SV Lakshmi Pty Ltd

C/- Planning Solutions

Proposed Perth Petrol Station

Air Quality Assessment

26 October 2018

Project No.: 0480271

The business of sustainability

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Proposed Perth Petrol Station

Air Quality Assessment

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CONTENTS

List of Tables

List of Figures

1. INTRODUCTION

SV Lakeshmi Pty Ltd C/- Planning Solutions are currently requesting a development approval for the development of a convenience store including the small-scale retail sale of fuel and convenience goods. The development site is located on the corner of Walter Road East and Marion Street as shown in Figure 1.1.

Planning Solutions engaged ERM to provide an air quality assessment of the proposed development. This assessment aims to determine the potential air quality impacts from the proposed development and consists of the estimation of potential air quality emissions, meteorological and dispersion modelling and the analysis of modelling results against relevant air quality criteria.

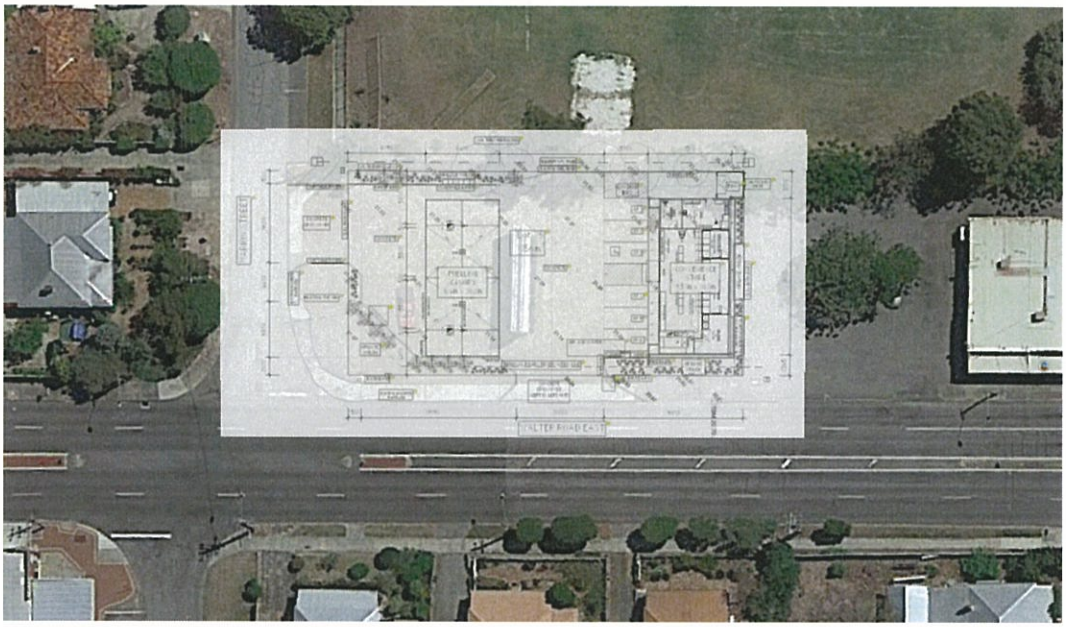

Figure 1.1: Location of proposed development

2. ASSESSMENT SUBSTANCES AND CRITERIA

Petrol stations are known for their emission of volatile organic carbons (VOCs). The VOCs considered in this assessment include:

- Benzene
- Ethyl Benzene
- Toluene
- Xylenes

In the absence of specific assessment criteria in Western Australian, assessment criteria from the National Environment Protection (Air Toxics) Measure (NEPM) are used to evaluate development. IN addition, we have included the Victorian Environmental Protection Agency (VIC EPA) air quality criteria relating to human health and wellbeing. A summary of the assessment criteria included in this assessment is provided in Table 2.1 .

Table 2.1: Assessment criteria

Substance	NEPM[1]		VIC EPA[2]	
	Averaging period	Criteria (µg/m³)	Averaging period	Criteria (µg/m³)
Benzene	Annual	10	3-minute	53
Ethyl Benzene	-	-	3-minute	14,500
Toluene	Annual	410	-	-
	24 hours	4,100	-	-
Xylenes	Annual	1,200	-	-
	24 hours	950	-	-

1. (National Environment Protection Council Service Corporation, 2011)
2. (EPA Victoria, 2001)

3. EMISSION ESTIMATION

The activities that produce emissions considered in this assessment are related to losses of the fuels through vaporisation or spillage of fuels and their subsequent evaporation. The specific activities include:

- Submerged filling of underground storage tanks.
- Underground tank breathing.
- Fuelling of vehicles.
- Removal of the vehicle fuel tank cap 'whoosh'.
- Fuel spills to the ground.

The emissions from the service stations have been estimated following the Brisbane City Council (BCC) methodology for service stations (BCC, 2017).

Vapour recovery (VR) systems are assume to be installed at the proposed petrol station. VR1 control has been assumed for the tank filling processes and VR2 has been assumed for vehicle refuelling. Descriptions of the VR systems and their control efficiencies are provided in Table 3.1.

Table 3.1: Vapour recovery systems

System	Description	Capture Efficiency (%)
VR1	Only applies to bulk-filling emissions	95
VR2	Only applies to vehicle filling emissions	90

Source: (Environment Australia, 1999)

The number of bowsers proposed at the station is six. The fuels considered in this assessment was unleaded petrol (ULP) and diesel. Tank deliveries were assumed to be 700 litres of fuel per min (42,000 litres/hour) and were conservatively modelled for one hour every day of the year (as per (BCC, 2017)). The delivery hour was staggered each day so that deliveries during peak hours were not ignored. An example of the delivery schedule adopted is provided in Table 3.2.

Table 3.2: Example delivery schedule

	Week 1						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1:00	✔						
2:00		✔					
3:00			✔				
4:00				✔			
5:00					✔		
6:00						✔	
7:00							✔
	Week 2						
8:00	✔						
9:00		✔					
10:00			✔				

11:00				✔			
12:00					✔		
13:00						✔	
14:00							✔
	Week 3						
15:00	✔						
16:00		✔					
17:00			✔				
18:00				✔			
19:00					✔		
20:00						✔	
21:00							✔
	Week 4						
22:00	✔						
23:00		✔					
24:00			✔				

Fuel dispensing was assumed to be 5,000 litres per day of UPL and 4,000 litres per day of diesel distributed based on the daily sales profile provided in the BCC methodology, modified for service station operation between 5am and 11pm. The modified hourly fuel profile that was assumed for this assessment is provided in Table 3.3.

The volumes of hourly fuel dispensed were used to determine the hourly fuelling of vehicles, 'whoosh' and spillage emissions of VOCs based on the emission factors provided in the BCC methodology and provided in Table 3.4. As there is no site-specific data available at this stage, the VOC emissions were speciated using the liquid fuel composition and the fuel vapour composition provided in Table 3.5 (BCC, 2017).

Table 3.3: Assumed hourly fuel sale profile

Hour	% of daily sales	Hour	% of daily sales	Hour	% of daily sales	Hour	% of daily sales
0-1	-	**6-7**	5.9	**12-13**	6.1	**18-19**	5.5
1-2	-	**7-8**	6.1	**13-14**	6.0	**19-20**	4.3
2-3	-	**8-9**	5.9	**14-15**	6.4	**20-21**	3.8
3-4	-	**9-10**	6.1	**15-16**	6.6	**21-22**	3.7
4-5	-	**10-11**	6.5	**16-17**	6.5	**22-23**	2.8
5-6	5.0	**11-12**	6.5	**17-18**	6.3	**23-24**	-

Table 3.4: Fuel emission factors

Emission Source	ULP	Diesel
	Emission Factor (mg / L)	Emission Factor (mg / L)
Underground Tank Filling – Submerged	880	176
Underground Tank Breathing	120	
Vehicle Refuelling – Filling	1320	
Vehicle Refuelling – Whoosh	80	
Spillages	80	

Table 3.5: Fuel liquid and vapour composition

Component	Liquid[1] (% wt)	Vapour[2] (% wt)
Benzene	1.0 [3]	0.39
Cyclohexane	0.2	0.0648
Ethylbenzene	2.0	0.0805
n-Hexane	3.6	1.76
Styrene	0.1	0.00287
Toluene	10.6	1.10
Xylenes	12.4	0.441

1. *The composition of the liquid has been taken from the EET Manual for Aggregated Emissions from Service Stations* (Environment Australia, 1999)*; however, it has been modified in accordance with the Fuel Standard (Petrol) Determination 2001 which limits the benzene to 1 % by volume.*
2. *The vapour composition has been calculated using the method found in the EET Manual for Aggregated Emissions from Service Stations* (Environment Australia, 1999).
3. *The density of unleaded petroleum and benzene were assumed to be 740and 876 kg/m³, respectively.*

4. MODELLING

The AERMOD dispersion model was used for this assessment. The AERMET pre-processor provides the input meteorological data for AERMOD. An overview of the assessment methodology is shown in Figure 4.1 and described in the sections below.

