ANNEXURE A – FORM 9

Form 9: Application for Resource Consent

Under Section 88 of the Resource Management Act 1991

TO: The Ashburton District Council

Ashburton Riverside Developments Limited applies for the resource consent described below.

1. **The names and addresses** of the owner and occupier (other than the applicant) of any land to which this application relates are as follows:

   The Allenton Rugby Football Club (incorporated)

2. **The location** to which this application relates is:

   Melrose Road, Ashburton legally described as Lot 2 DP 382372 contained in Record of Title 329320 and Section 1 SO 18829 held in Record of Title 329319. Please find the titles attached at Annexure B.

3. **The type of resource consent** being sought is a Land Use Consent.

4. **A description of the activities** to which the application relates is:

   The purpose of the road widening is to enable future traffic movements over Melrose Road and Allenton Rugby Club land and into the land owned by Ashburton Riverside Developments Ltd zoned Business D and the future development potential of this land.

   The site layout and details have been included in the plans contained as Annexure C.

   The proposed development will be in accordance with the plans accompanying this application and which should be read as part of it. A more detailed description of the proposed activity is to be found in the assessment of effects on the environment which accompanies this application as Annexure A, and which should also be read as part of this application.

5. **Attached is an assessment of any actual or potential effects** that the activity may have on the environment.

6. **No other applications required.**

7. **No other information** is required to be supplied by the district or regional plans or regulations.

.....

(Signature of applicant or person authorised to sign on behalf)

DATED: 26th November 2023

Address for service:

David Harford Consulting Limited

PO Box 603

Ashburton 7740

Attention: David Harford

Telephone: (029) 307 7164

Email: david@dhconsulting.co.nz

Address for Applicant

Ashburton Riverside Developments Ltd

Attention: Ben Shearer/Jeff Vesey

Email:ben.shearer@hotmail.com

ANNEXURE B RECORDS OF TITLE

Quickmap Title Details

Information last updated as at 26-Nov-2023

RECORD OF TITLE
DERIVED FROM LAND INFORMATION NEW ZEALAND
FREEHOLD

Identifier **329320**

Land Registration District **Canterbury**

Date Issued 12 June 2007

Prior References

CB38C/1080

Type Fee Simple

Area 9.2875 hectares more or less

Legal Description Lot 2 Deposited Plan 382372

Registered Owners

The Allenton Rugby Football Club (Incorporated)

Subject to a right of way over part marked A on DP 382372 specified in Easement Certificate A204542.7 - 13.11.1995 at 11:41 am

The easements specified in Easement Certificate A204542.7 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right (in gross) to convey electric power over part marked B on DP 382372 in favour of Electricity Ashburton Limited created by Transfer 5042038.1 - 16.5.2001 at 9:00 am

Subject to a right (in gross) for river control and protection purposes over part marked A,B,C on DP 382372 in favour of Canterbury Regional Council created by Transfer 6724321.1 - 20.1.2006 at 9:00 am

9189903.2 Mortgage to Nelson Building Society - 1.10.2012 at 2:12 pm

Subject to a right to drain water and a slope and batter easement over part marked X on DP433407 created by Easement Instrument 9418109.8 - 6.6.2013 at 11:34 am

Quickmap Title Details

Information last updated as at 26-Nov-2023

RECORD OF TITLE
DERIVED FROM LAND INFORMATION NEW ZEALAND
FREEHOLD

Identifier **329319**

Land Registration District **Canterbury**

Date Issued 12 June 2007

Prior References

CB35D/978 CB38C/1080

Type Fee Simple

Area 9.2729 hectares more or less

Legal Description Lot 1 Deposited Plan 382372 and Section 1 Survey Office Plan 18829

Registered Owners

Ashburton Riverside Development Limited

Appurtenant to Section 1 SO 18829 is a right of way specified in Easement Certificate A204542.7 - 13.11.1995 at 11:41 am

The easements specified in Easement Certificate A204542.7 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right (in gross) for river control and protection purposes over all of Section 1 SO 18829 in favour of Canterbury Regional Council created by Transfer 6724328.1 - 20.1.2006 at 9:00 am

Subject to a right (in gross) for river control and protection purposes over part Lot 1 DP 382372 marked D on DP 382372 in favour of Canterbury Regional Council created by Transfer 6724321.1 - 20.1.2006 at 9:00 am

Subject to Section 241(2) Resource Management Act 1991 (affects DP 382372)

Subject to Section 8 Atomic Energy Act 1945 (affects Section 1 SO 18829)

Subject to Section 3 Geothermal Energy Act 1953 (affects Section 1 SO 18829)

ANNEXURE C DEVELOPMENT PLANS

Contractor to locate all existing services & verify all dimensions before commencing work

Issue	Date	Reason	Approved
A	01/23	FOR DISCUSSION	GPM

Notes:

Owners: The Allenton Rugby Football Club (Incorporated)

Address: 21 Melrose Road, Allenton, Ashburton
Appellation: Lot 2 DP 382372
RT Reference: 329320
Total Area: 9.2875 ha

Applicant: Ashburton Riverside Development Limited
c/- Ben Shearer

- All dimensions in metres unless shown otherwise;
- Existing boundaries adopted from LINZ online database;
- Aerial Photography: Sourced from LINZ Database https://data.linz.govt.nz/layer/111403-ashburton-0075m-urban-aerial-photos-2021-2022/ under Creative Commons Attribution 4.0 International;
- This plan is in terms of NZGD2000 Gawler Circuit;
- This plan has been prepared for the sole purpose of obtaining subdivision consent pursuant to Section 88 of the Resource Management Act 1991;
- Use of this plan for other purposes or its reproduction in part or full is not permitted without the prior consent of Davis Ogilvie (Aoraki) Ltd;
- A full assessment of easements will be undertaken prior to final survey and subsequent to proposed servicing and engineering requirements being confirmed;
- All dimensions and areas are subject to final legal survey;
- Services are sourced from Canterbury Maps and are indicative only;

Key:

- Water Supply
- Foul Sewer
- Stormwater
- Electricity (Underground)
- Telecom
- Existing Easement
- Proposed Easement

Schedule of Proposed Easements

Purpose	Shown	Servient Tenament	Dominant Tenament
Right of Way	D	Lot 2	Lot 1

Schedule of Existing Easements

Purpose	Shown	Servient Tenament	Document
Right of Way	A	Lot 2	E.C A204542.7
	AB	Lot 1	
Right to Convey Electric Power	B	Lot 2	T.5042038.1
River Control and Protection	Lot 1 and 2	Lot 1 and 2	T.6724321.1
Slope and Batter, Right to Drain Water	X	Lot 1	E.I 9418109.8

FOR DISCUSSION ONLY
NOT FOR CONSENT

CAD ref: C:\12ds\data\DO-TIMARU\30619 TM - 21 Melrose Road, Allenton, Ashburton 1065\06 CADD\Dwg\DOA-30619-Scheme Plan-PL01-A.dwg

DAVIS OGILVIE
Davis Ogilvie (Aoraki) & Partners Ltd
Engineers - Surveyors - Planners
14 The Terrace, Timaru 7940
P.O. Box 359 Timaru, NZ
Ph. 03 688 8350 / 0800 888 350
Also - Nelson, Christchurch, Greymouth

LOTS 1 AND 2 BEING A PROPOSED SUBDIVISION OF LOT 2 DP 382372

ASHBURTON RIVERSIDE DEVELOPMENT LIMITED

Design	Drawn	QA check
DS	TH	DS
Scale @ A1 1:1000	Date 01/23	File 30619

dwg PL01 Issue A

Contractor to locate all existing services & verify all dimensions before commencing work

Issue	Date	Reason	Approved
A	01-23	For Discussion Only	GPM

Notes:

Owners: Ashburton Riverside Development Ltd
Affected: The Allenton Rugby Football Club (Incorporated)

Address: 21 Melrose Road, Allenton, Ashburton
Appellation: Lot 1 & Part of Lot 2 DP 382372, Section 1 SO 18829, Lot 1 546930, RS 36406
RT Reference: 329320, 329319, 975273
Total Area: 9.2875 ha, 9.1510ha, 1.1943ha, 16.1874ha

Applicant: Ashburton Riverside Development Limited
c/- Ben Shearer

- All dimensions in metres unless shown otherwise;
- Existing boundaries adopted from LINZ online database;
- Aerial Photography: Sourced from LINZ Database https://data.linz.govt.nz/layer/99197-canterbury-03m-rural-aerial-photos-2017-2018/ under Creative Commons Attribution 4.0 International;
- Survey: Sourced from LINZ Database Canterbury LiDAR 1m DEM (2018-2019) https://data.linz.govt.nz/layer/104931-canterbury-lidar-1m-dem-2018-2019/ under Creative Commons Attribution 4.0 international;
- This plan is in terms of NZGD2000 Gawler Circuit;
- This plan has been prepared for the sole purpose of obtaining subdivision consent pursuant to Section 88 of the Resource Management Act 1991;
- Use of this plan for other purposes or its reproduction in part or full is not permitted without the prior consent of Davis Ogilvie (Aoraki) Ltd;
- A full assessment of easements will be undertaken prior to final survey and subsequent to proposed servicing and engineering requirements being confirmed;
- All dimensions and areas are subject to final legal survey;
- Services are sourced from Canterbury Maps and are indicative only;
- This plan is for discussion purposes only, and is subject to approvals from Local and Regional Authorities, NZTA, and relevant land acquisition(s)/agreements;
- The layout is subject to further investigations,stake holder consultation and detailed design. This may result in changes to the proposed road layout.

Key

- Proposed Sealed Road and RoW
- Proposed Allotment (2,000m² - 3,000m²)
- Proposed Allotment (3,000m² - 4,000m²)
- Proposed Allotment (4,000m² - 6,000m²)
- Proposed Stormwater Treatment and Infiltration Area (Indicative Only)
- Proposed Easement
- Existing Easement
- Area subject to possible boundary adjustment
- Existing Stormwater Channel
- Existing Ashburton River Flood Bank
- Existing ground major contour at 2.5m (LiDAR 1m)
- Existing ground minor contour at 0.5m (LiDAR 1m)

FOR DISCUSSION ONLY

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ASHBURTON RIVERSIDE DEVELOPMENTS
ALFORD FOREST ROAD, ASHBURTON

SUBDIVISION CONCEPT LAYOUT PLAN

Design	Drawn	QA check	dwg	Issue
RL	RL	GPM	PL01	A
Scale @ A1	Date	File		
1:1750	01-23	29718		

Contractor to locate all existing services & verify all dimensions before commencing work

Issue	Date	Reason	Approved
A	02-23	For Discussion Only	GPM

Notes:
- All dimensions in metres unless shown otherwise;
- See notes on PL01.

FOR DISCUSSION ONLY

CAD ref: C:\12ds\data\DO-TIMARU\29718 TIM - Alford Forest Road, Ashburton, New Zealand_23\Dwg\29718-Road Layout Plan.dwg

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ASHBURTON RIVERSIDE DEVELOPMENTS
ALFORD FOREST ROAD, ASHBURTON

ROAD LAYOUT PLAN

Design	Drawn	QA check	dwg	Issue
RL	RL	GPM	PL02	A
Scale @ A1	Date	File		
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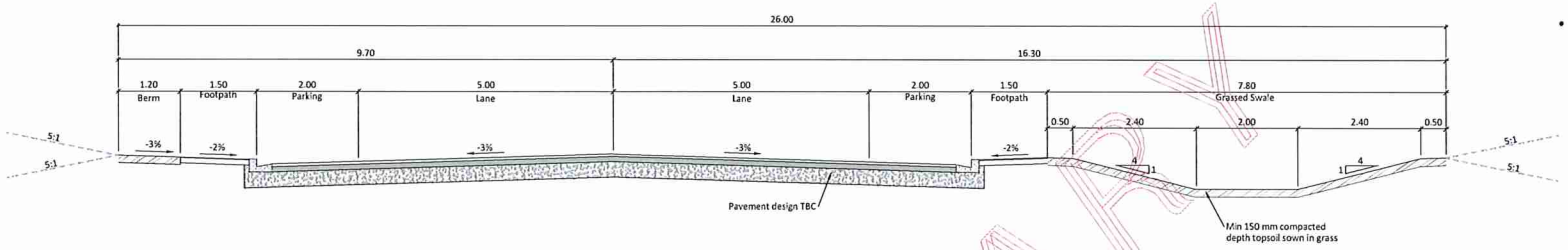
Contractor to locate all existing services & verify all dimensions before commencing work

Issue	Date	Reason	Approved
A	02-23	For Discussion Only	GPM

Notes:
- All dimensions in metres unless shown otherwise;
- See notes on PL01.



SECTION A - MAIN ROAD & WESTERN LOOP

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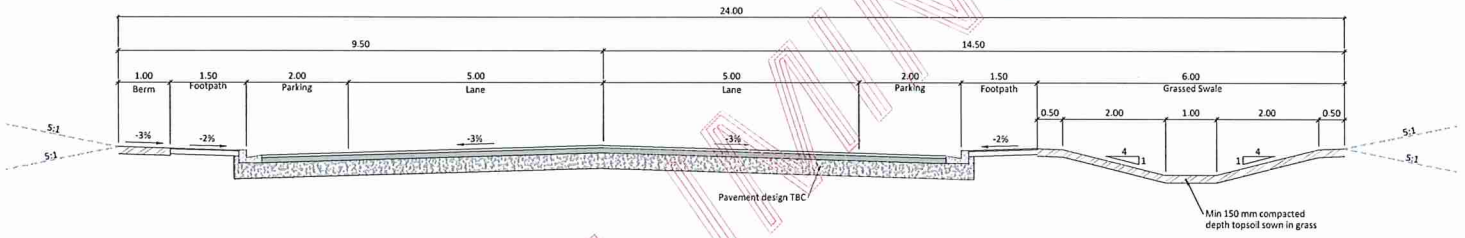

SECTION B - EASTERN LOOP

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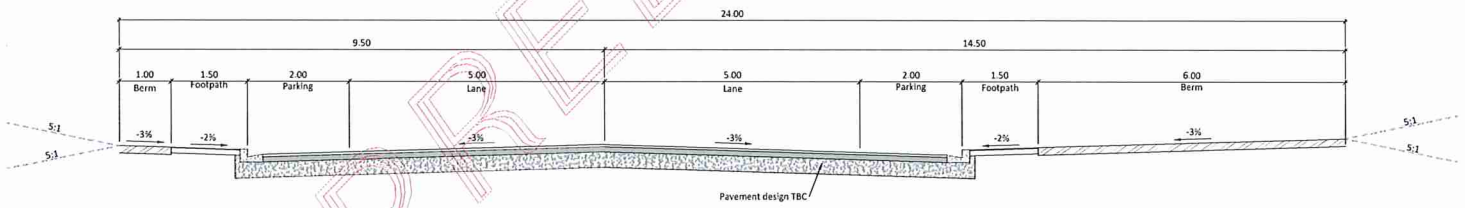

