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Environment Effects Statement | May 2021

western outer ring main

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# APA VTS (Operations) Pty Ltd

## Western Outer Ring Main - Environment Effects Statement
## Social Impact Assessment

May 2021

# Executive summary

The Western Outer Ring Main (WORM) gas pipeline Project (the Project) is a proposed 600 millimetre nominal diameter high pressure gas transmission pipeline that will provide a high pressure connection between the eastern and western pipeline networks of the Victorian Transmission System (VTS).

The Project has been designed to provide critical infrastructure for Victoria's gas supply, distribution, and consequent security, efficiency and affordability. The key objectives of the Project are to:

- Improve system resilience and security of gas supply
- Increase the amount of natural gas that can be stored for times of peak demand
- Improve network performance and reliability
- Address potential gas shortages as forecasted by AEMO in the March 2020 Victorian Gas Planning Report update

The Minister for Planning determined on 22 December 2019 that the Project would require an Environment Effects Statement (EES) under the *Environment Effects Act 1978* (EE Act). This report addresses the evaluation objectives set out in the EES scoping requirements: *to minimise potential adverse social, economic, amenity and land use effects at local and regional scales*.

In line with the EES scoping requirements, this social impact assessment (SIA) seeks to understand the social impacts brought about by the Project, and identify ways to enhance the positive impacts and avoid, minimise or manage the negative impacts to people and communities. The SIA was developed using a data triangulation method where information was sourced from desktop sources, evidence from the findings from other technical studies undertaken for the EES, and through consultation with affected stakeholders, such as local councils, residents, property owners/lease holders and community infrastructure facilities service providers.

The methodology to undertake the SIA included the following key steps:

- To capture the areas subject to the socio-economic influences of the Project, the social study area was defined as the local study area and the regional study area. The local study area includes the 114 parcels intersected by the Project's construction corridor and a surrounding buffer of approximately 1 kilometre on either side of the proposed pipeline corridor.
- The regional study area includes the local government areas intersected by the Project, namely Melton, Hume, Mitchell and Whittlesea
- A baseline of the existing conditions within the social study area was established through research on community values, demographic characteristics, and community infrastructure facilities
- A risk assessment was undertaken to identify the issues for assessment, investigate issues proportionate to the identified risk, and inform the Project of applicable measures to manage identified risks

- The impact assessment was focused on four themes: landholders and properties intersected by the Project, residential amenity and character, transport and access, and community infrastructure facilities. Impacts were assessed based on a significance criteria
- Impact management and monitoring measures were developed to address negative impacts and enhance Project benefits

### Existing conditions

The Project intersects 137 parcels of land through the LGAs of Melton, Hume, Mitchell, and Whittlesea. The land and area generally surrounding the Project is predominantly rural. The majority of properties are rural residential or agricultural, and residents value the quiet rural amenity afforded by the area's natural landscapes. These properties vary in intensity of use and type of agricultural activity, including established cropping and grazing businesses and equestrian training / breeding properties. The exception to this is a small number of emerging growth areas in Plumpton (KP 0.0-3.1) and Mickleham (KP 28.5-32.6), which are characterised by new residential development.

More broadly, the LGAs that the Project intersects are characterised by population growth, which in Hume and Whittlesea has been culturally and linguistically diverse. Despite this, rural landscapes predominate in much of these LGAs, and are valued by the community. The high growth in some areas such as Hume has resulted in community concerns regarding the capacity and quality of road infrastructure.

Community infrastructure facilities located with a 1 km area of the Project includes:

- Open space and natural areas that have high amenity values that provide for passive recreation opportunities
- Small parks and linear reserves that service residential catchments in urban growth areas
- Cultural facilities such as places of worship and community centres
- Educational and early child care facilities

### Impact assessment

The risk assessment and subsequent impact assessment found that the Project's construction activities have the potential to result in temporary social impacts on the nearby residents, the general community and community infrastructure facilities, including:

- A temporary reduction in area of land available for rural residential and agricultural use and increased or changed agricultural property management requirements at the properties intersected by the Project
- A temporary increase in demand on time of the landowners and lease holders to engage with the Project especially during the Project planning and construction phases. This may lead to impacts on wellbeing, particularly for those landholders or lease holders who reside at the affected property, or use the property to supplement or generate income. The increased demand on time would also be experienced by landholders and land users from the cultural and linguistically diverse groups, who may have additional cultural or linguistic barriers in engaging with the Project.
- A temporary reduction in the local amenity leading to disruption to day to day activities at residences and reduced enjoyment of people's properties, particularly outdoor areas, mainly within the local study area

- A temporary reduction in local amenity leading to reduced use and enjoyment of some nearby community infrastructure facilities, such as open spaces and outdoor areas in proximity to the Project's construction corridor
- Temporary and intermittent increase in travel time experienced along existing roads at locations intersected by the proposed construction corridor.

The risk assessment and subsequent impact assessment found that the Project's operational activities would result in insignificant social impacts. This is largely due to the limited operational activities and reinstatement of usual activities on or along the easement. Consequently, no specific management measures are required during the Project's operation phase.

The recommended Environmental Management Measures (EMMs) to avoid, minimise and mitigate social impacts to residents, the community, and users of community infrastructure facilities during construction include:

- Reduce community disruption:
  To manage potential amenity impacts associated with construction, the Project will be undertaken in accordance with EMMs AQ1, AQ3, AQ4, B7. LV1, LV2, LV5, NV1, NV2, NV3, NV4, NV5, NV6, and NV7 (refer Appendix B) to minimise noise, vibration, air quality, and landscape and visual impacts to residents directly adjacent to the alignment, community facilities and recreation areas.
- Minimise property impacts:
  To minimise property impacts due to construction of the Project, construction activities will be undertaken in accordance with the relevant elements of existing property specific biosecurity plans which landholders operate under and Project related land access agreements developed with each individual landholder
- Community and residential access and connectivity:
  To manage potential impacts to local access during construction, Traffic Management Plans (TMPs), approved by the relevant local government authorities or the Department of Transport, will be in place prior to the commencement of construction
- Land access:
  Prior to any works commencing on a property, agreements will be made with the landowners and occupiers regarding the use of existing roads or tracks, the selection of new access routes and any property-specific measures to be adhered to during construction and operation
- Land owners and occupiers will be informed of the construction commencement, and details of the proposed construction program, in accordance with the Project Consultation Plan
- Workers supplies and services during construction will be sourced from the regional study area as practicable
- Regional employment and purchasing will be supported through requiring the main construction contractor to detail mechanisms to provide for regional employment and purchasing during the tender phase. The adequacy of this plan will be a consideration in the selection of the preferred construction contractor.
- A Project Consultation Plan will be implemented to facilitate ongoing consultation with relevant stakeholders throughout the Project's planning and construction

Following the implementation of the Project's EMMs, it is anticipated that the Project's construction would have minor residual impacts on landholders and users of properties intersected by the Project, residential amenity and the use of community facilities.

The Project's potential benefits would contribute to regional sustainable development and are anticipated to include some local employment and business procurement opportunities during construction, and the potential future development of the Project's easement as a linear open space in locations where there are current or marked future residential communities.

# Abbreviations

| Abbreviation | Definition |
|---|---|
| ABS | Australian Bureau of Statistics |
| APA | APA VTS (Operations) Pty Ltd, trading as APA Group, the proponent for the Project |
| CEMP | Construction Environment Management Plan |
| DELWP | Department of Environment, Land, Water and Planning |
| EE Act | Environment Effects Act 1978 |
| EES | Environment effects statement |
| EMM | Environmental Management Measure |
| ha | Hectare |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999 |
| HDD | Horizontal Directional Drilling |
| IAIA | International Association of Impact Assessment |
| IRSD | Index of Relative Socio-Economic Disadvantage |
| km | Kilometre |
| LGA | Local government area |
| MLV | Mainline Valve |
| MSA | Melbourne Strategic Assessment area |
| n.d. | No date |
| Pipelines Act | Pipelines Act 2005 |
| SA1 | Statistical area 1 |
| SIA | Social impact assessment |
| The Project | The Western Outer Ring Main Project |
| SEIFA | Socio-economic index of areas |
| VPA | Victorian Planning Authority |
| VTS | Victorian Transmission System |
| WORM | Western Outer Ring Main |

# Glossary

| Term | Meaning |
|---|---|
| Amenity and character | The noise, air quality, and visual amenity of the area provide for the enjoyment of residents and create a recognisable and distinctive character (Wood et al., 2008). |
| Construction corridor | The area of land directly disturbed for construction of the Project consisting of the construction right of way, extra work spaces, temporary access tracks and any other ancillary facilities required to construct the pipeline. |
| Community infrastructure facilities | The Victorian Government recognises that community infrastructure facilities are vital to 'creating healthy community, supporting inclusion and enhancing the wellbeing of local residents (Victorian Government, 2010). Based on the definition provided by the Victorian Government, the following community infrastructure facilities have been included in this SIA:<br>• Recreation and open space, including parks and reserves, sports facilities, swimming pools, and off-road trails<br>• Cultural facilities, including community centres, libraries, performance spaces, museums, galleries, and places of worship<br>• Education and early childhood facilities, including child care premises, and primary, secondary and tertiary education facilities<br>• Emergency services, including police, fire and ambulance services<br>• Health facilities and services, including aged care, rehabilitation, hospitals, and private or specialist health care providers |
| Demography | The range of different groups existing in a particular populace, as distinguished by factors such as age, ethnicity and social background. |
| Easement | A right held by the proponent to make use of the land for a specific purpose (in this case, for the installation and operation of a pipeline).<br>The easement for the Project will typically be 15 m wide. |
| Local study area | Includes the 137 parcels intersected by the Project's construction corridor. |
| Index of Relative Socio-Economic Disadvantage | Socio-economic advantage and disadvantage are defined broadly by the Index of Relative Socio-Economic Disadvantage (IRSD) in terms of people's access to material and social resources and their ability to participate in society (ABS, 2018a). In order to capture this broad definition, the IRSD includes a range of data points, including income, education, employment, occupation, and housing. The IRSD divides a population into ten equal groups. The lowest scoring 10 per cent of these groups are given a decile number of 1, which indicates the highest level of disadvantage, and the highest scoring 10 per cent of areas are given a decile of 10, which indicates the lowest level of disadvantage. |

| Term | Meaning |
|---|---|
| Melbourne Strategic Assessment (MSA) area | The area between KP 0 - KP 3.2, KP 28.16 - KP 28.57 and KP 32.07 - KP 51.04, which is within the area having MSA approvals. This agreement between the Victorian and Australian governments made under Part 10 of the EPBC Act whereby impacts on Matters of National Environmental Significance that are expected to occur within the Melbourne urban growth boundary are defined and accounted for a priori and can be considered early in the development of a plan, policy or program. |
| Regional study area | The regional study area – this includes the local government areas (LGA) within which the Project is located. This includes, in order of kilometre point, the LGAs of Melton, Hume, Mitchell, and Whittlesea. |
| Resident | In the context of this SIA, resident refers to people living in the area. |
| SA1 – Statistical Area 1 | The ABS notes the following in regards to the construction of SA1s: 'The SA1s have generally been designed as the smallest unit for the release of census data. SA1s have a population of between 200 and 800 people with an average population size of approximately 400 people. SA1s are designed to be either a predominantly rural or predominantly urban in character, with SA1s in rural and remote areas generally having a lower population than in urban areas. SA1s are designed to be internally connected by road, except for groups of unpopulated islands and Aboriginal and Torres Strait Islander communities, which may not be contiguous. SA1s closely bound small rural towns. In urban areas, SA1s have been designed to contain or aggregate to whole gazetted suburbs. SA1s may be aggregated to reflect Local Government Areas, but will not exactly match (ABS, 2017a)'. |
| Stakeholder | Person or group affected by or concerned with an issue. |
| Vulnerable group | The inability of people to withstand or adapt to change due to characteristics of the group they are a part of. This report considers the following groups: socio-economically disadvantaged persons as identified by the Index of Relative Socio-Economic Disadvantage (ISRD), the elderly and very young, and people who need assistance with core activities such as self-care, movement and communication due to a severe or profound disability. |

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# 1. Introduction

## 1.1 Purpose of this report

The Western Outer Ring Main (WORM) gas pipeline Project (the Project) is a proposed 600 millimetre nominal diameter high pressure gas transmission pipeline that will provide a high pressure connection between the eastern and western pipeline networks of the Victorian Transmission System (VTS).

APA is the proponent for the Project. APA is Australia's largest natural gas infrastructure business. In Victoria, the VTS is owned and maintained by APA and consists of some 2,267 kilometres of gas pipelines. The VTS serves a total consumption base of approximately two million residential consumers and approximately 60,000 industrial and commercial users throughout Victoria.

The Project has been designed to provide critical infrastructure for Victoria's gas supply, distribution, and consequent security, efficiency and affordability. The key objectives of the Project are to:

- Improve system resilience and security of gas supply
- Increase the amount of natural gas that can be stored for times of peak demand
- Improve network performance and reliability
- Address potential gas shortages as forecasted by AEMO in the March 2020 Victorian Gas Planning Report update

The Minister for Planning determined on 22 December 2019 that APA and the Western Outer Ring Main gas pipeline Project (the Project) would require an Environment Effects Statement (EES) under the *Environment Effects Act 1978* (EE Act). The EES will inform assessment of approvals required for the Project including under the *Pipelines Act 2005*, *Aboriginal Heritage Act 2006* and *Environment Protection and Biodiversity Conservation Act 1999*.

The purpose of this report is to assess the potential social impacts associated with the Project and to define the environmental management measures necessary to meet the EES evaluation objectives. To assess the social impacts, the report uses recognised social impact assessment methodology and addresses the relevant items set out in the scoping requirements. This includes describing the social baseline, identifying social impacts, considering options for management, mitigation and monitoring of impacts and commitments.

## 1.2 Why understanding social impact is important

The features and qualities of the environment influence the way that people live, work, play, and interact with one another. These qualities include the amenity and character of an area, mobility and access to residences, community infrastructure facilities and goods and services. The construction and operation of the Project has the potential to change these features and qualities. These changes may lead to impacts on the community with regard to wellbeing, community use and enjoyment of open space and recreational areas, business functionality and access to goods, services and facilities.

This social impact assessment (SIA) seeks to understand the potential social changes brought about by the Project, and identify ways to enhance the positive impacts and avoid, minimise or manage the negative impacts to people and communities that may occur due to these changes.

## 1.3 Limitations

This Social Impact Assessment Report (Report):

1. Has been prepared by GHD Pty Ltd ("GHD") for APA VTS (Operations) Pty Ltd (APA);
2. May only be used for the purpose of informing the Environment Effects Statement and Pipeline Licence Application for the Western Outer Ring Main Project (and must not be used for any other purpose); and
3. May be provided to the Department of Environment, Land, Water and Planning for the purpose of public exhibition as part of the Environment Effects Statement and Pipeline Licence Application for the Western Outer Ring Main Project.

The services undertaken by GHD in connection with preparing this Report were limited to those specifically detailed in section 5 Methodology of this Report. The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD when undertaking services and preparing the Report (Assumptions), as specified in section 5 Methodology and throughout this Report. GHD excludes liability for errors in, or omissions from, this Report arising from or in connection with any of the assumptions being incorrect. Subject to the paragraphs in this section of the Report, the opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the time of preparation. GHD has not, and accepts no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was signed.

# 2. EES scoping requirements

## 2.1 EES evaluation objectives

The scoping requirements for the EES, released by the Minister for Planning, set out the specific environmental matters to be investigated and documented in the Project's EES, and informs the scope of the EES technical studies. The scoping requirements include a set of evaluation objectives. These objectives identify the desired outcomes to be achieved in managing the potential impacts of constructing and operating the Project.

The following evaluation objective is relevant to the social assessment:

- *To minimise potential adverse social, economic, amenity and land use effects at local and regional scales.*

## 2.2 EES scoping requirements

The scoping requirements relevant to the social evaluation objectives and where they are addressed in this SIA report (or other technical reports) are shown in Table 2-1.

Table 2-1 Scoping requirements relevant to the social impact assessment

| Aspect | Scoping requirement | Section addressed |
|---|---|---|
| Key issues | • Potential for Project works and operations to affect business (including farming) operations or other existing or approved land uses through direct impacts of land loss or indirect impacts such as severance of land, erosion/sedimentation, reduced accessibility, or impacts on water supply and use | • Appendix A<br>• Section 9.1.2 and Section 9.2.2<br>• Technical report K – Land use |
| | • Relocation or other impacts to existing or proposed infrastructure, including road/rail networks and power infrastructure | • Technical report K – Land use |
| | • Potential for dust emissions resulting from construction works and activities, including dust from potentially contaminated soil | • Impacts to residential amenity are discussed in Section 9.1.3 Impacts to the amenity of community facilities are discussed in Section 9.1.5<br>• Technical report F – Noise and vibration<br>• Technical report G – Air quality |
| | • Potential for increases in noise and vibration levels during Project construction or operation to affect amenity adversely for sensitive receptors including residential areas (including from blasting activities where required) | |
| | • Potential for Project construction or operation to adversely affect local air quality | |
| | • Potential for temporary or permanent changes to use of or access to existing infrastructure and land in the Project area and in its vicinity | • Impacts to community connectivity, including through changes in the transport road network are discussed in Section 9.1.4 |

| Aspect | Scoping requirement | Section addressed |
|---|---|---|
| | • Potential for adverse impacts on visual or landscape values, including impacts on amenity from Project lighting | • Impacts to residential amenity are discussed in Section 9.1.3. Impacts to the amenity of community facilities are discussed in Section 9.1.5<br>• Technical report J – Landscape and visual. |
| Existing environment | • Describe existing and reasonably foreseeable land uses within and adjacent to the proposed Project area, including the types of land ownership present along the alignment and land uses associated precinct structure plans. | • Section 7<br>• Technical report K – Land use. |
| | • Identify dwellings and any other potentially sensitive receptors (e.g. residential, commercial, industrial, recreational areas, etc.) that could be affected by the Project's potential effects on air quality, lighting, noise, odour or vibration levels, especially vulnerable receptors including children and the elderly. | • Section 7<br>• Technical report F – Noise and vibration<br>• Technical report G – Air quality<br>• Technical report K – Land use. |
| | • Monitor and characterise background levels of air quality (e.g. dust), noise and vibration near the Project, including established residential areas and other sensitive receptors. | • Technical report F – Noise and vibration<br>• Technical report G – Air quality. |
| | • Describe proposed transport routes during construction and operations (for employees, construction equipment and other Project-related transportation). This should include description of existing roads and their ability to accommodate traffic generated by the Project. | • Impacts to community connectivity, including through changes in the transport road network are discussed in Section 9.1.4.<br>• Technical report K – Land use. |
| | • Identify existing and reasonably foreseeable land uses and businesses occupying land to be traversed by, adjacent to, or otherwise affected by impacts from the Project. | • Section 7<br>• Appendix A<br>• Technical report K – Land use. |
| | • Identify strategic plans specifying or encouraging land use outcomes for land to be occupied by the Project. | • Technical report K – Land use. |
| | • Identify visual and landscape values near the Project, including public and private vantage points from which elements of the Project may be visible. | • Section 7<br>• Technical report J – Landscape and visual. |
| Mitigation measures | • Identify mitigation measures to be implemented to avoid or minimise impacts on existing or proposed land uses within and surrounding the Project area, including the proposed approach to arrange access where required. | • Section 11.<br>• Technical report K – Land use. |

| Aspect | Scoping requirement | Section addressed |
|---|---|---|
| | • Identify potential and proposed design responses and/or other mitigation measures to avoid, reduce and/or manage any significant effects for sensitive receptors during Project construction and operation arising from specified air pollution indicators, noise, vibration, odour, traffic and lighting, in the context of applicable policy and standards. | • Section 11<br>• Technical report F – Noise and vibration<br>• Technical report G – Air quality<br>• Technical report J – Landscape and visual |
| | • Describe and evaluate the proposed traffic management and safety principles to address changed traffic conditions during construction and operation of the Project. | • Section 11<br>• Technical report K – Land use. |
| | • Identify options for mitigating impacts from Project construction or operation on any potentially affected businesses, existing and proposed transport infrastructure, and community facilities including open space. | • Section 11<br>• Technical report F – Noise and vibration<br>• Technical report G – Air quality<br>• Technical report K – Land use<br>• Technical report J – Landscape and visual |
| | • Identify options for mitigating or managing visual or landscape impacts of the Project. | • Technical report J – Landscape and visual. |
| | • Identify any further opportunities for the Project to enhance social outcomes, for example through co-location and integration with other existing and proposed infrastructure Projects (e.g. future shared path networks, recycled water mains, etc). | • Technical report K – Land use.<br>• Section 8 and Section 9 |
| Likely effects | • Identify implications for communities, current land uses and businesses and reasonably foreseeable changes in land use. This should include the likely extent and duration of any temporary or permanent disruption to existing land uses arising from Project construction, including requirements for the Project to access and/or acquire land. This should also include a description of the rights and restrictions on use of the pipeline easement during operations. | • Section 9<br>• Technical report K – Land use. |
| | • Predict likely atmospheric concentrations of dust and other air pollution indicators at sensitive receptors along the pipeline corridor, during Project construction and operation, using an air quality impact assessment undertaken in accordance with SEPP environmental objectives. | • Technical report G – Air quality. |

| Aspect | Scoping requirement | Section addressed |
|---|---|---|
| | • Assess likely noise, vibration, odour, traffic, lighting and visual impacts at sensitive receptors adjacent to the Project during Project construction and operation (both with and in the absence of the proposed mitigation measures), relative to standards. This needs to include assessment of noise and vibration impacts from any proposed blasting activities and ongoing maintenance activities. | • Section 9<br>• Technical report F – Noise and vibration. |
| | • Assess potential effects of the Project on the structural condition of potentially affected public roads for both the construction and operation phases. | • Section 9<br>• Technical report K – Land use<br>• Technical report D – Land stability and ground movement. |
| | • Assess potential impacts on precinct structure plans. | • Technical report K – Land use. |
| | • Assess potential safety hazards to the public arising from Project construction and operation. | • Technical report M – Safety |
| Performance criteria | • Outline measures to monitor the success of commitments to mitigate or manage effects on social, economic, amenity and land use values during all phases of the Project. | • Section 11<br>• Technical report F – Noise and vibration<br>• Technical report G - Air quality<br>• Technical report K – Land use<br>• Technical report J – Landscape and visual |
| | • Describe the approach to monitor effects and develop contingency measures to be implemented in the event of adverse residual effects on social, economic, amenity and land use values requiring further management. | |
| | • Describe any further measures that are proposed to enhance social outcomes, and either manage risks to landscape and recreational values, or enhance visual amenity outcomes both for residents living near the Project and for visitors to the locality, to form part of the EMF (see Section 3.7 of the Scoping Requirements). | • Section 11<br>• Chapter 20 – Environmental Management Framework<br>• Technical report J – Landscape and visual |

## 2.3 Linkages to other reports

Findings of other technical studies undertaken for the EES provide evidence and inform the SIA as indicated in Table 2-2.

Table 2-2 Linkages to other technical reports

| Specialist report | Relevance to the SIA |
|---|---|
| Technical report F –Noise and vibration | Provides an assessment of the Project's potential noise and vibration impacts on sensitive receptors.<br>Findings from the report have informed the impact assessment on residential amenity and character and community infrastructure facilities. |
| Technical report G – Air quality | Provides an assessment of the Project's effects on local air quality.<br>Findings from the report have informed the impact assessment on residential amenity and character and community infrastructure facilities. |
| Technical report J – Landscape and visual | Provides an assessment of the Project's potential visual impacts on sensitive receptors and change to landscapes,<br>Findings from the report have informed the impact assessment on residential amenity and character, and community infrastructure facilities. |
| Technical report K – Land use | Provides an assessment of the Project's potential effects on land uses within the identified study area, including an understanding of changes to agricultural, residential, commercial, industrial and extractive industries, open space and community land use, roads, and waterways. The report also considered impacts to planned land uses.<br>Findings from the report have informed the existing conditions section of this report, and the impact assessment on landholders and property impacts, residential amenity and character, transport and access, and community infrastructure facilities. |

# 3. Project description

## 3.1 Project overview

The Project provides a new link between APA's existing Plumpton Regulating Station (approx. 38 kilometres north west of Melbourne's CBD) and Wollert Compressor Station (approx. 26 kilometres north east of Melbourne's CBD). The Project includes the following key components:

- **A new pipeline**: The pipeline would be approximately 51 kilometres in length. The pipeline would be within a 15 metre wide permanent easement and be buried for its entire length to a minimum depth of cover of 750 millimetres.
- **Mainline valves**: Three mainline valves (MLV) would be located along the pipeline alignment. The area required for mainline valves would be subdivided and acquired by APA to provide ongoing access for any maintenance or inspection activities from the existing roads. The mainline valves would be spaced at intervals of approximately 15 kilometres, and located at approximately KP 6, KP 22 and KP 35.
- The **Wollert Compressor Station upgrade**: The installation of a new Solar Centaur 50 compressor, an end of line scraper station and a pressure regulating station within the existing APA facility at Wollert.

A schematic illustration of the Project context is shown in Figure 3-1.

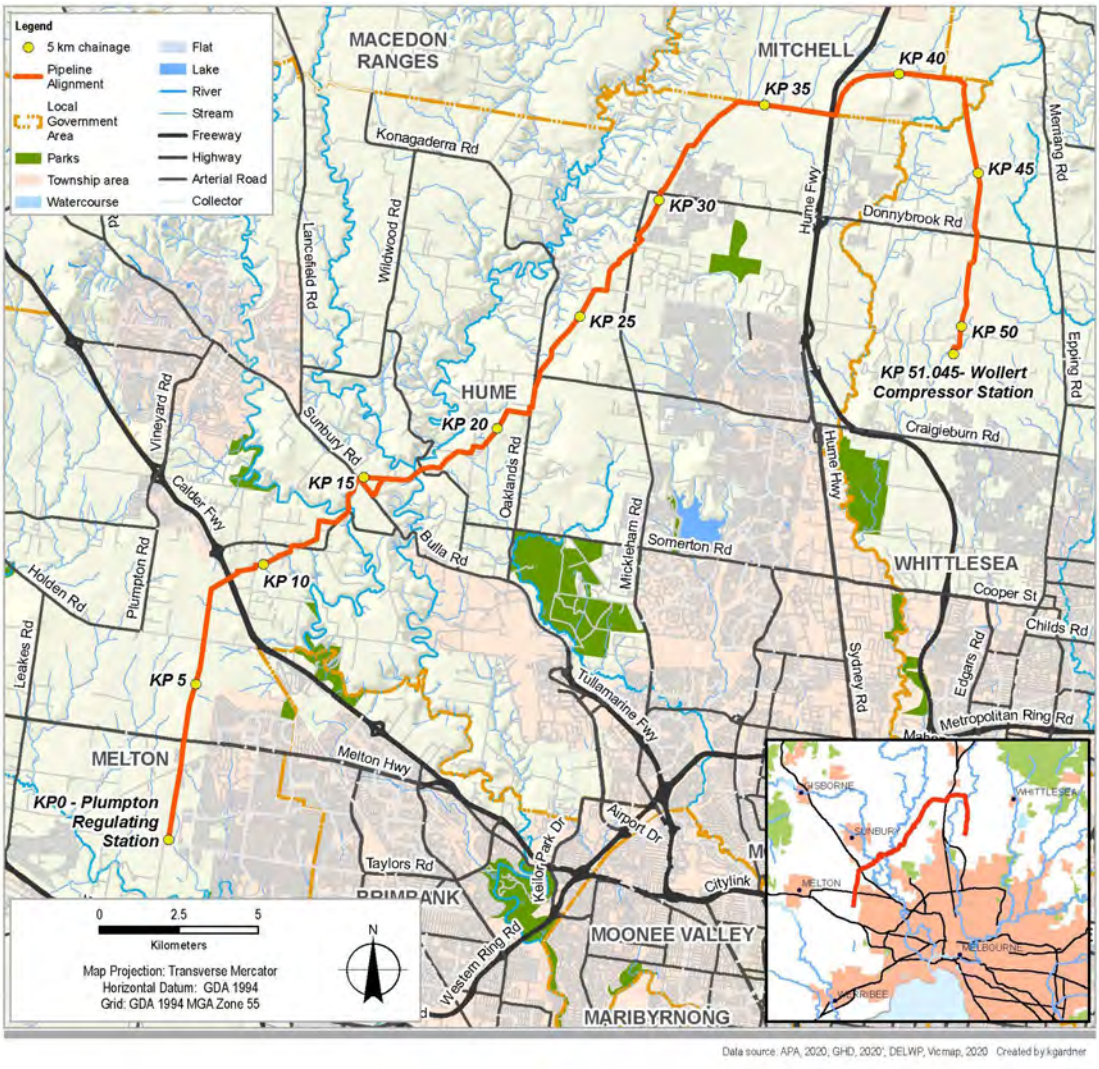



Figure 3-1 Western Outer Ring Main overview

## 3.2 Construction

Subject to the staging of the works, construction for the entire Project is expected to take approximately nine months. Key construction activities for the Project include:

- Establishing offsite construction sites and construction/laydown areas
- Constructing the pipeline
- Constructing three mainline valves
- Construction of upgrades associated with the Wollert compressor station
- Rehabilitation

### 3.2.1 Construction sites

Two temporary construction sites would be established for construction.

One offsite compound for pipeline works nominally 200 metres x 200 metres, include laydown and storage areas. This would be located on a site where the activity is permitted under the relevant Planning Scheme, most likely within an existing industrial area.

The second temporary laydown area and construction offices would be established for the Wollert Compressor Station construction works. The construction offices and site laydown area for the compressor station equipment would be located within the existing compressor site area at Wollert.

### 3.2.2 Pipeline construction area

The Project would require a construction area for the pipeline, which would typically comprise a 30 metre wide corridor along the Project. Most construction activity would be located within this construction area. The activities and facilities within the construction corridor would include access tracks and additional work areas such as vehicle turn around points and additional work spaces for crossings, stockpiling of materials and storage of pipe. Additional work areas up to 50 m x 50 m or 50 m x 100 m (such as for vehicle turn-around points, areas to accommodate HDD) would be required in some locations.

### 3.2.3 Pipeline construction methodology

The techniques used to construct the underground pipeline would include various methods including, open trench construction and alternative techniques at certain locations such as horizontal directional drilling (HDD) or horizontal boring.

Where crossing watercourses, major roads, rail line reserves or other constraints, the pipeline may be constructed using trenchless construction techniques such as HDD or shallow horizontal boring, to avoid construction disturbance within the sensitive area.

The pipeline construction sequence starts with survey works and continues with site establishment (including laydown area), clearing and grading, pipe stringing, pipe bending, welding and coating, open trench construction, lowering pipe into trench, hydrostatic testing, commissioning, and finally rehabilitation.

There would be dedicated access points into the construction corridor with vehicular movements along the Project alignment kept within the construction corridor.

### 3.2.4 Construction of other facilities

The construction sequence for the Wollert Compressor Station works starts with survey works and continues with site establishment (including laydown area), bulk earthworks, civil works (concrete slab and footings), mechanical works, electrical and instrumentation works, hydrostatic testing, commissioning, and site completion.

Various components of the compressor are assembled offsite. When delivered to site the various components are assembled together in-situ. Cranes are used to lift the compressor into place with all connecting pipework fitted.

## 3.3 Operation

Following the reinstatement of land as part of the pipeline construction, the land would be generally returned to its previous use. When commissioned, the pipeline would be owned and maintained by APA. The pipeline would be contained within a 15 metre wide permanent easement corridor (within the area that formed the 30 metre construction corridor). Routine corridor inspections would be undertaken in accordance with APA procedures and AS2885 to monitor the pipeline easement for any operational or maintenance issues.

Excavating or erecting permanent structures, buildings, large trees or shrubs over the underground pipeline would be prohibited in accordance with the *Pipelines Act 2005* and pursuant to easement agreements with landowners.

Maintenance and inspections of the MLVs and the Wollert Compressor Station would also be conducted periodically in accordance with APA procedures. The activities usually include vegetation management, valve and compressor operation and corrective maintenance.

The key operation and maintenance phase activities include:

- Easement maintenance (vegetation control, weed management, erosion and subsidence monitoring)
- Pipeline, MLVs and compressor station maintenance
- Specialist pigging operations
- Cathodic protection surveys for mechanical and electrical preventative and corrective maintenance
- Monitoring and routine inspections and surveillance

# 4. Legislation, policy and guidelines

## 4.1 Legislation, policy and guidelines

The EES is prepared under the EE Act and will inform assessment of approvals required for the Project. The legislation relevant to the principal approvals required for the Project is:

- Commonwealth approval under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). For the component of the Project that is located outside of the Melbourne Strategic Assessment (MSA) program area, the Project requires assessment and approval under the EPBC Act, under the assessment bilateral agreement with Victoria made under section 45 of the EPBC Act

  The MSA program is the Victorian Government's approach to managing the impact of urban development in Melbourne's growth areas on significant vegetation communities, plants and animals. Areas within the approved Melbourne Strategic Assessment (MSA) area occur between approximately 0 - KP 3.2, KP 28.16 - KP 28.57 and KP 32.07 - KP 51.04. Areas outside of the MSA occur approximately between KP 3.2 and KP 28.6 – KP 32.07.

- Pipeline Licence approval is required under the *Pipelines Act 2005* (Vic) (Pipelines Act) for the Western Outer Ring Main Project. The Pipeline Licence application is exhibited with the EES.
  Section 49 of the Pipelines Act requires that the following matters be considered before granting a licence:

  *(a) the potential environmental, social, economic and safety impacts of the proposed pipeline;*

  *(f) the assessment of the Environment Effects Minister in relation to the proposed pipeline, if an assessment has been made;*

  *(g) any written comments received from the Planning Minister or the relevant responsible authority on the effect of the proposed pipeline on the planning of the area through which it is to pass;*

  *(h) any written comments received from the Water Minister and from the relevant Crown Land Minister on the impact of the proposed pipeline.*

  Section 3 of the Pipelines Act states the objectives of the Act, including:

  *(a) to facilitate the development of pipelines for the benefit of Victoria*

  *(e) to protect the public from environmental, health and safety risks resulting from the construction and operation of pipelines*

  *(f) to ensure that pipelines are constructed and operated in a way that minimises adverse environmental impacts and has regard for the need for sustainable development*

  Section 4 of the Pipelines Act sets out the principles of sustainable development to be given regard in implementing the Act including that decision-making should be guided by a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable and an assessment of the risk-weighted consequences of various options.

Section 54(c) of the Pipelines Act states that conditions on a licence may include conditions concerning the protection of the environment

- Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006* (Vic) (AH Act). Two CHMPs are currently in progress for the Project (CHMP 16593 and CHMP 16594).

A number of legislative, policy, guidance and standard documents were found to be relevant to this social impact assessment and are discussed further in this report. The key legislation, policy and guidelines that apply to the social impact assessment for the Project are summarised in Table 4-1. Further detail is provided in Section 4.2 to 0.

Table 4-1 Key legislation and policy applicable

| Legislation | Description | Relevant to this SIA |
|---|---|---|
| *Planning and Environment Act 1987* (PE Act) | The PE Act sets out the key planning environmental objectives for Victoria. The relevant objectives for this SIA are:<br>*(1)(c) To secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria*<br>*(1)(e) To protect public utilities and other assets and enable the orderly provision and coordination of public utilities and other facilities for the benefit of the community*<br>*(2)(d) To ensure that the effects on the environment are considered and provide for explicit consideration of social and economic effects when decisions are made about the use and development of land.* | The SIA considers the potential for the Project to impact on a range of social values in the local and regional study area.<br>Specifically, this SIA has considered key community values which have the potential to change, both positively and negatively, as a result of the Project. |
| *Environment Effects Act 1978* | The Environment Effects Act requires an assessment of proposed Projects (works) that are capable of having a significant effect on the environment. Under the Act, an Environment Effects Statement must be prepared and submitted to the Minister. | The SIA was prepared to address the EES scoping requirements as detailed in Section 2.2. |
| *Pipelines Act 2005 (Vic)*\<br>*Pipelines Regulations 2017 (Vic)* | The Pipelines Act is the primary Act governing the construction and operation of high transmission pipelines in Victoria and is accompanied by the Pipelines Regulations 2017.<br>Section 3 of the Pipelines Act states the objectives of the Act, including:<br>*(a) to facilitate the development of pipelines for the benefit of Victoria*<br>*(e) to protect the public from environmental, health and safety risks resulting from the construction and operation of pipelines*<br>*(f) to ensure that pipelines are constructed and operated in a way that minimises adverse environmental impacts and has regard for the need for sustainable development* | The SIA considers the potential benefits and adverse impacts of the Project as discussed in Section 9. |

| Legislation | Description | Relevant to this SIA |
|---|---|---|
| | Section 4 of the Pipelines Act sets out the principles of sustainable development to be given regard in implementing the Act including that decision-making should be guided by a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable and an assessment of the risk-weighted consequences of various options.<br><br>Section 49 of the Pipelines Act requires that the following matters relevant to land use and planning be considered before granting a licence:<br><br>*(a) the potential environmental, social, economic and safety impacts of the proposed pipeline*<br><br>*(f) the assessment of the Environment Effects Minister in relation to the proposed pipeline, if an assessment has been made;*<br><br>*(g) any written comments received from the Planning Minister or the relevant responsible authority on the effect of the proposed pipeline on the planning of the area through which it is to pass;*<br><br>*(h) any written comments received from the Water Minister and from the relevant Crown Land Minister on the impact of the proposed pipeline.*<br><br>Regulation 8 of the Pipelines Regulations requires that an application for a licence contains:<br><br>*(vii) identification of the environmental, social and safety impacts arising from the proposed pipeline and pipeline operation, based on the surrounding current land uses and reasonably foreseeable future land uses*<br><br>*(ix) outline of the measures to be undertaken to control, mitigate and manage identified impacts arising from the proposed pipeline and pipeline operation* | |

The following sub-sections summarise the legislation, policy and plans, and SIA guidelines that are relevant to this SIA and have informed its preparation. The relevant State level policy and planning documents are outlined in Section 4.2 and at local level are outlined in Section 4.3 and relevant SIA guidelines are outlined in Section 4.4.

## 4.2 Victorian legislation, policy and guidelines

Table 4-2 summarises the State and Greater Melbourne plans and policies and their relevance to the development of this SIA.

### Table 4-2 State and Greater Melbourne plans and policies

| Policy or plan | Description | Relevant to this SIA |
|---|---|---|
| Planning policy framework | The Planning Policy Framework provides a framework for integrated policy decision making with regards to how land is used and developed across the state. The most relevant sections for this assessment are:<br>• **Section 15** Built environment and heritage: Planning must support the establishment and maintenance of communities by delivering functional, accessible, safe and diverse physical and social environments, through the appropriate location of use and development and through high quality buildings and urban design.<br>• **Section 19 Infrastructure**: Planning for development of social and physical infrastructure should enable it to be provided in a way that is efficient, equitable, accessible and timely.<br>• Planning is to recognise social needs by providing land for a range of accessible community resources, such as education, cultural, health and community support (mental health, aged care, disability, youth and family services) facilities | This SIA considers the potential changes to land use and how these may result in social impacts, with a focus on the principles outlined in the planning policy framework. |
| Plan Melbourne | Plan Melbourne responds to the regional and local opportunities Greater Melbourne will face between now and 2050. The Plan provides a strategy for supporting employment, housing and transport in Greater Melbourne while protecting and enhancing the city's liveability and sense of community. | This SIA has drawn on Plan Melbourne to identify regionally relevant land use and infrastructure and the potential for regional impacts. |

## 4.3 Local policy and guidelines

Table 4-3 summarises the relevant local government plans for each LGA. These include community strategic plans and open space / recreation plans where available and relevant.

### Table 4-3 Local plans and policies

| Plan / policy | Description and relevance |
|---|---|
| Melton City 2036: The City We Imagined (2016) | Melton is a rapidly growing city that was originally known for being a small town with equestrian and farming activities but now, increasingly, as a multicultural local government area. |
| Melton City Council Annual Report 2018-2019 (2019b) | The community values both social and built connections as well as the natural environment. Vision for the community is to be a safe and socially connected City that includes the diverse range of residents. It seeks to be a well built city with thought out transport connections, open spaces, active transport options and access to schools, health services and a local hospital. |

| Plan / policy | Description and relevance |
|---|---|
| | The community seeks opportunities for life-long learning and local job opportunities. Melton hopes to build iconic local suburbs that have interesting places for residents and visitors to enjoy. The City wants to retain its natural spaces for wildlife and people by encouraging sustainable planning and design.<br><br>Melton's strategic objectives are to create a City of:<br><br>• People leading happy and healthy lives<br>• Preserves and enhances the natural landscape for future generations<br>• Clear visions to sustainably manage growth and accessibility<br>• Strong local employment and education<br>• Well run Council with transparency, accountability, innovation and sustainability |
| Hume City Council Plan 2017 – 2021(2020/21 Actions) (2020c) | Hume is a vibrant, diverse and fast-growing local government area. Council seeks to make improvements for those who live, work and study within the Hume municipalities, and to be a community living in harmony where residents value and celebrate their cultures and identities. Hume City Council strategic objectives are in line with the long-term community plan *Hume Horizons 2040*. The community aims to be well educated and employed, vibrant and connected, sustainably built and well-maintained community, that is well-governed by an engaged community, and where residents live healthy and safe lifestyles.<br><br>Objectives include providing:<br><br>• High quality and locally accessible education facilities and programs for people of all ages and supportive of life-long learning<br>• A resilient local economy with diversity in training and employment opportunities<br>• Leisure and recreational facilities that provide formal and informal opportunities for all, and promote healthy, safe and sustainable lifestyles. Development of world-class sporting and leisure facilities in high growth areas<br>• Accessibility to health and social support services and events that promote social justice, respect and equity<br>• A range of affordable housing options that are well designed, including public open spaces, accessible and connected transport networks and well planned land uses for future growth<br>• Environmentally sustainable infrastructure and practices<br>• Opportunities for community to participate in decision making processes on issues of local significance and for innovative partnerships to support a skilled, diverse workforce that embraces innovation |
| Mitchell 2020 Community Plan (2011) | Mitchell's vision is for Council and the community to work together to create a sustainable future and to build a great quality of life. The strategic objectives for Mitchell include advocacy, community participation, responsible planning, building strong communities, supporting local jobs and business through quality investments, sound financial and organisational management and caring for the environment.<br><br>Mitchell Shire is expected to experience significant population growth over the next 20 to 30 years. Council's role is to advocate for the growing community's future needs. The Council is committed to providing compassionate leadership, supporting a diverse community and encouraging their involvement in decision making. |

| Plan / policy | Description and relevance |
|---|---|
| Whittlesea City Council Plan 2017 – 2021 (2017a) | Council in partnership with community published 'Whittlesea 2040; A place for all' which informed the overall Council vision. Whittlesea's vision is to be:<br>• A connected community that provides a socially cohesive, healthy and safe community and that encourages participation in local decision making processes<br>• A liveable community with smart and well connected transport networks, vibrant and well designed neighbourhoods and provides a diversity in housing options to support the diverse needs, in terms of size and cost<br>• To build strong local economy by increasing local employment, providing education opportunities for all and empowering successful and innovative businesses<br>• Encourage sustainable environmental practices by valuing the natural landscape and biodiversity, being climate ready and becoming leaders in clean and sustainable living by reducing waste and energy use and being more efficient with water use. |

## 4.4 Social impact assessment guidelines

The methodology for this social impact assessment was guided by international social impact assessment principles and methods as described by Vanclay (2003), which are endorsed by the International Association for Impact Assessment (IAIA), and the social impact assessment good practice recommendations detailed in Vanclay, Esteves, and Franks (2015). The relevance of these guidelines is summarised in Table 4-4.

Table 4-4 Relevant social impact assessment guidelines and standards

| Policy document | Relevance |
|---|---|
| International Principles For Social Impact Assessment (Vanclay, 2003) | The *International Principles for Social Impact Assessment* defines SIA as being “the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, Projects) and any social change processes invoked by those interventions”. This document was prepared by Vanclay for the IAIA and is considered to be a statement of the core values of the social impact assessment community and provides a set of principles to guide the practice of social impact assessment. These values and principles have guided the development of the methodology for this social impact assessment, as detailed in Section 5. |
| Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects (Vanclay et al., 2015) | The Guidance extends on the *International Principles for Social Impact Assessment* and provides guidance on good practice in undertaking social impact assessment and the adaptive management of social issues, with a focus on these practices for Project development. The good practice recommendations detailed in the Guidance have informed the development of the methodology for this social impact assessment, as detailed in Section 5. |

# 5. Methodology

## 5.1 Overview of the method

This section describes the method that was used to assess the potential impacts of the Project. A risk based approach was applied to prioritise the key issues for assessment and inform measures to avoid, minimise and offset potential effects. Figure 5-1 shows an overview of the assessment method.

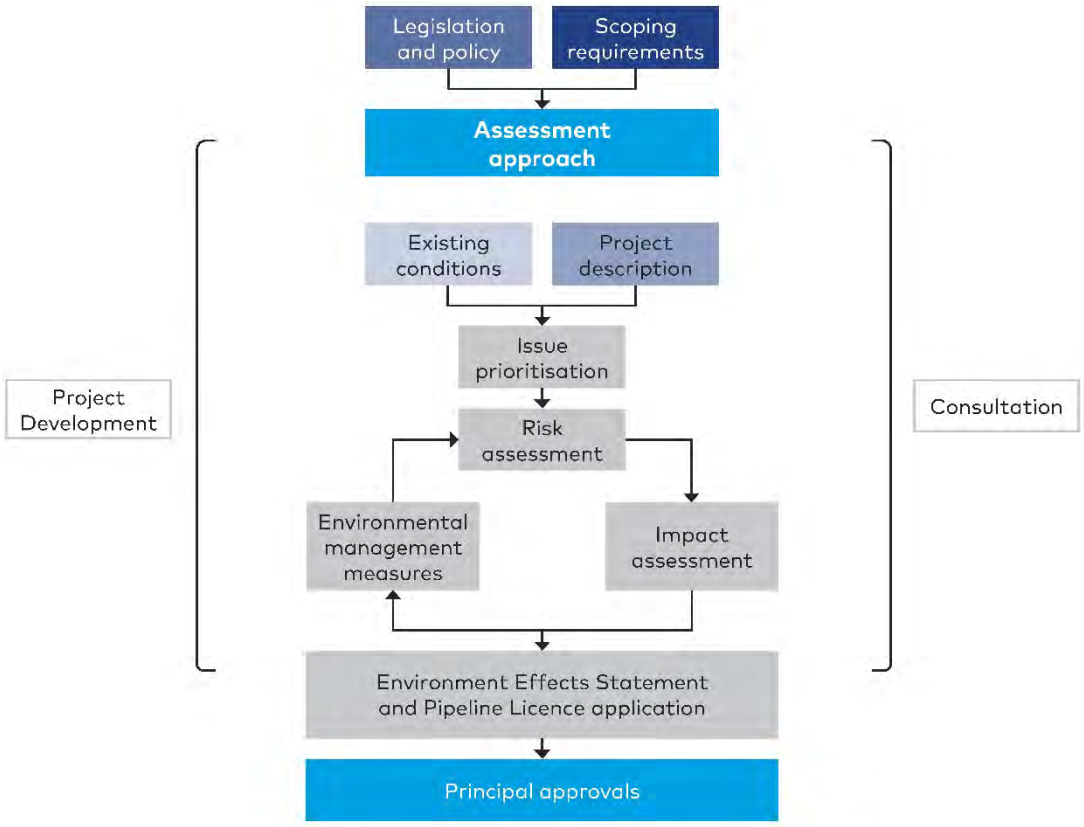



Figure 5-1 Assessment method overview

## 5.2 Scoping and identification of key issues

To provide a framework for this SIA, scoping of potential impacts and opportunities was undertaken. This assisted in determining the study area, scope of the social baseline, understanding of potential social impacts and opportunities, and identifying stakeholders to be consulted.