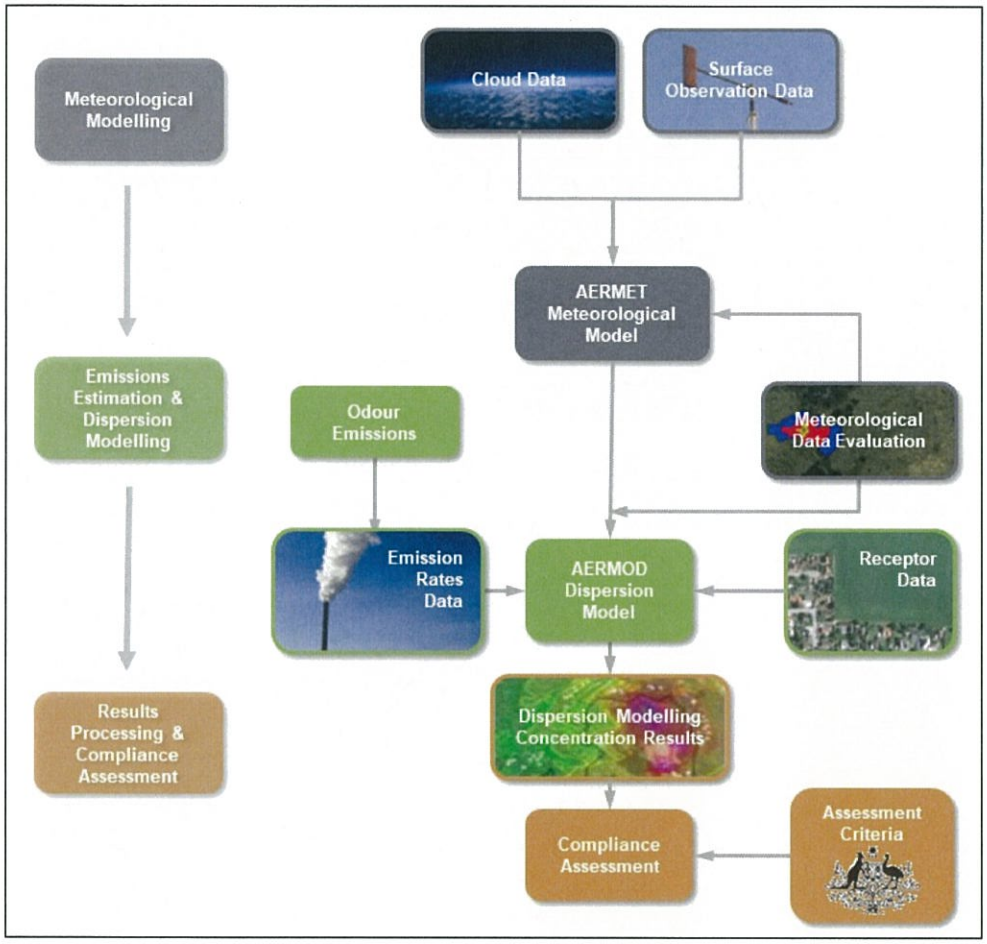

Figure 4.1: Modelling methodology

4.1 Meteorological Modelling

Processing of meteorological data for AERMOD for the dispersion modelling was completed using the AERMET meteorological pre-processor. Meteorological modelling was completed with consideration of the VIC EPA guidance publication (1550) (EPA Victoria, 2013A).

Wind data were taken from the Perth Metro station, approximately 7km south west of the site. The last five years of data were analysed with 2016 chosen as it was the most recent year with complete data. Cloud data was taken from the Perth Airport station approximately 5 km south east of the site.

A summary of the meteorological data used in AERMET is presented in Table 4.1.

Table 4.1: AERMET input data summary

Station information	
Station Name	Perth Metro AWS (station ID. 009225)
Station Lat:	393.424 km Easting
Station Lon:	6467.947 km Northing
Station Height (above MSL):	26.0 m
Parameters measured:	Wind Speed, Wind Direction, Temperature, Relative Humidity and Pressure
Minimum logging period:	1 minute
Ceilometer for cloud data	No
Anemometer height (above ground)	10 m
Approximate distance to site	~7000 m
Modelled year information	
Modelled Year	2016
Parameters used:	Wind Speed, Wind Direction, Temperature, Relative Humidity and Pressure
Data availability (from anemometer)	92%
Supplementary Data	Ceilometer data for Cloud Amount and Cloud Height from Perth Airport (station ID. 009021).
Land use parameters used	High density Residential and Shrub land (Arid Region) as outlined in VIC EPA publication 1550.

4.2 Dispersion Modelling

The AERMOD dispersion modelling system was used for this assessment. To assist with the application of AERMOD, VIC EPA has developed draft guidelines on the use of AERMOD, which are as follows:

- Construction of input meteorological data files for VIC EPA regulatory air pollution model (AERMOD) (publication 1550) (EPA Victoria, 2013A)
- Guidance notes for using the regulatory air model AERMOD in Victoria (publication 1551) (EPA Victoria, 2013B).

AERMOD stands for the AERMIC Dispersion Model. AERMOD was designed by the AERMIC committee (the American Meteorological Society/ Environmental Protection Agency Regulatory Model Improvement Committee) to treat elevated and surface sources in terrain that is either simple or complex (Cimorelli et al, 1996), (Perry et al, 2005).

AERMOD is described in more detail by (AERMIC, 1995), (Cimorelli et al, 1996), (AERMIC, 1995), (US EPA, 2002). The AERMOD modelling system consists of two pre-processors and the dispersion model. The meteorological pre-processor (AERMET) provides AERMOD with the meteorological information it needs to characterise the boundary layer (e.g. mixing height, friction velocity). The terrain pre-processor (AERMAP) both characterises the terrain and generates receptor grids and elevations for the dispersion model (AERMOD).

AERMOD has been built on the framework of the older Industrial Source Complex Model version 3 (ISC3) and retains the steady-state, straight line trajectory formulation of ISC3 and related models such as AUSPLUME. However, its treatment of dispersion in the presence of complex terrain improves on that used in ISC3 without the complexity of the current complex terrain models. It

contains advanced algorithms to describe turbulent mixing processes in the planetary boundary layer for both convective and stably stratified layers.

Emissions from the submerged filling of underground storage tanks as well as breathing from these underground tanks were assumed to be emitted from the tank vent pole and have been modelled as a point source in AERMOD (P1). The fuelling of vehicles, 'whoosh' and fuel spills on the ground were modelled as a volume source in AERMOD (V1) with release parameters to account for emissions from under the stations proposed canopy area. The location of each source is shown in Figure 4.2. The emission release parameters are described in Table 4.2.

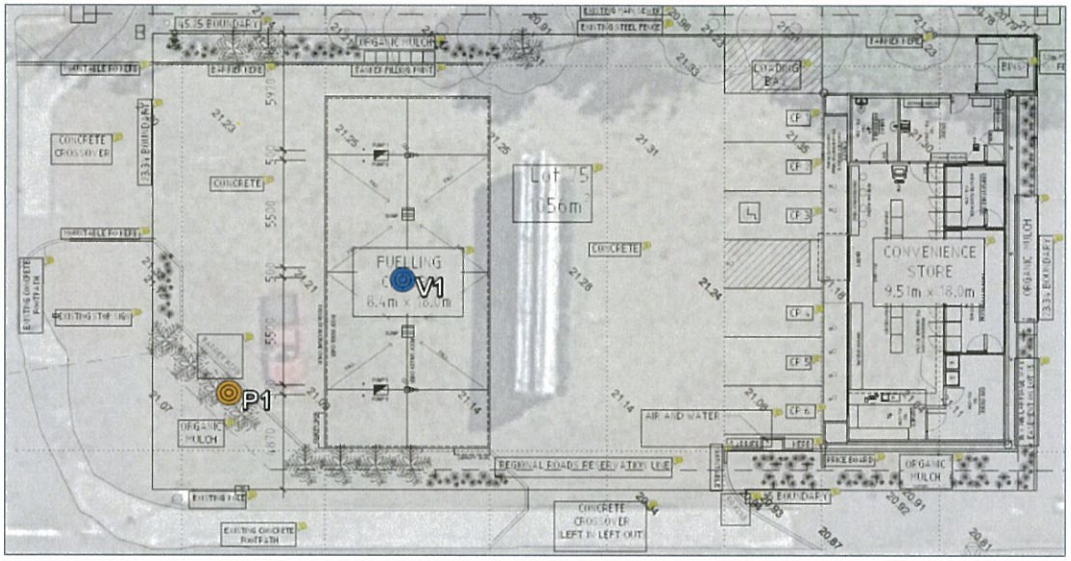

Figure 4.2: Modelled source locations

Table 4.2: Source parameter data

Source Parameter	P1	V1	Units
Hours of operation	24	24	hours
Release Location UTM Zone 56S	400,256	400,265	Easting m
	6,470,759	6,470,765	Northing m
Stack height	7	-	m
Stack diameter	0.1	-	m
Sigma y	-	4.2	m
Sigma z	-	1.1	m
Temperature	25	-	℃
Velocity	0.1	-	m/s

5. RESULTS AND CONCLUSIONS

The modelling contour results are shown in the following figures:

- Figure 5.1: Benzene annual average contour (criteria – 10 µg/m³)
- Figure 5.2: Benzene 3-minute average contour (criteria – 53 µg/m³)
- Figure 5.3: Ethyl benzene 3-minute average contour (criteria – 14,500 µg/m³)
- Figure 5.4: Toluene annual average contour (criteria – 410 µg/m³)
- Figure 5.5: Toluene 24-hour average contour (criteria – 4,100 µg/m³)
- Figure 5.6: Xylenes annual average contour (criteria – 1,200 µg/m³)
- Figure 5.7: Xylenes 24-hour average contour (criteria – 950 µg/m³)

As shown in the figures, all predicted concentrations are well below the air quality criteria. This indicates that the proposed operations (including VR1 and VR2 emissions controls) meets all air quality requirements.