SECTION C - EASTERN LOOP

Scale: 1:50 @ A1

FOR DISCUSSION ONLY

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ASHBURTON RIVERSIDE DEVELOPMENTS
ALFORD FOREST ROAD, ASHBURTON

ROAD TYPICAL SECTION

Design	Drawn	QA check	dwg	Issue
RL	RL	GPM	PL03	A
Scale @ A1	Date	File		
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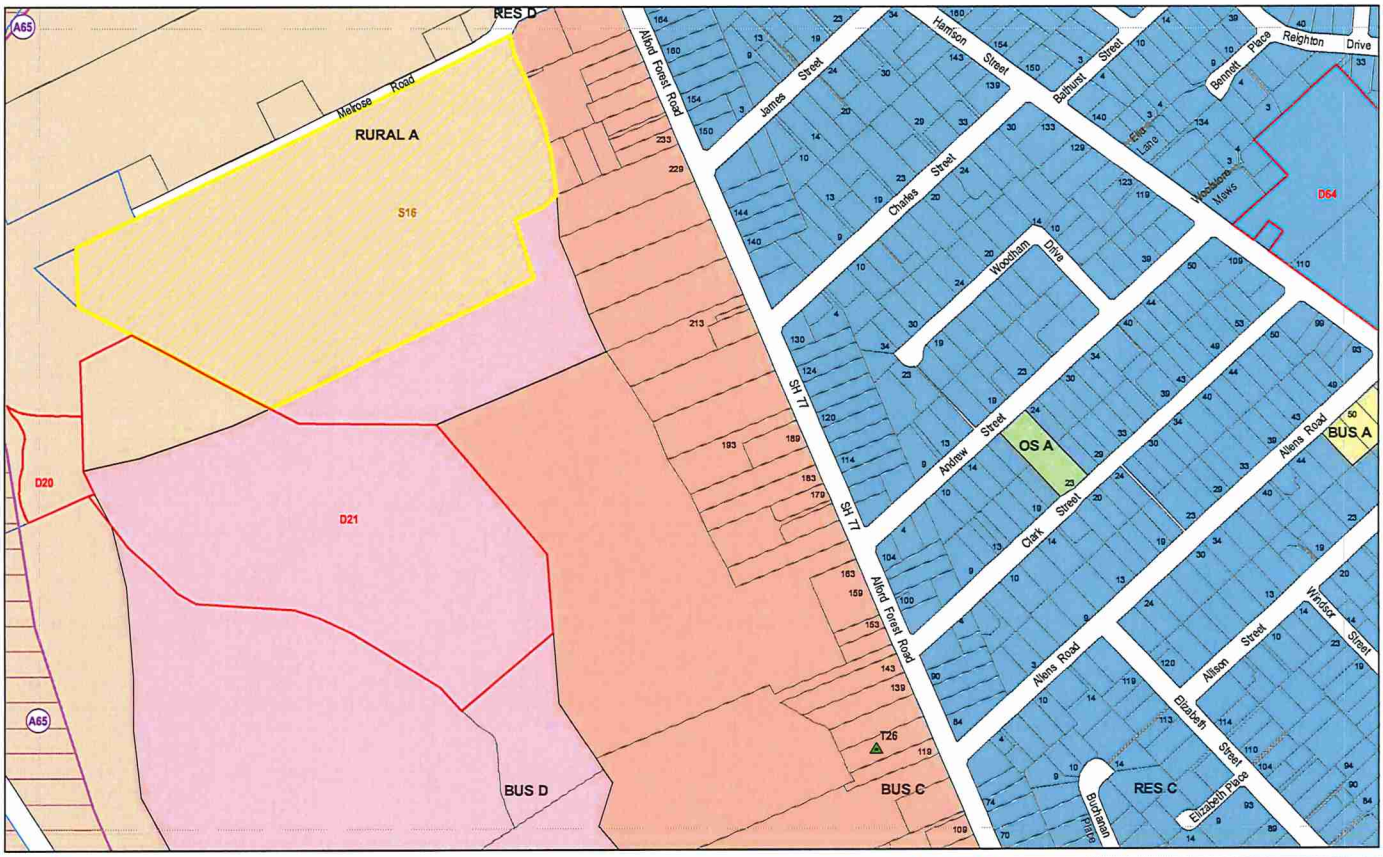
ANNEXURE D PLANNING MAP



Ashburton District Plan

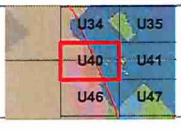
Ashburton

km
0 0.05 0.1 0.2 0.3

Scale 1: 5,000 (A4)

R65

Street Index
Rural Index
Urban Index
Legend



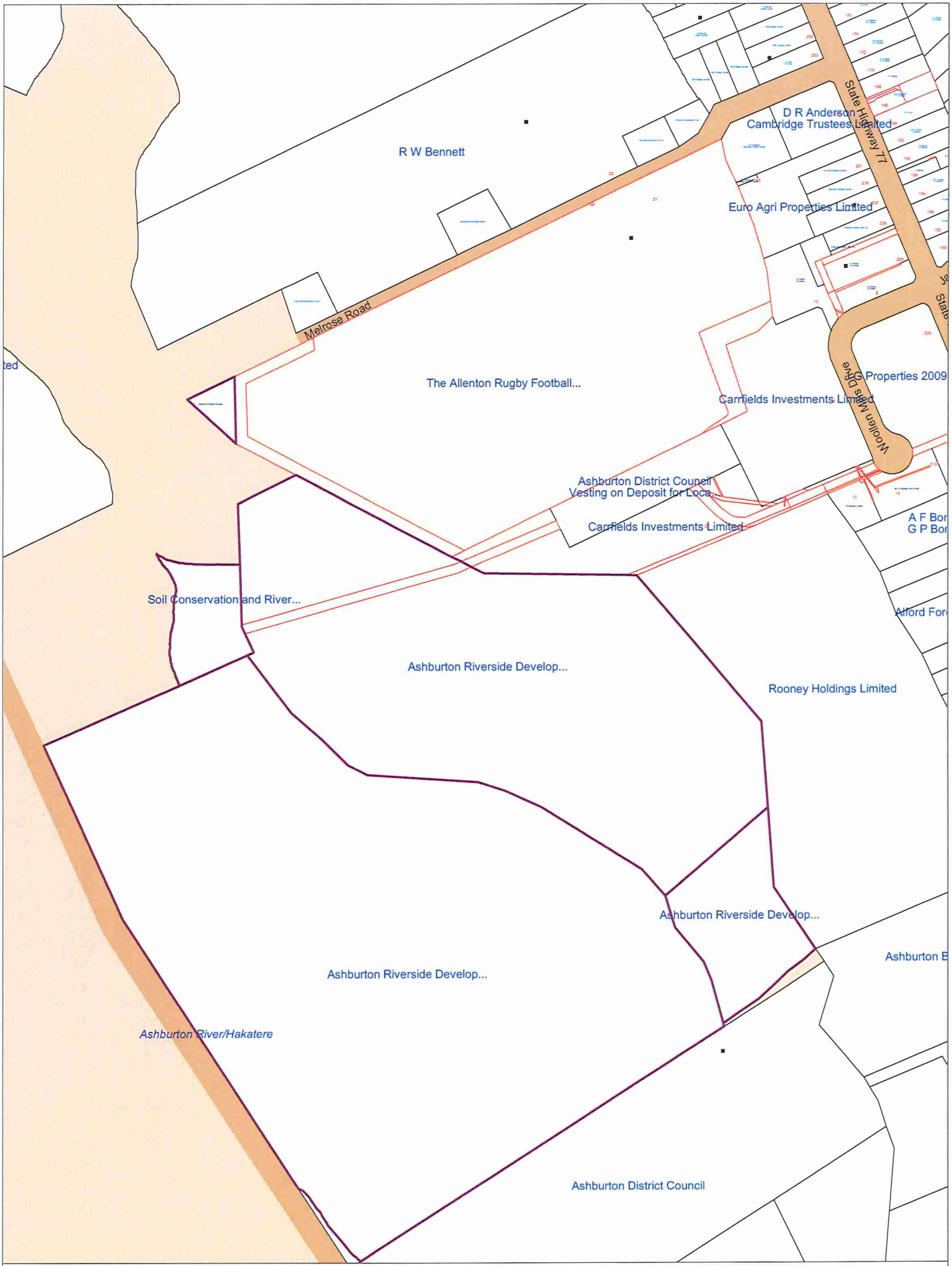
Ashburton DISTRICT COUNCIL

Map U40

25-Aug-14

ID number	Authority Responsible	Purpose	Site/Legal Description	Lifetime of Designation	Conditions Apply?	Map reference	Zoning
13	Environment Canterbury	Soil conservation and river control	South Ashburton River R2494 (54.8601ha)	Has been given effect to.	No	R58	Rural B
14	Environment Canterbury	Soil conservation and river control	South Ashburton River R2495 (5.2988ha)	Has been given effect to.	No	R58	Rural B
15	Environment Canterbury	Soil conservation and river control	South Ashburton River R2243 (19.0202ha)	Has been given effect to.	No	R58, R64	Rural B
16	Environment Canterbury	Soil conservation and river control	South Ashburton River R2244 (5.9691ha)	Has been given effect to.	No	R64	Rural B
17	Environment Canterbury	Soil conservation and river control	South Ashburton River R2498 (42.6943ha)	Has been given effect to.	No	R64, R65	Rural B
18	Environment Canterbury	Soil conservation and river control	South Ashburton River R5204 (13.7593ha)	Has been given effect to.	No	R64, R65	Rural B
19	Environment Canterbury	Soil conservation and river control	South Ashburton River R5203 (57.780ha)	Has been given effect to.	No	R65, R72, U52	Rural A
20	Environment Canterbury	Soil conservation and river control	South Ashburton River Pt R1951 (0.8599ha)	Has been given effect to.	No	R65	Rural A
21	Environment Canterbury	Soil conservation and river control	South Ashburton River Sec 1 of SO 18829 (9.1510ha)	Has been given effect to.	No	U40	Rural A
22	Environment Canterbury	Soil conservation and river control	South Ashburton River RS 40469 (25.7550ha)	Has been given effect to.	No	U40, U60, U67, U68	Rural A and Business D
23	Environment Canterbury	Soil conservation and river control	South Ashburton River R2502 (75.6762ha)	Has been given effect to.	No	R72, R79, U74	Rural A and Aquatic Park
24	Environment Canterbury	Soil conservation and river control	South Ashburton River R2764 (21.6506ha)	Has been given effect to.	No	R79	Rural B
25	Environment Canterbury	Soil conservation and river control	North Ashburton River R5215 (4.3250ha)	Has been given effect to.	No	R38	Rural B
26	Environment Canterbury	Soil conservation and river control	North Ashburton River R5216 (25.1663ha)	Has been given effect to.	No	R38, R44	Rural B

ANNEXURE E LOCATION PLAN



QuickMap
Custom Software Ltd

0 50 100 150 200 250 300 350 400 450 500m

Scale 1:4000 Topographical and Cadastral map derived from LINZ data. Printed: 08-Jun-2022 12:25.

ANNEXURE F NOVO GROUP TRAFFIC REPORT

novo group
Planning. Traffic. Development.

Integrated Transport Assessment

Prepared for

ASHBURTON RIVERSIDE DEVELOPMENT LTD

Alford Forest Road
Ashburton

June 2023

Integrated Transport Assessment
Prepared for

Ashburton Riverside Development Ltd

Alford Forest Road
Ashburton

Novo Group Ltd
Level 1, 279 Montreal Street
PO Box 365, Christchurch 8140
P: (03) 365 5570
E: info@novogroup.co.nz
W: www.novogroup.co.nz

Document Date:	**16/06/2023**
Document Version/Status:	Rev D | FINAL
Project Reference:	206-021
Project Manager:	Nick Fuller, Principal Transport Engineer
Prepared by:	Nick Fuller, Principal Transport Engineer
Reviewed by	Rhys Chesterman, Director and Traffic Engineer/Planner

Table of Contents

List of Figures and Tables

Appendices

Introduction

1. Ashburton Riverside Development Ltd (the Applicant) has commissioned Novo Group to prepare an Integrated Transport Assessment (ITA) for alterations to the Outline Development Plan for industrial zoned land to the south of Melrose Road and west of Alford Forest Road in Ashburton.

2. This report provides an assessment of the transport aspects of the proposed development. It also describes the transport environment in the vicinity of the site, describes the transport related components of the proposal and identifies compliance issues with the transport provisions in the District Plan. It has been prepared broadly in accordance with the Integrated Transportation Assessment Guidelines specified in New Zealand Transport Agency Research report 422, November 2010.

3. The application site (the Site) is currently undeveloped, but the majority is zoned in the Ashburton District Plan as Business D. This application is to address the Outline Development Plan (ODP) *Appendix 5.3:Outline Development Plan Business D Zone, Riverside* contained in the Ashburton District Plan to reflect access to (and an upgrade of) Melrose Road. The existing Business D land and Melrose Road are illustrated in **Figure 1.** The proposal requires access to Melrose Road and facilitates development, as the land owned by the Applicant currently has no legal road access (until such time as other parties choose to develop).

Figure 1: Site Location

4. Given the majority of the site is already zoned Business D, the critical issue being assessed in this report is the Melrose Road widening and the associated potential effects at the SH77 / Melrose Road intersection.

Transport Environment

Road Network

5. Traffic volume diagrams that summarise the existing peak period traffic flows on the surrounding road network are included in **Appendix 1** (refer to Diagrams 1 and 2 for the AM and PM peak hours respectively). These summarise traffic counts undertaken on Wednesday 24th August 2022.

6. Traffic growth in the area is estimated as being 0.28% per year, based on Waka Kotahi counts of Alford Forest Road (north of Oak Grove). Ten years of growth is therefore 2.8% and the counted traffic volumes have been factored up to provide 2032 traffic volumes, as illustrated in Diagrams 3 and 4 for the AM and PM peak hours respectively (in **Appendix 1**).

Melrose Road

7. The key transport details of Melrose Road are summarised in **Table 1**.

Table 1: Melrose Road Transport Details

Key Feature or Characteristic	Comment
Road Classification	Local Road
Cross-Section Description	***From SH77 for 100m*** 13m carriageway accommodating two traffic lanes plus on-street car parking. Footpaths on both sides of the road. 20m road corridor. ***From 100m West of SH77 Heading West to 240m*** Approximately 8m sealed carriageway passing the Rugby Club, with on-street parking permitted. No footpaths. 10m road corridor. ***From 240m West of SH77 onwards*** Approximately 7.0m wide unsealed carriageway. No footpaths. 10m road corridor.
Traffic Volumes	Peak hour traffic volumes of 16 vehicles per hour in the AM and 47 vehicles per hour in the PM. Daily volumes of 275 vehicles per day[1].
Speed	50km/hr speed restriction
Cycling / Pedestrian Infrastructure	As above
Other Comments	This road currently provides limited access to industrial land, residential sites and the Rugby Club (Allenton RFC). The road continues to (and provides access to) the Ashburton River.

Alford Forest Road (State Highway 77)

8. The key transport details of Alford Forest Road (State Highway 77) are summarised in **Table 2**.

[1] Estimated on the Mobile Road website.

Table 2: Alford Forest Road Transport Details

Key Feature or Characteristic	Comment
Road Classification	State Highway
Cross-Section Description	13.8m carriageway comprising two 3.5m traffic lanes plus parking lanes of 3.4m width both sides of the road. Footpaths of approximately 3.15m width are provided both sides of the road.
Traffic Volumes	Peak hour traffic volumes of 316 vehicles per hour in the AM and 360 vehicles per hour in the PM. Daily volumes of 7,601 vehicles per day[2].
Speed	50km/hr speed restriction

Farm Road

9. The key transport details of Farm Road are summarised in **Table 3**.

Table 3: Farm Road Transport Details

Key Feature or Characteristic	Comment
Road Classification	Collector Road
Cross-Section Description	12m carriageway comprising 5.2m wide south-westbound lane and 6.8m wide north-eastbound lane. Southern footpath width of approximately 3.4m width. Northern footpath of 2.0m width plus a grass berm.
Traffic Volumes	Peak hour traffic volumes of 82 vehicles per hour in the AM and 62 vehicles per hour in the PM. Daily volumes of 710 to 890 vehicles per day[3].
Speed	50km/hr speed restriction

Alford Forest Road / Melrose Road Intersection

10. The existing Alford Forest Road / Melrose Road intersection arrangement is illustrated in **Figure 2**. This indicates a stop-controlled intersection where Alford Forest Road has the priority. No turning bays or additional lanes are marked at the intersection.

11. A traffic model has been created of this intersection using the 2022 counted traffic volumes and the 2032 forecast traffic volumes. The results of these models are contained in **Appendix 2** and they indicate that the intersection is predicted to operate satisfactorily.

[2] Waka Kotahi count database north of Oak Grove.
[3] Estimated on the Mobile Road website.

Figure 2: Alford Forest Road / Melrose Road Intersection

Alford Forest Road / Farm Road Intersection

12. **Figure 3** illustrates the Alford Forest Road / Farm Road intersection arrangement, which is also a stop-controlled intersection where Alford Forest Road has the priority. No turning bays or additional lanes are marked at the intersection. This intersection is approximately 70m north of the Melrose Road intersection (measured centre to centre).

