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Toolern UDF: Addendum to the Background Report

Toolern Employment and Mixed Use UDF and Revision of the Toolern Town Centre UDF

For: City of Melton

Contract No. Contract 17/028

Prepared by: Tract in association with GHD

Date: 22 October, 2018

CITY OF MELTON

BUFFER ASSESSMENT

SUMMARY

An industrial land buffer assessment was undertaken by GHD (commissioned by Tract on behalf of Melton City Council) following issue of the background report for the Toolern Employment/Mixed Use Area (TEMU) Urban Design Framework (UDF) and revision of the Toolern Town Centre UDF. Following review of this report and consultation with agencies and land owners and occupiers, it became apparent that further investigation was required to determine the impact of existing industrial land buffers in regards to future sensitive uses within the TEMU and the revision of the Toolern Town Centre UDF.

This assessment identified and reported on all existing industries within the UDF areas and a 1KM radius which attracted a buffer (default buffer) and could be a potential noise/vibration source that may affect the future development of the UDF areas.

GHD also utilised the EPA publication 'Recommended separation distances for industrial residual air emissions (March 2013)' to determine site specific variation to the default buffers and allowed for directional buffers to be developed.

The assessment provided recommendations on which adverse amenity impacts can be mitigated through built form and planning controls for the precinct and provided high level recommendations for development within the UDF areas to assist with land use allocation.

AMENITY RECOMMENDATIONS

The assessment has mapped the default buffers as per Figure 3. Figure 3 shows that the town centre north of the railway lineis partly constrained by the operations of Boral Concrete, Westkon, Technochem and ABMT Textiles.

Figure 3 shows that the town centre south of the railway line is not constrained, and therefore is the preferred location for any future sensitive uses as identified in Figure 17.

In regards to the TEMU area, Figure 3 shows it is constrained through its central section due to operations associated with ABMT Textiles, Melton Recycling Facility – Transfer Station, Melton Recycling Facility – crushing, Reinforced Concrete Pipes, Abey Australia and Technochem.

Figure 3 shows that the east and west of the precinct remain relatively unconstrained. As such, Figure 17 shows the central part of the TEMU should be planned to include the location of non-sensitive uses whilst the east and western areas should be the preferred location for transitional uses. This means that whilst sensitive uses may be considered within the TEMU (where applicable to the applied zone), they should be located outside of the directional buffer areas and within closer proximity to the eastern and western boundaries of the TEMU area.

GHD recommends:

- That planning of land uses should be in line with Figure 17.
- While sensitive uses may be considered within the TEMU, outside the directional buffer areas, this should be considered as a 'transitional' area with more sensitive uses located within closer proximity to the eastern and western boundaries of the TEMU.
- The implementation of design controls through the Schedule to the UGZ where appropriate, which can place specific requirements on proposed use developments in particular areas and implementing buffer areas.
- A staged development approach is recommended to provide the opportunity to consider the changing industrial context for the surrounding precincts.

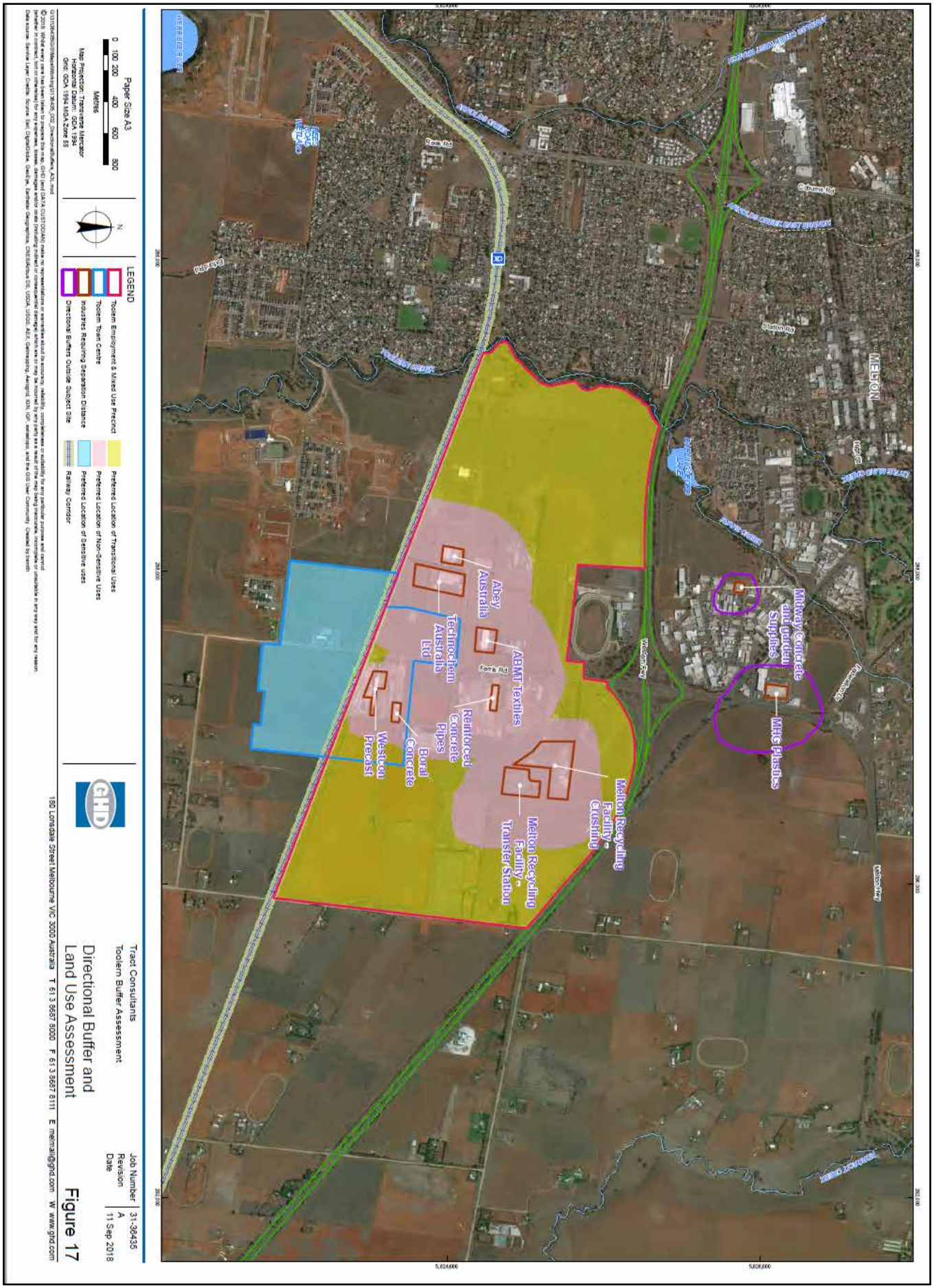
- Locate complimentary commercial and business uses within the specified buffer distances to industrial developments and adjacent to arterial roads. The commercial and business land uses would act as a physical buffer between industrial activities and more sensitive land uses.

NOISE AND VIBRATION RECOMMENDATIONS

The assessment has concluded that the dominant noise source is likely to be from traffic noise from the existing road network. Other major noise sources are likely to originate from the crushing activities at the Melton Waste Transfer Station, the harness racing at Tabcorp Park and Melton Railway Station and the associated train line.

GHD recommends:

- To undertake a noise and vibration survey within and surrounding the Toolern and TEMU UDF areas to further inform the proposed urban form for the site
- Further, acoustic treatments could be considered, including transmission barriers and noise walls as well as appropriate materials and design controls such as insulation, double/ tripled glazed windows, orientating habitable rooms away from noise sources etc."



EXTRACT FROM GHD REPORT, "TOOLERN BUFFER ASSESSMENT, OCTOBER 2018", p63

Tract Consultants Pty Ltd

Toolern Buffer Assessment

October 2018

Executive summary

GHD was engaged by Tract Consultants Pty Ltd (Tract) to conduct a buffer assessment for the Toolern Town Centre and Toolern Employment & Mixed Use areas.

Key focus areas of the buffer assessment included the following:

- Identify industries within the TEMU and Town Centre UDF and within a 1 km catchment area which attract a buffer and/or be a potential noise/vibration source which may affect the future development of the land.
- Utilise Section 9 of the EPA publication *Recommended separation distances for industrial residual air emissions* (March 2013) to determine site specific variation to the default buffers. This allowed for directional buffers to be developed using site-representative meteorology.
- Provide recommendations on which adverse amenity impacts can be mitigated through built form and planning controls for the precinct, allowing for optimisation of the placing of sensitive land uses within the precinct.
- Following review of the potential mitigation measures, provide high level recommendations for development in the precinct to assist in land use allocation.

Key findings

Key findings of this report are summarised below:

- Various existing premises with the potential for odour, dust, noise and vibration were identified within and surrounding the Toolern Town Centre and TEMU areas.
- The western and south-eastern portion of the TEMU area is largely unconstrained by the default buffers for the industries identified in Table 3.
- The southern portion (south of the Melbourne-Ballarat train corridor) of the Toolern Town Centre is unconstrained by the default buffers for the industries identified in Table 3. Local meteorology was used to develop directional buffers to assess protection from disamenity in the event of a process upset. The adjustments to take account of local meteorology shows a large reduction of the default buffer towards the west, while there is an increase beyond the default buffer to the east and southeast.
- The directional buffers result in a reduction of the constrained area in the western portion of the TEMU area, by approximately 9.2 ha.
- The unconstrained southern portion of the Toolern Town Centre area also remains relatively unchanged when the directional buffers are applied.
- The dominant noise source is likely to be from traffic noise from the existing road network. Other major noise sources are likely to originate from the crushing activities at the Melton Waste Transfer Station, the harness racing at Tabcorp Park and Melton Railway Station and the associated train line.
- The northern most section of the TEMU area straddles the Western Freeway however as the Western Freeway has an annual average daily traffic (AADT) less than 40,000 vehicles normal construction methods will likely be sufficient in minimising noise exposure, in line with PPN83.

- Any new developments in the Toolern Town Centre and the TEMU area within a *noise influence area* would be required to be designed to satisfy with VPP Clause 55.07-6, outlined in Table 9.
- Crowd and music noise from HRV Melton – Tabcorp Park may also have the potential for noise emissions.
- Any development that is proposed to be situated nearby HRV Melton may require local acoustic treatment to ensure compliance with SEPP N-2, in particular the music noise levels outlined in Table 7.

Land use recommendations

- It is recommended that planning of land uses should be in line with Figure 17.
- While sensitive uses may be considered within the TEMU, outside the directional buffer areas, this should be considered as a 'transitional' area with more sensitive uses located within closer proximity to the eastern and western boundaries of the TEMU, adjacent to existing residential uses.
- The implementation of design controls through the Schedule to the UGZ where appropriate, which can place specific requirements on proposed use developments in particular areas and implementing buffer areas.
- A staged development approach is recommended to provide the opportunity to consider the changing industrial context for the surrounding precincts.
- Locate complimentary commercial and business uses within the specified buffer distances to industrial developments and adjacent to arterial roads. The commercial and business land uses would act as a physical buffer between industrial activities and more sensitive land uses.
- Undertake a noise and vibration survey within and surrounding the Toolern and TEMU UDF areas to further inform the proposed urban form for the site
- Further, acoustic treatments could be considered, including transmission barriers and noise walls as well as appropriate materials and design controls such as insulation, double/ tripled glazed windows, orientating habitable rooms away from noise sources etc.

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1. Introduction

1.1 Context

GHD was engaged by Tract Consultants Pty Ltd (Tract) to conduct a buffer assessment for the Toolern Town Centre and Toolern Employment & Mixed Use area (TEMU) (herein after referred to as 'the subject sites').

Tract was engaged by Melton City Council (Council) in 2017 to prepare a revision to the 2012 Urban Design Framework (UDF) for the Toolern Town Centre and to prepare the TEMU UDF. Both areas (employment & mixed use areas) require the preparation of a UDF prior to any development and subdivision permits being granted.

GHD understands that as part of a background report prepared for both the Toolern Town Centre 2017 UDF revision and the TEMU UDF it was determined that the impact of industry land buffers on the future delivery of the two UDFs was required.

Council therefore required a buffer assessment that presents a suitable approach to development across the whole precinct.

The purpose of a buffer assessment is to provide sufficient separation between sensitive land uses (such as residences) and industries that have the potential to generate emissions of dust and/or odour so that on the occasion of an upset or malfunction, the off-site dis-amenity is minimised.

A number of existing industries exist within the subject sites which may have the potential to constrain proposed development by virtue of amenity buffers (odour and dust) that they may attract.

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

Note that the terms 'buffer distance' and 'separation distance' have been used interchangeably in this report – the former is the commonly understood term while the latter was introduced in 2013 and is currently the latest EPA guideline.

This report also includes a desktop noise and vibration impact review of potential noise sources that may affect development within the precinct and potential mitigation techniques.

1.2 Purpose of this report

The purpose of this assessment is to identify and report on all existing buffers and identify any potential constraints (dust, odour and/or noise) to development of the TEMU and Town Centre UDF's. Where dust and/or odour constraints are identified GHD will utilise the provisions within the EPA separation distance guideline, Publication 1518 dated March 2013 to undertake a site specific variation to the default buffer. Where potential noise sources are identified, general noise and vibration mitigation strategies have been suggested. GHD will then provide key recommendations for development in the precinct to assist in land use allocation.

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

1.3 Limitations

This report has been prepared by GHD for Tract Consultants Pty Ltd and may only be used and relied on by Tract Consultants Pty Ltd for the purpose agreed between GHD and the Tract Consultants Pty Ltd as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Tract Consultants Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

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

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

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

GHD has prepared this report on the basis of information provided by Tract Consultants Pty Ltd and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based in part on an onsite inspection undertaken by GHD in August 2018. Note that it is the nature of environmental assessment that all variation in environmental conditions as well as the existing facility's operating conditions cannot be assessed and all uncertainty concerning the conditions of the ambient air quality environment cannot be eliminated. Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report. Site conditions (including the presence of hazardous substances and/or site contamination, dust, odour, and/or noise sources) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

1.4 Scope of works

The scope of works for the buffer assessment was as follows:

General

1. Inception meeting with Tract and Council to clarify and confirm objectives, reporting, program and discuss any outstanding issues or queries.
2. Review the previous work undertaken for Council regarding the buffer assessment for Technochem and subsequent Planning Panel proceedings for Amendment C84 (part 2) from 2011.
3. Site visit to inspect the sites and identify potential industries within the TEMU and Town Centre UDF's and within a 1 km catchment area (surrounding area) which may attract a buffer and/or be a potential noise source which may affect the future development of the land.

Buffer distances

4. Assess any constraints on the TEMU and Town Centre UDF's from any existing industry, and plot the relevant separation distances.
5. Based on existing industry sizes and known or estimated throughputs, review any options for de-rating the individual industries default buffers.
6. Characterise the meteorology at the site by means of wind roses. This enables directions of good and poor dispersion to be developed. GHD used the Environment Protection Authority (EPA) Victoria and Bureau of Meteorology (BOM) datasets from Melton and Melbourne Airport, respectively.
7. Use the site-representative meteorological data and dispersion modelling to develop directional buffers for the identified industries and plot on an aerial image.
8. Provide conclusions as to any buffer constraints that may apply and general amenity.

Noise and vibration

9. Undertake a review of the relevant noise and vibration guidelines and standards applicable to the Precinct and 1 km catchment.
10. Undertake a review of potential impacts associated with the identified sources.
11. Provide general recommendations to optimise the use and development of the site.
12. Identify the requirements for further assessment work at the site.
13. Reporting the results of the desktop noise and vibration impact assessment review.

1.5 Assumptions

The following assumptions were made during the preparation of this report:

- The most site representative meteorology is from the EPA Automatic Weather Station (AWS) located at Melton.
- The most site representative available cloud data is from the BOM AWS located at Melbourne Airport.
- The surrounding industries site boundaries are based off publically available information provided by the Victorian State Government Department of Environment, Land, Water and Planning (DELWP).
- Information surrounding the operations and throughput of surrounding industries are from publicly available information, site visits, planning permit data (where available) and not through direct contact with local industry or industry bodies, with the exclusion of the following industries which GHD did make contact with:
  - Bertocchi
  - ABMT Textiles
  - MHG Plastic Industries
  - Fox & Lillie Rural
  - Saizeriya
- Technochem has not be assessed as it has previously been assessed and a buffer is currently applied through the Precinct Structure Plan (PSP) (incorporated document in the Melton Planning Scheme) and the UGZ3.
- The former Melton landfill and its subsequent buffer is subject to an audit and is not included in the assessment.

2. Project description

2.1 Location and land use

The Toolern Town Centre and the TEMU areas are located in Melton, Victoria and are subject to the provisions of the Melton City Council (Council) Planning Scheme. The TEMU UDF area is located directly south of the Western Freeway and extends to Mount Cottrell Road on the eastern site and to the Toolern Creek on the western site. The Toolern Town Centre is located south of the TEMU, with the two areas meeting at Abey Road and slightly north of Boral Concrete. The Toolern Town Centre extends slightly south of Bridge Road. An aerial photograph of the subject sites is provided in Figure 1.

The subject sites are located within Urban Growth Zone 3 (UGZ3). The Harness Racing Victoria (HRV) Melton located to the immediate north of the TEMU area is located within the Special Use Zone 7 (SUZ7), with an industrial complex (classified as Industrial 1 Zone (IN1Z)) located on the other side of the Western Freeway. Land to the west of the TEMU area is classed as a mix of uses including General Residential Zone 1 (GRZ1), Residential Growth Zone (RGZ1) and Public Park and Recreation Zone (PPRZ). Land to the south and east of the areas is classified as Urban Growth Zone 3 and Urban Growth Zone 8.

2.2 Surrounding land use

The existing land use in the region is predominantly residential to the west of the site, with an industrial and business component to the north. The region is largely undeveloped to the east of the subject sites.

