

HORSHAM ALTERNATIVE TRUCK ROUTE FEASIBILITY STUDY

Final Report

PREPARED FOR DEPARTMENT OF TRANSPORT AND PLANNING | May 2024

We design with community in mind

Revision schedule

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Executive Summary

Context & Project Purpose

For decades a Horsham Bypass has been investigated to redirect the through vehicles out of the Horsham CBD. However, the Department of Transport and Planning (DTP) has no further plans to continue with the Horsham Bypass. As such, an investigation of alternative routes has been proposed in the interim, such as through the Horsham Urban Transport Plan prepared by Horsham Rural City Council (HRCC), which outlines the objectives and benefits of an alternative truck route.

The DTP and HRCC are jointly investigating the feasibility of alternative truck routes to the Western Highway and other arterial roads that converge with and go through the Horsham CBD. The feasibility study aims to identify alternative route options and assess their relative performance against a project specific assessment framework to identify the most benefit to potential users and the broader community.

Investment Logic

Investment Logic Map (ILM)

A project specific ILM was prepared for the project. The below key problems and strategic responses were identified.

Key problems:

- Growing delays and frustrating conditions facing heavy vehicles on the third busiest road freight route in Australia places pressure on freight operators and drivers.
- Growing conflict between road users contributes to the frequency and severity of crashes within Horsham's Central Activity District.
- Highly significant reliance on a single river crossing places residents within Horsham and across Western Victoria at growing risk during emergencies.
- The noise, smell and presence of high volumes of heavy vehicles through built up residential areas adversely impacts on local community amenity and development of the urban environment.

Strategic responses:

- Improve options for less disrupted and frustrating travel across Horsham and the river. This can be achieved through stakeholder engagement, leading to provision of an alternative freight route.
- Improve the attractiveness of cycling, walking and public transport. This can be achieved through stakeholder engagement and leveraging existing active transport strategies, leading to an upgrade of cycling and walking infrastructure and amenities.

Benefit Management Plan (BMP)

The BMP benefits are listed below, as well as their intended outcomes.

Benefits:

- Reduced road safety risk.
- Improved transport network efficiency.
- More active communities.
- Improved local amenity and quality of place.

Intended outcomes:

- Reduction in the casualty crash rating.
- Reduction in the presence of hazards.
- Reduction in travel time.
- Increase in travel time reliability.
- Increase in pedestrian and cycling activity.
- Increase in level of satisfaction.

Identified Route Options & Rapid Assessment

Twelve potential route option alignments were identified, of which Options 1 to 5 are to the northeast of Horsham and Options 6 to 12 are to the southwest. The potential routes are illustrated at an overview level in Figure A below, with further detail provided in Section 7 of this report.

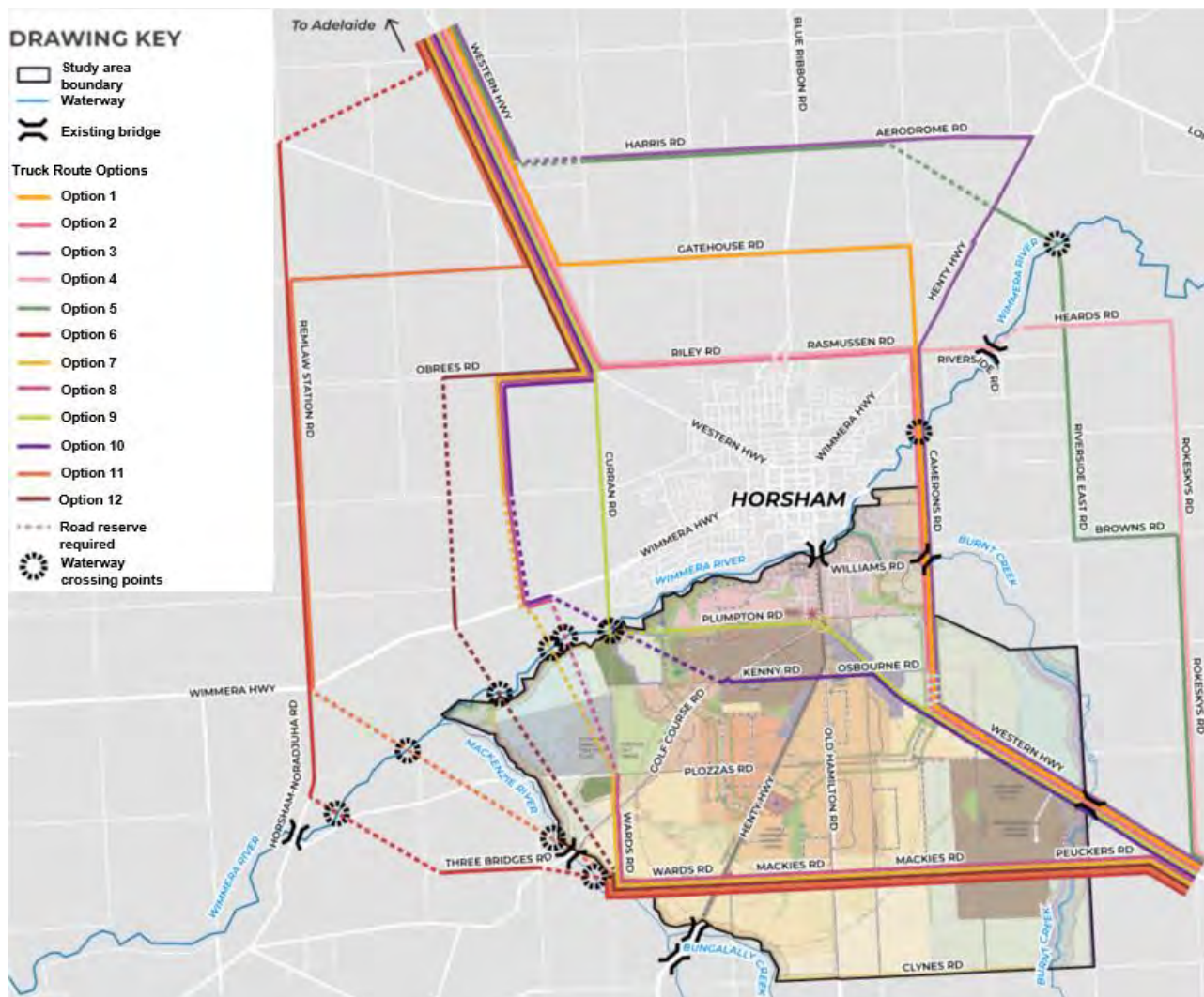


Figure A: Potential Alternative Truck Route Alignment Options (source: Mesh)

The set of criteria in Table A and associated measures were considered to be the most suitable factors to reasonably compare the alternative route options at this level of planning. A weighting is also assigned to each criteria, which was informed by the ILM weightings.

Rapid Assessment Criteria	Weighting	Implication on Overall Performance
1 - Constraints	20%	Based on level of risk, with the least comparative risk scoring 20%. A significant constraint may however not be considered viable.
2 - Structures and Road Length	30%	Based on the length of structures and total road length, with the shortest comparative length or lowest comparative cost scoring 30%
3 - Land Use Integration	20%	Based on proximity to key compatible land uses, with best comparative access to key land use scoring 20%.
4 - Travel Time	30%	Based on percentage difference in overall travel time that will help reduce traffic through the CBD, with fastest comparative travel time scoring 30%.

Table A: Key Aspects of the High-Level Cost Estimates

The northeast routes assessment overall outcome is summarised in Table B and the southwest routes assessment overall outcome is summarised in Table C. It is noted that no comparison was made as part of the rapid assessment stage between northeast routes and southwest routes, with the intent being to find the best option on each side.

Criteria	Option 1	Option 2	Option 3	Option 4	Option 5
1 - Constraints	20%	10%	15%	10%	15%
2 - Structures and Road Length	29%	30%	27%	26%	30%
3 - Land Use Integration	15%	10%	20%	5%	10%
4 - Travel Time	30%	29%	26%	26%	29%
Total	94%	79%	88%	67%	84%

Table B: Northeast Alignment Options Results (Comparative Assessment)

Criteria	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	Option 12
1 - Constraints	Not considered viable due to areas of high Aboriginal Cultural Heritage Sensitivity.						
2 - Structures and Road Length	24%	25%	25%	30%	28%	23%	25%
3 - Land Use Integration	20%	20%	20%	15%	15%	20%	20%
4 - Travel Time	23%	26%	26%	30%	28%	23%	25%
Total	67%	71%	71%	75%	71%	66%	70%

Table C: Southwest Alignment Options Results (Comparative Assessment)

After application of the rapid assessment criteria, a workshop was held with DTP and HRCC to discuss the results and confirm which viable options will proceed to the next stage of more detailed assessment. On this basis, it was agreed that the options to bring forward to the detailed assessment were Options 1 and 5. The following general comments are provided regarding the short-listing of Options 1 and 5:

- Option 1 had the highest overall score of the northeast options, largely due to being the shortest route and having the least constraints.
- Option 5 was the other route selected, as there are higher travel time savings to the northeast of Horsham and less overall constraints. Whilst Option 5 ranked third of the northeast routes, it overlaps with parts of the second ranked Option 3 but the main difference being it does not use Cameron Road and therefore presents an alternative in that regard.

Short-Listed Route Options Assessment

Following confirmation of the two options considered most viable from the rapid assessment, concept plans were prepared, with the scope being to provide an overview of the full alignment and provide concept level details of intersections where the proposed route intersects with existing arterial roads. Key bridges were also designed at concept level, with any additional bridges and roundabouts also identified on the cover sheets. These concept plans were then used to inform the preparation of high-level cost estimates and calculation of potential land acquisition that would be needed to achieve the required road reserve. Both the concept plans and high-level cost estimates were reviewed by the project team prior to their assessment below. The outcome of this process will be to build upon the findings of the long-listing rapid assessment with the additional information gained from the concept design and high-level cost estimates.

The concept design plans for Options 1 and 5 are included in Appendix F. Key features of each of the options are described below.

Option 1 - Northeast of Horsham

The overall alignment and key features are described as follows:

- The route primarily uses and adopts an 80km/h speed limit along Cameron Road and Gatehouse Road to link the Western Highway either side of Horsham.
- Four bridges are proposed, being:
 - o A rail crossing in the northwest which supports two-way movements and retains the through movement along the Western Highway. Vehicles are only able to travel north-bound onto the Western Highway from the bridge, facilitating the key through function of the alternative route.
 - o A rail crossing in the northeast which is adjacent to the Henty Highway. This bridge provides on and off-ramps for all-direction movements onto the Henty Highway. It is noted however that the south-bound on-ramp may be difficult to achieve due to its proximity to Riverside Road.
 - o A bridge over the Wimmera River associated with Cameron Road.
 - o The existing bridge over Burnt Creek associated with Cameron Road would need to be upgraded to match the proposed road alignment.
- Five roundabouts are proposed, designed to accommodate 80km/h approach speeds.

Option 5 - Northeast of Horsham

The overall alignment and key features are described as follows:

- The route primarily uses and adopts an 80km/h speed limit along West Road, Riverside East Road and Harris Road to link with the Western Highway either side of Horsham.
- Three bridges are proposed, being:
 - o A rail crossing in the northwest which supports two-way movements and retains the through movement along the Western Highway. Vehicles are only able to travel north-bound onto the Western Highway, facilitating the key through function of the alternative route.
 - o A rail crossing in the northeast which is adjacent to the Henty Highway. This bridge provides on and off-ramps for all-direction movements onto the Henty Highway.
 - o A bridge over the Wimmera River associated with Riverside East Road.
- Six roundabouts are proposed, designed to accommodate 80km/h approach speeds.

It is noted that land acquisition is not factored into the high-level cost estimate, due to the complexity of calculating the cost at this level of planning. Land acquisition should be considered however when comparing the relative viability of the options.

The more detailed assessment undertaken provides the basis of assessment for the short-listed options, with the additional information gained from the concept plans and high-level cost estimates adding further details to that undertaken as part of the rapid assessment. The findings from the more detailed assessment are set out in Table D.

It is clear from review of all metrics that Option 1 represents the most feasible option of the shortlisted alternative truck routes. It is the shortest route, with the least constraints, fastest travel time, least land acquisition and lowest cost. It is noted that there is a potential difficulty to locate an on-ramp in close proximity to Riverside Road. However, this may be able to be resolved at a more detailed level of design.

Criteria	Option 1	Option 5
Constraints	• Areas of cultural heritage sensitivity are potentially manageable, subject to future CHMP/detailed planning work. • Land zoning: - o Interface with LDRZ land along Cameron Road. - o Limits aerodrome expansion to the south (not currently proposed). • Interaction with existing Infrastructure/utilities: Water mains. • Overlaps with a farm machinery corridor on Doon South Road. • A new road reserve would be needed south of Cameron Road. • Environmental constraints: No identifiable high-risk matters.	• Areas of cultural heritage sensitivity are potentially manageable, subject to future CHMP/detailed planning work. • Land zoning: Limits aerodrome expansion to the north. • Interaction with existing Infrastructure/utilities: Water mains and substation on the corner of Riverside East Road and Browns Road. • Overlaps with a farm machinery corridor on Aerodrome Road. • A new road reserve would be needed between Riverside East Road and Aerodrome Road. • Environmental constraints: No identifiable high-risk matters.
High-Level Cost Estimate	\$162.9 million.	\$199.5 million

Criteria	Option 1	Option 5
Land Use Integration	Interfaces with: - Burnt Creek Industrial Estate / Horsham Regional Livestock Exchange. - Airport precinct. - Upgrading Camerons Road supports access to WAL Hub.	Interfaces with: - Airport precinct. - Generally supports access to WAL Hub.
Travel Time	17 mins 10 secs.	18 mins
Land Acquisition	166,947m ² .	344,725m ²
Constructability	Includes an additional bridge compared to Option 5, including a noted difficulty in locating an on-ramp to the bridge over Henty Highway proximate to Riverside Road.	Requires three bridges, being one less than Option 1.

Table D: Short-Listed Options Assessment

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1 Introduction

1.1 Background

Horsham is a growing and vibrant regional centre. It is the capital of Victoria's western Wimmera Region and provides a northwestern gateway to the Grampians National Park. It is situated at the convergence of various major regional arterial roads, namely the Western Highway, Wimmera Highway and Henty Highway. Moreover, the Western Highway currently runs through Horsham's Central Business District (CBD). It is the main road-based freight route between Melbourne and Adelaide, and the third busiest interstate freight road corridor in the country.

Historically, these traffic volumes brought passer-by visitors, which helped activate the city and make it an important regional hub. However, as traffic volumes continue to increase and the area develops, their travelling through creates a range of undesirable impacts and conflicts, namely in the creation of place, user amenity, road safety, congestion, travel time variability and network resilience.

For decades a Horsham Bypass has been investigated to redirect the through vehicles out of the Horsham CBD. However, the Department of Transport and Planning (DTP) has no further plans to continue with the Horsham Bypass. As such, an investigation of alternative routes has been proposed in the interim, such as through the Horsham Urban Transport Plan prepared by Horsham Rural City Council (HRCC), which outlines the objectives and benefits of an alternative truck route.

1.2 Purpose

The DTP and HRCC are jointly investigating the feasibility of alternative truck routes to the current arterial road network that converges and goes through the Horsham CBD. The feasibility study aims to identify alternative route options and assess their relative performance against a project specific assessment framework to identify the most benefit to potential users and the broader community.

The key factors that will inform the relative performance of the identified alternative route options include the cost, benefits and impacts associated with the following matters:

- Arterial road network access and integration, Wimmera Intermodal Freight Terminal and other freight related land uses.
- Floodplains along Wimmera River and impacts on potential crossings.
- Impact on community groups, services and other sensitive receptors such as residential areas.
- Environmental and cultural heritage (historic and Aboriginal) impacts.
- Service implications (electricity, telecommunications, water, sewer, gas, etc.).
- Local planning context and strategic projects (land use strategies, urban growth plans, structure plans, masterplans, etc.).

Stantec has been engaged by DTP to help undertake the feasibility study, with the project being jointly funded by both HRCC and the Commonwealth Government.

1.3 Feasibility Study Area

The Horsham Rural City municipality is located in the Wimmera Region of Western Victoria, north of the Grampians National Park, covering some 4,267sq/km.

Horsham is located on the Wimmera River and the Western Highway approximately 300km northwest of Melbourne CBD, 190km northwest of Ballarat and 450km east of Adelaide.

Horsham is the largest urban centre in the Wimmera Region, providing a range of higher order commercial, community, health, entertainment, government and retail services to the local residents and wider rural community.

The project's feasibility study area as set by DTP and HRCC is depicted in Figure 1-1. It generally centres on the existing urban extent of Horsham and extends a few rural road blocks in each direction along the major regional highways that converge and go through it.

It has been assumed that the alternative route options would generally be within the feasibility study area but outside of the existing urban extent of Horsham.

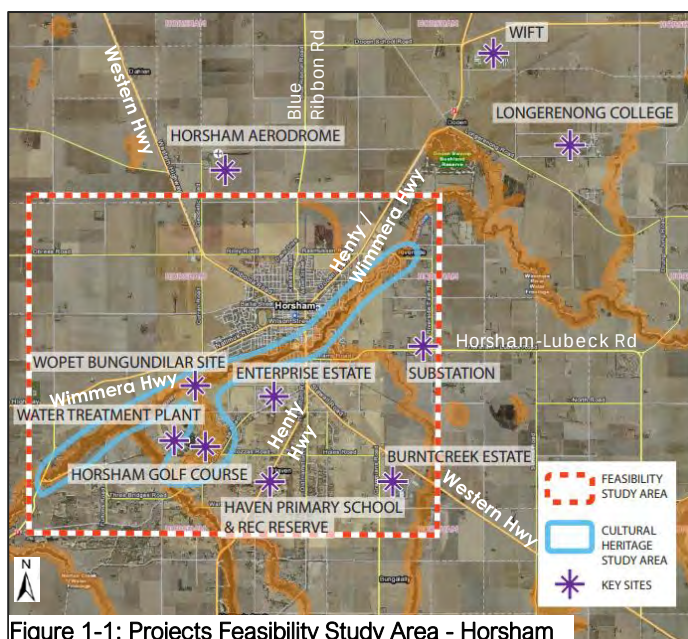


Figure 1-1: Projects Feasibility Study Area - Horsham

1.4 This Report's Purpose

This report sets out the process which has been undertaken in identifying feasible alternative route options that would be suitably attractive to redirect through traffic from the Horsham CBD.

This report includes relevant background information and takes this through to the final recommendations.

In this regard, this report provides the following:

- Key project background and context
- Existing and future known study area conditions
- Available and collected travel data
- Key project issues and opportunities
- Corridor arrangements and investigations
- Route identification and short-listing assessment
- Concept plans and high-level costing of preferred options.

1.5 Alternative Route Definition

It is considered important to clarify what the difference is between an alternative route and a bypass. While both aim to provide a vehicle route around a town centre or other key activity area instead of needing to go through it, an alternative route is a lower order road to a bypass. The need for an alternative route compared to a bypass typically depends on the traffic demands they need to support and what vehicle speeds they are trying to achieve. The lower the demands and speeds the more appropriate and feasible an alternative route is, and conversely with a bypass.

An example of an alternative route is in Shepparton, where C391 (River Road, Doyles Road and Grahamvale Road) goes around the eastern side of the urban extent to reduce the need for vehicles travelling north-south to go through the town centre along Wyndham Street / Goulburn Valley Highway. This alternative route utilises existing rural roads with various safety and capacity upgrades, especially at intersections, to help manage the continued growth in traffic demands as the Shepparton Bypass is delivered over a number of stages. An outline of these current and proposed arrangements for the Shepparton Alternative Route and Bypass are in [Bypassing Shepparton - Victoria's Big Build](#).

As able to be understood with the Shepparton Bypass, they typically involve the creation of a completely new and separated road corridor, often with grade separated intersections. Many of these have been delivered along the major inter-state road corridors, like the Hume Freeway with Wangaratta and Wodonga, Goulburn Valley Highway with Seymour and Nagambie, and Western Highway with Ballarat, Trawalla and Buangor (refer to recently completed and proposed bypass works along the Western Highway in [Ararat to Stawell - Victoria's Big Build](#)).

1.6 Scope and Methodology

The overall project scope and methodology that has been followed for this project is outlined graphically in Figure 1-2.

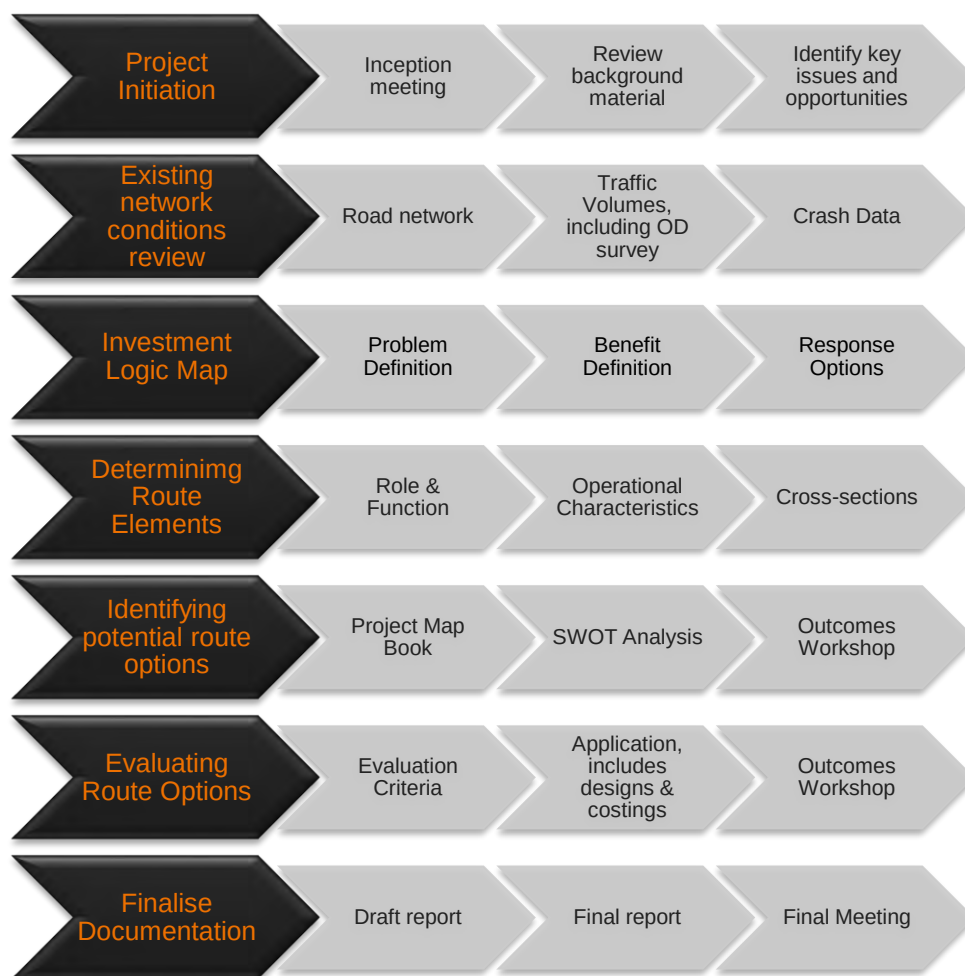


Figure 1-2: Project Scope and Methodology

This feasibility study final report is the result of a collaborative effort between Stantec, HRCC and DTP. A number of meetings and workshops were held to confirm outputs and seek feedback during the methodology process. In conjunction with the meetings and workshops, the below documents were issued for client review and comment during the process, which have generally been endorsed:

- Investment Logic Map and Benefit Management Plan (September, 2022).
- Background & Existing Conditions Paper (January, 2023).
- Key Design Elements and Arrangements of the Proposed Alternative Route Memo (January, 2023).
- Route Alignment Options Assessment Framework Memo (September, 2023).
- Route Alignment Options – Rapid Assessment (October, 2023).

1.7 Limitations

This alternative truck route feasibility study is considered to be at a high-level planning stage. It is based on the available information collated and presented in this report. There has been no transport modelling, detailed site investigations or detailed designs to confirm the associated need, benefit or feasibility of implementing the proposed arrangements. Rather, they represent professional judgement by relevant discipline experts and stakeholders, with the intention to put forward the most viable alternative truck route for further consideration and investigation.

2 Strategic Planning Context

2.1 State Level Policy

This section includes a summary of State level strategic documentation which is of key relevance to Horsham and the proposed feasibility of an alternative truck route.

Transport Integration Act, 2010

The *Transport Integration Act 2010* (TIA) came into effect on 1 July 2010 and is Victoria's principal transport legislation. The TIA establishes a framework for the provision of an integrated and sustainable transport system in Victoria. It does this through the vision statement, transport system objectives and decision-making principles.

The TIA requires that all decisions affecting the transport system be made within the same integrated decision-making framework and support the same objectives. It brings together the transport portfolio, including ports and marine, under one statute for the first time in the State's history.

The TIA was designed with the vision of an integrated and sustainable transport system that contributes to an inclusive, prosperous, and environmentally responsible State. The act breaks this vision down into six objectives:

- Social and economic inclusion
- Integration of transport and land use
- Economic prosperity
- Efficiency, coordination, and reliability
- Environmental sustainability
- Safety, health, and wellbeing

The TIA includes the transport system objectives set out in Table 2-1, which will be used as a basis for the decision framework developed for this project to assess the relative performance of identified viable route options.

Objective	Description
Social and economic inclusion	The transport system should provide a means by which persons can access social and economic opportunities to support individual and community wellbeing including by— (a) minimising barriers to access so that so far as is possible the transport system is available to as many persons as wish to use it. (b) providing tailored infrastructure, services and support for persons who find it difficult to use the transport system.
Economic prosperity	The transport system should facilitate economic prosperity by— (a) enabling efficient and effective access for persons and goods to places of employment, markets, and services. (b) increasing efficiency through reducing costs and improving timeliness. (c) fostering competition by providing access to markets. (d) facilitating investment in Victoria. (e) supporting financial sustainability.
Environmentally sustainability	The transport system should actively contribute to environmental sustainability by: (a) protecting, conserving, and improving the natural environment. (b) avoiding, minimising, and offsetting harm to the local and global environment, including through transport-related emissions and pollutants and the loss of biodiversity. (c) promoting forms of transport and the use of forms of energy and transport technologies which have the least impact on the natural environment and reduce the overall contribution of transport-related greenhouse gas emissions. (d) improving the environmental performance of all forms of transport and the forms of energy used in transport. (e) preparing for and adapting to the challenges presented by climate change.

Integration of transport and land use	(1) The transport system should provide for the effective integration of transport and land use and facilitate access to social and economic opportunities. (2) Without limiting the generality of subsection (1), transport and land use should be effectively integrated so as to improve accessibility and transport efficiency with a focus on: (a) maximising access to residences, employment, markets, services, and recreation. (b) planning and developing the transport system more effectively. (c) reducing the need for private motor vehicle transport and the extent of travel. (d) facilitating better access to, and greater mobility within, local communities. (3) Without limiting the generality of subsection (1), the transport system and land use should be aligned, complementary and supportive and ensure that: (a) transport decisions are made having regard to the current and future impact on land use. (b) land use decisions are made having regard for the current and future development and operation of the transport system. (c) transport infrastructure and services are provided in a timely manner to support changing land use and associated transport demand. (4) Without limiting the generality of subsection (1), the transport system should improve the amenity of communities and minimise impacts of the transport system on adjacent land uses.
Efficiency, coordination, and reliability	(1) The transport system should facilitate networkwide efficient, coordinated, and reliable movements of persons and goods at all times. (2) Without limiting the generality of subsection (1), the transport system should: (a) balance efficiency across the network so as to optimise the network capacity of all modes of transport and reduce journey times. (b) maximise the efficient use of resources including infrastructure, land, services, and energy. (c) facilitate integrated and seamless travel within and between different modes of transport. (d) provide predictable and reliable services and journey times and minimise any inconvenience caused by disruptions to the transport system
Safety and health and wellbeing	(1) The transport system should be safe and support health and wellbeing. (2) Without limiting the generality of subsection (1), the transport system should: (a) seek to continually improve the safety performance of the transport system through: (i) safe transport infrastructure. (ii) safe forms of transport. (iii) safe transport system user behaviour. (b) avoid and minimise the risk of harm to persons arising from the transport system; Authorised by the Chief Parliamentary Counsel Part 2—Vision statement, objectives, principles, and statements of policy principles (c) promote forms of transport and the use of forms of energy which have the greatest benefit for, and least negative impact on, health and wellbeing.

Table 2-1: TIA Objectives

DTP Transport Strategy

The DTP Transport Strategy recognises the significant level of uncertainty surrounding the future of transport, in addition to the challenges of sustaining productive journey times with high levels of population growth and rapid change.

The strategy is a work in progress, but a set of Strategic Directions has been approved to guide the development of the transport system through policy, planning, project delivery and operations in the context of this uncertainty, as shown in Figure 2-1.

They underline the importance of non-infrastructure interventions to optimise the efficiency and capacity of the current network to support the investment in infrastructure, utilising innovation, technology and new commercial models as well as traditional methods.

Any alternative route that is ultimately delivered for Horsham is expected to directly or indirectly incorporate these strategic directions.



Figure 2-1: DTP's Strategic Directions

Movement and Place

The Movement and Place framework recognises that streets not only keep people and goods moving, but they are also places for people to live, work, and enjoy.

In this new language, road corridors and streets are defined by the context of the interfacing land use and assigned various 'movement' and 'place' classifications. This way of thinking implies that while we are planning for and developing our transport network, we need to consider the needs for movement and placemaking simultaneously (i.e., providing suitable levels of access to places while making them attractive for people to spend time in).

The Framework offers a common language for coordinated transport planning between transport and planning agencies and local governments. It also provides a consistent approach to assessing the performance of the road and transport network, identifying project requirements, and assessing project solutions. As such, the use of the Movement and Place Framework in the context of developing corridor options represents an opportunity to assess their relative performance and guide the development of the corridor arrangements, having consideration for future surrounding land uses.

Also, the Movement and Place approach adopts more of a vision and validate approach to network planning and management (i.e., identify the long-term vision for each corridor within the network and develop treatments that progress towards them).

The classification of a corridor in terms of its movement function will generally be consistent with the description provided in Table 2-2 (i.e., National, State, Regional, Municipality, Local level of functional importance), but for each mode (i.e. General Traffic, Freight, Bus, Cycling, Walking, Tourist, etc.).

Classification	Description
M1	Mass movement of people and/or goods on routes with a State or National level movement function or primary access to a State level place.
M2	Significant movement of people and/or goods on routes connecting across multiple municipalities or primary access to Regional level places.
M3	Moderate movement of people and/or goods on routes connecting municipalities or primary access to Municipal level places.
M4	Movement of people and/or goods within a municipality
M5	Local movement

Table 2-2: Movement Classification

The classification of a corridor in terms of its place function will generally be consistent with the description provided in Table 2-3 (i.e. National, State, Regional, Municipality, Local level of functional importance).

Classification	Description
P1	State level - state significant destination
P2	Regional level - regional-wide significance
P3	Municipal level – municipal significance
P4	Neighbourhood level – neighbourhood significance
P5	Local Level – local significance

Table 2-3: Place Classification

Movement and Place has been applied across Victoria, including Horsham. We have been provided with the latest freight network classifications from DTP. The resulting classifications and their use with this project are discussed further in Section 3.1 of this report.

Principal Freight Network

The Principal Freight Network (PFN)¹ identifies and protects freight corridors and places of national, state and regional significance that support high-capacity and efficient freight movements around Victoria. These routes were recently reviewed and updated in consultation with relevant public and industry stakeholders in 2020 to help support the growing future freight task on the Victorian transport network by:

- Guiding future transport network and land use planning and infrastructure investment to ensure consideration and prioritisation of freight.
- Protecting the PFN and future capacity of this network through appropriate legislation, planning scheme and policy provisions.
- Integrating multi-modal supply chains and end-to-end supply chains to achieve productivity gains and industry competitiveness.

The green lines in Figure 2-2 illustrate the updated PFN proximate to Horsham, which includes Western Highway, Wimmera Highway and Henty Highway. Whilst outside of the Project Feasibility Study Area, the Wimmera Intermodal Freight Terminal is located north-east of Horsham, bounded by Wimmera Highway and the railway line.

The updated PFN helps give certainty to industry and communities on the preferred routes for freight movements, and significant freight places now and in the future to support land-use planning.

Moreover, the PFN is recognised as part of the State Transport System in Clause 18: Transport of the Victorian Planning Provisions, which means it can only be amended by the Minister through a planning scheme amendment process and should be considered in all relevant decision-making, such as part of this project.

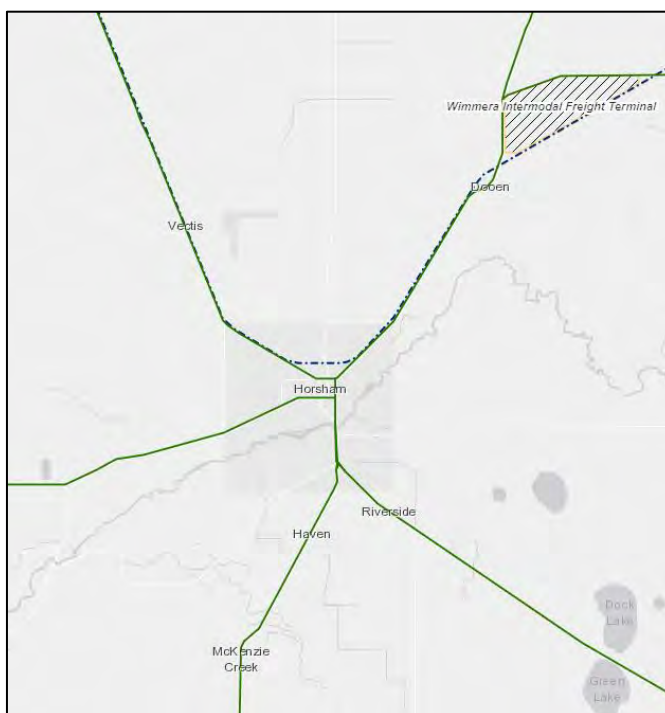


Figure 2-2: PFN, Horsham

¹ Department of Transport, Principal Freight Network: <https://transport.vic.gov.au/about/planning/transport-strategies-and-plans/principal-freight-network>

Victorian Freight Plan – Delivering the Goods

This Victorian Freight Plan was published in 2018. The purpose of the plan is to set out the priorities to achieve an efficient, safe and sustainable freight and logistics system that enhances Victoria's economic prosperity and liveability. It outlines the initiatives to be undertaken by the State government in the short, medium, and long-term, setting a blueprint to prioritise investment in the freight network. Key elements and objectives that are highlighted in the plan that are of relevance to this project are:

- Various Western Highway upgrades between Ballarat and the South Australian border, including duplication between Ballarat and Stawell.
- Acknowledgment of the need for local government's involvement as most freight movements begin and end on roads managed by local government.
- Victoria needs to use its existing freight and logistics assets more efficiently in the future to manage growth.
- The existing HPFV network is extensive and provides end-to-end access through integrated local, interstate, and state road connections.
- The challenge of managing existing and proposed freight corridors and places in conjunction with urban form changes and the need to reduce the impacts of congestion on supply chain costs and communities.
- A key objective of the plan is to improve the efficiency of moving freight while minimising adverse impacts.
- To provide an improved connection with sufficient future capacity between Victorian businesses with their local, interstate and export markets.

One of the priorities within this document is to make better use of our rail freight assets, with reference to the Mode Shift Incentive Scheme (MSIS). This scheme has been assisting the transfer of road-based freight to rail via the Wimmera Intermodal Freight Terminal (WIFT) viable as freight demands and rail services increase. Such schemes help at least reduce the distance travelled by heavy vehicles across the freight network.

Road Safety Action Plan

The Victorian Road Safety Strategy (2021-2030) aims to halve deaths and progressively reduce serious injuries by 2030. This aligns with the ultimate ambition to eliminate all road deaths and serious injuries by 2050. The strategy seeks to achieve this by embedding a strong culture of road safety within the Victorian community, supporting all road users to feel and make safe choices on and around our roads.

The strategy's principles are to:

- Have positive outcomes for all Victorians.
- An approach to road safety that is built around a safe system approach that is coordinated and collaborative and includes all the Road Safety Partners of Victoria.
- Use all the levers available to address immediate road safety concerns while also preparing for and welcoming technological advancement opportunities.
- Ensure the data and evidence base of our initiatives and interventions is sound and strong.
- Take a holistic approach, to build initiatives that address all aspects of the system including public health, vehicle safety technology, infrastructure, and behaviour change supported by enforcement practices.
- When developing action plans consider how to adapt to changes in road safety technology, the needs of the Victorian community, and the social and economic environment.

The strategy will be implemented via short-term action plans of key initiatives. This approach allows for an agile response to road safety now and into the future.

In terms of what this project should do regarding Road Safety, it should also adopt a safe system approach that ideally eliminates the potential of road deaths and serious injuries associated with any new infrastructure – only achieving a reduction of road deaths and serious injuries would not align with the Victorian Road Safety Strategy.

Wimmera Southern Mallee Regional Transport Strategy

The Wimmera Southern Mallee Regional Transport Strategy was developed in 2014 by Regional Development Victoria, which:

- Identifies priority transport projects of regional significance.
- Ensures the Wimmera Southern Mallee's transport directions are aligned with state, regional, and local policy.

The strategy consists of specific projects that aim to support investment and economic development, enhance supply chain and freight efficiency, help manage known regional challenges, improve accessibility and improve safety, health and wellbeing.

Priority projects that are part of this strategy, which are relevant to Horsham, include:

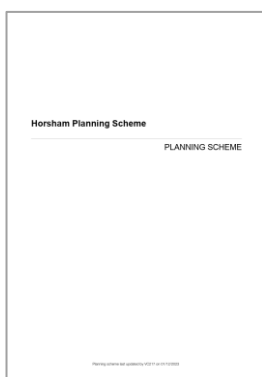
- **Henty Highway improvements (Horsham to Lascelles):** The region's key north-south road requires shoulder and roughness upgrades to ensure it is fit for purpose as part of Victoria's Principal Freight Network.
- **Horsham Bypass:** A Western Highway bypass of this regional city will improve amenity and safety for residents and increase the efficiency of freight movements.

- **Henty Highway improvements (Horsham to Portland):** The primary freight route from the Wimmera to Portland will benefit from greater maintenance south of Horsham to improve the road condition.

2.2 Local Government

The following is a summary of the Local Government Planning Policy documents which have been reviewed and provide guidance to inform the feasibility study.

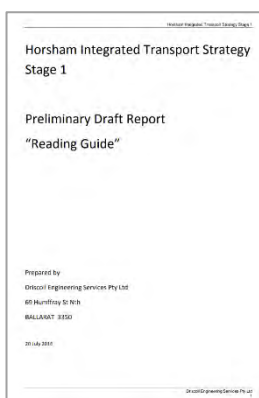
Horsham Planning Scheme



The Horsham Planning Scheme contains State and Local Policy relating to the transport system and freight in Victoria, some of which is specific to the Horsham region. Relevant strategies are as follows:

- Clause 18.01-1S: Land use and transport integration
- Clause 18.01-2S: Transport system
- Clause 18.02-5S: Freight
- Clause 18.02-5R: Freight links – Wimmera Southern Mallee

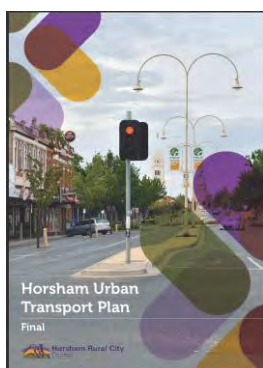
Horsham Integrated Transport Strategy, Stage 1 Draft 2016



The aim of the Stage 1 Strategy is to address issues related to a strategic transport network incorporating a Horsham bypass of the Western Highway.

A key objective of the Horsham Integrated Transport Strategy was to identify potential routes for all three highways around Horsham, however ultimately this was not adopted by Council.

Horsham Urban Transport Plan 2020



The Horsham Urban Transport Plan was prepared in 2020 and aims to set directions and priorities for development of the transport system in urban Horsham in a way that supports the goals of the community, economy and environment both now and in the future. It includes an objective to remove trucks from the CBD and river precinct which don't originate or terminate in the CBD.

Horsham Rural Road Network Plan 2022



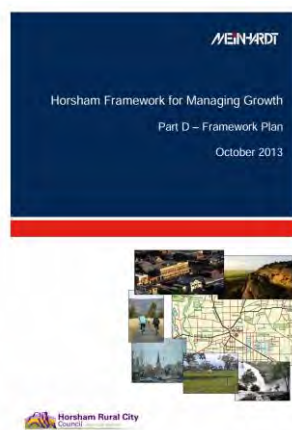
Involved a review of the local rural road network to develop a plan to better manage the existing sealed and unsealed network with the finite resources available to Council for the upgrading and maintenance of them

Horsham Panel Report – Amendment C72



Horsham Planning Scheme Amendment C72 proposed to apply a Public Acquisition Overlay - Schedule 3 (PAO3) over the land required for the realignment of the Western Highway around Horsham to create a bypass. It is noted however that Amendment C72 was subsequently abandoned.

Horsham Framework for Managing Growth: Part D – Framework Plan 2013



The Framework Plan is intended to serve as a planning tool that will help deliver the long-term vision for the future urban growth and development of Horsham. A strategic direction from the plan also included the establishment of new bridges across the Wimmera River to improve connectivity between the existing and proposed communities on either side of the river.

Horsham South Emerging Options

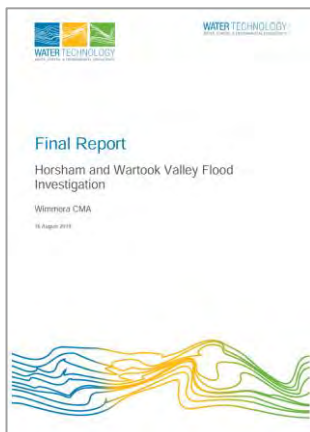


HRCC is preparing a Structure Plan for the area of Horsham South. The Structure Plan will be a strategic document that establishes a shared vision and framework for future growth, development and character of Horsham South. The intent being that the plan will be adopted through a future planning scheme amendment to implement the proposed land uses and controls. Consideration will need to be given to the potential impacts of a potential alternative route with the proposed development of Horsham South, so as to not unduly impact its development and livability for the future community.

2.3 Local Studies & Strategies

The following is a summary of studies and strategies that have been undertaken for Horsham, which have been reviewed when undertaking the background review to inform the feasibility study.

Horsham Wartook Valley Flood Investigation 2019



Included detailed hydrologic and hydraulic modelling of the Wimmera River, Mackenzie River, Burnt Creek, Bungalally Creek, Darragan Creek and Sandy Creek, covering a large rural area and the township of Horsham. The investigation recommended updates to the Land Subject to Inundation Overlay (LSIO) and Flood Overlay (FO) for adoption into the Horsham Rural City Council Planning Scheme.

Destination Horsham – Investment Attraction Strategy 2022



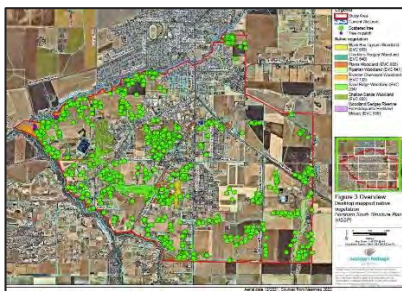
'Investment theme 3' focused on commercial and industrial land development. Three key sites are specifically identified, being Wimmera Agriculture and Logistics Hub (WAL Hub), Burn Creek Industrial Estate and Enterprise Estate. An alternative heavy vehicle route should support the attractiveness of these industrial estates.

Wimmera Agriculture and Logistics Hub (WAL Hub)



The WAL Hub is the key export freight hub for the Wimmera, based within the 470 hectare precinct located 12km north of Horsham at Doon. The WAL Hub contains the Wimmera Intermodal Freight Terminal (WIFT), a project which is an important strategic investment for the Wimmera region, providing vital freight infrastructure

Horsham South Ecology and Habitat Assessment



An ecology and habitat assessment is being undertaken by others for the Horsham South area. There are scattered trees within this area which Council will seek to protect through the introduction of a Vegetation Protection Overlay (VPO)

2.4 Cultural Heritage

Aboriginal Heritage Act 2006

The main purpose of the Aboriginal Heritage Act 2006 is:

- to provide for the protection of Aboriginal cultural heritage and Aboriginal intangible heritage in Victoria; and
- to empower traditional owners as protectors of their cultural heritage on behalf of Aboriginal people and all other peoples; and
- to strengthen the ongoing right to maintain the distinctive spiritual, cultural, material and economic relationship of traditional owners with the land and waters and other resources with which they have a connection under traditional laws and customs; and
- to promote respect for Aboriginal cultural heritage, contributing to its protection as part of the common heritage of all peoples and to the sustainable development and management of land and of the environment.

Horsham and surrounds contain various areas of cultural sensitivity, particularly along the Wimmera River. The area around the Golf Course in particular includes registered Aboriginal cultural sites associated with a floodplain and lunette system.

Aboriginal Cultural Values Draft Report

In July 2023, GHD prepared an Aboriginal Cultural Values Draft Report for the Horsham Alternative Truck Route Feasibility Study. It documents the findings of engagement sessions held in May 2023 with Traditional Owners and representatives from Barengi Gadjin Land Council (BGLC), the Registered Aboriginal Party for the area. The report complements the findings of the desktop assessment report completed in January 2023.

The report identifies that Barringi Gadyin (Wimmera River) has been central to the cultural and spiritual life of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk Traditional Owners (collectively known as the Wotjobaluk Peoples) for thousands of years. The Wotjobaluk Traditional Owners maintain a strong connection to their Country today, and protecting and managing their land, waters, and culture is of vital importance.

Recommendations of the report included seeking to protect heritage values through avoidance of high sensitivity areas.

•



3 Existing Conditions

3.1 Movement & Place Classifications

The Movement and Place classifications for the roads within the feasibility study area are summarised in Table 3-1. These are aspirational classifications, with a '1' rating reflecting State significance, whilst a '5' rating reflects local significance.

Road Name	Movement & Place Classification					
	Place (P)	Movement (M)	General Traffic (GT)	Freight (F)	Cycling (C)	Walking (W)
Western Hwy	P5	M1	GT1	F1	n/a	W3 (part)
Henty Hwy	P5	M2	GT2 / GT3	F2	n/a	W3 (part)
Wimmera Hwy	P5	M2	GT3	F2	n/a	W3 (part)
Blue Ribbon Rd	P5	M3	GT3	F3	n/a	W3 (part)
Golf Course Rd	P4 / P5	M3	GT4 / GT5	F3	C3 (part)	W3 / W4
Curran Rd	P5	M3	GT5	F3	n/a	W4
Pearson Rd	P4	M3	GT5	F3	n/a	W4
Cameron Rd	P5	M3 / M5	GT5	F3 (part)	n/a	W4
Gatehouse Rd	P5	M3 / M5	GT5	F3 (part)	n/a	W4 / W5
Three Mile Rd	P5	M3	GT5	F3	n/a	W5
Riley Rd	P5	M3	GT5	F3	n/a	W4
Rasmussen Rd	P4 / P5	M3	GT5	F3	n/a	W3 / W4
Remlaw Strn Rd	P5	M3	GT5	F3	n/a	W5
Plumpton Rd	P4	M3	GT5	F3	n/a	W4
Riverside E Rd	P5	M5	GT5	F3 (part)	n/a	W5
Riverside Rd	P5	M5	GT5	n/a	n/a	W4
Mackies / Wards Rd	P5	M3	GT5	F3	n/a	W5
Three Bridges Rd	P5	M3	GT5	F3	n/a	W5
Holes Rd	P4	M3	GT5	F3	n/a	W4
Hunts Rd	P5	M5	GT5	n/a	n/a	W4
Plozzas Rd	P5	M5	GT5	n/a	n/a	W4

Table 3-1: Movement & Place Classifications

Key points associated with Table 3-1 include the following:

- Only the Western Highway has a '1' rating for movement (M1), general traffic (GT1) and freight (F1), indicating its state significance as a through-route for freight and traffic. The other significant through routes of Henty Highway and Wimmera Highway have M/F2 classifications and as such provide primary access across municipality and/or regional level places.

- All roads outside of the urban area are identified as suitable for some level of freight movements, excluding Riverside Road, Hunts Road and Plozzas Road. It is also noted that the freight classification 'F3' does not apply to all sections of Cameron Road, Gatehouse Road and Riverside East Road.
- Roads classified as 'M5', either entirely or in part, include Cameron Road, Gatehouse Road, Riverside East Road and Riverside Road. This classification indicates that movements are intended to occur at a local level only. It is noted that Cameron Road and Gatehouse Road also include sections of M3, supporting a moderate movement of people or goods.

3.2 Land Use Zones & Overlays

This section sets out the Horsham Planning Scheme zones and overlays relevant to the study area, with the maps attached in Appendix A.

Zoning

The Horsham Planning Scheme contains a variety of zones relevant to the study area, with the most prominent zones outside of the urban area as follows:

- | | |
|--|--|
| • FZ – Farming Zone | • PUZ2 – Public Use Zone (Education) |
| • LDRZ – Low Density Residential Zone | • PUZ6 – Public Use Zone (Local Government) |
| • RLZ – Rural Living Zone | • PUZ7 – Public Use Zone (Other Public Use) |
| • C2Z – Commercial 2 Zone | • SUZ1 – Special Use Zone (Horsham Golf Course) |
| • IN1Z – Industrial 1 Zone | • SUZ2 – Special Use Zone (Horsham Airport) |
| • IN3Z – Industrial 3 Zone | • SUZ8 – Special Use Zone (Horsham Artist in Residence) |
| • PCRZ – Public Conservation and Resource Zone | • TRZ1 – Transport Zone (State Transport Infrastructure) |
| • PPRZ – Public Park and Recreation Zone | • TRZ2 – Transport Zone (Principal Road Network) |
| • PUZ1 – Public Use Zone (Service & Utility) | |

The principal road network (TRZ2) is comprised of Western Highway, Blue Ribbon Road, Henty Highway, Horsham-Lubeck Road, Wimmera Highway and Horsham-Noradjuha Road.

Industrial and Special Use Overlays

Industrial precincts are a key part of truck movements through the city and Horsham has a number of transport depots within the industrial estates which cater for regional and interstate freight. Such sites are typically found within the Industrial Zone and also sometimes the Special Use Zone, as shown in Figure 3-1. As noted in Horsham's investment attraction strategy, the WAL Hub, Burnt Creek Industrial Estate and Enterprise Estate are key sites to be supported and are also specifically identified in Figure 3-1.

The recently established WAL Hub/ WIFT is a strong focus in Council's investment attraction strategy, with transport and logistics businesses being encouraged to locate within in this precinct. The Burnt Creek Industrial Estate (which includes the Regional Live Stock Exchange) is also a focus for industrial land use, whilst the Enterprise Estate performs as a local industrial estate.

Plumpton Road, Golf Course Road and Stawell Road form part of the Enterprise Estate and have active street frontages. Careful planning is needed around this precinct, as higher volumes of heavy truck movements is considered to be unsuitable due to the adjacent public realm.

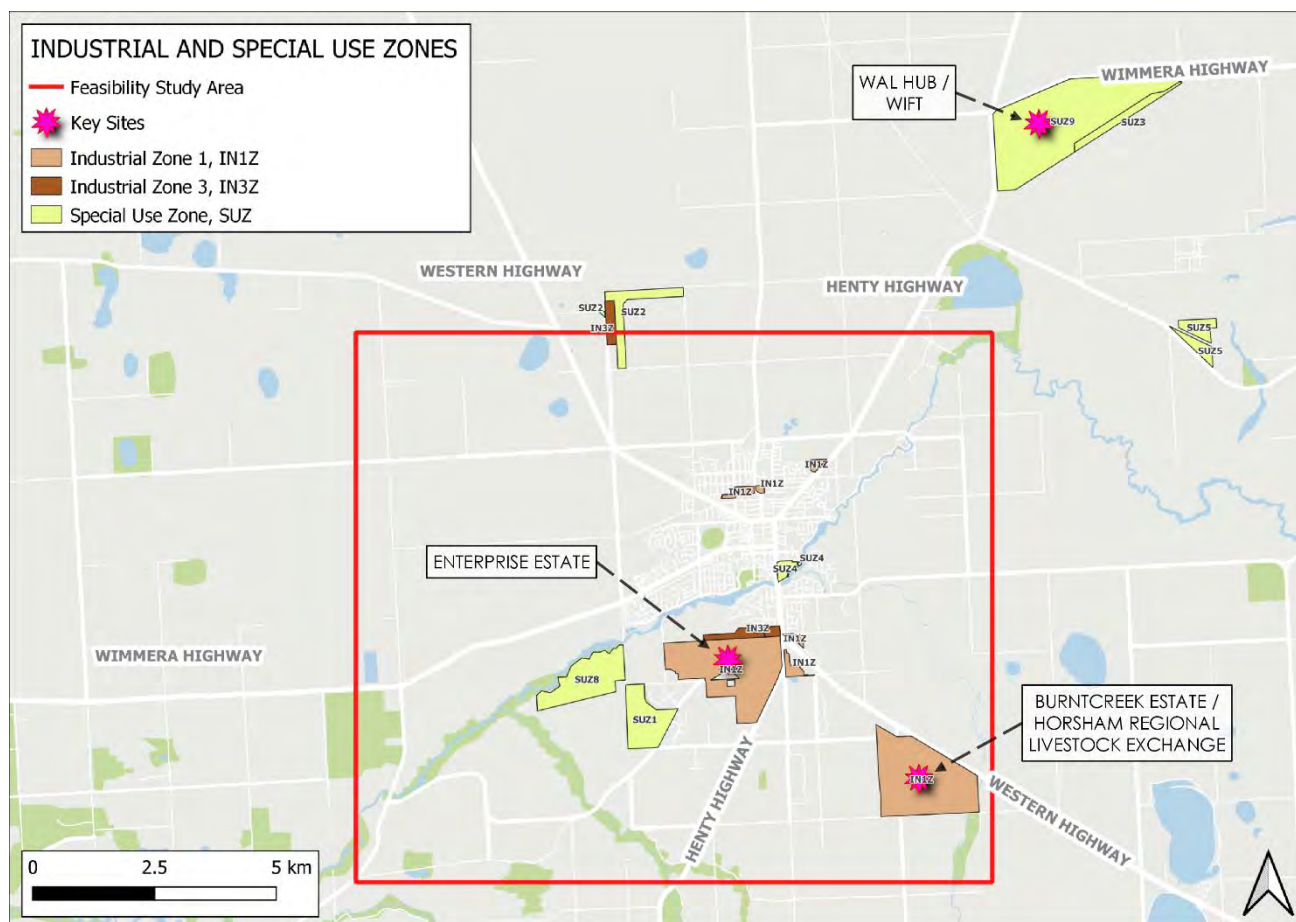


Figure 3-1: Industrial and Special Use Zones

Environmental and Landscape Overlays

Environmental and landscape overlays, as per the Horsham Planning Scheme, exist within the feasibility study area and throughout the wider Horsham area. Some of the surrounding arterial road network is covered by an Environmental Significance Overlay (ESO). The various ESO categories include Natimuk Douglas Wetlands (ESO2), water course protection (ESO3), channel and reservoir protection (ESO5) and Horsham South wastewater treatment plant buffer area (ESO6). Use of land for a road and roadworks typically do not require a planning permit, however vegetation removal is likely to require a planning permit. Works within land covered by these Overlays which trigger a requirement to apply for a planning permit would be subject to consideration of the following relevant key environmental objectives to be achieved:

- ESO2 – To ensure the Natimuk Douglas Wetlands are preserved as a haven for migratory birds; to encourage the revegetation of wetlands where appropriate, in consultation with the Department of Sustainability and Environment.
- ESO3 – To maintain the quality and quantity of water within the watercourse; to protect and encourage the long-term future of flora and fauna habitats along watercourses; to minimise the potential damage caused to human life, buildings and property by flood waters.
- ESO5 – To maintain and enhance the quality and supply of irrigation and domestic water throughout the Wimmera region; to protect water reservoirs and channels from potential sources of pollution.
- ESO6 – To ensure that notice of an application which may have an impact on the ongoing operation of the wastewater treatment plant is given to the relevant agency.

Built Form Overlays

Built form overlays, as per the planning scheme, exist over the northern and southern parts of the feasibility study area and throughout the wider Horsham area. Some of the surrounding arterial road network is covered by a Design and Development Overlay (DDO) and Development Plan Overlay (DPO). Notable overlays are listed below.

- DDO1 – Rifle butts danger area
- DDO2 – Immediate airport environs area
- DDO3 – Wider airport environs area

A planning permit is not triggered to use land for a road, roadworks or vegetation removal under the provisions of the DDO. The intent of the above DDO schedules typically relates to building heights and sensitive land uses.

- DPO1 – Low density residential development plan
- DPO2 – Rural living development plan

A planning permit is not triggered to use land for a road, roadworks or vegetation removal under the provisions of the DPO. The intent of the above DPO schedules is to generally guide future low density and rural living within these areas. Planning for a heavy vehicle alternative route should give consideration to any amenity issues associated with housing in these areas.

Heritage Overlays

Various land parcels within the Horsham urban area contain existing and proposed Heritage Overlays (HO). There are also proposed and existing HOs proximate to the feasibility study area boundary to the west, south-west (west of Wards Road) and north-east (proximate to the WAL Hub). Whilst HOs within the urban area would not be impacted by an alternative heavy vehicle route, those to the north-east are relevant due to their proximity to the WAL Hub.

Impact to HO19 ("Dooen" Hotel) and HO20 (Former post office and store) should be avoided and the silos at Dooen are of local significance and any impact to them should be minimised. It is noted that roadworks which change the appearance of a heritage place triggers the requirement for a planning permit.

Floodplain Overlays

The Floodway Overlay (FO) and Land Subject to Inundation Overlay (LSIO), as per the Horsham Planning Scheme Amendment C81hors, exist proximate to the Wimmera River that runs southwest-northeast through the feasibility study area, in addition to surrounding areas, particularly in the eastern region of the feasibility study area. A planning permit is required for roadworks if the water flow path is redirected or obstructed in these areas. Any vegetation removal in these areas is also likely to trigger the need for a planning permit.

3.3 Transport Network

Road Network

State Road Network

The Western Highway is one of the primary routes for freight and is a key transport link to Melbourne, Adelaide, Geelong, and surrounding regional hubs. The Hume Highway / Wimmera Highway is another major freight route, which connects Horsham to Sydney. The Henty Highway also runs north-east to south-west through Horsham. There are other B-Double capable arterial roads that also service the town, namely Blue Ribbon Road to the north and Horsham-Lubeck Road to the east.

The Annual Average Daily Traffic (AADT) volumes from 2020, as extracted from the Victorian Government online open data portal², are shown in Table 3-2. The data covers a selection of roads from within the study area. Whilst these figures may have been affected by COVID restrictions, they provide a good indication of regular travel patterns in the area. It is noted that arterial roads converge through Horsham, therefore the road names used below use the most local-level road name.

Road	All Vehicles One-Way AADT	Trucks One-Way AADT
Stawell Road between O'Callaghans Parade and Williams Road	13,000	1,700
McPherson Street between Baillie Street and Wilson Street	6,200	1,500
Baillie Street between Urquhart Street and McPherson Street	4,900	853
Dooen Road between Cameron Road and McPherson Street	4,600	500
Blue Ribbon Road between Baillie Street and Rasmussen Road	4,600	242
Western Highway between Osborne Road and Ballyglunin North Road	3,400	1,100
Dimboola Road between Jenkinson Avenue and Urquhart Street	3,200	594
Western Highway between Ballyglunin North Road and Northern Grampians Road	3,000	900
Western Highway between Kornheim Road and Jenkinson Avenue	2,700	878
Hamilton Road between Phoebe Crescent and Kenny Road	2,300	300
Henty Highway between Dooen School Road and Rasmussen Road	2,000	250
Wimmera Highway between Horsham-Noradjuha Road and Natimuk-Hamilton Road	1,500	255
Horsham-Lubeck Road between Cameron Road and Western Highway	122	28

Table 3-2: Horsham Annual Average Daily Traffic (AADT) One-Way Volumes, 2020

² Data Vic (<https://www.data.vic.gov.au/>)

Key Roads Within the Feasibility Study Area

Figure 3-2 illustrates the roads nominated for inspection within the Horsham feasibility study area, also identifying their road categorisation. These roads are on Horsham's residential periphery and beyond, deemed to be areas of investigation for the potential alternative truck route. These roads are further detailed in Appendix B, with typical existing cross-sections.