Figure 3: Alford Forest Road / Farm Road Intersection

13. A traffic model has been created of this intersection using the 2022 counted traffic volumes and the 2032 forecast traffic volumes. The results of these models are contained in **Appendix 2** and they indicate that the intersection is predicted to operate well within capacity.

Harrison Street / Farm Road Intersection

14. **Figure 4** illustrates the Harrison Street / Farm Road intersection arrangement. This is a give-way controlled cross-road, where Harrison Street has the priority. This intersection is approximately 114m north-east of the Alford Forest Road / Farm Road intersection (measured centre to centre).

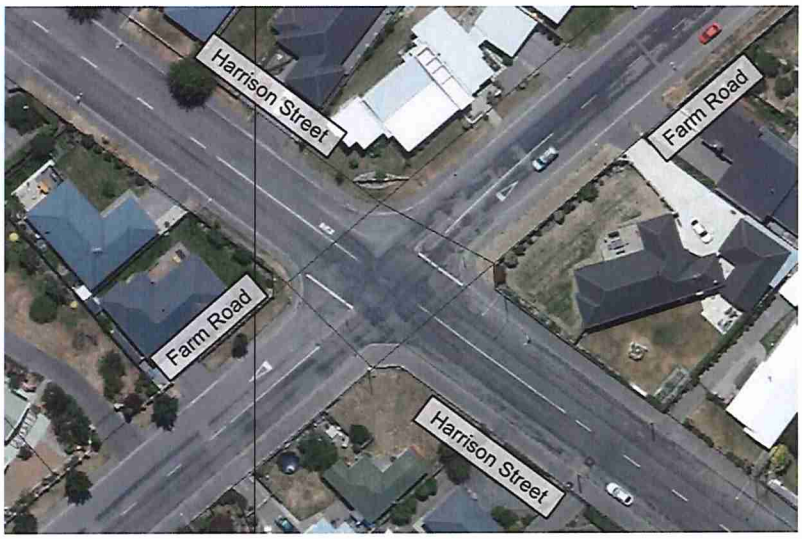


Figure 4: Harrison Street / Farm Road Intersection

15. A traffic model has been created of this intersection using the 2022 counted traffic volumes and the 2032 forecast traffic volumes. The results of these models are contained in **Appendix 2** and they indicate that the intersection is predicted to operate well within its predicted capacity.

Crash History

16. The Waka Kotahi Crash Analysis System (CAS) has been reviewed to identify crashes that have been reported in the vicinity of the site accesses for the most recent five-year period available[4]. The review area is illustrated in **Figure 5**. No crashes have been reported within these parameters, indicating that the existing road network is operating safely.

[4] 01 March 2018 to 01 March 2023.

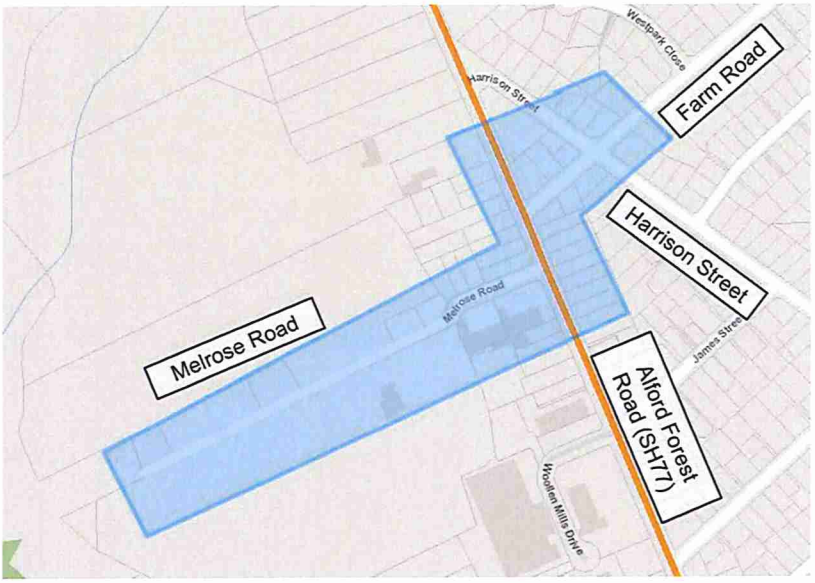


Figure 5: CAS Review Area

The Proposal

17. It is proposed to seek resource consent for the road access, earthworks and ancillary activities associated with the ODP – Riverside for the future development within the Rural A and Business D zone land (including a portion of the Allenton Rugby Club which is a scheduled activity within the Ashburton District Plan). This proposal provides a road frontage for the Business D land to Melrose Road, thereby facilitating a road connection and enabling development of the Applicant's land without needing third parties to develop their land to facilitate access to this Site.

18. In the long-term, this will provide a third access point to the Business D zoned land in this area (the other two access locations are the extensions of Range and Robinson Streets as shown on the ODP albeit its highly doubtful Range Street would ever be extended). Furthermore, it is proposed to widen Melrose Road to provide a 20m wide road corridor between the application Site and SH77.

19. The following sets out the transport details of the proposal.

Traffic Generation & Distribution

Traffic Generation

20. The focus of the traffic effects associated with the change to the ODP is at the Melrose Road / SH77 intersection. The Applicant has control over approximately 16Ha of the development area, at the northern end of the ODP site. This is illustrated in **Figure 6**. This figure also illustrates the other available access locations to the existing Smallbone Drive industrial area (via Range Street and Robinson Street extensions).

21. A credible worst-case assessment for the operation of the Melrose Road / SH77 intersection is assumed to be the development of the Applicants circa 16ha with no other accesses to the existing road network. This is the basis of the following assessment.

22. The traffic volumes associated with the proposed development have been estimated using traffic survey data from the Smallbone Drive industrial area as identified in the 2005 Opus Report Impacts of Riverside Commercial and Industrial Area. The traffic generation is summarised in **Table 4**, based on a development area of 16ha and a peak hour traffic generation rate of 12.65 vehicles per hour per Ha (20% of which is understood to be heavy traffic) plus a daily rate of 98.2 vehicles per Ha.

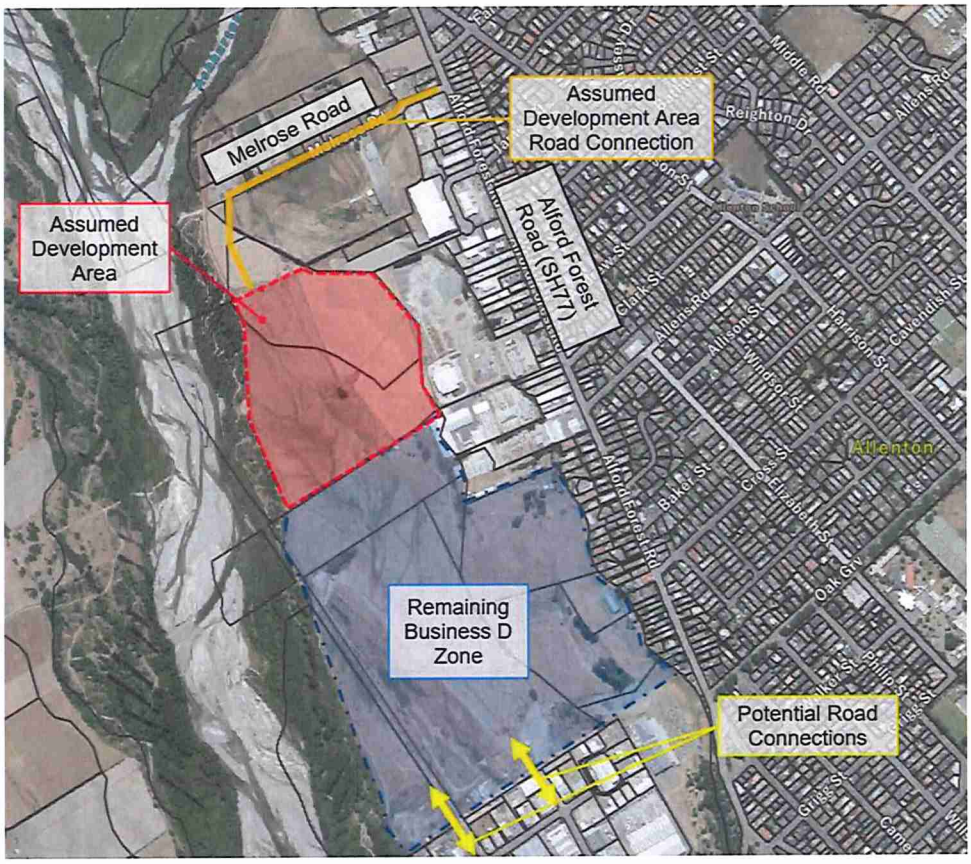


Figure 6: Assumed Development Area

Table 4: Predicted Traffic Generation [16ha Development Area][5]

	Arrivals	Departures	Total
AM Peak Hour	168	34	202
PM Peak Hour	43	160	202
Daily	786	786	1,571

Traffic Distribution

23. The distribution of traffic during the peak hours has been assumed to be based on Journey to Work data for the Allenton South Ward, where the Site is located. This data (along with the assumed broad

[5] Arrival and Departure splits taken from ITE Trip Generation data book for Light Industrial development.

distribution from the Site) is summarised in **Table 5**. This is illustrated on Diagram 5 in **Appendix 1**. The peak hour traffic is distributed on the network in Diagrams 6 and 7 (AM and PM peak hours respectively) and then added to the 2032 base volumes in Diagrams 8 and 9 (AM and PM peak hours respectively) in **Appendix 1**.

Table 5: Assumed Distribution

Ward	Total Percentage	North	East	South
Methven	1.07%	1.07%		
Ashburton Forks	1.07%	1.07%		
Allenton South	30.65%			30.65%
Allenton North	11.83%		3.94%	7.89%
Eiffelton	4.84%			4.84%
Tinwald South	9.14%			9.14%
Ashburton West	1.08%			1.08%
Allenton East	10.22%		2.56%	7.67%
Ashburton North	3.76%		2.82%	0.94%
Tinwald North	5.91%			5.91%
Ashburton East	1.61%			1.61%
Hampstead	7.53%			7.53%
Netherby	6.99%			6.99%
Winchmore - Wakanui	4.30%	1.43%	1.43%	1.43%
Total	***100%***	***3.57%***	***10.75%***	***85.68%***

Off-Site Road Upgrades

Melrose Road Upgrade

24. It is proposed to upgrade Melrose Road to provide a consistent 20m wide road corridor between the Site and SH77. This includes purchasing land from the Allenton Rugby Club to provide the additional 10m width required (because of the existing 10m road corridor in parts) and we understand they are amenable to this.

25. The proposed corridor width is sufficient to accommodate a Local Road for primary freight access in NZ Standard 4404 *Land Development and Subdivision Infrastructure* (Row E17). The estimated traffic volumes of 1,850 vehicles per day are broadly consistent with the classification of that document, noting that these volumes would likely reduce with the opening of additional road connections further south.

Alford Forest Road / Melrose Road Intersection

26. Upgrades will be required to the Alford Forest Road (SH77) / Melrose Road intersection to better accommodate heavy vehicles and traffic turning right into Melrose Road. The plans included in **Appendix 3** illustrate widening of the intersection radii to better accommodate semi-articulated trucks turning at the intersection. These are also illustrated in **Figure 7**.

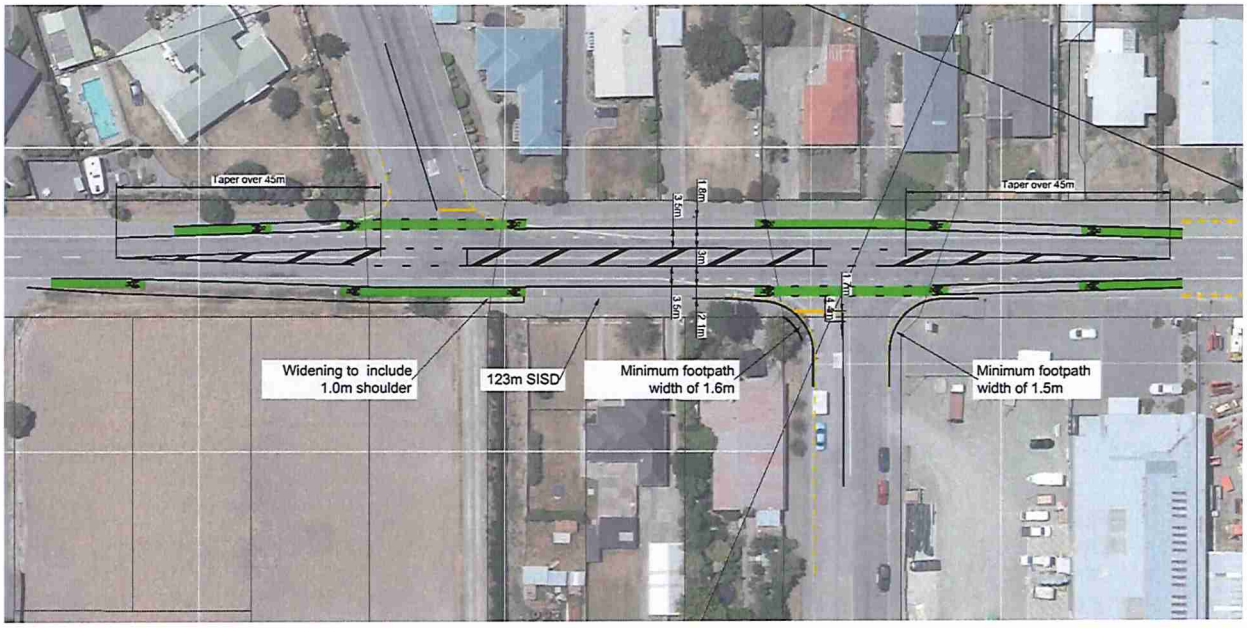


Figure 7: Proposed Road Upgrades

27. These plans also indicate a flush median on SH77 to accommodate right turning traffic into Melrose Road. This median has been extended beyond the SH77 / Farm Road intersection to also accommodate vehicles turning right into Farm Road, as this may form a route around the Ashburton township for traffic heading toward State Highway 1 northbound.

28. The resultant midblock cross-section proposed is (from east to west):

    i. 3.4m wide footpath;

    ii. 2.1m cycle lane;

    iii. 3.5m wide traffic lane;

    iv. 3.0m wide flush median / right turn bay;

    v. 3.5m wide traffic lane;

    vi. 1.8m cycle lane; and

    vii. 3.4m wide footpath;

Site Layout & District Plan Compliance

29. Given the stage of the proposal, it is assumed that the internal transport network and individual site layouts will comply with the District Plan requirements or will be subject to Resource Consent applications at the appropriate time. No specific changes are proposed to the District Plan regarding these matters as part of this variation to the ODP.

Assessment of Effects

30. The focus of this assessment is on the performance of the following intersections, although an assessment of the increases in link volumes is also provided.

    i. SH77 / Melrose Road;

    ii. SH77 / Farm Road; and

    iii. Harrison Street / Farm Road.

Intersection Operation

SH77 / Melrose Road Intersection

31. The SH77 / Melrose Road intersection model has been updated to include the proposed arrangement illustrated in **Figure 7**, plus the year 2032 with development traffic volumes. The results are contained in **Appendix 4** and these indicate that no movement will operate worse than Level of Service B, which is considered good operation. Given this, this intersection is considered to be able to satisfactorily accommodate the traffic volumes from a capacity perspective.

32. The review of the crash record did not highlight any reported crashes at this intersection, so it is considered to currently be operating safely. The proposed development will notably increase the traffic volumes turning to / from Melrose Road, although a flush median is proposed to provide a safe waiting facility for right turning traffic into Melrose Road.

33. The vehicle tracking of a semi-articulated truck turning left out of Melrose Road will also utilise the flush median. Whilst not ideal, this is considered tolerable in given there will likely be few semi-trailers undertaking this turn. It is predicted that there will be three heavy vehicles making this turn in the AM peak and five in the PM peak, although not all of these will be semi-trailers. These drivers will need to wait for the flush median to be clear and this is considered to be acceptable given they will know the manoeuvring needs of their vehicles.

34. The proposed layout does accommodate a 12.5m truck without crossing into the flush median. It is noted that this is the recommended design vehicle for an Arterial Road / Collector Road intersection in Austroads *Guide to Road Design Part 4 (Intersections and Crossings – General)*.