2.3 Sensitive land use

The definition of a sensitive receptor or sensitive land use is defined by the EPA[1] as:

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

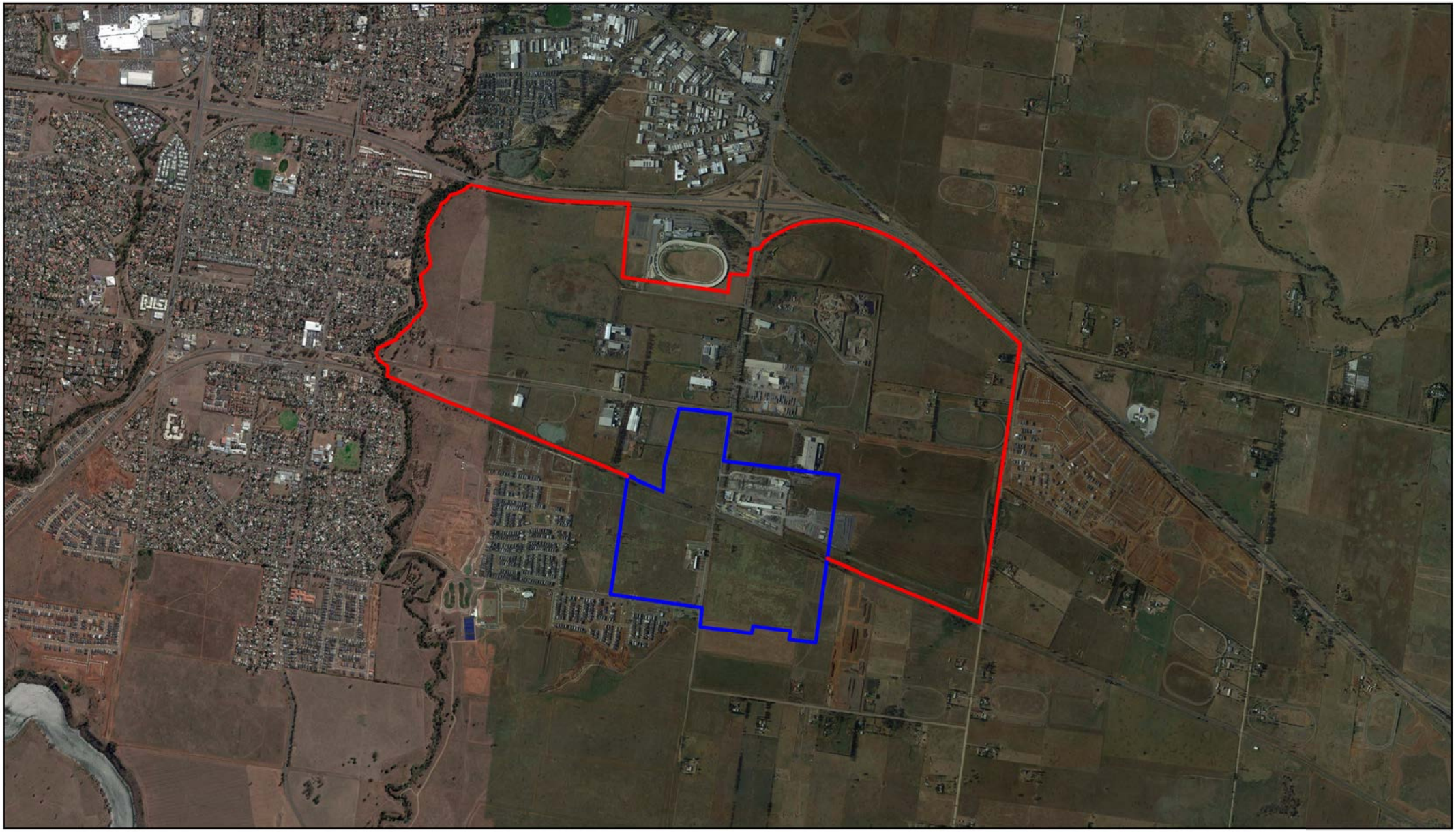
The State environmental protection policy for noise (SEPP-N1) defines a noise sensitive area as:

(a) *That part of the land within the apparent boundaries of any piece of land which is within a distance of 10 m outside the external walls of any of the following building – dwelling (except caretakers house); residential building*

(b) *(b) that part of the land within the apparent boundaries of any piece of land on which is situated any of the following buildings which is within a distance of 10 m outside the external walls of any dormitory, ward ore bedroom of such buildings- caretakers house, hospital, hotel, motel, reformative institution tourist establishment and work release hostel.*

The nearest current sensitive land uses in relation to the sites are residences located to the west of the TEMU area, within the General Residential 1 Zone along Tamar Drive and Manson Drive. It is also noted that there is accommodation uses within Tabcorb Park, which is located to the immediate north of the TEMU area.

[1] EPAV 2013 "Recommended separation distances for industrial residual air emissions" Publication. 1518, March 2013



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Metres (at A4)

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

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LEGEND

Toolern Employment and Mixed Use UDF Area

Toolern Town Centre UDF Area

CLIENTS | PEOPLE | PERFORMANCE

Tract Consultants

Toolern Buffer Assessment

Job Number 3136435
Revision A
Date 17/08/2018

Site location

Figure 1

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Google Earth Imagery 2018. Created by: SM

3. Existing planning and land use context

3.1 Strategic Planning Policy

3.1.1 Toolern Precinct Structure Plan (PSP)

The Toolern Precinct Structure Plan (Precinct Structure Plan) was prepared by the Melton Shire Council in conjunction with the Growth Areas Authority (GAA) (now the Victorian Planning Authority – VPA), government agencies, service authorities and major stakeholders.

The Precinct Structure Plan is a long-term plan for urban development. It describes how the land is expected to be developed, the services planned to support development and how they will be delivered.

The Precinct Structure Plan:

- Enables the transition of non-urban land to urban land.
- Sets the vision for how land should be developed and the desired outcomes to be achieved.
- Outlines projects required to ensure that future residents, visitors and workers within the area can be provided with timely access to services and transport necessary to support a quality, affordable lifestyle.
- Details the form and conditions that must be met by future land use and development.
- Determines the use and development controls that apply in the schedule to the Urban Growth Zone and what permits may be granted under the Schedule to the zone.
- Provides developers, investors and local communities with certainty about future development.

The Toolern PSP required an Urban Design Framework to be prepared for each precinct prior to development commencing. This includes the Activity Centres and the Toolern Employment and Mixed Use Area.

3.1.2 Toolern Town Centre and TEMU UDF

The Toolern Town centre UDF, adopted in 2012, was prepared following a detailed process of design, analysis, testing and consultation with State and Local government, landowners, stakeholders and potential end users.

Melton Council is now developing the Toolern Employment and Mixed Use Urban Design Framework while also revising the previous Toolern Town Centre Urban Design Framework.

3.2 Planning Policy Framework

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

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

This clause also seeks to prevent environmental problems created by siting incompatible land uses close together. This identifies the need to focus investment and growth in places of state significance including the National Employment and Innovation Clusters (NEIC). Clause 11 also seeks to facilitate the orderly development of urban areas and the preparation of a hierarchy of structure plans or precinct structure plans.

Clause 13 considers environmental risks including reference to land use separation and protection of sensitive uses from adverse impacts from other land uses.

Clause 13.04–1S seeks to ensure that potentially contaminated land is suitable for its intended future use and development, and that contaminated land is used safely.

Noise Guidelines

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

- *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (in metropolitan Melbourne).*
- *A Guide to the Reduction of Traffic Noise (VicRoads 2003).*

Air Emissions Guidelines

Clause 13.06 relates to air quality and aims to assist in the protection and improvement of air quality. This clause seeks to ensure, wherever possible, that there is suitable separation between land uses that reduce amenity and sensitive land uses.

The policy considers the following policy guidelines (as considered relevant to this study).

- *State Environment Protection Policy (Air Quality Management).*
- *Recommended Buffer Distances for Industrial Residual Air Emissions (Environmental Protection Authority, 1990) in assessing the separation between land uses that reduce amenity and sensitive land uses.*

  Note: A new EPA document entitled 'Recommended separation distances for industrial residual air emissions – Publication Number 1518 March 2013 has since replaced EPA Publication AQ 2/86, 'Recommended Buffer Distances for Industrial Residual Air Emissions 1990'.

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

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

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

Clause 17 relating to economic development aims to provide for a strong and innovative economy. This clause requires planning to contribute to the economic well-being of communities and the State as a whole by supporting and fostering economic growth and development. This is to be achieved by providing land, facilitating decision-making and resolving land use conflicts, so that each district may build on its strengths and economic potential.

Clause 17.03-1S relating to industry seeks to ensure availability of land for industry. Strategies include:

- Provide an adequate supply of industrial land in appropriate locations including sufficient stocks of large sites for strategic investment.
- Identify land for industrial development in urban growth areas where:
  - Good access for employees, freight and road transport is available.
  - Appropriate buffer areas can be provided between the proposed industrial land and nearby sensitive land uses.
- Protect and carefully plan existing industrial areas to, where possible, facilitate further industrial development.
- Avoid approving non-industrial land uses that will prejudice the availability of land in identified industrial areas for future industrial use.

The policy considers the following guidelines:

- *Recommended Buffer Distances for Industrial Residual Air Emissions (Environmental Protection Authority, 1990) in assessing the separation between land uses that reduce amenity and sensitive land uses.*

  Note: A new EPA document entitled 'Recommended separation distances for industrial residual air emissions – Publication Number 1518 March 2013 has since replaced EPA Publication AQ 2/86, 'Recommended Buffer Distances for Industrial Residual Air Emissions 1990'.

Clause 17.02 – 3 refers to the protection of state significant industrial land. There are no state significant industrial precincts located within the City of Melton however, it is noted that the list of state significant industrial precincts is not exhaustive.

This clause seeks to:

- Ensure sufficient availability of strategically located land for major industrial development, particularly for industries and storage facilities that require significant threshold distances from sensitive or incompatible uses.
- Protect heavy industrial areas from inappropriate development and maintain adequate buffer distances from sensitive or incompatible uses.

Clause 19.03-6S seeks to reduce waste and maximise resource recovery so as to reduce reliance on landfills and minimise environmental, community amenity and public health impacts. This clause also seeks to:

- Ensure future waste and resource recovery infrastructure needs are identified and planned for, to safely and sustainably manage all waste and maximise opportunities for resource recovery.
- Protect waste and resource recovery infrastructure against encroachment from incompatible land uses by ensuring buffer areas are defined, protected and maintained.
- Ensure waste and resource recovery facilities are sited, designed, built and operated so as to minimise impacts on surrounding communities and the environment.

Relevant Policy Guidelines include:

- *Statewide Waste and Resource Recovery Infrastructure Plan (Sustainability Victoria, 2015)*
- *Metropolitan Waste and Resource Recovery Implementation Plan (Metropolitan Waste and Resource Recovery Group, 2016)*
- *Waste Management Policy (Siting, Design and Management of Landfills) (Environment Protection Authority, 2004)*
- *Environment Protection (Industrial Waste Resource) Regulations 2009*
- *Best Practice Environmental Management Guideline (Siting, Design, Operation and Rehabilitation of Landfills) (Environment Protection Authority, 2001)*
- *Victorian Organics Resource Recovery Strategy (Sustainability Victoria, 2015)*
- *Designing, Constructing and Operating Composting Facilities (Environment Protection Authority, 2015)*

3.3 Local planning policy framework

The local Planning Policy Framework (LPPF) incorporates local planning policy content which varies between municipalities and is provided in two parts via the Municipal Strategic Statement (MSS) and the Local Planning Policies (LPPs).

The MSS provides a focus for key strategic planning, land use and development objectives guided by state policies at the local level.

The following review of the Melton Planning Scheme is primarily limited to the investigation area.

3.3.1 Land use

Clause 21.01-2 Urban Areas - Growth Corridor – Urban Growth Zone Land

The growth area between Melton Township and the Eastern Corridor, and in the City of Wyndham, is subject to the West Growth Corridor Plan. The growth area to the west of Diggers Rest Township is subject to the Sunbury – Diggers Rest Growth Corridor Plan.

The West Growth Corridor Plan identifies:

- That a majority of the land between Melton Township and the Eastern Corridor will be developed for residential purposes, including the land surrounding the existing township of Rockbank.
- That three employment nodes are to be developed. One in Toolern, one on the Melton Highway, and the other being the expansion of the Western Industrial Node to include the land around the existing Boral Quarry site in Ravenhall.
- Land to be retained for the protection of biodiversity and drainage.
- The location of new transport infrastructure including new railway stations, arterial roads and the Outer Metropolitan Ring Road to service the needs of an increased population.

The development of this area will need to be in accordance with Precinct Structure Plans that are progressively developed for these precincts.

3.3.2 Urban Development

Clause 22.04 seeks to ensure that infrastructure is designed and provided in an efficient and timely manner and the development of urban areas reflect sound planning principles and practices.

Key policy direction for the subject sites are:

- To ensure that all development proceeds in an orderly and timely manner which enables the efficient provision of community facilities and services.
- To ensure that developers contribute equitably to the cost and provision of physical and community infrastructure.
- To ensure that the form of future residential development does not prejudice the outward expansion and development of the urban area.
- To encourage and facilitate orderly, incremental, outward growth of the urban fringe in the environs of the Melton township.
- To ensure the construction of street patterns which allow easy access, are understandable to residents and visitors and are designed so as to minimise trip length and frequency.
- To provide market variety in the form of a range of lot sizes and locations.

Clause 22.05 Employment Policy seeks to create an environment conducive to economic growth and wealth generation.

Key policy direction for the subject sites are:

- To attract a range of new industry and employment-generating uses to the municipality.
- To direct the majority of new employment growth to either the Melton Township, Toolern Precinct Structure Plan area or the Melton East Growth Area.
- To co-ordinate the development and location of commercial centres, industrial areas and other employment opportunities in the municipality so that the length and frequency of vehicle trips are minimised.
- To encourage the provision of a range of employment opportunities for a variety of skill levels and qualifications.
- To recognise and build upon the opportunities presented by the Victoria University of Technology.

3.4 Surrounding industries

A site inspection of the Toolern Town Centre, the TEMU area, and the surrounding area was conducted by GHD on 2 August 2018. This was supplemented by research using aerial photography from Google Earth and Google Street View. Various existing premises with the potential for odour, dust, noise and vibration were identified.

GHD also conducted a search of the National Pollutant Inventory (NPI) database and found results for one industry within the TEMU area (ABMT Textiles) and one industry within the surrounding area (MHG Plastic Industries). GHD also conducted a search for Major Hazard Facilities and EPA Licenced facilities and found that none are located within or surrounding the sites to within a one kilometre radius.

Identified industries within the subject sites and a one kilometre radius of the sites are listed in Table 1. A one kilometre radius was chosen as (a) it is the upper limit for the majority of industry buffers in the EPA guideline and (b) the amount of existing sensitive uses nearby would limit any heavy industry that requires a larger buffer (which are normally reserved for IN2 zoned areas) from operating in the vicinity. Note, Technochem has not been included as it has previously been assessed and a buffer is currently applied through the Precinct Structure Plan (PSP) (incorporated document in the Melton Planning Scheme) and the UGZ3.

For each identified industry, Table 1 shows the company, type of operation, street address, potential sources, primary concern (dust, odour, noise and/or vibration), and location of the industry with respect to the Toolern Town Centre, the TEMU area, and the surrounding area. Refer to Figure 2 for locations of the industries that have been identified. Auto facilities, service stations, general factories and warehouses have not been included, as they do not attract an odour/dust buffer. It is noted that should noise impacts from these activities cause complaints at sensitive receivers beyond the boundary of the industrial/commercial property, a compliance assessment under SEPP-N1 may be required.

It is noted that no current restrictions have been placed on any of the industries identified in Table 1.

Table 1 Identified surrounding industries

Company	Address	Operations	Operating Hours	Potential Sources	Primary Concern	Location
Abey Australia	57/81 Abey Road, Melton South	Supply of kitchen, bathroom and laundry items	8:00 am to 2:00 pm (Monday to Friday) Closed (Saturday and Sunday)	Electrostatic coating, machinery	Odour	TEMU UDF area
ABMT Textiles	100-128 Ferris Road, Melton South	Manufacture and production (including knitting and dying) of fabrics	Unknown	Fabric dye/finishing and wastewater treatment	Odour	TEMU UDF area
Belkblast Protective Coatings	31-39 Bundy Drive, Melton South	Sandblasting and abrasive coating	Unknown	Abrasive coating	Dust	TEMU UDF area
Bertocchi	82/98 Ferris Road, Melton South	Wholesale and export of meats	5:00 am to 10:00 pm (Monday to Friday) 6:00 am to 2:00 pm (Saturday)	Meat	Odour	TEMU UDF area
Boral Concrete	133 Ferris Road, Melton	Concrete batching	6:00 am to 6:00 pm (Monday to Friday) 6:00 am to 12:00 pm (Saturday)	Concrete, trucks	Dust	Toolern Town Centre UDF area
Central Bobcat Hire & Tag-Along-Trailers	21-29 Bundy Drive, Melton South	Road maintenance equipment	Unknown	Trucks	-	TEMU UDF area
Fox & Lillie (Rural)	33 Norton Drive, Melton	Wool brokerage and testing	8:00 am to 5:00 pm (Monday to Friday) Closed (Saturday and Sunday)	Wool	Odour	1 km radius
Harness Racing Victoria (HRV) Melton – Tabcorp Park	2 Ferris Road, Melton South	Harness Racing	Unknown	People, speakers	Noise	1 km radius

Company	Address	Operations	Operating Hours	Potential Sources	Primary Concern	Location
MaxiStop	163 Abey Rd, Melton South	Disk brake pad manufacturer	Unknown	Machinery	-	TEMU UDF area
Melton Waste Transfer Station	33-41 Ferris Road, Melton South	Refuse transfer station and re-sale centre. Crushing concrete, rock and brick.	6:00 am to 6:00 pm (Monday to Friday) 6:00 am to 3:00 pm (Saturday)	Trucks, refuse materials, crushers	Dust, Odour, Noise	TEMU UDF area
MHG Plastic Industries	66/72-84 High Street, Melton	Manufacture of protective and decorative automotive parts including plastic fabrication	Unknown	Plastic	Odour	1 km radius
Midway Concrete & Garden Supplies	19 Collins Road, Melton	Concrete batching	Unknown	Concrete, trucks	Dust, Noise	1 km radius
Molex Networks	60-78 Abey Road, Melton South	Telecommunication/ networking products	Unknown	None	-	TEMU UDF area
Reinforced Concrete Pipes	69/99 Ferris Road, Melton South	Production of concrete pipes	Unknown	Concrete, trucks	Dust,	TEMU UDF area
Saizeriya	2-82 Shogaki Drive, Melton South	Supply of frozen and chilled food products	Unknown	Food preparation	Odour	TEMU UDF area
Trusteel	43-67 Ferris Road, Melton South	Garage door manufacture	7:30 am to 4:30 pm (Monday to Friday) 8:00 am to 1:00 pm (Saturday)	Metal fabrication	Dust, Noise	TEMU UDF area
Westkon	133-199 Ferris Road, Melton South	Concrete batching	6:00 am to 6:00 pm (Monday to Friday) 6:00 am to 12:00 pm (Saturday)	Concrete, trucks	Dust	Toolern Town Centre UDF area

3.4.1 Surrounding industry operations

A brief company overview and description of the manufacturing process for the above identified industries is provided below.

The following descriptions are based on GHD's understanding of the process at each industry, an examination of the facilities' website where available, and a roadside site inspection.

Abey Australia

Abey Australia manufactures kitchen, bathroom and laundry products including sinks, tapware and toilets. The primary activities undertaken at the Melton site includes pressing, electrostatic coating, packing, storage and warehousing.