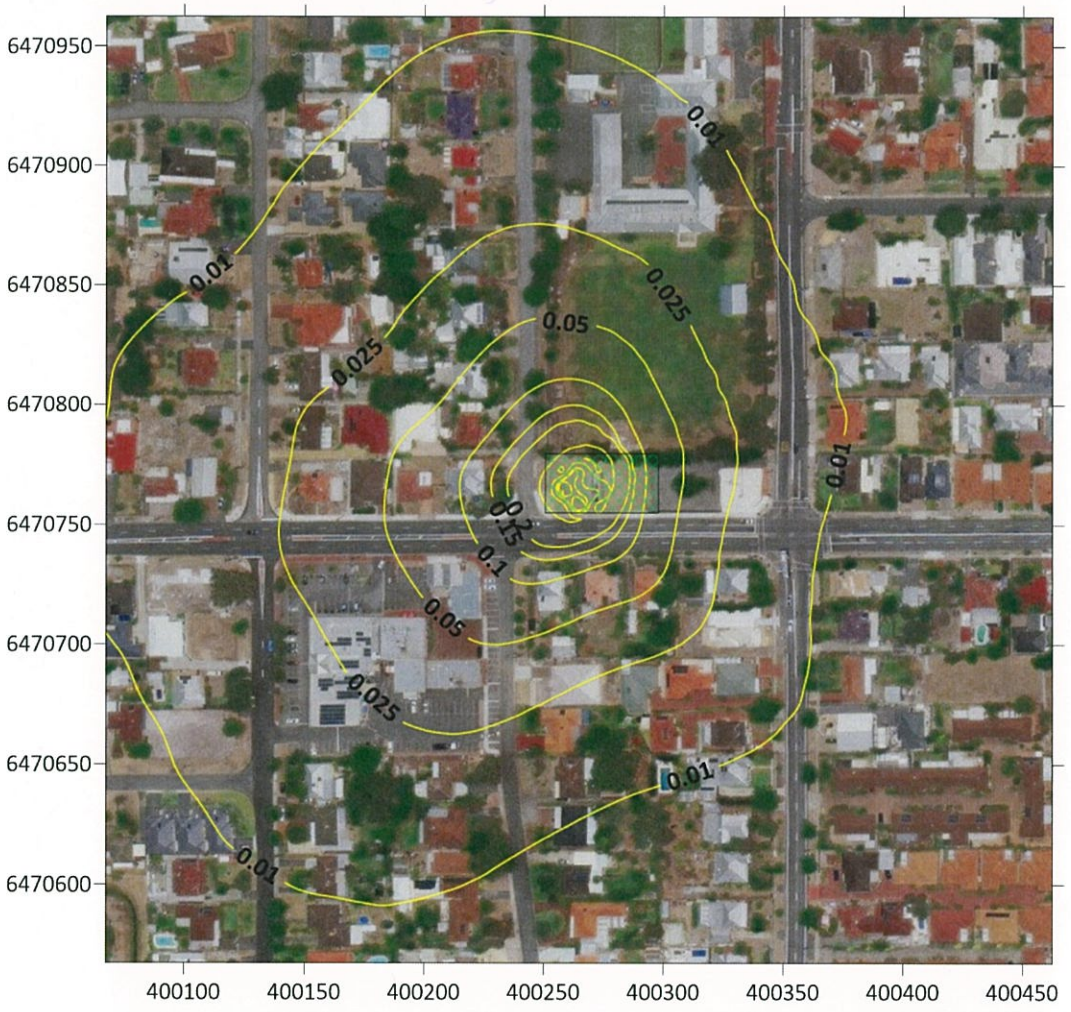

Figure 5.1: Benzene annual average contour (criteria – 10 µg/m³)

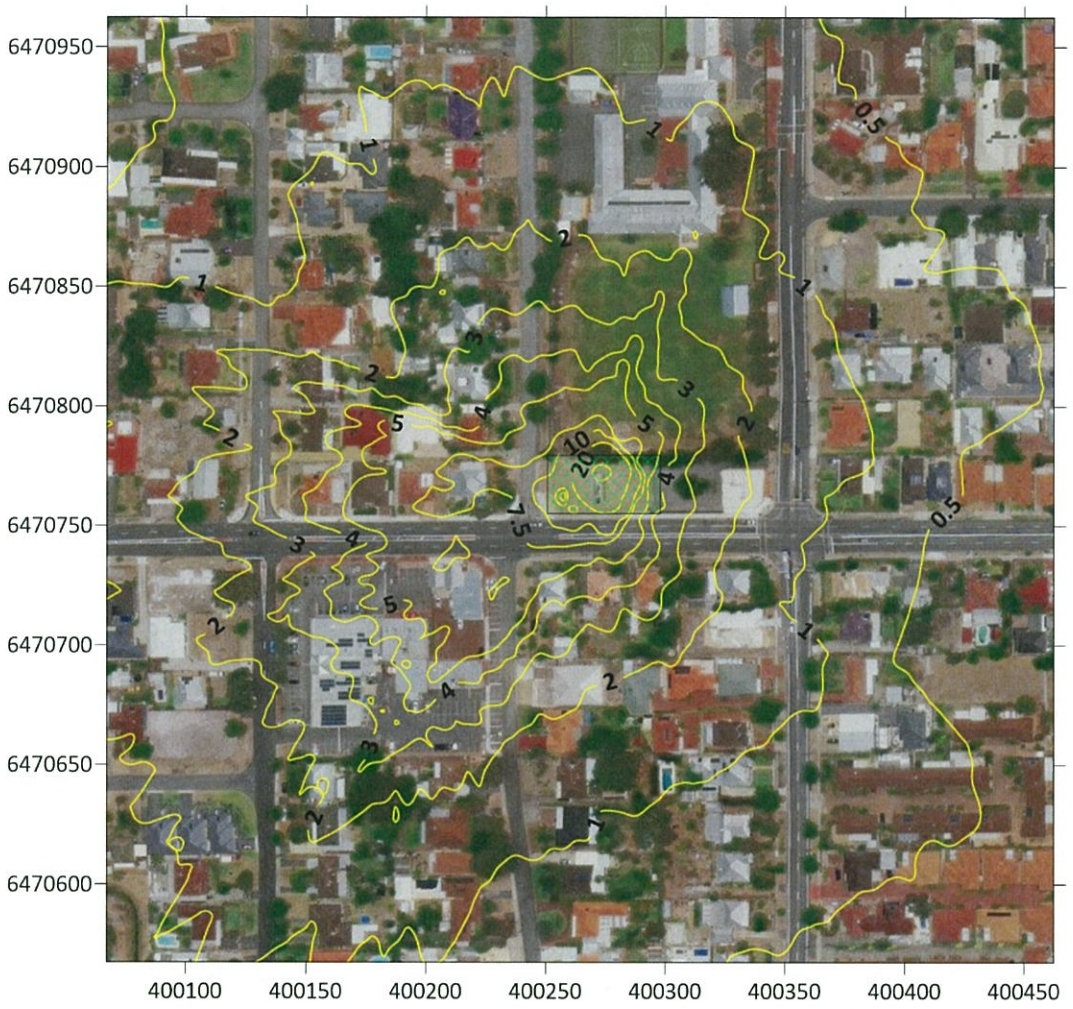

Figure 5.2: Benzene 3-minute average contour (criteria – 53 µg/m³)

