

LEGEND:
 ● EX. TREES TO BE RETAINED
 ○ EX. TREES TO BE REMOVED - APPROX. 88 No.

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

ISSUE	APP'D	DATE	AMENDMENT
A	TG	6.5.22	ISSUED FOR INFORMATION ONLY
B	TG	10.5.22	MINOR REVISIONS
C			
D			
E			

GENERAL NOTES
 1. ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE.
 2. DOT SUPPLIED SURVEY AND SERVICES SHOWN IS TO MGA94255 AND AHD.
 3. DIMENSIONS ARE TO BE LINE OF KERB, UNLESS NOTED OTHERWISE.
 4. BALLARTO ROAD - DECLARED ROAD - 70km/h
 LYREBIRD DR - LOCAL ROAD - 50km/h

BG&E DRAWING NO.
V21199-SKT-CI-0001

DESIGNED
 BG&E
 04.02.22
 APPROVED

CAT: Metro South East
 PROJ:
 FILE: V21199-SKT-CI-0001.dwg

SKETCH

vicroads

BALLARTO ROAD
 BALLARTO ROAD / LYREBIRD DRIVE INTERSECTION UPGRADE
 CITY OF FRANKSTON
 BOUNDARY ACQUISITION & TREE REMOVAL SKETCH

SCALE OF METRES
 HORIZ 5 10
 VERT 1 2 3 4 5 6 7 8 9 10

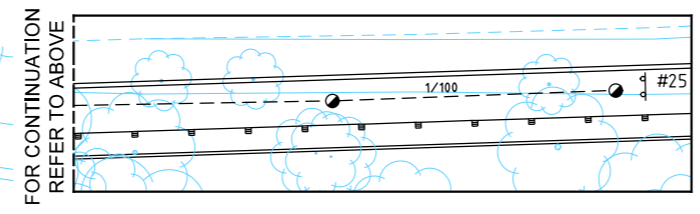
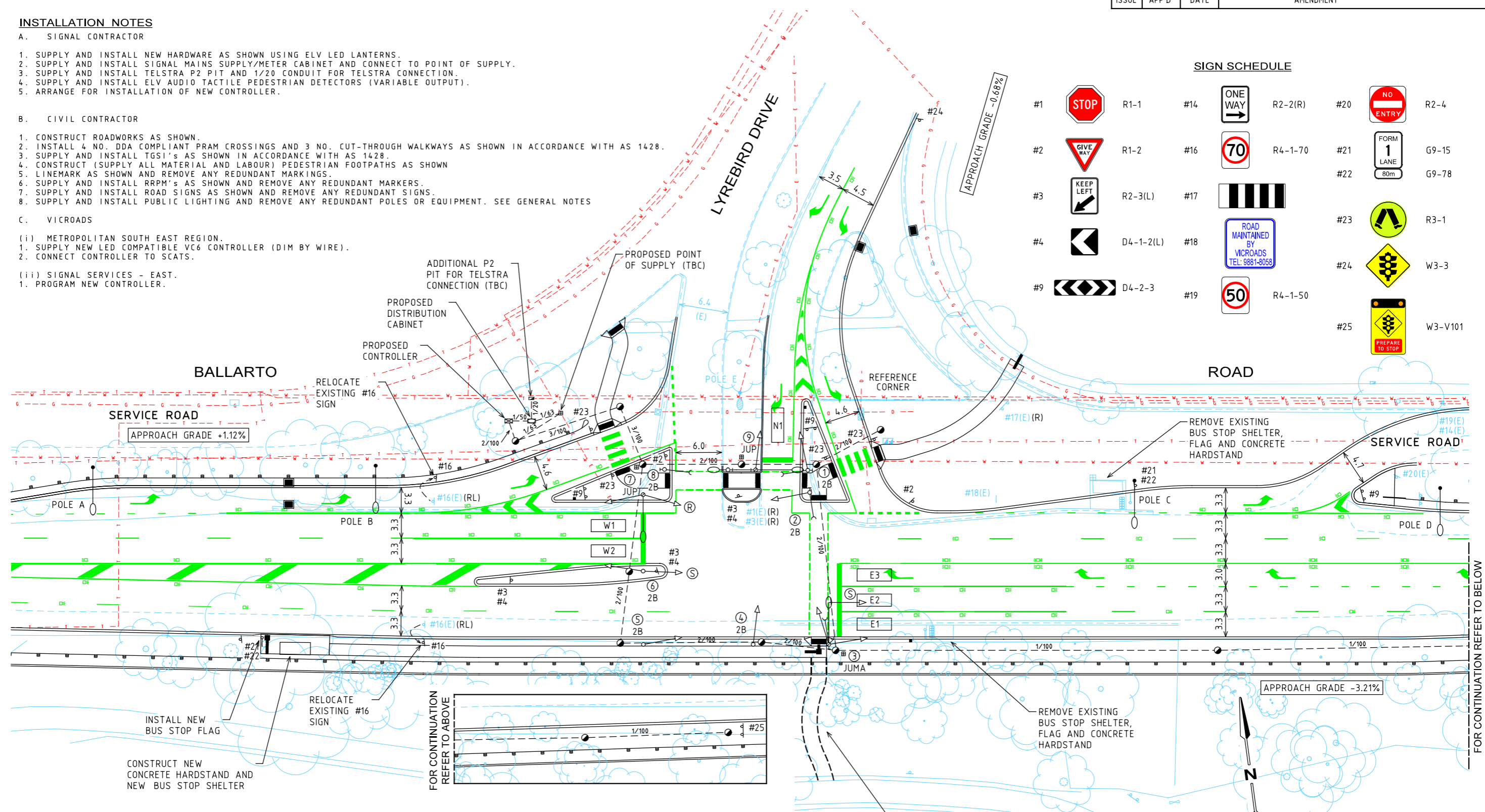
FILE NO: V21199
 CONTRACT NO:
 SHEET NO: 1
 DRAWING NO: VR-XXXX
 ISSUE: B