ABMT Textiles

ABMT Textiles is involved in the manufacture, dyeing and finishing of cotton, linen and woollen yarns. ABMT Textiles has locations in both Australia and China. The Melton site is involved in research and development and manufacture of Merino wool and organic cotton. The manufacture of these textiles involves the use of knitting machines and low liquor ratio dying machines. ABMT Textiles Melton also has an on-site waste water treatment plant.

Belkblast Protective Coatings

Belkblast Protective Coatings provide abrasive coating and cleaning services. Belkblast has been operating in Melton since 2008 and the 1.8 ha facility consisting of two overhead cranes and a blasting booth. Belkblast offers a range of blast cleaning services as well as commercial painting, metal spraying and epoxy coatings services.

Bertocchi

Bertocchi is a wholesale meat supplier to major supermarkets and butchers within Australia and overseas. The Bertocchi Melton site is currently used for the processing of meat products including fresh barbeque sausages, fresh beef mince and fresh lamb cuts. It is noted that the main activities undertaken at the site include slicing, packing and distribution. Preserving and/or drying of smallgoods does not occur onsite. The existing facilities in Bertocchi Melton include offices, freezer rooms, warehouses and storage rooms. GHD notes that on 27 July 2018 Bertocchi received approval for a planning permit[2] which allows for alterations and additions to the existing warehouse for manufactured meat and dairy products.

Boral Concrete

Boral Concrete is a concrete batching plant located in the northeast corner of the Westkon site. The Melton site comprises of the following: above ground storage bays, storage silos, a surge bin, aggregate weight hoppers, a conveyor system, a truck washout box, a slopping settlement pit, a recycling and stirrer pit, a discharge and sample pit, 2 x 45,000 litre water tanks, amongst other equipment and areas.

Central Bobcat Hire & Tag-Along-Trailers

Central Bobcat Hire is a division of Central Road Construction which also has divisions in profiling and asphalt. Central Bobcat Hire predominately works with earthmoving, working alongside the road construction industry. The Melton facility is essentially a depot for vehicles such as Road Profilers, Trucks, Excavators, Bobcats, Asphalt Pavers, Rollers and Floats.

[2] PA2018/6008/1

Fox & Lillie (Rural)

Fox & Lillie (Rural) is a component of Fox & Lille, which is an Australian agribusiness, operating in the wool, aquaculture and seafood trading industries. The Melton site specialises in wool brokerage, with the main activities occurring on site is the buying, testing and selling of wool.

HRV Melton – Tabcorp Park

Tabcorp Park is a harness racing facility, hotel and conference/event space. The venue hosts night racing on Saturday nights and various events throughout the year. The racetrack is approximately 1,040 m in circumference and has been in operation since 2009.

MaxiStop

MaxiStop manufacture brake pads for automotive and industrial uses. MaxiStop has existed in Melton since 2001 and is the where the company manufactures disk brake pads. The company has three main types of material used in the brake pads which vary based on the brake pad's end use.

Melton Waste Transfer Station

The Melton Waste Transfer Station is operated by the Melton City Council and consists of the following services: the permanent drop-off site, the resale shop and the transfer station. Crushing of materials also occurs at the Melton site operated by City Circle. They accept concrete, rock and brick.

The transfer station accepts and recycles household materials and non-putrescible residual waste. The permanent drop-off site accepts and disposes of the following materials: green waste, timber, mattresses, tyres, concrete E-waste, white goods, paint, fluorescent lighting, car and appliance batteries and barbeque gas bottles. The site manages approximately 45,000 tonnes of materials per annum. The re-sale shop accepts most household items and building materials including timber, bricks, tiles and plumbing products.

MHG Plastic Industries

MHG Plastic Industries manufactures both internal and external protective and automotive parts. The company has three manufacturing sites including Melton and Geelong in Australia and in Thailand. Activities undertaken at the Melton site involve plastic resin and include injection moulding, painting and the extrusion of plastic.

Midway Concrete & Garden Supplies

Midway Concrete & Garden Supplies is a family-owned concrete, garden supplies and skip hire business. The company offers a range of concrete types including exposed aggregate and pre-mix concrete. From GHD's site visit, it was apparent that the production of concrete occurs at the Melton site.

Molex Networks

Molex Networks develop and manufacture connectors which allow for networking and storage interconnect solutions. The Melton site currently consists of an office, factory and warehouse which are used to manufacture the electrical communication products.

Reinforced Concrete Pipes

Reinforced Concrete Pipes specialise in thin wall steel reinforced concrete pipes and eCP geopolymer concrete pipes. The Melton site is currently used for concrete batching and the formation of pipes. The site has the following air discharge points: aggregate receival hopper, aggregate storage hoppers, cement storage silos, cement weigh hoppers and the concrete mixer.

Saizeriya

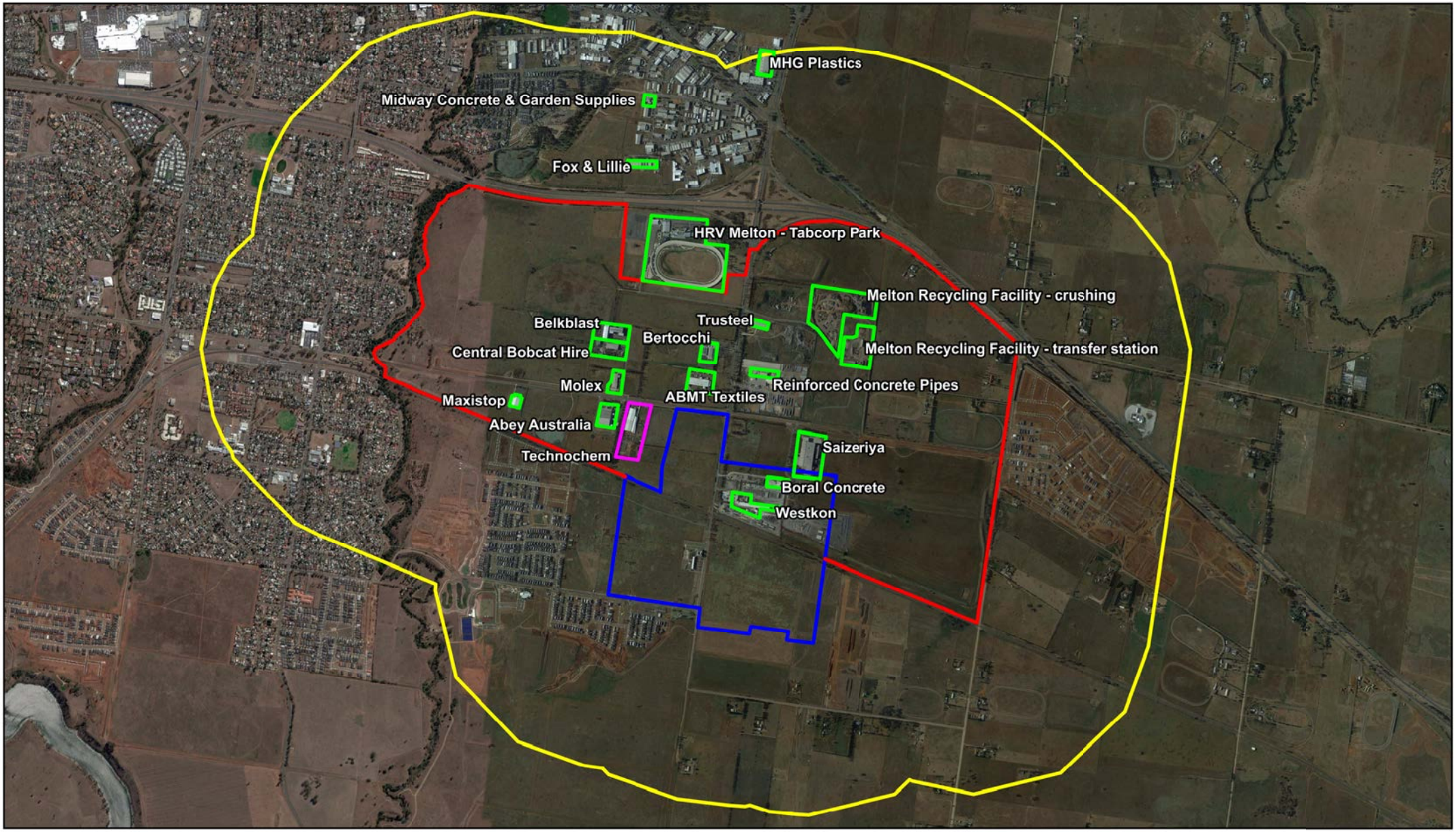
Saizeriya supply frozen and chilled food products to restaurants and food service venues in Japan. Saizeriya Melton has been manufacturing food products since 2003 and currently produces a range of Italian style products including sauces, soups and meat products.

Trusteel

Trusteel are a metal fabrication company that specialise in the manufacture of steel sheds. The activities undertaken at Trusteel Melton include manufacturing steel door sections which involves pressing the panels. All of the steel fabrication occurs at the Trusteel manufacturing facility in Mulgrave.

Westkon

Westkon is a precast concrete manufacturing facility who specialises in the production and construction of precast products for major public projects. Currently, the major activities undertaken at the Melton site are concrete batching and the precasting of concrete. A wastewater recycling facility also exists at the Melton site.



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Metres (at A4)

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

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LEGEND

- Toolern Employment and Mixed Use UDF Area
- Toolern Town Centre UDF Area
- Identified industries
- 1 km from site
- Technochem

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Tract Consultants

Toolern Buffer Assessment

Job Number 3136435
Revision B
Date 10/09/2018

Surrounding industries

Figure 2

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3.5 Transport related sources

Additional sources of noise and vibration may be produced from the following transport associated (mobile) activities surrounding and within the Toolern Town Centre and the TEMU area as shown in Table 2.

Table 2 Transport related sources of noise and vibration impacts

Source	Potential sources	Primary Concern
Melbourne-Ballarat rail corridor	Trains and train horns	Noise and Vibration
Western Freeway	Cars and trucks (traffic on elevated roadways and bridges)	Noise
Melton Highway	Cars and trucks (traffic on elevated roadways and bridges)	Noise
Melton Railway Station	Trains, bells from boom gates and train horns	Noise and Vibration
High Street	Cars and trucks (traffic)	Noise
Local traffic	Cars and trucks (traffic)	Noise

3.6 Complaint history

The past performance of surrounding industry is a good indicator as to whether the default buffer is appropriate and whether there is a potential for residual emissions to impact on local amenity.

EPA has provided Tract a list of odour and dust complaints made within the UDF area. The EPA has received a total of five odour and air quality complaints, all related to the burning of waste on site: odour and/or smoke. Therefore, GHD has not attributed any of the complaints to the industries identified in Table 1. Moreover, it is noted that a large portion of the land within the UDF area is vacant or industrial, and therefore the number of complaints is low.

4. Amenity assessment

4.1 Relevant buffer guidelines

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

4.1.1 Threshold distances

The State Planning Policy framework seeks to ensure that planning resolves and does not create land use conflicts. This is typically done by providing separation distances between potentially conflicting land use zones that may result in incompatable uses.

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

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

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

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

There is no planning permit trigger for use and developments identified under clause 53.10, however Clause 66.02 – 7 (use and development referrals) requires that an application is referred to the EPA as the determining referral authority if the proposal is to use land for an industry or warehouse for a purpose listed in the table to Clause 53.10 shown with a Note 1 or if the threshold distance is not met.

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

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

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

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

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

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

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

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

Summary

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

4.1.2 EPA buffer distances

In the case of an existing industrial use, the EPA recommends buffer distances should be considered when preparing a planning scheme, planning scheme amendment or planning permit application. A buffer distance is a planning instrument used to provide separation of sensitive land uses (i.e. residential, schools, hospitals) from existing premises with the potential for off-site emissions (odour or dust) that can cause dis-amenity in the event of an upset or malfunction. Under routine operations, any adverse impact is to be confined on-site so that an external buffer should not be required.

The purpose of the EPA separation distance guidelines is to provide recommended minimum separation distances between odour or dust emitting industrial land uses and sensitive land uses. Accordingly, the relevant sections of the guideline for this assessment are to:

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

In the case of the Toolern Town Centre and the TEMU area, the EPA recommended separation distance guideline[3] will apply to existing industries in the vicinity of the subject sites. The buffers are to be scribed as per EPA Guidelines Method 1 (Urban method). This method requires that the separation distance be measured from the activity boundary of the industry to the property boundary of the sensitive land use, i.e. the activity boundary of the industry is a convex polygon containing all the potentially emitting activities of the industry.

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

EPA default buffers from surrounding industries

The industrial premises attracting buffers as identified in Section 3.3 are listed in Table 3 and are detailed below with a description of the industrial category and relevant buffer distance if any for each identified industrial premise.

Abey Australia

The relevant category in the EPA guideline is '*manufacturing products using fibreglass or resin',* which requires a buffer distance of 250 m for production amounts greater than 250 tonnes per year. GHD contacted Abey Australia on 30 August 2018 and was told it was 'likely' resins were used at the Melton site in quantities greater than 250 tonnes per annum. GHD have therefore applied a 250 m buffer to Abey Australia.

ABMT Textiles

GHD contacted ABMT Textiles on 28 August 2018 and was it was confirmed that the dying and processing of textiles involving both natural and synthetic fibres occurs at the ABMT Textiles Melton site. Therefore, ABMT Textiles attracts two buffers under the EPA guideline as follows:

- Textile manufacturing and processing including dyeing or finishing cotton, linen, woollen yarns or textiles (250 m).
- Textile manufacturing and processing including synthetic fibres or textiles (500 m).

GHD has therefore applied the largest buffer distance of 500 m, which will take into account all operations undertaken at the site including waste water treatment for textile manufacturing.

Belkblast Protective Coatings

No separation distance for abrasive coatings is specified in the EPA guideline, hence no buffer distance has been adopted.

Bertocchi

GHD contacted Bertocchi on 28 August 2018 and it was confirmed that the only form of meat processing that occurs at the Bertocchi site is slicing and packing. Moreover, GHD was also informed that the preservation/drying of smallgoods does not occur onsite. GHD contacted Bertocchi again on 19 October 2018 with regards to the approved planning permit[4] to confirm the future use of the site. It was confirmed that the addition to the existing warehouse will involve further processing (i.e. further slicing and packing of products) and that the preservation/drying of smallgoods will not occur onsite in the future. Therefore, no buffer distance is applicable for the Bertocchi site.

[3] EPA Recommended Separation Distances for Industrial Residual Air Emissions, Publication 1518, March 2013

[4] PA2018/6008/1

Boral Concrete

The relevant category in the EPA guideline is '*production of concrete',* which requires a buffer distance of 100 m for production amounts greater than 5,000 tonnes per year. Based on the size of the facility, the 100 m buffer has been applied.

Central Bobcat Hire & Tag-Along-Trailers

No separation distance for road maintenance equipment is specified in the EPA guideline, therefore, no buffer distance has been applied.

Fox & Lillie (Rural)

GHD contacted Fox & Lillie (Rural) on 28 August 2018 and confirmed that neither wool scouring nor the manufacture, and processing (dyeing) of textiles occurs at the Fox & Lillie (Rural) site. Therefore, no relevant buffer distance as per the EPA guideline is applicable to this industry.

Harness Racing Victoria (HRV) Melton – Tabcorp Park

No separation distance for harness racing is specified in the EPA guideline, therefore, no buffer distance has been applied. The primary concern for HRV Melton is noise from music and people, which is discussed further in Section 5.2.

MaxiStop

No separation distance for break pad manufacture is specified in the EPA guideline, hence no buffer distance has been adopted.

Melton Waste Transfer Station

As both waste transfer and crushing occurs at the site, the Melton Waste Transfer Station attracts two buffers in the EPA guideline as follows:

- The category relating to the transfer of materials is *'collecting, consolidating, temporarily storing, sorting or recovering refuse or used materials before transfer for disposal or use elsewhere'* which requires a buffer of 250 m.
- The category relating to the crushing of materials is *'quarrying, crushing, screening, stockpiling and conveying of rock (without blasting)'* which also requires a buffer of 250 m.

MHG Plastic Industries

The relevant category in the EPA guideline is '*manufacturing products using fibreglass or resin',* which requires a buffer distance of 250 m for production amounts greater than 250 tonnes per year. GHD made contact with MHG Plastic Industries on 30 August 2018 to enquire about throughput amounts at the Melton site, however the exact throughput amounts were unknown; but, it is highly likely that throughput amounts are greater than 250 tonnes per year. Therefore, GHD has applied a buffer of 250 m.

Midway Concrete & Garden Supplies

The relevant category in the EPA guideline is '*production of concrete',* which requires a buffer distance of 100 m for production amounts greater than 5,000 tonnes per year. It has been assumed based on the size of Midway Concrete & Garden Supplies that the site's throughput is greater than 5,000 tonnes per year and therefore the 100 m buffer has been applied.

Molex Networks

The manufacturing of electrical components is not specified in the EPA guideline and therefore no buffer distance is applicable.

Reinforced Concrete Pipes

Reinforced concrete pipes manufactures various sizes of round and box type drainage pipe. The relevant category in the EPA guideline is '*production of concrete',* which requires a buffer distance of 100 m for production amounts greater than 5,000 tonnes per year, therefore the 100 m buffer has been applied.

Saizeriya

GHD contacted Saizeriya on 19 October 2018 where it was confirmed that the processing of seafood does not occur on site. Therefore, although Saizeriya manufacture food, there is no relevant category in the 'food, beverages and manufacturing' section of the EPA guideline. Therefore, no buffer distance is applicable.

Trusteel

Trusteel is a manufacturer of steel door sections which involves panel pressing. As no steel production is occurring at the Trusteel Melton site, no buffer distance is applicable.

Westkon

The relevant category in the EPA guideline is '*production of finished concrete or stone products,* which requires a buffer distance of 100 m for production amounts greater than 5,000 tonnes per year. It has been assumed based on the size of Westkon that the site's throughput is greater than 5,000 tonnes per year and therefore the 100 m buffer has been applied.