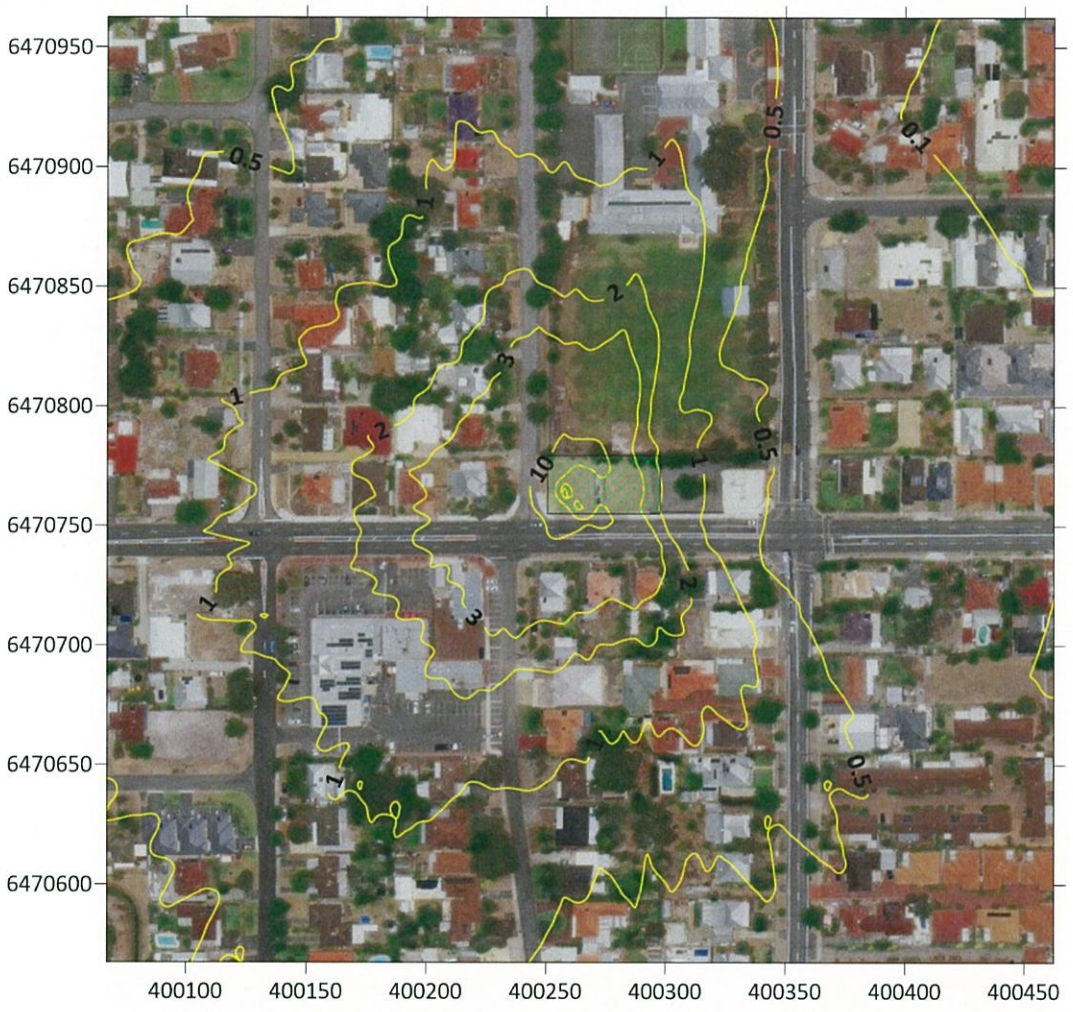

Figure 5.3: Ethyl benzene 3-minute average contour (criteria – 14,500 µg/m³)

Figure 5.4: Toluene annual average contour (criteria – 410 µg/m³)

Figure 5.5: Toluene 24-hour average contour (criteria – 4,100 µg/m³)

Figure 5.6: Xylenes annual average contour (criteria – 1,200 µg/m³)

Figure 5.7: Xylenes 24-hour average contour (criteria – 950 µg/m³)

6. REFERENCES

AERMIC. (1995). *AERMIC (1995), Formulation of the AERMIC MODEL (AERMOD) (Draft), Regulatory Docket AQM-95-01, AMS/EPA Regulatory Model Improvement Committee (AERMIC).*

BCC. (2017). *Emission Estimation Methodology - Service Station.* Brisbane City Council. Delivered via mail 31 May 2017.

Cimorelli et al. (1996). *Cimorelli, A.J., Perry, S.G., Lee, R.F., Paine, R.J., Venkatram, A. and Weil, J.C. (1996), Current Progress in the AERMIC Model Development Program. US EPA Publication No. 96-TP24B.04.*

Environment Australia. (1999). Emissions Estimation Technique Manual for Aggregated Emissions from Service Stations. *National Pollutant Inventory.*

EPA Victoria. (2001). State Environmental Protection Policy (Air Quality Management). *Victoria Government Gazette.* Victoria: No. S 240 Friday 21 December 2001.

EPA Victoria. (2013A). *Publication 1550, Construction of input meteorological data files for EPA Victoria's regulatory air pollution model (AERMOD), October 2013.*

EPA Victoria. (2013B). *Publication 1551, Guidance notes for using the regulatory air pollution model AERMOD in Victoria.*

National Environment Protection Council Service Corporation. (2011). National Environmental Protection (Air Toxics) Measures. Federal Register of Legislative Instruments F2011C00855.

Perry et al. (2005). *Perry, S. et al., (2005), AERMOD: A Dispersion Model for Industrial Source Applications. Part II: Model Performance against 17 Field Study Databases. Journal of Applied Meteorology, 44(5): 694.708.*

US EPA. (2002). *US EPA (2002), User's Guide For The AMS/EPA Regulatory Model. AERMOD, U.S. Environmental Protection Agency, Draft - 08/10/02.*

Government of Western Australia
Department of Water and Environmental Regulation

REPORT

Lot 75 (72) Walter Road East, Eden Hill (DAP/18/04173)

Proposed convenience store - air quality advice for Town of Bassendean

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November 2018

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Contents

Purpose

This report documents advice prepared for the Town of Bassendean (the Town) in response to an email request dated 2 November 2018. The advice concerns a proposed convenience store providing for the sale of fuel and convenience goods at Lot 75 (No. 72) Walter Road East, Bassendean.

Documentation

Air Quality Services has reviewed the follow documents:

Table 1. Documentation

Document	Author	Date of document	Objective reference
Proposed Perth Petrol Station – Air Quality Assessment	ERM	26/10/2018	-
WRE Hourly Traffic Volumes.pdf	Main Roads	2/11/2018 (email date)	-
Metro Central Joint Development Assessment Panel Agenda	Metro Central JDAP	21/10/2018	-
Development Application, Lot 75 (72) Walter Road East, Bassendean, WA	Planning Solutions	July 2018	-
Gasoline Service Station Industrywide Risk Assessment Guidelines	Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spots" Program	11/1997	-
The National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Aggregated Emissions from Service Stations	Environment Australia	11/1999	-
Construction of input meteorological data files for EPA Victoria's regulatory air pollution model (AERMOD)	VIC EPA	10/2013	-
Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales	NSW EPA	1/2016	-

Background

The proposed development is for a convenience store including the retail sale of fuel.

The Town has advised that:

- The petrol station is intended to operate from 5am to 11pm daily (i.e. beyond the hours of operation which link to a 50m separation distance), but less than the 24 hour operation linked to a specified 200m separation distance;

- The planning report provided in support of the application indicated that the proposed development would include a stage 1 vapour recovery system only (as mandated), but the ERM report has been prepared on the assumption of both a stage 1 and a stage 2 vapour recovery system being implemented;
- High-flow diesel sales will not be provided, so there is an assumption that the proposed development will provide service, almost exclusively, for light vehicles; and
- The transport impact statement provided in support of the application assumes 978 vehicle trips per day (both inbound and outbound).

Specific queries raised by the Town are:

1. The estimated sales split between unleaded and diesel (seems proportionately low for unleaded and proportionately high for diesel) based on the applicant's assertion that the premises will be utilised by light vehicles only (see pg 4 of report);
2. The overall estimated volume of fuel to be sold per day seems too low (pg 4 of report);
3. The sales profile seems constant throughout the day (whereas it would be expected to be more varied to reflect the hourly traffic patterns of the adjoining roads) (Table 3.3 on pg 4 of report);
4. There is no consideration of changes in sales profiles throughout the week (i.e. noting that Mondays are busier than Tuesdays based upon the fuel discounting cycle); and
5. Are the land use parameters referred to correct (Table 4.1 of report)?

Summary of advice

AQS has reviewed the ERM air quality report and sections of other documents as shown in Table 1. Responses to the Town's comments and queries (these are shown in italics) are provided below.

Assessment criteria

- The 3-min assessment criteria used in the ERM report have not been adopted in WA.
- The proponent should consider using the impact assessment criteria established in NSW EPA (2016) for emissions not covered by National Environment Protection (Ambient Air Quality) Measure (1998).

Emission estimation

The planning report provided in support of the application indicated that the proposed development would include a stage 1 vapour recovery system only (as mandated), but the ERM report has been prepared on the assumption of both a stage 1 and a stage 2 vapour recovery system being implemented.

- Stage 2 vapour recovery is not mandatory in WA.
- Vehicle refuelling has the highest emission factor of the sources considered.

- Consequently, the modelling configuration, which has included stage 2 vapour recovery (i.e. 90% control of refuelling emissions), will significantly underestimate the potential impact of VOC emissions.

High-flow diesel sales will not be provided, so there is an assumption that the proposed development will provide service, almost exclusively, for light vehicles.

The estimated sales split between unleaded and diesel (seems proportionately low for unleaded and proportionately high for diesel) based on the applicant's assertion that the premises will be utilised by light vehicles only (see pg 4 of report).

- ERM states that a Brisbane City Council (BCC) methodology was adopted to estimate the fuel sales split between petrol and diesel. AQS has also estimated the proportion of petrol/LPG and diesel light vehicles in the Perth fleet as shown in Table 2. The data in Table 2 are based on 2016 vehicle population data sourced from the WA Department of Transport vehicle registration database (TRELIS) and vehicle activity sourced from the Australian Bureau of Statistics (ABS) 2016 Survey of Motor Vehicle Use.

Table 2. Perth vehicle fleet data

Light Vehicles, 2016[1]	No. Vehicles (million)	No. Vehicles %	VKT[3]/year (million)	VKT/year (%)
Petrol/LPG[2]	1.089	89	12,750	91
Diesel	0.136	11	1,235	9

1. Light vehicle classification comprises passenger vehicles only (including large SUVs) but no light commercial vehicles.
2. LPG is estimated to account for 2% of this vehicle category.
3. VKT= vehicle kilometres travelled.

- The petrol and diesel split assumed in the ERM report (i.e. 56% and 44% respectively) does not reflect the Perth-wide proportions for light vehicles as estimated in Table 2, which are closer to 90% and 10% respectively. We are not aware of local factors that may result in higher levels of diesel consumption compared to petrol consumption at this location.
- An assumed higher proportion of petrol will mean that there are increased emissions of volatile organic compounds, including the species modelled in the ERM report.

The overall estimated volume of fuel to be sold per day seems too low (pg 4 of report);

- AQS was not able to source a copy of the BCC methodology referenced in the ERM report and cannot comment on the fuel volume estimates.
- With respect to the number of bowsers proposed for the development, there appears to be conflicting information in the ERM report and Planning Solutions report. That is, the ERM report states that there will be six bowsers, whereas the Planning Solutions report states that there will be three bowsers.

