ANNEXURE 4

Traffic Assessment (and Addendum dated 19 June 2012)

VIASTRADA

TRAFFIC ENGINEERING AND PLANNING

Proposed Rural Residential Zoning of The Denwood Trustees Block, Springs Road, Lincoln

Transportation Assessment prepared for

Fiona Aston Consultancy Ltd
(on behalf of Denwood Trustees)

ViaStrada

December 2010

www.viastrada.co.nz

This document has been prepared for the benefit of the Fiona Aston Consultancy Ltd and Denwood Trustees. No liability is accepted by ViaStrada, any of its employees or sub-consultants with respect to its use by any other person.

Quality Assurance Statement			
			Date
ViaStrada Ltd Level 6, Link Centre 152 Hereford Street Po Box 22 458 Christchurch New Zealand Phone: (03) 943 0839 Fax: (03) 366 7603 www.viastrada.co.nz	Project Manager: Jeremy Philips		19/10/10
	Prepared by: Lisa Williams		22/12/10
	Reviewed by: Rhys Chesterman		22/12/10
Project Number:	733		
Project Name:	Denwood Rural Residential Plan Change		
Status	Final		
Date:	22 December 2010		

Table of Contents

Table of Figures

INTRODUCTION

1. ViaStrada has been commissioned by Denwood Trustees (through Fiona Aston Consultancy Ltd) to prepare a transportation assessment for a proposal to rezone a block of land along Springs Road for rural residential use. This report considers the traffic effects of the proposal.

2. The following traffic impact assessment has been prepared broadly in accordance with the New Zealand Transport Agency (NZTA) publication *Transport Impact Guidelines for Site Development* (2007).

THE PROPOSAL

3. It is proposed to rezone the "Denwood Block" which is currently zoned Outer Plains for rural-residential use. The area proposed for residential rezoning is shown in Figure 1 below.

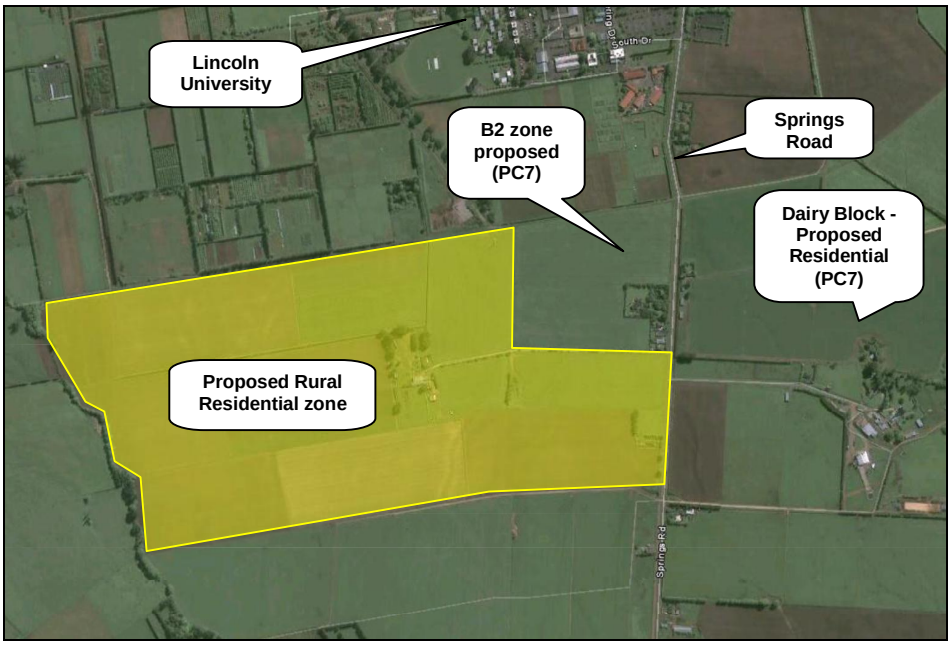


Figure 1: Plan Change Site

4. The total area of proposed residential land is approximately 71 hectares. It is anticipated that development of this area could result in 110 allotments – with each eventually being constructed with a residential house. The following assessment is therefore based on assessing the traffic effects of 106 allotments around the indicative roading layout shown in the Outline Development Plan (ODP).

5. The ODP identifies a main vehicle connection onto Springs Road (south of the proposed B2 zone). It is intended that this connection will be a sufficient distance from any proposed new road that might connect with the proposed Dairy Block on the opposite side of Springs Road. A new road will traverse through the Denwood Block in a westerly direction, ultimately forming a loop road. Provision for future connections with land to the north is also provided for; however their vehicle carrying capacity would only be dependent on further development by third-parties. It is

intended that the form of individual roading elements within the zone would be based initially upon the Council's roading design standards and/or those of NZS4404:2010 *Land Development and Subdivision Engineering*. However in recognition of the Council's expectations in terms of urban design philosophy, the detailed cross section of the road carriageway, footpaths and service reserves would be negotiated and agreed with Council staff at the time of subdivision.

6. Cycle and walkway access is also provided from the wider site and the B2 zone.

THE TRAFFIC ENVIRONMENT

The Surrounding Area

7. The land fronting Springs Road north and east of the Denwood Block is proposed for Business 2 zoning under Plan Change 7 to the Selwyn District Plan. The current Business 2 zone rules allows for a wide range of industrial, warehousing, office and retail activities.

8. The opposite (eastern) side of Springs Road is proposed for residential zoning also under Plan Change 7. This area is known as the Dairy Block and includes residential houses together with other land uses such as a school, open spaces and other amenities.

9. Along the northern boundary of the site is an old rail corridor now owned by Lincoln University. The University proper is located further north, occupying the south-western corner of Ellesmere Junction Road and Springs Road. The rural land along the northern boundary of the proposed Living 3 zone is university research farmland.

10. Further north along Springs Road are large areas of land owned and used by the Crown Research Institute. The main Lincoln Township is located generally north-east of the site with the proposed urban limit including the areas of proposed B2 zone land and the Dairy Block.

11. The proximity of the proposed rural-residential zone with the proposed B2 zone, the University, CRI and future schools within the Diary Block will provide an opportunity to live in a semi-rural setting with employment and educational opportunities within walking and cycling distance. There is also a new supermarket located on Gerald Street, close to the Springs Road intersection, and the Denwood land.

Springs Road

12. The application site has frontage to Springs Road only.

13. Springs Road is classified as a *Strategic Road* in the Selwyn District Plan. This has a primary function of carrying large volumes of traffic between destinations, often at high speeds. Due to the volume and speed of traffic, the function of Strategic Roads to carry 'through' traffic takes precedence over other functions of these roads.

14. Traffic volumes obtained from the NZTA Crash Analysis System suggests that Springs Road outside the application site carries around 1,600 vehicles per day. This increases to over 2,000 vehicles outside Lincoln University and increases further to 3,600 north of the roundabout (towards Christchurch). The majority of the traffic is generated from Lincoln University and the traffic volumes are expected to fluctuate depending on the University term times.

15. Springs Road outside the application site currently has a posted speed limit of 100 km/hour. This decreases to 70 km/hour outside Lincoln University. The same speed limit applies to Ellesmere Junction Road outside Lincoln University, however

increases to 100 km/hour nearer the Weedons Road intersection. The speed limit of Gerald Street also reduces to 50 km/hour nearer the Lincoln township.

16. The junction of Springs Road/Gerald Street/Ellesmere Junction Road is controlled by a roundabout.

Traffic Crash Analysis

17. A search of the New Zealand Transport Agencies (NZTA) Crash Analysis System (CAS) for reported crashes over the five year period ending 7 December 2010 is shown in the Collision Diagram below.