The scoping of issues was informed by:

- A review of literature providing context for the region
- The Project description
- Knowledge of the Project team regarding the social impacts of pipelines and linear infrastructure Projects

## 5.3 Identification of the social study area

The socio-economic benefits and impacts of the Project are not contained within the Project's boundaries. Various factors are considered in determining the social study area. They include, but are not limited to:

- Areas that may be affected by noise, dust and visual changes
- Areas that may be affected by transport and land use changes
- Areas that may potentially supply goods and services, community infrastructure facilities, and workforce to the Project

To capture the socio-economic influences of the Project the social study area was defined as:

- Local study area – includes the 137 parcels intersected by the Project's construction corridor, as shown in Figure 5-2.

  Community infrastructure facilities and dominant social features and values within proximity to the Project (a 1 km buffer) were identified, as these are considered likely to be affected by changes in noise, air quality, visual amenity and land use.

- The regional study area – this includes the local government areas (LGA) within which the Project is located, as shown in Figure 5-2. This includes, in order of kilometre point, the LGAs of Melton, Hume, Mitchell, and Whittlesea.

An access road running adjacent to the railway line in Beveridge is a possible access option for use by the Project. The access road is an existing access track recently constructed by Yarra Valley Water and no physical construction works is proposed by the Project. As such this access track has not been considered further with regards to the assessment for social impacts. A second informal access track option may be used by machinery and equipment to access the construction footprint from the north. This track follows the existing APA easement. No physical construction is expected to be required to establish this access and therefore this access track has not been considered further with regards to the assessment for social impacts.


Paper Size ISO A4

0 2,100 4,200

Meters

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

N

GHD

Australian Pipeline Limited
Western Outer Ring Main Gas Project

Project No. 12529997
Revision No. F
Date 18/12/2020

Social study area

Figure 5-2

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: kgardner

## 5.4 Existing conditions method

The existing conditions assessment was used to establish a baseline of the social study area and provide a profile of the current social environment. Understanding community values, demographic characteristics, and community infrastructure facilities was the focus of the existing conditions assessment.

The social baseline is tailored to describing the social values and characteristics that are likely to be impacted by the Project, based on the initial scoping of social impacts described in Section 1.1.

### *Community values*

Community values are in part based around the features and qualities of the built environment that encourage these social ties and contribute to quality of life and wellbeing (Paranagamage et al, 2010; Maller and Nicholls, 2014). Features that contribute to community values include tangible (physical) elements such as parks, buildings, and landscape, and intangible (social) elements such as sense of belonging and community diversity.

An understanding of community values for each local government area was established through a review of the following indicators:

- **Amenity and character** – the noise, air quality, and visual amenity of the area provide for the enjoyment of residents and create a recognisable and distinctive character (Wood et al., 2008)
- **Connectivity** – people have the ability to move through their community and access a range of places in and outside their community safely and conveniently (Paranagamage et al., 2010)
- **Community infrastructure facilities** –people have access to spaces to live, work, be entertained and provide essential facilities (Maller & Nicholls, 2014; Paranagamage et al., 2010; Wood et al., 2008). These spaces contribute to the development of social capital though providing opportunities for meeting and interacting with other people and provide a place to develop and maintain relationships (Gehl, 2011; Paranagamage et al., 2010). Similarly, access to open space and natural areas contributes to community wellbeing (Sugiyama et al., 2008). The approach to identifying community infrastructure facilities is discussed further below.

Community values were identified through a desktop review of Council policies, strategies, and plans and other publicly available data. In addition, consultation with key stakeholders was undertaken to validate and elaborate on the social baseline conditions.

### *Demographic characteristics*

To provide the social context of the study area, the relevant demographic characteristics of the community within the regional study area were identified. It broadly includes information on population, cultural and ethnic diversity, employment and training, and information on relative socio-economic disadvantage within communities (see further discussion under ‘Vulnerable communities’, below). A high level demographic profile of the area was established through a desktop review of ABS and Victorian Government data.

### Vulnerable communities

In line with international social impact assessment principles and methods (Vanclay, 2003; Vanclay et al., 2015), this social impact assessment has included an assessment of vulnerable groups that can be identified in the social study area. Vulnerability is defined as the inability of a group to withstand or adapt to change due to their social characteristics. Specifically, it relates to how a group will be impacted by a change due to their *sensitivity to change* and their *ability to adapt to change* (adaptability) including access to socio-economic resources to cope with a change (Cinner et al., 2012; Rakauskiene & Strunz, 2016).

The vulnerable groups identified in this social impact assessment include:

- Socio-economic disadvantage as defined by ABS' Index of Relative Socio-Economic Disadvantage (IRSD), which indicates the level of relative socio-economic disadvantage in a specified area. Socio-economic advantage and disadvantage are defined broadly by the IRSD in terms of people's access to material and social resources and their ability to participate in society (ABS, 2018a). In order to capture this broad definition, the IRSD includes a range of data points, including income, education, employment, occupation, and housing.
  The IRSD divides a population into ten equal groups. The lowest scoring 10 per cent of these groups are given a decile number of 1, which indicates the highest level of disadvantage, and the highest scoring 10 per cent of areas are given a decile of 10, which indicates the lowest level of disadvantage. The groups used in this report are the ABS' Statistical Area 1 (SA1) for each local government area, which is the smallest statistical area reported by the ABS.
- Ageing populations, which present a well understood set of vulnerabilities, including lower mobility, higher medical needs, and social isolation (WHO, 2007). These were identified at a LGA level based on the responses to the ABS 2016 Census. Facilities that cater to these populations were identified within a 1 km buffer from the Project.
- Children, who are recognised to be vulnerable to changes in the ambient noise environment (Markovich & Lucas, 2011), and who require lower background noise than adults to hear adequately (Erickson & Newman, 2017). These were identified at a LGA level based on the responses to the ABS 2016 Census. Facilities that cater to these populations were identified within a 1 km buffer from the Project.
- People who require assistance with daily tasks may be vulnerable to changes in amenity, particularly noise, and may have lower capacity to respond to changes. These have been identified based on the percentage of a population that stated they required assistance with daily activities in the 2016 Census.

### Community infrastructure facilities and services

The Victorian Government recognises that community infrastructure facilities as vital to 'creating healthy community, supporting inclusion and enhancing the wellbeing of local residents (Victorian Government, 2010).

Based on the definition provided by the Victorian Government, the following community infrastructure facilities have been included in this SIA:

- Recreation and open space, including parks and reserves, sports facilities, swimming pools, and off-road trails
- Cultural facilities, including community centres, libraries, performance spaces, museums, galleries, and places of worship

- Education and early childhood facilities, including child care premises, and primary, secondary and tertiary education facilities
- Emergency services, including police, fire and ambulance services
- Health facilities and services, including aged care, rehabilitation, hospitals, and private or specialist health care providers

As a general guide, community infrastructure facilities within a 1 km buffer of the Project corridor were identified, as these facilities may be impacted by the Project's activities. Some community infrastructure facilities beyond this area were also included in the assessment, if relevant. Specifically, a number of community infrastructure facilities types were identified based on whether their catchment would be intercepted by the Project. These include major health services (e.g. hospitals), and emergency services (police, fire and ambulance services).

Community infrastructure facilities was identified through a review of GIS mapping, Google search, and engagement with key stakeholders (Section 5.8).

## 5.5 Risk assessment method

A risk assessment for the Project was carried out using an approach that is consistent with Australian/New Zealand Standard AS/NZS ISO 31000:2018 Risk Management Process.

This risk assessment was used to identify the issues for assessment and apply a structured approach to the level of assessment and analysis undertaken of potential environmental effects within each technical study. Applying the risk framework facilitated an approach for the EES to identify and then investigate issues with a focus proportionate to the risk, and to consider management measures focused on reducing identified risks..

The risk assessment methodology included:

- Defining the context for the risk assessment based on the existing assets, values and uses (baseline) assessments of each technical area and the proposed Project activities which interact with those existing conditions
- Identifying the risk pathways for the Project based on a specific cause and effect
- Identifying standard management/mitigation measures (including those in guidelines and standards) and whether additional mitigation measures may be required.
- Analysing the consequence and likelihood of the identified risk based on a consequence guide developed for each technical area and a likelihood guide
- Defining the risk level based on the risk matrix

The impact assessment then focused on the key risks and/or where additional management/mitigation measures may be required or beneficial.

The identification, analysis and evaluation of risks was conducted within each technical area and across technical areas where there was input or connection across disciplines.

The consequences of a social risk occurring were assigned using consequence categories from insignificant to severe developed for the social impact assessment based on the existing conditions and values in the study area. The consequence levels and descriptors are provided in Appendix A.

A likelihood rating for each identified risk was assigned ranging from 'frequent' where the event is expected to occur to 'rare', where the event may occur only in exceptional circumstances. The likelihood levels and descriptors are provided in Appendix A.

The risk matrix used to define each risk level is also provided in Appendix A.

The risk ratings were revisited during the impact assessment where additional environmental management measures were applied to identify the residual impacts and risks.

## 5.6 Impact assessment method

The study assesses the changes brought about by the construction and operation of the Project and how these changes affect the ability of residents and the general community to go about their day-to-day life. The social impacts of the Project's changes are organised into four themes:

- Landholders and properties intersected by the Project – identifies the social impacts on landholders as a result of their property being intersected by the Project during construction and operation.
- Residential amenity and character – identifies the social impacts of the Project-induced changes in noise, vibration, air quality, landscape and visual on people's day to day lifestyle, and their level of enjoyment of the property.
- Transport and access – identifies the social impacts of the Project's changes to the transport networks in terms of people's ability to conveniently get from one place to another
- Community infrastructure facilities – the social impacts of the Project-induced changes to the use and function of community infrastructure facilities close to the Project, with a focus on amenity and character. In addition, access to open spaces as a social value was assessed based on the 800 m walkable catchment in accordance with the *Plan Melbourne 20 Minute Neighbourhood criteria* (DELWP, 2020).

The construction and operation of the Project requires different activities, which would result in changes in the social environment. Consequently, the SIA has been divided into two parts that reflect the dominant Project phases that are likely to result in distinct social impacts.

The social impacts were identified and assessed using a data triangulation process. This means that information used to ascertain an impact was collected from multiple sources, including:

- The outcomes of SIA consultation (Section 5.8)
- The findings of the existing conditions review (Section 7)
- The Project description
- The findings of relevant technical studies that detail the likely Project-induced changes in the environment. The studies that informed this social impact assessment are detailed in Section 2.3.

Impacts were assessed based on the significance criteria detailed in Table 5-1, which considers the following:

- Sensitivity of existing values or receptors to change and the adaptability of the value or receptor to change based on the description of existing conditions in Section 6 and Section 7
- Intensity of the change – the level of change from the existing conditions described in Section 6 and Section 7
- Duration of the change
- Likelihood of the change.

- The design measures that would avoid change and the Environmental Management Measures (EMMs) that would be implemented to minimise changes were then considered and developed, and the significance of the resulting residual changes assessed. In developing EMMs, consideration was also given to performance criteria, monitoring and contingency measures relevant to achieving the anticipated outcome of the EMM.

This SIA draws on the EMMs developed by other technical studies to minimise the changes associated with the Project. Those EMMs that are referenced in this SIA are detailed in full in Appendix B.

Table 5-1 Social impact significance criteria

| Level of significance | Landholders and properties intersected by the Project, residential amenity and character, transport and access | Community facilities |
|---|---|---|
| Insignificant | Short term[1] or minimal impact easily reversible adverse change where those affected could be expected to easily adapt or cope. | No change to access or usage of a recreational or community facility. |
| Minor | Reversible adverse change where those affected could be expected to have substantial capacity to adapt or cope. | Minor (short term or minimal impact) reduction to access or usage of a recreational or community facility. |
| Moderate | Adverse change where those affected could be expected to have some capacity to adapt or cope. | Moderate reduction to access or usage of a recreational or community facility. |
| Major | Irreversible change at a Project level where those affected could be expected to have limited capacity to adapt or cope. | Permanent major reduction to access or usage of a recreational or community facility of regional significance. |
| Severe | Irreversible change at a regional level where an extended population is affected which could be expected to have little or no capacity to adapt or cope. | Permanent complete loss of a recreational or community facility of State significance. |

[1] Short term is considered to be less than six months.

## 5.7 Rationale

This SIA assessment has been undertaken in accordance with the scoping requirements, relevant legislation and SIA guidelines, and is focused on identifying the potential impacts of the Project on the social study area.

As described in Section 5.2, the study area methodology was based on two areas, which were selected based on their potential for changes generated by the construction and operation of the Project to result in social impacts. These include the following impacts for each area:

- Local study area: the potential social impacts are likely to be a result of changes in amenity, alongside the impacts of temporary land use change during construction.

- Regional study area: the potential social impacts are likely to be a result of changes in amenity and would be experienced at a greater intensity for receptors closer to the Project's construction. For this reason, the existing conditions assessment focused on identifying residents, community facilities and dominant social features and values within proximity to the Project (a 1 km buffer).

Similarly, previous experience and a robust methodology adopted for the assessment of other major infrastructure projects informed a desktop assessment and data review as a comprehensive method for assessing the existing environment conditions, ultimately informing potential Project impacts within the study area.

## 5.8 Stakeholder consultation

Stakeholder inputs are critical in the SIA process, they are required to:

- Identify potentially affected people and communities
- Understand the values and characteristics of potentially affected people and communities
- Identify the potential impacts and benefits of the Project, and potential measures to mitigate impacts and enhance the benefits of the Project

The following stakeholder consultation activities by the report authors have informed the SIA:

- Consultation with representatives from the councils included in the regional study area. At the time of writing this report, all councils had been consulted. The exception to this was the City of Whittlesea, which was not consulted as they did not respond to the meeting requests.
- Consultation with emergency services providers, including representatives from Victoria Police. At the time of writing this report, Ambulance Victoria and CFA were not consulted as they did not respond to the meeting requests.
- Consultation with a sample of landholders and current occupants who either reside, lease or own parcels intersected by the Project. This included a selection of stakeholders, landowners or lessees landowners or leasers based on their characteristics, including geographic spread and land use. At the time of writing this report, six landholders or current occupants had been consulted.
- Consultation with environmental groups associated with natural areas identified as community infrastructure facilities. This included engaging with representatives from Merri Creek Management Committee. Jacksons Creek Econetwork and Friends of Merri Creek declined to participate in the SIA consultation.

More broadly, APA is engaging with all landholders, as well as local residents, councils, interest groups and communities as detailed in EES Chapter 6 – Project communications and community engagement and the Environment Effects Statement Consultation Plan. The outcomes of that engagement undertaken during the preparation of the SIA has also informed the SIA..

Consultation activities by the report authors for the social impact assessment were undertaken between August 2020 and December 2020. Given the COVID outbreak in Victoria at this time, all SIA consultation meetings were held via telephone or through online conferencing facilities.

# 6. Existing conditions – local study area

The existing social environment for the local study area is described in this section.

It includes description of:

- Land use and key features
- Amenity and character
- Access and connectivity to the area.

## 6.1 Land use and key features

The land intersected by the Project is predominantly located within the Green Wedge, Farming, and Rural Conservation zones (119.4 ha) as outlined in Table 6-1 and shown in Figure 6-1. The remainder of the Project corridor is located within the Urban Growth Zone (53.9 ha), the Public Use Zone (7.8 ha), the Road Zone (1.6 ha) and the Special Use Zone (0.2 ha).

Table 6-1 Land zoning within parcels intersected by the Project

| Zone | Area (ha) | Area (%) |
|---|---|---|
| Green Wedge Zone[a] | 92.7 | 50.9% |
| Urban Growth Zone[b] | 53.9 | 29.6% |
| Farming Zone | 20.0 | 11.1% |
| Public Use Zone[c] | 7.8 | 4.3% |
| Rural Conservation Zone[d] | 6.7 | 3.6% |
| Road Zone | 0.7 | 0.4% |
| Special Use Zone | 0.2 | 0.1% |
| Total | 182.1 | 100.0% |

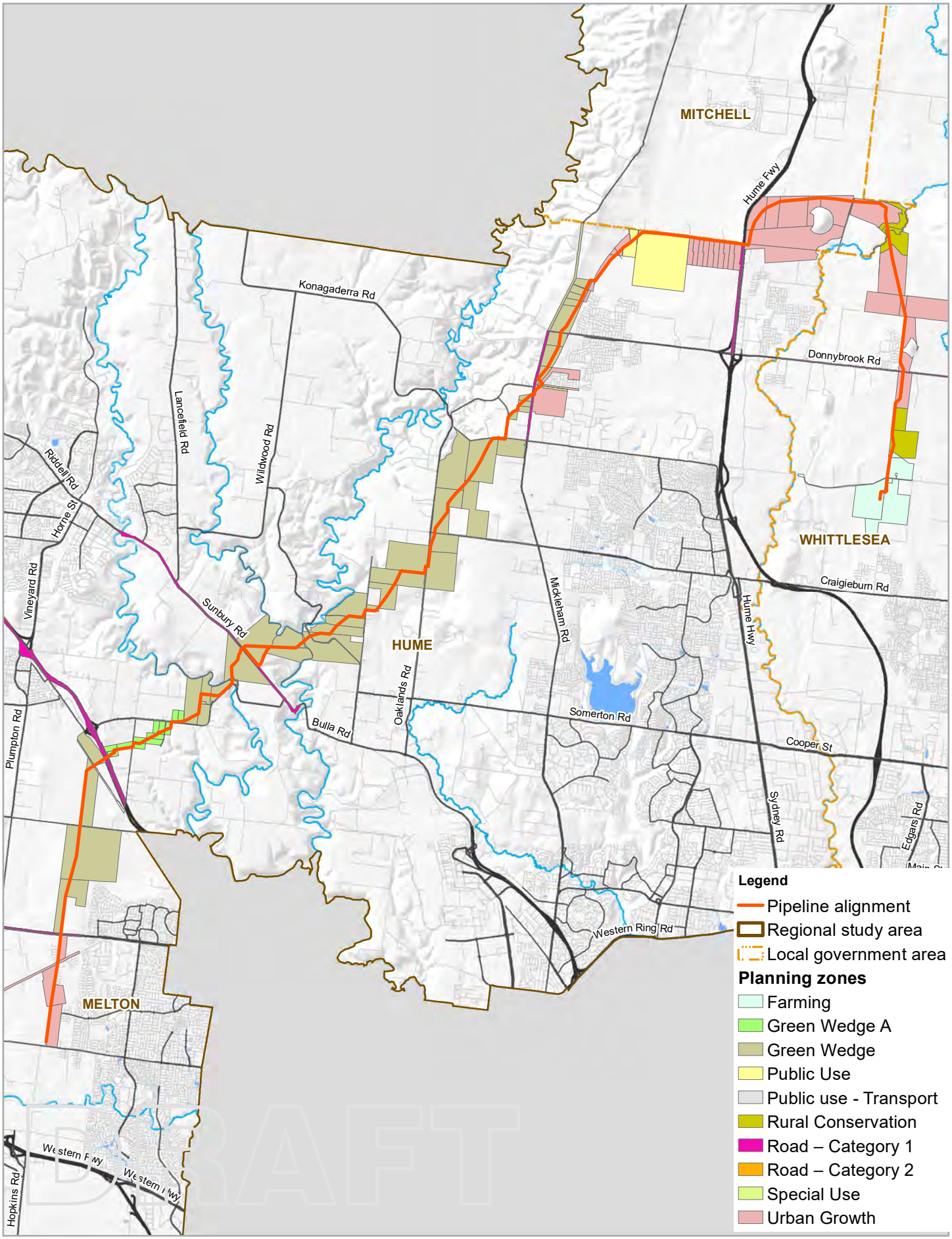
a. Includes Green Wedge A Zone

b. Includes Urban Growth Zone Schedule 1, 4, 5, 6, and 11.

c. Includes Public Use Zone – Service Utility and Public Use Zone - Transport

d. Includes Rural Conservation Zone – Schedule 11

Source: VPA, 2020.



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

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Project No. 12529997
Revision No. C
Date 13/01/2021

Land Zoning

Figure 6-1

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: kgardner

Given the dominance of zones that support rural uses, much of land that the Project intersects is used for a mix of rural residential and agricultural properties. These properties vary in intensity of use and type of agricultural activity, including established cropping and grazing businesses and equestrian training / breeding properties. As detailed in the City of Hume's *Draft Rural Strategy* and confirmed by a review of APA data and stakeholder inputs into the SIA, the majority of agricultural properties intersected by the Project would more appropriately be classified as hobby farms with small herds of cattle or sheep or market gardens (City of Hume, 2020d). These properties are often not the primary source of income for landholders and users of the property, but may supplement income, or contribute more broadly to people's lifestyle.

Similar to broader practices in Melbourne's Green Wedge (City of Hume, 2020d), properties intersected by the Project include around 43 parcels where there are no current residents (APA supplied data). However, there are 43 parcels that host current residents, in addition to two parcels that host places of worship[1]. There are a further 49 parcels intersected by the Project; however, these include infrastructure corridors, waterways, and APA-owned properties.

Table 6-2 provides an overview of land use within parcels intersected by the Project. In addition to the agricultural and rural residences, the Project intersects land that is being converted into residential development use, or is understood to be a future residential development property (9 parcels) (APA supplied data). Further to this, 11 of the 39 parcels that are currently used for agriculture are understood to have been sold to residential developers (APA supplied data). Further, it is noted that KP 0-9 and a section between KP 45 -51 of the alignment are located within an existing APA easement.

Technical report K – Land use provides a detailed discussion of current and future land use within the local study area.

### Table 6-2 Land use within parcels intersected by the Project

| Use | Number of properties |
|---|---|
| Rural residential | 39 |
| Agricultural | 39 |
| Future development site | 8 |
| Infrastructure (e.g. road, rail, water) | 38 |
| APA owned (Wollert facility) | 3 |
| Community facility (place of worship) | 2 |
| Natural feature | 4 |
| Residential development site under construction | 1 |
| Subdivided parcels for local roads | 3 |
| Total | 137 |

Source: APA supplied data

[1] This includes properties that are predominantly classified as agricultural in Table 6-2, but are known to have permanent residents.

## 6.2 Amenity and character

Reflecting the predominantly rural-residential and agricultural land uses in the local study area, amenity and character in much of the study area is characterised by single story rural residences with farm amenity buildings featured in natural and agricultural landscapes. Where the local study area is located in established or emerging residential areas, built form predominantly features detached residential development.

Amenity and character are discussed further according to local government area in Section 7.2 and in Technical report J – Landscape and visual amenity.

## 6.3 Connectivity

Major highways and freeways include the Hume Freeway at the northern end of the alignment Calder Highway at the southern section of the alignment. There are a number of roads that are intersected by the alignment as detailed in Table 6-3.

### Table 6-3 Roads intersected by the alignment

| Road name | KP |
|---|---|
| Beattys Road | 2.2 |
| Melton Highway | 3.1 |
| Holden Road | 6.4 |
| Calder Freeway | 8.6 |
| Dillon Ct | 8.8 |
| Duncans Lane | 9.6 |
| Morefield Court | 10.8 |
| Bulla-Diggers Rest Road | 11.2 |
| Sunbury Road | 14.8 |
| Batey Court | 15.6 |
| Wildwood Road | 17.0 |
| Unnamed road – off St Johns Road | 18.3 |
| St Johns Road | 19.0 |
| Oaklands Junction | 21.6 |
| Craigieburn Road | 22.7 |
| Mt Ridley Road | 26.4 |
| Parkland Crescent | 27.0 |
| Mickleham Road | 28.0 |
| Donnybrook Road | 30.2 |
| Hume Freeway | 37.1 |
| Donnybrook Road | 47.0 |
| Summerhill Road. | 50.2 |

Connectivity is discussed further according to local government area in Section 7.2.

# 7. Existing conditions – regional study area

The demographic characteristics, community values, economic characteristics, description of vulnerable population and community infrastructure facilities is provided for each LGA included in the regional study area. In addition, a summary of the area's regional significance, as detailed in *Plan Melbourne,* is also provided.

## 7.1 Regional profile

Plan Melbourne provides the overarching metropolitan planning strategy for Greater Melbourne to 2050. The Plan identifies places of state significance that will be the focus for investment and growth, alongside areas that will support Melbourne's growth to 2050. Places of state significance, supporting areas and their proximity to the Project area are detailed in Table 7-1.

Table 7-1 Plan Melbourne places of state significance and supporting area

| Type | Place type | Relevance to the Project area |
|---|---|---|
| **Place of state significance** | **Metropolitan activity centres** act as employment, housing and service centres for regional catchments. These centres have a primary role in service delivery including government, health and education, and retail.<br>These centres are expected to provide for employment growth and will ensure that this growth occurs outside of the central city. | No metropolitan activity centres are intersected by the Project alignment or the local or regional study area.<br>The following centres are located within a 2 km radius of the Project alignment:<br>• Lockerbie<br>• Beveridge<br>• Mickleham<br>• Sunbury South<br>• Plumpton. |
| | **State significant industrial** precincts provide for major industrial development and are linked the Principal Freight Network and transport gateways. The majority of this land is vacant and is expected to provide for investment in manufacturing, freight and logistics. Consequently, protection of this land from incompatible uses also provides for future employment growth. | The Project alignment and local and regional study area is proximal portions of the Northern State Industrial Precinct (KP 34.0-37.0). All industrial areas are identified for future industrial development and not registered as current industrial land uses under Plan Melbourne. |
| | **Health and education precincts** provide a range of health and education services and are well serviced by public transport. | No health and education precincts are intersected by the Project alignment or the local or regional study area. The closet health service (Cragieburn Health Service) is located over 5 km south-west of the Project alignment. |
| **Other** | **Growth areas** have at least 25 years supply of greenfield residential land with around 15 years' land supply that is either zoned or has a Precinct Structure Plan and is therefore 'development ready'. These growth areas are expected to provide for the development of housing within communities that have sufficient social and economic infrastructure, including local employment to provide for liveable and resilient communities. | The Project alignment and local and regional study area intersect growth areas at KP0.0-3.0 and KP28.5-31.6). |

| Type | Place type | Relevance to the Project area |
|---|---|---|
| | **Green wedge** areas support and host Melbourne's food production, critical infrastructure, recreation and tourism. These areas provide opportunities for the community to connect with the natural environment, in addition to hosting extractive resources (e.g. sand and stone) that are important for Melbourne's future growth. | The Project alignment (KP3.0-28.0) and local and regional study area intersect green wedge areas. |

## 7.2 Community values

This section provides a description of the community values both at the local government area level, and with a focus on those features proximal to the Project. As detailed in Section 5.4, community values that are of relevance to the social impact assessment include amenity and character and connectivity.

### 7.2.1 Melton local government area

#### Key features

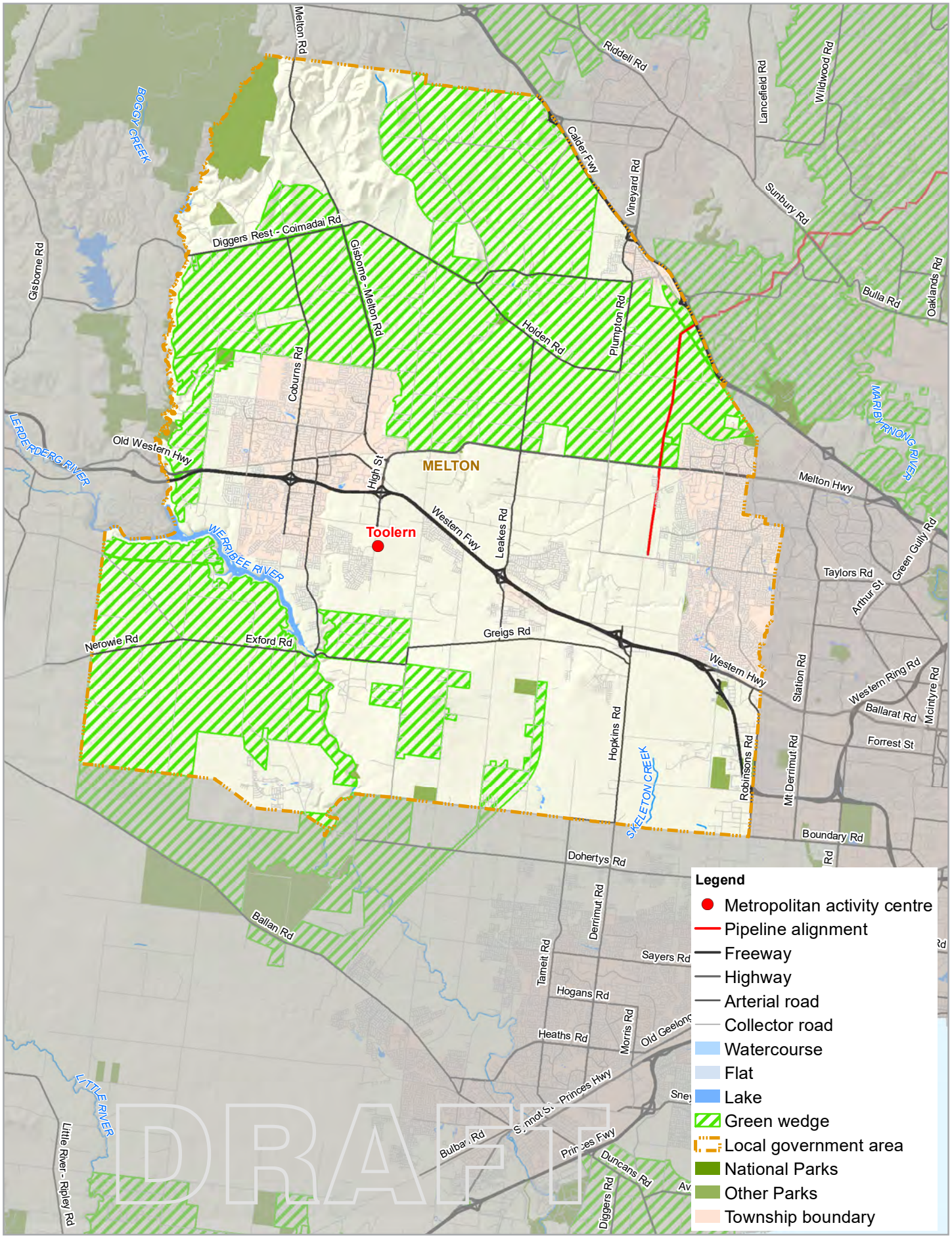
The City of Melton is made up of the urban locality of Melton and the suburban or small township areas of Caroline Springs, Diggers Rest, Rockbank and Toolern Vale. The City has three distinct areas:

- Established urban areas, which include the Metropolitan Activity Centres of Melton in the west and Caroline Springs in the east
- Growth areas, including the Metropolitan Activity Centres of Plumpton, Rockbank North, Rockbank, Hopkins Road, and Toolern in the centre of the city
- Large areas of Melbourne's Green Wedge, which feature in the north, south and west of the City (City of Melton, 2019c)

The Project intersects the Western Plains North Green Wedge, which is located in the north-east of the City and borders the City of Hume. The remaining land the Project traverses is predominantly rural; however, as it is located within the City's growth area, much of it is earmarked for residential development. The most advanced of land undergoing urbanisation is within the Plumpton and Kororoit precincts (Victorian Planning Authority, 2018), the former of which was being developed at the time of writing this report. The Kororoit and Plumpton PSPs specifically account for the existing pipeline and easement (KP 0 – KP 3). The new pipeline location was considered in terms of land uses provided for within the PSPs. Specifically, the PSPs have identified the following objectives for the existing easement which can also be applied with the new pipeline:

- Plumpton – the open space benefits of the easement will be maximised through developing a shared path, which will be complemented by Indigenous design landscaping and recreational uses (Victorian Planning Authority, 2018).
- Kororoit – ensure sensitive land uses are located outside the measurement length of the high pressure gas transmission pipelines where possible and that construction is managed to minimise risk of any adverse impacts (Victorian Planning Authority, 2017a).

The traditional custodians of the City of Melton are the Kulin Nations (City of Melton, 2018). An overview of the City and its key features is provided in Figure 7-1.

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Meters

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

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| Project No. | 12529997 |
| Revision No. | B |
| Date | 7/12/2020 |

City of Melton overview

Figure 7-1

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

### Amenity and character

The City features a mixture of urban and industrial areas, particularly in the south-east and west, centred around Melton. It also features large areas of rural, agricultural and natural landscapes, an example of which is shown in Figure 7-2. These areas are valued as open rural landscapes that provide for rural lifestyles (City of Melton, 2014). The Project traverses land classified as the eastern plains, which provide for expansive rural vistas, with land in the north of the Green Wedge within the City providing for long range views (City of Melton, 2014).

Figure 7-2 View north across flat to gently undulating farmland from Taylors Road, Plumpton

Source: GHD, 2020

### Connectivity

The road network in the City of Melton includes the primary north-south routes of Gisborne Melton Road and Hopkins Road. The primary east-west routes include the Western Freeway, High Street, Diggers Rest-Coimadai Road, Melton Highway, and Ballarat Road.

Given the growth in population, traffic and transport infrastructure and management are a priority for Council (AECOM, 2015; City of Melton, 2019a). Traffic management, with a focus on commuting time and congestion was raised as an issue for around one quarter of respondents to the *2019 Annual Community Satisfaction Survey* (Metropolis Research, 2019).

Public transport between Melton and metropolitan Melbourne is primarily provided by the Melton line. Melton has a lower rate of public transport usage than Greater Melbourne, with 10.1% of residents travelling to work by public transport, compared to 16.3% in Greater Melbourne (ABS, 2017b).

The development of a connected off-road trail network for use by cyclists and pedestrians is a noted priority for Council (City of Melton, 2019c). No trails are located in proximity to the Project.

### 7.2.2 Hume local government area

#### Key features

The City of Hume is located approximately 15 km north of the Melbourne CBD. The City of Hume is characterised by the established suburbs of Broadmeadows, Tullamarine, and Gladstone Park in the south-east, the developing residential suburbs of Craigieburn, Greenvale and Roxburgh Park (collectively referred to as the Hume Corridor), in the north-east and the Sunbury township in the north-west. The City of Hume hosts the Melbourne International Airport, which is an important regional employment generator (City of Hume, 2019).

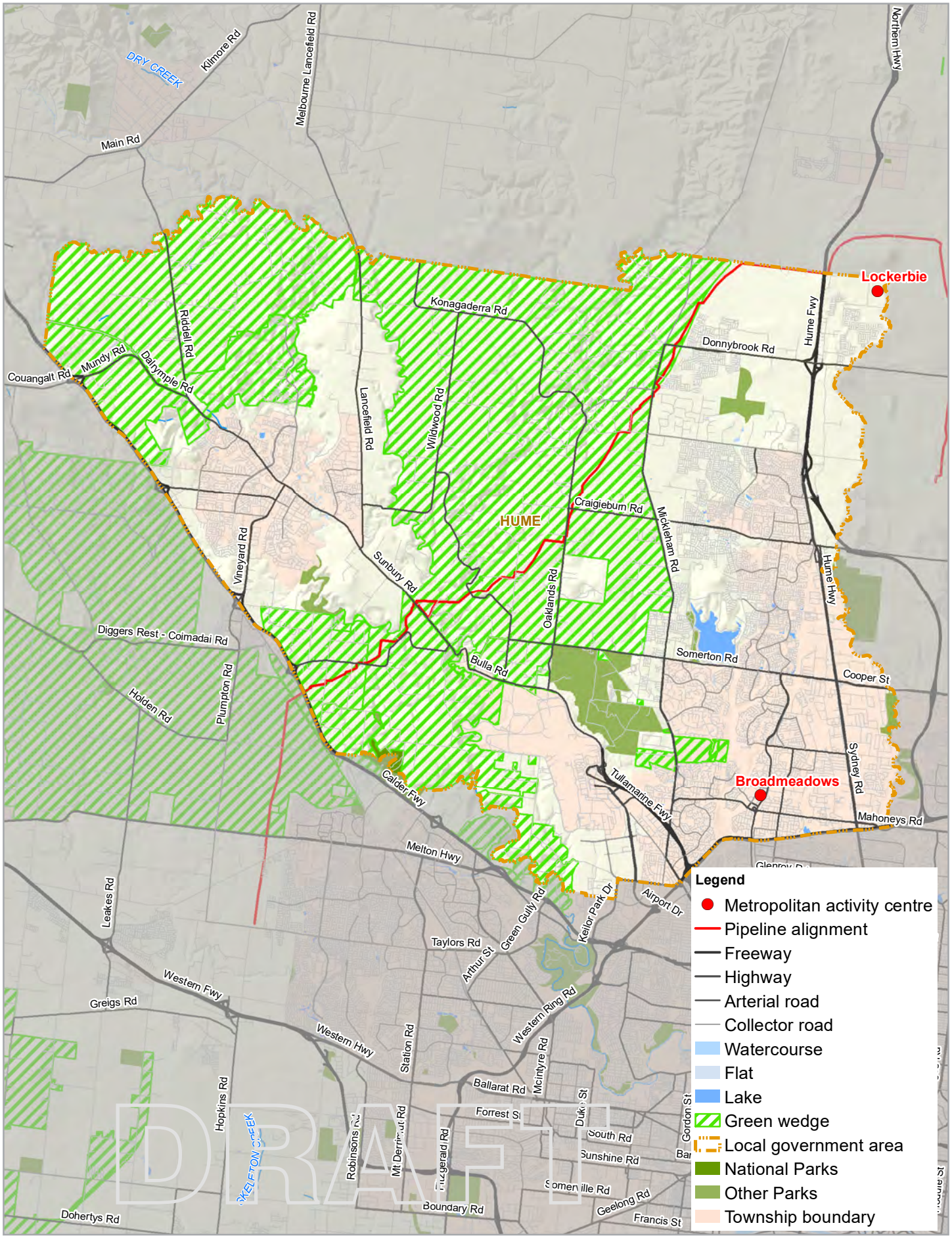
The City of Hume hosts a number of Metropolitan Activity Centre's including Lockerbie, Craigieburn, Craigieburn Town Centre, Roxburgh Park, Sunbury, Sunbury South, Broadmeadows, and Gladstone Park. The Metropolitan Activity Centre's proximal to the Project alignment include Lockerbie (~1.9 km), Mickleham (~1 km), and Sunbury South (1.5 km).

The land the Project traverses is predominantly rural. However, it is adjacent to a number of urban residential developments, including Merrifield (within Mickleham), which has been developed in recent years. In addition, there are a number of areas earmarked for future residential development, including Lindum Vale and Cloverton Estate.

The Project is located within or adjacent to the future Outer Metropolitan Ring (OMR)/E6 Transport corridor, which is subject to a Public Acquisition Overlay (PAO) with large stretches of the Project located in the City of Hume. The Project is located next to or within the OMR PAO between KP 7 – KP 12, KP 19 - KP 21, KP 23.5 to KP 26.0, KP 27.0 to KP 33.4, and KP 34.0 to KP 42.0.

The traditional custodians of the City of Hume are the Wurundjeri Woi Wurrung peoples, which includes the Gunung Willam Balluk clan (City of Hume, 2020a).

An overview of the City and its key features is provided in Figure 7-3.



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

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Western Outer Ring Main Gas Project

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City of Hume overview

Figure 7-3

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

### Amenity and character

The City contains a rich natural heritage, with key natural features including creeks, escarpments and hill tops (City of Hume, 2019).

The land located between the Hume Corridor and Sunbury, which the Project traverses, is predominantly zoned within Melbourne's Green Wedge, and is valued as a distinct rural landscape (City of Hume, 2019, 2020d) (Figure 7-4). The exception to this are the small areas of urban residential development, including Merrivale within Mickleham (Figure 7-5). Although farming was a historically dominant activity in this area, farming has declined in the Green Wedge due to a range of factors, including poor quality of soil, low levels of rainfall, and an ageing population  (City of Hume, 2019, 2020d).

Figure 7-4 View east of a dwelling on Duncans Lane, Diggers Rest

Source: GHD, 2020

Figure 7-5 View south-west of dwellings along Inkerman Crescent, Mickleham

Source: GHD, 2020

### Connectivity

The road network in the City of Hume includes the primary north-south routes of Lancefield Road, Riddle Road, Mickleham Road, Oaklands Road, Pascoe Vale Road, and the Hume Freeway. The primary east-west routes include the Broadmeadows Road, Camp Road, Somerton Road, Craigieburn Road, Gap Road, and Donnybrook Road.

The Hume Planning Scheme notes that population growth has historically exceeded infrastructure improvement, and as a consequence, a number of arterial roads in the City operate above capacity (City of Hume, 2019). Similarly, the City of Hume's *Draft Rural Strategy* notes that there is community concern in regards to the impact of urban growth on the rural road network, which has the potential to result in conflict between different road users (e.g. cyclists, drivers, and agricultural road users); however, modelling undertaken by the Council found that rural road network has the capacity to support rural and nearby communities (City of Hume, 2020d).

The City of Hume is serviced by the Craigieburn and Sunbury lines. Hume had a lower rate of public transport usage than Greater Melbourne in 2016, with 10.4% of residents travelling to work by public transport, compared to 16.3% in Greater Melbourne.

The Project intersects a number of off-road shared paths, including that adjacent to Donnybrook Road, Mickleham Road, Sunbury Road, and Buller-Diggers Rest Road (City of Banyule et al., 2019).

### 7.2.3 Mitchell local government area

#### Key features

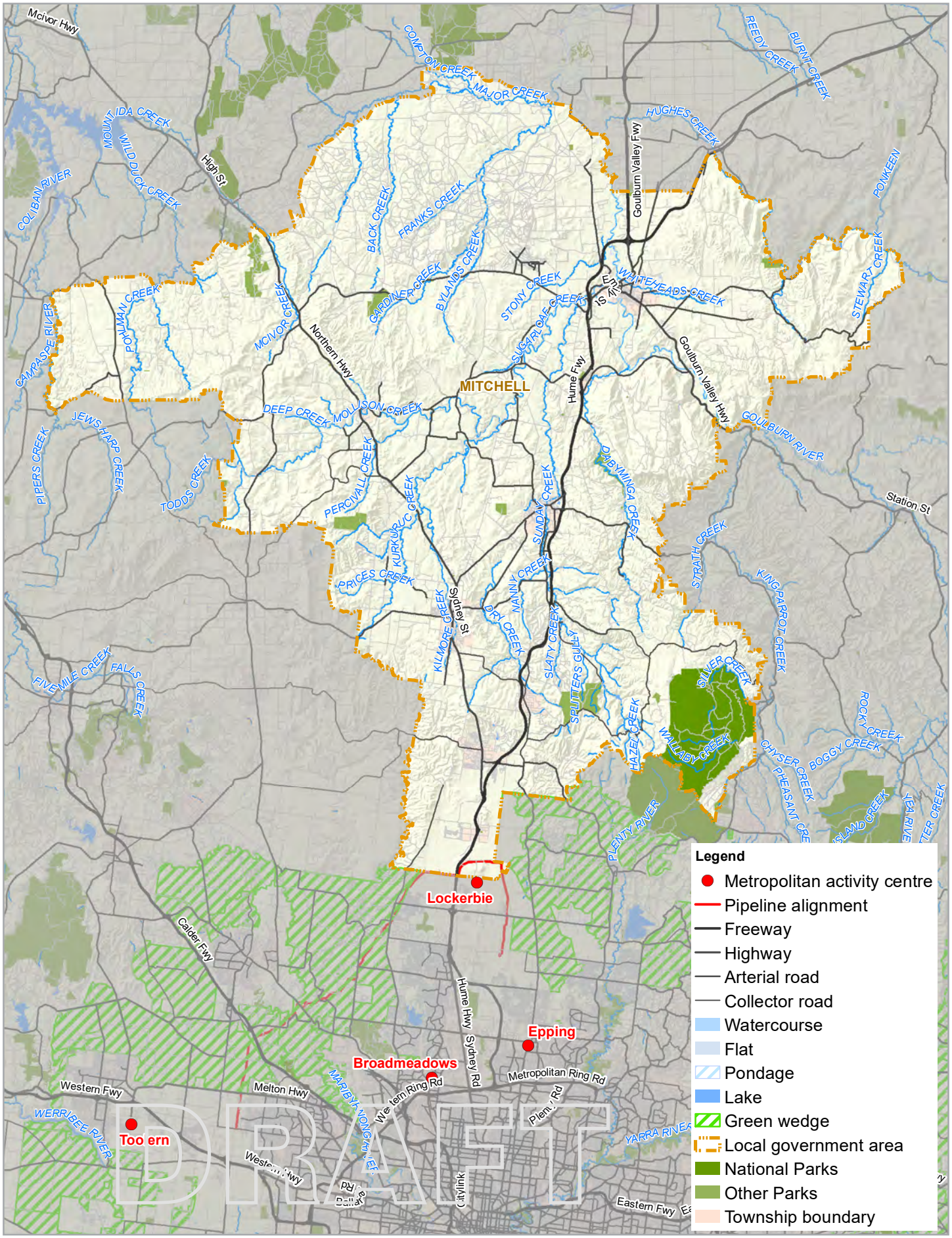
The Mitchell Shire Council includes townships of Wallan, Beveridge, Kilmore, Kilmore East, Heathcote, Broadford, Pyalong, Puckapunyal and Seymour. The Shire's features of historic and developing townships with rural and agricultural land, and significant natural landscapes, including the Goulbourn River (Mitchell Shire Council, 2019b).

Mitchell Shire hosts two Metropolitan Activity Centres, including and Beveridge, and Wallan both of which are incorporated into Melbourne's northern growth corridor (Victoria State Government, 2020). Beveridge is approximately 1.7 km from the Project alignment. Beveridge was the birthplace of Ned Kelly, and features a number of locations on the Ned Kelly Touring Route. The town is subject to continued growth and development, including the Mandalay Estate.

The Project traverses through the south-eastern corner of the Shire, intersecting predominantly agricultural land, which is subject to the Lockerbie North Precinct Structure Plan (Victorian Planning Authority, 2017b). Under the Plan, the Lockerbie North area would be developed as an additional and complementary urban area to the Beveridge township. However, consultation found that the area proximal to the Project corridor is not expected to be developed for some time.

The traditional custodians of the Mitchell Shire are the Taungurung and Wurundjeri peoples (Mitchell Shire Council, 2019a).

An overview of the City and its key features is provided in Figure 7-6.



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

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Australian Pipeline Limited
Western Outer Ring Main Gas Project

City of Mitchell overview

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|---|---|
| Project No. | 12529997 |
| Revision No. | B |
| Date | 7/12/2020 |

Figure 7-6

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

### Amenity and character

Mitchell features a diversity of landscapes, from steep to rolling hills, volcanic plains, and floodplains association with major rivers and creeks (Mitchell Shire Council, 2019b). The area surrounding the Project alignment is predominantly agricultural and feature typical rural landscapes. The area features views of the foothills of the Great Dividing Range, Mount Fraser, and Bald Hill (Growth Areas Authority, 2012).