INSTALLATION NOTES

- A. SIGNAL CONTRACTOR**
- SUPPLY AND INSTALL NEW HARDWARE AS SHOWN USING ELV LED LANTERNS.
 - SUPPLY AND INSTALL SIGNAL MAINS SUPPLY/METER CABINET AND CONNECT TO POINT OF SUPPLY.
 - SUPPLY AND INSTALL TELSTRA P2 PIT AND 1/20 CONDUIT FOR TELSTRA CONNECTION.
 - SUPPLY AND INSTALL ELV AUDIO TACTILE PEDESTRIAN DETECTORS (VARIABLE OUTPUT).
 - ARRANGE FOR INSTALLATION OF NEW CONTROLLER.
- B. CIVIL CONTRACTOR**
- CONSTRUCT ROADWORKS AS SHOWN.
 - INSTALL 4 NO. DDA COMPLIANT PRAM CROSSINGS AND 3 NO. CUT-THROUGH WALKWAYS AS SHOWN IN ACCORDANCE WITH AS 1428.
 - SUPPLY AND INSTALL TGS1'S AS SHOWN IN ACCORDANCE WITH AS 1428.
 - CONSTRUCT (SUPPLY ALL MATERIAL AND LABOUR) PEDESTRIAN FOOTPATHS AS SHOWN
 - LINEMARK AS SHOWN AND REMOVE ANY REDUNDANT MARKINGS.
 - SUPPLY AND INSTALL RRPMS AS SHOWN AND REMOVE ANY REDUNDANT MARKERS.
 - SUPPLY AND INSTALL ROAD SIGNS AS SHOWN AND REMOVE ANY REDUNDANT SIGNS.
 - SUPPLY AND INSTALL PUBLIC LIGHTING AND REMOVE ANY REDUNDANT POLES OR EQUIPMENT. SEE GENERAL NOTES
- C. VICROADS**
- (i) METROPOLITAN SOUTH EAST REGION.
- SUPPLY NEW LED COMPATIBLE VC6 CONTROLLER (DIM BY WIRE).
 - CONNECT CONTROLLER TO SCATS.
- (ii) SIGNAL SERVICES - EAST.
- PROGRAM NEW CONTROLLER.