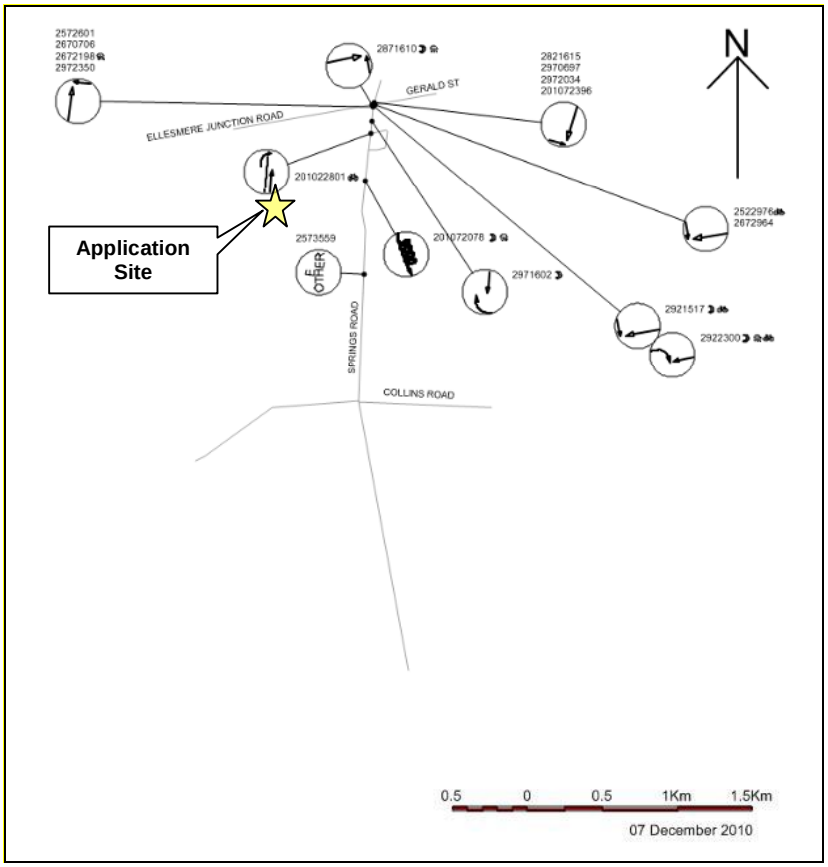


Figure 2: NZTA Collision Diagram: Springs Road outside the Application Site (Recorded Crashes between 2005 and 2010)

18. The diagram above does not highlight any crash trends outside the application site. The two mid-block crashes located near the application can be described as follows:

- Crash #2573559 which occurred on Sunday 4 September 2005 at a point referenced as being 850m north of Collins Road. This involved a northbound vehicle colliding with an over-dimensioned vehicle entering/leaving a private property. It did not result in injury.
- Crash #201072078 which occurred on Saturday 10 July 2010 at 1:10am at a point referenced as being 500m south of Gerald Street. This involved a

south-bound car losing control and colliding with a pole. The driver was reported to be influenced by alcohol. It did not result in injury.

19. Not unexpectedly, the majority of reported crashes occurred at the Springs Road/Gerald Street/Ellesmere Junction Road roundabout. The majority of these resulted in one of the drivers failing to give way.

Cycle Links

20. Currently there is little in the way of dedicated cycle facilities in the immediate area. The road widths in the area however do not preclude it ever being developed with cycle and/or pedestrian facilities, nor are these forms of transport completely prevented at this point in time. This is not uncommon in rural, semi-rural and rural-residential areas. There are however cycle (and pedestrian) connections proposed as part of the proposed development on the opposite side of Springs Road, including options for cycle connections along the railway corridor.

Public Transport

21. The existing Metro bus routes in the surrounding area (as at December 2010) include the following:

- Bus route #81: Lincoln – City (providing service to Central Christchurch City, via Riccarton)
- Bus route #518: Hornby – Lincoln
- Bus route #820: Burnham – Lincoln (providing services via Springston and Rolleston).

Other Relevant Statutory Documents

22. A summary of the relevant statutory documents as they relate to this Plan Change is outlined below.

Land Transport Management Act 2008 (LTMA)

23. The *New Zealand Land Transport Management Act* outlines the five land transport objectives.

- *Assist economic development*
- *Assist safety and personal security*
- *Improve access and mobility*
- *Protect and promote public health*
- *Ensure environmental sustainability*

24. These are reflected in the *New Zealand Transport Strategy's* (NZTS) vision: "People and freight in New Zealand have access to an affordable, integrated, safe, responsive and sustainable transport system."

25. The *New Zealand Transport Strategy* provides direction for the transport sector setting out the governments intentions for transport and guidance for local authorities.

Regional Land Transport Strategy (RLTS)

26. The RLTS sets the direction for land transport in the Canterbury Region over the next 10 years. The RLTS is prepared under the requirements of the *Land Transport Act*

1998, as amended by the *Land Transport Management Act* 2003. The RLTS seeks the following outcomes:

- *Provide equitable access for all sectors of the community*
- *Supports a thriving economy*
- *Promotes a social environment which is safe and supportive*
- *Promotes public health outcomes, is pleasant and is environmentally sustainable*
- *Is safe*
- *Involves community participation in land transport decision making*
- *Is part of an integrated planning framework*
- *Is innovative and responsive to change.*

Canterbury Regional Policy Statement (RPS)

27. The RPS provides an overview of significant regional resource management issues and the identification of policies and methods to achieve integrated, sustainable management of natural and physical resources within the region. Chapter 15 deals specifically with Transport, and identifies two key issues:

- *Effects on transport infrastructure from the use, development or protection of land and associated natural and physical resources;*
- *Adverse effects on the environment from the provision of transport infrastructure and the use of transport.*

28. Relevant objectives and policies essentially seek to enable a safe, efficient and cost-effective transport system to meet needs for transport at local, regional and national level, and avoid, remedy or mitigate the adverse effects of transport use and provision, reduce demand for transport, and promote transport modes which have low adverse environmental effects.

29. PC 1 to the RPS introduces Chapter 12A: Development of Greater Christchurch which addresses increased pressure for future urban growth in the Greater Christchurch region, in response to adoption of the Greater Christchurch Urban Development Strategy. The commissioners' recommendations have identified that limited additional Greenfields development beyond that recommended in the S.42A report is appropriate.

The Lincoln Structure Plan (2008)

30. The Lincoln Structure Plan determines when, where and how the town of Lincoln will grow over the next three decades as its population climbs from about 3,200 to 11,900 in 2041. From a traffic perspective the Structure Plan indicates where new roads, paths, and land-uses might go.

31. The Structure Plan document highlights key transportation routes, with particular reference to Springs Road which provides an important link to Christchurch City. It also highlights the bus service that currently links Christchurch to the University and the Lincoln township, reflecting the importance of these destinations.

32. One of the 18 broad principles listed in the Structure Plan document refers to an integrated transport and walking network.

33. Southfield Drive is expected to become an important east-west link across the southern growth area of Lincoln (joining the Springs Road/the University and Edward Street), with its relevance becoming even more important based on the development proposed in the Dairy Block.

34. While the primary focus is on the completion of Southfield Drive, the Christchurch, Rolleston and Environs Study (CRETS) also identified that a new east-west roading link further south again was seen as advantageous. The Lincoln community originally identified that there should be a southern bypass of Lincoln to divert traffic (particularly heavy vehicles) from unnecessarily having to travel through the centre of Lincoln when travelling between State Highway 1 (Burnham) and 75 (Tai Tapu). The Structure Plan however refers to the substantial cost to construct 4km of new road and suggests this is not justifiable on this basis alone. To make the justification of this road more acceptable its bypass function has been merged with a collector road function to cater for growth as it extends further south of Lincoln beyond the new sections of Southfield Drive. It is understood that the location of this Southern Bypass has since been repositioned through PC7 to generally follow the southern boundary of the Dairy Block rather than cross through the middle of it.

Proposed Plan Change 7 (Including the 'Dairy Block')

35. Following the Lincoln Structure Plan adopted by Council, proposed Plan Change 7 has been introduced which proposes substantial amendments to the Selwyn District Plan. In particular, it seeks to provide for the strategic residential growth around townships within the Greater Christchurch Area, including Rolleston, Lincoln, Prebbleton and West Melton. It is therefore a key method for giving effect to Proposed Plan Change 1 to Chapter 12 of the Regional Policy Statement.

36. Outline Development Plans have been prepared for the Lincoln area, including the Dairy Block which occupies a large tract of land on the opposite side of Springs Road – and south of the Lincoln township. This includes primary and secondary road links which run in an east-west direction through the site connecting with Springs Road. A primary north-south route is also proposed which connects the wider site with Gerald Street. These roads will largely function like a collector road and will provide cycle lanes, footpaths and parking.