### Connectivity

The road network in the Shire includes the primary north-south routes of Epping-Kilmore Road, Wallan-Whittlesea Road, the Northern Highway, Lancefield-Tooborac Road, Goulbourn Valley Freeway, and the Hume Freeway. The primary east-west routes include the Seymour-Tooborac Road, Upper Goulbourn Road, and Kilmore-Lancefield Road.

Public transport between the urban areas in the Mitchell Shire and metropolitan Melbourne is primarily provided by the North East rail line. However, public transport accessibility within Mitchell Shire and how this network connects Mitchell Shire to metropolitan Melbourne is considered to be a liveability issue for residents (Mitchell Shire Council, 2018). As a consequence, Mitchell has a lower rate of public transport usage than Greater Melbourne, with 5.2% of residents travelling to work by public transport, compared to 16.3% in Greater Melbourne (ABS, 2017b).

## 7.2.4 Whittlesea local government area

### Key features

The City of Whittlesea is located in the northern suburbs of Melbourne. The main townships include Whittlesea, Epping, Epping North, Wollert, Mernda, Doreen, South Morang, Mill Park, Lalor, Bundoora and Thomastown.

Over 32,000 hectares the Whittlesea LGA is rural land, which equates to around 70% of the LGA's total area. Much of this land is located in the northern part of the municipality, where it is part of the Whittlesea green wedge. The green wedge supports agricultural production, conservation and biodiversity areas and rural living (City of Whittlesea, 2011).

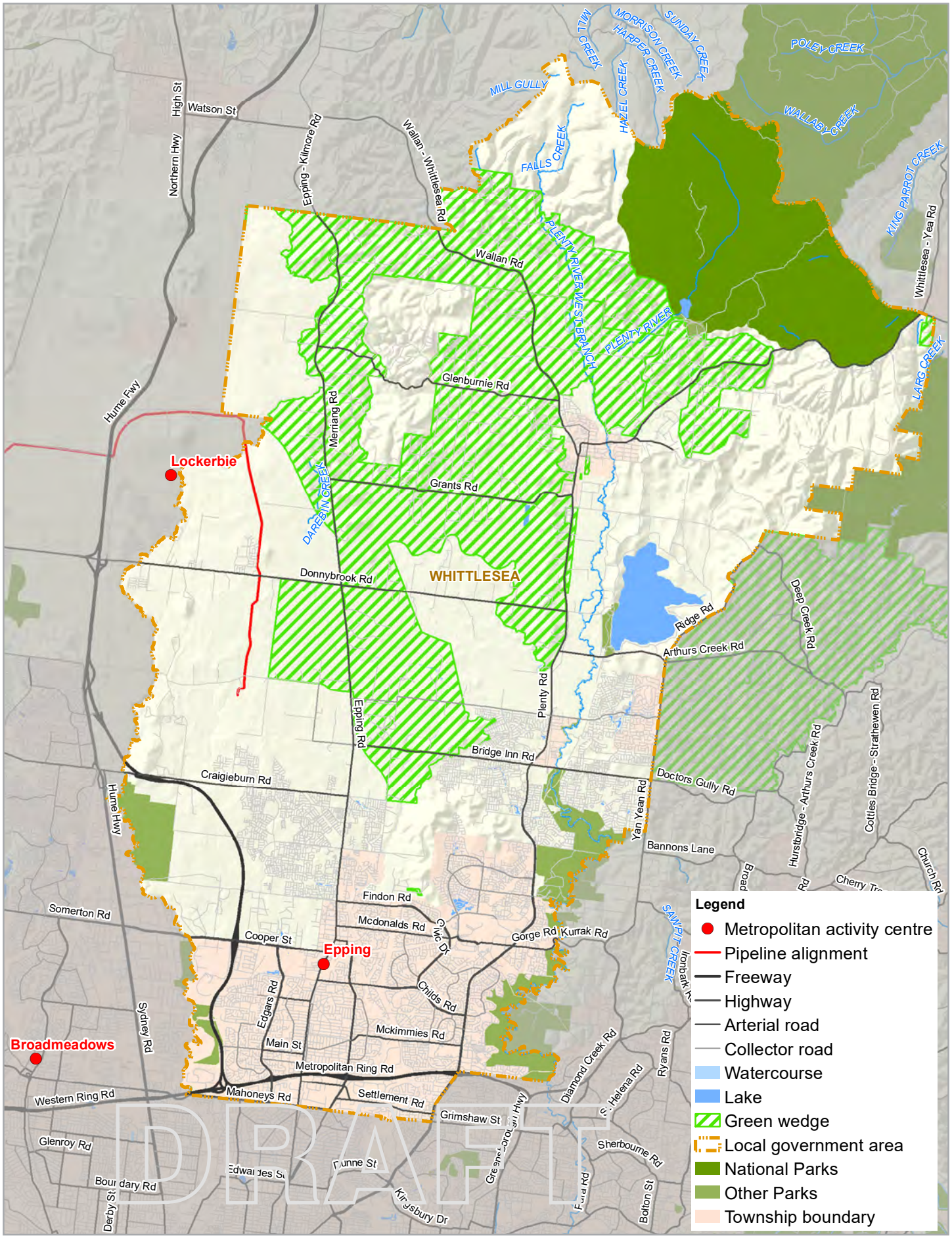
Epping Central is the City's established Metropolitan Activity Centre and includes a range of commercial, service and infrastructure assets (City of Whittlesea, 2017b).

The Project intersects a small portion of the suburbs of Beveridge and the western part of Donnybrook. These suburbs are largely rural, although there are a number of areas identified for future residential and commercial development, including the Donnybrook-Woodside Precinct, which is intersected by the Project. There are two estates being developed within this precinct, including Olivine and Peppercorn Hill.

Within the City of Whittlesea, the Project's pipeline would be located within an existing gas pipeline easement or land where APA has existing tenure, such as the Wollert Compressor Station.

Whittlesea is on the land of the Wurundjeri Willum Clan (Whittlesea City Council, 2020).

An overview of the City and its key features is provided in Figure 7-7.




Paper Size ISO A4

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Meters

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

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Australian Pipeline Limited
Western Outer Ring Main Gas Project

Project No. 12529997
Revision No. B
Date 7/12/2020

City of Whittlesea overview

Figure 7-7

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

### Amenity and character

The City of Whittlesea is largely characterised by a mixture of high growth urban areas, alongside significant agricultural and natural landscape, and heritage places. The Whittlesea Hills (Eden Hills sub-area) is a distinctive rural land character area (City of Whittlesea, 2017b) that features lighted wooded rolling hills and open pastures, as shown in Figure 7-8 (City of Whittlesea, 2011).

Donnybrook and Beveridge are predominantly rural and feature generally rural and natural landscapes; however, there are small areas of residential and urban development emerging. The area surrounding the regional study area remains rural and undeveloped.

Figure 7-8 View south-west along the Project alignment from Wildwood Road

Source: GHD, 2020

### Connectivity

The road network in the City of Whittlesea includes the primary north-south routes of Plenty Road, Wallan Road, Epping Road, Merriang Road and the Hume Freeway. The primary east-west routes include the M80 Ring Road, Cooper Street, McDonalds Road, Craigieburn Road, Bridge Inn Road, Donnybrook Road, and the Whittlesea-Yae Road.

According to Council, the road network capacity is constrained and challenged (City of Whittlesea, 2017b). In particular, capacity in north-south routes is limited, and the lack of continuity and connection in east-west routes limits connectivity within the municipality (City of Whittlesea, 2017b). Traffic management was one of the top three issues raised by 43.4% of respondents to the *2018 Community Attitudes and Liveability Survey* (Metropolis Research, 2018).

Public transport between the urban areas in the south of Whittlesea and metropolitan Melbourne is primarily provided by the Mernda rail line. The North East rail line also runs through Whittlesea, and includes the Donnybrook Station proximal to the Project alignment. Whittlesea has a lower rate of public transport usage than Greater Melbourne, with 11.0% of residents travelling to work by public transport, compared to 16.3% in Greater Melbourne.

Cycling is popular recreational activity in Whittlesea City Council, particularly for children under ten years of age (Whittlesea City Council, 2016). There are no bicycle trails proximal to the Project.

## 7.3 Demographic characteristics

This section details the key demographic indicators identified as relevant for understanding the Project's social impacts. These include:

- Population trends and projections
- Cultural diversity and proficiency in Spoken English
- An employment and training profile
- A profile of potentially vulnerable populations

Demographic data presented in this section has been summarised per LGA in Appendix C.

### 7.3.1 Population

Each LGA in the regional study area has experienced population growth between 2009 and 2019 at a higher rate than those in Greater Melbourne and Victoria overall, as detailed in Table 7-2. The regional study area contains large portions of Greater Melbourne's growth areas (Department of Environment Land Water and Planning, 2017). As such, it is expected to cater for considerable population growth between 2018 and 2036, as shown in Table 7-3.

Table 7-2 Population trends and Projections, 2019

| LGA | Population change |
|---|---|
| Melton | The population of Melton City Council increased by 65.0% between 2009 and 2019 (Figure 7-9). Melton is projected to grow by over by 111.9% between 2018 and 2036, as detailed in Table 7-3. |
| Hume | Hume City Council's population increased by 40.0% between 2009 and 2019 (Figure 7-9). Hume is projected to grow by over by 53.3% between 2018 and 2036, as detailed in Table 7-3. |
| Mitchell | Mitchell Shire Council's population increased by 40.1% between 2009 and 2019 (Figure 7-9). Mitchell is Projected to grow by over by 120.5% between 2018 and 2036, as detailed in Table 7-3. |
| Whittlesea | The population of the City of Whittlesea increased by 58.3% between 2009 and 2019 (Figure 7-9). Whittlesea is projected to grow by over by 63.2% between 2018 and 2036, as detailed in Table 7-3. |
| Greater Melbourne | Greater Melbourne's population increased by 13.3% between 2009 and 2019 (Figure 7-9). Greater Melbourne is projected to grow by over by 37.8% between 2018 and 2036, as detailed in Table 7-3. |
| Victoria | The State of Victoria's population increased by 22.8% between 2009 and 2019 (Figure 7-9). Victoria is projected to grow by over by 23.2% between 2018 and 2036, as detailed in Table 7-3. |

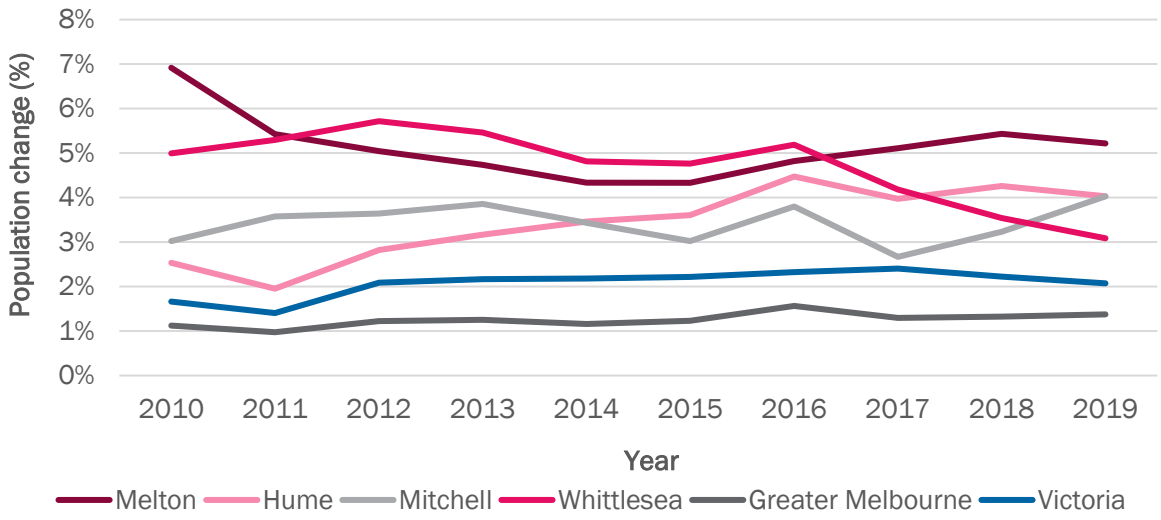



Figure 7-9 Population change 2009-2019

Source: GHD after (Victorian Government, 2019) *Victoria in Future 2019 - Population and household Projections to 2051*

Table 7-3 Projected population 2018-2036

| Area | 2018 | 2021 | 2026 | 2031 | 2036 | 2018-36 change |
|---|---|---|---|---|---|---|
| Melton | 156,710 | 179,490 | 223,930 | 276,430 | 332,050 | 111.9% |
| Hume | 224,390 | 250,520 | 286,530 | 316,240 | 343,990 | 53.3% |
| Mitchell | 44,300 | 50,070 | 62,420 | 78,770 | 97,690 | 120.5% |
| Whittlesea | 223,320 | 246,010 | 285,920 | 327,470 | 364,450 | 63.2% |
| Greater Melbourne | 4,886,860 | 5,220,800 | 5,740,910 | 6,243,720 | 6,736,150 | 37.8% |
| Victoria | 1,477,678 | 1,536,345 | 1,632,708 | 1,728,275 | 1,820,475 | 23.2% |

Source: GHD after (Victorian Government, 2019) *Victoria in Future 2019 - Population and household Projections to 2051*

### 7.3.2 Cultural and ethnic diversity

#### Indigenous population

Small populations of people in the regional study area stated that they were Indigenous in the 2016 Census, as detailed in Table 7-4. As proportions of the population, these were generally in line with the State proportion of Indigenous people at 0.8% and slightly higher than that of Greater Melbourne (0.5%). The exception to this was Mitchell, where 1.6% of the population identified as Indigenous as at the 2016 Census.

Table 7-4 Indigenous population, 2016

| Area | Indigenous population | |
|---|---|---|
| | No. | % |
| Melton | 1,286 | 0.9% |
| Hume | 1,461 | 0.7% |
| Mitchell | 650 | 1.6% |
| Whittlesea | 1,639 | 0.8% |
| Greater Melbourne | 24,062 | 0.5% |
| Victoria | 47,788 | 0.8% |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*

### Cultural and linguistic diversity

To understand the cultural and linguistic diversity of the regional study area the following indicators were examined: the proportion of people who were born overseas (

Table 7-6) country of birth (Table 7-7), languages spoken at home, and English proficiency for non-English speakers (Figure 7-10). These are outlined for each LGA in Table 7-5.

Table 7-5 Cultural and linguistic diversity, 2016

| LGA | Cultural and linguistic diversity indicators |
|---|---|
| Melton | In 2016, 36.5% of people within Melton stated that they were born overseas, which is slightly less than both Greater Melbourne (40.2%) and Victoria (35.1%). Top responses include India (3.8%), Philippines (2.9%) and New Zealand (2.1%). Around a third of the population (32.3%) stated that a language other than English was spoken at home. A small proportion (1.8%) indicated that they speak another language and do not speak English well or at all. |
| Hume | In 2016, 42.3% of people within Hume stated that they were born overseas, which is generally in line with the Greater Melbourne profile (40.2%), and Victoria (35.1%). Top responses include Iraq (5.4%), India (4.4%) and Turkey (3.1%). Almost half of the population (44.9%) stated that a language other than English was spoken at home. There is a notable proportion (8.0%) of the population that indicated that they speak another language and do not speak English well or at all. |
| Mitchell | In 2016, 20.9% of people within Mitchell stated that they were born overseas, which is considerably less than both Greater Melbourne (40.2%) and Victoria (35.1%). Top responses include England (2.6%), New Zealand (1.1%) and India (0.7%). A language other than English was spoken at home for 7.2% of the population. The proportion of the population that indicated that they speak another language and do not speak English well or at all was 0.9%. |
| Whittlesea | In 2016, 41.6% of people within Whittlesea stated that they were born overseas, which is generally in line with the Greater Melbourne profile (40.2%), and Victoria (35.1%). Top responses include India (5.6%), Italy (3.0%), and the former Yugoslav Republic of Macedonia (2.8%). Almost half of the population (44.0%) stated that a language other than English was spoken at home. There is a notable proportion (7.4%) of the population that indicated that they speak another language and do not speak English well or at all. |

| LGA | Cultural and linguistic diversity indicators |
|---|---|
| Greater Melbourne | In 2016, Greater Melbourne's population had 40.2% indicating that they were born overseas which is slightly higher than Victoria (35.1%). Top responses include India (3.6%), China (excludes SARs and Taiwan) (3.5%) and England (3%). Around a third of the population (32.3%) stated that a language other than English was spoken at home. The proportion of the population that indicated that they speak another language and do not speak English well or at all was 5.5%. |
| Victoria | In 2016, 35.1% of Victorians stated that they were born overseas. Top responses include England (2.9%), India (2.9%), China (excludes SARs and Taiwan) (2.7%). Around a quarter of the population (26.0%) stated that a language other than English was spoken at home. The proportion of the population that indicated that they speak another language and do not speak English well or at all was 4.4%. |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*

### Table 7-6 Persons born overseas, 2016

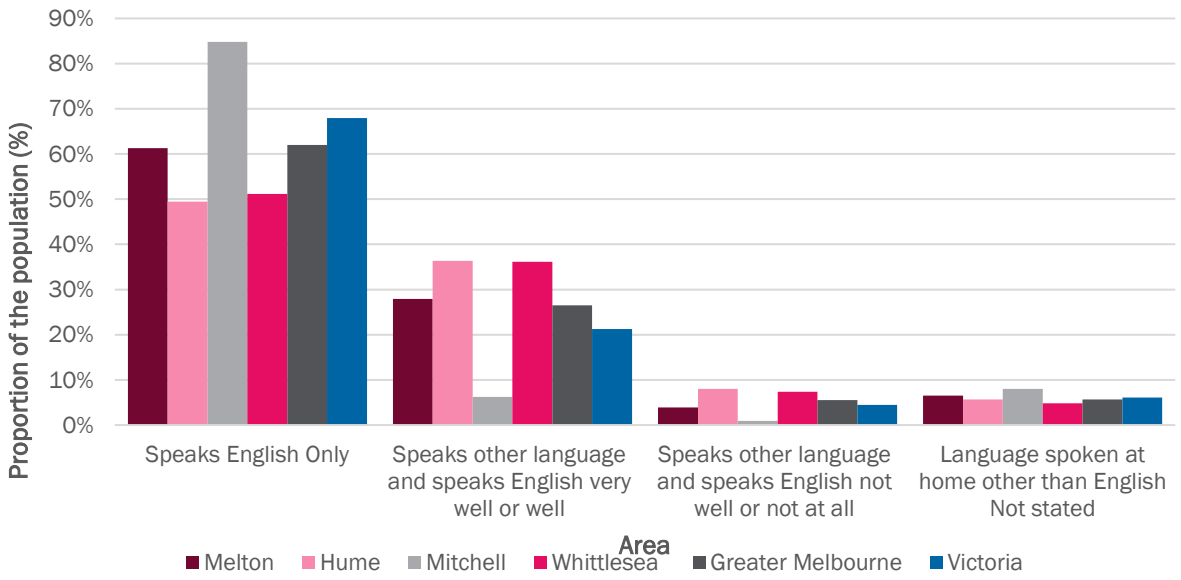
| Area | Persons born overseas | |
|---|---|---|
| | No. | % |
| Melton | 49,437 | 36.5% |
| Hume | 83,490 | 42.3% |
| Mitchell | 8,552 | 20.9% |
| Whittlesea | 82,156 | 41.6% |
| Greater Melbourne | 1,803,055 | 40.2% |
| Victoria | 2,080,245 | 35.1% |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*

### Table 7-7 Country of birth other than Australia – top responses, 2016

| Area | Place | % | Place | % | Place | % |
|---|---|---|---|---|---|---|
| Melton | India | 3.8% | Philippines | 2.9% | New Zealand | 2.1% |
| Hume | Iraq | 5.4% | India | 4.4% | Turkey | 3.1% |
| Mitchell | England | 2.6% | New Zealand | 1.1% | India | 0.7% |
| Whittlesea | India | 5.6% | Italy | 3.0% | The former Yugoslav Republic of Macedonia | 2.8% |
| Greater Melbourne | India | 3.6% | China (excludes SARs and Taiwan) | 3.5% | England | 3.0% |
| Victoria | England | 2.9% | India | 2.9% | China (excludes SARs and Taiwan) | 2.7% |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*




Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*

Figure 7-10 Proficiency in spoken English, 2016

## 7.4 Employment and education

An employment and education profile was established through a review of the latest unemployment data (Figure 7-11), and 2016 Census data for dominant industries of employment (Table 7-9), and highest level of educational attainment (Table 7-10). These indicators are discussed for each LGA in Table 7-8.

For all LGAs, it is noted that restrictions to slow the spread of COVID-19 have resulted in 'unprecedented interventions in the labour market' (ABS, 2020a). These restrictions, which began in April 2020 throughout Australia and appear to be captured in the increase in unemployment shown in Figure 7-11 in March 2020 were increased across Greater Melbourne in July 2020 and extended through to October 2020. At the time of writing this report, recent unemployment data, particularly at the LGA level was not released by the Australian Government. However, more recent data was available for Greater Melbourne and Victoria than is discussed in Table 7-8 and shown in Figure 7-11.

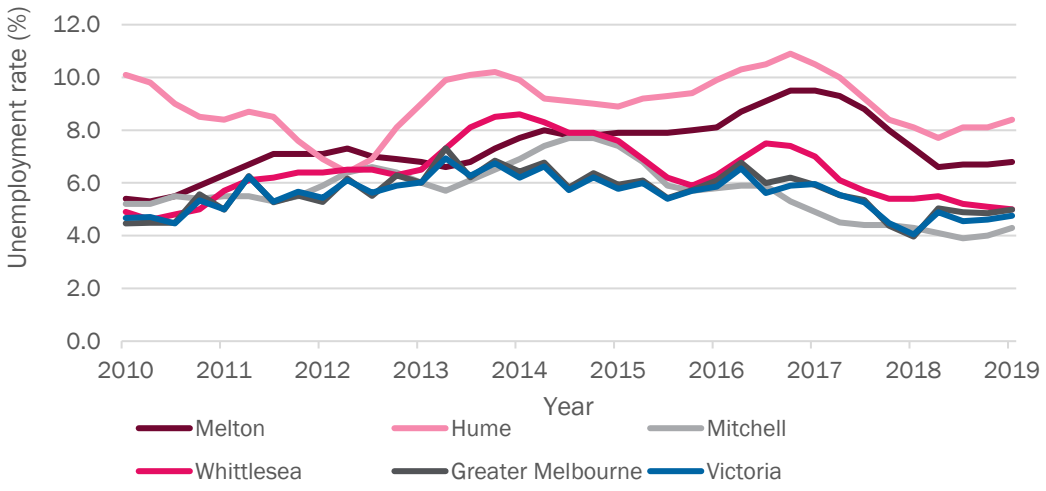
The most recent unemployment data for Greater Melbourne shows an increase in the unemployment rate to 7.3%, which is slightly above that of the State at 6.7% (ABS, 2020b).

Table 7-8 Employment and training profile

| LGA | Employment and training |
|---|---|
| Melton | The unemployment rate for Melton in March 2020 was 7.6%, which was above that of the State (5.5%). Dominant industries of employment include retail trade (10.9%) and healthcare and social assistance (10.7%) and transport, postal and warehousing (10.4%). In 2016, Melton's highest level of educational attainment was year 12 (18.1%), which is a higher proportion than Greater Melbourne (17.2%) and Victoria (15.9%). A lower proportion of Melton people stated tertiary (16.0%) as their highest level of educational attainment compared to Greater Melbourne (27.5%) and Victoria (24.3%). |

| LGA | Employment and training |
|---|---|
| Hume | In March 2020, the unemployment rate in Hume was 8.9%, which was above the State rate of 5.5%. Dominant industries of employment include health care and assistance (10.9%), retail trade (10.6%) and transport, postal and warehousing (10.5%). As at the 2016 Census, the highest level of educational attainment was Year 12 (19.3%), which is a higher proportion than Greater Melbourne (17.2%) and Victoria (15.9%). Tertiary education was stated as the highest attainment of education by 14.8% of people, which is significantly lower than Greater Melbourne (27.5%) and Victoria (24.3%). |
| Mitchell | The unemployment rate for Mitchell in March 2020 was 4.7%, which was below that of the State (5.5%). Dominant industries of employment include construction (12.5%), healthcare and social assistance (10.2%) and public administration safety (10.0%). In 2016, Mitchell had a low proportion of people who stated they had tertiary qualifications (10.6%) compared to Greater Melbourne (27.5%) and Victoria (24.3%). Holding a certificate III/ IV (21.3%) was the most predominant highest level of education attainment, and significantly more prevalent than both Greater Melbourne (12.8%) and Victoria (14.4%). |
| Whittlesea | In March 2020, the unemployment rate in Whittlesea was 5.2%, which was below that of the State (5.5%). Dominant industries of employment include health care and social assistance (12.9%), retail trade (11.5%), and construction (9/5%).<br><br>As at the 2016 Census, the predominant highest level of educational attainment was year 12 (19.0%), which was higher than Greater Melbourne (17.2%) and Victoria (15.9%). A much lower proportion of people stated that they had tertiary qualifications (18.0%) compared to Greater Melbourne (27.5%) and Victoria (24.3%). |
| Greater Melbourne | In March 2020, the unemployment rate in Greater Melbourne was 5.7%, which was greater than that of the State (5.5%). Dominant industries of employment include healthcare and assistance (12.0%), retail trade (10.1%) and education and training (8.6%). In 2016, Greater Melbourne people stated tertiary (27.5%) as highest level of educational attainment, followed by year 12 (17.2%). |
| Victoria | Victoria's unemployment rate in March 2020 was 5.5%. Dominant industries of employment include healthcare and assistance (12.5%), retail trade (10.2%) and education and training (8.6%). As at the 2016 Census, the state of Victoria had tertiary education (24.3%), year 12 (15.9%) and certificate III/ IV (14.4%) as the most prominent highest levels of educational attainment. |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*; (Australian Government, 2020) *LGA Data tables - Small Area Labour Markets*; (ABS, 2020b) *6291.0.55.001 - Labour Force, Australia, Detailed - Electronic Delivery, Jul 2020*.




Sources: GHD after (Australian Government, 2020) *LGA Data tables - Small Area Labour Markets;* (ABS, 2020b) *6291.0.55.001 - Labour Force, Australia, Detailed - Electronic Delivery, Jul 2020.*

Figure 7-11 Unemployment rate (smoothed) per LGA, 2020

Table 7-9 Top five industries of occupation, 2016

| Industry | Melton | Hume | Mitchell | Whittlesea | Greater Melbourne | VIC |
|---|---|---|---|---|---|---|
| Manufacturing | 8.6% | 9.6% | 9.3% | 9.5% | 7.7% | 7.8% |
| Construction | 10.1% | 9.8% | 12.5% | 10.2% | 8.2% | 8.3% |
| Retail trade | 10.9% | 10.6% | 9.2% | 11.5% | 10.1% | 10.2% |
| Transport, postal and warehousing | 10.4% | 10.5% | 7.3% | 7.0% | 5.0% | 4.8% |
| Public administration and safety | 5.4% | 5.5% | 10.0% | 5.2% | 5.0% | 5.3% |
| Education and training | 7.0% | 6.9% | 7.2% | 7.0% | 8.6% | 8.6% |
| Health care and social assistance | 10.7% | 10.9% | 10.2% | 12.9% | 12.0% | 12.5% |

Note: Shaded cells indicate that the industry of employment is in the top five responses for this LGA.

Source: (ABS, 2017c) 2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0

Table 7-10 Highest level of educational attainment

| Highest level of educational attainment | Melton | Hume | Mitchell | Whittlesea | Greater Melbourne | VIC |
|---|---|---|---|---|---|---|
| Tertiary | 16.0% | 14.8% | 10.6% | 18.0% | 27.5% | 24.3% |
| Advanced diploma | 9.1% | 9.0% | 8.7% | 9.5% | 9.5% | 9.2% |
| Certificate III / IV | 17.4% | 15.3% | 21.3% | 15.4% | 12.8% | 14.4% |
| Year 12 | 18.1% | 19.3% | 13.6% | 19.0% | 17.2% | 15.9% |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*

## 7.5 Potentially vulnerable populations

### 7.5.1 Socio-economic Indexes for Disadvantage

Vulnerability is defined as the inability of people to withstand or adapt to change due to their social characteristics. Specifically, it relates to how a group will be impacted by a change due to their *sensitivity to change* and their *ability to adapt to change* (adaptability) including access to socio-economic resources to cope with a change (Cinner et al., 2012; Rakauskiene & Strunz, 2016).

In this SIA, we have included the following indicators of vulnerability:

- The ABS' socio-economic indices for areas (SEIFA) – Index of Relative Socio-economic Disadvantage (IRSD)
- People that require assistance – which is an indicator of a high level of disability
- Age-related vulnerability – including children and elderly people

#### *SEIFA - IRSD*

The ABS produces four socio-economic indices for areas (SEIFA) based on the 2016 Census, which identify areas of relative advantage and disadvantage. The Index of Relative Socio-Economic Disadvantage (IRSD) summarises information about the socio-economic conditions of people and households within an area, based on measures of relative advantage and disadvantage. This index has been selected as it helps identify areas that may be vulnerable to change as they lack resources (disadvantaged areas).

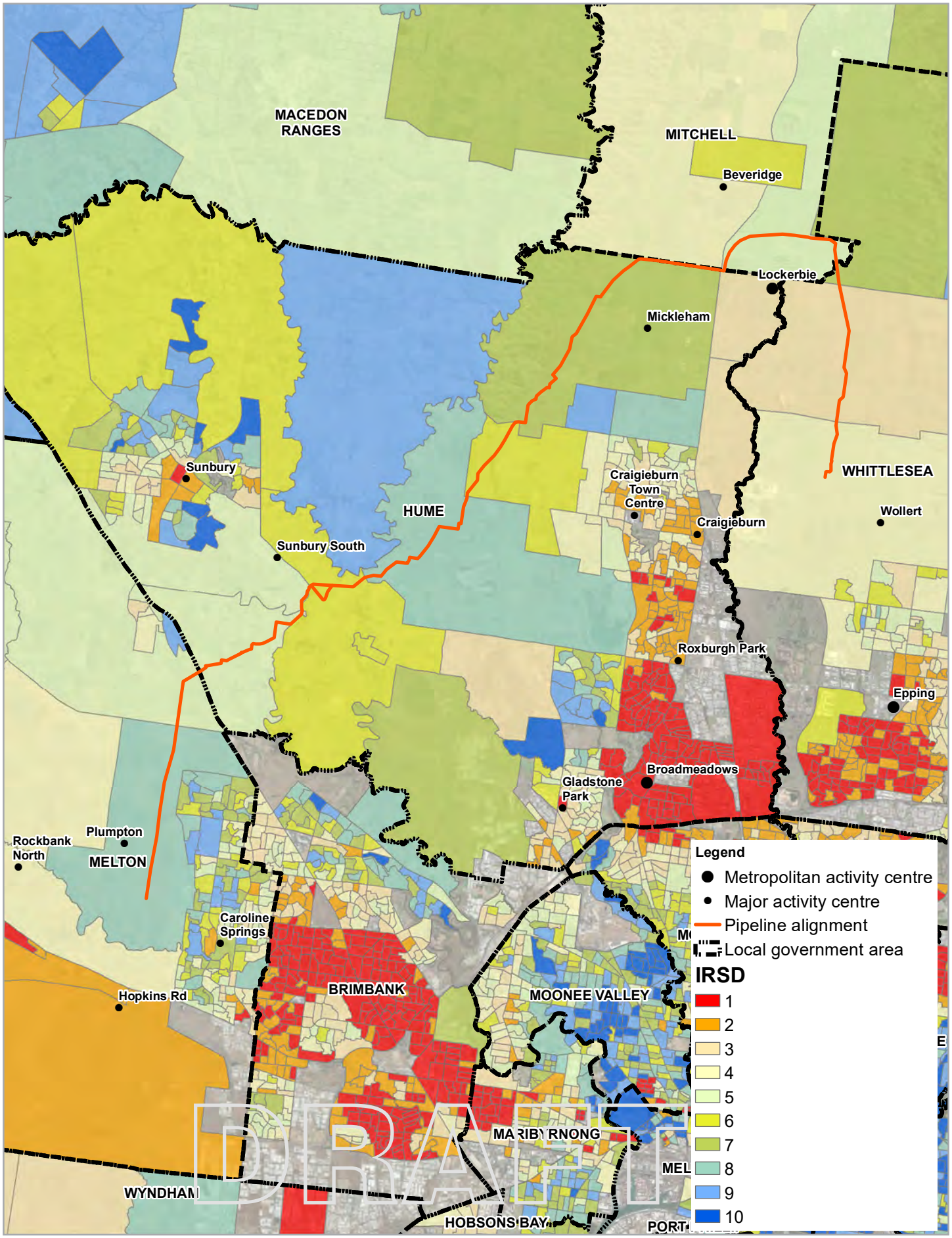
Socio-economic disadvantage is defined broadly by the IRSD in terms of people's access to material and social resources and their ability to participate in society (ABS, 2018c). In order to capture this broad definition, the IRSD includes a range of data points, including income, education, employment, occupation, and housing. The IRSD divides a population of the state into ten equal groups. The lowest scoring 10 percent of these groups are given a decile number of 1, which indicates the highest level of disadvantage, and the highest scoring 10 percent of areas are given a decile of 10, which indicates the lowest level of disadvantage.

The groups used in this report to describe the ISRD classification are the ABS' Statistical Area 1 (SA1), which is the smallest statistical area reported by the ABS. This allows an understanding of disadvantage proximal to the Project alignment. A discussion of the IRSD classification for the SA1s proximal to the Project alignment for each LGA is provided in Table 7-11 and shown in Figure 7-12.

### Table 7-11 IRSD classification

| Area | Discussion |
|---|---|
| Melton | Melton's level of relative disadvantage within one kilometre of the Project alignment, at a SA1 level, ranges between deciles 6 and 8 indicating a low level of relative disadvantage. The highest SA1s of relative disadvantage within Melton LGA occur in the most north section and a small SA1 to the east, both with a decile 6 rating. |
| Hume | The SA1s proximal to the Project have low levels of relative disadvantage, with SA1s classified between decile 6 and 8. The exception to this was the most north-eastern SA1, which was classified in decile 3, indicating relatively high levels of disadvantage. It is noted that the data was collected in 2016 and was collected prior to the development of Merrifield within Mickleham. Therefore, the relative disadvantage of this community has not been captured. |
| Mitchell | The SA1s proximal to the Project have medium level of relative disadvantage, with SA1s classified between decile 4 and 5. |
| Whittlesea | The SA1s proximal to the Project have medium to high levels of relative disadvantage, with SA1s classified between decile 3 and 7. The Project passes through a SA1 classified as decile 3 area which indicates a relatively high level of disadvantage. This SA1 is currently predominately undeveloped land but it is noted that large master planned developments are planned. |

Source: ABS (ABS, 2018a) *2033.0.55.001 - Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016*




Paper Size ISO A4

0 2,100 4,200

Meters

Map Projection: Lambert Conformal Conic
Horizontal Datum: GDA 1994
Grid: GDA 1994 VICGRID94

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Western Outer Ring Main Gas Project

Project No. 12529997
Revision No. B
Date 7/12/2020

Socio-economic Index for Disadvantage, 2016

Figure 7-12

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,IRSD, 2016; Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: cjauniau

### *People who require assistance*

The 'need for assistance' 'is designed to reflect the concept of 'profound or severe core activity limitation' and require assistance with daily tasks (ABS, 2018b). Therefore, people with a disability who are able to live independently of a carer or do not otherwise require assistance with daily tasks would not be included in this population.

Table 7-12 details the proportion of people that stated they required assistance with every day tasks in the 2016 Census. Melton and Mitchell had proportions (4.9%) of the population that required assistance in line with that of Greater Melbourne (4.9%) and the State (5.1%). Whittlesea (5.7%) and Hume (6.3%) had slightly higher proportions than that of Greater Melbourne (4.9%) and the State (5.1%).

Table 7-12 People that require assistance, 2016

| Need for assistance | Melton | Hume | Mitchell Shire | Whittlesea | Greater Melbourne | Victoria |
|---|---|---|---|---|---|---|
| Need for assistance (percent) | 4.9% | 6.3% | 4.9% | 5.7% | 4.9% | 5.1% |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*

### Children and elderly people

Table 7-13 identifies the proportion of the population below 15 years of age and above 65 years of age as at the 2016 Census. The regional study area hosts large areas of Melbourne's growth areas, which have a tendency to attract younger families. As a consequence, all LGAs profiled have a higher proportion of children under 15 years and smaller proportions of people aged above 65 years than that of Greater Melbourne and Victoria overall, as detailed in Table 7-13.

Children and the elderly are dispersed through the LGA. Within the local study area, there is one facility where children or the elderly are the dominant user group, which is the Kool Kids Childcare – Merrifield, a child care centre, which is located just over 500 m from the Project alignment.

Table 7-13 Children and the elderly

| Cohort | Melton | Hume | Mitchell | Whittlesea | Greater Melbourne | VIC |
|---|---|---|---|---|---|---|
| Under 15 | 24.6% | 22.2% | 20.7% | 21.4% | 18.3% | 18.2% |
| Above 65 years | 8.4% | 10.3% | 14.2% | 11.7% | 14.0% | 15.6% |

Source: (ABS, 2017c) *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*

## 7.6 Community infrastructure facilities

This section details the community infrastructure facilities in the local and regional study area. Community infrastructure facilities identified include recreation and open space facilities, cultural facilities, education and early childhood facilities, justice and emergency services facilities, and health facilities.

As detailed in Section 5.4, community infrastructure facilities within the local study area (1 km buffer of the Project alignment) were identified, as these infrastructure facilities may be impacted by the Project's activities. These have been detailed according to local government area.

Some community infrastructure facilities beyond this area were also identified. Specifically, a number of community infrastructure facilities types were identified based on whether their catchment would be intercepted by the Project. These include schools, major health services (e.g. hospitals), and emergency services (police, fire and ambulance services). APA has considered trenchless construction methods such as HDD at road crossings to minimise impacts to the community and emergency crossings.

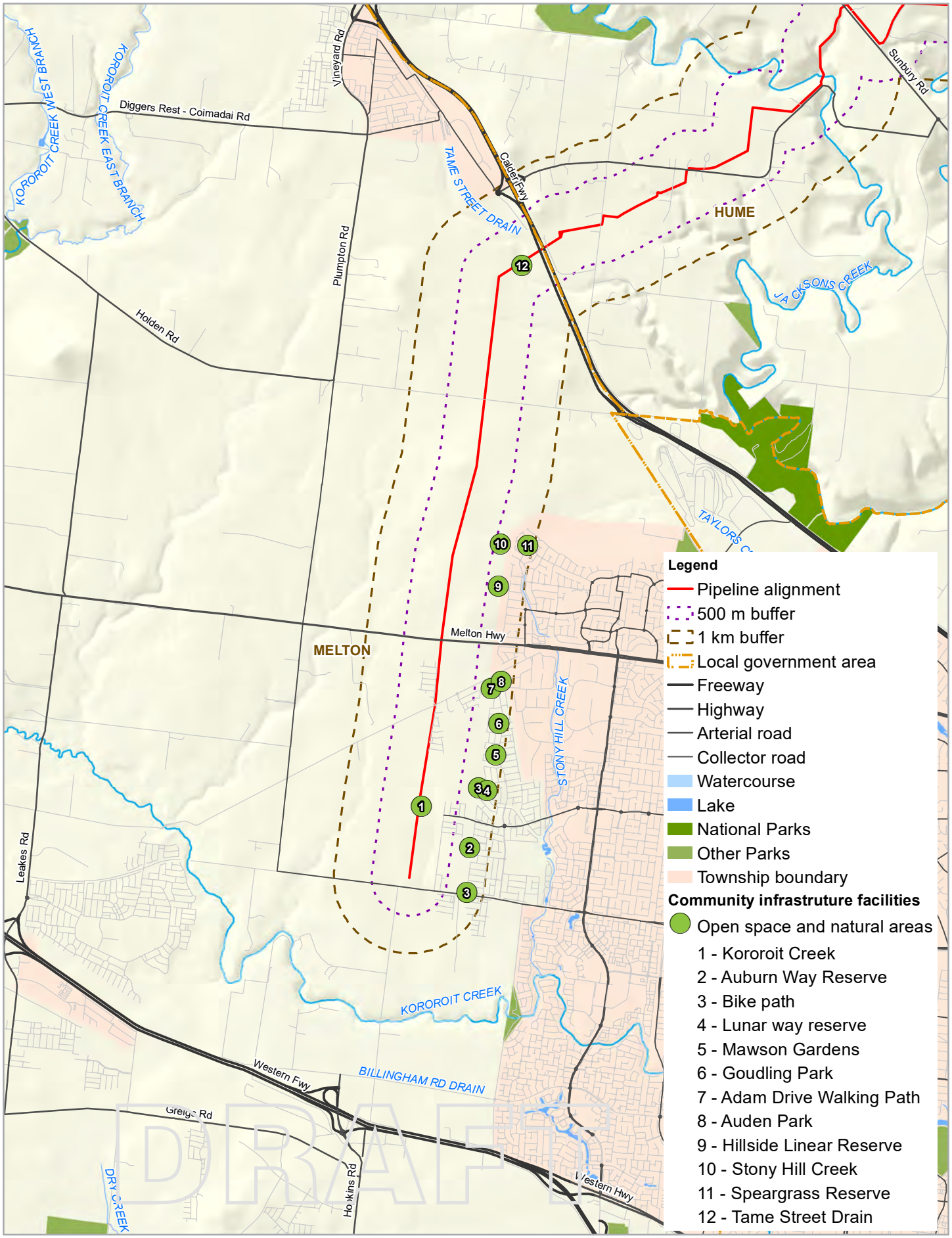
### 7.6.1 Local government area community infrastructure facilities

Community infrastructure facilities within a 1 km buffer for each local government area is shown in Figure 7-13 to Figure 7-16 and discussed in Table 7-14 to Table 7-17. This excludes regional health or emergency services infrastructure, which are detailed in Section 7.6.2 and 7.6.3 respectively.

