

**Project no.** 220912

**Date** 24/01/2024

Bojan Ritonja  
Planit Consulting Pty Ltd  
PO Box 112  
Geelong VIC 3220

**Via email** [bojan@planitconsulting.com.au](mailto:bojan@planitconsulting.com.au)

Dear Bojan

### **Harvey Road Bannockburn Intersections – Intersection analysis and concept designs**

Planit Consulting Pty Ltd engaged Trafficworks to undertake analysis and concept design work for the following intersections along Harvey Road in Bannockburn:

- Harvey Road and Bannockburn-Shelford Road (existing intersection)
- Harvey Road and Ormond Street (existing intersection)
- Harvey Road and new road (does not exist).

The intersections are located within the south west Precinct of the future Bannockburn PSP. Council has identified these intersections will require a contribution from the adjoining landowners and intersection designs are required to inform the contributions required.

The Bannockburn PSP area is shown in Figure 1.

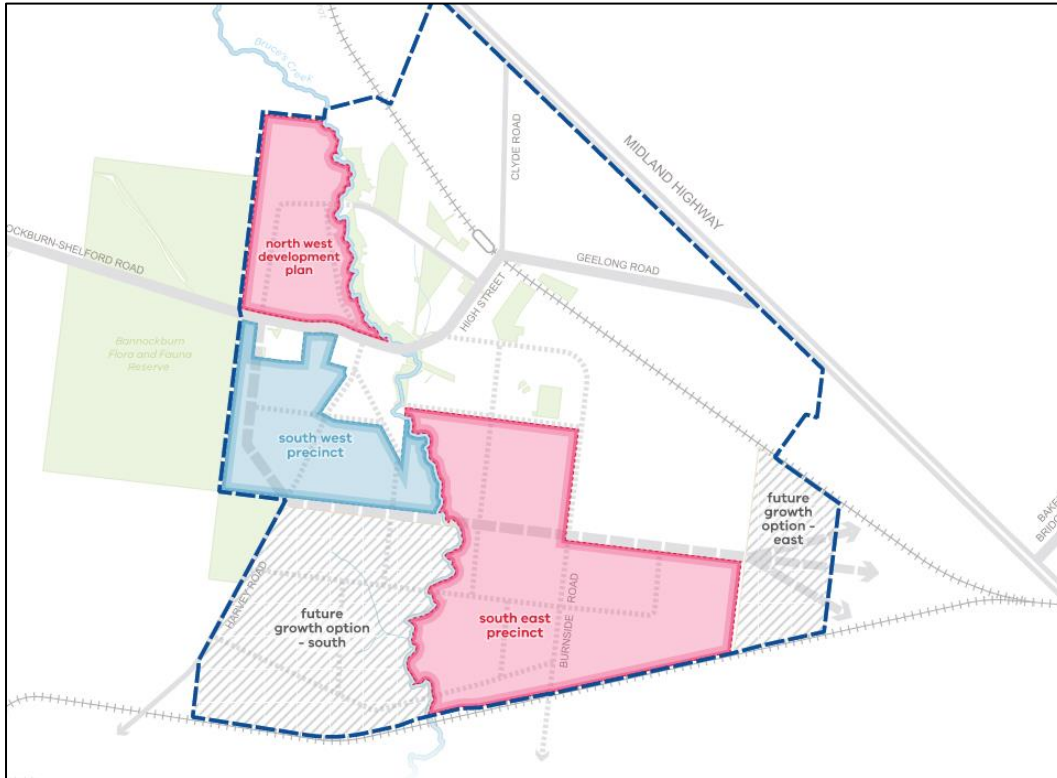


Figure 1: Bannockburn PSP

**Intersection analysis**

SIDRA analysis was undertaken to determine the indicative intersection layouts required to support the south west precinct of the future Bannockburn PSP. The following assumptions were made to determine the high-level impact of the residential growth area:

- Existing traffic volumes from 2018 were obtained for Harvey Road and Bannockburn-Shelford Road from the Cardno Traffic Modelling report (March 2019).
- The 2018 traffic volumes on Harvey Road and Bannockburn-Shelford Road were projected to the final year (2043) using a 2% compound annual growth rate.
- Ultimately, Bannockburn-Shelford Road will be downgraded to a connector road with the introduction of the bypass arterial road. Therefore, it was assumed that 50% of traffic currently utilising Bannockburn-Shelford Road will use the new bypass arterial road.
- 3% heavy vehicle volumes were applied.

- The lot yield of each area was based on the Bannockburn Growth Plan (May 2021).
- Based on the rates used in the Cardno report, peak hour traffic generation rates of 0.85 trips per dwelling in the AM peak hour and 0.9 trips per dwelling in the PM peak hour were adopted.

The ‘south west precinct’ includes 51.7ha of business park development. A high-level traffic generation rate of 200 trips / ha of developable land has been applied to estimate the traffic generation for the industrial and business land uses within the PSP. In addition, a ratio of 40% was applied to estimate the equivalent Gross Floor Area (GFA) as a percentage of the total developable land. This rate is equivalent to 5 daily trips / 100m<sup>2</sup> GFA as per the RTA Guide for Traffic Generating Developments.

Based on the above, the anticipated traffic generation of the key areas within the future Bannockburn PSP at full development are shown in Table 1.

Table 1: Traffic generation rates

Precinct	Measure	Peak hour traffic generation rates		Development traffic generation	
		AM Peak	PM Peak	AM Peak	PM Peak
North west	1,267 lots	0.9	0.85	1,140	1,077
South west (residential)	1,159 lots	0.9	0.85	1,043	985
Future growth area - South	2,693 lots	0.9	0.85	2,424	2,289
South west (business park)	206,721 m <sup>2</sup>	5 trips / 100 m <sup>2</sup> of GFA		1,344	
<b>Total</b>	<b>5,119</b>			<b>5,951</b>	<b>5,695</b>

- The following peak hour splits were applied:
  - AM: 20 % IN 80% OUT
  - PM: 70% IN 30% OUT
- Traffic distributed to / from the surrounding residential developments would generate:
  - 30% to / from Bannockburn town centre
  - 60% to / from Geelong
  - 10% to west

- Of the local traffic accessing the town centre that generates to the arterial road intersections:
  - 20% will utilise Harvey Road
  - 80% will utilise the arterial roads.
- The ‘south east precinct’ and ‘future growth option east’ of the Bannockburn PSP (refer to Figure 1) will not generate traffic to/from the intersections along Harvey Road and therefore have not been included as part of this analysis.

**Ultimate conditions (i.e. full development)**

Based on the above assumptions, the anticipated traffic volumes at full development at the three intersections are shown in Appendix 1.

The intersection layouts required to support the anticipated traffic volumes at each intersection and achieve a 10-year design life are shown in Figures 2 - 4. Detailed SIDRA outputs are provided in Appendix 2.

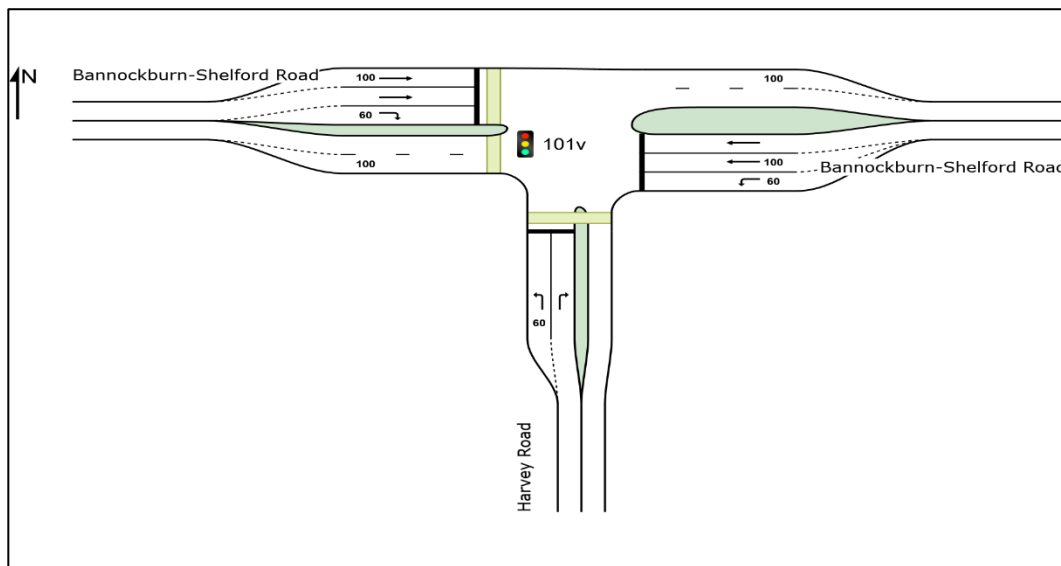


Figure 2: Harvey Road / Bannockburn-Shelford Road SIDRA intersection layout

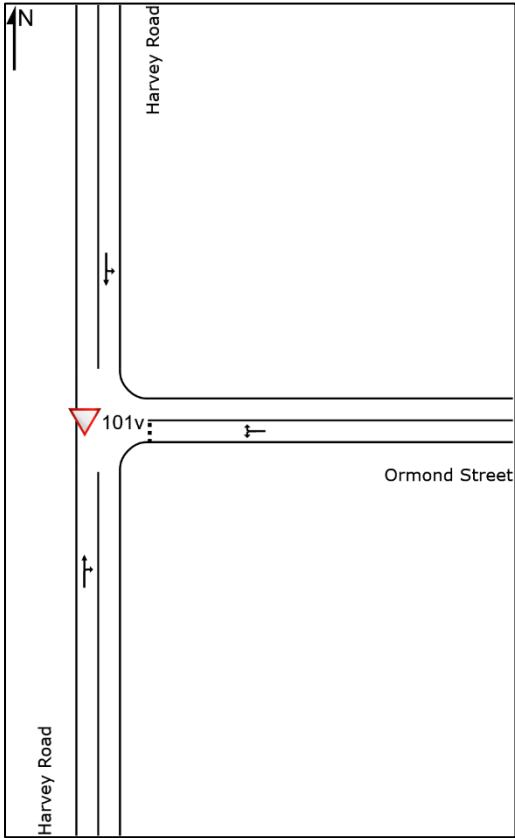


Figure 3: Harvey Road / Ormond Street SIDRA intersection layout

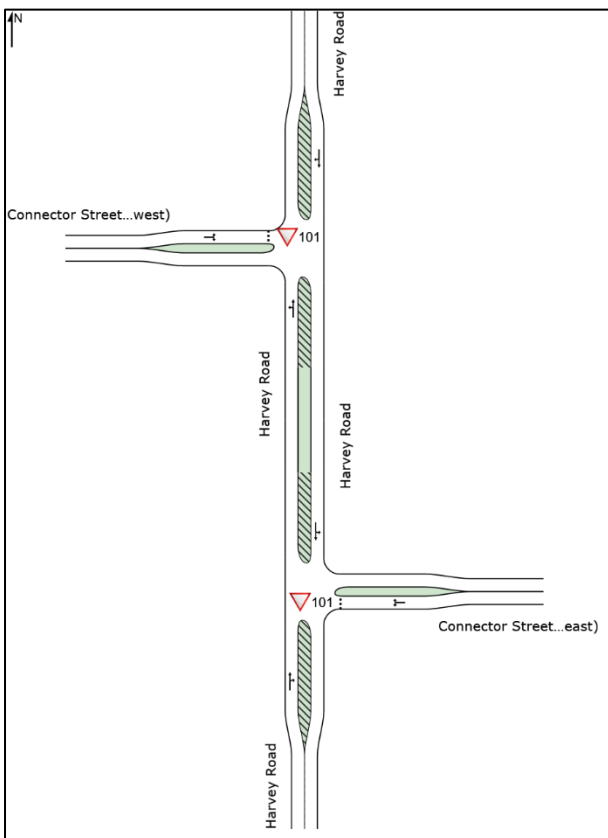


Figure 4: Harvey Road / future E-W connector road SIDRA intersection layout

**Interim conditions**

An interim roundabout treatment is proposed at the Harvey Road / Bannockburn-Shelford Road intersection to facilitate initial development. The proposed roundabout layout is shown in Figure 5.

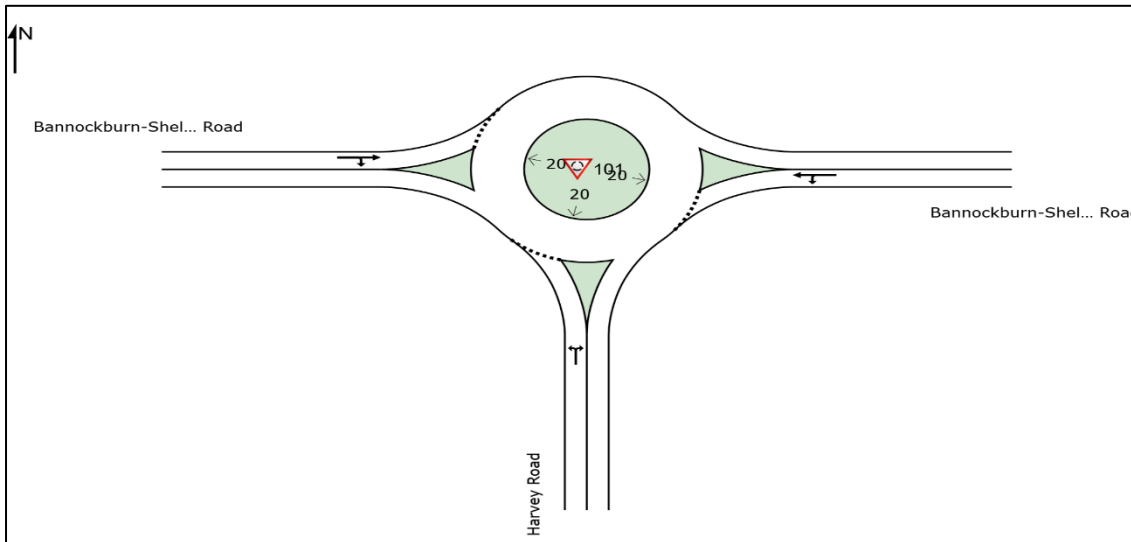


Figure 5: Harvey Road / Bannockburn-Shelford Road SIDRA interim intersection layout

SIDRA analysis was undertaken to determine the trigger to upgrade the interim intersection layout, based on the following additional assumptions:

- Of the traffic travelling to Geelong:
  - 70% will utilise Bannockburn-Shelford Road
  - 30% will utilise Hamilton Highway via Harvey Road.
- 10% heavy vehicle volumes were applied to Bannockburn-Shelford Road (as per the DTP Open Data Portal).

The SIDRA analysis indicates that the interim roundabout intersection treatment will operate satisfactorily with the development of:

- 1,000 lots from the south west development area only (i.e. no development occurs in the north west development area)
- a combined 1,050 lots from each development area (i.e. south west and north west) assuming the areas develop at the same rate (i.e. 525 lots in the south west and 525 lots in the north west development areas).

**Concept designs**

Based on the outcomes of the SIDRA analysis, concept plans were prepared for the interim intersection layouts and are provided in Appendix 3 and swept path analysis is provided in Appendix 4. It is noted that the interim and ultimate layout for the collector road intersections with Harvey Road are the same in both scenarios.

The intersection designs have adopted the following design principles:

- Road cross sections have been based on the standard cross sections prepared by the Victorian Planning Authority (VPA)
- Design speed - 60km/h
- Collector roads
  - Design vehicle - bus
  - Check vehicle – 19.0 m semi-trailer
- Bannockburn-Shelford Road
  - Design vehicle - 19.0 m semi-trailer
  - Check vehicle – B-double

Please contact me on 0438 343 817 if you require additional information.

Yours sincerely,

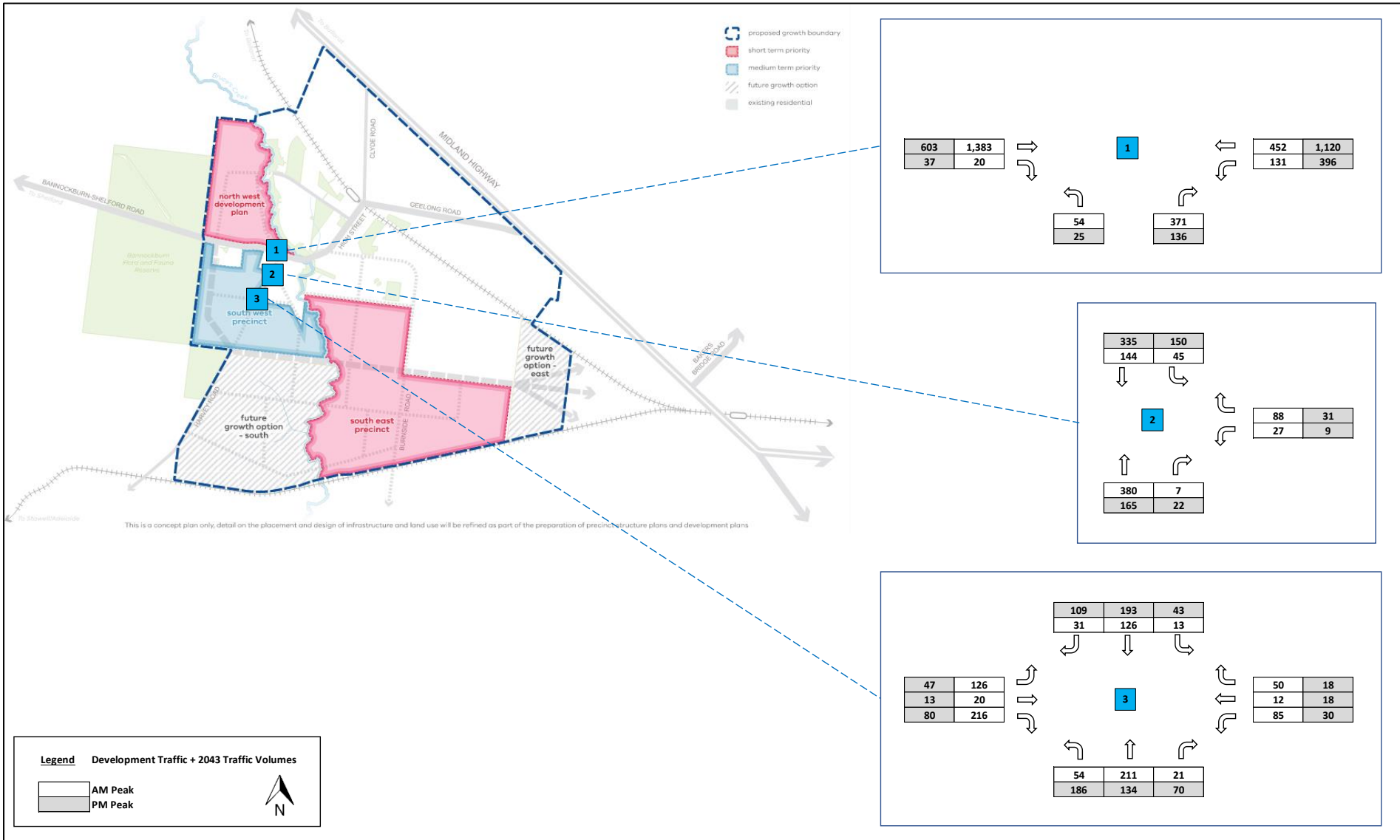


Ali Abdou

**Director** BE (Civil) (Hons), MIEAust, CPEng (Civil, PM), RPEng (Civil)

## **Appendix 1 – Anticipated traffic volumes**





## **Appendix 2 – Detailed SIDRA analysis**

## Site: 101v [Ultimate\_BS Rd-Harvey\_AM - signals (Site Folder: General)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Convert Function Default

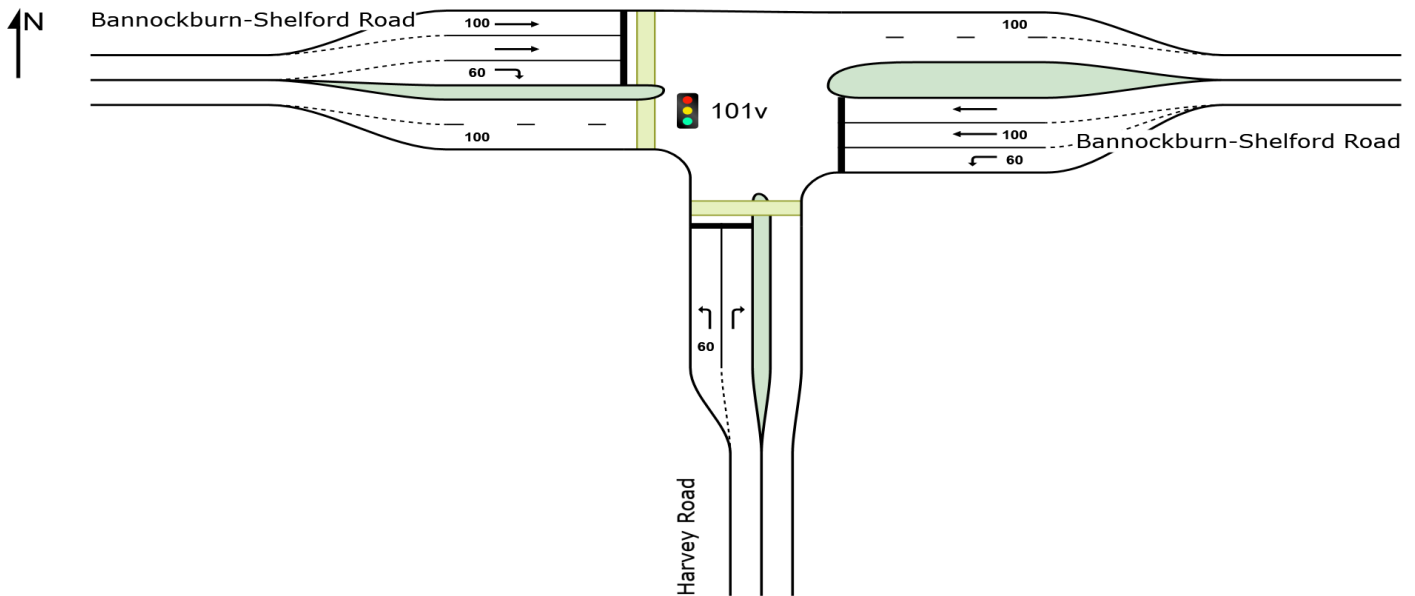
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Reference Phase: Phase A

### Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



### Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	Dist ]		m	%	%
	veh/h	%	veh/h	%							m		m		
South: Harvey Road															
Lane 1	57	3.0	57	3.0	441	0.129	100	44.2	LOS D	2.2	15.7	Short	60	0.0	NA
Lane 2	391	3.0	391	3.0	484	0.807	100	52.7	LOS D	19.3	138.9	Full	500	0.0	0.0
Approach	447	3.0	447	3.0		0.807		51.6	LOS D	19.3	138.9				
East: Bannockburn-Shelford Road															
Lane 1	138	3.0	138	3.0	1451	0.095	100	8.1	LOS A	1.5	10.7	Short	60	0.0	NA
Lane 2	169	3.0	169	3.0	947	0.179	55 <sup>6</sup>	15.8	LOS B	4.6	32.7	Short	100	0.0	NA
Lane 3	307	3.0	307	3.0	947	0.324	100	16.5	LOS B	9.0	64.4	Full	500	0.0	0.0
Approach	614	3.0	614	3.0		0.324		14.4	LOS B	9.0	64.4				
West: Bannockburn-Shelford Road															
Lane 1	522	3.0	522	3.0	1179	0.443	55 <sup>6</sup>	399.7	LOS F	13.4	96.4	Short	100	0.0	NA
Lane 2	933	3.0	933	3.0	1163	0.803	100	24.5	LOS C	34.5	247.5	Full	500	0.0	0.0
Lane 3	21	3.0	21	3.0	110	0.191	100	65.4	LOS E	1.0	7.5	Short	60	0.0	NA
Approach	1477	3.0	1477	3.0		0.803		157.8	LOS F	34.5	247.5				
All Vehicles	2538	3.0	2538	3.0		0.807		104.4	LOS F	34.5	247.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

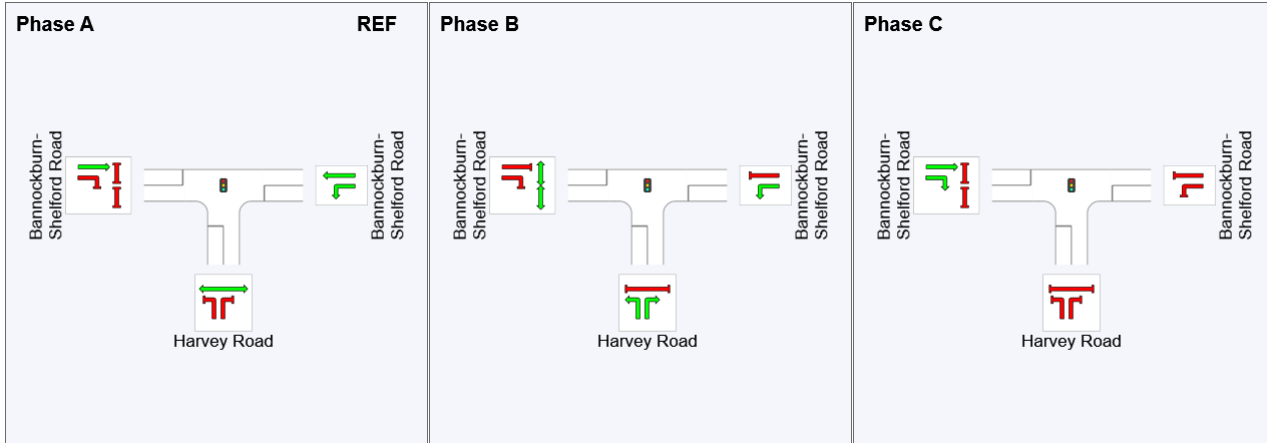
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

- 1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes.
- 1 Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
- 6 Lane under-utilisation due to downstream effects

### Output Phase Sequence



REF: Reference Phase  
 VAR: Variable Phase



### Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	55	88
Green Time (sec)	49	27	6
Phase Time (sec)	55	33	12
Phase Split	55%	33%	12%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Inter-green Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

## Site: 101v [Ultimate\_BS Rd-Harvey\_PM - signals (Site Folder: General)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Convert Function Default

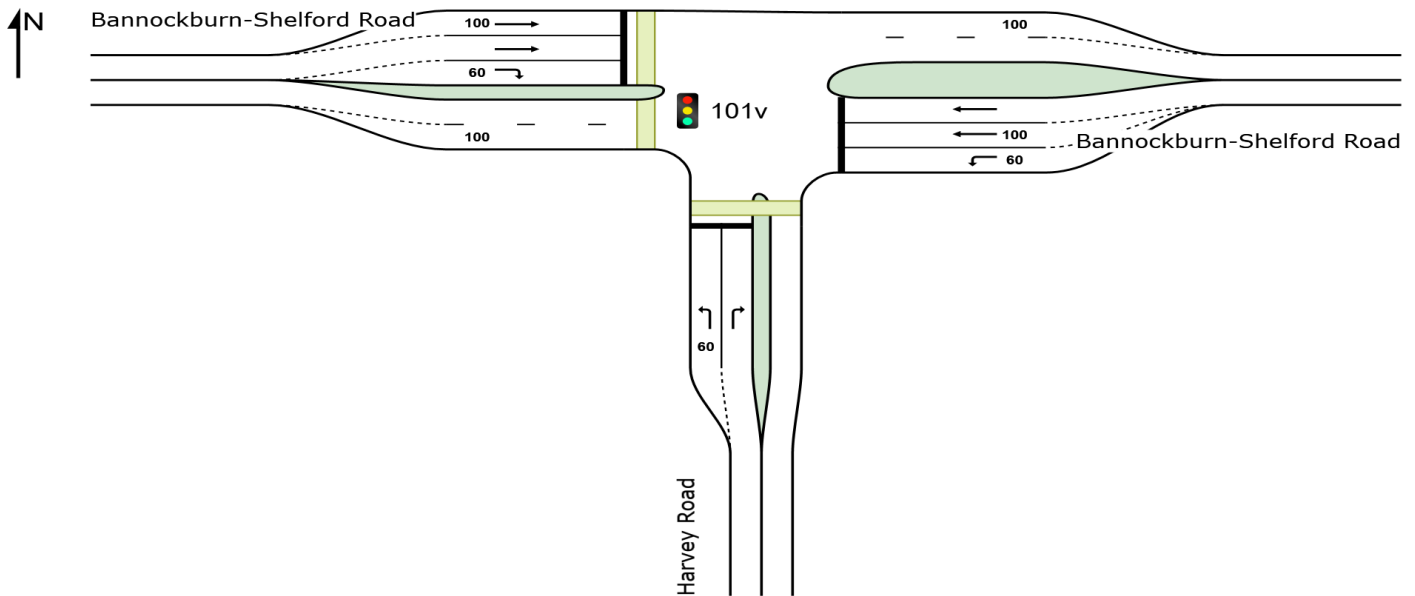
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Reference Phase: Phase A

### Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



### Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	Dist ]		m	%	%
	veh/h	%	veh/h	%							m		m		
South: Harvey Road															
Lane 1	26	3.0	26	3.0	184	0.143	100	54.8	LOS D	1.2	8.7	Short	60	0.0	NA
Lane 2	143	3.0	143	3.0	239	0.599	100	51.7	LOS D	6.9	49.4	Full	500	0.0	0.0
Approach	169	3.0	169	3.0		0.599		52.2	LOS D	6.9	49.4				
East: Bannockburn-Shelford Road															
Lane 1	417	3.0	417	3.0	1451	0.287	100	8.6	LOS A	5.4	38.9	Short	60	0.0	NA
Lane 2	419	3.0	419	3.0	1218	0.344	55 <sup>6</sup>	12.6	LOS B	9.5	68.3	Short	100	0.0	NA
Lane 3	760	3.0	760	3.0	1218	0.624	100	12.0	LOS B	22.3	160.1	Full	500	0.0	0.0
Approach	1596	3.0	1596	3.0		0.624		11.3	LOS B	22.3	160.1				
West: Bannockburn-Shelford Road															
Lane 1	226	3.0	226	3.0	1449	0.156	55 <sup>6</sup>	5.1	LOS A	3.0	21.9	Short	100	0.0	NA
Lane 2	409	3.0	409	3.0	1449	0.282	100	4.2	LOS A	6.2	44.5	Full	500	0.0	0.0
Lane 3	39	3.0	39	3.0	110	0.353	100	57.8	LOS E	2.0	14.1	Short	60	0.0	NA
Approach	674	3.0	674	3.0		0.353		7.6	LOS A	6.2	44.5				
All Vehicles	2439	3.0	2439	3.0		0.624		13.1	LOS B	22.3	160.1				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

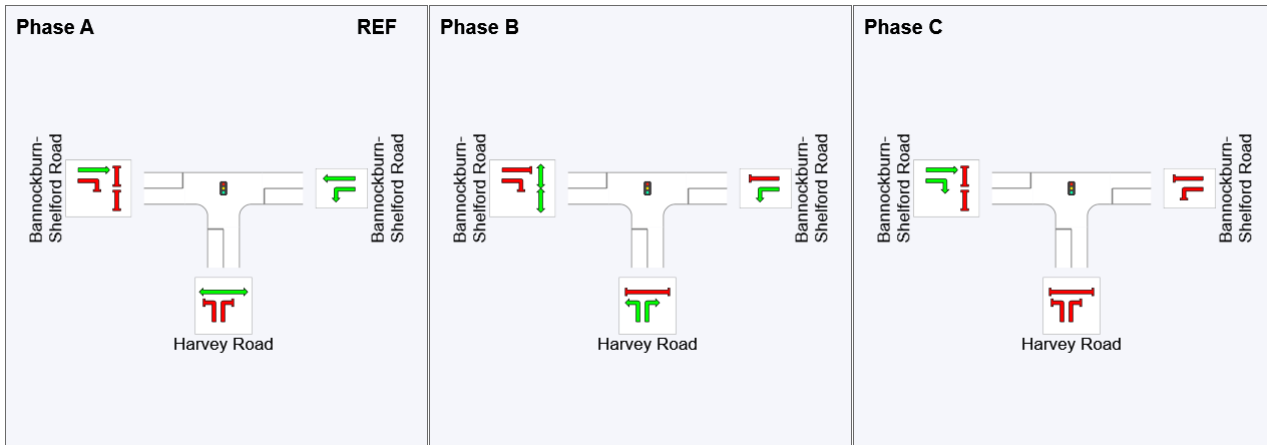
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

6 Lane under-utilisation due to downstream effects

### Output Phase Sequence



REF: Reference Phase  
 VAR: Variable Phase



### Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	69	88
Green Time (sec)	63	13	6
Phase Time (sec)	69	19	12
Phase Split	69%	19%	12%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

## Site: 101v [Ultimate\_BS Rd-Harvey\_AM - signals - sensitivity (Site Folder: General)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Design Life Analysis (Practical Capacity): Results for 10 years

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Convert Function Default

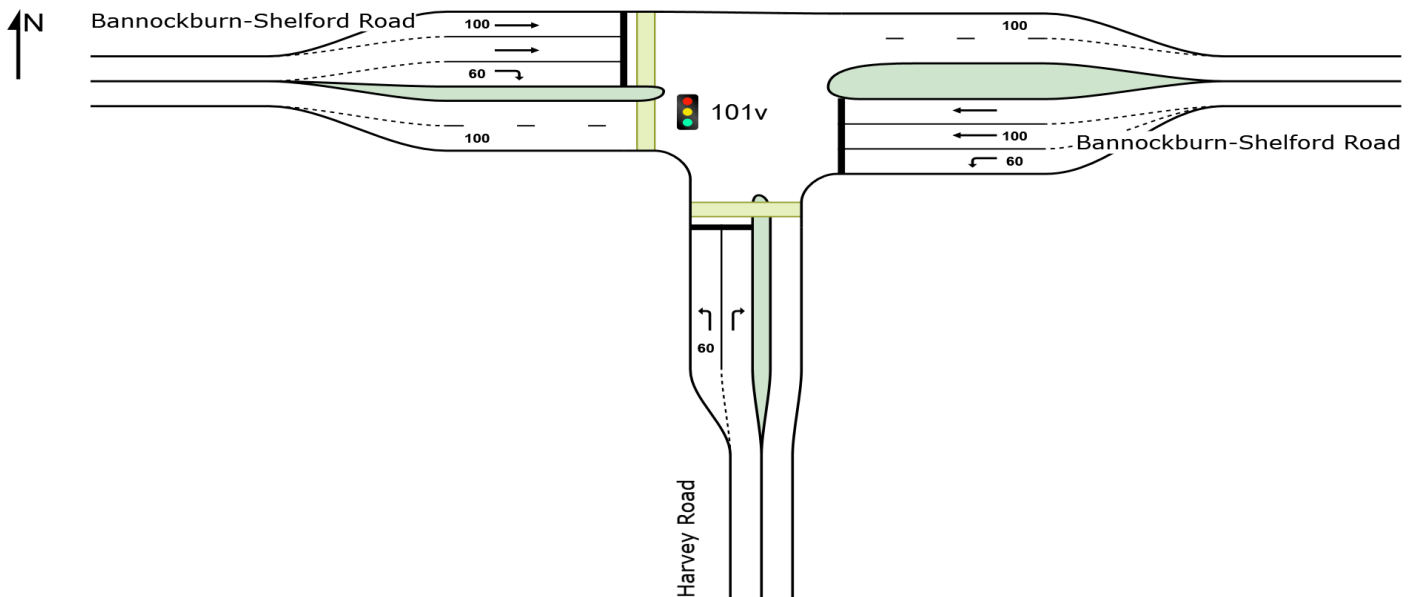
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Reference Phase: Phase A

### Site Layout

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### Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	Dist ]		m	%	%
	veh/h	%	veh/h	%							m				
South: Harvey Road															
Lane 1	57	3.0	57	3.0	429	0.133	100	79.8	LOS E <sup>11</sup>	3.3	23.4	Short	60	0.0	NA
Lane 2	391	3.0	391	3.0	436 <sup>1</sup>	0.896	100	101.6	LOS F <sup>11</sup>	31.3	224.4	Full	500	0.0	0.0
Approach	447	3.0	447	3.0		0.896		98.8	LOS F <sup>11</sup>	31.3	224.4				
East: Bannockburn-Shelford Road															
Lane 1	138	3.0	138	3.0	1580	0.087	100	7.2	LOS A	1.5	10.6	Short	60	0.0	NA
Lane 2	206	3.0	206	3.0	1134	0.182	55 <sup>6</sup>	15.9	LOS B	6.8	48.8	Short	100	0.0	NA
Lane 3	374	3.0	374	3.0	1134	0.330	100	16.7	LOS B	13.7	98.1	Full	500	0.0	0.0
Approach	718	3.0	718	3.0		0.330		14.6	LOS B	13.7	98.1				
West: Bannockburn-Shelford Road															
Lane 1	637	3.0	637	3.0	1288	0.495	55 <sup>6</sup>	2167.4	LOS F <sup>11</sup>	22.6	162.4	Short	100	0.0	NA
Lane 2	1137	3.0	1137	3.0	1269 <sup>1</sup>	0.896	100	39.6	LOS D	68.9	494.5	Full	500	0.0	4.0
Lane 3	21	3.0	21	3.0	73	0.286	100	102.0	LOS F <sup>11</sup>	1.6	11.4	Short	60	0.0	NA
Approach	1796	3.0	1796	3.0		0.896		795.7	LOS F <sup>11</sup>	68.9	494.5				
All Vehicles	2961	3.0	2961	3.0		0.896		501.1	LOS F <sup>11</sup>	68.9	494.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

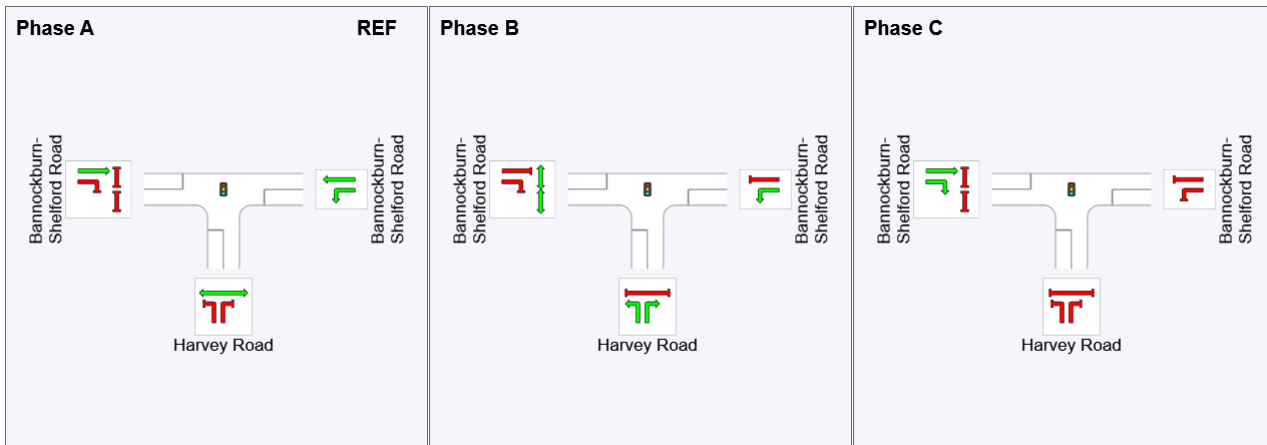
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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- 1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes.
- 1 Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
- 6 Lane under-utilisation due to downstream effects
- 11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

### Output Phase Sequence



REF: Reference Phase  
 VAR: Variable Phase



### Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	94	138
Green Time (sec)	88	38	6
Phase Time (sec)	94	44	12
Phase Split	63%	29%	8%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



## Site: 101v [Ultimate\_BS Rd-Harvey\_PM - signals - sensitivity (Site Folder: General)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Convert Function Default

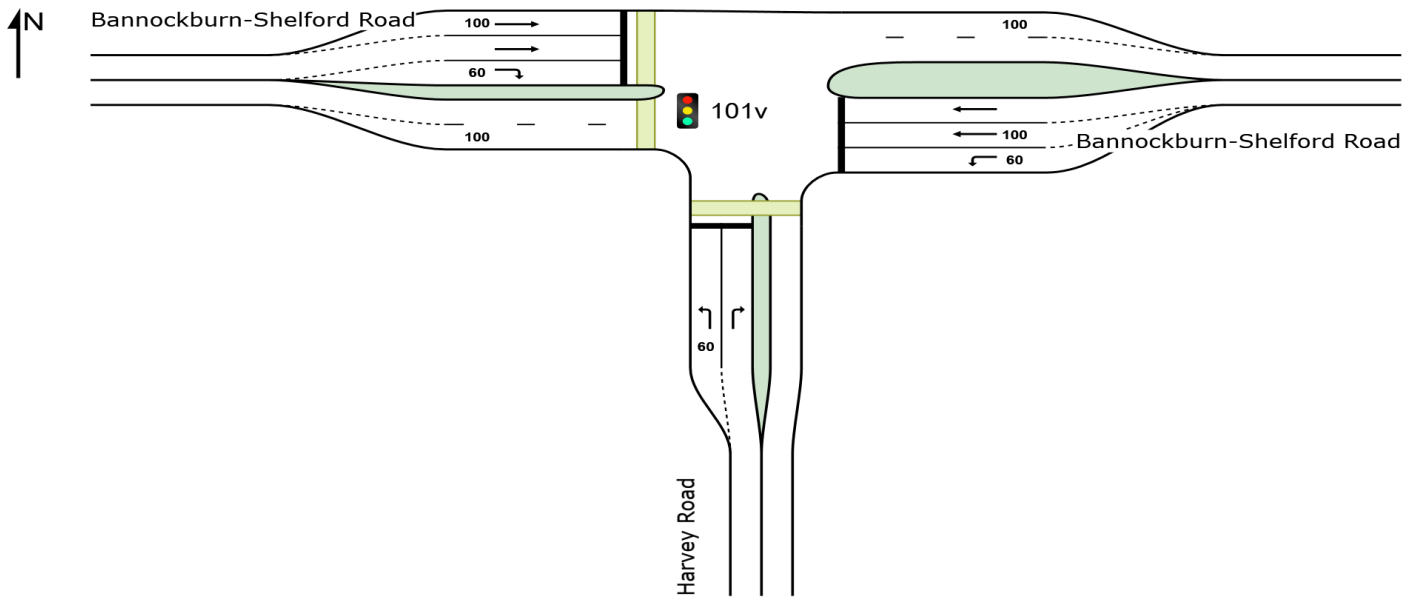
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Reference Phase: Phase A

### Site Layout

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### Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]						[ Veh	Dist ]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Harvey Road															
Lane 1	26	3.0	26	3.0	184	0.143	100	54.8	LOS D	1.2	8.7	Short	60	0.0	NA
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Lane 1	417	3.0	417	3.0	1451	0.287	100	8.6	LOS A	5.4	38.9	Short	60	0.0	NA
Lane 2	419	3.0	419	3.0	1218	0.344	55 <sup>6</sup>	12.6	LOS B	9.5	68.3	Short	100	0.0	NA
Lane 3	760	3.0	760	3.0	1218	0.624	100	12.0	LOS B	22.3	160.1	Full	500	0.0	0.0
Approach	1596	3.0	1596	3.0		0.624		11.3	LOS B	22.3	160.1				
West: Bannockburn-Shelford Road															
Lane 1	226	3.0	226	3.0	1449	0.156	55 <sup>6</sup>	5.1	LOS A	3.0	21.9	Short	100	0.0	NA
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Lane 3	39	3.0	39	3.0	110	0.353	100	57.8	LOS E	2.0	14.1	Short	60	0.0	NA
Approach	674	3.0	674	3.0		0.353		7.6	LOS A	6.2	44.5				
All Vehicles	2439	3.0	2439	3.0		0.624		13.1	LOS B	22.3	160.1				

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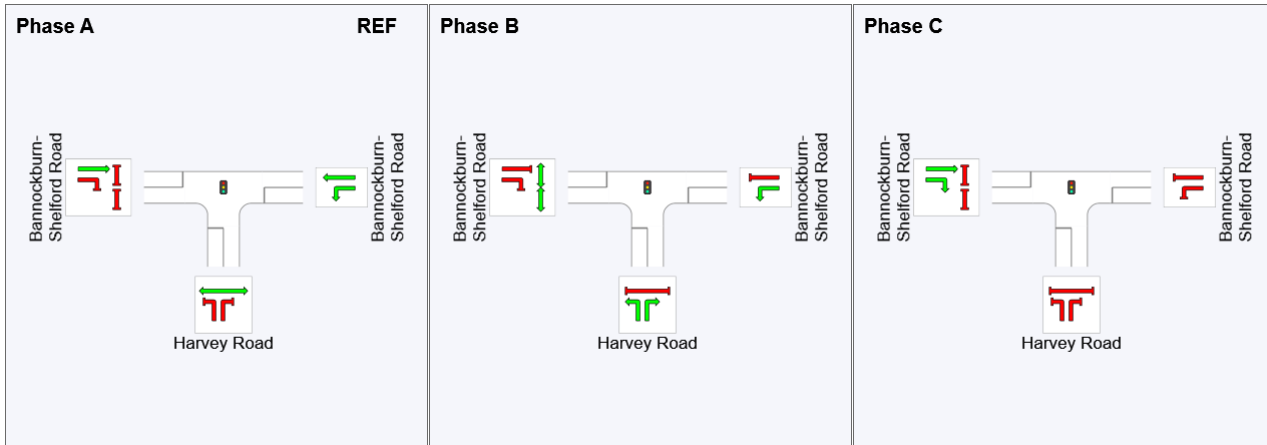
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

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6 Lane under-utilisation due to downstream effects

### Output Phase Sequence



REF: Reference Phase  
 VAR: Variable Phase



### Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	69	88
Green Time (sec)	63	13	6
Phase Time (sec)	69	19	12
Phase Split	69%	19%	12%
Phase Frequency (%)	100.0	100.0	100.0

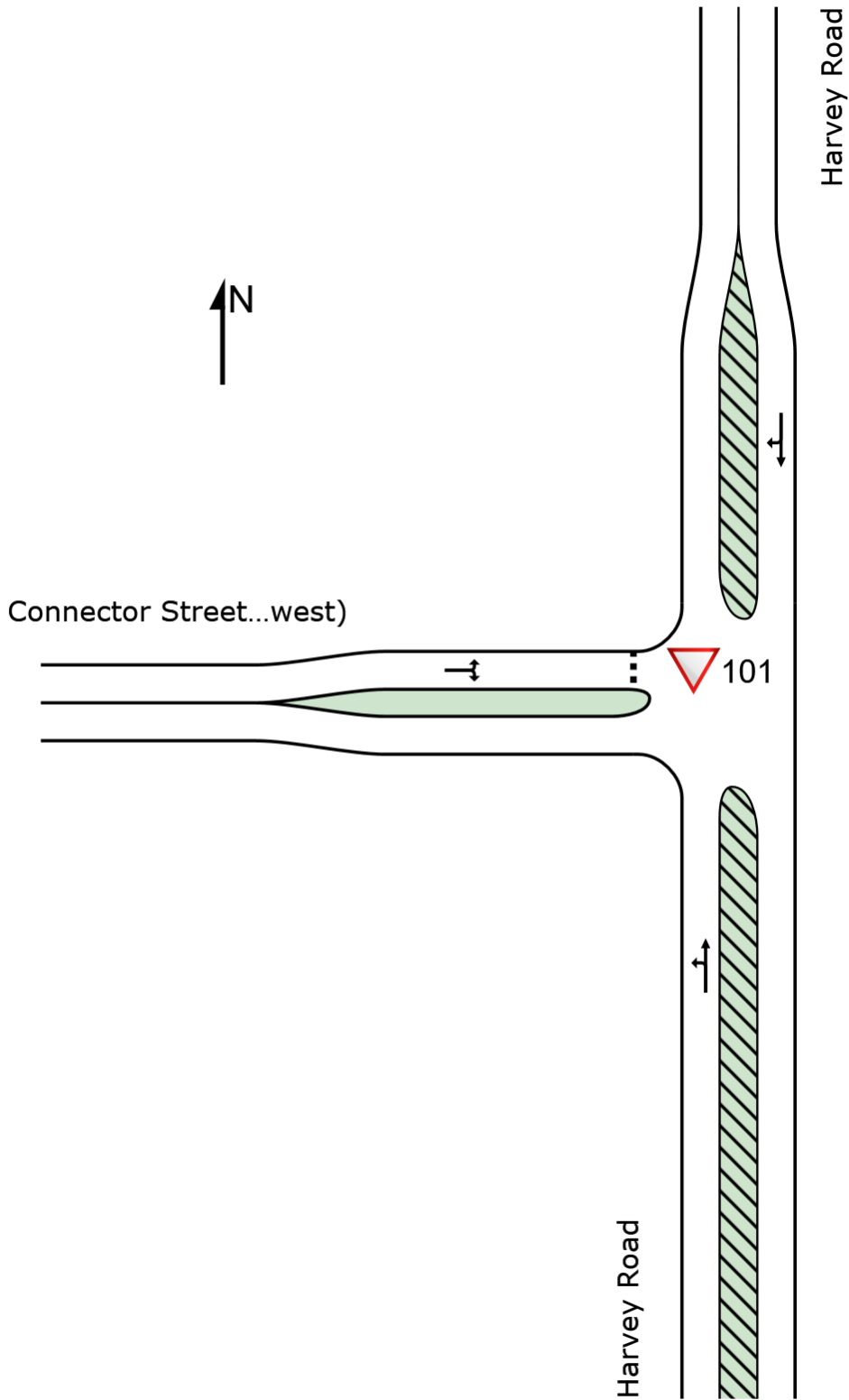
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

▽ Site: 101 [Ultimate\_Harvey-Connector west\_AM (Site Folder: General)]

New Site  
Site Category: (None)  
Give-Way (Two-Way)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



## Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue	Of Queue Dist ]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	m		m	%	%
	veh/h	%	veh/h	%											
South: Harvey Road															
Lane 1	343	3.0	343	3.0	1912	0.179	100	0.5	LOS A	0.0	0.0	Full	10	0.0	0.0
Approach	343	3.0	343	3.0		0.179		0.5	NA	0.0	0.0				
North: Harvey Road															
Lane 1	179	3.0	179	3.0	1749	0.102	100	1.6	LOS A	0.3	1.9	Full	500	0.0	0.0
Approach	179	3.0	179	3.0		0.102		1.6	NA	0.3	1.9				
West: Connector Street (west)															
Lane 1	380	3.0	380	3.0	903	0.421	100	8.7	LOS A	2.4	16.9	Full	500	0.0	0.0
Approach	380	3.0	380	3.0		0.421		8.7	LOS A	2.4	16.9				
All Vehicles	902	3.0	902	3.0		0.421		4.2	NA	2.4	16.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

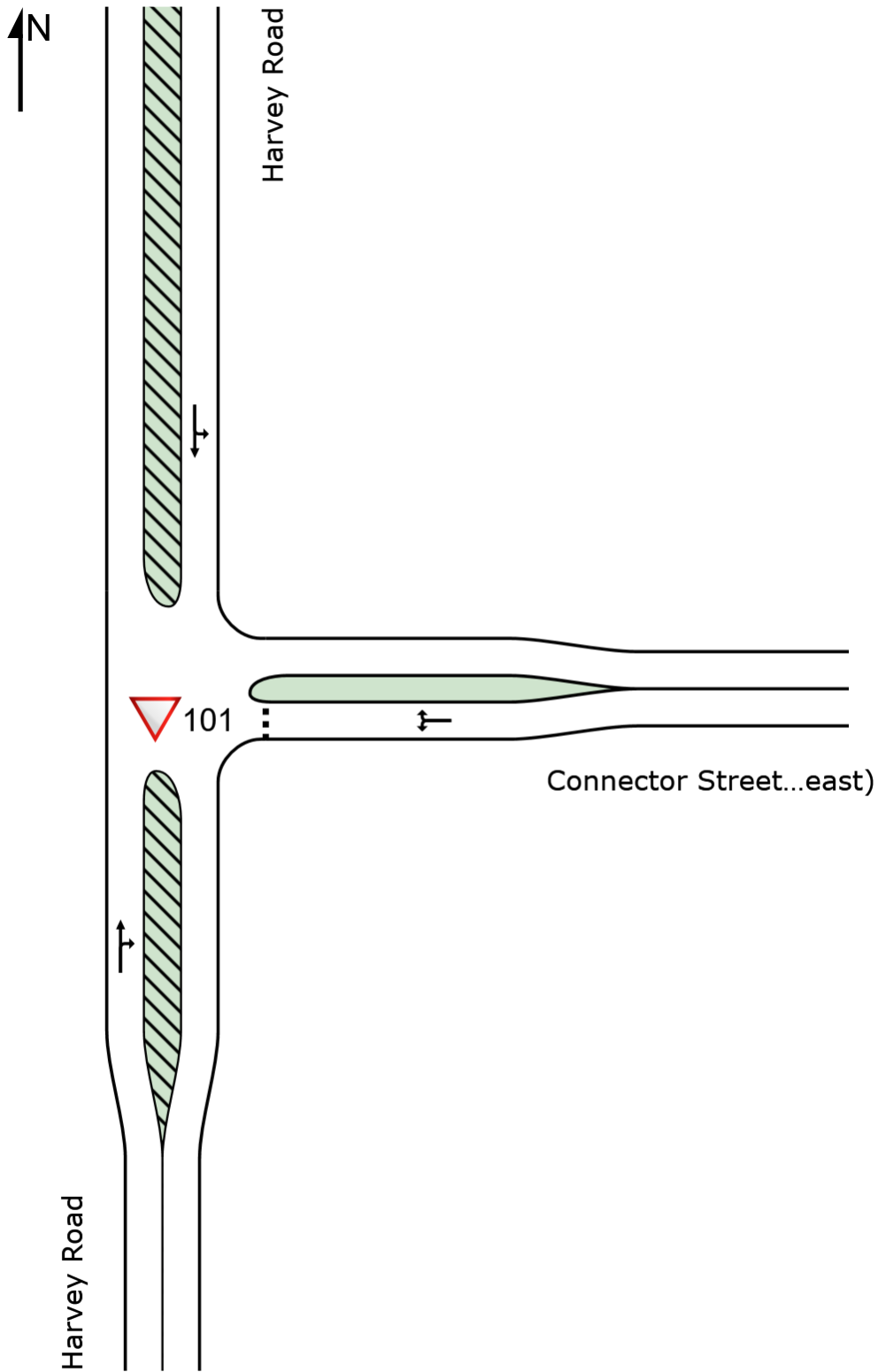
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

▽ Site: 101 [Ultimate\_Harvey-Connector east\_AM (Site Folder: General)]

New Site  
Site Category: (None)  
Give-Way (Two-Way)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



## Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue	Dist ]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]											
South: Harvey Road															
Lane 1	301	3.0	301	3.0	1842	0.163	100	0.7	LOS A	0.2	1.5	Full	500	0.0	0.0
Approach	301	3.0	301	3.0		0.163		0.7	NA	0.2	1.5				
East: Connector Street (east)															
Lane 1	154	3.0	154	3.0	851	0.181	100	8.1	LOS A	0.7	4.8	Full	500	0.0	0.0
Approach	154	3.0	154	3.0		0.181		8.1	LOS A	0.7	4.8				
North: Harvey Road															
Lane 1	394	3.0	394	3.0	1924	0.205	100	0.2	LOS A	0.0	0.0	Full	10	0.0	0.0
Approach	394	3.0	394	3.0		0.205		0.2	NA	0.0	0.0				
All Vehicles	848	3.0	848	3.0		0.205		1.8	NA	0.7	4.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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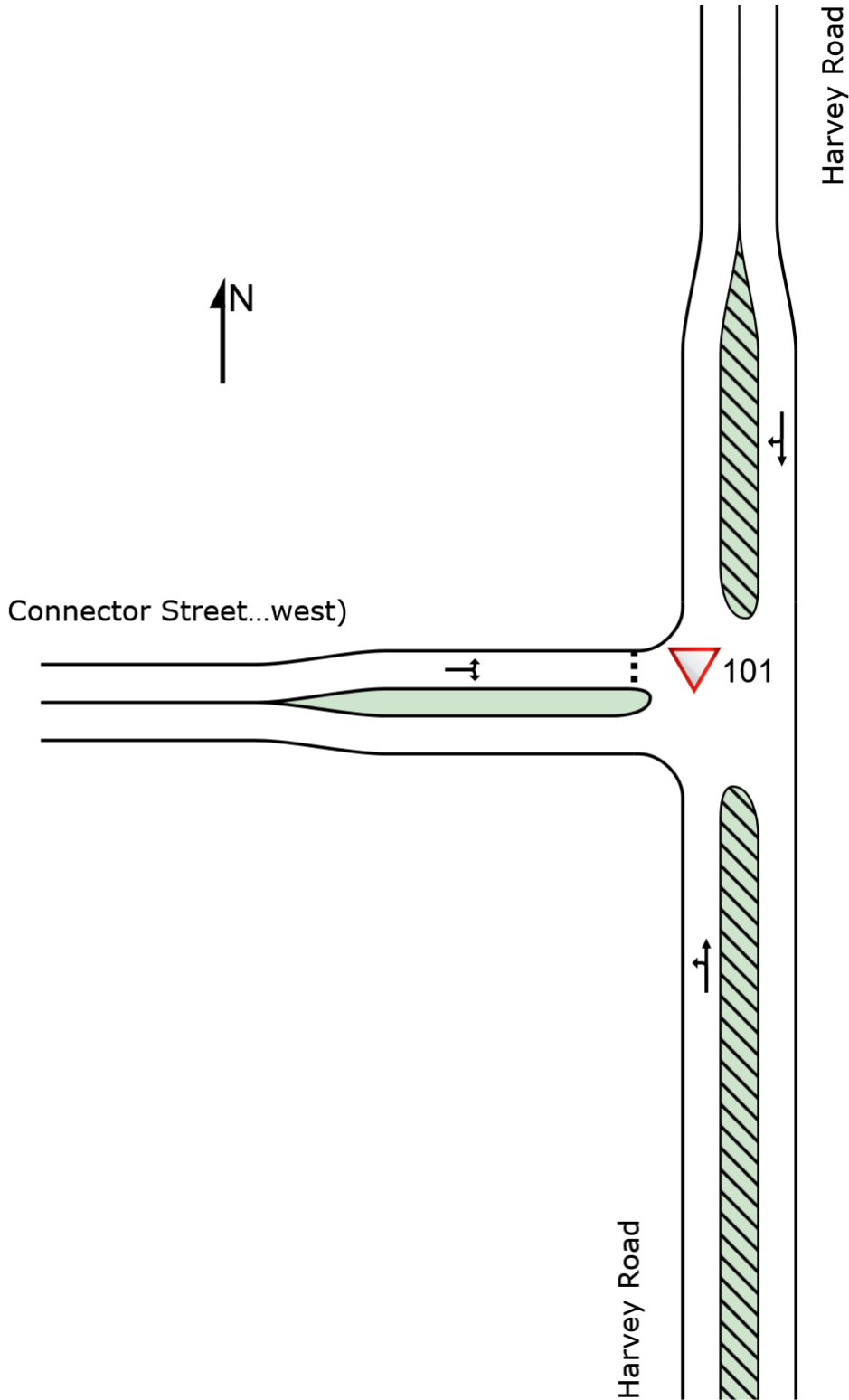
Organisation: TRAFFICWORKS PTY LTD | Licence: NETWORK / 1PC | Created: Wednesday, 24 January 2024 12:22:43 PM

Project: T:\2223 Projects\220912\Analysis\220912\_SIDRA\_Ultimate analysis\_240117.sip9

New Site  
Site Category: (None)  
Give-Way (Two-Way)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



## Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	Aver. Back Of Queue [ Veh	Dist ]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h	HV ] %	[ Total veh/h	HV ] %											
South: Harvey Road															
Lane 1	343	3.0	343	3.0	1912	0.179	100	0.5	LOS A	0.0	0.0	Full	10	0.0	0.0
Approach	343	3.0	343	3.0		0.179		0.5	NA	0.0	0.0				
North: Harvey Road															
Lane 1	179	3.0	179	3.0	1749	0.102	100	1.6	LOS A	0.1	0.8	Full	500	0.0	0.0
Approach	179	3.0	179	3.0		0.102		1.6	NA	0.1	0.8				
West: Connector Street (west)															
Lane 1	380	3.0	380	3.0	903	0.421	100	8.7	LOS A	0.9	6.8	Full	500	0.0	0.0
Approach	380	3.0	380	3.0		0.421		8.7	LOS A	0.9	6.8				
All Vehicles	902	3.0	902	3.0		0.421		4.2	NA	0.9	6.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

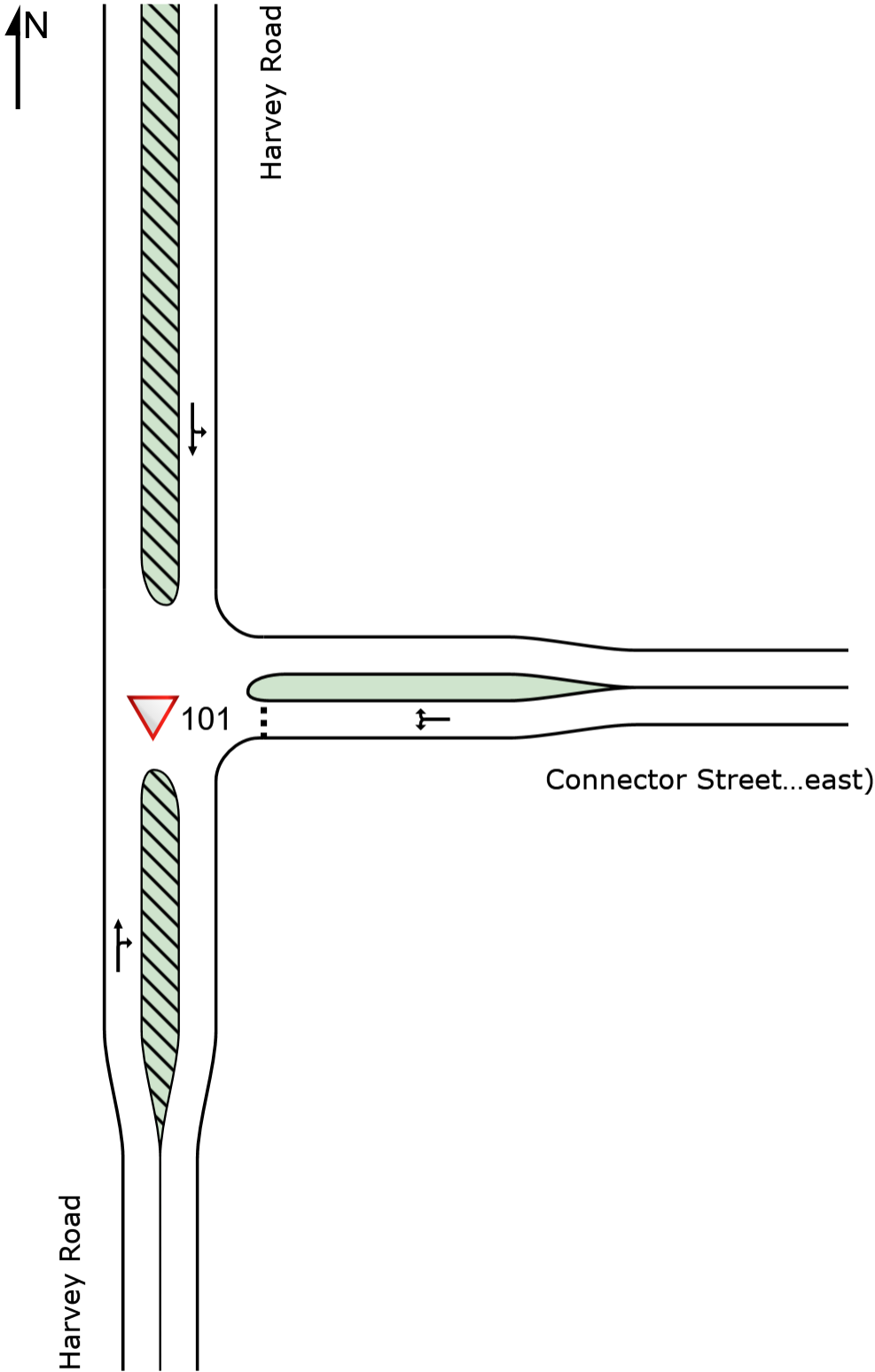
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



New Site  
Site Category: (None)  
Give-Way (Two-Way)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



## Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	Aver. Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h	HV ] %	[ Total veh/h	HV ] %						[ Veh	Dist ] m				
South: Harvey Road															
Lane 1	301	3.0	301	3.0	1842	0.163	100	0.7	LOS A	0.1	0.6	Full	500	0.0	0.0
Approach	301	3.0	301	3.0		0.163		0.7	NA	0.1	0.6				
East: Connector Street (east)															
Lane 1	154	3.0	154	3.0	851	0.181	100	8.1	LOS A	0.3	1.9	Full	500	0.0	0.0
Approach	154	3.0	154	3.0		0.181		8.1	LOS A	0.3	1.9				
North: Harvey Road															
Lane 1	394	3.0	394	3.0	1924	0.205	100	0.2	LOS A	0.0	0.0	Full	10	0.0	0.0
Approach	394	3.0	394	3.0		0.205		0.2	NA	0.0	0.0				
All Vehicles	848	3.0	848	3.0		0.205		1.8	NA	0.3	1.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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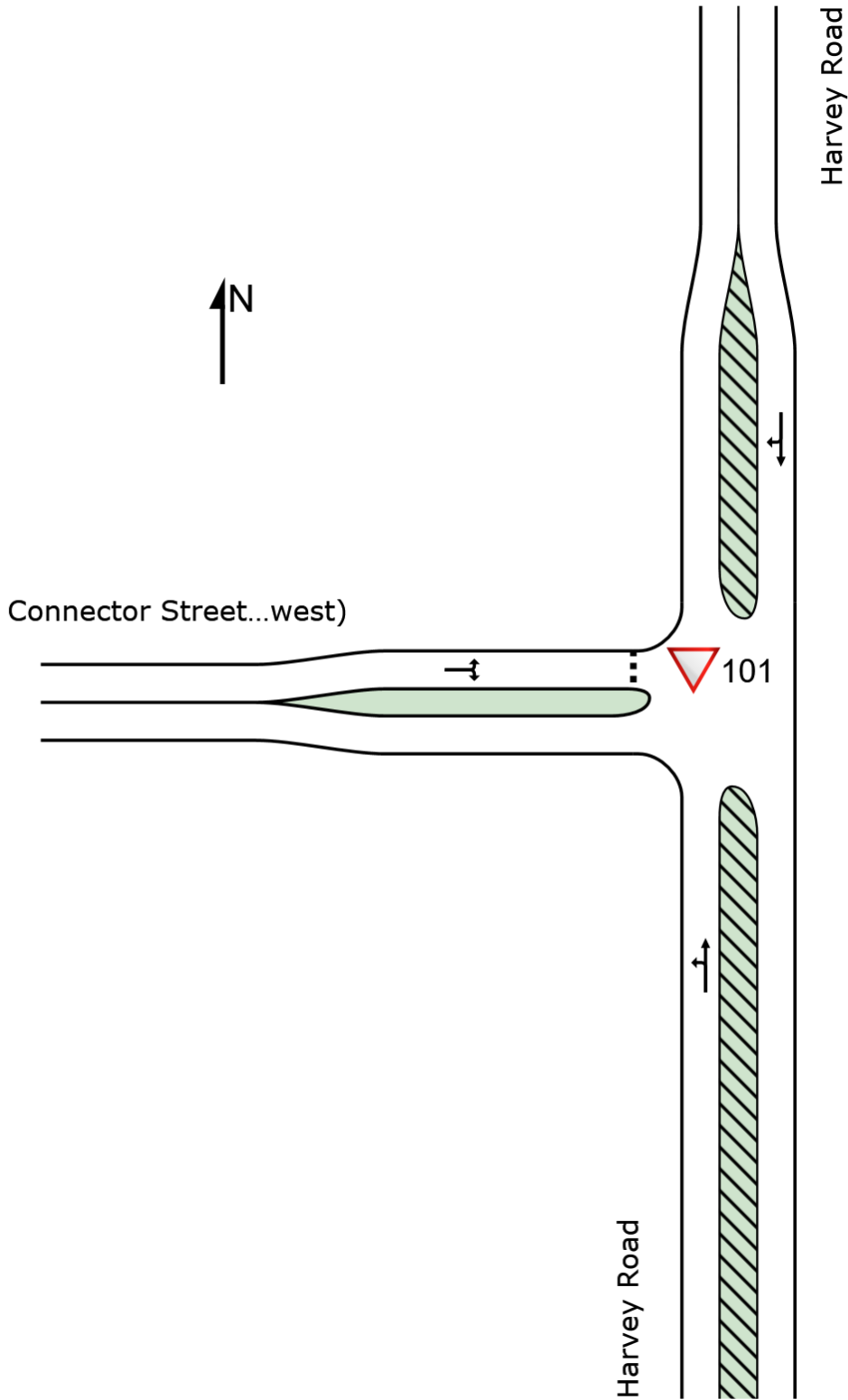
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Project: T:\2223 Projects\220912\Analysis\220912\_SIDRA\_Ultimate analysis\_240117.sip9

New Site  
Site Category: (None)  
Give-Way (Two-Way)

### Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



## Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	Aver. Back Of Queue [ Veh	Dist ]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h	HV ] %	[ Total veh/h	HV ] %											
South: Harvey Road															
Lane 1	374	3.0	374	3.0	1877	0.199	100	1.3	LOS A	0.0	0.0	Full	10	0.0	0.0
Approach	374	3.0	374	3.0		0.199		1.3	NA	0.0	0.0				
North: Harvey Road															
Lane 1	363	3.0	363	3.0	1615	0.225	100	2.9	LOS A	0.4	2.7	Full	500	0.0	0.0
Approach	363	3.0	363	3.0		0.225		2.9	NA	0.4	2.7				
West: Connector Street (west)															
Lane 1	146	3.0	146	3.0	810	0.181	100	8.2	LOS A	0.3	1.9	Full	500	0.0	0.0
Approach	146	3.0	146	3.0		0.181		8.2	LOS A	0.3	1.9				
All Vehicles	883	3.0	883	3.0		0.225		3.1	NA	0.4	2.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

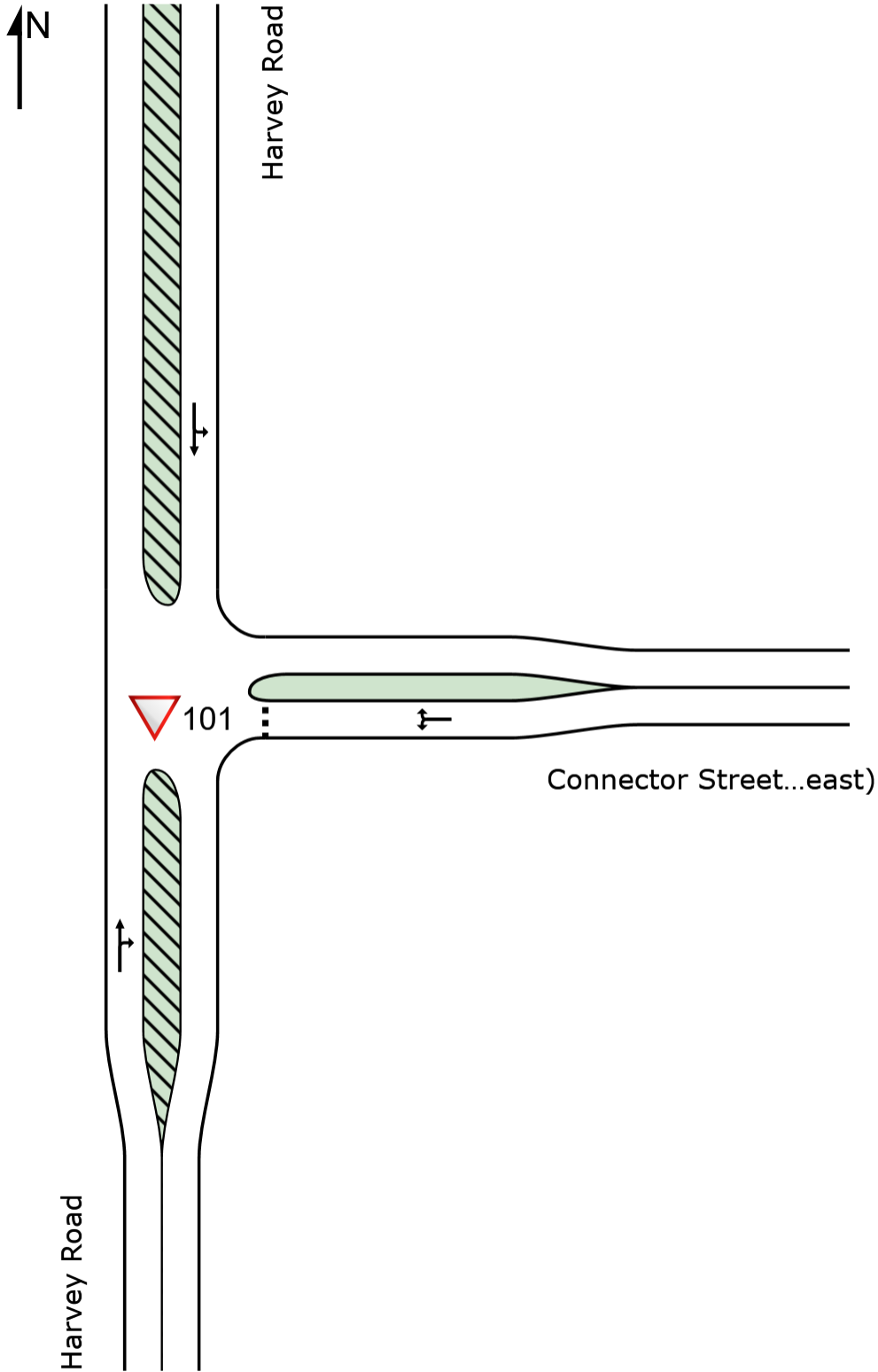
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

New Site  
Site Category: (None)  
Give-Way (Two-Way)

### Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	Aver. Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]						[ Veh	Dist ]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Harvey Road															
Lane 1	411	3.0	411	3.0	1751	0.234	100	1.6	LOS A	0.3	1.9	Full	500	0.0	0.0
Approach	411	3.0	411	3.0		0.234		1.6	NA	0.3	1.9				
East: Connector Street (east)															
Lane 1	69	3.0	69	3.0	773	0.090	100	8.3	LOS A	0.1	0.9	Full	500	0.0	0.0
Approach	69	3.0	69	3.0		0.090		8.3	LOS A	0.1	0.9				
North: Harvey Road															
Lane 1	345	3.0	345	3.0	1916	0.180	100	0.4	LOS A	0.0	0.0	Full	10	0.0	0.0
Approach	345	3.0	345	3.0		0.180		0.4	NA	0.0	0.0				
All Vehicles	825	3.0	825	3.0		0.234		1.7	NA	0.3	1.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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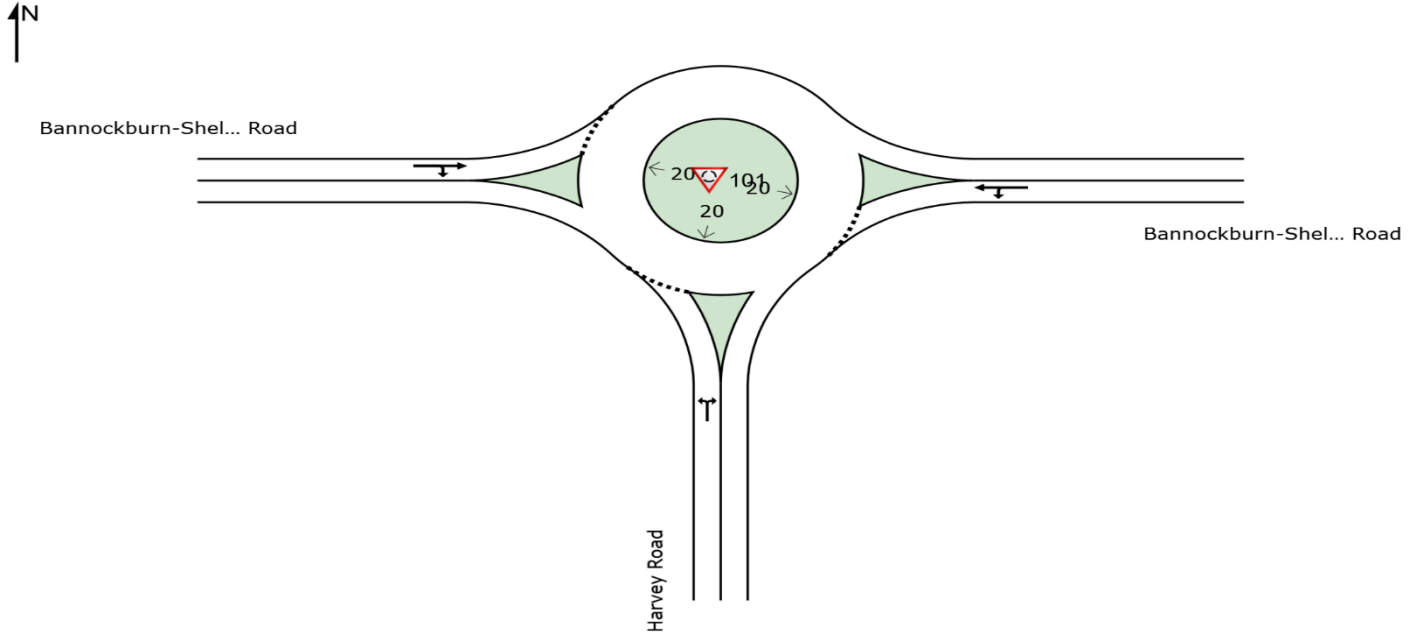
Project: T:\2223 Projects\220912\Analysis\220912\_SIDRA\_Ultimate analysis\_240117.sip9

**Site: 101 [Interim\_BS Rd-Harvey\_AM - 1,000 lots - SOUTH only (Site Folder: General)]**

New Site  
 Site Category: (None)  
 Roundabout

**Site Layout**

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



**Lane Use and Performance**

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	Dist ]		m	%	%
	veh/h	%	veh/h	%						m					
South: Harvey Road															
Lane 1 <sup>d</sup>	713	3.0	713	3.0	946	0.753	100	16.9	LOS B	10.7	77.2	Full	500	0.0	0.0
Approach	713	3.0	713	3.0		0.753		16.9	LOS B	10.7	77.2				
East: Bannockburn-Shelford Road															
Lane 1 <sup>d</sup>	588	7.8	588	7.8	1441	0.408	100	4.4	LOS A	4.0	29.8	Full	500	0.0	0.0
Approach	588	7.8	588	7.8		0.408		4.4	LOS A	4.0	29.8				
West: Bannockburn-Shelford Road															
Lane 1 <sup>d</sup>	546	9.4	546	9.4	654	0.835	100	23.9	LOS C	13.9	104.9	Full	500	0.0	0.0
Approach	546	9.4	546	9.4		0.835		23.9	LOS C	13.9	104.9				
All Vehicles	1847	6.4	1847	6.4		0.835		15.0	LOS B	13.9	104.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

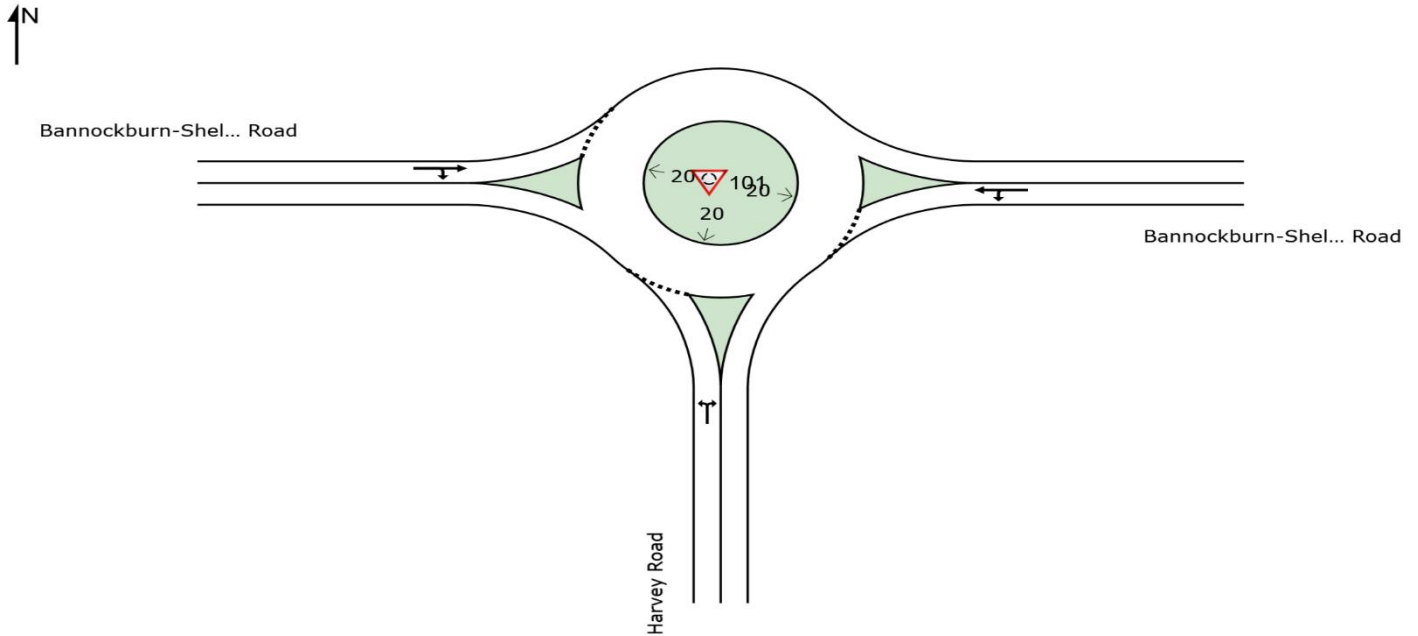
<sup>d</sup> Dominant lane on roundabout approach