SIGN SCHEDULE

#1		R1-1	#14		R2-2(R)	#20		R2-4
#2		R1-2	#16		R4-1-70	#21		G9-15
#3		R2-3(L)	#17			#22		G9-78
#4		D4-1-2(L)	#18		R4-1-50	#23		R3-1
#9		D4-2-3	#19			#24		W3-3
						#25		W3-V101



- GENERAL NOTES (CONTINUED)**
- PUBLIC LIGHTING (PUBLIC LIGHTING IN ACCORDANCE WITH CATEGORY V3 AS 1158.1.1)
 - PEDESTAL 9 TO BE 11m JUP, 12.5m MOUNTING HEIGHT, 4.5m DOUBLE OUTREACH BRACKET WITH L2 LED LUMINAIRES.
 - POLE A TO BE AN 11m IMPACT ABSORBING POLE AT 12.5m MOUNTING HEIGHT, 4.5m OUTREACH BRACKET WITH L2 LED LUMINAIRE.
 - POLE B TO BE AN 11m IMPACT ABSORBING POLE AT 12.5m MOUNTING HEIGHT, 4.5m OUTREACH BRACKET WITH L2 LED LUMINAIRE.
 - POLE C TO BE AN 11m IMPACT ABSORBING POLE AT 12.5m MOUNTING HEIGHT, 4.5m OUTREACH BRACKET WITH L2 LED LUMINAIRE.
 - POLE D TO BE AN 11m IMPACT ABSORBING POLE AT 12.5m MOUNTING HEIGHT, 4.5m OUTREACH BRACKET WITH L2 LED LUMINAIRE.
 - POLE E IS A RIGID LIGHTING POLE AT 5.5m MOUNTING HEIGHT, 0.5m OUTREACH BRACKET WITH CFL LUMINAIRE.

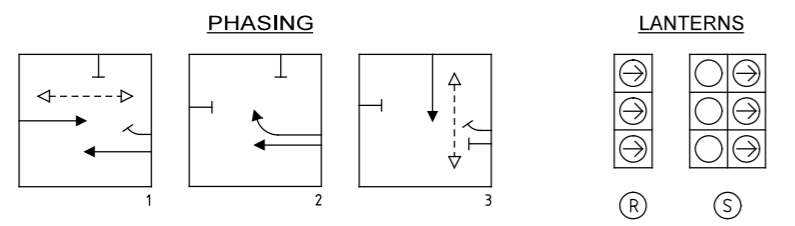
NOTE
PROPOSED SIGNAL HARDWARE LOCATIONS ARE INDICATIVE ONLY
THE ACTUAL LOCATION OF PROPOSED PEDESTALS, CONDUIT PITS, CONDUITS, ETC. SHALL BE DETERMINED ON SITE AT THE PRE-INSTALLATION MEETING

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.

TRAFFICWORKS
1st Floor 132 Upper Heidelberg Road IVANHOE VIC. 3079
P.O. Box 417 IVANHOE VIC. 3079
Tel: (03) 9490 6900 Fax: (03) 9490 5910 www.trafficworks.com.au
TRAFFICWORKS No. 201157-TSP-20 -P2

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION
DATE OF ISSUE: 29/07/21

MELWAY MAP 100 D6



LEGEND		PHASING		LANTERNS	
	PEDESTAL - EXISTING, NEW, JOINT USE				
	3 ASPECT LANTERN - 200mm, 300mm				
	MAST ARM (OUTREACH AS INDICATED)				
	PEDESTRIAN PUSH BUTTON & LANTERN				
	VEHICLE GROUP - ACTIVE, PROHIBITED				
	PERMITTED PEDESTRIAN MOVEMENT				
	PROPOSED STREET LIGHT				
	EXISTING STREET LIGHT				
	DETECTOR LOOP - PROPOSED, EXISTING				
	TRAFFIC SIGNAL CONTROLLER				
	CONDUIT WITH NUMBER/DUCT DIAMETER				
	PIT - CONDUIT, DETECTOR				
	POLE - TRAMWAY, ELECTRICITY				
	F.O. INTERNALLY ILLUMINATED SIGN - FIBRE OPTIC				
	N.R.T. NO RIGHT TURN				
	G.W.T.P. GIVE WAY TO PEDESTRIANS				
	N.S. NO STOPPING				
	PAVEMENT MARKER - RAISED, RAISED REFLECTIVE				
	SEWERAGE PIT				
	FIRE - PLUG, HYDRANT				
	STOP VALVE				
	ELECTRICITY SUPPLY PIT				
	UTILITY UNCLASSIFIED				
	OVERHEAD SERVICE				
	D.S. DIRECTIONAL SIGN				
	I.S. INFORMATION SIGN				
	FENCE				
	UNDERGROUND SEWER MAIN				
	UNDERGROUND ELECTRICITY				
	UNDERGROUND GAS				
	UNDERGROUND WATER				
	UNDERGROUND TELECOMMUNICATIONS				
	TELECOMMUNICATIONS PIT - PILLAR				
	DRAINAGE PIT - SIDE ENTRY, GRATED				
	TGS - WARNING, DIRECTIONAL				
	(R) - REMOVE, (RL) - RELOCATE				