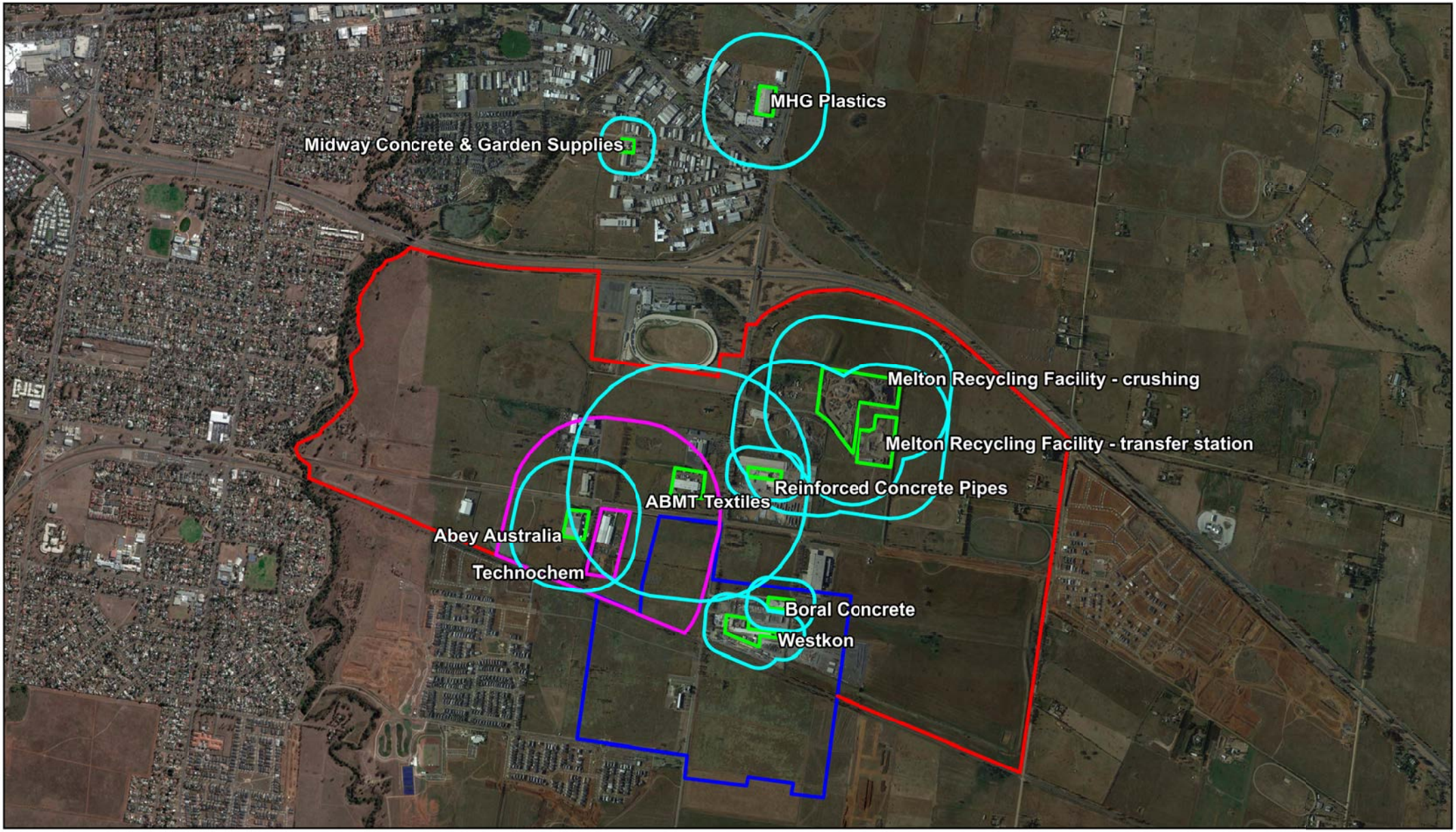
Table 3 Default buffers for existing surrounding industries

Company	Industry Class	EPA Default Buffer (m)
Abey Australia	Manufacturing products using fibreglass or resin (assuming electrostatic coating contains resin)	250
ABMT Textiles	Textile manufacturing and processing including dyeing or finishing cotton, linen, woollen yarns or textiles	250
	Textile manufacturing and processing including synthetic fibres or textiles (Note: GHD has applied the 500 m buffer for ABMT Textiles)	500
Boral Concrete	Production of concrete	100
Melton Waste Transfer Station (waste transfer)	Collecting, consolidating, temporarily storing, sorting or recovering refuse or used materials before transfer for disposal or use elsewhere	250
Melton Waste Transfer Station (crushing)	Quarrying, crushing, screening, stockpiling and conveying of rock (without blasting)	250
MHG Plastic Industries	Manufacturing products using fibreglass or resin	250
Midway Concrete & Garden Supplies	Production of concrete	100
Reinforced Concrete Pipes	Production of concrete	100
Westkon	Production of concrete	100

4.1.3 Application to site

Figure 3 overleaf shows the default buffers for the industries identified above in Table 3. The buffer distances have been scribed from the envelope of potential sources as per the EPA separation guideline. The default 440 m buffer for Technochem[5] has also been included in Figure 3, outlined in pink. From Figure 3 it can be seen that the centre of the TEMU area is largely constrained by the ABMT Textiles 500 m buffer and the Melton Recycling Facility crushing and transfer 250 m buffers. However, none of the identified industries have the potential to cause constraint to the western and south-eastern portions of the TEMU area. Moreover, Figure 3 also shows that the northern portion of the Toolern Town Centre area is constrained by the Boral and Westkon 100 m buffers. However, the southern portion of the land (south of the Ballarat-Melbourne train line) remains unconstrained by any of the identified industry's buffers.

[5] Planning Panel Melton Amendment C84 Part 2., 26 May 2011



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Metres (at A4)

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

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LEGEND

- Toolern Employment and Mixed Use UDF Area
- Toolern Town Centre UDF Area
- Identified industries
- Default buffers
- Technochem boundary and 440 m buffer

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Tract Consultants

Toolern Buffer Assessment

Job Number 3136435
Revision A
Date 31/08/2018

Default buffers

Figure 3

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4.1.4 Site specific variation to the default buffer

The EPA allows for a site-specific variation to the default buffer distance for a given industry and identifies six criteria to consider in Table 4 of the guideline. These criteria are addressed below:

1. Transitioning of the industry – If an industry has plans to transition out of the area in the foreseeable future then a reduced buffer can be negotiated for those industries.
2. Plant equipment and operation – If the plant has a high standard of emission technology or has evidence of no upset or malfunctions occurring then a reduced buffer may be more appropriate.
3. Environmental risk assessment (ERA) – An ERA would need to be completed to assess this option, this would require specific knowledge of process operations and emission rates.
4. Size of the plant – If the throughput is small compared to large examples within the same industry then it may be possible to de-rate the buffers based on throughput.
5. Topography or meteorology – If there are exceptional topographic or meteorological characteristics which will affect dispersion of IRAEs.
6. Likelihood of IRAEs – The likelihood of residual emissions from the identified industries would need to be assessed once specific operational information was obtained regarding their operations including how frequently upset conditions occur and the assessment would rely on a detailed complaint history from the residential area encompassed within the default buffer.

Where detailed site specific emission estimation is not available the primary mechanisms for a modification to the default buffer are generally:

- Transitioning of the industry: GHD has been instructed by Melton City Council to assume that all existing industries will remain in the precinct. Therefore, no reduced buffers have been applied on this basis.
- Size of the plant: Based on communication with the identified industries, all industries confirmed that throughput amounts were likely greater than or equal to the throughput amounts specified in the EPA guideline. Therefore, no buffer distances were able to be reduced based on throughput.
- Topography or meteorology: This has been assessed in Section 4.2 to produce directional buffers which consider the influence of topography or meteorology on the dispersion of emissions, for all the identified industries with a default buffer.
- Likelihood of IRAEs: The likelihood of residual emissions could include an assessment of a detailed complaint history from a residential area encompassed within the default separation distances. Given that there are no existing sensitive uses within the default buffers the likelihood of residual emissions based on complaint history cannot be established, and given a large portion of the land within the UDF area is vacant or industrial, the number of complaints is low.

Based on the information available to GHD and contact with the identified industries, the only site-specific criteria applicable to the industries is meteorology. Therefore, local meteorology has been used to develop directionally dependent buffers.

4.2 Meteorology

The local meteorology largely determines the pattern of off-site odour and dust impact. The characterisation of local wind patterns requires accurate site-representative hourly recordings of wind speed and direction over a period of at least 12 months (one year).

GHD has access to high quality meteorological data (five years at one-hour intervals) from the Melton automatic weather station (AWS), operated by the Environment Protection Authority (EPA) Victoria. The Melton AWS is located approximately 1 km from the subject site. GHD has also accessed the Bureau of Meteorology (BOM) Melbourne Airport AWS for cloud data.

GHD selected the five years from 2013 to 2017 as it was the most recent period with a complete record from the both Melton AWS and Melbourne Airport AWS.

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

The features of particular interest in this assessment are: (i) the prevailing wind directions, (ii) the relative incidence of more stable light wind conditions, and (iii) good dispersion conditions with winds over 5 m/s.

A distinction can be made for fugitive deposited dust entrained in strong winds, as opposed to dust emissions from process sources where the emission rate is independent of local wind conditions. The 'worst case' in the former class is wind speeds greater than 5 m/s, while the 'worst case' in the latter is light, stable winds.

4.2.1 Long term pattern in wind

The average wind rose for the entire data period is shown in Figure 4 and shows the following features:

- The predominant annual average wind directions are from the northwest segment comprising 29% of all incident winds.
- The incidence of westerly winds (~8%) is significantly higher than easterlies occurring ~1% of the time.
- The average wind speed measured was 3.2 m/s.
- The observed wind speed distribution indicates that the largest proportion of high wind speeds (> 5 m/s) are from the north and the north-northwest, while the largest proportion of light winds (<2 m/s) are from the northwest.

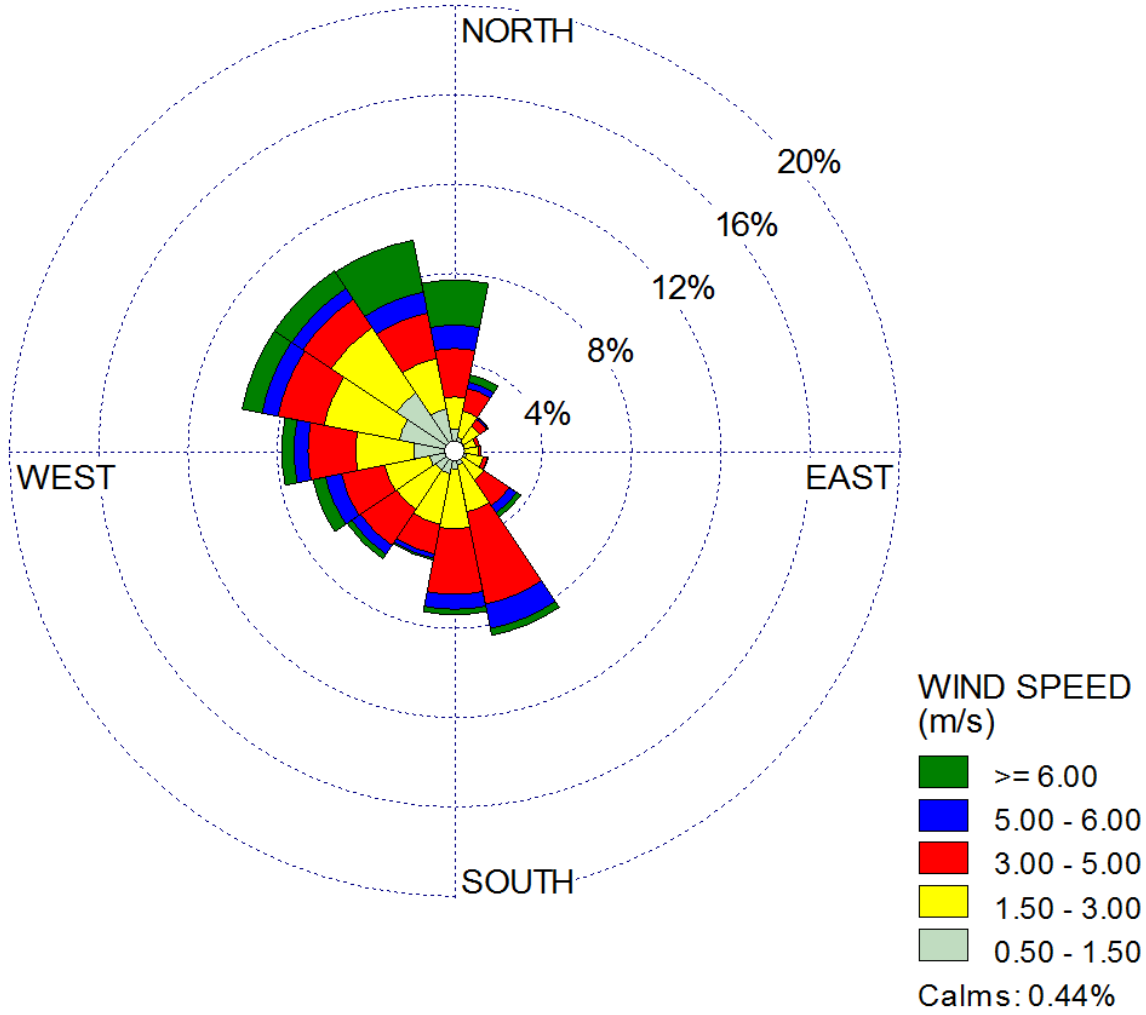


Figure 4 Wind rose (2013 - 2017) for Melton

4.2.2 Seasonal variation in wind pattern

The seasonal wind roses for the same period (2013 - 2017) are presented in Figure 5 and show that:

- During the summer the predominant wind direction is from the south to south-southeast, which comprises 27% of the total winds. The summer wind rose also includes winds from the southwest and northwesterly sectors.
- During winter, northeasterly sector winds are the most dominant due to pre-frontal northerlies, and cool air drainage from the surrounding hills and mountains. Northwesterly component winds comprise ~43% of all incident winds.
- Autumn and spring are transitional periods. During these months both summer and winter patterns are observed. Autumn wind patterns are characteristically similar to winter, generally consisting of north to north westerly winds. Spring wind patterns are also similar to winter wind patterns, with a lack of south-southeasterly winds, which are observed in the summer wind rose.
- The seasonal incidence of light (<2 m/s) wind speeds is greatest in autumn, comprising approximately 38% of wind speeds.

- The seasonal incidence of (>5 m/s) high wind speeds is greatest in spring, comprising approximately 20% of wind speeds.
- As with the annual wind rose for the period from 2013 to 2017, there is a lack of northeasterly sector winds in all observed seasons. Although some winds from the north-northeast can occur in winter.
- The direction and high proportion of light winds in autumn is predominately from the northwest. These drainage flows are likely to be associated with high stability and can be expected to define the directions of poorest dispersion.

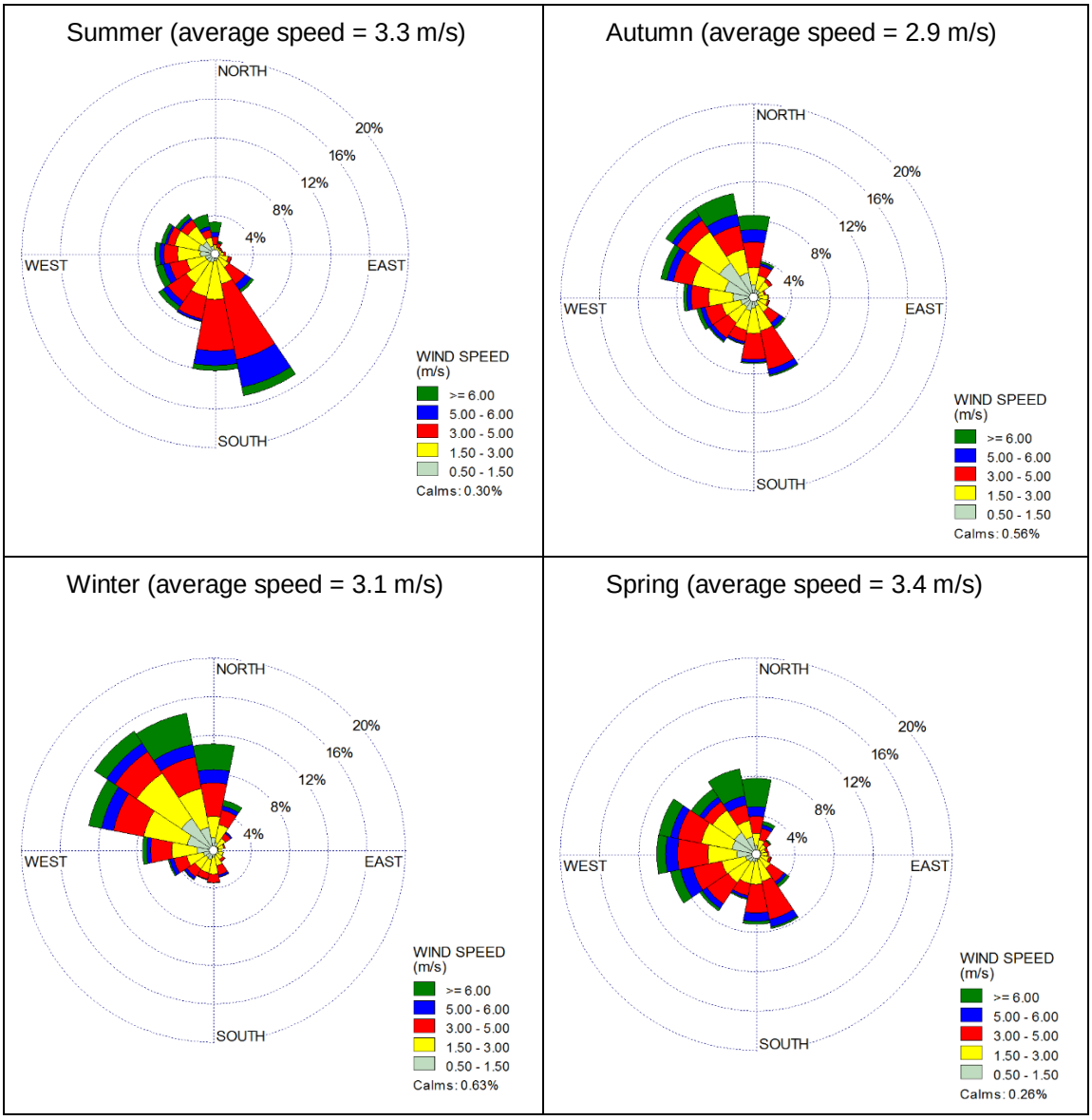


Figure 5 Seasonal wind roses (2013 - 2017) for Melton

4.2.3 Directionally dependent buffer

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

Where site-representative meteorological data is available, the directions of good and poor dispersion can be identified as shown in Section 4.2. Further, if the five year dataset is configured into the dispersion modelling format (deriving atmospheric stability category) then dispersion modelling can be conducted using a nominal air source emission rate to assess the directional change in extent from a default radial buffer[6].

The directional buffer adapts the default radial buffer to take account of the directions of good and poor dispersion – found from the meteorological data representative of local conditions.

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

Dispersion modelling was performed using the Melton meteorological dataset and a nominal 10 m x 10 m area source with a nominal emission rate. The 99.5% contour that provides the same enclosed area as a 500 m radius circle (i.e. 785,398 m^2) was selected and is presented in Table 4. From Table 4, it can be seen that the extent of the contour is greater than the all-direction mean of 500 m in the south-easterly sector – out to 795 m. Similarly, the extent of the contour to the west is significantly less than 500 m, down to 257 m. The contour effectively gives the departure from the fixed 500 m radius that would be required if an equal exposure to disamenity was to be given in the event of an upset/malfunction at any of the potential odour/dust emitting sites.