Table 7-14 Melton community infrastructure facilities

| Name | Description | Suburb | Distance from the Project | | Map code |
|---|---|---|---|---|---|
| | | | Within 500 m | 500 m -1 km | |
| **Open space and natural areas** | | | | | |
| Drainage – tributary to Kororoit Creek | Natural drainage that is a tributary of Kororoit Creek, which runs approximately parallel to Saric Court. The feature is currently on private property and therefore has limited community use. SIA consultation found that there are future plans to realign the drainage with the APA easement as part of the development of this area. | Deanside | ✓ | ✓ | 1 |
| Auburn way reserve | Local park that hosts play equipment, picnic areas and a shelter. | Fraser Rise | | ✓ | 2 |
| Off-road bike path | Off-road bike path within a linear reserve that connects Taylors Road to the Melton Highway. | Fraser Rise | | ✓ | 3 |
| Lunar Way Reserve | Linear reserve | Fraser Rise | | ✓ | 4 |
| Mawson Gardens | Local park that hosts barbeque facilities, picnic areas, play equipment, and a shelter. | Fraser Rise | | ✓ | 5 |
| Goulding Park | Local park that includes barbeque facilities, a basketball court, picnic areas, play equipment, and a shelter. | Fraser Rise | | ✓ | 6 |

| Name | Description | Suburb | Distance from the Project | | Map code |
|---|---|---|---|---|---|
| | | | Within 500 m | 500 m -1 km | |
| Adam Drive Walking Path | Offroad bike path. | Fraser Rise | | ✓ | 7 |
| Auden Park | Local reserve | Fraser Rise | | ✓ | 8 |
| Hillside Linear Reserve | Open space within powerline easement and back of residential area. | Hillside | | ✓ | 9 |
| Speargrass Reserve | Local pocket park | Hillside | | ✓ | 11 |
| Tame Street Drain | Drainage open space. SIA consultation found that there is limited community use of the area. | Diggers Rest | ✓ | ✓ | 12 |




Paper Size ISO A4

0 790 1,580

Meters

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

N

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# Melton community infrastructure facilities

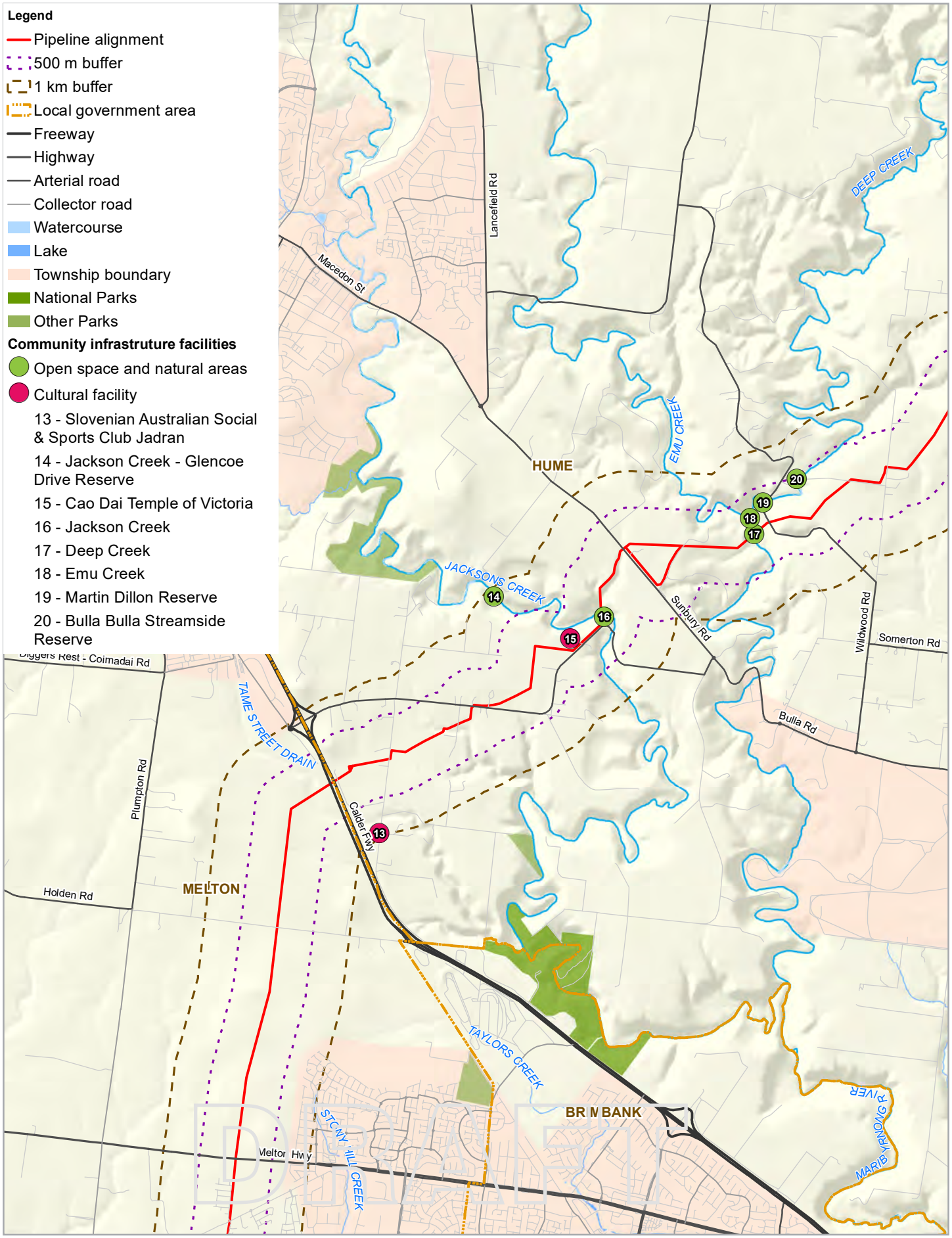
Figure 7-13

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

Table 7-15 Hume community infrastructure facilities

| Name | Description | Suburb | Distance from the Project | | Map code |
|---|---|---|---|---|---|
| | | | Within 500 m | 500 m -1 km | |
| **Cultural** | | | | | |
| Cao Dai Temple of Victoria | Religious place of worship. | Diggers Rest | ✓ | | 15 |
| Slovenian Australian Social & Sports Club Jadran | Slovenian social and sports club. | Diggers Rest | | ✓ | 13 |
| Mickleham Musallah Muslims Sunni | Religious place of worship. | Mickleham | | ✓ | 22 |
| Annadale Interim Community Centre | The Annadale community centre features a community room, Maternal and Child Health Services, and a childcare centre. The community room has capacity for 15 people and features a kitchen (City of Hume, 2020b). | Mickleham | | ✓ | 25 |
| **Education and early childhood** | | | | | |
| Kool Kids Childcare - Merrifield | Childcare centre. | Mickleham | | ✓ | 26 |
| Mickleham Primary School | Public primary school with an approximate enrolment of 400. | Mickleham | | ✓ | 21 |
| Annadale Preschool | Public preschool. | Mickleham | | ✓ | 24 |
| **Open space and natural area** | | | | | |
| Jacksons Creek | Jacksons Creek is noted to have considerable environmental and visual amenity values for the local area (Victorian Planning Authority, 2008). | Diggers Rest | ✓ | | 16 |
| Deep Creek | Stream. The area has been utilised for recreational fishing and other passive recreation, such as hiking (Bonnici, n.d.). | Diggers Rest | ✓ | | 17 |

| Name | Description | Suburb | Distance from the Project | | Map code |
|---|---|---|---|---|---|
| | | | Within 500 m | 500 m -1 km | |
| Emu Creek | Emu Creek and its environs hold natural and biodiversity values and contribute to the area's valued natural landscape. (Victorian Planning Authority, 2011) | Diggers Rest | ✓ | | 18 |
| Martin Dillon Reserve | Local reserve located along the Deep Creek gorge. The reserve is located adjacent to a bluestone bridge, which contributes to the rural character of the reserve (City of Hume, 2020e). | Bulla | ✓ | | 19 |
| Bulla Bulla Streamside Reserve | Local reserve located along Deep Creek. The reserve is located proximal to Martin Dillon Reserve. | Bulla | ✓ | | 20 |
| Merrifield Park | Local park and playground. | Mickleham | ✓ | | 27 |
| Kalkallo Creek | Creek system that that runs predominantly through private property. Consultation found that a number of local environmental groups are investigating potential options for restoration of the Creek in this area. | Mickleham | ✓ | ✓ | 28 |
| Jackson Creek - Glencoe Drive Reserve | Reserve associated with Jacksons Creek. Site of the mid 1970s Sunbury Rock Festival | Mickleham | | ✓ | 14 |
| Annadale Park | Local park and playground that features a tennis court, play equipment, and a shelter. | Mickleham | | ✓ | 23 |




Paper Size ISO A4

0 820 1,640

Meters

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

N

GHD

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Hume community infrastructure facilities

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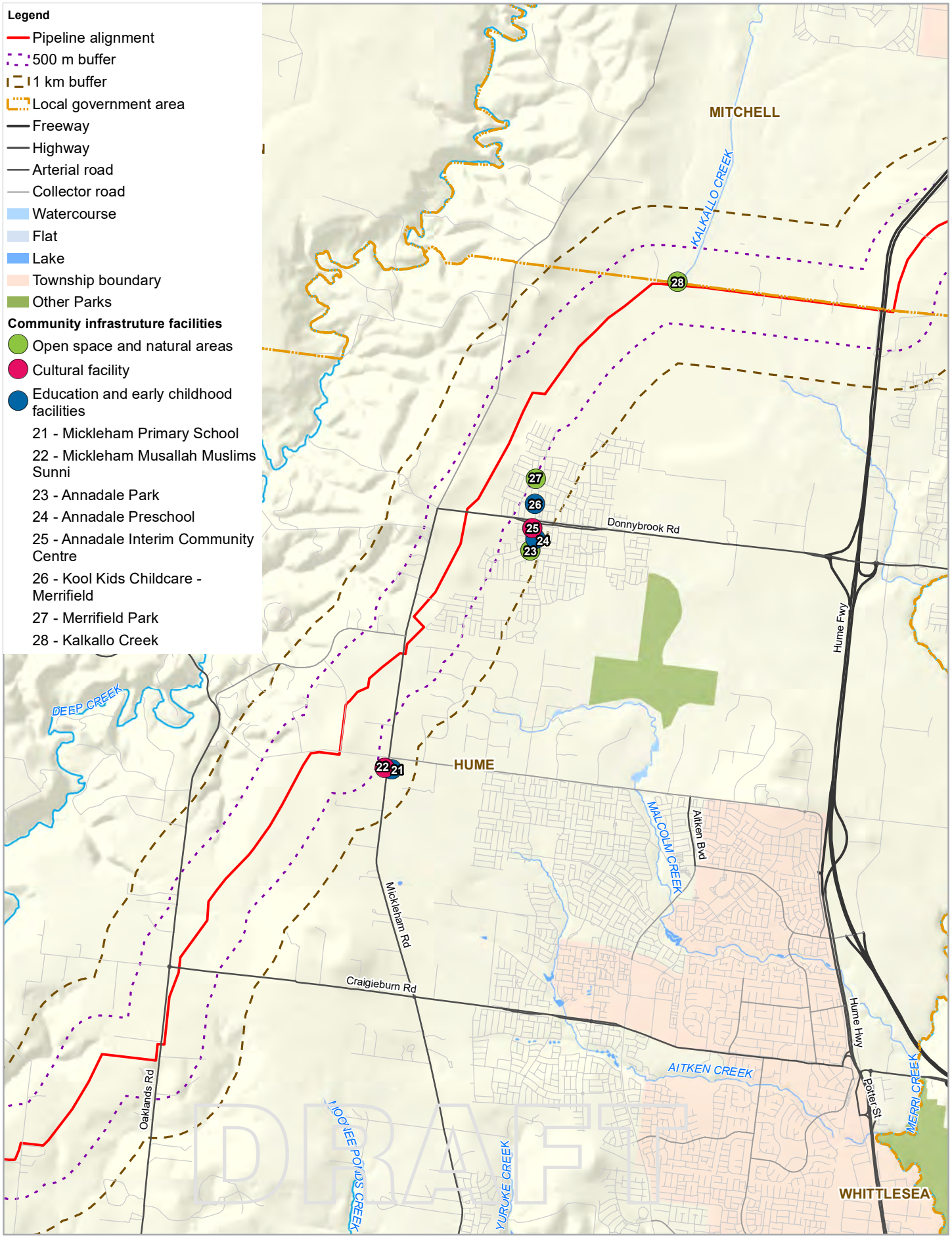
Revision No. E
Date 8/12/2020

Figure 7-14

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau




Paper Size ISO A4

0 770 1,540

Meters

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

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Western Outer Ring Main Gas Project

Hume community infrastructure facilities

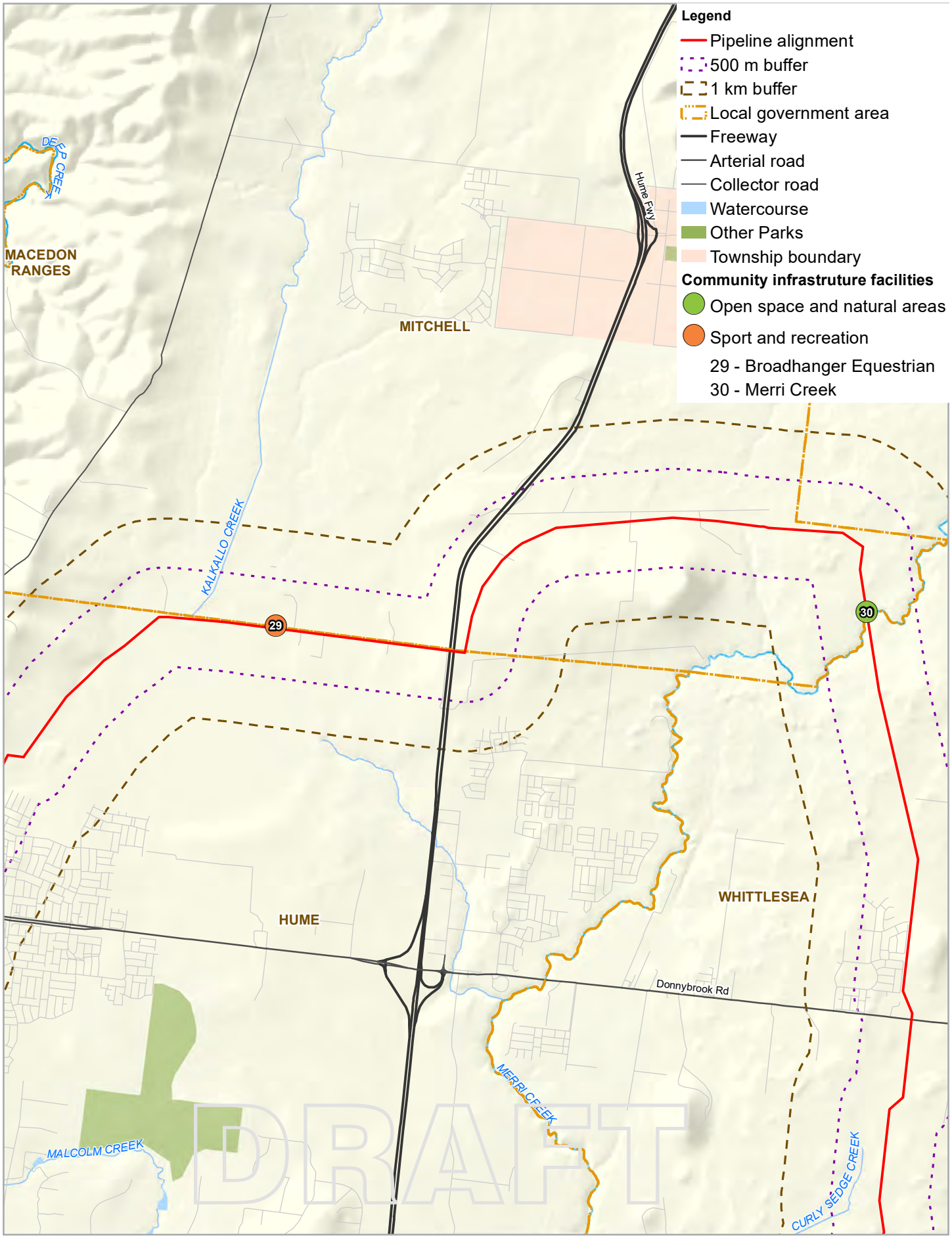
Project No. 12529997
Revision No. E
Date 8/12/2020

Figure 7-14

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

Table 7-16 Mitchell community infrastructure facilities

| Name | Description | Suburb | Distance from the Project | | Map code |
|---|---|---|---|---|---|
| | | | Within 500 m | 500 m -1 km | |
| **Open space and natural areas** | | | | | |
| Merri Creek | Merri Creek and the broader Merri Creek catchment hold significant cultural (Indigenous and non-Indigenous), recreational, and biodiversity values (Friends of Merri Creek, 2020; Merri Creek Management Committee, 2009).<br>The portion of Merri Creek that is captured within the social study area is contained within the Upper Merri Creek Catchment. Recent planning for the catchment has captured the values for the catchment, which include the ability to connect to nature, Wurundjeri cultural values, and water as a supporting resource for farmers and providing for local water security (Upper Merri Creek Communities, 2020).<br>The portion of Upper Merri Creek that is within the social study area is within private land and SIA consultation found that it is not used recreationally. However, SIA consultation found that conservation of Merri Creek on private land is common. | Beveridge | ✓ | ✓ | 30 |
| **Sports and recreation** | | | | | |
| Broadhanger Equestrian | Private and semi-private paddocks for equestrian activities. Training facilities. | Beveridge | ✓ | | 29 |




Paper Size ISO A4

0 600 1,200

Meters

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

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Western Outer Ring Main Gas Project

Mitchell community infrastructure facilities

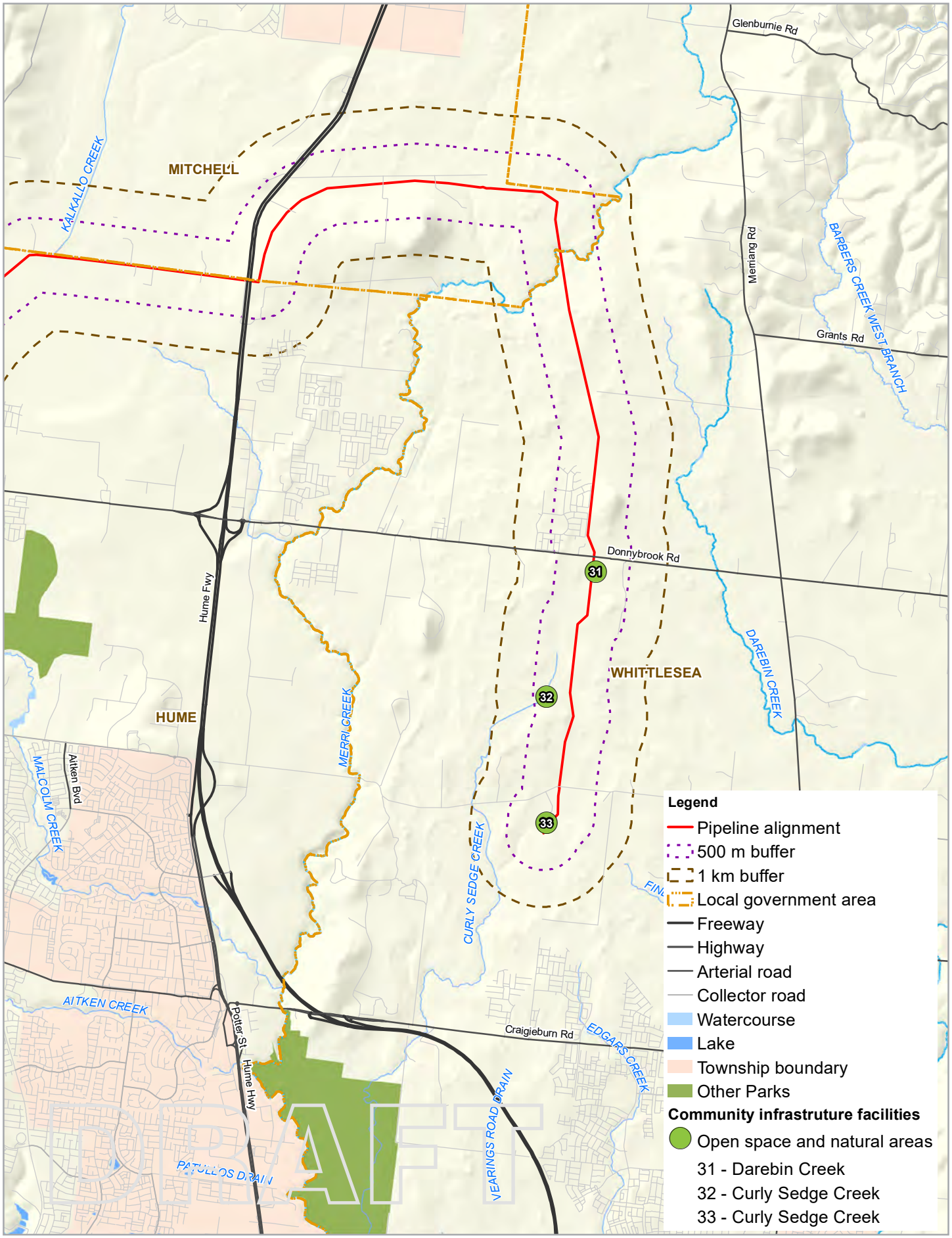
Project No. 12529997
Revision No. E
Date 7/12/2020

Figure 7-15

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

Table 7-17 Whittlesea community infrastructure facilities

| Name | Description | Suburb | Distance from the Project | | Map code |
|---|---|---|---|---|---|
| | | | Within 500 m | 500 m -1 km | |
| **Open space and natural areas** | | | | | |
| Darebin Creek | The Darebin Creek catchment includes a network of bike paths, reserves, and Indigenous and non-Indigenous heritage, all of which have contributed to high social values attached to the Darebin Creek Catchment (Melbourne Water, 2016).<br>A tributary of the Darebin Creek is captured within the social study area. The portion of Darebin Creek within the study area is within private land and is not used recreationally. | Donnybrook | ✓ | | 31 |
| Curly Sedge Creek | The Curly Sedge Creek is a part of the Merri Creek Catchment. The portion of Curly Sedge Creek within the study area is within private land and is not used recreationally. | Donnybrook | ✓ | | 32 |
| | | Wollert | ✓ | | 33 |




Paper Size ISO A4

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Meters

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

N

GHD

Australian Pipeline Limited
Western Outer Ring Main Gas Project

Whittlesea community infrastructure facilities

Project No. 12529997
Revision No. E
Date 7/12/2020

Figure 7-16

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery . Created by: cjauniau

### 7.6.2 Regional health

Table 7-18 lists the hospitals located within approximately a ten kilometre buffer of the Project corridor.

**Table 7-18 Health infrastructure within a 10 km buffer of the Project corridor**

| Health services | Address | Distance from Project corridor |
|---|---|---|
| Northern Epping Hospital | 185 Cooper St, Epping VIC 3076 | Approximately 8.7km |
| Sunshine Hospital | Furlong Rd, St Albans VIC 3021 | Approximately 10.3km |

### 7.6.3 Regional emergency services

Table 7-19 lists the emergency services located within each LGA considered in the regional study area.

**Table 7-19 Emergency services infrastructure**

| LGA | Police service | Country Fire Authority (CFA) service | Ambulance service |
|---|---|---|---|
| Hume LGA | ✓ ✓ | ✓ - CFA District 14 (Melton) | ✓ |
| Whittlesea LGA | ✓ | ✓ - CFA District 14 (Melton) | ✓ |
| Melton LGA | ✓ | ✓ - CFA District 14 (Melton) | ✓ |
| Mitchell Shire (S) | ✓ | ✓ - CFA District 12 (Seymour) | ✓ |

✓ Australian Federal Police service located within the selected LGA.

# 8. Risk assessment

A risk assessment of Project activities was performed in accordance with the methodology described in Section 5.5.

The initial risk ratings considered an initial set of mitigation measures (where relevant), which are based on compliance with legislation and standard requirements that are typically incorporated into the delivery of infrastructure projects of similar type, scale and complexity. Risk ratings were applied to each of the identified risk pathways assuming that these mitigation measures were in place.

Where the initial risk ratings were categorised as medium, these risks were a focus of additional management measures as part of the impact assessment. All risks were considered in the impact assessment.

The assessment of the potential impacts associated with the identified risks during the construction and operation of the Project is presented in the following section of this report.

The risk register showing the risk pathways and findings of the risk assessment for the social impact assessment is attached in Appendix A.

Five construction risks were identified and assessed and one operation risk was identified.

A summary of the risk assessment results is presented in Table 8-1. The risk assessment identified two initial risks to have a medium risk rating. These risks were concerned with the changes to amenity for residents and the community (S1) and community facilities and recreation areas (S2) as a result of the Project's construction activities. The rating reflects the potential for the changes in amenity to result in changes to people's day to day lives, such as the reduction in use of backyards (S1), or reduction in use of community facilities (S2).

Social impacts associated with the risks identified in Table 8-1 are described and assessed in section 9. Impacts description was further elaborated based on stakeholder inputs gathered through the SIA consultation process.

Table 8-1 Risk results

| Risk ID | Risk description | Construction/ operation | Pipeline/ MLV/ compressor | Initial risk rating | Final risk rating |
|---|---|---|---|---|---|
| S1 | **Construction impacts to amenity (residents proximal to the alignment)**<br>Noise, vibration and dust emissions impacting amenity for residents and the community | Construction | All | Medium | Low |
| S2 | **Property damage**<br>Construction activities lead to severance and damage to existing property. This may result in impacts on agri-businesses and reduce property productivity. | Construction | Pipeline | Low | Low |

| Risk ID | Risk description | Construction/ operation | Pipeline/ MLV/ compressor | Initial risk rating | Final risk rating |
|---|---|---|---|---|---|
| S3 | **Construction impacts to amenity (community facilities and recreation areas)** Noise, vibration and dust emissions impact amenity values for community facilities. | Construction | All | Medium | Low |
| S4 | **Permanent acquisition** Permanent use (acquisition) of the easement leads to permanent impacts on residents and properties. | Operation | Pipeline / MLV | Low | Low |
| S5 | **Property access and severance** Construction activities disrupt access to properties. | Construction | All | Low | Low |
| S6 | **Demand on landholder time** Demands on landholder time to engage and negotiate with Project staff may reduce time available for management of properties. | Construction | All | Low | Low |

# 9. Impact assessment

## 9.1 Construction

This section identifies, describes and assesses the potential social impacts arising from the construction of the Project within the local and regional study area. It includes an assessment of the Project's economic opportunities and impacts to landholders and properties intersected by the Project, wellbeing of landholders and residents, residential amenity, access and connectivity, and community infrastructure facilities.

### 9.1.1 Economic impacts

The Project will bring regional economic benefits through employment and purchasing of goods and services, contributing to regional sustainable development.

At the peak of the construction program, a construction workforce of up to 350 people is expected across the Project, including 70 people at the Wollert compressor station. The construction workforce will include workers with varying skills ranging from unskilled labour to specialised gas pipeline technicians. In line with the EMM S5, through its construction contractors, APA will give preference where practicable to maximise workforce recruitment from within the regional study area and the remaining workforce would be sourced from elsewhere. The occupational groups expected to be required for the Project include:

- Project management, HSE, site management and administration
- Plant management
- Engineers
- Skilled trades
- Technicians
- Operators
- Labourers
- Surveyors

It is understood from consultation that the regional study area has experienced unemployment and broader economic slowdown impacts as a result of COVID and that the Project would create employment opportunities for the labour force in the regional study area. In line with EMM S5, through its construction contractors, APA will give preference where practicable to maximise Project procurement of goods and services from the regional study area. APA is undertaking discussions with councils and key stakeholders regarding any potential initiatives that can be supported by the Project. APA would provide reasonable opportunity for subcontractors and labour from regions local to the site to be engaged on the construction works.

### *Impact summary*

Based on the above description of the impact and mitigation, the impact summary is provided in Table 9-1.

Table 9-1 Economic benefits / impact summary

| Impact summary | Significance |
|---|---|
| With the application of EMM S5, the impact on those individuals who gain employment and businesses deliver services to the Project will be positive; however, Project-related employment and business opportunities are expected to be short term, and be limited to a small number of people and businesses. | Insignificant |

## 9.1.2 Landholders and properties intersected by the Project

### Overview of Project changes to landholders and properties intersected by the Project

The construction of the Project would result in temporary land use changes along the alignment, within the construction laydown and pipeline construction areas, and along access corridors. Construction activities along the full length of the pipeline are expected to include:

- Surveying to mark the extent of the construction area
- Site establishment, including installation of temporary access tracks if required
- Establishment of a temporary site compound, laydown and storage area, for the entire Project (expected to be in a nearby industrial area)
- Clearing and grading of the construction area, which will typically comprise a 30 m construction corridor
- Excavation of a trench in which to lay the pipeline
- Returning topsoil, clearing up, reinstating and rehabilitating the construction corridor and all temporary facilities

Subject to the staging of the works, construction for the entire Project is expected to take approximately 9 months. General timeframes to complete works in any one area from site establishment to rehabilitation is nominally four to six months. However, the construction front itself is expected to move at a rate of approximately 700 m per day.

This section discusses the potential social impact to landholders and properties arising from land use changes resulting from construction activities. A detailed assessment of changes to agricultural productivity and businesses is provided in Appendix A. Potential changes to open space and community facilities are discussed in Section 9.1.5. The impact to future residential development, including impacts to precinct structure plans are outlined in Technical report K – Land use.

### Changes in the value of land affected by the easement

SIA consultation with landholders found that some landholders were concerned that their property values would decrease due to the establishment of the Project's pipeline easement.

There is limited research published that have considered the effect of gas pipelines on property values. The research that is available has found that it is unlikely that there is a relationship between proximity to a pipeline and sale price or value of a property (Diskin et al., 2011; McElveen et al., 2017; Wilde et al., 2012).

Landholders will be entitled to compensation for the establishment of the easement on their property and impacts to properties associated with construction, in accordance with the Pipelines Act and the *Land Acquisition and Compensation Act 1986* as detailed in EMM LU3. APA would seek to agree a fair value for compensation including input from relevant external advisers such as valuation professionals. APA would also agree to cover reasonable expenses related to legal and valuation advice during negotiation incurred by the landholder. It was also noted by some stakeholders during consultation that the compensation for establishing an easement on the property and changes associated with the Project's construction was viewed as an opportunity to supplement incomes.

### Land use change on agricultural and rural residential land uses and businesses – impacts on landholders and properties

As noted in Section 6.1, the Project corridor intersects properties that have a variety of agricultural and rural residential land uses, including hobby farms where a small number of cattle or sheep are kept. Income from these agricultural properties ranges from additional supplementary income, to developed agricultural businesses, including equestrian training and agistment, cattle grazing and cropping properties, where the property supports primary income of the landholder and potentially employees.

The land use change that would occur as a result of the Project's construction would temporarily reduce the area of land available for grazing, cropping, or other productive activities, such as equestrian training. In addition, the Project's construction and associated land use change has the potential to increase or change agricultural property management requirements. These changes include:

- The introduction of weeds from vehicles moving within and across properties
- Temporary damage or removal/relocation of property infrastructure such as access tracks, fences, or pasture
- Potential negligence in property access, for example, Project personnel leaving gates open, which can lead to animals escaping

Overall, the land use change associated with the Project's construction has the potential to increase landholders' property management requirements and would temporarily reduce land that is used for usual activities on the property, potentially reducing income for the landholders and employees on the property.

Generally, the construction corridor runs along property boundaries or follows the alignment of the existing pipeline easements. However, there are a number of areas where the construction corridor intersects properties, and would act to sever properties during the construction period. In these cases, the level of disruption to agricultural and rural residential land uses and businesses for individual property owners would increase.

An assessment of the impacts on agricultural land and businesses was undertaken as part of the EES (Appendix D). The assessment found that the most noteworthy impact of the Project on agricultural production is the temporary removal of agricultural production on certain properties along the construction corridor during construction period. There is 164 ha of agricultural land within the construction corridor that would be temporarily removed from predominantly agricultural use during the construction phase of the Project. The area of land temporarily removed from agriculture during the construction phase is approximately 0.06% of agricultural land available in the regional study area (164 ha in construction corridor compared to 276,654 ha of agricultural related land in regional study area). The duration of construction activity in any one location is not expected to exceed six months. It is expected that agricultural production within the construction corridor would be disrupted for 12 months allowing for cessation of

activity prior to commencement of works and the successful completion of rehabilitation activities. Following rehabilitation of the construction corridor, normal agricultural activities and production would be able to resume. The area of agricultural land required for operations is negligible.

The unmitigated economic impact to agriculture at the construction stage is estimated at $0.2 million which is equivalent to 0.13% of the annual value of agricultural production within the regional study area. The impact is conservative based on assumptions on commercial agricultural use and a 12 month interruption period.

Landholders will be entitled to compensation for the establishment of the easement on their property and changes associated with construction, including any damage that occurs, in accordance with the *Pipelines Act 2005* and the *Land Acquisition and Compensation Act 1986* as detailed in EMM LU3. APA would seek to agree a fair value for compensation based on relevant external advice from valuation professionals. APA would also agree to cover reasonable expenses related to legal and valuation advice during negotiation incurred by the landholder.

Compensation for the easement will be commensurate to the market value of properties and registration of an easement.

As discussed in Appendix D and detailed in Section 11, to minimise property damage due to construction of the Project, construction activities would be undertaken in accordance with the mitigation measures detailed in the agricultural assessment (Appendix D) (EMM S2) and to minimise disruption to agricultural uses (EMM S4).

#### *Impact summary and rating*

Based on the above description of the impact, the impact summary is provided in Table 9-2.

Table 9-2 Land use change on agricultural and rural residential land uses and businesses (construction) impact

| Impact summary | Significance |
|---|---|
| Following the implementation of EMM S2 and the establishment of compensation agreements to offset the impact of construction on properties (EMM LU3), the reduction in land available for usual property activities is unlikely to impact on those landholders that utilise their property to generate a primary or secondary income. | Minor |
| Following the implementation of EMM S2 and S4, the Project's construction activities are unlikely to result in unplanned disruption or unplanned increases in property management activities for landholders due to the Project's construction activities. | Minor |

### Landholder and resident wellbeing

The Project's planning and construction would require landholders to engage with APA and their representatives to establish land access processes and negotiate the easement compensation, among other things. Additionally, potential adverse impacts on private and public land would be avoided through pre-disturbance surveys and recommendations of specialist investigations. The time required to engage with the Project, along with changes to amenity and privacy (discussed in Section 9.1.3) may result in stress, anxiety, and frustration for some landholders. This may be heightened for landholders that do not wish to host the Project.

Landowners affected by the Project are encouraged by APA to seek independent legal advice on any concerns they may have with regard to legal implications of the activities which could include the Project's potential impact on their land. Pre-defined and agreed reasonable costs incurred in seeking advice in relation to the Project would be reimbursed by APA.

As detailed in EMM S4, prior to any works commencing on a property, agreements with the landowners and occupiers would be established regarding:

- Access across the construction area
- Stock management, access and exclusion
- Management of overland flow
- Biosecurity
- Relocation / duplication of facilities and infrastructure
- Replacement of damaged or removal of Project infrastructure and rehabilitation of disturbed areas

Land owners and occupiers will be informed of the construction commencement, and details of the proposed construction program, in accordance with the Project Consultation Plan (EMM S6).

#### *Impact rating and summary*

Based on the above description of the impact, the impact summary is provided in Table 9-3.

Table 9-3 Landholder and resident wellbeing (construction) impact rating

| Impact summary | Significance |
|---|---|
| Following the implementation of EMM S4, it is expected that the Project's planning and construction and associated time requirements on landholders and occupiers would be unlikely to result in impacts to landholders' wellbeing. | Minor |

### 9.1.3 Residential amenity

Construction activities are likely to result in temporary changes in visual amenity and character, air quality and noise amenity, including increased dust and noise. These changes are discussed individually below, and then as a whole to establish the potential social impact of amenity changes.

Project construction works may occur for up to 11 hours per day, seven days a week, over a period of nine months. Construction is expected to progress at a rate of approximately 700 metres per day for open trench construction, however horizontal direct drilling (HDD) is likely to have lower daily progress rates. Bored crossings are expected to take approximately 2 weeks (night time work not anticipated for bored locations), whereas the HDD crossings (direct drilling when night time lighting/noise my occur) might take 2-3 weeks. The total duration for HDD could be longer, with additional time required for site set up and clean up etc.). The majority of the works would be undertaken during the daytime, however evening and night-time works may be required for HDD, boring and hydrostatic testing, generating noise, dust and reduced visual amenity. Therefore, the reduction in amenity as a result of the Project's construction activities would be temporary and intermittent.

The degree of reduced amenity (visual, noise and air quality) is largely dependent on the proximity of residents to the Project and the type and intensity of Project work undertaken at a given location. As detailed in Technical report G – Air quality, the location of sensitive receptors in relation to the Project is summarised in Table 9-4.

The following section considers the potential for social impacts to occur in instances where the change in amenity is at its peak.

Table 9-4 Location of sensitive receptors in relation to the Project

| Distance from Project (construction corridor) (m) | Number of sensitive receptors |
|---|---|
| 0-25 | 0 |
| 26-50 | 14 |
| 51-75 | 9 |
| 76-100 | 11 |
| 101-200 | 53 |
| 201-300 | 130 |
| 301-400 | 154 |
| 401-500 | 118 |

Source: Technical report G – Air quality Visual amenity and character

The Project's construction activities would result in a change in visual amenity and character within and surrounding the Project corridor. Construction activities such as the removal of existing vegetation within the Project corridor and night time lighting could temporarily result in direct views of construction activities and sites for nearby residents.

As noted in Technical report J - Landscape and visual and in Section 7.2, the existing amenity and character in and surrounding the Project corridor includes a number of distinct areas, including areas of rural and natural amenity and landscapes, which are highly valued, and smaller pockets of urban residential development. Where the Project corridor intersects rural, and rural residential land, residents would experience greater changes to visual amenity and character. Where the Project corridor intersects urban land, the change in amenity would not be as great, as many of these areas are currently exposed to residential construction activities.

Additionally, the Project's construction may result in a loss of privacy, particularly for landholders and residents of rural or rural residential properties, which typically have higher levels of residential privacy than urban or suburban areas. The overall level of intrusion and change in privacy would be experienced differently, depending on the landholder, the value they place on privacy, the nature and duration of activities undertaken on the property in proximity to the dwelling. These temporary visual changes would likely result in some residents temporarily changing their lifestyle activities at their residence or on their properties by limiting outdoor recreational activities, minimising use of verandas and having to close doors, windows and curtains.

EMM LV1 lists a number of measures to minimise visual impacts during construction due to land use clearance, including:

- Machinery and materials to be removed as soon as it is no longer required
- Project activities will be progressed sequentially, with clean-up, restoration and rehabilitation as soon as installation activities are complete unless weather conditions prevent this
- Construction areas will be kept tidy and dust kept to a minimum in accordance with the CEMP

In addition, EMM LV5 includes a number of measures to reduce visual impacts to the character in areas where there is high value placed on the existing character of the area, such as in rural residential areas. These measures include the replacement of trees and shrubs within the approved construction area affecting public places or existing screening of private residences from road reserves, where practicable, and where reasonably requested in consultation with the affected landholder and/or responsible authority. The construction corridor would be reinstated after construction in line with EMM B7, which would incorporate landholder inputs as part of reinstatement.

Lighting from 24 hour construction activities would occur at the HDD sites where the Project corridor crosses Calder Freeway, Sunbury Road, Deep Creek, Melton Highway and Hume Freeway. These sites would be lit at night time for approximately one and a half weeks during construction. Light fixtures would be designed to illuminate machinery and the immediate working area to a level that is adequate for safe working conditions. For this reason, the extent of light spill to areas that it is not required is expected to be minimal. Lighting from night time construction activities may also occur at hydro testing sites. However this is expected to be limited in duration as compared to the HDD sites and only required if work is necessary outside of daylight hours.

There would be no 24 hour lighting from construction of the Project which is directly adjacent to residential areas elsewhere along the Project alignment.

As detailed in Technical report J – Landscape and visual, the closest residential dwelling to the HDD site at Deep Creek which would require night lighting, is estimated to be 350 metres away to the north-east. The glow from night-time lighting for construction could be visible from indoors or outdoors for this dwelling. Residents may be prompted to close their curtains or blinds, which would reduce the flow of breeze especially during summer.

In line with EMM LV2, light generated during night construction activities such as HDD, will be managed in general accordance with the requirements in *Australian Standard AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting* to minimise off-site light spill.

### Noise and vibration

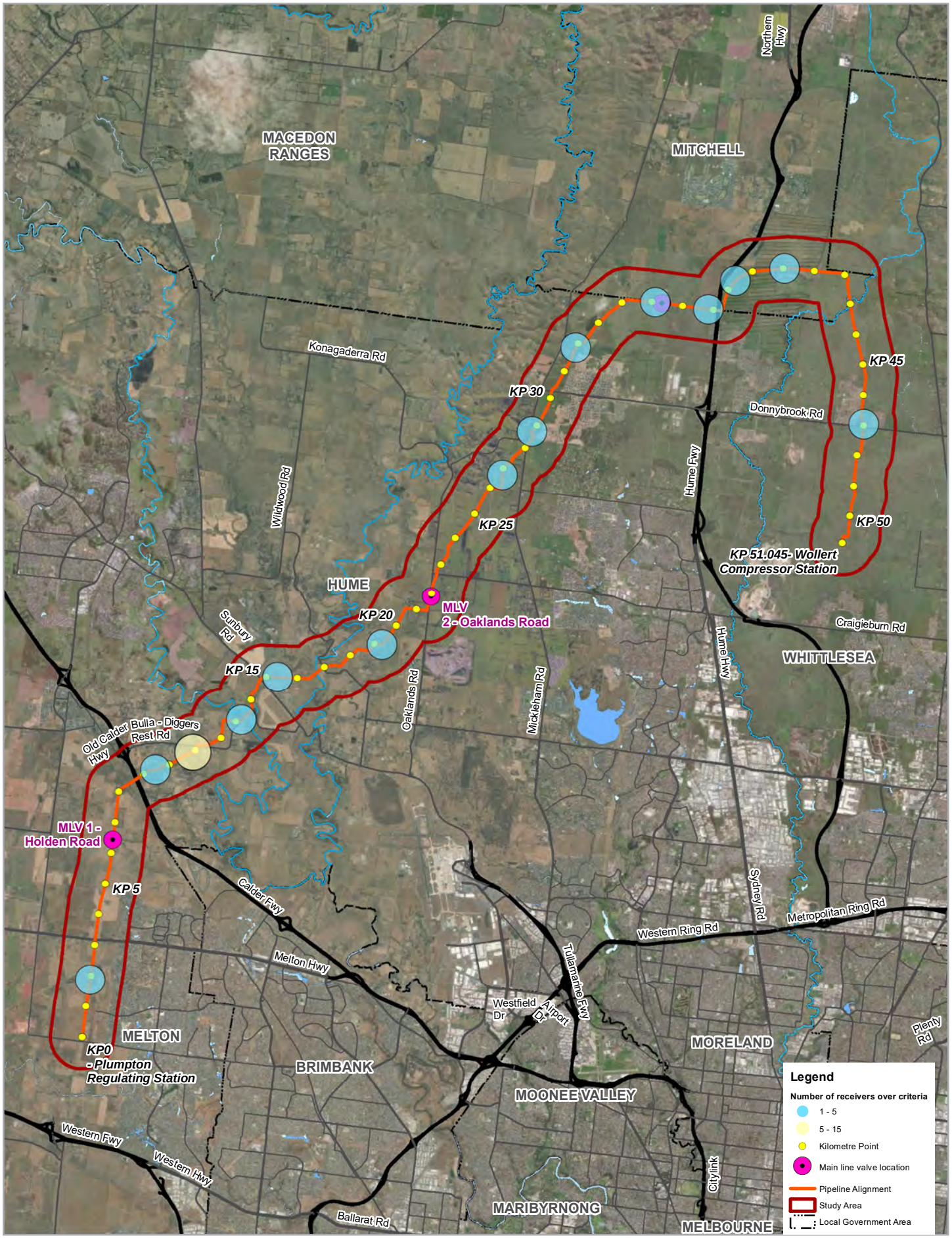
The Project's construction would change the noise amenity within and surrounding the Project corridor in the short term. A range of activities may generate noise and vibration that would be noticeable for nearby residents and other sensitive receptors, including clear and grading, stringing and bending, excavation, welding, tunnelling, backfilling and blasting.

According to the modelling undertaken for and detailed within Technical report F – Noise and vibration, there are a number of areas where the Project's construction noise is predicted to exceed the daytime, evening, and night-time construction noise management levels established for the Project where there is no mitigation.

Specifically, the results of noise modelling found that the Project's activities would result in the following :

- Non-destructive testing and coating has the greatest predicted noise level at one receptor of 107.7 dB(A) prior to any mitigation compared to the day-time criterion of 75 dB(A). This activity affects one sensitive receptor located within Plumpton south of the Melton Highway.
- Open-cut construction is predicted to exceed the day-time criterion of 75 dB(A) in the locations shown in Figure 9-1 prior to mitigation. Noise levels from this activity may exceed the recommended criterion by up to 32.7 dB(A) at one receptor prior to mitigation, depending on the separation distance of the receptor and the presence of features that act to provide acoustic screening (e.g. fences).
- Horizontal directional drilling / bored crossing is predicted to exceed the evening[2] criterion of 'background + 10 dB' at the locations shown in (Figure 9-2) prior to mitigation. Noise levels from this activity in the evening may exceed the recommended criterion by up to 25.2 dB(A) at one receptor prior to mitigation, depending on the factors listed for open-cut construction above. The number of exceedances for this activity increase should works be undertaken during the night[3], where the criterion is equivalent to background external noise, which equates to no audible construction noise within a habitable room of a residential premise. Noise levels from this activity may exceed the recommended criterion by up to 38.5 dB(A) at one receptor location and the number of sensitive receptors that the model predicted this activity would affect pre-mitigation is shown in Figure 9-3.

[2] Evening is defined as Monday to Friday 6:00 PM to 10:00 PM, Saturdays 1:00 PM to 10:00 PM, and Sunday and public holidays 7:00 AM to 10:00 PM, see Technical report F Noise and vibration.
[3] Night is defined as 10:00 PM to 7:00 AM any day, see Technical report F Noise and vibration.




Paper Size ISO A4

0 1 2 3 4

Kilometers

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

N

APA VTS (Operations) Pty Ltd
Western Outer Ring Main Gas Project

Open Cut Construction
Exceedances (daytime)

Project No. 31-12529997
Revision No. A
Date 12/03/2021

Figure 9-1

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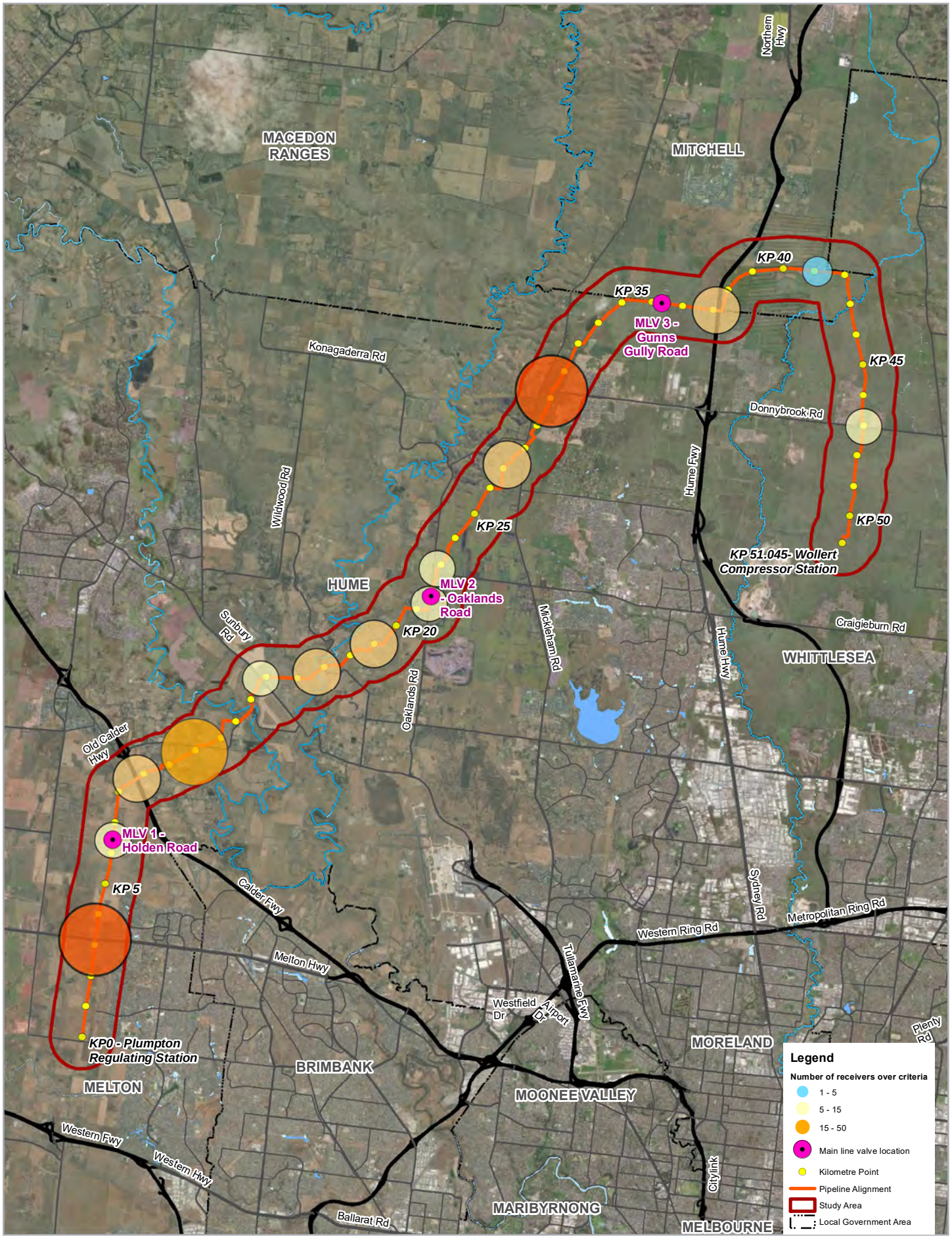


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0 1 2 3 4

Kilometers

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

N

APA VTS (Operations) Pty Ltd
Western Outer Ring Main Gas Project

HDD
Exceedances (night)

Project No. 31-12529997
Revision No. A
Date 12/03/2021

Figure 9-2

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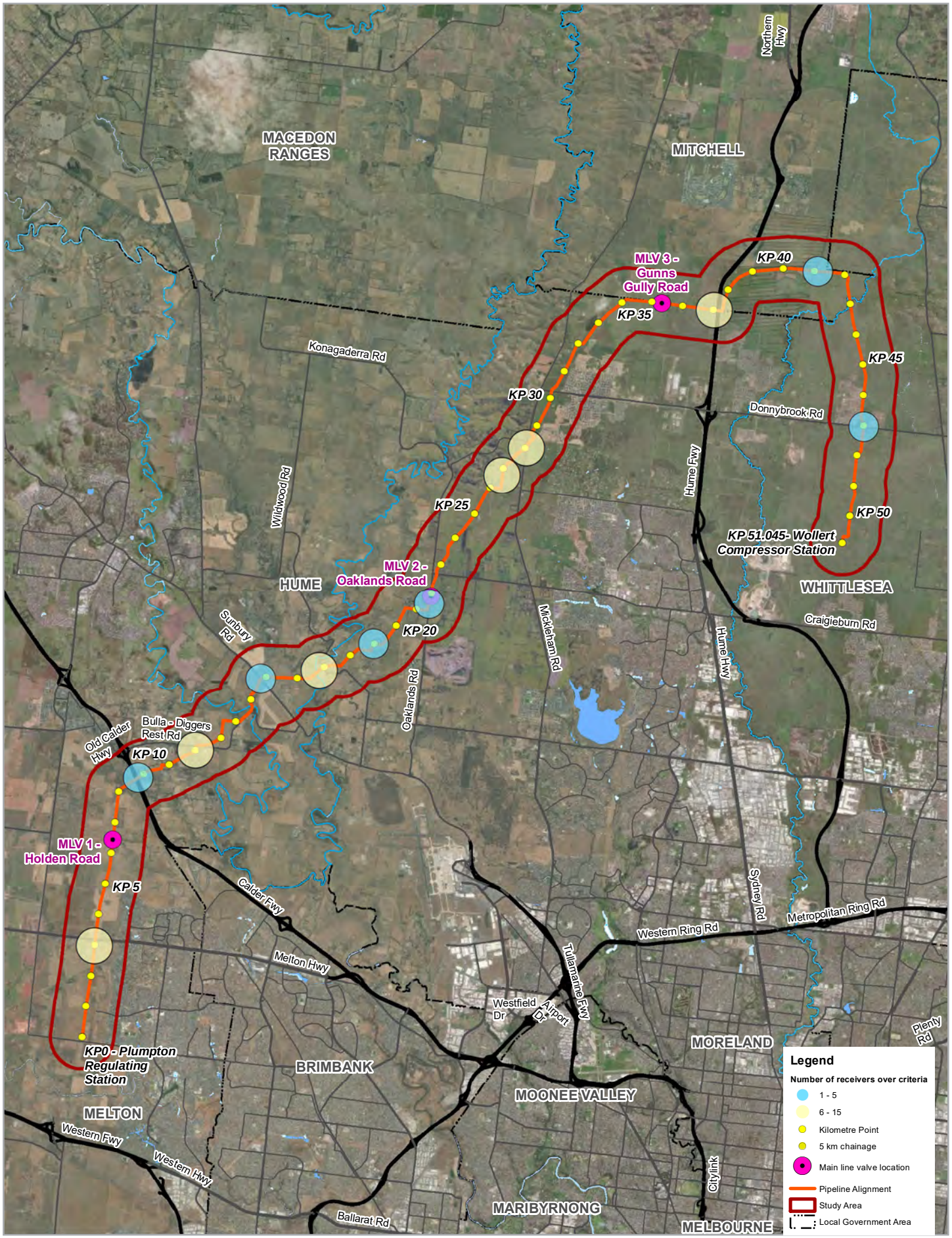


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0 1 2 3 4

Kilometers

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

N

APA VTS (Operations) Pty Ltd
Western Outer Ring Main Gas Project

HDD
Exceedances (evening)

Project No. 31-12529997
Revision No. A
Date 12/03/2021

Figure 9-3

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Print date: 12 Mar 2021 - 14:22

Data source: DELWP, VicMap 2020; GHD, 2021 Created by: kgardner

As detailed in Technical report F – *Noise and vibration*, environmental management measures would be implemented to reduce the Project's noise and vibration emissions in accordance with Project criteria (EMM NV10). Good practice noise minimisation measures would be adopted through the Construction Noise and Vibration Plan including using the lowest noise and vibrations practicable, machinery not having loud beeper reversing alarms, and limiting works to standard construction hours where possible. Additional measures may be used in some circumstances such as engineering controls or barriers.