37. The separation distance between the Springs Road intersections identified on the Denwood and Dairy Block Outline Development Plans is more than 200 metres.

DISTRICT PLAN PROVISIONS

38. The site is currently located in the ***Outer Plains zone*** as specified on Planning Map 8 in the District Plan. It is proposed to rezone the site for rural-residential purposes.

39. It is noted that any residential development on the proposed allotments could comply with all the relevant transport related requirements of the District Plan. This includes adequate parking, access and manoeuvring for each residential house on each new allotment. Failure to comply with any of these standards would result in the requirement for additional resource consent approval to be considered separately to the Plan Change application that is the subject of this report.

40. As discussed above, the wider application site can also comply with the relevant Code of Subdivision and the design can be tailored to the satisfaction of the

Council. This includes detailed design pertaining to road, berm and footpath widths, lighting, cross fall and kerb design. The road through the site is however most likely to be classified as a local road. For information purposes, District Plan Table E10.2 – Roading Standards suggests that these types of roads should have a road reserve width between 15-20 metres, and a carriageway width of 6.2-6.5 metres. There are other standards which require the road to be vested, formed and sealed.

Objectives and Policies

41. Section 32 of the Resource Management Act requires an assessment of whether the proposed methods are the most appropriate way in which to efficiently and effectively achieve the objectives of the Plan. The objectives and policies relating to transportation have largely been revised under proposed PC 12 (Integrated Transport Management), and additional objectives and policies added as part of PC 7 (Rolleston and Lincoln). They aim to provide for a more sustainable land transport system, better urban form and to cater for future transport networks. They both place a strong emphasis on integration between transport and land use; promotion of multiple transport modes, including active transport (cycling and walking) and public transport; and ensuring good connectivity between existing and proposed development areas.

42. Key relevant objectives and supporting policies are outlined below and form the basis of the following assessment of effects.

Objective B2.1.1
An integrated approach to land use and transport planning to ensure the safe and efficient operation of the District's roads…is not compromised by adverse effects from activities on surrounding land or by residential growth and that the safe and efficient operation of roads … is not compromised by effects of new land uses.

Objective B2.1.2
An integrated approach to land use and transport planning to manage and minimise adverse effects on the transport networks on adjoining land use, and to avoid 'reverse sensitivity effects' on the operation of transport networks.

Objective B2.1.3
Future road networks and transport corridors are designed, located and protected, to promote and provide for: sustainable transport modes;…

Policy B2.1.5
Promote the strategic planning of transport networks to achieve a high level of connectivity and provision for sustainable transport including public transport, cycling and walking.

Policy B2.1.17
Encourage people to walk or cycle within and between townships by providing a choice of routes for active transport modes and ensuring there is supporting infrastructure such as parking for cycles, at destinations.

Objective B4.3.4
New areas for residential...development support the timely, efficient and integrated provision of infrastructure, including appropriate transport and movement networks through a coordinated and phased development approach.

ASSESSMENT OF EFFECTS

43. An application for a zone change enables all potential effects to be considered. In terms of traffic related issues, these effects relate to issues such as the geometric layout of the site and the effects of site generated traffic on the capacity of the surrounding road network.

44. For the purposes of this report, any future subdivision within the application site will be assumed to comply with the relevant Councils Code of Subdivision. It is noted that the proposed road widths, pedestrian provisions and intersection designs can comply with relevant geometric design requirements and are of a suitable standard to cater for traffic generated within the site.

45. Instead, the traffic related issues with this proposal relate to the ability of the existing road network in the vicinity of the site to safely cater for site generated traffic, while retaining a suitable level of service for other land use activities in the immediate area, particularly those located along Springs Road. The relevant traffic related issues also include the consideration of the potential effects of the proposal at the Springs Road intersection.

46. On this basis the following assessment of effects will consider:

- The ability for the proposal to provide adequate car parking and safe vehicular access and circulation.
- The daily and peak hour volume of traffic estimated to be generated by the proposal and its distribution onto the surrounding road network; and
- The ability of the surrounding road network to cater for increased traffic flow.

Car Parking, Vehicular Access and Circulation

47. It is noted that any residential development on the proposed allotments could comply with all the relevant transport related requirements of the District Plan. This includes adequate parking, access and manoeuvring for each residential house on each new allotment. Failure to comply with any of these standards would result in the requirement for additional resource consent approval to be considered separately to the subdivision application that is the subject of this report.

48. The road reserve and carriageway width can also be tailored to the satisfaction of the Council. This includes detailed design pertaining to road, berm and footpath widths, lighting, cross fall and kerb design.

49. Footpaths are likely to be provided on both sides of the road around the majority of the site. It is assumed that these will be constructed to an acceptable width. This will adequately cater for pedestrian movements in and around the site effectively segregating them from vehicular traffic. Separate pedestrian and cycle connections can also be provided to and from the adjoining B2 land.

50. The internal subdivision roads will be local roads with low traffic volumes and will be suitable for use by cyclists as well as motor vehicles.

51. Although kerbside parking could be made available within the anticipated carriageway width within the site, parking along this road is likely to be low. This is because any proposed houses will easily be able to cater for the anticipated resident and visitor parking demand wholly on-site.

52. The Outline Development Plan layout is not dissimilar to many other subdivision concepts that have been evidenced in New Zealand over the past ten years. The design does not raise any particular or extra-ordinary traffic related concerns. Overall it is considered that the roading design and outline development plan will adequately cater for vehicle and pedestrian movements in a safe and efficient manner.

Daily Traffic Generation

53. It is considered that approximately 106 residential allotments could be created, which initially will have access from Springs Road only. The alignment of the road through the application site has been positioned such that that it provides potential future connectivity with adjoining land to the east and north. These connections are not essential and would rely on third party approval, nonetheless their presence is considered to be an important part of transportation future proofing.

54. There is a substantial library of traffic generation research on the traffic generation of residential development. This data reveals a range of 6-14 trips per day per dwelling unit. An analysis of traffic effects arising from suburban residential land development is typically based upon a generation rate of 10 trips per dwelling unit per day.

55. However the traffic generation research also indicates that the trip generation per dwelling unit is influenced by proximity to non-residential activities (shopping, schools, work places and general entertainment and other amenities), and the separation distance from the primary commercial district for the wider area (research indicates that increased separation distance from a major CBD results in more trip linking and a lower overall generation rate per dwelling unit). The location of the site within a small provincial community suggests that the bulk of dwellings will encompass a range of residential occupation patterns, and therefore a generation rate of 8 (or less) trips per day per unit is considered appropriate. There is however an increasing level of commercial infrastructure being provided in the area and this could result in increased numbers of short trips within the immediate area. Therefore a trip generation rate of around 10 trips per dwelling unit per day will be used for this assessment, however it must be emphasised that this is likely to be a conservative approach.

56. It therefore follows that the site with say 106 residential allotments could generate around 1060 vehicle trips per day (106 allotments x 10 trips each per day = 1,060). It is important to note that this level of traffic generation would not occur immediately but would occur over time as the application site was developed. Nonetheless, this is what could be expected over the longer term if 106 allotments were created and a residential house established on each lot. Note that if each unit were to only generate 8 trips per day, the overall traffic generation would be 848 vehicle trips per day. For the purposes of this assessment we have relied on the more conservative estimate of 10 trips per day.

Peak Hour Traffic Generation

57. It has already been estimated that the proposal will generate around 1,060 vehicle trips per day. However it is the peak hour traffic generation of the site and the effects of this additional traffic on the operation of the surrounding road network that is the primary traffic consideration with this proposal.

58. Traffic generation research indicates that the peak hour traffic generation of suburban residential development is around 10% of the daily traffic generation. In this situation this calculates to a generation of one trip per dwelling unit in the peak hour – or around 106 trips in total to and from the site.