The sales profile seems very even throughout the day (whereas it would be expected to be more varied to reflect the hourly traffic patterns of the adjoining roads) (Table 3.3 on pg 4 of report); and

There is no consideration of changes in sales profiles throughout the week (i.e. noting that Mondays are busier than Tuesdays based upon the fuel discounting cycle).

- ERM followed the BCC methodology to derive the hourly fuel sale profile. This profile does not reflect the actual hourly traffic patterns provided by the Town for Walter Road East (Main Roads, 2018), which presumably are closely related to fuel consumption patterns. Therefore, the potential maximum hourly emission rate may not be represented in the model configuration. This may influence the modelled estimate of pollutant concentrations over averaging periods of an hour or less.
- ERM did not consider the fuel sale variation between week days. Therefore, the potential maximum hourly emission rate for Monday (i.e. day of peak consumption due to pricing cycles in Perth) will not be represented in the model configuration. This may influence the modelled estimate of pollutant concentrations for daily averaging periods.

Other comments

- The identified pollutants are consistent with the typical substances emitted at service stations.
- The specified air emission activities and their adopted emission factors are consistent with the typical values recommended by NPI (1999) and CAPCOA (1999).
- The total emission from the nominated sources was not reported.

Meteorological data

Are the land use parameters referred to correct (Table 4.1 of report)?

- Based on the VIC EPA guideline (2013) referenced in the ERM report, the land use parameters are based on a 1km radius from the Mount Lawley Bureau of Meteorology (BOM) weather station. The angles selected for the land use sectors are unknown. However, the selection of land use categories seems to be reasonable based on our knowledge of the area.

Other comments

- ERM adopted 2016 as a representative year based on completeness of data. The wind speed, wind direction, temperature, relatively humidity and pressure have not been discussed in the report. These components, especially wind speed and wind direction, are critical model inputs for the air quality assessment.
- The distance between the Perth Airport weather station and the proposed development is similar to the distance between the Mount Lawley site and the proposed development. The Perth Airport weather station is likely to have better quality meteorological data.

Dispersion Modelling

- The parametrisation of the emission sources is acceptable as per the recommended values from CAPCOA (1999). However, the point source (P1) is double the height (7m) of the common tank vent pole, i.e. 3.6m. Clarification of this source parameter by the proponent is required in the report.
- Sensitive receptors are defined as where people live or congregate. As the proposed development is situated in the urban area adjacent to a primary school and a residential area, assessment of the modelled ground level concentrations (GLCs) at the boundary of proposed development is appropriate.
- Building downwash was not considered by ERM. Our review of satellite imagery indicates that the distance from the proposed vent pipe to the nearest sensitive receptor is approximately 30m. Compared to modelled results without incorporating building downwash, CAPCOA advice that concentrations would increase by 5% at 20m from the vent pipe with building downwash. The concentrations with and without building wake effect are equal at approximately 50m.

Modelled results

- The ERM report shows that modelled GLC contours are well below the assessment criteria.
- Only contour plots are presented. The modelled GLCs at sensitive receptors are not presented or discussed.
- Background concentrations are not discussed in the ERM report. The adopted criteria are designed for cumulative impacts (i.e. emissions from the proposal plus background concentrations).

Summary

Although the ERM report shows modelled CLC contours are well below the assessment criteria, AQS notes that there is a number of uncertainties in the model results. The results may therefore not reflect the potential impacts to the nearby sensitive receptors based on the following:

- Meteorological data may not be representative.
- The methodology used to estimate fuel sales, fuel split, and hourly and weekly variations of refuelling may not represent the worst case emission scenario in the local area.
- Emissions are underestimated due to the application of stage 2 vapour control, which is not proposed.
- There is no assessment of background concentrations and potential cumulative impacts.

In relation to planning advice, please note the following:

- The separation distances recommended in EPA Guidance Statement No. 3 include amenity and health impacts which arise from emissions including odour, noise, air pollutants and other factors. The Department notes that liabilities associated with the resolution of land use incompatibilities generally default to the State. Consequently, unless there are remedial actions available in the

event the proposal is approved and environmental or population impacts become evident at a later date, a precautionary approach is recommended. This should include the proposed management of the residual risk, which the Department views as an important consideration for the Town of Bassendean in the planning decision.

Limitations

Please note the following important information relevant to this AQS advice:

- AQS was not provided with electronic copies of the dispersion modelling input files. Therefore the model configuration and model results could not be verified and have been accepted as supplied.
- Pollutants of concern considered by the consultant are benzene, ethyl benzene, toluene and xylenes. The potential for other air quality issues (e.g. odour) has not been assessed.
- The Department does not have primary responsibility for the assessment of public health issues, including Health Risk Assessment, in relation to air pollution. This is the role of the Department of Health.
- Especially for amenity issues, the Department has an established position that technical studies, such as modelling and monitoring of air pollutants used to inform planning decision-making, should be used with caution as there can be significant uncertainty in the accuracy of scientific assessments. In addition, the results of scientific assessments must be compared to some pre-defined criteria (including health, amenity and annoyance). For odour and dust, these pre-defined levels often do not exist or are subjective.

References

EPA NSW, 2016: Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, NSW Environment Protection Authority.

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ERM Air Quality Assessment - Peer Review

Proposed Perth Petrol Station

Prepared for Town of Bassendean

November 2018

Project Number: TE18094

talis
delivering solutions

DOCUMENT CONTROL

Version	Description	Date	Author	Reviewer
0a	Internal Review	08/11/18	JH	AJM
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Approval for Release

Name	Position	File Reference
John Hurley	Senior Environmental Consultant	TE18094 - TownOfBassendean (Peer Review).1b
Signature		

Table of Contents

Tables

1 Introduction

Talis Consultants Pty Ltd (Talis) was commissioned by the Town of Bassendean to perform an independent peer review of the air quality assessment report prepared by ERM for Planning Solutions, namely:

- ERM: Proposed Perth Petrol Station. *Air Quality Assessment*; for SV Lakshmi Pty Ltd C/- Planning Solutions. 26th October 2018 (Project NO.: 0480271).

This report presents a summary of the peer review.

1.1 Capacity to offer expert opinion

This peer review has been commissioned by the Town of Bassendean and has been undertaken by **John Hurley.**

John is a Senior Environmental Consultant and Air Quality Team Lead for Talis with 15 years' experience in air quality environmental consultancy in Australia.

John holds a BSc Chemistry and Biotechnology and an expert in odour science.

Specialising in Air Quality assessments, environmental and planning approvals, site-specific mitigation technologies and dispersion modelling applications for odour and industrial emissions, John also has a comprehensive research and consulting record in odour measurement using dynamic olfactometry, odour capture, control and consultation on alternative mitigation technologies, air emission consultation and chemical emission assessments and expert witness.

He has undertaken a considerable number of air quality and odour impact assessments as well as chemical emission assessments in process control and OH&S exposure for personnel as well as undertaking extensive air quality emission works in key areas such as:

- Waste Water;
- Solid Waste and Recycling;
- Poultry;
- Livestock and Animal Rendering;
- Refineries,
- Oil Recycling;
- Petrochemical;
- Biofuels;
- Asphalt;
- Grain Feed and Processing; and
- Marina Seagrass Wrack Accumulations.

John is extremely experienced in all facets of emissions collection techniques including point, area and volume source applications. He is extensively skilled in meteorological datasets and dispersion modelling of air emissions which are used not only for planning applications but also for abatement and mitigation assessments of air emissions.

John has worked integrally with treatment techniques for odour mitigation and has consulted on best-practice mitigation technologies for a wide range of industries including procurement, scheduling, supervision and installation services for purpose-built biofiltration technologies.

John has also provided expert opinion and witness for both State Administrative Tribunal mediation and hearings.

2 Peer Review

The peer review considers the following key points:

- The proposed undertaking itself (i.e. what the ERM report assessed);
- Technical methods undertaken in the ERM report and their applicability for the type of assessment;
    - the justifications (if any);
- The ERM findings and recommendations;
- The surrounding land uses and any conflicts;
- The reviewer's commentary on the assessment's ability to adequately address the potential for impacts on surrounding receptors; and
- The reviewer's own opinion on the proposed undertaking.

Where applicable for each key point, the section of the assessment is risk assessed as follows:

Table 2-1: Peer Review Risk Assessment Hierarchy

High	The issue has significant implications based on the technical data results and the conclusions drawn from the assessment
Medium	The issue has implications that may alter the conclusions that are drawn from the assessment
Low	The issue may need to be addressed but is considered unlikely to alter the conclusions of the assessment
Observation Only	An issue has been raised purely as an observation

The risk assessment system does not represent a "pass" or "fail", or imply an "error", rather it mostly relates to a lack of adequate justification or evidence in the assessment undertaking.

2.1 The Proposed Undertaking

The ERM report assessed the potential for ground level impacts of pollutants from a proposed Perth metropolitan service station which is adjoined to (part of) a proposed convenience store.

The service station is considered to be the potential pollution source.

The service station was assumed to have Vapour Recovery (VR) 1 and VR2 installed which provides 95% and 90% capture efficiency respectively for vapour loss from sub-terrain tanks (VR1) and from the bowsers themselves during refuelling (VR2).

There are six (6) bowsers proposed, and both unleaded petrol (ULP) and diesel were the fuels considered for pollutant emissions.

The ERM report was requested by the Town of Bassendean's Council due to the proposed location of the fuel station which is directly adjacent to a local school's oval.