**Site: 101 [Interim\_BS Rd-Harvey\_PM - 1,000 lots - SOUTH only (Site Folder: General)]**

New Site  
 Site Category: (None)  
 Roundabout

**Site Layout**

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



**Lane Use and Performance**

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	Dist ]		m	%	%
	veh/h	%	veh/h	%							m		m		
South: Harvey Road															
Lane 1 <b>d</b>	295	3.0	295	3.0	809	0.364	100	11.9	LOS B	2.6	18.9	Full	500	0.0	0.0
Approach	295	3.0	295	3.0		0.364		11.9	LOS B	2.6	18.9				
East: Bannockburn-Shelford Road															
Lane 1 <b>d</b>	1025	6.4	1025	6.4	1390	0.738	100	5.2	LOS A	11.0	81.3	Full	500	0.0	0.0
Approach	1025	6.4	1025	6.4		0.738		5.2	LOS A	11.0	81.3				
West: Bannockburn-Shelford Road															
Lane 1 <b>d</b>	494	8.8	494	8.8	1043	0.473	100	7.1	LOS A	4.0	29.9	Full	500	0.0	0.0
Approach	494	8.8	494	8.8		0.473		7.1	LOS A	4.0	29.9				
All Vehicles	1814	6.5	1814	6.5		0.738		6.8	LOS A	11.0	81.3				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**d** Dominant lane on roundabout approach

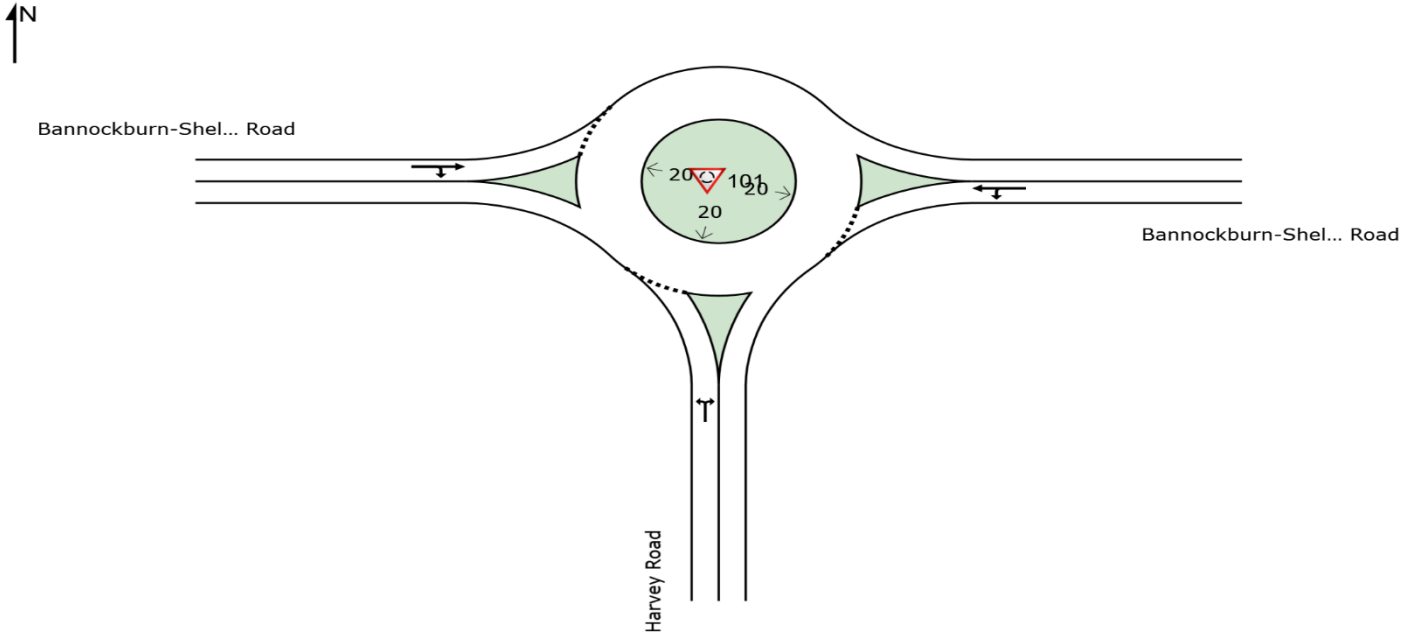


**Site: 101 [Interim\_BS Rd-Harvey\_AM - 1,050 total lots (Site Folder: General)]**

New Site  
 Site Category: (None)  
 Roundabout

**Site Layout**

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



**Lane Use and Performance**

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	Dist ]		m	%	%
	veh/h	%	veh/h	%							m		m		
South: Harvey Road															
Lane 1 <b>d</b>	421	3.0	421	3.0	914	0.461	100	11.3	LOS B	3.5	24.9	Full	500	0.0	0.0
Approach	421	3.0	421	3.0		0.461		11.3	LOS B	3.5	24.9				
East: Bannockburn-Shelford Road															
Lane 1 <b>d</b>	521	8.5	521	8.5	1274	0.409	100	4.9	LOS A	3.7	28.0	Full	500	0.0	0.0
Approach	521	8.5	521	8.5		0.409		4.9	LOS A	3.7	28.0				
West: Bannockburn-Shelford Road															
Lane 1 <b>d</b>	808	9.1	808	9.1	959	0.843	100	16.0	LOS B	16.4	123.4	Full	500	0.0	0.0
Approach	808	9.1	808	9.1		0.843		16.0	LOS B	16.4	123.4				
All Vehicles	1751	7.5	1751	7.5		0.843		11.6	LOS B	16.4	123.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

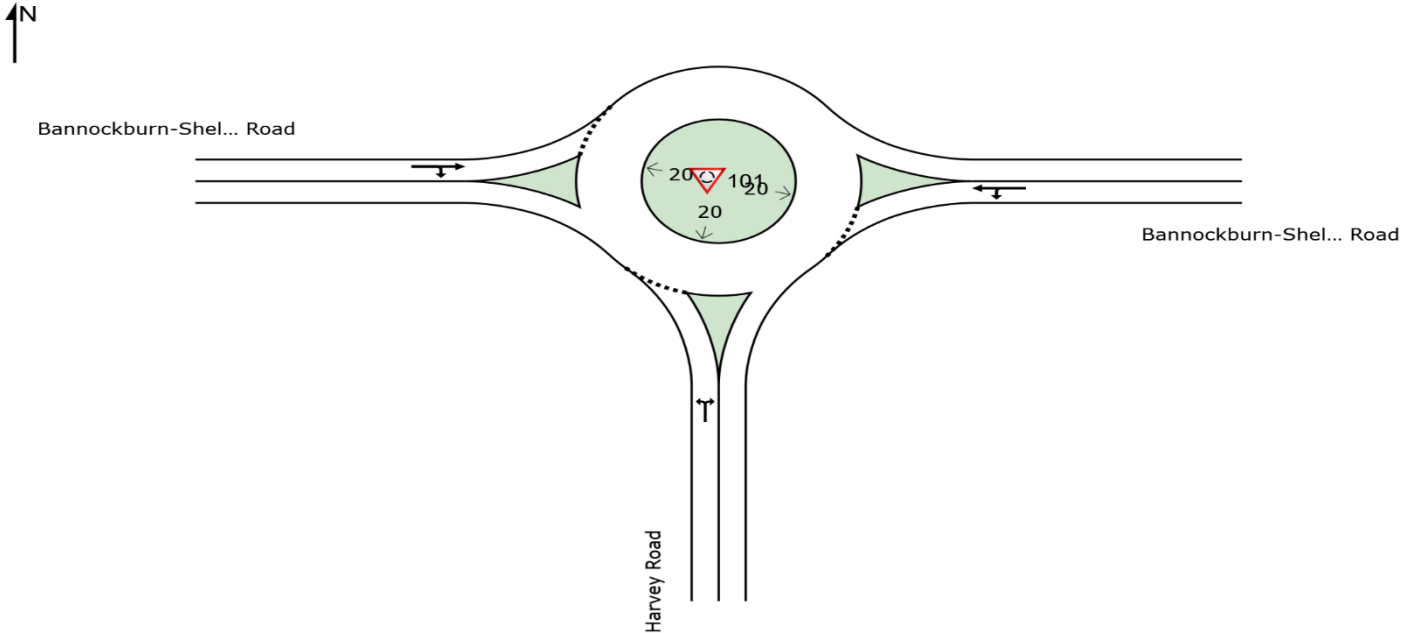
**d** Dominant lane on roundabout approach

**Site: 101 [Interim\_BS Rd-Harvey\_PM - 1,050 total lots (Site Folder: General)]**

New Site  
 Site Category: (None)  
 Roundabout

**Site Layout**

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



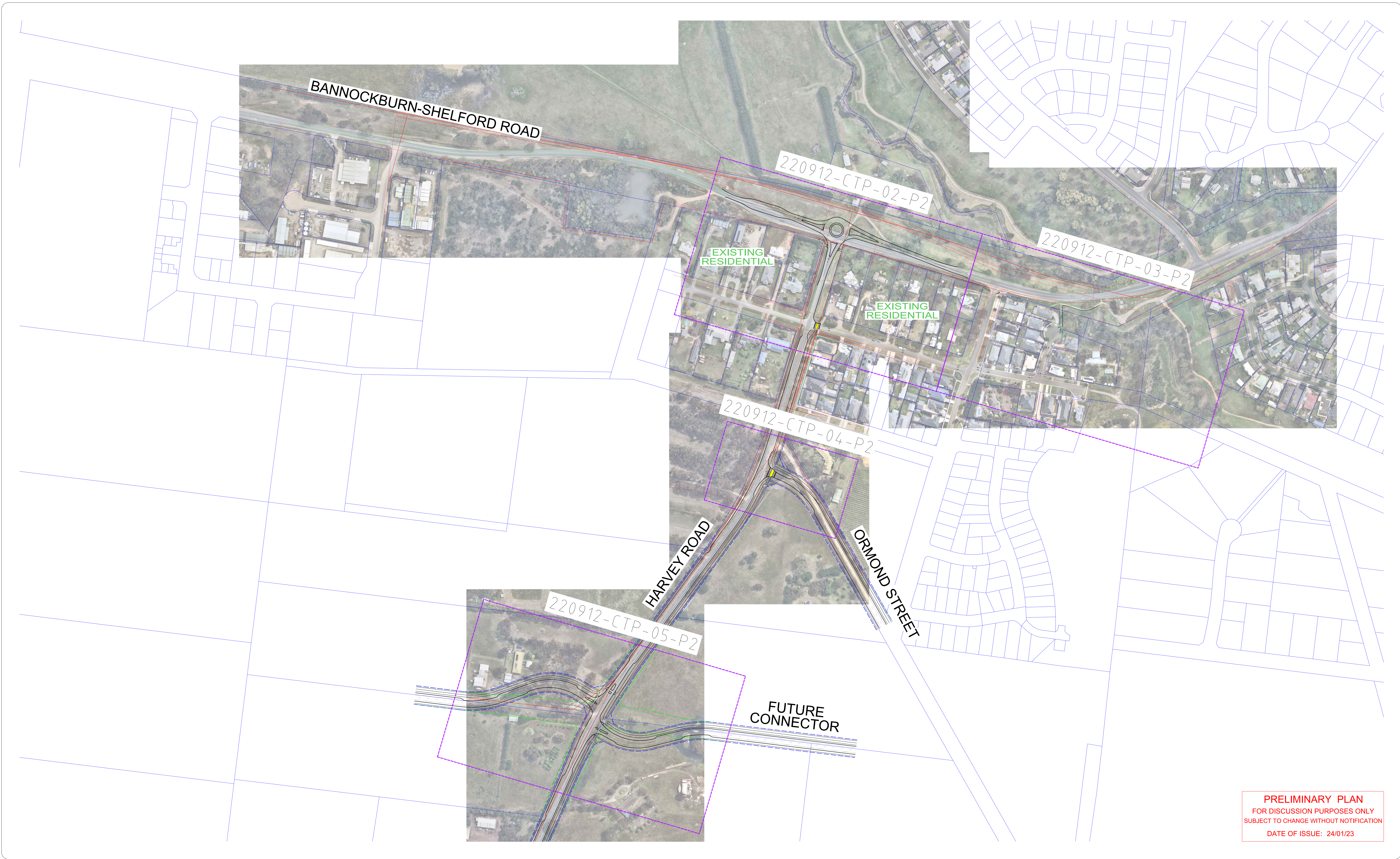
Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]	veh/h	v/c	%	sec		[ Veh	Dist ]		m	%	%
	veh/h	%	veh/h	%							m		m		
South: Harvey Road															
Lane 1 <b>d</b>	237	3.0	237	3.0	699	0.339	100	12.2	LOS B	2.4	17.3	Full	500	0.0	0.0
Approach	237	3.0	237	3.0		0.339		12.2	LOS B	2.4	17.3				
East: Bannockburn-Shelford Road															
Lane 1 <b>d</b>	954	7.8	954	7.8	1400	0.681	100	5.0	LOS A	8.9	66.4	Full	500	0.0	0.0
Approach	954	7.8	954	7.8		0.681		5.0	LOS A	8.9	66.4				
West: Bannockburn-Shelford Road															
Lane 1 <b>d</b>	520	9.0	520	9.0	1193	0.436	100	6.1	LOS A	3.8	28.7	Full	500	0.0	0.0
Approach	520	9.0	520	9.0		0.436		6.1	LOS A	3.8	28.7				
All Vehicles	1711	7.5	1711	7.5		0.681		6.3	LOS A	8.9	66.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
 Roundabout LOS Method: SIDRA Roundabout LOS.  
 Lane LOS values are based on average delay per lane.  
 Intersection and Approach LOS values are based on average delay for all lanes.  
 Roundabout Capacity Model: SIDRA Standard.  
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**d** Dominant lane on roundabout approach

## **Appendix 3 – Concept plans**

24/01/2024 220912-CTP-01  
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**PRELIMINARY PLAN**  
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Drawing Record				
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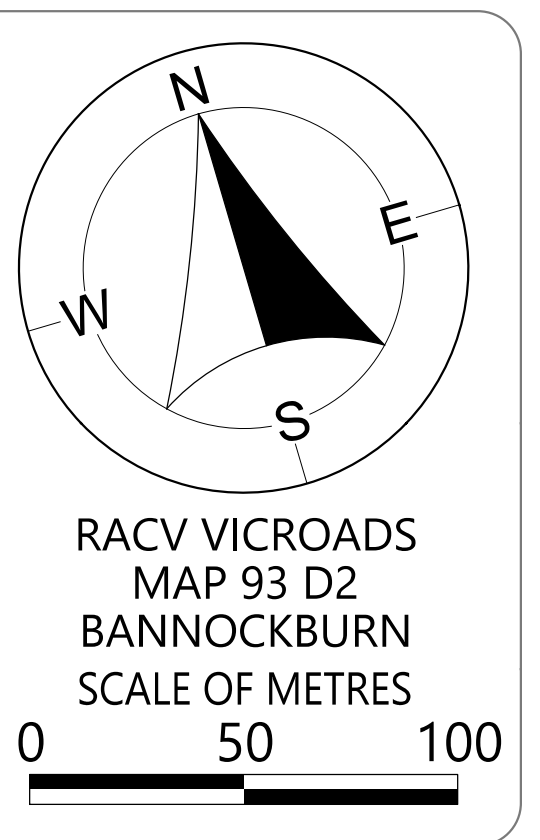
**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

Notes & Legend	
1.	AERIAL IMAGE FROM NEARMAP UNDER LICENSE AGREEMENT WITH TRAFFICWORKS PTY LTD.
2.	ALL DIMENSIONS ARE TO FACE OF KERB UNLESS SHOWN OTHERWISE.
	Design by Trafficworks
	Cadastral
	Proposed ROW Boundary
	Existing
	Signalised Intersection Property Boundary

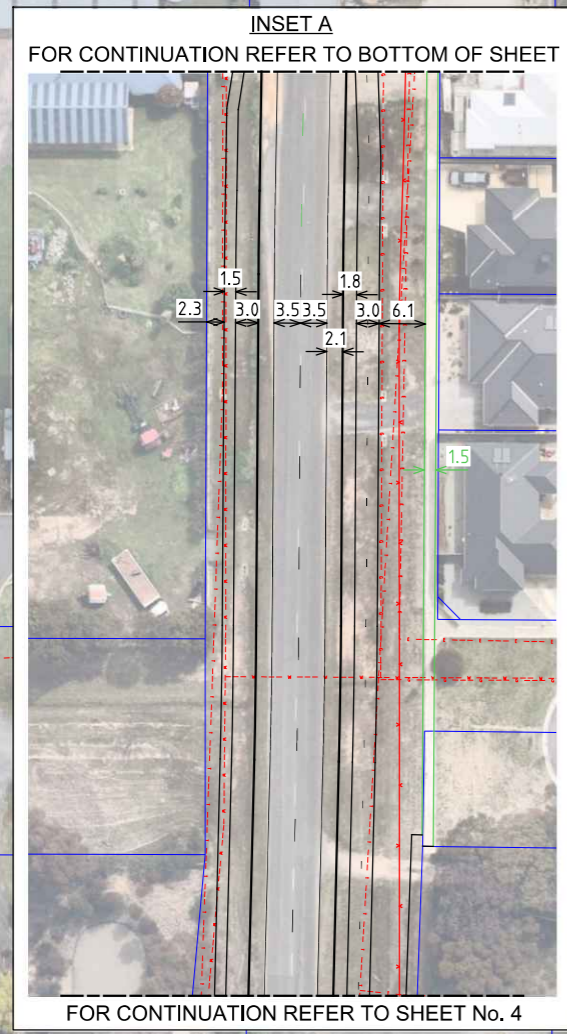
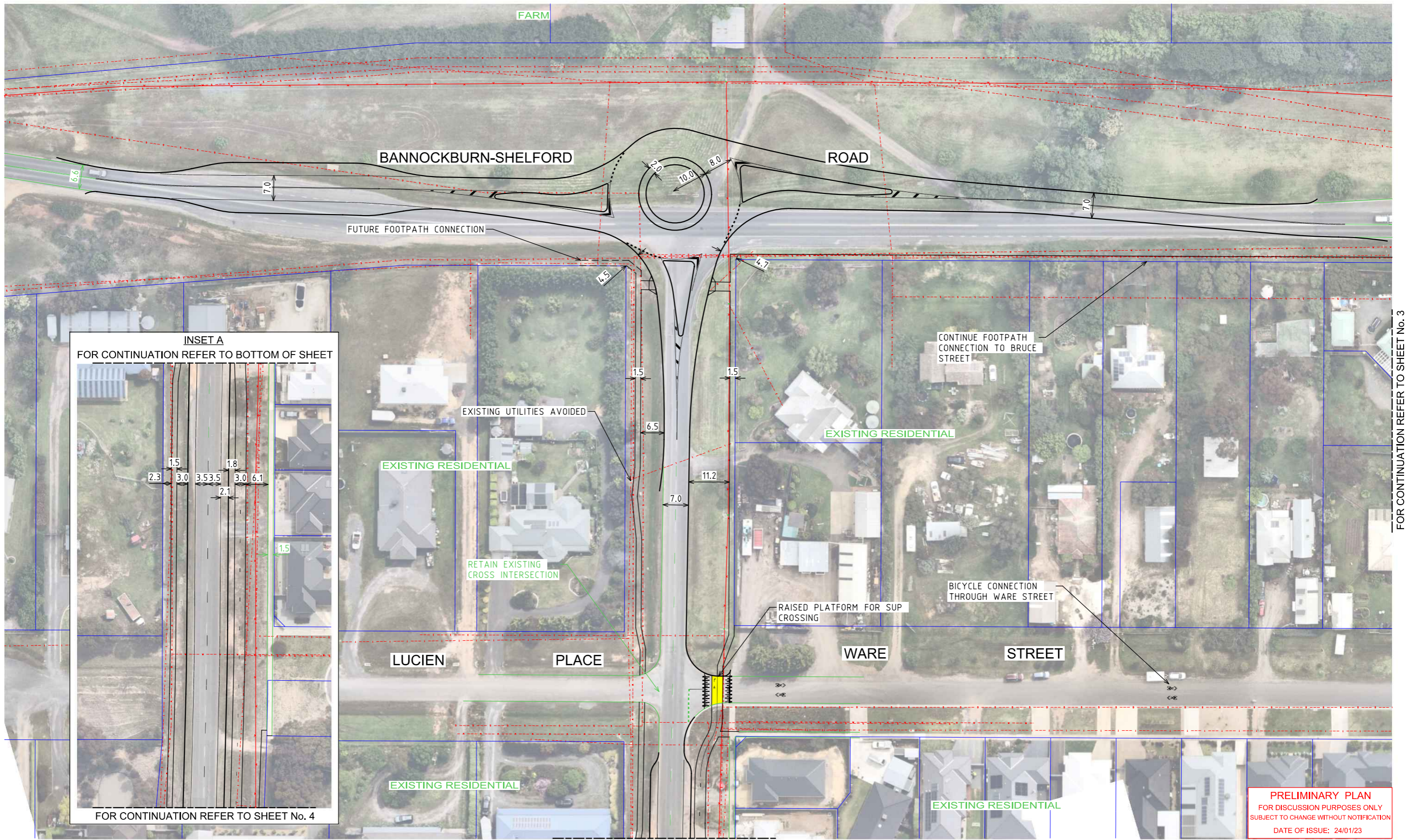
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**PLANIT CONSULTING**



Bannockburn Growth Plan		
Golden Plains Shire Council		
Key Plan		
SHEET NO.	DRAWING NO.	ISSUE
1	220912-CTP-01	P2



**PRELIMINARY PLAN**  
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24/01/2024 220912-CTP-02 2:37:27 PM T:\2223 Projects\220912-CTP-01-05-P2.dgn

FOR CONTINUATION REFER TO SHEET No. 3

FOR CONTINUATION REFER TO INSET A

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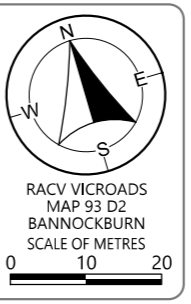
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	Design by Trafficworks
	Cadastral
	Proposed ROW Boundary
	Existing
	Signalised Intersection Property Boundary

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**Bannockburn Growth Plan**  
 Golden Plains Shire Council

**Concept Plan**

SHEET NO. 2	DRAWING NO. 220912-CTP-02	ISSUE P2
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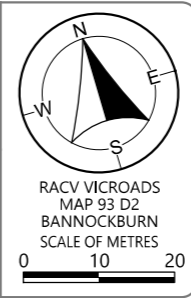
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—	Design by Trafficworks
—	Cadastral
—	Proposed ROW Boundary
—	Existing
—	Signalised Intersection Property Boundary

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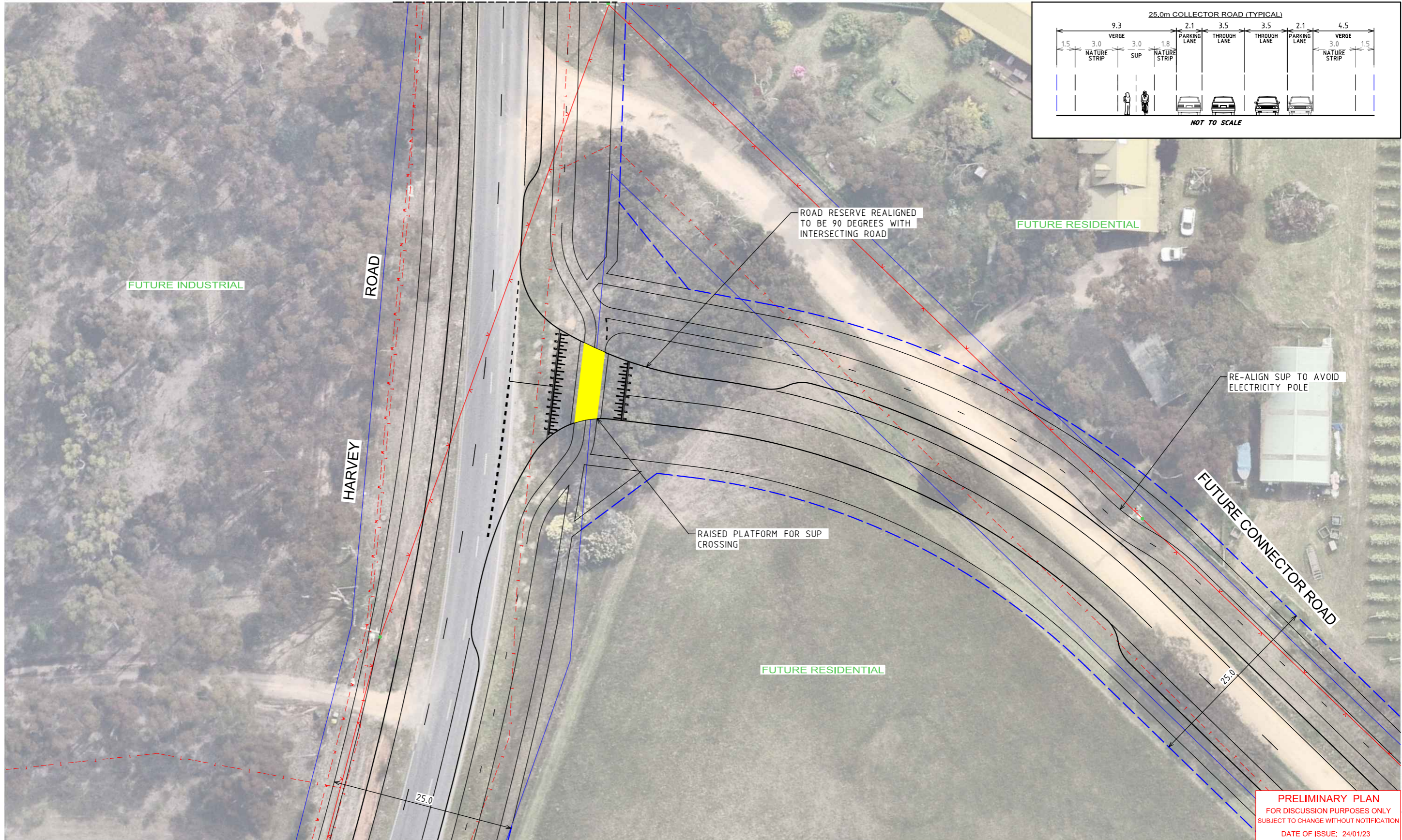
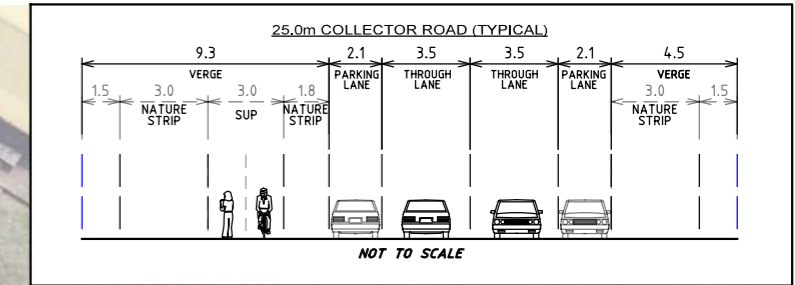


**Bannockburn Growth Plan**  
 Golden Plains Shire Council

**Concept Plan**

SHEET NO. 3	DRAWING NO. 220912-CTP-03	ISSUE P2
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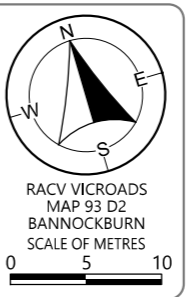
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Notes & Legend
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— Design by Trafficworks — Cadastre - - Proposed ROW Boundary — Existing - - Signalised Intersection Property Boundary