The angular change in buffer distance is given as a function of direction in Table 4. This information has also been used to demonstrate the effect on default buffers from the industries identified in Table 3 that have the potential to constrain the proposed site, refer to Figure 6.

Table 4 Directional variation in 500 m default buffer in response to local meteorology – Melton

Direction Sector (Degrees)		Range (m)	Percent (%) of all direction mean range (500m)	Direction Sector (Degrees)		Range (m)	Percent (%) of all direction mean range (500m)
N	0	382	76	S	180	484	97
NNE	22.5	501	100	SSW	202.5	367	73
NE	45	534	107	SW	225	306	61
ENE	67.5	586	117	WSW	247.5	266	53
E	90	667	133	W	270	257	51
ESE	112.5	737	147	WNW	292.5	284	57
SE	135	795	159	NW	315	287	57
SSE	157.5	698	140	NNW	337.5	312	62

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

4.2.4 Potential constraints posed by directional buffers

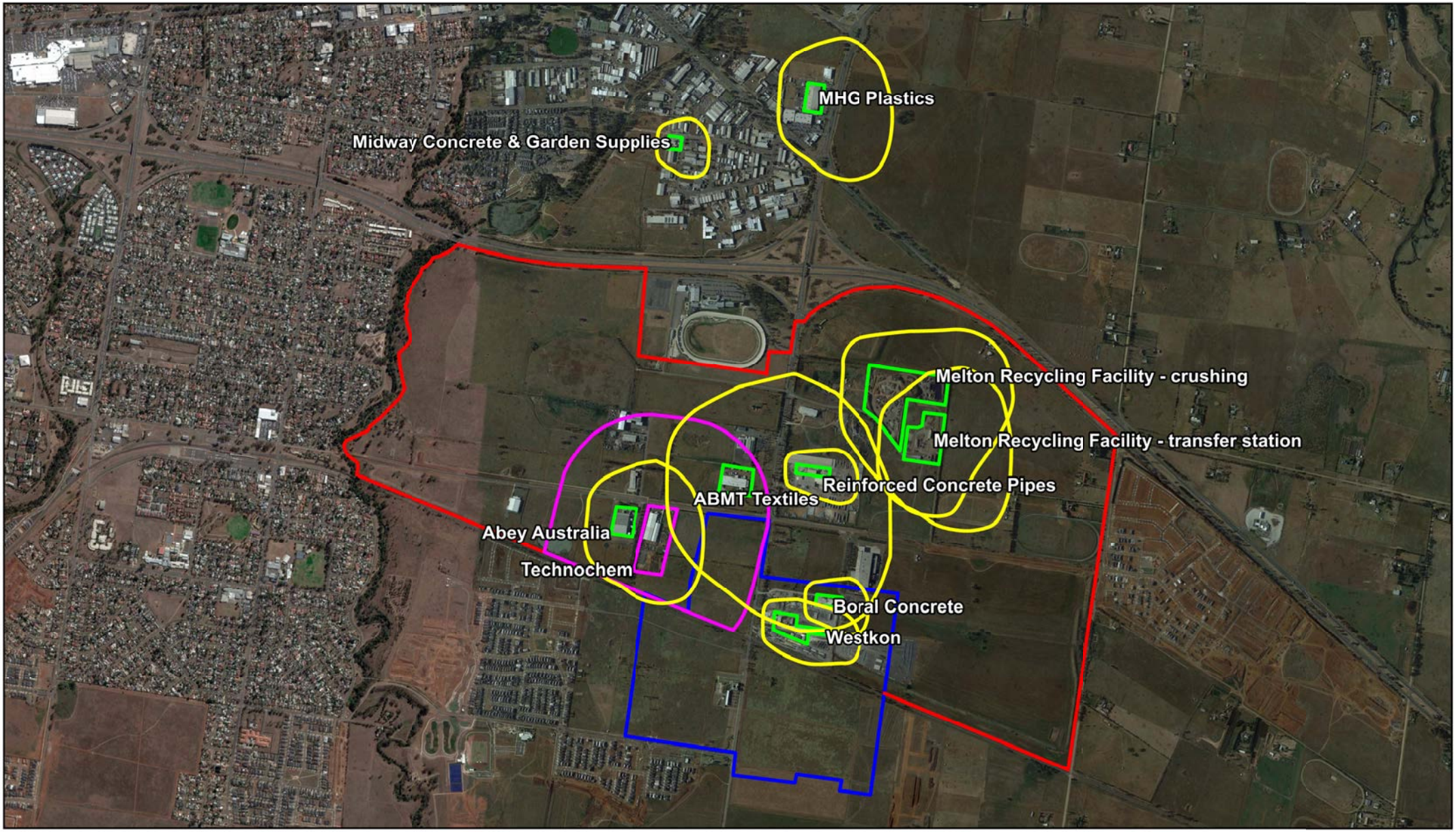
Figure 6 shows the directional buffers applied to the industries as identified in Table 3. From Figure 6 it can be seen that the directional buffers extend significantly to the east and southeast compared to the default buffers. The directional buffers are significantly reduced to the west (approximately a 50% reduction) compared to the default radial buffers and to a lesser extent in the north. From Figure 6 a reduction in the portion of constrained land in the western portion of the TEMU area can be seen compared to the default buffers (Figure 3). This occurs mainly as a result of the 500 m directional buffer applied to ABMT Textiles. This is shown in Figure 7, whereby the area of land now no longer constrained (highlighted in orange) is approximately 9.2 ha.

Moreover, as previously mentioned, the directional buffers result in an extension from the fixed radius towards the east and southeast. However the overall area of land able to be developed i.e. land in which an industry/infrastructure does not already exist, within both the TEMU (excluding the western portion) and Toolern Town Centre areas has remained relatively the same as the default buffer (Figure 3). This means that the directional buffers have mainly extended into regions where industry or infrastructure already exist.

4.2.5 Summary

GHD has utilised the criteria outlined in Table 4 of the EPA guideline which allows for site specific variation to the default buffer distance for a given industry. In particular, GHD has assessed the local meteorology to develop directional buffers for the industries identified in in Table 3.

The directional buffers (shown in Figure 6) result in a significant reduction to the west and an extension to the east and southeast, when compared to default buffers. This results in an increase in the total area of land unconstrained by buffers in the western section of the TEMU area (shown in Figure 7), whilst the area in the eastern portion has remained relatively unchanged (i.e. the directional buffers have mainly extended into regions where industry or infrastructure already exist). The unconstrained southern portion of the Toolern Town Centre area also remains relatively unchanged when the directional buffers are applied.



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0 250 500 750

Metres (at A4)

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

N

LEGEND

- Toolern Employment and Mixed Use UDF Area
- Toolern Town Centre UDF Area
- Identified industries
- Directional buffers
- Technochem boundary and 440 m buffer

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Toolern Buffer Assessment

Job Number 3136435
Revision A
Date 31/08/2018

Directional buffers

Figure 6

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8/180 Lonsdale St Melbourne VIC 3000 Australia T 61 3 8687 8000 F 61 3 8687 8111 E melmail@ghd.com.au W www.ghd.com.au

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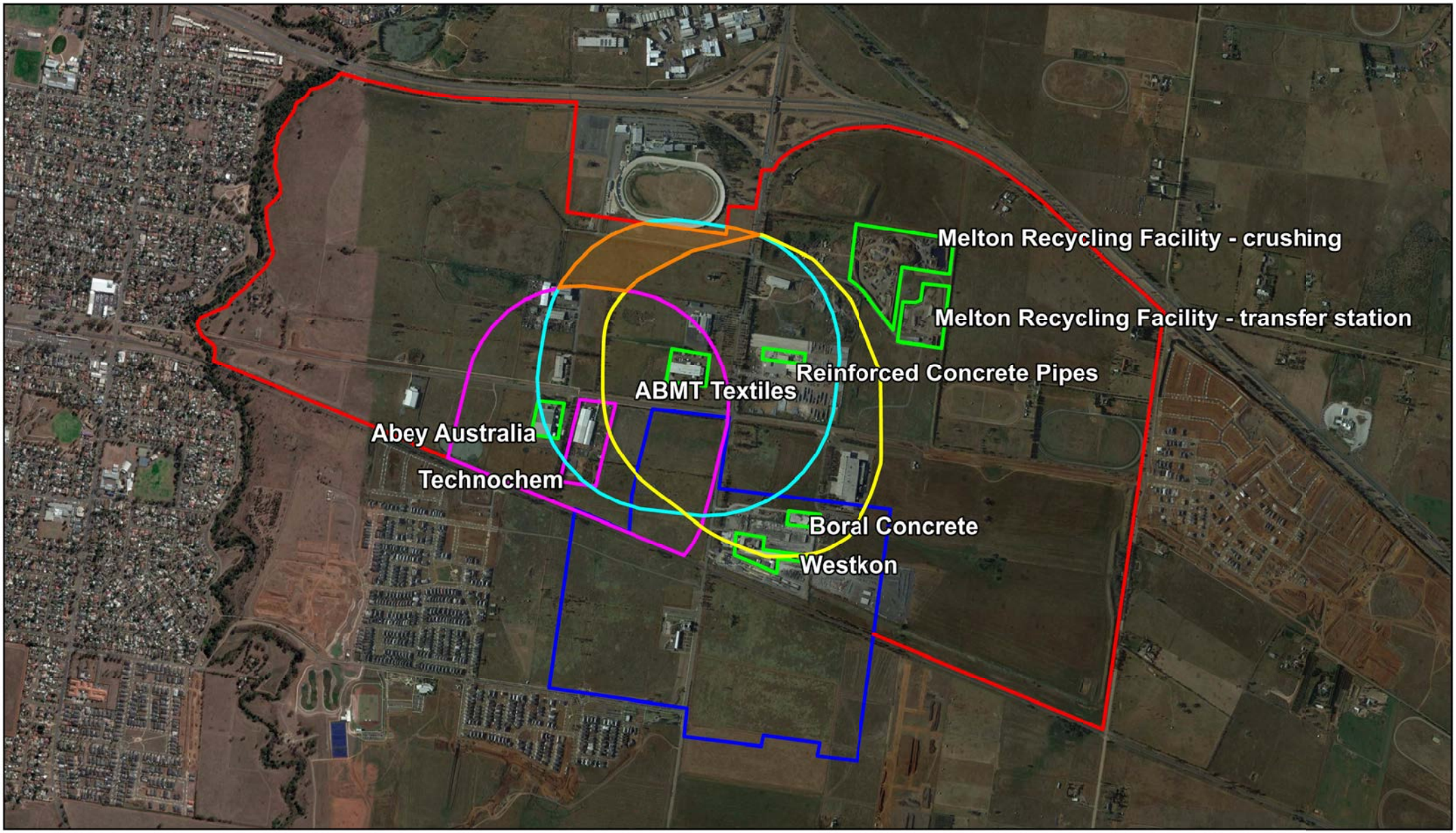

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Metres (at A4)

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

N

LEGEND

- Toolern Employment and Mixed Use UDF Area
- Toolern Town Centre UDF Area
- Identified industries
- ABMT Textiles default buffer
- ABMT Textiles directional buffer
- Area previously contrainted by ABMT Textiles default buffer
- Technochem boundary and 440 m buffer

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Toolern Buffer Assessment

Job Number 3136435
Revision A
Date 31/08/2018

ABMT Textiles default and directional buffer comparision

Figure 7

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5. Noise and vibration assessment

5.1 What is noise

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

Noise sources can contain certain characteristics, such as tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content. There is evidence to suggest that noise with all or some of these characteristics can cause greater annoyance than noise without these characteristics at the same noise level (NSW NPI, 2017).

5.2 Potential major noise sources

Current potential noise sources surrounding the site likely consist of a mixture of activities from industrial, commercial and residential noise sources. Generally, these activities are located indoors and anticipated to have low to medium noise impact risk on the site.

From the site visit, the ambient noise environment at the site is expected to be predominantly traffic noise from the existing road network. Other major noise sources are likely to originate from the crushing activities at the Melton Waste Transfer Station, the harness racing at Tabcorp Park, and Melton Railway Station and the associated train line and train horns. Table 5 outlines the significant noise sources noted in close proximity to the site.

Table 5 Major potential sources of noise

Source	Potential Sources
Local roads	Cars and trucks
Ballarat-Melbourne Rail Corridor	Trains
HRV Melton – Tabcorp Park	Crowds, music
Melton Railway Station	Trains, bells, train horns
Melton Waste Transfer Station	Crushing, recycling activities
Western Freeway	Cars and trucks (Traffic on elevated roadways and bridges)

5.3 Existing potential primary vibration sources

Primary vibration sources within and nearby the Toolern Town Centre and the TEMU area were identified to be sourced from the following activities:

- Level crossing activities from Melton Railway station
- Rail movements along the Ballarat-Melbourne train line

5.4 Legislation, guidelines and standards

The noise and vibration regulations and standards outlined within this section are considered to be applicable to the Toolern Town Centre and the TEMU area.

5.4.1 State Environment Protection Policy No. N-1 (Victorian Government, 1989)

Noise from industry in Metropolitan Melbourne and/or Victoria's Major Urban Area (as shown on Figure 8) is managed using the *State Environmental Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1* (Victorian Government, 1989) (SEPP N-1).

As the subject sites are located within the SEPP N-1 boundary (as shown in Figure 8), the noise level criteria for industrial noise impacts to the sensitive receptors would be assessed following the procedures outlined in SEPP N-1.

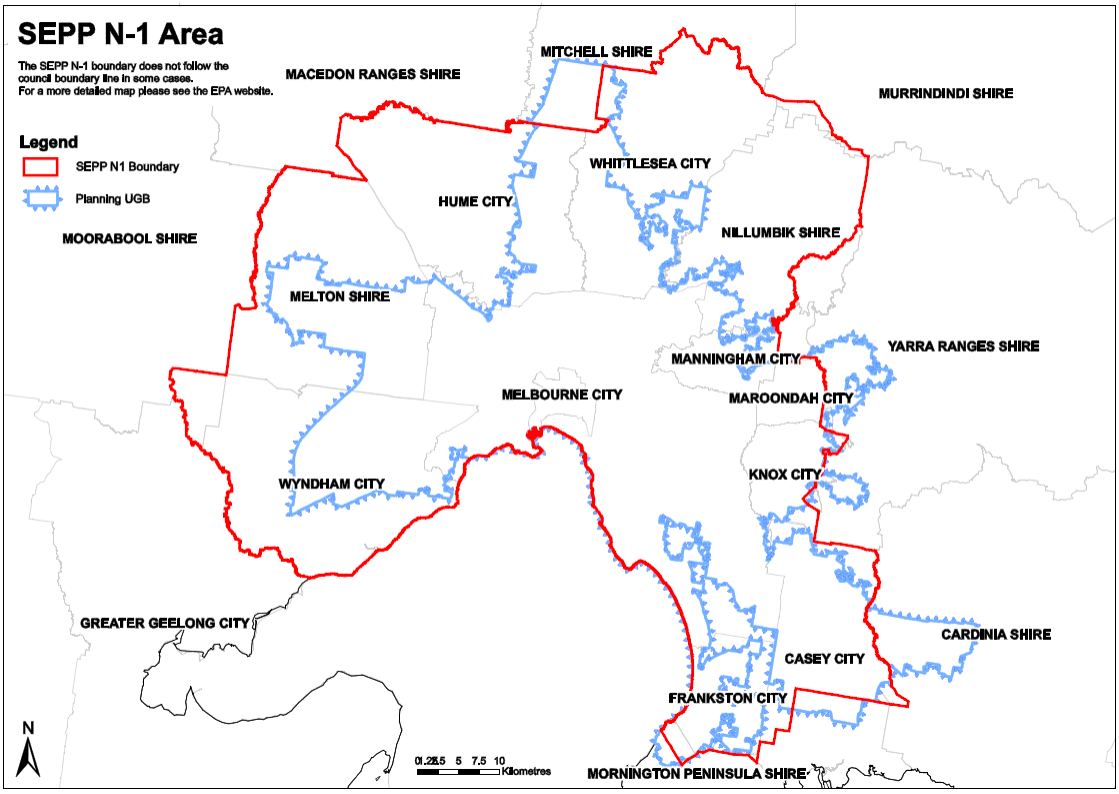

Figure 8 Areas covered by SEPP N-1 (EPA Victoria, 2011)

SEPP N-1 manages the impact of noise on residential and other noise-sensitive uses and should be applied when siting or designing new or expanded industry or plant and when government authorities assess applications for industry.

SEPP N-1 sets the maximum noise level allowed in a noise-sensitive area from commercial/industrial premises depending on the time of day, evening, or night, land use zoning and existing background noise levels. The first step in developing the noise limit is to calculate the prescribed upper noise limit (Zoning Level or Zoning Limit) for the particular land use as opposed to noise sensitive areas[7] (i.e. residential zoned land around the site).

[7] In accordance with Part VI of SEPP N-1, "noise sensitive area" is defined as *'part of the land within the apparent boundaries of any piece of land which is within a distance of 10 metres outside the external walls of any dwelling or residential building'* (Victorian Government1989). Therefore, it can be defined that the sensitive receiver distance is the shortest distance between the noise emitter and the location at 10 m away from the dwelling or residential building façade.

Once the zoning level has been defined, the background noise level[8] is assessed to decide whether the background levels are neutral (i.e. not significantly higher than the zoning levels) or otherwise.

If the background level is neutral, the noise limit adopted is the zoning level. If, on the other hand, the background level is found to be significantly lower or higher than the zoning level then the noise limit is reduced or increased respectively.

5.4.2 State Environment Protection Policy No. N-2 (Victorian Government, 1989)

Noise impacts from musical entertainment venues are managed using the *State Environmental Protection Policy (Control of Music Noise from Public Premises) No. N-2* (Victorian Government, 1989) (SEPP N-2). HRV Melton – Tabcorp Park in particular has the potential for music noise impact on sensitive receptors. The SEPP N-2 manages the impact of music noise on residential and other noise-sensitive uses and should be applied when siting or designing new or expanded musical entertainment venues and when government authorities assess applications for the development.

The noise limit at nearby sensitive receivers prescribed under the SEPP N-2 has been summarised in Table 6 for indoor venues and Table 8 for outdoor venues below.

Table 6 SEPP N-2 noise limit – indoor venues

Time period[a]	Noise limit at noise sensitive receivers
More than or equal to 10 operations per year	
Day/Evening	Music noise (L_{Aeq}) shall not exceed background noise (L_{A90}) + 5 dB
Night	Music noise (L_{Aeq}) shall not exceed background noise (L_{oct90}) + 8 dB in any octave band (63 Hz – 4 kHz)
Less than 10 operations per year	
Day/Evening	Music noise (L_{Aeq}) shall not exceed background noise (L_{A90}) + 8 dB
Night	Music noise (L_{Aeq}) shall not exceed background noise (L_{oct90}) + 8 dB in any octave band (63 Hz – 4 kHz)

[a] The operating period for the indoor venues vary according to the number of operations per week and the day of the week on which an operation occurs (refer to Table 8).