- GENERAL NOTES**
- BASE INFORMATION FROM CLIENT SURVEY FILE 1900254-FS--01.DGN.
 - ALL DIMENSIONS ARE TO FACE OF KERB UNLESS SHOWN OTHERWISE.
 - DECLARED ROAD - BALLARTO ROAD (SPEED ZONE 70km/h)
LOCAL ROAD - LYREBIRD DRIVE (SPEED ZONE 50km/h)
 - PUBLIC LIGHTING (PUBLIC LIGHTING IN ACCORDANCE WITH CATEGORY V3 AS 1158.1.1)
 - PEDESTAL 3 TO BE 11m JUMA, 12.5m MOUNTING HEIGHT, 4.5m OUTREACH BRACKET WITH L2 LED LUMINAIRE.
 - PEDESTAL 7 TO BE 11m JUP, 12.5m MOUNTING HEIGHT, 4.5m OUTREACH BRACKET WITH L2 LED LUMINAIRE.

DESIGNED
A ALEXANDROV JUL 2021

APPROVED

CAT:
PROJ:
FILE:

vicroads

SCALE OF METRES
HOR 0 5 10
VER

BALLARTO ROAD / LYREBIRD DRIVE				
FRANKSTON CITY				
TRAFFIC SIGNAL PLAN				
FILE NO.	SITE NO.	SHEET NO.	DRAWING NO.	ISSUE
	XXXX		VICROADS	

FUNCTIONAL LAYOUT DESIGN – BALLARTO ROAD & LYREBIRD DRIVE INTERSECTION, CARRUM DOWNS –Design Memo



Document Control

Revision	Date	Description	Prepared	Reviewed	Approved
A	06/04/21	Information Only	Thomas Gardiner	Alex Wong	Edwin Chan

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1 INTRODUCTION

1.1 Background

DoT is seeking to improve the efficiency and safety of the Ballarto Road/ Lyrebird Drive intersection in Carrum Downs, Victoria. Ballarto Road is an arterial road managed by DoT, with Lyrebird Drive owned and maintained by Frankston City Council. The intersection is currently a T-junction with a channelised right-turn treatment and an auxiliary left-turn treatment on Ballarto Road going into Lyrebird Drive. There is a bus stop on each side of the carriageway on Ballarto Road just east of the intersection. There are currently no pedestrian crossing facilities provided on Ballarto Road. Traffic peaks at an hourly intersection throughput of approximately 1,900 to 2,000 vehicles during the PM peak.

Proposed upgrade works include signalling and widening of the intersection to accommodate an additional auxiliary through lane on Ballarto Road in each direction, dedicated right-turn and left-turn auxiliary lanes on Ballarto Road into Lyrebird Drive, and provision of pedestrian operated signals across the intersection in both directions. The upgrade works will significantly improve vehicle and pedestrian safety and improve the overall efficiency of the intersection.

DoT has developed two options for the upgrade works undertaken to date. The latest option, which minimises the removal of existing trees, is currently a concept design. The current phase of the project involves the functional layout development based on the selected concept design, with further optimisation to minimise impact to existing trees, existing utilities and to private properties whilst still achieving the overall project objectives.

2 DESIGN STANDARDS AND CRITERIA

2.1 Road Design Criteria

The design adopted for the functional layout design is in accordance with the reference documents listed below in Table 1.

Table 1: Reference Standards

REFERENCES:
VicRoads Standard Drawings
VicRoads Supplements to Austroads Guide to Road Design Part 3, 4, 4A, and 6
Austroads Guide to Road Design Part 3, 4, 4A, and 6
VicRoads Road Design Notes 06-06, and 06-08
Australian Standards – AS1742.1: General introduction and index of signs
Australian Standards – AS1742.2: Traffic control devices for general use
Australian Standards – AS1742.10: Pedestrian control and protection
Australian Standards – AS1742.12: Bus, transit, tram, and truck lanes

3 DESIGN

3.1 Road Design

The proposed intersection design has been undertaken in accordance with Australian guidelines and relevant VicRoads supplements. A design speed of 70km/h for Ballarto Road (declared road), matching the posted limit has been adopted. A design speed of 50km/h for Lyrebird Drive (local road), matching the posted limit has been adopted. An approach sight distance of 70m for Lyrebird Drive has been adopted, with a safe intersection sight distance of 115m and 125m adopted for the Ballarto Road western and eastern approaches respectively.