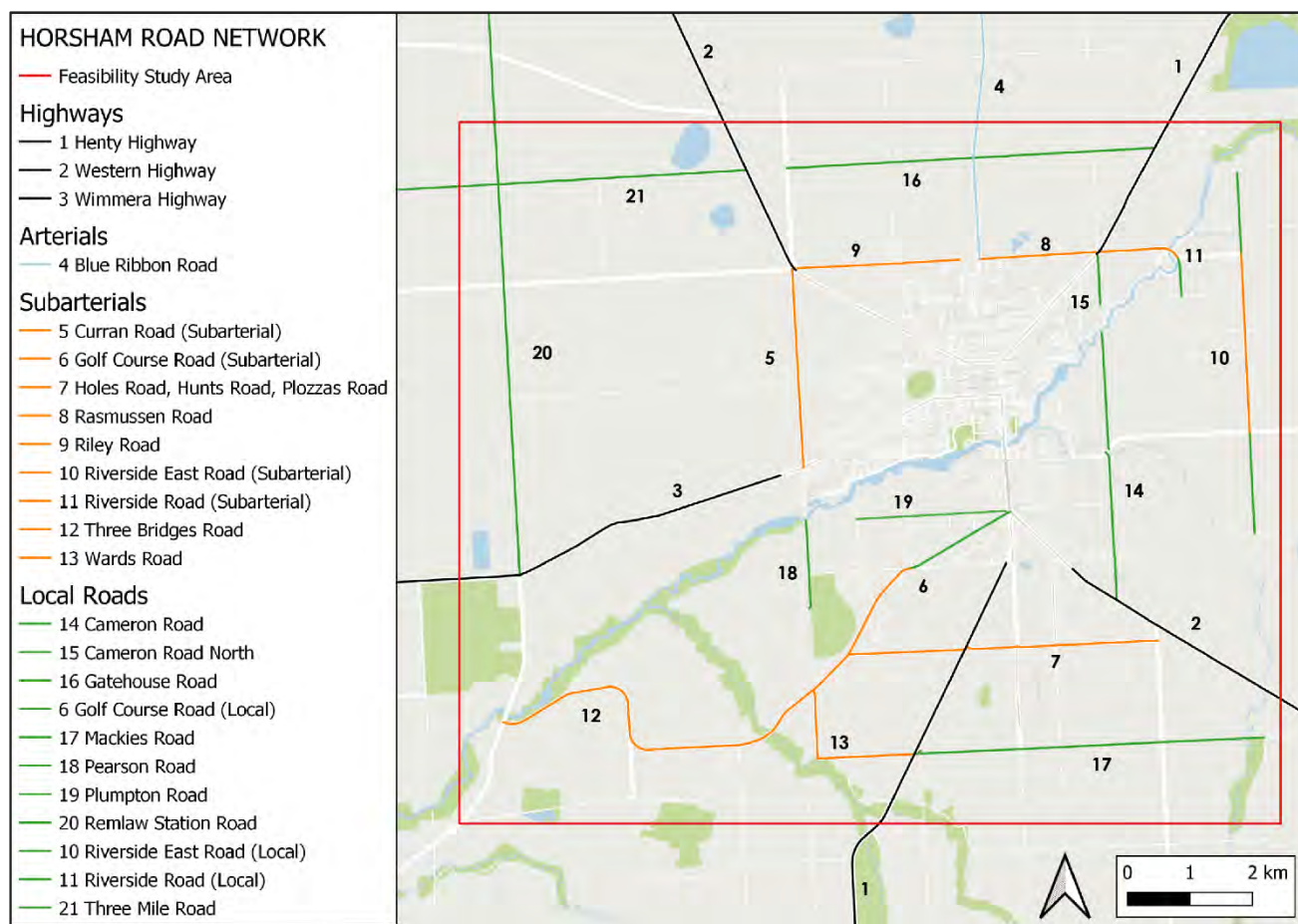


Figure 3-2: Map of Horsham Road Network

Freight

Victoria's Principal Freight Network (PFN) is a framework that protects key rail and road freight routes throughout the state, connecting corridors and places that are significant at national, state and regional levels. Many of the arterials surrounding Horsham are also freight capable. It is also noted that the WIFT (approximately 10 km north-east of the Horsham urban area) intends to 'facilitate the agglomeration of freight related land uses around key freight handling facilities and ensure the continued efficient and effective transfer of goods into and out of the [Wimmera] region'.

The Department of Transport, in conjunction with local authorities, sets out the routes and heavy vehicle dimension limits across the road network. Figure 3-3 and Figure 3-4 show the B-Double and A-Double heavy vehicles routes within the feasibility study area. Henty Highway, Western Highway, Wimmera Highway and Blue Ribbon Road are B-double approved routes, however of these only Blue Ribbon Road is not A-Double approved. It is also noted that various other roads within the feasibility study area are B-double classified, with a status of approved, conditionally approved or restricted.

Regarding Figure 3-3, it is noted that Riley Road has a weight limit and the intersection of Geodetic Road / Riley Road (at the level crossing) does not allow B-double access due to risk of short stacking.

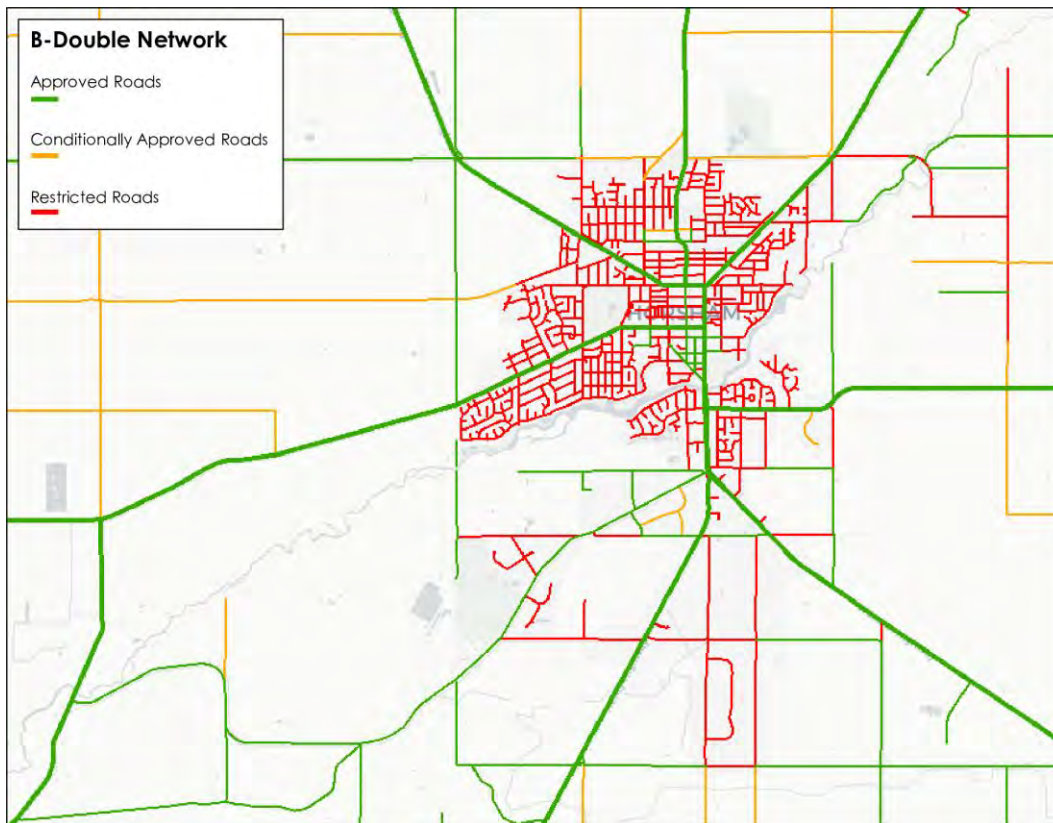


Figure 3-3: Approved B-Double Network within Feasibility Study Area

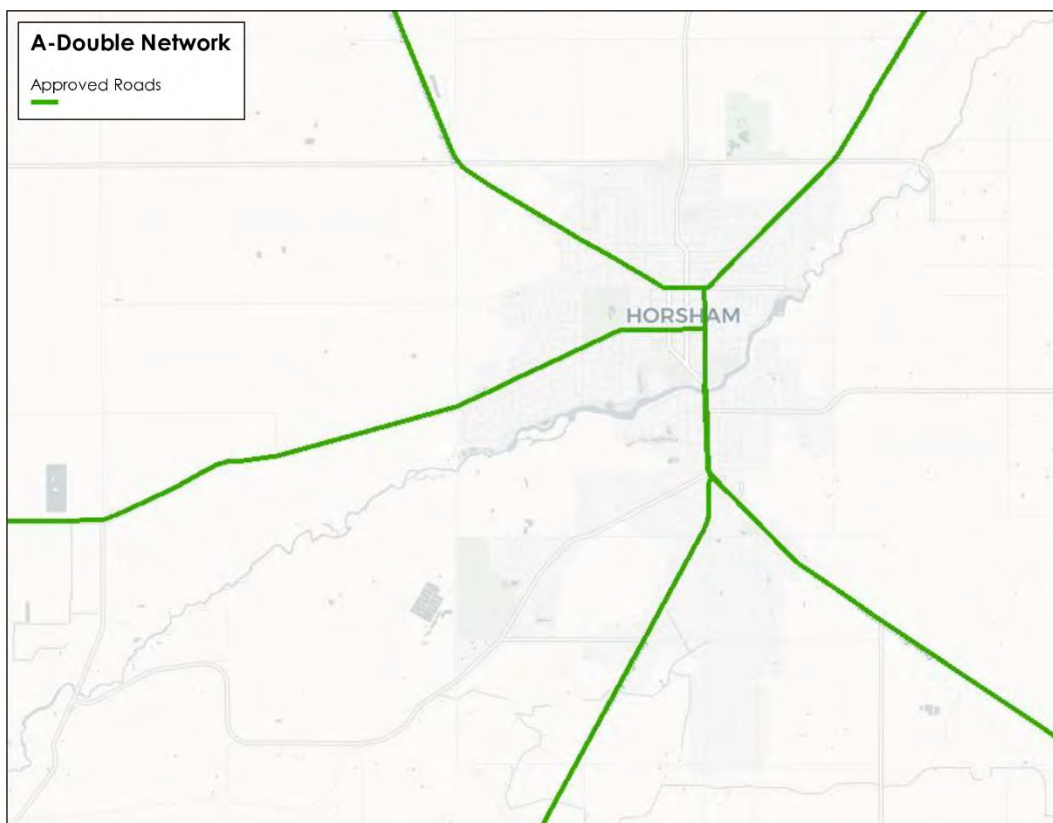


Figure 3-4: Approved A-Double Network within Feasibility Study Area

Public Transport

Figure 3-5 below shows the extent of the current public transport network within and providing access to Horsham. It shows five existing bus routes, some of which travel along the arterial roads within and surrounding the CBD.

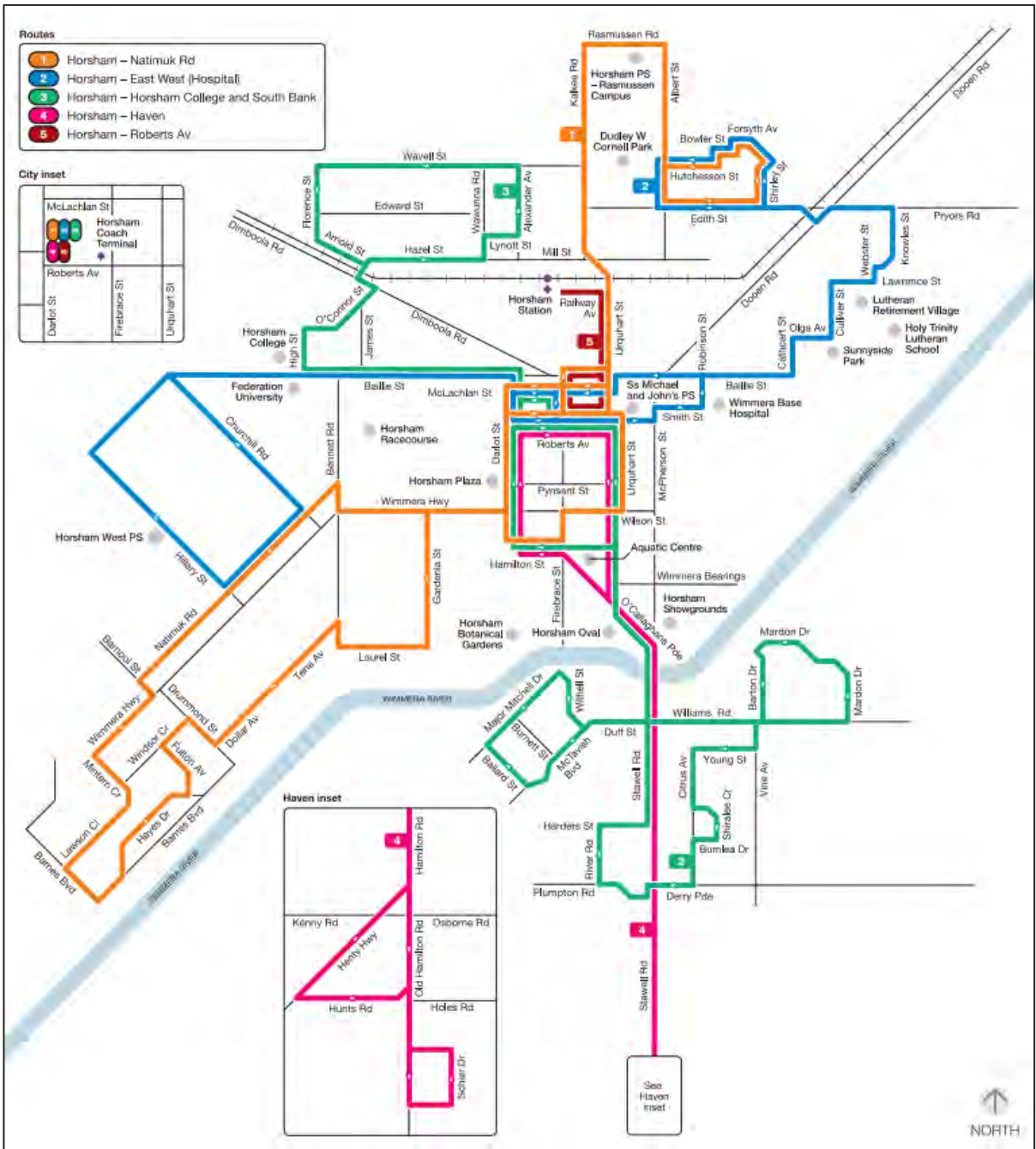


Figure 3-5: Public Transport Network

Active Transport

Figure 3-6 represents Horsham’s existing bicycle and shared path network. Regarding areas surrounding Horsham’s urban extent, it is noted that off-road routes are provided along some arterial roads, particularly to the south, west and north-west of Horsham. These routes typically provide linkages to a recreational path network along the Wimmera River.

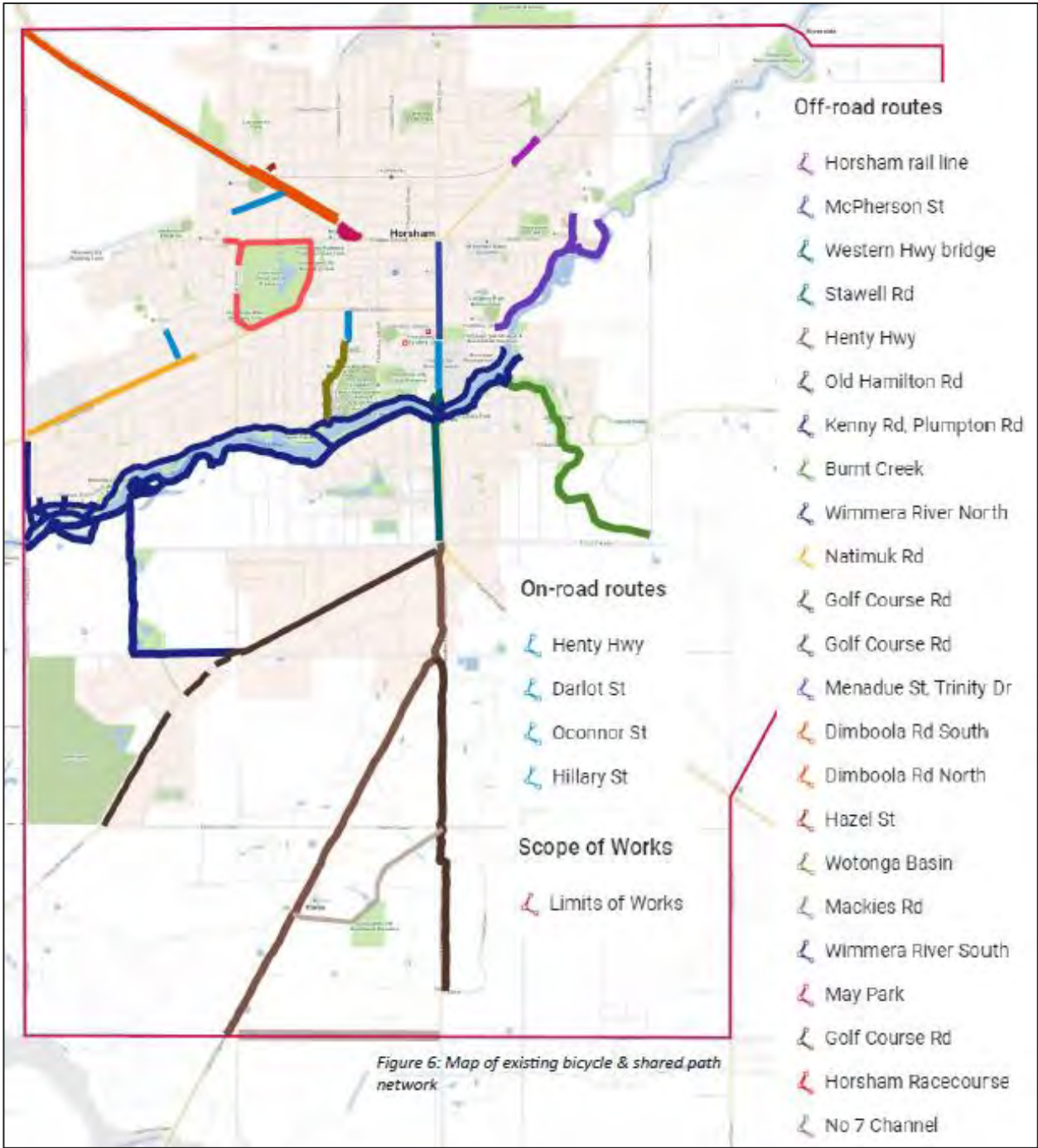


Figure 3-6: Horsham Existing Bicycle & Shared Path Network³

³ Horsham Rural City Council. (n.d.). *Draft Bicycle and Shared Paths Plan*.

Crash History

Figure 3-7 and Figure 3-8 show the total number of crashes by year, severity, and location across the Horsham Local Government Area (LGA) during the five-year period between mid-2015 and mid-2020. Crashes from within the Horsham urban area, totalling 117, were excluded; therefore, the chart and map below show only the crashes that occurred from the edge of the urban area out to the boundaries of the study area. The data also shows the following:

- From mid-2015 to mid-2020, there were 36 crashes in total. 2019 was the worst year overall for the total number of crashes with nine, whilst 2016 was the worst year for fatalities with a total of two.
- The majority of the crashes occurred away from intersections (61%). T-intersection crashes and cross intersection crashes made up 17% and 11% of the recorded incidents, respectively. The remaining percentage of crashes occurred either on private property (8%) or were deemed as happening at an 'unknown' (3%) location.
- Of the three recorded fatal incidents, two occurred on roads with a speed limit of 100km/h and the other occurred on a road with a speed limit of 80km/h. Two of the fatal incidents involved a collision with another vehicle, and the other incident involved a collision with a fixed object.
- It is noted that four crashes occurred along the Riverside East Road corridor, with one of those being fatal (running off-road, in a 100km/h zone).
- For the incidents that occurred on roads with recorded speed limits, the average speed of those roads was approximately 80km/h.

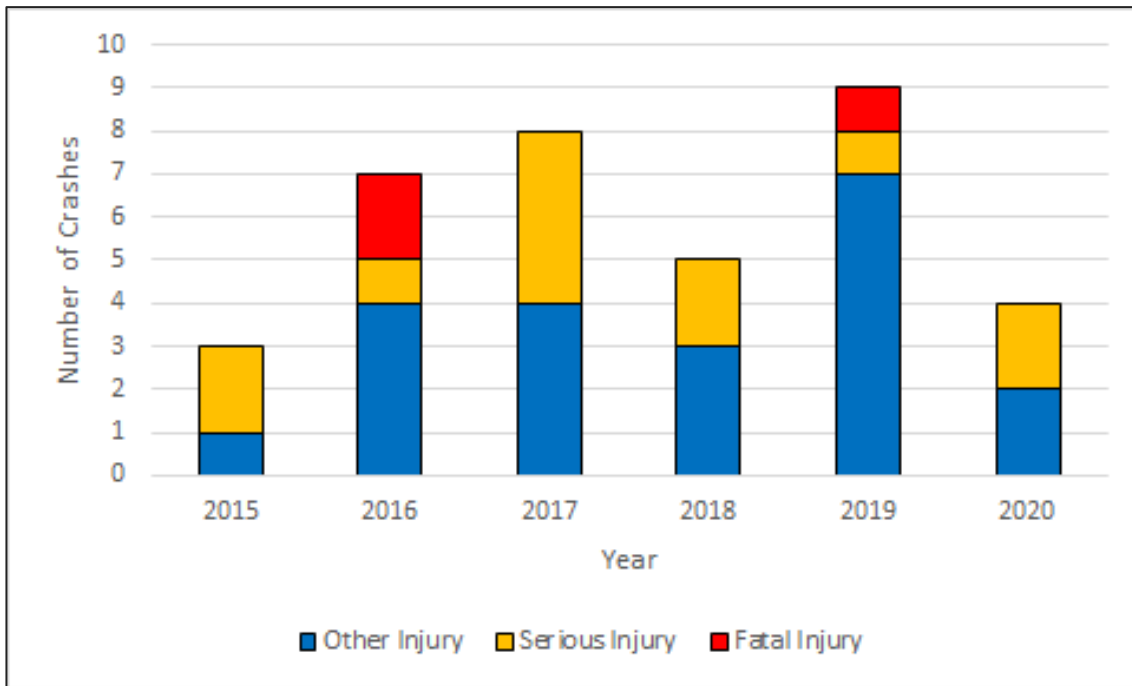


Figure 3-7: Number and Severity of Crashes by Year

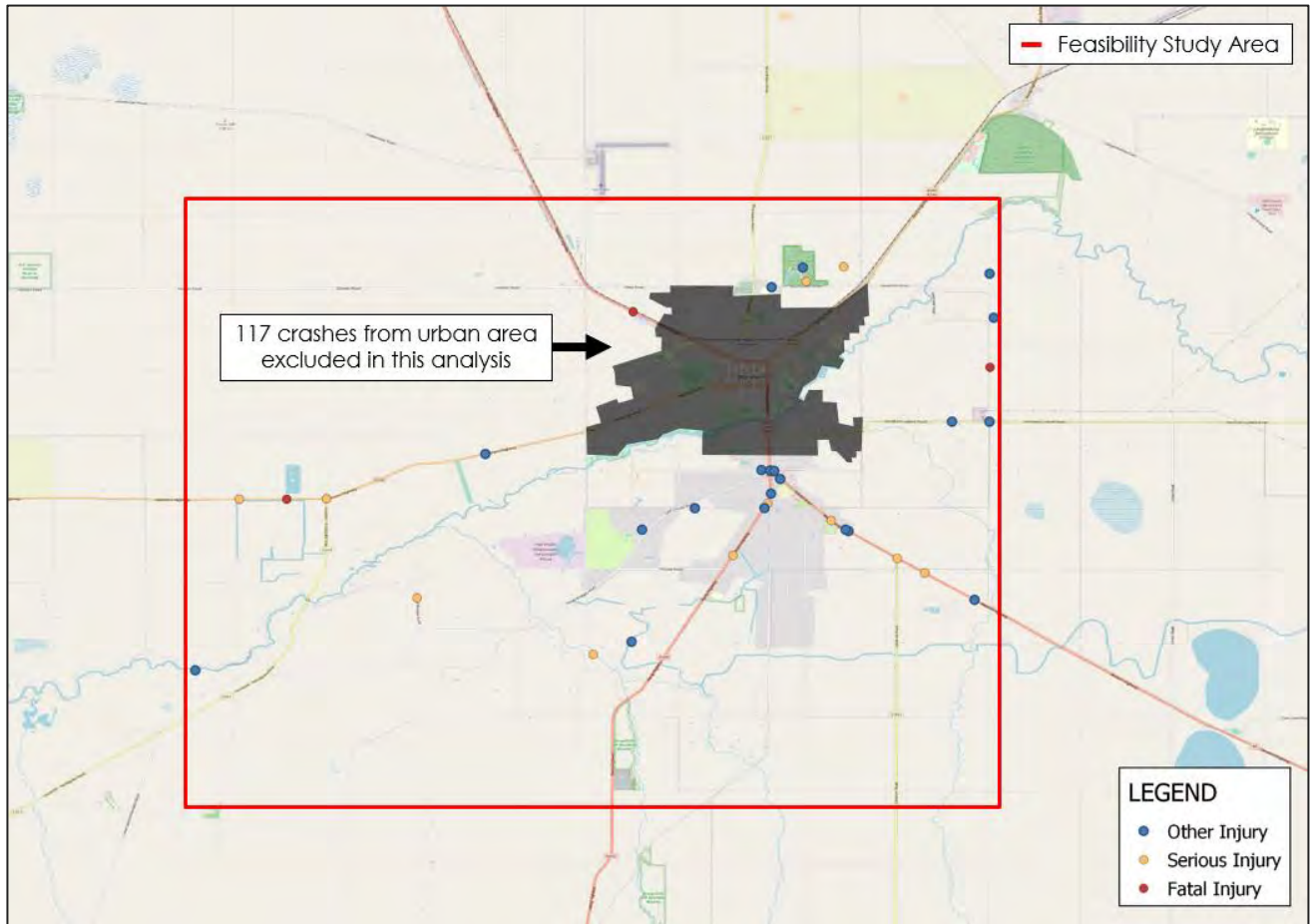


Figure 3-8: Crash Locations by Severity

3.4 Environmental Desktop Assessment

A desktop assessment of environmental features within the feasibility study area has been undertaken to understand flora and fauna implications on potential route options. Up to this point this has included a desktop review of various online databases, with a summary of the environmental key risks identified below. A technical memo is provided in Appendix C, which elaborates on biodiversity legislation and likely policy requirements.

The following key risks to providing an upgraded road corridor within the feasibility study area have been identified in Figure 3-9:

- High risk areas are considered to be FFG Act listed communities and VBA threatened species, which are most commonly found around Haven and the south-west portion of the feasibility study area.
- Medium risk areas are considered to be EVC 2005 endangered/vulnerable vegetation and other VBA threatened species, which are more commonly associated with the Wimmera River and scattered throughout the southern portion of the feasibility study area.

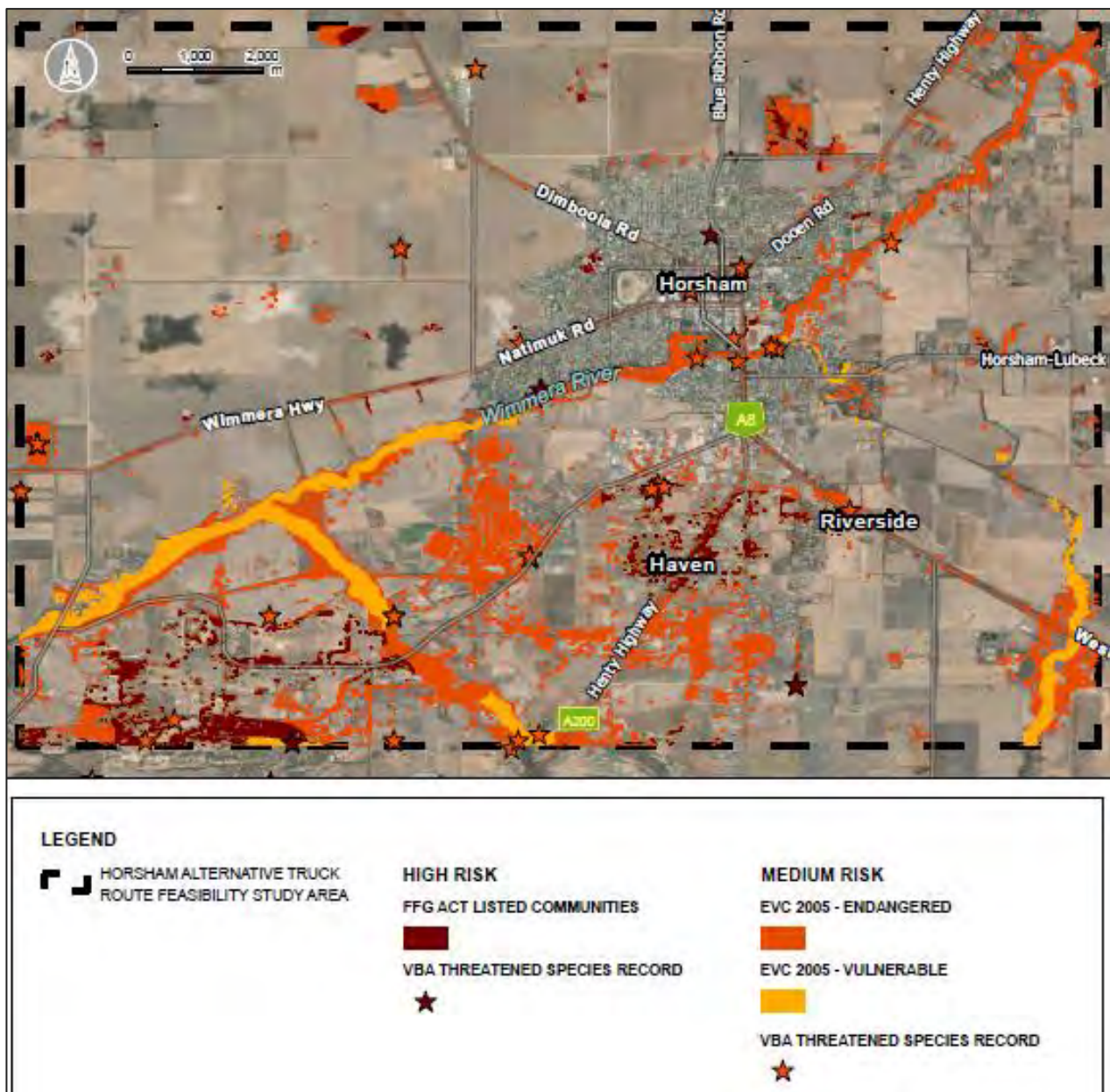


Figure 3-9: Environmental Risk Overview

3.5 Flooding

A flooding desktop assessment has been undertaken, which considered the *Horsham and Wartook Valley Flood Investigation (2019)* and Horsham's 1% AEP flood mapping (refer to Appendix D). Any proposed heavy vehicle alternative route should consider the impacts on flood levels and behaviour by utilising the existing model prepared by Water Technology for the *Horsham and Wartook Valley Flood Investigation*. A summary of the key matters identified from the desktop assessment is as follows:

Alternative heavy vehicle route, east and north of Horsham

- The route is upstream of Horsham (from the perspective of the Wimmera River) and would therefore not increase flood levels in Horsham and may have the effect of reducing flood levels in Horsham at the expense of properties upstream of the potential alternative heavy vehicle route.
 - o The *Horsham and Wartook Valley Flood Investigation* considered several options to mitigate flooding in Horsham, which included levees upstream of Horsham and an increase in the bridge span of the Western Highway over the Wimmera River.
 - o The potential alternative heavy vehicle route should be considered in the context of the proposed mitigation options and how it might compliment or hinder options to mitigate flooding in Horsham and surrounding areas.
 - o Any increase in the formation level will result in an increase in flood levels upstream in an area already subject to significant flooding during the 1% AEP flood event.
- A significant portion of Cameron Road is subject to inundation during the 1% AEP flood event, with some depths exceeding 1m. Several residential properties also adjoin Cameron Road in the area of inundation, therefore lifting the formation above the 1% AEP flood level to provide flood immunity would be difficult.
- Aerial photography from January 2011 indicates significant areas of inundation adjacent to Gatehouse Road which may indicate the road may not have flood immunity or insufficient freeboard and the road formation may need to be lifted. This should be further investigated.

Alternative heavy vehicle route, south and west of Horsham

- A potential alternative heavy vehicle route is mostly free of inundation during the 1% AEP flood event except for where it crosses the Wimmera River and low-lying areas in the vicinity of the Horsham sewage treatment plant.
- A potential alternative heavy vehicle route could result in an increase in Wimmera River flood levels upstream without suitable planning. This report assumes that options to mitigate flood levels as investigated in the *Horsham and Wartook Valley Flood Investigation* (such as additional flow capacity at the existing Western Highway bridge) or other options, would be incorporated in the detailed design to mitigate or offset any increase.
- A potential river crossing location may be far enough downstream that afflux is confined to areas that do not contain dwellings, although there is likely to be an impact on upstream rural areas. Flood modelling of any proposed crossing location and details should inform any crossing location and design.

It is noted that planning scheme amendment C81hors (the Flood Amendment) has been exhibited and is being considered by Council. A decision on whether to adopt the amendment is proposed to occur during 2023. If adopted, any outcomes relevant to this proposal will need to be considered during route options assessment.

3.6 Utilities

Existing utilities are a potential constraint to road extensions or expansion, mainly due to the cost of their relocation if impacted. A high-level review of dial-before-you-dig (DBYD) has been undertaken to understand the locations of utilities and is summarised in Table 3-3.

Asset	Description	Location(s)
Water	Water mains	- Throughout the feasibility study area, with >150mm pipes located at: - Polkemmet Road. - Western Highway (south-east of Horsham). - Peuckers / Mackies Road. - Laharum Road. - Henty Highway (north-east of Horsham). - Aerodrome / Harris Road. - Wimmera Highway. - Plumpton Road.
Sewer	Sewer mains	Generally extends south from the urban area, north of Holes/Plozzas Road, east of Pearsons Road and west of Grahams Bridge Road.
Gas	High pressure pipeline	Western Highway, east of Grampians Road (ie. Carrisbrook to Horsham pipeline).
	Distribution mains	- Western Highway, south-east of the urban area (ie. connecting the urban area to the high pressure pipelines). - Northeast portion of Golf Course Road.
Electricity	High voltage power cables and significant substations	- Golf Course Road (around Horsham golf club). - Plozzas Road. - Grahams Bridge Road. - Wimmera Highway, west of Horsham-Noradjuha Road. - Zone substation and communications cable at corner of Horsham-Lubeck Road and Riverside East Road. - Plumpton Road. - Curran Road (at edge of urban area). - A 'zone substation' and communications cable is noted at the intersection of Western Highway and Hamilton Road.
	Low voltage cables and distribution substations	Throughout the feasibility study area.
Telecoms (AARNet)	Fibre Optic Assets	Running northwest-southeast along part of Dimboola Road.
Telecoms (AusNet)	Transmission Lines	Running east-west, on the eastern boundary of the feasibility study area.
Telecoms (NBN)	Cable, trench	- Primarily within the Horsham urban area, especially in cul-de-sacs. - Cables running along several arterials and other roads leading to/from the urban area. - North-south along Blue Ribbon Road. - Northeast-southwest along Dooen South Road. - Golf Course Road. - Henty Highway. - Plozzas Road. - Pits along Obrees Road, Remlaw Road, and Hunts Road.
Telecoms (Nextgen)	Cable	- Nextgen cable runs east-west along the northern boundary of the Horsham urban area (along Rasmussen Road and Riley Road). - It also runs northwest-southeast along the Western Highway, north-south along Dooen Road South and Cameron Road North / Cameron Road, and out east beyond the boundary of the feasibility study area along Horsham-Lubeck Road.

Asset	Description	Location(s)
Telecoms (Optus)	Underground cable	- Primarily within the Horsham urban area. - North-south along Blue Ribbon Road, Riverside East Road, and Stawell Road. - East-west along Baillie Street, Williams Road, and Horsham-Lubeck Road.
Telecoms (Telstra)	Cable	- Present along most streets within the Horsham urban area. - Widespread throughout the feasibility study area, running along most arterial and main roads.
Telecoms (TPG)	PIPE Networks Duct, AAPT/PowerTel Duct, AAPT/PowerTel Pit	- Sporadic PIPE Networks Ducts along Dooen South Road, Blue Ribbon Road, Plumpton Road, Rasmussen Road, and Gatehouse Road. - AAPT PowerTel Ducts and AAPT/PowerTel Pits running north-south along Cameron Road. These ducts and pits also run east-west through the northern section of the Horsham urban area.
Telecoms (Vocus)	Vocus Group Pit, Vocus Group Conduit	- Vocus pits can be found on the Western Highway, Curran Road, and Riley Road. - A small number of Vocus conduits can also be found on Riley Road.

Table 3-3: Summary of DBYD

It is noted that the cost associated with relocating utilities varies depending on the asset. Table 3-4 is provided by way of reference, generally categorising the level of cost associated with relocation as low, medium or high. When considering route options, this cost can also be considered equivalent to level of risk with regard to assets. The assets considered to be high risk are mapped in Figure 3-10.

Assets(s)	Indicative cost/risk to relocate
Water – trunk feeder mains	High
Water – 150mm or less pipes	Low
Sewer	High
Gas high pressure pipeline	High
Gas distribution mains	Medium
Low voltage electricity	Low
High voltage electricity	High
Communications	Medium

Table 3-4: Indicative utility relocation costs

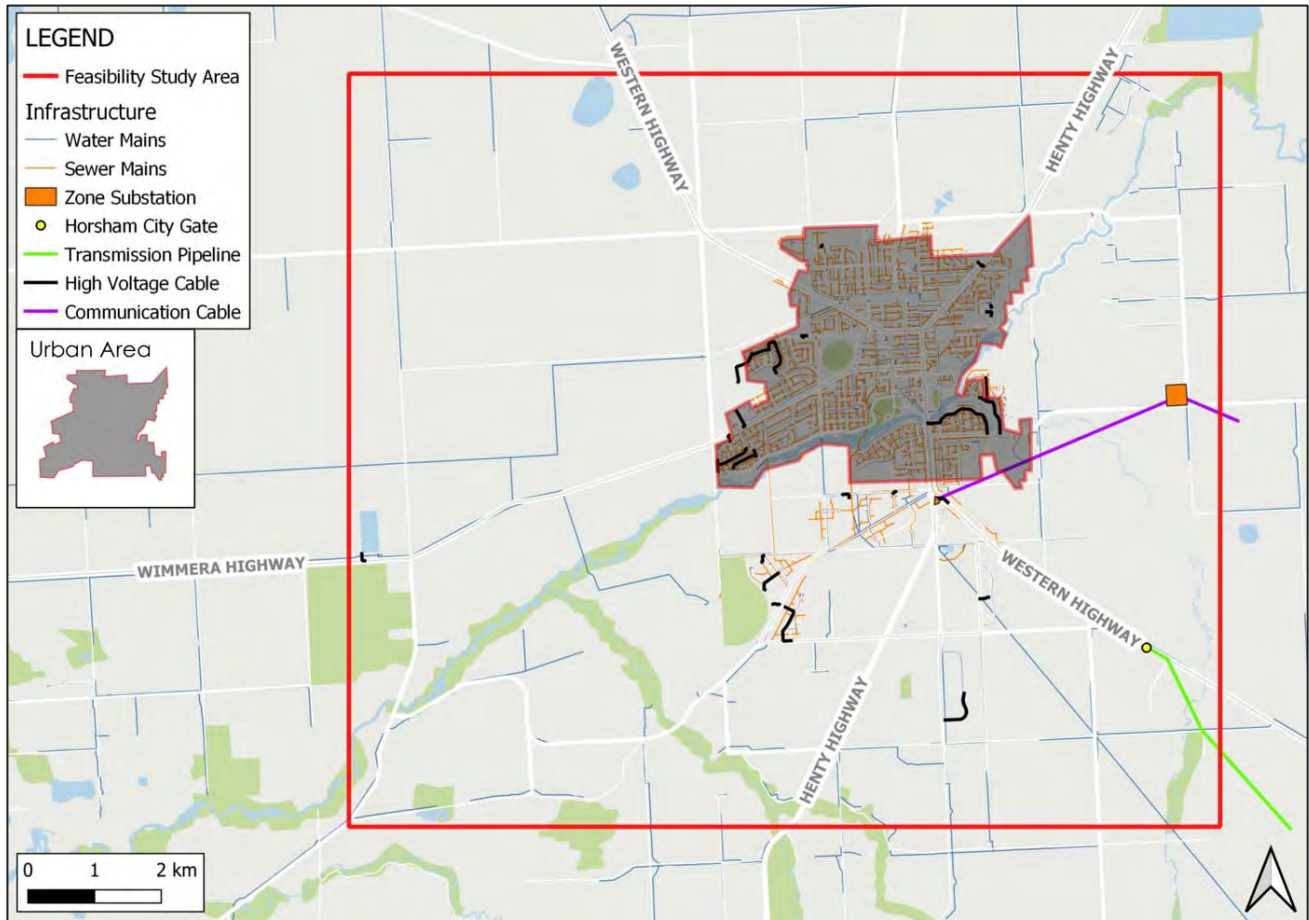


Figure 3-10: High Risk Utilities

4 Travel Data Information

Various travel data sources have been reviewed to understand existing traffic movements through and around Horsham. These data sources include tube counts and origin-destination data undertaken as part of this project, supplemented by existing SCATS data, freight data and previous modelling work undertaken as part of the previous bypass investigations undertaken for Horsham. The most relevant data is summarised within this section of the report.

4.1 Traffic Survey Data

Week-long tube counts and origin-destination surveys were undertaken during the period Wednesday 10th to Tuesday 16th August 2022, to understand the existing traffic movements in and through Horsham.

Tube Counts

The week-long tube counts were undertaken at seven locations, placed on the major roads around Horsham to capture a general understanding of how much traffic is accessing the network. It is noted that due to a data outage, site 5 (Blue Ribbon Road) was only able to collect data for Wednesday and Thursday. The seven tube count locations are shown in Figure 4-1 and listed as follows:

1. Western Highway, north of Dahlen Quarry Road.
2. Western Highway, southeast of West Road.
3. Henty Highway, south of Mackies Road.
4. Henty Highway, northeast of Mackies Road.
5. Blue Ribbon Road, north of Gatehouse Road.
6. Wimmera Highway, east of Remlaw Station Road.
7. Horsham-Lubeck Road, east of Rokeskys Road.

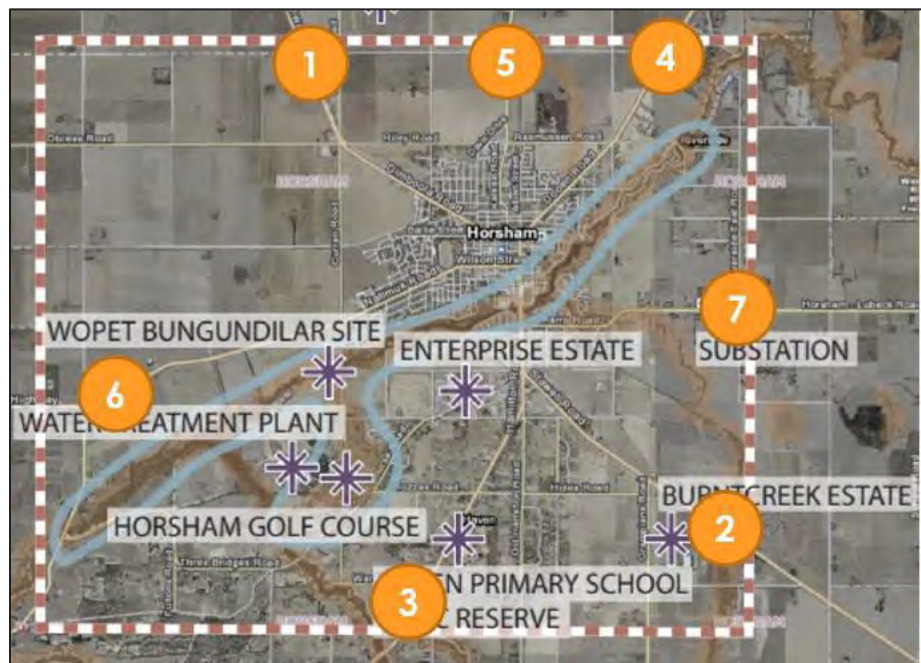


Figure 4-1: Tube count locations

The results of the tube counts identified:

- The overall traffic volumes between 2012 and 2022 were comparable, however the proportion of heavy vehicles on all roads was higher in 2022 than in 2021.
- The Western Highway, both to the north-west and south-east, continues to carry the highest traffic volumes, with between 4,500 – 5,000 vehicles per day.
- The typical AM peak time is 08:00, however the south-eastern leg of Western Highway has an AM peak of 11:00. Closer inspection of the data suggests that AM traffic is fairly consistent, with 11:00 representing a minor peak.

Origin-Destination Surveys

Origin-destination surveys were undertaken at the seven locations presented above in Figure 4-1. The data for cars is summarised as follows:

- 134 cars passed through Horsham in the AM and 60 passed through in the PM.
- 1,045 cars terminated their trip in Horsham in the AM and 958 terminated in the PM.
- Of cars entering Horsham, 11% passed through in the AM and 6% passed through in the PM. It is noted that 2012 survey data indicated that 10% of cars passed through Horsham, generally within the range of this 2022 data.
- The data indicates that the Western Highway in both directions is the main through route. Of through traffic, approximately 51% used the Western Highway during the AM and PM periods.

The data for trucks is summarised as follows:

- 84 trucks passed through Horsham in the AM and 51 passed through in the PM.
- 102 trucks terminated their trip in Horsham in the AM and 59 terminated in the PM.
- Of trucks entering Horsham, 45% passed through in the AM and 46% passed through in the PM. It is noted that 2012 survey data indicated that 55% of trucks passed through Horsham, being approximately 10% more than in 2022.
- The data indicates that the Western Highway in both directions is the main through route. Of through traffic, approximately 79% used the Western Highway during the AM and PM periods.

Based on the above data, it is evident that the key truck movement is along the Western Highway, between stations 1 and 2. Data from the busier PM peak period is visually represented in Figure 4-2 and Figure 4-3, to illustrate the relative prevalence of this movement.

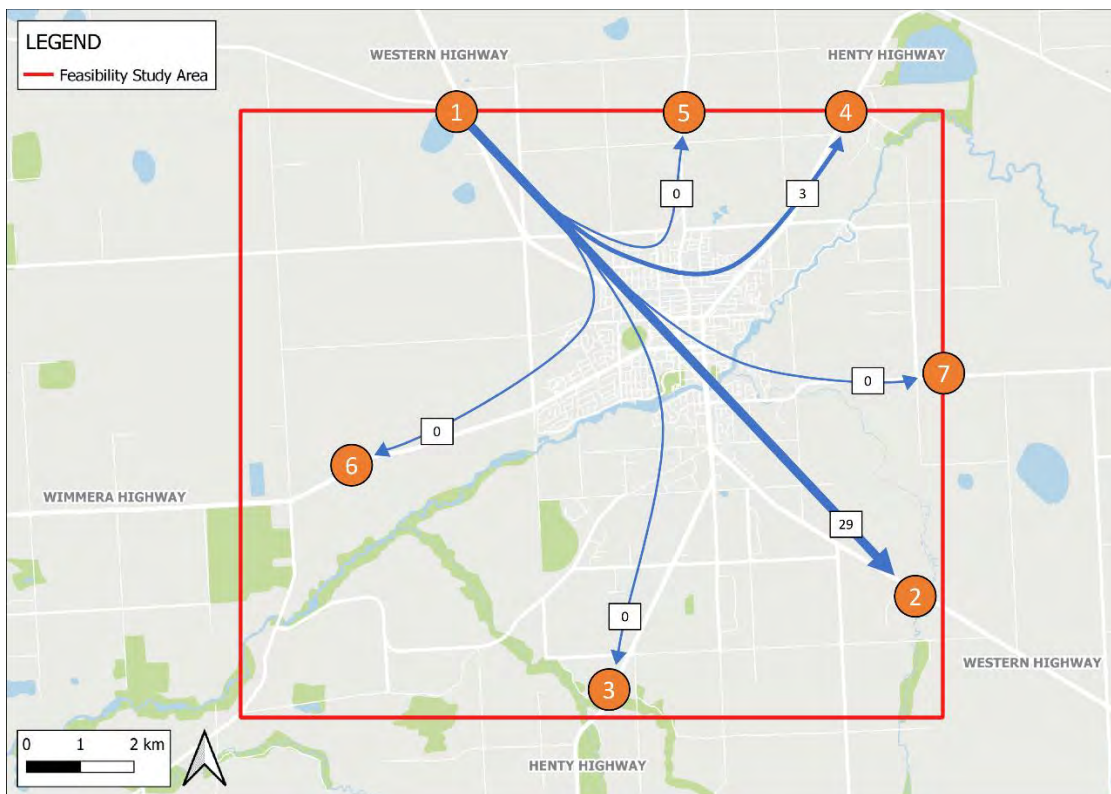


Figure 4-2: Station 1 to other stations - heavy vehicles, 2hr PM peak survey period

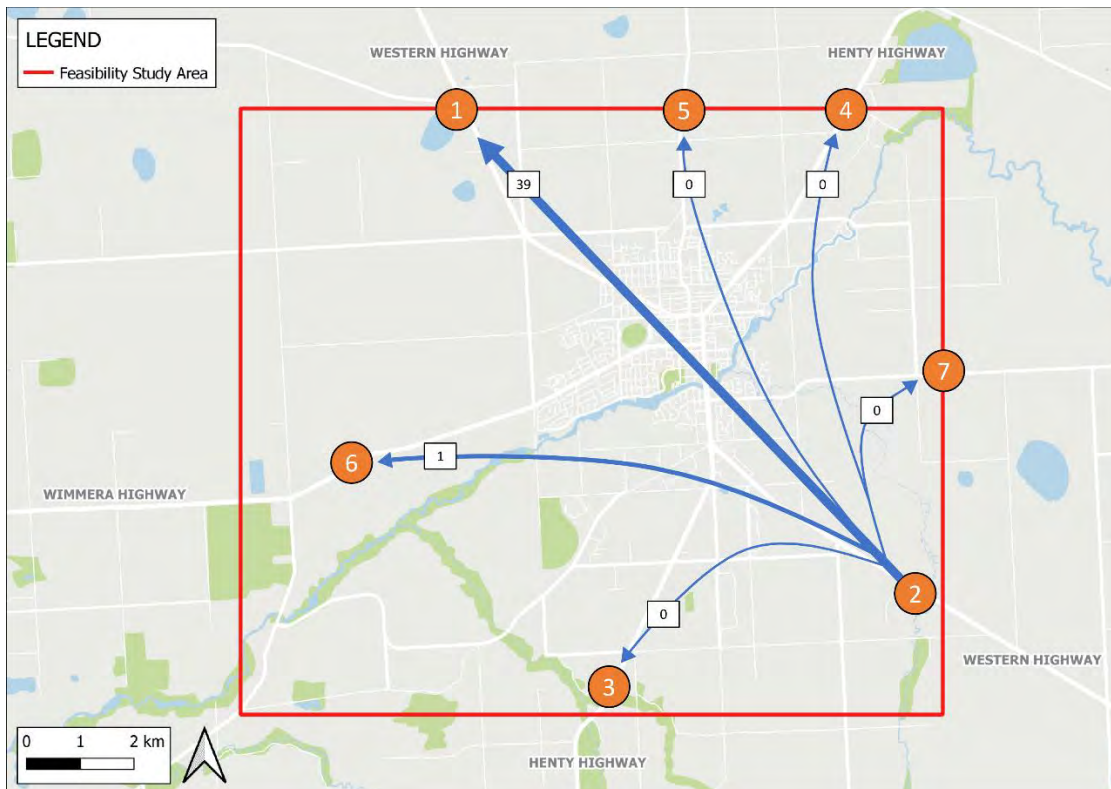


Figure 4-3: Station 2 to other stations - heavy vehicles, 2hr PM peak survey period

Providing an alternative heavy vehicle route would be beneficial due to reducing vehicle movements through Horsham, in particular heavy vehicle through movements along the Western Highway. Considering 74% of heavy vehicles that passed through Horsham used only the Western Highway, an alternative heavy vehicle route connecting the Western Highway either side of Horsham is intended to divert these vehicles. In terms of other heavy vehicle movements, data indicates that the remaining 16% would benefit from a route to the east and north of Horsham, whilst 10% would benefit from a route to the south and west.

4.2 SCATS Data

SCATS data between 2019 and 2022 was analysed for the purpose of reviewing any seasonality trends associated with traffic passing through Horsham. The other purpose was to gain an understanding of the period pre, during COVID lockdowns and current. The following conclusions were drawn from the review:

- Traffic volumes were typically between 2 – 2.5 million movements per month across the intersections during 2019, peaking in October to December.
- 2020 saw a notable drop in volumes in April, which remained below 2 million per month until October, likely explained by the impacts of COVID lockdowns.
- Volumes for the first half of 2022 were fairly steady, at around 2 million movements per month, which is still less than the pre-COVID level.
- In terms of seasonality, peaks were noted in October, with volumes typically being lower during the winter months.
- Overall, the annual average in 2022 (most recent data) was approximately 9% lower than 2019 (pre-COVID).

4.3 Freight Data

BITRE Freight Data

The Bureau of Infrastructure and Transport Research Economics (BITRE) produces reports and statistics relating to national freight. The 2014 freightline report⁴ provides an overview of major freight flows in Australia, which highlights the importance of road freight between Adelaide and Melbourne and beyond to the eastern States, via the Western Highway passing through Horsham.

This is depicted in Figure 4-4, with the thickness of the blue lines indicating the relative road freight volumes around Australia, illustrating the relative importance of the Adelaide to Melbourne route in the national context.

In 2011-12, the domestic freight task totaled almost 600 billion tonne kilometres, with road freight accounting for 35% of total freight. Road freight in Australia grew from 139.4 to 207.5 billion tonne kilometres between 2000-01 to 2011-12.

While rail carries a larger volume of freight overall, road transport is the main mode of transport for the majority of commodities produced and/or consumed in Australia. Total domestic freight was projected to grow 80% between 2010 and 2030, underpinned by strong growth in domestic movements of bulk commodity exports. By 2030 it was estimated that the total national road freight task would be 1.8 times the 2010 level. The actual and projected domestic freight task by mode is shown in Figure 4-5.

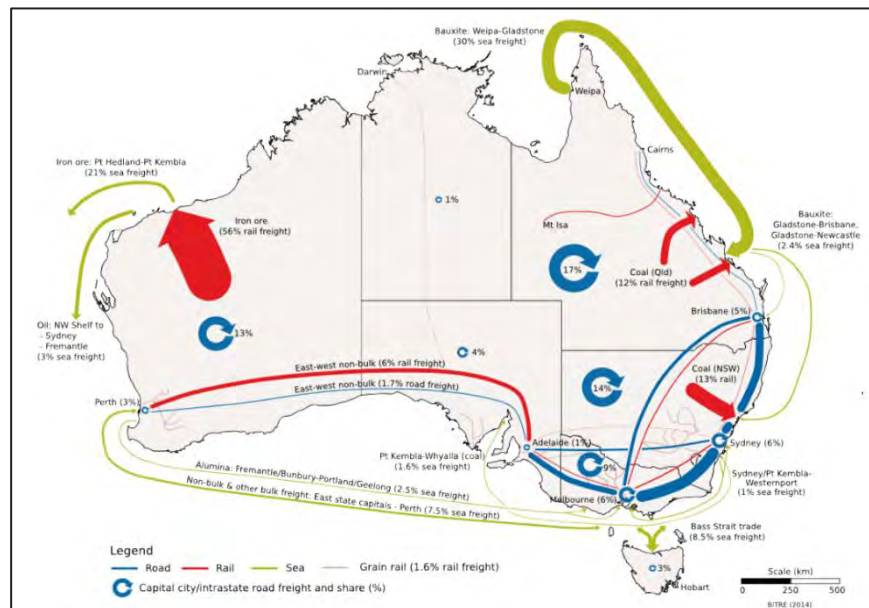


Figure 4-4: Major Freight Flows in Australia, 2011-12

Source: BITRE³

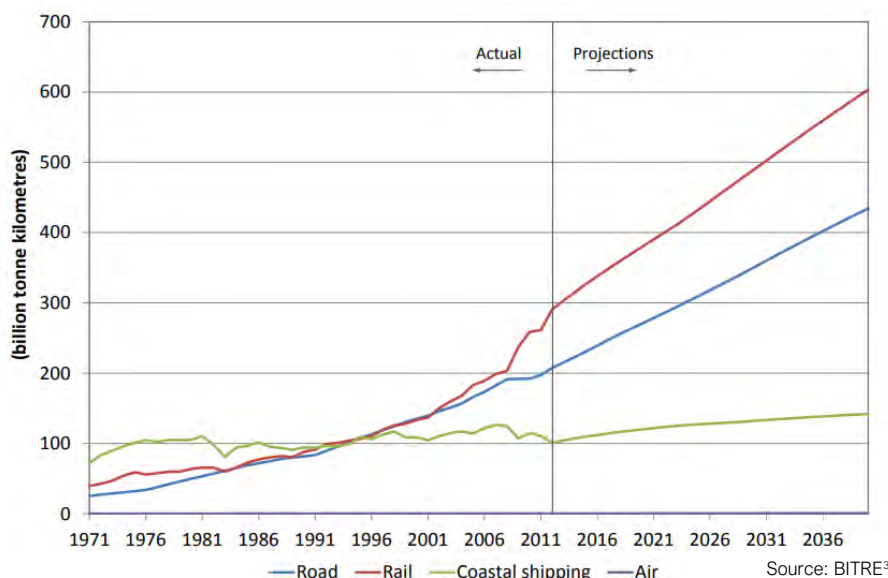


Figure 4-5: Actual and projected domestic freight task, by mode, 1972-2040

BITRE also provides aggregated telematics data around current freight vehicle trip origins and destinations at a local municipality level. While the data is only from a sample of freight vehicles and most being B-Double or larger vehicle configurations, it does help provide a general understanding of where the freight vehicles are generally travelling.

⁴ BITRE. (2014). *Freightline I – Australian freight transport overview*.

https://www.bitre.gov.au/publications/publications?title=freightline&field_publication_type_target_id=All&field_publication_subjects_target_id=All&dateop=between&date%5Bvalue%5D=&date%5Bmin%5D=&date%5Bmax%5D=

For those freight vehicles that had a stop of at least one hour in Horsham, Figure 4-6 indicates where the associated trips started or ended. It clearly demonstrates that the predominant movement is along and proximate to the Western Highway between Melbourne and Adelaide. There are some other key freight vehicle movement flows around Horsham, in a somewhat generally even-distribution to and from the adjacent municipalities, but these are relatively low compared to those along and proximate the Western Highway.