[8] For a day, evening or night period means the arithmetic average of the L_{A90} levels for each hour of that period for which the commercial, industrial or trade premises under investigation normally operates. The background level shall include all noise sources except noise from commercial, industrial or trade premises which appear to be intrusive at the point where the background level is measured.

Table 7 SEPP N-2 indoor venues prescribed operating period

Venues	Number of Operations Per Week	Day	Operating Period	
			Day/Evening time	Night-time
Indoor Venues	One	Friday	9 AM to 12 PM	12 PM to 9 AM
		Saturday	10 AM to 12 PM	12 PM to 10 AM
		Sunday	11 AM to 10 PM	10 PM to 11 AM
		Other	9 AM to 11 PM	11 PM to 9 AM
	Two or three	Thursday	9 AM to 11 PM	11 PM to 9 AM
		Friday	9 AM to 11 PM	11 PM to 9 AM
		Saturday	10 AM to 11 PM	11 PM to 10 AM
		Sunday	11 AM to 10 PM	10 PM to 11 AM
		Other	9 AM to 10 PM	10 PM to 9 AM
	More than three	Saturday	10 AM to 10 PM	10 PM to 10 AM
		Sunday	12 AM to 9 PM	9 PM to 12 AM
		Other	9 AM to 10 PM	10 PM to 9 AM

Table 8 SEPP N-2 noise limit – outdoor venues

Outdoor operating period		Noise limit at noise sensitive receivers	
for duration of operation less than or equal to five (5) hours	for duration of operation greater than five (5) hours	Outdoor measurement	Indoor measurement
12 NOON to 11 PM	12 NOON to 10 PM	65 dB(A)L_{eq}	55 dB(A) L_{eq}

5.4.3 Victoria Planning Provisions (VPP)–Clause 55.07-6 and Clause 58.04-3

The Victorian Planning Provisions (VPP) Clause 55.07-6 and Clause 58.04-3, specify indoor noise levels that should be met for an apartment development within industrial areas or in a road or rail *noise influence area*.

In 2017, DELWP released a practice note for *Assessing External Noise Impacts for Apartments – Planning Practice Note 83* (August 2017) (PPN 83) to provide guidance about the operation of the VPP Clause 55.07-6 and Clause 58.04-3.

If a high density residential premises is developed within the TEMU or Toolern Town Centre sites any apartment building located within a *noise influence area* would need to be designed to comply with the indoor noise criteria outlined in Table 9.

Table 9 VPP Clause 55.07-6 Noise influence area and indoor design noise criteira

Noise source	Noise influence area	Indoor noise criteria
Zone interface		Not greater than 35 dB(A) for bedrooms, assessed as a $L_{Aeq,8hr}$ from 10 pm to 6 am. Not greater than 40 dB(A) for living areas, assessed $L_{Aeq,16hr}$ from 6 am to 10 pm.
Industry	300 metres from the industrial 1, 2 and 3 zone boundary	
Roads		
Freeways, tollways and other roads carrying 40,000 Annual Average Daily Traffic (AADT) Volume	300 metres from the nearest trafficable lane	
Railways		
Railway servicing passengers in Victoria	80 metres from the centre of the nearest track	
Railway servicing freight outside Metropolitan Melbourne	80 metres from the centre of the nearest track	
Railway servicing freight in Metropolitan Melbourne	135 metres from the centre of the nearest track	

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

5.4.4 Indoor sound levels – AS/NZS 2107

The site proposes to have a mix of uses and so as well as the Victorian Planning Provisions (VPP) Clause 55.07-6 and Clause 58.04-3, it is recommended the indoor sound levels of any building comply with the Australian Standard AS/NZS 2107:2016 "*Acoustics – Recommended design sound levels and reverberation times for building interiors*" (AS/NZS 2107: 2016).

5.4.5 Specific noise characteristics

Where a noise source contains certain characteristics, such as tonality, impulsiveness, intermittency and irregularity, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. SEPP N-1 requires any tonality, impulsiveness and/or intermittency noise characteristics emanating from the development precinct and surrounding area to be taken into consideration when assessing the site against the SEPP N-1 noise criteria.

5.4.6 Low frequency noise

Where a noise source contains certain characteristics, such as dominant low-frequency noise (LFN), there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level.

When prominent low-frequency noise is present, noise measurements based on A-weighting are inappropriate as the A-weighting filters the measured levels of the low and very high frequencies, but has less filtering effect on most of the mid-range sound frequencies where speech and communication are important (Roberts, 2010).

In the absence of Victorian specific guidelines on low frequency noise, reference to the following methodologies are made:

- C-Weighted criterion (Broner, 2011)
- C-Weighted minus A-weighted criterion (Roberts, 2010)
- Linear minus A-weighted criterion (QLD DEHP, 2004) and NSW *Noise Policy for Industry* (NSW NPI, 2017)

C-Weighted criterion

The Broner method is based on an acoustic publication entitled: *A simple outdoor criterion for assessment of low frequency noise emission* (Broner, 2011). Ideally, LFN criteria should be set for indoors where the LFN complaints would normally occur. However, in planning terms, it is much easier to set criteria for the outside of residences, "*where artefacts of the measurement do not play such a big role and where there is no need to enter a person's premises after start-up to confirm compliance with an outdoors noise level specification*" (Broner, 2011). Similarly, an overall noise level criterion may be preferred rather than relying on an octave band or third-octave band analysis and calculation (Broner, 2011).

The Broner LFN criteria are based on empirical case history data, including well-known publications and standards. The LFN impact assessment criteria adopted for this site is detailed in Table 10.

Table 10 Broner criteria for low frequency noise

Sensitive receiver		Range	Criteria dB(C)L_{eq}
Residential	Night-time or plant operation 24/7	Desirable	60
		Maximum	65
	Daytime or intermittent (1 – 2 hours)	Desirable	65
		Maximum	70

C-Weighted minus A-weighted criterion

Low frequency noise (LFN) is common as background noise in urban environments and as an emission from many artificial sources including wind turbines (Roberts, 2010).

The difference between dB(C) and dB(A) provides some basic information about the presence of low frequency components in noise. Research suggests that when the difference (Δ) is great enough that further investigation or action related to the presence of low frequency noise may be required (Roberts, 2010).

Roberts (2010) provides three examples of where the difference between dB(C) and dB(A) are used:

- In Germany, Δ > 20 dB is used to indicate the presence of low frequency noise.
- The World Health Organization (1999), uses Δ > 10 dB as guidance for undertaking further frequency analysis.
- Kjellberg and co-workers (1997) suggest a Δ > 15 dB, then add 6 dB to the measured A-weighted level.

Linear minus A-weighted criterion

The Queensland Government *Assessment of Low Frequency Noise Guideline* (QLD DEHP, 2004) and NSW Noise Policy for Industry (NSW NPI, 2017) is used to address noise sources with inherent dominant infrasound or very low frequency noise (LFN) characteristics such as those below a frequency of 200 Hz.

The Queensland DEHP procedure for the initial screening to determine if a more detailed assessment is required, is as follows:

- The overall sound pressure level inside residences should not exceed 50 dB(Linear) to minimise risk of complaints of LFN annoyance.
- If the dB(Linear) measurement exceeds the dB(A) measurement by more than 15 dB, a one-third octave band measurement in the frequency range 20 to 200 Hz should be carried out.

The NSW *Noise Policy for Industry* (NSW NPI, 2017) considers noise sources as follows:

- If the dB(Linear) measurement exceeds the dB(A) measurement by more than 15 dB, a one-third octave band measurement in the frequency range 20 to 200 Hz should be carried out.

The correction specified in the NSW NPI is to be added to the measured or predicted noise levels at the receiver before comparison with the criteria. Correction of 5 dB is to be applied if the difference between the measurements of C-weighted and A-weighted levels over the same period is 15 dB or more.

5.4.7 Rail noise

Melton Railway Station and the Ballarat rail corridor have the potential to emit noise toward the Toolern Town Centre and the TEMU area. The Victorian Government publication '*Passenger Rail Infrastructure Noise Policy*' (Victorian Government, April 2013) provides a policy to assist in managing rail noise impacts from three rail infrastructure scenarios, namely:

- Improved passenger rail infrastructure
- New passenger rail infrastructure
- Changes to land use near existing and planned rail corridors

Of the scenarios outlined above, the most relevant to the Toolern Town Centre and the TEMU area is "changes to land use near existing and planned rail corridors", Table 11 below details a summary of the of the investigation thresholds for this scenario.

Table 11 Investigation thresholds for change in land use near an existing rail corridor

Time	Type of Receiver	Investigation Threshold(s)
Day (6 AM to 10 PM) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks • Noise sensitive community buildings including schools, kindergartens, libraries	65 L_{Aeq} **or** 85 L_{Amax}
Night (10 PM to 6 AM) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks	60 L_{Aeq} **or** 85 L_{Amax}

5.4.8 Rail vibration

Human comfort

The threshold for human perception of vibration is approximately 0.1 mm/s. In the absence of local guidelines, the Acceptable Vibration Threshold Guidance (AVTG) has been used for criteria for human comfort from intermittent vibration, such as a railway, which are based on Vibration Dose Value (VDV) criteria. The AVTG provides a method for assessing potential vibration impacts from rail operations such as ground induced vibration created by rolling stock movements.

The AVTG is based on guidelines contained in the British Standard BS 6472, *Guide to Evaluation of Human Exposure to Vibration in Buildings.*

Intermittent vibration is assessed using the VDV. Acceptable VDV's as outlined in AVTG, are presented in Table 12.

Table 12 Acceptable vibration dose values for intermittent vibration (m/s$^{1.75}$)

Location	Day-time[1]		Night-time[1]	
	Preferred value	Maximum value	Preferred value	Maximum value
Critical areas[2]	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

1 Day-time is 7.00 am to 10.00 pm and night-time is 10:00 pm to 7.00 am.

2 Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative, and there may be need to assess intermittent values against the continuous or impulsive criteria for critical areas.

Structural damage

Currently, there is no Australian Standard that sets the criteria for the assessment of building or other structural damage caused by vibration.

Additional to the detailed British Standards, the German Standard *DIN 4150-3: 1999 Structural Vibration – Part 3: Effects of Vibration on Structures* (German Standards, 1999) provides more stringent vibration criteria as opposed to BS 7385.2:1993 for above ground structures, and is recommended, in the absence of specific criteria being supplied by the asset owner at this stage.

5.5 Discussion of potential noise impacts

5.5.1 Traffic noise

Traffic noise, in particular, associated with the Western Freeway is expected to be a major contributor to background noise near the subject sites, namely the TEMU area. Noise from the Western Freeway and other major roads could involve low frequency engine braking noise from heavy vehicles that could cause annoyance to surrounding sensitive receivers. Any development that is proposed to be situated nearby the roadway may result in exposure to noise levels that require local acoustic treatment to preserve internal amenity or boundary treatments to mitigate external noise amenity.

A detailed traffic noise intrusion assessment and building acoustic treatment requirement assessment has not been undertaken due to the preliminary nature of this assessment. Instead, GHD has referenced the DELWP practice note *Assessing External Noise Impacts for Apartments – Planning Practice Note 83* (PPN 83) (August 2017). The PPN 83 provides guidance on the *standard design treatment for* residential sensitive receptors potentially located within 300 m from the nearest trafficable lane of a freeway, tollway or other road carrying an annual average daily traffic (AADT) volume of 40,000 vehicles. The AADT volume for the Western Freeway (Melton) was approximately 25,500 vehicles[9] in 2017, however the northern most section of the TEMU area is located within 300 m from the nearest trafficable lane of the Western Freeway. Therefore, it is expected that road traffic will impact the site and further investigation and noise monitoring would be required to characterise the traffic noise impact levels, in particular during the night-time period prior to completion and during the early design of any buildings.

PPN 83 Road noise exposure category

The DELWP practice note for *Assessing External Noise Impacts for Apartments – Planning Practice Note 83* provides guidance on the likely building acoustic treatment requirements for residential premises to be located within a *Road Noise Influence Area.* Chart 1 of PPN 83 provides noise exposure categories (reproduced in Figure 9), which correspond to the acoustic design treatment packages in Appendix 1 of the note (PPN 83).

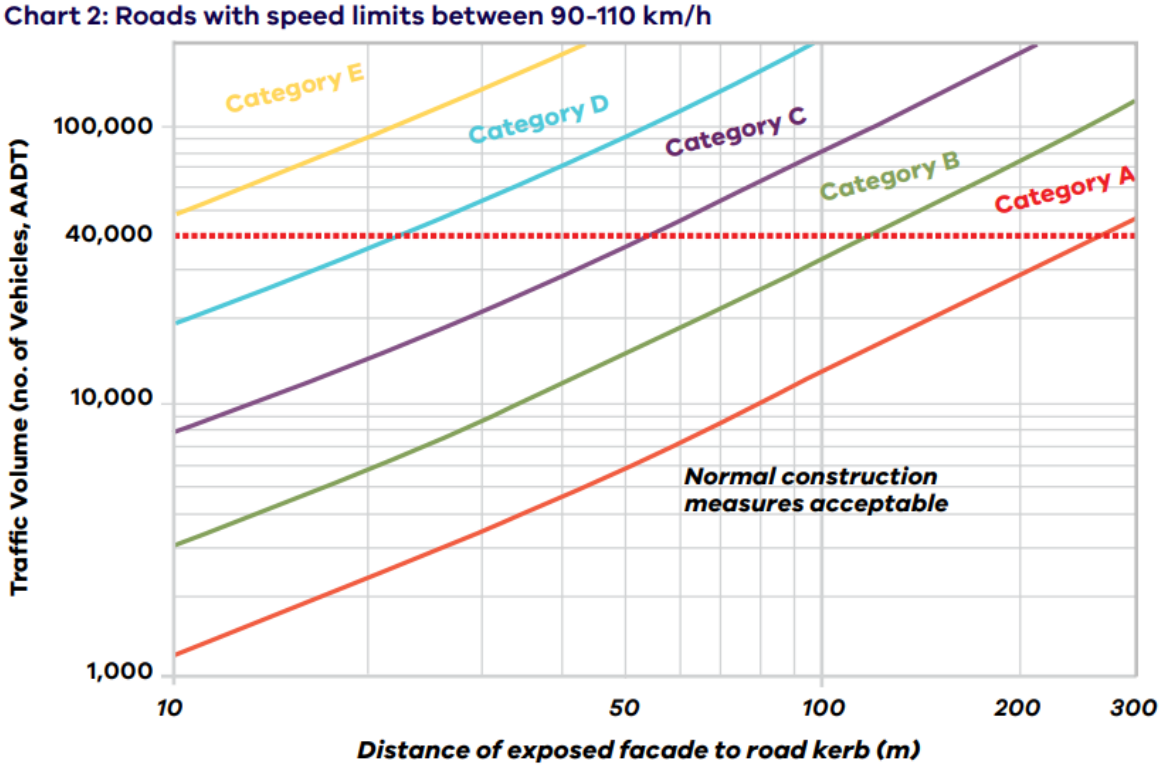

Figure 9 Noise exposure category with road speed limits between 90 – 110 km/h

[9] https://www.vicroads.vic.gov.au/-/media/files/documents/traffic-and-road-use/traffic-volume-information-for-web-april-2018.ashx?la=en&hash=D37507400210271B32524D78F455BFD2

The Western Freeway has a speed limit of 110 km (as sign posted) with road kerb distance to the nearest portion of the TEMU area being approximately 30 m. Based on this, potential development falls under Noise Exposure Category C. PPN 83 states that:

> *"Where an apartment development is located on a road with a [sic] AADT less than 40,000 vehicles, normal construction methods are considered to meet the specified noise levels for an apartment development".*

Therefore, it is likely that normal construction methods will be sufficient in minimising noise exposure.

5.5.2 Rail noise

The Ballarat-Melbourne train line is located directly south of the TEMU UDF area and runs through the Toolern Town Centre UDF area with Melton Railway station located approximately 570 m to the west of the TEMU area. Rail noise from the Ballarat-Melbourne train line and Melton Railway station is usually generated from the noise emitted by the engine of trains, wheel rolling/friction, wheel passing rail joints and train horn/tram bell noise. These noise sources may contain certain characteristics, such as intermittency and tonality (horn/bell, squeaky noise from wheel rolling/friction, etc.) and dominant low-frequency noise (in the case of trains) that may cause amenity disruption to the surrounding sensitive receivers.

Potential excessive noise impacts from the rail and train station operation may cause sleep disturbance, annoyance, hearing issues, impact on social activities and working performance, and discomfort to human hearing.

A detailed rail noise intrusion assessment and building acoustic treatment requirement assessment has not been undertaken due to the preliminary stage and qualitative nature of the assessment. However, the PPN 83 provides guidance on the *standard design treatment for noise* for residential sensitive receptors potentially located within 135 m from the centre of the nearest rail track with railway servicing freight and passengers in metropolitan Melbourne (refer to Figure 10).

The subject areas are located partially within the 135 m railways noise influence area buffer (refer to Figure 2) and as such railway noise is also considered to represent a potential considerable risk to the proposed development. However, further investigation and noise monitoring would be required to characterise the rail noise impact levels, in particular during the night-time period.

<table>
<tr><th>Type of Rail Service</th><th colspan="4">Rail Noise Screening Distances (measured in metres (m) from the centre of the nearest track to the proposed apartment development</th></tr>
<tr><th></th><th><10m</th><th>10-80m</th><th>80-135m</th><th>135m></th></tr>
<tr><td>Passenger rail lines and all non-metropolitan rail lines</td><td colspan="2">Noise assessment required</td><td colspan="2">Normal construction method acceptable</td></tr>
<tr><td>Metropolitan Freight – railway servicing freight in metropolitan Melbourne</td><td colspan="3">Noise assessment required</td><td>Normal construction method acceptable</td></tr>
</table>

Figure 10 Rail noise exposure

PPN 83 Road noise exposure category

PPN 83 outlines rail noise exposure categories, depending on the separation distance between the external noise source and a new apartment. This is shown in Figure 11.

Exposure Category	Separation distance between external noise source and new apartment	
	Passenger rail lines and all non-Melbourne metro rail lines	Freight line (Metro Melbourne)
A	50<80m	80<135m
B	25<50m	50<80m
C	10<25m	25<50m
D	<10m	10<25m
E	NA	<10m

Figure 11 Rail noise exposure categories

The nearest separation distance between rail corridor and the nearest southern precinct boundary is approximately 30 m. Based on this, potential residential development situated nearest to the rail corridor would fall under Noise Exposure Category C. An acoustic report or a standard design treatment for noise can be used to meet the specified noise levels.

