guidance on separation distances in the absence of site-specific technical studies.*

*The separation distances are intended to be used as a tool, supplemented by other appropriate techniques, to assist in the assessment of:*

- *new individual industries, infrastructure and estates, in the vicinity of existing/proposed sensitive land uses; and*
- *new individual sensitive land uses or estates, in the vicinity of existing/proposed industry and infrastructure".*

The ultimate design capacity of the SPS as referenced in the Report (26 ML / day which equates to 301 litres per second) would suggest that a buffer distance of 50 m would be required.

#### 8.3.3 Conclusion on recommended separation distance

Application of the odour risk assessment results from EPA Publication 1883 shows that currently, without further mitigation, there is High odour risk from the SPS.

Based on the review of Draft EPA Publication 1949, there is no recommended separation distance in Victoria (the separation distance does not apply during normal conditions, of which routine maintenance is considered to be one).

'State of knowledge' references from other States and Territories were used which showed that a separation distance of between 50 m and 100 m is recommended which can be used as a basis for an odour buffer for the SPS. For conservative purposes, the upper range, i.e. 100 m, is considered applicable as the odour buffer (BAO), provided that appropriate mitigation measures are implemented to minimise risk of harm so far as reasonably practicable (i.e. additional measures are needed to what are currently employed at the SPS).

## 9 Summary and conclusions

T+T has undertaken the following with respect to odour:

- A review of the planning and environmental framework which applies to the SPS and the proposed land use at the Subject Land.
- A review of the CEE Report and its adequacy with respect to the applicable planning and environmental framework.
- A review of comparable sewage pumping stations in Melbourne and any applicable buffer zones.
- A review of the current state of knowledge with respect to separation distances from other States and Territories, in the absence of a Victorian-based separation distance.

Based on the above, we conclude the following:

- The CEE Report has not adequately demonstrated that GED has been fulfilled for the SPS operations, especially with the consideration that routine maintenance that can be anticipated is not an upset condition.
- In the absence of adequate demonstration that GED (with respect to implementation of mitigation measures so far as reasonably practicable) has been fulfilled, the results of the odour field survey are not considered applicable at this stage in establishing the odour buffer.
- SEW needs to adequately demonstrate that so far as reasonably practicable measures have been applied to the SPS, including during routine maintenance where the most odorous activities will take place.
- The excluded high sensitive land uses within the CEE Report do not coincide with the proposed land use at the Subject Land (commercial/light industrial which are considered to be of low to medium sensitivity) and hence there may be a discrepancy in the basis of the recommended 180 m buffer zone (based on odour) in the Report.
- Whilst the intention of restricting building height is understood to prevent flow around the SPS from being impeded by buildings, the recommended 10 m height basis within a 300 m distance of the BAO does not seem to be based on robust justification. Justification will need to be further provided by CEE with regards to building height restrictions around the SPS.
- The basis of buffer zones for other sewage pumping stations cannot be established with full confidence due to lack of information in the Report and the public domain. It is also unclear whether there has been a cessation or reduction in complaints since improvement to mitigation measures, which would then indicate the suitability of those distances subject to the implementation of similar mitigation measures. As such, whilst the identified separation from sensitive land use for other sewage pumping stations are useful for reference, it is T+T's opinion that those distances of separation of sensitive land use are likely to be site-specific and caution is advised in directly applying the same to the SPS.
- The CEE Report has not used the most up-to-date odour risk assessment guideline (EPA Publication 1883) as it was finalised only after the Report was completed. A preliminary odour risk assessment undertaken by T+T based on EPA Publication 1883 showed that the odour risk is High.
- Review of the current 'state of knowledge' from other States and Territories shows that:
  - The odour risk (as per the EPA Tasmania guideline) for the SPS is High, which provides another line of evidence to corroborate the High risk finding from EPA Publication 1883.
  - Separation distances from other jurisdictions exist and range between 50 m to 100 m. For conservative purposes, 100 m is recommended to apply to the SPS as the odour buffer zone.

On the whole, T+T's review finds that there is insufficient basis for a 180 m buffer zone and a 10 m height limitation within a 300 m distance of the BAO, as recommended in the CEE Report. However, as upset conditions can occur no matter how well a sewage pumping station is managed (of which routine maintenance is not considered to be one), prudence is advised especially in light of the High odour risk from the SPS. Hence, T+T recommends/notes the following:

- Unless SEW can further demonstrate that a larger buffer zone is needed subsequent to demonstration of compliance with the GED, an odour buffer zone of 100 m is recommended to be applied around the SPS based on state of knowledge, provided that appropriate mitigation measures are implemented to minimise risk of harm so far as reasonably practicable (i.e. additional measures are needed to what are currently employed at the SPS).
- Establishment of a BAO does not preclude usage of the Subject Land for the land uses (industrial/commercial) proposed by Galileo as those land uses can be considered under Draft EPA Publication 1949.
- As the agent of change, subject to further assessment, our recommendation is that Galileo can locate low sensitivity land uses (industrial such as warehouses) and medium sensitivity land uses (commercial such as offices and restricted retail) within any designated buffer. Where possible, if both proposed land uses are considered suitable upon further assessment, preference should be given to locate industrial land use nearest to the SPS.

## 10 Applicability

This report has been prepared for the exclusive use of our client Galileo 190 Officer South Nominee Pty Ltd, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

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