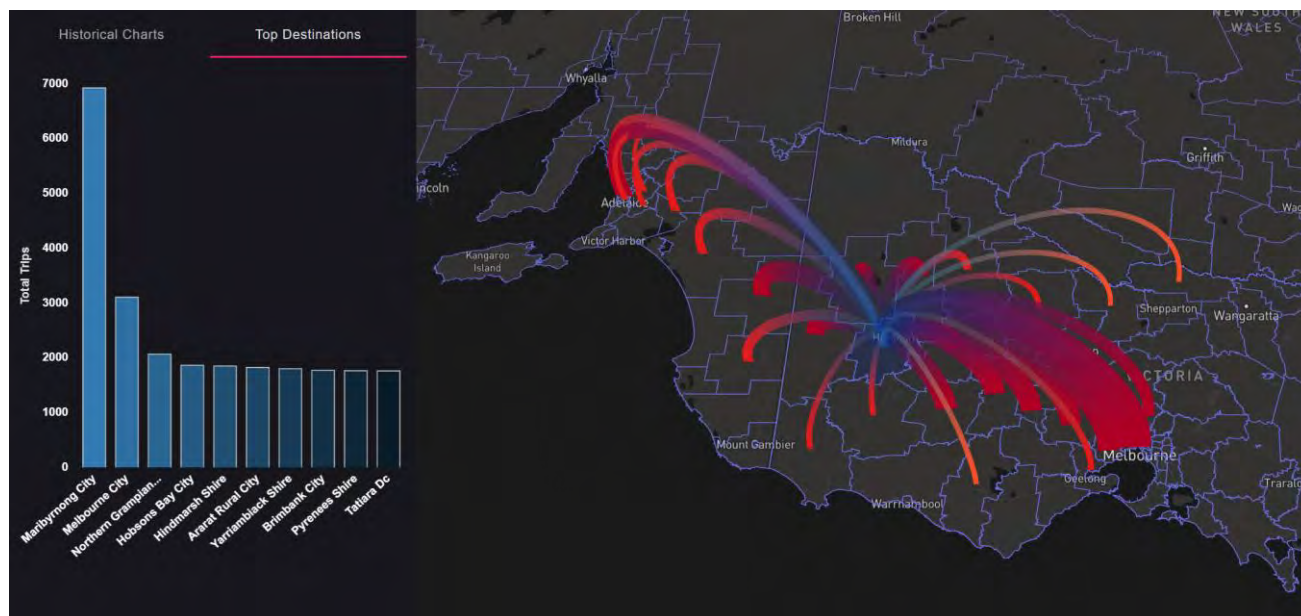


Figure 4-6: Freight Vehicle Origin-Destination Flows - Horsham LGA, BITRE⁵

4.4 Modelling Data

AECOM prepared a traffic analysis report for the Horsham Bypass in 2015 on behalf of VicRoads. The purpose of the Horsham Bypass Planning Study was to determine a suitable realignment route for the Western Highway at Horsham to enable a road reservation and associated planning scheme controls to be implemented in the future. This process involved the collection of detailed traffic data for the study area which informed the development of a traffic model for the year 2012 and future years of 2016, 2021 and 2031.

Given that the Horsham Bypass is not being pursued, we can utilise the Base Case modelling to gain an understanding of the general changes expected in traffic volumes and heavy vehicle proportions.

In this regard, Table 7 from the traffic analysis report, which is reproduced in Table 4-1 below, provides the 'all' and 'heavy' vehicle volumes expected on the main roads accessing and proximate to Horsham out to 2031. From 2021 to 2031, all vehicle volumes were estimated to increase by around 7% overall, whilst heavy vehicles were estimated to increase by around 14% on the Western Highway, with no growth on the Wimmera or Henty Highway.

2022 survey data presented in Section 4.2 for comparable sites is generally consistent with 2021 data, with heavy vehicle volumes slightly higher in 2022 than 2021. There is more variation in the total traffic volumes however, with some 2021 data significantly higher, likely explained by the count locations being closer to central Horsham, whereas 2022 data was collected towards the edge of the feasibility study area.

Road	Between	2-way 24-hour traffic volume (all vehicles)				2-way 24-hour traffic volume (heavy vehicles)			
		2012	2016	2021	2031	2012	2016	2021	2031
Western Hwy	Grahams Bridge Rd and Golf Course Rd	4,100	4,300	4,500	4,900	1,300	1,400	1,500	1,800
Western Hwy	Golf Course Rd and Lubeck-Horsham Rd	6,200	6,500	6,700	7,300	1,700	1,700	1,900	2,100

⁵Australian Government. (n.d.). *National Freight Data Hub*. [Truck movements by Local Government Areas | National Freight Data Hub - prototype website \(freightaustralia.gov.au\)](https://freightaustralia.gov.au)

Road	Between	2-way 24-hour traffic volume (all vehicles)				2-way 24-hour traffic volume (heavy vehicles)			
		2012	2016	2021	2031	2012	2016	2021	2031
Western Hwy	Lubeck-Horsham Rd and Wimmera Hwy	22,600	23,200	24,000	25,300	3,100	3,200	3,400	3,700
Western Hwy	Wimmera Hwy and Henty Hwy	9,700	10,000	10,400	11,100	1,800	1,900	2,000	2,300
Western Hwy	Henty Hwy and Riley Rd	10,400	10,800	11,200	11,900	1,600	1,700	1,800	2,100
Wimmera Hwy	Curran Rd and Western Hwy	11,400	11,700	12,000	12,600	400	400	500	500
Henty Hwy	Old Hamilton Rd and Western Hwy	1,500	1,500	1,600	1,700	300	300	300	300
Henty Hwy	Western Hwy and Rasmussen Rd	3,300	3,400	3,500	3,700	500	500	500	500

Table 4-1: Daily (24-hour) traffic volume summary - Base Case

5 Investment Logic, Issues and Opportunities

5.1 Investment Management Standard

The investment management standard (IMS) is a tool for agencies to confirm an investment need and help shape a proposal prior to commencing a business case. The IMS is targeted at the earlier stages of investment development where there is the greatest ability to influence and improve outcomes and drive maximum value for the effort and resources invested. As such, a preliminary Investment Logic Map⁶ (ILM) and Benefit Management Plan (BMP) have been developed for the potential alternative heavy vehicle route through three workshops with representatives from HRCC and DTP during September 2022. These processes form a key part of the IMS process, with copies of these documents included in Appendix E.

Investment Logic Map

Based on the ILM, the below key problems and strategic responses have been identified.

Key problems:

- Growing delays and frustrating conditions facing heavy vehicles on the third busiest road freight route in Australia places pressure on freight operators and drivers.
- Growing conflict between road users contributes to the frequency and severity of crashes within Horsham's Central Activity District.
- Highly significant reliance on a single river crossing places residents within Horsham and across Western Victoria at growing risk during emergencies.
- The noise, smell and presence of high volumes of heavy vehicles through built up residential areas adversely impacts on local community amenity and development of the urban environment.

Strategic responses:

- Improve options for less disrupted and frustrating travel across Horsham and the river. This can be achieved through stakeholder engagement, leading to provision of an alternative freight route.
- Improve the attractiveness of cycling, walking and public transport. This can be achieved through stakeholder engagement and leveraging existing active transport strategies, leading to an upgrade of cycling and walking infrastructure and amenities.

Benefit Management Plan

The BMP benefits are listed below, as well as their intended outcomes.

Benefits:

- Reduced road safety risk.
- Improved transport network efficiency.
- More active communities.
- Improved local amenity and quality of place.

Intended outcomes:

- Reduction in the casualty crash rating.
- Reduction in the presence of hazards.
- Reduction in travel time.
- Increase in travel time reliability.
- Increase in pedestrian and cycling activity.
- Increase in level of satisfaction.

Application

The above outcomes of the ILM and BMP are a requirement of any business case to source state funding, which is what will ultimately be sought to deliver this project. While this current engagement does not include the development of a business case, having the investment and response logic set out from the beginning of the project will help with what aspects in the identification and assessment of alternative route options should be targeted. Moreover, the outcomes of the ILM and BMP have been embedded in the assessment framework that was developed for this project. This helps to ensure that the preferred option is best placed to secure the funding needed for it to be delivered.

⁶ Consistent with the [Investment Management Standard](#) set by the Department of Treasury and Finance Victoria.

5.2 Key Issues

Key issues requiring consideration when determining the feasibility of the alternative truck route are summarised as follows:

- **Cultural Heritage** – To the west of Horsham, the southwestern Wimmera River corridor has places of high tangible and non-tangible cultural sensitivity. To the east of Horsham, there are also culturally sensitive areas, however these may be more manageable in terms of planning an alternative truck route, subject to future cultural heritage management planning.
- **Horsham South Structure Planning** – Consideration will need to be given to the potential impacts of a potential alternative route with the proposed development of Horsham South, so as to not unduly impact its development and livability for the future community.
- **Flooding** – A route running to the northeast of Horsham is upstream from the perspective of the Wimmera River and would therefore not increase flood levels in Horsham and may have the effect of reducing flood levels in Horsham at the expense of properties upstream of the potential alternative heavy vehicle route. A route to the southwest is likely to result in an increase in Wimmera River flood levels upstream, however could be combined with options to mitigate flood levels.

5.3 Study Area Constraints

Various physical, planning and land use elements relevant to the feasibility study area have been set out in the report. The most relevant constraints that have the highest potential impact on the viability of implementing an alternative route are summarised in Table 5-1 and mapped in Figure 5-1.

Category	Sub-Category	Risk Classification
Areas of Cultural Heritage Sensitivity	-	Derived from Aboriginal Cultural Values Draft Report
Key Sites	WIFT/WAL Hub, aerodrome, Horsham South community district catchment.	• An alternative heavy vehicle route should support the WIFT/WAL Hub site. • An alternative heavy vehicle route needs to be cognisant of aerodrome expansion plans. • An alternative heavy vehicle route needs to be cognisant of future development in Horsham South.
Low Density Residential Zone	-	Heavy vehicles should avoid interfacing with existing and proposed low density residential development where possible.
Infrastructure	Water mains	Potential high cost to relocate. Figure 5-1 shows all water mains (noting through further analysis some mains might be identified as moderate to low cost).
	Sewer mains	High cost to relocate. The map shows all sewer mains.
Flood Extents	Land Subject to Inundation Overlay (LSIO)	Risk level depends on what mitigation measures are required to bridge the associated flooding extent.
Environmental Constraints	VBA threatened flora and fauna	Medium to High risk. All associated areas mapped.
	FFG Act listed communities	High risk. All associated areas mapped.
	EVC2005	Medium risk. All associated areas mapped.

Table 5-1: Study Area Constraints Summary

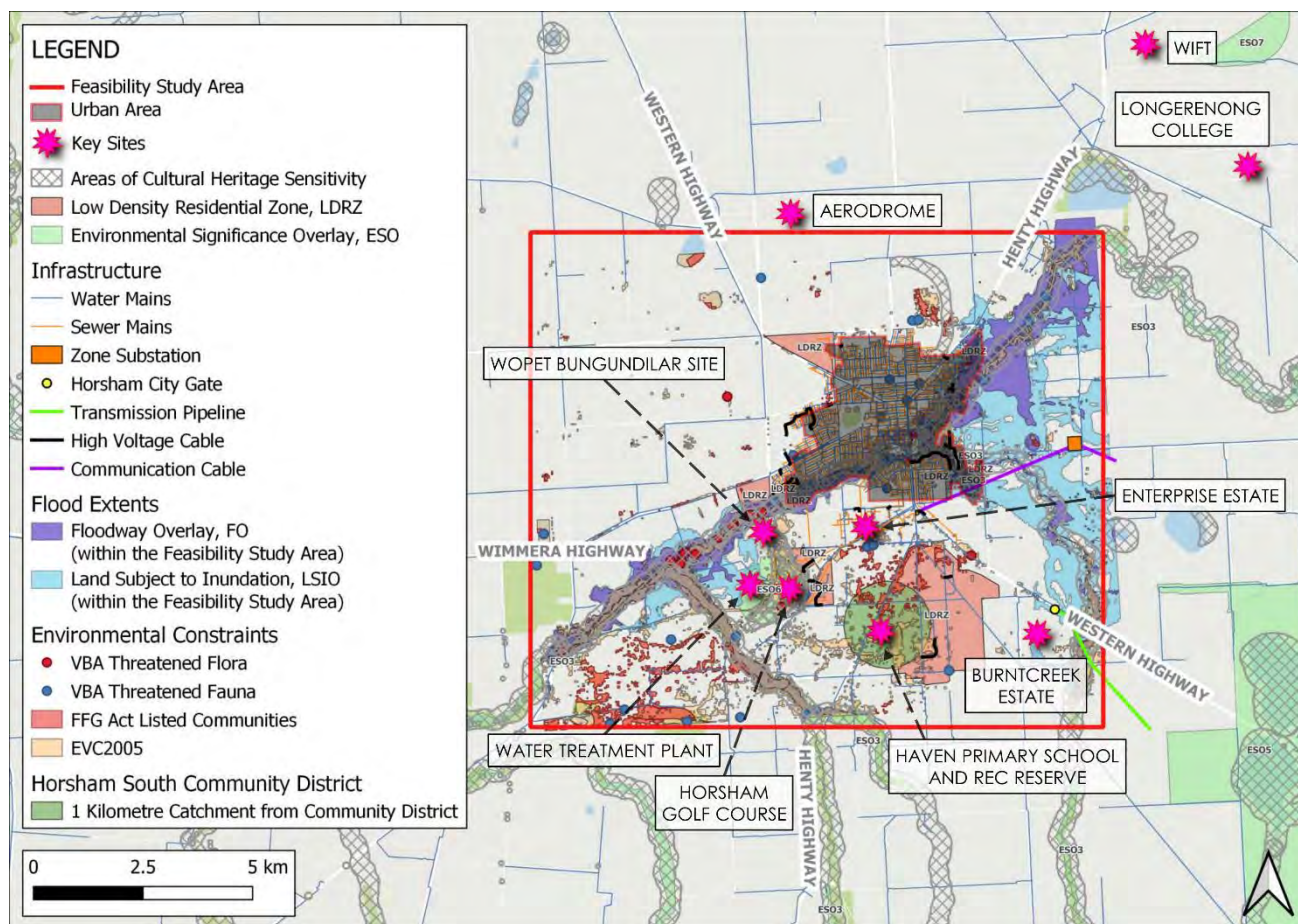


Figure 5-1: Land Use Constraints Map

An alternative heavy vehicle route will service through movements by providing an alternative to the Western Highway. In terms of going to the northeast or southwest of Horsham, the following high-level comments are made in relation to the currently identified constraints summarised in Table 5-1 and mapped in Figure 5-1:

- Areas of cultural heritage sensitivity are generally found within the southwestern, central and northeastern portions of the feasibility study area.
- Areas subject to flooding are more prevalent to the east and along the Wimmera River.
- Water mains are located throughout the study area, with higher capacity lines typically found around the major arterial roads.
- Sewer mains are primarily within the southern-central portion of the feasibility study area.
- Environmental constraints are more commonly found in the southern-central and south-west portions of the feasibility study area.
- Land zoned for low density residential development, outside of the existing urban area, is primarily located in the Horsham South area, with pockets also around Horsham golf club, south of Wimmera Highway and east of Curran Road.
- The Horsham South Community District is a focus for the growth for Horsham South and small lot size development will be encouraged within a 1km radius. The alternative heavy vehicle route should not comprise this intention.

5.4 SWOT Assessment

Table 5-2 provides a summary of the key strengths, weaknesses, opportunities and threats identified through the material presented in this report. These will be used to help inform the next stages of the project, which is to identify viable alternative route options for assessment. The material will also be used to help develop and apply the assessment framework to identify the route that provides the greatest benefit to users and the broader community.

Strengths	Weaknesses
• An alternative heavy vehicle route is a lower cost option compared to a full bypass. • In the absence of a bypass, an alternative truck route that removes existing through movements will benefit the Horsham CBD's amenity and safety. • A majority of the rural roads within the feasibility study area are designated for and already support some level of freight movements. • Continued MSIS funding will help support the use and development of the WIFT.	• An alternative truck route will not be as attractive to through movements as a bypass. • The principal freight network (PFN) passes through central Horsham, carrying substantial freight with no alternative route. It is also noted that freight demand continues to grow. • Currently there is a single river crossing, posing a network resilience issue. • The south and east portions of the feasibility study area have the most constraints.
Opportunities	Threats
• Traffic data indicates the majority of heavy and other vehicles passing through Horsham relate to the Western Highway. • The north and west portions of the feasibility study area have less land use constraints. • An alternative route could better support access to the WIFT/WAL Hub. • An additional river crossing would add resilience to the transport network. • Provision of an alternative heavy vehicle route provides an opportunity to achieve the benefits identified through the ILM process, including: - o Reduced road safety risk. - o Improved transport network efficiency. - o More active Horsham community. - o Improved local amenity and quality of place.	• Future low density residential development is expected within the Horsham South area, including a community district catchment area, presenting potential amenity issues. • Curran Road to the west of Horsham has potential to form part of a heavy vehicle alternative route, however future growth is identified directly to the east of it. • The sewer main system extends beyond the urban area to the south-west, potentially constraining road expansion in this area. • Significant utilities pose a cost risk where any road works require their relocation. • The south-west portion of the feasibility study area has vast areas of environmental and flooding constraints. • The east side of the feasibility study area is largely impacted by flooding constraints. • There are high value cultural heritage assets within the feasibility study area, particularly along the Wimmera River. The level of significance to the southwest of Horsham is very high and unlikely to be suitable for an alternative route through this area. • Future aerodrome runway expansion may impact feasibility of an alternative route proximate to this area.

Table 5-2: SWOT Assessment

6 Corridor Arrangements & Investigations

6.1 Movement and Place

As discussed earlier in this report, the Movement and Place framework recognises that streets not only keep people and goods moving, but they are also places for people to live, work, and enjoy.

In this new language, road corridors and streets are defined by the context of the interfacing land use and assigned various 'movement' and 'place' classifications. This way of thinking implies that during planning and development of our transport network, we need to consider the needs for movement and placemaking simultaneously (i.e., providing suitable levels of access to places while making them attractive for people to spend time in).

The Framework offers a common language for coordinated transport planning between transport and planning agencies and local governments. It also provides a consistent approach to assessing the performance of the road and transport network, identifying project requirements, and assessing project solutions. As such, the use of the Movement and Place Framework in the context of developing corridor options represents an opportunity to assess their relative performance and guide the development of the corridor arrangements, having consideration for future surrounding land uses.

Also, the Movement and Place approach adopts more of a vision and validate approach to network planning and management (i.e., identify the long-term vision for each corridor within the network and develop treatments that progress towards them).

Within the study area, only the Western Highway has a '1' rating for movement (M1), general traffic (GT1) and freight (F1), indicating its state significance as a through-route for freight and traffic. The other significant through routes of Henty Highway and Wimmera Highway have M/F2 classifications, so provide primary access across municipality and/or regional level places.

All roads outside of the urban area are identified as suitable for some level of freight movements, excluding Riverside Road, Hunts Road and Plozzas Road. It is also noted that the freight classification 'F3' does not apply to all sections of Cameron Road, Gatehouse Road and Riverside East Road.

Roads classified as 'M5', either entirely or in part, include Cameron Road, Gatehouse Road, Riverside East Road and Riverside Road. This classification indicates that movements are intended to occur at a local level only. It is noted that Cameron Road and Gatehouse Road also include sections of M3, supporting a moderate movement of people or goods.

6.2 Design Elements

Table 6-1 sets out the key corridor design elements, including the relevant design guidance used, which has also been informed by the Movement and Place Framework.

Design Element	Design Guidance	Design Requirement	Notes / Commentary
Design Vehicles	VicRoads's Heavy Vehicle Network Access Considerations Road Design Note 04-01 (July 2019).	Designed to support a PBS Road Class PBS Level 3 (B-Triple).	Based on the corridors are proposed to be significant freight routes (F1 or F2). Additional consideration may be needed for road trains north of Horsham.
Operating Speed	VicRoads Traffic Engineering Manual – Speed Zoning Technical Guidelines.	Speed limit of 80km/h, as generally located outside and able to be separated from built up areas. Section of 60km/h speed limit if the route passes through Horsham South.	Road corridors are expected to be designed to support high movement function with limited direct property access in 80km/h speed zone, with more property access expected in 60km/h speed zone.
Access management arrangements	Table 3.1 of Austroads Guide to Traffic Management Part 5.	Category 2A/B – Higher speed roads with restricted access. • Service roads • Medians • Indented turn lanes • Turn bans may apply at specified locations and/or times.	Given higher speed, separation and space for safety barriers between vehicle movements ideally provided. In a 60km/h zone, Category 3A/B elements could be adopted.

Intersection selection	Table 3.6 of Austroads Guide to Traffic Management, Part 6, and Appendix A of the associated VicRoads Supplement.	Roundabouts are most likely to be the appropriate treatment between intersecting arterial roads. Stop or give way controls between arterial and lower order roads (noting medians likely to be provided on arterial road across local road).	Higher speed, low pedestrian and low bicycle environment. If going through Horsham South, 60km/h is likely to apply with increased pedestrians and cyclists. Special design consideration needed in this instance, including provision of shared path.
Overtaking lanes	Section 9.4 of Austroads Guide to Road Design Part 3.	Separated overtaking lanes with spacing of up to 10km, in line with current strategy.	In an 80 km/h operating speed the overtaking lanes should be a minimum of 600m and desirable 1km in length (noting the minimum and desirable lengths have been increased by one and a half as they are expected to accommodate road trains).

Table 6-1: Design Elements

It is noted that a speed limit of 80km/h is generally being targeted, rather than 100km/h. This is on the basis of the significant geometric characteristics (deflection of approaches, central island size, long splitter islands, etc.) of roundabouts in these environments.

Implementation of staggered overtaking lanes will be considered in line with the current strategy which specifies that they be no more than 10km apart. Given that the alternative route is likely to be less than 20km in total length and comprising intersections, overtaking lanes will be considered on the longest uninterrupted sections.

6.3 Cross Sectional Elements

Table 6-2 sets out the key cross-sectional elements, including the relevant design guidance used to inform them.

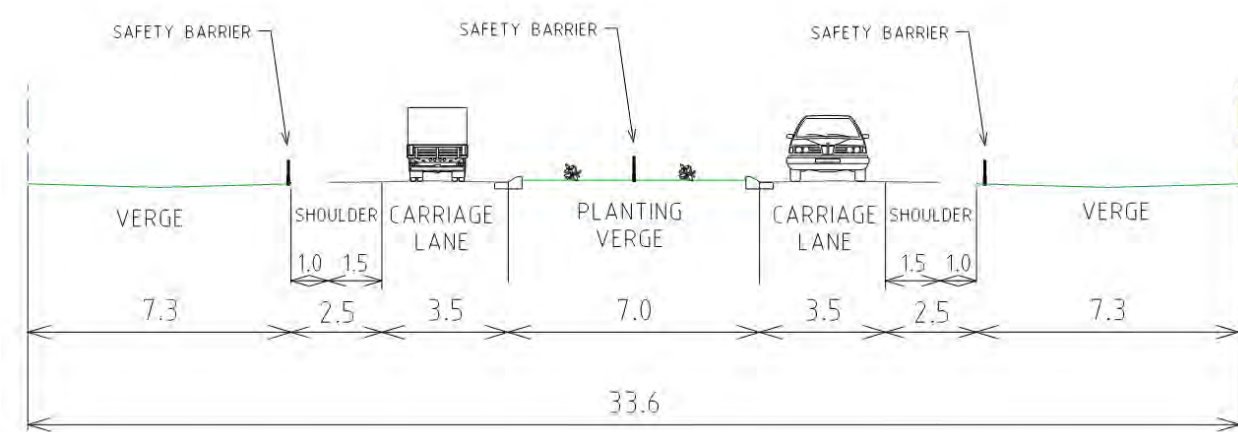
Design Element	Design Guidance	Design Requirement	Notes / Commentary
Traffic Lanes	Table V4.2 of VicRoads Supplement to Austroads Guide to Road Design Part 3.	3.5m traffic lane with 2.5m wide shoulder and 1.5m of the shoulder sealed.	No kerbside parking (except potentially where speed limit is only 60km/h).
Median	Table 4.15 of the Austroads Guide to Road Design Part 3, and Austroads Guide to Road Design Part 6 (various).	Ideally 7.0m to accommodate turn lane and safety barrier, minimum of 4.0m to accommodate safety barrier (or where speed limit is only 60km/h).	80km/h road requires central safety barrier to align with safe system principles (not required where speed limit is only 60km/h).
Border / Verge	Figure V4.5 of VicRoads Supplement to Austroads Guide to Road Design Part 3.	Minimum of 7.3m has been adopted at this time to support potential drainage and utility requirements. Reduced to 4.0m in 60km/h zone.	Additional width may be considered where a specific utility requiring it is expected to be accommodated.
Public and active transport facilities	VicRoads SD2071 and Figure 4 of VicRoads Design Guidance for strategically important cycling corridors.	Indented bus bays where routes are accommodated (nothing specifically proposed as yet). Off-road active transport facilities.	There is considered to be sufficient road reserve width to accommodate these facilities if required / desired, but can be revised as considered needed.

Table 6-2: Cross Sectional Elements

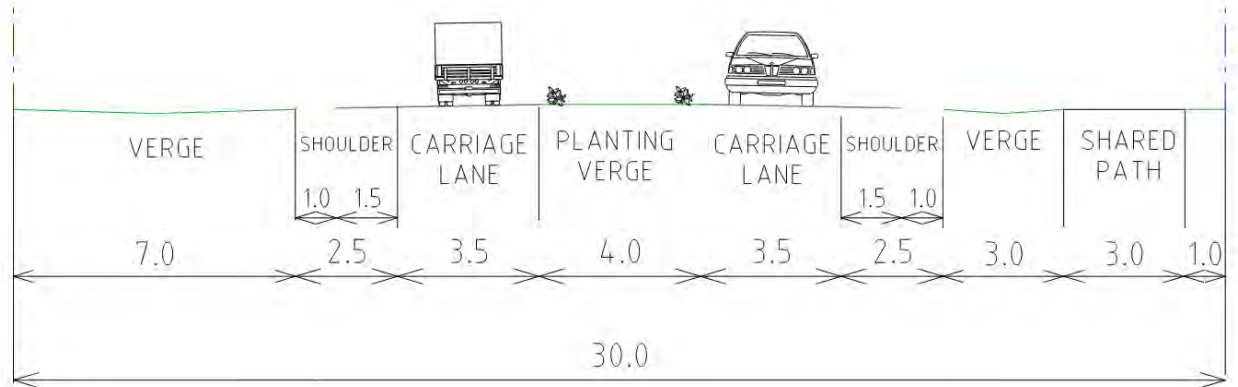
Based on the above general road corridor information, the below cross-sections have been provided to help understand the general proposed upgraded arrangements.

The initial cross-section below relates to the arrangements to support one-lane in each direction at 80km/h with suitable shoulders, median and borders to support indented turning lanes, road safety barriers, drainage and utilities (total road reserve width of 33.6m). A minimum 7m clear width should be provided for potential instances of farm machinery access, noting the

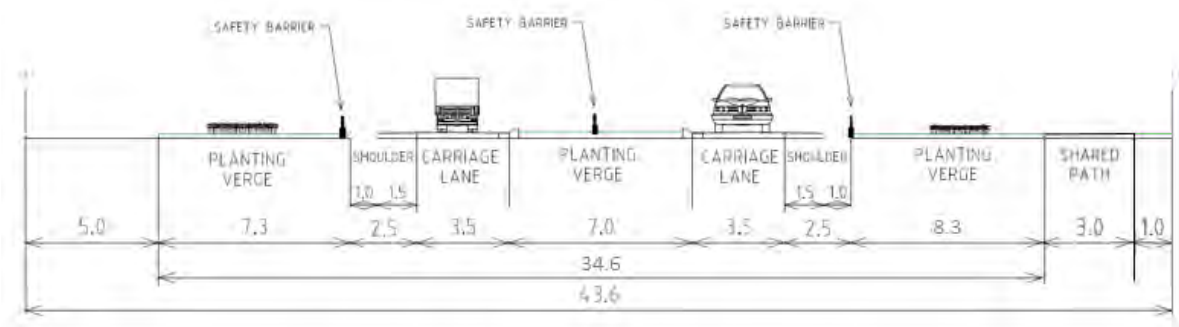
width between safety barriers is 10m. It is noted that this cross-section width would be increased to provide an additional carriage lane for overtaking in each direction where proposed.



The next cross-section below relates to the arrangements to support one-lane in each direction at 60km/h with suitable shoulders, median and borders to support indented turning lanes, drainage and utilities, with allowance for a shared path on one side of the road (total road reserve width of 30m). In an urban context, the only change would be that the shoulder is converted to a parking or breakdown lane, with kerbing provided to the verge (requiring a minimum of 5.5m width between two kerblines). No overtaking lanes would be expected to be provided within a 60km/h speed zone.



The below cross-section relates to the arrangements should there be a desire to future-proof the corridor to support its potential duplication (total road reserve width of 43.6m). It is noted that this cross-section width would be sufficient to provide an additional carriage lane for overtaking in each direction where proposed. However, at this time it is not considered needed given the expected volumes of traffic that would use the alternative route, noting that consideration of any overtaking lanes is beyond the scope of this study.



7 Identification of Alignment Options

Twelve potential alternative truck route alignment options were identified, having had consideration of existing road reserves, land constraints and workshopping with the project team. Five options are located to the northeast of Horsham and seven are located to the southwest. This long-listing process is intended to identify a range of potential routes, which will then undergo a rapid assessment to narrow them down to the most feasible options. The potential routes and a brief description of each are provided below.

7.1 Alignment Options Northeast of Horsham

Five alignment options were identified northeast of Horsham, as identified in Figure 7-1 and briefly described in Table 7-1.

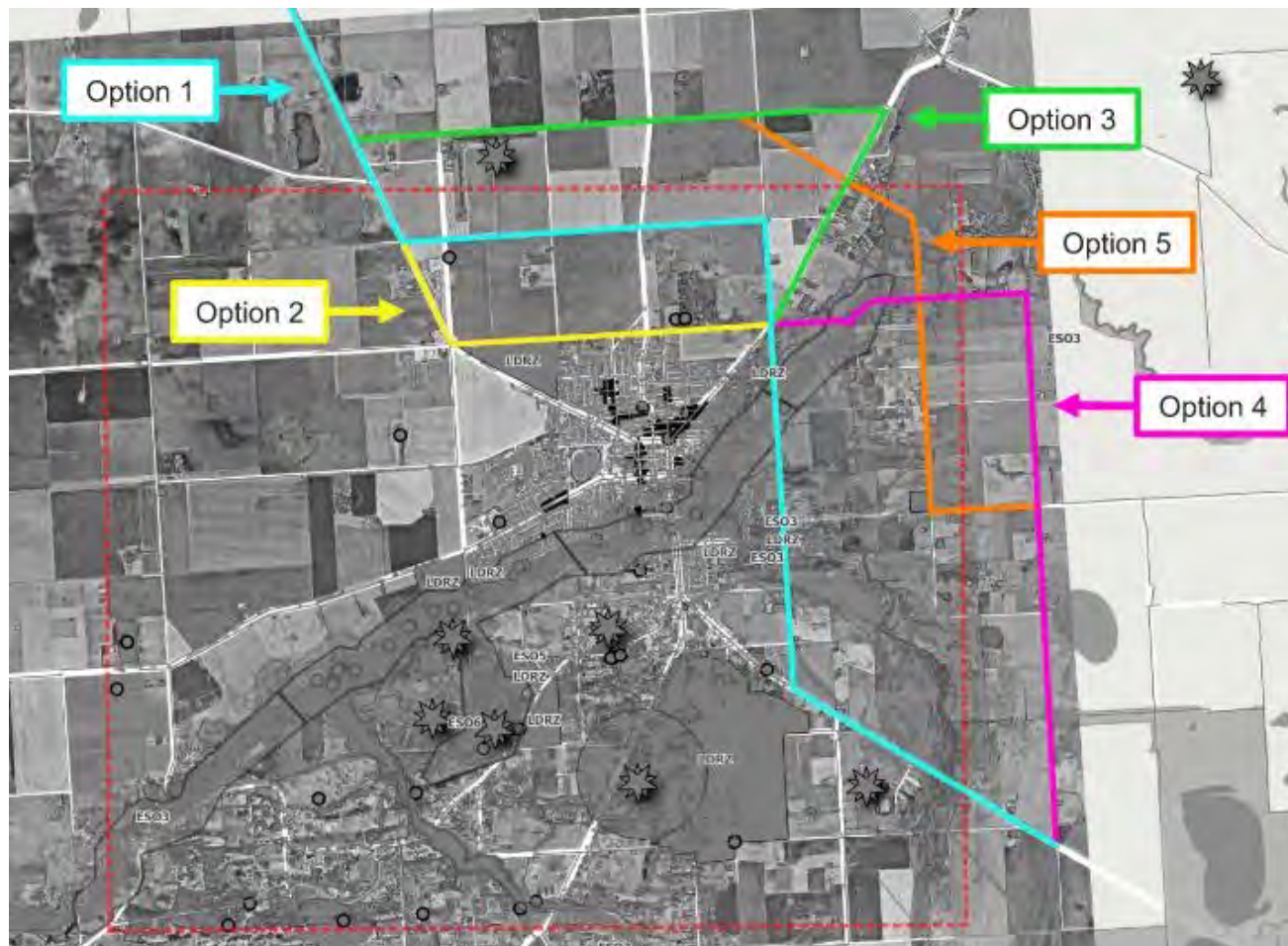


Figure 7-1: Potential Alternative Truck Route Alignment Options, Northeast of Horsham

Alignment Option	Approximate Route Length	Key Existing Roads Used	Key Proximate Land Uses	Number of Waterway Crossings
Option 1	20.9km.	Cameron Road and Gatehouse Road.	Runs past the Burnt Creek Industrial Estate and south of the aerodrome.	One new and one existing waterway crossing.
Option 2	20.3km.	Cameron Road and Riley Road.	Abuts existing residential development and future LDRZ land along Riley Road and Rasmussen Road.	One new and one existing waterway crossing.
Option 3	24km.	Cameron Road and Harris Road.	Runs past the Burnt Creek Industrial Estate and north of the aerodrome. This route provides the closest access point to the WAL Hub.	One new and one existing waterway crossing.

Alignment Option	Approximate Route Length	Key Existing Roads Used	Key Proximate Land Uses	Number of Waterway Crossings
Option 4	22.6km.	West Road and Riley Road.	Abuts existing residential development and future LDRZ land along Riley Road and Rasmussen Road.	One existing waterway crossing.
Option 5	22km.	West Road, Riverside East Road and Harris Road.	Runs along the north side of the aerodrome.	One new waterway crossing.

Table 7-1: Description of Northeast Alignment Options

7.2 Alignment Options Southwest of Horsham

Seven alignment options were identified southwest of Horsham, as identified in Figure 7-2 and briefly described in Table 7-2.

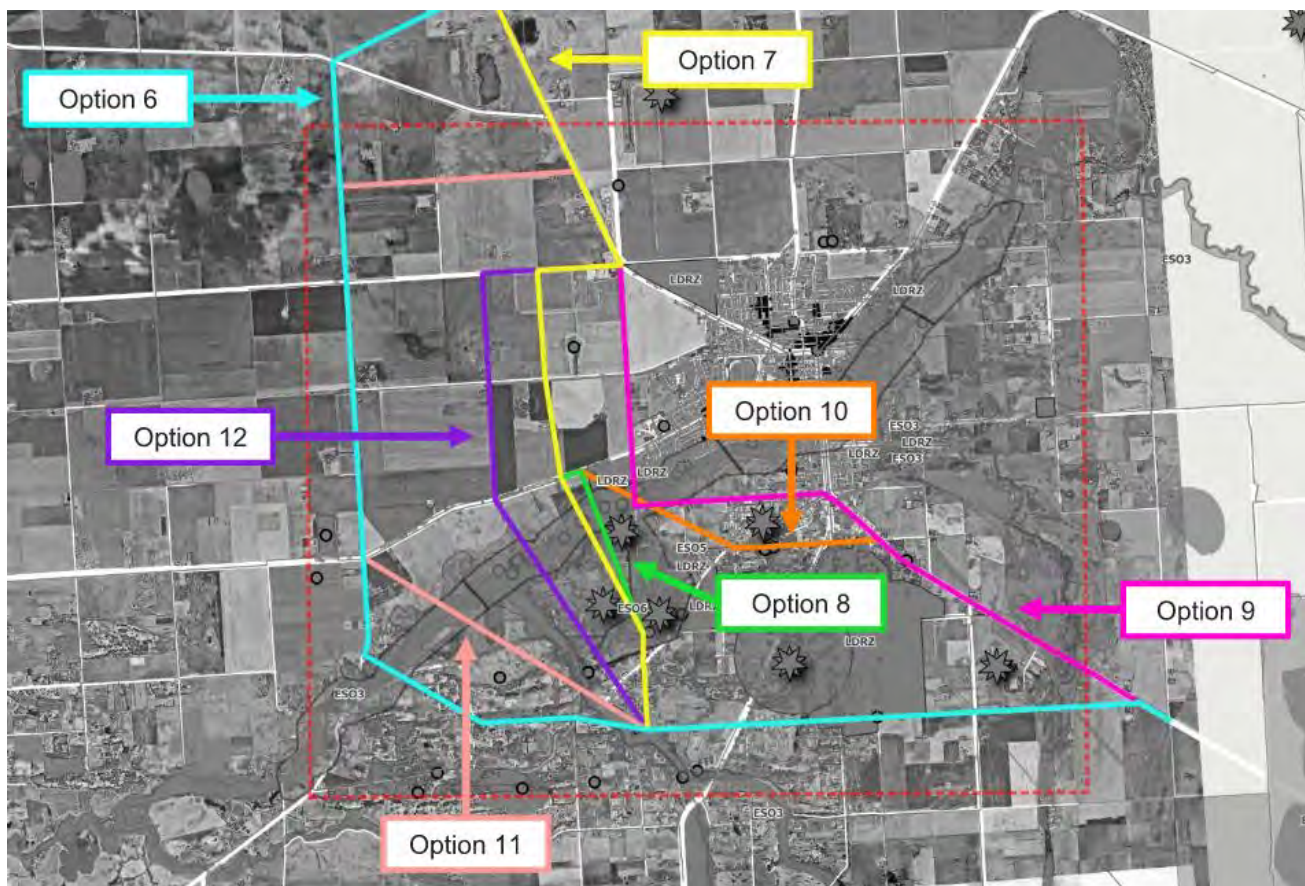


Figure 7-2: Potential Alternative Truck Route Alignment Options, Southwest of Horsham

Alignment Option	Approximate Route Length	Key Existing Roads Used	Key Proximate Land Uses	Number of Waterway Crossings
Option 6	27.1km.	Mackies Road and Remlaw Station Road.	Abuts LDRZ land along Mackies Road and is approximately 1km south of the proposed Haven community activity district	Two new waterway crossings.
Option 7	23.5km.	Mackies Road and Obrees Road.	Abuts LDRZ land along Mackies Road, runs through the sewerage treatment plant area and is approximately 1km south of the proposed Haven community activity district.	One new waterway crossing.

Alignment Option	Approximate Route Length	Key Existing Roads Used	Key Proximate Land Uses	Number of Waterway Crossings
Option 8	23.7km.	Mackies Road and Obrees Road.	Abuts LDRZ land along Mackies Road, runs through the sewerage treatment plant area and is approximately 1km south of the proposed Haven community activity district.	One new waterway crossing.
Option 9	19.4km.	Plumpton Road and Curran Road.	Abuts LDRZ and GRZ land along Curran Road and Plumpton Road.	One new waterway crossing.
Option 10	21.5km.	Kenny Road and Obrees Road.	Abuts LDRZ land along Mackies Road.	One new waterway crossing.
Option 11	28.2km.	Mackies Road and Remlaw Station Road.	Abuts LDRZ land along Mackies Road and is approximately 1km south of the proposed Haven community activity district.	Two new waterway crossings.
Option 12	24.8km.	Mackies Road and Obrees Road.	Abuts LDRZ land along Mackies Road, runs through existing RLZ land and is approximately 1km south of the proposed Haven community activity district.	One new waterway crossing.

Table 7-2: Description of Southwest Alignment Options

8 Long-List Rapid Assessment

There are various matters and detail that are relevant in considering what the 'best' route alignment would be for an alternative truck route. In the first instance, it is considered appropriate to review a long-list of potential route options and analyse them at a higher-level 'rapid' assessment. After determining a short-list of route options from this assessment, high-level design and costings were undertaken to allow a more detailed assessment to be applied. Stantec's scope for the project allowed for a full assessment of up to 45km of route options. This section of the report outlines the rapid assessment process which was applied to the long-list of potential route options.

8.1 Process

A rapid assessment methodology was developed and reviewed by the project team for comment and confirmation. This generally involved setting out the criteria which would be used to assess the long-list of route options and the weighting which would be applied to each criteria. The criteria, its application and the outcomes are set out below.

8.2 Criteria

The below set of criteria and associated measures were considered to be the most suitable factors to reasonably compare the alternative route options at this level of assessment. The criteria are explained below in terms of how they were intended to be measured to derive the overall level of performance for each option. A weighting is also assigned to each, which was informed by the ILM weightings.

Criteria 1: Constraints

Key land use constraints will be assessed for each route option. Sensitive land uses may not be appropriate to accommodate an alternative heavy vehicle route, with considerations to include:

- Areas of Cultural Heritage Sensitivity (refer to discussion in Section 2.4)
- Residential land zoning (refer to discussion in Section 3.2)
- Environmental constraints (refer to discussion in Section 3.4)
- Flood extents (refer to discussion in Section 3.5)
- Infrastructure such as water, sewer and utilities (refer to discussion in Section 3.6)

This criteria is weighted at 20%, based on level of risk, with the least comparative risk scoring 20%.

Criteria 2: Structures and Road Length

Waterways and flood prone land require bridges or similar elevated structures to be built for roads to cross them. Costs are higher to construct such structures, thereby the length of structure will be important to consider and compare for the options. There are also varying overall road lengths associated with the options. At this level of assessment, length of structures and roads will be compared from a relative cost perspective.

This criteria is weighted at 30%, based on the length of structures and total road length, with the shortest comparative length or lowest comparative cost scoring 30%.

Criteria 3: Land Use Integration

Given that the project is focused on heavy vehicles, there are relevant land uses around Horsham which heavy vehicles require access to. This includes the WAL Hub, industrial estates and other key freight locations. Accessibility to these land uses associated with the heavy vehicle route options will rank favourably. Within this criteria, Movement & Place will also be considered, whereby routes nominated for freight Movements would be favourable and areas with high Place value to be avoided.

This criteria is weighted at 20%, based on proximity to key compatible land uses, with best comparative access to key land use scoring 20%.

Criteria 4: Travel Time

The route options provided have different lengths and alignments, which will be considered to determine travel time differences, noting that the speed limit being targeted for the alternative heavy vehicle route is generally 80km/h. However, it is noted that the length of route and intersections will add delays to comparative travel time. These factors will be calculated to identify which route options are expected to perform more efficiently.

This criteria is weighted at 30%, based on percentage difference in overall travel time that will help reduce traffic through the CBD, with fastest comparative travel time scoring 30%.

8.3 Application

The above criteria were applied to each option where relevant, with the resulting performance measures considered on an overall performance basis. The route options were grouped into those either northeast or southwest of Horsham. Due to the differing characteristics of each side, a comparative performance assessment was made. Comparative performance in the context of this assessment means northeast routes will be compared against each other, whilst southwest routes will be compared against each other, independently of each other. No comparison is being made between northeast routes and southwest routes, as the intent is to find the best option on each side. Key considerations for the northeast routes assessment are summarised in Table 8-1 and the southwest routes assessment summarised in Table 8-4.

Alignment Option	Comparative Land Use Constraints	High-Level Cost Comparison (100% being highest cost)	Comparative Land Use Integration	Comparative Total Expected Travel Time
Option 1	Least constraints	88%	Integrates with more compatible land uses	17 mins 10 secs
Option 2	Highest constraints	86%	Integrates with some compatible land uses	17 mins 35 secs
Option 3	Moderate constraints	97%	Integrates with the most compatible land uses	19 mins 30 secs
Option 4	Highest constraints	100%	Integrates with the least compatible land uses	19 mins 30 secs
Option 5	Moderate constraints	87%	Integrates with some compatible land uses	18 mins

Table 8-1: Summary of Northeast Alignment Options Comparative Assessment

Alignment Option	Comparative Land Use Constraints	High-Level Cost Comparison (100% being highest cost)	Comparative Land Use Integration	Comparative Total Expected Travel Time
Option 6	Not considered viable due to areas of high Aboriginal Cultural Heritage Sensitivity.	99%	Integrates with more compatible land uses	23 mins 5 secs
Option 7		93%	Integrates with more compatible land uses	20 mins 15 secs
Option 8		94%	Integrates with more compatible land uses	20 mins 45 secs
Option 9		78%	Integrates with less compatible land uses	18 mins
Option 10		84%	Integrates with less compatible land uses	19 mins 25 secs
Option 11		100%	Integrates with more compatible land uses	23 mins 40 secs
Option 12		94%	Integrates with more compatible land uses	21 mins 15 secs

Table 8-2: Summary of Southwest Alignment Options Comparative Assessment

8.4 Outcomes

The northeast routes assessment overall outcome is summarised in Table 8-3 and the southwest routes assessment overall outcome is summarised in Table 8-4. It is reiterated that no comparison is being made between northeast routes and southwest routes, as the intent is to find the best option on each side.

Criteria	Option 1	Option 2	Option 3	Option 4	Option 5
1 - Constraints	20%	10%	15%	10%	15%
2 - Structures and Road Length	29%	30%	27%	26%	30%
3 - Land Use Integration	15%	10%	20%	5%	10%
4 - Travel Time	30%	29%	26%	26%	29%
Total	94%	79%	88%	67%	84%

Table 8-3: Northeast Alignment Options Results (Comparative Assessment)

Criteria	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	Option 12
1 - Constraints	Not considered viable due to areas of high Aboriginal Cultural Heritage Sensitivity.						
2 - Structures and Road Length	24%	25%	25%	30%	28%	23%	25%
3 - Land Use Integration	20%	20%	20%	15%	15%	20%	20%
4 - Travel Time	23%	26%	26%	30%	28%	23%	25%
Total	67%	71%	71%	75%	71%	66%	70%

Table 8-4: Southwest Alignment Options Results (Comparative Assessment)

After application of the criteria, a workshop was held with DTP and HRCC to discuss the results and confirm which options were most viable to proceed to the next stage of a full assessment. On this basis, it was agreed that the options to bring forward to the more detailed assessment were Options 1 and 5. The following general comments are provided regarding the short-listing of Options 1 and 5:

- Option 1 had the highest overall score of the northeast options, largely due to being the shortest route and having the least constraints.
- Option 5 was the other route selected, as there are generally travel time savings to the northeast of Horsham and less overall constraints. Whilst Option 5 ranked third of the northeast routes, it overlaps with parts of the second ranked Option 3 but the main difference being it does not use Cameron Road and therefore presents an alternative in that regard.

9 Short-Listed Assessment

9.1 Process

Following confirmation of the two options considered most viable from the rapid assessment, concept plans were prepared, with the scope being to provide an overview of the full alignment and provide concept level details of intersections where the proposed route intersects with existing arterial roads. Key bridges were also designed at concept level, with any additional bridges and roundabouts also identified on the cover sheets. These concept plans were then used to inform the preparation of high-level cost estimates and calculation of potential land acquisition that would be needed to achieve the required road reserve. Both the concept plans and high-level cost estimates were reviewed by the project team prior to their assessment below. The outcome of this process will be to build upon the findings of the long-listing assessment with the additional information gained from the concept design and high-level cost estimates.

9.2 Concept Design Plans

The concept design plans for Options 1 and 5 are included in Appendix F. Key features of each option are described below.

Option 1 - Northeast of Horsham

The overall alignment and key features are shown in Figure 9-1, described as follows:

- The route primarily uses and adopts an 80km/h speed limit along Cameron Road and Gatehouse Road to link with the Western Highway either side of Horsham.
- Four bridges are proposed, being:
 - o A rail crossing in the northwest which supports two-way movements and retains the through movement along the Western Highway. Vehicles are only able to travel north-bound onto the Western Highway from the bridge, facilitating the key through function of the alternative route.
 - o A rail crossing in the northeast which is adjacent to the Henty Highway. This bridge provides on and off-ramps for all-direction movements onto the Henty Highway. It is noted however that the south-bound on-ramp may be difficult to achieve due to its proximity to Riverside Road.
 - o A bridge over the Wimmera River associated with Cameron Road.
 - o The existing bridge over Burnt Creek associated with Cameron Road would need to be upgraded to match the proposed road alignment.
- Five roundabouts are proposed, designed to accommodate 80km/h approach speeds.

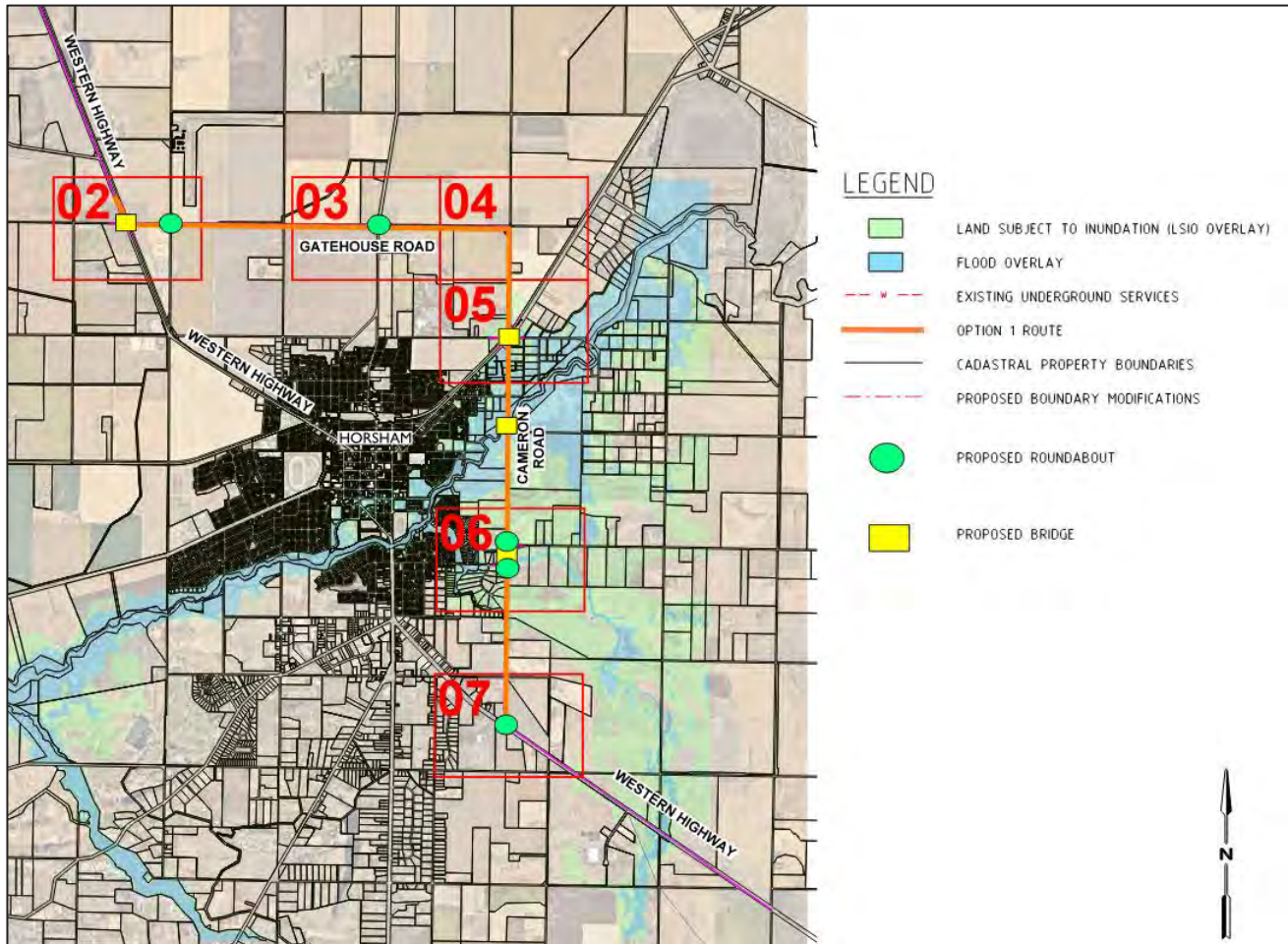


Figure 9-1: Overview of Option 1

Option 5 - Northeast of Horsham

The overall alignment and key features are shown in Figure 9-2, described as follows:

- The route primarily uses and adopts an 80km/h speed limit along West Road, Riverside East Road and Harris Road to with link the Western Highway either side of Horsham.
- Three bridges are proposed, being:
 - o A rail crossing in the northwest which supports two-way movements and retains the through movement along the Western Highway. Vehicles are only able to travel north-bound onto the Western Highway, facilitating the key through function of the alternative route.
 - o A rail crossing in the northeast which is adjacent to the Henty Highway. This bridge provides on and off-ramps for all-direction movements onto the Henty Highway.
 - o A bridge over the Wimmera River associated with Riverside East Road.
- Six roundabouts are proposed, designed to accommodate 80km/h approach speeds.

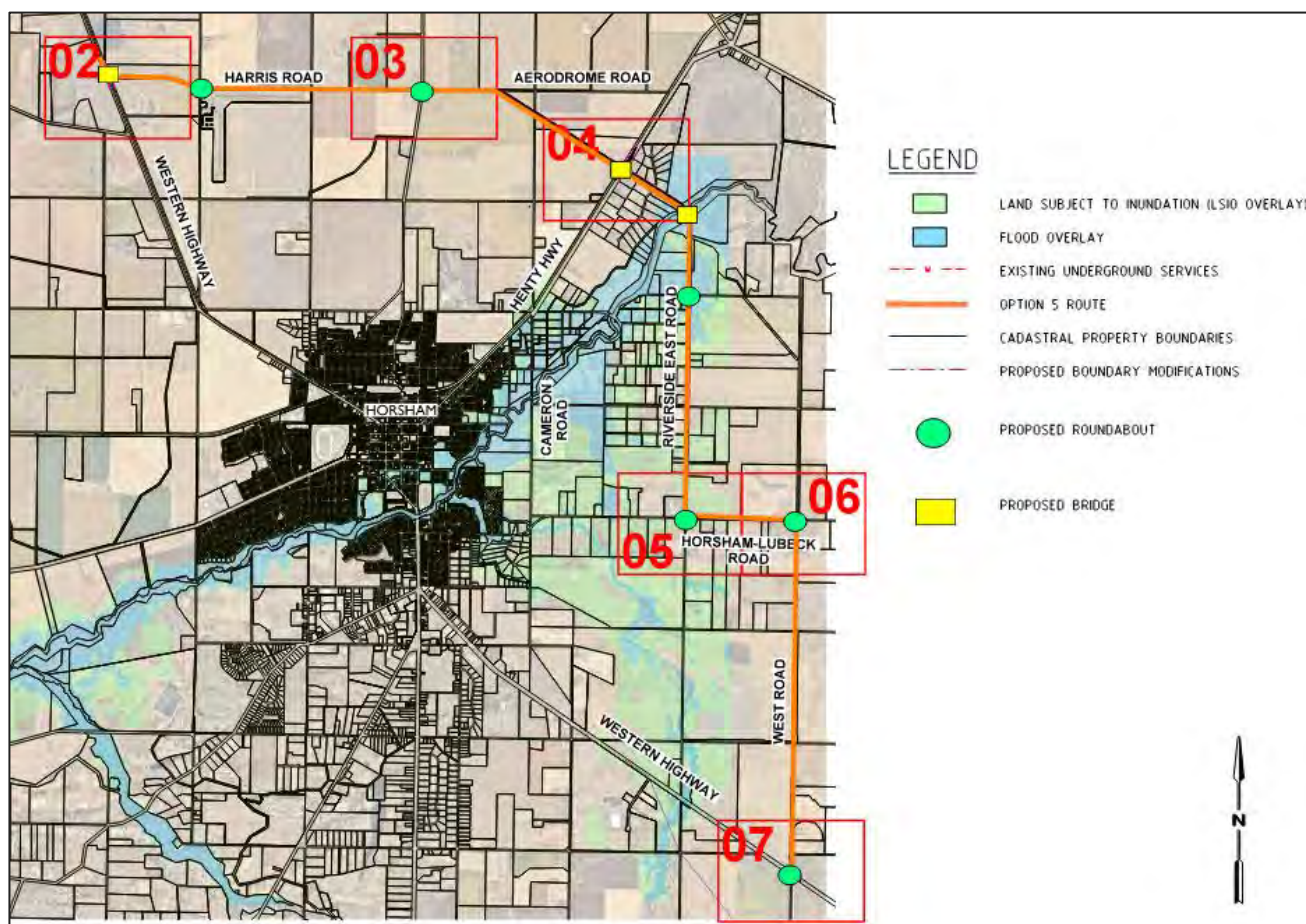


Figure 9-2: Overview of Option 5

9.3 High-Level Cost Estimates

The high-level cost estimates for Options 1 and 5 are included in Appendix G. Key features of each of the options are described in Table 9-1, which indicates:

- Option 1 to the northeast of Horsham represents the shortest route and requires less than half of the land acquisition of Option 5. The estimated cost is also the lowest, requiring one less roundabout but one more bridge.
- Option 5 to the northeast of Horsham is a longer and slower route than Option 1. The anticipated amount of land acquisition is also just more than double. The estimated cost of this option is also higher, influenced by the route length.

It is noted that land acquisition is not factored into the high-level cost estimate, due to the complexity of calculating the rate at this level of assessment. Land acquisition should be considered however when comparing the relative viability of the options.

Alignment Option	Key features	Approximate route length	Approximate land acquisition	High-Level Cost Estimate (incl GST)
Option 1	5 roundabouts, 4 bridges	12.8km	166,947m ²	\$162.9 million
Option 5	6 roundabouts, 3 bridges	20km	344,725m ²	\$199.5 million

Table 9-1: Key Aspects of the High-Level Cost Estimates

9.4 Alignment Assessment

The rapid assessment undertaken in Section 8 of this report provides the basis of assessment for the route options, with the additional information gained from the concept plans and high-level cost estimates able to provide a refined assessment. As such, the findings from the rapid assessment are set out in Table 9-2 with the additional information now included.

Criteria	Option 1	Option 5
Constraints	• Areas of cultural heritage sensitivity are potentially manageable, subject to future CHMP/detailed planning work. • Land zoning: ◦ Interface with LDRZ land along Cameron Road. ◦ Limits aerodrome expansion to the south (not currently proposed). • Interaction with existing Infrastructure/utilities: Water mains. • Overlaps with a farm machinery corridor on Dooen South Road. • A new road reserve would be needed south of Cameron Road. • Environmental constraints: No identifiable high-risk matters.	• Areas of cultural heritage sensitivity are potentially manageable, subject to future CHMP/detailed planning work. • Land zoning: Limits aerodrome expansion to the north. • Interaction with existing Infrastructure/utilities: Water mains and substation on the corner of Riverside East Road and Browns Road. • Overlaps with a farm machinery corridor on Aerodrome Road. • A new road reserve would be needed between Riverside East Road and Aerodrome Road. • Environmental constraints: No identifiable high-risk matters.
High-Level Cost Estimate	\$162.9 million.	\$199.5 million
Land Use Integration	Interfaces with: • Burnt Creek Industrial Estate / Horsham Regional Livestock Exchange. • Airport precinct. • Upgrading Camerons Road supports access to WAL Hub.	Interfaces with: • Airport precinct. • Generally supports access to WAL Hub.
Travel Time	17 mins 10 secs.	18 mins
Land Acquisition	166,947m ² .	344,725m ²
Constructability	Includes an additional bridge compared to Option 5, including a noted difficulty in locating an on-ramp to the bridge over Henty Highway proximate to Riverside Road.	Requires three bridges, being one less than Option 1.

Table 9-2: Short-Listed Options Assessment

It is clear from review of all metrics that Option 1 represents the most feasible option of the shortlisted alternative truck routes. It is the shortest route, with the least constraints, fastest travel time, least land acquisition and lowest cost. Whilst an additional bridge is required in this option, the overall expected cost is still the lowest. One note in this regard is the potential difficulty to locate an on-ramp in close proximity to Riverside Road. However, this may be able to be resolved at a more detailed level of design.