59. This peak hour generation is likely to be tidal in nature where most of the peak hour traffic would be exiting the subdivision during the morning peak hour and then returning during the evening peak hour. If however, the demographics of the area were to include more elderly, the overall trip generation rate would be spread over the entire day which would result in the peak hour generation rate being significantly lower. Furthermore, if a lower daily rate of 8 trips per dwelling unit were used (=848vpd) the hourly generation would reduce to 85 trips over the peak hour period. For the purposes of this report, a conservatively high rate of 106 trips will however be used for the peak hour.

Traffic Distribution

60. Initially, all site generated vehicles would have to exit the site via a new T-intersection at Springs Road. Although the distributional splits are currently unknown as drivers have the ability to turn left or right at this intersection, it can confidently be assumed that most vehicles will exit the application site onto Woodbank Road with a left turn. This is simply because the main roading network, including Christchurch City and the Lincoln township (including schools and amenities, places of employment and the ease of access) is all located to the north (and north-east) of the application site.

61. For the purpose of this assessment it will be assumed that all vehicles will traverse Springs Road at some point (as there is no alternative access, until such a time that connections are made with adjoining sites – of which there is no guarantee that this will occur). This ultimately would result in an additional 1,060 vehicles per day on Springs Road outside the application site (or 106 vehicles during the busiest hour of the day). This volume would dissipate as vehicles disperse via other routes. For example drivers might turn left from Springs Road onto Ellesmere Junction Road (towards Rolleston, Springston, Burnham or Hornby), or turn right onto Gerald Street (or other link roads towards Lincoln), or drive straight through in a northerly direction towards Christchurch City.

62. This level of traffic is not significant in the context of anticipated traffic volumes on Strategic Roads such as Springs Road. That said the surrounding road network including carriageway width and intersection treatment still requires consideration. This will be addressed in the section that follows.

63. The level of traffic on the local roading network through the application site is also not significant in the context of anticipated traffic volumes on local roads and is compatible with the volumes of traffic generated by similar roads in the Lincoln area. It is reiterated that the alignment of the road through the application site has been designed such that it could provide a potential linkage with other sites/roads to the north. If this were to ever occur it could have the effect of distributing the traffic load over a greater area rather than solely onto Springs Road. That said,

the location of the properties within the application site would probably still tend to mostly use the Springs Road access as this would still provide the quickest, most convenient and most direct route to and from Christchurch City and the Lincoln township (which is likely to be the predominant destinations). If any site generated traffic chose to access the site from the north it would ultimately have the effect of reducing the level of traffic using Springs Road.

Road Network Effects

64. The subject site, if fully developed could result in 1,060 traffic movements per day and could cumulatively result in the traffic volume on Springs Road increasing to around 2,660 vehicles per day (1,600 existing + 1,060 proposed = 2,660). This excludes the potential traffic generated by the Dairy Block. Even if the Dairy Block were to double the amount of traffic, this would still be less than what most collector roads generate in Christchurch City. It is however acknowledged that the expectation of traffic volumes in semi-rural areas is lower. That said, there is no question that Springs Road has the ability to cater for the anticipated level of traffic with no noticeable reduction on the level of service along this road. The reserve width of Springs could easily cater for all existing traffic, traffic generated from the application site and traffic generated from other nearby subdivisions. This would however require some upgrades in localised positions – as would also be required if the Dairy Block were developed.

65. Localised upgrades would most likely be required to form an adequate T-junction on Springs Road so as to serve the application site. This would ultimately require seal widening in the immediate locale. Given the predominance of traffic flows to and from the north (towards Christchurch City) and the low through volumes on the existing road, a dedicated right-turn facility is unlikely to be required. Even if it were, there is suitable space within the road reserve to provide a treatment that is efficient, practical, functional and safe.

66. The proposed access/intersection on Springs Road is also located in the most preferable position – mid-block between the B2 zone (to the north) and the application site boundary (to the south). Consideration has also been made so as to not be located within close proximity to potential access from the Dairy Block site located on the opposite side of the road. The T-junction on Springs Road that would be required to serve the site is separated by more than 200 metres from the connections outlined on the relevant Outline Development Plans associated with the Dairy Block.

67. Sight visibility from the proposed T-intersection is excellent in both directions with more than 250 metres available in both directions. Note that the Austroads *Guide to Traffic Engineering Practice: Part 5 Intersections at Grade* advocates a Safe Intersection Sight Distance (SISD) of 253 metres. This recognises a design speed of 100 km/hour and assumes a desirable driver reaction time of 2.5 seconds. This also corresponds favourably with the Land Transport New Zealand RT6 *Guidelines for Visibility at Driveways* which recommends a minimum sight distance of 250 metres where there is frontage to an arterial road.

68. Local roads (such as the road network that will flow through the site) have a primary function of providing property access whereas strategic roads and arterial roads (such as Springs Road and Ellesmere Junction Road) have a function of traffic movement. This is why arterial roads generally have wider formed widths, carry greater volumes, often have higher speed limits and are generally constructed and managed to minimise any local access function. From a traffic perspective, vehicle access from the application site (a local network) onto Springs

Road is entirely appropriate. New Zealand Standard 4404:2010 *Land Development and Subdivision* Engineering suggests that local roads serving up to 150 dwelling units in 'Rural – Live & Play Zones' should be designed with a local road classification and include a 5.5-5.7 metre movement lane, set with a 15 metre wide reserve. The Outline Development Plan provides this width. Note however that in recognition of the Council's expectations in terms of urban design philosophy, the detailed cross section of the road carriageway, footpaths and service reserves could be tailored and/or negotiated and agreed with Council staff at the time of subdivision.

69. The consideration for separate cycle lanes through the application site is not necessary owing to the overall low traffic volumes. The New Zealand Supplement to the Austroads *Guide to Traffic Engineering Practice Part 14: Bicycles* notes that where the volumes of vehicles is less than 3,000 vehicles per day, then cycles are capable of being mixed with other traffic and no exclusive cycle lanes are required. This is also reinforced in the Land Transport New Zealand *Cycle Network and Route Planning Guide*. That said, cycle (and pedestrian) links have still been identified.

Sustainable Transport System

70. The following discussion considers the location of the proposed residential area within the transport network, particularly in respect to permeability, connectivity and accessibility of the location.

71. As already discussed, access from the proposed residential area to the wider road network for travel in all directions would be predominantly by Springs Road.

72. Access to Christchurch City is then largely afforded via Springs Road, Ellesmere Junction Road and Gerald Street. Springs Road offers a route directly into Christchurch City (16km to Riccarton, 20km to Central City). Gerald Street (and any future roading links resulting from development within the Dairy Block) means that most services within the Lincoln township are less than 2km away. Given that Lincoln is the nearest key activity area the proximity to this is particularly important.

73. Although the reality is that many people in rural-residential areas do not tend to use public transport, it should be noted that the Lincoln University and township are serviced by public transport and this provides the opportunity to establish sustainable transport use from the start rather than needing to rely on changing existing travel patterns in established areas. With this in mind bus stops are or could be provided within walking distance of the application site. Environment Canterbury (ECAN) is responsible for the planning and development of the Christchurch Bus service, and they have set an objective in the Regional Passenger Transport Plan to achieve 90% of residences being within 500m of a bus route. Whilst the provision of any future bus routes is at the discretion of ECAN, the application site could broadly be made to comply with this.

74. For the reasons discussed above it is considered the proposal is generally appropriate in respect to achieving relevant public transport related objectives as far as it is possible to do so through the plan change process.

75. There is also potential to provide good access to the transport network for active travel modes (walking and cycling). It is proposed to provide a pedestrian and cycle links through the site.

76. In the Christchurch City Council Cycling Strategy, for example, Section 4.2 identifies that adults commuting by cycle typically undertake trips between 5 and 10 km. This

means the location of the site is such that people might readily choose to cycle to and from work if located within the Lincoln township or immediate surrounds. It is however unlikely that many would choose to cycle to and from Christchurch on a regular basis – as is the case for most people living in the Lincoln area.

77. Connectivity and permeability within the proposed rural-residential area will largely be based on the future road network. In addition to the use of future roads, provision of short pedestrian and cycle links for example have been (or could be) made through to the adjoining B2 zone. Potential links and connections have also been provided to adjoining land to the north. These actions ensure a high level of connectivity and can encourage the use of active travel for short trips. These more detailed design aspects are however generally determined during the subdivision process.