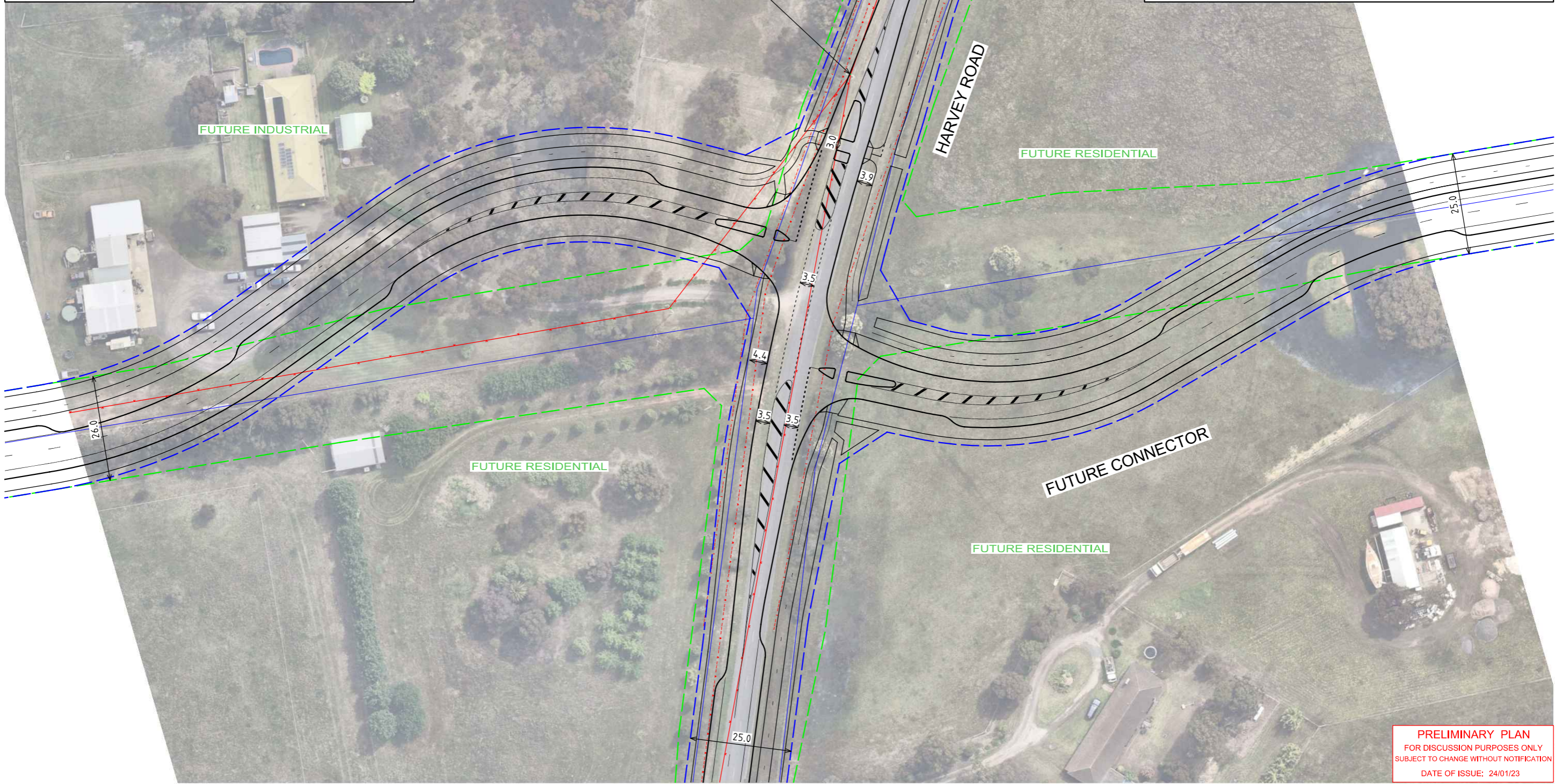
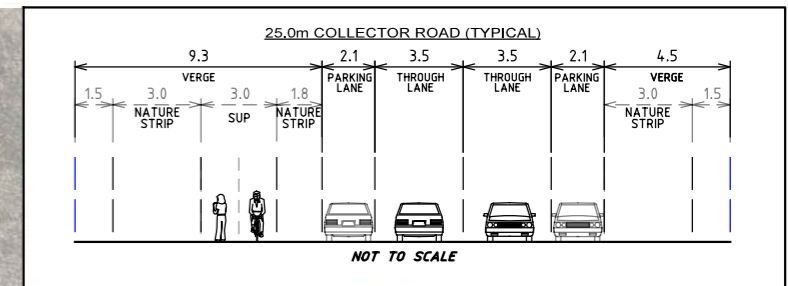
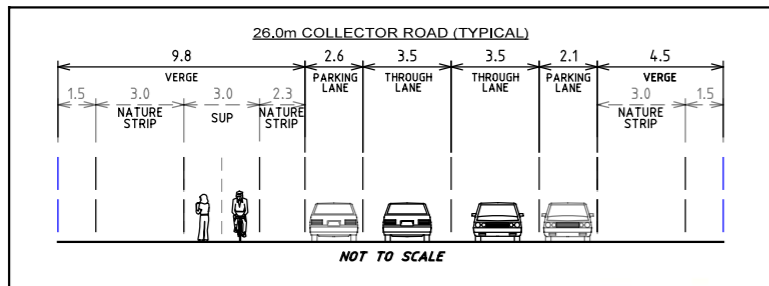
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Bannockburn Growth Plan		
Golden Plains Shire Council		
Concept Plan		
SHEET NO.	DRAWING NO.	ISSUE
4	220912-CTP-04	P2



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- Design by Trafficworks
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- - - Proposed ROW Boundary
- Existing
- - - Signalised Intersection Property Boundary

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RACV VICROADS  
 MAP 93 D2  
 BANNOCKBURN  
 SCALE OF METRES  
 0 10 20

## Bannockburn Growth Plan

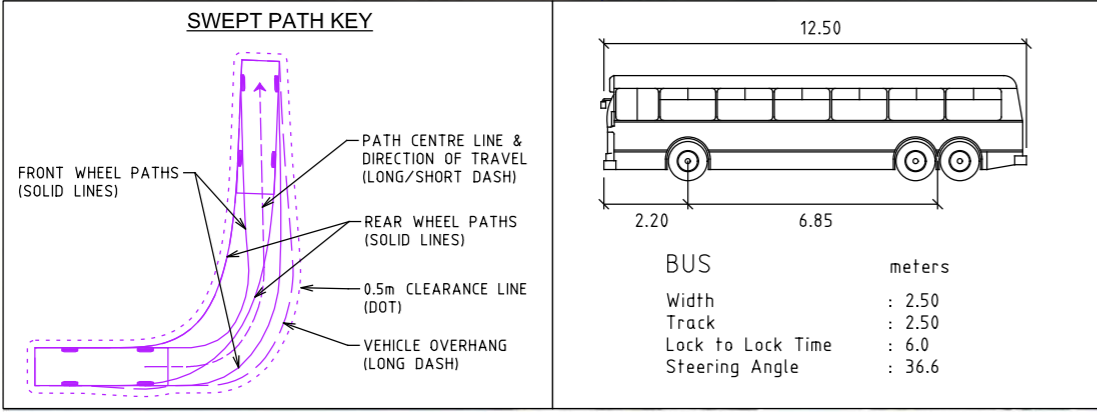
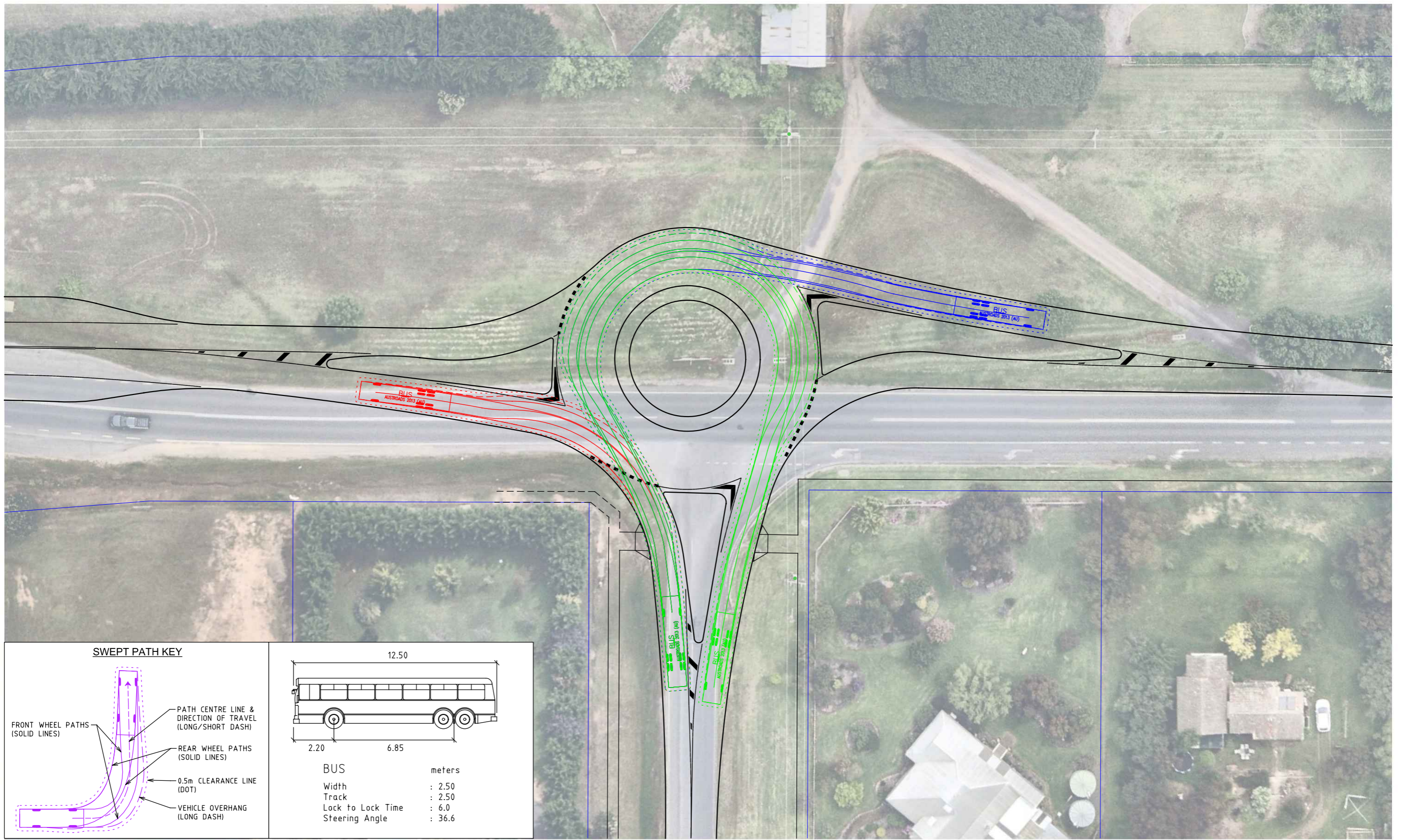
Golden Plains Shire Council

# Concept Plan

SHEET NO. 5	DRAWING NO. 220912-CTP-05	ISSUE P2
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## **Appendix 4 – Swept path analysis**



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Drawing Record				
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Notes & Legend	
1. AERIAL IMAGE FROM NEARMAP UNDER LICENSE AGREEMENT WITH TRAFFICWORKS PTY LTD. 2. ALL DIMENSIONS ARE TO FACE OF KERB UNLESS SHOWN OTHERWISE.	
Design by Trafficworks Cadastre Proposed ROW Boundary Existing	

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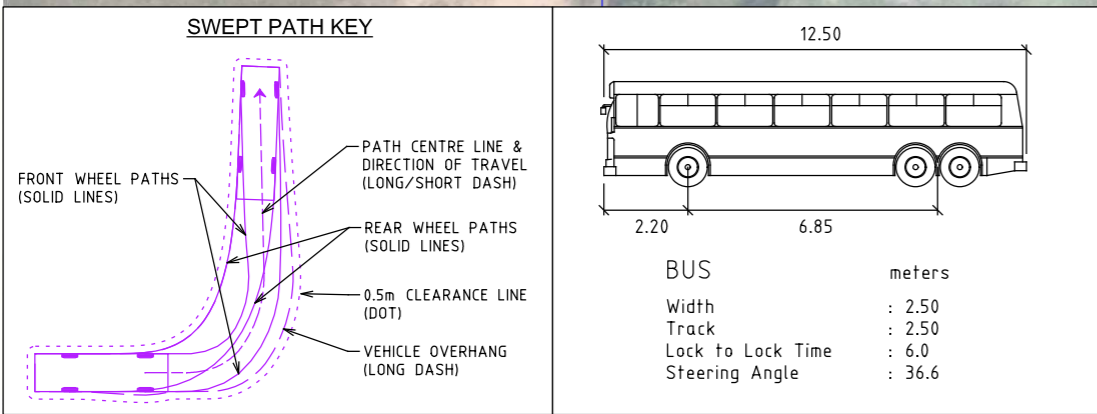
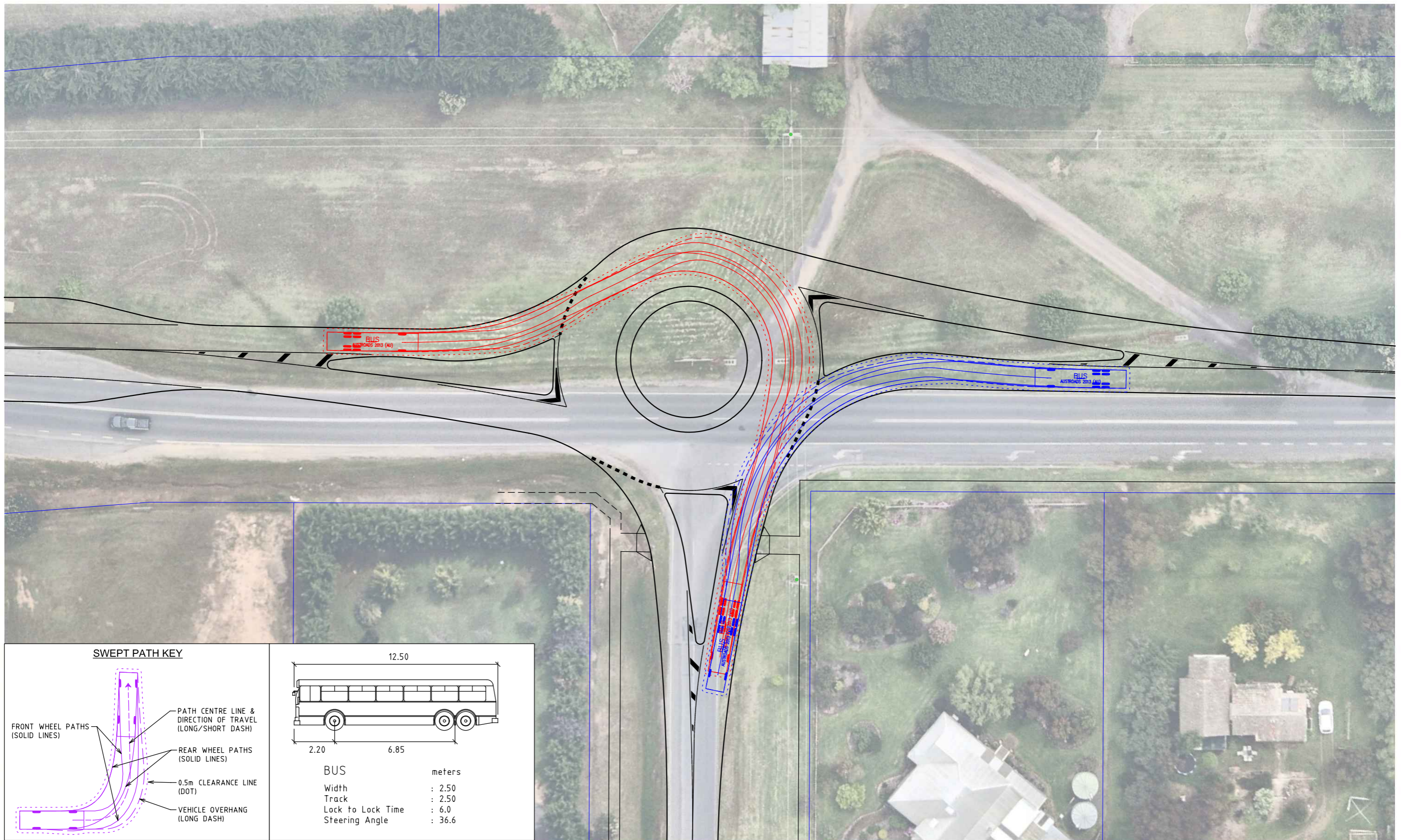
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RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

**Bannockburn Growth Plan**  
Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. 1	DRAWING NO. 220912-SKT-01-01	ISSUE P2
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	Design by Trafficworks
	Cadastre
	Proposed ROW Boundary
	Existing

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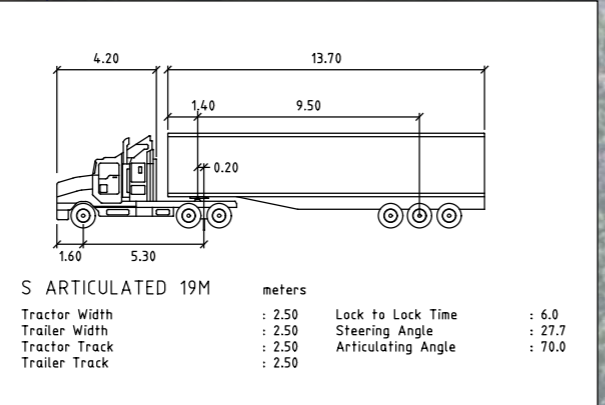
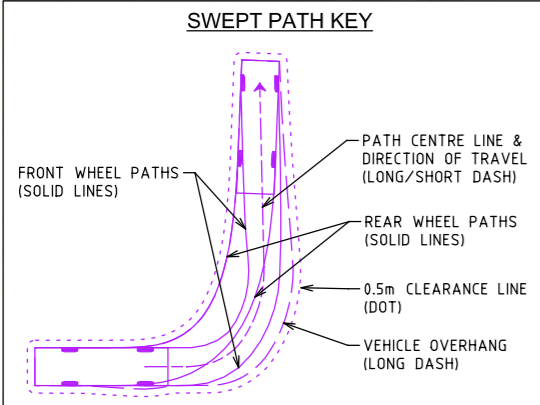
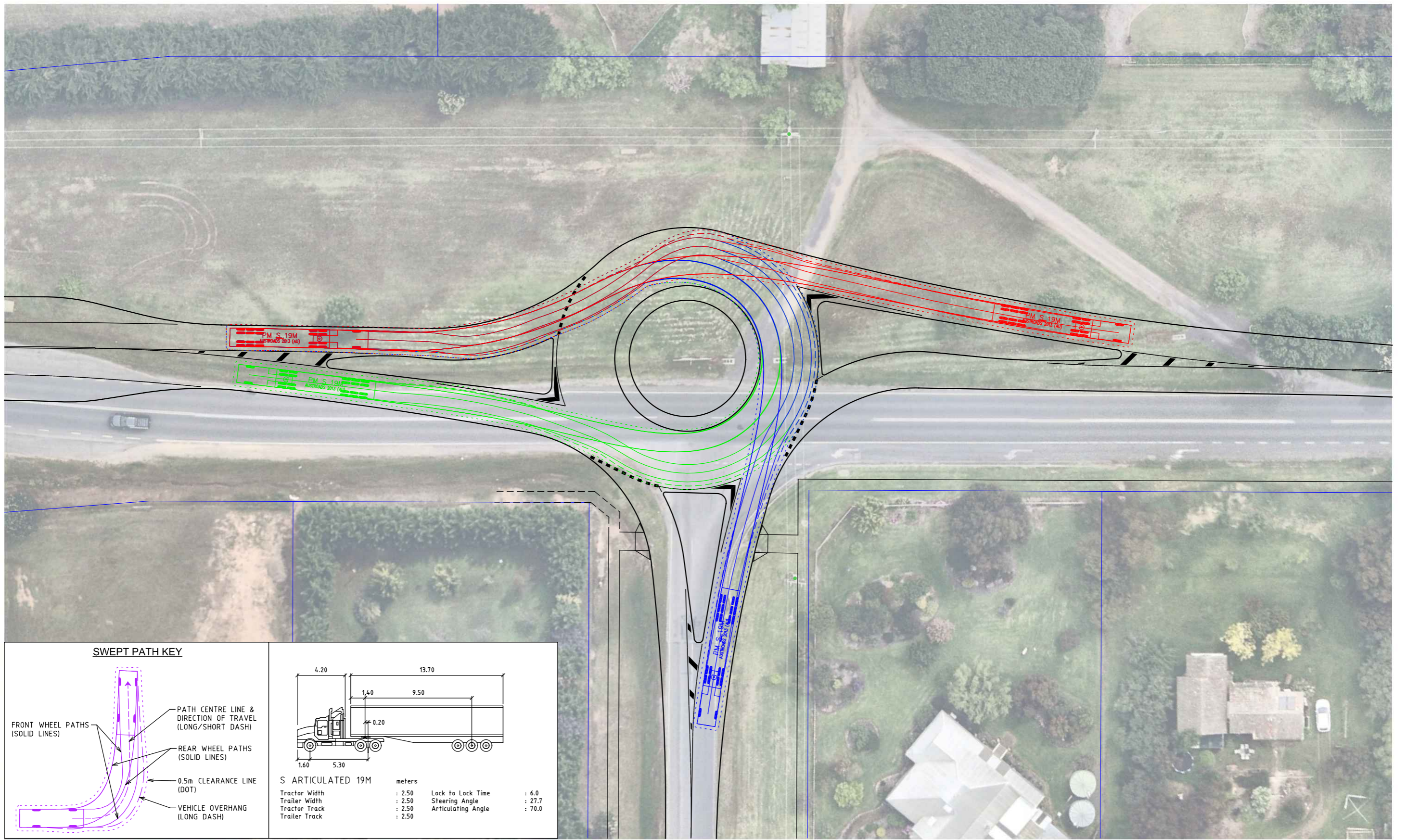
**PLANIT CONSULTING**

RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

**Bannockburn Growth Plan**  
Golden Plains Shire Council

**Swept Path Assessment**

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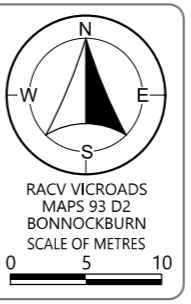
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- Design by Trafficworks
  - Cadastre
  - Proposed ROW Boundary
  - Existing

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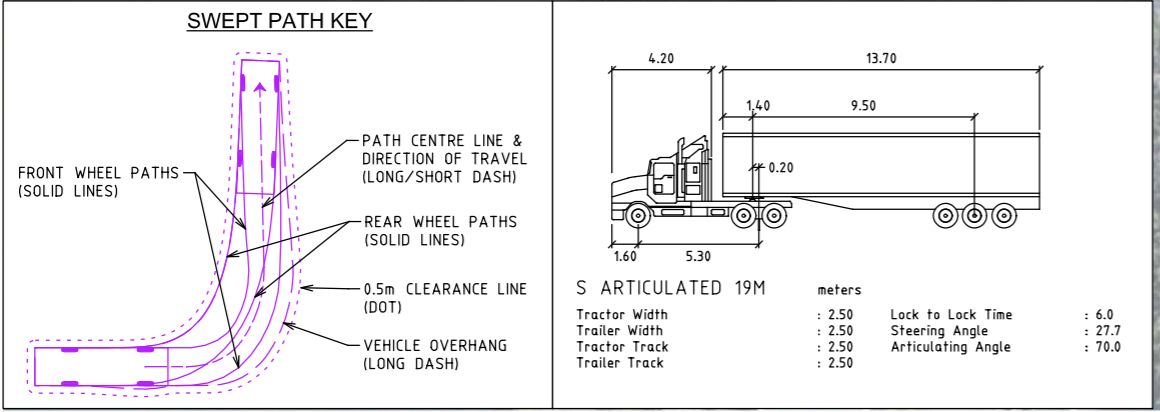
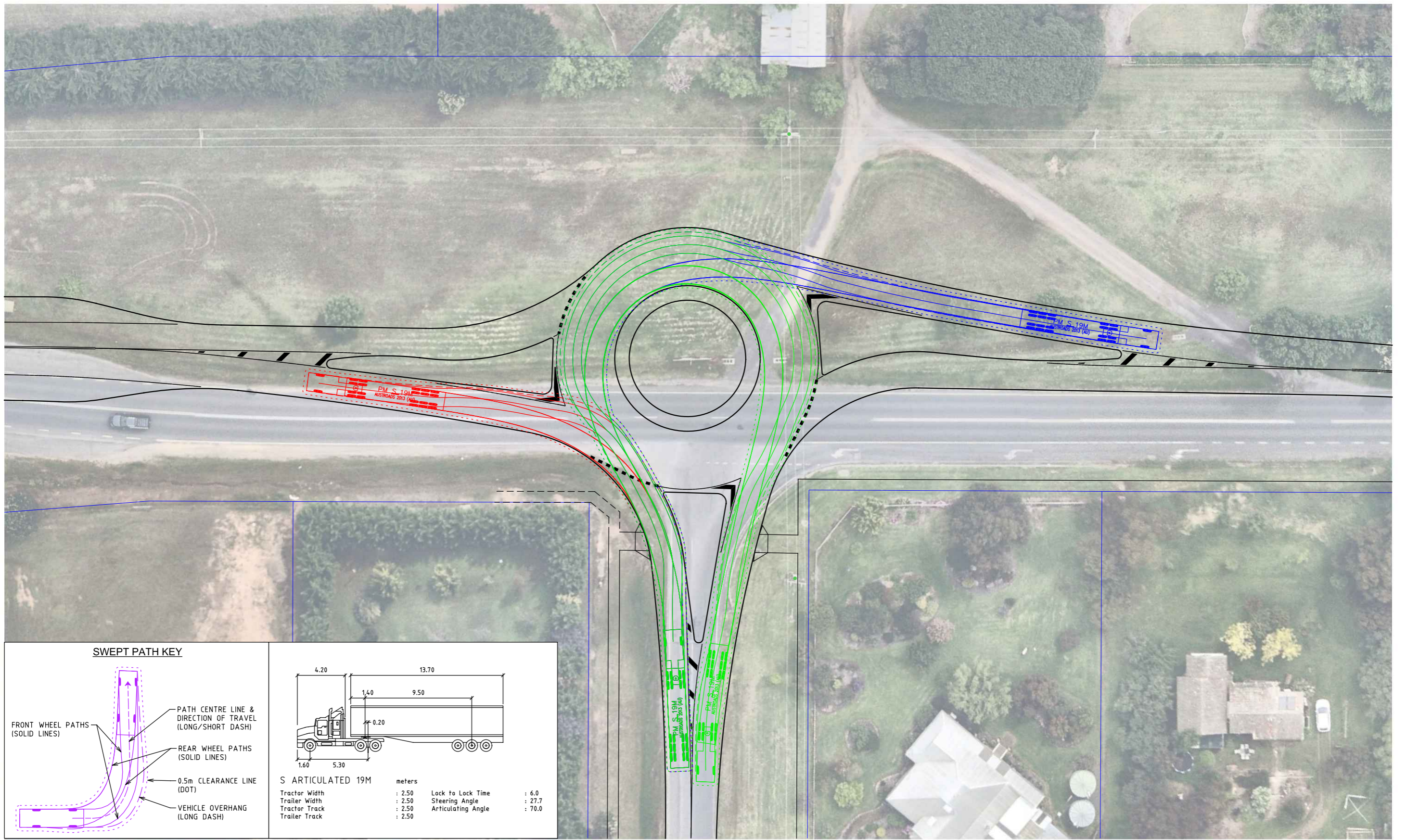
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Design by Trafficworks Cadastre Proposed ROW Boundary Existing	