Technical report F – *Noise and vibration,* concludes that with the implementation of on-site management measures (EMM NV1, NV2 and NV4) it is expected that noise could be reduced to meet the project noise criteria in EMM NV10. Controls would be implemented suited to the individual locations and circumstances and it is expected that on-site management measures could reduce the noise levels by around 5 dB(A) (for general mitigation practices) to as much as 50 dB(A) where noise barriers or enclosures are used. However, in some locations the contractor may decide to use off-site mitigation measures to minimise noise impacts and meet the project noise criteria, and this may include alternative temporary accommodation (EMM NV7). These alternate options may be employed for a number of reasons including timing and duration of impact, feasibility of installing mitigation (e.g. barriers) or a receptor's sensitivity to the noise impact. According to Technical report F – Noise and vibration, vibration that would occur as a result of the Project's construction works may be perceptible by nearby residents, particularly at the residential areas surrounding Donnybrook Road and Mt Ridley Road, within the suburb of Mickleham, and within rural residential properties that are intersected by the Project. Measures to avoid and minimise the impacts of construction vibration would be considered in locations where sensitive receptors are located within 100 metres from construction and subject to vibration generating construction activities. This would include measures such as alternative work methods, restricted hours and increasing the distance between equipment and sensitive receptor (EMM NV1, NV4).

Although the Project's construction noise levels would be reduced and managed by the environmental management measures, a considerable change in the baseline noise conditions may still occur and:

- Reduce people's enjoyment of their property, including spending less time outdoors in backyards and verandas
- Prompt residents to close windows while indoors, which may reduce breeze, particularly in summer
- Disrupt everyday activities, such as conversations, relaxing, listening to the radio or watching television, and sleep
- Deter friends and family from visiting some residents

These changes would at times reduce people's ability to enjoy their properties and go about their day-to-day lives. Such disruptions may reduce people's capacity to participate in work and community activities, reduce social interactions, and affect personal and social relationships.

There may be some social groups that are vulnerable to changes in the noise environment, in that they may be more sensitive to an increase in noise levels and have less capacity to adapt to the change. These include children and the elderly, people with a disability, and shift workers. All groups have higher vulnerability to noise changes due to (but not limited to) their greater likelihood to rest during the day (when noise limits are higher). As noted in Section 7.5, children, the elderly, people with disability and those engaging in shift work are dispersed throughout the LGA and some may be residing in areas adjacent to the Project alignment. Overall, the changes in noise amenity may reduce people's enjoyment of their properties, particularly in areas where the Project corridor is proximal to residences. The change in amenity would be temporary, as

the construction process would move relatively quickly through the Project corridor, at a rate of approximately 700 m per day. Given this the potential for social impacts to occur following the implementation of EMMs, it is recommended that residents are notified of upcoming construction works.

Given the relatively high proportion of people who 'do not Speak English well' (8.0% within the Hume LGA and 7.4% within the Whittlesea LGA), it is recommended that a free telephone translation service be promoted where appropriate for specific Project communications, as detailed in EMM S6.

As noted in Technical report F – Noise and vibration, construction works may result in adverse reactions within the community despite prior notification; consequently a complaints system will be established to manage this.

### Air quality

During the SIA consultation, the potential for the Project's dust emissions to impact on community members with existing respiratory issues was raised as a concern.

According to Technical report G – Air quality, dust would be generated from construction activities such as clearing and grading, open trench construction, lowering and backfilling. Technical report F – The air quality assessment in Technical report G – Air quality, found that there are a number of sensitive receptors, where dust emissions would exceed the criteria without the implementation of mitigation measures. Specifically, Technical report G – Air quality found that there would be exceedances of air quality criteria without mitigation at 15 receptors., including:

- Four in Diggers Rest
- Three in Oaklands Junction
- One in Yuroke
- Six in Mickleham
- One in Beveridge

These sensitive receptors can be predominantly characterised as rural residential properties.

According to Technical report G – Air quality, a number of EMMs (AQ1, AQ3, AQ4) would be implemented to manage dust emissions to levels below the relevant criteria under the State environment protection policy (Ambient Air Quality) 1999 (SEPP AAQ). Real time reactive monitors would be installed at isolated residences or a series of instruments for multiple residences leading to reducing or suspending work activities in the immediate area for a period when real-time monitors 'alarm' and when adverse conditions are likely (for example, dry gusty winds with sensitive receptors nearby and downwind).

With construction progressing at 700 m per day for open trenching, the impact on an individual rural residence will be for a short duration (less than one day per activity phase). The duration of other construction activities (such as boring and Horizontal Direct Drilling (HDD)) can be longer, however, it is expected that the dust emissions associated with horizontal boring and HDD, and associated minor civil works, would be less than those associated with open trench construction as dust emissions will be localised to the entry and exit pits. The residual air quality impacts associated with construction vehicle combustion emissions is expected to be minimal due to the scale of vehicles involved and low background concentrations of key combustion emissions. In addition, the potential residual air quality impacts associated with encountering odorous soils is minimal, due to implementation of soil management measures detailed in the CEMP.

Notwithstanding the above, it is noted that a change in air quality (even with the limits of SEPP AAQ) may:

- Reduce people's enjoyment of their property, including spending less time outdoors
- Increase the cleaning required for indoor and outdoor areas
- Prompt residents to close windows while indoors, which may reduce breezes, particularly in summer

Given this the potential for social impacts to occur following the implementation of EMMs, it is recommended that residents are notified of upcoming construction works. Given the relatively high proportion of people who do not 'Speak English well' (8.0% within the Hume LGA and 7.4% within the Whittlesea LGA), it is recommended that a free telephone translation service be promoted where appropriate for specific Project communications, as per EMM S6.

Construction works may result in adverse reactions within the community despite prior notification; consequently a complaints system should be established to manage this. The complaints system is detailed in Technical report F – Noise and vibration, but would apply generally to complaints in addition to any noise complaints.

### Combined amenity impacts

Overall, the Project's construction has the potential to change the amenity of the environment, including character and privacy, noise and air quality, to the extent that some people may temporarily experience reduced enjoyment of their property, particularly their backyards and outdoor spaces.

To manage potential amenity impacts associated with construction, the Project will be undertaken in accordance with EMMs AQ1, AQ3, AQ4, B7, LV1, LV2, LV5, NV1, NV2, NV3, NV4, NV5, NV6, and NV7 to minimise noise, vibration, air quality and landscape and visual impacts to residents directly adjacent to the alignment.

In addition, it is recommended that residents are notified of upcoming construction works. As noted during the SIA consultation, this is particularly important for areas in proximity to the Project, such as in Plumpton and Merrifield which are being developed and residents may not be aware of the Project. Further, given the relatively high proportion of people who do not 'Speak English well' it is recommended that translated materials are provided and translated meetings are offered for stakeholders and the wider community, where appropriate for specific Project communications, as per EMM S6.

Construction works may result in adverse reactions within the community despite prior notification; consequently a complaints system should be established to manage this. The complaints system is detailed in Technical report F – Noise and vibration.

#### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-5.

Table 9-5 Residential amenity (construction) impact rating

| Impact summary | Significance |
|---|---|
| With the implementation of EMMs, it is expected that some reduction in noise and visual amenity would remain, particularly where the Project corridor is located proximal to residences. The potential for adverse change in the noise environment for some receptors is of note. However, these changes would be intermittent and temporary due to the linear nature of the Project's construction. | Moderate |

### 9.1.4 Transport and access

The Project's construction would generate around 10-15 heavy vehicle movements per day to and from the Project corridor. In addition, the construction workforce would travel to the construction corridor from pre-existing accommodation in the surrounding area.

The Project's construction is expected to require traffic control and partial road closures temporarily at the locations detailed in Table 9-6. The roads subject to traffic control and partial closure include a mix of roads that would service predominantly rural populations, such as Morefield Court, and a number of roads that were identified as primary routes through the LGA in Section 7.2, including Holden Road, Bulla-Diggers Rest Road, Sunbury Road, Wildwood Road, Oaklands Road, Craigieburn Road, Mickleham Road, and Donnybrook Road. The majority of these primary routes are located in the Hume LGA, where as noted in Section 7.2, the growth in population has led to community concern in regards to capacity of rural road network, which has the potential to result in conflict between different road users (e.g. cyclists, drivers, and agricultural road users). Potential Project related changes to some of these routes were noted as a concern during community consultation.

These changes to the road network may result in temporary delays and may temporarily increase travel times along these roads.

Table 9-6 Traffic control and road closure locations

| Road | LGA | Traffic control | Partial road closure |
|---|---|---|---|
| Beatty's Road | Melton | Y | |
| Holden Road | Melton | Y | |
| Dillon Ct Road | Hume | Y | Y |
| Duncans Lane Road | Hume | Y | Y |
| Morefield Ct | Hume | Y | |
| Bulla-Diggers Rest Road | Hume | Y | |
| Sunbury Road | Hume | Y | |
| Wildwood Rd | Hume | Y | |
| St Johns Rd | Hume | Y | |
| Oaklands Rd | Hume | Y | |
| Craigieburn Rd | Hume | Y | |
| Mt Ridley Rd | Hume | Y | |
| Parkland Cr | Hume | Y | Y |
| Mickleham Rd | Hume | Y | |
| Donnybrook Rd | Hume | Y | |
| Unnamed Rd | Hume | | |
| Donnybrook Rd | Whittlesea | Y | |
| Summerhill Rd | Whittlesea | Y | Y |

EMM S4 will be implemented to manage potential impacts to local access during construction. Specifically, EMM S4 requires that a Traffic Management Plans (TMP), approved by the relevant local government authority or Department of Transport, be in place prior to the commencement of construction. The TMPs will include stakeholder and communications arrangements in accordance with the Project Consultation Plan (EMM S6).

#### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-7.

Table 9-7 Transport and access (construction) impact rating

| Impact summary | Significance |
|---|---|
| Following the implementation of EMM S4, the change in transport network as a result of the Project's construction activities is expected to result in temporary and minor increases in travel time for people within the regional study area, particularly on rural roads. | Minor |

### 9.1.5 Community infrastructure facilities

This section discusses potential impacts on the functional use of community infrastructure facilities and services, with a focus on changes in amenity at the facilities and access to the facilities. The impacts are discussed by the category of the community infrastructure facilities and services as identified in Section 5.4, namely:

- Open space, natural areas and sports facilities
- Cultural facilities
- Education and early childhood facilities
- Emergency services
- Health facilities and services

#### *9.1.5.1 Open space, natural areas and sports facilities*

The open space and natural areas, and sports facilities within proximity to the Project (Section 7.6) can be categorised into three sub-groups:

- Local parks, reserves and off-road paths that cater to the urban growth communities within Frasers Rise and Mickleham
- Creeks / streams and reserves associated with these natural features that are located in semi-rural areas. A number of creeks are located on private property and therefore do not provide for broader community use, as detailed in Section 7.6. However, it is recognised that these areas may be valued by the community for their ecological significance. This is assessed in Technical report A – Biodiversity and Technical report B – Surface water.
- Sports facilities

As described in Section 9.1.3, the Project's construction would generate noise temporarily, especially in areas adjacent to construction activities. Generally, construction activities would move within and along the construction corridor and likely to last at any one location for three to six months and the intensity of the activities would also vary during this period. This effect would be at its height during trench construction, which is expected to advance at a rate of approximately 700 m per day (Technical report F – Noise and vibration). Therefore, the change in amenity will vary from time to time and be temporary.

The implications of these changes are discussed for each sub-group as follows:

- **Local parks, reserves and off-road paths**

The change in amenity including reduced visual amenity due to vegetation clearing and views of construction sites from some locations, and increase in noise levels at some locations may make the use of small parks and reserves, and off-road paths temporarily unappealing. Findings of Technical report F – Noise and vibration indicates that construction noise criteria would be exceeded without mitigation at Tame Street Drain in Diggers Rest (Melton). However, as detailed in Section 7.6.1, Tame Street Drain has limited community use; therefore, it is not expected that noise exceedances at this facility would impact on use of this open space for active or passive recreation by the surrounding community.

For facilities outside of the 500 m buffer but within a 1 km buffer (see Section 7.6), it is expected that the change in amenity would be insufficient to result in changes in use.

- **Reserves associated with creeks / streams**

As with local parks, the change in amenity within reserves associated with creeks / streams may make passive recreational activities temporarily unappealing, particularly as these areas typically have high natural or rural amenity values where low background or natural 'noise' is valued. This effect would primarily be experienced at facilities located within 500 m of the construction corridor, such as Martin Dillon Reserve (Bulla) and Bulla Bulla Streamside Reserve (Bulla). The findings of Technical report F – Noise and vibration indicates that construction noise criteria would be exceeded without mitigation at Martin Dillon Reserve in Diggers Rest (Melton). However, as noted in Section 7.6.1, both reserves are located in a sparsely populated area and would primarily be used by day trippers, hikers and other recreational visitors. It is recognised that the reduced amenity would likely discourage use by day trippers, hikers or other recreational visitors. However, due to the location of these reserves within Melbourne's Green Wedge, there are a number of other areas that would offer alternative options for high amenity nature recreation nearby.

There are no facilities of this type located between 500 m and 1 km of the Project.

- **Sports facilities**

There is one sporting facility within 500 m of the construction corridor -- Broadhanger Equestrian (Beveridge). It is expected that the change at facilities located between 500 m to 1 km from the construction corridor would be insufficient to result in changes in use.

Findings of Technical report F – Noise and vibration indicate that construction noise criteria would be exceeded for evening works without mitigation at Broadhanger Equestrian. The criterion is up to 50 dB(A) for evenings and a level up to 67.5 dB(A) is predicted for NDT coating and 63.3 dB(A) for excavation. The daytime criterion of 75 dB(A) would be met. The change in amenity at Broadhanger Equestrian may make it difficult to hear training discussions in outdoor discussions. Without mitigation, activities may be temporarily unappealing.

As mentioned in Section 9.1.3, to manage potential amenity impacts associated with construction, the Project will be undertaken in accordance with EMMs AQ1, AQ3, AQ4, B7, NV1, LV1, LV2, LV5, 1, NV2, NV3, NV4, NV5, NV6 and NV10 to minimise noise, vibration, air quality and landscape and visual impacts to community facilities and recreation areas. The noise assessment undertaken for the Project has considered it is feasible that construction noise could be reduced to be at or below the recommended noise criteria (EMM NV10) with the implementation of on-site management measures.

In addition, the Project's Consultation Plan (EMM S6) would engage with facility managers, potentially affected stakeholders and the broader community in relation to the timing and nature of the Project's activities and potential impacts.

#### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-8.

Table 9-8 Open space, natural areas and sports facilities (construction) impact rating

| Impact summary | Significance |
|---|---|
| With the implementation of the Project's EMMs, a small number of open spaces and recreational areas would experience a short term and intermittent change in noise amenity, which may reduce use for the short period in which noise is at its height. | Minor |

### *9.1.5.2 Cultural facilities*

As discussed in Section 9.1.3, the Project's construction would generate noise temporarily, especially in areas adjacent to construction activities. Generally construction activities would move within and along the construction corridor and likely to last at any one location for three to six months and the intensity of the activities would also vary during this period. This effect would be at its height during trench construction, which is expected to advance at a rate of approximately 700 m per day (Technical report F – Noise and vibration). Therefore, the change in amenity will vary from time to time and be temporary.

Cultural facilities are considered sensitive to changes in the noise environment, in part because the function of facilities such as places of worship value low noise levels, and in part because these faculties often cater to vulnerable groups, such as children or aged populations. These groups may be sensitive to increases in noise levels. The Cao Dai Temple of Victoria (Diggers Rest) and Annadale Interim Community Centre (Mickleham) are located within 500 m of the Project's construction corridor, and likely to experience a change in the noise environment. In particular, the findings of Technical report F – Noise and vibration indicate that construction noise criteria would be exceeded without mitigation at the Caoi Dai Temple. Additionally, it is noted that the frontage of the parcel that the Caoi Dai Temple is intersected by the Project's construction corridor. This could lead to temporary loss of access or diminished access to the facility.

In addition, it is noted that the Mickleham Musallah Muslims Sunni is located approximately 610 m from the Project's construction corridor. This facility may experience similar changes to the noise environment to those detailed above; however, it is noted that noise reduces over distance.

As mentioned in Section 9.1.3, to manage potential amenity impacts associated with construction, the Project will be undertaken in accordance with EMMs AQ1, AQ3, AQ4, NV1, NV2, NV3, NV4 and NV10 to minimise noise, vibration and air quality impacts to community facilities and recreation areas. The noise assessment undertaken for the Project has considered it is feasible that construction noise could be reduced to be at or below the recommended noise criteria (EMM NV10) with the implementation of on-site management measures. In addition, the Project's Consultation Plan (EMM S6) would engage with facility managers, potentially affected stakeholders and the broader community in relation to the timing and nature of the Project's activities and potential impacts.

In regards to the potential for diminished access at the Caoi Dai Temple, as per EMM S4, APA would seek agreements with the landowner prior to any works commencing on a property, including measures to provide access during construction.

### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-9.

Table 9-9 Cultural facilities (construction) impact rating

| Impact summary | Significance |
|---|---|
| With implementation of the Project's EMMs, it is expected that the facilities would continue to provide services to the community. However, given the vulnerability of users and sensitivity of activities undertaken, community use may temporarily reduce. | Minor |

#### *9.1.5.3 Education and early childhood facilities*

As discussed in Section 9.1.3, the Project's construction would generate noise temporarily, especially in areas adjacent to construction activities. Generally construction activities would move within and along the construction corridor and likely to last at any one location for three to six months and the intensity of the activities would also vary during this period. This effect would be at its height during trench construction, which is expected to advance at a rate of approximately 700 m per day (Technical report F – Noise and vibration). Therefore, the change in amenity will vary from time to time and be temporary.

As detailed in Section 7.6, all educational and child care facilities are located over 500 m from Project's construction corridor, and as such are expected to experience lesser changes in noise amenity. However, it is recognised that temporary increases in noise levels can impact on people's capacity to participate indoor and outdoor play and learning activities. Further to this, it is also recognised that child care facilities may be particularly sensitive to changes in the noise environment.

As mentioned in Section 9.1.3, to manage potential amenity impacts associated with construction, the Project will be undertaken in accordance with EMMs AQ1, AQ3, AQ4, NV1, NV2, NV3, NV4 to minimise noise, vibration and air quality impacts to community facilities and recreation areas. In addition, the Project's Consultation Plan (EMM S6) would engage with facility managers, potentially affected stakeholders and the broader community in relation to the timing and nature of the Project's activities and potential impacts.

### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-10.

Table 9-10 Education and child care facilities (construction) impact rating

| Impact summary | Significance |
|---|---|
| With implementation of the Project's EMMs, it is expected that the facilities would continue to provide services to the community. However, given the vulnerability of users and sensitivity of activities undertaken, community use may temporarily reduce or activities undertaken may be altered (e.g. reduced use of outdoor areas). | Minor |

#### 9.1.5.4 Emergency services

As detailed in Section 7.6, emergency services facilities were identified in the regional study area. As these are located at a considerable distance away from the Project, it is not expected that changes in amenity would affect these community services. Therefore, changes from the Project's construction activities are not expected to affect emergency services and facilities.

The provision of emergency services are time sensitive. It is expected that the Project's construction would result in minor travel delays on selected roads, (see Section 9.1.4), which has the potential to impact response times; however, SIA consultation with emergency services found that there are limited concerns in regards to the potential for minor travel delays along the roads to impact on emergency services. During consultation, emergency services stakeholders requested that they are consulted in regards to construction timelines and changes in road conditions be undertaken during the Project's construction phase.

As per EMM S4, it is expected that the Project's Traffic Management Plan would include:

- Measures to prevent impacts to emergency services access, which would be developed in consultation with emergency services providers.
- Engagement with affected emergency services stakeholders prior to construction in relation to the timing and nature of construction activities and their potential impacts.

##### Impact rating and summary

Based on the above description of the impact, the impact risk rating is provided in Table 9-11.

Table 9-11 Emergency services (construction) impact rating

| Impact summary | Significance |
|---|---|
| With implementation of the Project's EMMs, it is expected that the facilities would continue to provide services to the community with limited change in service provision. | Minor |

#### 9.1.5.5 Health facilities and services

As detailed in Section 7.6.2, the regional health facilities are located at a considerable distance away (over 10 km) from the Project's construction corridor. Consequently, changes in amenity would not effect these facilities. The potential for emergency access to health facilities is discussed above for emergency services (Section 9.1.5.4).

## 9.2 Operations

### 9.2.1 Employment and business opportunities

The operations and maintenance personnel required for the Project are likely to be in the order of two to three persons. Operational requirements for regional purchasing are likely to be limited and incidental in nature.

### 9.2.2 Landholders and properties intersected by the Project

#### Overview of Project changes to landholders and properties intersected by the Project

Following the reinstatement of land as part of the pipeline construction, the land would be generally returned to its previous use. The exception to this includes the following surface facilities:

- The three mainline valves that would be located along the pipeline alignment within the proposed easement area, but subdivided and acquired by APA
- Marker signs that delineate the location of the pipeline

Proposed upgrades to the Wollert compressor station would be contained within the existing APA facility.

Excavating or erecting permanent structures or buildings over the underground pipeline would be prohibited in accordance with the *Pipelines Act 2005* and pursuant to easement agreements with landowners.

Routine corridor inspections would be undertaken in accordance with APA procedures and AS2885 to monitor the pipeline easement for any operational or maintenance issues. The ongoing corridor inspections address issues such as:

- Unauthorised excavation
- Land stability (such as subsidence, erosion)
- Revegetation
- Weed invasion
- Third-party (such as asset owners) and landowner activities

The routine operation of gas pipelines requires the periodic running of a pig to clean and inspect the wall integrity. Pigging would be undertaken 10 years post construction, then at a frequency determined by the result of each inspection, most likely greater than 10 years.

Maintenance and inspections of the mainline valves would also be conducted periodically in accordance with APA procedures. The activities usually include vegetation management, valve operation and corrective maintenance.

The first nine kilometres of the Project alignment is within an existing APA easement, where the activities described above currently occur.

#### Agricultural and rural residential land uses

As detailed above, the pipeline would be buried and land disturbed during construction would be generally returned to its previous use; therefore, it is expected that landholders would be able to resume prior agricultural and rural residential activities. However, as detailed above, there would be some restrictions on land use over the easement, including excavation or establishing buildings over the easement. These restrictions may restrict future development plans for the landholder.

As noted above, the exception to this are the three mainline valve locations. APA would acquire the land for the mainline valve sites with purchase to compensate individual property holders for the loss of that land.

Detail on the estimated economic agricultural loss is provided in Appendix D.

Maintenance activities associated with the mainline valves outlined above would be periodic in nature and restricted to three locations. Maintenance activities for mainline valves and pipeline corridor may introduce and spread weeds to properties through the movement of vehicles within and across properties. The introduction or spread of weeds within a property has the potential to increase the cost of operating and managing an agricultural property. As detailed in EMM S4, any site access or maintenance tasks must be undertaken in consultation with relevant landholders and residents adjacent to the easement to confirm biosecurity and access requirements that may have changed.

As detailed in 9.1.2, landholders will be entitled to compensation for the establishment of the easement on their property. Compensation for the easement will reflect impacts to the market value of properties arising from the registration of an easement over the affected land parcel, in line with EMM LU3.

#### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-12.

Table 9-12 Land use change on agricultural and rural residential land uses and businesses (operation) impact rating

| Impact summary | Significance |
|---|---|
| Following the implementation of EMM S4 and LU3 and the establishment of compensation agreements to offset the impact of establishing an easement on properties, the reduction in land available for usual property activities is unlikely to impact on those landholders that utilise their property to generate a primary or secondary income | Minor |
| Following the implementation of EMM S4, the Project's operation activities are unlikely to result in unplanned disruption or unplanned increases in property management activities for landholders due to the Project's construction activities. | Minor |

### Landholder and resident wellbeing

APA activities within the Project easement would be minimal during the operational phase, and as noted above, related to routine corridor inspections. In line with EMM S4, any site access or maintenance tasks must be undertaken in consultation with landholders where access is required to the easement to confirm biosecurity and access requirements that may have changed. Operational hazards from the pipeline for community wellbeing are discussed in Technical Report M – Safety.

### Impact rating and summary

Based on the above description of the impact, the impact risk rating is provided in Table 9-13.

Table 9-13 Landholder and resident wellbeing (operation) impact rating

| Impact summary | Significance |
|---|---|
| Following the implementation of EMM S4, the activities of APA would result in limited interaction with landholders and are unlikely to result in material demands on landholder's time. Consequently, the Project's operational activities are unlikely to impact on landholder and resident wellbeing and the social impact is insignificant. | Insignificant |

### 9.2.3 Residential amenity

#### Amenity and character

As noted in the Overview of Project changes detailed in Section 9.2.2, the majority of land would be reinstated and revegetated. In line with EMM LV6, the removal of trees and shrubs within the approved construction area affecting public places or existing screening of private residences from road reserves, where practicable, trees and shrubs will replaced where reasonably requested and in consultation with the affected landholder and/or responsible authority. The planting of select small trees and shrubs would be permitted within the pipeline easement, three metres of greater from the edge of the pipeline. The planting of small shrubs and groundcovers with limited size root balls would be permitted within the easement, within three metres of the pipeline. Planting would be undertaken in accordance with the relevant bushfire management overlays for the area.

Similarly, vegetation removal in roadsides may change the visual outlook for some residents, although as noted in Technical report J – Landscape and visual amenity, these changes are common in the landscape.

Maintenance activities are intermittent and generally limited in nature, and would be undertaken in line with EMM S4. Consequently, the level of intrusion would be unlikely to change the landholder's overall sense of privacy. Although it is recognised that the level of intrusion and change in privacy would be felt differently, depending on the landholder, the value they place on privacy, the nature and duration of activities undertaken on the property in proximity to the Project corridor.

#### Noise and vibration

As detailed in Technical report F – Noise and vibration, maintenance activities would generate minimal noise. The Project involves the expansion of the existing Wollert compressor station. The noise assessment detailed in Technical report F – Noise and vibration found that any expansion of the existing facility would meet applicable noise limits. As noted above, the Wollert compressor station is located in a rural area and some distance from dwellings or other sensitive receptors. Given the limited change in expected noise levels, it is not expected that the expansion of the Wollert facility would result in social impacts, such as a reduction in the use and enjoyment of outdoor spaces in nearby residential areas in Wollert.

#### Air quality

Maintenance activities are not expected to result in the generation of dust emissions and have not been assessed. Technical report G – Air quality found that the operational emissions associated with the Wollert compressor station would meet relevant criteria, when utilising low NOx and CO technology. As noted above, the Wollert compressor station is located in a rural area and some distance from dwellings or other sensitive receptors. Given this, it is unlikely that any change in air quality would result in a social impact.

#### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-14.

Table 9-14 Landholder and resident wellbeing (operation) impact rating

| Impact summary | Significance |
|---|---|
| The Project's operational activities and restrictions within the easement are expected to be intermittent and limited in nature. As such, it is unlikely to change the amenity of the environment, including character and privacy, noise and air quality, to the extent that people would experience a social impact, such as reduced enjoyment of their property, particularly their backyards and outdoor spaces. | Insignificant |

### 9.2.4 Transport and access

The operation of the Project is expected to generate minimal traffic, and is expected to generally involve service vehicles carrying personnel undertaking general maintenance. Consequently, the impact would be negligible and has not been assessed.

### 9.2.5 Community infrastructure facilities

As noted above in Section 9.2.3, the Project's operational activities are limited in nature and changes to amenity would be insufficient to affect community infrastructure located in the regional study area as identified in Section 7.6.1. Consequently, Project's operational activities are not likely to negatively impact on the functional use of community infrastructure facilities located within the study area.

As noted in Section 7.2.1, the Project has been placed within an existing APA easement (KP 0 - KP 9 and a section between KP 45 – KP 51), which has previously been incorporated into precinct structure plans for developing communities, such as Kororoit and Plumpton (Section 7.2.1). In these areas, sections of the Project would be installed within existing APA easements. Where the Project is to be constructed outside existing easements, an easement would be registered. The opportunity would exist for the easement to be developed into an attractive linear open space that would provide connective open space for these emerging communities, as is detailed in the precinct structure plans (see Section 7.2.1). In addition, it is expected that the Project's easement could be incorporated into any future precinct structure plans that it intersects, as detailed in Technical report K – Land use.

The Project's easement in precinct structure plans would allow for future development of linear open space, in accordance with APA's *Site Planning and Landscape National Guidelines* (APA, 2020), which outlines the preferred urban design and landscape outcomes for APA's easements. In general, these guidelines are designed to provide for landscaped active open space areas, that typically incorporate a mix of landscaping and shared use paths, examples of which are shown in Figure 9-4. As much of the land on which the pipeline is to be constructed is private land, it would ultimately be the decision of the owner of the property on which the pipeline is constructed to progress the establishment of linear green spaces within the easement, in-line APA's *Site Planning and Landscape National Guidelines*.


Source: APA (2020) *Site Planning and Landscape National Guidelines*

Figure 9-4 Potential linear open space outcomes

### *Impact rating and summary*

Based on the above description of the impact, the impact risk rating is provided in Table 9-15.

Table 9-15 Community infrastructure facilities (operation) impact rating

| Impact summary | Significance |
|---|---|
| The Project's easement may be used to develop linear open space for local benefit, particularly in developing urban communities. | Minor |

# 10. Cumulative impacts

This section describes the social cumulative impacts that could potentially occur as a result of the interaction of the Project's effects with other key projects. It is based on publicly available information for identified projects that are likely to coincide with the delivery of this Project. As the extent and significance of the potential impacts of other developments was not defined at the time of preparation of this SIA, the cumulative impacts are described but cannot be specifically assessed.

## 10.1 Construction

This section provides a discussion on the potential social impacts of the Project with two other projects that may be constructed at the same time as the Project:

- Melbourne Water's Yan Yean to Bald Hill pipeline project, which coincides with the Project construction activities at KP 40-42
- Major Road Projects Victoria's (MRPV) Sunbury Road upgrade project, which traverses the WORM construction corridor at KP15

The construction of the Yan Yean to Bald Hill pipeline project is expected to commence early 2022 and to be completed in 2024. The works for the Yan Yean to Bald Hill pipeline project would commence at the eastern end of the Project and are therefore not expected to occur within the same location as WORM at the same time. Details in terms of sequencing of works and types of activities for the MRPV Sunbury Road upgrade project are not known; however, should construction activities for either of the two projects listed above occur at the same time, there is potential for cumulative social impacts on landholders and properties intersected by the Project, residential amenity, transport and access, and community infrastructure facilities.

### Impacts on landholders and properties intersected by the Project

There are four properties that are likely to be intersected by the Project and the Yan Yean to Bald Hill pipeline project. These properties are predominantly rural residential and agricultural in nature. Properties that host multiple projects may experience the following cumulative impacts:

- The reduction in land available for usual property activities
- Disruption to use of property and increase in property management activities due to the construction activities of multiple projects
- Landholders would experience issues relating to construction twice due to the multiple projects

### Impacts on residential amenity

As identified in Technical report F – Noise and vibration, there are three sensitive receptors that may be affected by the construction noise generated by the Project and the Yan Yean to Bald Hill pipeline project and eleven sensitive receptors that may be affected by the cumulative effects of the Project and the Sunbury Road upgrade.

Residences that host or are proximal to areas where the Project's construction overlaps with that of other developments may experience exceedances of noise and air quality criteria as is detailed in Technical report F – Noise and vibration and Technical report G – Air quality. Similarly, the presence of multiple construction fronts may result in increased vegetation clearing, and alterations to the rural visual amenity, which represents the dominant land use in the areas where the Project and other developments overlap.

Overall, should the Project's construction coincide with that of other developments, there is the potential that resident's proximal to these activities may experience a further or prolonged reduction in amenity, including reduced privacy and increased disturbance to day to day activities from noise and dust.

### Impacts on transport and access

Should the Project's construction coincide with that of other developments,  here would be an increase in construction traffic using existing roads/haulage routes close to these projects. Likely haulage routes for the other developments were not known at the time of preparing this report. However, should the same routes be utilised, this may result in increased traffic, temporary road/lane closures and therefore increase travel time as discussed in Section 9.2.4.

### Impacts on community infrastructure facilities

There are no community infrastructure facilities identified proximal to the three projects considered in this section. However, it is recognised that the provision of emergency services are time sensitive. It is expected that the Project's construction would result in minor travel delays on selected roads, (see Section 9.1.4), which has the potential to impact response times. As discussed above, this effect may be prolonged or exacerbated should the Project's construction coincide with that of other developments, and these development's activities require activities that result in traffic delays.

### Management approach to cumulative impacts

Should construction location and timing coincide, APA would work with MRPV and Melbourne Water to manage potential amenity impacts associated with construction. The Project will be undertaken in accordance with the EMMs discussed above for air quality, and noise and vibration (AQ1, AQ3, AQ4, NV1, NV2, NV3, NV4, NV5, NV6, NV7, NV8, and NV9) to minimise impacts to residents. In addition, EMM S3 (TMP), would need to take account of any other projects. Targeted and combined communication with residents would be considered if applicable under the Project Consultation Plan (S6). With EMMs to manage construction impacts, any cumulative impacts would also be managed.

## 10.2 Operation

As detailed in the assessment of the Project's potential impacts during operation, the Project's operational activities will be relatively limited, resulting in insignificant to minor impacts on landholders and properties intersected by the Project and residential amenity. As such the Project is unlikely to contribute to cumulative impacts during its operations phase.

# 11. Environmental management measures

This section outlines the recommended environmental management measures for social impacts identified as a result of the social assessment. Table 11-1 lists the recommended environmental management measures relevant to the social impact assessment.

The mitigation hierarchy has been applied in the development of the mitigation measures (refer to Table 11-1). It is the nature of construction projects/the operation of pipelines that the complete avoidance of social impacts is not possible. However, minimisation of social impacts has been achieved where possible, primarily during alignment selection by avoiding land where rehabilitation would not be feasible (e.g. commercial, residential, industrial and community land uses), and by implementing a CEMP, Project Consultation Plan, and Traffic Management Plans. Where construction impacts cannot be minimised or avoided through HDD or boring, land rehabilitation would be undertaken.

Table 11-1 Recommended environmental management measures

| EMM # | Environmental Management Measure | Stage | Mitigation hierarchy |
|---|---|---|---|
| S1 | **Reduce community disruption**<br>Construct the Project in accordance with EMMs AQ1, AQ3, AQ4, B7, LV1, LV2, LV5, NV1, NV2, NV3, NV4, NV5, NV6, and NV7 to minimise noise, vibration, air quality, and landscape and visual amenity impacts to residents directly adjacent to the alignment, community facilities and recreation areas. | Construction | Minimisation |
| S2 | **Minimise property impacts**<br>Minimise the risk of property damage due to construction of the Project by carrying out construction activities in accordance with the mitigation measures detailed in the Agricultural Impact Assessment (Appendix-C). Refer EMM S7 to EMM S23. | Construction | Refer EMM S7 to EMM S23 in Agricultural impact report Appendix D |
| S3 | **Community and residential access and connectivity**<br>The following must be implemented to manage potential impacts to local access roads during construction:<br>a Approved Traffic Management Plans (TMPs) to mitigate risks to workers and the public arising from the movement of construction vehicles on public roads and at site access points<br>b Stakeholder and communications arrangements in accordance with the Project Consultation Plan (Refer to EMM S6)<br>c Measures to prevent impacts to emergency services access. | Construction | Minimisation |

| EMM # | Environmental Management Measure | Stage | Mitigation hierarchy |
|---|---|---|---|
| S4 | **Land access**<br>Prior to any works commencing on a property, develop agreements with the landowners and occupiers regarding the use of existing roads or tracks, the selection of new access routes and any property-specific measures to implement during construction and operation, such as:<br>• Access across the construction area<br>• Relocation / duplication of facilities and infrastructure.<br>Inform land owners and occupiers of the construction commencement, and details of the proposed construction program, in accordance with the Project Consultation Plan (EMM S6). | Construction<br>Operation | Minimisation |
| S5 | Source workers, supplies and services during construction from the regional study area as far as reasonably practicable.<br>Support regional employment and purchasing by requiring the main construction contractor to detail mechanisms to provide for regional employment and purchasing during the tender phase. The adequacy of this plan must be a consideration in the selection of the preferred construction contractor. Once engaged, contractors must be required to report on performance against set criteria. | Construction | Avoidance |
| S6 | Develop and implement a Project Consultation Plan to facilitate ongoing consultation with relevant stakeholders throughout the Project's planning and construction. The Plan must include:<br>• The approach to communicating and engaging with the community and potentially affected stakeholders in relation to:<br>– The likely timing and nature of the Project's construction activities and potential impacts.<br>– Changes to transport conditions.<br>• The mechanisms and timing for communicating Project updates for all stakeholders through multiple channels (website, newsletters, local media)<br>• The approach for communicating and engaging with vulnerable groups, including community groups and residents that do not speak English. Translation services will be promoted as and where appropriate for specific project communications.<br>• Measures to evaluate the effectiveness of the communication and engagement under the Plan.<br>• Arrangements for receipt and management of feedback and complaints, including timeframes for responding to complaints. | Construction | Minimisation |

## 11.1 Performance criteria and monitoring

APA will monitor and review the impacts and effectiveness of the Project's environmental management measures during the construction phase, and collect relevant data as outlined in Table 11-2. The data should be reported within APA quarterly during the Project's construction phase.

Given the low level of Project activities and limited social impacts during operation, no performance criteria or monitoring have been recommended for this phase of the Project.

Table 11-2 Performance criteria and monitoring

| EMM # | Performance criteria and monitoring |
|---|---|
| S1 | As detailed in:<br>• Technical report A – Biodiveristy[1]<br>• Technical report F – Noise and vibration[1]<br>• Technical report G – Air quality[1]<br>• Technical report J – Landscape and visual[1]. |
| S2, S4 | The development of negotiated land access agreements for each affected landholder and monitoring as advised in the Agricultural Assessment (Appendix D). |
| S5 | The number and dollar value of goods and services sourced within the regional study area. |
| S6 | The number of complaints resolved within the timeframes outlined within the Project Consultation Plan.<br>The number of complaints based on complaint type (e.g. noise, air quality, traffic). |

1. Performance criteria and monitoring for these reports is detailed in Appendix E.

Technical report A – Biodiversity, Technical report F – Noise and vibration, Technical report G – Air quality include a number of contingency measures that will be implemented should there be adverse residual effects on the land and amenity, including vegetation values, noise effects and air quality. These include following measures relevant to the Project's potential social impacts detailed in Table 11-3.

In addition to the contingency measures detailed below, the complaints data collected in accordance with EMM S6 will be collated and reported as part of Project reporting process on a monthly basis and used to inform a review of the efficacy of existing management and mitigation measures. A general compliance report will be made available publicly on our Project website (www.apa.com.au/worm). This may be in the form of a tally table with general categories and record of complaints or incidents.

## Table 11-3 Summary of contingency measures relevant to managing social impacts

| Technical report | Phase | Contingency measures relevant to managing social impacts |
|---|---|---|
| Technical report A – Biodiversity | Operation | Dependent on the outcomes of consultation with relevant landowners, the performance of EMMs will be evaluated by the development and implementation of a monitoring program that will:<br>• Evaluate the progress of reinstatement toward achieving key performance indicators and report the results in accordance with the requirements under the Pipeline Licence<br>• At the end of the monitoring period evaluate whether monitoring should be extended<br>• Provide recommendations for management as required, which may not be addressed by operational EMMs |
| Technical report F – Noise and vibration | Construction | • Where the construction noise and/or vibration levels are predicted or measured to exceed applicable criteria after implementing the general noise mitigation practices, further mitigation measures will be considered and implemented where reasonable and feasible<br>• Where the residual impact is still predicted to exceed the recommended noise or vibration criterion for an extended period (after other mitigation measures have been implemented), information on the impact will be discussed with affected residents<br>• Depending on the circumstances, off-site measures to minimise noise impact will be considered including alternative temporary accommodation or other respite option |
| Technical report G – Air quality | Construction | • If all available methods of dust stabilisation fail to suppress dust and dust emissions are evident beyond the site boundary at identified sensitive receptor locations (as identified by real-time reactive monitoring, as required), the APA Construction Manager will temporarily modify or suspend dust generating activities until conditions subside<br>• If dust is observed to be causing a hazard, then controls should be implemented. If dust levels cannot be contained works should be modified or stopped until dust hazard is reduced to a manageable level |

Note: This table provides a summary of contingency measures detailed in the EMM or performance criteria of other technical studies relevant to managing social impacts. These studies should be referred to for the further information on managing the impacts of the relevant technical discipline.

# 12. Conclusion

The purpose of this report is to provide a social impact assessment to inform the preparation of the EES required for the Project.

A summary of the key assets, values or uses potentially affected by the Project, and the associated impact assessment are summarised below.

## 12.1 Existing conditions

The Project intersects 137 parcels of land through the LGAs of Melton, Hume, Mitchell, and Whittlesea. The land and area generally surrounding the Project is predominantly rural. The majority of properties are rural residential or agricultural, and residents value the quiet rural amenity afforded by the area's natural landscapes. The exception to this is a small number of emerging growth areas in Plumpton and Mickleham, which are characterised by new residential development.

More broadly, the LGAs that the Project intersects are characterised by population growth, which in Hume and Whittlesea has been culturally and linguistically diverse. Relative disadvantage, as indicated by the ISRD varies across the SA1s intersected by the Project, with areas of relative disadvantage close to the Project located in Hume and Whittlesea.

Community infrastructure facilities located with a 1 km area of the Project includes:

- Open space and natural areas that have high amenity values that provide for passive recreation opportunities
- Small parks and linear reserves that service residential catchments in urban growth areas
- Cultural facilities such as places of worship and community centres
- Educational and early child care facilities

## 12.2 Impact assessment

The risk assessment and subsequent impact assessment found that the Project's construction activities have the potential to result in temporary social impacts on the nearby residents, the general community and community infrastructure facilities, including:

- A reduction in area of land available for rural residential and agricultural use and increased or changed agricultural property management requirements
- A reduction in the local amenity leading to reduced enjoyment of people's properties, particularly the outdoor areas
- A reduction in the use and enjoyment of community infrastructure facilities, particularly outdoor areas in proximity to the Project's construction corridor

The assessment identified that these impacts would be experienced at a higher intensity by people that may be sensitive to potential changes in amenity, including children and people with existing respiratory conditions.

Following the implementation of the Project's EMMs, it is anticipated that the Project's construction would have minor impacts on residential amenity and the use of community facilities.

The risk assessment and subsequent impact assessment found that the Project's operational activities would result in insignificant social impacts. This is largely due to the limited operational activities. Consequently, no specific management measures or other controls are required during the Project's operation phase.

# 13. References


ABS. (2017a). *1270.0.55.001 - Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, July 2016*. Australian Bureau of Statistics. http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by Subject/1270.0.55.001~July 2016~Main Features~Statistical Area Level 1 (SA1)~10013

ABS. (2017b). *2016 Census*. Australian Bureau of Statistics. http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016 Census Community Profiles

ABS. (2017c). *2016 Census of Population and Housing. General Community Profile. Catalogue number 2001.0*. https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016 Census Community Profiles

ABS. (2018a). *2033.0.55.001 - Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016*. Australian Bureau of Statistics. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2033.0.55.0012016?OpenDocument

ABS. (2018b). *2071.0 - Census of Population and Housing: Reflecting Australia - Stories from the Census, 2016.* Australian Bureau of Statistics. https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by Subject/2071.0~2016~Main Features~Core Activity Need for Assistance~27

ABS. (2018c). *ABS 2033.0.55.001 Census of Population and Housing: Socio-Economic Indexes for Areas, Australia, 2016*. Australian Bureau of Statistics. http://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001

ABS. (2020a). *6202.0 - Labour Force, Australia, Jun 2020*. Australian Bureau of Statistics. https://www.abs.gov.au/ausstats/abs@.nsf/lookup/6202.0Main Features5Jun 2020

ABS. (2020b). *6291.0.55.001 - Labour Force, Australia, Detailed - Electronic Delivery, Jul 2020*. Australian Bureau of Statistics. https://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/16CF9AD7C2477BA5CA257F630014C8C0?opendocument

AECOM. (2015). *Moving Melton - Integrated Transport Strategy*. https://www.melton.vic.gov.au/files/assets/public/services/building-planning-amp-transport/strategic-planning/studies-strategies-guidelines/moving-melton-its/moving-melton-integrated-transport-strategy-report.pdf

APA. (2020). *Site Planning and Landscape National Guidelines*.