78. For the reasons discussed above it is therefore considered that the proposal is consistent with and will effectively achieve the relevant Cycling and Pedestrian related objectives.

Transport Safety

79. The analysis of reported crashes outlined earlier in this report identified no major existing safety issues with the surrounding road network.

80. Whilst any increase in traffic volumes within the road network increases the potential for accidents to occur the major design considerations relate to the movement of traffic (motorised and active) from the local residential roads onto the classified road network. The road network can be designed such that appropriate consideration is made for all modes of transport (including those by foot, by cycle or by motor-vehicle). There are no obvious reasons to suggest the proposed plan change will result in an environment that is inherently unsafe.

CONCLUSIONS

81. The above assessment outlines the existing environment in the vicinity of the Denwood Block and discusses the potential effects resulting from development that might occur in accordance with the proposed Outline Development Plan.

82. The area is currently zoned Rural Outer Plains and the proposal is to rezone the land for rural-residential use – most likely to result in the development of approximately 106 allotments, each with a residential dwelling. A traffic generation rate of 10 trips per dwelling per day has been adopted and is considered to be a conservative (high) estimate. This might result in 1,060 vehicle trips being generated by the activities on the site each day. This might equate to around 106 trips over the two daily peak hour periods. This level of traffic can easily be accommodated within the existing and proposed roading network.

83. It is also considered that the location and provision of a main through road could facilitate the future provision of a bus service through the area such that all residences could be within 500 metre of a bus route. Alternatively, the site could also be served by existing bus routes that visit the nearby University or Lincoln township. Accordingly, this could achieve the desired objective set in the Environment Canterbury Regional Passenger Transport Plan.

84. In respect to the walking and cycling ideals, it is noted that it the roading network through the site will facilitate for both modes. This will include relevant footpaths and shared use along the internal roads. Further off-road links have been provided to the nearby B2 site. There is no reason to suggest that these links

could not connect with other planned facilities in the Dairy Block on the opposite side of Springs Road. Off-road parking provision is generally determined at a later point in the development process. There is no reason why the relevant on-site parking provisions cannot be provided.

85. Overall, the proposal can be supported from a transport perspective.

Planning · Traffic · Development

Novo Group Limited,
PO Box 38 123
Christchurch 8842

P: 03 365 5570
E: info@novogroup.co.nz

19 June 2012

Denwood Trustees
c/- Caroline Hutchison
Contract Planning
CHRISTCHURCH

By Email to Caroline Hutchison: contractplanning@vodafone.co.nz

Dear Caroline,

RE: ADDENDUM TO TRAFFIC ASSESSMENT FOR PROPOSED PLAN CHANGE 28 TO SELWYN DISTRICT COUNCIL – DENWOOD TRUSTEES PROPERTY.

We have previously provided a traffic assessment to accompany the application for a rural residential plan change on the Denwood Trustees Property at Springs Road, Lincoln. The traffic assessment was dated December 2010. It is understood the ODP on which the traffic assessment was prepared has been changed. This letter addresses the aspects of the Traffic Assessment which require reconsideration as a result of these changes.

The key changes from a traffic perspective are listed below followed by an assessment of effects in respect to these changes.

- An increase in the number of lots from 106-110 lots to 115 lots.
- At the time the initial transport assessment was prepared no Living 'Z' zone was proposed. A Business 2 zone was proposed to be located in the north east corner of the Denwoods land and the remainder was to become Living 3 under PC28.
- It is understood that the PC7 ODP has subsequently created two new zones (Living 'Z' and Business 2 Deferred) in the land between the PC28 area and Springs Road.
- As a result of the PC7 rezoning PC28 will now have primary road access through the PC7 Living 'Z' area to Springs Road.

Paragraphs 53 to 59 of the original transport assessment outline the likely traffic generation as varying between 6 and 14 trips per dwelling per day. A daily trip generation rate of 10 trips per unit per day was adopted and based on the provision of 106 lots and this would equate to 1,060 trips per day and 106 trips in the peak hour. The Traffic Assessment however acknowledges that an 8 trip per unit daily trip generation rate is more likely to be applicable. However, in order to be conservative the assessment was based on the rate of 10 trips per unit.

Applying the 10 trips per unit rate to up to 115 lots would equate to 1,150 trips per day (115 trips in the peak hour). However, applying the more likely 8 trips per unit, per day rate would equate to 920 trips per day. As such the actual volume of traffic likely to result from the proposed units is generally within the ambit of that previously assessed, such that the overall conclusions previously reached in regards to effects continue to apply.

Regardless, even if the site does generate 1,150 trips per day and allowing for the existing traffic volumes and new traffic associated with the adjacent Plan Change 7 'Area '1 and the

Dairy Block developments, this volume of traffic can be adequately accommodated within the existing physical capacity of Springs Road.

For completeness consideration is also given to the new traffic associated with the adjacent Plan Change 7 ODP (Business 2 and Living Z), 'Area '1 and the Dairy Block developments as traffic associated with these developments will form part of the transport environment. Traffic volumes associated with each of these developments are estimated as follows:

Table 1: Summary of additional peak hour traffic generation likely to occur onto Springs Road.

Area	Trips / hour
PC28	115
PC7, LZ[1]	115
PC7, B2[2]	643[3]
Area 1 / Diary Block	173[4]
Total	**1,046**

This suggests that as a result of the above developments along Springs Road an increase in traffic flows of around 1,046 vehicles could be expected in the peak hour. It is reiterated that this represents an overly conservative (high) estimate and if more likely (lower) traffic generation rates are applied this would suggest around 445 trips in the peak hour[5]. It is reiterated that this lower estimate is most likely to eventuate however in order to be overly conservative the higher estimate of 1,046 trips in the peak hour is considered below.

The Council has provided the following annual average daily traffic volumes based on recent traffic counts on Springs Road (south of Gerald Street) which is summarised in the table below:

Table 2: Summary of Selwyn District Council's Traffic Counts for Springs Road (south of Gerald Street).

Road	Between:		AADT	Date	Direction
SPRINGS RD (82)	ROUNDABOUT (START ISLAND)	THE CRESCENT (NORTH)	2752	16/7/2009	Both lanes
SPRINGS RD (82)	THE CRESCENT (NORTH)	THE CRESCENT (SOUTH)	3132	4/3/2010	Both lanes
SPRINGS RD (82)	THE CRESCENT (SOUTH)	UNIVERSITY CARPARK (LHS)	3127	4/3/2010	Both lanes
SPRINGS RD (82)	DAIRY BLOCK BOUNDARY	COLLINS RD (LHS)	1209	22/4/2010	Both lanes

[1] 115 sections / dwellings.
[2] 13.4ha of Business 2 land.
[3] Applying the method presented in traffic evidence for Denwood submission on PC7 in summary: floor area likely to equate to 40% of site area, 20% of floor area used for office or retail, RTA Guide to Traffic Generating Developments rates of 1 trip per 100m² GFA for industrial and 2 trips per 100m² for office or slow trade retail.
[4] Assuming 20% of household generated trips within Area 1 and Dairy Block use Springs Road.
[5] Assuming 0.8 trips per hour per dwelling for PC28 (92 trips) and PC7 LZ (92 trips) and 6.6 trips per hour, per ha for PC7 B2 (88 trips) based on surveyed rates from Izone in Rolleston.

This indicates that the existing daily traffic volumes on Springs Road are around 3,132 trips per day. Assuming peak hour traffic volumes are around 10% of this figure the existing peak hour traffic volumes would be in the order of 313 trips in the peak hour[6]. As such allowing for the existing and estimated new traffic volumes on Springs Road (near the application site) a total of 758 to 1,359 vehicles per hour could occur in the peak hour. This is well within the physical capacity of Springs Road (2,200 vehicles in the peak hour for a two way rural road).

PC7 has allowed for two road intersections with Springs Road. The PC28 development will utilise the northern most intersection provided for under PC7 for access to Springs Road (i.e., does not increase the number of intersections with Springs Road). The intersection approved under PC7 aligns with one of the road access points into the adjacent Area 1 development and therefore provides for good connectivity between these three areas (PC28, PC7 LZ and Area 1). The proposed intersection location has already been assessed under PC7 and the additional traffic associated with the PC28 development can easily be accommodated within a conventional intersection design.