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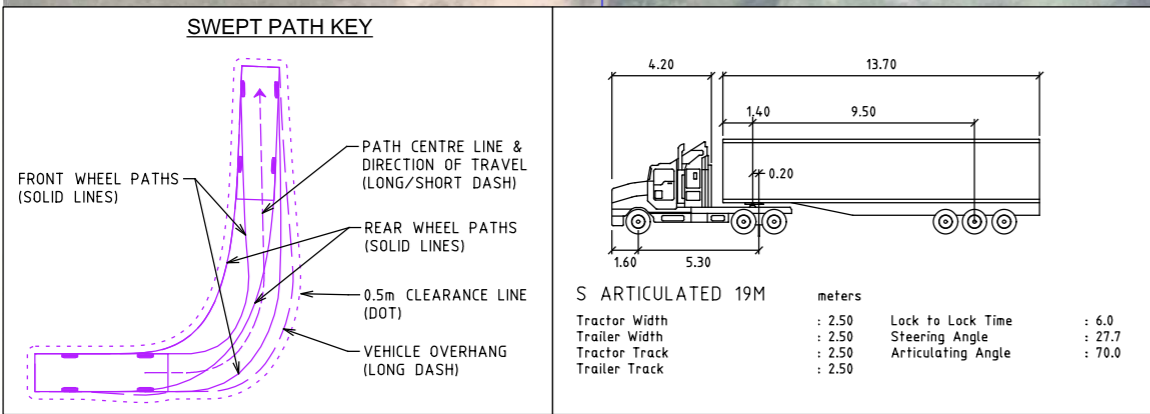
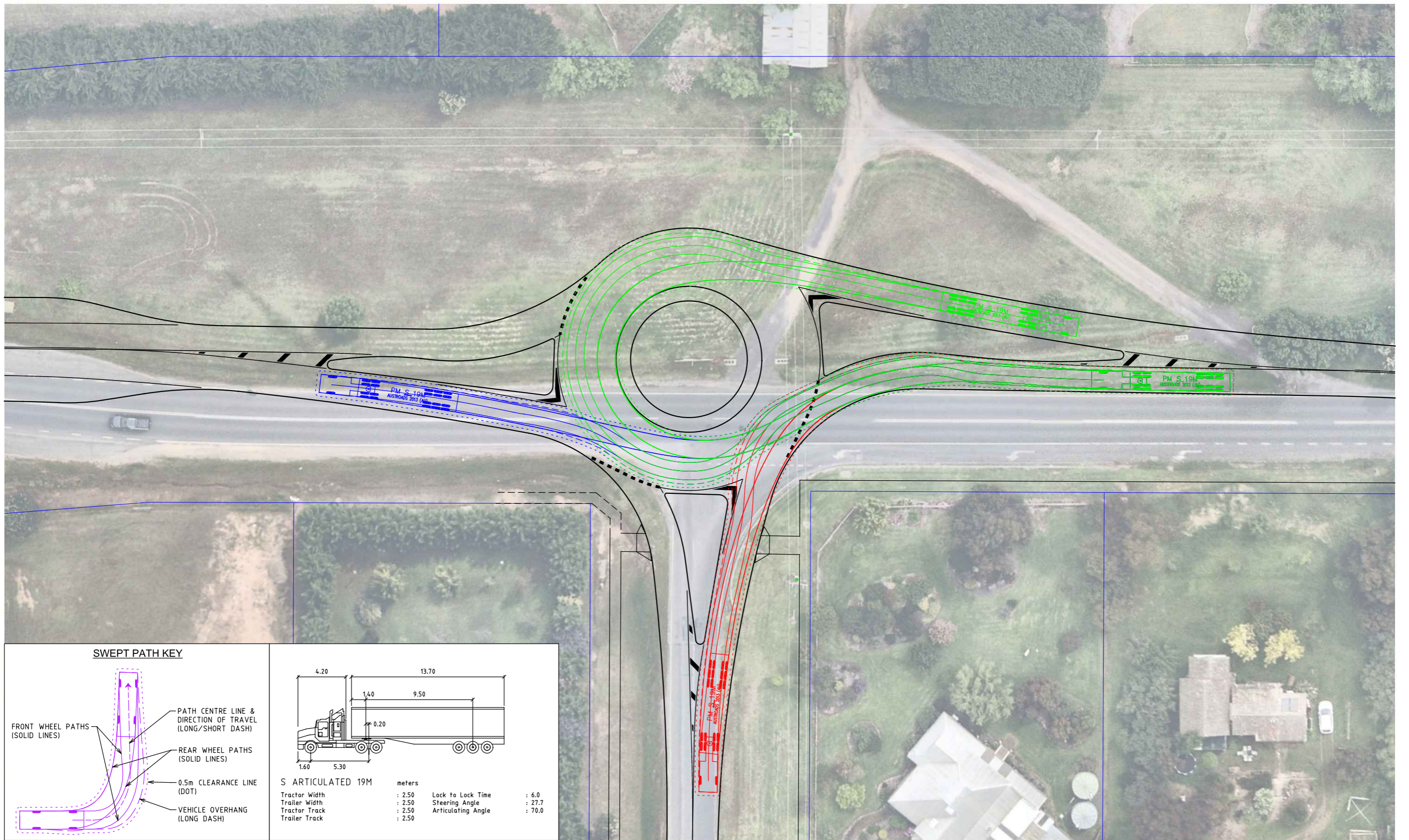
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RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

**Bannockburn Growth Plan**  
Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. 4	DRAWING NO. 220912-SKT-01-04	ISSUE P2
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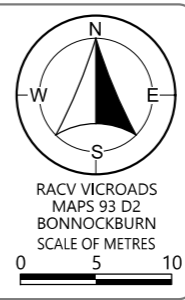
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	Cadastré
	Proposed ROW Boundary
	Existing

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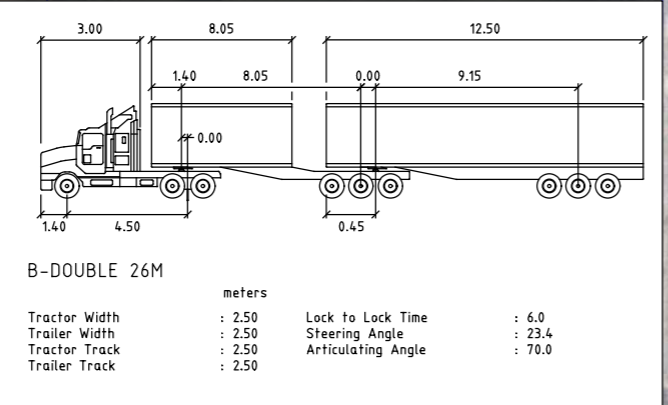
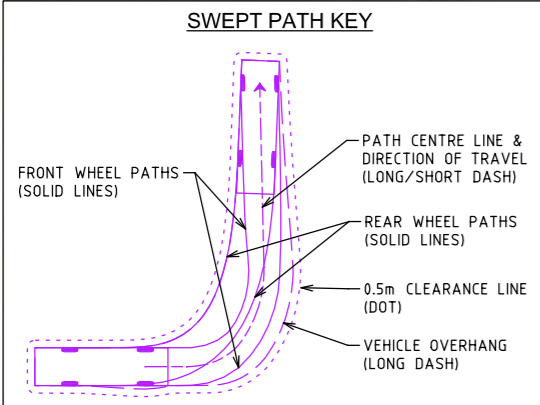
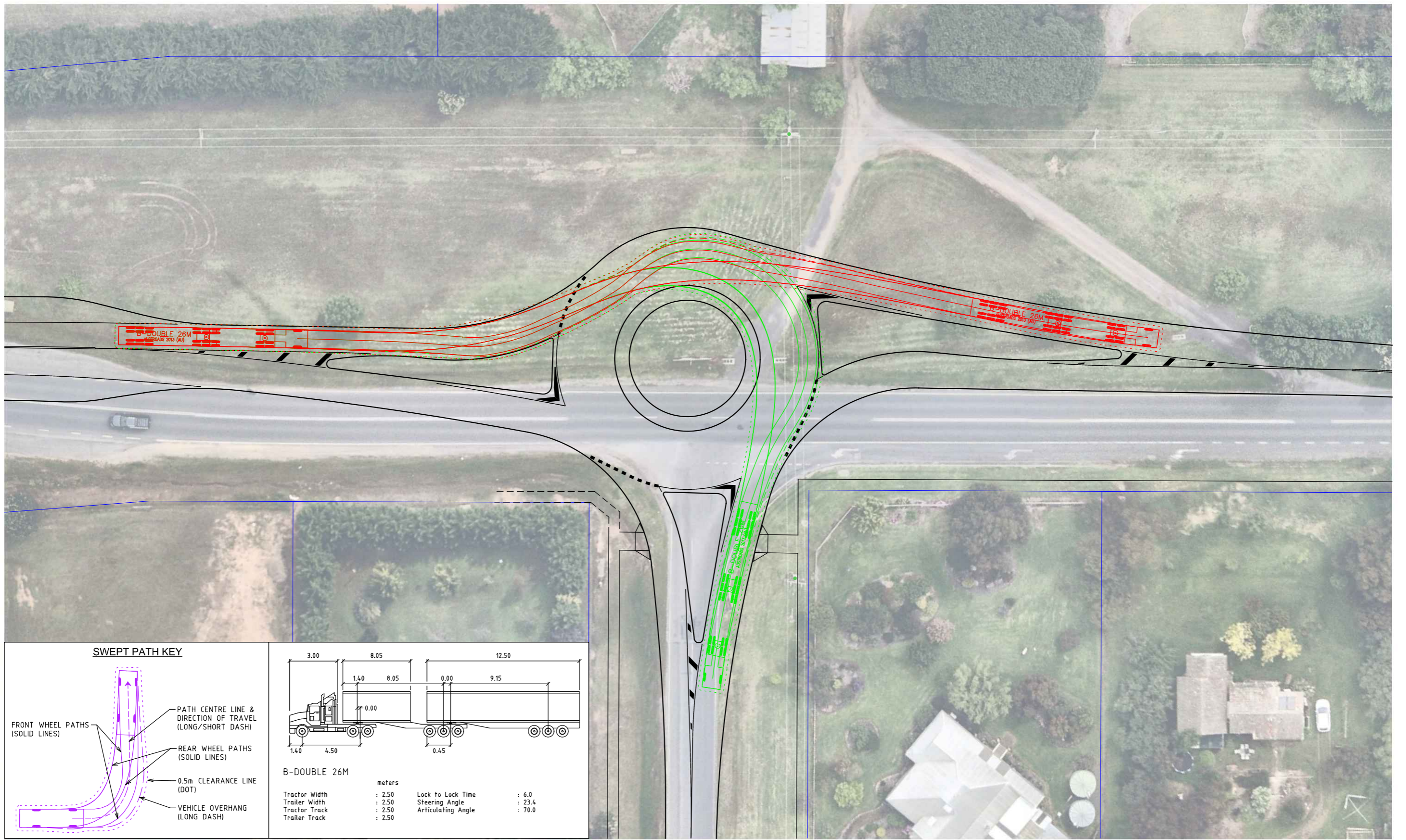
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**Bannockburn Growth Plan**  
Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. 5	DRAWING NO. 220912-SKT-01-05	ISSUE P2
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Drawing Record				
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P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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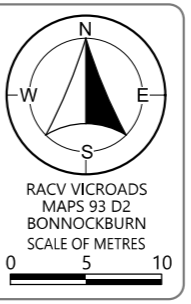
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  - Cadastre
  - - - Proposed ROW Boundary
  - Existing

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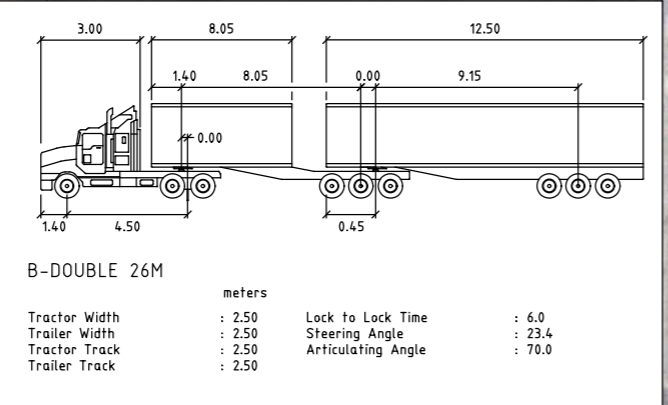
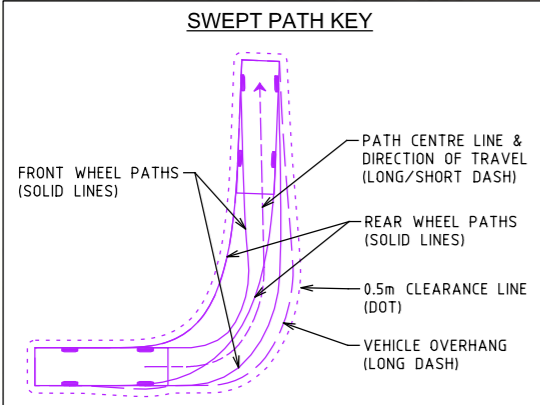
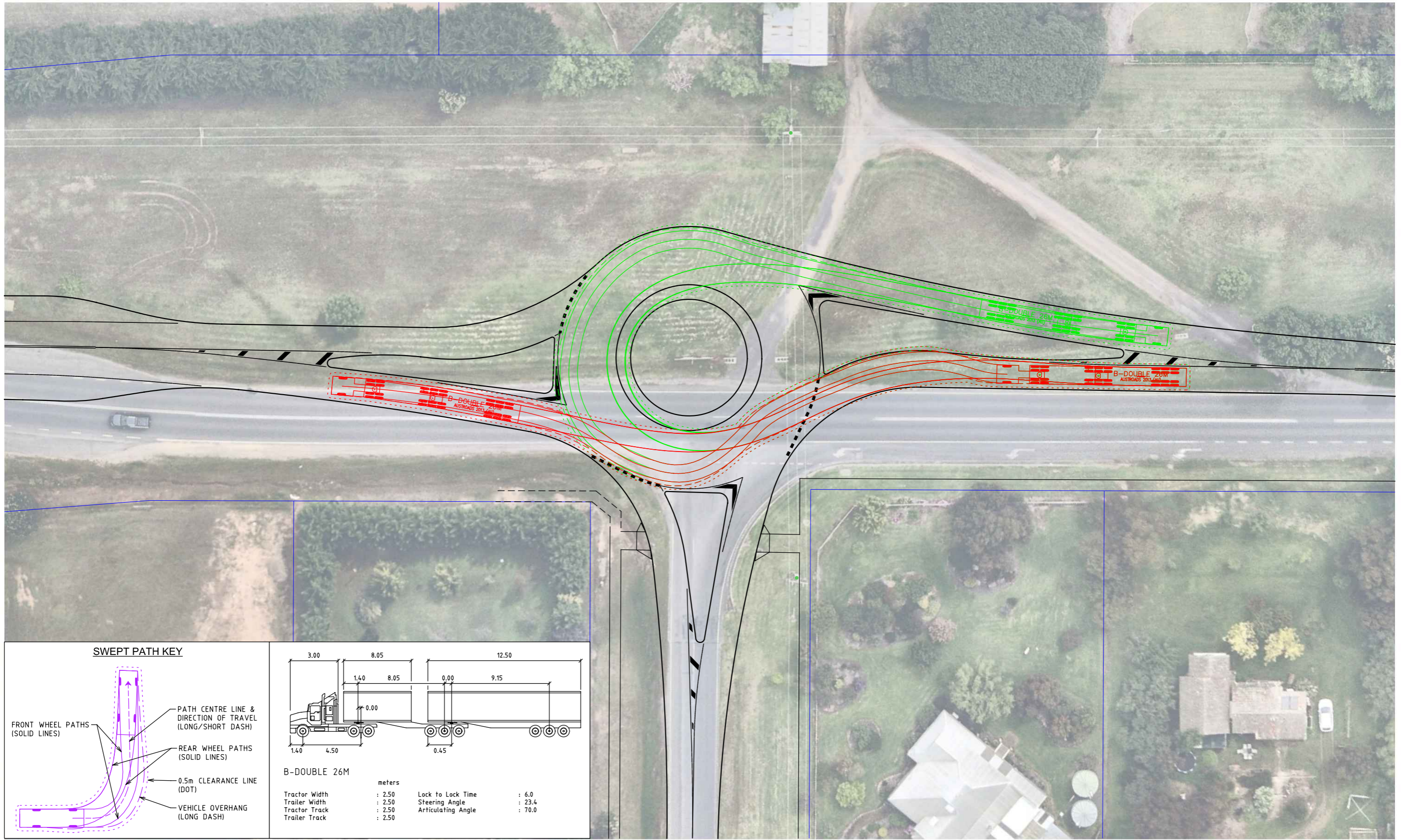
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**Swept Path Assessment**

SHEET NO. 6	DRAWING NO. 220912-SKT-01-06	ISSUE P2
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P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
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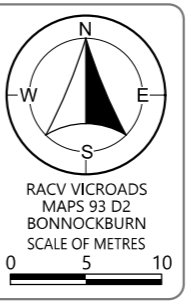
**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT NOTIFICATION  
DATE OF ISSUE: 24/01/23

- Notes & Legend**
- AERIAL IMAGE FROM NEARMAP UNDER LICENSE AGREEMENT WITH TRAFFICWORKS PTY LTD.
  - ALL DIMENSIONS ARE TO FACE OF KERB UNLESS SHOWN OTHERWISE.
- Design by Trafficworks
  - Cadastre
  - Proposed ROW Boundary
  - Existing

**TRAFFICWORKS™**

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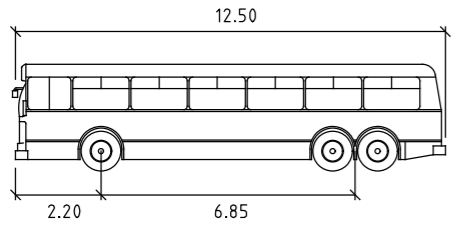
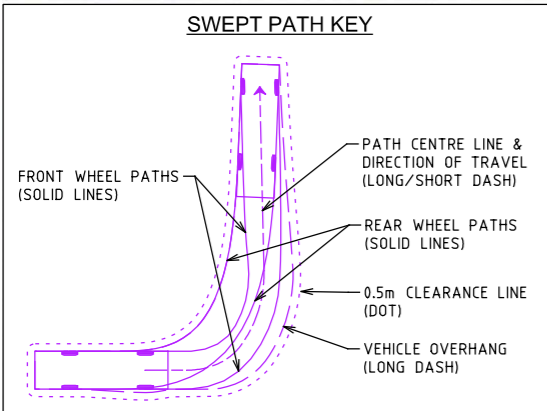


**Bannockburn Growth Plan**  
Golden Plains Shire Council

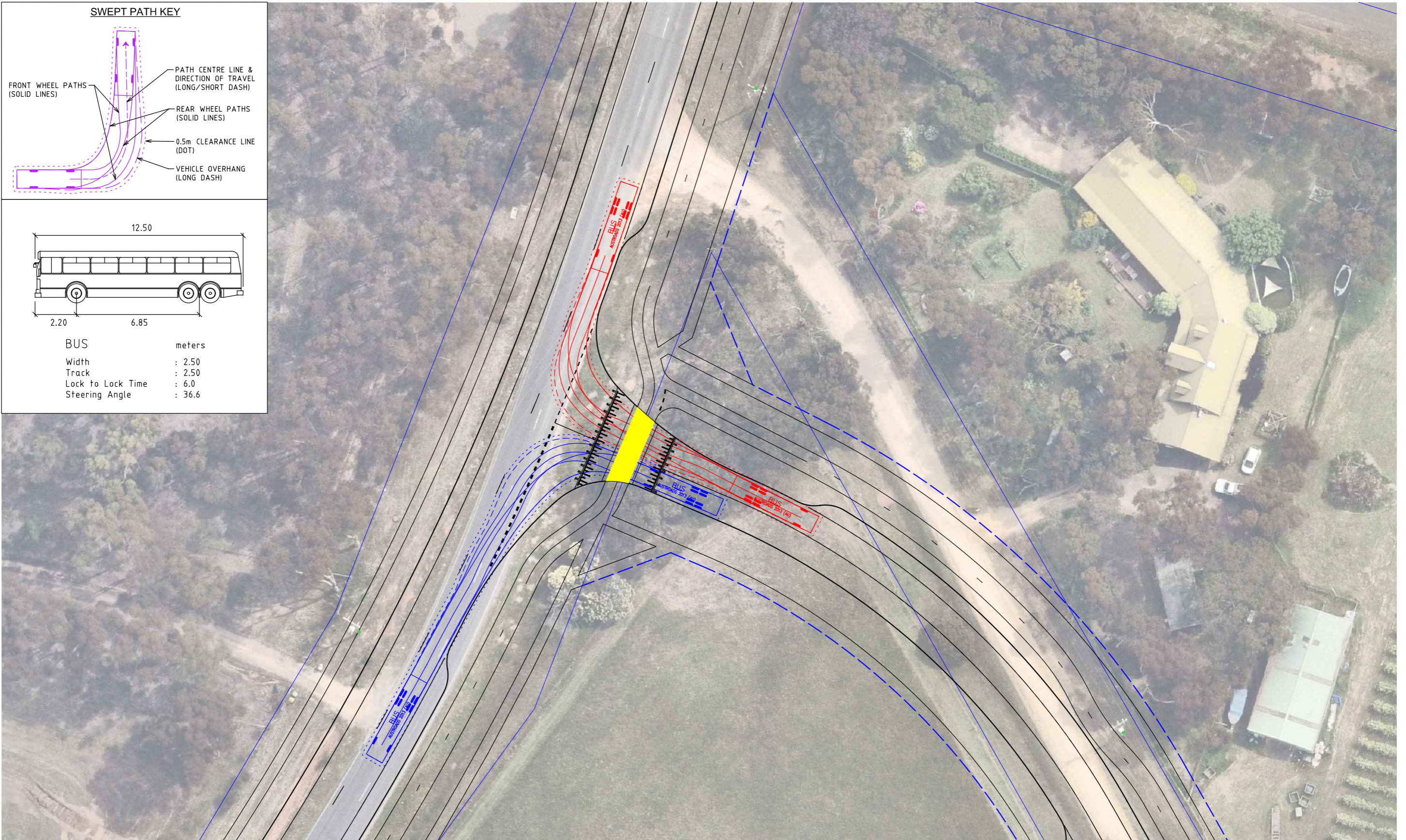
**Swept Path Assessment**

SHEET NO. 7	DRAWING NO. 220912-SKT-01-07	ISSUE P2
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BUS	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6



24/01/2024 220912-SKT-02-01  
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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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DATE OF ISSUE: 24/01/23

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	Design by Trafficworks
	Cadastre
	Proposed ROW Boundary
	Existing

**TRAFFICWORKS™**

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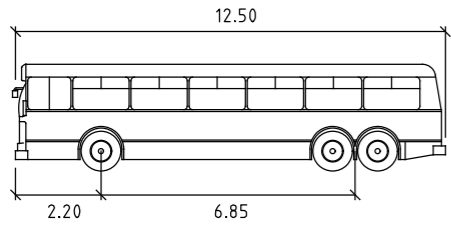
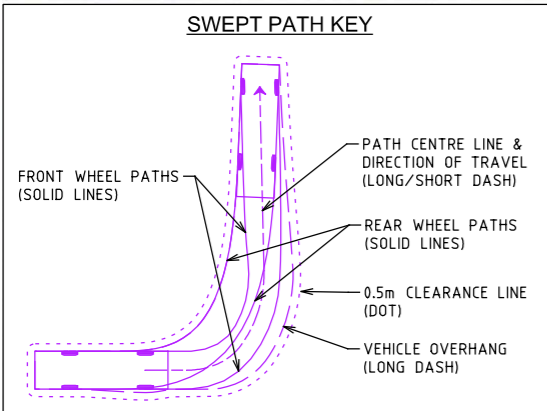
**PLANIT CONSULTING**

RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES

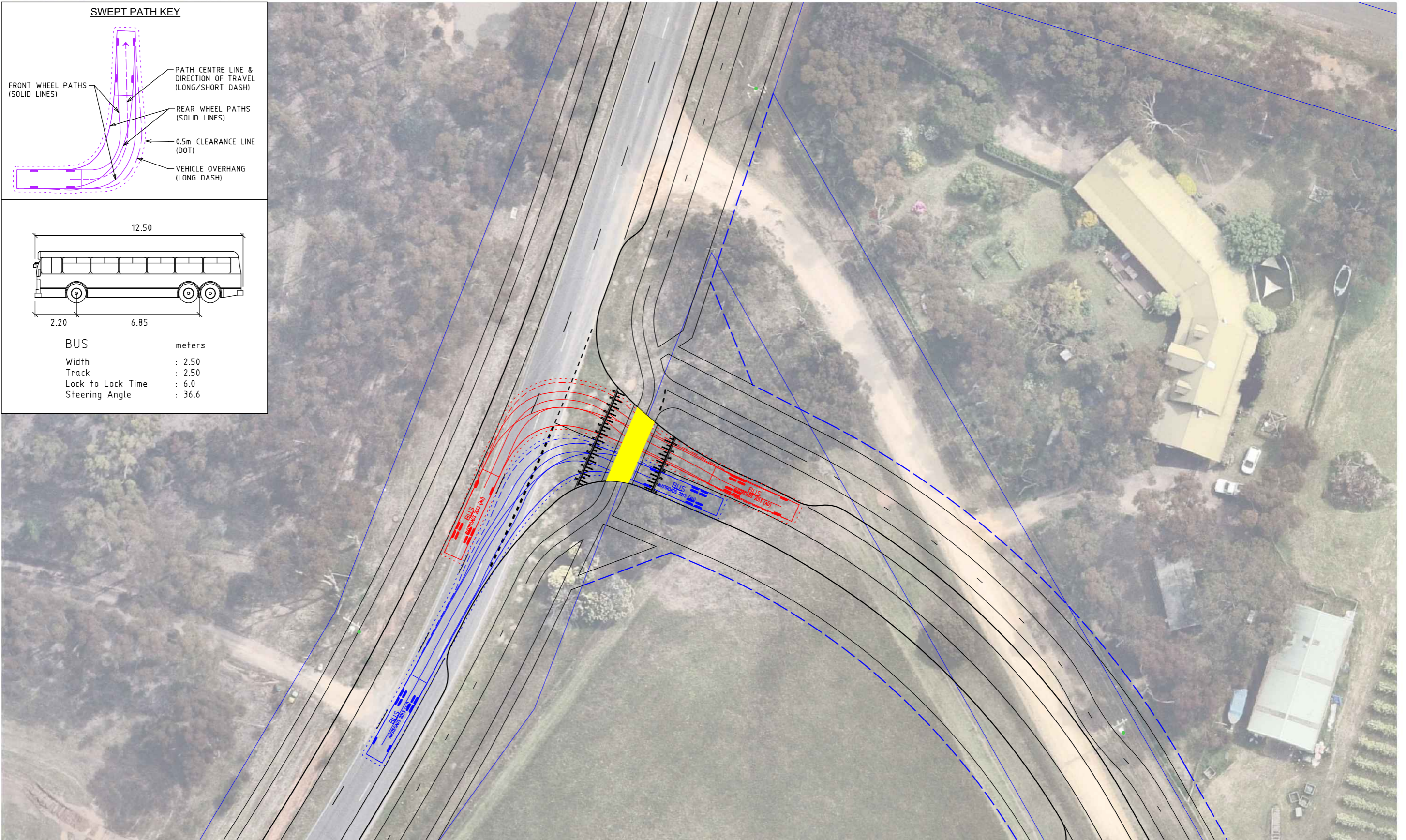
**Bannockburn Growth Plan**  
Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. 8	DRAWING NO. 220912-SKT-02-01	ISSUE P2
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BUS	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6