Australian Government. (2020). *Small Area Labour Markets Publication - LGA Data Tables*. Department of the Environment and Energy. https://docs.employment.gov.au/documents/lga-data-tables-small-area-labour-markets-march-quarter-2020

Bonnici, A. (n.d.). *Deep Creek, Bulla*. Fishing Mad. https://fishingmad.com.au/location/deep-creek-bulla

Cinner, J. E., McClanahan, T. R., Graham, N. A. J., Daw, T. M., Maina, J., Stead, S. M., Wamukota, A., Brown, K., & Bodin, Ö. (2012). Vulnerability of coastal communities to key impacts of climate change on coral reef fisheries. *Global Environmental Change*, *22*(1), 12–20. https://doi.org/10.1016/j.gloenvcha.2011.09.018

City of Banyule, City of Darebin, City of Hume, City of Moreland, City of Nillumbik, & City of Whittlesea. (2019). *Northern Regional Trails Strategy - Interactive Map*. https://www.northerntrails.melbourne/

City of Hume. (2019). *Hume Planning Scheme*. https://planning-schemes.delwp.vic.gov.au/schemes/hume

City of Hume. (2020a). *Aboriginal and Torres Strait Islander Peoples*. Hume City Council. https://www.hume.vic.gov.au/Residents/People-Services/Aboriginal-and-Torres-Strait-Islander-Peoples#:~:text=Hume City Council recognises the,Traditional Custodians of this land.

City of Hume. (2020b). *Annadale Interim Community Centre*. City of Hume. https://www.hume.vic.gov.au/Residents/Libraries-and-Community-Facilities/Venues/Annadale-Interim-Community-Centre

City of Hume. (2020c). *Council Plan 2017-2021 (2020/21 Actions)*. https://www.hume.vic.gov.au/files/sharedassets/public/your-council/council-plans/hume-city-council-plan-2017-2021-2020-2021-actions.pdf

City of Hume. (2020d). *Draft Rural Strategy*. https://participate.hume.vic.gov.au/59195/widgets/301211/documents/174196/download

City of Hume. (2020e). *Martin Dillon Reserve*. City of Hume. https://www.hume.vic.gov.au/Residents/Leisure-Sport-and-Recreation/Parks-and-Reserves/Martin-Dillon-Reserve

City of Melton. (2014). *Western Plains North Green Wedge Management Plan*. https://www.melton.vic.gov.au/Services/Building-Planning-Transport/Strategic-Planning/Studies-Strategies-Guidelines/Green-Wedges-within-the-City-of-Melton/Western-Plains-North-Green-Wedge-Management-Plan

City of Melton. (2016). *Melton City 2036. The City We Imagined*. https://www.melton.vic.gov.au/Council/About-the-City/Community-visio

City of Melton. (2018). *Melton Council Reconciliation Action Plan Innovate 2018-2020*. https://www.melton.vic.gov.au/files/assets/public/council/publications/documentsreportsstrategies/policies/melton_city_council_reconciliation_policy_2015-17_1.pdf

City of Melton. (2019a). *Melton Advocacy Priorities*. https://www.melton.vic.gov.au/files/assets/public/council/about-council/what-were-fighting-for/2019/advocacy-priorities-booklet-2019.pdf

City of Melton. (2019b). *Melton City Council Annual Report 2018-2019*. https://www.melton.vic.gov.au/files/assets/public/council/publications/annual-report/melton-city-council-annual-report2018-2019.pdf

City of Melton. (2019c). *Melton Planning Scheme*. https://planning-schemes.delwp.vic.gov.au/schemes/melton

City of Whittlesea. (2011). *Whittlesea Green Wedge Management Plan 2011-2021*. https://www.whittlesea.vic.gov.au/media/1840/part-2-people.pdf

City of Whittlesea. (2017a). *Whittlesea City Council Plan 2017 – 2021*. https://www.whittlesea.vic.gov.au/media/2601/draft-council-plan-2017-2021.pdf

City of Whittlesea. (2017b). *Whittlesea Planning Scheme*. http://planning-schemes.delwp.vic.gov.au/schemes/whittlesea/ordinance/21_mss02_wsea.pdf

DELWP. (2020). *Plan Melbourne 20 Minute Neighbourhood*. Plan Melbourne 2017 - 2050. https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/plan-melbourne/20-minute-neighbourhoods

Department of Environment Land Water and Planning. (2017). *Plan Melbourne Strategy 2017 - 2050*. http://www.planmelbourne.vic.gov.au/__data/assets/pdf_file/0007/377206/Plan_Melbourne_2017-2050_Strategy_.pdf

Diskin, B., Friedman, J., Peppas, S., & Peppas, S. (2011). The effect of natural gas pipelines on residential value. *Right of Way*, *January*(24–27).

Erickson, L. C., & Newman, R. S. (2017). Influences of Background Noise on Infants and Children. *Current Directions in Psychological Science*, *26*(5), 451–457. https://doi.org/10.1177/0963721417709087

Friends of Merri Creek. (2020). *Activism history*. Friends of Merri Creek.

Gehl, J. (2011). *Life between buildings: using public space*. Island Press.

Growth Areas Authority. (2012). *Lockerbie North Precinct Structure Plan Background Report*. https://vpa-web.s3.amazonaws.com/wp-content/uploads/2017/07/Background-Report-March-2012.pdf

Maller, C., & Nicholls, L. (2014). Encountering the Multiplicity of Community in Planning and Designing New Neighbourhoods. *Urban Policy and Research*, *32*(1), 17–32. https://doi.org/10.1080/08111146.2013.844120

Markovich, J., & Lucas, J. (2011). *The Social and Distributional Impacts of Transport: A Literature Review*. https://doi.org/1

McElveen, M. A., Brown, B. E., & Gibbons, C. M. (2017). Natural Gas Pipelines and the Value of Nearby Homes: A Spatial Analysis. *Journal of Housing Research*, *26*(1), 27–38. https://doi.org/10.1080/10835547.2017.12092126

Melbourne Water. (2016). *Drought Response Plan - Part B A Water Sharing Plan for Licence Water Users in the Darebin Creek Catchment*. https://www.melbournewater.com.au/sites/default/files/Darebin_Creek.pdf

Merri Creek Management Committee. (2009). *Merri Creek and Environs Strategy 2009-2014*. https://mcmc.org.au/file/MCES/MCES_2009-2014_web.pdf

Metropolis Research. (2018). *City of Whittlesea 2018 Community Attitudes and Liveability Survey*. https://www.whittlesea.vic.gov.au/media/3650/c-users-guh-desktop-whittlesea-2018-community-attitude-and-liveability-survey-report-finalv2.pdf

Metropolis Research. (2019). *2019 City of Melton Annual Community Satisfaction Survey*. https://www.melton.vic.gov.au/files/assets/public/council/about-the-city/community-satisfaction-survey/melton-city-council-2019-community-satisfaction-survey-overview-report.pdf

Mitchell Shire Council. (2011). *Mitchell 2020*. https://cdn.mitchellshire.vic.gov.au/general-downloads/Mitchell_2020_Community_Plan_and_Vision_120217.pdf

Mitchell Shire Council. (2018). *Improving Public Transport in Mitchell Shire*. https://cdn.mitchellshire.vic.gov.au/general-downloads/Mitchell-Shire-Improving-public-transport-business-case-1.pdf

Mitchell Shire Council. (2019a). *Acknowledging our Traditional Owners Guide 2019*. https://cdn.mitchellshire.vic.gov.au/general-downloads/Community Development/MSC-Acknowledging-our-Traditional-Owners-Guide-2019_web.pdf

Mitchell Shire Council. (2019b). *Mitchell Planning Scheme*. https://planning-schemes.delwp.vic.gov.au/schemes/mitchell

Paranagamage, P., Austin, S., Price, A., & Khandokar, F. (2010). Social capital in action in urban environments: an intersection of theory, research and practice literature. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, *3*(3), 231–252. https://doi.org/10.1080/17549175.2010.526374

Rakauskiene, O. G., & Strunz, H. (2016). Approach to Reduction of Socioeconomic Inequality: Decrease of Vulnerability and Strengthening Resilience. *Economics & Sociology*, *9*(4), 243–258. https://doi.org/10.14254/2071-789X.2016/9-4/15

Somerville, T., & Wetzel, J. (2017). *Environmental hazards : The micro-geography of land-use negative externalities*. https://doi.org/10.14288/1.0355841

Sugiyama, T., Leslie, E., Giles-Corti, B., & Owen, N. (2008). Associations of neighbourhood greenness with physical and mental health: do walking, social coherence and local social interaction explain the relationships? *Journal of Epidemiology & Community Health*, *62*(5), e9–e9. https://doi.org/10.1136/jech.2007.064287

Upper Merri Creek Communities. (2020). *Summary of the community workshop outcomes*. Upper Merri Creek Communities. https://uppermerricreek.com.au/community-workshop

Vanclay, F. (2003). International principles for social impact assessment. *Impact Assessment and Project Appraisal*, *21*(1), 5–12.

Vanclay, F., Esteves, A. M., & Franks, D. M. (2015). *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects*. https://espace.library.uq.edu.au/view/UQ:355365/UQ355365.pdf

Victoria State Government. (2020). *Northern Region*. Suburban Development. https://www.suburbandevelopment.vic.gov.au/regions/northern-region

Victorian Government. (2010). *A Guide to Delivering Community Precincts*. https://www.localgovernment.vic.gov.au/__data/assets/pdf_file/0023/48623/Guide-to-Delivering-Community-Precincts.pdf

Victorian Government. (2019). *Victoria in Future 2019 - Population and household projections to 2051*. Victoria in Future. https://www.planning.vic.gov.au/land-use-and-population-research/victoria-in-future#:~:text=VIF2019 projections extend to 2056,Government Areas and smaller areas.&text=VIF2016 projected the state's population,and 11.2 million by 2056

Victorian Planning Authority. (2008). *Delivering Melbourne's newest sustainable communities*. https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/melbournes-strategic-planning-history/delivering-melbournes-newest-sustainable-communities

Victorian Planning Authority. (2011). *The Sunbury / Diggers Rest Growth Corridor Plan*.

Victorian Planning Authority. (2017a). *Kororoit Precinct Structure Plan*. https://vpa-web.s3.amazonaws.com/wp-content/uploads/2018/02/MeltonC147IncorpDoc-KororoitPrecinctStructurePlanDecember2017ApprovalGazetted-Part-1.pdf

Victorian Planning Authority. (2017b). *Lockerbie North Precinct Structure Plan*. https://vpa-web.s3.amazonaws.com/wp-content/uploads/2017/07/Lockerbie-North-Precinct-Structure-Plan-March-2012.pdf

Victorian Planning Authority. (2018). *Plumpton Precinct Structure Plan*. https://vpa-web.s3.amazonaws.com/wp-content/uploads/2018/02/Pages-from-MeltonC146IncorpDoc-PlumptonPrecinctStructurePlanDecember2017ApprovalGazetted-Part-1.pdf

WHO. (2007). *Global Age-friendly Cities - A Guide*. http://www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf

Wilde, L., Loos, C., & Williamson, J. (2012). Pipelines and property values: An eclectic review of the literature. *Journal of Real Estate Literature*, *20*(2), 245–259.

Wood, L., Shannon, T., Bulsara, M., Pikora, T., McCormack, G., & Giles-Corti, B. (2008). The anatomy of the safe and social suburb: An exploratory study of the built environment, social capital and residents' perceptions of safety. *Health & Place*, *14*(1), 15–31. https://doi.org/10.1016/j.healthplace.2007.04.004

# Appendices

# Appendix A – Risk assessment

**Risk Assessment**

The scoping requirements require a risk-based approach to be adopted during the design of EES studies, so that a greater level of effort is directed at investigating and managing those matters that pose relatively higher risk of adverse effects.

The risk assessment as part of the assessment framework for the EES, is described in Chapter 5 Evaluation and assessment framework.

The consequence of the risk occurring were assigned using a consequence guide specific for each technical discipline. The consequence guide is provided in Table A1.

The likelihood was assigned using a likelihood guide applied to all technical disciplines. The likelihood guide is provided in Table A2.

The risk rating was determined using the risk matrix developed for this EES. The risk matrix is shown in Table A3.

The risk pathways define the cause and effect topics relevant to [technical area] based on an understanding of the existing conditions and the Project activities. The risk pathways are provided in Table A4. Each pathway shows the initial risk rating based on standard management measures, and a residual risk rating based on additional management measures (if required) recommended through the impact assessment process.

Table A1 Consequence approach

| Level | Community facilities | Residential amenity (social implications of changed 'physical' amenity) |
|---|---|---|
| Insignificant | No change to access or usage of a recreational or community facility. | Short term or minimal impact easily reversible adverse change where those affected could be expected to easily adapt or cope. |
| Minor | Minor (short term or little impact) reduction to access or usage of a recreational or community facility. | Reversible adverse change where those affected could be expected to have substantial capacity to adapt or cope. |
| Moderate | Moderate reduction to access or usage of a recreational or community facility. | Adverse change where those affected could be expected to have some capacity to adapt or cope. |
| Major | Permanent major reduction to access or usage of a recreational or community facility of regional significance. | Irreversible change at a Project level where those affected could be expected to have limited capacity to adapt or cope. |
| Severe | Permanent complete loss of a recreational or community facility of State significance. | Irreversible change at a regional level where an extended population is affected which could be expected to have little or no capacity to adapt or cope. |

### Table A2 Likelihood approach

| Level | | Description |
|---|---|---|
| 1 | Rare | The event is conceivable and may occur only in exceptional circumstances |
| 2 | Remote | The event could occur but is not anticipated and may occur if certain abnormal circumstances prevail |
| 3 | Unlikely | The event is unlikely but could occur if certain circumstances prevail |
| 4 | Likely | The event will probably occur in most circumstances |
| 5 | Almost certain | The event is expected to occur in most circumstances or is planned to occur |

### Table A3 Risk rating approach

| | | Consequence rating | | | | |
|---|---|---|---|---|---|---|
| | | Insignificant | Minor | Moderate | Major | Severe |
| Likelihood rating | Almost certain | Low | Medium | High | Very high | Very high |
| | Likely | Low | Low | Medium | High | Very high |
| | Unlikely | Negligible | Low | Medium | High | High |
| | Remote | Negligible | Negligible | Low | Medium | High |
| | Rare | Negligible | Negligible | Negligible | Low | Medium |

Table A4 Risk pathways

| Risk ID | Risk description | Construction / operation | Pipeline / MLV / compressor | Initial Environmental Management Measures | Initial risk rating | Additional mitigation and management measures | Final risk rating |
|---|---|---|---|---|---|---|---|
| S1 | **Construction impacts to amenity (residents proximal to the alignment)** Noise, vibration, visual change and dust emissions impacting amenity for residents and the community | Construction | All | Reduce community disruption: To manage potential amenity impacts associated with construction, the Project will be undertaken in accordance with EMMs AQ1, AQ3, AQ4, B7, LV1, LV2, NV1, NV4, NV5. NV6, to minimise noise, vibration and air quality impacts to residents directly adjacent to the alignment, community facilities and recreation areas. | Medium | Engage with potentially affected stakeholders and the broader community in relation to the timing and nature of the Project's activities and potential impacts to enable improved adaption to changes.<br>EMMs which adopt additional mitigation beyond standard measures to manage potential amenity impacts: AQ1, LV5, LV7, NV2, NV3, NV7. | Low |
| S2 | **Property damage** Construction activities lead to severance and damage to existing property. This may result in impacts on agri-businesses and reduce property productivity. | Construction | Pipeline | Avoid property impacts: To minimise property damage due to construction of the Project, construction activities will be undertaken in accordance with the relevant elements of existing property specific biosecurity plans which landholders operate under. | Low | | Low |

| Risk ID | Risk description | Construction / operation | Pipeline / MLV / compressor | Initial Environmental Management Measures | Initial risk rating | Additional mitigation and management measures | Final risk rating |
|---|---|---|---|---|---|---|---|
| S3 | **Construction impacts to amenity (community facilities and recreation areas)**<br>Noise, vibration, visual change and dust emissions impact amenity values for community facilities. | Construction | All | Reduce community disruption: To manage potential amenity impacts associated with construction, the Project will be undertaken in accordance with DMMs AQ1, AQ3, AQ4, B7, LV1, LV2, NV1, NV4, NV5, and NV6, to minimise noise, vibration and air quality impacts to residents directly adjacent to the alignment, community facilities and recreation areas. | Medium | Engage with facility managers, potentially affected stakeholders and the broader community in relation to the timing and nature of the Project's activities and potential impacts to enable improved adaption to changes.<br>EMMs which adopt additional mitigation beyond standard measures to manage potential amenity impacts: AQ1, LV5, LV7, NV2, NV3. | Low |
| S4 | **Permanent acquisition**<br>Permanent use (acquisition) of the easement leads to permanent impacts on residents and properties. | Operation | Pipeline / MLV | Site access and property management:<br>During operation of the Project, any site access or maintenance tasks must be undertaken in consultation with relevant landholders and residents adjacent to the easement to confirm biosecurity and access requirements that may have changed. | Low | | Low |

| Risk ID | Risk description | Construction / operation | Pipeline / MLV / compressor | Initial Environmental Management Measures | Initial risk rating | Additional mitigation and management measures | Final risk rating |
|---|---|---|---|---|---|---|---|
| S5 | **Property access and severance**<br>Construction activities disrupt access to properties. | Construction | All | Avoid property impacts:<br>To minimise property damage due to construction of the Project, construction activities will be undertaken in accordance with the relevant elements of existing property specific biosecurity plans which landholders operate under | Low | | Low |
| S6 | **Demand on landholder time**<br>Demands on landholder time to engage and negotiate with Project staff may reduce time available for management of properties. | Construction | All | Landholder communication:<br>Prior to any works commencing on a property, agreements with the landowners and occupiers regarding the use of existing roads or tracks, the selection of new access routes and any property-specific measures to implement during construction and operations, such as<br>a. Access across the construction area<br>b. Stock management, access and exclusion<br>c. Management of overland flow<br>d. Biosecurity<br>e. Relocation / duplication of facilities and infrastructure.<br>Land owners and occupiers will be informed of the construction commencement, and details of the proposed construction program, in accordance with the Project Consultation Plan | Low | | Low |

# Appendix B – Environmental Management Measures

The Environmental Management Measures (EMMs) from other technical studies that have been referenced and considered in this SIA are detailed below.

Table B1 EMM

| EMM code | EMM detail |
|---|---|
| S7 | Consultation will be undertaken with relevant landholders regarding property-specific measures to implement during construction and operations including:<br>a. Access across the construction corridor during construction<br>b. Stock management<br>c. Biosecurity. |
| S8 | All reasonable steps will be undertaken to enter into an agreement with each landholder on fair and reasonable terms. Agreements will include commitments to agreed measures to minimise the impact of the Project on landholder activities. |
| S9 | A Schedule of Landholder Agreements will be compiled and maintained, documenting actions to be carried out on each property. |
| S10 | All third party services within the easement, including on farm infrastructure, will be identified and marked on the ground in advance of open trench construction activities. |
| S11 | All identified third party services and water lines will be managed so that their operation can continue during pipeline construction, wherever practicable. |
| S12 | Biosecurity management measures will be developed for the construction phase of the Project in accordance with the Catchment and Land Protection Act 1994 and incorporated into the CEMP for the Project. |
| S13 | Biosecurity management measures will be implemented in accordance with the VTS Operational Environmental Management Plan that has been prepared for use during the operation of the Victoria section of the VTS only in accordance with the Pipelines Act 2005 and Pipelines Regulations 2017. |
| S14 | Reinstatement will commence progressively post construction and will be undertaken as soon as practicable. |
| S15 | The construction corridor will be re-profiled to original contours or to new, stable contours where it is not reasonably practical to re-profile to original contour in line with contractor construction specification. |
| S16 | Soil amelioration and fertiliser will be applied where required as determined by soil assessments and tailored to rehabilitation requirements in consultation with the landholder. |
| S17 | Compaction of the trench backfill as per APA's performance specification and/or contractor's construction specifications. Degree of compaction to take into account design load limits on the pipe whilst minimising changes to pre-construction groundwater conditions |
| S18 | Compaction relief will be implemented by ripping or scarifying areas of the construction corridor which have been compacted by construction activities. Particular attention will be given to areas subject to regular watering and high traffic volume. |
| S19 | All access tracks, fences and gates will be reinstated post construction in consultation with landholders and any relevant third parties. |
| S20 | Permanent access gates will be installed post construction, where required at fence intersections and for access to MLV compounds which will be completely fenced. |

| EMM code | EMM detail |
|---|---|
| S21 | Where seeding is adopted to facilitate prompt revegetation and soil stabilisation, the following principles will be considered:<br>a Seed mixtures to be formulated with consideration of the vegetation composition of the areas adjacent to the construction corridor and in consultation with the relevant landholder<br>b Sterile seed stock (cover crop) may be used to provide short term surface stability<br>c Seed to be evenly dispersed over the disturbed area<br>d Seeding to take place as soon as practicable after reinstatement of the soil profile<br>A suitable fertilizer may be applied depending on soil conditions and any landholder requirements. |
| S22 | Monitoring of the condition of the construction corridor and other disturbed areas will be completed post construction and remedial measures undertaken, as required, with the aim that all disturbed areas are re-profiled to a stable landform consistent with original contours and drainage lines, or proposed new stable contours, and vegetated with a self-sustaining, non-pest species groundcover. |
| S23 | Reasonable and practicable measures will be implemented to avoid impacts to landholder national vendor declarations and other requirements under applicable livestock production assurance programs due to the use of herbicides, pesticides and other chemicals during construction and operations. Such measures will be informed by consultation with Meat and Livestock Australia. |
| AQ1 | **Construction dust management**<br>Implement management and control measures during construction activities to minimise dust including:<br>• Water carts to be used on unsealed work areas as required<br>• Crushed rock to be placed on existing permanent unsealed access tracks where agreed with relevant stakeholders – especially in areas where housing abuts, or may abut by the time construction occurs, the construction corridor<br>• Water spray units to be used, where required, on soil stockpiles and during the loading and unloading of dust generating materials, i.e. Soil/sand/fill and aggregates<br>• Vehicle loads to be covered when carrying dust (or litter) generating material<br>• Vehicle speed within the construction area must be restricted to 30 km/hr<br>• Dust suppression activities must consider weather patterns, ground cover, ground conditions e.g. type and moisture content of soil present, and type of activities being conducted as well as proximity to sensitive receptor locations<br>• Undertake a sufficient level of compaction on stockpile surfaces to minimise dust.<br>If all available methods of dust stabilisation fail to suppress dust and dust emissions are evident beyond the site boundary at identified sensitive receptor locations (as identified by real-time reactive monitoring, as required), the contractor must temporarily modify or suspend dust generating activities until conditions subside.<br>Controls must be implemented if dust is observed to be causing a hazard (such as a wind barrier (e.g. shade cloth) where residences are adjacent). If dust levels cannot be contained works must be modified or stopped until dust hazard is reduced to a manageable level. |
| | **Construction dust monitoring**<br>Reactive dust monitoring instruments must be used during construction where isolated rural residences or rows of housing that abut the construction corridor are within the impact 'footprint' distances identified in Table 23 of Technical Report G Air Quality. |

| EMM code | EMM detail |
|---|---|
| | Instruments must be consistent with those detailed in the Protocol for Environmental Management: Mining and Extractive Industries and be capable of sending a SMS text message to the contractor. These instruments must be deployed for each work day subject to where the daily workfront is in relation to the specific areas where sensitive receptors are located. |
| AQ3 | **Odorous soils management**<br><br>In the event that odorous soils (as a result of contamination or acid sulfate soils) are uncovered during construction, standard soil management measures must be undertaken, as outlined in EMM C1 (Implement spoil management measures). |
| AQ4 | **Operational odour management**<br><br>Implement the VTS Pipeline Integrity Management Plan during operation. The VTS Pipeline Integrity Management Plan details the activities that will be taken to ensure the integrity of the VTS pipelines, including avoiding leaks of odours during operation. These are considered measures to minimise fugitive gas emissions. Measures that must be implemented include:<br><br>• Regular pipeline inspections and patrols<br>• Pipelines to be constructed as per AS2885 or standards at time of construction<br>• The pipeline to be identified in the ground via danger marker tape and above ground via pipeline marker sign on the easement<br>• Cathodic protection system to be installed for corrosion resistance, with 24/7 monitoring and 12 month detail survey<br>• Insulation of a series of sacrificial anodes along the pipe for corrosion resistance<br>• Remote SCADA monitoring<br>• Third party engagement i.e. when working around pipeline, emergency services, government, civil contractors<br>• In line integrity pigging as determined by Pipeline Risk Assessments.<br><br>Design and construct the Wollert Compressor Station to include a stack that is capable of venting emergency or routine maintenance gas (unburnt natural gas) higher into the atmosphere than simply allowing fugitive emissions at ground level. The existing emergency flaring stack must be used for this purpose. |
| LU3 | **Impacts to land tenure and access**<br><br>Provide compensation for the reservation of the easement and acquisition of land for the Project in accordance with Pipelines Act 1985 and Land Acquisition and Compensation Act 1986.<br><br>Consult relevant stakeholders in relation to construction access and operational activities in accordance with the Project Consultation Plan and Project EMMs S3 and S5. |
| LV1 | Avoid tree removal as far as reasonably practicable. Through detailed design and selection of construction methods, identify and demarcate trees to be retained within the construction corridor that provide screening to private property residences prior to commencement of construction. Protect trees to be retained in accordance with AS-4970 Protection of trees on development sites. |

| EMM code | EMM detail |
|---|---|
| LV2 | Prior to construction, undertake an arborist report on trees that screen private residences from road reserves to be retained immediately bordering the construction corridor where trimming would be required. The arborist assessment must consider any potential impacts on trees from proposed construction activities in accordance with AS-4970 Protection of trees on development sites. |
| LV5 | Where trees and shrubs within the approved construction area are lost and affect public places or existing screening of private residences from road reserves, replace trees and shrubs where practicable, reasonably requested and in consultation with the affected landholder and/or responsible authority. Undertake planting in accordance with the relevant bushfire management overlays for the area. |
| NV1 | Manage construction noise and vibration in accordance with Chapter 4 (Noise and vibration) of EPA Victoria Publication *1834 Civil construction, building and demolition guide*.<br><br>Prepare and implement a Construction Noise and Vibration Plan that includes the following general good practice measures:<br>• Use lowest-noise and vibration work practices and equipment that meet the requirements of the job<br>• Use broadband reversing alarms on construction vehicles and machinery in preference to 'beeper' reversing alarms. The site will be planned to minimise the need for reversing of vehicles.<br>• Turn off equipment and vehicles when not being used<br>• Take care not to drop spoil and construction materials that cause peak noise events<br>• Ensure equipment is operated in accordance with manufacturers requirements<br>• Limit works to the 'normal working hours' (as defined in EPA Publication 1834) as far as reasonably practicable<br>• Minimise the use of loud equipment, generation of unnecessary noise and vibration, and the movement of vehicles on the construction corridor as far as reasonably practicable<br>• Outline designated vehicle routes, parking locations and delivery hours to minimise noise impact on sensitive receptors<br><br>Undertake all reasonable and practicable actions to comply with the construction noise and vibration criteria as identified in EMM NV10. |
| NV2 | Where the construction noise and/or vibration levels are predicted or measured to exceed applicable criteria (as identified in EMM NV10) after implementing the general noise mitigation practices, further mitigation measures must be considered and implemented as far as reasonably practicable. These measures may include:<br>• Adopting engineering noise controls at the source (e.g. silencer, mufflers, enclosures) by all practical means using current technology<br>• Selection of quieter equipment<br>• Installation of onsite barriers such as hoardings or temporary screens to provide a noise barrier between any particularly noisy construction works and the residences<br><br>Restricting the hours that the very noisy activities can occur (respite periods). |
| NV3 | Develop a detailed blast study and impact management plan in accordance with AS 2187.2 – 2006 *Explosives- storage and use* and other relevant documents to confirm blasting impacts and implement any further management measures required. |

| EMM code | EMM detail |
|---|---|
| NV4 | As far as reasonably practicable, increase the distance between a sensitive receptor and the noise/vibration source to reduce impacts. This can be achieved through strategic placement of stationary equipment (e.g. generators used for specific works) within the construction corridor to maximise the distance between source and receptor. |
| NV5 | As far as reasonably practicable limit works to the 'normal working hours' (as defined in EPA Publication 1834). Identify activities required to be undertaken outside of normal working hours.<br><br>The Construction Noise and Vibration Plan must include a clear rationale for defining works as 'low-noise', 'managed impact', or 'unavoidable' (as defined in EPA Publication 1834) and response strategies to mitigate the impacts of these works. |
| NV6 | Where the residual noise and vibration impact (after mitigation measures are being implemented) exceeds the recommended construction noise and vibration criteria or construction works are planned close to the sensitive receptors, notify residents in advance about upcoming construction works.<br><br>Send notification letters to residents of noise affected dwellings prior to the commencement of works which include information on:<br><br>• Date and time of the noise intensive works<br>• Expected durations of the noisiest activities<br>• Use and provision of individual protective measures such as earplugs (for short duration impacts of 1 to 2 nights only and on a case-by case basis)<br><br>Implement a complaints management register that documents:<br><br>• Name of persons receiving complaint<br>• Name of person making the complaint<br>• Date and time of complaint<br>• Nature of the complaint<br>• Actions taken to rectify the issue<br>• Actions to minimise risk of repeated occurrence<br>• Name of person responsible for undertaking the required actions<br>• Communication of response to the complaint<br><br>Implement a complaint system that includes the following measures:<br><br>• Establish a community liaison phone number and permanent site contact number so that noise related complaints can be received and addressed in a timely manner<br>• Determine whether any unusual activities were taking place at the time of the complaint that may have generated higher noise levels than usual and whether they may be attributed to the construction site activities<br><br>Implement additional mitigation measures where required and reasonably practicable. |
| NV7 | Where the residual impact is predicted to exceed the recommended noise or vibration criterion for an extended period (after other mitigation measures have been implemented), discuss information on the impact with affected residents.<br><br>Depending on the circumstances, off-site measures to minimise noise impact must be considered including alternative temporary accommodation or other respite option. |

<table>
<tr><th>EMM code</th><th>EMM detail</th></tr>
<tr><td>NV10</td><td>Undertake all reasonable and practicable actions to comply with the construction noise criteria:
<table>
<tr><th>Sensitive receptor</th><th>Period</th><th>Noise criteria, LAeq</th></tr>
<tr><td>Residential</td><td rowspan="4">EPA normal working hours<br>hours:<br>Mon-Fri: 7am - 6pm<br>Sat: 7am - 1pm</td><td>75</td></tr>
<tr><td>Educational institutions</td><td>60</td></tr>
<tr><td>Parks and recreational areas</td><td>65</td></tr>
<tr><td>Community and commercial buildings</td><td>70</td></tr>
<tr><td>Residential</td><td>Evening and weekend<br>Mon-Fri: 6pm - 10pm<br>Sat: 1pm - 10pm<br>Sundays and public holidays 7 am to 10 pm</td><td>Noise level at any residential premises not to exceed background (LA90, dB) noise by:<br>• 10 dBA or more for up to 18 months</td></tr>
<tr><td>Residential</td><td>Night-time<br>Mon-Sun: 10pm - 7am</td><td>Noise inaudible within a habitable room of any residential premises.<br>Background +0 dB(A) (external)</td></tr>
</table>
</td></tr>
<tr><td></td><td>Implement management measures if vibration from construction is predicted to exceed the standards for structural damage as identified in the following:
<table>
<tr><th rowspan="3">Group</th><th rowspan="3">Type of structure</th><th colspan="4">Vibration velocity (PPV) in mm/s</th></tr>
<tr><th colspan="3">At foundation at a frequency of (1)</th><th rowspan="2">Vibration at horizontal plane of highest floor (all frequencies)</th></tr>
<tr><th>< 10 Hz</th><th>10 Hz–0 Hz</th><th>50 Hz–00 Hz</th></tr>
<tr><td>1</td><td>Buildings used for commercial purposes, industrial buildings and buildings of similar design</td><td>20</td><td>20–40</td><td>40–50</td><td>40</td></tr>
<tr><td>2</td><td>Dwellings and buildings of similar design and/or occupancy</td><td>5</td><td>5–15</td><td>15–20</td><td>15</td></tr>
<tr><td>3</td><td>Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. heritage-listed)</td><td>3</td><td>3–8</td><td>8–10</td><td>8</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>EMM code</th><th>EMM detail</th></tr>
<tr><td></td><td>Implement management measures if vibration from construction is predicted to exceed the standards for structural damage to existing underground pipelines:
<table>
<tr><th>Pipe material</th><th>Guideline value on pipe (mm/s)</th></tr>
<tr><td>Steel (including welded pipes)</td><td>100</td></tr>
<tr><td>Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with/without flanges)</td><td>80</td></tr>
<tr><td>Masonry, plastic</td><td>50</td></tr>
</table>
Implement management measures if vibration from construction exceeds the human perception of 0.3 mm/s at sensitive receptors.</td></tr>
</table>

# Appendix C – Demographic data

### Demographic data

This section provides a summary of the key demographic indicators discussed in the regional profile. These have been summarised at the LGA level.

Table B1 Demographic summary table – Melton LGA

| Indicator | Melton | Greater Melbourne | Victoria |
|---|---|---|---|
| **Population:** | | | |
| 2009-2019 population change | 65% | 13.3% | 22.8% |
| 2018-2036 Projected population change | 111.9% | 37.8% | 23.2% |
| **Cultural and ethnic diversity** | | | |
| Indigenous persons | 0.9% | 0.5% | 0.8% |
| Persons born overseas | 36.5% | 40.2% | 35.1% |
| **Employment and training** | | | |
| Unemployment (December 2019) | 6.8% | 4.7% | 6.3% |
| Top five industries of employment | | | |
| Manufacturing | 8.6% | 7.7% | 7.8% |
| Construction | 10.1% | 8.2% | 8.3% |
| Retail trade | 10.9% | 10.1% | 10.2% |
| Education and training | 7.0% | 8.6% | 8.6% |
| Health care and social assistance | 10.7% | 12.0% | 12.5% |
| **Highest level of educational attainment** | | | |
| Tertiary | 16.0% | 27.5% | 24.3% |
| Advanced diploma | 9.1% | 9.5% | 9.2% |
| Certificate III / IV | 17.4% | 12.8% | 14.4% |
| Year 12 | 18.1% | 17.2% | 15.9% |
| **Vulnerability indicators** | | | |
| SEIFA decile (LGA) | 7 | 8 | N/A |
| Under 15 years | 24.6% | 18.3% | 18.2% |
| Over 65 years | 8.4% | 14.0% | 15.6% |
| Need for assistance | 4.9% | 4.9% | 5.1% |
| **Journey to work** | | | |
| Car - as driver or passenger | 76.8% | 65.8% | 67.2% |
| Used public transport | 10.1% | 16.3% | 13.1% |

## Table B2 Demographic summary table – Hume LGA

| Indicator | Hume | Greater Melbourne | Victoria |
|---|---|---|---|
| **Population:** | | | |
| 2009-2019 population change | 40.0% | 13.3% | 22.8% |
| 2018-2036 Projected population change | 53.3% | 37.8% | 23.2% |
| **Cultural and ethnic diversity** | | | |
| Indigenous persons | 0.7% | 0.5% | 0.8% |
| Persons born overseas | 42.3% | 40.2% | 35.1% |
| **Employment and training** | | | |
| Unemployment (December 2019) | 8.4% | 4.7% | 6.3% |
| Top five industries of employment | | | |
| Manufacturing | 9.6% | 7.7% | 7.8% |
| Construction | 9.8% | 8.2% | 8.3% |
| Retail trade | 10.6% | 10.1% | 10.2% |
| Education and training | 6.9% | 8.6% | 8.6% |
| Health care and social assistance | 10.9% | 12.0% | 12.5% |
| **Highest level of educational attainment** | | | |
| Tertiary | 14.8% | 27.5% | 24.3% |
| Advanced diploma | 9.0% | 9.5% | 9.2% |
| Certificate III / IV | 15.3% | 12.8% | 14.4% |
| Year 12 | 19.3% | 17.2% | 15.9% |
| **Vulnerability indicators** | | | |
| SEIFA decile (LGA) | 4 | 8 | N/A |
| Under 15 years | 22.2% | 18.3% | 18.2% |
| Over 65 years | 10.3% | 14.0% | 15.6% |
| Need for assistance | 6.3% | 4.9% | 5.1% |
| **Journey to work** | | | |
| Car - as driver or passenger | 75.8% | 65.8% | 67.2% |
| Used public transport | 10.4% | 16.3% | 13.1% |

## Table B3 Demographic summary table – Mitchell LGA

| Indicator | Mitchell Shire | Greater Melbourne | Victoria |
|---|---|---|---|
| **Population:** | | | |
| 2009-2019 population change | 40.1% | 13.3% | 22.8% |
| 2018-2036 Projected population change | 120.5% | 37.8% | 23.2% |
| **Cultural and ethnic diversity** | | | |
| Indigenous persons | 1.6% | 0.5% | 0.8% |
| Persons born overseas | 20.9% | 40.2% | 35.1% |
| **Employment and training** | | | |
| Unemployment (December 2019) | 4.3% | 4.7% | 6.3% |
| Top five industries of employment | | | |
| Manufacturing | 9.3% | 7.7% | 7.8% |
| Construction | 12.5% | 8.2% | 8.3% |
| Retail trade | 9.2% | 10.1% | 10.2% |
| Education and training | 7.2% | 8.6% | 8.6% |
| Health care and social assistance | 10.2% | 12.0% | 12.5% |
| **Highest level of educational attainment** | | | |
| Tertiary | 10.6% | 27.5% | 24.3% |
| Advanced diploma | 8.7% | 9.5% | 9.2% |
| Certificate III / IV | 21.3% | 12.8% | 14.4% |
| Year 12 | 13.6% | 17.2% | 15.9% |
| **Vulnerability indicators** | | | |
| SEIFA decile (LGA) | 7 | 8 | N/A |
| Under 15 years | 20.7% | 18.3% | 18.2% |
| Over 65 years | 14.2% | 14.0% | 15.6% |
| Need for assistance | 4.9% | 4.9% | 5.1% |
| **Journey to work** | | | |
| Car - as driver or passenger | 74.4% | 65.8% | 67.2% |
| Used public transport | 5.2% | 16.3% | 13.1% |

Table B4 Demographic summary table – Whittlesea LGA

| Indicator | Whittlesea | Greater Melbourne | Victoria |
|---|---|---|---|
| **Population:** | | | |
| 2009-2019 population change | 58.3% | 13.3% | 22.8% |
| 2018-2036 Projected population change | 63.2% | 37.8% | 23.2% |
| **Cultural and ethnic diversity** | | | |
| Indigenous persons | 0.8% | 0.5% | 0.8% |
| Persons born overseas | 41.6% | 40.2% | 35.1% |
| **Employment and training** | | | |
| Unemployment (December 2019) | 5.0% | 4.7% | 6.3% |
| Top five industries of employment | | | |
| Manufacturing | 9.5% | 7.7% | 7.8% |
| Construction | 10.2% | 8.2% | 8.3% |
| Retail trade | 11.5% | 10.1% | 10.2% |
| Education and training | 7.0% | 8.6% | 8.6% |
| Health care and social assistance | 12.9% | 12.0% | 12.5% |
| **Highest level of educational attainment** | | | |
| Tertiary | 18.0% | 27.5% | 24.3% |
| Advanced diploma | 9.5% | 9.5% | 9.2% |
| Certificate III / IV | 15.4% | 12.8% | 14.4% |
| Year 12 | 19.0% | 17.2% | 15.9% |
| **Vulnerability indicators** | | | |
| SEIFA decile (LGA) | 7 | 8 | N/A |
| Under 15 years | 24.8% | 18.3% | 18.2% |
| Over 65 years | 11.7% | 14.0% | 15.6% |
| Need for assistance | 5.7% | 4.9% | 5.1% |
| **Journey to work** | | | |
| Car - as driver or passenger | 75.6% | 65.8% | 67.2% |
| Used public transport | 11.0% | 16.3% | 13.1% |

# Appendix D – Agricultural assessment

# APA VTS (Operations) Pty Ltd

## Western Outer Ring Main Environment Effects Statement
## Agriculture Impact Assessment Report

April 2021

# Executive Summary

The Western Outer Ring Main (WORM) gas pipeline Project (the Project) is a proposed 600 millimetre nominal diameter high pressure gas transmission pipeline that will provide a high pressure connection between the eastern and western pipeline networks of the Victorian Transmission System (VTS).

The Project has been designed to provide critical infrastructure for Victoria's gas supply, distribution, and consequent security, efficiency and affordability. The key objectives of the Project are to:

- Improve system resilience and security of gas supply
- Increase the amount of natural gas that can be stored for times of peak demand
- Improve network performance and reliability
- Provide opportunities for natural gas supply to new growth areas in the northwest, including Sunbury South, Lindum Vale, Merrifield and Kalkallo
- Address potential gas shortages as forecasted by AEMO in the March 2020 Victorian Gas Planning Report update.

The Minister for Planning determined on 22 December 2019 that the Project would require an Environment Effects Statement (EES) under *the Environment Effects Act 1978* (EE Act). This report addresses the evaluation objectives set out in the EES scoping requirements: *to minimise potential adverse social, economic, amenity and land use effects at local and regional scales.*

The purpose of this report is to assess the potential agricultural impacts associated with the Project and to define the environmental management measures necessary to meet the EES evaluation objectives.

This desktop report provides an understanding of the existing conditions and considers the impacts on agricultural land uses and agribusinesses directly impacted by the Project and more broadly within a regional study area. The construction corridor totals 178 ha and traverses predominately through agricultural related land uses (164 ha) with the main land use impacted being grazing modified pastures (134 ha) followed by rural residential with agriculture (16 ha). While extensive grazing is the dominant land use within the construction corridor, some of the land is considered to be in transition and would eventually be used for urban uses. At present, just under half (approximately 44%) of the Project already lies within the Urban Growth Boundary (UGB) and is therefore unlikely to be used for agricultural production. Within the next 10-30 years the remaining agricultural land along the construction corridor will most likely transition to other uses, prompted by further expansion of the UGB particularly along the northern and western development corridors and the development of infrastructure within the Public Acquisition Overlay.

GHD's desktop assessment identified a range of direct and indirect impacts on land use and agricultural production at the construction and operation stages. The direct impacts can be broadly classified as either land use changes or changes to land capability and infrastructure while the indirect impacts on agricultural production may occur as a result of Project activities impacting within the regional study area.

The most significant impact of the Project on agricultural production is the temporary removal of the construction corridor from current agricultural production on certain properties during construction. Following rehabilitation of the construction corridor, normal agricultural production would be able to resume. The area of agricultural land required for operations is negligible and is not expected to impact on existing agricultural enterprises.

The unmitigated economic impact to agriculture at the construction stage is estimated at $0.2 million which is equivalent to 0. 13% of the annual value of agricultural production within the regional study area. The impact is conservative based on assumptions on commercial agricultural use and a 12-month interruption period. The direct and indirect impacts can be mitigated via a number of different actions that would minimise potential impacts.

Following the implementation of the Project's environmental management measures, it is anticipated that the Project's construction would have minor impacts on agribusinesses, agricultural land uses and farming operations.

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# Abbreviations

| Abbreviation | Definition |
|---|---|
| ABS | Australian Bureau of Statistics |
| CEMP | Construction Environmental Management Plan |
| EES | Environment Effects Statement |
| GMU | Geomorphological unit |
| ha | Hectare |
| km | Kilometre |
| LGA | Local government area |
| ROW | Right of way |
| VGF | Victorian Geomorphology Framework |
| VTS | Victorian Transmission System |
| WORM | Western Outer Ring Main |

# Glossary

| Term | Meaning |
|---|---|
| APA | APA VTS (Operations) Pty Ltd, trading as APA Group, the proponent for the Project |
| Construction corridor | The area of land directly disturbed for construction of the Project consisting of the construction right of way, extra work spaces, temporary access tracks and any other ancillary facilities required to construct the pipeline. |
| Demography | The range of different groups existing in a particular populace, as distinguished by factors such as age, ethnicity and social background. |
| Easement | A right held by the proponent to make use of the land for a specific purpose (in this case, for the installation and operation of a pipeline).<br>The easement for the Project would typically be 15 m wide. |
| Environmental management measure (EMM) | Approaches, requirements or actions to avoid, mitigate or manage potential adverse impacts |
| Construction corridor | The construction corridor is generally 30 metres wide and contains the area of land directly disturbed for construction of the Project work spaces, temporary access tracks and any other ancillary facilities required to construct the pipeline. There are 137 parcels intersected by the Project's construction corridor. |
| Project | The Western Outer Ring Main Project |
| Regional study area | The regional study area – this includes the local government areas (LGA) within which the Project is located. This includes, in order of kilometre point, the LGAs of Melton, Hume, Mitchell, and Whittlesea. |
| Scoping requirements | The EES Scoping requirements for the Project issued by the Department of Environment Land, Water and Planning in August 2020. |
| Social Impact Assessment Report | Western Outer Ring Main Environment Effects Statement Social Impact Assessment Report (GHD 2021), prepared for APA VTS (Operations) Pty Ltd |

# 1. Introduction

## 1.1 Purpose of this report

The Western Outer Ring Main (WORM) gas pipeline project (the Project) is a proposed 600 millimetre nominal diameter high pressure gas transmission pipeline that would provide a high pressure connection between the eastern and western pipeline networks of the Victorian Transmission System (VTS). APA is the proponent for the Project.

The Minister for Planning determined on 22 December 2019 that APA and the Western Outer Ring Main (WORM) gas pipeline project (the Project) would require an Environment Effects Statement (EES) under the *Environment Effects Act 1978* (EE Act). The EES will inform assessment of approvals required for the Project including under the *Pipelines Act 2005*, *Aboriginal Heritage Act 2006* and *Environment Protection and Biodiversity Conservation Act 1999*.

The purpose of this report is to assess the potential agricultural impacts associated with the Project and to define the environmental management measures necessary to meet the EES evaluation objectives. This report is intended to form an appendix to and be read in conjunction with the Western Outer Ring Main Environment Effects Statement Social Impact Assessment Report (GHD, 2020a).

## 1.2 EES scoping requirements and study response

The scoping requirements for the EES, released by the Minister for Planning, set out the specific environmental matters to be investigated and documented in the Project's EES, and informs the scope of the EES technical studies. The EES scoping requirements relevant to this agricultural impact assessment have been included in Section 2 of the Social Impact Assessment Report.

This Agricultural Impact Assessment report identifies the potential impacts to agriculture associated with the construction and operation of the Project. This report provides an understanding of the existing conditions and considers the impacts on agricultural land uses and agribusinesses directly impacted by the Project (parcels intercepted) and more broadly within a regional study area (the four LGAs within the project). The report proposes environmental management measures to avoid, minimise and manage potential adverse impacts.