Following the project inception meeting with DoT on 25 March 2021, it was determined to retain the current Ballarto Road centreline and widen to both the north and south of the current pavement limits rather than shifting the intersection geometry to the north to avoid impacting existing trees along the southern road reserve. It was also agreed to adopt a common through and auxiliary lane width of 3.3m, with a minimum 3.0m lane width adopted for turning bays. BG&E have matched closely to the existing road geometry along both Ballarto Road and Lyrebird Drive in the provided functional layout.

Lane diverge and merge lengths have been designed to meet the minimum Austroads requirements for the nominated design speeds, with vehicle storage confirmed via SIDRA modelling. A 120m long auxiliary lane has been provided on the Ballarto Road western approach to the intersection, with a 75m auxiliary lane on the eastern approach. A storage/deceleration length of 30m for the westernmost left-turn entry into the Ballarto Road service road has been provided, with around 70m storage/deceleration nominated for the left-turn lane into Lyrebird Drive. A short storage/deceleration length of around 15m has been provided at the Ballarto Road left-turn into the service road just east of the Lyrebird Drive intersection due to existing geometric constraints, with a storage/deceleration length of 94m adopted for the right-turn lane into Lyrebird Drive.

Swept path analysis of the proposed works was undertaken using a 12.5m SU truck/bus design vehicle for all movements (see below), with a 19m semi-trailer used as the checking vehicle. A minimum lane width of 3.5m adopted has been adopted in Lyrebird Drive, with the road curvature matching the existing conditions. It is noted that the dual right turn lanes from Lyrebird Drive onto Ballarto Road shown in DoT's concept have been reduced to a single right turn lane following SIDRA analysis. A dedicated left turn lane from Lyrebird Drive onto Ballarto Road with new concrete splitter island has been provided, requiring the existing eastern kerb alignment to be demolished and reconstructed and necessitating the removal of two existing street trees. The nose of the existing Lyrebird Drive grassed median has also been shortened to accommodate the auxiliary Ballarto Road eastbound through lane.

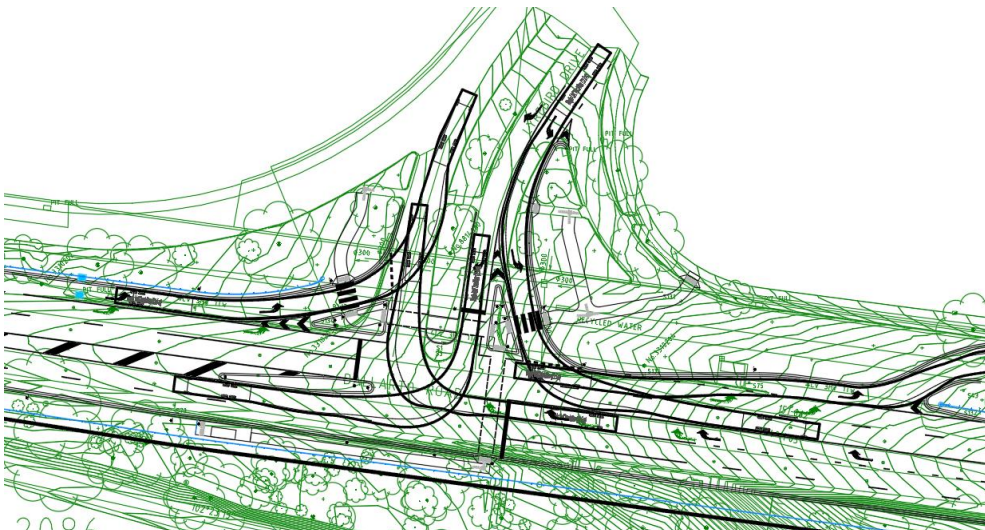


Figure 1 -Swept Path Envelopes

The proposed left turn lane into the service road east of the Lyrebird Drive intersection requires that the existing bus bay be relocated east of the service road access. The existing westbound bus bay location has likewise been relocated to the departure side of the intersection in accordance with the VicRoads Supplement to 1742.12. Pedestrian connectivity and safety have been significantly improved with the addition of pedestrian operated signal infrastructure, zebra crossings, and footpath connections. There is scope to create a connection south to the Peninsula Link Shared Trail at a future date.