This road access arrangement crosses the northern part of the bypass corridor (as shown on the PC7 / PC28 ODP's) and would require a road intersection should the bypass road be constructed in the future. Given the relatively low traffic volumes (estimated above) for the PC28 area this can be accommodated by a conventional intersection design and I do not consider that it will have any significant effect on the efficiency of the bypass road.

It is understood this road access arrangement has been determined in consultation with Council staff.

The PC28 ODP also makes provision for a future road connection to the paper road (Weedons Road) at the north western corner of the site. This could provide a future road connection to Ellesmere Junction Road. In addition to this a future road connection is also allowed for to the PC7 Business 2 zone. This would provide for a secondary point of access particularly should a future road connection to Ellesmere Junction Road not be achievable. On this basis I consider the ODP makes reasonable provision for future road connections and will therefore enable adequate connectivity with the wider transport network to be achieved.

The internal PC28 road network results in four intersections which are all separated by approximately 160m (centre line to centre line). This complies with the likely District Plan requirement (under PC12 for 50km/h roads).

In summary, the proposed road layout is considered to be a safe and efficient solution to service the properties located to the north of the bypass corridor.

In respect to the transport network within the proposed development, footpaths and cycle links will be provided in accordance with the Selwyn District Plan. The detailed design of such facilities is best determined during the subdivision process however at this stage given the intended (rural residential / Living 3) zoning of the site and the associated road design standards in Plan Change 12, it is anticipated that neither footpaths nor cycle facilities would be required. However informal discussions with Council staff have indicated that it may be acceptable to provide footpaths on one side of the road. It is reiterated that this level of detail is best discussed at the subdivision stage.

[6] Depending on traffic generation rates applied expected peak hour traffic volumes on Lincoln Road range from 758 trips in the peak hour (313 existing + 445 new) to 1, 359 trips in the peak hour (313 existing +1,046 new).

A question has previously been raised by Council in respect to speeds given the length of straight roads. The narrow carriageway (as per the District Plan requirements for rural local roads) will encourage lower speeds. Regardless, if operating speeds are a concern, local area traffic management techniques can be designed and implemented to achieve the desired operating speed. Again these aspects of technical network design are best discussed and determined through the subdivision process.

In respect to walking and cycling movements, the revised ODP identifies off road walking and cycle links to provide for pedestrian and cyclists movements over and above that which can occur within the proposed road network.

In addition to the site location details provided in the original traffic assessment, a map has been attached (as Appendix 1.0) to this letter which shows the main roads within the Lincoln Township area. The metro bus route map has also been attached (as Appendix 2.0) and this shows the location of bus stops. It is noted that currently (following changes since the February earthquakes) the 518 route previously mentioned does not appear to be operating. This is also shown online at: http://www.metroinfo.org.nz/limited-services.html.

In terms of other updates to the traffic assessment, an updated search of the CAS database (over 10 years from 2002 to 2012) has been undertaken with the Crash report and Collision Diagram attached (as Appendix 3.0) to this letter. The following points are noted:

- There were 27 reported crashes over the 10 year search period, 20 of these occurred at the Springs Road, Ellesmere Junction Road, Gerald Street roundabout.
- None of the reported crashes resulted in fatal or serious injuries, eight of the reported crashes resulted in minor injuries.
- The type of crashes occurring at the Springs Road, Ellesmere Junction Road, Gerald Street roundabout were typical of that which generally occurs at roundabouts (failure to give way) and suggest driver error rather than any inherent geometric, design or layout flaws.
- There were no crash trends present in the remainder of the crashes with most related to discrete events such as icy roads, fog/mist, stray animals, over-dimension load, fatigue, alcohol.

The updated crash statistics no not change any of the previous conclusions reached.

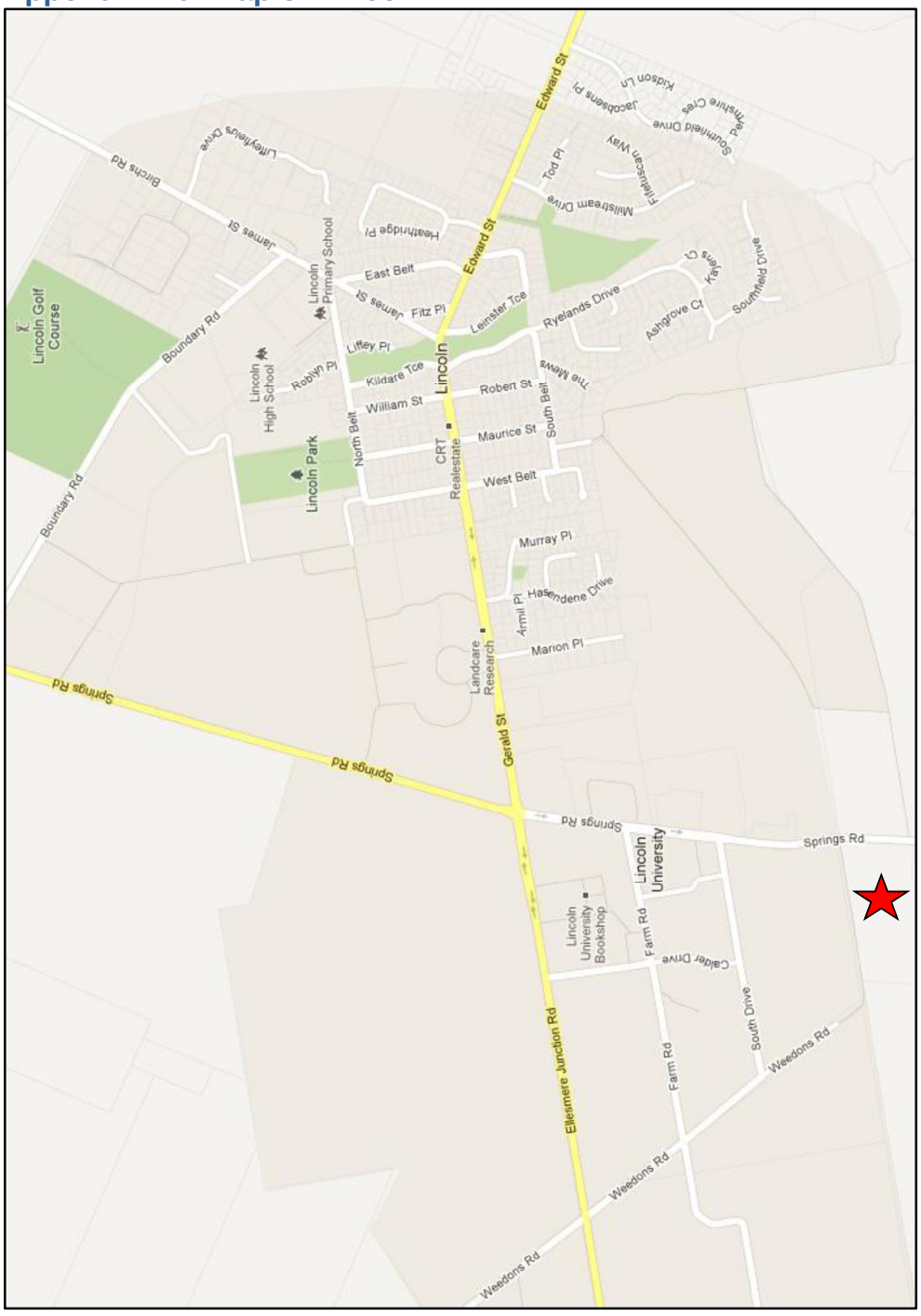
Overall, the proposed changes do not change the conclusion in respect to traffic effects reached in the Traffic Assessment. It is therefore (still) concluded that the proposal is supportable from a traffic perspective.