10 Conclusions

The following conclusions are drawn from the outcomes of the assessment of the shortlisted Options 1 and 5:

- Option 1 to the northeast of Horsham represents the most feasible option of the shortlisted alternative truck routes. It performs the best across all metrics, including constraints, cost, land use integration, travel time and land acquisition.
- It is noted that it is potentially difficult to locate an on-ramp to the proposed bridge in close proximity to Riverside Road for Option 1, however this may be able to be resolved at a more detailed level of design.
- Table 10-1 summarises the key outcomes of the assessment of Option 1.

Criteria	Option 1
Constraints	• Areas of cultural heritage sensitivity are potentially manageable, subject to future CHMP/detailed planning work. • Land zoning: - o Interface with LDRZ land along Cameron Road. - o Limits aerodrome expansion to the south (not currently proposed). • Interaction with existing Infrastructure/utilities: Water mains. • Overlaps with a farm machinery corridor on Dooen South Road. • A new road reserve would be needed south of Cameron Road. • Environmental constraints: No identifiable high-risk matters.
High-Level Cost Estimate	\$162.9 million.
Land Use Integration	Interfaces with: • Burnt Creek Industrial Estate / Horsham Regional Livestock Exchange. • Airport precinct. • Upgrading Camerons Road supports access to WAL Hub.
Travel Time	17 mins 10 secs.
Land Acquisition	166,947m ² .
Constructability	Includes an additional bridge compared to Option 5, including a noted difficulty in locating an on-ramp to the bridge over Henty Highway proximate to Riverside Road.

Table 10-1: Option 1 Assessment Results

Appendix

We design with community in mind



Appendix A - Horsham Planning Scheme Zones and Overlays



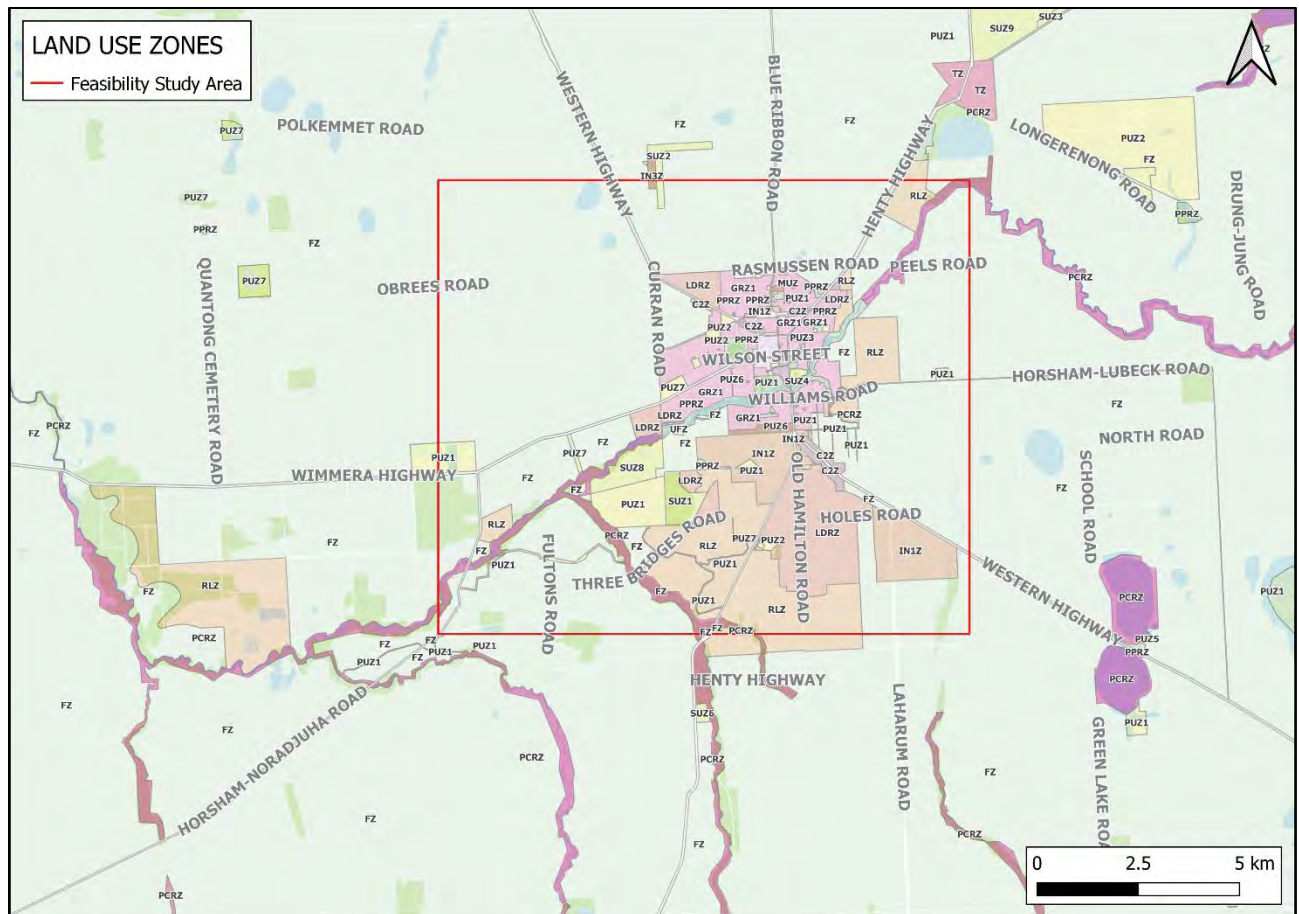


Figure A1: Horsham Planning Scheme Zones

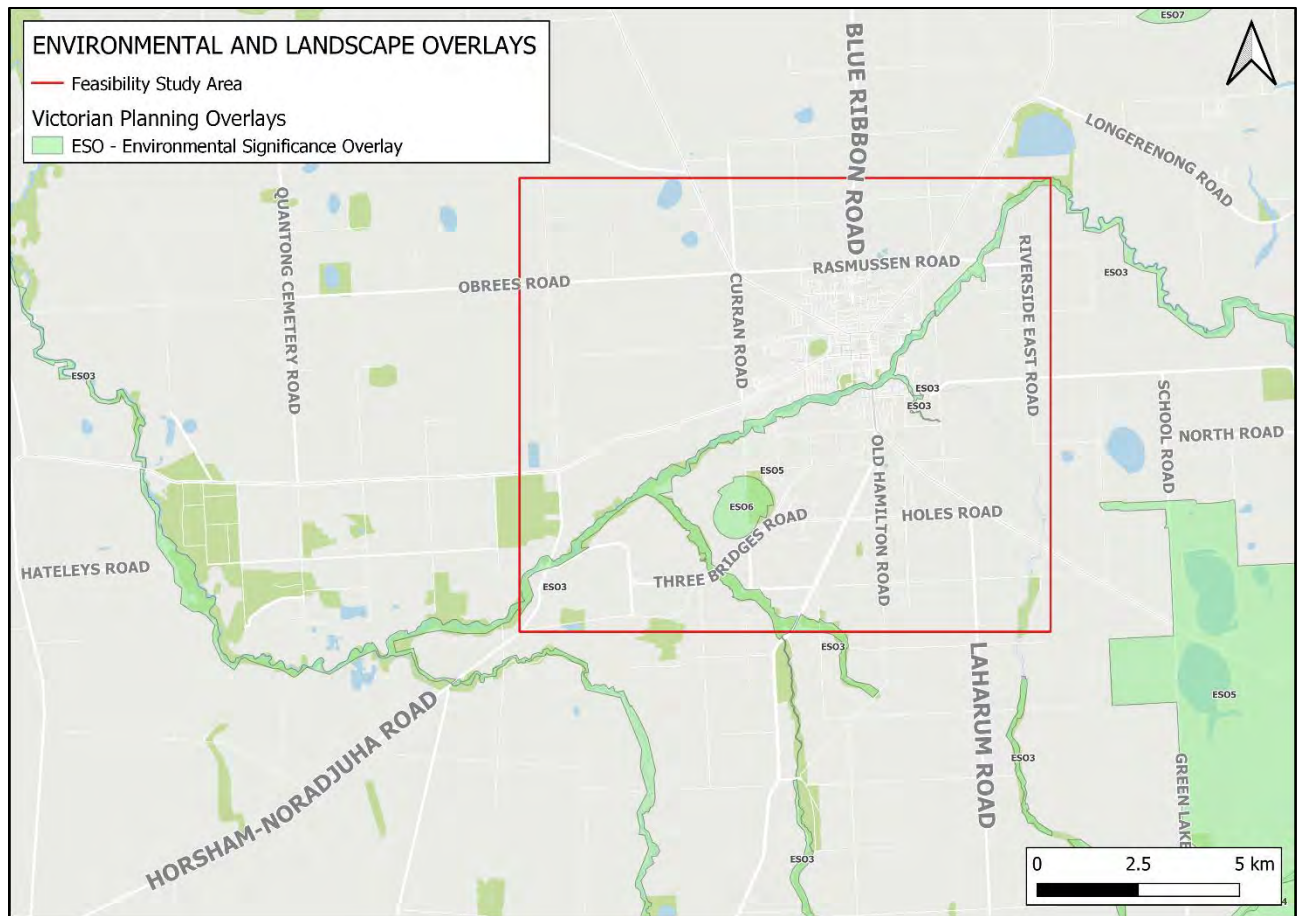


Figure A2: Environmental and Landscape Overlays

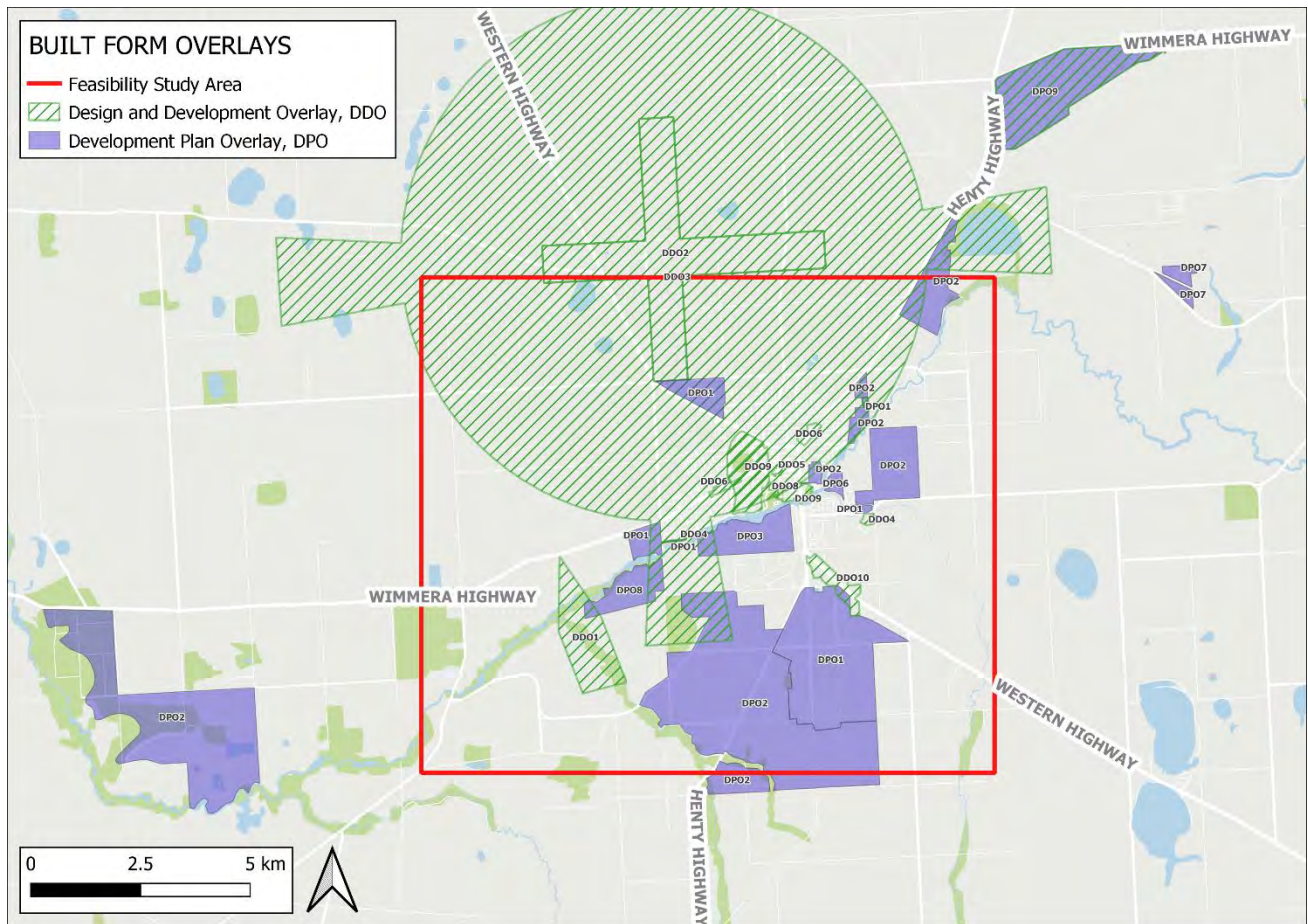
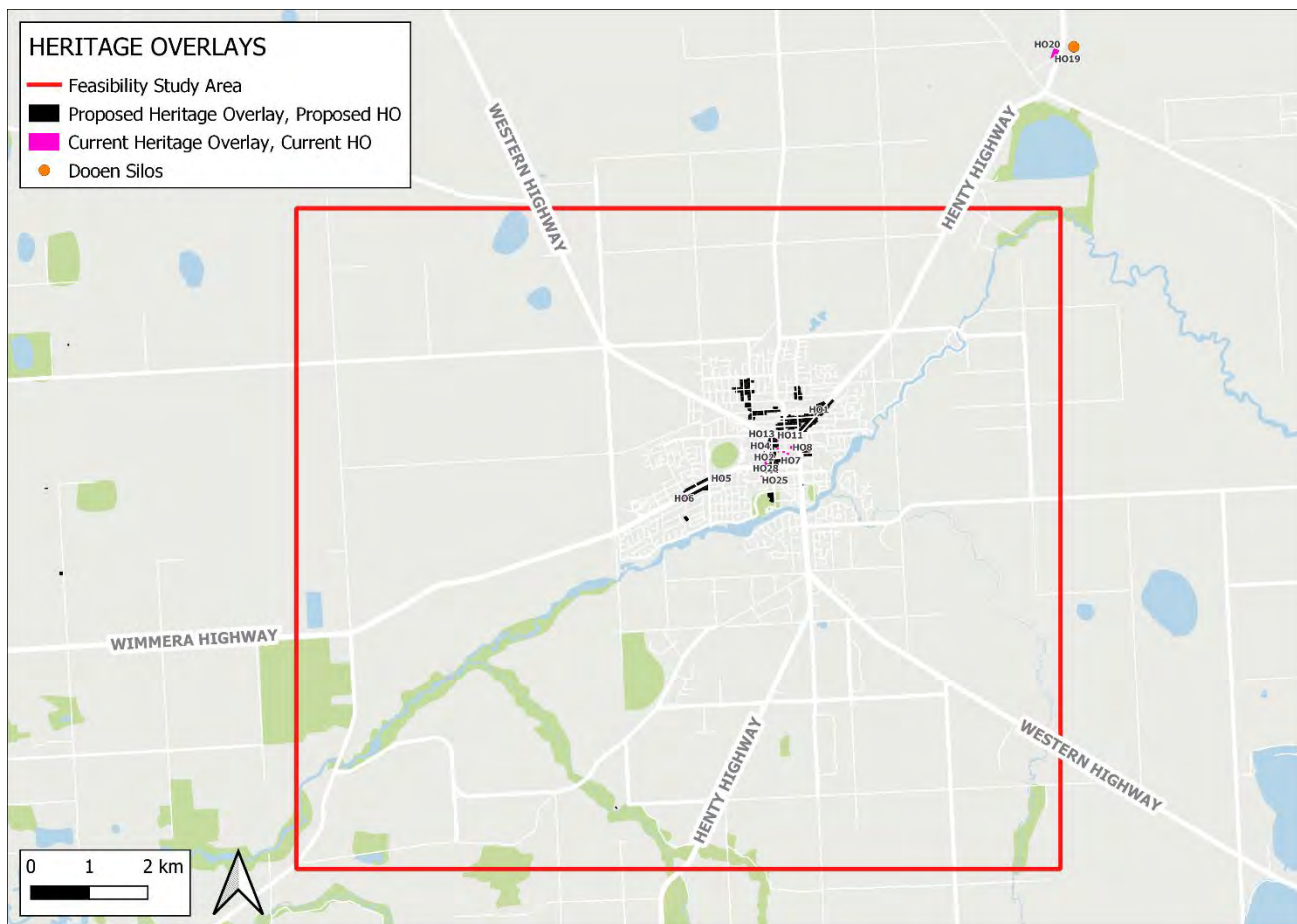


Figure A3: Built Form Overlays



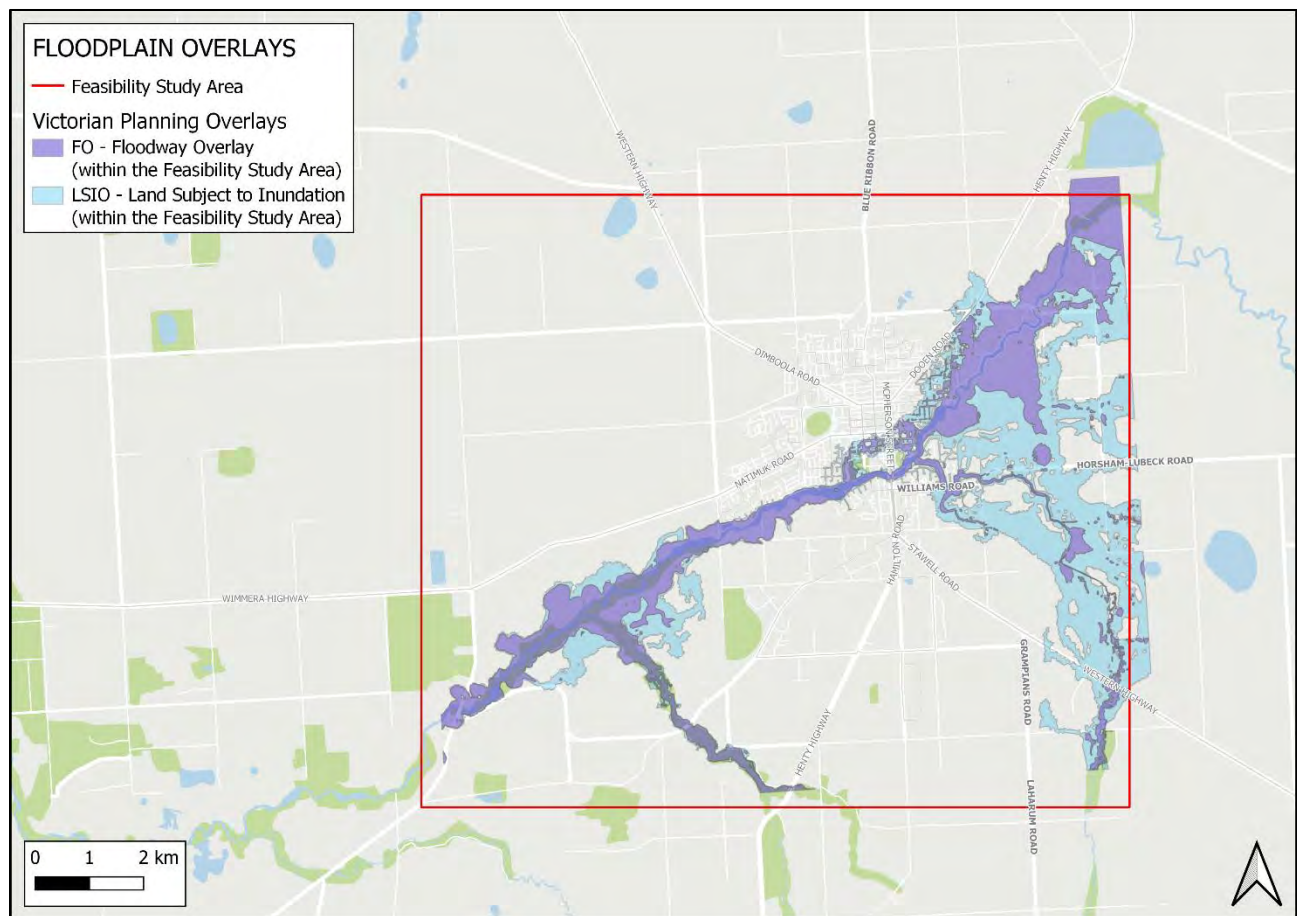


Figure A5: Floodplain Overlays

Appendix B - Existing Road Network



Road	Photo Location	Features	Photos	
Blue Ribbon Road	233 Blue Ribbon Rd Dooen VIC 3401 Australia Co-ordinates: (-36.681401877093826, 142.20210800886363)	- Road Category: Secondary State Arterial - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 45m - Road Width (Edge to Edge): 8.8m - Lane Width: 3.4m - Unsealed Shoulder Width: 0.8m - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: Unsealed gravel shoulder had a steep drop-off in the inspected area.

Typical Cross Section:



Road	Photo Location	Features	Photos	
Cameron Road North (Sealed)	1 Cameron Rd N Dooen VIC 3401 Australia Co-ordinates: (-36.69757421813912, 142.22352298444736)	- Road Category: Paper Urban - Speed Limit: 50km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 4m - Lane Width: N/A - Unsealed Shoulder Width: 1.5m - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: N/A

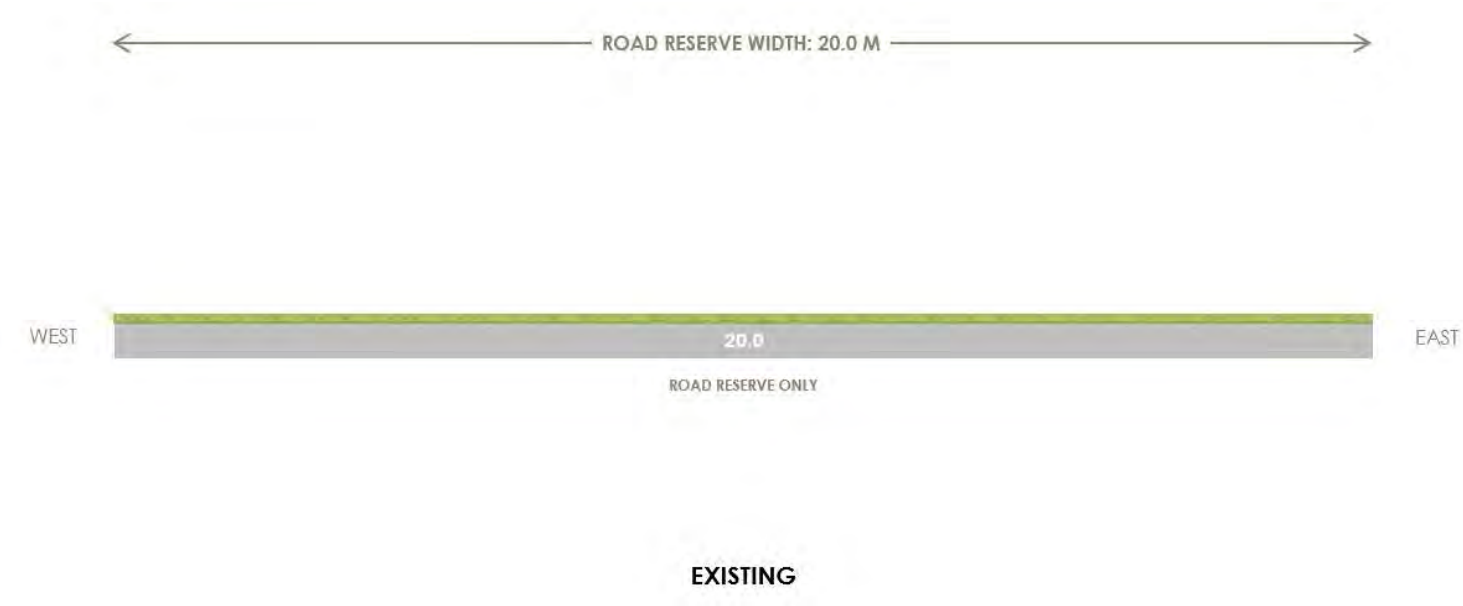
Typical Cross Section:



Road	Photo Location	Features	Photos	
Cameron Road North (Unsealed)	60–64 Pryors Rd Dooen VIC 3400 Australia Co-ordinates: (-36.704373154411094, 142.22348705806806)	• Road Category: N/A • Speed Limit: N/A • Description: Road reserve only • Road Reserve Width: 20m • Road Width (Edge to Edge): N/A • Lane Width: N/A • Unsealed Shoulder Width: N/A • Footpath / Shared Path: No	Facing: North N/A	Facing: South 

Additional comments: This is a road reserve only, closed to vehicle access.

Typical Cross Section:



Road	Photo Location	Features	Photos	
Cameron Road (South)	40 Cameron Rd Riverside VIC 3401 Australia Co-ordinates: (-36.73715824076079, 142.22385865321218)	- Road Category: Access Urban - Speed Limit: 80km/h - Description: Sealed, two-way road - Road Reserve Width: 22m - Road Width (Edge to Edge): 7m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: Generally, an unsealed shoulder is not present.

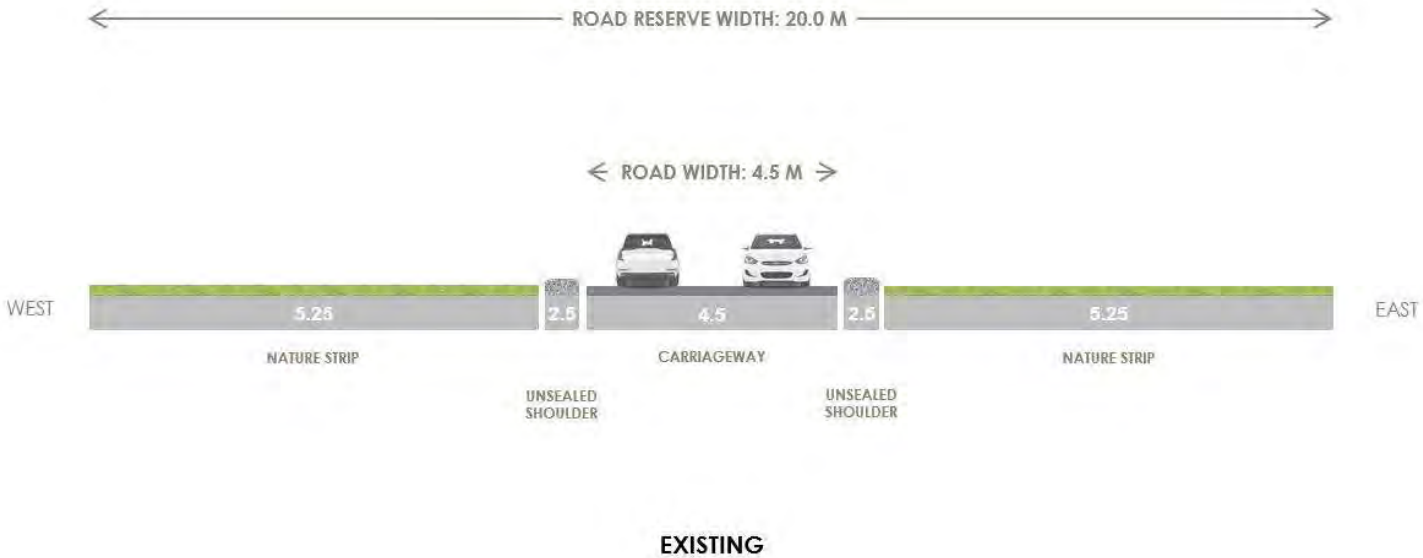
Typical Cross Section:



Road	Photo Location	Features	Photos	
Cameron Road (Sealed)	251–271 Cameron Rd	- Road Category: Access Urban - Speed Limit: 80km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 4.5m - Lane Width: N/A - Unsealed Shoulder Width: 2.5m - Footpath / Shared Path: No	Facing: North	Facing: South
	Horsham VIC 3400 Australia Co-ordinates: (-36.717238250611025, 142.22335848447145)			

Additional Comments: N/A

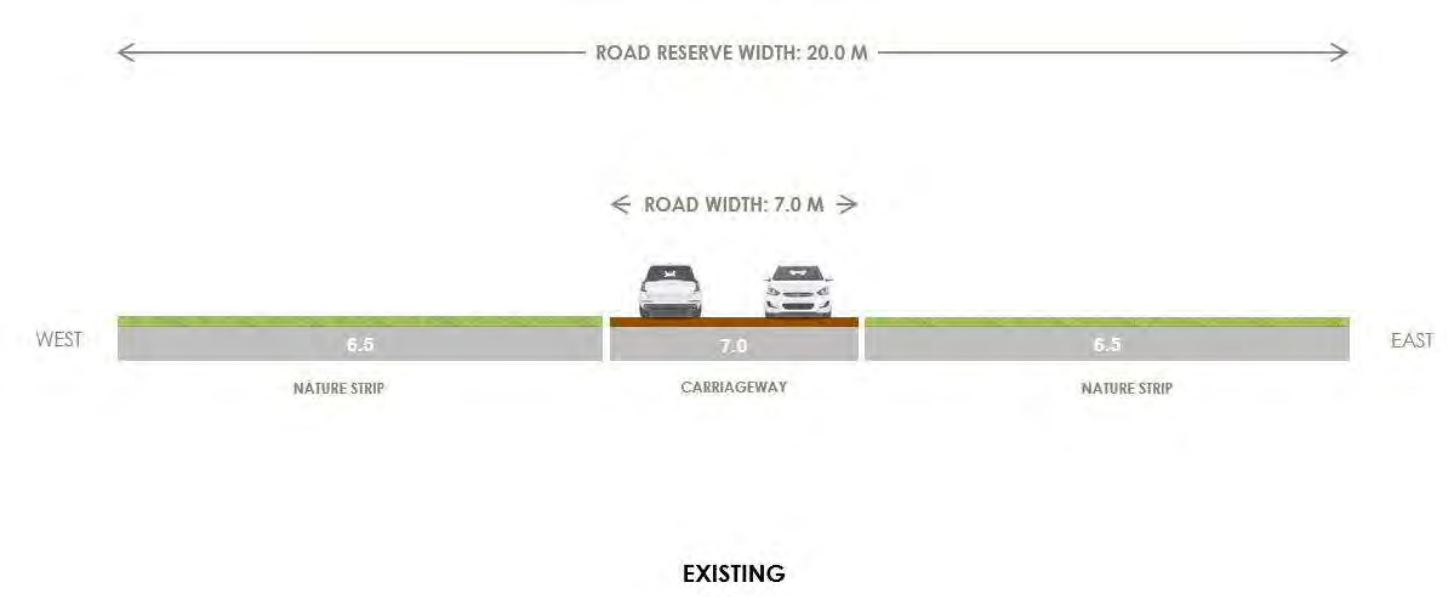
Typical Cross Section:



Road	Photo Location	Features	Photos	
Cameron Road (Unsealed)	273–297 Cameron Rd Horsham VIC 3400 Australia Co-ordinates: (-36.71489254534911, 142.2230056283605)	- Road Category: Minor Urban - Speed Limit: 80km/h - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 7m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: N/A

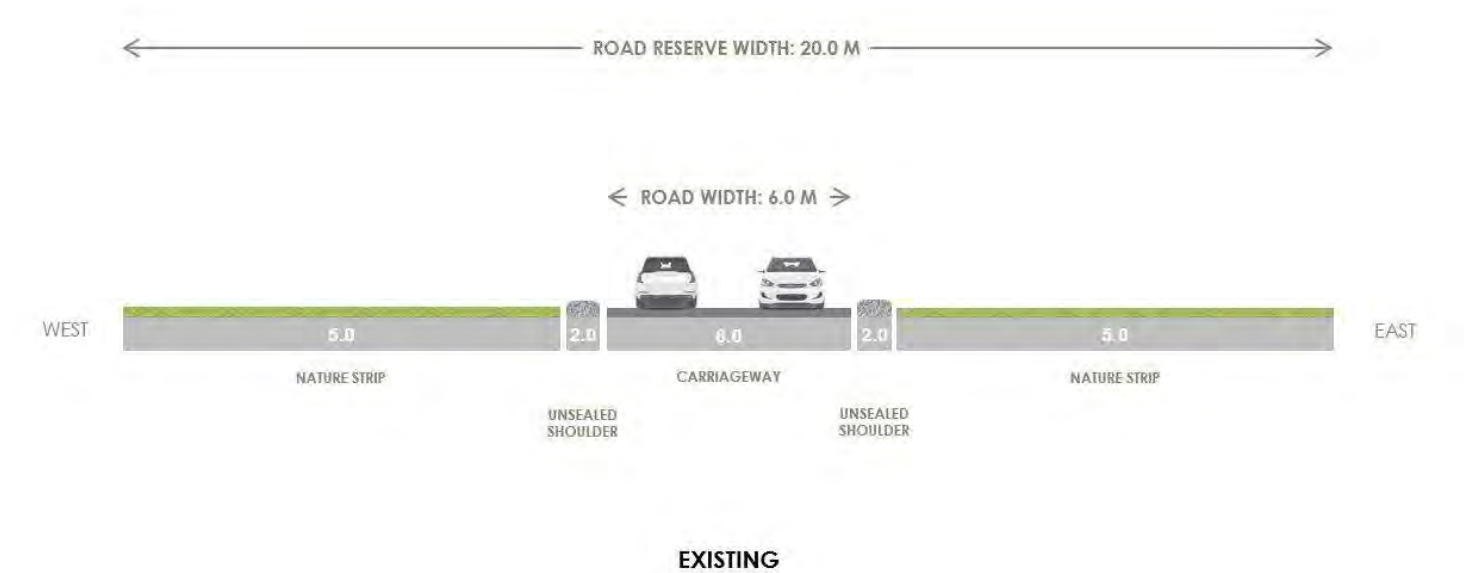
Typical Cross Section:



Road	Photo Location	Features	Photos	
Curran Road	Curran Rd Vectis VIC 3401 Australia Co-ordinates: (-36.70323605632875, 142.16854521855845)	- Road Category: Link Urban - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 6m - Lane Width: N/A - Unsealed Shoulder Width: 2m - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: N/A

Typical Cross Section:



Road	Photo Location	Features	Photos	
Gatehouse Road (East)	Gate House Rd Dooen VIC 3401 Australia Co-ordinates: (-36.68230247641213, 142.20311585806292)	- Road Category: Minor Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 5m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

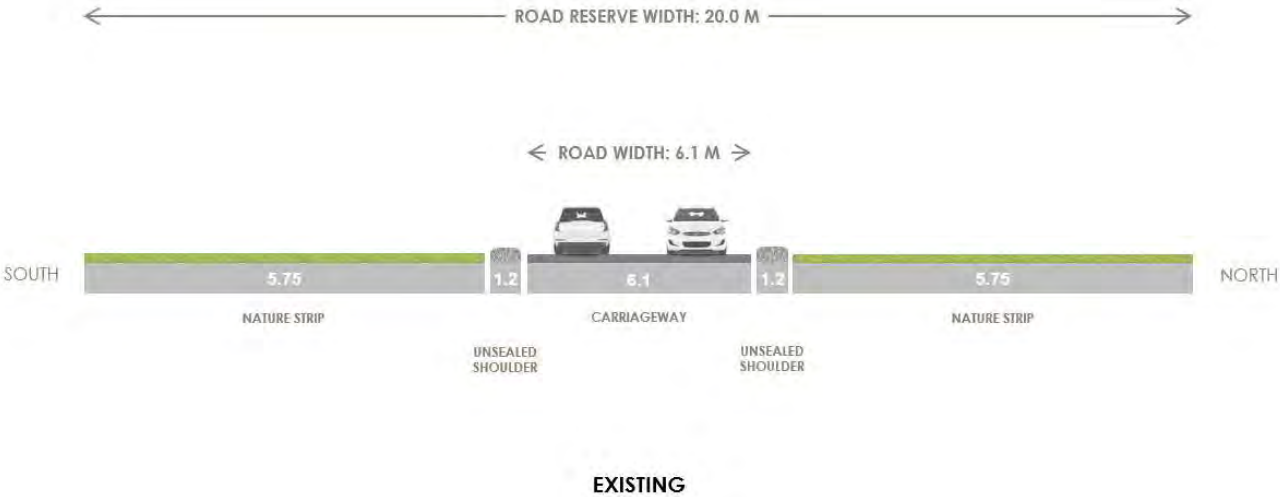
Typical Cross Section:



Road	Photo Location	Features	Photos	
Gatehouse Road (West)	Gate House Rd Dooen VIC 3401 Australia Co-ordinates: (-36.68245981426288, 142.19410971366935)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 6.1m - Lane Width: N/A - Unsealed Shoulder Width: 1.2m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

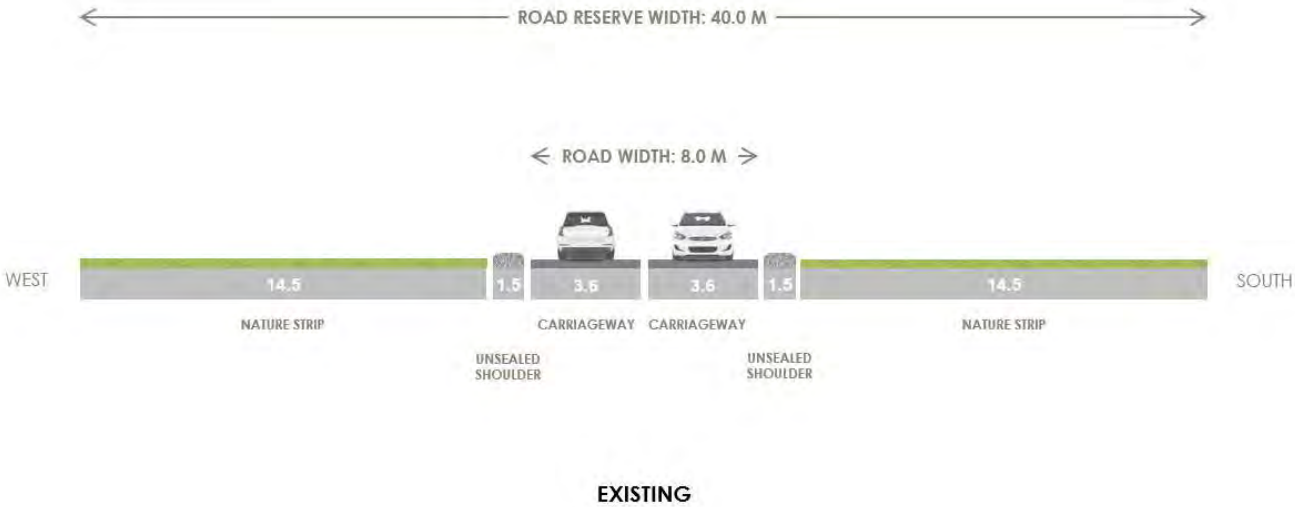
Typical Cross Section:



Road	Photo Location	Features	Photos	
Golf Course Road	258–266 Golf Course Rd Haven VIC 3401 Australia Co-ordinates: (-36.74879776395263, 142.178247581157)	- Road Category: Link Rural - Speed Limit: 70km/h - Description: Sealed, two-way road - Road Reserve Width: 40m - Road Width (Edge to Edge): 8m - Lane Width: 3.6m - Unsealed Shoulder Width: 1.5m - Footpath / Shared Path: No	Facing: North 	Facing: West 

Additional Comments: N/A

Typical Cross Section:



Road	Photo Location	Features	Photos	
Henty Highway (North-East)	470–496 Henty Highway Doon VIC 3401 Australia Co-ordinates: (-36.682060142870625, 142.2346729981937)	- Road Category: Primary State Arterial - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 60m - Road Width (Edge to Edge): 9.2m - Lane Width: 3.6m - Unsealed Shoulder Width: N/A - Footpath / Shared Path: Yes (3m, East)	Facing: North 	Facing: South 

Additional Comments: The main shoulder area is sealed and there is a 3m wide shared path on the east side of the road.

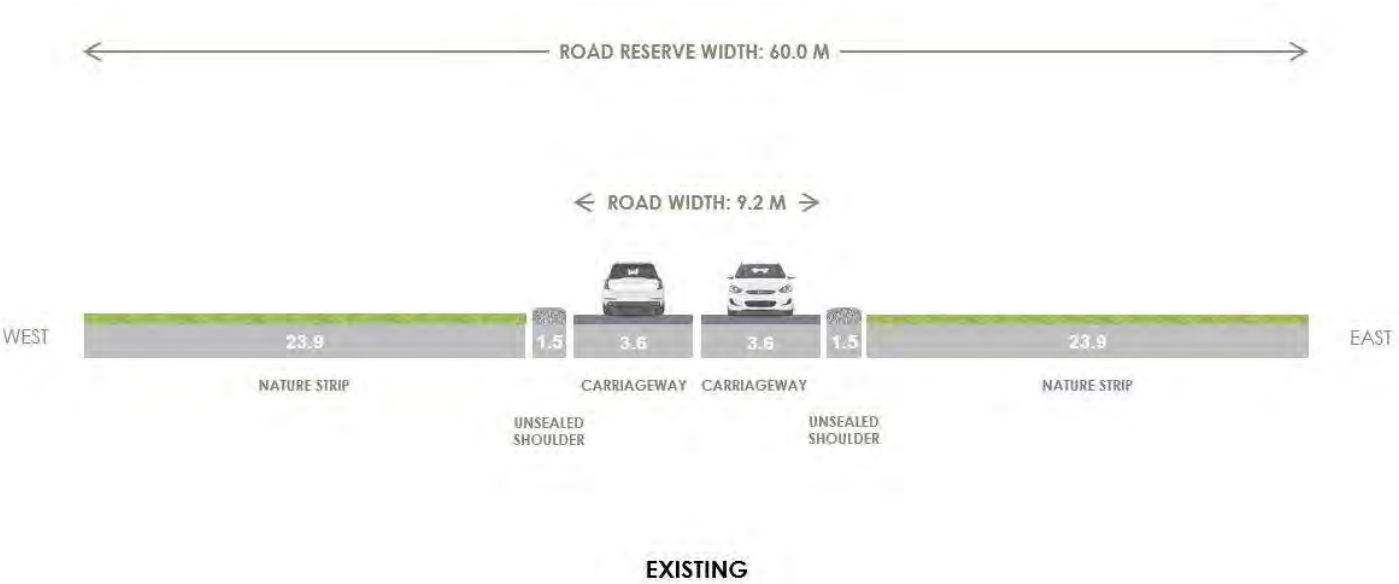
Typical Cross Section:



Road	Photo Location	Features	Photos	
Henty Highway (South)	4030 Henty Highway McKenzie Creek VIC 3401 Australia Co-ordinates: (-36.78480728527682, 142.17454452712317)	- Road Category: Primary State Arterial - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 60m - Road Width (Edge to Edge): 9.2m - Lane Width: 3.6m - Unsealed Shoulder Width: 1.5m - 2m - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: Road reserve becomes 40m north of Clynes Rd W. There is a gravel path on east side of the road, north of Clynes Rd W. However, it falls outside the road reserve

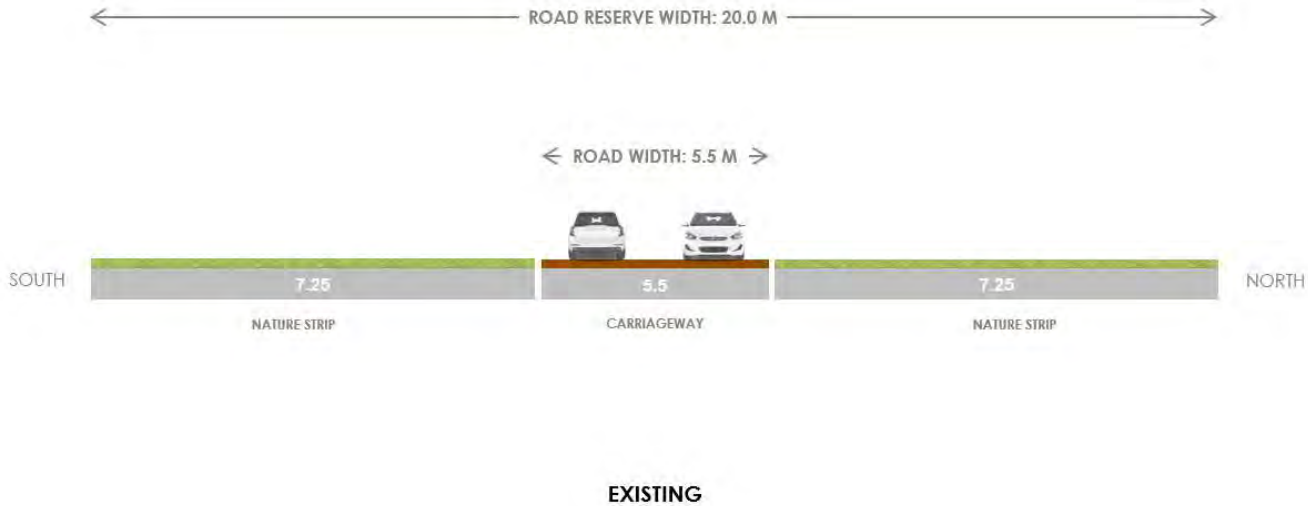
Typical Cross Section:



Road	Photo Location	Features	Photos	
Holes Road (East)	168 Holes Rd Haven VIC 3401 Australia Co-ordinates: (-36.75305112313158, 142.22009888786118)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 5.5m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

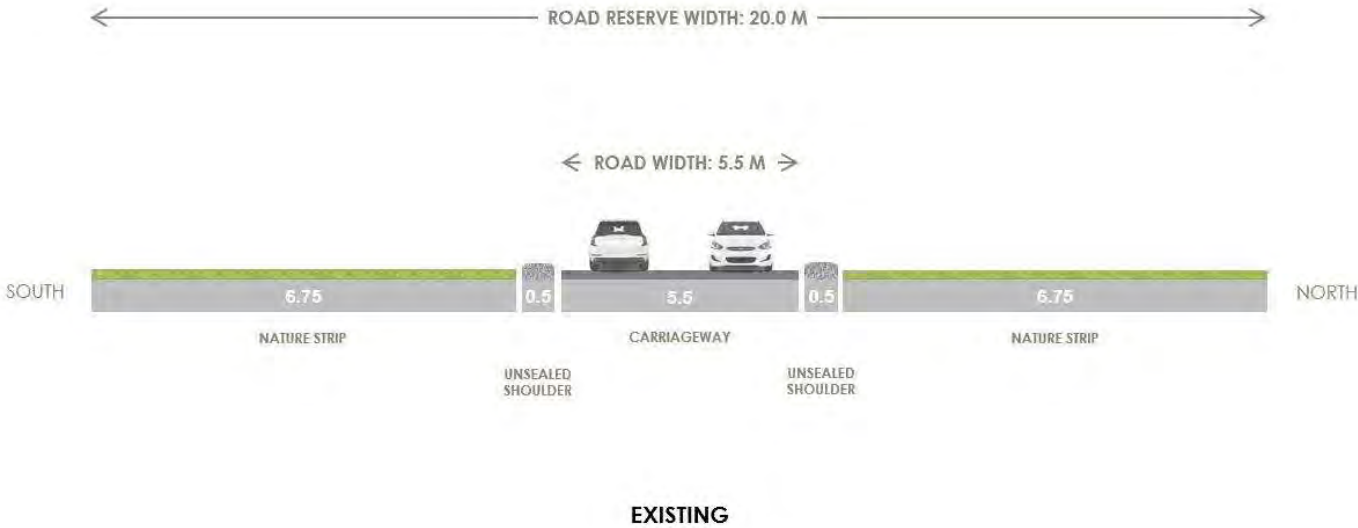
Typical Cross Section:



Road	Photo Location	Features	Photos	
Holes Road (West)	10–50 Holes Rd Haven VIC 3401 Australia Co-ordinates: (-36.7528841024735, 142.20668463614328)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 5.5m - Lane Width: N/A - Unsealed Shoulder Width: 0.5m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

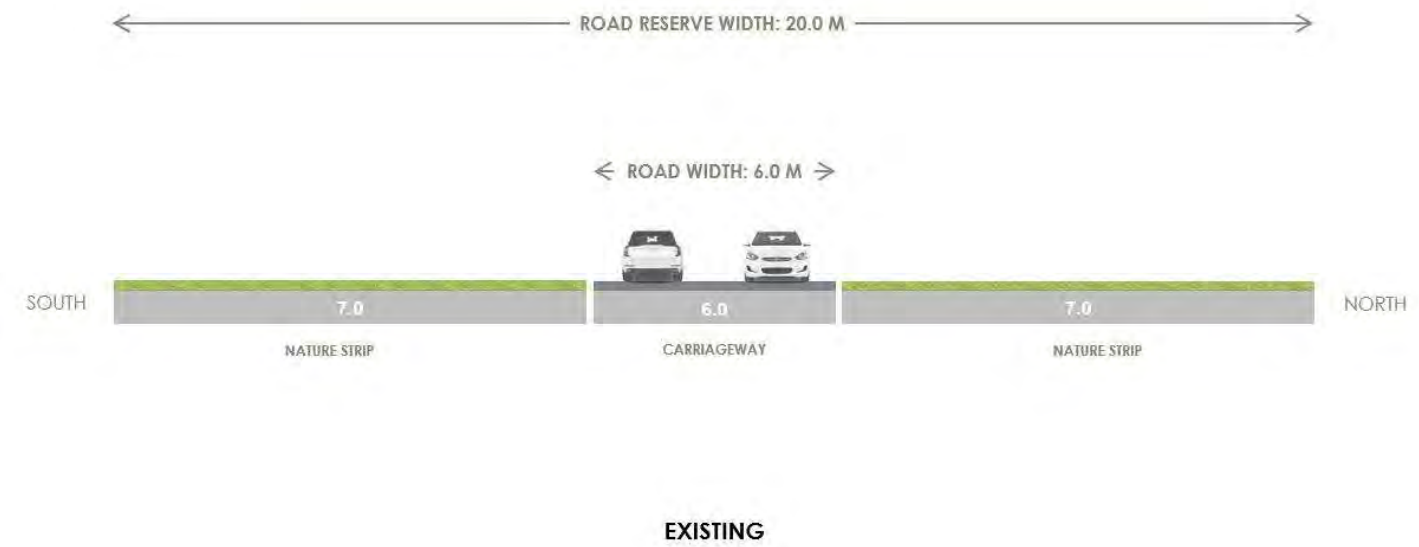
Typical Cross Section:



Road	Photo Location	Features	Photos	
Hunts Road	67 Hunts Rd Haven VIC 3401 Australia Co-ordinates: (-36.75248783196325, 142.20491449645914)	- Road Category: Access Rural - Speed Limit: 60km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 6m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

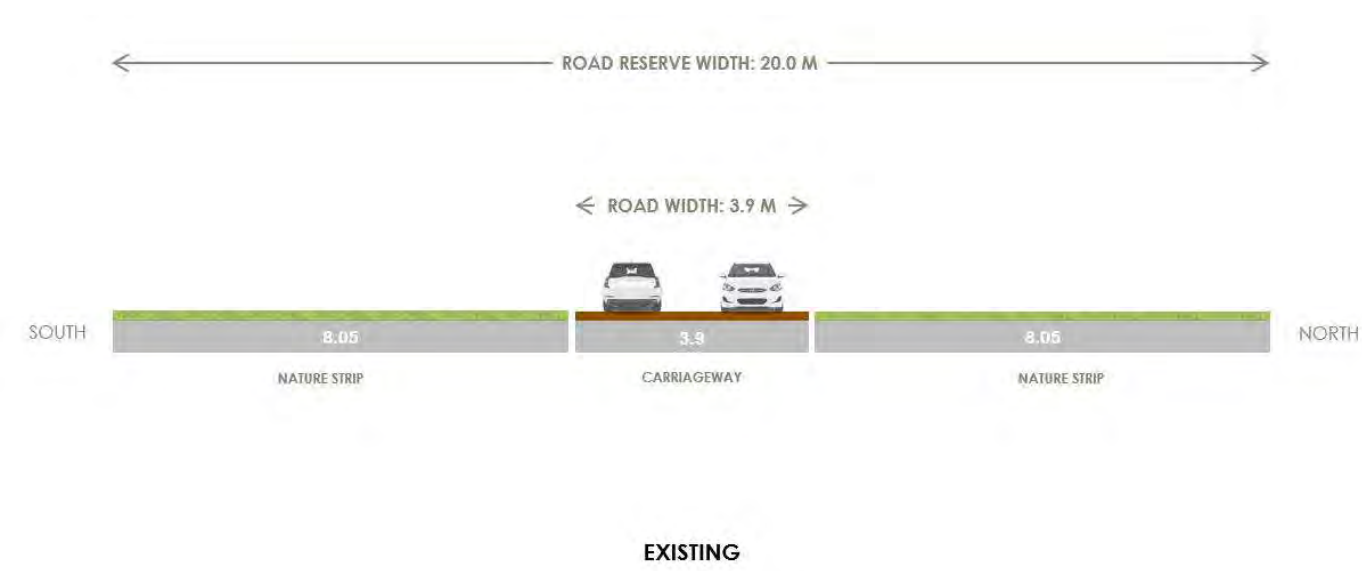
Typical Cross Section:



Road	Photo Location	Features	Photos	
Mackies Road (East)	Bungalally VIC 3401 Australia Co-ordinates: (-36.768101070386614, 142.24217343209176)	- Road Category: Minor Rural - Speed Limit: Not Signed (Potentially 60km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 3.9m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: No signed speed limit, nature of road conducive to low speeds.

Typical Cross Section:



Road	Photo Location	Features	Photos	
Mackies Road (West)	24–124 Mackies Rd Haven VIC 3401 Australia Co-ordinates: (-36.76773273477142, 142.19652275611946)	- Road Category: Access Rural - Speed Limit: Not Signed (Potentially 60km/h) - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 6.4m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: Yes (2.9m, North)	Facing: East 	Facing: West 

Additional Comments: No speed limit observed, assumed 60km/h due to residential environment. Typically, no unsealed shoulder.

Typical Cross Section:



Road	Photo Location	Features	Photos	
Pearsons Road	Australia Co-ordinates: (-36.74110811079132, 142.1688649900595)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 3.6m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: The road is wider south of Kenny Rd, where it enters some kind of facility. North of Kenny Rd, the typical road width is 3.6m, which stops prior to the river.

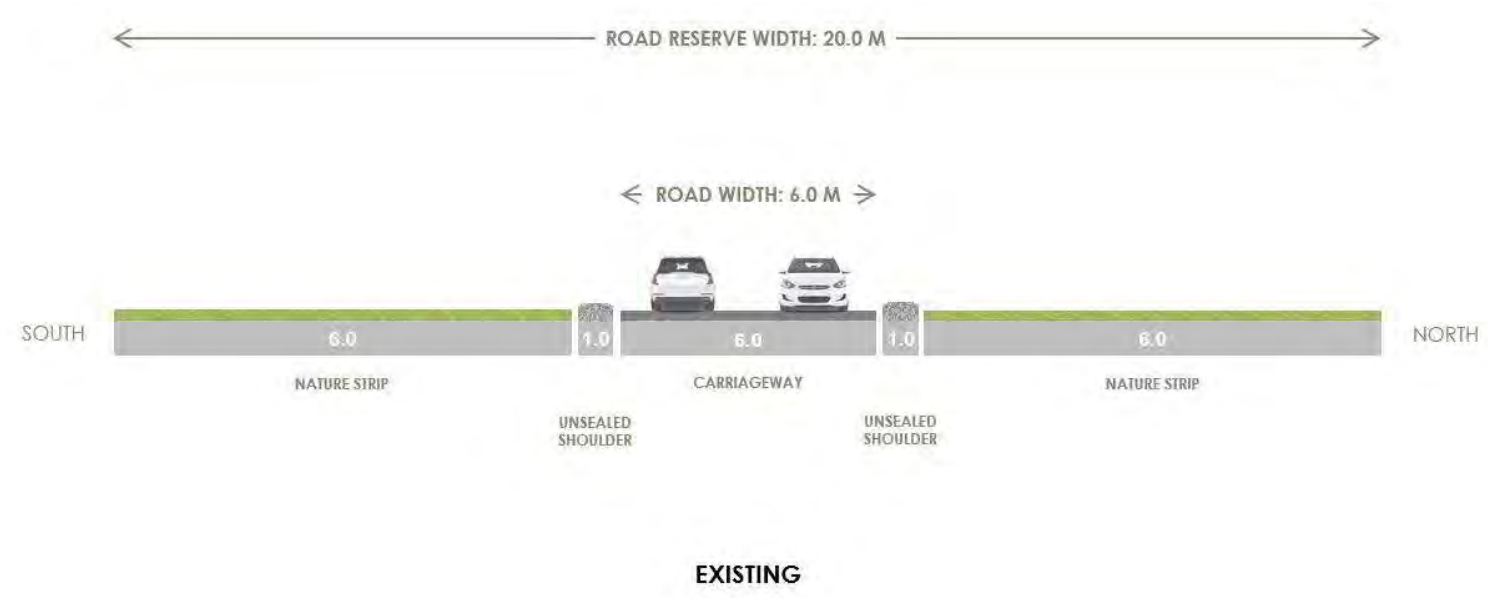
Typical Cross Section:



Road	Photo Location	Features	Photos	
Plozzas Road	93 Plozzas Rd Haven VIC 3401 Australia Co-ordinates: (-36.75339130019296, 142.18572709000634)	• Road Category: Access Rural • Speed Limit: 80km/h • Description: Sealed, two-way road • Road Reserve Width: 20m • Road Width (Edge to Edge): 6m • Lane Width: N/A • Unsealed Shoulder Width: 1m • Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

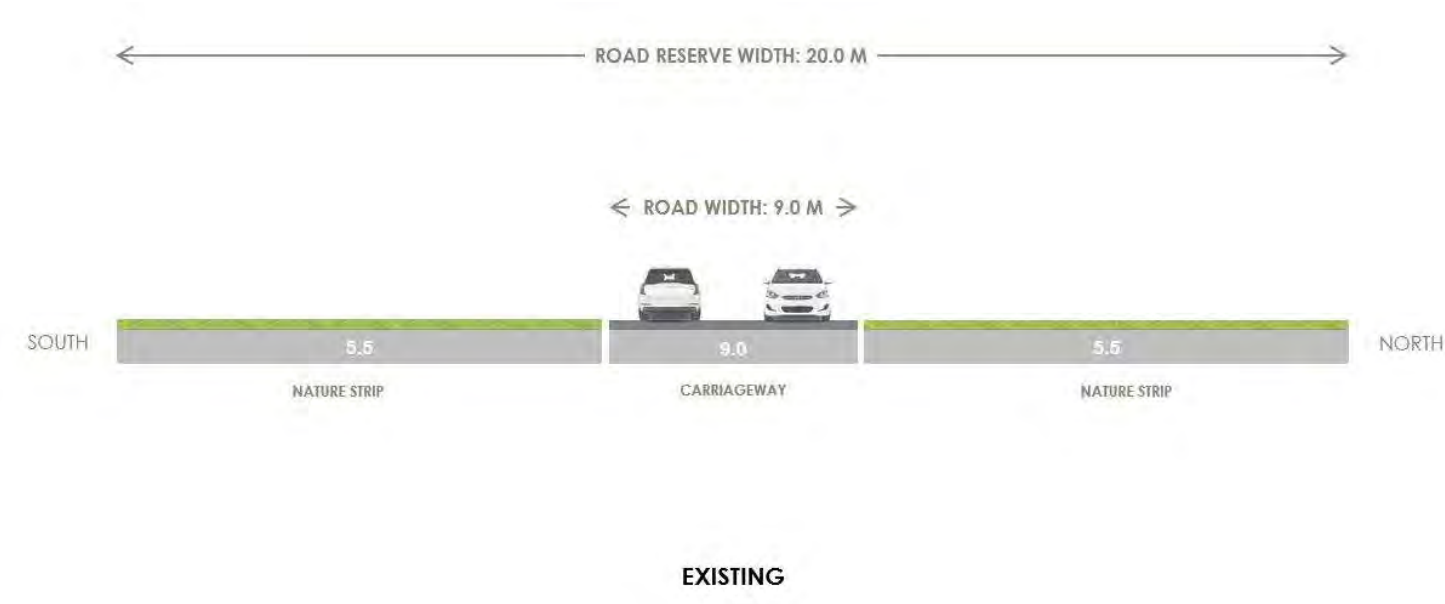
Typical Cross Section:



Road	Photo Location	Features	Photos	
Plumpton Road (East)	45 Plumpton Rd Horsham VIC 3400 Australia Co-ordinates: (-36.73356325252431, 142.1977054710036)	- Road Category: Minor Urban - Speed Limit: 70km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 9m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: Road is in an industrial development area.