Appendix 1 of PPN83 provides the preliminary standard design treatment for noise exposure category C.

Assessment of surrounding railways noise impacting the development should comply with the recommended VPP Clause 55.07-6 indoor sound levels criteria.

Other receivers such as offices would also be needed to be assessed against rail noise intrusion to preserve the indoor workplace amenity during the business hours.

5.5.3 Industrial/commercial noise

Identified nearby industrial activities with potential noise sources have been identified in Section 5.2 of this report. It is recommended that further investigation be undertaken for these premises in relation to their industrial noise impact. Assessment of surrounding industrial noise impacting the development should comply with the recommended VPP Clause 55.07-6 indoor sound level criteria. PPN 83 states that:

"The application of a standard design treatment for noise is not available for an apartment development located in an industry noise influence area. An acoustic report must be provided."

In addition, noise emissions from any centralised mechanical services equipment associated with the proposed future development situated within the precinct, at any residence affected by noise from the facility, will be required to comply with the SEPP N-1 noise policy criteria.

For multi tenancy residential development, noise from mechanical services plant that is managed under a body corporate would generally be covered by the SEPP N-1 noise policy.

Melton Waste Transfer Station

From GHD's site visit, a major noise source was identified to be the rock crushing associated with the activities undertaken at the Melton Waste Transfer Station. It is recommended that further investigation including baseline noise monitoring be undertaken in relation to proposed developments in the TEMU area, nearby the Melton Waste Transfer Station, in line with SEPP N-1.

HRV Melton – Tabcorp Park

Activities undertaken at HRV Melton and Tabcorp Park (primarily music from functions hosted at HRV Melton and crowd noise from Tabcorp Park) have the potential for noise emissions. Any development that is proposed to be situated near HRV Melton may result in exposure to music noise levels that require local acoustic treatment to ensure compliance with SEPP N-2, in particular the noise levels outlined in Table 7. It is noted that crowd noise emanating from Tabcorp Park is not assessed by SEPP N-1 or SEPP N-2.

5.6 Discussion of potential vibration impacts

With regards to vehicle movements, typical ground vibration from heavy trucks passing over normal road surfaces generate low vibration levels in the range of 0.01 – 0.2 mm/s at the building's footings located 10-20 m from the roadway. The rattling of windows or the like is sometimes more likely to be caused by airborne low-frequency noise radiation from truck exhaust or vibrating truck trailer bodies.

Train vehicles passing along the Ballarat-Melbourne rail corridor will induce ground borne vibration transmitted through the subsoil which may cause intermittent vibration nuisance to the surrounding sensitive receivers, depending on the distance between the rail line and the sensitive receivers. If not addressed, potential vibration impacts arising from rail operations may include sleep disturbance, discomfort due to excessive vibration exposure, and damage to infrastructure.

Vibration impacts at sensitive receivers would depend on various factors such as type of industry, distance to receivers and ground soil properties.

5.7 General noise and vibration mitigation strategies

The identified noise sources are expected to remain in the area long term. Should a control at source noise mitigation strategy not be possible or practicable, it is not uncommon that the indoor amenity of sensitive receivers subject to noise be acoustically treated using a control at receiver strategy, via building acoustic treatment. However, the limitation of this strategy is that it would not preserve the outdoor amenity of the receiver unless a combination control such as noise control at transmission be implemented.

The noise mitigation strategies can generally be divided into four different areas, namely (from the most preferred to least preferred rankings) (NSW NPI, 2017):

- *Land use controls* (separating the location of noise-producing activities from sensitive areas).
- *Control at source* (reduce the noise output of the source to provide protection surrounding environment).
- *Control in transmission* (reduce noise level at the receiver but not necessarily the environment surrounding the source, e.g. noise barrier, etc.).
- *Receiver control* (localised acoustic treatment at sensitive receptor).

5.7.1 Land use controls

There are several strategies involved in using the land use control measures.

- *Setback strategy* (e.g. open space design adjacent to noisy industries, busy roads and/or railway corridors to provide noise reduction through setback distances to residential uses).
- *Setback distances* between the noise source and the noise sensitive receptor could be one of the treatments in reducing the noise exposure level at the proposed precinct development. A setback strategy would also be effective in mitigating ground-borne vibration impacts from nearby vibration sources.
- *Building locations and height controls:* For example, high rise buildings could be located adjacent to primary noise sources to provide a noise shielding effect to residential uses and the overall precinct.
- *Expansion of cycle and pedestrian facilities* to discourage the use of motor vehicles and encourage the use of bicycles, scooters or walking, which would result in less noise emission within the area.
- *Impose acoustic control planning conditions on new developments such as* planning permit conditions for specific acoustic treatments to noise sensitive developments.

5.7.2 Control at source

There are a number of strategies which can be used to control the noise at its source such as:

- Promoting the use of low pavement surfaces on new roads within the Toolern Town Centre and TEMU areas. The type of road surface has a significant effect on the level of noise generated by the tyre/road interface. Austroads Technical Report "*Austroads Review Report: Traffic Noise/Long-life Surfacings*" (Austroads, January 2011) provides relative noise emission levels of conventional road surfacings in Australia, based on studies conducted by (Campbell & Isles, 2001), (Parnell, 2006) and (Samuels, 2008).
- Traffic management to reduce the need for multiple heavy vehicle deliveries to one location.
- Acoustic treatments to specific noise sources from specific nearby industry.

5.7.3 Control in transmission

The noise reduction strategy used to control in noise transmission generally involves the installation of noise barriers. Noise barriers may include an existing feature, such as:

- An elevated road or a natural slope (e.g. earth mound)
- A purpose designed feature such as a solid boundary fence
- A purpose designed feature of the building, such as a partially enclosed carport
- A purpose designed building which acts as a barrier block

Figure 12 and Figure 13 illustrate different noise barrier configurations, sourced from the NSW Department of Planning "*Development near Rail Corridors and Busy Roads – Interim Guideline*" (NSW DoP, 2008).

The barrier should be installed in a manner such that it covers the noise sources from direct line-of-sight to the sensitive receptors.

In general, the barrier should provide sufficient screening to avoid direct line-of-sight between the shielded noise sources and the protected sensitive receptors.

Noise barriers would not be effective in reducing noise impacts if the line of sight from the noise source to the residence is not reduced. Hence, it may not be practical to install a noise barrier for elevated sensitive receptors.

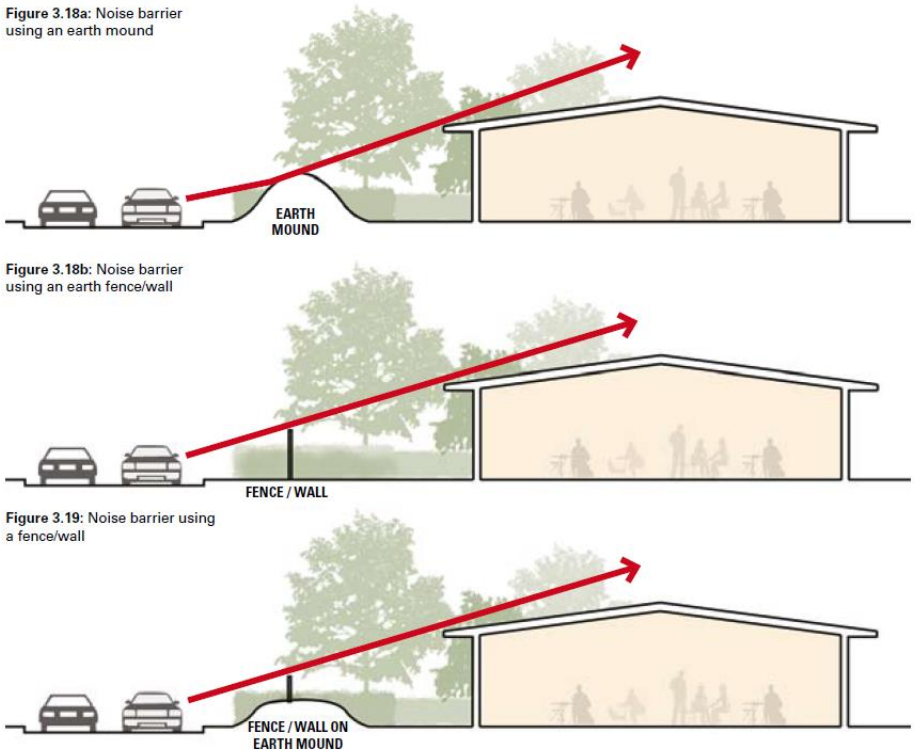

Figure 12 Noise barrier features (NSW DoP, 2008)

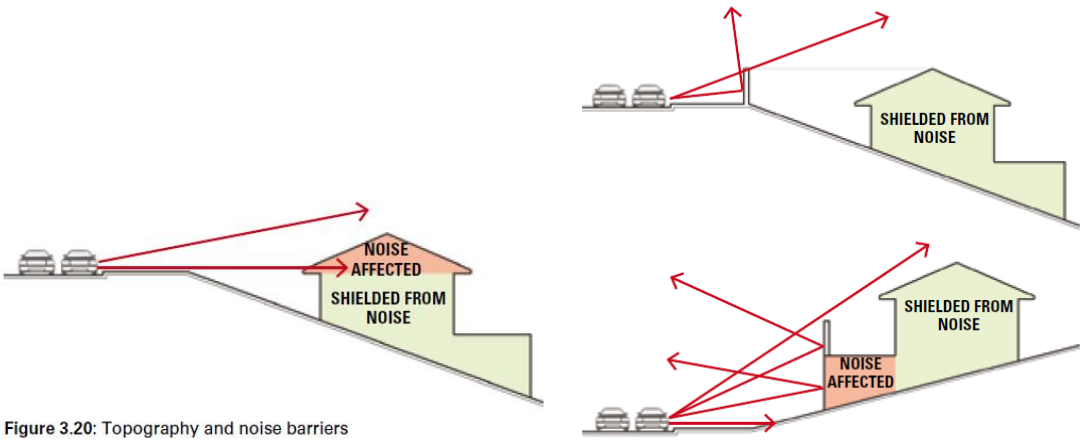

Figure 13 Noise barrier topography & features (NSW DoP, 2008)

5.7.4 Receiver control

There are several strategies involved in controlling noise at the receiver including:

- Building orientation
- Balustrade/balcony design/configuration
- Building façade acoustic treatment

Building orientation

The building orientation layout involves configuring the development's floor plan to have sleeping areas/habitable areas facing away from the noise sources. Figure 14 and Figure 15 illustrate samples of building orientation layout strategies to minimise local noise intrusion, which is sourced from NSW Department of Planning "*Development near rail corridors and busy roads – Interim guideline*" (NSW DoP, 2008).

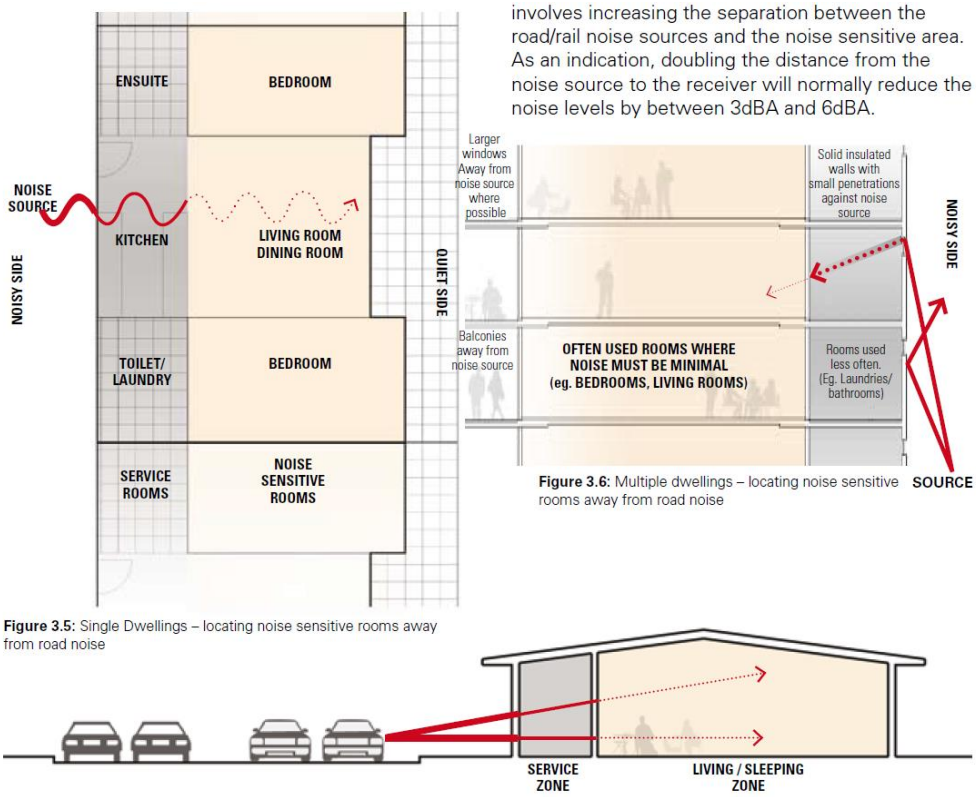

Figure 3.5: Single Dwellings – locating noise sensitive rooms away from road noise

Figure 3.6: Multiple dwellings – locating noise sensitive rooms away from road noise

Figure 14 Sample of building layout strategies 1(NSW DoP, 2008)

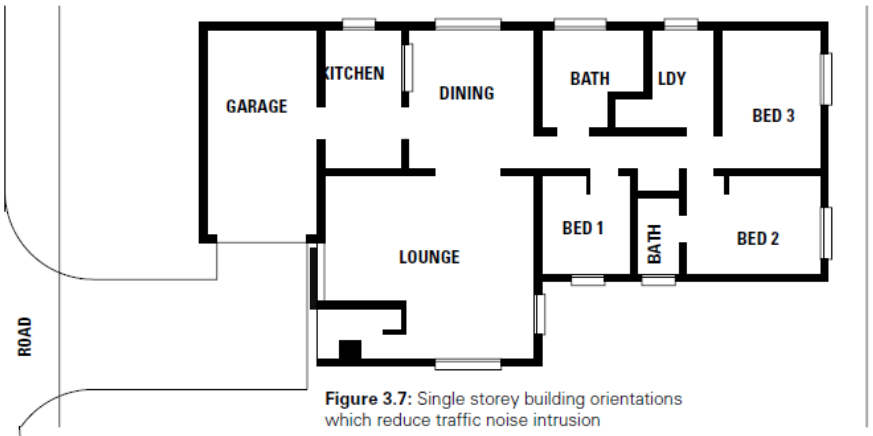

Figure 3.7: Single storey building orientations which reduce traffic noise intrusion

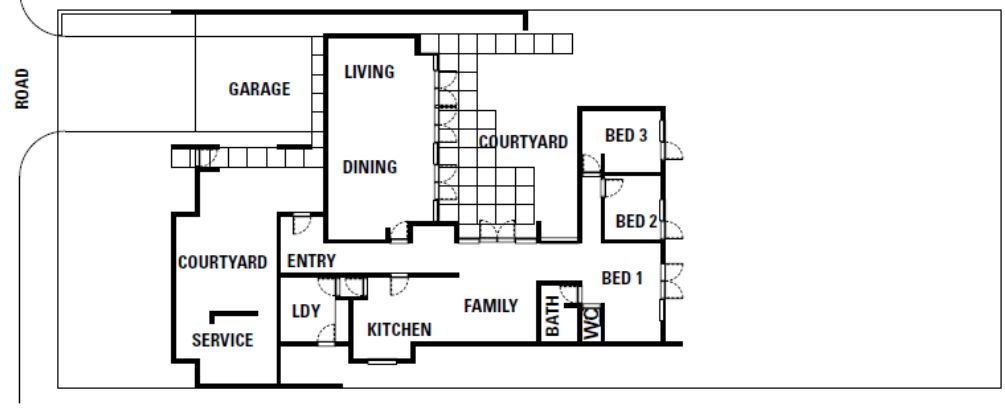

Figure 3.8: Double storey building orientation which reduces traffic noise intrusion

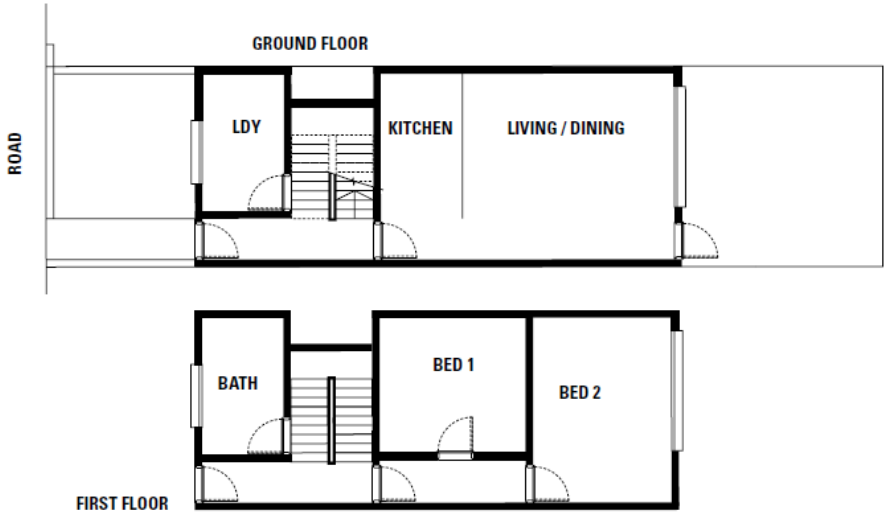

Figure 15 Sample of building orientation layout strategies 2 (NSW DoP, 2008)

Balustrade/balcony design/configuration

By designing the balustrade/balcony design/configuration to avoid direct line of sight from any balcony to the noise source, it is possible to minimise local noise intrusion. Figure 16 illustrates examples of balustrade/balcony design strategies to minimise local noise intrusion, which is sourced from NSW Department of Planning "*Development near rail corridors and busy roads – Interim guideline*" (NSW DoP, 2008).