The local school's oval is considered a sensitive receptor together with the surrounding residential homes.

2.2 Summary of ERM Method

i. Utilised AERMOD dispersion modelling techniques to project ground level impacts of Volatile Organic Compound group BTEX:
   a. Referred to the National Environmental Protection [Air Toxics] Measure (NEPM) as the reference criteria for ground level impacts of BTEX; and
   b. Referred to the Victorian Environmental Protection Agency (VIC EPA) air quality criteria to compare the NEPM criteria findings.

ii. Emissions were estimated following the Brisbane City Council (BCC) methodology for service stations (BCC, 2017);

iii. Developed a site-representative meteorological file using AERMET and Perth Metro and Perth Airport Bureau Of Meteorology (BoM) Automatic Weather Station (AWS) data;

iv. VR1 emissions modelled as 7m stack (point) source vent; and

v. Refuelling of vehicles with VR2 technology modelled as a "spill" volume source where the fuel station canopy height was taken as the height of the volume source, and the canopy length taken as the length of the volume source.

Medium	• The use of modelling is not supported for this type of assessment given the complexities of representing the transient and "puff" nature of the emissions released (vapour loss due in part to headspace displacement) which is in the reviewer's opinion far too complex to warrant near-field modelling of vapour losses; and • The modelling presented does not simulate the peak and trough emissions that would be expected from refuelling activities of everyday peak times (morning and afternoon) as well as the price cycle of fuel which is known to cause peak periods when fuels are cheaper on any given day.
Low	• The report does not present any technical detail to how the model and meteorological data was setup or developed, other than to present an AERMET model input table (Table 4.1, pg.7) and a Source Parameter Data table (Table 4.2, pg.8); and therefore there is no opportunity to scrutinise the modelling and meteorological methods.
	• Odour impacts were not considered in the assessment
Observation Only	• The use of AERMOD modelling for BTEX emissions is inherently difficult for a manually-handled petrol bowser with a theoretical vapour release of typically 10% (VR2); • ERM has therefore considered a volume source release in lieu of any approach to model vapour loss from a bowser; • However, the technical approach using modelling would appear largely unnecessary given its vapour loss at sufficiently low concentrations or volume loss (as vapour) during a vehicular refuel – in other words, it is inherently difficult to represent these types of emissions as vapour loss given the transient activity of refuelling and also the small nozzle size of the bowser handles.

2.3 ERM Findings and Recommendations

i. The report presented a series of Figures that illustrated ground level isopleths (contours) representing the ground level concentrations of the BTEX compounds against the most stringent criteria of either NEPM or VIC EPA;
ii. The report found that all ground level concentrations passed, or met the criteria; that is, there were no exceedances of the criteria in the near field; and
iii. No other comments were made, nor any qualification of the findings with respect to the adjacent school or houses.

Medium	• The use of dispersion modelling appears inadequate due to the insufficient methods in which the vapour emission peaks and troughs have been presented; • In terms of dispersion modelling, the report findings and recommendations cannot be refuted nor validated since the report does not present the technical methodology for the modelling or meteorological setup; and • A local meteorological analysis would have addressed the percentage of time, and times of day, that winds affecting the school oval (i.e. pushing vapour onto the oval) would occur. This would further inform the risk.

2.4 Surrounding Land Uses and Conflicts

The land use in the general locale is urban (residential). The proposed petrol station/convenience store satisfies this land use. In terms of a conflict the location of the petrol station with respect to the school oval may be perceived as an aesthetic conflict of land use, although not technically a land use conflict.

However, the school grounds represent a sensitive receptor equally proportional to the surrounding houses which are also sensitive receptors.

Land uses considered to be potentially sensitive to emissions from industry and infrastructure include (emphasis added):

"...residential developments, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds, and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing facilities".

Medium	• The largest conflict for the proposed development is the business hours of the activity which would represent a "roadhouse" activity. In this case a roadhouse activity requires a 200 metre separation distance which cannot be met in the proposed development location.

2.5 Reviewer's Commentary of the Assessment's Ability to adequately address the Risk

The report addresses the risk of ground level pollutant impacts using a desktop dispersion modelling approach. The report does not consider odour impacts which given the efficacy of the VR1 and VR2 technologies would be one of the main "pollutants" with respect to amenity, with noise, traffic and ambient lighting being other amenity considerations of significance.

The use of a dispersion modelling approach is not uncommon for addressing VOC release, however; the ability to adequately represent the vapour losses by way of a volume source "spill" scenario is questionable only in that it would be inherently difficult, if at all plausible, to adequately represent vapour losses from refuelling bowsers. This is also true of modelled vapour impacts in the extreme near-field i.e. impacts immediately adjacent to an emission source.

Whilst the modelling demonstrated that ground level impacts were negligible, the report fails to detail its modelling and meteorological methods other than by way of a limited summary. Additionally, the report does not attempt to address peak and trough emissions due to daily peak periods and other peak periods that would typically follow the fuel price cycle.

Nonetheless, the findings are not contrary to a common sense approach to vapour loss using high level, best-practice technologies such as VR1 and VR2 where petrol stations exist within high-density residential areas and often have adjoining boundaries to residential homes.

It should be noted that the undertaking does not satisfy the 200 metre separation distance which would apply to this proposed development.

Medium	• The report addresses the risk of the undertaking by accounting for the VR1 and VR2 technologies as well as designing a "spill" scenario to mimic what may happen in the event of bowser spill; and • With this approach a risk scenario has been addressed with respect to vapour, but has not accounted for peaks and troughs, and, the methods to assess this (modelling) may be irrelevant given the extreme near-field scenario.
High	• The minimum 200 metre separation distance from the nearest sensitive receptor cannot be met.

2.6 Reviewer's Opinion of the Proposed Undertaking

The undertaking is, in the opinion of the reviewer, a conflict given the inability to satisfy the 200 metre separation distance from the nearest receptor, moreover, the report has not considered ambient light, noise and other amenity impacts.

The dispersion modelling assessment methods used, although likely to be the only way to assess vapour loss outside of ambient odour field surveys, ambient VOC monitors on surrogate sites and indeed a comparison of other existing sites where a service station and residential abodes can coexist without complaint, appears to be inadequate given the lack of representation of peak and trough times. A meteorological analysis of the locale would have also informed the risk.

Additionally, the aesthetics of locating a petrol station directly adjacent to a school oval could be considered, in principle, a perceived conflict in land use.

The percentage of time the school oval is populated would represent a smaller period compared to adjacent housing which is populated, in general, both within and outside of school hours. With this in mind, the school oval may be seen as less of a sensitive receptor than the immediately adjacent houses.

3 Closing

The undertaking and its operational hours suggests that the suitable separation distance should be 200 metres from the nearest receptor, this distance cannot be met. Furthermore, the lesser separation distance of 50 metres also cannot be met.

It has been assumed that VR1 and VR2 controls are to be in place within the proposed undertaking and that the level of vapour control will therefore be best practice. With this in mind the risk for vapour losses causing air quality impacts is expected to be low; however, the maintenance and care of the VR systems would need to be rigorously followed to support this.

The ERM report does not provide enough sufficient detail showing the peak and trough vapour release trends to inform the level of risk at those peak times when refuelling would occur, nor does the reviewer believe that the use of dispersion modelling for vapour release within an extreme near-field context addresses the underlying risk of impacts, in particular odour impacts. Furthermore, other amenity issues such as traffic, noise and ambient lighting need also to be considered in full.

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TRANSCORE PTY LTD ACN 094 951 318 ABN 19 094 951 318

25 October 2018

Metro Central JDAP
Locked Bag 2506
PERTH WA 6001

Attention: Presiding Member and Panel Members

Dear Madams and Sir,

Re: LOT 75 (72) WALTER ROAD EAST (CNR MARMION STREET), BASSENDEAN
DAP REF NO. DAP/18/04173

Transcore has been engaged by Vibe Petroleum in the capacity of traffic engineers for the abovementioned project.

This submission is prepared in support of the proposed development and provides responses to the relevant reasons of refusal in the Responsible Authority Report.

3. The applicant has failed to demonstrate how non-standard 15m long petrol tankers will be retained for use in conjunction with the proposed development, both with respect to the intended current operator of the facility along with any future operator of the facility;

There is no standard sized fuel tanker for servicing service stations. The size of the fuel tanker can range from 12.5m to 27.5m. The choice of fuel tanker size depends on whether the service station is located in a metro or regional area and site constraints. In this instance, due to the size of the site, a 15m fuel tanker will be used for this site. The size of the fuel tanker servicing the site can be a condition of approval.

4. The proposed development has not been designed to accommodate standard heavy rigid vehicles (HRV) for waste management and articulated vehicles (AV) for petrol deliveries contrary to the provisions of AS 2890.2 – Off-street commercial vehicle facilities which states that facilities shall be designed to accommodate the standard vehicle type or types appropriate to the use required by the operator of the facility;

Similar to the fuel tanker, there is no standard size for waste collection and delivery vehicles. The sizes of these vehicles are chosen based on nature of the

activity and site constraints. In this instance, due to the size of the site, maximum 8.8m service vehicle size (both for waste collection and deliveries) will be used for this site. The maximum size of the service vehicle servicing the site can be a condition of approval.