Yours sincerely

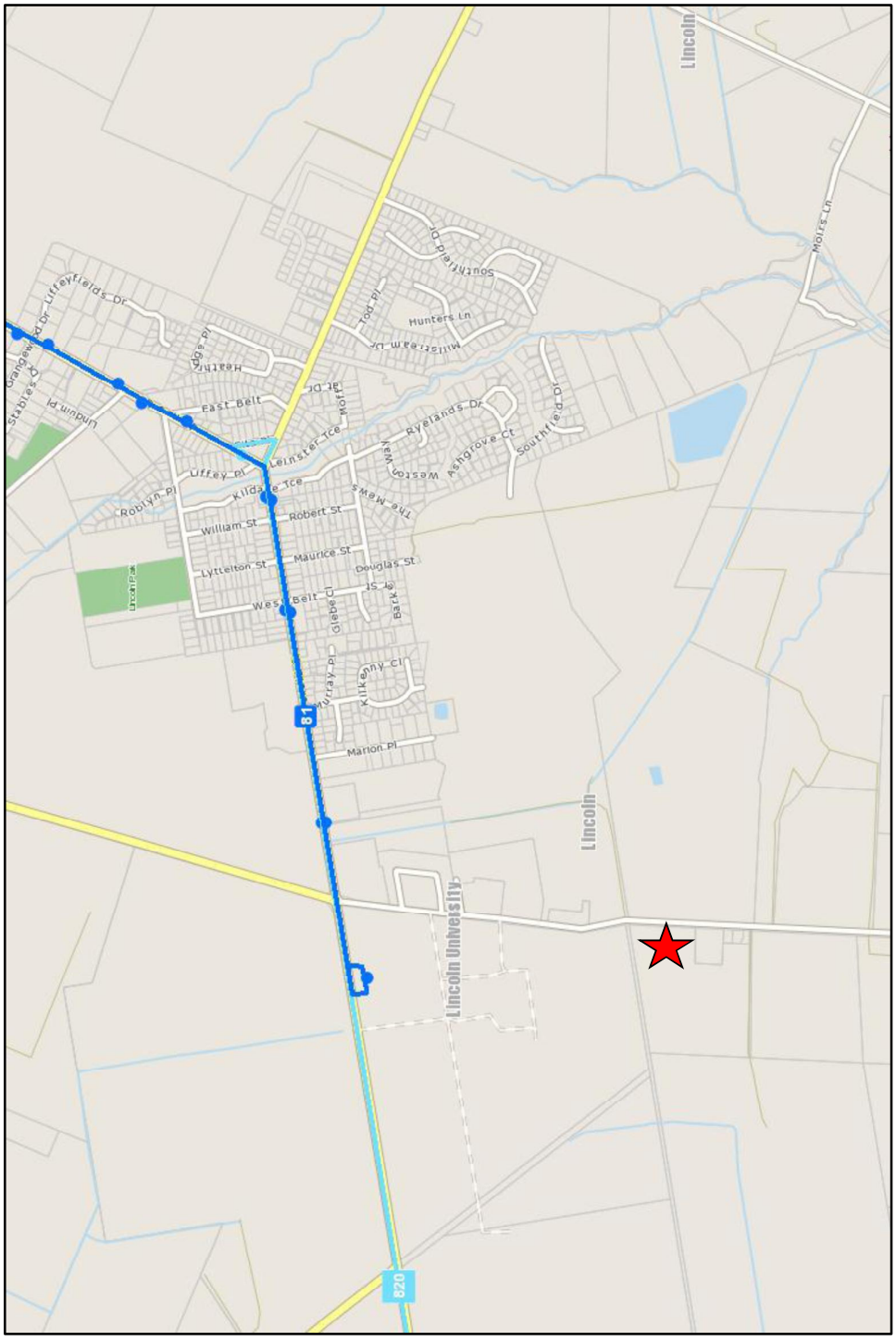
Novo Group Limited

Lisa Williams
Transport Planner
T: 03 365 5570
M: 027 2929 825
E: Lisa@novogroup.co.nz
W: www.novogroup.co.nz

Appendix 1.0: Map of Lincoln



Appendix 2.0: Metro Map

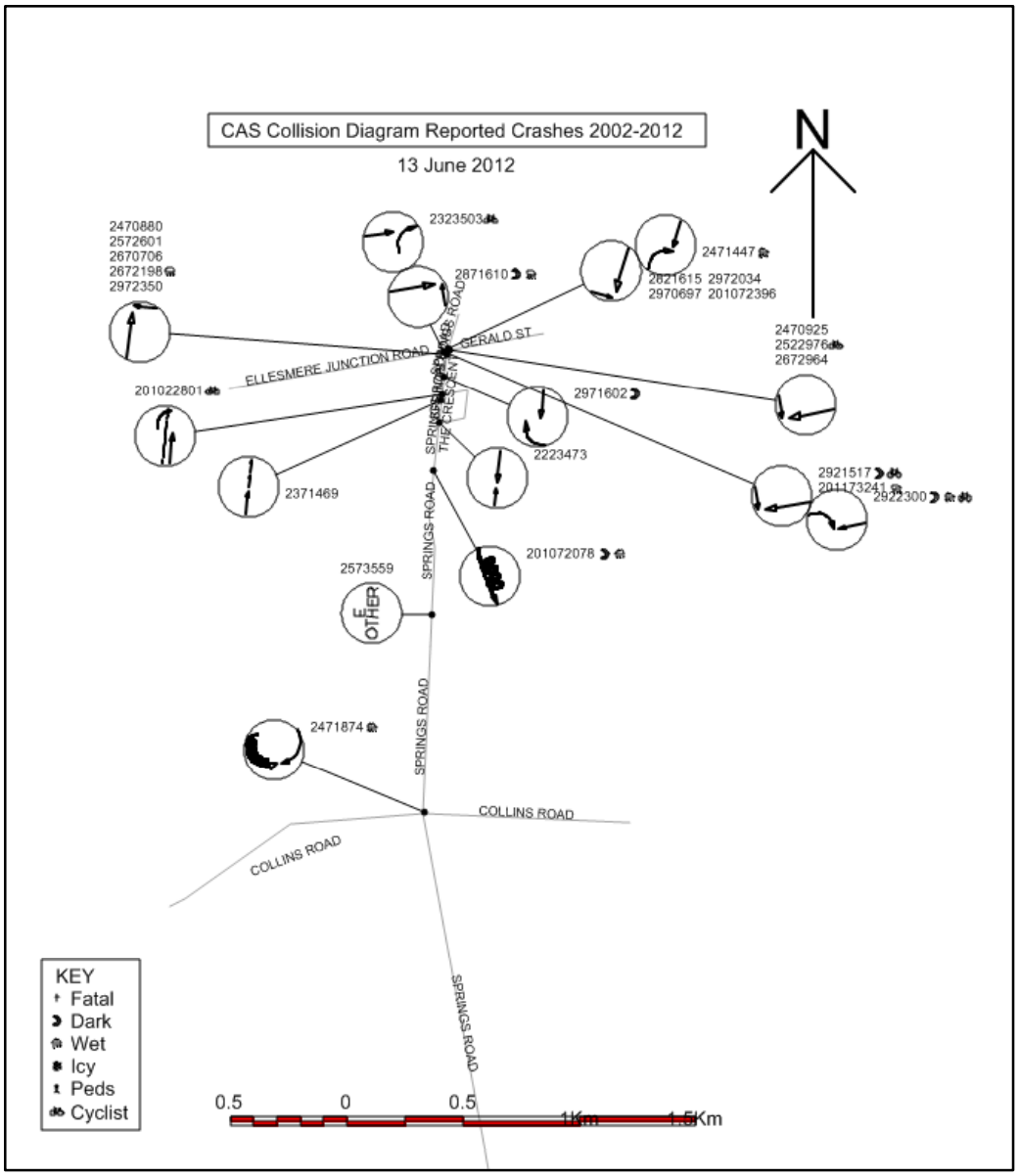


Appendix 3.0: CAS Crash Report and Collision Diagram (2001-2011).