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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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DATE OF ISSUE: 24/01/23

**Notes & Legend**

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- Design by Trafficworks
- Cadastre
- - - Proposed ROW Boundary
- Existing

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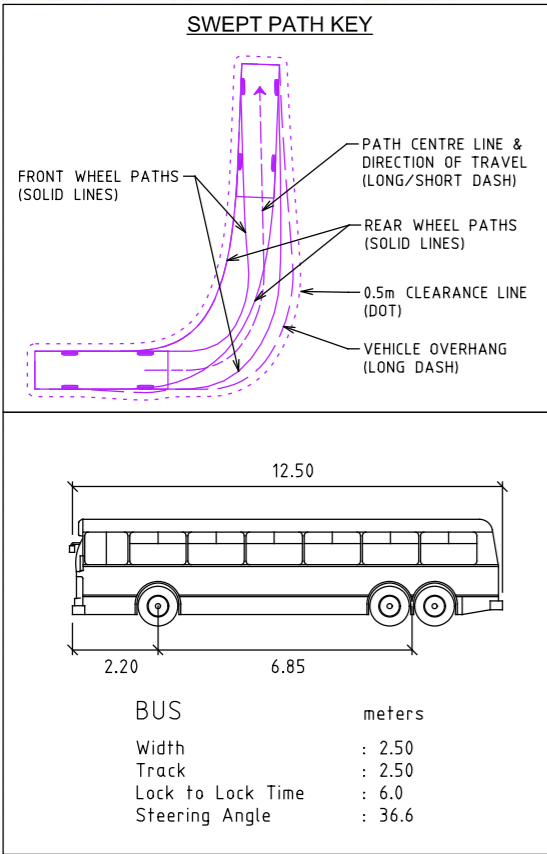
**PLANIT CONSULTING**

RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES

**Bannockburn Growth Plan**  
Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. 9	DRAWING NO. 220912-SKT-02-02	ISSUE P2
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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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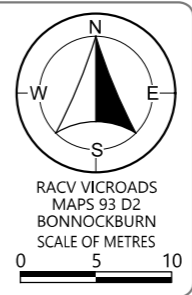
**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT NOTIFICATION  
DATE OF ISSUE: 24/01/23

Notes & Legend	
1.	AERIAL IMAGE FROM NEARMAP UNDER LICENSE AGREEMENT WITH TRAFFICWORKS PTY LTD.
2.	ALL DIMENSIONS ARE TO FACE OF KERB UNLESS SHOWN OTHERWISE.
	Design by Trafficworks
	Cadastral
	Proposed ROW Boundary
	Existing

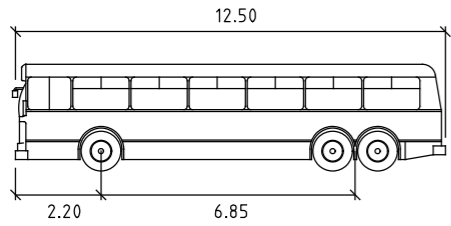
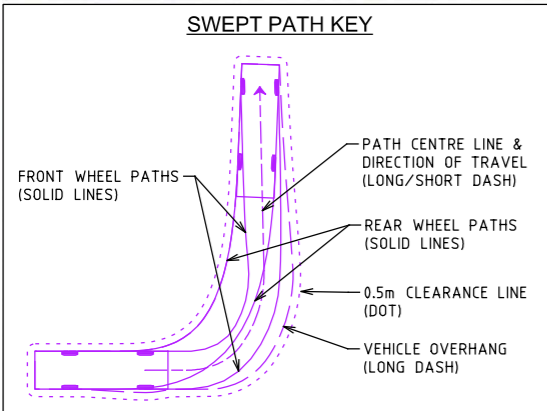
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Bannockburn Growth Plan		
Golden Plains Shire Council		
Swept Path Assessment		
SHEET NO.	DRAWING NO.	ISSUE
10	220912-SKT-02-03	P2



BUS	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6



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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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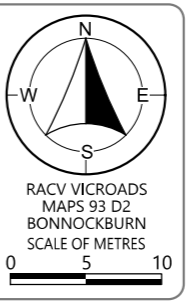
**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT NOTIFICATION  
DATE OF ISSUE: 24/01/23

Notes & Legend
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<ul style="list-style-type: none"> <li><span style="color: black;">—</span> Design by Trafficworks</li> <li><span style="color: blue;">—</span> Cadastre</li> <li><span style="color: blue;">- - -</span> Proposed ROW Boundary</li> <li><span style="color: green;">—</span> Existing</li> </ul>

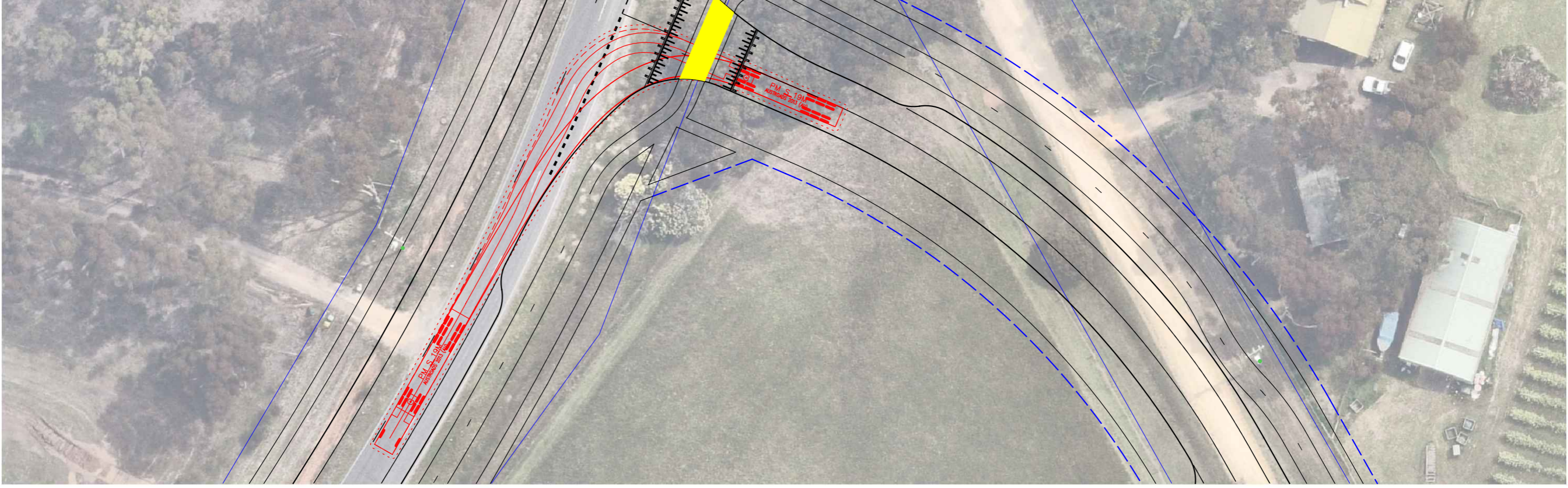
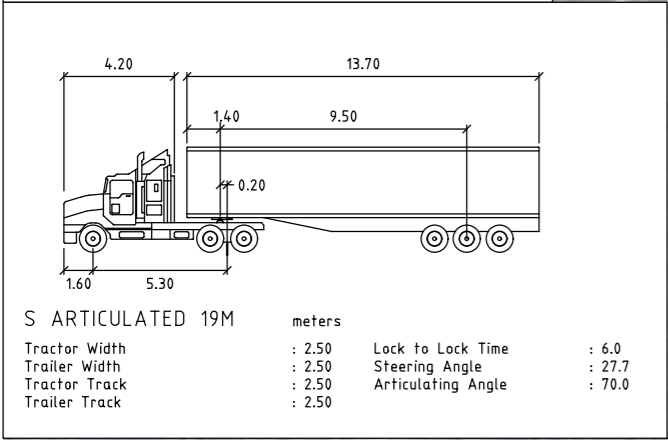
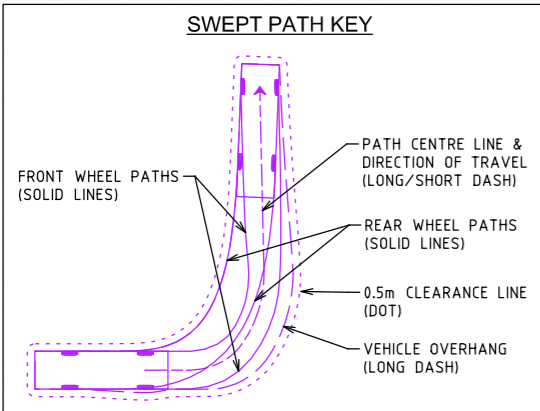
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**PLANIT CONSULTING**



Bannockburn Growth Plan		
Golden Plains Shire Council		
Swept Path Assessment		
SHEET NO.	DRAWING NO.	ISSUE
11	220912-SKT-02-04	P2



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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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	Design by Trafficworks
	Cadastre
	Proposed ROW Boundary
	Existing

### TRAFFICWORKS™

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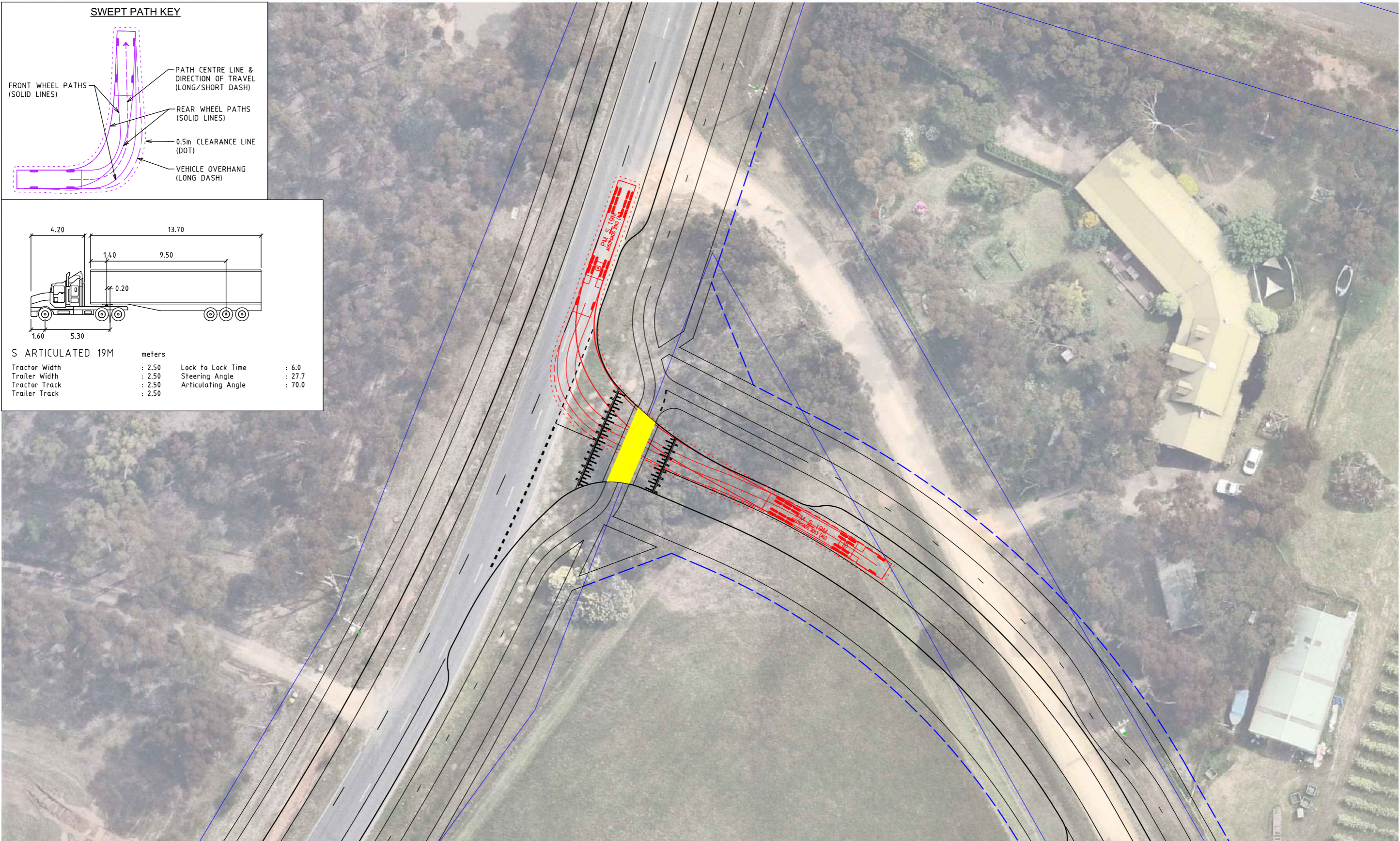
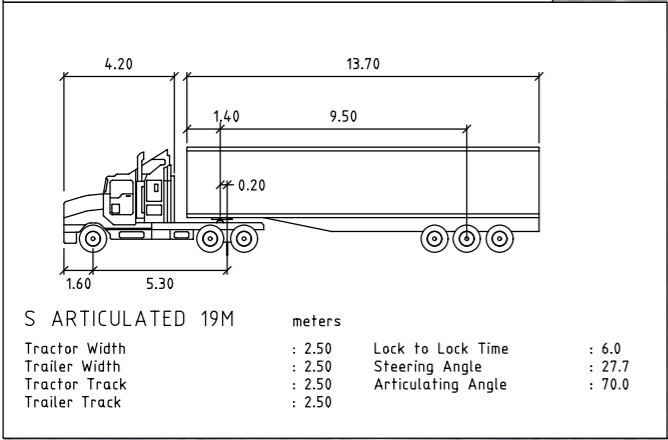
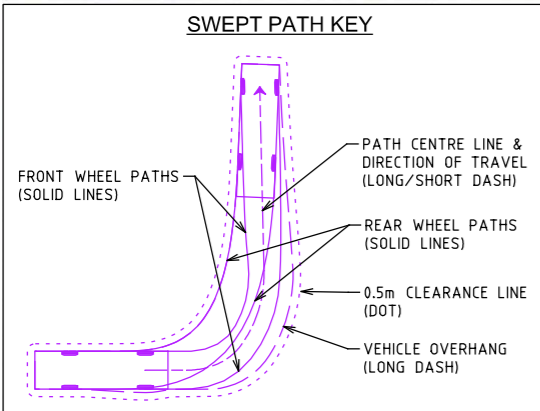
RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

## Bannockburn Growth Plan

Golden Plains Shire Council

# Swept Path Assessment

SHEET NO. 12	DRAWING NO. 220912-SKT-02-05	ISSUE P2
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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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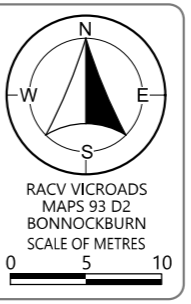
**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT NOTIFICATION  
DATE OF ISSUE: 24/01/23

Notes & Legend	
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	Design by Trafficworks
	Cadastre
	Proposed ROW Boundary
	Existing

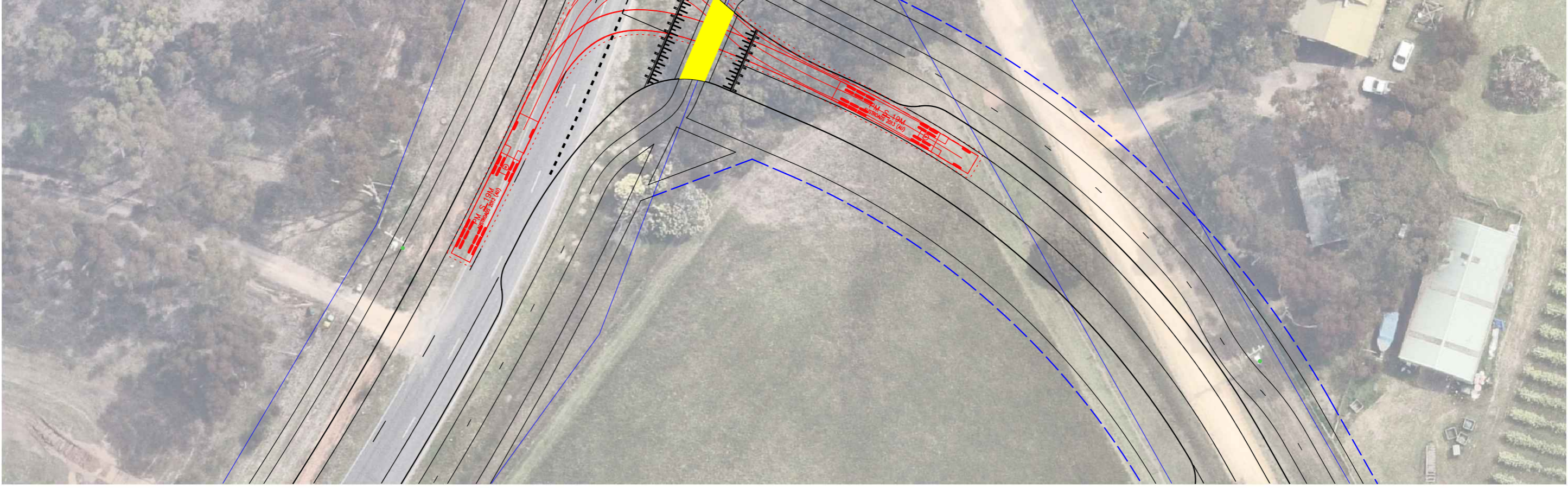
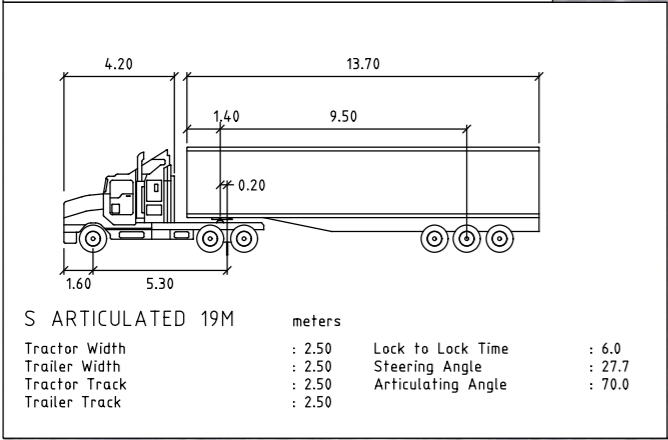
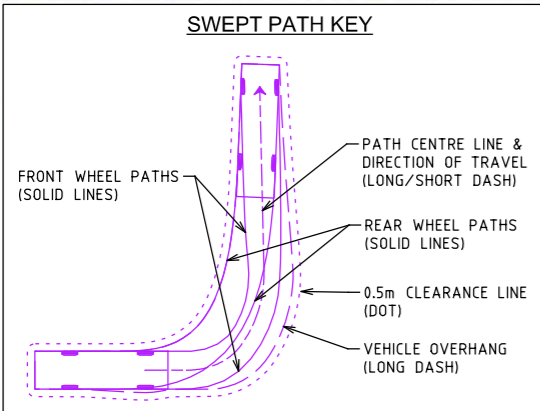
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Bannockburn Growth Plan			
Golden Plains Shire Council			
Swept Path Assessment			
SHEET NO.	DRAWING NO.	ISSUE	
13	220912-SKT-02-06	P2	



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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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	Design by Trafficworks
	Cadastre
	Proposed ROW Boundary
	Existing

**TRAFFICWORKS™**

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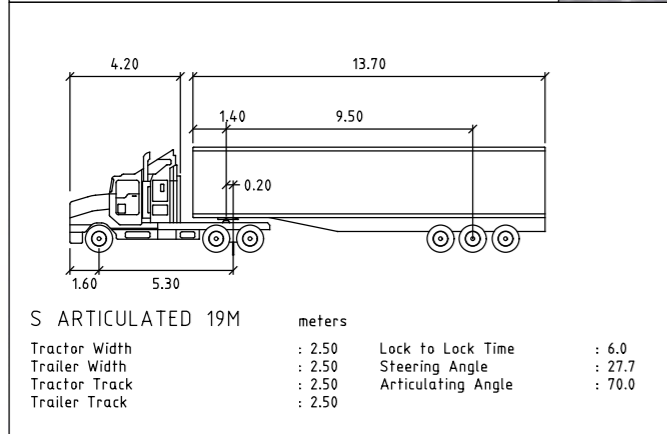
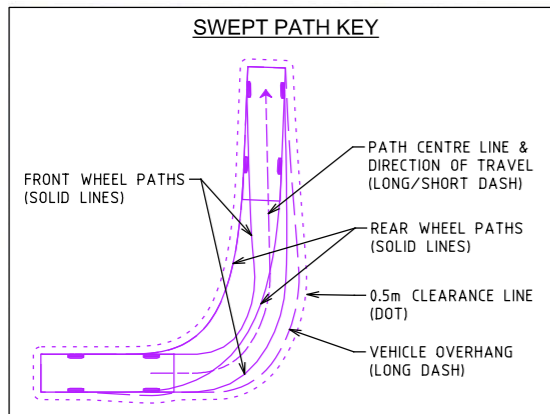
**PLANIT CONSULTING**

RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES

**Bannockburn Growth Plan**  
Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. <b>14</b>	DRAWING NO. 220912-SKT-02-07	ISSUE <b>P2</b>
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24/01/2024 220912-SKT-02-08  
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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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	Cadastre
	Proposed ROW Boundary
	Existing

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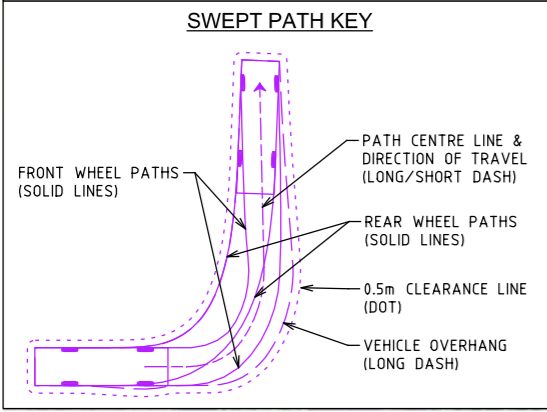
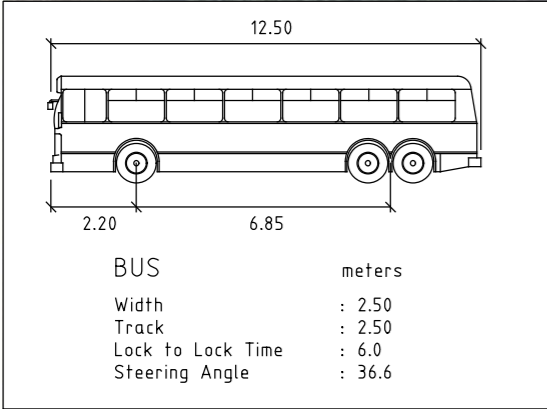
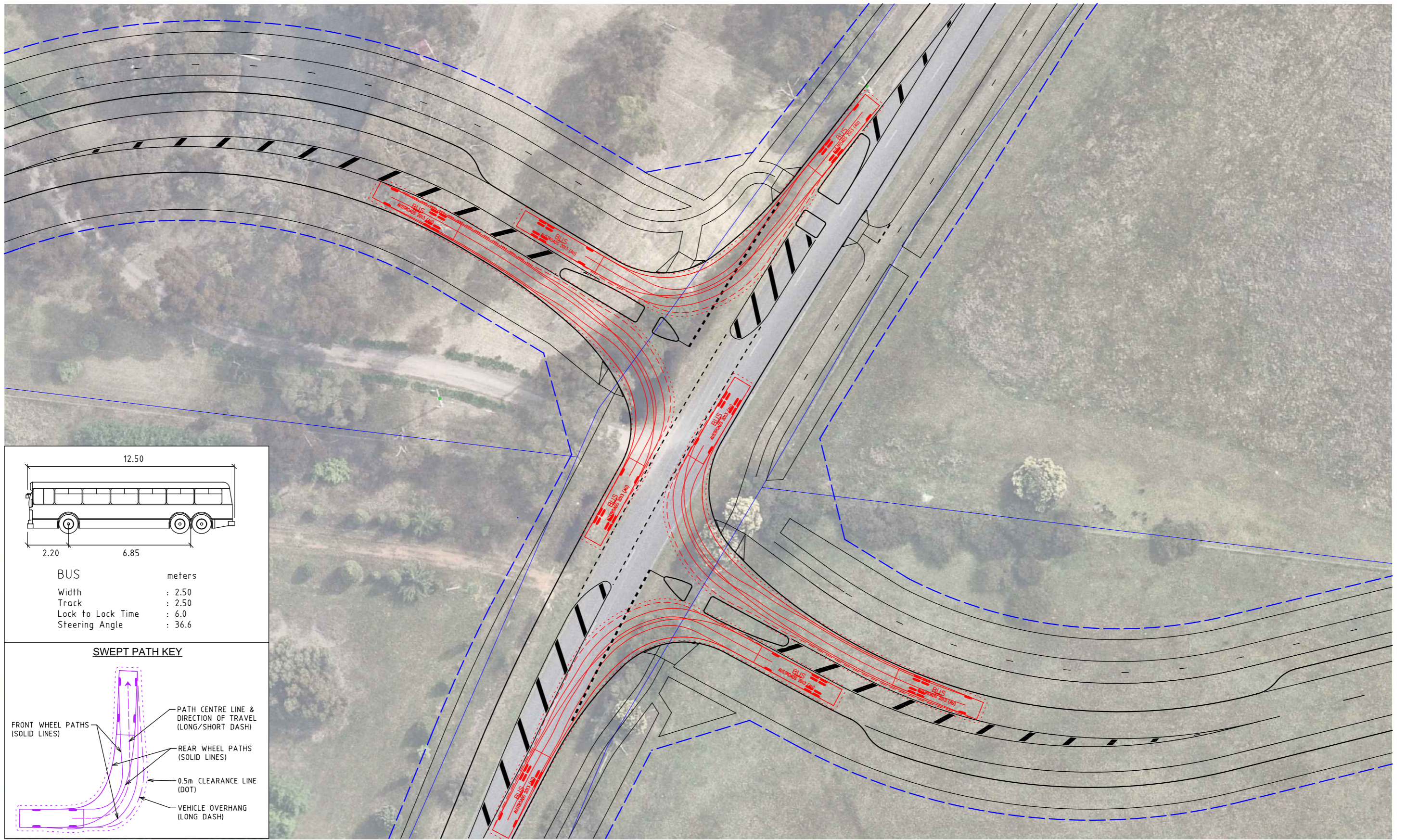
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**PLANIT CONSULTING**

RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES

Bannockburn Growth Plan		
Golden Plains Shire Council		
Swept Path Assessment		
SHEET NO.	DRAWING NO.	ISSUE
15	220912-SKT-02-08	P2