### 1.2.1 Study method

GHD's scope involved a desktop assessment of the impacts of the Project during both construction and operations stages on the current agricultural land use. GHD did not undertake any consultation with landholders as part of this study and instead relied on consultation information provided by APA including detailed summary notes following fieldwork and consultation with directly affected landholders. To assess the agricultural impacts, GHD reviewed the issues and concerns raised by directly affected landholders and also used their own knowledge of agricultural operations and land use within the regional study area. Landholders raised concerns in relation to the effect that the pipeline construction may have on the potential disruption to farm activities and subsequent economic impacts to local farming communities. Additionally, noise and vibration concerns were raised in relation to impacts on farming activities as livestock, such as cattle and horses, that are sensitive to noise would need to be moved during construction.

GHD also defined the land use and land tenure within and surrounding the construction corridor using a combination of desktop and field assessments (completed by APA). Desktop research included an analysis of publicly available data including Australian Bureau of Statistics, land use mapping from Department of Environment, Land, Water and Planning and land capability data from Agriculture Victoria.

### 1.2.2 Legislation, policy and guidelines

This EES is prepared under the EE Act and will inform assessment of approvals required for the Project. In addition to the legislation relevant to the principal approvals required for the Project as outlined in Section 4 of the Social Impact Assessment Report, the following legislation is also relevant to this Agricultural Impact Assessment Report:

Table 1 Key legislation and policy applicable

| Legislation/policy | Relevance to this impact assessment |
|---|---|
| *Land Acquisition and Compensation Act 1986* | The *Land Acquisition and Compensation Act 1986* allows for and manages the procedure for the acquisition of land in Victoria, and provides for the determination of the compensation payable where land is acquired.<br>The Act allows for acquisition and compensation to occur as per Part 6 of the *Pipelines Act 2005*. |
| *Pipelines Act 2005* | The *Pipelines Act 2005* is the primary Act governing the construction and operation of high transmission pipelines in Victoria.<br>Under the Act, a licence to construct and operate a pipeline must be obtained by the proponent of a pipeline development. |
| *Catchment and Land Protection Act 1994* | The Catchment and Land Protection Act 1994 is the main article of legislation governing the management of invasive plants and animals in Victoria. Under this Act, species of plants and animals can be declared as noxious weeds and pest animals.<br>Under this Act, a proponent must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds and prevent the spread of and as far as possible eradicate, established pest animals. |

## 1.3 Project overview

APA is proposing to construct approximately 51 kilometres of buried high pressure gas transmission pipeline between Plumpton and Wollert, in Victoria. The Project also comprises the installation of a new gas compressor and associated process control equipment and pipework within APA's existing gas compressor station site at Wollert. The pipeline would connect the eastern and western sections of the VTS between Plumpton and Wollert. Three mainline valves (MLV) would be installed along the length of the alignment. A schematic illustration of the Project context is shown in Figure 1.

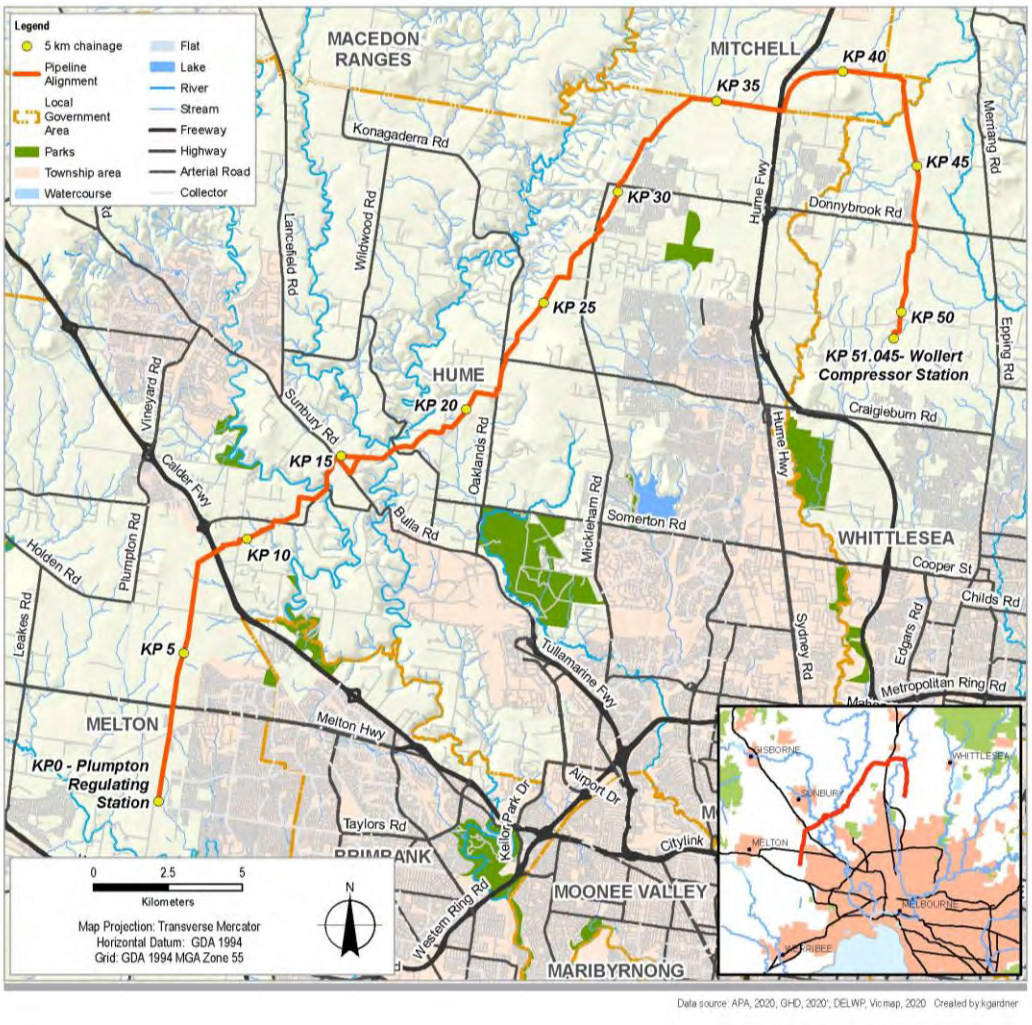



Figure 1 Project alignment

## 1.4 Limitations

This Agricultural Impact Assessment Report (Report):

1. Has been prepared by GHD Pty Ltd ("GHD") for APA VTS (Operations) Pty Ltd (APA);
2. May only be used for the purpose of informing the Environment Effects Statement and Pipeline Licence Application for the Western Outer Ring Main Project (and must not be used for any other purpose); and
3. May be provided to the Department of Environment, Land, Water and Planning for the purpose of public exhibition as part of the Environment Effects Statement and Pipeline Licence Application for the Western Outer Ring Main Project.

The services undertaken by GHD in connection with preparing this Report were limited to those specifically detailed in section 1 of this Report. The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD when undertaking services and preparing the Report (Assumptions), as specified throughout this Report. GHD excludes liability for errors in, or omissions from, this Report arising from or in connection with any of the assumptions being incorrect. Subject to the paragraphs in this section of the Report, the opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the time of preparation. GHD has not, and accepts no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was signed.

# 2. Existing conditions

## 2.1 Climate

Climatic conditions have been analysed for the automatic weather station (AWS) at Melbourne Airport (3 to 20 km from the pipeline construction corridor and 17 km from the Wollert Compressor Station). The Melbourne Airport AWS is considered representative of the area due to the weather station's proximity to the pipeline alignment.

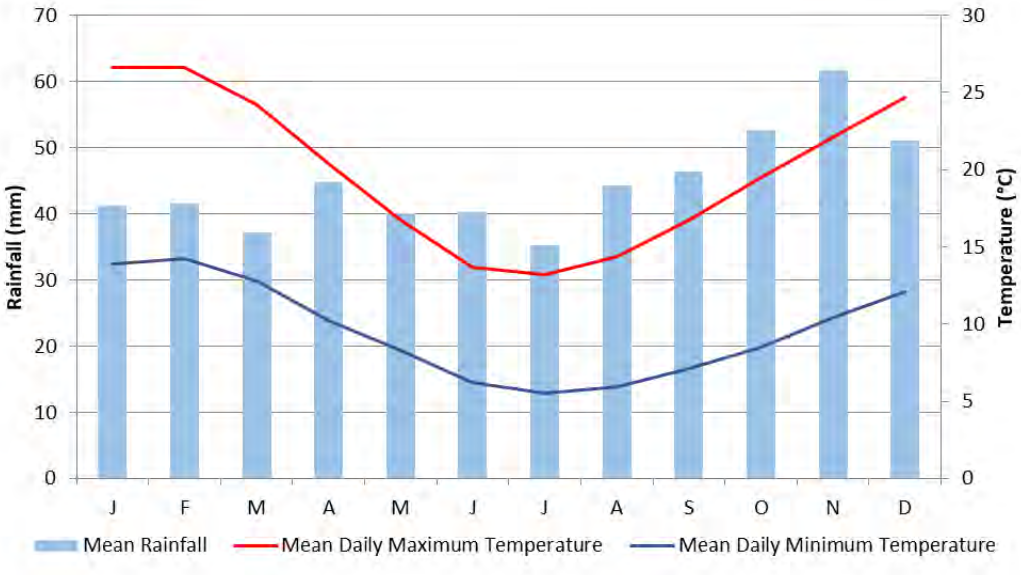
This site was selected as it provides long-term data on rainfall and temperature patterns throughout the year to assist in understanding agricultural enterprise selection and production in the area.

As detailed in Figure 2, the mean rainfall for the regional study area is 531 mm per year with a pattern of high rainfall in late spring and early summer, compared to the seasons of autumn and winter. Temperatures are characterised by hot maximum temperatures in summer and low minimum temperatures in winter.

Average rainfall and temperature conditions at selected locations have an impact on the choice of agricultural enterprises, however the actual selection of enterprises on individual properties relies on a complex interaction of a range of variables in addition to climate. In particular soils and landform which is described in further detail in section 2.3, strongly influences enterprise selection.

While average rainfall and temperature are important indicators of potential rain fed agricultural production, actual annual production is greatly influenced by monthly variability compared to the monthly average and can fluctuate between years.

While rainfall impacts on all forms of agricultural production, both surface water and groundwater resources also have an impact depending on their availability. These resources provide opportunities for irrigation of crops and livestock drinking water and are discussed further in the following sections.




Source: Bureau of Meteorology Melbourne Airport Station Number 086282

Figure 2 Climatic statistics for Melbourne Airport AWS

## 2.2 Land capability

Land capability assessment is a method of determining if a land area can sustain a specific use and level of management without causing significant long-term degradation. Agriculture Victoria's *Assessment of agricultural land capability in Melbourne's Green Wedge and Peri-urban Areas* (2018) identifies strategic agricultural land using a five class land capability classification system (Figure 3). In particular, this report presents information and series of maps that cover land capability for intensive soil-based agriculture, key soils and landscapes, current intensive (higher-value) soil-based agricultural land uses and groundwater resources. Land capability is a function of a range of natural resource conditions including geomorphology, topography, vegetation and soils. The assessment modelled 14 factors and identified Class 1 and 2 as inherently capable for intensive soil based agriculture at naturally high capability while Class 3 and 4 land are those areas with moderate capability and land would have limitations for high impact uses. Class 1, 2 and 3 land can be considered potentially suitable for identification as 'Strategic Agricultural Land.'

The construction corridor traverses predominantly Class 4 and 5 with some smaller areas of Class 3 land dispersed throughout. Class 4 land is not as inherently capable for intensive soil-based agriculture and generally used for extensive agriculture.

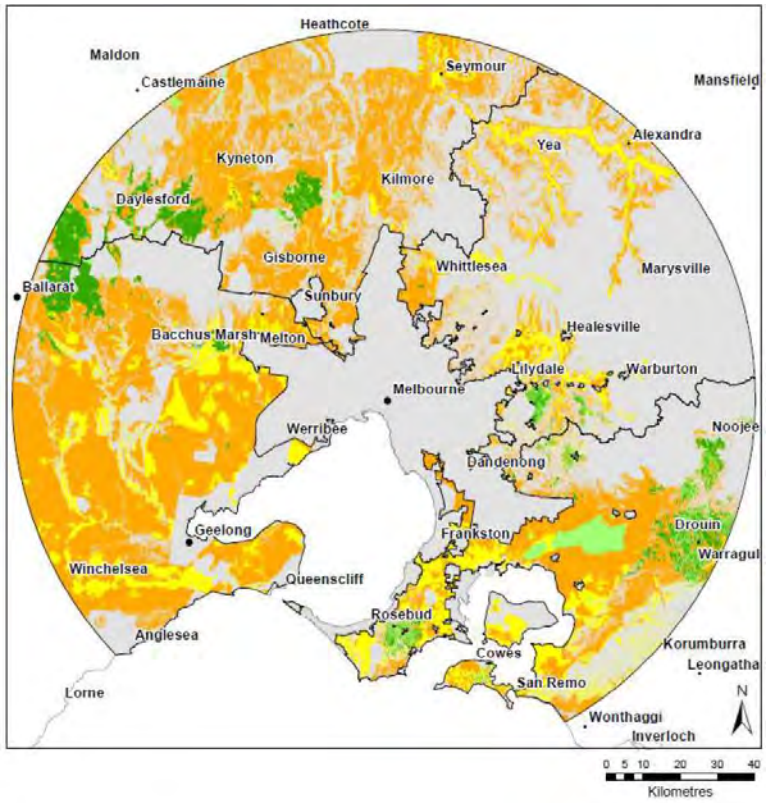



Figure 3 **Land capability assessment of Melbourne's Green Wedge and Peri-Urban Areas**

## Legend

| Capability Class | | Description |
|---|---|---|
| | 1 | Class 1: Land that is inherently capable for intensive soil-based agriculture, particularly horticulture. This class includes landscapes with Ferrosols on more gentle slopes and some alluvial areas. The access to a constant water supply will generally improve the capability of the land. |
| | 2 | Class 2: Land that is inherently capable for soil-based agriculture, including intensive horticulture and dairying. This class includes Ferrosols on steeper terrain (i.e. slopes >10%) and former swamp landscapes that have been extensively drained and have organic rich soils that also require adequate site drainage. |
| | 3 | Class 3: Land that is inherently capable for soil-based agriculture at moderate to high intensity. The potential/capability may vary (e.g. according to slope, inherent fertility and drainage) but is often realised with access to a constant water supply. |
| | 4 | Class 4: Land that is not as inherently capable for intensive soil-based agriculture. Extensive agriculture (including broadacre cropping with suitable land management practices) and non-soil utilisation activities are often most appropriate, and more intensive grazing is possible in some higher rainfall areas or where consistent water supplies are available. |
| | 5 | Class 5: Land that is excluded from this study. This includes Public Land, areas within the Urban Growth Boundary (UGB), steep terrain (i.e. slopes >20% in landscapes with Ferrosols and slopes >10% elsewhere) and areas with potential Coastal Acid Sulfate Soils (CASS). |

Adapted from: Agriculture Victoria (2018) *Assessment of agricultural land capability in Melbourne's Green Wedge and Peri-urban Areas* – Agriculture Victoria Research Final Technical Report – Updated October 2018

## 2.3 Soils and landform

As outlined above, agricultural enterprises across the project study area greatly influence enterprise selection. Most agricultural enterprises depend on the local natural resource base that determines the suitability of a location for a specific enterprise. There are a range of natural resources that need to be considered including soil type, topography, climate and water availability.

The Victorian Geomorphology Framework (VGF) is a three tier hierarchical system of land unit descriptions. This framework describes and defines details of Victoria's landscapes and provides a hierarchy to align past and future soil and land information. The system incorporates information from geomorphology, pedology and ecology fields, and provides an assessment of both soil and vegetation distribution.

The majority of the soils within the construction corridor are classed as Victorian Western Plains (Table 2 and Figure 4) and comprise mainly of low-lying undulating plains formed on both volcanic and sedimentary lithologies. The youngest landscapes (dating back 59,000 years), the stony rises, comprise of skeletal uniform or brown gradational soils that have been developed on volcanic ash and represent some of the most valuable cropping country. Stony rises (GMU 6.1.2) cover 82% of the construction corridor and associated soil types include shallow dark gradational (dermosols) and self-mulching (and cracking) clay soils (vertosols).

Soils at the southern end of the construction corridor comprise of plains with poorly developed drainage and shallow regolith (GMU 6.1.3) and consist of sodic and non-sodic textured soils (Sodosols) and some gradational soils (dermosols). These soils cover approximately 11 ha (6%) of the construction corridor.

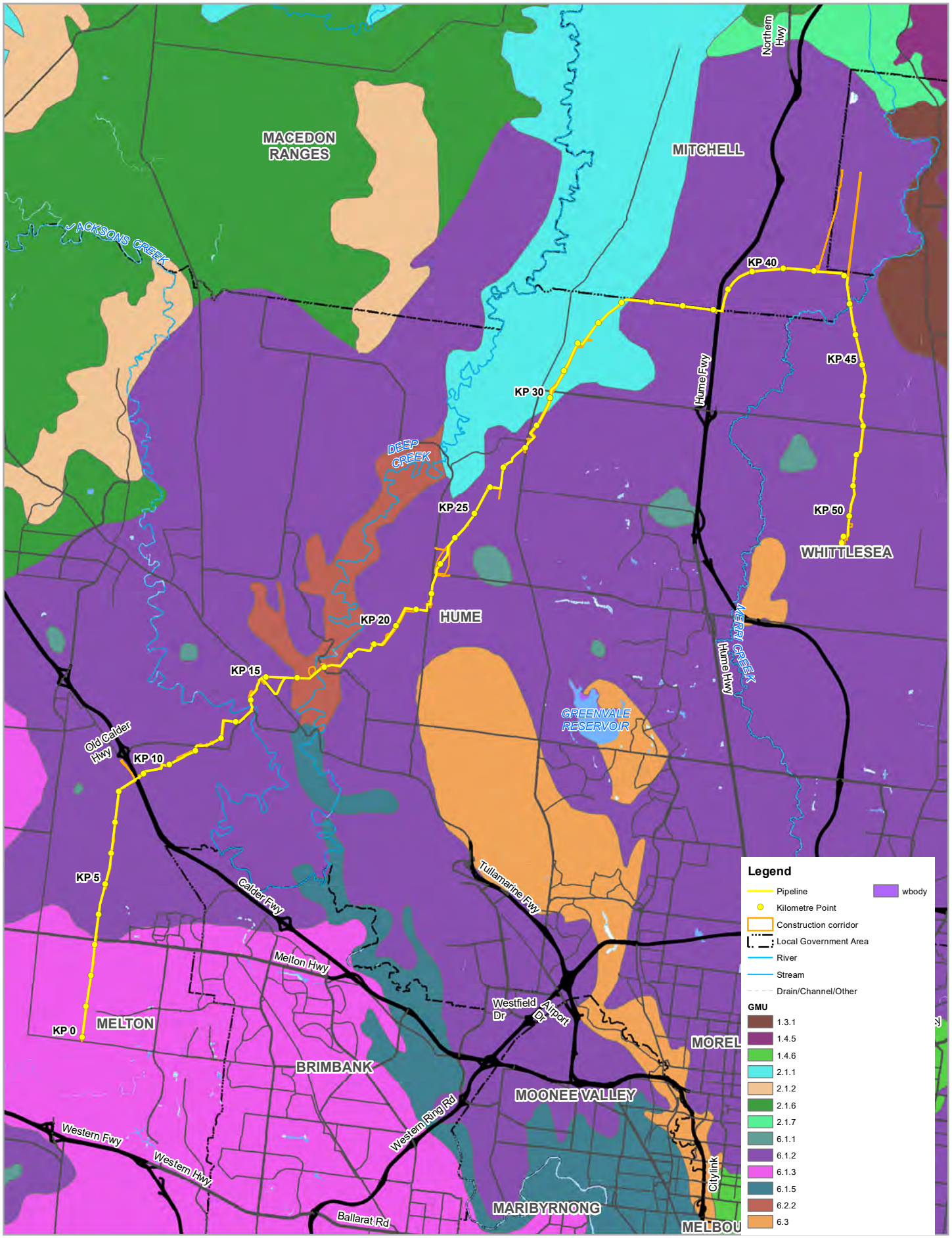
Further north, the construction corridor traverses through ridges, escarpments, mountains on non-granitic palaeozoic rocks (GMU 2.1.1) and soils that have developed on these landforms are red texture contrast soils (chromosols) that may be sodic (sodosols) especially where rainfall is lower. These soils cover 15 ha (9%) of the construction corridor with soils in the western uplands grouping (GMU 2) accounting for 43% of soils within the regional study area.

### Table 2 Soils and land information – Victorian Geomorphological Framework

| Geomorphological Unit | Construction corridor | | Regional study area | |
|---|---|---|---|---|
| | Area (ha) | Per cent | Area (ha) | Per cent |
| 1.2.1 – Plateaux and broad ridges | | | 29,993 | 7% |
| 1.3.1 – Low relief landscapes at low elevation | | | 31,456 | 7% |
| 1.3.3 – Terraces, fans and floodplains | | | 10,081 | 2% |
| 1.4.2 – Prominent summits between 500 and 1200m | | | 3 | 0.0% |
| 1.4.3 – Escarpments, gorges | | | 26,910 | 6% |
| 1.4.4 – Deeply dissected ridge and valley landscapes | | | 7,904 | 2% |
| 1.4.5 – Moderately dissected ridge and valley landscapes | | | 27,420 | 6% |
| 1.4.6 – Outlying ridges and hills | | | 1,922 | 0% |

| Geomorphological Unit | Construction corridor | | Regional study area | |
|---|---|---|---|---|
| | Area (ha) | Per cent | Area (ha) | Per cent |
| 2.1.1 – Ridges, escarpments, mountains on non- granitic Palaeozoic rocks | 15 | 9% | 32,709 | 7% |
| 2.1.2 – Hills, valley slopes and plains on non- granitic Palaeozoic rocks | | | 85,549 | 20% |
| 2.1.3 – Ridges, escarpments, mountains on granitic Palaeozoic rocks | | | 23,402 | 5% |
| 2.1.6 – Eruption points and volcanic plains | | | 35,561 | 8% |
| 2.1.7 – Terraces and floodplains | | | 13,312 | 3% |
| 4.1.2 – Areas of inundation away from modern channels | | | 22 | 0.0% |
| 4.3 – Alluvial fans and aprons | | | 536 | 0.1% |
| 6.1.1 – Eruption points: maars, scoria cones and lava shields, including associated ash and scoria deposits | | | 704 | 0.2% |
| 6.1.2 – Stony rises | 147 | 82% | 63,755 | 15% |
| 6.1.3 – Plains with poorly developed drainage and shallow regolith | 11 | 6% | 36,840 | 8% |
| 6.1.5 – Terraces, floodplains and lakes, swamps and lunettes and their deposits | | | 839 | 0.2% |
| 6.2.2 – Dissected plains | 5 | 3% | 1,556 | 0.4% |
| 6.2.5 – Terraces and floodplains, and coastal plains | | | 2,779 | 1% |
| 6.3 – Hills and low hills | | | 4,371 | 1% |
| Waterbody | | | 710 | 0.2% |
| **Total** | **178** | **100%** | **438,335** | **100%** |

Source: Source: Victorian Geomorphological Framework (VGF) (2007) Available [Online]: http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/landform_geomorphological_framework

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Kilometers

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Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

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Date 09/12/2020

Geomorphology of Melbourne

Figure 4

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery Created by: kgardner

## 2.4 Land Use

Land use within the regional study area is influenced by ownership and the biophysical characteristics of the land (climate and soils). Land use classifications generally describe all aspects of activity continuously across a landscape (e.g. agricultural uses, environmental uses and residential/industrial uses). Table 3 and Figure 5 show the land use for the construction corridor and the regional study area. Land use was obtained from the Victorian Department of Environment, Land, Water and Planning and shows land use occurring at the time that the spatial layer was developed and therefore there could be some minor differences with current land use. The Victorian Land Use Information System reflects the status of Victorian land use in 2017.

The construction corridor traverses predominately through agricultural related land uses (164 ha) with the main land use impacted being grazing modified pastures (134 ha), followed by rural residential with agriculture (16 ha). In addition to grazing land, the project also impacts upon cropping land including approximately 10 ha of oilseeds and 5 ha of cereal crops. Agricultural land uses account for approximately 92% of all land uses within the construction corridor. Across the regional study area, grazing is the predominant land use accounting for 55% of all land use. The total area of agricultural related land uses across the regional study area is 276,654 ha. Further discussion on agricultural resources across the regional study area is included in section 2.5 below.

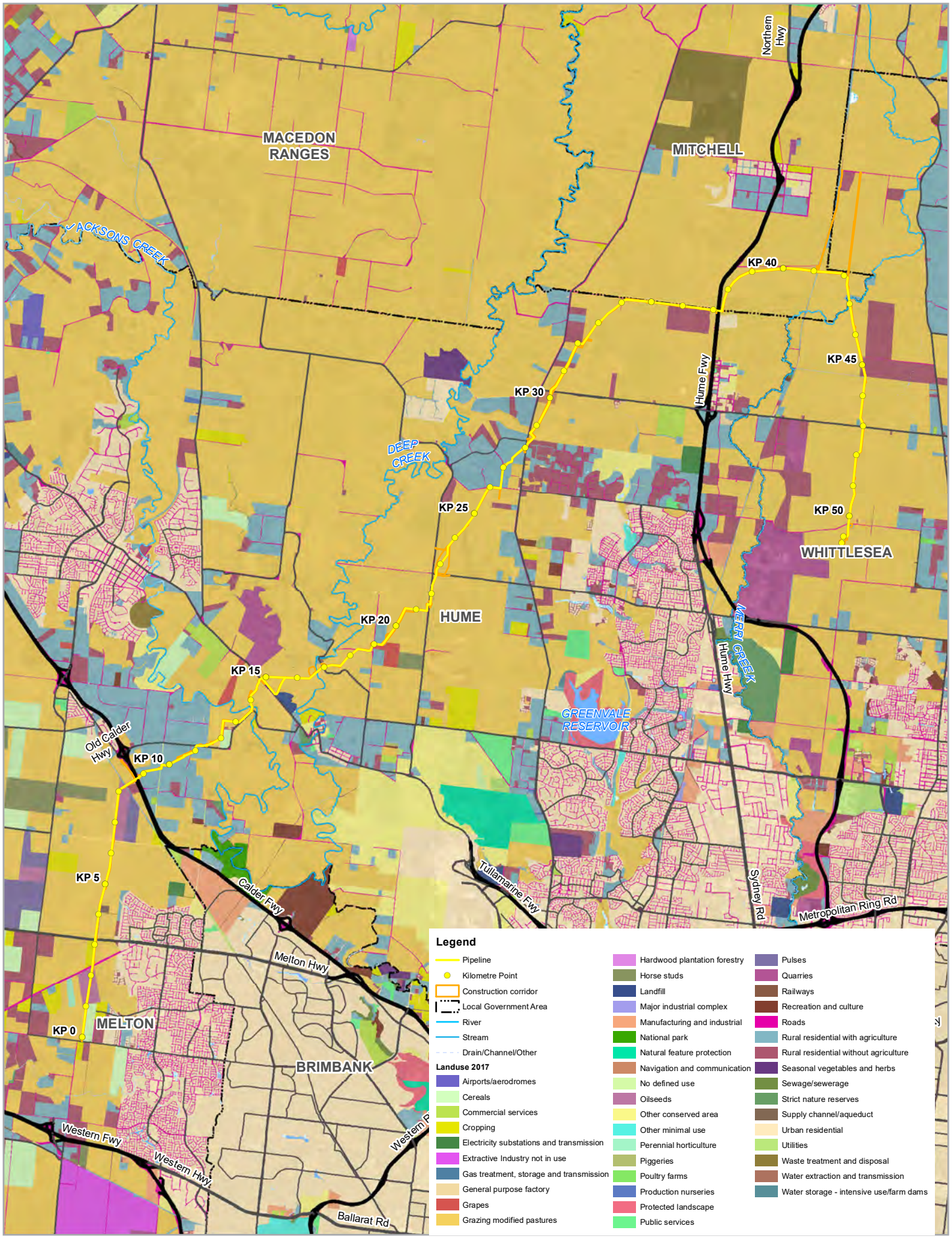
The Land Use and Planning Report (GHD 2020b) discusses the current and reasonably foreseeable future land uses within and adjacent to the project area and provides an assessment of the potential impacts associated with the construction and ongoing operation of the Project on all land uses and provides a detailed overview of the relevant legislation, policy and guidelines for the regional study area.

Table 3 Land use with the construction corridor compared to regional study area (ha)

| Land use | Construction corridor | | Regional study area | |
|---|---|---|---|---|
| | Area (ha) | Per cent | Area (ha) | Per cent |
| Abattoirs | | | 38 | <1% |
| Airports/aerodromes | | | 101 | <1% |
| Cereals | 4.67 | 3% | 2,501 | 1% |
| Channel/aqueduct | | | 0.2 | <1% |
| Commercial services | | | 408 | <1% |
| Cropping | | | 5,389 | 1% |
| Electricity substations and transmission | | | 176 | <1% |
| Extractive Industry not in use | | | 854 | <1% |
| Gas treatment, storage and transmission | 0.004 | <1% | 0.2 | <1% |
| General purpose factory | | | 372 | <1% |
| Glasshouses - hydroponic | | | 24 | <1% |
| Grapes | 0.02 | <1% | 164 | <1% |

| Land use | Construction corridor | | Regional study area | |
|---|---|---|---|---|
| | Area (ha) | Per cent | Area (ha) | Per cent |
| Grazing irrigated modified pastures | | | 4,802 | 1% |
| Grazing modified pastures | 133.86 | 75% | 239,319 | 55% |
| Grazing native vegetation | | | 21 | <1% |
| Hardwood plantation forestry | | | 2,314 | 1% |
| Horse studs | | | 2,362 | 1% |
| Irrigated cropping | | | 94 | <1% |
| Irrigated seasonal vegetables and herbs | | | 113 | <1% |
| Landfill | | | 409 | <1% |
| Major industrial complex | | | 9 | <1% |
| Manufacturing and industrial | | | 813 | <1% |
| National park | | | 11,495 | 3% |
| Natural feature protection | | | 1,577 | <1% |
| Navigation and communication | 1.32 | 0.7% | 246 | <1% |
| No defined use | | | 1,184 | <1% |
| Oilseeds | 9.57 | 5% | 572 | <1% |
| Other conserved area | 0.14 | 0.1% | 31,089 | 7% |
| Other minimal use | | | 1,714 | <1% |
| Perennial horticulture | | | 20 | <1% |
| Piggeries | | | 14 | <1% |
| Plantation forests | | | 299 | <1% |
| Poultry farms | | | 62 | <1% |
| Production native forests | | | 22,302 | 5% |
| Production nurseries | | | 38 | <1% |
| Protected landscape | | | 1,090 | <1% |
| Public services | | | 1,271 | <1% |
| Pulses | | | 846 | <1% |
| Quarries | | | 2,386 | 1% |
| Railways | | | 48 | <1% |
| Recreation and culture | | | 1,301 | <1% |
| Reservoir | | | 381 | <1% |
| Reservoir/dam | | | 16 | <1% |

| Land use | Construction corridor | | Regional study area | |
|---|---|---|---|---|
| | Area (ha) | Per cent | Area (ha) | Per cent |
| River | | | 25 | <1% |
| Roads | 3.32 | 2% | 17,099 | 4% |
| Rural residential with agriculture | 16.27 | 9% | 20,926 | 5% |
| Rural residential without agriculture | 8.46 | 5% | 14,925 | 3% |
| Sawmill | | | 5 | <1% |
| Seasonal vegetables and herbs | | | 209 | <1% |
| Sewage/sewerage | | | 141 | <1% |
| Softwood plantation forestry | | | 429 | <1% |
| Strict nature reserves | 0.02 | <1% | 20,663 | 5% |
| Supply channel/aqueduct | 0.41 | 0.2% | 38 | <1% |
| Transport and communication | | | 1 | <1% |
| Urban residential | 0.08 | <1% | 23,401 | 5% |
| Utilities | | | 672 | <1% |
| Waste treatment and disposal | | | 1,495 | <1% |
| Water extraction and transmission | | | 6 | <1% |
| Water storage - intensive use/farm dams | | | 45 | <1% |
| **Total** | **178.15** | **100%** | **438,313** | **100%** |

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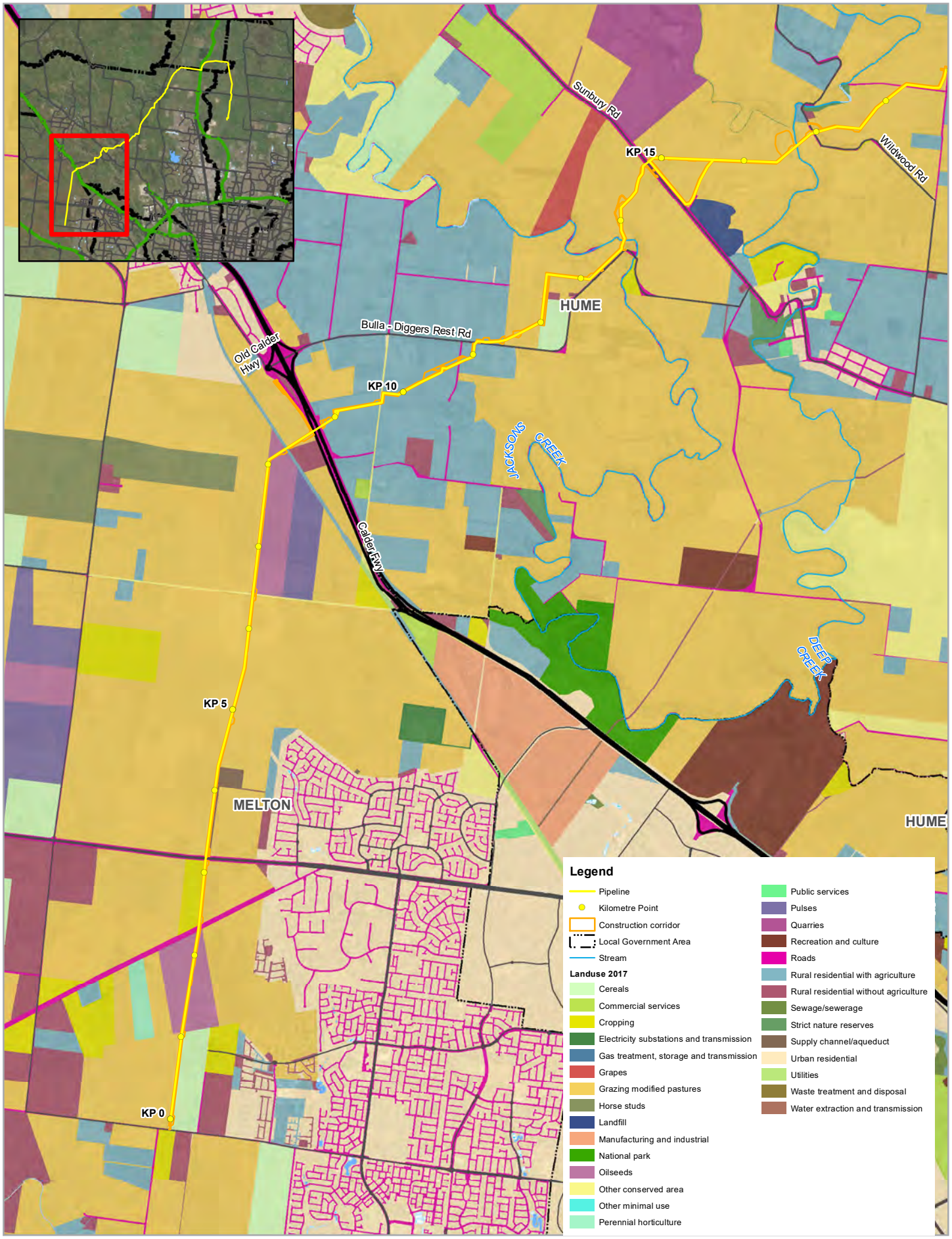
# Land use

Figure 5

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery Created by: kgardner

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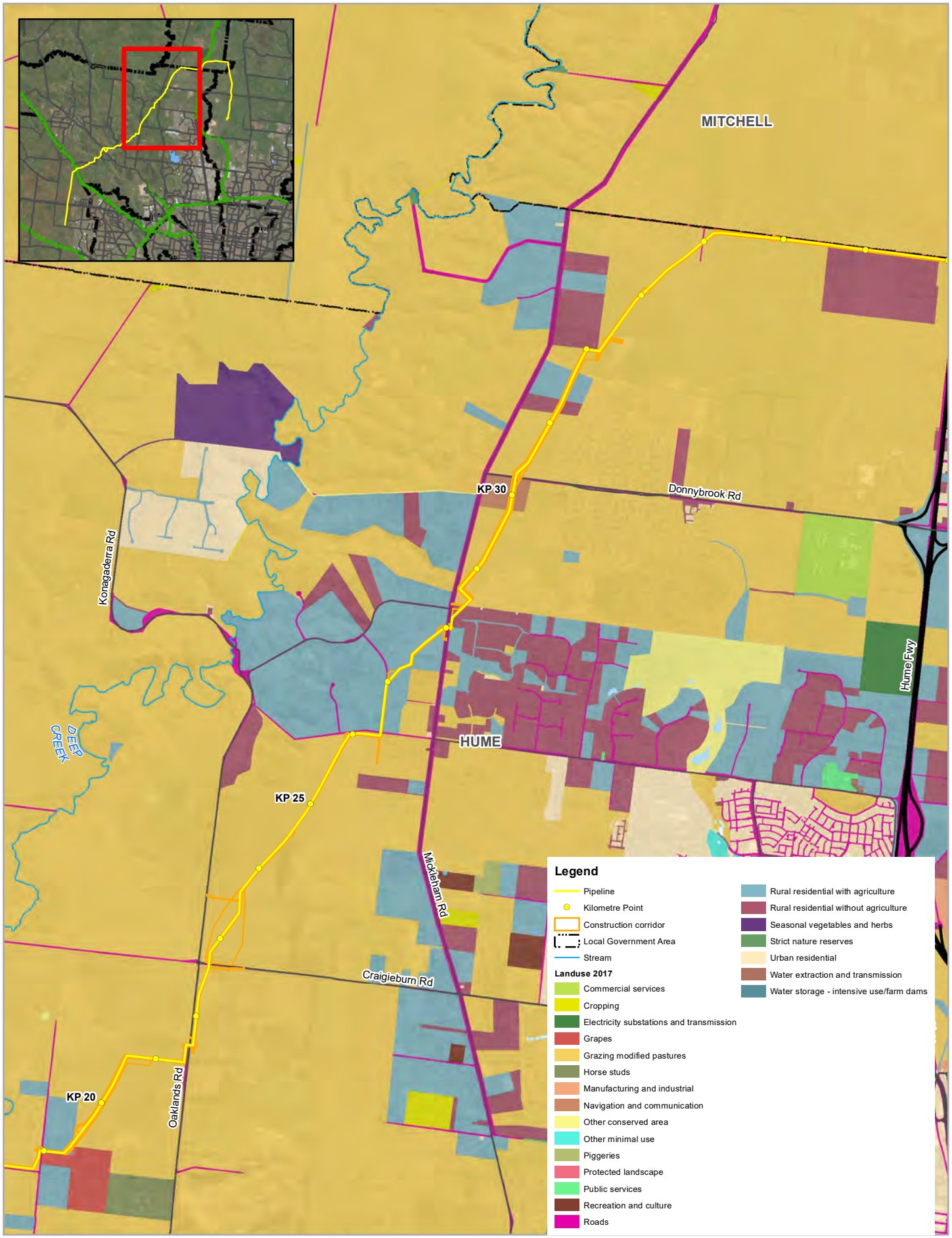
Land use

Figure 5-1

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery Created by: kgardner

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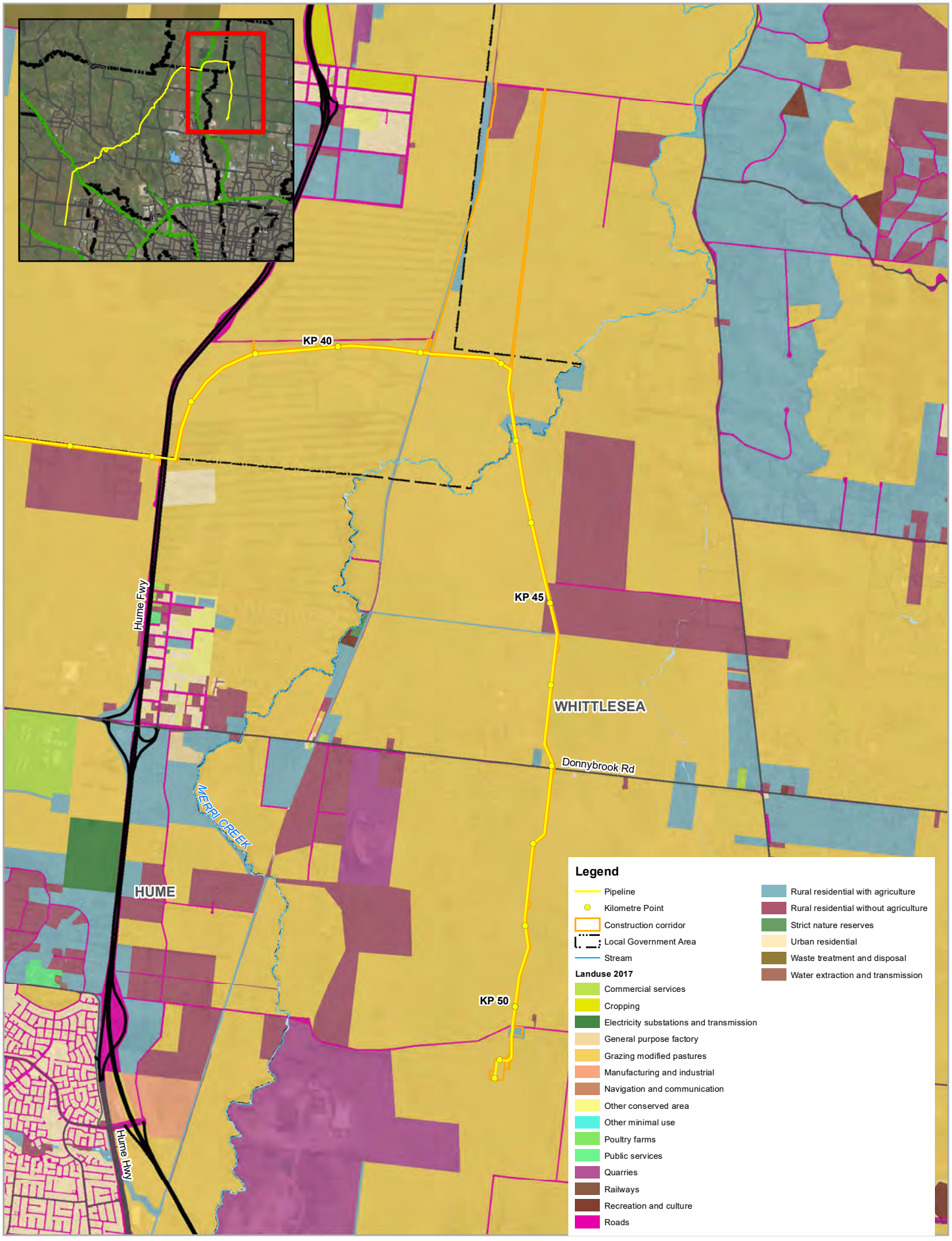
Land use

Figure 5-2

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery Created by: kgardner

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# Land use

Figure 5-3

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery Created by: kgardner

## 2.5 Agricultural resources & businesses

The proposed pipeline would traverse non-urban areas of metropolitan Melbourne that lie outside the Urban Growth Boundary, known as Green Wedges. Specifically the pipeline would traverse the Sunbury Green Wedge and the south east section of the Western Plains North Green Wedge.

The 51 km construction corridor traverses mainly agricultural land uses (93%) with most of the land along the route being used for grazing, intermittent hay production and some cropping activities. The construction corridor impacts on 137 parcels of which the major uses are rural residential (36 parcels), agricultural (39), future development site (eight) and infrastructure (road 32 and other infrastructure six). Property holdings range in size from small holdings to larger holdings greater than 250 ha in size. Traditionally, agricultural related businesses comprised of family farming units however due to the significant and substantial changes that are occurring within the immediate vicinity of the site in regards to urban development and major infrastructure projects, a number of land parcels are currently owned by property development firms and land is in transition from traditional agricultural to urban land uses.

Agricultural production continues to occur within these Green Wedge areas, however productivity is often limited by rainfall, land capability and soils (as discussed in earlier sections). Commercial agricultural production is also limited by high land prices and conflicts with surrounding land uses (residential, industrial and other green wedge activities).

Agricultural or equine production in these areas typically falls into the following categories:

- Conventional commercial farming or equine businesses
- Rural lifestyle properties supporting limited production
- Opportunistic grazing or production of transitional land.

### 2.5.1 Supply chains and infrastructure

The lack of agricultural supply chain infrastructure and markets within Melbourne's peri-urban region means agricultural production is generally transported elsewhere for sale or processing. Livestock would typically be transported and sold at saleyards in Kyneton or Ballarat, or direct to abattoirs. Grain, oilseeds and wool would typically be transported to Geelong for export.

Some landholders may however trade produce and services locally, for example supplying livestock and feed (hay or grain) to local rural lifestyle and equine businesses. Conversely some farming businesses in the region may have agreement with surrounding landholders to lease and manage otherwise underutilised land, for the purpose of grazing livestock, growing crops or cutting hay.

Across the regional study area, there are a number of equine enterprises ranging from commercial equine facilities (e.g. those breeding and harness racing), to smaller more recreational activities (e.g. horse riding and other recreational facilities) or smaller holdings that are popular for keeping horses. In 2010-11, Hume LGA estimated there was 4,826 stud horses across 280 businesses and a further 3,875 horses across 922 businesses (ABS 2012).

### 2.5.2 Proposed long term land use change

At present, just under half (approximately 44%) of the Project already lies within the Urban Growth Boundary (UGB) (~KP 0 – 3.2, KP 28.16 – 28.57 and KP 32.07 – 51.04[1]) and is therefore unlikely to be used for agricultural production. Within the next 10-30 years the remaining agricultural land along the construction corridor will most likely transition to other uses, prompted by further expansion of the UGB (*Plan Melbourne 2017-2050 planning strategy*) particularly along the northern and western development corridors (Figure 6) and the development of infrastructure within the Public Acquisition Overlay. The proposed Outer Metropolitan Ring / E6 transport corridor will also traverse the Green Wedge along a similar route to the pipeline. Since 2010 this corridor has been reserved in municipal planning schemes, via a Public Acquisition Overlay (Amendment VC68).

As a result of the above proposed developments, any loss of agricultural production capacity caused by the pipeline development should be viewed as short to medium term, ahead of the eventual permanent land use changes.

In March 2020, Hume City Council released their Draft Rural Strategy which focuses on the challenges being experienced in the rural areas and sets out Council's strategies about how to address these challenges and embrace opportunities for the future. The majority of the land area impacted by the construction corridor is within the Hume LGA and therefore the issues identified in this recently released Draft Rural Strategy are of relevance to this agricultural impact assessment. The Strategy identifies a number of individual issues that have impacted on the viability and productivity of agricultural enterprises in rural areas. The challenges identified include:

- Desire by landholders to subdivide and develop land
- Reduced investment in land use viability
- Reduced agricultural viability
- Land management challenges and reliance on off-farm income
- Absentee landholders
- Land speculation as a result of continued expansion of urban growth boundary
- Ageing rural community / reduced sense of community
- Climate change

The Western Outer Ring Main Environment Effects Statement Land Use and Planning Report (GHD, 2020b) documents the land use challenges associated with agriculture in Melton's green wedges due to its strategic location close to Melbourne's ports and airports and also the threat of land fragmentation to agriculture in peri-urban areas.