35. These upgrades are assumed to be in place ahead of occupation of activities within the Site. It is also assumed that Road Safety Audits of the intersection upgrade will be required by Waka Kotahi for at least detailed design and post construction stages to ensure this is a safe intersection form. It is anticipated that these will form conditions of the subdivision application rather than relating to the ODP.

36. Overall, it is considered that this intersection will be able to operate safely and efficiently with the proposed access to the ODP land.

SH77 / Farm Road Intersection

37. The SH77 / Farm Road intersection model has been updated to include the proposed arrangement illustrated in **Figure 7**, plus the 2032 with development traffic volumes. The results are contained in **Appendix 4** and these also indicate that no movement will operate worse than Level of Service A, which is considered excellent operation. Given this, this intersection is considered to be able to satisfactorily accommodate the traffic volumes from a capacity perspective.

38. Although not required for capacity purposes, the proposed flush median is extended beyond this intersection as otherwise the tapers would have started with (or in very close proximity) to the intersection. The extension of this flush median again provides a safety benefit with regards to accommodating vehicles waiting to turn right into Farm Road.

39. This intersection has been designed to accommodate an 8.8m rigid truck turning left without crossing the centre line or into the flush median. This is consistent with the requirements of Austroads.

40. The above is considered to be sufficient to confirm that this intersection will operate safely and efficiently.

Harrison Street / Farm Road Intersection

41. The existing intersection model has been updated to include the 2032 with development traffic volumes. The results of the modelling are included in **Appendix 4** and it is noted that no movement is predicted to operate worse than Level of Service A.

42. No issues were identified regarding the safety of this intersection and it is anticipated to be able to continue to operate safely and efficiently.

Link Capacities & Effects

General Link Capacity

43. **Table 6** sets out the link volumes in the vicinity of the site in 2032 with the proposed development traffic added to the road network.

Table 6: Link Volumes – 2032 Peak Hours

Location	AM Peak Hour	PM Peak Hour
Melrose Road	219	251
SH77 (south of Melrose Road)	498	544
SH77 (north of Farm Road)	243	254
Harrison Street (north of Farm Road)	98	116
Harrison Street (south of Farm Road)	65	90
Farm Road (east of Harrison Street)	128	107

44. The RTA *Guide to Traffic Generating Developments* includes the following information regarding traffic capacity of urban roads. Note that this relates to peak hour flows per direction, whereas the volumes

provided in **Table 6** are two-way volumes. The data indicates that the traffic volumes predicted on the network are well within the capacity of urban roads.

Table 7: Urban Road Peak Hour Flows per Direction

Level of Service	One Lane Flow (vehicles per hour)
A	200
B	380
C	600
D	900
E	1,400

Melrose Road Operation

45. Melrose Road will have more than sufficient capacity to accommodate the predicted traffic volumes once it has been upgraded. As such, it is anticipated there will be a condition at subdivision stage that requires these upgrades prior to occupation of activities at the site.

46. Subject to the above, the operation of the wider transport network is considered to be acceptable.

Summary & Conclusion

Summary

47. It is proposed to apply for resource consent to enable roading formation including earthworks ancillary activities for land to the south of Melrose Road and west of Alford Forest Road (SH77). This will facilitate a connection to Melrose Road to enable the Applicant to develop, as they are otherwise waiting on third parties to establish roading connections. Melrose Road would be upgraded to accommodate this connection.

48. The focus of this report has been on the transport effects associated with the development of the Applicant's circa 16ha on the assumption there is only access to the site via Melrose Road. This assessment has identified that the transport effects are anticipated to be acceptable subject to:

    i. Upgrading Melrose Road to an Industrial Local Road standard, including widening of the road corridor to 20m through purchasing land from the Allenton Rugby Club; and

    ii. Upgrading the SH77 / Melrose Road intersection to provide a flush median and alter the radii as per the plans included in **Appendix 3**, which also incorporate extending the proposed median through the SH77 / Farm Road intersection.

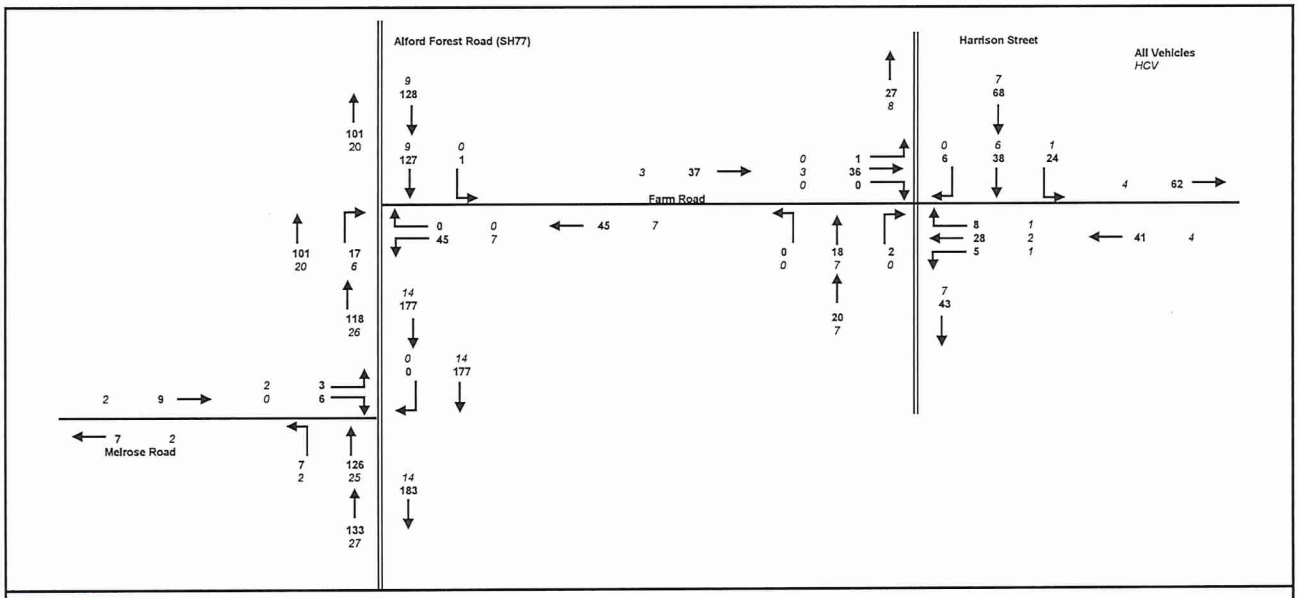
49. The above improvements are assumed to be in place prior to activities being occupied at the site. It is also assumed that these upgrades will be subject to the appropriate Road Safety Audit requirements, including Detailed Design stage and Post Construction stage audits.

Conclusion

50. Given the above assessment (and subject to satisfactory upgrades being constructed prior to occupation of activities), the effects of altering the ODP are considered **acceptable**.

Appendix 1

Traffic Flow Diagrams



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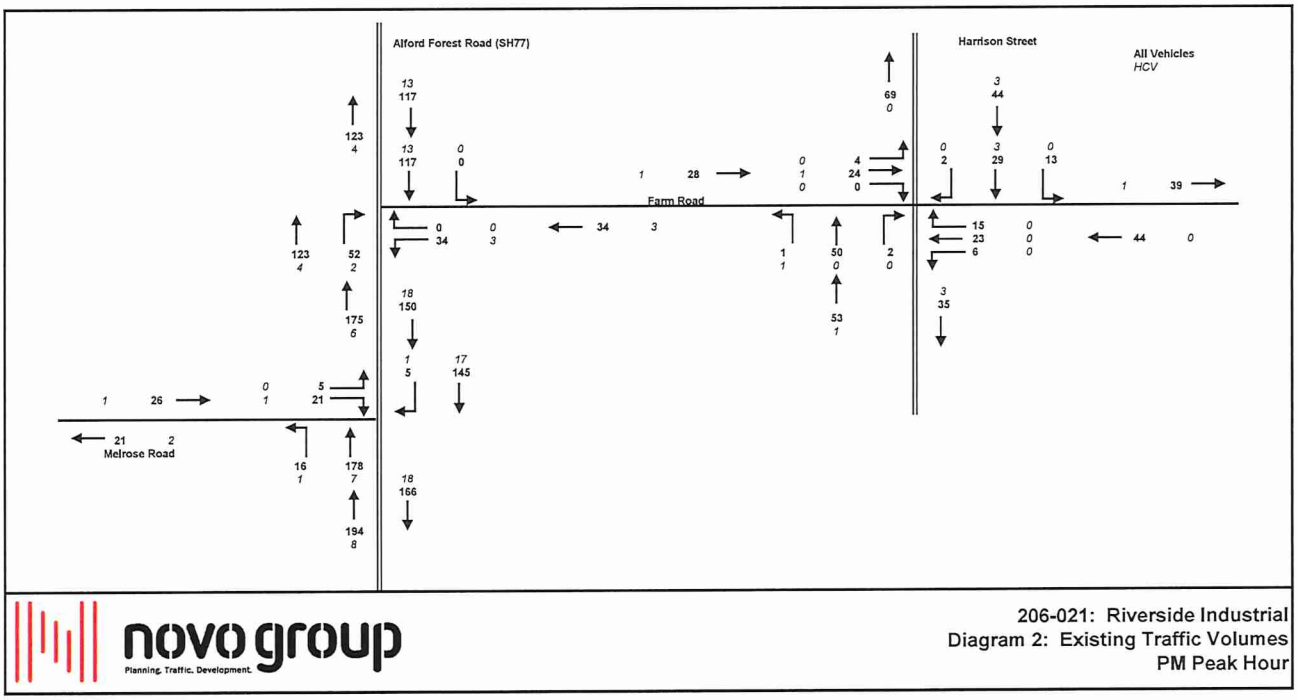
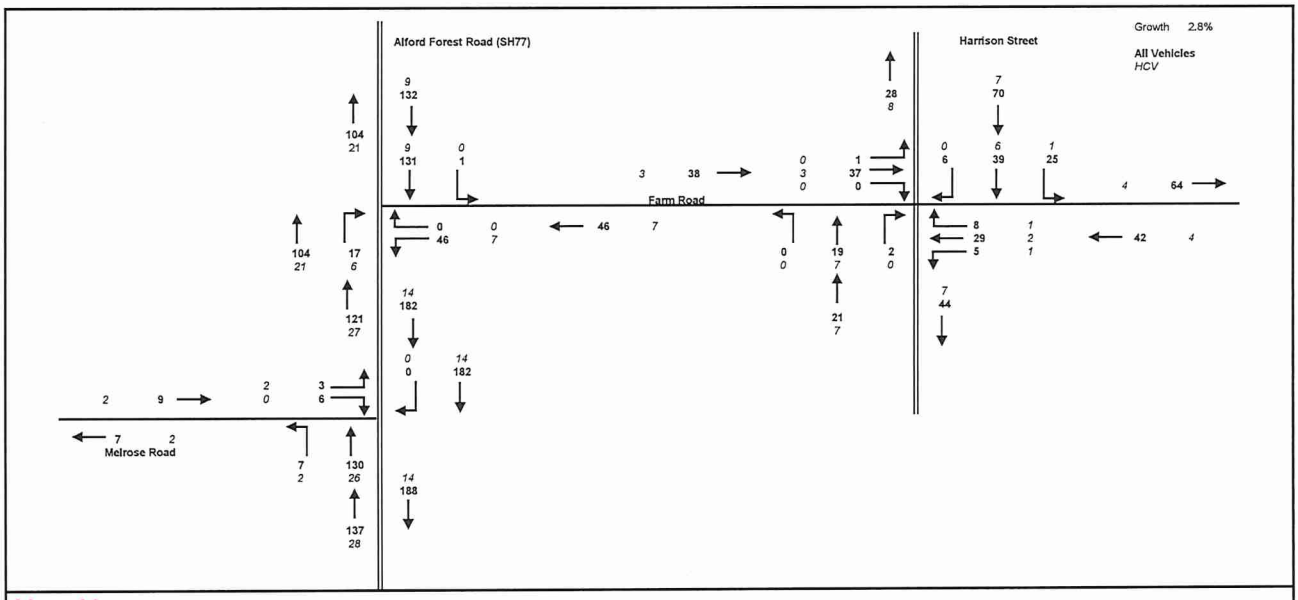
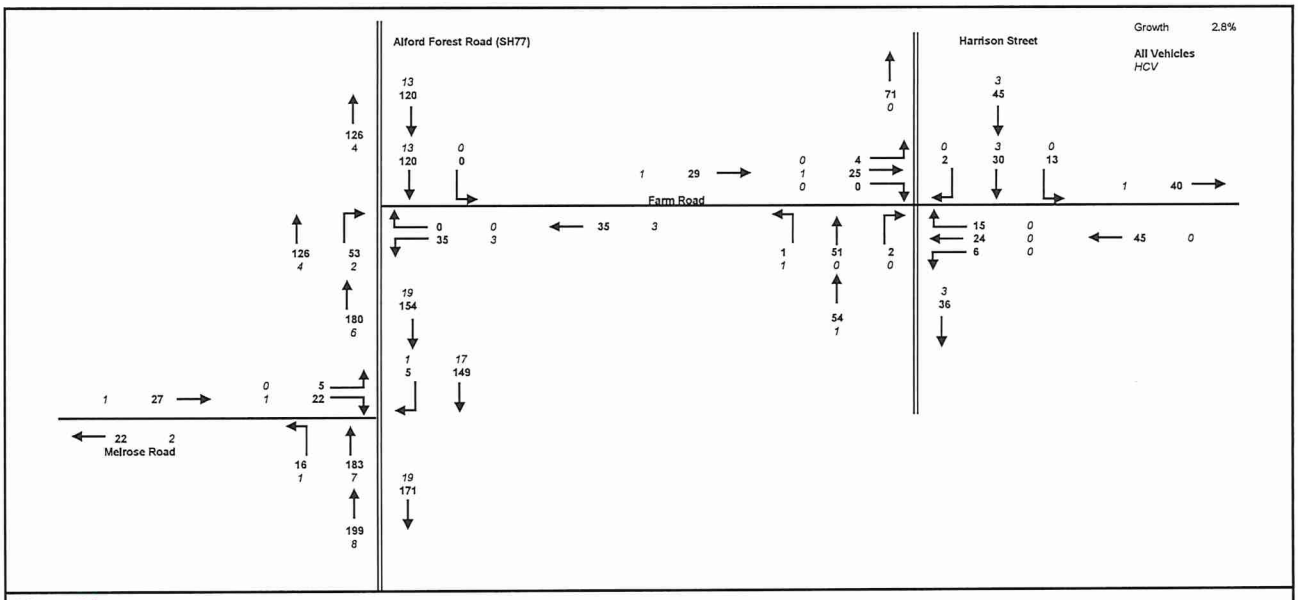
206-021: Riverside Industrial
Diagram 1: Existing Traffic Volumes
AM Peak Hour



206-021: Riverside Industrial
Diagram 2: Existing Traffic Volumes
PM Peak Hour



206-021: Riverside Industrial
Diagram 3: 2032 Base Traffic Volumes
AM Peak Hour



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206-021: Riverside Industrial
Diagram 4: 2032 Base Traffic Volumes
PM Peak Hour