Guard fence has been provided along both sides of Ballarto Road to protect existing vegetation and services infrastructure. To reduce impact on existing service infrastructure and vegetation, a minimum guard fence offset of 0.5m has been adopted along the northern side of Ballarto Road. A nominal 3.0m guard fence offset to the line of kerb along the southern road reserve was adopted to facilitate the relocated bus bay and pedestrian path connection, however there is scope to reduce the guard fence offset and to create a 'break' in the guard fence at the proposed bus bay to further reduce impact on vegetation. An indicative road acquisition boundary and retaining wall alignment has been provided at a fixed 5.0m offset from the proposed southern line of kerb (approximately 1330m² property acquisition required as shown in blue below).

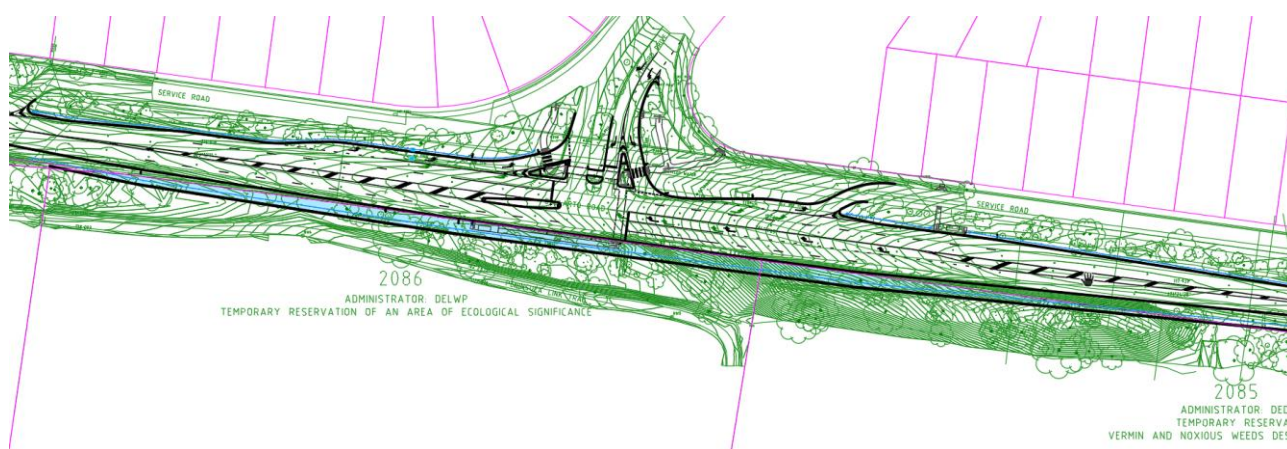


Figure 2 - Indicative road acquisition boundary

Please refer to the Functional Layout Plans: DRG No. DRG-CI-1001_1003 for further details.

3.2 Existing Services

Following a site inspection and studying the supplied survey data, the following services have been identified for potential adjustment or relocation to suit the proposed works.

- Electricity – The existing overhead electrical infrastructure along the northern road reserve of Ballarto Road falls within the proposed pavement widening works and will therefore require relocation or undergrounding.
- Water – Existing recycled and potable water services have been identified running along Ballarto Road's northern verge area and through the Lyrebird Drive intersection. Minimal impact to the existing water services from the proposed works is anticipated.
- Gas – Minimal impact to the various existing gas services in the area is anticipated.
- Telecommunications – Existing underground Telecommunications services are present along both sides of Ballarto Road. Minimal impact is anticipated to these services along the northern side of Ballarto Road (the footpath east of the Lyrebird Drive intersection has been designed to avoid impacting a large telecommunications chamber), however the relocation of underground telecommunications services at two locations along Ballarto Road's southern verge have been identified.
- Drainage – Minor stormwater drainage works to suit the proposed pavement widening are anticipated. Due to the proposed formalisation of Ballarto Road with new kerb and channel, additional side entry pits along the road alignment directing flows south to the Peninsula Link Trail are anticipated (to be further investigated during detailed design).

3.3 Existing Vegetation

Existing trees indicatively marked for removal have been identified on the functional layout plan in red, including approximately 66x trees along the southern reserve, and around 12x on the northern side of Ballarto Road. Additional tree removal may be required pending arboricultural assessment and determination of tree protection zone (TPZ) and other requirements such as confirmation of guard fence deflection/roll allowance, retaining wall construction, services relocations/adjustments etc. (to be further investigated during detailed design).