Typical Cross Section:



Road	Photo Location	Features	Photos	
Plumpton Road (West)	2 Ballinger St Horsham VIC 3400 Australia Co-ordinates: (-36.733462937928, 142.18665324540225)	- Road Category: Minor Urban - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 3.5m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: East	Facing: West 

Additional Comments: Road closed temporarily due to wet conditions.

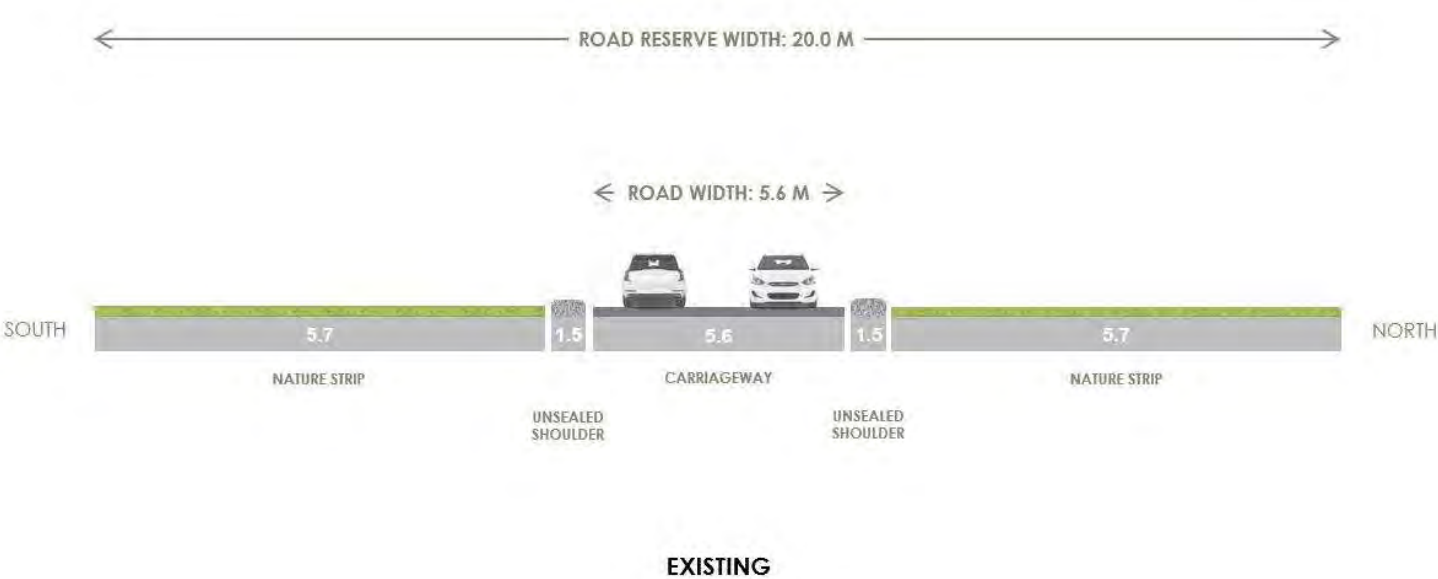
Typical Cross Section:



Road	Photo Location	Features	Photos	
Rasmussen Road	Dooen VIC 3401 Australia Co-ordinates: (-36.696845558319055, 142.20836966404426)	- Road Category: Link Urban - Speed Limit: 60km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 5.6m - Lane Width: N/A - Unsealed Shoulder Width: 1.5m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: There is a school on this road, where there is a permanent 40km/h speed limit.

Typical Cross Section:



Road	Photo Location	Features	Photos	
Remlaw Station Road	Remlaw Station Rd Vectis VIC 3401 Australia Co-ordinates: (-36.737717705360275, 142.11710175795247)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 9.3m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: Alignment of road reserve and actual road are an anomaly.

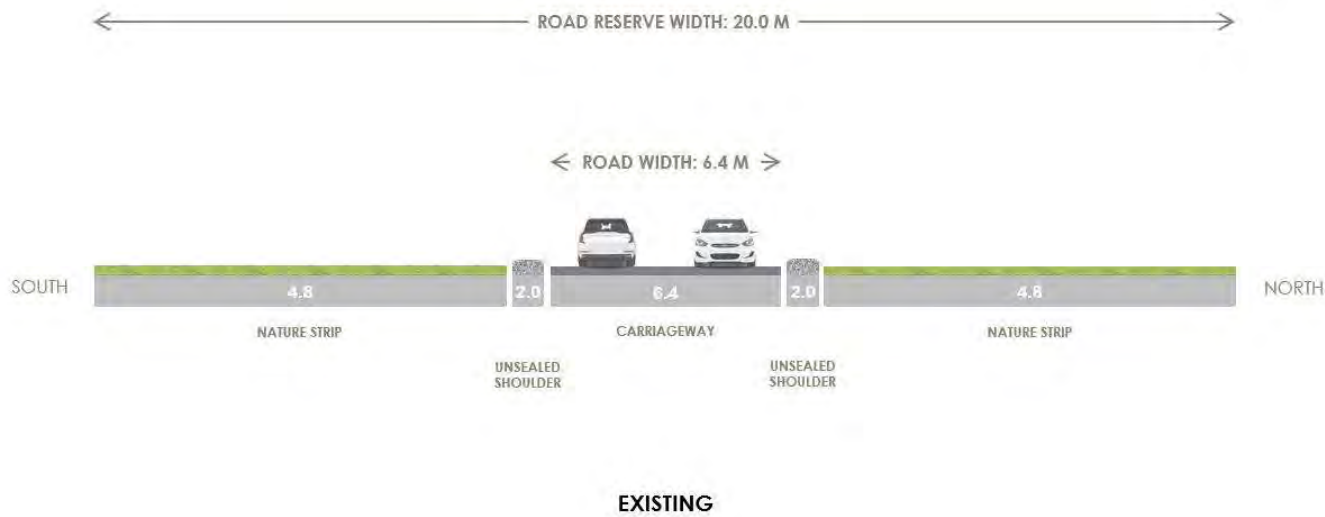
Typical Cross Section:



Road	Photo Location	Features	Photos	
Riley Road (East)	8–24 Riley Rd Dooen VIC 3400 Australia Co-ordinates: (-36.6968915557728, 142.191113168304)	- Road Category: Access Urban - Speed Limit: 60km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 6.4m - Lane Width: N/A - Unsealed Shoulder Width: 2m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

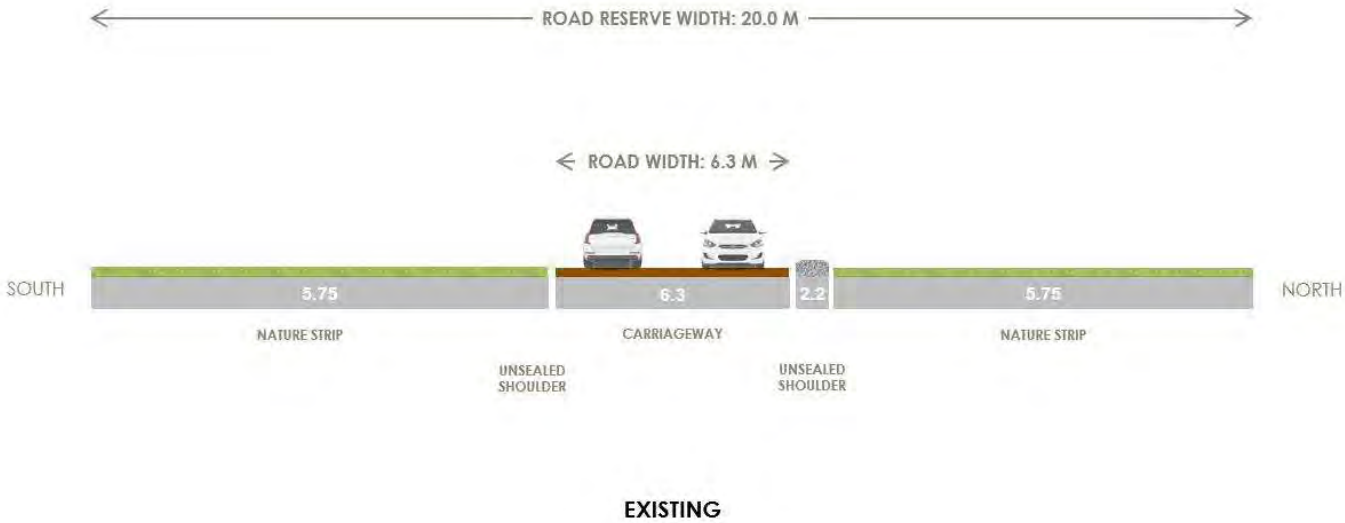
Typical Cross Section:



Road	Photo Location	Features	Photos	
Riley Road (West)	Riley Rd Dooen VIC 3400 Australia Co-ordinates: (-36.69696548789343, 142.17202609603726)	- Road Category: Access Urban - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 6.3m - Lane Width: N/A - Unsealed Shoulder Width: 2.2m (North) - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: Unsealed shoulder on north side of the road, 2.2m.

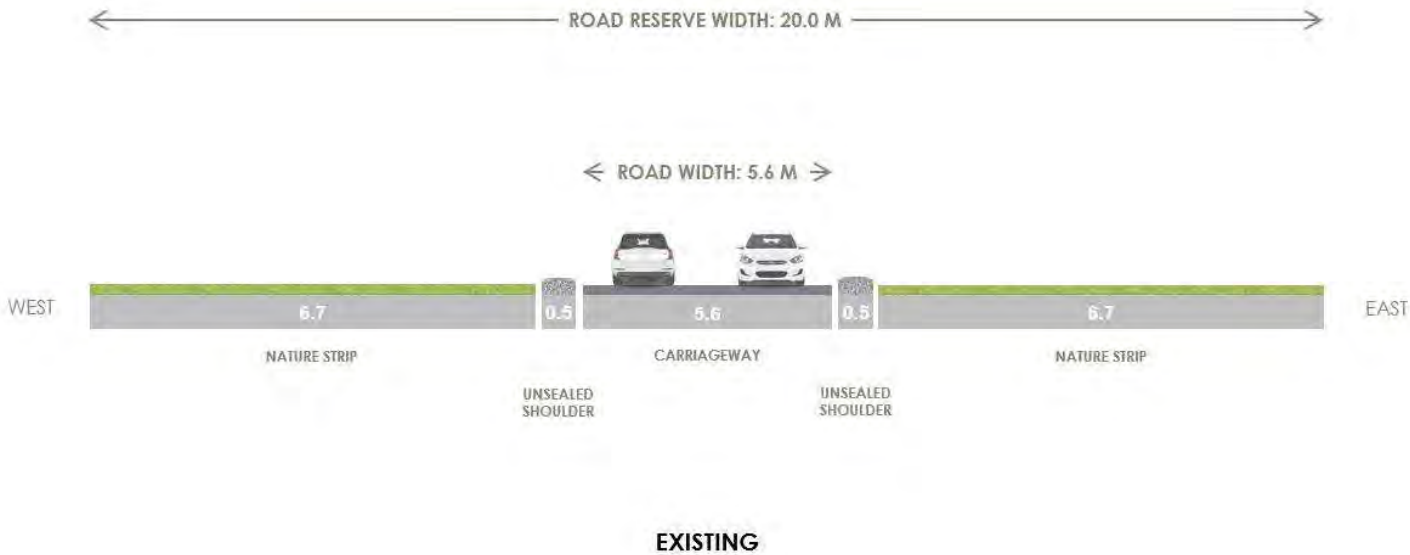
Typical Cross Section:



Road	Photo Location	Features	Photos	
Riverside East Road	600–742 Riverside East Rd Riverside VIC 3401 Australia Co-ordinates: (-36.698202545426604, 142.2492844109088)	- Road Category: Access Rural - Speed Limit: 80km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 5.6m - Lane Width: N/A - Unsealed Shoulder Width: 0.5m - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: N/A

Typical Cross Section:



Road	Photo Location	Features	Photos	
Riverside Road	88–94 Riverside Rd Doon VIC 3401 Australia Co-ordinates: (-36.69692483099198, 142.23449011250028)	- Road Category: Collector Rural - Speed Limit: 80km/h - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 6.8m - Lane Width: N/A - Unsealed Shoulder Width: 1.5m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

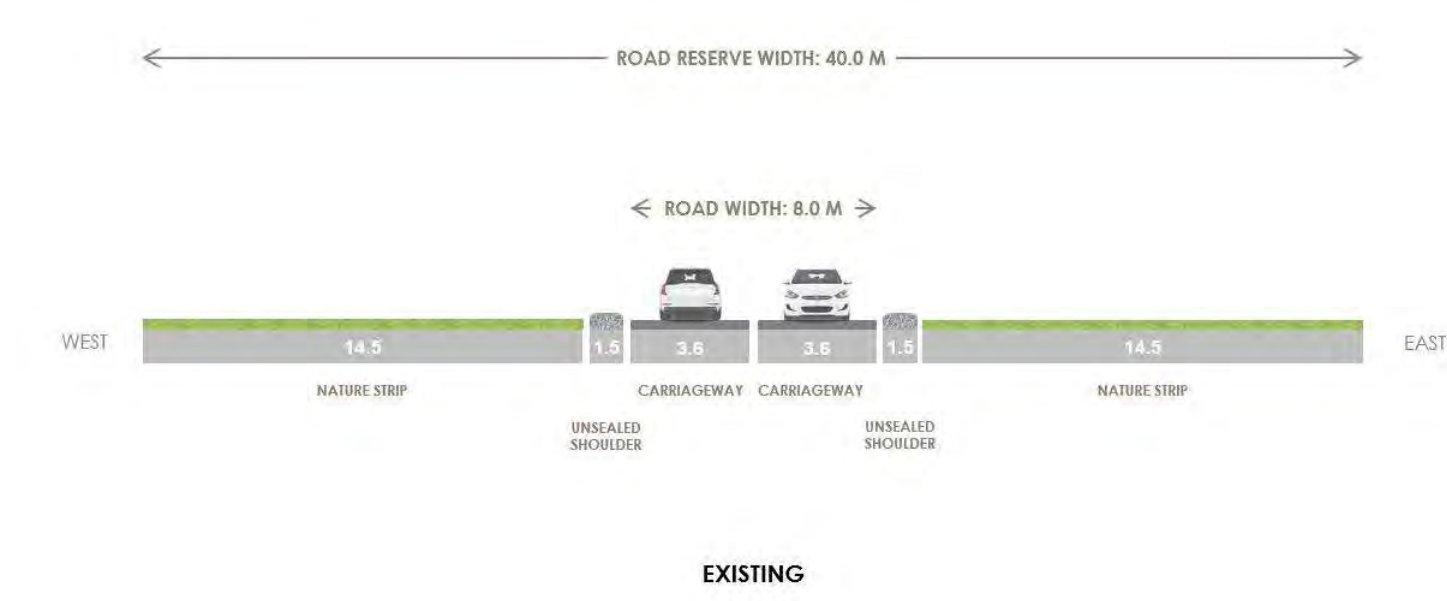
Typical Cross Section:



Road	Photo Location	Features	Photos	
Three Bridges Road	618 Three Bridges Rd Haven VIC 3401 Australia Co-ordinates: (-36.75747572561975, 142.1696658077451)	- Road Category: Link Rural - Speed Limit: 80km/h - Description: Sealed, two-way road - Road Reserve Width: 40m - Road Width (Edge to Edge): 8m - Lane Width: 3.6m - Unsealed Shoulder Width: 1.5m - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: Speed limit becomes 100 km/h southbound from this location. Becomes 70km/h northbound near Plozzas Rd.

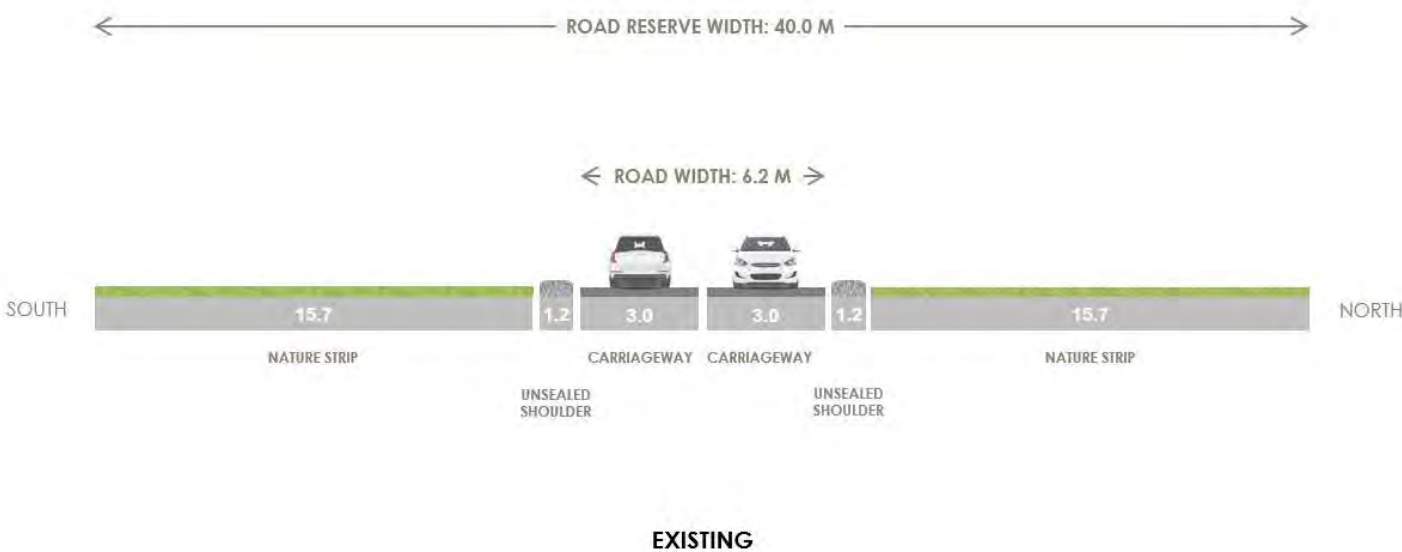
Typical Cross Section:



Road	Photo Location	Features	Photos	
Three Bridges Road (West)	100 Three Bridges Rd Lower Norton VIC 3401 Australia Co-ordinates: (-36.758194879363515, 142.12292836657747)	- Road Category: Link Rural - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 40m - Road Width (Edge to Edge): 6.2m - Lane Width: 3m - Unsealed Shoulder Width: 1.2m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

Typical Cross Section:



Road	Photo Location	Features	Photos	
Three Mile Road (Sealed)	35 3 Mile Rd Vectis VIC 3401 Australia Co-ordinates: (-36.68267672105352, 142.15765399120522)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 3.6m - Lane Width: N/A - Unsealed Shoulder Width: 2.1m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

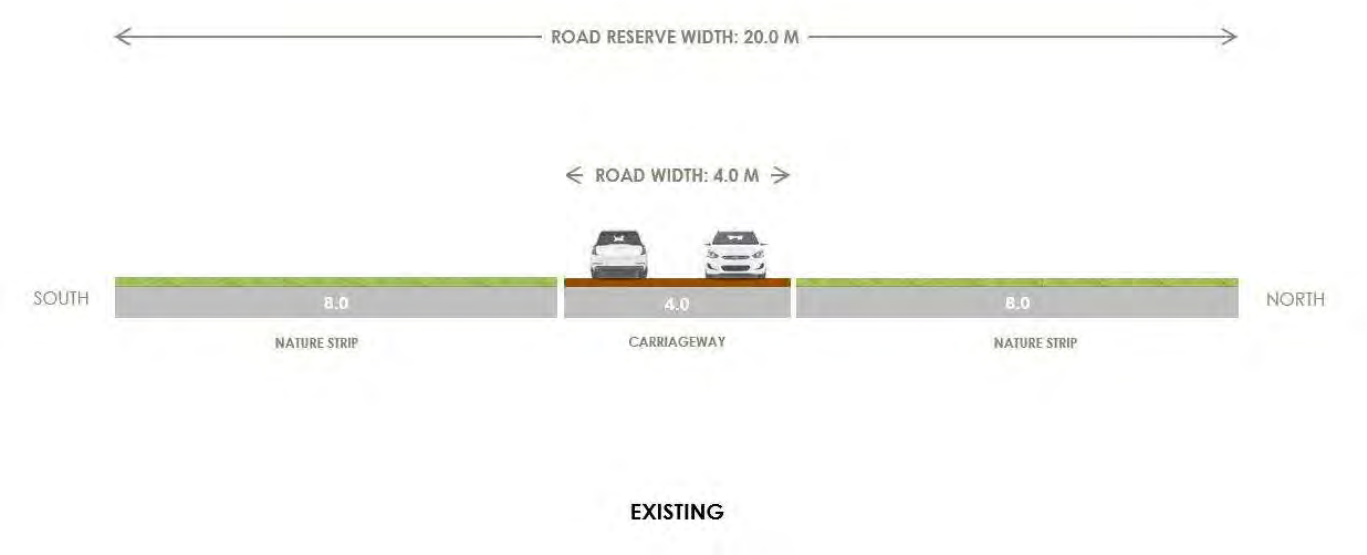
Typical Cross Section:



Road	Photo Location	Features	Photos	
Three Mile Road (Unsealed)	35 3 Mile Rd Vectis VIC 3401 Australia Co-ordinates: (-36.68293434562733, 142.1558942629419)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Unsealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 4m - Lane Width: N/A - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: East	Facing: West 

Additional Comments: N/A

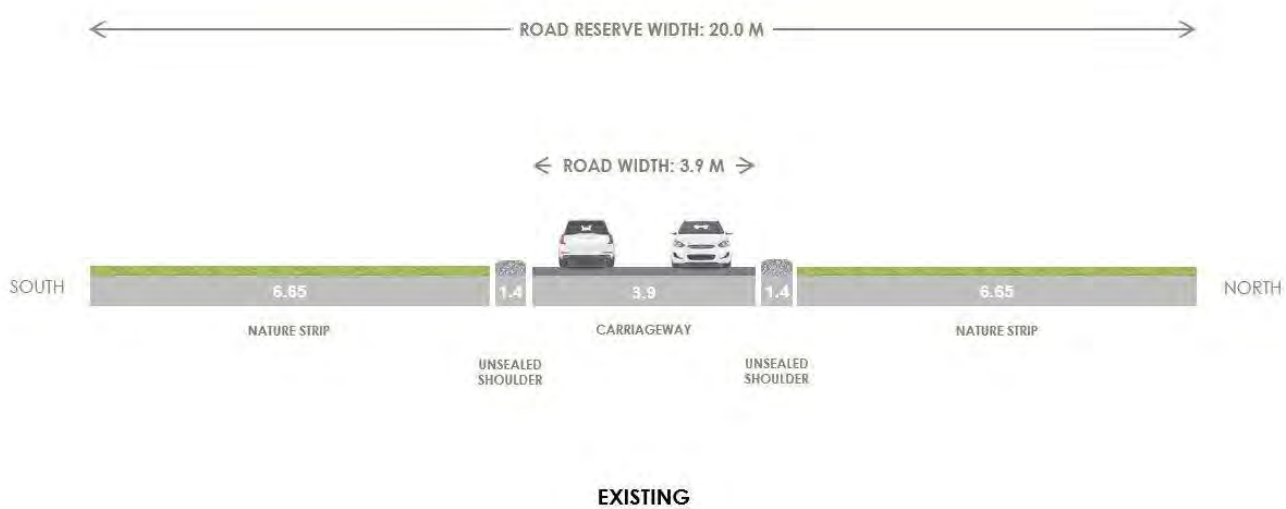
Typical Cross Section:



Road	Photo Location	Features	Photos	
Wards Road	69–71 Wards Rd Haven VIC 3401 Australia Co-ordinates: (-36.76763572705629, 142.1856281601782)	- Road Category: Access Rural - Speed Limit: Not Signed (Rural Default 100km/h) - Description: Sealed, two-way road - Road Reserve Width: 20m - Road Width (Edge to Edge): 3.9m - Lane Width: N/A - Unsealed Shoulder Width: 1.4m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

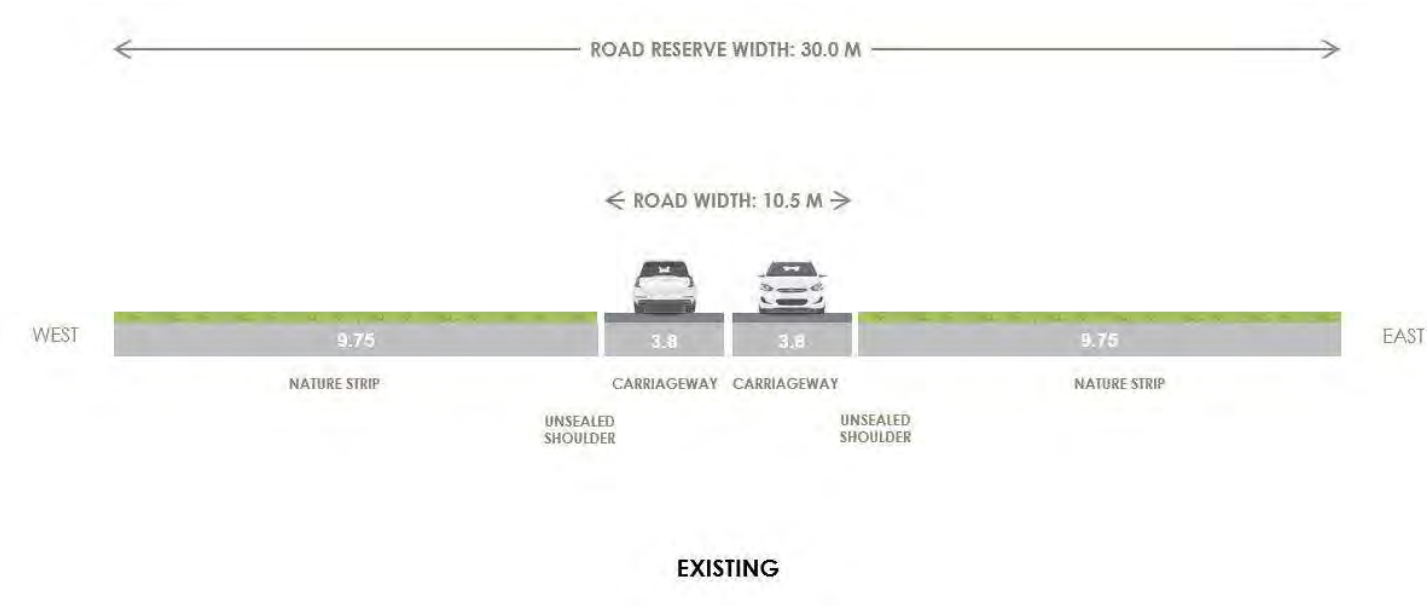
Typical Cross Section:



Road	Photo Location	Features	Photos	
Western Highway (North-West)	401–413 Western Highway Vectis VIC 3401 Australia Co-ordinates: (-36.696513602373464, 142.1685604212019)	- Road Category: Primary State Arterial - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 30m - Road Width (Edge to Edge): 10.5m - Lane Width: 3.8m - Unsealed Shoulder Width: N/A - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: Generally, the shoulder area is sealed.

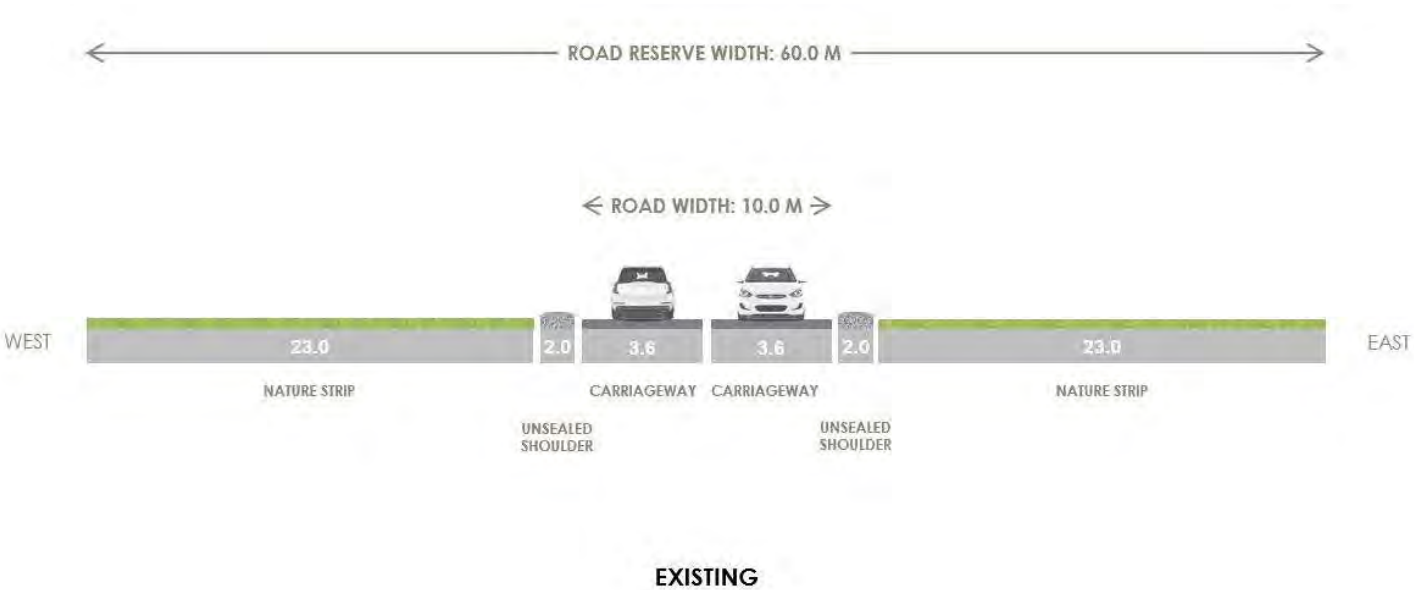
Typical Cross Section:



Road	Photo Location	Features	Photos	
Western Highway (South-East)	Western Highway Bungalally VIC 3401 Australia Co-ordinates: (-36.76777413927711, 142.26162830822886)	- Road Category: Primary State Arterial - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 60m - Road Width (Edge to Edge): 10m - Lane Width: 3.6m - Unsealed Shoulder Width: 2m - Footpath / Shared Path: No	Facing: North 	Facing: South 

Additional Comments: Typically there is a 2m gravel shoulder both sides of the road.

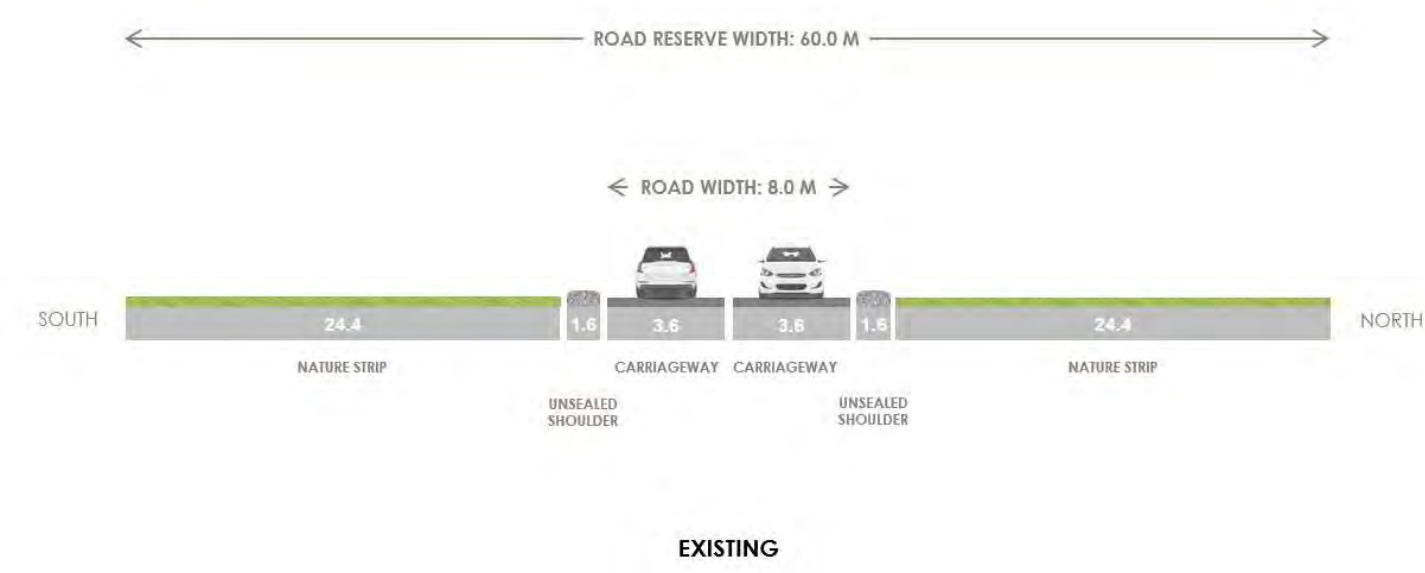
Typical Cross Section:



Road	Photo Location	Features	Photos	
Wimmera Highway (South-West)	Wimmera Highway Vectis VIC 3401 Australia Co-ordinates: (-36.738998880394206, 142.11718431581184)	- Road Category: Primary State Arterial - Speed Limit: 100km/h - Description: Sealed, two-way road - Road Reserve Width: 60m - Road Width (Edge to Edge): 8m - Lane Width: 3.6m - Unsealed Shoulder Width: 1.6m - Footpath / Shared Path: No	Facing: East 	Facing: West 

Additional Comments: N/A

Typical Cross Section:



Appendix C - Environmental Information



HORSHAM ALTERNATE TRUCK ROUTE FEASIBILITY STUDY - ECOLOGICAL & ENVIRONMENTAL PLANNING DESKTOP ASSESSMENT

1. INTRODUCTION

1.1 Background

Stantec has been engaged by the Department of Transport to undertake a feasibility study for an alternate truck route to help reduce the volumes of heavy vehicle traffic travelling through the Horsham CBD.

The City of Horsham is a growing and vibrant regional centre in Victoria's western Wimmera Region and provides a north-western gateway to the Grampians National Park. It is situated at the intersection of five major regional arterial roads: the Western Highway (south), Western Highway (north), Henty/Wimmera Highway (north), Wimmera Highway (west), and Henty Highway (south). The Western Highway is the main transport route between Melbourne and Adelaide, and the third busiest interstate freight corridor in the country.

As an important agricultural centre and transit hub, traffic volumes are projected to continue increasing. This future influx (of heavy vehicle traffic in particular) is expected to negatively impact road safety and amenity within the Horsham CBD. The previously proposed Horsham Bypass did not receive adequate support, and the alternative truck route aims to deliver similar objectives in the short term.

1.2 Purpose

The identification of a suitably attractive alternative truck route will be one that has a quicker travel time than travelling through the Horsham CBD. To inform how the existing road conditions should be changed to achieve this, a feasibility study area for the likely location of the alternative truck route has been identified.

The feasibility study area is rich with environmental assets, and the associated disturbance caused by the development of an alternative truck route should *'avoid, minimise, and offset environmental impacts, and incorporate resilience to natural hazards, including future climate change risks'* as per Clause 19 of the recently amended (VC216) Victorian Planning Provisions (VPP).

This memo sets out the inputs to these objectives, and what the likely environmental asset impacts are within the Feasibility Study Area (FSA) shown in **Figure 1** below.

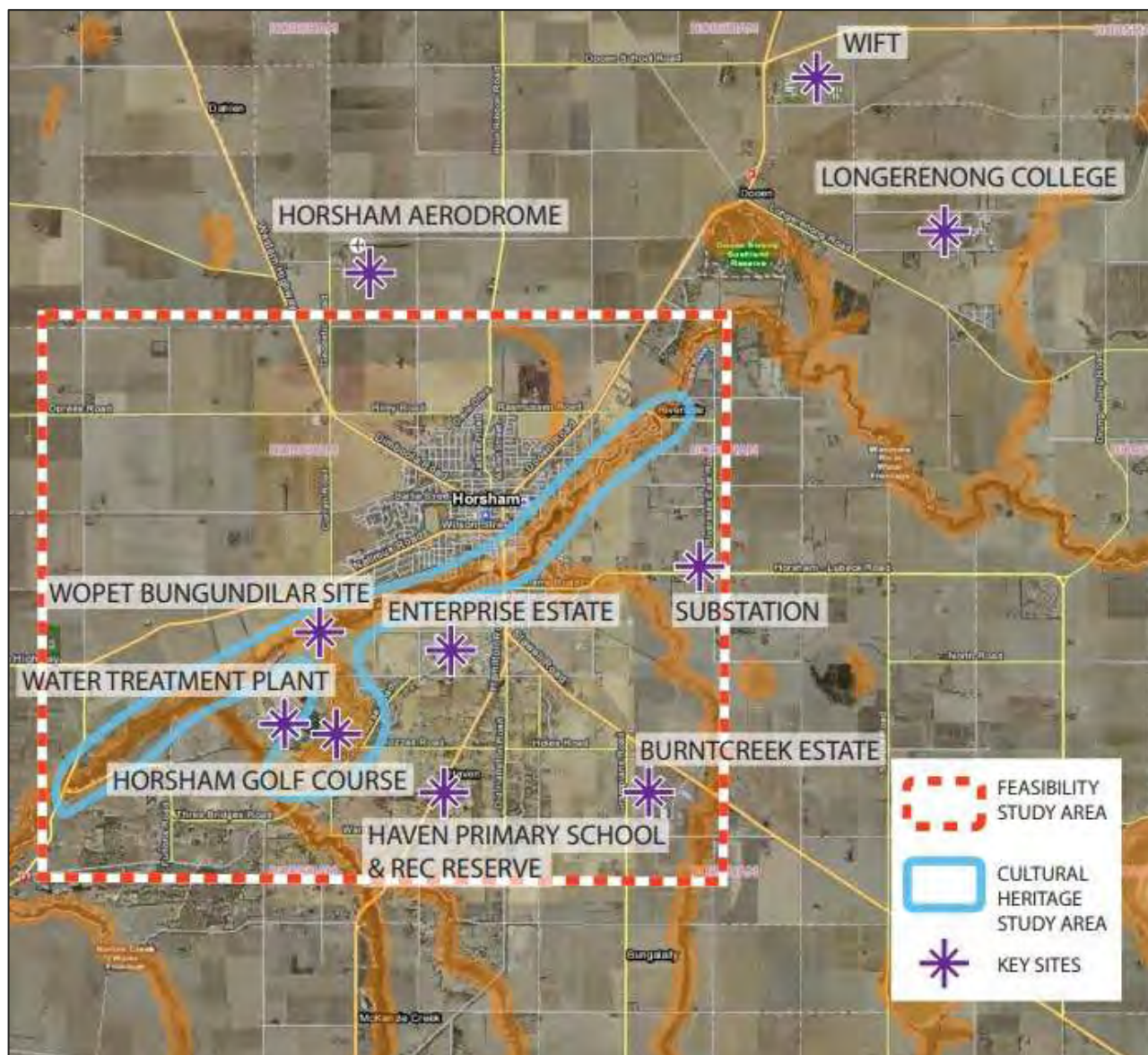


Figure 1: Horsham Alternative Truck Route - Feasibility Study Area (FSA) (Department of Transport, 2022)

2. METHODOLOGY

2.1 Desktop Assessment

To identify the ecological values and planning obligations of the feasibility study area, the following steps have been undertaken:

1. Collate and review information from the following publicly available databases, proximate to the existing road corridors and general area:
 - a. DELWP NatureKit 2.0
 - b. DELWP Native Vegetation Information Management (NVIM) System
 - c. Environment Protection and Biodiversity Conservation (EPBC) Protected Matters Search Tool
 - d. WaterWatch Map Portal
 - e. DELWP Victorian Biodiversity Atlas (VBA)
 - f. VicPlan – MapShare Database
 - g. Horsham Planning Scheme
2. Highlight the areas of potential environmental/environmental planning sensitivity

The resulting areas of investigation and associated summary input information are provided in this memo. It should be noted that no site visits or investigations have been completed at this stage, so the areas of investigation should be considered preliminary in nature and will be updated throughout the study.

2.2 Limitations

The scope of the assessment is limited to advice on potential environmental impacts and guidance on potential legislative requirements under the following local, state, and federal legislation.

- *Flora and Fauna Guarantee Act 1988 (2019 Amendment Act)*
- *EPBC Act 1999*
- *Crown Land (Reserves) Act 1978*
- *Native Title Act 1993*
- *Planning and Environment Act 1987* (including local laws and policies regulated by the Horsham Rural City Council)
- *Water Act 1989*

The aim of this assessment is to determine any potential environmental impacts and provide guidance on potential legislative requirements. This assessment solely focuses on biodiversity and relevant legislation, with cultural heritage (including Aboriginal cultural heritage and historic heritage) and contaminated land being outside the scope of this assessment.

This assessment has been undertaken as a preliminary assessment as part of an overall feasibility study. As design progresses and if alterations to the study area occur, this could result in the need to reevaluate the environmental and planning approval advice for the project.

Consultation has not been undertaken with Horsham Rural City Council or other regulatory authorities as part of this desktop review.

3. RESULTS

3.1 Desktop Review

3.1.1 DELWP NatureKit – Victorian Bioregion

The FSA is in the Wimmera bioregion (DEWLP, 2022) as shown in **Figure 2** below.

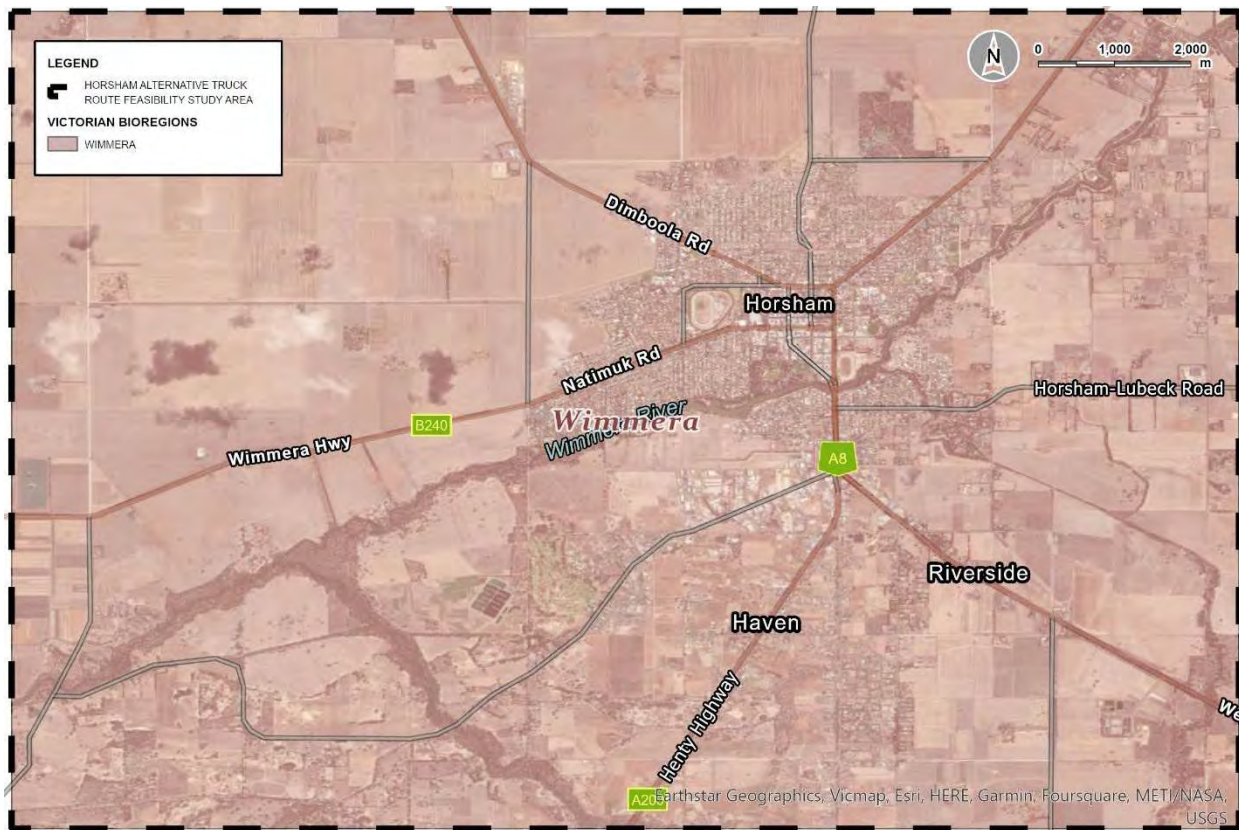


Figure 2: Victorian Bioregions (NatureKit, 2022)

3.1.2 DELWP NatureKit - Ecological Vegetation Classes 2005

The Department of Environment, Land, Water and Planning (DELWP)'s NatureKit online database has indicated that Ecological Vegetation Class (EVC)-quality vegetation is mapped within the FSA. The distribution of these EVCs is shown in **Figure 3**, and the criteria for each Bioregional Conservation Status (BCS) is outlined in **Table 1** below.

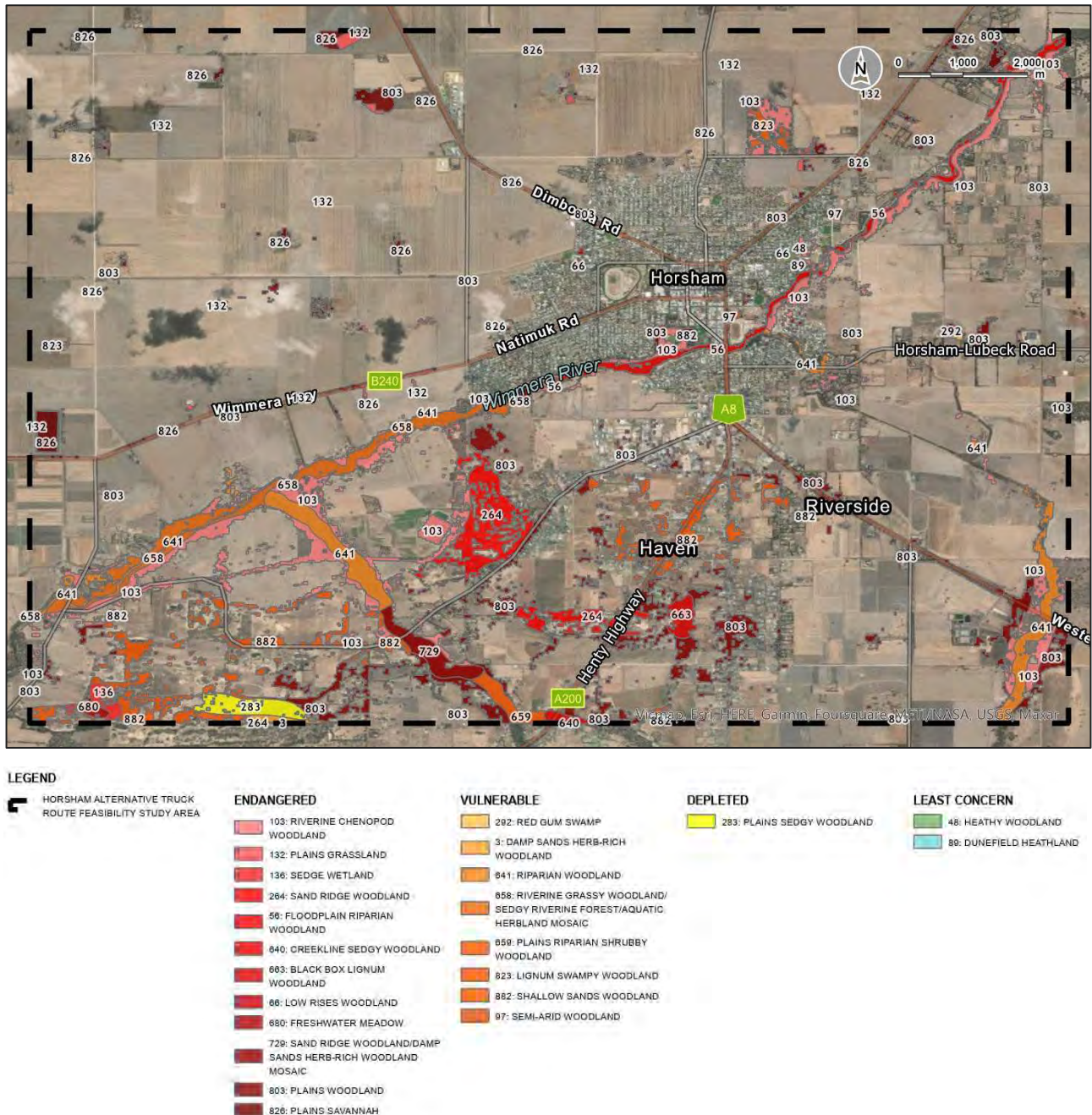


Figure 3: Ecological Vegetation Classes 2005 (NatureKit, 2022)

Table 1: Criteria for Bioregional Conservation Status of Ecological Vegetation Classes (EVC) (DELWP, 2022)

Bioregional Conservation Status (BCS)	Criteria
Endangered (E)	Contracted to less than 10% of former range; OR Less than 10% pre-European extent remains; OR Combination of depletion, degradation, current threats and rarity is comparable overall to the above: • 10 to 30% pre-European extent remains and severely degraded over a majority of this area; or • naturally restricted EVC reduced to 30% or less of former range and moderately degraded over a majority of this area; or • rare EVC cleared and/or moderately degraded over a majority of former area.
Vulnerable (V)	10 to 30% pre-European extent remains; OR Combination of depletion, degradation, current threats and rarity is comparable overall to the above: • greater than 30% and up to 50% pre-European extent remains and moderately degraded over a majority of this area; or • greater than 50% pre-European extent remains and severely degraded over a majority of this area; or • naturally restricted EVC where greater than 30% pre-European extent remains and moderately degraded over a majority of this area; or • rare EVC cleared and/or moderately degraded over a minority of former area.
Depleted (D)	Greater than 30% and up to 50% pre-European extent remains; OR Combination of depletion, degradation and current threats is comparable overall to the above and: • greater than 50% pre-European extent remains • and moderately degraded over a majority of this area.
Least Concern (LC)	Greater than 50% pre-European extent remains and subject to little to no degradation over a majority of this area.

3.1.3 DELWP NatureKit - Flora and Fauna Guarantee Act 1988 Listed Communities

Several of the EVCs located within the FSA are *Flora and Fauna Guarantee Act 1988* (FFG Act) listed threatened communities, highlighted in **Figure 4** below as per DELWP's Data Vic online database. These communities have been matched to one or more EVCs and the bioregions in which they occur. These FFG Act listed communities would require a separate application for a *Permit to take protected flora* under the FFG Act if they are expected to be impacted:

- **Red Gum Swamp No. 1:**
 - EVC283: Plains Sedgy Woodland, EVC292: Red Gum Swamp, EVC823: Lignum Swampy Woodland
- **Northern Plains Grassland:**
 - EVC132: Plains Grassland
- **Grey Box – Buloke Grassy Woodland:**
 - EVC 66: Low Rises Woodland, EVC 882: Shallow Sands Woodland
- **Semi-Arid North-West Plains Buloke Grassy Woodland:**
 - EVC 97: Semi-Arid Woodland
- **Semi-Arid Shrubby Pine-Buloke Woodland:**
 - EVC 97: Semi-Arid Woodland

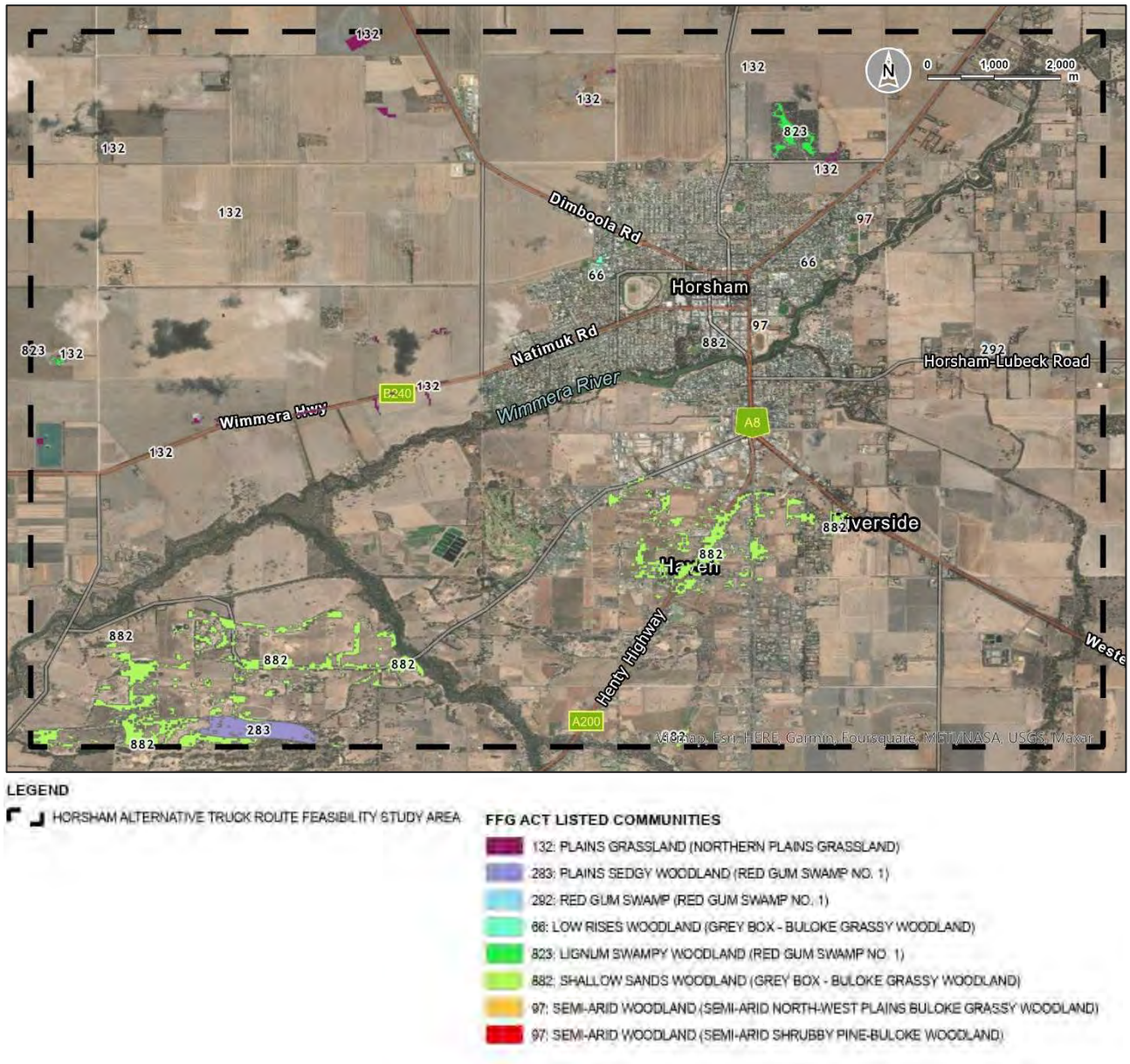


Figure 4: FFG Act Listed Communities (DELWP, 2022)

3.1.4 DELWP NVIM System - The Guidelines for the removal, destruction or lopping of native vegetation (State)

The Guidelines apply Victoria's state-wide policy for the assessment and removal of native vegetation and are incorporated into the Victorian Planning Provisions and all planning schemes in Victoria. The Guidelines aim to ensure that the removal of native vegetation is avoided, minimised, and offset to achieve no net loss to biodiversity (DELWP, 2017).

The location categories mapped within the FSA include Locations 1, 2, and 3 (see **Figure 5**). Depending on the location and extent of vegetation to be cleared, these pathways determine the information that will need to be supplied to DELWP when applying for removal.

Table 2: Determination of the assessment pathway for an application for native vegetation removal (DELWP, 2017)

Extent of native vegetation	Location Category		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares or more	Detailed	Detailed	Detailed

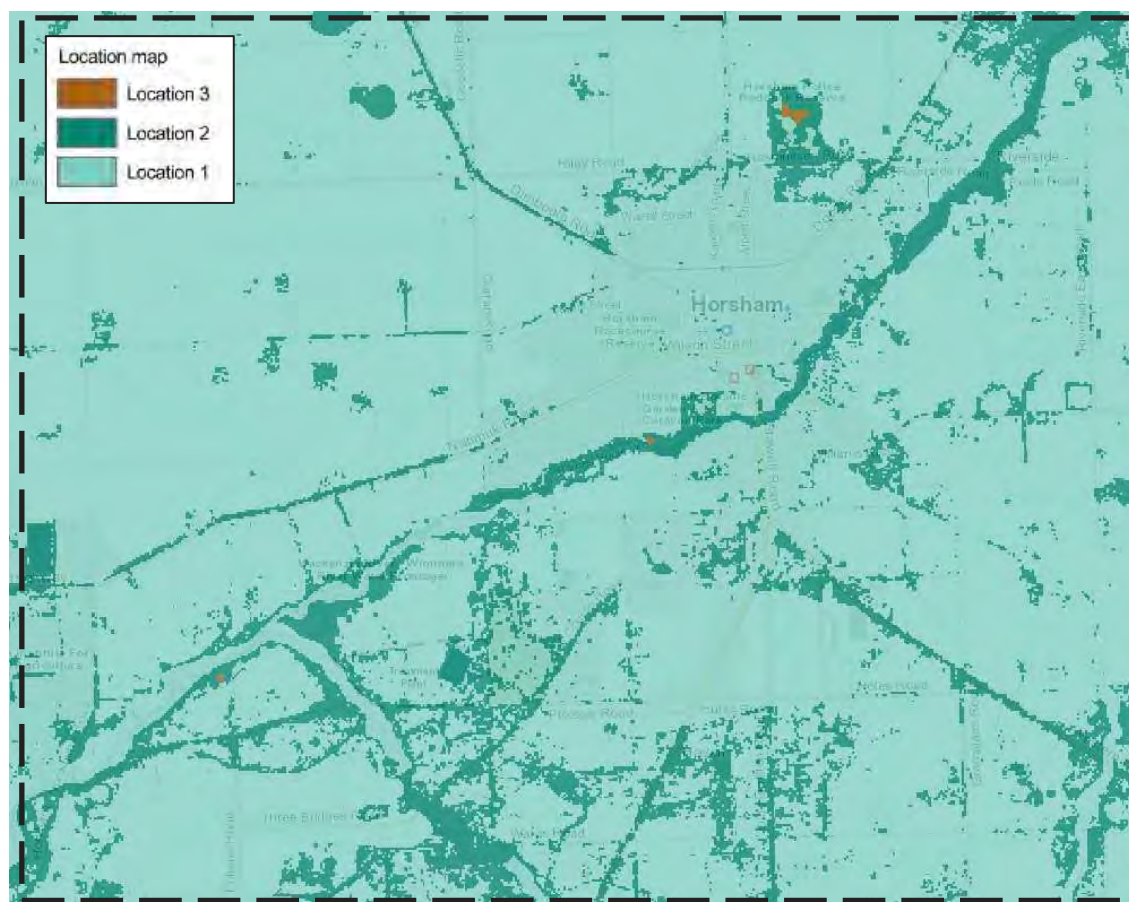


Figure 5: Native Vegetation Risk Location Category Map (NVIM, 2022)

3.1.5 Victorian Biodiversity Atlas (VBA) - Listed Threatened Flora Species

A search of the VBA database conducted on 17th August 2022 indicated that 11 threatened flora species have been previously recorded within a 5km buffer and inside the FSA in the past 20 years. See **Figure 6** below for the locations of these observations. The list of species, their most recent record and habitat requirements are presented in **Table 3** below.