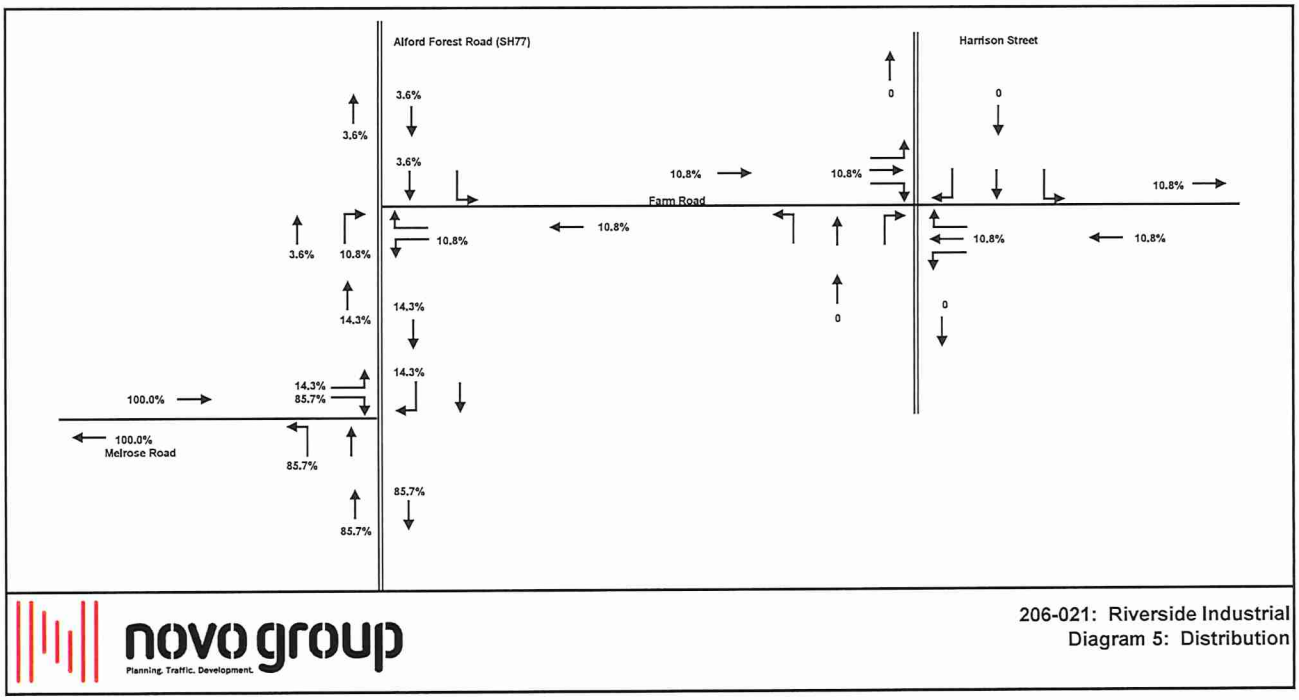

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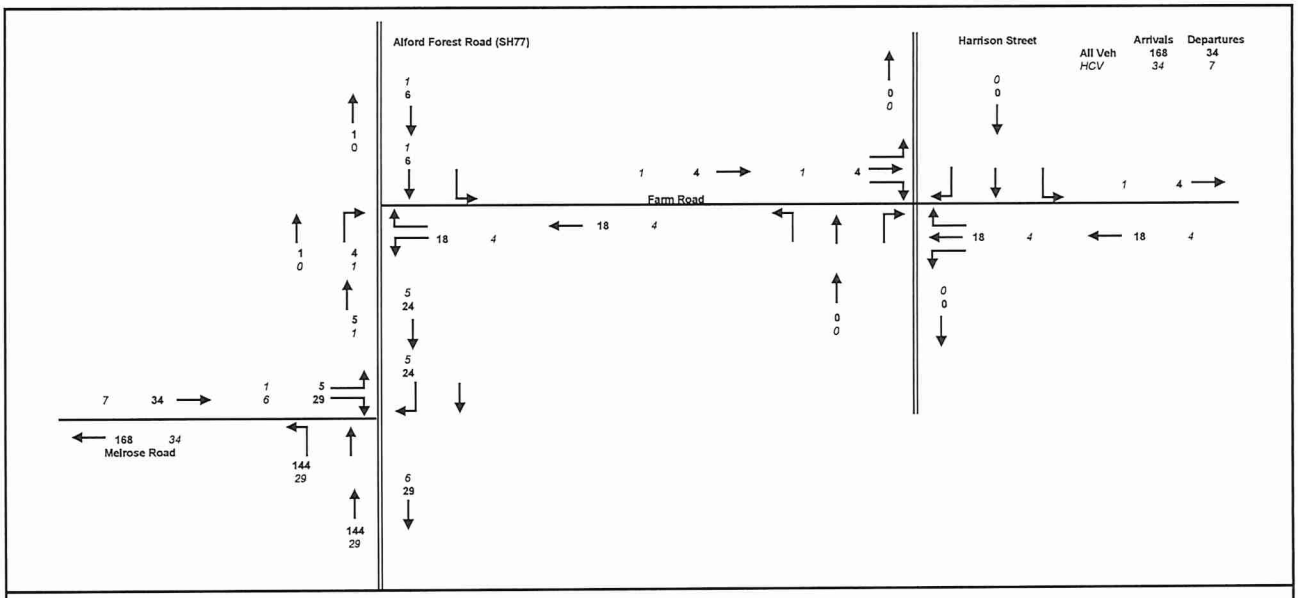
Diagram 5: Distribution



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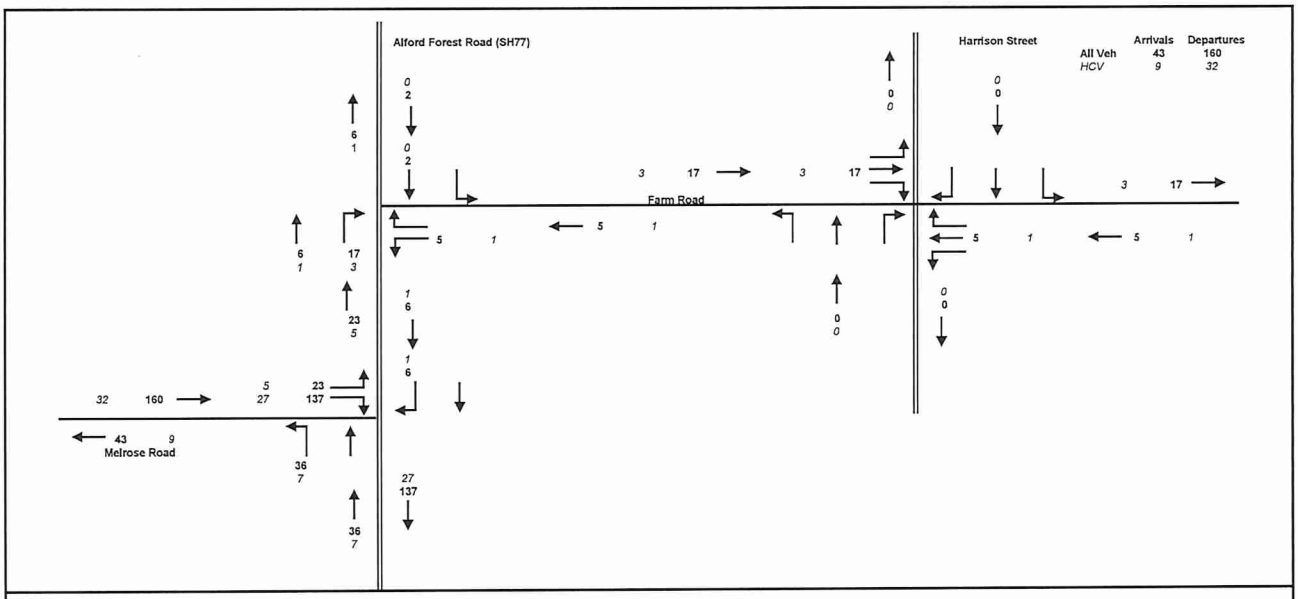
206-021: Riverside Industrial
Diagram 6: Development Traffic
AM Peak Hour



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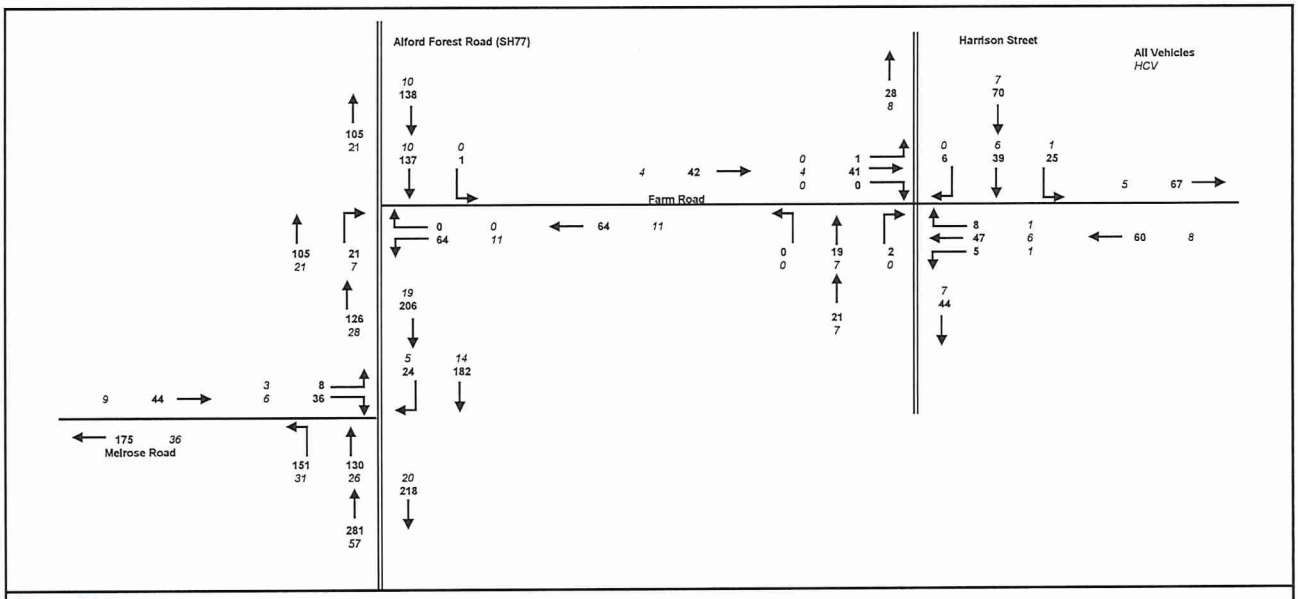
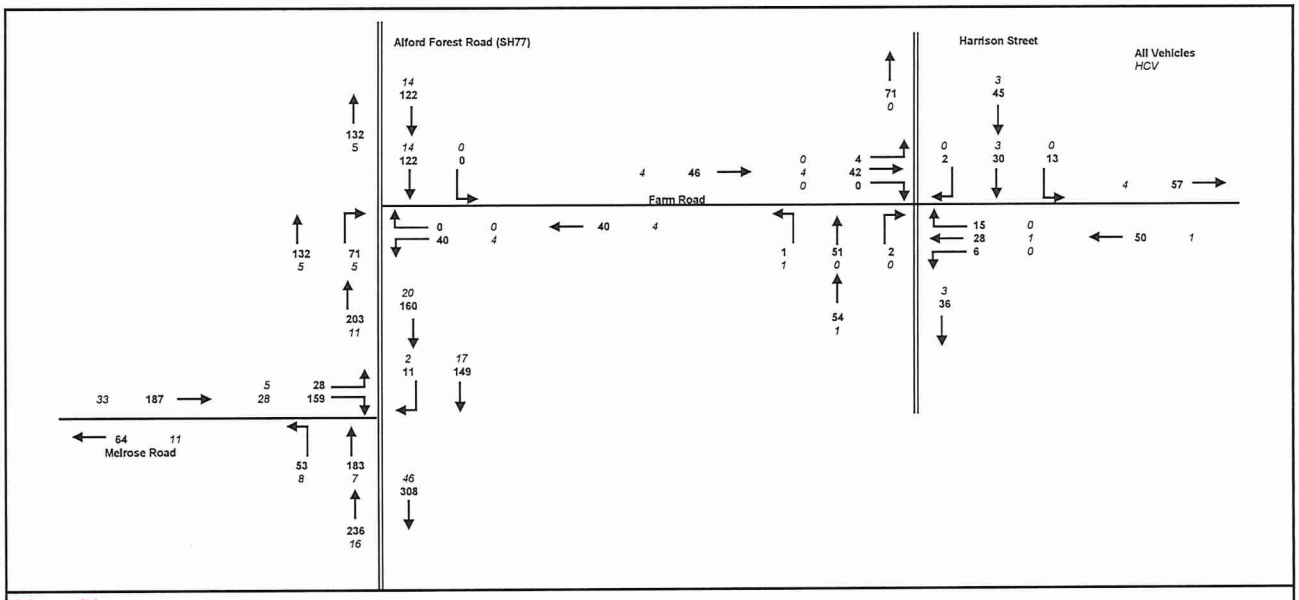
206-021: Riverside Industrial
Diagram 7: Development Traffic
PM Peak Hour



206-021: Riverside Industrial
Diagram 8: 2032 Base Plus Development Traffic Volumes
AM Peak Hour



206-021: Riverside Industrial
Diagram 9: 2032 Base Plus Development Traffic Volumes
PM Peak Hour

Appendix 2

2022 & 2032 'Base' Traffic Model Results

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Melrose: 2022 AM Base (Site Folder: 2022 Base Models)]

Alford Forest Rd / Melrose Rd 2022 Existing Volumes

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
1	L2	7	2	7	28.6	0.081	4.8	LOS A	0.0	0.0	0.00	0.03	0.00	48.9
2	T1	126	25	133	19.8	0.081	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		133	27	140	20.3	0.081	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
North: Alford Forest Rd														
8	T1	177	14	186	7.9	0.100	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	50.0
9	R2	1	0	1	0.0	0.100	5.1	LOS A	0.0	0.1	0.00	0.00	0.00	49.1
Approach		178	14	187	7.9	0.100	0.0	NA	0.0	0.1	0.00	0.00	0.00	50.0
West: Melrose Rd														
10	L2	3	2	3	66.7	0.011	10.9	LOS B	0.0	0.3	0.32	0.90	0.32	43.8
12	R2	6	0	6	0.0	0.011	8.7	LOS A	0.0	0.3	0.32	0.90	0.32	44.4
Approach		9	2	9	22.2	0.011	9.4	LOS A	0.0	0.3	0.32	0.90	0.32	44.2
All Vehicles		320	43	337	13.4	0.100	0.4	NA	0.0	0.3	0.01	0.04	0.01	49.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Melrose: 2022 PM Base (Site Folder: 2022 Base Models)]

Alford Forest Rd / Melrose Rd 2022 Existing Volumes

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
1	L2	16	1	17	6.3	0.107	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
2	T1	178	7	187	3.9	0.107	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		194	8	204	4.1	0.107	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
North: Alford Forest Rd														
8	T1	145	17	153	11.7	0.088	0.0	LOS A	0.0	0.3	0.03	0.02	0.03	49.8
9	R2	5	1	5	20.0	0.088	5.6	LOS A	0.0	0.3	0.03	0.02	0.03	48.6
Approach		150	18	158	12.0	0.088	0.2	NA	0.0	0.3	0.03	0.02	0.03	49.8
West: Melrose Rd														
10	L2	5	0	5	0.0	0.033	8.2	LOS A	0.1	0.8	0.36	0.89	0.36	44.6
12	R2	21	1	22	4.8	0.033	9.1	LOS A	0.1	0.8	0.36	0.89	0.36	44.3
Approach		26	1	27	3.8	0.033	8.9	LOS A	0.1	0.8	0.36	0.89	0.36	44.3
All Vehicles		370	27	389	7.3	0.107	0.9	NA	0.1	0.8	0.04	0.09	0.04	49.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Melrose: 2032 AM Base (Site Folder: 2032 Base Models)]

Alford Forest Rd / Melrose Rd 2032 Existing Volumes

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
1	L2	7	2	7	28.6	0.083	4.8	LOS A	0.0	0.0	0.00	0.03	0.00	48.9
2	T1	130	26	137	20.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		137	28	144	20.4	0.083	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
North: Alford Forest Rd														
8	T1	182	14	192	7.7	0.103	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	50.0
9	R2	1	0	1	0.0	0.103	5.1	LOS A	0.0	0.1	0.00	0.00	0.00	49.1
Approach		183	14	193	7.7	0.103	0.0	NA	0.0	0.1	0.00	0.00	0.00	50.0
West: Melrose Rd														
10	L2	3	2	3	66.7	0.011	10.9	LOS B	0.0	0.3	0.32	0.90	0.32	43.8
12	R2	6	0	6	0.0	0.011	8.7	LOS A	0.0	0.3	0.32	0.90	0.32	44.4
Approach		9	2	9	22.2	0.011	9.5	LOS A	0.0	0.3	0.32	0.90	0.32	44.2
All Vehicles		329	44	346	13.4	0.103	0.4	NA	0.0	0.3	0.01	0.04	0.01	49.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Melrose: 2032 PM Base (Site Folder: 2032 Base Models)]