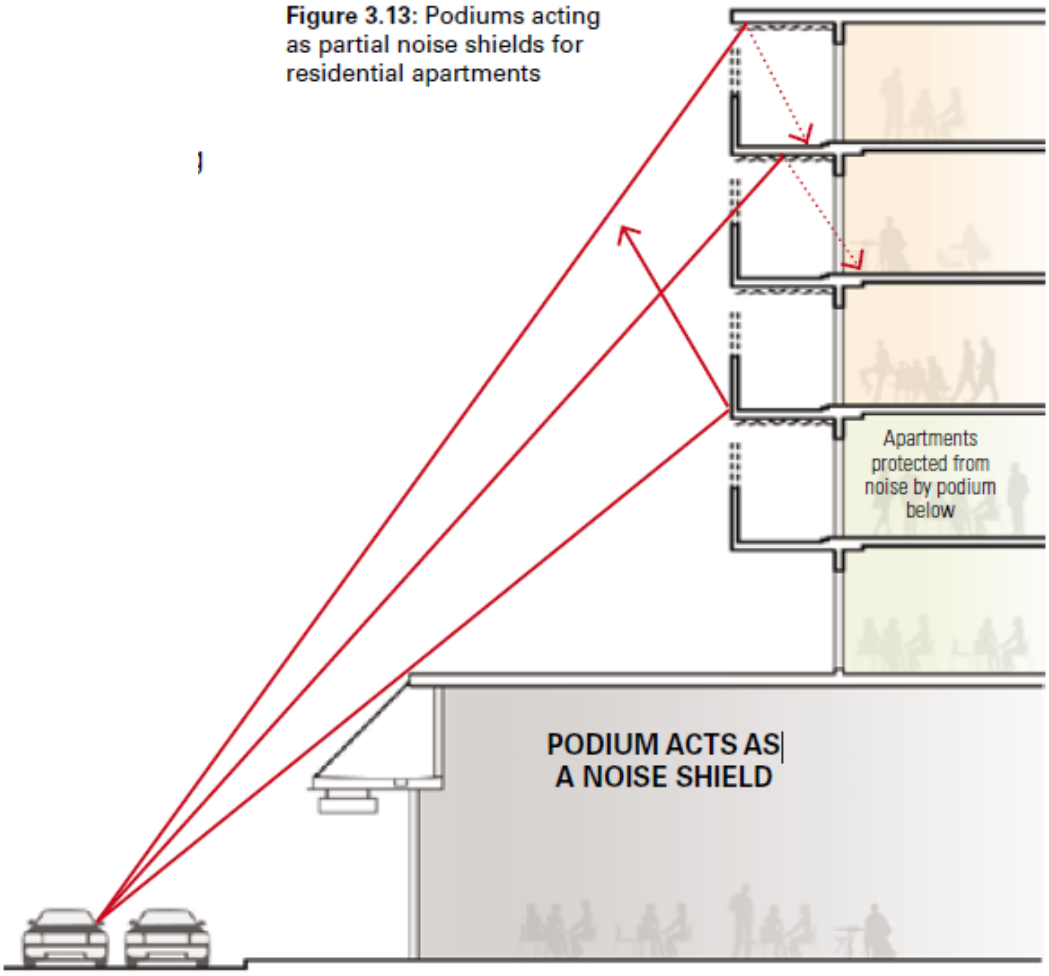

Figure 3.13: Podiums acting as partial noise shields for residential apartments

Where balconies are required, solid balustrades with sound absorption material added to the underside of balconies above is a good means of reducing noise entering the building.

Providing enclosed balconies (or winter gardens) is another means of reducing the noise entering a building. Where enclosed balconies are used ventilation may need to be considered. By installing acoustic louvres ventilation requirements and reduced noise can be addressed. These approaches are shown in **Figure 3.16**.

Figure 3.15: Balcony treatments which reduce traffic noise intrusion

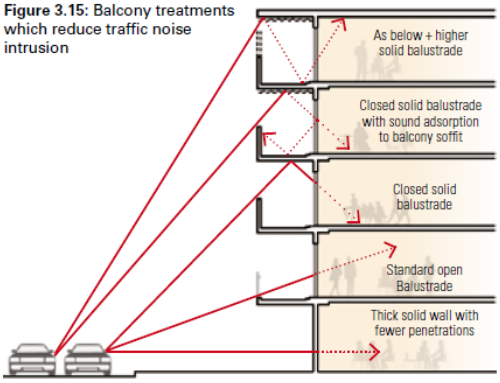

Figure 3.16: Enclosable balconies facing the road

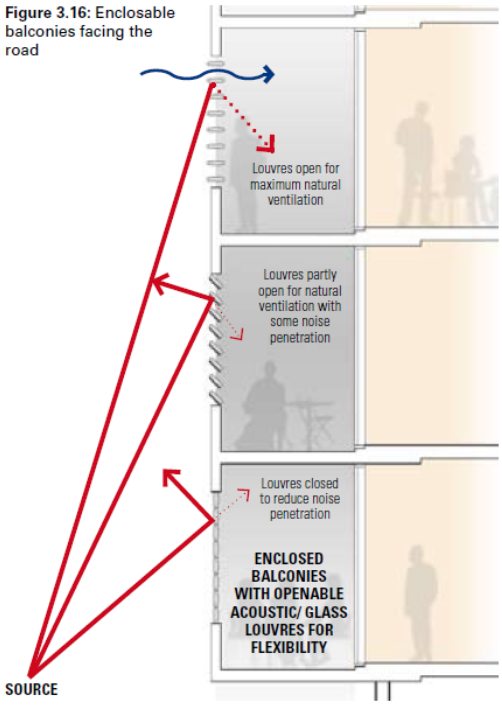

Figure 16 Sample of balustrade/balcony design strategies (NSW DoP, 2008)

Building façade acoustic treatment

External traffic noise intrusion is typically transmitted into the building via lightweight façade elements such as glass, doors, lightweight walls, lightweight roofs, as well as any grille openings. Subject to more detailed traffic noise assessment, these light weight façade elements may need to be acoustically treated to preserve indoor amenity of the building occupants, such as:

- Minimising lightweight external wall construction facing the dominating noise sources
- Thicker glazing construction for the window façade
- Minimise window size and maximise masonry on the external wall construction
- Minimise the use of openable window construction
- Configure any discharge/intake duct grill layout (above ceiling level) facing away from the noise sources

The purpose of treating the building envelope is to reduce the internal noise, however this is generally the last measure used when the external noise criteria cannot be achieved.

The Australian standard *AS 3671:1989 – Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction* (Standards Australia, 1989) provides a procedure for determining appropriate treatments that correspond to the noise reduction required for internal noise levels. AS 3671 refers to AS 2107-2000 (now superseded by AS 2107:2016) as the appropriate standard that recommends design objective noise limits for acoustic environments within occupied spaces. In addition, the DELWP practice note *Assessing External Noise Impacts for Apartments – Planning Practice Note 83* (PPN 83) (August 2017) also provides guidance on the indoor sound levels within residential apartments situated within the *Noise Influence Area*.

In principle, noise inside a building can be reduced if the building envelope has a high sound reduction. Heavy, dense materials such as masonry or brick walls are better for sound reduction. However, lightweight solutions can also be effective in reducing noise. These include double-stud, staggered-stud or resilient-stud systems that have external layers of cement sheet or similar and internal layers of plasterboard with acoustic insulation in the cavity.

Noise from traffic may enter a room through the roof, external walls, windows and external doors. Windows and doors are often the weakest point in sound insulation. Measures such as thicker glass, laminated glass or double glazing and acoustically sealed windows (permanent or openable) are techniques for noise reduction. Louvre windows are less effective in noise reduction when compared to solid single and double glazed acoustically sealing windows. Depending on the noise reduction required, window size and effectiveness of acoustic seals, louvre windows can be considered as a construction component.

Note that mohair/brush/weatherpile type seals are not acceptable for acoustically rated partitions (windows, doors, etc.). All acoustic seals required shall be compressible bulb or rubber type seals. It is essential to ensure that all installed seals are fully engaged around the perimeter of the partition frame.

Solid-core doors are the most effective for external doors. Gaps and openings around both doors and windows should be well sealed acoustically. Table 13 shows the noise reduction possible by introducing thicker glass, types of seals, or double glazing and is sourced from Austroads (Austroads, 2005). Note that no additional noise reduction is achieved when any type of window is open.

The internal noise design objective can only be achieved when the windows remain closed. To maintain internal design objectives at all times would require ventilation to rooms by means other than through openable windows. Alternative ventilation may include "borrowed" natural ventilation from other rooms with less exposure to traffic noise or a mechanically ventilated system.

Table 13 Noise reductions possible based on window type and thickness

Noise reductions possible dB(A)	Type and thickness of glazing	Type of window
5 to 15	Any type of window when open	
Single glazing: closed		
Up to 20	3 mm glass	Openable, no seals
Up to 25	3 mm glass	Fixed, permanent seals
Up to 25	4 mm glass	Openable, weather stripped
Up to 30	6 mm glass	Openable, acoustic seals or fixed, permanent seals
Up to 35	12 mm glass	Openable, acoustic seals or fixed, permanent seals
Double glazing: closed (100 mm separation)		
Up to 30	4 mm + 4 mm glass	Openable, acoustic seals or fixed, permanent seals
Up to 35	6 mm + 6 mm glass	Openable, acoustic seals or fixed, permanent seals
Up to 40	6 mm + 6 mm glass	Fixed, permanent seals

Source: (Austroads, 2005)

5.8 Potential constraints to the mitigation strategies

The following details the identified potential key constraints for noise mitigation measures at the site:

- Established existing industries with private ownership – control at source mitigation strategy may be a challenge.
- Land-use controls mitigation strategy through setback distances could compromise land value and land utilisation.
- While noise from industry and transportation are typically addressed separately, cumulative impacts may be a concern for precinct users, in terms of perception.
- Noise control in transmission, through the installation of noise barriers, could have some limitations as follows:
  - Noise barriers are not effective to reduce transmission to receivers in a high rise buildings overlooking a road.
  - Noise barriers generally create view restriction, feelings of confinement, loss of air circulation, loss of sunlight and lighting and could potentially increase local crime due to visual shielding.
- Noise control at individual receivers may involve substantial acoustic treatments along with the associated cost.

5.9 Recommended further work and investigation

This section discusses some recommended future key actions to address potential noise and vibration impact to the sites:

- Undertake a detailed noise survey in the subject areas, including on-site attended and unattended noise monitoring to determine the characteristics of the existing background/ambient noise levels.
- Undertake a detailed rail vibration survey in the subject area, including on-site attended and unattended vibration monitoring to determine the characteristics of the existing rail vibration levels. The findings of this assessment would then inform the configuration and design detail of the immediately surrounding land. Based on the measurements and detailed design layout, noise and vibration impacts from existing operations could be assessed against the applicable standards and statutory requirements.
- Based on the noise survey results, confirm noise specific criteria for the proposed site.
- Based on the monitoring/ modelling results and knowledge of the subject area, identify cost-effective mitigation measures and possible recommendations for ensuring compliance and amenity preservation.

6. Future Land Use Planning Considerations

6.1 Key findings and development constraints

GHD has identified the existing industries within the subject sites and have highlighted those industries with the potential for odour and dust, general air, noise emissions and vibration impacts.

6.1.1 Amenity assessment (dust/odour/general air)

The significant constraints within the Toolern Town Centre are:

- Boral Concrete
- Westkon

The TEMU is generally constrained through the centre of the study area with the east and west portions relatively free from constraint.

The default buffer analysis also identifies areas within the subject sites that are acceptable for sensitive residential or sensitive non-residential uses without any further investigations into individual industrial operations.

GHD has also assessed site-specific variations to the default separation distances as per EPA guideline 1518. However, based on the information available to GHD and contact with the identified industries, the only site-specific factor applicable to the industries was meteorology. Local meteorology was used to develop directional buffers to assess protection from disamenity in the event of a process upset. The adjustments to take account of local meteorology show a large reduction towards the west, while there is an increase beyond the default buffer to the east and southeast. The directional buffers result in a reduction of the constrained area in the western portion of the TEMU area, by approximately 9.2 ha. Aside from the western portion of the TEMU area, the overall area of land able to be developed within both the TEMU and Toolern Town Centre areas (i.e., land in which an industry/infrastructure does not already exist) has remained similar to the default buffer. Further, the directional buffers mainly extend into regions where industry or infrastructure already exist, allowing unutilised areas more potential for development.

Due to the changing nature of the locality and rezoning of land to the UGZ, the potential for future new industries to pose constraints on the site has been removed.

6.1.2 Noise and vibration assessment

The dominant noise source is likely to be from traffic noise from the existing road network. Other major noise sources are likely to originate from the crushing activities at the Melton Waste Transfer Station, the harness racing at Tabcorp Park and Melton Railway Station and the associated train line.

It is recommended that baseline noise monitoring be undertaken in relation to any proposed development in the TEMU area, nearby the Melton Waste Transfer Station, in line with SEPP N-1.

Traffic noise influence predominately from the Western Freeway is also expected to contribute to the overall noise levels within the TEMU area. The northern most section of the TEMU area straddles the Western Freeway however as the Western Freeway has an AADT of less than 40,000 vehicles and as such it is expected that normal construction methods will likely be sufficient in minimising noise exposure, in line with PPN83.

Another significant noise source identified within and nearby the TEMU and Toolern Town Centre areas included rail noise associated with the Ballarat-Melbourne railway line and Melton Railway Station. Any new developments in the Toolern Town Centre and the TEMU area within the rail *noise influence area* would be required to be designed to satisfy with VPP Clause 55.07-6, outlined in Table 9.

Crowd and music noise from HRV Melton – Tabcorp Park may also have the potential for noise emissions. Any development that is proposed nearby HRV Melton may require local acoustic treatment to ensure compliance with SEPP N-2, in particular the music noise levels outlined in Table 7.

The identified noise sources are expected to remain in the area for the long term and as such any approved development into the area will need to be designed in a manner to ensure noise at new sensitive land uses are minimised to prevent complaint and disturbance to the occupants.

6.2 Mitigation measures

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

Land use planning considerations

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

The identified directional buffers, as a minimum, indicate where the establishment of sensitive uses should be avoided to reduce potential adverse amenity issues.

Based on the directional buffer distances, this report has highlighted a number of locations where existing industries may have a detrimental impact on the amenity of proposed new sensitive uses.

It is considered that the location of sensitive uses within prescribed separation distances of existing industries could raise the following two problems:

1. A risk to future sensitive uses being subjected to unacceptable odour, noise and dust during either routine or upset events or in certain other circumstances (amenity impacts).
2. The encroachment of sensitive uses on the buffer areas of existing industries may result in unachievable or unreasonable requirements on the industries to mitigate the impacts at the source (reverse amenity impacts).

In order to manage the conflicts between existing and proposed land uses, there must be a balance between selecting measures that sufficiently mitigate amenity impacts, and avoiding over regulation and therefore impacting on the ability to achieve other objectives such as urban growth and environmental sustainability.

Based on the analysis contained in this report, it is recommended that any proposed introduction of sensitive uses should be avoided within the buffer areas shown in Figure 17 below.

While sensitive uses may be considered within the TEMU, outside the directional buffer areas, this should be considered as a 'transitional' area with more sensitive uses located within closer proximity to the eastern and western boundaries of the TEMU, adjacent to existing residential uses.

286,000 288,000 290,000 292,000

5,826,000 5,824,000

MELTON
High St
Coburns Rd
Station Rd
Rees Rd
Melton Hwy
Federation Dr
Western Fwy
Ferris Rd
Eaton Rd

ARNOLDS CREEK WEST BRANCH
ARNOLDS CREEK EAST BRANCH
ARNOLDS CREEK
LITTLE MELTON CREEK
RAVEN CREEK
TOOLERN CREEK
KORKUPOT CREEK
DARLINGSFORD LAKE
REES ROAD WETLAND
WERRIBEE RIVER

Midway Concrete and garden Supplies
MHG Plastics
Melton Recycling Facility - Crushing
Melton Recycling Facility - Transfer Station
ABMT Textiles
Abey Australia
Reinforced Concrete Pipes
Technochem Australia Ltd
Boral Concrete
Westcon Precast

Paper Size A3

0 100 200 400 600 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- Toolern Employment & Mixed Use Precinct
- Toolern Town Centre
- Industries Requiring Separation Distance
- Directional Buffers Outside Subject Site
- Preferred Location of Transitional Uses
- Preferred Location of Non-Sensitive Uses
- Preferred Location of Sensitive uses
- Railway Corridor

Tract Consultants
Toolern Buffer Assessment

Job Number	31-36435
Revision	A
Date	11 Sep 2018

Directional Buffer and Land Use Assessment

Figure 17

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Data source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Created by:lrsmith

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Staged development

Undertake a staged development approach to the extent possible as the area is predominantly in private ownership – so that sensitive uses are not developed within buffer areas until the industry adequately reduces the off-site impacts or relocates out of the area. Planning policy may be introduced to support this approach and put the onus on ensuring appropriate separation rests with the encroaching sensitive land use.

Control of odours at source

Odour emissions at source in an industrial premises can be reduced by odour treatment/control. This can be required by EPA (via PANs (Pollution Abatement Notices) and PINs (Penalty Infringement Notices)). For those industries identified to cause a constraint, it is the EPA's responsibility to enforce compliance with the SEPP –AQM criteria so that these sites do not cause off-site impacts or odour complaints under normal operations. EPA is also responsible for validating and investigating any odour complaints that they receive.

Control of dust emissions at source

Two available measures to control or reduce the dust emissions at source include:

- Use of BPEM (Best Practice Environmental Management) measures for each industry to mitigate dust on site
- Reduce the dust output of the source via dust mitigation measures (may require EPA enforcement via PANs and PINs)

EPA is also responsible for validating and investigating any dust complaints that they receive.

Control of Noise emission's

Some possible noise mitigation strategies that are available include:

- Land use control
- Control at source
- Control in transmission
- Receiver control

Should a control at source noise mitigation strategy not be possible or practicable, it is not uncommon that the indoor amenity of sensitive receiver's subject to noise be acoustically treated using a control at receiver strategy, via building acoustic treatments. However, the limitation of this strategy is that it would not preserve the outdoor amenity of the receiver.

6.3 Recommended actions

There are a number of different types of planning controls that could be implemented to facilitate the Toolern Town Centre and Employment & Mixed Use precincts.

Based on the above investigation, the following recommendations should be considered in the development of the Toolern Town Centre UDF Revision and the TEMU UDF:

- Careful strategic planning of land uses, to plan where different types of land uses can be located as per Figure 17.
- The implementation of design controls through the Schedule to the UGZ where appropriate, which can place specific requirements on proposed use developments in particular areas and implementing buffer areas.
- Consider staging the development of the land to provide the opportunity to consider the changing industrial context for the surrounding precincts.
- Acknowledge the broader vision for the surrounding area seeking to transition from standard industrial uses to knowledge based, educational, research and higher tech services.
- Locate complimentary commercial and business uses within the specified buffer distances to industrial developments and adjacent to arterial roads. This could apply spatially at a horizontal level as well as a vertical level. The commercial and business land uses would act as a physical buffer between industrial activities and more sensitive land uses.
- Undertake a detailed noise and vibration survey within and surrounding the subject sites to further inform the proposed urban design form for the site.
- Further, acoustic treatments could be considered, including transmission barriers and noise walls as well as appropriate materials and design controls such as insulation, double/tripled glazed windows, orientating habitable rooms away from noise sources etc.

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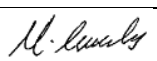
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Draft A						12/09/2018
0	S. Materia	M. Asimakis		C. McVie		22/10/2018

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