Figure 6: VBA Threatened Flora Species - Observation Locations

A federally listed species has been recorded, the Trailing Hopbush (*Dodonaea procumbens*), which could potentially trigger a referral requirement under the EPBC Act. Many species are state listed such as Buloke (*Allocasuarina luehmannii*), Small Milkwort (*Comesperma polygaloides*), and Spotted Gum (*Corymbia maculata*). If the works are considered to significantly impact on any state listed species, a permit under the Flora and Fauna Guarantee Act 1988 (the FFG Act) may be required. Such impacts can be mitigated by adjusting the location of the truck route or construction footprint. Further efforts to minimise such impacts should be determined through consultation with DELWP.

Table 3: VBA Threatened Flora Records generated on 17 August 2022

Scientific Name	Common Name	Conservation Status			Last Record	Habitat
		EPBC	FFG	#		
<i>Acacia pendula</i>	Weeping Myall		cr	#	2008	Prefers slightly fertile, well-drained sandy soils in full sun, and with occasional watering, drought tolerant, will grow in partial shade (Treelink, 2022)
<i>Allocasuarina luehmannii</i>	Buloke		cr		2019	Typically occupies patches of red-brown loamy sands with alkaline sub-soils on the alluvial plain of the Murray River and its tributaries in south-western NSW (NSW Department of Planning and Environment, 2022)
<i>Comesperma polygaloides</i>	Small Milkwort		cr		2013	Found in remnant native grasslands on the Western (Basalt) Plains in small local stands on some roadsides and railway reserves (Ecolink, 2022)
<i>Dodonaea procumbens</i>	Trailing Hopbush	VU		#	2008	Grows in low-lying, often winter-wet areas in woodland, low open forests, heathland and grasslands, on sands and clays (DAWE, 2022)
<i>Corymbia maculata</i>	Spotted Gum		vu	#	2012	Grows in open forest, forming dense, pure stands in forest, on a wide range of soil types, commonly in areas with poorer clay subsoils/moderately infertile soil
<i>Leptorhynchus waitzia</i>	Button Immortelle		en		2005	Grows on sandy or loamy soils, often in intermittently flooded areas and salt flats. In Victoria it is found on open grassy plains, grassy woodlands and sandy flats in mallee areas (NSW DPE, 2022)
<i>Pimelea flava subsp. dichotoma</i>	Diosma Rice-flower		en		2005	Has white flowers and grows in woodland and eucalypt forest, to one meter in height (Australian Native Plants, 2022)
<i>Brachyscome chrysoglossa</i>	Yellow-tongue Daisy		en		2013	Perennial plant with wide growing range, occupy rainy coastal and mountainous regions, clay soils subject to flooding, open woodland and grassland, as well as dry central Australia (National Herbarium of NSW, 2014)
<i>Swainsona behriana</i>	Southern Swainson-pea		en		2005	Occupies dry forest, woodland, and grassy areas, often on moist sites (National Herbarium of NSW, 2014)
<i>Vittadinia cuneata var. morrisii</i>	Fuzzy New Holland Daisy		en		2011	Predominantly found in dry sclerophyll forest, rare in Victoria but known in the Dimboola and Horsham areas (VicFlora, 2022)
<i>Asperula wimmerana</i>	Wimmera Woodruff		en		2012	Usually in woodland or heavier water-retentive soils (VicFlora, 2022)

EPBC = Environment Protection and Biodiversity Conservation Act 1999 (National) CR (critically endangered), EN (endangered), VU (vulnerable); FFG = Flora and Fauna Guarantee Act 1988, cr = critically endangered, en = endangered, vu = vulnerable; # = extended outside its natural range.

3.1.6 Victorian Biodiversity Atlas (VBA) – Listed Threatened Fauna Species Observations

A search of the VBA database conducted on the 17th August 2022 indicated that 26 threatened fauna species have been previously recorded within a 5km buffer and within the FSA in the past 20 years. See **Figure 7** below for the locations of these observations. The list of species, their most recent record and habitat requirements are presented in **Table 4** below.

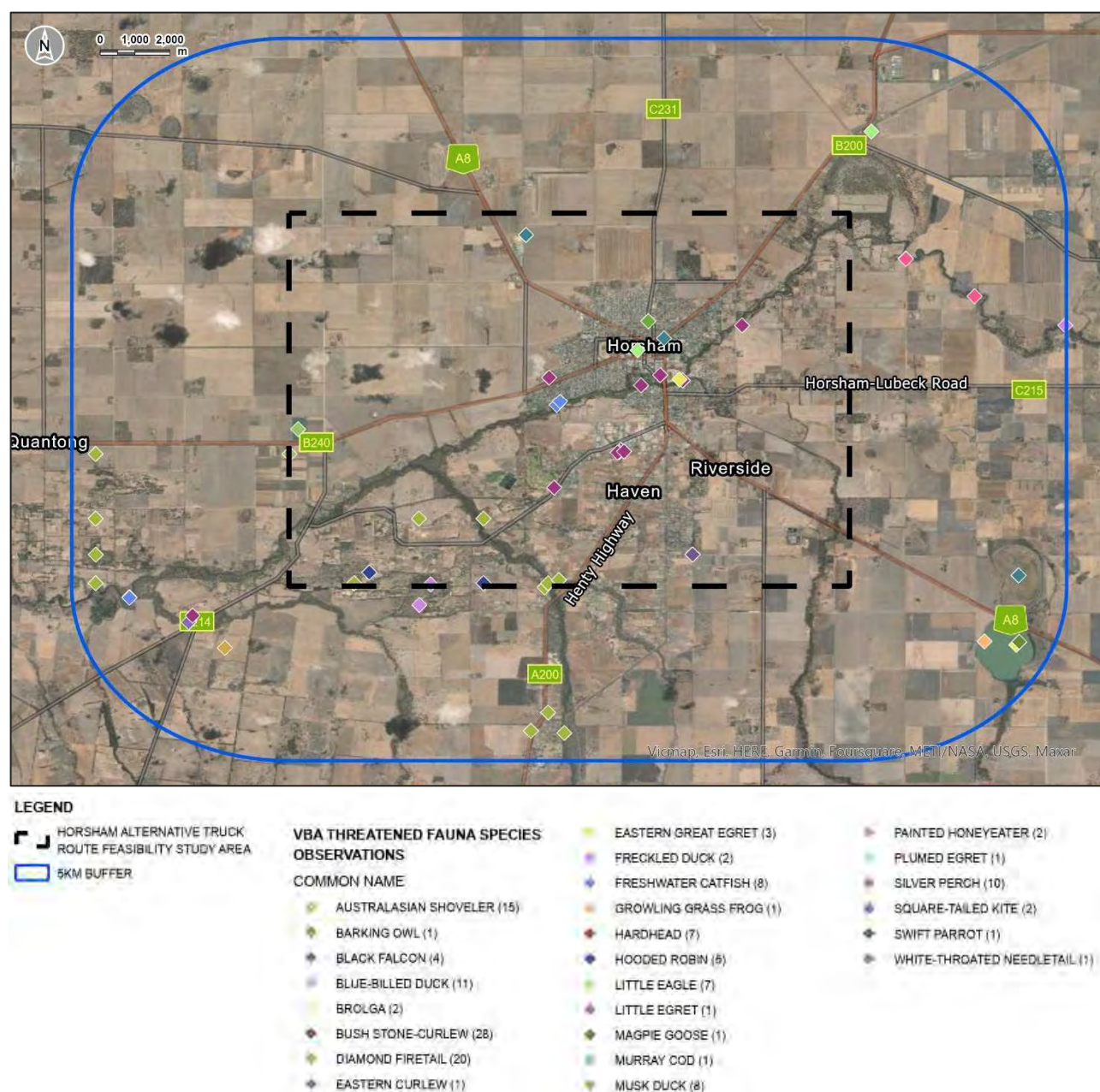


Figure 7: VBA Threatened Fauna Species - Observation Locations

Several federally listed fauna species have been recorded within the FSA, including Silver Perch (*Bidyanus bidyanus*), Painted Honeyeater (*Grantiella picta*), White-throated Needletail (*Hirundapus caudacutus*), Swift Parrot (*Lathamus discolor*), Growling Grass Frog (*Litoria raniformis*), Murray Cod (*Maccullochella peelii*), and Eastern Curlew (*Numenius madagascariensis*) which could potentially trigger a referral requirement under the EPBC Act.

The most frequently recorded state listed fauna species include the Australasian Shoveler (*Spatula rhynchotis*), Bush Stone-Curlew (*Burhinus grallarius*), Diamond Firetail (*Stagonopleura guttata*), Freshwater Catfish (*Tandanus tandanus*), and Musk Duck (*Biziura lobata*). If the works are considered to significantly impact on any state listed species, impacts should be mitigated by adjusting construction methodology and timing, e.g., works should be timed outside species breeding seasons. Further efforts to minimise such impacts should be determined through consultation with DELWP.

Table 4: VBA Threatened Fauna Records generated on 17 August 2022

Scientific Name	Common Name	Conservation Status			Last Record	Habitat
		EPBC	FFG	#		
<i>Anseranas semipalmata</i>	Magpie Goose		vu		2006	Seen in floodplains and wet grasslands, sometimes seen long distances inland, usually younger individuals (Australian Museum, 2022)
<i>Antigone rubicunda</i>	Brolga		en		2018	Congregate in inland flocking areas, which include upland marshes, the edges of reservoirs and lakes, pastures, and agricultural land (Northern Prairie Wildlife Research Center, 2013)
<i>Ardea alba modesta</i>	Eastern Great Egret		vu		2018	Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands (BirdLife, 2022)
<i>Ardea intermedia plumifera</i>	Plumed Egret		cr		2006	Prefers the shallows in terrestrial wetlands, freshwater swamps, billabongs, floodplains, and wet grasslands with dense aquatic vegetation, occasionally seen in estuarine or intertidal habitats (BirdLife, 2022)
<i>Aythya australis</i>	Hardhead		vu		2019	Found in freshwater swamps and wetlands and occasionally in sheltered estuaries; rarely seen on land and tend to roost on low branches and stumps near the water. Prefer deep, fresh open water and densely vegetated wetlands for breeding (BirdLife, 2022)
<i>Bidyanus bidyanus</i>	Silver Perch	CR	en		2022	Freshwater fish endemic to the Murray-Darling River system, found in the lowland reaches with a preference for flowing water (ACT EPSDD, 2022)
<i>Biziura lobata</i>	Musk Duck		vu		2019	Found in deep freshwater lagoons, with dense reed beds (Australian Museum, 2020)
<i>Burhinus grallarius</i>	Bush Stone-curlew		cr		2020	Broad habitat preference, usually open forest, eucalyptus woodland, rainforest edges, grassy plains, arid scrubland, and along inland watercourses (Birdlife, 2022)
<i>Egretta garzetta</i>	Little Egret		en		2003	Frequents tidal mudflats, saltwater and freshwater wetlands, and mangroves (Birdlife, 2022)

Scientific Name	Common Name	Conservation Status			Last Record	Habitat
		EPBC	FFG	#		
<i>Falco subniger</i>	Black Falcon		cr		2018	Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas (Birdlife, 2022)
<i>Grantiella picta</i>	Painted Honeyeater	VU	vu		2006	Found in dry open forests and woodlands, is strongly associated with mistletoe. May also be found along rivers, on plains with scattered trees and on farmland with remnant vegetation, urban parks and gardens with large eucalypts (Birdlife, 2022)
<i>Hieraaetus morphnoides</i>	Little Eagle		vu		2008	Seen over woodland and forested lands and open country, extending into the arid zone; tends to avoid rainforest and heavy forest (Birdlife, 2022)
<i>Hirundapus caudacutus</i>	White-throated Needletail	VU	vu		2020	Aerial birds, roost in trees and occur over most types of habitat, but are recorded most often above wooded areas, including open forest and rainforest, flying between trees or in clearings, below the canopy, and less commonly recorded above woodland (DCCEW, 2022)
<i>Lathamus discolor</i>	Swift Parrot	CR	cr		2018	Found in dry sclerophyll forests and woodlands, suburban parks and gardens and flowering fruit trees (Birdlife, 2022)
<i>Litoria raniformis</i>	Growling Grass Frog	VU	vu		2010	Dependent upon permanent freshwater lagoons for breeding, ideally in the shallow part of lagoons where there is generally a complex vegetation structure (DCCEW, 2022)
<i>Lophoictinia isura</i>	Square-tailed Kite		vu		2019	Mainly inhabits open eucalypt forests and woodlands, often where there is a broken canopy, but it also ranges into nearby open habitats, often dominated by stringybarks, peppermints or box-ironbark eucalypts. Also occurs along the edges of dense forest and along in road verges with remnant or planted trees, in clearings within forest or in areas of regrowth. Other suitable habitats include mallee, heathland, and other low shrublands, grasslands or cultivated farmland near remnant woodland (Birdlife, 2022)
<i>Maccullochella peelii</i>	Murray Cod	VU	en		2022	Utilises a diverse range of habitat from clear rocky streams, to slow-flowing, turbid lowland rivers and billabonds, frequently found in the main channels of rivers and larger tributaries (DCCEW, 2022)
<i>Melanodryas cucullata</i>	Hooded Robin		vu		2010	Found in lightly timbered woodland, mainly dominated by acacia and/or eucalypts (Birdlife, 2022)
<i>Ninox connivens</i>	Barking Owl		cr		2003	Found in open woodlands and the edges of forests, often adjacent to farmland, in

Scientific Name	Common Name	Conservation Status			Last Record	Habitat
		EPBC	FFG	#		
						habitats that are dominated by eucalypts, particularly red gum and in the tropics, paperbarks (Birdlife, 2022)
<i>Numenius madagascariensis</i>	Eastern Curlew	CR	cr		2004	Found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours, and lagoons (Birdlife, 2022)
<i>Oxyura australis</i>	Blue-billed Duck		vu		2019	Almost wholly aquatic, rarely seen on land. Non-breeding flocks congregate on large, deep open freshwater dams and lakes in autumn (Birdlife, 2022)
<i>Spatula rhynchotis</i>	Australasian Shoveler		vu		2019	Found in all kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps, also found in open waters and occasionally along the coast (Birdlife, 2022)
<i>Stagonopleura guttata</i>	Diamond Firetail		vu		2021	Found in open grassy woodland, heath and farmland or grassland with scattered trees (Birdlife, 2022)
<i>Stictonetta naevosa</i>	Freckled Duck		en		2017	Prefers permanent freshwater swamps and creeks with heavy growth of cumbungi (bullrushes), lignum or tea-tree. Moves to more permanent waters such as lakes, reservoirs, farm dams and sewerage ponds during drier times and rest in dense cover (Birdlife, 2022)
<i>Tandanus tandanus</i>	Freshwater Catfish		en		2021	Found in rivers, creeks, lakes and billabongs, as well as weir pools and farm dams, places with slow moving waters, cobble or gravel substrates, water plants, and instream woody habitat, such as fallen logs are ideal for breeding and feeding (VEWH, 2022)

EPBC = Environment Protection and Biodiversity Conservation Act 1999 (National) CR (critically endangered), EN (endangered), VU (vulnerable); FFG = Flora and Fauna Guarantee Act 1988, cr = critically endangered, en = endangered, vu = vulnerable; # = extended outside its natural range.

4. LEGISLATIVE REVIEW

4.1 Desktop Review

The relevant environmental legislation has been reviewed for permit and approval triggers below.

4.1.1 Environment Protection and Biodiversity Conservation (EPBC) Act 1999 (Federal)

The Environment Protection and Biodiversity Conservation (EPBC) Act 1999 establishes a Commonwealth process for assessment of proposed actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES), or on Commonwealth Land. An action is defined as a project, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if the action has, will have, or is likely to have a 'significant impact' on a matter of NES. An EPBC Act Referral is required if actions are likely to impact on a matter of national significance i.e., threatened species.

The Protected Matters Search Tool (PMST) is an online database that identifies if matters of national environmental significance or other matters protected by the EPBC Act 1999 are likely to occur in the area of interest. An EPBC Protected Matters Search Tool Report was generated on the 6th of September 2022 to determine whether any matters of National Environmental Significance (MNES) or habitat may occur within or near the proposed alignment. A radius of 5km was used, and full results are presented in **Appendix A**.

Below is a summary of the results from the Protected Matters Search Report:

- **1 Wetland of International Importance (Ramsar):**
 - Lake Albacutya (50 – 100km upstream from a Ramsar site)
- **6 Threatened Ecological Communities:**
 - Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions
 - Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia
 - Mallee Bird Community of the Murray Darling Depression Bioregion
 - Natural Grasslands of the Murray Valley Plains
 - Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions
 - White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
- **35 Threatened Species:**
 - 12 Birds
 - 1 Fish
 - 1 Frog
 - 1 Insect
 - 1 Mammal
 - 18 Plants
 - 1 Reptile
 - 11 Migratory Species:
 - 1 migratory marine bird, 3 migratory terrestrial species, and 7 migratory wetland birds
- **7 State and Territory Reserves**
 - Box Swamp W.R, Bungalally I48 B.R, Bungalally I49 B.R, Bungalally I50 B.R, Dooen Swamp B.R, Gum Swamp, Vectis East W.R, John Smith Memorial F.R
- **1 Regional Forest Agreement**
 - West Victoria RFA

Given the presence of EVC quality vegetation and FFG Act listed communities (outlined in Sections 3.1.2 and 3.1.3 respectively) which consist of similar species to several of the EPBC listed threatened ecological communities, there is potential that some of these are present within the FSA. The presence and extent of these federally listed ecological communities would need to be confirmed following detailed site investigations, assessing vegetation against the EPBC listing criteria for each listed community.

As per Sections 3.1.5 and 3.1.6 above, there have been previous records of at least 1 flora (Trailing Hop Bush (*Dodonaea procumbens*)) and 7 fauna species (Silver Perch (*Bidyanus bidyanus*), Painted Honeyeater (*Grantiella picta*), White-throated Needletail (*Hirundapus caudacutus*), Swift Parrot (*Lathamus discolor*), Growling Grass Frog (*Litoria raniformis*), Murray Cod (*Maccullochella peelii*) and Eastern Curlew (*Numenius madagascariensis*)) within the FSA in the past 20 years that are EPBC listed. The likelihood of significantly impacting on these species cannot be determined until the proposed locations of alternate truck route options have been established. Given the presence of EPBC-listed species in the area, at this early stage, there is potential that the project could impact on federally listed species and potential that an EPBC referral may be required.

4.1.2 Environment Effects Act 1978

Under Victoria's *Environment Effects Act 1978 (EE Act)*, projects that could have a 'significant effect' on Victoria's environment can potentially require an Environment Effects Statement (EES). This Act applies to any public works 'reasonably considered to have or be capable of having a significant effect on the environment'. The Minister for Planning and Environment is the responsible person for assessing whether this Act applies.

Before commencing any public works to which this Act applies, the proponent must initiate an EES to be prepared and submitted to the Minister for the Minister's assessment of the environmental effects of the works.

The criteria for the types of potential effects on the environment that might be of significance are provided in the Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978 (DSE 2006). They include impacts to native vegetation, matters listed under the FFG Act, and wetlands. The criteria come under two categories:

- Individual potential environmental effects (one or more effects indicates potential significance of the impacts)
- A combination of potential environmental effects (two or more effects indicate potential significance of the impacts)

An assessment against the criteria should be completed to identify whether one or more individual effects may be triggered, with the information available at the time. Given the rich environmental assets located within the Feasibility Study Area, it is possible that the works may trigger the requirement for an Environment Effects Statement (EES). However, this should be confirmed when an alignment and construction corridor are determined. In particular, it is important that the construction footprint is assessed in detail (including accessing areas of private land) as part of determining the need for an EES.

4.1.3 Planning and Environment Act 1987 (State) – Horsham Planning Scheme

The strategic planning projects shown in **Table 5** should be considered in the feasibility study. An attractive alternative truck route alignment will incorporate the objectives of these plans, particularly if they are within the relevant planning policy project areas. Refer to **Figure 8** for applicable strategic planning project area locations.

Table 5: Strategic Planning Policy Projects - Summaries

Strategic Planning Policy Project Name	Summary
City to River Masterplan	A long term 20-year plan aiming to enhance and activate the Wimmera River Precinct and its link to Horsham's Central Activity District (CAD)
Horsham South Structure Plan	Identifies a future vision for Horsham South (see Figure 8 for project area) that captures the community's objectives and aspirations
Horsham Urban Transport Plan	Sets directions and key priorities for developing transport in urban Horsham to support the community, economy, and environment both now and in the future
Strategic Cycling Corridor	A subset of the Principal Bicycle Network (PBN); a network of cycle routes which supports the needs of commuter trips to and around major activity centres

Table 6: Planning Summary Table

Planning Scheme (PS)	Horsham Planning Scheme - Horsham Rural City Council (HRCC)
Use Classification	The alternative truck route is considered a 'Use of land for a Road'
Relevant Zones	- COMMERCIAL 1 ZONE (C1Z) - COMMERCIAL 2 ZONE (C2Z) - COMMONWEALTH LAND NOT CONTROLLED BY PLANNING SCHEME (CA) - FARMING ZONE (FZ) - GENERAL RESIDENTIAL ZONE - SCHEDULE 1 (GRZ1) - GENERAL RESIDENTIAL ZONE - SCHEDULE 2 (GRZ2) - INDUSTRIAL 1 ZONE (IN1Z) - INDUSTRIAL 3 ZONE (IN3Z) - LOW DENSITY RESIDENTIAL ZONE (LDRZ) - MIXED USE ZONE (MUZ) - PUBLIC CONSERVATION AND RESOURCE ZONE (PCRZ) - PUBLIC PARK AND RECREATION ZONE (PPRZ) - PUBLIC USE ZONE - SERVICE AND UTILITY (PUZ1) - PUBLIC USE ZONE - EDUCATION (PUZ2) - PUBLIC USE ZONE - HEALTH AND COMMUNITY (PUZ3) - PUBLIC USE ZONE - CEMETERY/CREMATORIUM (PUZ5)

Relevant Overlays

- PUBLIC USE ZONE - LOCAL GOVERNMENT (PUZ6)
- PUBLIC USE ZONE - OTHER PUBLIC USE (PUZ7)
- RURAL LIVING ZONE (RLZ)
- SPECIAL USE ZONE - SCHEDULE 1 (SUZ1)
- SPECIAL USE ZONE - SCHEDULE 2 (SUZ2)
- SPECIAL USE ZONE - SCHEDULE 4 (SUZ4)
- SPECIAL USE ZONE - SCHEDULE 8 (SUZ8)
- TRANSPORT ZONE 1 - STATE TRANSPORT INFRASTRUCTURE (TRZ1)
- TRANSPORT ZONE 2 - PRINCIPAL ROAD NETWORK (TRZ2)
- URBAN FLOODWAY ZONE (UFZ)

ENVIRONMENT AND LANDSCAPE

- ESO3 ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 3
- ESO5 ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 5
- ESO6 ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 6

LAND MANAGEMENT

- BMO BUSHFIRE MANAGEMENT OVERLAY
- FO FLOODWAY OVERLAY
- LSIO LAND SUBJECT TO INUNDATION OVERLAY

HERITAGE AND BUILT FORM

- DDO1 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 1
- DDO2 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 2
- DDO3 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 3
- DDO4 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 4
- DDO5 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 5
- DDO6 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 6
- DDO8 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 8
- DDO9 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 9
- DDO10 DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 10
- DPO1 DEVELOPMENT PLAN OVERLAY - SCHEDULE 1
- DPO2 DEVELOPMENT PLAN OVERLAY - SCHEDULE 2
- DPO3 DEVELOPMENT PLAN OVERLAY - SCHEDULE 3
- DPO6 DEVELOPMENT PLAN OVERLAY - SCHEDULE 6
- DPO8 DEVELOPMENT PLAN OVERLAY - SCHEDULE 8
- HO1 HERITAGE OVERLAY (HO1)
- HO10 HERITAGE OVERLAY (HO10)
- HO11 HERITAGE OVERLAY (HO11)
- HO12 HERITAGE OVERLAY (HO12)
- HO13 HERITAGE OVERLAY (HO13)
- HO2 HERITAGE OVERLAY (HO2)
- HO24 HERITAGE OVERLAY (HO24)
- HO25 HERITAGE OVERLAY (HO25)
- HO27 HERITAGE OVERLAY (HO27)
- HO28 HERITAGE OVERLAY (HO28)
- HO3 HERITAGE OVERLAY (HO3)
- HO4 HERITAGE OVERLAY (HO4)

	• HO5 HERITAGE OVERLAY (HO5) • HO6 HERITAGE OVERLAY (HO6) • HO7 HERITAGE OVERLAY (HO7) • HO8 HERITAGE OVERLAY (HO8) • HO9 HERITAGE OVERLAY (HO9) • IPO1 INCORPORATED PLAN OVERLAY - SCHEDULE 1 OTHER • EAO ENVIRONMENTAL AUDIT OVERLAY • PAO1 PUBLIC ACQUISITION OVERLAY 1 • RXO ROAD CLOSURE OVERLAY
Relevant Strategic Planning projects	• City to River Masterplan • Horsham South Structure Plan • Alternative heavy vehicle route and second river crossing • Horsham Urban Transport Plan • Strategic Cycling Corridor
Particular Provisions	Clause 52.17 – Native Vegetation Clause 52.35 – Major Road Projects Clause 52.29 – Land adjacent to the Principal Road Network Clause 53.21 – State Transport Projects
Other relevant policy documents	Movement and Place in Victoria (Department of Transport, February 2019) Delivering the Goods, Creating Victorian Jobs: Victorian Freight Plan (Department of Economic Development, Jobs, Transport and Resources, July 2018) Horsham Municipal Bicycle and Shared Path Plan 2012-16 (Driscoll Engineering Services, September 2012)
Possible exemptions	Under Section 62.1 of the Horsham Planning Scheme, Uses not requiring a permit include 'the use of land for a Road except within the Urban Floodway Zone and a Public Conservation and Resource Zone'.

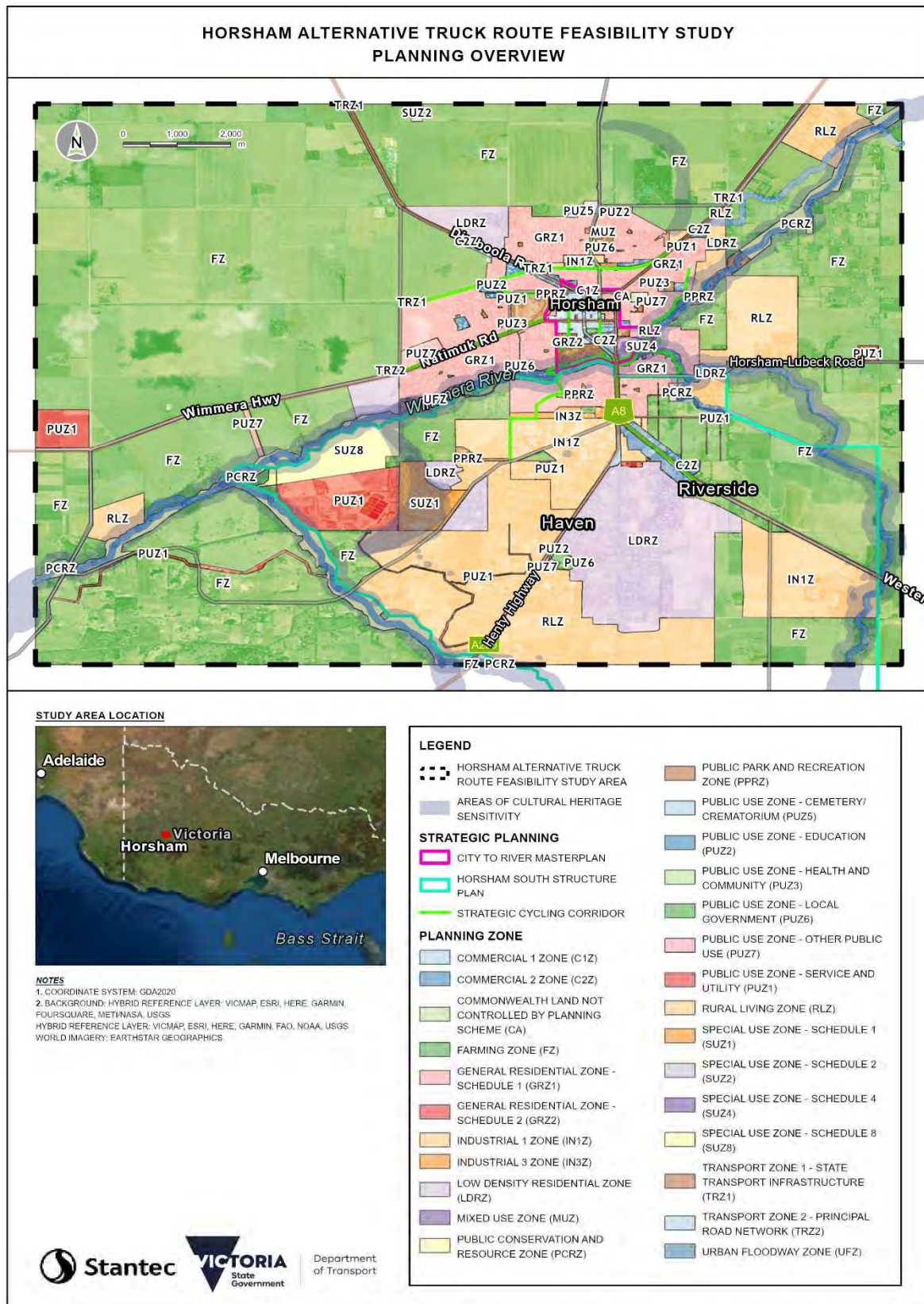


Figure 8: Horsham Alternative Truck Route Feasibility Study Planning Overview

Table 7: Planning Zone Approval Requirements - Summary

ZONE CODE	ZONE SCHEDULE	PERMITS/APPROVALS		
		Use	Buildings and Works	Native Vegetation Removal
C1Z	COMMERCIAL 1 ZONE	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies.
C2Z	COMMERCIAL 2 ZONE			Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
CA	COMMONWEALTH LAND NOT CONTROLLED BY PLANNING SCHEME	N/A – Commonwealth Land not controlled by planning scheme		
FZ	FARMING ZONE	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
GRZ1	GENERAL RESIDENTIAL ZONE - SCHEDULE 1	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies.
GRZ2	GENERAL RESIDENTIAL ZONE - SCHEDULE 2			Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
IN1Z	INDUSTRIAL 1 ZONE	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies.
IN3Z	INDUSTRIAL 3 ZONE			Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land

		(Uses not requiring a permit)		Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
LDRZ	LOW DENSITY RESIDENTIAL ZONE	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
MUZ	MIXED USE ZONE	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
PCRZ	PUBLIC CONSERVATION AND RESOURCE ZONE	Yes – The use of land for a Road requires a permit in Public Conservation and Resource Zone	Yes – Roadworks is a section 2 use and requires a permit in Public Conservation and Resource Zone as listed in Clause 62.02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
PPRZ	PUBLIC PARK AND RECREATION ZONE	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land

		(Uses not requiring a permit)		native vegetation' unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
PUZ1	PUBLIC USE ZONE - SERVICE AND UTILITY	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – 'Roadworks' are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to 'remove, destroy or lop native vegetation' unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
PUZ2	PUBLIC USE ZONE - EDUCATION			
PUZ3	PUBLIC USE ZONE - HEALTH AND COMMUNITY			
PUZ5	PUBLIC USE ZONE - CEMETERY/CREMATORIUM			
PUZ6	PUBLIC USE ZONE - LOCAL GOVERNMENT			
PUZ7	PUBLIC USE ZONE - OTHER PUBLIC USE			
RLZ	RURAL LIVING ZONE	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – 'Roadworks' are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to 'remove, destroy or lop native vegetation' unless an exemption applies. Possible exemptions include: • Dead vegetation (conditions apply) • Road safety • Planted vegetation • Surveying • Transport land
SUZ1	SPECIAL USE ZONE - SCHEDULE 1	No – The use of land for a Road is a section 1 use (permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	No – 'Roadworks' are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to 'remove, destroy or lop native vegetation' unless an exemption applies. Possible exemptions include (conditions apply): • Dead vegetation • Road safety • Planted vegetation • Surveying • Transport land
SUZ2	SPECIAL USE ZONE - SCHEDULE 2			
SUZ4	SPECIAL USE ZONE - SCHEDULE 4			
SUZ8	SPECIAL USE ZONE - SCHEDULE 8			
TRZ1	TRANSPORT ZONE 1 - STATE TRANSPORT INFRASTRUCTURE	No – The use of land for a Road is a section 1 use	No – 'Roadworks' are exempt from a permit for	Unlikely – Generally, a permit is required to

TRZ2	TRANSPORT ZONE 2 - PRINCIPAL ROAD NETWORK	(permit not required) as listed in Clause 62.01 (Uses not requiring a permit)	buildings and works under Clause 62.02-02	'remove, destroy or lop native vegetation' unless an exemption applies. However, land in a Transport Zone, on behalf of the Head, Transport for Victoria to construct or maintain transport system infrastructure, in accordance with written agreement of the Secretary to DELWP does not require a permit.
UFZ	URBAN FLOODWAY ZONE	Yes – The use of land for a Road requires a permit within the Urban Floodway Zone	No – 'Roadworks' are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to 'remove, destroy or lop native vegetation' unless an exemption applies. Possible exemptions include (conditions apply): • Dead vegetation • Road safety • Planted vegetation • Surveying • Transport land

Note: It is recommended that the above interpretation of the planning scheme is confirmed with Horsham Rural City Council.

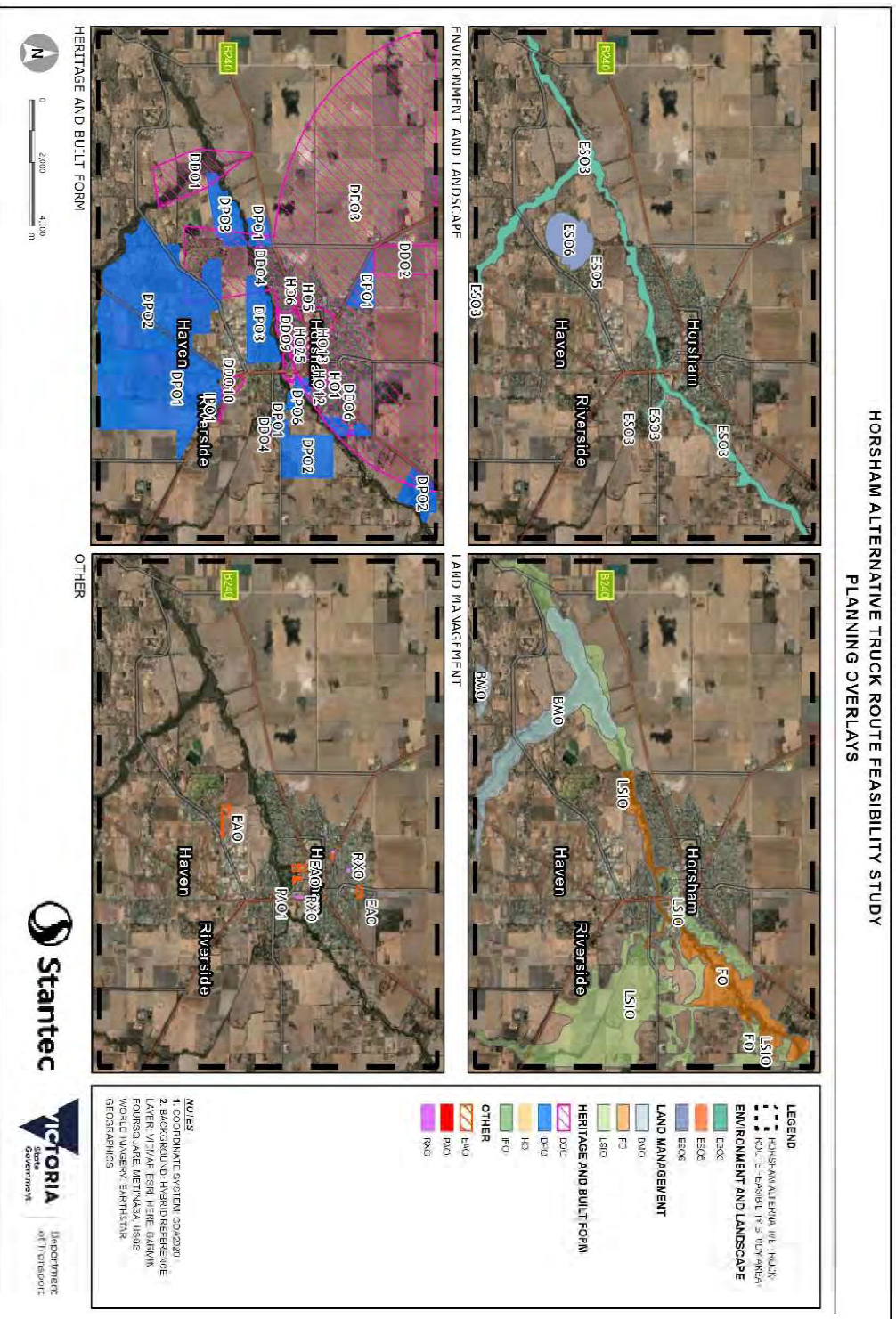


Figure 9: Planning Overlays

Table 8: Planning Overlay Approval Requirements – Summary

OVERLAY CODE		PLANNING SCHEDULE		PERMITS/APPROVALS		
		Use	Buildings and Works	Vegetation Removal		
ENVIRONMENT AND LANDSCAPE						
ESO3	ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 3 (WATER COURSE PROTECTION)	No – ‘Use of land for a road’ is an exempt use under Clause 62.01	Yes – A permit is required to carry out works pursuant to Clause 42.01-2	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include (conditions apply): • Dead vegetation • Road safety • Planted vegetation • Surveying • Transport land		
ESO5	ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 5 (CHANNEL AND RESERVOIR PROTECTION)					
ESO6	ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 6 (HORSHAM SOUTH WASTEWATER TREATMENT PLANT BUFFER AREA)					
LAND MANAGEMENT						
BMO	BUSHFIRE MANAGEMENT OVERLAY	No – ‘Use of land for a road’ is an exempt use under Clause 62.01	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include (conditions apply): • Dead vegetation • Road safety • Planted vegetation • Surveying Transport land		
FO	FLOODWAY OVERLAY	No – ‘Use of land for a road’ is an exempt use under Clause 62.01	Yes – A permit is required to construct a building or to construct or carry out works, including Roadworks, if the water flow path is redirected or obstructed, pursuant to Clause 44.04-2	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include (conditions apply): • Dead vegetation • Road safety • Planted vegetation		

				• Surveying • Transport land
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	No – ‘Use of land for a road’ is an exempt use under Clause 62.01	Yes – A permit is required to construct a building or to construct or carry out works, including Roadworks, if the water flow path is redirected or obstructed, pursuant to Clause 44.04-2	Likely – Generally, a permit is required to ‘remove, destroy or lop native vegetation’ unless an exemption applies. Possible exemptions include (conditions apply): • Dead vegetation • Road safety • Planted vegetation • Surveying • Transport land
HERITAGE AND BUILT FORM				
DDO1	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 1 (RIFLE BUTTS DANGER AREA)	No – ‘Use of land for a road’ is an exempt use under Clause 62.01	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	N/A
DDO2	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 2 (IMMEDIATE AIRPORT ENVIRONS AREA)			
DDO3	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 3			
DDO4	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 4			
DDO5	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 5			
DDO6	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 6			
DDO8	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 8			
DDO9	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 9			
DDO10	DESIGN AND DEVELOPMENT OVERLAY – SCHEDULE 10			
DPO1	DEVELOPMENT PLAN OVERLAY - SCHEDULE 1	No – ‘Use of land for a road’ is an exempt use under Clause 62.01	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	N/A
DPO2	DEVELOPMENT PLAN OVERLAY - SCHEDULE 2			
DPO3	DEVELOPMENT PLAN OVERLAY - SCHEDULE 3			
DPO6	DEVELOPMENT PLAN OVERLAY - SCHEDULE 6			
DPO8	DEVELOPMENT PLAN OVERLAY - SCHEDULE 8			
HO1	HERITAGE OVERLAY (HO1)	No – ‘Use of land for a road’ is an exempt use under Clause 62.01	No – ‘Roadworks’ are exempt from a permit for buildings and works under Clause 62.02-02	Possibly – HO1 and HO24 have specific tree controls that apply and therefore a permit may be required for vegetation removal under these overlays
HO10	HERITAGE OVERLAY (HO10)			
HO11	HERITAGE OVERLAY (HO11)			
HO12	HERITAGE OVERLAY (HO12)			
HO13	HERITAGE OVERLAY (HO13)			
HO2	HERITAGE OVERLAY (HO2)			
HO24	HERITAGE OVERLAY (HO24)			
HO25	HERITAGE OVERLAY (HO25)			
HO27	HERITAGE OVERLAY (HO27)			
HO28	HERITAGE OVERLAY (HO28)			
HO3	HERITAGE OVERLAY (HO3)			
HO4	HERITAGE OVERLAY (HO4)			
HO5	HERITAGE OVERLAY (HO5)			
HO6	HERITAGE OVERLAY (HO6)			
HO7	HERITAGE OVERLAY (HO7)			
HO8	HERITAGE OVERLAY (HO8)			
HO9	HERITAGE OVERLAY (HO9)			
IPO1	INCORPORATED PLAN OVERLAY - SCHEDULE 1	No – ‘Use of land for a road’ is an exempt use	No – ‘Roadworks’ are exempt from a permit for buildings	N/A

		under Clause 62.01	and works under Clause 62.02-02	
OTHER				
EAO	ENVIRONMENTAL AUDIT OVERLAY	No – 'Use of land for a road' is an exempt use under Clause 62.01	No – 'Roadworks' are exempt from a permit for buildings and works under Clause 62.02-02	N/A
PAO1	PUBLIC ACQUISITION OVERLAY 1	No – 'Use of land for a road' is an exempt use under Clause 62.01	No – 'Roadworks' are exempt from a permit for buildings and works under Clause 62.02-02	Unlikely – Generally, a permit is required to 'remove, destroy or lop native vegetation' unless an exemption applies. However, land in a Public Acquisition Overlay, and if the Head, Transport for Victoria is the acquiring authority, to construct or maintain transport system infrastructure, in accordance with written agreement of the Secretary to DELWP does not require a permit.
RXO	ROAD CLOSURE OVERLAY	No – 'Use of land for a road' is an exempt use under Clause 62.01	No – 'Roadworks' are exempt from a permit for buildings and works under Clause 62.02-02	N/A

Note: It is recommended that the above interpretation of the planning scheme is confirmed with Horsham Rural City Council.

Table 9: Particular Provision Approval Requirements - Summary

Particular Provision	Use	PERMITS/APPROVALS	
		Buildings and Works	Native Vegetation Removal
Clause 52.17 – Native Vegetation	N/A	N/A	Likely - Pursuant to Clause 52.17, a planning permit is required to remove, destroy, or lop native vegetation, including dead native vegetation. Possible exemptions include (conditions apply): • Dead vegetation unless it is a standing dead tree with a trunk diameter of 40cm or more at a height of 1.3m above ground level • Road safety • Planted vegetation • Surveying • Transport land • Regrowth • Weeds
Clause 52.35 – Major Road Projects	Unlikely – Projects carried out by or on behalf of Major Road Projects Victoria are subject to Clause 52.35. The use and development of land must be carried out generally in accordance with the plans and documents approved by the Minister for Planning under Clause 52.35, to the satisfaction of the Minister for Planning. Clause 52.35 outlines the consultation, project boundary, and other pre-commencement requirements for the construction of a project or a component stage or stage of project. It is understood that the project is not currently part of works to be carried out by Major Road Projects Victoria, and as such, it is considered unlikely that this clause will apply.	Unlikely - Any requirement of this planning scheme to obtain a permit or any provision of this planning scheme that prohibits or restricts the use or development of land, requires the use or development of land to be carried out in a particular manner, or requires a specified thing to be done to the satisfaction of a specified person or body, does not apply to a use or development to which this clause 52.35 applies if the requirements of Clause 52.35 are met. This exemption does not apply to a requirement in clauses 45.08 or 51.03, or in any schedule to those clauses. It is understood that the project is not currently part of works to be carried out by Major Road Projects Victoria, and as such, it is considered unlikely that this clause will apply.	Unlikely – Before the removal, destruction or lopping of native vegetation to enable a preparatory use or development, information about that native vegetation in accordance with application requirements 1, 5, 9,10 and 11 in Tables 4 and 5 to the <i>Guidelines for removal, destruction, or lopping of native vegetation</i> (DELWP, 2017) must be prepared to the satisfaction of the Secretary to the DELWP (as constituted under Part 2 of the <i>Conservation, Forests and Lands Act 1987</i>). Biodiversity impacts must also be offset in accordance with the <i>Guidelines</i>, to the satisfaction of the Secretary. It is understood that the project is not currently part of works to be carried out by Major Road Projects Victoria, and as such, it is considered unlikely that this clause will apply.
Clause 52.29 – Land adjacent to the Principal Road Network	Unlikely – A permit is required to create or alter access to a road in a Transport Zone 2, or land in a Public Acquisition Overlay if a transport manager (other than a municipal council) is the acquiring authority and the acquisition is for	Unlikely – A permit is required to create or alter access to a road in a Transport Zone 2, or land in a Public Acquisition Overlay if a transport manager (other than a municipal council) is the acquiring	N/A

	the purpose of a road unless the works are carried out by or on behalf of the Head, Transport for Victoria. Provided this condition is met, a permit is unlikely to be required under this clause.	authority and the acquisition is for the purpose of a road unless the works are carried out by or on behalf of the Head, Transport for Victoria. Provided this condition is met, a permit is unlikely to be required under this clause.	
Clause 53.21 – State Transport Projects	Likely – this clause applies to an application under any provision of this planning scheme made by or on behalf of the Head, Transport for Victoria or the Secretary to the Department of Transport	Likely – this clause applies to an application under any provision of this planning scheme made by or on behalf of the Head, Transport for Victoria or the Secretary to the Department of Transport	N/A

Note: It is recommended that the above interpretation of the planning scheme is confirmed with Horsham Rural City Council.

4.1.4 Wildlife Act 1975

The Wildlife Act 1975 is the primary legislation in Victoria providing for protection and management of wildlife. The Act requires people engaged in wildlife research (e.g., fauna surveys, salvage, and relocation activities) to obtain management authorisation under the Act to ensure these activities are undertaken appropriately and, in a manner, consistent with the controls.

The purpose of the Wildlife Act 1975 is to establish processes to protect and conserve wildlife, prevent extinction, and provide for the sustainable use and access to wildlife. Additionally, the Act prohibits and regulates activities relating to wildlife. This includes requiring a licence to capture, handle, relocate or temporarily house wildlife.

If fauna is found on site (e.g., trapped or injured) during construction and needs to be moved a qualified specialist (ecologist/zoologist) who holds management authorisation under the Wildlife Act 1975 should be engaged to conduct the work.

4.1.5 Catchment and Land Protection Act 1994

The Catchment and Land Protection (CALP) Act 1994 is the main piece of legislation covering noxious weed and pest animal management in Victoria. Under the Act all landowners have legal obligations to manage declared noxious weeds and pest animals on their land.

The site is within the jurisdiction of the Wimmera Catchment Management Authority (WCMA). Mitigation measures should be in place during construction to avoid the spread of listed noxious weeds and avoid the introduction of new weed species into the site.

4.1.6 Water Act 1989

The Water Act 1989 provides for the management of Victoria's waterways. The main objectives of the Act are to promote the efficient use of water resources, ensure conservation and appropriate management and increase community involvement in the conservation and management of Victoria's water resources. Under the Act a 'Works on Waterways' permit would be required from the relevant authority for all construction work (including crossings) within the bed and banks of a designated waterway.

The site is within the Wimmera Catchment Management Authority (WCMA) region. A Works on Waterways permit is required for crossings of a designated waterway. Given the works are likely to involve crossing waterways (likely to be 'designated waterways'), a Works on Waterways permit will likely be required.

Figure 10 contains an overview of the designated waterways within the FSA which are managed by the Wimmera CMA.

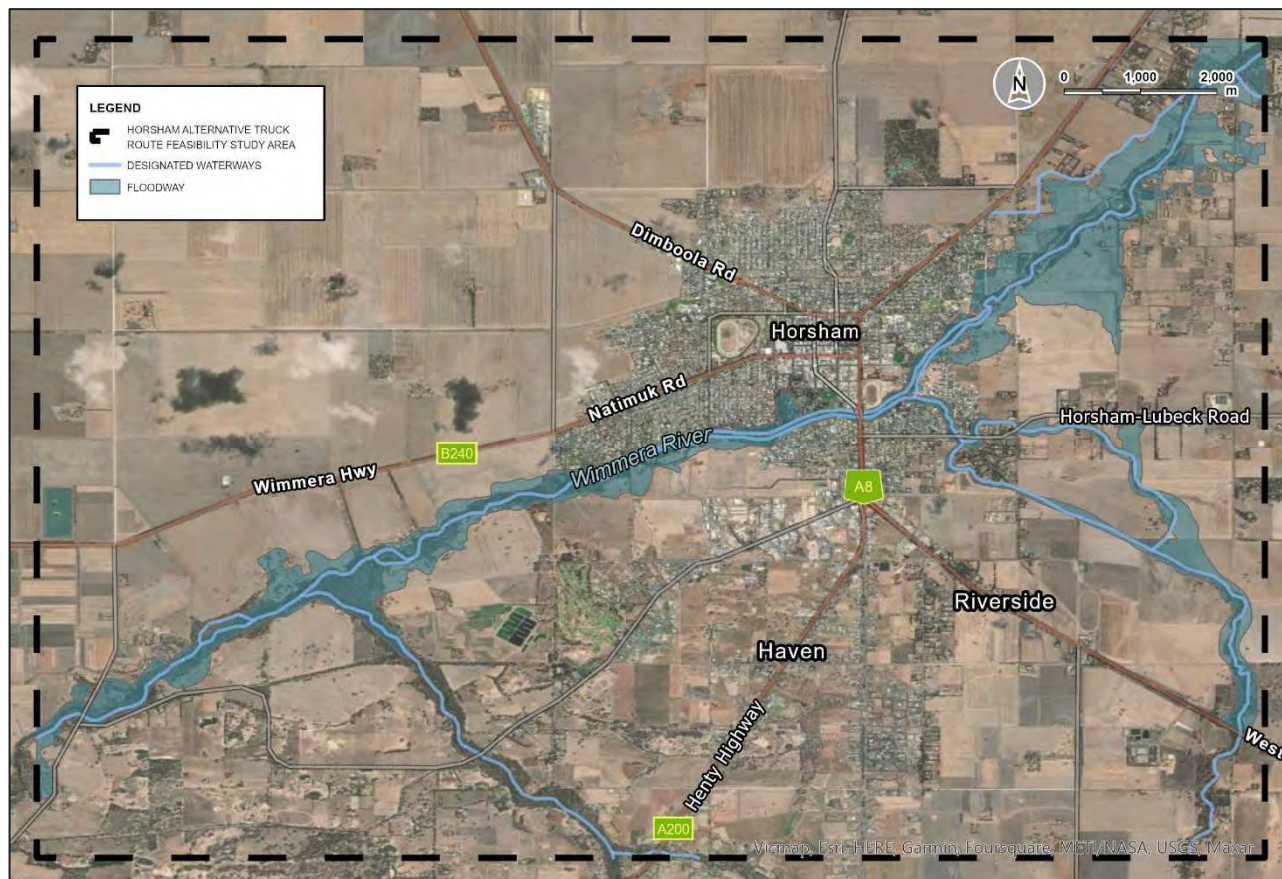


Figure 10: Designated Waterways (Wimmera CMA, 2022)

4.2.1 Crown Land Reserves Act 1978

Working within Crown land requires approval from the responsible authority. As the project progresses the landowner/manager of each affected land parcel will need to be identified and approval obtained prior to works. Apart from DELWP, managers can include other State government departments, Statutory authorities, VicRoads, Parks Victoria, Local Councils, and volunteer Committees of Management. The relevant Crown land managers can be identified via the VicMap Crown Land Tenure spatial data available publicly from DataVic (VicMap, 2021). It is recommended that this spatial data is used to help determine the relevant landowners/managers for Crown land parcels impacted by the final construction footprint.

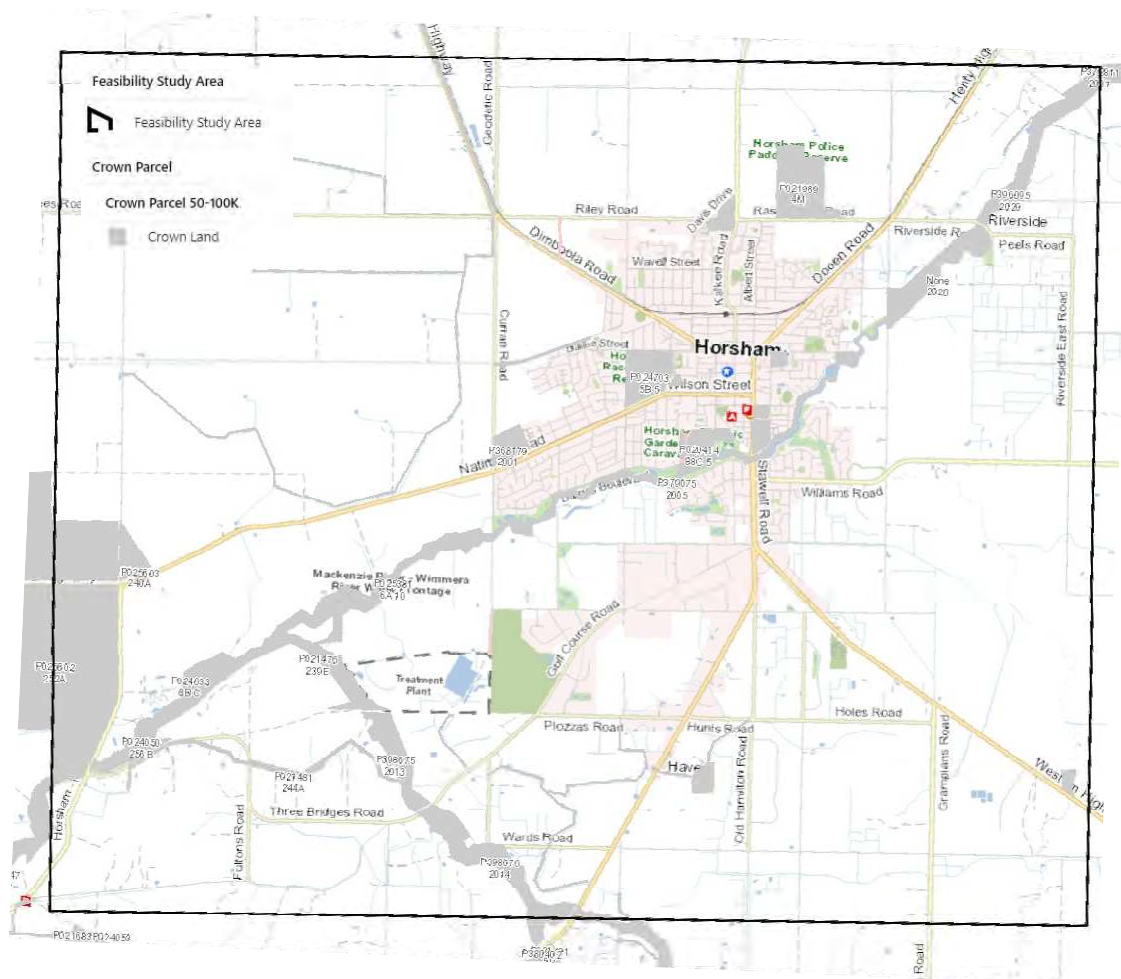


Figure 11: Crown Land Parcels (MapshareVic, 2022)

5. SUMMARY & CONCLUSIONS

Table 10 below outlines the risk assessment criteria, and **Figure 12** illustrates the areas of highest environmental risk within the FSA based on the desktop assessment. Note that this assessment is based on publicly available desktop databases only. The categorisation of areas as medium or high risk is subject to change upon completion of field assessments to verify the indicated ecological values. Additionally, field assessments may identify additional areas of environmental sensitivity that should be considered.

Table 11 below provides information regarding specific likely biodiversity legislation and policy that is relevant to the feasibility study. Given this assessment has been conducted as a preliminary desktop assessment, these requirements may change and should be reviewed as the study progresses.

Table 10: Environmental Desktop Risk Assessment

Environmental Risk Rating	Criteria
High	- Flora and Fauna Guarantee (FFG) Act Listed Communities Distribution Area - Environment Protection and Biodiversity Conservation (EPBC) Act Listed Species recorded within the last 20 years - Likely to incur federal and state legislative approvals
Medium	- Ecological Vegetation Class (EVC) with Bioregional Conservation Status (BCS) of Endangered/Vulnerable Distribution Area - FFG Act Listed Species recorded within the last 20 years - Likely to incur state legislative approvals

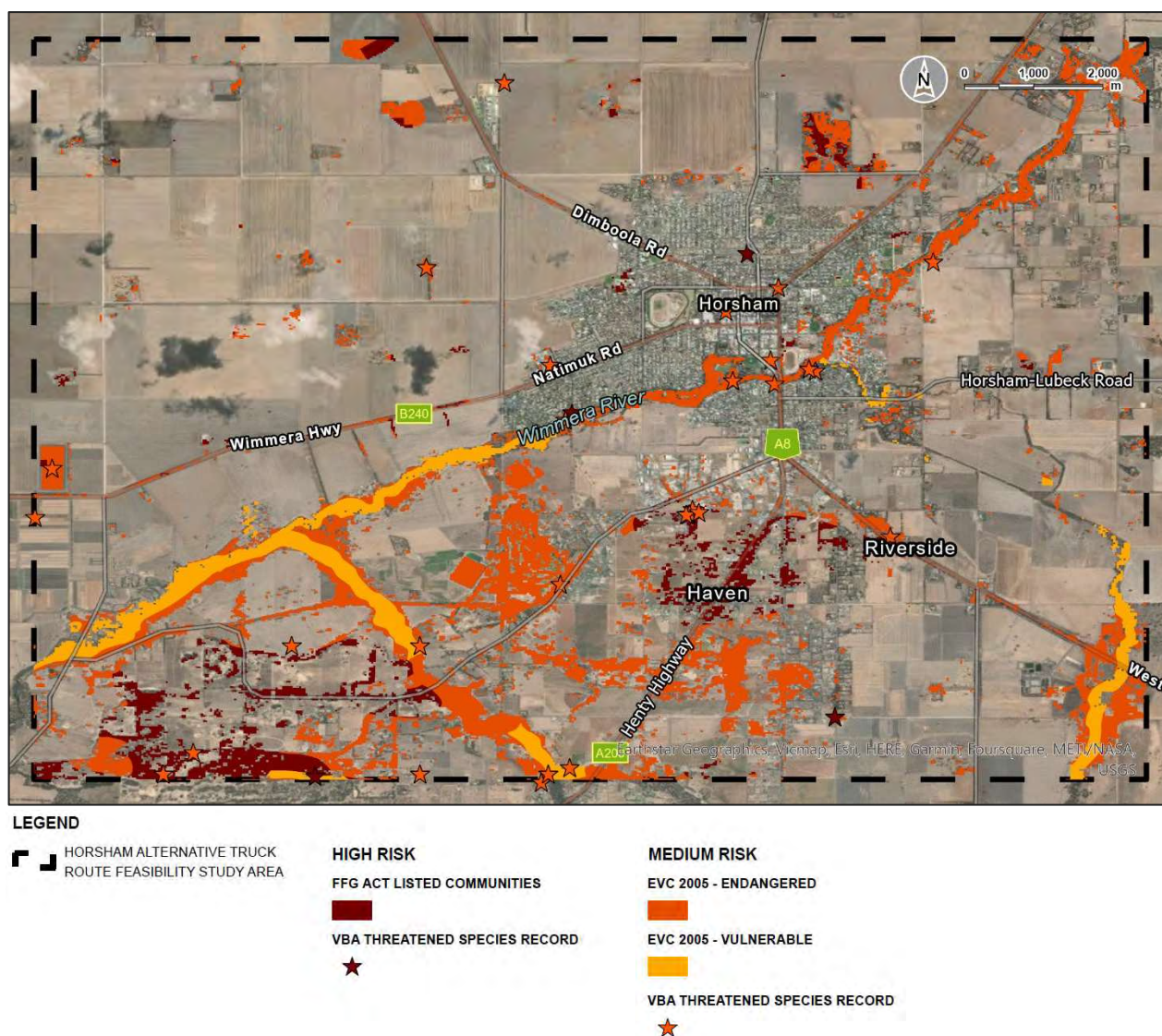


Figure 12: Environmental Desktop Risk Assessment Overview

Table 11: Biodiversity Legislation Summary Table

Legislation or Criteria	Permit/Approval/Actions Required?
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Possibly – 8 EPBC-listed species have previous been recorded within the Feasibility Study Area, with potential for the presence of several EPBC listed threatened communities. Referral under the EPBC Act is required if any significant impacts on listed threatened ecological communities, flora or fauna species is expected as a result of the works.
Flora and Fauna Guarantee Act 1988 (FFG Act)	Possibly - FFG-listed species (11 flora, 26 fauna) have been previously recorded and 5 FFG listed ecological communities are mapped within the Feasibility Study Area. FFG permit may be required if impacting on FFG-listed or protected species and/or communities.
Planning and Environment Act 1987	Likely – Permits for 'Use of the land' or 'Buildings and works' will be required if works are within a Public Conservation and Resource Zone or Urban Floodway Zone. Permits for Vegetation Removal (under Clause 52.17 or applicable overlays) are likely if no exemption is found to apply.
Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017)	Likely – While the risk-based pathway is yet to be determined, it is likely to be via the Detailed Assessment Pathway, based on likelihood to impact Location 2 and 3 risk categories, and the amount of vegetation likely required to be removed due to scale of project.
Water Act 1989	Likely - Numerous designated waterways intersect within the Feasibility Study Area. Works on Waterways permit required for crossing of any designated waterways
Catchment and Land Protection Act 1994	Likely – to require management of transport of noxious weeds, depending on species observed through site investigations. Weed and pest management and hygiene controls will be required in a Construction Environmental Management Plan.
Environment Effects Act 1978	Possibly – It is considered possible that the proposed works will result in a significant adverse effect in a regional, state, or national context. However, this risk level should be revised once the truck route options are decided and assessed.
Crown Land Reserves Act 1978	Possibly – Crown land managers need to be identified and consent obtained
Wildlife Act 1975	Unlikely* – If fauna is found on site (e.g., trapped or injured) during construction and needs to be moved a qualified specialist (ecologist/zoologist) who holds management authorisation under the Wildlife Act 1975 should be engaged to conduct the work. It is also recommended that the engaged specialist undertakes a pre-construction check to ensure there are no nests or other areas of potential fauna habitat that may be impacted by tree felling (particularly if impacting on any mature trees). *Provided the specialist holds a management authorisation under the Wildlife Act (1975), a specific permit for this project will not be required by the client.
Landowner/land manager consent	Required – Landowner/land manager needs to be identified for each affected parcel of land and consent needs to be obtained, e.g., crown landowner consent for affected Crown Land parcels
Are further flora and fauna assessments required?	Yes – Once the truck route alignment options have been determined, including the likely construction footprints for each, a detailed environmental assessment will be required. This will need to include vegetation quality assessments undertaken by a qualified native vegetation assessor to quantify native vegetation removal as part of the planning permit and offsetting process. Confirmation of the need for additional environmental approvals (i.e. EES, FFG permit, EPBC referral) can also be determined at the detailed assessment stage.