Alford Forest Rd / Melrose Rd 2032 Existing Volumes

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
1	L2	16	1	17	6.3	0.110	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
2	T1	183	7	193	3.8	0.110	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		199	8	209	4.0	0.110	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
North: Alford Forest Rd														
8	T1	149	17	157	11.4	0.090	0.0	LOS A	0.0	0.4	0.03	0.02	0.03	49.8
9	R2	5	1	5	20.0	0.090	5.6	LOS A	0.0	0.4	0.03	0.02	0.03	48.6
Approach		154	18	162	11.7	0.090	0.2	NA	0.0	0.4	0.03	0.02	0.03	49.8
West: Melrose Rd														
10	L2	5	0	5	0.0	0.035	8.2	LOS A	0.1	0.8	0.37	0.89	0.37	44.6
12	R2	22	1	23	4.5	0.035	9.2	LOS A	0.1	0.8	0.37	0.89	0.37	44.2
Approach		27	1	28	3.7	0.035	9.0	LOS A	0.1	0.8	0.37	0.89	0.37	44.3
All Vehicles		380	27	400	7.1	0.110	0.9	NA	0.1	0.8	0.04	0.09	0.04	49.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Farm: 2022 AM Base (Site Folder: 2022 Base Models)]

Alford Forest Rd / Farm Rd 2022 Existing Volumes
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
2	T1	101	20	106	19.8	0.076	0.1	LOS A	0.1	1.2	0.09	0.08	0.09	49.4
3	R2	17	6	18	35.3	0.076	5.5	LOS A	0.1	1.2	0.09	0.08	0.09	47.9
Approach		118	26	124	22.0	0.076	0.9	NA	0.1	1.2	0.09	0.08	0.09	49.1
East: Farm Rd														
4	L2	45	7	47	15.6	0.042	8.6	LOS A	0.2	1.3	0.25	0.89	0.25	44.7
6	R2	1	0	1	0.0	0.042	8.4	LOS A	0.2	1.3	0.25	0.89	0.25	44.7
Approach		46	7	48	15.2	0.042	8.6	LOS A	0.2	1.3	0.25	0.89	0.25	44.7
North: Alford Forest Rd														
7	L2	1	0	1	0.0	0.072	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
8	T1	127	9	134	7.1	0.072	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		128	9	135	7.0	0.072	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		292	42	307	14.4	0.076	1.7	NA	0.2	1.3	0.08	0.17	0.08	48.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Farm: 2022 PM Base (Site Folder: 2022 Base Models)]

Alford Forest Rd / Farm Rd 2022 Existing Volumes
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
2	T1	123	4	129	3.3	0.103	0.2	LOS A	0.3	2.5	0.16	0.16	0.16	48.7
3	R2	52	2	55	3.8	0.103	5.0	LOS A	0.3	2.5	0.16	0.16	0.16	47.7
Approach		175	6	184	3.4	0.103	1.6	NA	0.3	2.5	0.16	0.16	0.16	48.4
East: Farm Rd														
4	L2	34	3	36	8.8	0.031	8.3	LOS A	0.1	0.9	0.24	0.88	0.24	44.8
6	R2	1	0	1	0.0	0.031	8.6	LOS A	0.1	0.9	0.24	0.88	0.24	44.7
Approach		35	3	37	8.6	0.031	8.3	LOS A	0.1	0.9	0.24	0.88	0.24	44.8
North: Alford Forest Rd														
7	L2	1	0	1	0.0	0.068	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
8	T1	117	13	123	11.1	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		118	13	124	11.0	0.068	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		328	22	345	6.7	0.103	1.8	NA	0.3	2.5	0.11	0.18	0.11	48.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Farm: 2032 AM Base (Site Folder: 2032 Base Models)]

Alford Forest Rd / Farm Rd 2032 Existing Volumes
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
2	T1	104	21	109	20.2	0.078	0.1	LOS A	0.1	1.2	0.09	0.08	0.09	49.4
3	R2	17	6	18	35.3	0.078	5.5	LOS A	0.1	1.2	0.09	0.08	0.09	47.9
Approach		121	27	127	22.3	0.078	0.9	NA	0.1	1.2	0.09	0.08	0.09	49.2
East: Farm Rd														
4	L2	46	7	48	15.2	0.043	8.6	LOS A	0.2	1.3	0.26	0.89	0.26	44.7
6	R2	1	0	1	0.0	0.043	8.4	LOS A	0.2	1.3	0.26	0.89	0.26	44.6
Approach		47	7	49	14.9	0.043	8.6	LOS A	0.2	1.3	0.26	0.89	0.26	44.7
North: Alford Forest Rd														
7	L2	1	0	1	0.0	0.074	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
8	T1	131	9	138	6.9	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		132	9	139	6.8	0.074	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		300	43	316	14.3	0.078	1.7	NA	0.2	1.3	0.08	0.17	0.08	48.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Farm: 2032 PM Base (Site Folder: 2032 Base Models)]

Alford Forest Rd / Farm Rd 2032 Existing Volumes
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
2	T1	126	4	133	3.2	0.105	0.2	LOS A	0.4	2.5	0.16	0.16	0.16	48.7
3	R2	53	2	56	3.8	0.105	5.0	LOS A	0.4	2.5	0.16	0.16	0.16	47.7
Approach		179	6	188	3.4	0.105	1.6	NA	0.4	2.5	0.16	0.16	0.16	48.4
East: Farm Rd														
4	L2	35	3	37	8.6	0.032	8.3	LOS A	0.1	0.9	0.24	0.88	0.24	44.8
6	R2	1	0	1	0.0	0.032	8.6	LOS A	0.1	0.9	0.24	0.88	0.24	44.7
Approach		36	3	38	8.3	0.032	8.3	LOS A	0.1	0.9	0.24	0.88	0.24	44.8
North: Alford Forest Rd														
7	L2	1	0	1	0.0	0.069	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
8	T1	120	13	126	10.8	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		121	13	127	10.7	0.069	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		336	22	354	6.5	0.105	1.8	NA	0.4	2.5	0.11	0.18	0.11	48.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Harrison - Farm: 2022 AM Base (Site Folder: 2022 Base Models)]

Harrison St / Farm Rd 2022 Existing Volumes
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Harrison St														
1	L2	1	0	1	0.0	0.013	5.7	LOS A	0.0	0.1	0.04	0.08	0.04	57.1
2	T1	18	7	19	38.9	0.013	0.0	LOS A	0.0	0.1	0.04	0.08	0.04	58.7
3	R2	2	0	2	0.0	0.013	5.7	LOS A	0.0	0.1	0.04	0.08	0.04	56.7
Approach		21	7	22	33.3	0.013	0.8	NA	0.0	0.1	0.04	0.08	0.04	58.4
East: Farm Rd														
4	L2	5	1	5	20.0	0.038	5.9	LOS A	0.1	1.0	0.17	0.52	0.17	53.0
5	T1	28	2	29	7.1	0.038	4.7	LOS A	0.1	1.0	0.17	0.52	0.17	53.8
6	R2	8	1	8	12.5	0.038	6.3	LOS A	0.1	1.0	0.17	0.52	0.17	52.8
Approach		41	4	43	9.8	0.038	5.1	LOS A	0.1	1.0	0.17	0.52	0.17	53.5
North: Harrison St														
7	L2	24	1	25	4.2	0.039	5.6	LOS A	0.0	0.4	0.02	0.26	0.02	55.7
8	T1	38	6	40	15.8	0.039	0.0	LOS A	0.0	0.4	0.02	0.26	0.02	57.4
9	R2	6	0	6	0.0	0.039	5.5	LOS A	0.0	0.4	0.02	0.26	0.02	55.5
Approach		68	7	72	10.3	0.039	2.5	NA	0.0	0.4	0.02	0.26	0.02	56.7
West: Farm Rd														
10	L2	1	0	1	0.0	0.034	5.6	LOS A	0.1	0.9	0.18	0.51	0.18	54.0
11	T1	36	3	38	8.3	0.034	4.7	LOS A	0.1	0.9	0.18	0.51	0.18	53.9
12	R2	1	0	1	0.0	0.034	6.0	LOS A	0.1	0.9	0.18	0.51	0.18	53.6
Approach		38	3	40	7.9	0.034	4.8	LOS A	0.1	0.9	0.18	0.51	0.18	53.9
All Vehicles		168	21	177	12.5	0.039	3.4	NA	0.1	1.0	0.10	0.36	0.10	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Harrison - Farm: 2022 PM Base (Site Folder: 2022 Base Models)]

Harrison St / Farm Rd 2022 Existing Volumes
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Harrison St														
1	L2	1	1	1	100.0	0.028	6.8	LOS A	0.0	0.1	0.01	0.03	0.01	53.3
2	T1	50	0	53	0.0	0.028	0.0	LOS A	0.0	0.1	0.01	0.03	0.01	59.6
3	R2	2	0	2	0.0	0.028	5.6	LOS A	0.0	0.1	0.01	0.03	0.01	57.5
Approach		53	1	56	1.9	0.028	0.3	NA	0.0	0.1	0.01	0.03	0.01	59.4
East: Farm Rd														
4	L2	6	0	6	0.0	0.040	5.6	LOS A	0.1	1.0	0.16	0.54	0.16	53.7
5	T1	23	0	24	0.0	0.040	4.6	LOS A	0.1	1.0	0.16	0.54	0.16	53.9
6	R2	15	0	16	0.0	0.040	6.0	LOS A	0.1	1.0	0.16	0.54	0.16	53.3
Approach		44	0	46	0.0	0.040	5.2	LOS A	0.1	1.0	0.16	0.54	0.16	53.7
North: Harrison St														
7	L2	13	0	14	0.0	0.024	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	56.5
8	T1	29	3	31	10.3	0.024	0.0	LOS A	0.0	0.1	0.02	0.20	0.02	58.0
9	R2	2	0	2	0.0	0.024	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	56.0
Approach		44	3	46	6.8	0.024	1.9	NA	0.0	0.1	0.02	0.20	0.02	57.4
West: Farm Rd														
10	L2	4	0	4	0.0	0.025	5.7	LOS A	0.1	0.6	0.18	0.51	0.18	53.9
11	T1	24	1	25	4.2	0.025	4.7	LOS A	0.1	0.6	0.18	0.51	0.18	54.0
12	R2	1	0	1	0.0	0.025	6.0	LOS A	0.1	0.6	0.18	0.51	0.18	53.5
Approach		29	1	31	3.4	0.025	4.8	LOS A	0.1	0.6	0.18	0.51	0.18	54.0
All Vehicles		170	5	179	2.9	0.040	2.8	NA	0.1	1.0	0.08	0.29	0.08	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Harrison - Farm: 2032 AM Base (Site Folder: 2032 Base Models)]

Harrison St / Farm Rd 2032 Existing Volumes
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Harrison St														
1	L2	1	0	1	0.0	0.014	5.7	LOS A	0.0	0.1	0.04	0.08	0.04	57.2
2	T1	19	7	20	36.8	0.014	0.0	LOS A	0.0	0.1	0.04	0.08	0.04	58.8
3	R2	2	0	2	0.0	0.014	5.7	LOS A	0.0	0.1	0.04	0.08	0.04	56.7
Approach		22	7	23	31.8	0.014	0.8	NA	0.0	0.1	0.04	0.08	0.04	58.5
East: Farm Rd														
4	L2	5	1	5	20.0	0.039	5.9	LOS A	0.1	1.0	0.17	0.52	0.17	53.0
5	T1	29	2	31	6.9	0.039	4.7	LOS A	0.1	1.0	0.17	0.52	0.17	53.8
6	R2	8	1	8	12.5	0.039	6.3	LOS A	0.1	1.0	0.17	0.52	0.17	52.8
Approach		42	4	44	9.5	0.039	5.1	LOS A	0.1	1.0	0.17	0.52	0.17	53.5
North: Harrison St														
7	L2	25	1	26	4.0	0.040	5.6	LOS A	0.0	0.4	0.02	0.26	0.02	55.7
8	T1	39	6	41	15.4	0.040	0.0	LOS A	0.0	0.4	0.02	0.26	0.02	57.4
9	R2	6	0	6	0.0	0.040	5.5	LOS A	0.0	0.4	0.02	0.26	0.02	55.5
Approach		70	7	74	10.0	0.040	2.5	NA	0.0	0.4	0.02	0.26	0.02	56.6
West: Farm Rd														
10	L2	1	0	1	0.0	0.035	5.6	LOS A	0.1	0.9	0.18	0.51	0.18	54.0
11	T1	37	3	39	8.1	0.035	4.7	LOS A	0.1	0.9	0.18	0.51	0.18	53.9
12	R2	1	0	1	0.0	0.035	6.0	LOS A	0.1	0.9	0.18	0.51	0.18	53.6
Approach		39	3	41	7.7	0.035	4.8	LOS A	0.1	0.9	0.18	0.51	0.18	53.9
All Vehicles		173	21	182	12.1	0.040	3.4	NA	0.1	1.0	0.10	0.36	0.10	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Harrison - Farm: 2032 PM Base (Site Folder: 2032 Base Models)]

Harrison St / Farm Rd 2032 Existing Volumes
Site Category: (None)
Give-Way (Two-Way)