Plain English report, run on 13-Jun-2012 Page 1

First Street	Distance / C/I/F	Second street or landmark	Crash Number	Date DD/MM/YYYY	Day DDD	Time HHMM	Description of Events	Crash Factors (ENV = Environmental factors)	Road	Natural Light	Weather	Junction	Cntrl	Tot Inj F FAT	Tot Inj S SER	Tot Inj M MIN
ELLESMERE JUNCTION ROAD	I	SPRINGS ROAD	201172767	10/09/2011	Sat	0400	CAR1 WBD on ELLESMERE JUNCTION ROAD lost control turning right on right hand bend	CAR1 alcohol suspected, too fast entering corner, lost control when turning	Dry	Dark	Fine	Roundabo	Give Way Sign			
ELLESMERE JUNCTION ROAD	I	SPRINGS ROAD	2323503	04/11/2003	Tue	1555	SCHOOL BUS1 EBD on ELLESMERE JUNCTION ROAD hit CYCLIST2 (Age 19) merging from the right	SCHOOL BUS1 failed to give way at give way sign	Dry	Bright	Fine	Roundabo	Give Way Sign			1
ELLESMERE JUNCTION ROAD	I	SPRINGS ROAD	2922300	08/07/2009	Wed	1806	CYCLIST2 (Age 28) turning right hit by oncoming CAR1 SBD on ELLESMERE JUNCTION ROAD	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Wet	Dark	Fine	Roundabo	Give Way Sign			1
ELLESMERE JUNCTION ROAD	I	SPRINGS ROAD	2921517	19/03/2009	Thu	2100	CAR1 SBD on ELLESMERE JUNCTION ROAD hit CYCLIST2 (Age 33) crossing at right angle from right	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction CYCLIST2 lights not switched on, cyclist or m/cyclist wearing dark clothing	Dry	Dark	Fine	Roundabo	Give Way Sign			1
GERALD ST	I	SPRINGS ROAD	201221299	17/02/2012	Fri	2300	SUV1 WBD on GERALD ST lost control turning right, SUV1 hit Post Or Pole on right hand bend	SUV1 alcohol test above limit or test refused, lost control	Dry	Dark	Fine	Roundabo	Give Way Sign			1
GERALD ST	I	SPRINGS ROAD	2672964	26/08/2006	Sat	1345	CAR1 WBD on GERALD ST hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, misjudged speed etc of vehicle coming from another dirn with right of way	Dry	Bright	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD	850N	COLLINS ROAD	2573559	04/09/2005	Sun	1804	OTHER1 NBD on SPRINGS ROAD hit obstruction, OTHER1 hit Post Or Pole	OTHER1 overdimension vehicle or load ENV: entering or leaving private house / farm	Dry	Overcast	Fine	Driveway	N/A			
SPRINGS ROAD	I	COLLINS ROAD	2471874	23/05/2004	Sun	1250	CAR1 EBD on COLLINS ROAD lost control on curve and hit CAR2 head on	CAR1 too fast entering corner, swung wide on bend	Wet	Overcast	Light Rain	T Type Junction	Nil			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	2572601	28/07/2005	Thu	0800	CAR1 NBD on SPRINGS ROAD hit VAN2 crossing at right angle from right	CAR1 failed to give way at give way sign	Dry	Overcast	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	201173241	19/10/2011	Wed	1555	TRUCK1 WBD on ELLESMERE JUNCTION ROAD hit CAR2 crossing at right angle from right	TRUCK1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Wet	Overcast	Light Rain	Roundabo	Give Way Sign			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	201072396	20/07/2010	Tue	1155	CAR1 SBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Dry	Bright	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	2972350	10/07/2009	Fri	1301	CAR1 NBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Dry	Overcast	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	2972034	17/06/2009	Wed	0830	CAR1 SBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Dry	Overcast	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	2970697	12/03/2009	Thu	1630	CAR1 SBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR2 failed to give way at give way sign	Dry	Bright	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	2871610	22/05/2008	Thu	1845	CAR1 EBD on ELLESMERE JUNCTION ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction ENV: road slippery (rain)	Wet	Dark	Light Rain	Roundabo	Give Way Sign			
SPRINGS ROAD	I	ELLESMERE JUNCTION ROAD	2821615	02/04/2008	Wed	1011	CAR1 SBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, misjudged speed etc of vehicle coming from another dirn with right of way	Dry	Bright	Fine	Roundabo	Give Way Sign			1

First Street	Distance	C/I/F	Second street or landmark	Crash Number	Date DD/MM/YYYY	Day	Time HHMM	Description of Events	Crash Factors (ENV = Environmental factors)	Road	Natural Light	Weather	Junction	Cntrl	Tot F A T	Inj S E I R	M I N
SPRINGS ROAD	100S		GERALD ST	2971602	07/05/2009	Thu	1735	CAR1 SBD on SPRINGS ROAD hit CAR2 turning right onto SPRINGS ROAD from the left	CAR2 failed to give way at driveway, didnt see/look when required to give way to traffic from another direction ENV: entering or leaving other commercial	Dry	Dark	Fine	Driveway	Nil			
SPRINGS ROAD	200S		GERALD ST	2371469	27/03/2003	Thu	0825	CAR1 NBD on SPRINGS ROAD hit rear end of CAR2 stop/slow for queue	CAR1 following too closely ENV: fog or mist	Dry	Overcast	Mist	Unknown	N/A			
SPRINGS ROAD	200S		GERALD ST	2223473	02/12/2002	Mon	1400	CAR1 SBD on SPRINGS ROAD hit TRUCK2 headon on straight, CAR1 hit Fence	CAR1 failed to keep left on straight, fatigue (drowsy, tired, fell asleep)	Dry	Bright	Fine	Unknown	N/A		1	
SPRINGS ROAD	500S		GERALD ST	201072078	10/07/2010	Sat	0010	CAR1 SBD on SPRINGS ROAD lost control; went off road to left, CAR1 hit Post Or Pole	CAR1 alcohol test above limit or test refused, lost control ENV: fog or mist	Wet	Dark	Mist	Unknown	N/A			
SPRINGS ROAD		I	GERALD ST	2672198	22/05/2006	Mon	1550	CAR1 NBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Wet	Overcast	Light Rain	Roundabo	Give Way Sign			
SPRINGS ROAD		I	GERALD ST	2471447	12/05/2004	Wed	1040	CAR2 turning right hit by oncoming CAR1 SBD on SPRINGS ROAD	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Wet	Overcast	Light Rain	Roundabo	Give Way Sign			
SPRINGS ROAD		I	GERALD ST	2470925	09/02/2004	Mon	1125	OTHER1 WBD on GERALD ST hit CAR2 crossing at right angle from right	OTHER1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Dry	Bright	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD		I	GERALD ST	2670705	05/02/2006	Sun	1700	CAR1 NBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, overseas/migrant driver failed to adjust to NZ road rules and road conditions	Dry	Bright	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD		I	GERALD ST	2522976	06/10/2005	Thu	0850	CAR1 WBD on GERALD ST hit CYCLIST2 (Age 22) crossing at right angle from right	CAR1 failed to give way at give way sign, attention diverted by other traffic	Dry	Overcast	Fine	Roundabo	Give Way Sign		1	
SPRINGS ROAD		I	GERALD ST	2470880	22/03/2004	Mon	1600	CAR1 NBD on SPRINGS ROAD hit CAR2 crossing at right angle from right	CAR1 failed to give way at give way sign, didnt see/look when required to give way to traffic from another direction	Dry	Bright	Fine	Roundabo	Give Way Sign			
SPRINGS ROAD		I	THE CRESCENT N	201022801	06/10/2010	Wed	1510	CAR1 NBD on SPRINGS ROAD overtaking hit CYCLIST2 (Age 9) turning right	CYCLIST2 didnt see/look behind when changing lanes, position or direction	Dry	Bright	Fine	T Type Junction	Nil		1	


CAS Collision Diagram Reported Crashes 2002-2012
13 June 2012
N
2470880
2572601
2670706
2672198
2972350
2323503
2871610
2471447
2621615 2972034
2970697 201072396
2470925
2522976
2672964
GERALD ST
ELLESMERE JUNCTION ROAD
SPRINGS ROAD
THE CRESCENT
201022801
2971602
2223473
2371469
2921517
201173241
2922300
201072078
2573559
OTHER
2471874
COLLINS ROAD
KEY
Fatal
Dark
Wet
Icy
Peds
Cyclist
0.5
0
0.5
1Km
1.5Km