6. REFERENCES

Australian Museum (2022) Magpie Goose. NSW Government. (Online) <https://australian.museum/learn/animals/birds/magpie-goose/>

BirdLife (2022) Birdlife Australia. Birdlife International. (Online) <https://birdlife.org.au/>

DataVic (2021) VicMap Crown Land Tenure Spatial Dataset (Online) Vicmap Crown Land Tenure - Datasets - Victorian Government Data Directory.

DELWP (2017) Guidelines for the removal, destruction or lopping of native vegetation. The State of Victoria Department of Environment, Land, Water and Planning.

DELWP (2021) Flora and Fauna Guarantee Act 1988 – Threatened List: June 2021. Department of Environment, Land, Water and Planning. The State of Victoria Microsoft Word - FFG Threatened List June 2021.docx (environment.vic.gov.au)

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022) Environment Protection and Biodiversity Conservation (EPBC) Protected Matters Search Tool. Australian Government, Canberra. (Online) <https://pmst.awe.gov.au/#/map?lng=131.50634765625003&lat=-28.671310915880834&zoom=5&baseLayers=Imagery,ImageryLabels>

Department of Economic Development, Jobs, Transport and Resources (2018) Delivering the Goods – Victorian Freight Plan. Department of Transport, Victoria. (Online) <https://transport.vic.gov.au/-/media/tfv-documents/ports-and-freight/delivering-the-goods.pdf>

Department of Environment, Land, Water and Planning (DELWP) (2021) NatureKit 2.0. Victorian State Government (Online) <https://www.environment.vic.gov.au/biodiversity/naturekit>

Department of Environment, Land, Water and Planning (DELWP) (2022) Native Vegetation Information Management (NVIM) System. Victorian State Government. (Online) <https://nvim.delwp.vic.gov.au/>

Department of Environment, Land, Water and Planning (DELWP) (2022) Victorian Biodiversity Atlas (VBA). Victorian State Government. (Online) <https://www.environment.vic.gov.au/biodiversity/victorian-biodiversity-atlas>

Department of Environment, Land, Water and Planning (DELWP) (2022) VicPlan – MapShare Database. Victorian State Government. (Online) <https://mapshare.vic.gov.au/vicplan/>

Department of Transport (2022) Movement and Place in Victoria. Victorian State Government. (Online) <https://transport.vic.gov.au/about/planning/transport-strategies-and-plans/movement-and-place-in-victoria>

Driscoll Engineering Services (2012) Horsham Municipal Bicycle & Shared Path Plan. Horsham Rural City Council. (Online) https://www.hrcc.vic.gov.au/files/content/public/our-services/roads-and-transport/infrastructure-guidelines/hrcc_bike_strategy_-_2012_-_2016.pdf

Environment, Planning and Sustainable Development Directorate (EPSDD) (2022) Silver Perch (*Bidyanus bidyanus*). ACT Government. (Online) <https://www.environment.act.gov.au/nature-conservation/conservation-and-ecological-communities/threatened-species-factsheets/silver-perch>

Horsham Rural City Council (2022) Horsham Planning Scheme. (Online) <https://www.hrcc.vic.gov.au/Planning-and-Building/Planning/Horsham-Planning-Scheme>

iNaturalist (2022) *Antigone rubicunda*. CSIRO. (Online) <https://inaturalist.ala.org.au/taxa/508055-Antigone-rubicunda>

Treelogic (2022) Weeping Myall. Treelogic PTY LTD. (Online) [https://treelogic.com.au/factsheets/acacia-pendula-weeping-myall/#:~:text=Acacia%20pendula%20\(Weeping%20Myall\)%20is,considering%20for%20contemporary%20urban%20landscapes.&text=Northern%20Victoria%2C%20through%20NSW%20plains,Widespread%20in%20inland%20areas.&text=Small%20evergreen%2C%20narrow%20to%20spreading,up%20to%2012m%20in%20height.](https://treelogic.com.au/factsheets/acacia-pendula-weeping-myall/#:~:text=Acacia%20pendula%20(Weeping%20Myall)%20is,considering%20for%20contemporary%20urban%20landscapes.&text=Northern%20Victoria%2C%20through%20NSW%20plains,Widespread%20in%20inland%20areas.&text=Small%20evergreen%2C%20narrow%20to%20spreading,up%20to%2012m%20in%20height.)

VicFlora (2022) *Allocasuarina leuhmannii* (Buloke). Royal Botanic Gardens Victoria. (Online)
<https://vicflora.rbg.vic.gov.au/flora/taxon/cd00e21f-6b74-46ea-8258-ed2dd9f0055b>

VicFlora (2022) *Brachyscome chrysoglossa* (Yellow-tongue Daisy). Royal Botanic Gardens Victoria. (Online)
<https://vicflora.rbg.vic.gov.au/flora/taxon/cbbfc700-3e43-4657-a151-18f7599a45fa>

VicFlora (2022) *Dodonea procumbens* (Trailing Hop Bush). Royal Botanic Gardens Victoria. (Online)
<https://vicflora.rbg.vic.gov.au/flora/taxon/26421dc1-0b0b-44ff-bd2c-f12cc3090f17>

VicFlora (2022) *Pimelea flava* supsp. *Dichotoma* (Diosma Rice-flower). Royal Botanic Gardens Victoria (Online)
<https://vicflora.rbg.vic.gov.au/flora/taxon/988ae5bf-88d7-4edc-8ecf-99c902614d3a>

VicFlora (2022) *Swainsona behriana* (Southern Swainson Pea). Royal Botanic Gardens Victoria (Online)
<https://vicflora.rbg.vic.gov.au/flora/taxon/e890e45b-16b3-4c4e-9422-5a040a45b935>

Victorian Environmental Water Holder (VEWH) (2022) Creature Feature: Freshwater Catfish. Victorian State Government. (Online) <https://www.vewh.vic.gov.au/news-and-publications/stories/creature-feature-freshwater-catfish>
Wimmera CMA (2022) Wimmera CMA Designated Waterways. Australian Research Data Commons. (Online)
<https://researchdata.edu.au/wimmera-cma-designated-waterways/1436846>

Appendix A – EPBC Act Protected Matters Report



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Sep-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	35
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	6
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	7
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	5
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [\[Resource Information \]](#)

Ramsar Site Name	Proximity	Buffer Status
Lake albacutya	50 - 100km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area	In feature area
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area	In feature area
Mallee Bird Community of the Murray Darling Depression Bioregion	Endangered	Community may occur within area	In buffer area only
Natural Grasslands of the Murray Valley Plains	Critically Endangered	Community likely to occur within area	In feature area
Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions	Critically Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus banksii graptogyne South-eastern Red-tailed Black-Cockatoo [25982]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In feature area
FROG			
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area	In feature area
INSECT			
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Acacia glandulicarpa Hairy-pod Wattle [8838]	Vulnerable	Species or species habitat known to occur within area	In feature area
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Asterolasia phebaloides Downy Star-bush [3599]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Caladenia lowanensis Wimmera Spider-orchid [24374]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caladenia tensa Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caladenia versicolor Candy Spider-orchid [24392]	Vulnerable	Species or species habitat may occur within area	In feature area
Callistemon wimmerensis Wimmera Bottlebrush [82943]	Critically Endangered	Species or species habitat may occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area	In feature area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium monoplacoides Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area	In feature area
Pimelea spinescens subsp. pubiflora Wimmera Rice-flower [21979]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pterostylis cheraphila Floodplain Rustyhood [56508]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area	In feature area
Sclerolaena napiformis Turnip Copperburr [11742]	Endangered	Species or species habitat likely to occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Swainsona plagiotropis Red Darling-pea, Red Swainson-pea [10804]	Vulnerable	Species or species habitat may occur within area	In feature area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat may occur within area	In feature area

REPTILE

Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area
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Listed Migratory Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area

Migratory Terrestrial Species

Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area

Migratory Wetlands Species

Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - HORSHAM TRAINING DEPOT (Drill Hall) [20170]	VIC	In feature area
Defence - HORSHAM TRAINING DEPOT (Drill Hall) [20167]	VIC	In feature area
Defence - HORSHAM TRAINING DEPOT (Drill Hall) [20171]	VIC	In feature area
Defence - HORSHAM TRAINING DEPOT (Drill Hall) [20169]	VIC	In feature area
Defence - HORSHAM TRAINING DEPOT (Drill Hall) [20168]	VIC	In feature area
Defence - HORSHAM TRAINING DEPOT (Drill Hall) [20172]	VIC	In feature area

Listed Marine Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Box Swamp W.R	Natural Features Reserve	VIC	In buffer area only
Bungalally I48 B.R	Natural Features Reserve	VIC	In feature area
Bungalally I49 B.R.	Natural Features Reserve	VIC	In feature area
Bungalally I50 B.R.	Natural Features Reserve	VIC	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Dooen Swamp B.R.	Natural Features Reserve	VIC	In feature area
Gum Swamp, Vectis East W.R	Natural Features Reserve	VIC	In buffer area only
John Smith Memorial F.R	Nature Conservation Reserve	VIC	In buffer area only

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included.

RFA Name	State	Buffer Status
West Victoria RFA	Victoria	In feature area

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Avonbank Heavy Mineral Sands Project	2019/8586	Controlled Action	Proposed Decision	In buffer area only

Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Wimmera Mallee Pipeline Project	2004/1692	Not Controlled Action	Completed	In feature area

Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Department of Agriculture Water and the Environment

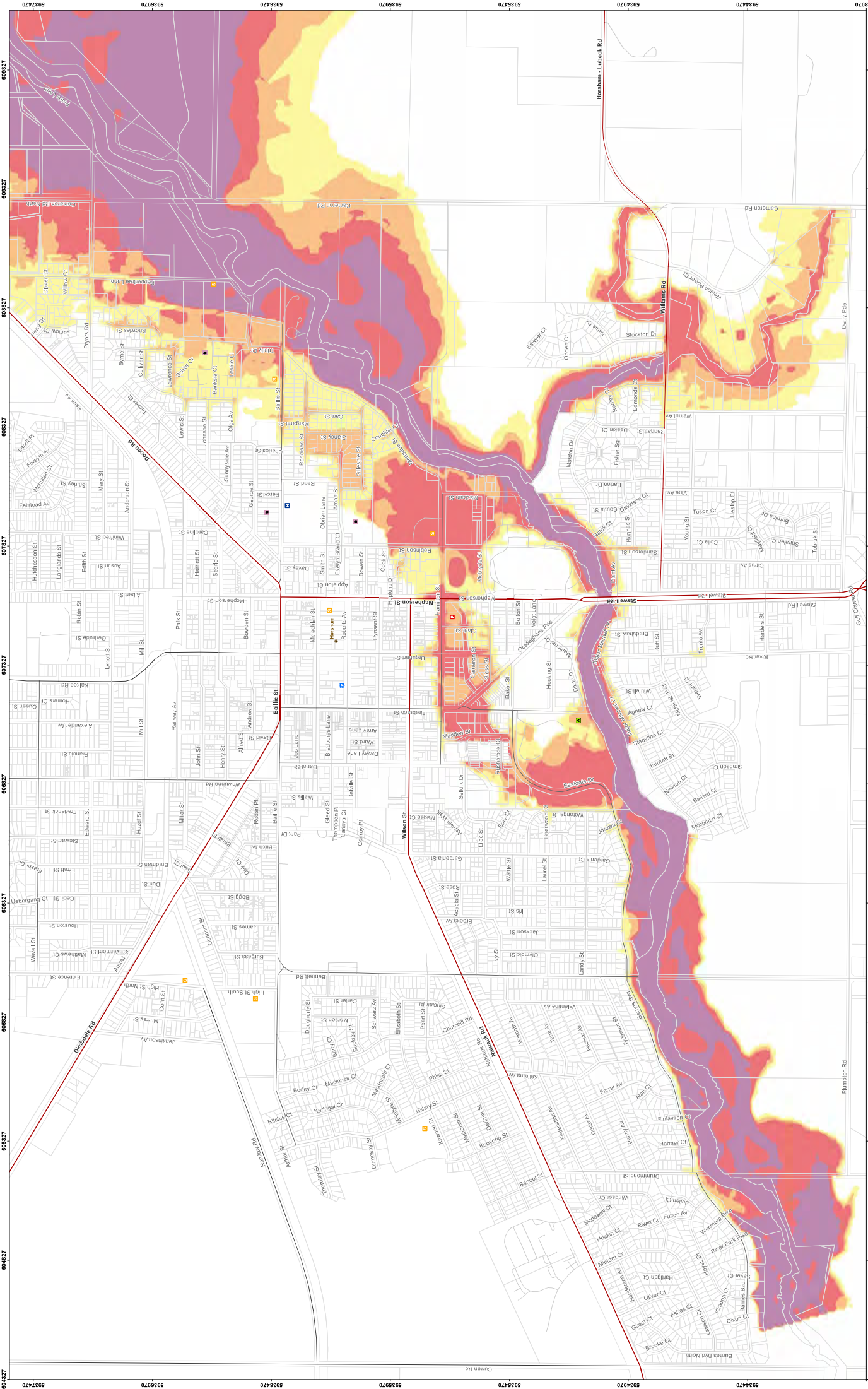
GPO Box 858

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Appendix D – Horsham 1% AEP Flood Extent





Scale: 1:5,000

0 100 200 meters

Coordinate System: GDA 1984 MGA Zone 54
Datum: GDA 1984
Units: Metres
File Format: 10,000,000,000
Scale Factor: 0.9999999999
Units: Metres

Legend

Flood Depth

- 0.25m
- 0.25 to <0.5m
- 0.5 to <1m
- 1m+

Parcels

- Highways
- Other Major Roads
- Minor Road Class 3
- Minor Road Class 4
- Minor Road Class 5+

FoI (points)

- Fire station
- Police station
- Emergency Hospital

Other

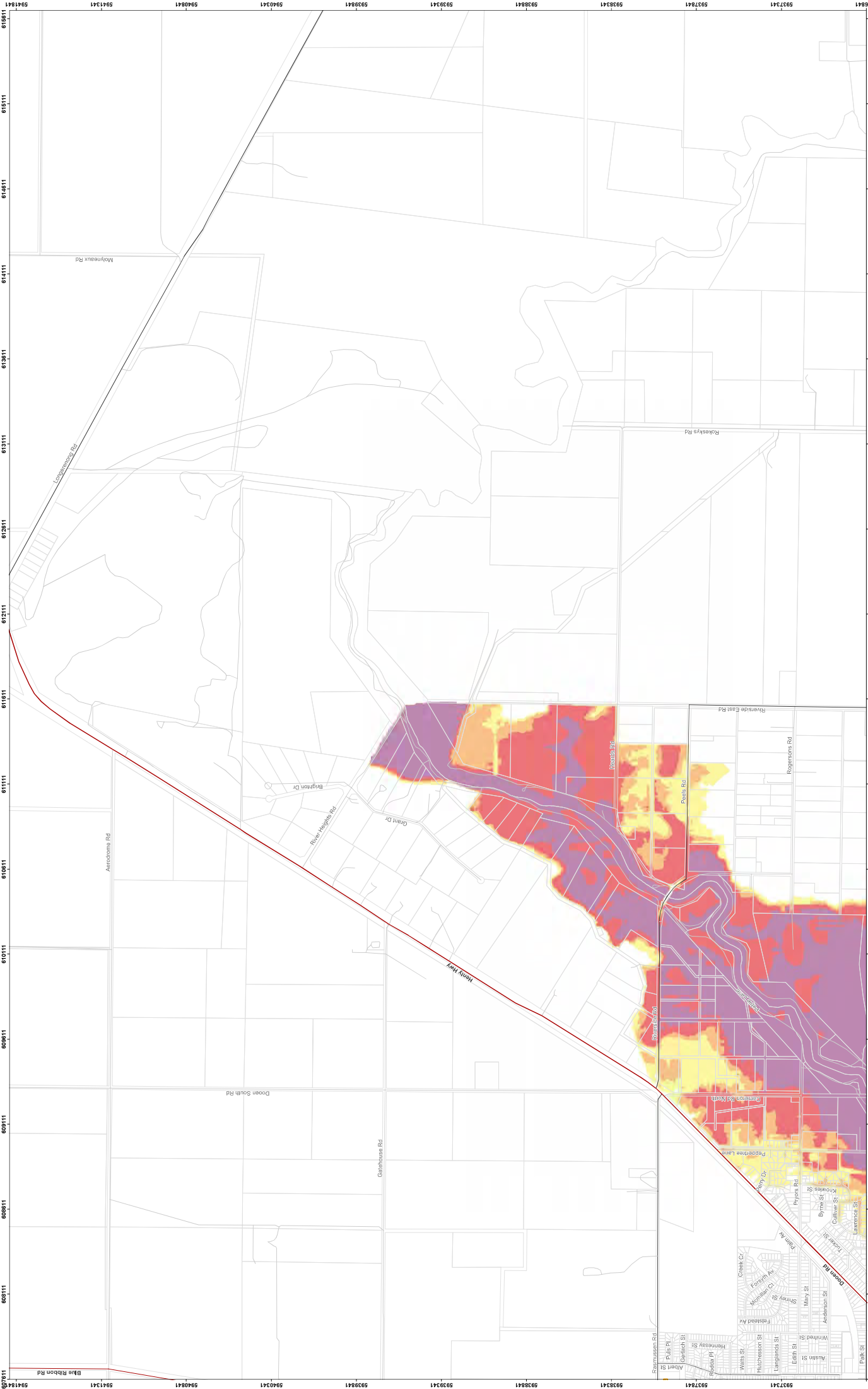
- School
- Apel care
- Caravan / Camp Site

Flood Investigation: Horsham 2002

1% AEP

Sheet: 1 of 3

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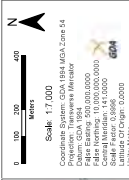
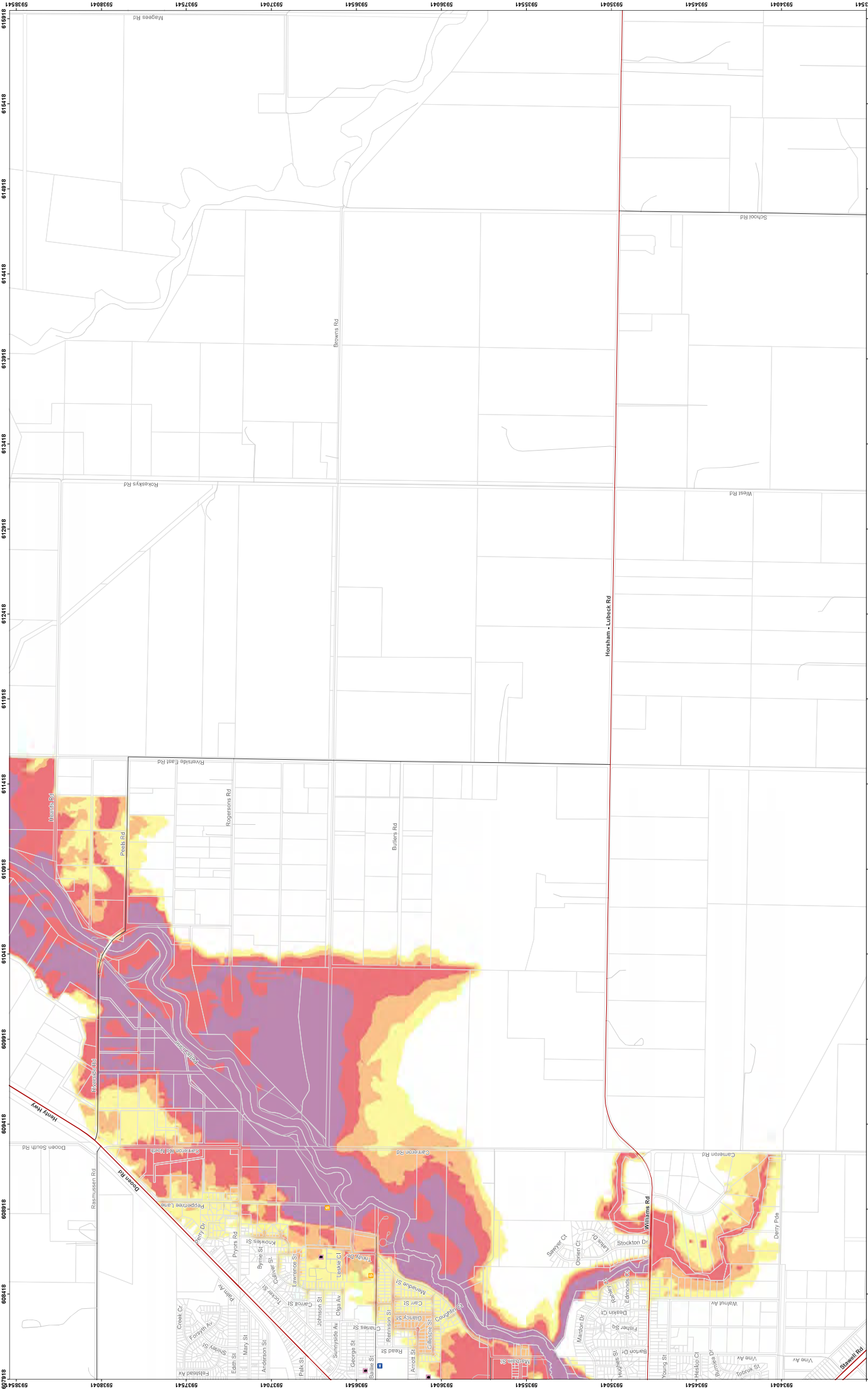
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- Legend**
- Flood Depth**
- 0.25m
 - 0.25 to <0.5m
 - 0.5 to <1m
 - 1m +
- FoI (points)**
- Major Roads
 - Other Major Roads
 - Minor Road Class 3
 - Minor Road Class 4
 - Minor Road Class 5+
- Other**
- School
 - Aged care
 - Caravan / Camp Site
 - Police station
 - Emergency Hospital

**Flood Investigation:
Horsham 2002**

1% AEP

Sheet: 3 of 3



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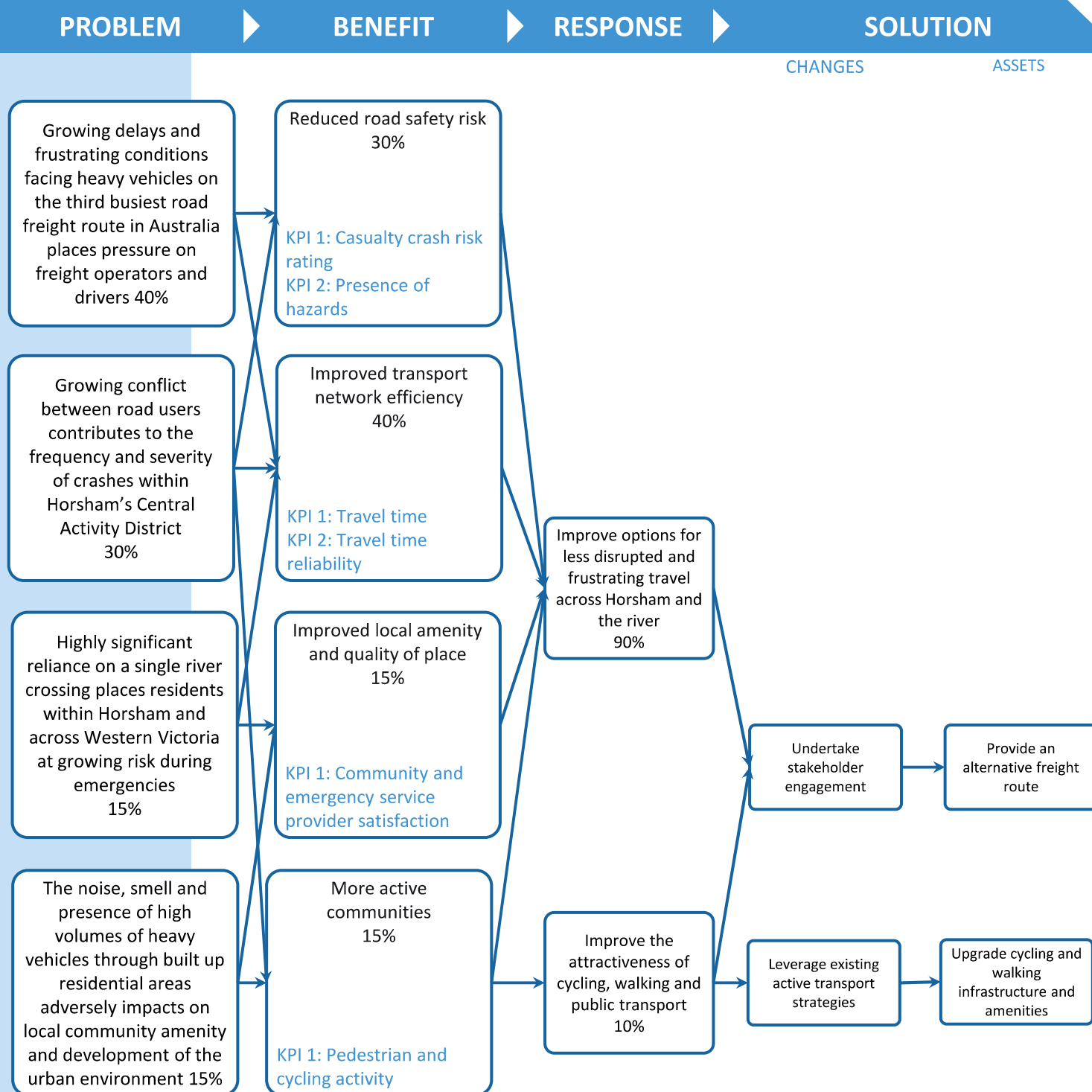
Appendix E – Preliminary ILM & BMP



Horsham Alternative Truck Route

INVESTMENT LOGIC MAP

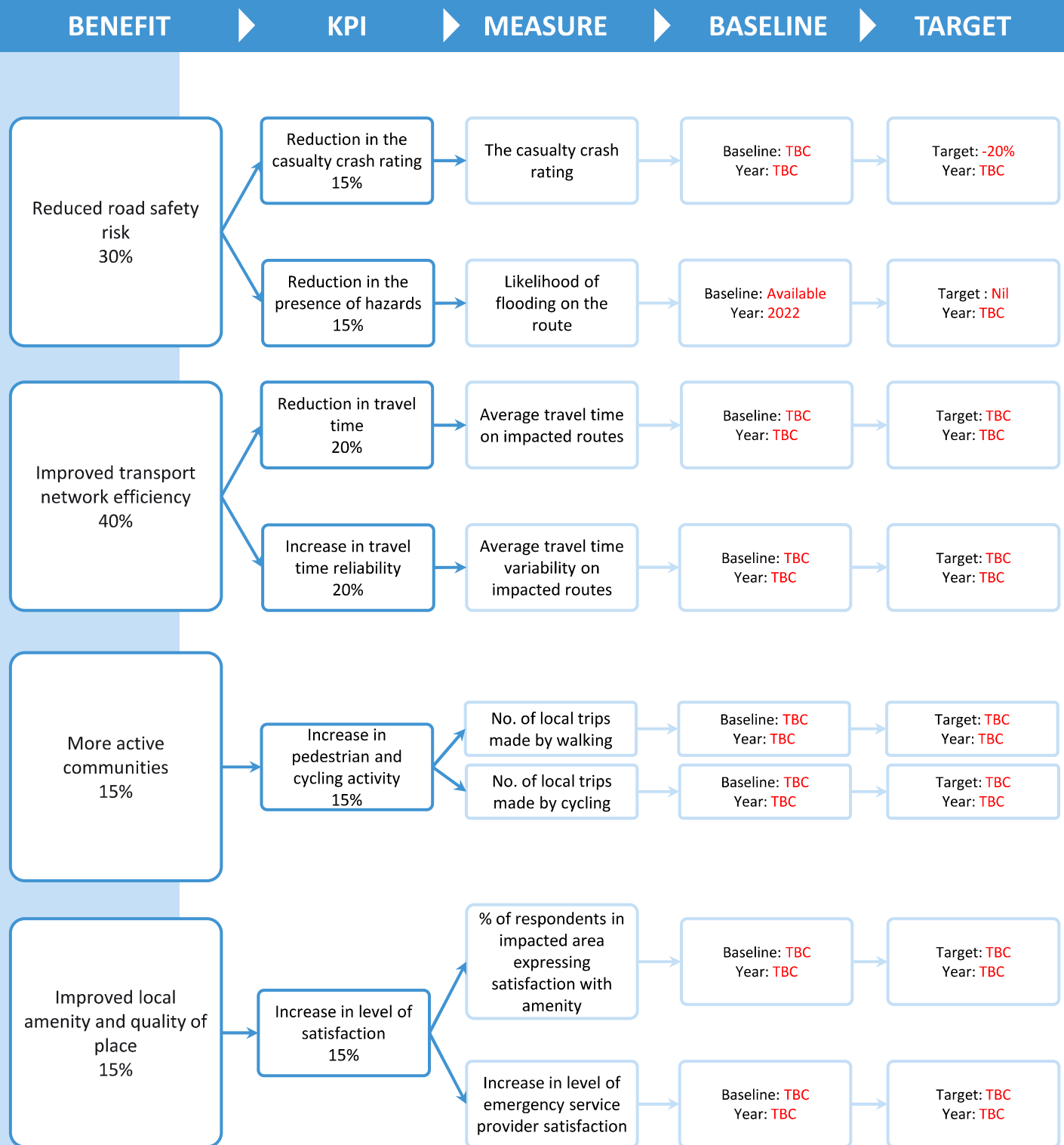
Initiative



Horsham Alternative Truck Route

BENEFIT MANAGEMENT PLAN

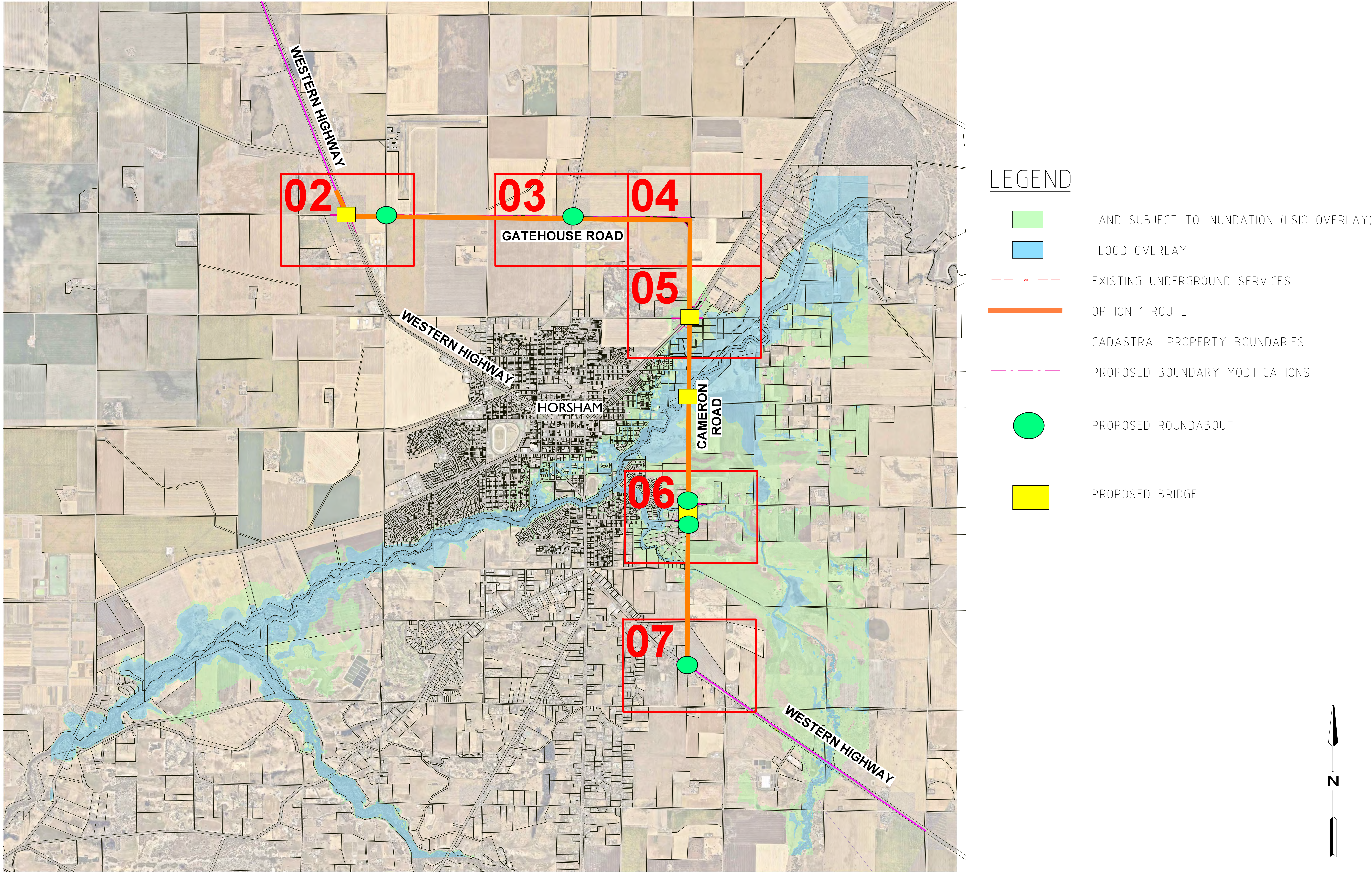
Part 1: Benefit Map



Appendix F – Concept Design Plans



HORSHAM ALTERNATIVE TRUCK ROUTE - OPTION 1



ON 16/04/2024 AT 10:58:45 AM

PLOTTED BY : bklmko



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE
APPROXIMATE ONLY AND THEIR EXACT POSITION
SHOULD BE PROVEN ON-SITE. NO GUARANTEE IS
GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED
B. KLINKO

APPROVED BY
-

DESIGN CHECK
A. DELL'ISOLA

DATE ISSUED
16 APRIL 2024

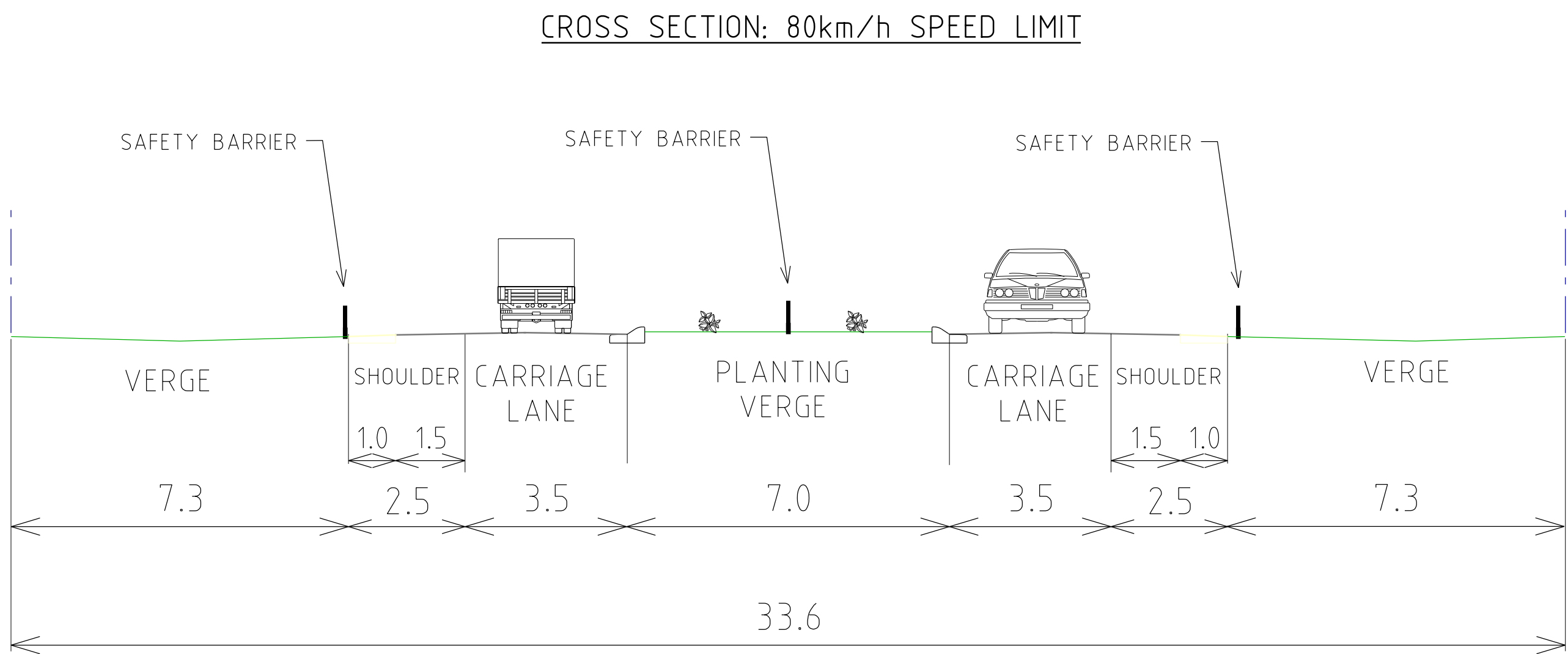
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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
OVERALL PLAN
CONCEPT LAYOUT

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PROPOSED CROSS-SECTION HORSHAM ALTERNATE TRUCK ROUTE



ON 16/04/2024 AT 10:58:52 AM
PLOTTED BY : bklmko



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

WARNING
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GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

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B. KLINKO

DESIGN CHECK
A. DELL'ISOLA

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-

DATE ISSUED
16 APRIL 2024

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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
WESTERN HIGHWAY / GATEHOUSE ROAD
CROSS-SECTIONS

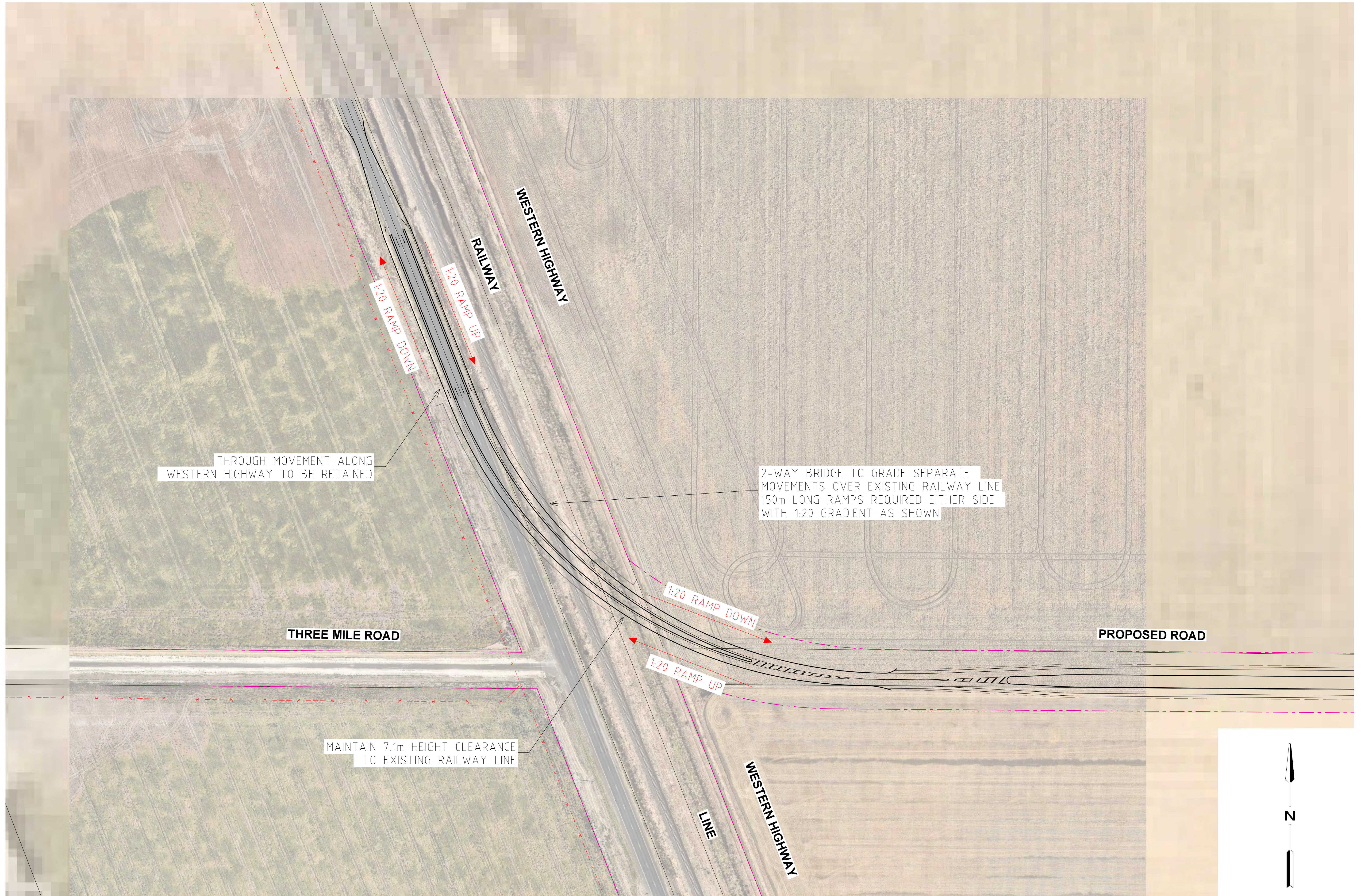
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SHEET 01 OF 07

ISSUE P2

ON 16/04/2024 AT 10:58:52 AM

PLOTTED BY : bklanko



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
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WARNING
BEWARE OF UNDERGROUND SERVICES
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DESIGNED
B. KLINKO

DESIGN CHECK
A. DELL'ISOLA

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-

DATE ISSUED
16 APRIL 2024

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**HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
WESTERN HIGHWAY / PROPOSED ROAD
CONCEPT LAYOUT**

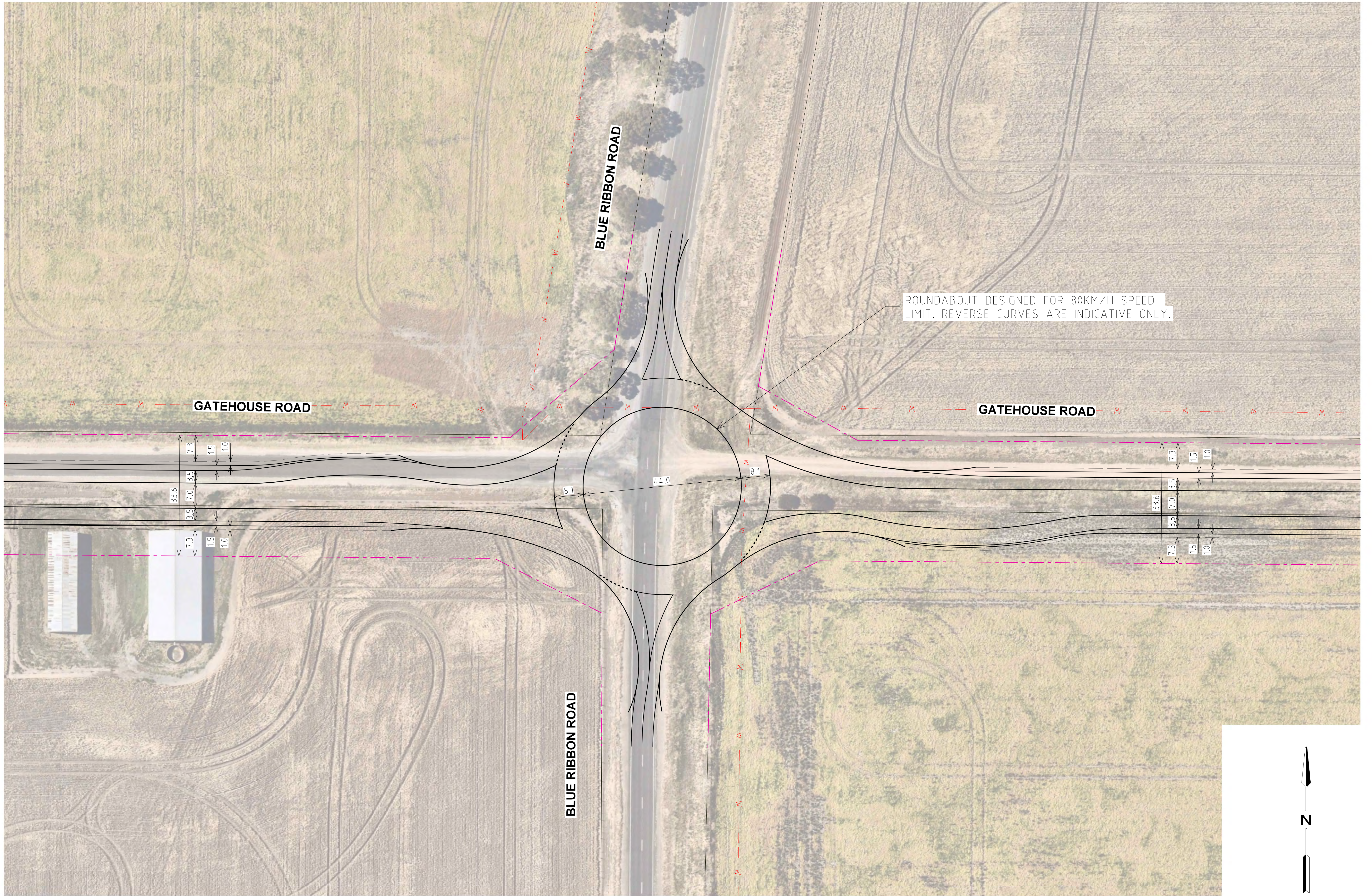
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ISSUE P2

ON 16/04/2024 AT 10:59:00 AM

PLOTTED BY : bklanko



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
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WARNING
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GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED
B. KLINKO

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-

DESIGN CHECK
A. DELL'ISOLA

DATE ISSUED
16 APRIL 2024

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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
GATEHOUSE ROAD / BLUE RIBBON ROAD
CONCEPT LAYOUT

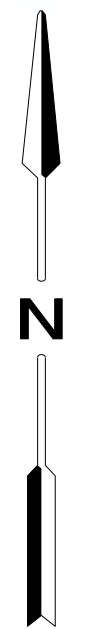
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SHEET 03 OF 07

ISSUE P2

ON 16/04/2024 AT 10:59:05 AM

PLOTTED BY : bklanko



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
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WARNING
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GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

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B. KLINKO

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DESIGN CHECK
A. DELL'ISOLA

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16 APRIL 2024

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CAD FILE NO.
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**HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
GATEHOUSE ROAD / DOEEN SOUTH ROAD
CONCEPT LAYOUT**

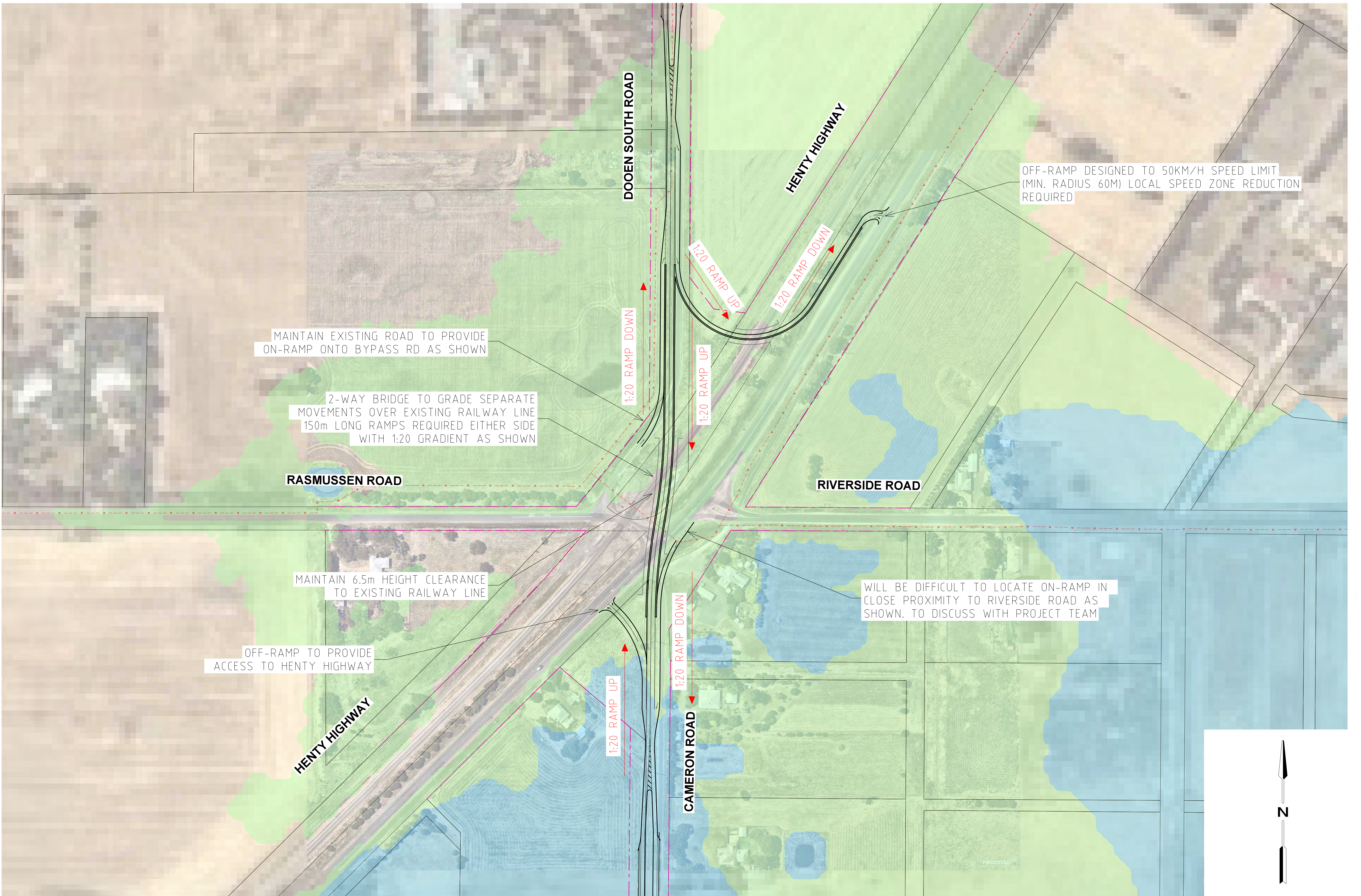
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SHEET 04 OF 07

ISSUE P2

ON 16/04/2024 AT 10:59:12 AM

PLOTTED BY : bklmko



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
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DESIGNED
B. KLINKO

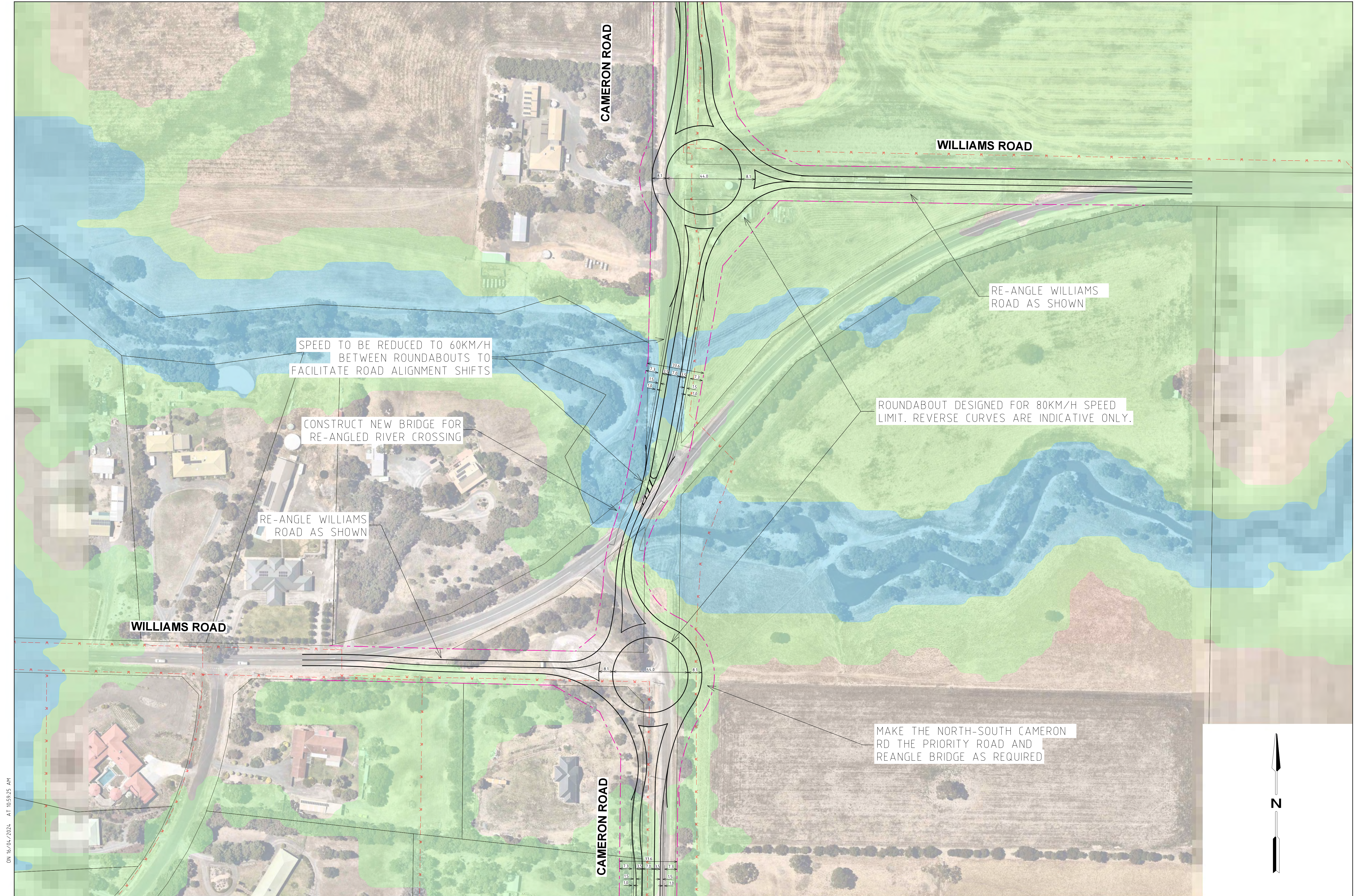
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DESIGN CHECK
A. DELL'ISOLA

DATE ISSUED
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**HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
CAMERON RD / HENTY HWY / RIVERSIDE RD
CONCEPT LAYOUT**
DRAWING NO. 300304004-01-05 SHEET 05 OF 07 ISSUE P2



ON 16/04/2024 AT 10:59:25 AM
PLOTTED BY : bklmko



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

WARNING
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GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED
B. KLINKO

APPROVED BY
-

DESIGN CHECK
A. DELL'ISOLA

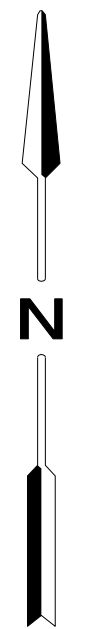
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16 APRIL 2024

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**HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
CAMERON ROAD / WILLIAMS ROAD
CONCEPT LAYOUT**
DRAWING NO. 300304004-01-06 SHEET 06 OF 07 ISSUE P2