5. The inability of service vehicles (petrol tankers) to remain lane correct within public streets when approaching the development site;

The service vehicles are lane correct on Walter Road East as the wheel path and vehicle body is contained within the lane. It is therefore assumed that this comment relates to the turn path of the fuel tanker turning right from Walter Road East into Marion Street. The turn path analysis undertaken indicates that the vehicle body runs over the corner of the stop line at the intersection of Marion Street and Walter Road East. If this is deemed to be an issue, minor adjustments to the west side kerb on Marion Street will allow the tanker to enter Marion Street lane correctly. This kerb line adjustment can be a condition of approval.

It should be further noted that service vehicles and particularly, fuel tankers will service this site outside the peak hours.

6. The ability for vehicles to traverse the site in opposing directions being unsafe in use;

It is normal for vehicles to traverse a service station site in opposing directions when the service station has dual crossovers and in particular is located on a corner lot. This is a normal and regular occurrence at all service stations that are located on a corner site and have crossovers on each road frontage.

7. The width of car parking bays immediately forward of the proposed convenience store being non-compliant with the 2.6m minimum specified within Australian Standard AS 2890.1 (Off-street car parking) for the kind of development that has been proposed;

General practice is to adopt User Class 2 classification in accordance with Table 1.1 of AS2890.1 (refer Attachment 1) for the parking bays within a service station. This classification requires a parking bay width of 2.5m which is provided. If User Class 3 classification is adopted, then a parking bay width of 2.6m is required.

If parking bay widths of 2.6m is deemed appropriate for this site, this can be achieved by relocating the air and water points to the south-west corner of the site and then to utilise this space. This space is about 0.85m and therefore, 0.1m can be added to each parking bay, achieving the required 2.6m width for parking bays. This requirement can be dealt with as a condition of approval.

8. The width of bowser bays for pumps 2-6 being non-compliant with the 2.9m minimum (comprising 2.6m minimum plus 300mm clearance) specified within

Australian Standard AS 2890.1 (Off-street car parking) for the kind of development that has been proposed;

It is inappropriate to apply the requirement of parking bay design as stipulated in AS2890.1 to the space between bowsers at a service station. The bowser spacing is standard and is provided at most if not all service stations as 5.5m. In any case, this width comfortably exceeds the widths of two side by side 2.6m wide parking bays which is 5.2m.

9. The width of the service bay / loading bay associated with the proposed convenience store being non-compliant with the 3.5m minimum specified within Australian Standard AS 2890.2 (Off-street commercial vehicle facilities) for the kind of development that has been proposed;

It is acknowledged that the width of the service bay proposed is non-compliant to the requirements of AS2890.2 of 3.5m. However, it is not unusual for non-compliant parking bays and service bays to be provided on constrained sites so long as it is demonstrated that practically, the service bay can work and does not create any safety issues. The turn path analysis undertaken for an 8.8m service truck demonstrates that such a service vehicle can reverse into the 3m wide service bay.

It should be noted that the effective width of this sized service vehicle is 2.5m and width of the proposed service bay is 3m. Further, if parking bay adjustments are carried out as per the requirement of reason for refusal 7, the width of the service bay can be increased to 3.2m.

10. The clearance height beneath the proposed petrol canopy being less than the 4.5m minimum specified by AS 2890.2 (Off-street commercial vehicle facilities);

The canopy height clearance provided is the standard clearance adopted by this service station operator based on type of vehicles anticipated to use the site however, if it is deemed necessary, the height clearance can increased by 0.1m to achieve the required 4.5m clearance in accordance with AS2890.2. This requirement can be dealt with as a condition of approval.

11. The 5.5m separation distance between the corner truncation reserved under the Metropolitan Region Scheme and the crossover on the Marion Street frontage of the development site being less than the 6m minimum specified by both the Town of Bassendean Specification for the Construction of Crossovers and Australian Standard AS 2890.1 – Off-street car parking;

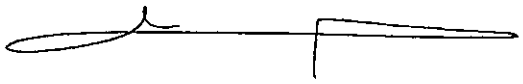
The proposed crossover on Marion Street can be shifted by 0.5m further north to achieve the 6m separation requirement of AS2890.1. This requirement can be dealt with as a condition of approval.

12. The design of the proposed crossovers for the development not demonstrating compliance with the Town's Specification for the Construction of Crossovers;

It is standard practice that such a requirement is dealt with through a condition of approval however, such a condition will need to recognise the proposed use, type and size of vehicles which will be using this development.

In conclusion, in my view, the traffic related reasons for refusal are not justified and with respect, it is requested that JDAP should approve the proposed development with appropriate condition.

Regards,



Behnam Bordbar
Managing Director

ATTACHMENT 1

TABLE 1.1

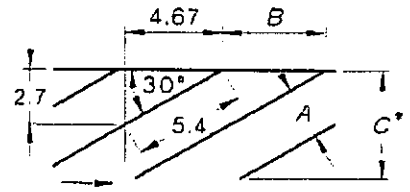
CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

User class	Required door opening	Required aisle width	Examples of uses (Note 1)
1	Front door, first stop	Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A	Front door, first stop	Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
2	Full opening, all doors	Minimum for single manoeuvre entry and exit	Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
3	Full opening, all doors	Minimum for single manoeuvre entry and exit	Short-term city and town centre parking, parking stations, hospital and medical centres
3A	Full opening, all doors	Additional allowance above minimum single manoeuvre width to facilitate entry and exit	Short term, high turnover parking at shopping centres
4	Size requirements are specified in AS/NZS 2890.6 (Note 2)		Parking for people with disabilities

NOTES:

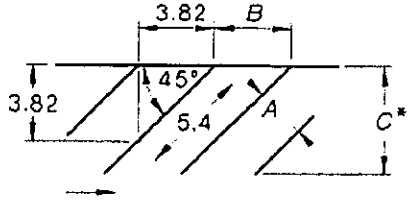
1 Except for the requirements specified in Clause 1.4 relating to User Classes 1A and 4, the examples of uses are intended to be flexible and allow for progressive improvement both in the ease of manoeuvring into and out of parking spaces, and in leaving and re-entering the vehicle as one progresses up the user class scale from 1 to 3A. The modelling of vehicle manoeuvring into Class 1A spaces shows however, that many drivers may have difficulty driving into and out of such spaces, especially those with vehicles larger than the B85 vehicle. Furthermore, they may have difficulty entering and leaving the vehicle in the narrower spaces. Safety issues associated with delays and congestion caused by manoeuvres into and out of Class 1A spaces in large parking areas should also be taken into account. See also Appendix B, Paragraph B4.8.

2 In preparation, see footnote to Clause 1.2.



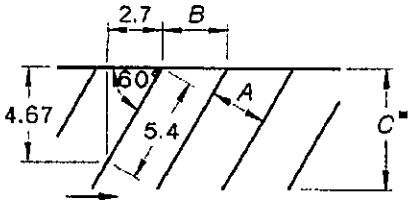
(a) Bays at 30°

User class (Note 1)	A (Notes 2 & 3)	B	C_1	C_2	C_3	Aisle width
1,1A	2.1	4.2	4.4	4.1	4.5	3.1
2	2.3	4.6	4.4	4.1	4.7	3.0
3	2.5	5.0	4.4	4.1	4.9	2.9
3A	2.5	5.0	4.4	4.1	4.9	3.45



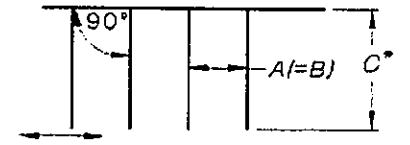
(b) Bays at 45°

User class (Note 1)	A (Note 3)	B	C_1	C_2	C_3	Aisle width
1,1A	2.4	3.4	5.2	4.8	5.5	3.9
2	2.5	3.5	5.2	4.8	5.6	3.7
3	2.6	3.7	5.2	4.8	5.7	3.5
3A	2.6	3.7	5.2	4.8	5.7	4.2
4	(See Note 5)					



(c) Bays at 60°

User class (Note 1)	A (Note 3)	B	C_1	C_2	C_3	Aisle width
1,1A	2.4	2.75	5.7	5.1	5.9	4.9
2	2.5	2.90	5.7	5.1	6.0	4.6
3	2.6	3.00	5.7	5.1	6.0	4.3
3A	2.6	3.00	5.7	5.1	6.0	5.1
4	(See Note 5)					



(d) Bays at 90°

User class (Note 1)	A (Note 3)	B	C_1	C_2	C_3	Aisle width (Note 4)
1	2.4	2.4	5.4	4.8	5.4	6.2
1A	2.4	2.4	5.4	4.8	5.4	5.8
2	2.5	2.5	5.4	4.8	5.4	5.8
3	2.6	2.6	5.4	4.8	5.4	5.8
3A	2.6	2.6	5.4	4.8	5.4	6.6
3A	2.7	2.7	5.4	4.8	5.4	6.2
4	(See Note 5)					

*Dimension C is selected as follows (see Note 6):

C1—where parking is to a wall or high kerb not allowing any overhang.

C2—where parking is to a low kerb which allows 600 mm overhang in accordance with Clause 2.4.1(a)(i).

C3—where parking is controlled by wheelstops installed at right angles to the direction of parking, or where the ends of parking spaces form a sawtooth pattern, e.g. as shown in the upper half of Figure 2.4(b).

For Notes—see over.

DIMENSIONS IN METRES

FIGURE 2.2 LAYOUTS FOR ANGLE PARKING SPACES

Presentation Summary

To:	Metro Central JDAP	**From:**	Josh Watson
Attention:	Presiding Member	**Job No:**	5503
Copy to:	DAP Secretariat	**Date:**	26 October 2018
Subject:	DAP Meeting Number: MCJDAP/318 – Item 8.1 Lot 75 (72) Walter Road East, Eden Hill – Proposed Vibe Convenience Store		

I act on behalf of Vibe Petroleum in support of the proposed Vibe convenience store at Lot 75 (72) Walter Road East, Eden Hill (**subject site**). Despite the recommendation for refusal, we consider there is strong justification for the proposal to be approved.