[1] KP's are approximate of the intersect with the urban growth boundary.


Source: DELWP (2017) Plan Melbourne 2050 Plan

Figure 6 Melbourne 2050 Plan

### 2.5.3 Agricultural production in the region

The regional study area outlined in section 2.4, including Hume, Melton, Mitchell and Whittlesea Shires stretches from the Green Wedge peri-urban areas of Melbourne to more rural areas with increased agricultural production.

Based on the land use classification of this regional study area, grazing is the predominant agricultural land use (239,319 ha) followed by rural residential with agriculture (20,926 ha). The number of livestock establishments, livestock types and numbers within the regional study area is provided in Table 4. Beef cattle and sheep and lambs are the predominant livestock enterprises. There are approximately 160 beef cattle farms in the regional study area comprising of 31,097 head. Similarly, there are 127 sheep and lamb enterprises carrying 172,431 head. The area also has a relatively small number of dairy, pork and goat producing enterprises.

**Table 4 Livestock numbers for the regional study area**

| Livestock Type | Livestock (no.) | | | | Total (no.) | No. of businesses |
|---|---|---|---|---|---|---|
| | Hume | Melton | Mitchell | Whittlesea | | |
| Cattle (beef) | 2,532 | 194 | 25,533 | 2,838 | **31,097** | **160** |
| Cattle (dairy) | 168 | 38 | 1,127 | 144 | **1,478** | **15** |
| Sheep and lambs | 2,667 | 10,382 | 157,336 | 2,046 | **172,431** | **127** |
| Pigs | 246 | 0 | 803 | 0 | **1,049** | **5** |
| Goats | 32 | 21 | 21 | 14 | **88** | **5** |

Source: ABS (2018) Agricultural Commodities, Australia, 2015-16, Cat. No. 7121.0

In addition to livestock enterprises, the major crops grown across the regional study area are wheat, barley, canola and oats (refer to Table 5). Only small areas of cropping land would be impacted by the Project as generally cropping requires large contiguous parcels of land to achieve economies of scale. Hay production is also common throughout the regional study area, used as a supplementary feed for landholder's livestock or sold to other landholders.

**Table 5 Major crops within the regional study area – approximate area**

| Crop Variety | Area (ha) | | | | Total (ha) | No. of businesses |
|---|---|---|---|---|---|---|
| | Hume | Melton | Mitchell | Whittlesea | | |
| Wheat | 356 | 2,064 | 1,173 | 0 | **3,593** | **19** |
| Oats | 19 | 386 | 84 | 0 | **489** | **13** |
| Barley | 87 | 1,432 | 5 | 0 | **1,523** | **15** |
| Triticale | 0 | 0 | 29 | 0 | **29** | **0** |
| Sorghum | 0 | 0 | 0 | 0 | **0** | **1** |
| Oil seeds - canola | 79 | 0 | 460 | 0 | **539** | **6** |
| Faba beans | 29 | 0 | 0 | 0 | **29** | **2** |
| Lupins | 0 | 0 | 15 | 0 | **15** | **0** |

| Crop Variety | Area (ha) | | | | Total (ha) | No. of businesses |
|---|---|---|---|---|---|---|
| | Hume | Melton | Mitchell | Whittlesea | | |
| All other broadacre crops | 0 | 0 | 5 | 44 | **48** | **2** |
| Hay and silage | 61 | 140 | 1,788 | 342 | **2,330** | **65** |

Source: ABS (2018) Agricultural Commodities, Australia, 2015-16, Cat. No. 7121.0

### 2.5.4 Value of agricultural production in region

The annual gross value of agricultural production across the regional study area in 2015-16 was $154.36 million (Table 6). The majority of the value of production is from horticulture (mainly mushrooms), with the value of livestock slaughtering also significant.

Table 6 Gross value of agricultural production within the regional study area by LGA ($million)

| Commodity | Hume | Melton | Mitchell | Whittlesea | Total ($ million) |
|---|---|---|---|---|---|
| Broadacre crops - Cereal crops | 0.334 | 0.682 | 0.783 | 0 | **1.80** |
| Broadacre crops - Non-cereal crops | 0.085 | 0 | 0.285 | 0 | **0.370** |
| Broadacre crops - All other crops | 0 | 0 | 0 | 0.018 | **0.018** |
| Hay | 0.052 | 0.057 | 1.24 | 0.159 | **1.51** |
| Nurseries, cut flowers or cultivated turf | 1.35 | 0.735 | 4.15 | 1.67 | **7.90** |
| Horticulture – fruit and vegetables (incl. nuts, grapes for wine production) | 2.73 | 1.86 | 0.541 | 78.15 | **83.28** |
| Livestock slaughtering | 2.36 | 9.05 | 33.24 | 2.42 | **47.08** |
| Livestock products | 0.554 | 0.684 | 10.51 | 0.657 | **12.40** |
| **Total ($million)** | **7.47** | **13.07** | **50.74** | **83.08** | **154.36** |

Source: ABS (2018) Value of Agricultural Commodities Produced, Australia, 2015-16, Cat. No. 7503.0

The annual gross value of nurseries, cut flowers and cultivated turf across the regional study area was $7.9 million in 2015-16. The majority of the value was largely from the production of nurseries and cultivated turf, 47.8% and 51.9% respectively.

The horticultural industry contributed an annual gross value of $83.28 million in 2015-16 with mushroom production accounting for 96.1% (or $80 million). Although mushrooms were produced in all four regional areas, Whittlesea was the largest producer, contributing almost $75.6 million alone. Table 7 below outlines the gross value of the main horticultural crops grown within the project study. The construction corridor falls within the Melbourne foodbowl, which is the peri-urban land surrounding the urban area. A 2015 study (Sheridan et al) found that Melbourne's foodbowl produces around 47% of the vegetables grown in Victoria and around 8% of fruit and that those highly perishable foods (such as leafy greens and berries) are typically grown in the inner foodbowl close to the city.

The study found that food production in the foodbowl is typically intensive, high value production that takes place on relatively small parcels of land. More extensive production that requires more land or established irrigation infrastructure occurs outside the foodbowl in regional Victoria. As urbanisation continues, it is estimated that by 2050 around 16% of the farmland in Melbourne's foodbowl could be lost, including up to 77% of farmland in the inner foodbowl.

Table 7 Gross value of horticultural production within the regional study area by LGA ($ million)

| Commodity | Hume | Melton | Mitchell | Whittlesea | Total ($ million) | % of total commodity value |
|---|---|---|---|---|---|---|
| **Nurseries, cut flowers or cultivated turf** | | | | | | |
| Nurseries | 1.329 | 0.735 | 0.047 | 1.669 | 3.780 | 47.8% |
| Cut flowers | 0.024 | 0 | 0 | 0 | 0.024 | 0.3% |
| Cultivated turf | 0 | 0 | 4.101 | 0 | 4.101 | 51.9% |
| **Total ($million)** | **1.35** | **0.735** | **4.15** | **1.67** | **7.90** | **100%** |
| **Horticulture – fruit and vegetables (incl. nuts, grapes for wine production)** | | | | | | |
| Grapes for wine production | 0.023 | 0.169 | 0.298 | 0 | 0.490 | 0.6% |
| Citrus fruit – grapefruits, lemons, limes oranges | 0 | 0 | 0.001 | 0 | 0.001 | 0.0% |
| Pome fruit – apples, pears | 0 | 0 | 0.006 | 0.006 | 0.011 | 0.0% |
| Stone fruits – apricots, cherries, nectarines, peaches, plums | 0 | 0 | 0.009 | 0.074 | 0.084 | 0.1% |
| Berries – blueberries, strawberries, others | 0 | 0 | 0.002 | 0.272 | 0.274 | 0.3% |
| Nuts | 0 | 0 | 0.021 | 2.135 | 2.156 | 2.6% |
| Mushroom | 2.578 | 1.688 | 0.201 | 75.571 | 80.039 | 96.1% |
| Tomatoes | 0.130 | 0 | 0.003 | 0.002 | 0.135 | 0.2% |
| Carrots | 0 | 0 | 0 | 0 | 0 | 0.0% |
| Pumpkins | 0 | 0 | 0 | 0 | 0 | 0.0% |
| Other vegetables | 0 | 0 | 0 | 0 | 0 | 0.0% |
| Capsicum | 0 | 0 | 0 | 0.001 | 0.001 | 0.0% |
| Onions | 0 | 0 | 0 | 0.092 | 0.092 | 0.1% |
| **Total ($million)** | **2.73** | **1.86** | **0.541** | **78.15** | **83.28** | **100%** |

Source: ABS (2018) Value of Agricultural Commodities Produced, Australia, 2015-16, Cat. No. 7503.0

### 2.5.5 Value of agricultural production within construction corridor

The value of agricultural production within the construction corridor can be estimated by adopting the value of agricultural production (gross income) per hectare multiplied by the land area impacted (hectares). Based on the assumptions outlined in Table 8 below, the overall annual production is estimated at $122,017 from 164 ha of agricultural related land use. Note that these values may overestimate the actual gross value of production because they assume identical crop yields and livestock production across the full length of the construction corridor where in reality there are some areas that are underutilised due to land being in transition or predominantly being used as rural residential with some agricultural activities (e.g. horse agistment). As outlined in section 2.5.2, some agricultural land within the construction corridor is subject to zoning change and would eventually transition to non-agricultural land uses.

In order to determine the current per hectare value of agricultural production within the construction corridor, GHD has analysed the gross income ($/ha/annum) for major agricultural enterprises based on gross income per hectare estimates. To calculate the gross income per hectare for the construction corridor, GHD have applied the gross income per hectare to the areas of the specific agricultural land uses impacted. Using this approach, GHD has calculated an average gross income in the construction corridor of $744 per hectare per annum ($122,017 / 164 ha), however considers that the value of the impact is conservative (i.e. an overestimate) of the likely cost of the loss of agricultural production for the reasons outlined above.

The average size holding for an agricultural property within Hume LGA is 191 ha and only includes those agricultural businesses with an estimated value of agricultural operations of $40,000 or greater and does not include smaller agricultural businesses (ABS 2018b). Using this approach, a typical grazing enterprise in Hume might be able to achieve an annual gross income of $142,104 ($744 per ha x 191 ha). Profits generally represent approximately a quarter of farm income after variable and overhead costs are deducted and therefore enterprises at this size would fail to generate sufficient funds to support a family and off-farm income would be required.

Table 8 Estimated value of agricultural production with in the construction corridor

| Land Use | Area with construction corridor (Ha) | Gross income per Ha ($/Ha/annum) | Gross income ($/annum) | Assumptions and source |
|---|---|---|---|---|
| Grazing modified pastures | 133.86 | $742 | $99,324 | Average Victorian Livestock Farm Monitor Project 2018/19 |
| Cereals | 4.67 | $960 | $4,483 | APW wheat $300/tonne (20/21 forecast) x 3.2 tonnes per ha |
| Oilseeds | 9.57 | $935 | $8,948 | Canola $550/tonne (20/21 forecast) x 1.7 tonnes per ha |
| Grapes | 0.02 | $10,410 | $208 | Wine grapes $694/tonne (Wine Australia National Vintage Report 2020) x 15 tonnes per ha |
| Rural residential with agriculture | 16.27 | $742 | $9,054 | As per grazing modified pastures, however it is assumed that only 75% of the area is used for grazing. |

| Land Use | Area with construction corridor (Ha) | Gross income per Ha ($/Ha/annum) | Gross income ($/annum) | Assumptions and source |
|---|---|---|---|---|
| **Total agricultural land use** | **164** | | **$122,017** | |

## 2.6 Agricultural employment

Within the regional study area (Hume, Melton, Mitchell and Whittlesea Shires) agriculture, forestry and fishing accounts for a relatively small proportion of total employment (996 people or 0.7%) in the 2016 census, up from 728 people (or 0.6%) in the previous census. This increase may be due to a move to more intensive or higher value farming enterprises in some areas.

Table 9 Industry by employment within the regional study area

| Industry of employment | 2011 | | 2016 | | Change 2011 - 2016 | |
|---|---|---|---|---|---|---|
| | No. of persons | % | No. of persons | % | No. of persons | % |
| Agriculture, Forestry and Fishing | 728 | 0.6% | 996 | 0.7% | **+268** | **36.8%** |
| Mining | 309 | 0.3% | 409 | 0.3% | **+100** | **32.4%** |
| Manufacturing | 20,976 | 18.2% | 16,850 | 12.5% | **-4,126** | **-19.7%** |
| Electricity, Gas, Water and Waste Services | 1,444 | 1.2% | 1,962 | 1.5% | **+518** | **35.9%** |
| Construction | 19,486 | 16.9% | 22,669 | 16.8% | **+3,183** | **16.3%** |
| Wholesale Trade | 6,188 | 5.4% | 5,301 | 3.9% | **-887** | **-14.3%** |
| Retail Trade | 9,970 | 8.6% | 11,571 | 8.6% | **+1,601** | **16.1%** |
| Accommodation and Food Services | 4,838 | 4.2% | 6,806 | 5.0% | **+1,968** | **40.7%** |
| Transport, Postal and Warehousing | 14,071 | 12.2% | 17,231 | 12.8% | **+3,160** | **22.5%** |
| Information Media and Telecommunications | 1,901 | 1.6% | 2,298 | 1.7% | **+397** | **20.9%** |

| Industry of employment | 2011 | | 2016 | | Change 2011 - 2016 | |
|---|---|---|---|---|---|---|
| | No. of persons | % | No. of persons | % | No. of persons | % |
| Financial and Insurance Services | 3,106 | 2.7% | 3,626 | 2.7% | **+520** | **16.7%** |
| Rental, Hiring and Real Estate Services | 1,243 | 1.1% | 1,631 | 1.2% | **+388** | **31.2%** |
| Professional, Scientific and Technical Services | 4,717 | 4.1% | 5,983 | 4.4% | **+1,266** | **26.8%** |
| Administrative and Support Services | 3,549 | 3.1% | 4,411 | 3.3% | **+862** | **24.3%** |
| Public Administration and Safety | 6,269 | 5.4% | 7,765 | 5.7% | **+1,496** | **23.9%** |
| Education and Training | 3,379 | 2.9% | 4,493 | 3.3% | **+1,114** | **33.0%** |
| Health Care and Social Assistance | 3,491 | 3.0% | 4,884 | 3.6% | **+1,393** | **39.9%** |
| Arts and Recreation Services | 1,355 | 1.2% | 1,692 | 1.3% | **+337** | **24.9%** |
| Other Services | 4,901 | 4.2% | 5,799 | 4.3% | **+898** | **18.3%** |
| Inadequately described/Not stated | 3,643 | 3.2% | 8,682 | 6.4% | **+5,039** | **138.3%** |
| **Total** | 115,564 | 100% | 135,070 | 100% | **+19,506** | **16.9%** |

Source: 2011 Census Community Profiles and 2016 Census Community Profiles

# 3. Impact assessment

The construction and operation phases of the Project were reviewed to assess potential impacts that the Project may have on existing agricultural land uses. The following potential direct and indirect impacts to agricultural land use and agribusinesses with the construction corridor were assessed:

- Direct potential impacts to agricultural resources and production:
  - Removal of agricultural land from production during construction
  - Reduced land capability
  - Damage to property infrastructure
  - Biosecurity.
- Indirect potential impacts to agricultural resources and production:
  - Impeded access
  - Interrupted management
  - Dust and noise generation
  - Economic impacts.

The Project would have a range of impacts on agricultural resources with the degree of impacts varying with the different stages of development, namely construction and operation. The primary impact on agricultural production is the temporary removal of the construction corridor land from agricultural production during construction, noting that following rehabilitation of the construction corridor, normal agricultural production would be able to resume. The broad activities associated with each of the stages that would impact on agricultural resources and farm management are:

- Construction: access along a 30 m construction corridor to construct an approximately 51 km underground high pressure gas transmission pipeline between APA's existing Plumpton Regulating Station and Wollert Compressor Station. Pipeline construction would generally progress in a linear manner along the alignment and be undertaken in accordance with the construction sequence outlined in the EES Chapter 4 *Project Description*. Construction for the entire project is expected to take approximately nine months. General timeframes to complete works in any one area from site establishment to rehabilitation are nominally four to six months.
- Operation: following reinstatement of the land as part of the pipeline construction, the land would be generally returned to its previous use. The easement area would be generally 15m wide and there would be some restrictions on building and large plantings within the easement area. Three mainline valves would also be located along the pipeline alignment within the proposed easement and these areas would be permanently removed from current land use. When commissioned, the pipeline would be owned and maintained by APA. Routine corridor inspections would be undertaken in accordance with APA procedures and AS2885 to monitor the pipeline easement for any operational or maintenance issues (including land stability, revegetation and weed invasion).

The above activities would have both direct and indirect impacts on agricultural resources and farm management activities with the most significant impacts being of a temporary nature. In addition, the scale of impacts would be influenced by the timing of construction due to the seasonal nature of farm management activities. The seasonal nature of farm management activities includes preferred timing of operations that suit the particular agro-climatic location. This includes the planting and harvesting of crops, and livestock husbandry operations such as calving, lambing and shearing. Disruption of farm management activities during these periods would cause greater impacts on agricultural enterprises. The impacts of the Project would vary for individual landholders because of the diverse nature and scale of the enterprises along the construction corridor.

Following is a description of the potential direct and indirect impacts of the Project that would occur, including differentiation of impacts considered to be of a temporary or longer term nature. Section 4 describes the environmental management measures that can be adopted to reduce these impacts.

## 3.1 Direct potential impacts

Direct impacts refer predominantly to the impact of temporary or longer term removal of agricultural land or infrastructure from agricultural production as a result of construction and operation activities of the Project. These impacts are described below as either land use change or changes to land capability and infrastructure.

### Temporary removal of agricultural land from production

There is 164 ha of agricultural land within the construction corridor that would be temporarily removed from predominantly agricultural use during the construction phase of the Project as outlined in section 2.4. Most of the land would only be temporarily removed from production during the construction phase as it would be reinstated and rehabilitated after the completion of construction. This enables the land to return to its former agricultural production levels, with the reinstatement (returning topsoil, clearing up, reinstating and rehabilitating the construction corridor and all temporary facilities) effectively completed. The area of land temporarily removed from agriculture during the construction phase is approximately 0.06% of agricultural land available in the regional study area (164 ha in construction corridor compared to 276,654 ha of agricultural related land in regional study area). The duration of construction activity in any one location is not expected to exceed six months. For the purposes of this assessment, it is expected that agricultural production within the construction corridor would be disrupted for 12 months allowing for cessation of activity prior to commencement of works and the successful completion of rehabilitation activities. Compensation for the temporary removal of productive agricultural land would be agreed and paid directly to affected landholders.

Landholders and relevant stakeholders along the proposed alignment have been engaged throughout the pipeline design process to address concerns about construction and operation of the pipeline and the construction corridor has generally avoided intensive higher-value agricultural land uses.

### Land capability, farm infrastructure and biosecurity

Construction activities may also, in addition to land use change, directly impact on land capability, infrastructure and biosecurity which unless mitigated would reduce the productive potential of agricultural land. The potential non-land use change potential impacts are described further in Table 10.

Table 10 Potential direct impacts on land capability, infrastructure and biosecurity

| Issue | Potential impacts |
|---|---|
| Land and water capability (including post construction settlement) | Soil erosion, compaction, post construction settlement and/or contamination could cause productivity declines for crops and livestock. Livestock are unable to obtain adequate quantity and/or quality of drinking water. |
| Property infrastructure | Construction of the pipeline would require fence lines to be cut to allow the installation of temporary and permanent gates to allow access along the construction corridor, and to prevent livestock entering construction areas. Unless repaired or appropriately planned, cut fences could result in unintended mixing of livestock which in turn could disrupt planned breeding programs, and require added costs to muster and draft livestock.<br><br>Construction activities could damage water channels, pipelines, dams etc. thus restricting supplies for irrigation and/or livestock. It is understood there is potentially up to three dams impacted (volume not confirmed).<br><br>Use of water for pipeline construction that could potentially divert use for irrigated agricultural production across the regional study area, including irrigation water used for cropping, intensive animal industries, nurseries, cultivated turf and horticulture.<br><br>Internal property tracks, roads and a horse training track crossed by the construction corridor or used for construction purposes would be disrupted for short periods when trenching occurs and the pipeline is installed. |
| Biosecurity | Construction activities, and to a lesser extent field surveys and pipeline operations, present risks of introduction or spread of weeds, pests and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.<br><br>Weed, pest and disease incursions or proliferation would potentially reduce crop and livestock production and increase farm costs unless properly controlled.<br><br>Use of some herbicides, pesticides or chemicals during construction or operation may require declarations by the landholder relating to use of those chemicals when signing a National Vendor Declaration (NVD) or other requirements under applicable livestock production assurance programs relating to the sale of their stock. Depending on the chemicals involved additional withholding periods may be applicable and any application of herbicides, pesticides or chemicals during construction or operation should be undertaken in consultation with the livestock owner. |

Potential impacts to land and water capability, property infrastructure and biosecurity incursions would vary for each individual property. Impacts can be limited by adopting appropriate mitigation measures which are discussed in Section 4. Collaborative planning as a result of consultation with landholders would limit impacts by enabling the refinement of the final route, adoption of construction practices and timing of activities that result in minimal disruption to agricultural production.

Biosecurity is a highly relevant issue for agriculture and other land uses within the regional study area because of the risks to agricultural production, the environment and communities from pests, diseases and weeds. The construction and operation of the Project has the potential to contribute to this risk given the introduction of machinery, equipment and staff from outside of the regional study area and ground disturbance over a long, linear footprint. As such, an understanding of the biosecurity issues relevant to the regional study area is important for the design of appropriate biosecurity mitigation measures to be implemented during the Project.

The biosecurity management measures included in the CEMP would detail measures to minimise the potential for biosecurity risks during construction. A biosecurity protocol was developed for the land access and field survey phase of the project by Meridian Agriculture (2019). This protocol was assessed for the current conditions with the topsoil profile intact. Property owners raised concerns about the possible introduction of animal diseases, plant diseases or weeds. The protocol notes that the following processes should be followed when accessing agricultural properties:

- Disinfect footwear prior to entering agricultural areas for land access and field survey phase. Ensure that there is no soil or dung on footwear. Disinfect upon leaving the property. A tray with absorbent material and disinfectant such as Virkon S® should be used. Alternatively, spray footwear using a spray bottle containing the disinfectant. During the construction phase when the topsoil has been removed, the requirement for disinfecting footwear would only be required if the person is in contact with the topsoil.
- During the land access and field survey phase only, check clothing on exit from a property to ensure that weed seeds have not attached to clothing. Do not wear trousers with cuffs. Cuffed trousers will potentially collect and transfer weed seeds.
- Do not drive onto the agricultural areas of the property unless necessary. If it is necessary to drive onto the agricultural areas, ensure that vehicles are decontaminated and inspected to be free of weed seeds and soil prior to, and after, the visit. In dry conditions, compressed air will be sufficient to dislodge any weed seeds. If the soil is wet, wash down will be required.
- If the owner is not present during the inspection ensure that all gates are left as found.

Biosecurity management measures (including if applicable those specific to cattle and equine enterprises) would be included in the CEMP in order to suitably address the biosecurity risks presented by the construction of the Project. Measures to address these risks would form a key component of the CEMP for the Project.

## 3.2 Indirect potential impacts

Potential indirect impacts on agricultural production may occur as a result of Project activities impacting beyond the construction corridor. These indirect impacts are caused because of Project activities that may alter the ability of landholders to fully utilise the productive capacity of their land. Potential indirect impacts are outlined in Table 11 and include interrupted access to non-construction corridor land as a result of construction activities that may limit access to crops and pastures thus impacting on farm management activities and potentially reducing crop and livestock production. Mitigation measures to address the potential indirect impacts can be found in Section 4.

Table 11 Potential indirect impacts of construction and operation activities

| Issue | Potential impacts |
|---|---|
| Impeded access | Construction activities may temporarily block access to land which is not otherwise directly associated with the construction corridor required for construction. Without mitigation, impacts could include inability to access areas for routine husbandry operations (e.g. crop spraying, harvesting), inability for livestock to graze pastures (including if water supplies are disrupted).<br><br>Production losses could vary from zero up to a substantial percentage of annual production. A multiplier has been adopted to reflect the cost of impacts if appropriate mitigation measures are not adopted (Section 3.2.1).<br><br>It is unlikely that impeded access impacts would be present during the operation phase. |
| Interrupted management | Planning, design and construction activities could cause a delay to land owners completing various crop and livestock husbandry operations (e.g. weed spraying, harvesting, animal health treatments etc.).Delays could reduce pasture and crop yields, reduce livestock growth rates, reduce product quality and therefore price, increase livestock mortality.<br><br>A multiplier has been adopted to reflect the cost of impacts if appropriate mitigation measures are not adopted (Section 3.2.1). |
| Dust, noise | Construction and operations would generate dust which may settle on crops and pastures, and noise which could affect grazing patterns of livestock. Dust accretions are likely to be removed at each rainfall event resulting in negligible impact.<br><br>Livestock generally become habituated to noise and although grazing patterns may be altered productivity is not likely to be affected. There would be little noise generated during usual operations and therefore no impact on livestock is expected.<br><br>Refer to Air and Noise Technical report for further discussion and mitigation measures on construction noise and dust suppression. |
| Regional services | A reduction in total agricultural production as a result of the construction and operational activities could reduce throughput for local agricultural supply, marketing and transport services. Given the recent changes to land uses in the regional study area and the duration of construction activities, the reduction in area is minimal from a regional perspective and would therefore have insignificant impacts on volumes of production and thus minimal impact on other agricultural industries and would not likely have an impact on those employed in agricultural related industries. |

### 3.2.1 Economic impact

To assess the economic impact to agricultural production during the construction phase, the land area directly impacted (ha) was multiplied by the estimate of gross income per hectare ($744). In addition, multipliers for the indirect impacts of impeded access, interrupted management and additional labour costs were included as a proportion of direct impacts. These multipliers were applied by GHD based on our knowledge of the likely impacts that could arise as a result of the project and also knowledge of agricultural production and typical enterprises within the regional study area. For the construction phase, the economic impact is estimated at $0.2 million based on the area of agricultural land impacted (refer to Table 3) and adopting a gross income of $744/ha (refer to Table 8), and assuming that the impact would occur over a 12 month period. The calculation includes both direct and indirect impacts, with the indirect impacts calculated by adopting multipliers for the three main indirect impact types. The impact is equivalent to 0.13% of the annual value of agriculture in the regional study area ($154.36 million, refer to Table 6).

Note that there is some uncertainty around the estimates, especially for those of an indirect nature, however, GHD considers that this uncertainty is accounted for in the adoption of a conservatively high value of agricultural production per hectare ($744/ha). As such, the value adopted is considered to be a conservative over-estimate of the impacts.

Table 12 Value of agricultural impacts on land use during the construction phase (unmitigated)

| Impact | Agricultural land (ha) | Annual value of agricultural production |
|---|---|---|
| Direct | | |
| Agricultural land within construction corridor | 164 | $122,017 |
| Indirect | (Multiplier of Direct) | |
| Impeded access | 50% | $61,009 |
| Interrupted management | 10% | $12,202 |
| Labour and other costs | 10% | $12,202 |
| **Total (12 months)** | | **$207,430** |
| **Percent of the regional study area (four LGAs) total (12 months)** | | **0.13%** |

# 4. Environmental management measures

For the range of potential impacts on agricultural activities described above (Section 3), a number of measures (Section 4.1) are available that can either eliminate or reduce the level of impact thus resulting in minimal disturbance to individual landholders or the broader economy that relies on the continuation of agricultural production.

A key measure to reduce impacts to agricultural resources and other land uses has been the process of alignment selection and refinement.

While the mitigation hierarchy has been applied in the development of the mitigation measures, it is noted that due to the nature of construction projects and the operation of pipelines the complete avoidance of the temporary impacts on agricultural activities of this proposed alignment is not possible. However, minimisation of impacts has been achieved where possible, primarily though agreeing and implementing landholder terms. Land rehabilitation would be undertaken following construction.

## 4.1 Recommended environmental management measures

The most significant impact of the Project on agricultural production is the temporary removal of the construction corridor from agricultural production during construction. Following rehabilitation of the construction corridor, normal agricultural production would be able to resume. The area of agricultural land required for operations is negligible.

Table 13 presents the measures that are recommended to be implemented to return the construction corridor to agricultural production as soon as practicable and address agricultural production related impacts.

Table 13 Recommended environmental management measures

| ID | Mitigation Measure | Stage | Mitigation hierarchy |
|---|---|---|---|
| S7 | Consultat with relevant landholders regarding property-specific measures to implement during construction and operations including:<br>a. Access across the construction corridor during construction<br>b. Stock management<br>c. Biosecurity. | Design and construction | Avoidance / Minimisation |
| S8 | Undertake all reasonable steps to enter into an agreement with each landholder on fair and reasonable terms. Agreements must include commitments to agreed measures to minimise the impact of the Project on landholder activities. | Design and construction | Avoidance / Minimisation |
| S9 | Compile and maintain a schedule of Landholder Agreements, documenting actions to be carried out on each property. | Design and construction | Minimisation |

| ID | Mitigation Measure | Stage | Mitigation hierarchy |
|---|---|---|---|
| LU3 | **Impacts to land tenure and access**<br>Provide compensation for the reservation of the easement and acquisition of land for Mainline valve stations in accordance with *Pipelines Act 1985* and *Land Acquisition and Compensation Act 1986*.<br>Consult relevant stakeholders in relation to construction access and operational activities in accordance with the Project Consultation Plan and Project EMMs S3 and S5. | Design, construction and operation | Minimisation |
| S6 | Develop and implement a Project Consultation Plan to facilitate ongoing consultation with relevant stakeholders throughout the Project's planning and construction. The Plan must include:<br>• The approach to communicating and engaging with the community and potentially affected stakeholders in relation to:<br>– The likely timing and nature of the Project's construction activities and potential impacts.<br>– Changes to transport conditions.<br>• The mechanisms and timing for communicating Project updates for all stakeholders through multiple channels (website, newsletters, local media)<br>• The approach for communicating and engaging with vulnerable groups, including community groups and residents that do not speak English. Translation services will be promoted as and where appropriate for specific project communications.<br>• Measures to evaluate the effectiveness of the communication and engagement under the Plan.<br>Arrangements for receipt and management of feedback and complaints, including timeframes for responding to complaints. | Design and construction | Minimisation |
| S10 | All third party services within the easement, including on farm infrastructure, must be identified and marked on the ground in advance of trenching activities. | Design and construction | Avoidance / Minimisation |
| S11 | Manage interfaces with all identified third party services and water lines so that their operation can continue during pipeline construction, wherever reasonably practicable. | Construction | Avoidance / Minimisation |
| S12 | Develop and implement biosecurity management measures for the construction phase of the Project in accordance with the Catchment and Land Protection Act 1994. | Construction | Avoidance / Minimisation |

| ID | Mitigation Measure | Stage | Mitigation hierarchy |
|---|---|---|---|
| S13 | Implement biosecurity management measures in accordance with the VTS Operational Environmental Management Plan that has been prepared for use during the operation of the Victoria section of the VTS only in accordance with the Pipelines Act 2005 and Pipelines Regulations 2017. | Operations | Avoidance / Minimisation |
| S14 | Progressively commence and complete reinstatement as soon as reasonably practicable post-construction. | Construction | Minimisation |
| S15 | Reprofile the construction corridor to original contours or to new, stable contours (where it is not reasonably practical to re-profile to original contour) in line with contractor construction specification. | Construction | Minimisation |
| S16 | Apply soil amelioration and fertiliser where required as determined by soil assessments and tailored to rehabilitation requirements in consultation with the landholder. | Construction | Minimisation |
| S17 | Compact the trench backfill as per APA's performance specification and/or contractor's construction specifications. Degree of compaction to take into account design load limits on the pipe whilst minimising changes to pre-construction groundwater conditions. | Construction | Minimisation |
| S18 | Implement compaction relief by ripping or scarifying areas of the construction corridor which have been compacted by construction activities. Particular attention must be given to areas subject to regular watering and high traffic volume. | Construction | Minimisation |
| S19 | Reinstate all access tracks, fences and gates post construction in consultation with landholders and any relevant third parties. | Construction | Minimisation |
| S20 | Install permanent access gates post construction, where required at fence intersections and for access to MLV compounds which will be completely fenced. | Construction | Minimisation |
| S21 | Where seeding is adopted to facilitate prompt revegetation and soil stabilisation, consider the following principles:<br>a Formulate seed mixtures with consideration of the vegetation composition of the areas adjacent to the construction corridor and in consultation with the relevant landholder.<br>b Sterile seed stock (cover crop) may be used to provide short term surface stability.<br>c Disperse seed evenly dispersed over the disturbed area.<br>d Seeding to take place as soon as reasonably practicable after reinstatement of the soil profile. | Construction | Minimisation |

| ID | Mitigation Measure | Stage | Mitigation hierarchy |
|---|---|---|---|
| | e A suitable fertilizer may be applied depending on soil conditions and any landholder requirements. | | |
| S22 | Monitor the condition of the construction corridor and other disturbed areas post construction with remedial measures undertaken, as required, with the aim that all disturbed areas are re-profiled to a stable landform consistent with original contours and drainage lines, or proposed new stable contours, and vegetated with a self-sustaining, non-pest species groundcover. | Construction and operation | Minimisation |
| S23 | Implement reasonable and practicable measures to avoid impacts to landholder national vendor declarations and other requirements under applicable livestock production assurance programs due to the use of herbicides, pesticides and other chemicals during construction and operations. Such measures must be informed by consultation with Meat and Livestock Australia. | Construction and operation | Avoidance / Minimisation |

# 5. Conclusion

GHD completed an agricultural impact assessment to identify the potential impacts to agricultural land uses from the construction and operation of the Project's approximately 51 kilometres of buried high pressure gas transmission pipeline between Plumpton and Wollert in Victoria. This agricultural assessment has been prepared to specifically address the relevant evaluation objectives outlined in the scoping requirements for the Environment Effects Statement and forms an appendix to the Social Impact Assessment Report.

The construction corridor totals 178 ha and traverses predominately through agricultural related land uses (164 ha) with the main land use impacted being grazing modified pastures (134 ha) followed by Rural residential with agriculture (16 ha). In addition to grazing land, the project also impacts upon limited cropping land. Beef cattle and sheep and lambs are the predominant livestock enterprises on the grazing land throughout the projects study area. While extensive grazing is the dominant land use impacted by the construction corridor, some of the land is considered to be in transition and would eventually be used for urban uses.

At present, approximately 44% of the Project already lies within the Urban Growth Boundary (UGB) and is therefore unlikely to be used for agricultural production. Within the next 10-30 years the remaining agricultural land along the construction corridor will most likely transition to other uses, prompted by further expansion of the UGB particularly along the northern and western development corridors and the development of infrastructure within the Public Acquisition Overlay. As a result of the above proposed developments, any loss of agricultural production capacity caused by the pipeline development should be viewed as short to medium term, ahead of the eventual permanent land use changes.

This assessment identifies a range of direct and indirect impacts on land use and agricultural production at the design, construction and operation stages. The direct impacts can be broadly classified as either land use changes or changes to land capability and infrastructure and biosecurity while the indirect impacts on agricultural production may occur as a result of Project activities impacting beyond the construction corridor. These indirect impacts are caused because of Project activities that may alter the ability of landholders to fully utilise the productive capacity of their land and could include impeded access to non-construction corridor land as a result of construction activities that may limit access to crops and pastures thus impacting on farm management activities and potentially reducing crop and livestock production. An example of impeded access is where construction activities through an agricultural property may temporarily block access to land which is not otherwise directly associated with the Project.

The most significant impact of the Project on agricultural production is the temporary removal of the construction corridor from agricultural production during construction. Following rehabilitation of the construction corridor, normal agricultural production would be able to resume. The area of agricultural land required for operations is negligible.

The unmitigated economic impact to agriculture at the construction stage is estimated at $0.2 million which is equivalent to 0.13% of the annual value of agricultural production within the regional study area. The impact is conservative based on assumptions on commercial agricultural use and a 12 month interruption period.

The impacts would be largely mitigated through a range of measures described in the body of the report. In addition a key mitigation measure would be compensation paid to directly affected landholders as required under the *Pipelines Act 2005* and *the Land Acquisition and Compensation Act 1986*. This assessment contains a number of mitigation measures recommended to be implemented to return the construction corridor to agricultural production as soon as practicable.

Residual impacts following the implementation of the recommended environmental management measures are expected to be low and it is anticipated that the Project's construction would have minimal impacts on the continuation of farming operations in the Project or regional study areas. Based on the outcomes of the assessment, the Project is not considered to have a significant adverse impact on agricultural resources at local and regional scales.

While GHD completed this agricultural impact assessment as a desktop study, it is underpinned by consultation with landholders and other stakeholders associated with the Project that has been undertaken by APA. Ongoing consultation through the life of the project would be carried out so that owners/occupants are informed about the timing and scope of any activity and any potential property impacts/changes.

# 6. References


Agriculture Victoria (2019) Livestock Farm Monitoring Project Victoria: Annual Report 2018/19 https://agriculture.vic.gov.au/__data/assets/pdf_file/0007/537757/Livestock-Farm-Monitor-Project-2018-2019.pdf

Agriculture Victoria (2018) Assessment of agricultural land capability in Melbourne's Green Wedge and Peri-urban Areas – Agriculture Victoria Research Final Technical Report – Updated October 2018

Australian Bureau of Statistics (2018a), Value of Agricultural Commodities Produced Australia, Small Area Data 2015-16, Cat. No 7503.0 Available: www.abs.gov.au.

Australian Bureau of Statistics (2018b), Agricultural Commodities, Australia, 2015-16, Cat. No 7121.0 Available: www.abs.gov.au.

Australian Bureau of Statistics (2012), Agricultural Commodities, Australia 2010-11, Cat. No 7121.0 Available: www.abs.gov.au.

GHD (2020a) *Western Outer Ring Main Environment Effects Statement - Social Impact Assessment Report*

GHD (2020b) *Western Outer Ring Main Environment Effects Statement - Land use and Planning Assessment Report*

Hume City Council (2020) *Hume City Council – Draft Rural Strategy (2020)* [Online] Available: https://participate.hume.vic.gov.au/humes-draft-rural-strategy

Meridian Agriculture (2019) *Biosecurity Protocols – Western Outer Ring Main Project – Australian Pipeline Authority*

Sheridan, J., Larsen, K. and Carey, R. (2015) Melbourne's foodbowl: Now and at seven million. Victorian Eco-Innovation Lab, The University of Melbourne.

Wine Australia National Vintage Report 2020 https://www.wineaustralia.com/getmedia/32c1875c-4ed6-4208-aa0a-02569c52368e/MI_VintageReport2020_with_appendix.pdf

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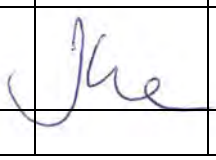
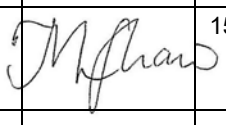
| 0 | P. Dellow & S Hoban | I Clarke |  | M Shaw |  | 15/04/21 |
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# Appendix E – Performance criteria and monitoring

**Performance criteria and monitoring**

The performance criteria and monitoring from other technical reports that are referenced in this SIA are detailed below.

## Technical report A – Biodiversity

Performance and monitoring criteria for the Technical report A - Biodiversity are outlined below.

### Botanical values

The key residual impact of the Project is the loss of threatened native vegetation and ecological communities. An offset strategy is currently under development that will comply with EPBC Act Environmental Offsets Policy (DSEWPAC 2012) and will meet policy objectives of the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a) (refer Appendix B Table B1). The offset strategy will describe how the offsets will be secured, managed and monitored, including management actions, responsibility, timing, performance measures and the specific environmental outcomes to be achieved. To the maximum extent practicable, locations of State and Commonwealth offsets will be harmonised by co-location.

An Offset Management Plan (OMP) would be finalised prior to construction.

A comprehensive body of baseline survey data exists that will be used as a benchmark to evaluate the residual impact of the Project on botanical values. In the event of adverse residual effects on flora and vegetation, and dependent on the outcomes of consultation with relevant landowners, the performance of EMMs will be evaluated by development and implementation of a monitoring program that will:

- Set objectives for vegetation recovery using baseline data from 2019/2020 field surveys. These objectives will consider the extent to which reinstatement of native vegetation meets or exceeds the structure, floristic diversity and condition of impacted native vegetation
- Assess the population of Tough Scurf-pea to determine the likelihood of any adverse impacts from construction and operation, or any other changed conditions that may impact its survival
- Confirm survival of Matted Flax-lily and evaluate the effectiveness of protection during construction
- Evaluate the progress of reinstatement toward achieving key performance indicators and report the results annually to relevant state government and municipal authorities
- At the end of the monitoring period evaluate whether monitoring should be extended
- Provide recommendations for management as required, which may not be addressed by operational EMMs

### Fauna values

The key residual impact of the Project to fauna is the loss of habitat for fauna. In particular, the initial loss of habitat for the EPBC Act listed Golden Sun Moth meets the criterion for a significant impact under the Act by meeting the threshold of “habitat loss, degradation or fragmentation >0.5 ha. Disturbance of these habitats within the Project Area is expected to be temporary with habitats reinstated following works. Impacts are also expected to be restricted to the narrow Project Area bisecting areas of habitat which will allow the species to readily recolonise the area following reinstatement. Any reduction in the area of occupancy is expected to be temporary. The residual impacts of habitat removal on these species are expected to be negligible.

However, an offset strategy is currently under development that will comply with EPBC Act Environmental Offsets Policy (DSEWPAC 2012) and will meet policy objectives of the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a). The offset strategy will describe how the offsets will be secured, managed and monitored, including management actions, responsibility, timing, performance measures and the specific environmental outcomes to be achieved. To the maximum extent practicable, locations of State and Commonwealth offsets will be harmonised by co-location.

An Offset Management Plan (OMP) would be finalised prior to construction.

### Aquatic ecology values

Monitoring of waterways where open trench construction is planned are recommended as part of EMM SW5 to monitor the performance of management measures in protection of waterways health and biodiversity values. In general, this requires:

- Undertaking biological and water quality monitoring of Jacksons Creek and Merri Creek prior to construction based on EPA publication 793.2 Biological Objectives for Rivers and Streams - Ecosystem Protection (2004). This will be undertaken at sites upstream and downstream of the waterway crossings to establish background conditions.
- During construction monitoring would occur based on EPA Publication 1834 Civil Construction, Building and Demolition Guide. This will be undertaken at sites upstream and downstream of the waterway crossings to determine if there are impacts due to construction.
- Following completion of the construction, the biological and water quality monitoring will be repeated to determine if there are ongoing or residual impacts
- Should the monitoring determine adverse residual impacts on biodiversity values, contingency measure will be implemented such as the remedial actions listed in EPA Publication 1834 Civil Construction, Building and Demolition Guide. These may include:
  - Identifying, repairing or redesigning failed management measures aimed at reducing impacts due to erosion and sedimentation
  - Further stabilising banks and beds at waterway crossings to reduce erosion potential and sedimentation
  - Ceasing the pumping of water from coffer dams and / or other areas if water quality exceeds background conditions

## Technical report F – Noise and vibration

Performance and monitoring criteria for the Technical report F – Noise and vibration are outlined below. The Technical report F – Noise and vibration includes a number of contingency measures that will be implemented as is outlined in Table D-1.

### Table E-1 Environmental management measures – Technical report F – Noise and vibration

| EMM | Environmental Management Measure | Stage |
|---|---|---|
| NV2 | Where the construction noise and/or vibration levels are predicted or measured to exceed applicable criteria (as identified in EMM NV10) after implementing the general noise mitigation practices, further mitigation measures must be considered and implemented as far as reasonably practicable. These measures may include:<br>• Adopting engineering noise controls at the source (e.g. silencer, mufflers, enclosures) by all practical means using current technology<br>• Selection of quieter equipment<br>• Installation of onsite barriers such as hoardings or temporary screens to provide a noise barrier between any particularly noisy construction works and the residences<br>Restricting the hours that the very noisy activities can occur (respite periods). | Construction |
| NV6 | Where the residual noise and vibration impact (after mitigation measures are being implemented) exceeds the recommended construction noise and vibration criteria or construction works are planned close to the sensitive receptors, notify residents in advance about upcoming construction works.<br>Send notification letters to residents of noise affected dwellings prior to the commencement of works which include information on:<br>• Date and time of the noise intensive works<br>• Expected durations of the noisiest activities<br>• Use and provision of individual protective measures such as earplugs (for short duration impacts of 1 to 2 nights only and on a case-by case basis)<br>Implement a complaints management register that documents:<br>• Name of persons receiving complaint<br>• Name of person making the complaint<br>• Date and time of complaint<br>• Nature of the complaint<br>• Actions taken to rectify the issue<br>• Actions to minimise risk of repeated occurrence<br>• Name of person responsible for undertaking the required actions<br>• Communication of response to the complaint<br>Implement a complaint system that includes the following measures:<br>• Establish a community liaison phone number and permanent site contact number so that noise related complaints can be received and addressed in a timely manner<br>• Determine whether any unusual activities were taking place at the time of the complaint that may have generated higher noise levels than usual and whether they may be attributed to the construction site activities | Construction |

| EMM | Environmental Management Measure | Stage |
|---|---|---|
| | Implement additional mitigation measures where required and reasonably practicable. | |
| NV7 | Where the residual impact is predicted to exceed the recommended noise or vibration criterion for an extended period (after other mitigation measures have been implemented), discuss information on the impact with affected residents.<br><br>Depending on the circumstances, off-site measures to minimise noise impact must be considered including alternative temporary accommodation or other respite option. | Construction |

## Technical report F Air quality

Performance and monitoring criteria for the Technical report F Air quality are outlined below.

### Construction

A Construction Environment Management Plan including dust management measures is required for construction works. The dust management mitigation measure to include a two-step process which is a function of number and proximity of sensitive receptors to the dust generating activities.

### Operation

Annual stack testing of the discharge points, as is currently done for the existing facility, will be undertaken.

## Technical report J – Landscape and visual assessment

Performance and monitoring criteria for the Technical report J – Landscape and visual assessment are outlined below.

To ensure the impacts of the Project on landscape and visual amenity remain low, a planting and remediation plan would be developed where planting of trees and shrubs are proposed following the initial mitigation measure.

The plan would be prepared in consultation with any affected landowners and would be consistent with APA's guidelines on restricted uses within an easement and other necessary approvals granted. The planting and remediation plan would incorporate the relevant mitigation measures listed in Technical report J *Landscape and visual* as well as outline a monitoring and defects period for planting and remediation to ensure significance of impact remains low.

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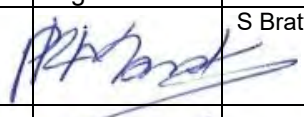
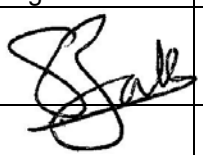
| 0 | N Gardner | P Mandke |  | S Brattle |  | 15.04.2021 |
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