ON 16/04/2024 AT 10:59:36 AM

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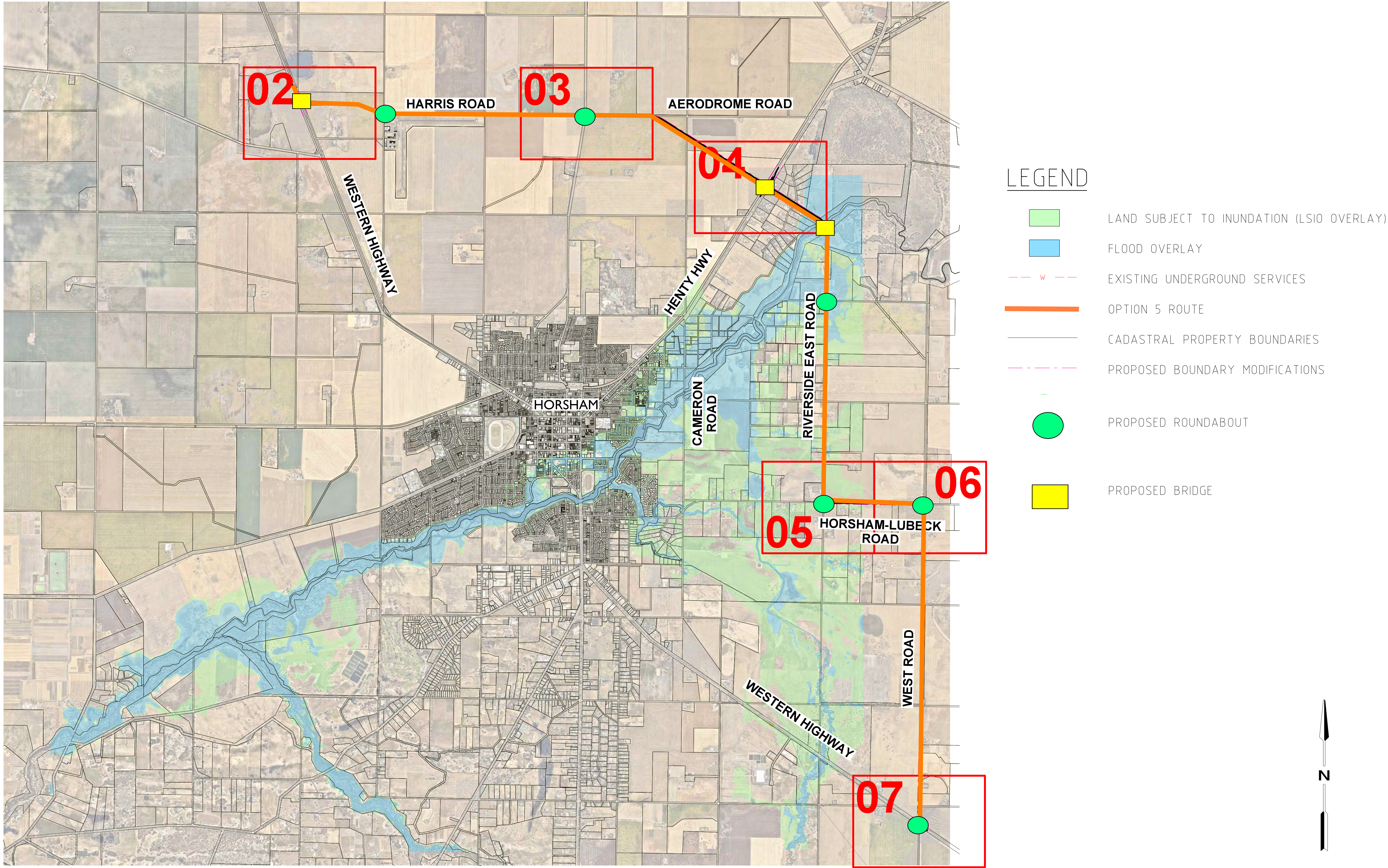
**HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 1
WESTERN HIGHWAY / CAMERON ROAD
CONCEPT LAYOUT**

DRAWING NO. 300304004-01-07

SHEET 07 OF 07

ISSUE P2

HORSHAM ALTERNATIVE TRUCK ROUTE - OPTION 5



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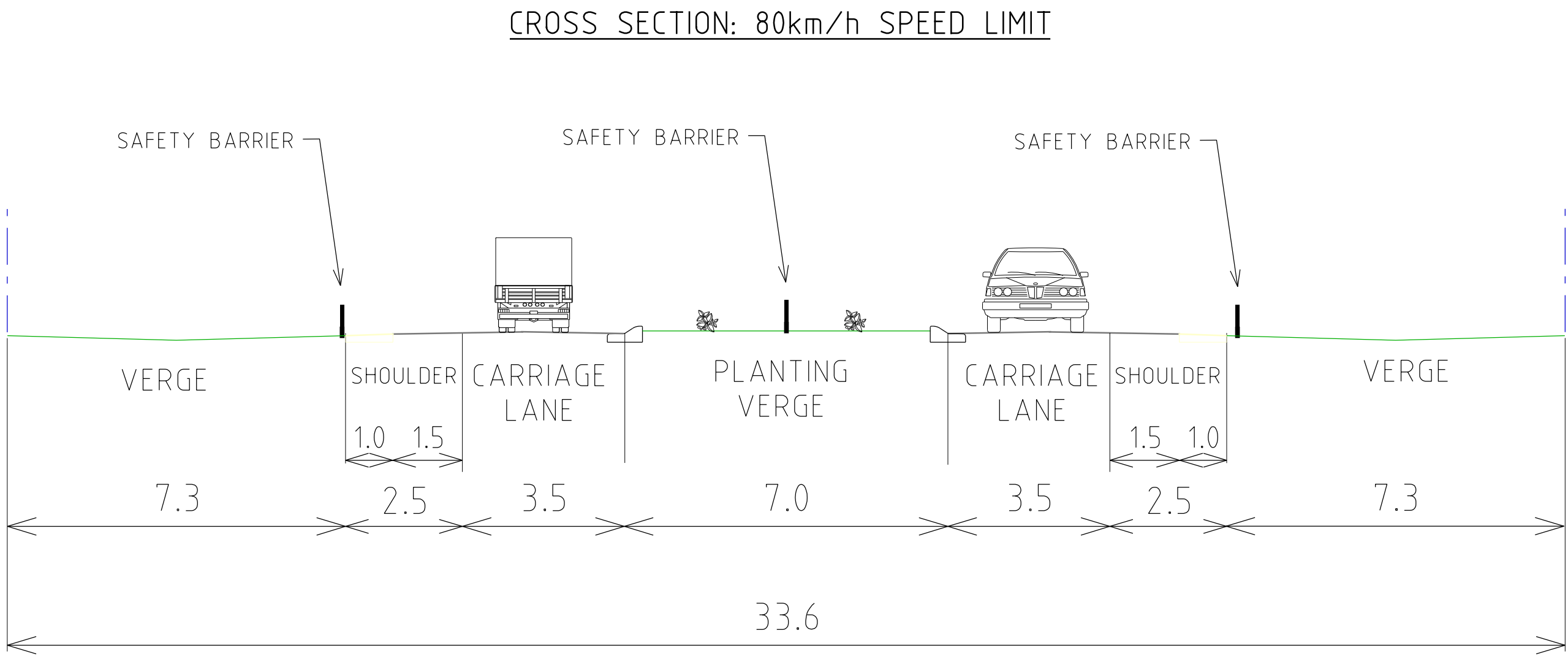
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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
OVERALL PLAN
CONCEPT LAYOUT
DRAWING NO. 300304004-02-00
SHEET 00 OF 07
ISSUE P2

PROPOSED CROSS-SECTION HORSHAM ALTERNATE TRUCK ROUTE



ON 16/04/2024 AT 10:35:58 PM
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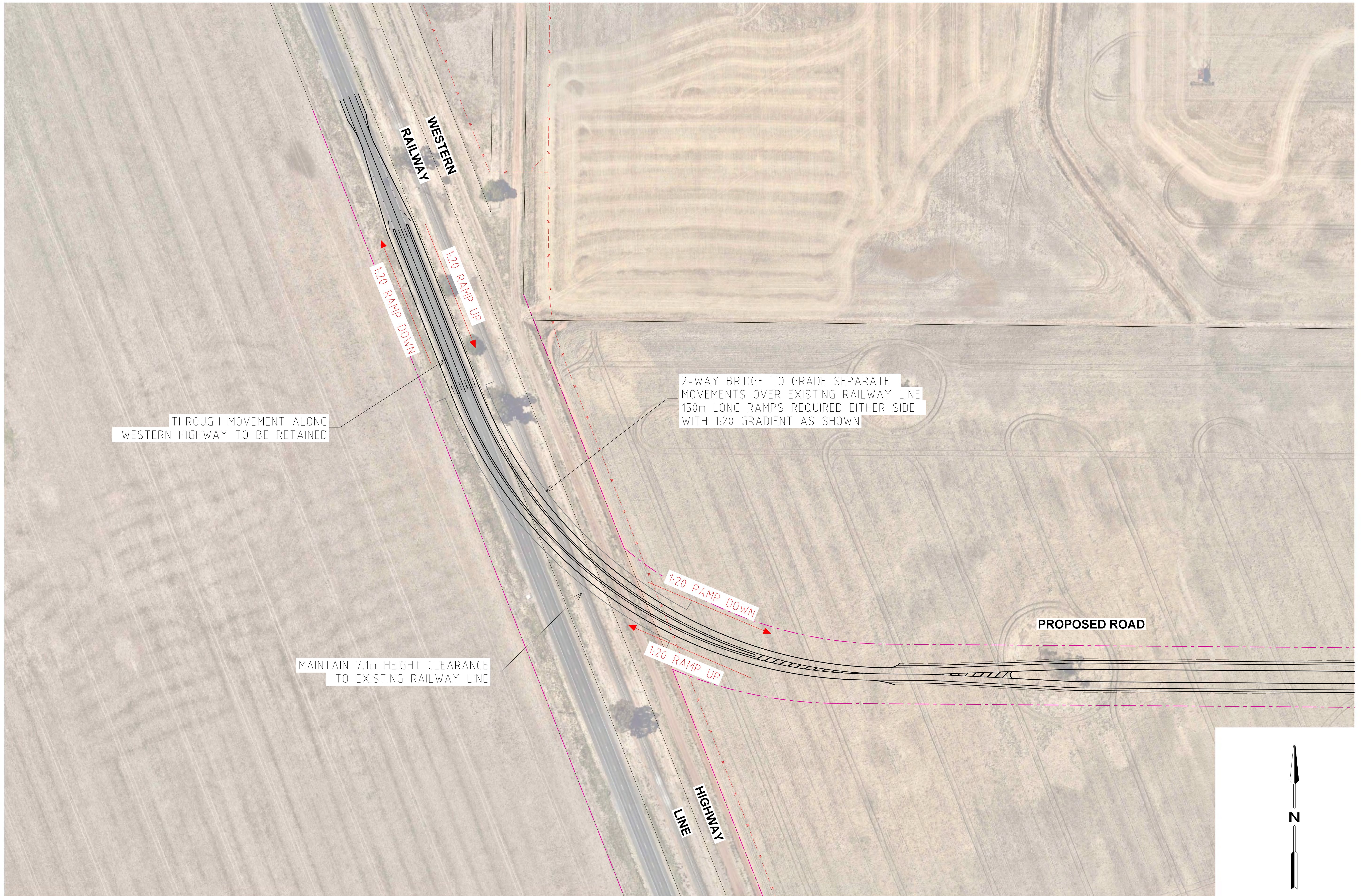
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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
WESTERN HIGHWAY / GATEHOUSE ROAD
CROSS-SECTIONS

DRAWING NO. 300304004-02-01 SHEET 01 OF 07 ISSUE P2

ON 16/04/2024 AT 10:35:59 PM

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**HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
WESTERN HIGHWAY / PROPOSED ROAD
CONCEPT LAYOUT**

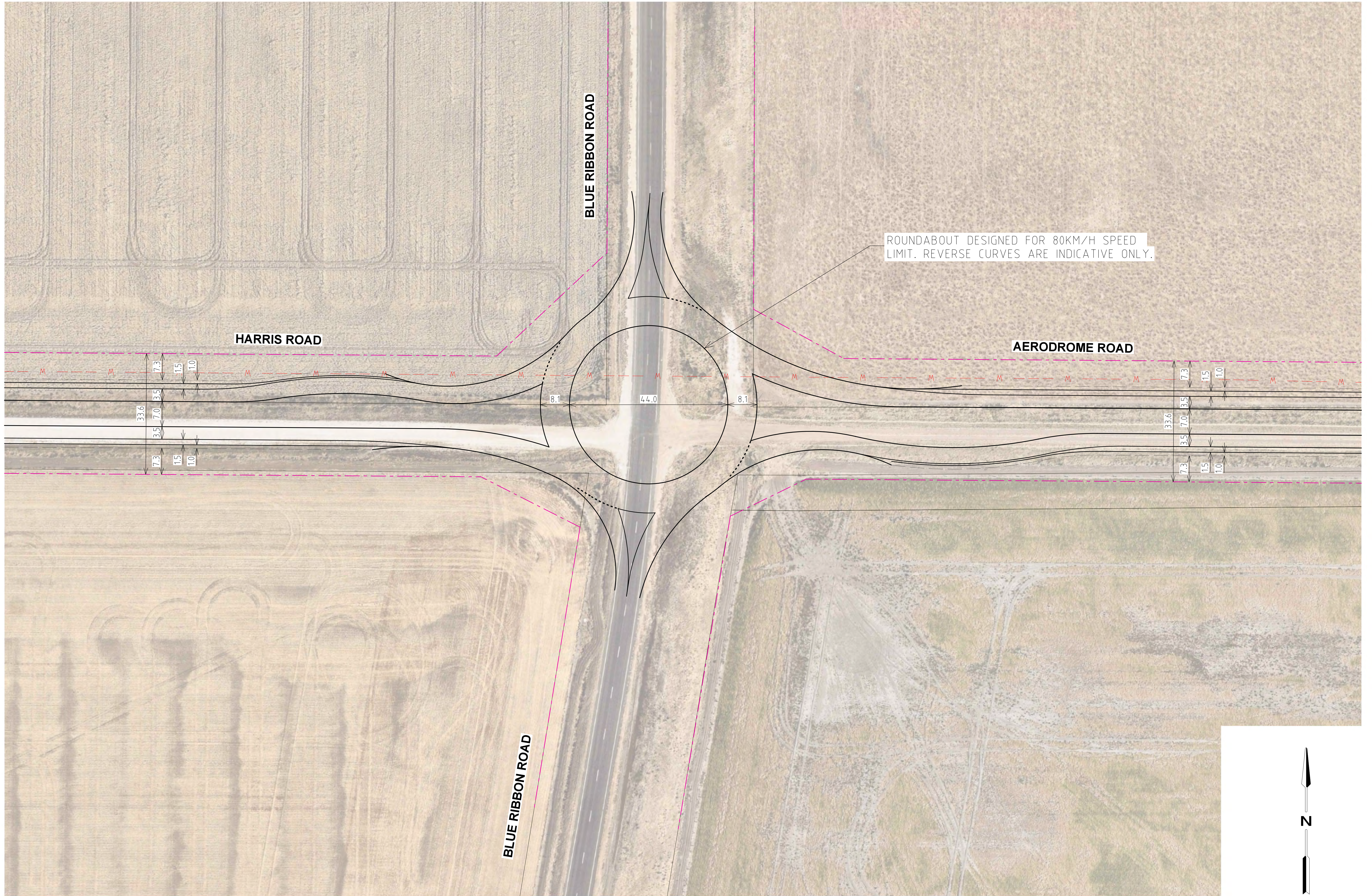
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SHEET 02 OF 07

ISSUE P2

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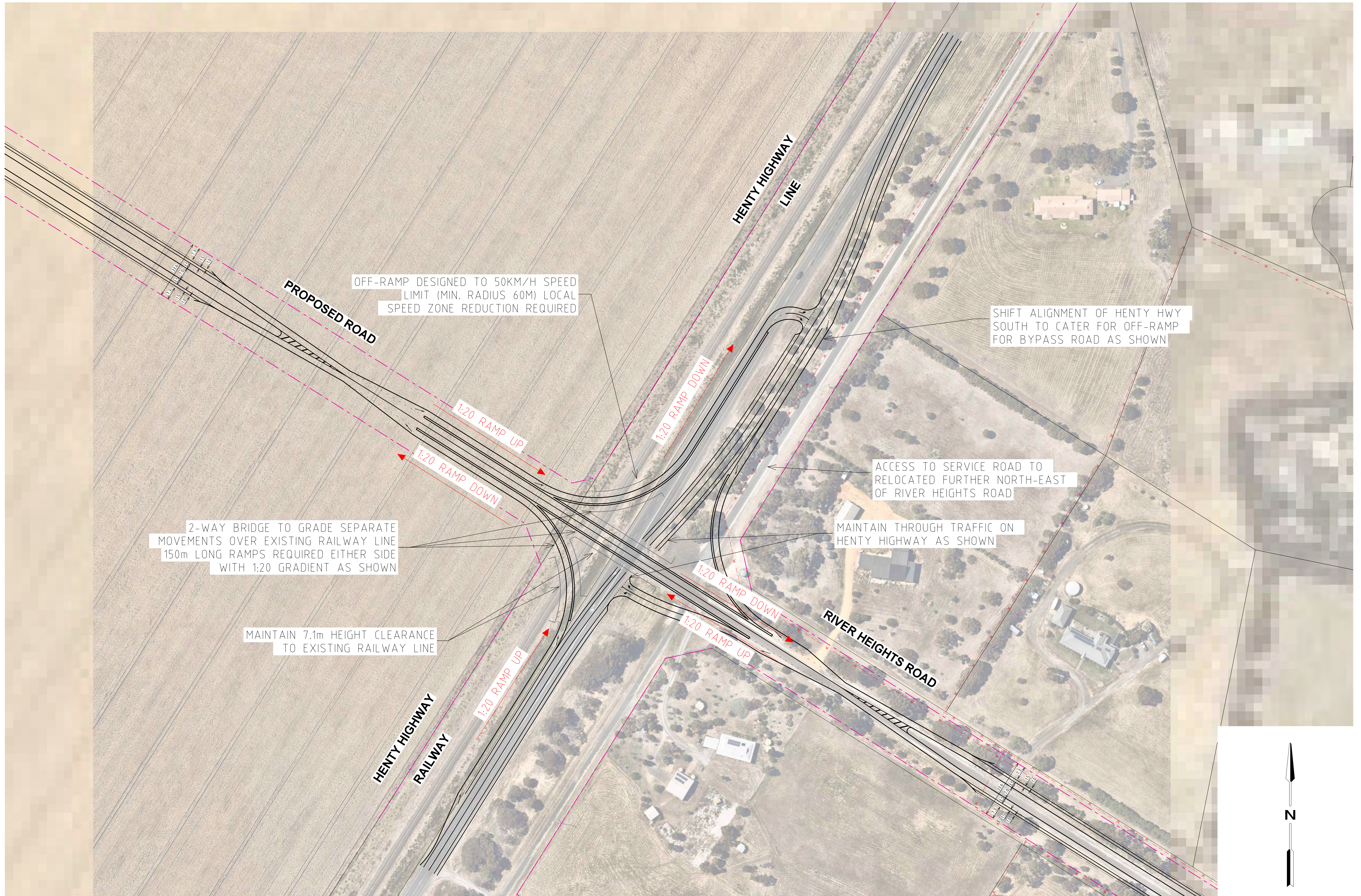
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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
HARRIS ROAD / AERODROME ROAD / BLUE RIBBON ROAD
CONCEPT LAYOUT
DRAWING NO. 300304004-02-03 SHEET 03 OF 07 ISSUE P2

ON 16/04/2024 AT 10:16 PM

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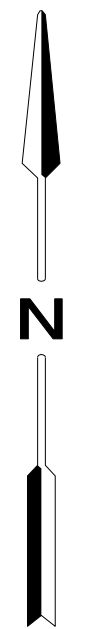
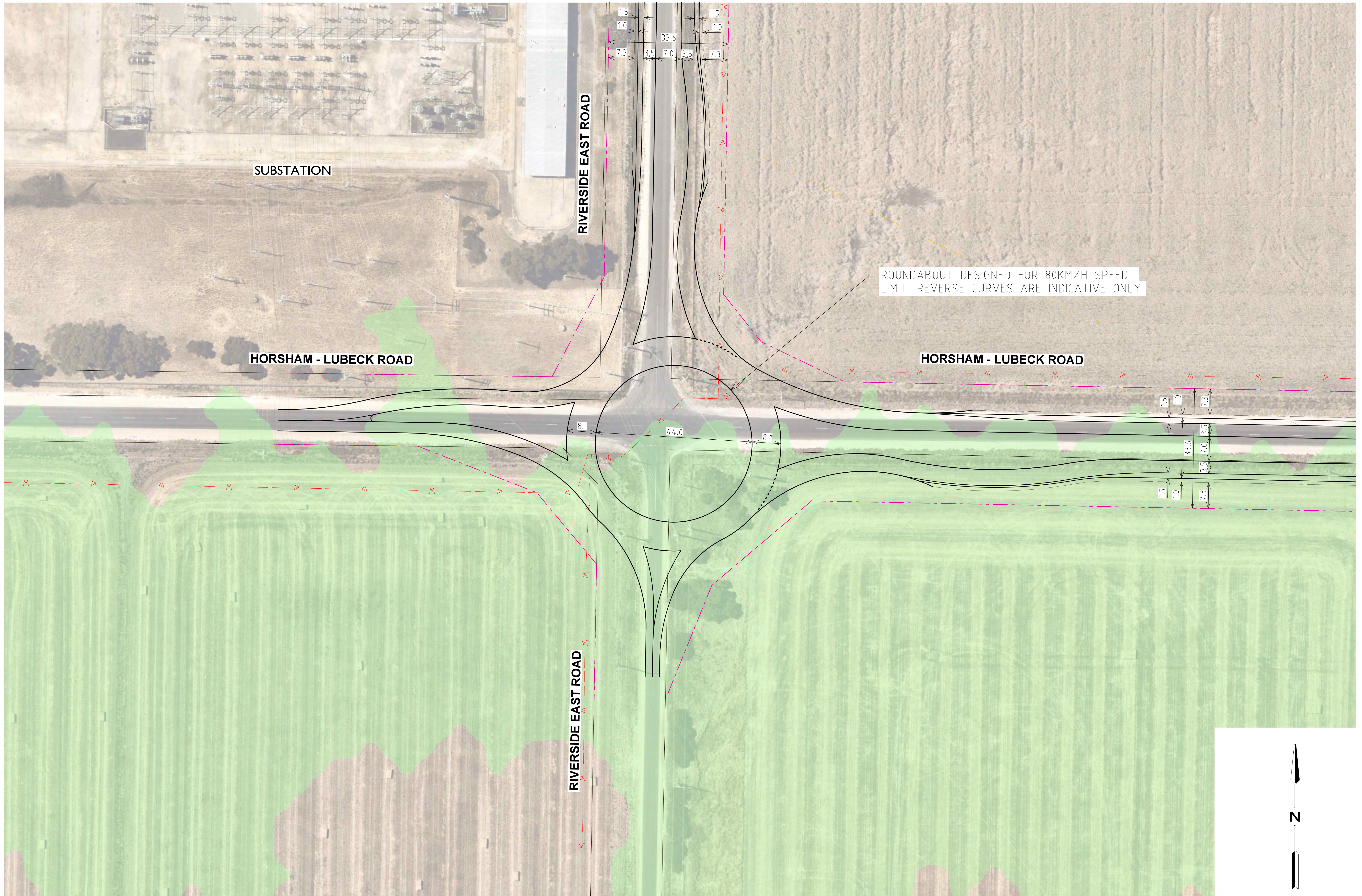
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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
HENTY HWY / RIVER HEIGHTS RD / PROPOSED RD
CONCEPT LAYOUT
DRAWING NO. 300304004-02-04 SHEET 04 OF 07 ISSUE P2

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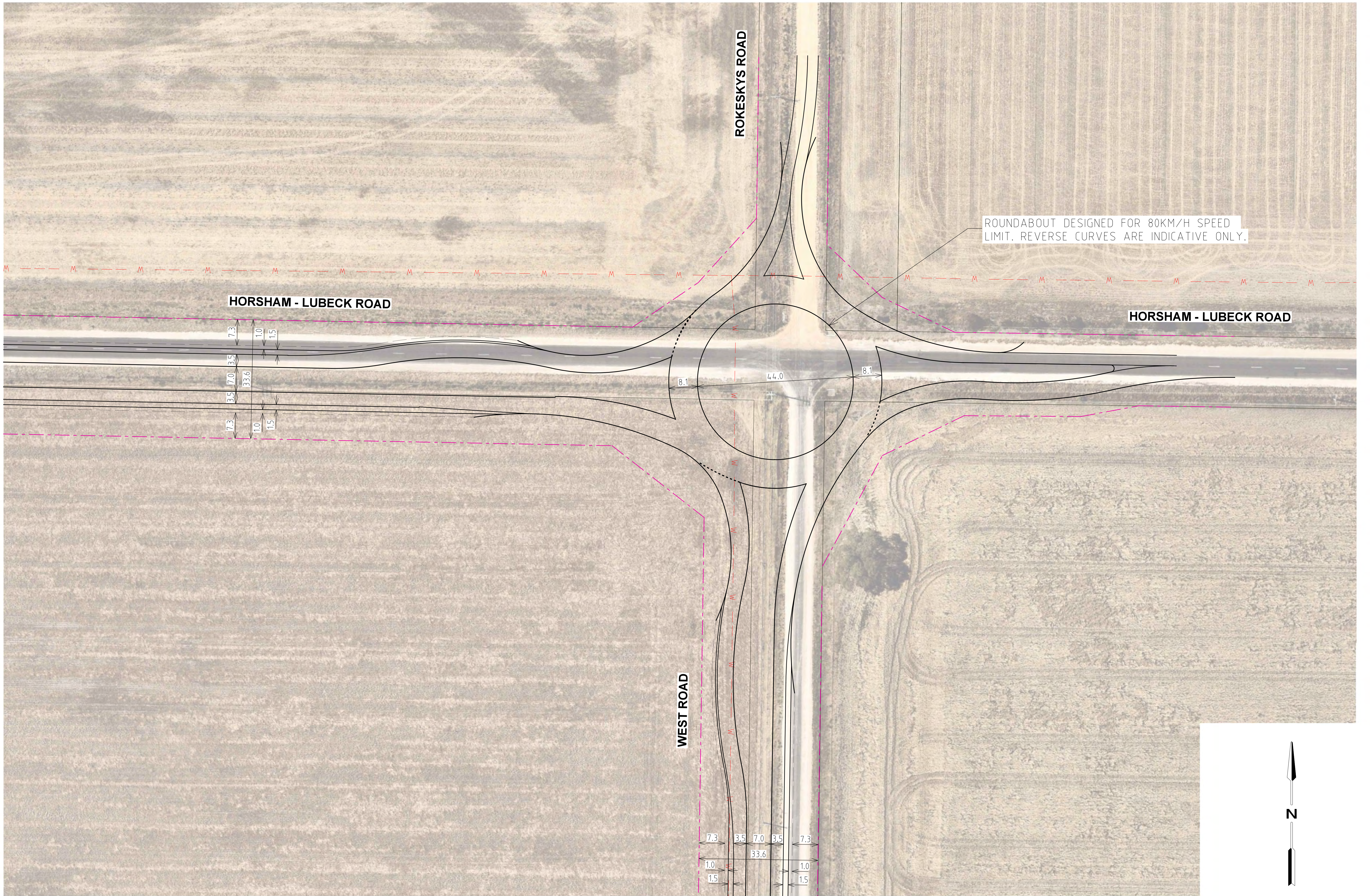
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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
HORSHAM-LUBECK ROAD / RIVERSIDE EAST ROAD
CONCEPT LAYOUT
DRAWING NO. 300304004-02-05 SHEET 05 OF 07 ISSUE P2

ON 16/04/2024 AT 10:43:39 PM

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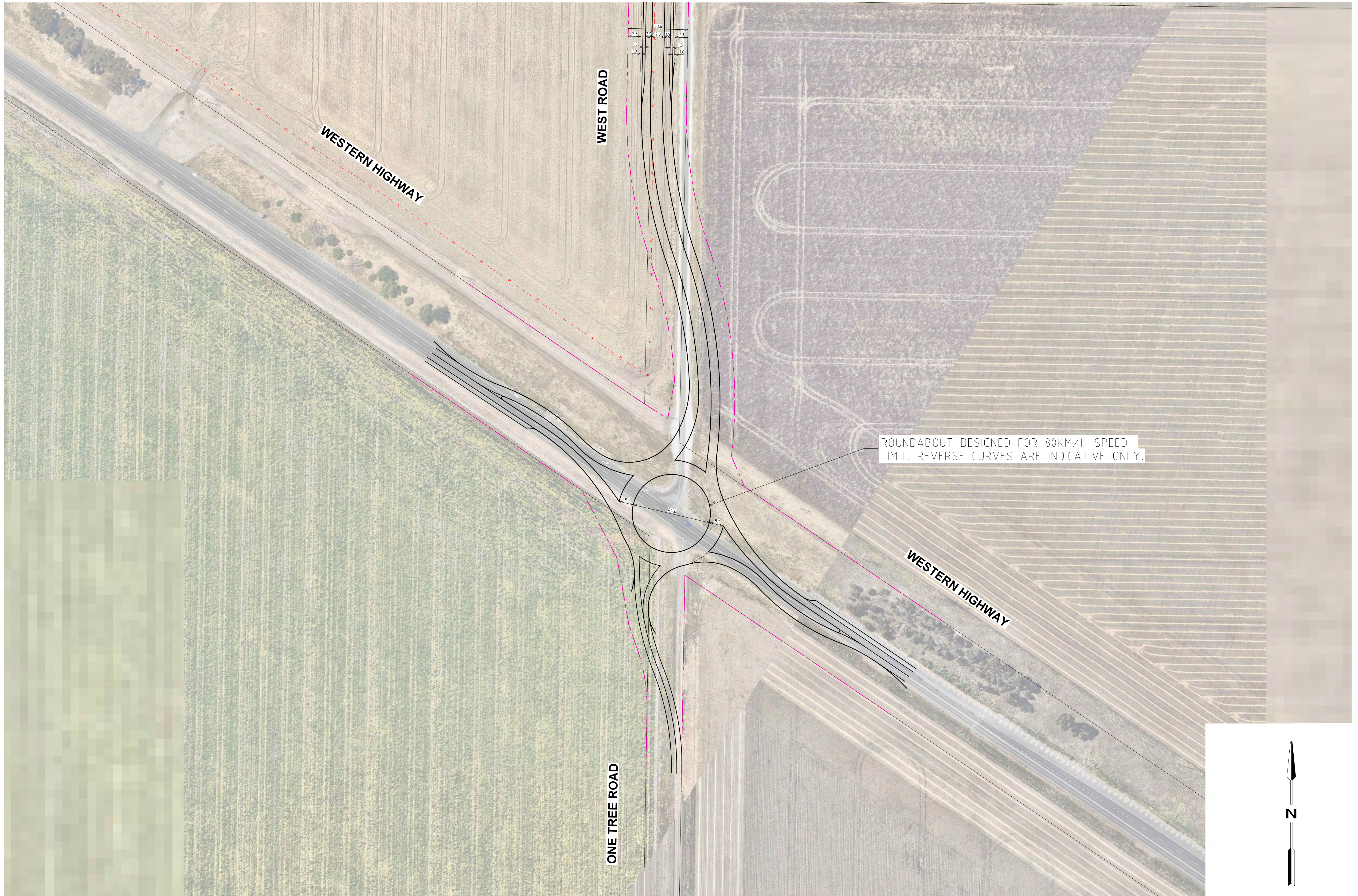
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HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
HORSHAM-LUBECK RD / ROKESKYS ROAD / WEST ROAD
CONCEPT LAYOUT
DRAWING NO. 300304004-02-06 SHEET 06 OF 07 ISSUE P2

ON 16/04/2024 AT 10:47 PM

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**HORSHAM ALTERNATIVE TRUCK ROUTE
OPTION 5
WESTERN HWY / WEST RD / ONE TREE RD
CONCEPT LAYOUT**

DRAWING NO. 300304004-02-07

SHEET 07 OF 07

ISSUE P2

Appendix G – High-Level Cost Estimates



Horsham Alternative Truck Route Concept - Option 1

17/04/2024 REV01

Preliminaries

Prerequisites are listed for the entire project. This is inclusive of site establishment of all works for the entirety of works. No consultancy fees, supporting documentation reports (vegetation, stormwater, etc), authority application fees, bonds etc. are included in proposed costings.

The proposed costings have been separated and structured in an order to provide a coherent break-down of costs associated with the project. It is assumed that preliminaries will have to be conducted prior to the commencement of works. This has been summarised below.

At the time of preparation of this document, indicative construction rates have been used and are subject to change and further review.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
PRELIMINARIES					
1	Site establishment	1	Item	\$ 500,000.00	\$ 500,000.00
2	Provision of Construction Management Plan	1	Item	\$ 100,000.00	\$ 100,000.00
3	Traffic control works	1	Item	\$ 5,000,000.00	\$ 5,000,000.00
4	Contractor to prove existing services where required	1	Item	\$ 120,000.00	\$ 120,000.00
5	Removal of existing vegetation and trees	1	Item	\$ 1,000,000.00	\$ 1,000,000.00
PRELIMINARY SUBTOTAL:					\$ 6,720,000.00
CONTINGENCY (30%)					\$ 2,016,000.00
PRELIMINARY WORKS COSTS:					\$ 8,736,000.00

Horsham Alternative Truck Route Concept - Option 1

17/04/2024 REV01

Road Works

Below provides a summary of the costs associated with the construction of the proposed road works required to deliver Option 5. Costs are inclusive of pavement and road works, service relocations as required, and ultimate extents to be determined as part of future works.

The existing road pavement was considered unsuitable for reuse, therefore it will be removed as a part of proposed works.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS AND ROAD WORKS					
1	Formation of roadways to 98% level 1 compaction,				
	(i) Estimated Excavation	141,283	m ³	\$ 25.00	\$ 3,532,066.88
	(ii) Estimated Fill	125,120	m ³	\$ 19.00	\$ 2,377,282.73
2	Removal of existing gravel road and disposal off site in an appropriate manner to an accepted disposal site.	13,065	m ²	\$ 12.00	\$ 156,780.00
3	Removal of existing asphalt road and disposal off site in an appropriate manner to an accepted disposal site.	50,471	m ²	\$ 20.00	\$ 1,009,422.00
4	Excess Material to be transported off site	RATE ONLY	m ³	\$ 25.00	\$ -
5	Approved Clay material imported as required	RATE ONLY	m ³	\$ 25.00	\$ -
6	Re-spreading topsoil to 100mm thickness	252,119	m ²	\$ 3.00	\$ 756,356.40
7	Supply, deliver and apply "Hydro Seeding" dust suppressant	252,119	m ²	\$ 1.30	\$ 327,754.44
8	Road pavement (including 1.5m sealed shoulder) on				
	(i) 40mm/14mm Type H hotmix asphalt;	106,830	m ²	\$ 35.00	\$ 3,739,050.00
	(ii) Prime Coat application to VicRoads requirements;	106,830	m ²	\$ 3.00	\$ 320,490.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	106,830	m ²	\$ 25.00	\$ 2,670,750.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	122,855	m ²	\$ 22.00	\$ 2,702,799.00
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	122,855	m ²	\$ 20.00	\$ 2,457,090.00
9	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	122,855	m ²	\$ 30.00	\$ 3,685,635.00
10	SM2 Kerb and channel 600mm wide	21,366	m	\$ 80.00	\$ 1,709,280.00
11	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	21,366	m	\$ 40.00	\$ 854,640.00
12	Supply and install street sign post and name plate to Council requirements.	25	No.	\$ 400.00	\$ 10,000.00
13	Supply and install street warning and directional signs to Council requirements.	16	No.	\$ 800.00	\$ 12,800.00
14	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 30,000.00	\$ 30,000.00
15	Supply and install wire safety barrier or VicRoads approved equivalent, inclusive of footings, excavation, and disposal of surplus spoil, as detailed on plans and manufacturer's standards.	32,049	m	\$ 200.00	\$ 6,409,800.00
	Carried Forward:				\$ 32,761,996.44

Horsham Alternative Truck Route Concept - Option 1

17/04/2024 REV01

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Brought Forward:				\$ 32,761,996.44
ROAD DRAINAGE AND SERVICE WORKS					
16	Removing and reconstruction of existing driveways inclusive of removal of existing material, culverts and relaying new culverts to council and flow requirements inclusive of backfill and reshaping of open drains.	1	Item	\$ 100,000.00	\$ 100,000.00
17	Removal and reconstruction of existing road crossing culverts inclusive of removal of existing material, culverts and relaying new culverts not inclusive of crossing culverts in waterways subject to flood modelling.	1	Item	\$ 150,000.00	\$ 150,000.00
18	Removal of existing overhead power lines and poles where required for construction of proposed roads as identified as part of authority applications.	1	Item	\$ 1,000,000.00	\$ 1,000,000.00
19	Excavation and refilling trenches for electrical and/or communications cables/conduits inclusive of additional width and depth at service tee joints and light-pole locations, supply and placing sand bedding and clay backfill , laying out cover slabs and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required.	1	Item	\$ 600,000.00	\$ 600,000.00
20	Excavation and refilling road crossing trenches for electrical conduits and/or communications conduits inclusive supply and placing sand bedding and FCR backfill and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required.	1	Item	\$ 1,200,000.00	\$ 1,200,000.00
21	Relocation of existing watermain subject to detail design levels and alignment, inclusive of excavation and refilling trenches for watermain and connection to existing main inclusive of connections to existing properties.	1	Item	\$ 200,000.00	\$ 200,000.00

ROAD WORKS SUBTOTAL: \$ 36,011,996.44

CONTINGENCY (30%) \$ 10,803,598.93

ROAD WORKS COSTS: \$ 46,815,595.38

Horsham Alternative Truck Route Concept - Option 1

17/04/2024 REV01

Roadabout (Intersection) Works

Removal of existing pavement and/or earthworks are included as part of existing pavement removal volumes and road works costings. Costs below are inclusive of works for all **5 roundabouts**.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS AND ROAD WORKS INCLUSIVE OF ALL 5 ROUNDABOUTS					
1	Re-spreading topsoil to 100mm thickness	41,610	m ²	\$ 3.00	\$ 124,830.00
2	Supply, deliver and apply "Hydro Seeding" dust suppressant	41,610	m ²	\$ 1.30	\$ 54,093.00
3	Road pavement on clay subgrade				
	(i) 40mm/14mm Type H hotmix asphalt;	22,200	m ²	\$ 35.00	\$ 777,000.00
	(ii) Prime Coat application to Council requirements;	22,200	m ²	\$ 3.00	\$ 66,600.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	22,200	m ²	\$ 25.00	\$ 555,000.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	26,618	m ²	\$ 22.00	\$ 585,585.00
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	26,618	m ²	\$ 20.00	\$ 532,350.00
4	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	26,618	m ²	\$ 30.00	\$ 798,525.00
5	Kerb and channel 600mm wide	5,890	m	\$ 80.00	\$ 471,200.00
6	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	5,890	m	\$ 40.00	\$ 235,600.00
7	Supply and install street sign post and name plate to Council	40	No.	\$ 400.00	\$ 16,000.00
8	Supply and install street warning and directional signs to Council requirements.	20	No.	\$ 800.00	\$ 16,000.00
9	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 50,000.00	\$ 50,000.00
ROAD DRAINAGE AND SERVICE WORKS INCLUSIVE OF ALL 5 ROUNDABOUTS					
10	Removal and reconstruction of existing road crossing culverts inclusive of removal of existing material, culverts and relaying	10	No.	\$ 20,000.00	\$ 200,000.00
11	Removal of existing overhead power lines and poles where required for construction of proposed roads as identified as part	5	Item	\$ 100,000.00	\$ 500,000.00
12	Excavation and refilling trenches for electrical and/or communications cables/conduits inclusive of additional width and depth at service tee joints and light-pole locations, supply and placing sand bedding and clay backfill , laying out cover slabs and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required	5	Item	\$ 20,000.00	\$ 100,000.00
13	Excavation and refilling road crossing trenches for electrical conduits and/or communications conduits inclusive supply and placing sand bedding and FCR backfill and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required.	5	Item	\$ 40,000.00	\$ 200,000.00
14	Relocation of existing watermain subject to detail design levels and alignment, inclusive of excavation and refilling trenches for watermain and connection to existing main inclusive of connections to existing properties .	5	Item	\$ 10,000.00	\$ 50,000.00
15	Installation of street lighting to industry standards inclusive of associative pits, conduits and cabling to existing or proposed electrical works subject to future design work.	5	Item	\$ 100,000.00	\$ 500,000.00

ROUNDAABOUT (INTERSECTION) SUBTOTAL: \$ 5,832,783.00

CONTINGENCY (30%) \$ 1,749,834.90

ROAD (INTERSECTION) WORKS COSTS: \$ 7,582,617.90

Horsham Alternative Truck Route Concept - Option 1

17/04/2024 REV01

Road Overpass Works - Western Highway

Removal of existing pavement and/or earthworks are included as part of existing pavement removal volumes and road works costings.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS, ROAD AND SERVICE WORKS					
1	Re-spreading topsoil to 100mm thickness	21,518	m ²	\$ 3.00	\$ 64,554.00
2	Supply, deliver and apply "Hydro Seeding" dust suppressant	21,518	m ²	\$ 1.30	\$ 27,973.40
3	Road pavement on clay subgrade				
	(i) 40mm/14mm Type H hotmix asphalt;	3,955	m ²	\$ 35.00	\$ 138,425.00
	(ii) Prime Coat application to Council requirements;	3,955	m ²	\$ 3.00	\$ 11,865.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	1,500	m ²	\$ 25.00	\$ 37,500.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 22.00	\$ -
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 20.00	\$ -
4	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	0	m ²	\$ 30.00	\$ -
5	Kerb and channel 600mm wide	300	m	\$ 80.00	\$ 24,000.00
6	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	300	m	\$ 40.00	\$ 12,000.00
7	Construction of bridge structure to enable road construction, safety barrier and service relocations etc.	3500	m ²	\$ 5,500.00	\$ 19,250,000.00
8	Supply and install street warning and directional signs to Council requirements.	4	No.	\$ 800.00	\$ 3,200.00
9	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 5,000.00	\$ 5,000.00
10	Installation of street lighting to industry standards inclusive of associative pits, conduits and cabling to existing or proposed electrical works subject to future design work.	1	Item	\$ 40,000.00	\$ 40,000.00

ROAD OVERPASS (WESTERN HIGHWAY) SUBTOTAL: \$ 19,614,517.40

CONTINGENCY (30%) \$ 5,884,355.22

ROAD OVERPASS (WESTERN HIGHWAY) WORKS COSTS: \$ 25,498,872.62

Horsham Alternative Truck Route Concept - Option 1

17/04/2024 REV01

Road Overpass Works - Henty Highway & River Crossings

Removal of existing pavement and/or earthworks are included as part of existing pavement removal volumes and road works costings. Costs are inclusive of works for the Henty Highway overpass and River Crossings.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS, ROAD AND SERVICE WORKS					
1	Re-spreading topsoil to 100mm thickness	21,518	m ²	\$ 3.00	\$ 64,554.00
2	Supply, deliver and apply "Hydro Seeding" dust suppressant	21,518	m ²	\$ 1.30	\$ 27,973.40
3	Road pavement on clay subgrade				
	(i) 40mm/14mm Type H hotmix asphalt;	6,300	m ²	\$ 35.00	\$ 220,500.00
	(ii) Prime Coat application to Council requirements;	6,300	m ²	\$ 3.00	\$ 18,900.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	6,300	m ²	\$ 25.00	\$ 157,500.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 22.00	\$ -
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 20.00	\$ -
4	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	0	m ²	\$ 30.00	\$ -
5	Kerb and channel 600mm wide	800	m	\$ 80.00	\$ 64,000.00
6	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	800	m	\$ 40.00	\$ 32,000.00
7	Construction of bridge structure to enable road construction, safety barrier and service relocations etc.	5200	m ²	\$ 5,500.00	\$ 28,600,000.00
8	Supply and install street warning and directional signs to Council requirements.	6	No.	\$ 800.00	\$ 4,800.00
9	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 5,000.00	\$ 5,000.00
10	River crossing bridge details to be confirmed.	2,000	m ²	\$ 5,500.00	\$ 11,000,000.00
11	Upgrade existing bridge to suit proposed bridge alignment. Details to be confirmed.	1,000	m ²	\$ 5,500.00	\$ 5,500,000.00
12	Removing and reconstruction of existing driveways inclusive of removal of existing material, culverts and relaying new culverts	2	No.	\$ 10,000.00	\$ 20,000.00
13	Installation of street lighting to industry standards inclusive of associative pits, conduits and cabling to existing or proposed electrical works subject to future design work.	1	Item	\$ 40,000.00	\$ 40,000.00

ROAD OVERPASS (HENTY HIGHWAY & RIVER CROSSINGS) SUBTOTAL: \$ 45,755,227.40

CONTINGENCY (30%) \$ 13,726,568.22

ROAD OVERPASS (HENTY HIGHWAY & RIVER CROSSINGS) WORKS COSTS: \$ 59,481,795.62

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Total Costs

ITEM NO.	DESCRIPTION	AMOUNT
	PRELIMINARY WORKS COSTS:	\$ 8,736,000.00
	ROAD WORKS COSTS:	\$ 46,815,595.38
	ROAD (INTERSECTION) WORKS COSTS:	\$ 7,582,617.90
	ROAD OVERPASS (WESTERN HIGHWAY) WORKS COSTS:	\$ 25,498,872.62
	ROAD OVERPASS (HENTY HIGHWAY & RIVER CROSSINGS) WORKS COSTS:	\$ 59,481,795.62

SUBTOTAL CONSTRUCTION COSTS: \$ 148,114,881.52

G.S.T : \$ 14,811,488.15

TOTAL AMOUNT (Including GST) \$ 162,926,369.67

CONTINGENCY COSTS (30% INCLUDED ABOVE): \$ 44,434,464.45

Horsham Alternative Truck Route Concept - Option 5

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Preliminaries

Prerequisites are listed for the entire project. This is inclusive of site establishment of all works for the entirety of works. No consultancy fees, supporting documentation reports (vegetation, stormwater, etc), authority application fees, bonds etc. are included in proposed costings.

The proposed costings have been separated and structured in an order to provide a coherent break-down of costs associated with the project. It is assumed that preliminaries will have to be conducted prior to the commencement of works. This has been summarised below.

At the time of preparation of this document, indicative construction rates have been used and are subject to change and further review.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
PRELIMINARIES					
1	Site establishment	1	Item	\$ 500,000.00	\$ 500,000.00
2	Provision of Construction Management Plan	1	Item	\$ 100,000.00	\$ 100,000.00
3	Traffic control works	1	Item	\$ 5,000,000.00	\$ 5,000,000.00
4	Contractor to prove existing services where required	1	Item	\$ 120,000.00	\$ 120,000.00
5	Removal of existing vegetation and trees	1	Item	\$ 1,000,000.00	\$ 1,000,000.00
PRELIMINARY SUBTOTAL:					\$ 6,720,000.00
CONTINGENCY (30%)					\$ 2,016,000.00
PRELIMINARY WORKS COSTS:					\$ 8,736,000.00

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Road Works

Below provides a summary of the costs associated with the construction of the proposed road works required to deliver Option 5. Costs are inclusive of pavement and road works, service relocations as required, and ultimate extents to be determined as part of future works.

The existing road pavement was considered unsuitable for reuse, therefore it will be removed as a part of proposed works.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS AND ROAD WORKS					
1	Formation of roadways to 98% level 1 compaction,				
	(i) Estimated Excavation	244,041	m ³	\$ 25.00	\$ 6,101,023.13
	(ii) Estimated Fill	216,123	m ³	\$ 19.00	\$ 4,106,337.00
2	Removal of existing gravel road and disposal off site in an appropriate manner to an accepted disposal site.	72,260	m ²	\$ 12.00	\$ 867,114.00
3	Removal of existing asphalt road and disposal off site in an appropriate manner to an accepted disposal site.	51,376	m ²	\$ 20.00	\$ 1,027,512.00
4	Excess Material to be transported off site	RATE ONLY	m ³	\$ 25.00	\$ -
5	Approved Clay material imported as required	RATE ONLY	m ³	\$ 25.00	\$ -
6	Re-spreading topsoil to 100mm thickness	435,491	m ²	\$ 3.00	\$ 1,306,472.40
7	Supply, deliver and apply "Hydro Seeding" dust suppressant	435,491	m ²	\$ 1.30	\$ 566,138.04
8	Road pavement (including 1.5m sealed shoulder) on				
	(i) 40mm/14mm Type H hotmix asphalt;	184,530	m ²	\$ 35.00	\$ 6,458,550.00
	(ii) Prime Coat application to VicRoads requirements;	184,530	m ²	\$ 3.00	\$ 553,590.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	184,530	m ²	\$ 25.00	\$ 4,613,250.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	212,210	m ²	\$ 22.00	\$ 4,668,609.00
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	212,210	m ²	\$ 20.00	\$ 4,244,190.00
9	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	212,210	m ²	\$ 30.00	\$ 6,366,285.00
10	SM2 Kerb and channel 600mm wide	36,906	m	\$ 80.00	\$ 2,952,480.00
11	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	36,906	m	\$ 40.00	\$ 1,476,240.00
12	Supply and install street sign post and name plate to Council requirements.	40	No.	\$ 400.00	\$ 16,000.00
13	Supply and install street warning and directional signs to Council requirements.	20	No.	\$ 800.00	\$ 16,000.00
14	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 50,000.00	\$ 50,000.00
15	Supply and install wire safety barrier or VicRoads approved equivalent, inclusive of footings, excavation, and disposal of surplus spoil, as detailed on plans and manufacturer's standards.	55,359	m	\$ 200.00	\$ 11,071,800.00
	Carried Forward:				\$ 56,461,590.57

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ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Brought Forward:				\$ 56,461,590.57
ROAD DRAINAGE AND SERVICE WORKS					
16	Removing and reconstruction of existing driveways inclusive of removal of existing material, culverts and	1	Item	\$ 100,000.00	\$ 100,000.00
17	Removal and reconstruction of existing road crossing culverts inclusive of removal of existing material, culverts and relaying new culverts not inclusive of crossing culverts in waterways subject to flood modelling.	1	Item	\$ 200,000.00	\$ 200,000.00
18	Removal of existing overhead power lines and poles where required for construction of proposed roads as identified as part of authority applications.	1	Item	\$ 1,000,000.00	\$ 1,000,000.00
19	Excavation and refilling trenches for electrical and/or communications cables/conduits inclusive of additional width and depth at service tee joints and light-pole locations, supply and placing sand bedding and clay backfill , laying out cover slabs and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required	1	Item	\$ 800,000.00	\$ 800,000.00
20	Excavation and refilling road crossing trenches for electrical conduits and/or communications conduits inclusive supply and placing sand bedding and FCR backfill and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required	1	Item	\$ 1,600,000.00	\$ 1,600,000.00
21	Relocation of existing watermain subject to detail design levels and alignment, inclusive of excavation and refilling trenches for watermain and connection to existing main inclusive of connections to existing properties.	1	Item	\$ 200,000.00	\$ 200,000.00

ROAD WORKS SUBTOTAL: \$ 60,361,590.57

CONTINGENCY (30%) \$ 18,108,477.17

ROAD WORKS COSTS: \$ 78,470,067.73

Horsham Alternative Truck Route Concept - Option 5

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Roadabout (Intersection) Works

Removal of existing pavement and/or earthworks are included as part of existing pavement removal volumes and road works costings. Costs below are inclusive of works for all **6 roundabouts**.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS AND ROAD WORKS INCLUSIVE OF ALL 6 ROUNDABOUTS					
1	Re-spreading topsoil to 100mm thickness	49,932	m ²	\$ 3.00	\$ 149,796.00
2	Supply, deliver and apply "Hydro Seeding" dust suppressant	49,932	m ²	\$ 1.30	\$ 64,911.60
3	Road pavement on clay subgrade				
	(i) 40mm/14mm Type H hotmix asphalt;	26,640	m ²	\$ 35.00	\$ 932,400.00
	(ii) Prime Coat application to Council requirements;	26,640	m ²	\$ 3.00	\$ 79,920.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	26,640	m ²	\$ 25.00	\$ 666,000.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	31,941	m ²	\$ 22.00	\$ 702,702.00
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	31,941	m ²	\$ 20.00	\$ 638,820.00
4	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	31,941	m ²	\$ 30.00	\$ 958,230.00
5	Kerb and channel 600mm wide	7,068	m	\$ 80.00	\$ 565,440.00
6	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	7,068	m	\$ 40.00	\$ 282,720.00
7	Supply and install street sign post and name plate to Council	48	No.	\$ 400.00	\$ 19,200.00
8	Supply and install street warning and directional signs to Council requirements.	24	No.	\$ 800.00	\$ 19,200.00
9	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 60,000.00	\$ 60,000.00
ROAD DRAINAGE AND SERVICE WORKS INCLUSIVE OF ALL 6 ROUNDABOUTS					
10	Removal and reconstruction of existing road crossing culverts inclusive of removal of existing material, culverts and relaying	12	No.	\$ 20,000.00	\$ 240,000.00
11	Removal of existing overhead power lines and poles where required for construction of proposed roads as identified as part	1	Item	\$ 100,000.00	\$ 100,000.00
12	Excavation and refilling trenches for electrical and/or communications cables/conduits inclusive of additional width and depth at service tee joints and light-pole locations, supply and placing sand bedding and clay backfill , laying out cover slabs and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required	6	Item	\$ 20,000.00	\$ 120,000.00
13	Excavation and refilling road crossing trenches for electrical conduits and/or communications conduits inclusive supply and placing sand bedding and FCR backfill and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required.	6	Item	\$ 40,000.00	\$ 240,000.00
14	Relocation of existing watermain subject to detail design levels and alignment, inclusive of excavation and refilling trenches for watermain and connection to existing main inclusive of <u>connections to existing properties.</u>	6	Item	\$ 10,000.00	\$ 60,000.00
15	Installation of street lighting to industry standards inclusive of associative pits, conduits and cabling to existing or proposed electrical works subject to future design work.	6	Item	\$ 100,000.00	\$ 600,000.00

ROUNDAABOUT (INTERSECTION) WORKS SUBTOTAL: \$ 6,499,339.60

CONTINGENCY (30%) \$ 1,949,801.88

ROAD (INTERSECTION) WORKS COSTS: \$ 8,449,141.48

Horsham Alternative Truck Route Concept - Option 5

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Road Overpass Works - Western Highway

Removal of existing pavement and/or earthworks are included as part of existing pavement removal volumes and road works costings.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS, ROAD AND SERVICE WORKS					
1	Re-spreading topsoil to 100mm thickness	21,518	m ²	\$ 3.00	\$ 64,554.00
2	Supply, deliver and apply "Hydro Seeding" dust suppressant	21,518	m ²	\$ 1.30	\$ 27,973.40
3	Road pavement on clay subgrade				
	(i) 40mm/14mm Type H hotmix asphalt;	3,955	m ²	\$ 35.00	\$ 138,425.00
	(ii) Prime Coat application to Council requirements;	3,955	m ²	\$ 3.00	\$ 11,865.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	3,955	m ²	\$ 25.00	\$ 98,875.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 22.00	\$ -
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 20.00	\$ -
4	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	0	m ²	\$ 30.00	\$ -
5	Kerb and channel 600mm wide	350	m	\$ 80.00	\$ 28,000.00
6	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	350	m	\$ 40.00	\$ 14,000.00
7	Construction of bridge structure to enable road construction, safety barrier and service relocations etc.	4375	m ²	\$ 5,500.00	\$ 24,062,500.00
8	Supply and install street warning and directional signs to Council requirements.	4	No.	\$ 800.00	\$ 3,200.00
9	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 5,000.00	\$ 5,000.00
10	Installation of street lighting to industry standards inclusive of associative pits, conduits and cabling to existing or proposed electrical works subject to future design work.	1	Item	\$ 40,000.00	\$ 40,000.00

ROAD OVERPASS (WESTERN HIGHWAY) WORKS SUBTOTAL: \$ 24,494,392.40

CONTINGENCY (30%) \$ 7,348,317.72

ROAD OVERPASS (WESTERN HIGHWAY) WORKS COSTS: \$ 31,842,710.12

Horsham Alternative Truck Route Concept - Option 5

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Road Overpass Works - Henty Highway & River Crossing

Removal of existing pavement and/or earthworks are included as part of existing pavement removal volumes and road works costings. Costs are inclusive of works for both the Henty Highway overpass and River Crossing.

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS AND ROAD WORKS					
1	Re-spreading topsoil to 100mm thickness	4,600	m ²	\$ 3.00	\$ 13,800.00
2	Supply, deliver and apply "Hydro Seeding" dust suppressant	4,600	m ²	\$ 1.30	\$ 5,980.00
3	Road pavement on clay subgrade				
	(i) 40mm/14mm Type H hotmix asphalt;	3,755	m ²	\$ 35.00	\$ 131,425.00
	(ii) Prime Coat application to Council requirements;	3,755	m ²	\$ 3.00	\$ 11,265.00
	(iii) 150mm Class 2/20mm FCR, extending to lip of kerb;	3,755	m ²	\$ 25.00	\$ 93,875.00
	(iv) 150mm Class 3/20mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 22.00	\$ -
	(v) 200mm Class 3/40mm FCR, extending 150mm behind back of kerb;	0	m ²	\$ 20.00	\$ -
4	Provisional Item for additional Subgrade works (3% lime, 3% cement), extending 150mm behind back of kerb.	0	m ²	\$ 30.00	\$ -
5	Kerb and channel 600mm wide	1,600	m	\$ 80.00	\$ 128,000.00
6	100mm dia. Class 4 A.G. drain with Geotextile Sock Surround behind kerb.	1,600	m	\$ 40.00	\$ 64,000.00
7	Construction of bridge structure to enable road construction, safety barrier and service relocations etc.	4,900	m ²	\$ 5,500.00	\$ 26,950,000.00
8	Supply and install street warning and directional signs to Council requirements.	4	No.	\$ 800.00	\$ 3,200.00
9	Supply and install line marking and RRPM's in accordance with council standards.	1	Item	\$ 5,000.00	\$ 5,000.00
10	River crossing bridge details to be confirmed.	2,500	m ²	\$ 5,500.00	\$ 13,750,000.00

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ROAD DRAINAGE AND SERVICE WORKS					
11	Removing and reconstruction of existing driveways inclusive of removal of existing material, culverts and relaying new culverts	2	No.	\$ 10,000.00	\$ 20,000.00
12	Removal of existing overhead power lines and poles where required for construction of proposed roads as identified as part of authority applications.	1	Item	\$ 100,000.00	\$ 100,000.00
13	Excavation and refilling road crossing trenches for electrical conduits and/or communications conduits inclusive supply and placing sand bedding and FCR backfill and disposal of surplus spoil as specified to meet new standards inclusive of pvc conduits and electrical services pits and covers as required. Inclusive of relocating service onto proposed bridge structure	1	Item	\$ 80,000.00	\$ 80,000.00
14	Excavation and refilling trenches for communications conduits that require relocation as part of proposed road upgrade works subject to detail design levels and alignment, inclusive of additional width and depth at service tee joints, supply and placing sand bedding and clay backfill , laying out cover slabs, FCR bedding under telephone pits and disposal of surplus spoil as specified to meet new standards.	1	Item	\$ 20,000.00	\$ 20,000.00
15	Excavation and refilling trenches for communications conduits that require relocation as part of proposed road upgrade works subject to detail design levels and alignment, inclusive additional width and depth at service tee joints, supply and placing sand bedding and FCR backfill , laying out cover slabs, FCR bedding under telephone pits and disposal of surplus spoil as specified to meet new standards.	1	Item	\$ 40,000.00	\$ 40,000.00
16	Installation of street lighting to industry standards inclusive of associative pits, conduits and cabling to existing or proposed electrical works subject to future design work.	1	Item	\$ 40,000.00	\$ 40,000.00

ROAD OVERPASS (HENTY ROAD & RIVER CROSSING) WORKS SUBTOTAL: \$ 41,456,545.00

CONTINGENCY (30%) \$ 12,436,963.50

ROAD OVERPASS (HENTY HIGHWAY & RIVER CROSSINGS) WORKS COSTS: \$ 53,893,508.50

Horsham Alternative Truck Route Concept - Option 5

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Total Costs

ITEM NO.	DESCRIPTION	AMOUNT
	PRELIMINARY WORKS COSTS:	\$ 8,736,000.00
	ROAD WORKS COSTS:	\$ 78,470,067.73
	ROAD (INTERSECTION) WORKS COSTS:	\$ 8,449,141.48
	ROAD OVERPASS (WESTERN HIGHWAY) WORKS COSTS:	\$ 31,842,710.12
	ROAD OVERPASS (HENTY HIGHWAY & RIVER CROSSINGS) WORKS COSTS:	\$ 53,893,508.50

SUBTOTAL CONSTRUCTION COSTS: \$181,391,427.83

G.S.T : \$ 18,139,142.78

TOTAL AMOUNT (Including GST) \$199,530,570.62

CONTINGENCY COSTS (30% INCLUDED ABOVE): \$ 54,417,428.35

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