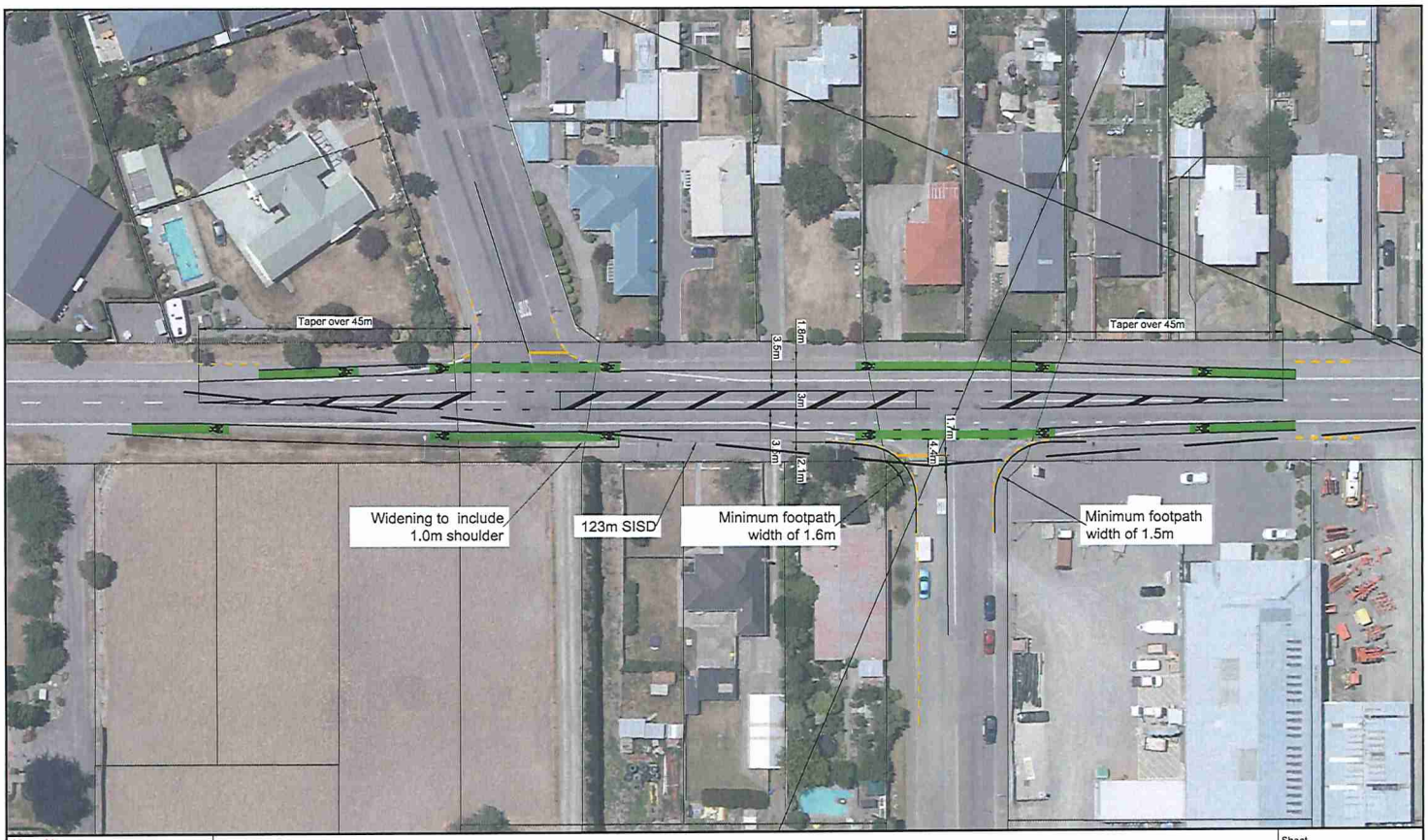
Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Harrison St														
1	L2	1	1	1	100.0	0.029	6.8	LOS A	0.0	0.1	0.01	0.03	0.01	53.3
2	T1	51	0	54	0.0	0.029	0.0	LOS A	0.0	0.1	0.01	0.03	0.01	59.6
3	R2	2	0	2	0.0	0.029	5.6	LOS A	0.0	0.1	0.01	0.03	0.01	57.5
Approach		54	1	57	1.9	0.029	0.3	NA	0.0	0.1	0.01	0.03	0.01	59.4
East: Farm Rd														
4	L2	6	0	6	0.0	0.041	5.6	LOS A	0.1	1.0	0.16	0.54	0.16	53.7
5	T1	24	0	25	0.0	0.041	4.6	LOS A	0.1	1.0	0.16	0.54	0.16	53.9
6	R2	15	0	16	0.0	0.041	6.0	LOS A	0.1	1.0	0.16	0.54	0.16	53.3
Approach		45	0	47	0.0	0.041	5.2	LOS A	0.1	1.0	0.16	0.54	0.16	53.7
North: Harrison St														
7	L2	13	0	14	0.0	0.025	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	56.5
8	T1	30	3	32	10.0	0.025	0.0	LOS A	0.0	0.1	0.02	0.20	0.02	58.0
9	R2	2	0	2	0.0	0.025	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	56.1
Approach		45	3	47	6.7	0.025	1.9	NA	0.0	0.1	0.02	0.20	0.02	57.5
West: Farm Rd														
10	L2	4	0	4	0.0	0.026	5.7	LOS A	0.1	0.7	0.18	0.51	0.18	53.9
11	T1	25	1	26	4.0	0.026	4.7	LOS A	0.1	0.7	0.18	0.51	0.18	54.0
12	R2	1	0	1	0.0	0.026	6.0	LOS A	0.1	0.7	0.18	0.51	0.18	53.5
Approach		30	1	32	3.3	0.026	4.8	LOS A	0.1	0.7	0.18	0.51	0.18	54.0
All Vehicles		174	5	183	2.9	0.041	2.8	NA	0.1	1.0	0.08	0.29	0.08	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix 3

SH77 / Melrose Road / Farm Road Upgrades



novo group

Novo Group Limited
PO Box 365
Christchurch 8014
NovoGroup.co.nz

Riverside Industrial Ltd
Alford Forest Road, Ashburton

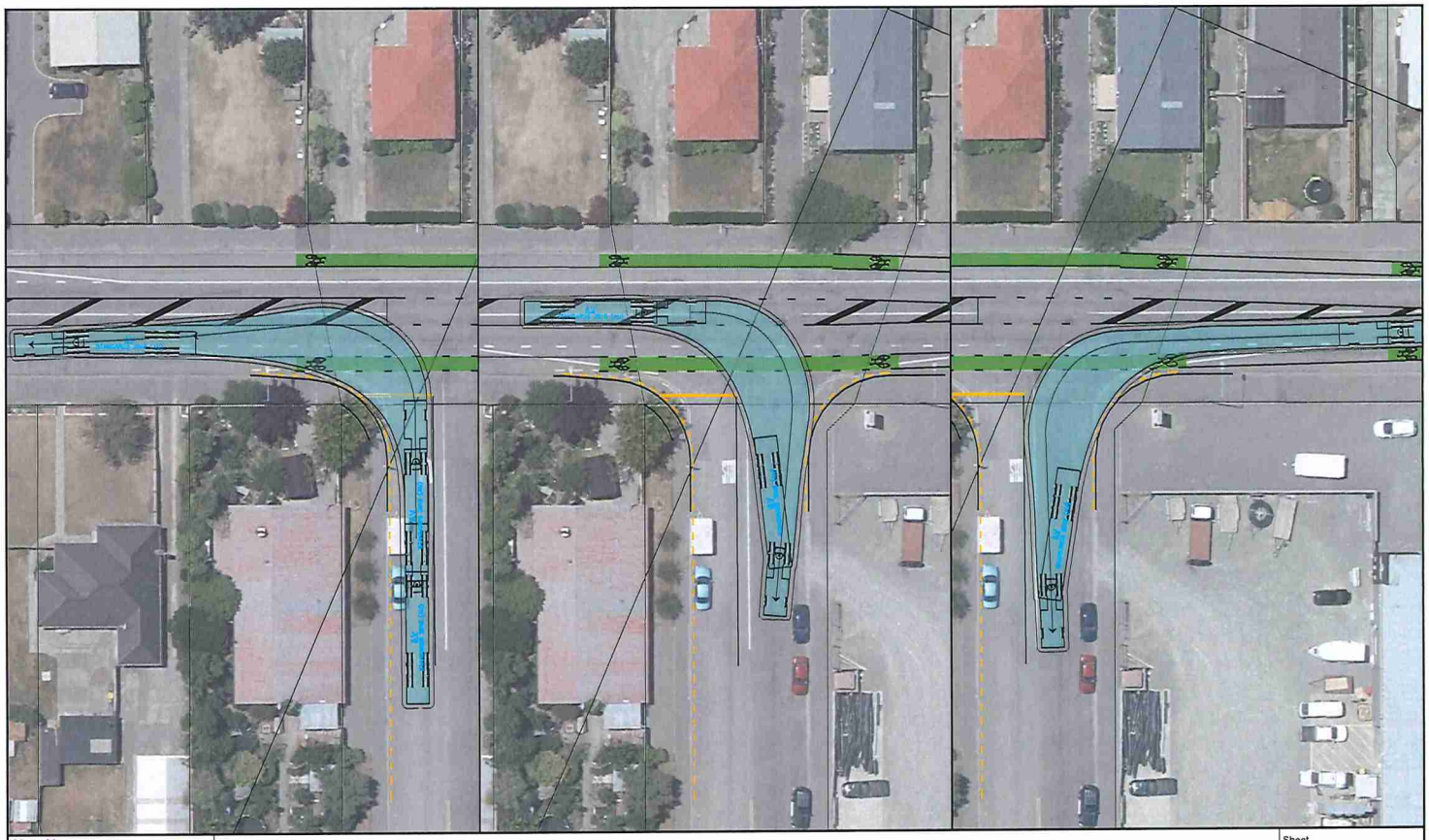
Alford Forest Road - Melrose Road - Farm Road Intersection Upgrades

Concept Arrangement

Drawing: 206-021 - Riverside - SK100X-E

Sheet: 206-021 - SK1001-E

Scale	@A3 1/600
Date	25/05/2023
By	N Fuller
Project #	206-021



novo group

Novo Group Limited
PO Box 365
Christchurch 8014
NovoGroup.co.nz

Riverside Industrial Ltd
Alford Forest Road, Ashburton

Alford Forest Road - Melrose Road Intersection Upgrades: Semi-Trailer Tracking (10km/h & 0.5m clearance)

Concept Arrangement

Drawing: 206-021 - Riverside - SK100X-E

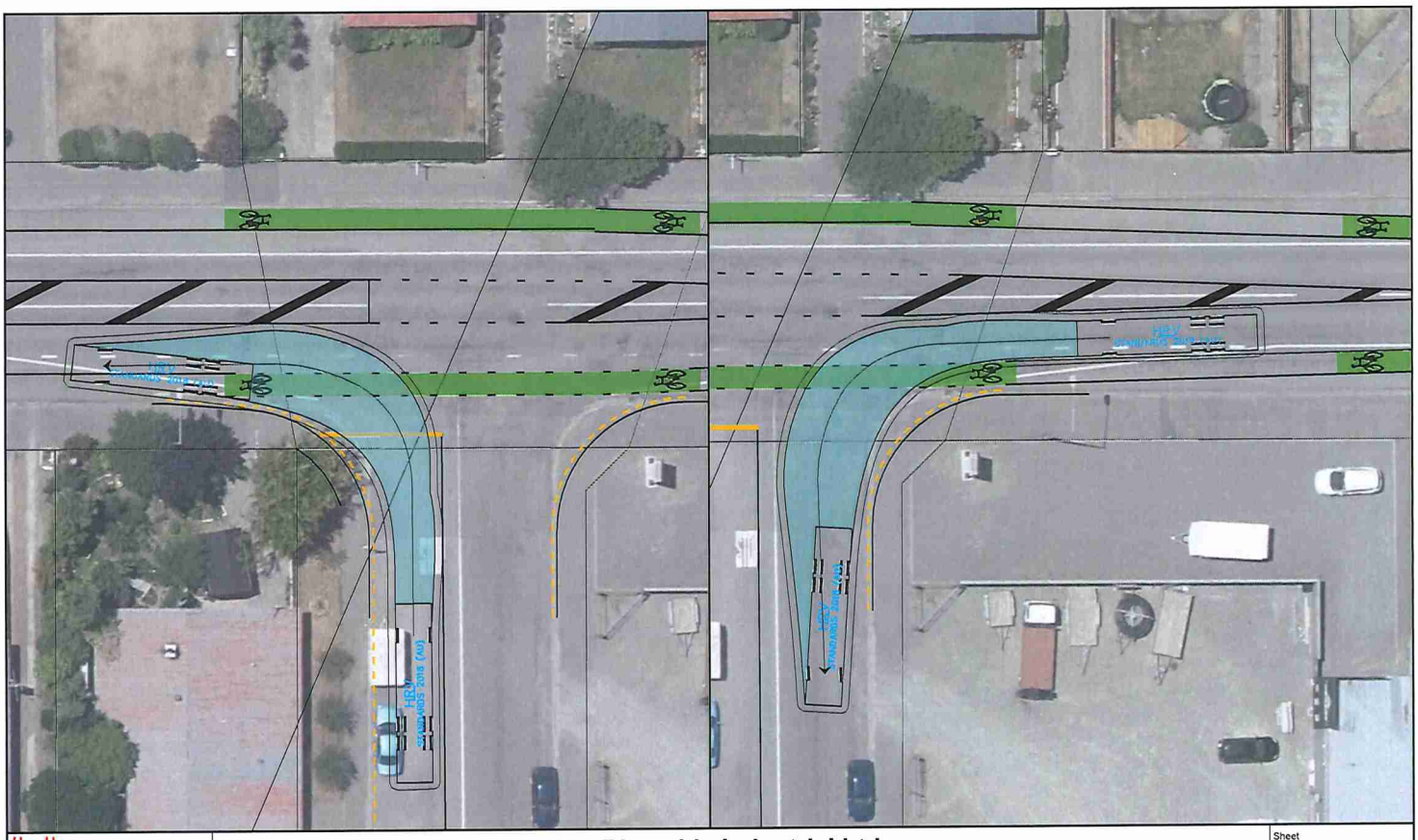
Sheet: 206-021 - SK1002-E

Scale @A3 1/400

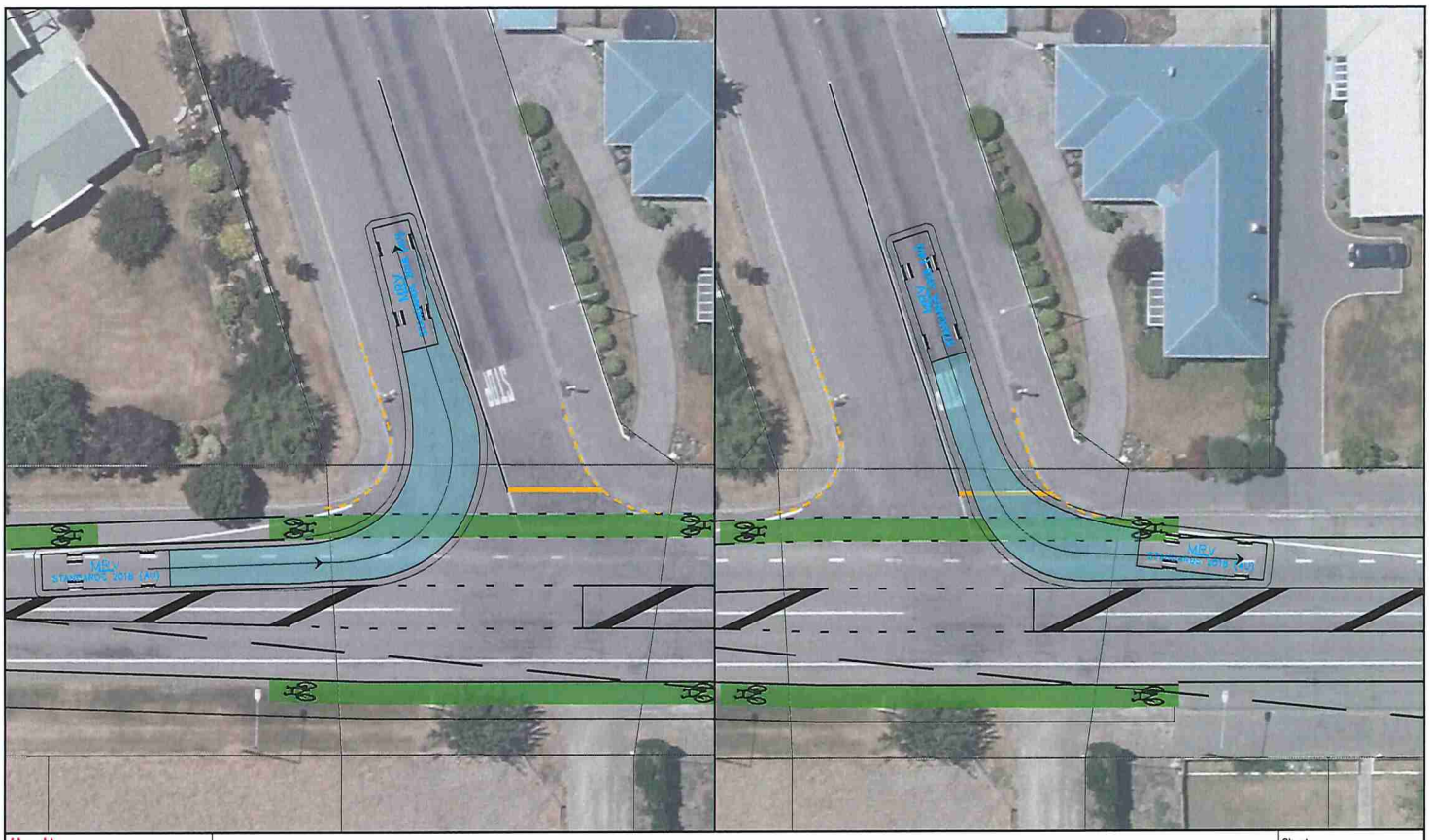
Date 25/05/2023

By N Fuller

Project # 206-021



novo group Novo Group Limited PO Box 365 Christchurch 8014 NovoGroup.co.nz	**Riverside Industrial Ltd** **Alford Forest Road, Ashburton**	Sheet **206-021 - SK1003-E**
	Alford Forest Road - Melrose Road Intersection Upgrades: 12.5m Truck Tracking (10km/h & 0.5m clearance)	Scale @A3 1/250
	Concept Arrangement	Date 25/05/2023 By N Fuller
	Drawing: 206-021 - Riverside - SK100X-E	Project # 206-021



novo group

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NovoGroup.co.nz

Riverside Industrial Ltd
Alford Forest Road, Ashburton

Alford Forest Road - Farm Road Intersection Upgrades: 8.8m Truck Tracking (10km/h & 0.5m clearance)