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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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	Design by Trafficworks
	Cadastre
	Proposed ROW Boundary
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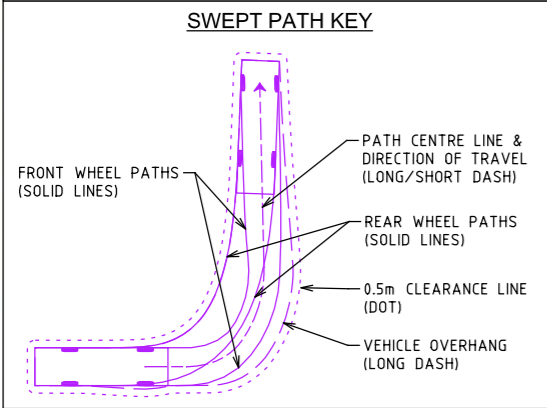
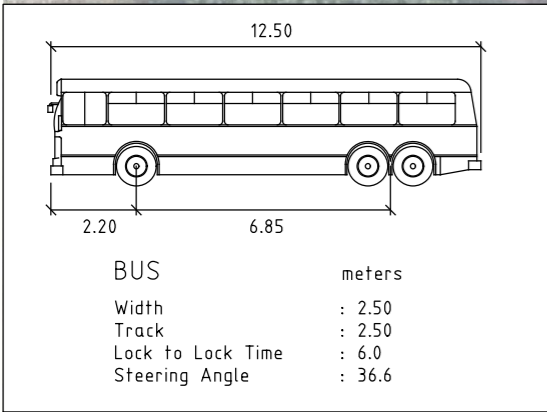
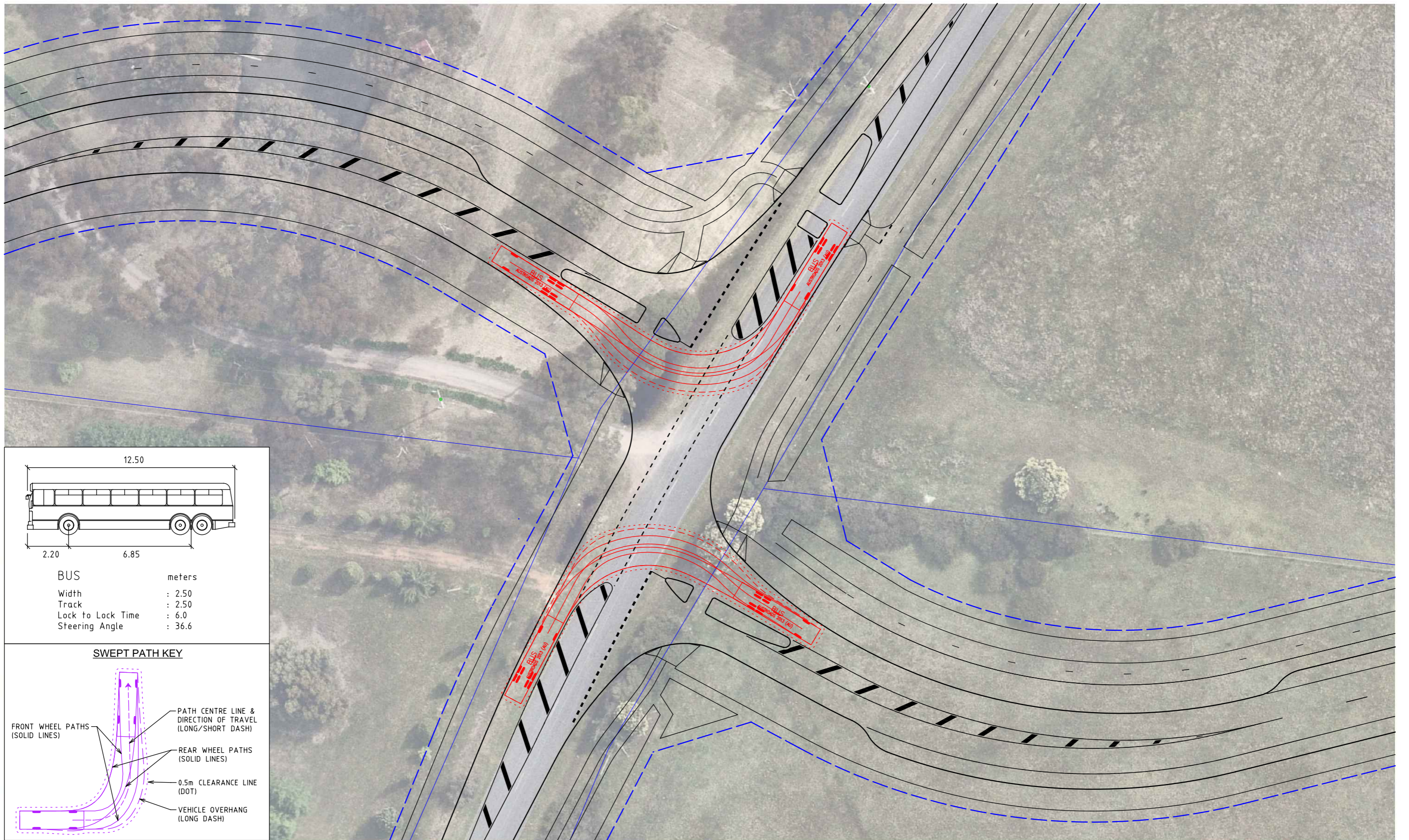
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RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

Bannockburn Growth Plan		
Golden Plains Shire Council		
Swept Path Assessment		
SHEET NO.	DRAWING NO.	ISSUE
16	220912-SKT-03-01	P2



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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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<p>— Design by Trafficworks</p> <p>— Cadastre</p> <p>— Proposed ROW Boundary</p> <p>— Existing</p>	

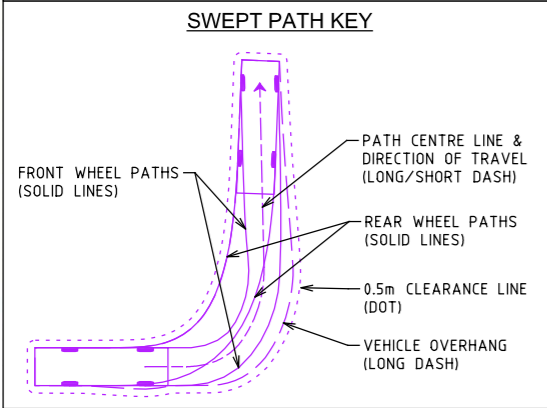
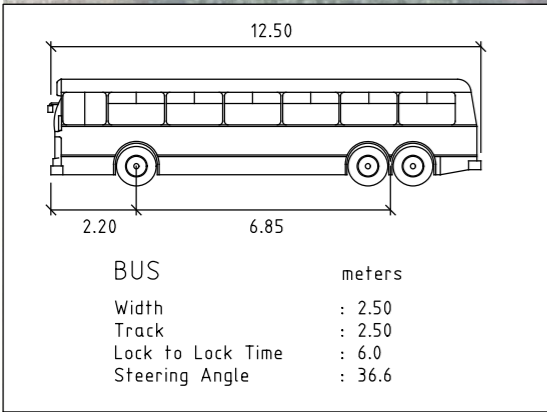
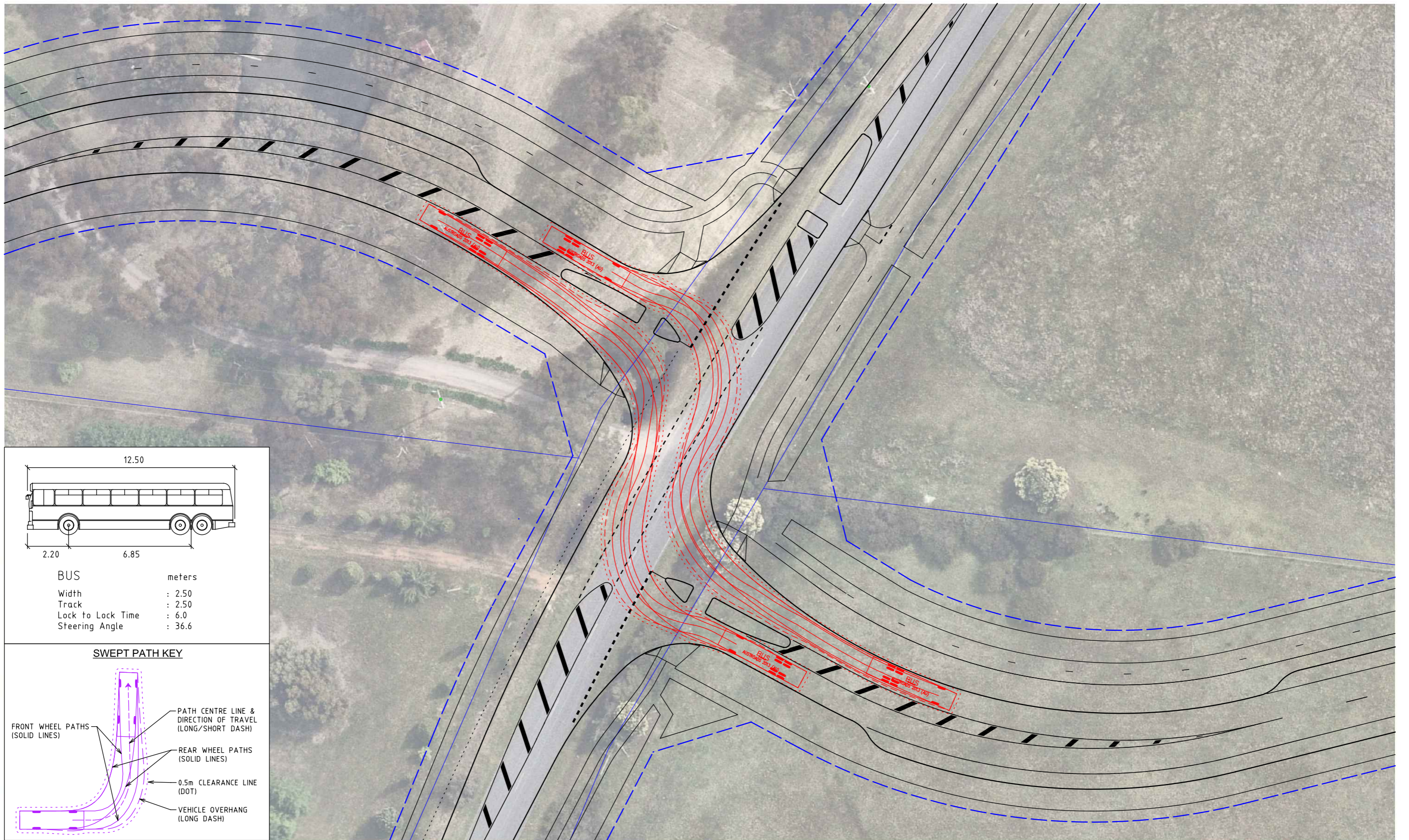
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PLANIT CONSULTING

RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

Bannockburn Growth Plan		
Golden Plains Shire Council		
Swept Path Assessment		
SHEET NO.	DRAWING NO.	ISSUE
17	220912-SKT-03-02	P2



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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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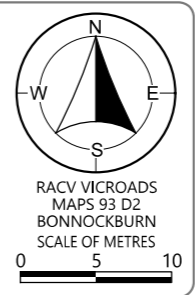
**PRELIMINARY PLAN**  
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	Proposed ROW Boundary
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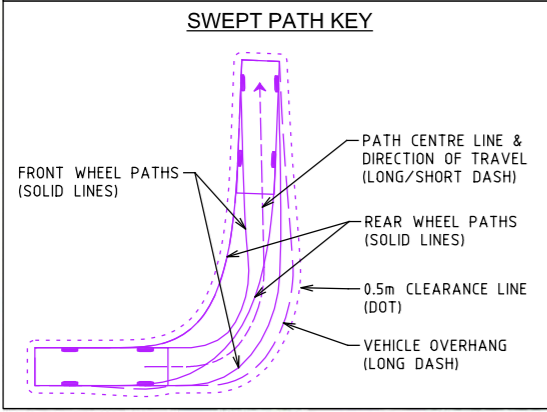
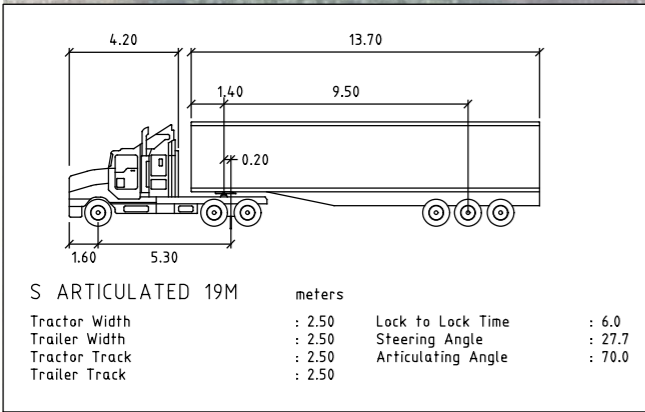
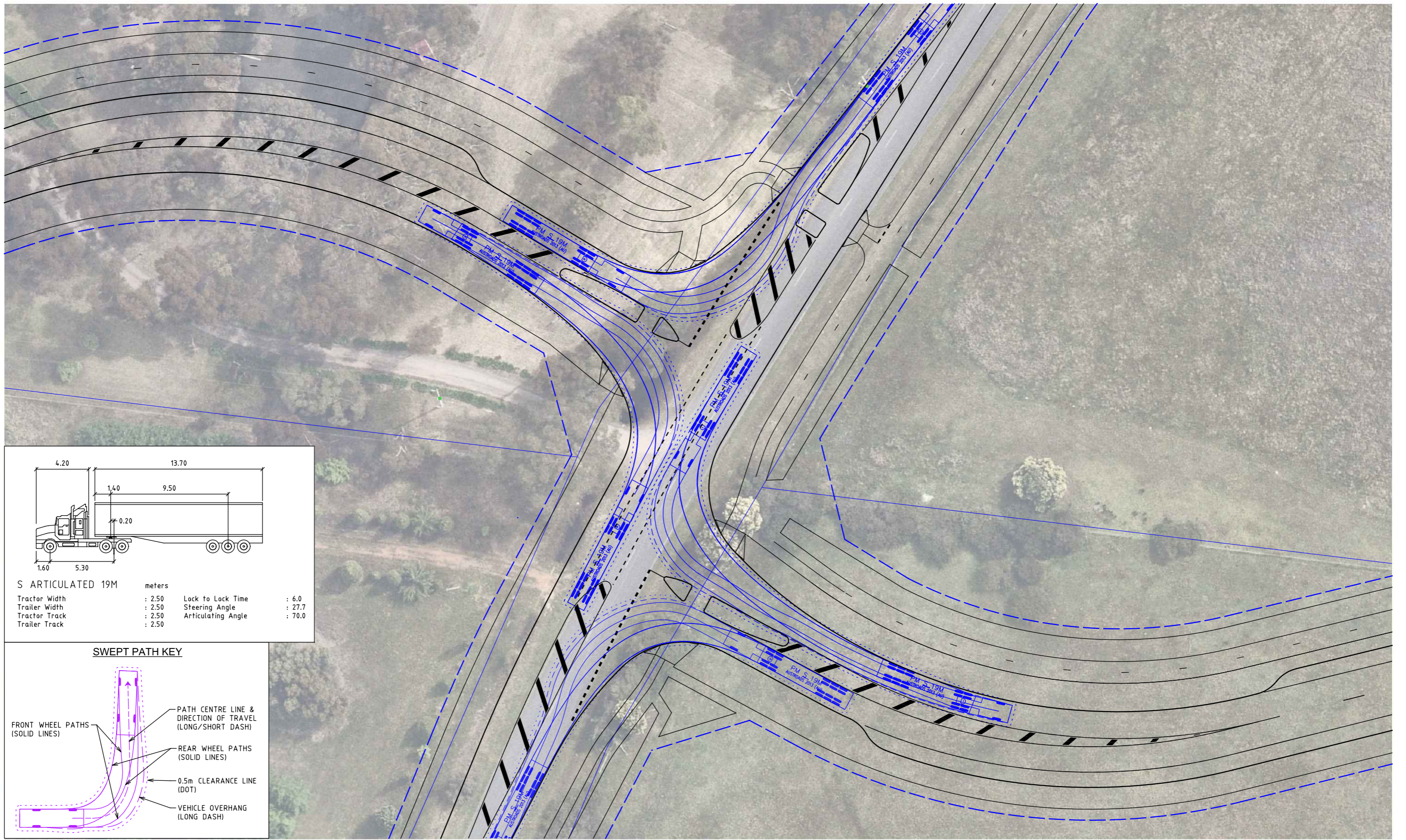
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Bannockburn Growth Plan		
Golden Plains Shire Council		
Swept Path Assessment		
SHEET NO.	DRAWING NO.	ISSUE
18	220912-SKT-03-03	P2



24/01/2024 220912-SKT-03-04  
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Drawing Record				
ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

**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.

**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT NOTIFICATION  
DATE OF ISSUE: 24/01/23

Notes & Legend	
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	Design by Trafficworks
	Cadastre
	Proposed ROW Boundary
	Existing

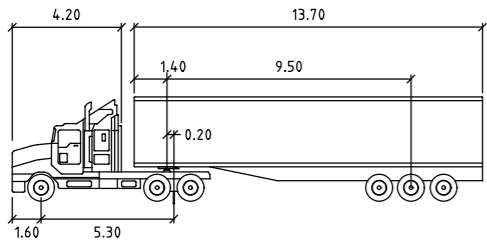
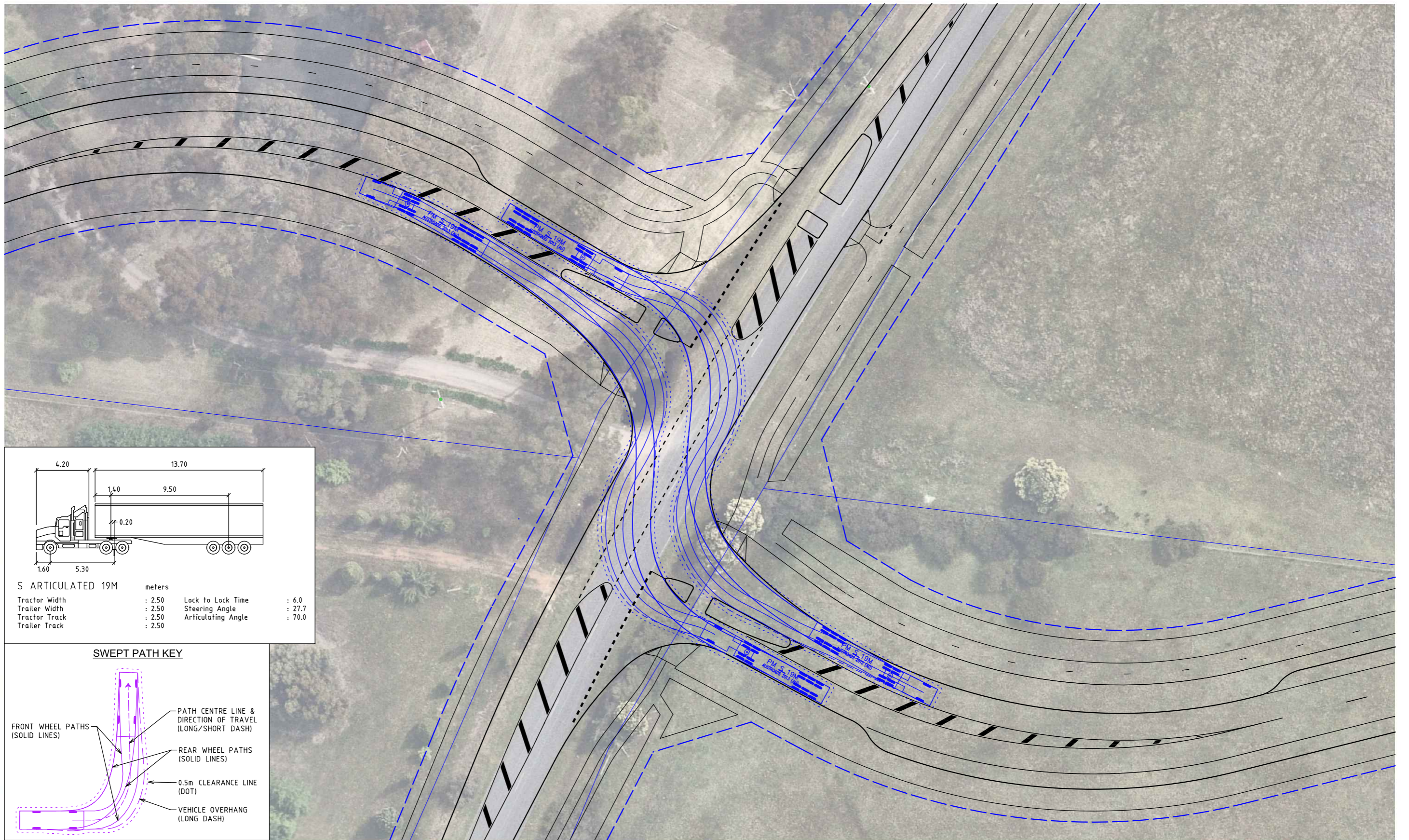
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**PLANIT CONSULTING**

RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

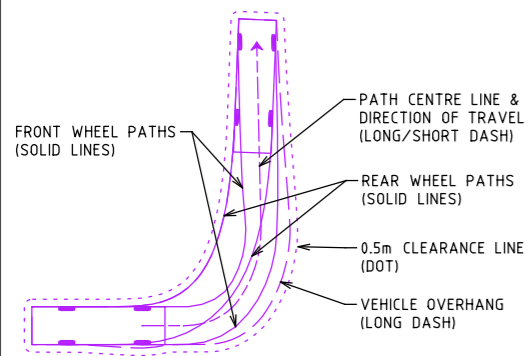
Bannockburn Growth Plan		
Golden Plains Shire Council		
Swept Path Assessment		
SHEET NO.	DRAWING NO.	ISSUE
19	220912-SKT-03-04	P2



S ARTICULATED 19M meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

**SWEPT PATH KEY**



24/01/2024 220912-SKT-03-05 2:40:20 PM T:\2223 Projects\220912\_SKT-01-21-P2.dgn

**Drawing Record**

ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT NOTIFICATION  
DATE OF ISSUE: 24/01/23

**Notes & Legend**

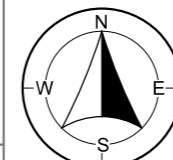
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- ALL DIMENSIONS ARE TO FACE OF KERB UNLESS SHOWN OTHERWISE.

- Design by Trafficworks
- Cadastre
- Proposed ROW Boundary
- Existing

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PLANIT CONSULTING



RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

**Bannockburn Growth Plan**

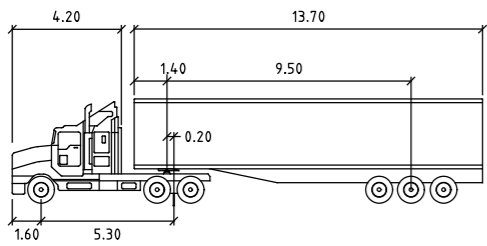
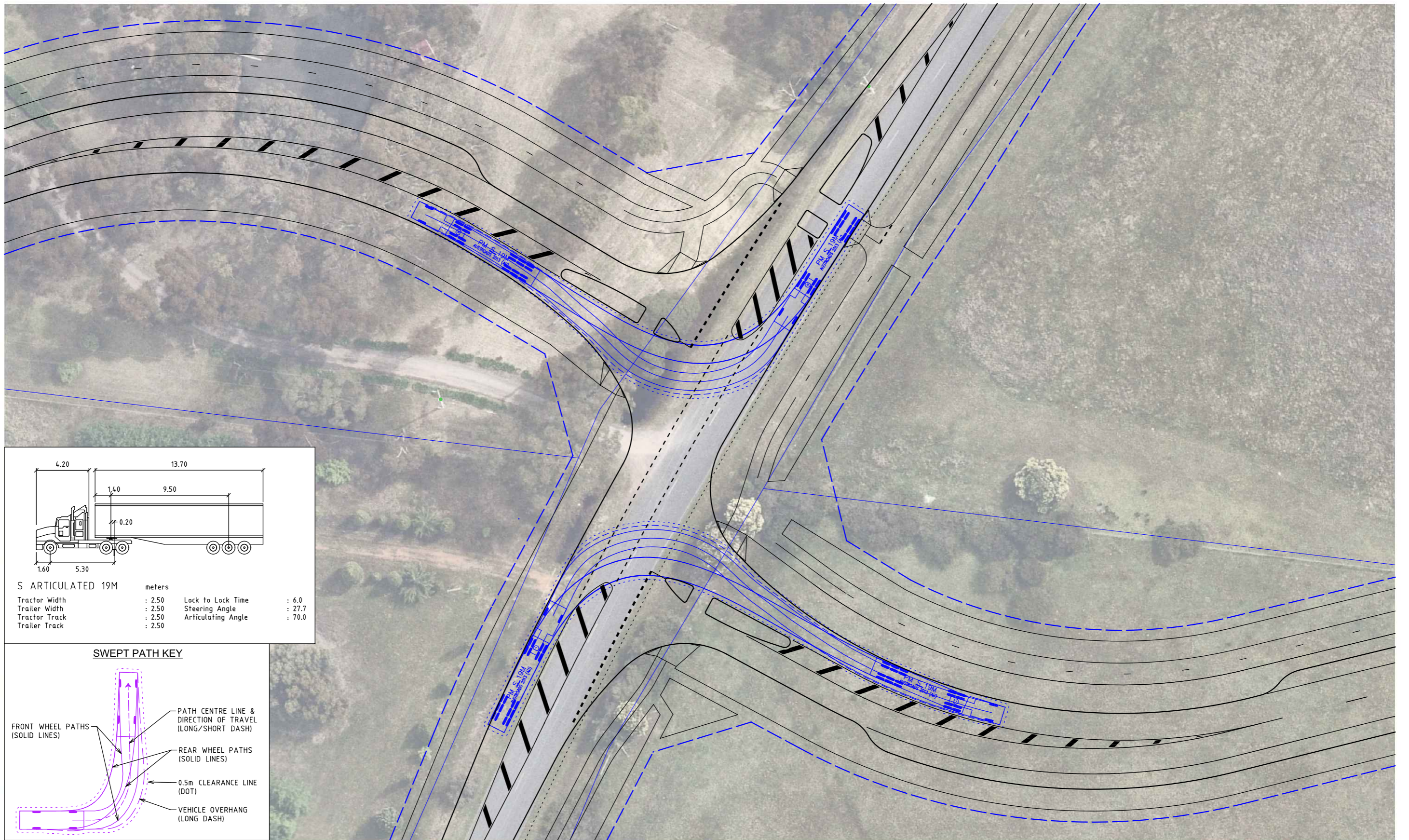
Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. 20

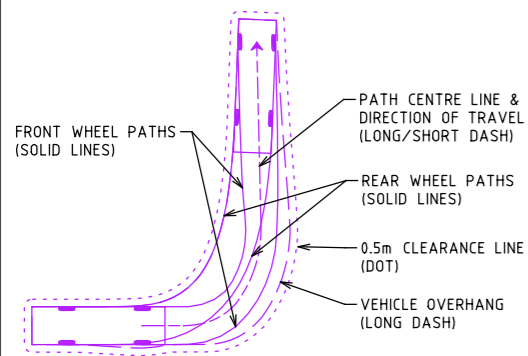
DRAWING NO. 220912-SKT-03-05

ISSUE P2



S ARTICULATED 19M		meters	
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

**SWEPT PATH KEY**



24/01/2024 220912-SKT-03-06  
24:0:21 PM T:\2223 Projects\220912\_Design\220912\_SKT-01-21-P2.dgn

**Drawing Record**

ISSUE	DRAWN	APP'D	DATE	AMENDMENT
P2	JF	AA	24.01.23	PRELIMINARY ISSUE FOR COMMENT

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**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT NOTIFICATION  
DATE OF ISSUE: 24/01/23

**Notes & Legend**

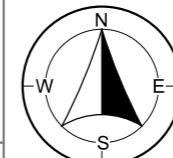
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- Proposed ROW Boundary
- Existing

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RACV VICROADS  
MAPS 93 D2  
BONNOCKBURN  
SCALE OF METRES  
0 5 10

**Bannockburn Growth Plan**

Golden Plains Shire Council

**Swept Path Assessment**

SHEET NO. 21

DRAWING NO. 220912-SKT-03-06

ISSUE P2