This presentation summary is primarily concerned with the planning framework, EPA separation distances, development standards and supporting reporting. Other presenters in support of this application will address separate concerns with the traffic, access and vapour analysis.

The majority of the reasons for refusal identified by the Town are matters that can be simply addressed by way of a condition of approval. These matters are addressed within this Presentation Summary.

CONVENIENCE STORE USE

The subject site is zoned Local Shopping in accordance with the Town's Local Planning Scheme No. 10 (**LPS10**). A Convenience Store (providing for the retail sale of petrol) is a **'P' Permitted Use** within the Local shopping zone. Clause 3.3.2 of LPS10 states the following in relation to Permitted uses:

> *means that the use is permitted by the Scheme providing the use complies with the relevant development standards and the requirements of the Scheme;*

The case of **DCSC Pty Ltd and Presiding Member of the Southern Joint Development Assessment Panel** [2017] WASAT 114 considered the same matters in making a determination for a Puma convenience store. Specifically, paragraph 60 of this case states:

> *The role of the Zoning Table in LPS 21 is to indicate the City's determination concerning a specified defined use classification's suitability to the specified zone and the zone objectives and policies referred to in cl 4.2. The scheme map and legend indicates which sites are determined by the City to be suited to the specified zone policies and objectives. There is no room for the decision-maker to reconsider those issues because that is the purpose of the scheme map, the legend and the Zoning Table. Zoning Table. If the City had been unsure whether all the sites in the Business Zone are suitable for use as a Convenience Store, then the Zoning Table should have reflected that by specifying 'D' or 'A'. If the City had been certain that none of the sites in the Business Zone are suitable for use as a Convenience Store, then the Zoning Table should have reflected that position by specifying 'X'. To that extent the Tribunal concludes that the assessment whether the use classification is suited to the zone, by reference to the objectives and policies specified for the Business Zone in cl 4.2.2 of LPS 21, is determined by the Zoning Table in the affirmative as indicated by the 'P' symbol.*

Therefore, this site has been identified by the scheme map and zoning table as being appropriate to contain a convenience store. In making any determination for this use the application needs to be considered against the relevant development standards of LPS10 and local planning policy framework. The development application is consistent with these development standards as demonstrated with the development application report and within this Presentation Summary.

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URBAN & REGIONAL PLANNING
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EPA SEPARATION DISTANCES

The development of a convenience store (service station) within proximity to sensitive land uses is not an anomaly and is a common occurrence within the Perth metropolitan region. The case of **Puma Energy Australia and City of Cockburn** [2016] WASAT 36 considered the same matters in making a determination for a service station within proximity to residential properties. Specifically, paragraph 160 of this case in part states:

> *He also gave evidence, which was not questioned or contradicted, and which we accept, that he is aware of 'several other retail fuel sites which have been approved (after adoption of the EPA Guidance Statement), along with a number of established sites, with lesser separation distance to sensitive land uses that the generic buffer, and where site specific odour and risk assessments have not be presented'.*

It is very common for service stations to be constructed within the 50m buffer distance prescribed by the EPA Guidance Statement. In our experience, site specific analysis is not often provided at the development application stage as service stations within Australia are highly regulated and are required to meet a number of standards. This allows service stations to be constructed adjacent to sensitive land uses.

In relation to the EPA Guidance Statement, service stations should consider the **gaseous, odour, risk and noise.** These matters are addressed further in the section below.

Gaseous and Odour

In **Puma Energy Australia and City of Cockburn** 2016 WASAT 36, paragraph 161 states:

> *In relation to gaseous and odour impacts, although Puma has not presented a sound site-specific technical analysis / scientific study based on site-specific and industry-specific information, it has presented evidence which satisfies the Tribunal that the proposed development would have an acceptable impact in terms of gaseous and odour impacts.*

Vibe will utilise a Stage 1 and 2 Vapour Recovery System as part of this development. These vapour recovery systems capture vapour from refuelling tankers and bowsers at an assumed capture efficiency of 95% and 90% respectfully. These systems are consistent with the systems proposed with the Puma case outlined above. In addition, ERM has been engaged to undertake a vapour assessment to determine the anticipated impact of vapour associated with the operations of the Vibe convenience store. This assessment confirms the proposed development will deliver a satisfactory and compliant vapour output to allow a reduction in the 50m EPA separation distance.

These systems will appropriately control vapour emissions, as detailed in the assessment prepared by ERM. In addition to the above, Vibe is also committed to providing a masonry wall along the northern boundary to reduce the visual impact of the Vibe to the school.

Risk

As the proposed Vibe convenience store provides for the retail sale of fuel, the proponent must obtain a Dangerous Goods Storage and Handling Licence in order to store and sell fuel on the subject site. This licence process must consider the risk component. In **Puma Energy Australia and City of Cockburn** 2016 WASAT 36, paragraph 172 states in part:

> *an application for a dangerous goods licence under the DGS Act and Regulations must include a risk assessment documenting 'how the proposed facility will operate with minimal risk to people, property and the environment.'*

The proposed development has been designed to ensure it can obtain a licence. The following matters are assessed and considered as part of the Dangerous Goods Storage and Handling Licence:

- Separation distances to boundaries, public places, protected places and impact on adjoining properties.
- Site accessibility for fuel delivery tankers and vehicles.

- Spill containment.
- Emergency preparedness and management.
- Operator training.
- Maintenance provisions.
- Lighting.
- Equipment to be installed.

The risk component of the EPA separation distance requirements is therefore considered at the Dangerous Goods Storage and Handling Licence process.

Noise

Reason for refusal No. 2 relates to insufficient information to confirm how potential noise impacts will be satisfactorily ameliorated. It is considered the noise impacts associated with the proposed development would be minimal and can simply be addressed through an environmental acoustic assessment. This can be prepared as a condition of development approval in accordance with the *Environmental Protection (noise) Regulations 1997*.

DEVELOPMENT STANDARDS

Traffic & Access

Reasons for refusal No 3 to 12 relate to traffic matters. Transcore has appropriately addressed these matters within their Presentation Summary and confirmed that a number of these matters are already addressed, can be addressed through conditions of approval or considered at detailed design stage.

Landscaping

Reason for refusal No. 13 relates to the proposed landscaping along Walter Road East. The landscaping strip is considered appropriate for the following reasons:

- The landscaping strip along Walter Road East is 2.345m wide. This is compliant with the Towns Local Planning Policy No. 7 Local Shopping Zone Design Guidelines.
- The subject site has a 1m wide portion of land reserved Other Regional Roads under the Metropolitan Region Scheme. We have been advised by the Department of Planning Lands & Heritage that there are no short/medium term upgrades proposed to Walter Road East. Therefore, the 1m wide reservation is long term and would remain as landscaping as part of this development.
- In addition to the above, we understand the Town has resolved at the Ordinary Council Meeting on the 27 August 2018 to downgrade Walter Road East to single carriageway and consider allocating funds in the 2019/2020 budget for the preparation of plans. The Town's position is considered long term however, if these modifications were to be undertaken the addition ORR reservation would not be required and this would ensure the larger landscaping strip be retained along Walter Road East.
- The overall development incorporates 136m^2 of landscaping (approximately 12%).

For these reasons it is considered the landscaping along Walter Road East should be supported and approved accordingly.

Street Setback

Reason for refusal No. 14 relates to setback of the retail building from Walter Road East. The setback is considered appropriate for the following reasons:

- The proposed setback is largely consistent with other commercial buildings within proximity to the subject site, including Walter Road Handy Mart (68 Walter Road East) adjacent to the subject site and hair dresser and real estate agent to the south west of the subject site located at 71 Walter Road East. These sites contain nil setbacks to the street and large expansive walls.
- The current elevation incorporates a mixture of materials, textures and signage to provide visual interest to the street. The proposed elevation does not simply contain a blank wall.
- The provisions of Local Planning Policy No.1 Town Centre Strategy and Guidelines do not apply to the proposed development.

For these reasons, the proposed setback and articulation on the elevation fronting Walter Road East is considered appropriate. However, Vibe would be open to further changes to this elevation and working with the Town to further improve the elevation to Walter Road East as a condition of development approval.

SUPPORTING REPORTS AND POTENTIAL CONDITIONS

External Fixtures

Reason for refusal No 15 can simply be addressed as a condition of development approval. External air conditioning units and refrigeration plant will be located on the roof of the proposed retailing building. Detailed designs can appropriately outline this infrastructure and a condition can be worded as such to ensure these fixtures are obscured from view. The vent pipes are proposed to be located at the truncation point of Walter Road East and Marion Street.

Waste Management

The proposed development has been designed by Vibe and has taken into consideration operational components, like waste management to ensure the convenience store can operate accordingly.

To satisfy the Town's concerns, an appropriately worded condition of development approval to require a waste management plan.

SUMMARY

For the reasons outlined above, we consider the proposed development warrants approval as it is a Permitted use within the Local Shopping zone, consistent with the development standards and has been demonstrated to be appropriate within proximity to sensitive land uses.

Thank you for your time and consideration. I would be pleased to answer any questions from the DAP members at the meeting on 31 October 2018.

JOSH WATSON
SENIOR PLANNER