Concept Arrangement

Drawing: 206-021 - Riverside - SK100X-E

Sheet: 206-021 - SK1004-E

Scale @A3 1/250

Date 25/05/2023

By N Fuller

Project # 206-021

Appendix 4

2032 'With Development' Traffic Model Results

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Melrose: 2032 AM Base + Development (Site Folder: 2032 Base + Development Models)]

Alford Forest Rd / Melrose Rd 2032 Existing Volumes + Development

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
1	L2	151	31	159	20.5	0.175	4.8	LOS A	0.0	0.0	0.00	0.29	0.00	47.5
2	T1	130	26	137	20.0	0.175	0.1	LOS A	0.0	0.0	0.00	0.29	0.00	48.3
Approach		281	57	296	20.3	0.175	2.6	NA	0.0	0.0	0.00	0.29	0.00	47.9
North: Alford Forest Rd														
8	T1	182	14	192	7.7	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	24	5	25	20.8	0.022	6.1	LOS A	0.1	0.8	0.41	0.57	0.41	45.1
Approach		206	19	217	9.2	0.102	0.7	NA	0.1	0.8	0.05	0.07	0.05	49.3
West: Melrose Rd														
10	L2	8	3	8	37.5	0.081	9.7	LOS A	0.3	2.5	0.47	0.95	0.47	43.0
12	R2	36	6	38	16.7	0.081	12.3	LOS B	0.3	2.5	0.47	0.95	0.47	43.0
Approach		44	9	46	20.5	0.081	11.8	LOS B	0.3	2.5	0.47	0.95	0.47	43.0
All Vehicles		531	85	559	16.0	0.175	2.6	NA	0.3	2.5	0.06	0.26	0.06	48.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Melrose: 2032 PM Base + Development (Site Folder: 2032 Base + Development Models)]

Alford Forest Rd / Melrose Rd 2032 Existing Volumes + Development

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
1	L2	53	8	56	15.1	0.132	4.7	LOS A	0.0	0.0	0.00	0.12	0.00	48.6
2	T1	183	7	193	3.8	0.132	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.3
Approach		236	15	248	6.4	0.132	1.1	NA	0.0	0.0	0.00	0.12	0.00	49.2
North: Alford Forest Rd														
8	T1	149	17	157	11.4	0.086	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	11	2	12	18.2	0.009	5.7	LOS A	0.0	0.3	0.36	0.53	0.36	45.3
Approach		160	19	168	11.9	0.086	0.4	NA	0.0	0.3	0.02	0.04	0.02	49.6
West: Melrose Rd														
10	L2	28	5	29	17.9	0.322	9.7	LOS A	1.6	12.7	0.55	1.01	0.62	43.0
12	R2	159	28	167	17.6	0.322	12.9	LOS B	1.6	12.7	0.55	1.01	0.62	42.7
Approach		187	33	197	17.6	0.322	12.4	LOS B	1.6	12.7	0.55	1.01	0.62	42.8
All Vehicles		583	67	614	11.5	0.322	4.5	NA	1.6	12.7	0.18	0.38	0.21	47.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Farm: 2032 AM Base + Development (Site Folder: 2032 Base + Development Models)]

Alford Forest Rd / Farm Rd 2032 Existing Volumes + Development
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
2	T1	105	21	111	20.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	21	7	22	33.3	0.017	5.5	LOS A	0.1	0.7	0.28	0.52	0.28	45.1
Approach		126	28	133	22.2	0.064	0.9	NA	0.1	0.7	0.05	0.09	0.05	49.1
East: Farm Rd														
4	L2	64	11	67	17.2	0.061	8.8	LOS A	0.2	1.9	0.27	0.89	0.27	44.7
6	R2	1	0	1	0.0	0.061	9.2	LOS A	0.2	1.9	0.27	0.89	0.27	44.6
Approach		65	11	68	16.9	0.061	8.8	LOS A	0.2	1.9	0.27	0.89	0.27	44.7
North: Alford Forest Rd														
7	L2	1	0	1	0.0	0.077	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
8	T1	137	10	144	7.3	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		138	10	145	7.2	0.077	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		329	49	346	14.9	0.077	2.1	NA	0.2	1.9	0.07	0.21	0.07	48.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Alford Forest - Farm: 2032 PM Base + Development (Site Folder: 2032 Base + Development Models)]

Alford Forest Rd / Farm Rd 2032 Existing Volumes + Development
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Alford Forest Rd														
2	T1	132	5	139	3.8	0.072	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	71	5	75	7.0	0.049	5.1	LOS A	0.2	1.6	0.25	0.53	0.25	45.6
Approach		203	10	214	4.9	0.072	1.8	NA	0.2	1.6	0.09	0.18	0.09	48.4
East: Farm Rd														
4	L2	40	4	42	10.0	0.037	8.4	LOS A	0.1	1.1	0.25	0.88	0.25	44.8
6	R2	1	0	1	0.0	0.037	9.7	LOS A	0.1	1.1	0.25	0.88	0.25	44.7
Approach		41	4	43	9.8	0.037	8.4	LOS A	0.1	1.1	0.25	0.88	0.25	44.8
North: Alford Forest Rd														
7	L2	1	0	1	0.0	0.070	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
8	T1	122	14	128	11.5	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		123	14	129	11.4	0.070	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		367	28	386	7.6	0.072	1.9	NA	0.2	1.6	0.08	0.20	0.08	48.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Harrison - Farm: 2032 AM Base + Development (Site Folder: 2032 Base + Development Models)]

Harrison St / Farm Rd 2032 Existing Volumes + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Harrison St														
1	L2	1	0	1	0.0	0.014	5.7	LOS A	0.0	0.1	0.04	0.08	0.04	57.2
2	T1	19	7	20	36.8	0.014	0.0	LOS A	0.0	0.1	0.04	0.08	0.04	58.8
3	R2	2	0	2	0.0	0.014	5.7	LOS A	0.0	0.1	0.04	0.08	0.04	56.7
Approach		22	7	23	31.8	0.014	0.8	NA	0.0	0.1	0.04	0.08	0.04	58.5
East: Farm Rd														
4	L2	5	1	5	20.0	0.056	5.9	LOS A	0.2	1.6	0.18	0.52	0.18	53.0
5	T1	47	6	49	12.8	0.056	4.8	LOS A	0.2	1.6	0.18	0.52	0.18	53.6
6	R2	8	1	8	12.5	0.056	6.3	LOS A	0.2	1.6	0.18	0.52	0.18	52.9
Approach		60	8	63	13.3	0.056	5.1	LOS A	0.2	1.6	0.18	0.52	0.18	53.5
North: Harrison St														
7	L2	25	1	26	4.0	0.040	5.6	LOS A	0.0	0.4	0.02	0.26	0.02	55.7
8	T1	39	6	41	15.4	0.040	0.0	LOS A	0.0	0.4	0.02	0.26	0.02	57.4
9	R2	6	0	6	0.0	0.040	5.5	LOS A	0.0	0.4	0.02	0.26	0.02	55.5
Approach		70	7	74	10.0	0.040	2.5	NA	0.0	0.4	0.02	0.26	0.02	56.6
West: Farm Rd														
10	L2	1	0	1	0.0	0.039	5.6	LOS A	0.1	1.1	0.19	0.51	0.19	54.0
11	T1	41	4	43	9.8	0.039	4.8	LOS A	0.1	1.1	0.19	0.51	0.19	53.9
12	R2	1	0	1	0.0	0.039	6.1	LOS A	0.1	1.1	0.19	0.51	0.19	53.6
Approach		43	4	45	9.3	0.039	4.8	LOS A	0.1	1.1	0.19	0.51	0.19	53.9
All Vehicles		195	26	205	13.3	0.056	3.6	NA	0.2	1.6	0.11	0.37	0.11	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Harrison - Farm: 2032 PM Base + Development (Site Folder: 2032 Base + Development Models)]

Harrison St / Farm Rd 2032 Existing Volumes + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Harrison St														
1	L2	1	1	1	100.0	0.029	6.8	LOS A	0.0	0.1	0.01	0.03	0.01	53.3
2	T1	51	0	54	0.0	0.029	0.0	LOS A	0.0	0.1	0.01	0.03	0.01	59.6
3	R2	2	0	2	0.0	0.029	5.6	LOS A	0.0	0.1	0.01	0.03	0.01	57.5
Approach		54	1	57	1.9	0.029	0.3	NA	0.0	0.1	0.01	0.03	0.01	59.4
East: Farm Rd														
4	L2	6	0	6	0.0	0.045	5.6	LOS A	0.2	1.1	0.16	0.54	0.16	53.7
5	T1	28	1	29	3.6	0.045	4.7	LOS A	0.2	1.1	0.16	0.54	0.16	53.8
6	R2	15	0	16	0.0	0.045	6.1	LOS A	0.2	1.1	0.16	0.54	0.16	53.3
Approach		49	1	52	2.0	0.045	5.2	LOS A	0.2	1.1	0.16	0.54	0.16	53.6
North: Harrison St														
7	L2	13	0	14	0.0	0.025	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	56.5
8	T1	30	3	32	10.0	0.025	0.0	LOS A	0.0	0.1	0.02	0.20	0.02	58.0
9	R2	2	0	2	0.0	0.025	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	56.1
Approach		45	3	47	6.7	0.025	1.9	NA	0.0	0.1	0.02	0.20	0.02	57.5
West: Farm Rd														
10	L2	4	0	4	0.0	0.042	5.7	LOS A	0.2	1.1	0.19	0.51	0.19	53.9
11	T1	42	4	44	9.5	0.042	4.8	LOS A	0.2	1.1	0.19	0.51	0.19	53.8
12	R2	1	0	1	0.0	0.042	6.0	LOS A	0.2	1.1	0.19	0.51	0.19	53.5
Approach		47	4	49	8.5	0.042	4.9	LOS A	0.2	1.1	0.19	0.51	0.19	53.8
All Vehicles		195	9	205	4.6	0.045	3.0	NA	0.2	1.1	0.09	0.31	0.09	56.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ANNEXURE G LLUR

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Dear Sir/Madam

Thank you for submitting your property enquiry from our Listed Land Use Register (LLUR). The LLUR holds information about sites that have been used or are currently used for activities which have the potential to cause contamination.

The LLUR statement shows the land parcel(s) you enquired about and provides information regarding any potential LLUR sites within a specified radius.

Please note that if a property is not currently registered on the LLUR, it does not mean that an activity with the potential to cause contamination has never occurred, or is not currently occurring there. The LLUR database is not complete, and new sites are regularly being added as we receive information and conduct our own investigations into current and historic land uses.

The LLUR only contains information held by Environment Canterbury in relation to contaminated or potentially contaminated land; additional relevant information may be held in other files (for example consent and enforcement files).

Please contact Environment Canterbury if you wish to discuss the contents of this property statement.

Yours sincerely

Contaminated Sites Team

Property Statement
from the Listed Land Use Register

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Visit ecan.govt.nz/HAIL for more information or
contact Customer Services at ecan.govt.nz/contact/ and quote ENQ362006

Date generated: 01 December 2023
Land parcels: Lot 2 DP 382372

The information presented in this map is specific to the property you have selected. Information on nearby properties may not be shown on this map, even if the property is visible.

Sites at a glance

Sites within enquiry area

There are no sites associated with the area of enquiry.

More detail about the sites

There are no sites associated with the area of enquiry.

Disclaimer

The enclosed information is derived from Environment Canterbury's Listed Land Use Register and is made available to you under the Local Government Official Information and Meetings Act 1987.

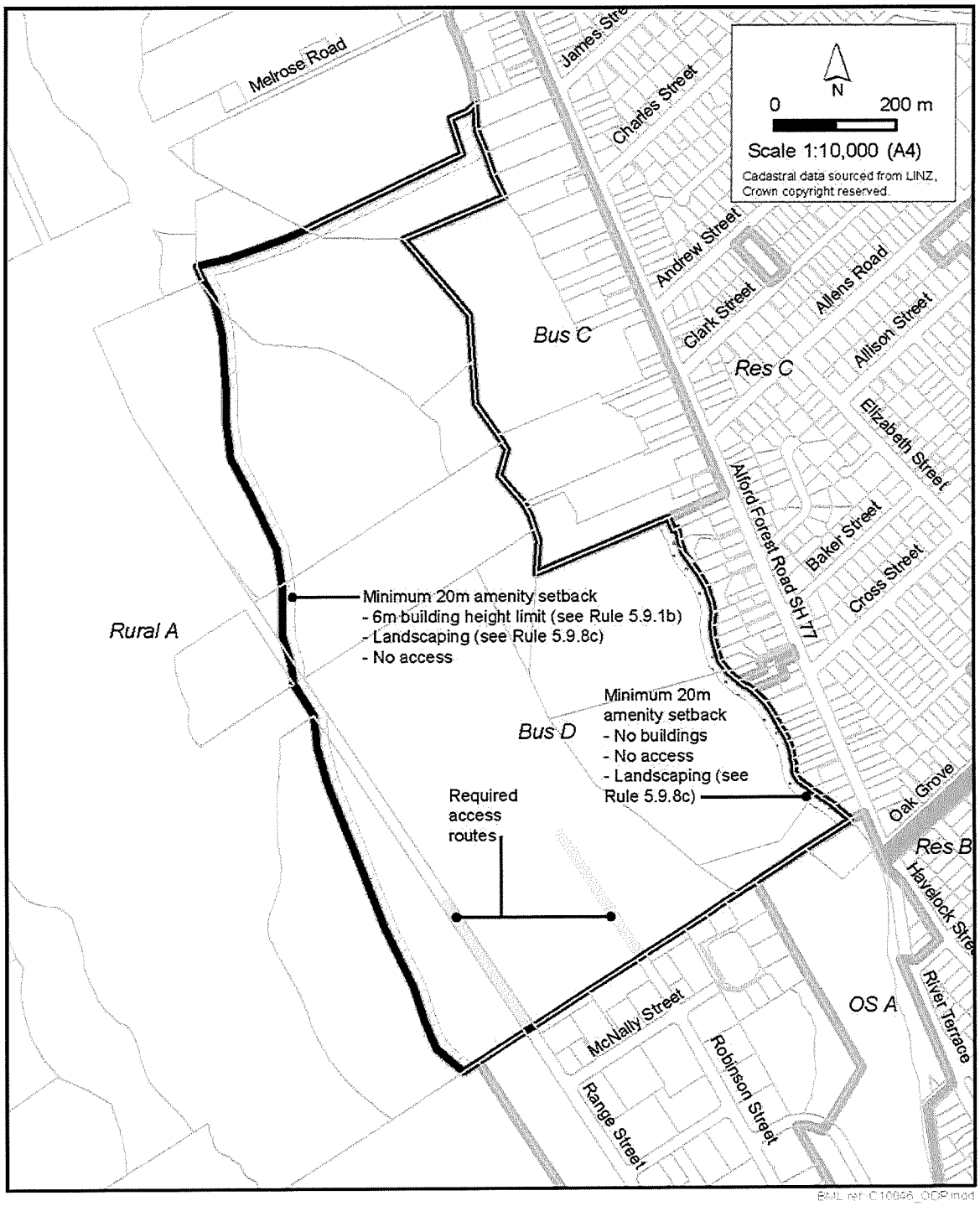
The information contained in this report reflects the current records held by Environment Canterbury regarding the activities undertaken on the site, its possible contamination and based on that information, the categorisation of the site. Environment Canterbury has not verified the

accuracy or completeness of this information. It is released only as a copy of Environment Canterbury's records and is not intended to provide a full, complete or totally accurate assessment of the site. It is provided on the basis that Environment Canterbury makes no warranty or representation regarding the reliability, accuracy or completeness of the information provided or the level of contamination (if any) at the relevant site or that the site is suitable or otherwise for any particular purpose. Environment Canterbury accepts no responsibility for any loss, cost, damage or expense any person may incur as a result of the use, reference to or reliance on the information contained in this report.

Any person receiving and using this information is bound by the provisions of the Privacy Act 1993.

ANNEXURE H Outline Development Plan Appendix 5-3- Business D Zone Riverside

Appendix 5-3: Outline Development Plan Business D Zone, Riverside



Business D Zone: Riverside