Before an Independent Hearings Panel
Appointed by Waimakariri District Council

under: the Resource Management Act 1991

in the matter of: Submissions and further submissions on the Proposed Waimakariri District Plan and Variation 1

and: Hearing Stream 12: Rezoning requests (larger scale)

and: **Crichton Developments Limited**
(Submitter 299)

Statement of evidence of Wayne Gallot (Transport) on behalf of Crichton Developments Limited in relation to Gladstone Road rezoning request

Dated: 5 March 2024

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STATEMENT OF EVIDENCE OF WAYNE GALLOT ON BEHALF OF CRICHTON DEVELOPMENTS LIMITED

INTRODUCTION

1 My full name is Wayne Anderson Gallot.

2 I currently hold the position of Senior Transport Engineer with Novo Group Limited (**Novo Group**), a Christchurch based resource management and traffic engineering consulting company. I have 20 years of experience as a Transport Planner / Engineer in New Zealand. This work has included roles in the private and public sectors, most recently as a Senior Transportation Engineer with Christchurch City Council prior to joining Novo Group in November 2021.

3 My qualifications include a Bachelor of Commerce and Management from Lincoln University (1995) and a Post Graduate Certificate in Engineering (Transport) from the University of Canterbury (2015). I hold a certificate of completion from Waka Kotahi New Zealand Transport Agency's Safe System Engineering course (2018) which endorses me to undertake Network Safety Assessments, Crash Reduction Studies, and Road Safety Audits. I also hold a certificate of completion for a Road Safety Audit course presented by Australian based company Safe System Solutions Pty Ltd (2022). I am a member of Engineering New Zealand's Transportation Group.

CODE OF CONDUCT

2 Although this is not an Environment Court hearing, I note that in preparing my evidence I have reviewed the Code of Conduct for Expert Witnesses contained in Part 9 of the Environment Court Practice Note 2023. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where relying on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

3 I have been asked to provide transport engineering evidence in respect of the relief sought by Crichton Developments Limited (*Submitter 299*) in relation to the proposed Waimakariri District Plan (*PDP*). Specifically, the request to rezone land at 145-167 Gladstone Road (the *Site*), Woodend, to Large Lot Residential Zone (*the Proposal*).

4 My evidence will address:

4.1 A description of the Site location and the surrounding road network, including reported crash history for the area.

4.2 Road network changes, namely the planned State Highway 1 (*SH1*) Woodend Bypass.

4.3 A description of the transport elements of the Proposal, including Site traffic generation and distribution.

4.4 Assessment of road network effects, including consideration of:

(a) New Gladstone Road intersection location and design.

(b) Road network connectivity.

(c) Road network capacity.

(d) Gladstone Road – SH1 Main North Road intersection.

(e) Sustainable transport modes.

4.5 Summary and conclusion.

5 In preparing my evidence, I have reviewed:

5.1 The submission lodged by Inovo Projects Limited on behalf of Crichton Development Limited on 30 November 2021.

5.2 Transport-related provisions in the PDP.

SUMMARY OF EVIDENCE

6 The existing local road network surrounding the Site generally carries low traffic volumes and appears to be appropriately designed for the typically residential land uses it serves, including the provision of pedestrian and cycle facilities.

7 SH1 Main North Road through Woodend carries significantly higher volumes than the local road network surrounding the site and has a poor reported crash history. That said, there is no apparent crash trend or inherent safety issue with turning movements at the SH1 Main North Road intersections at Gladstone Road, School Road or Petries Road.

8 If the Woodend Bypass proceeds, it is expected to result in a significant reduction in the Main North Road traffic volume through Woodend. It is also expected that there would be a corresponding improvement in safety on this road with the reduced traffic volumes.

9 The requested Large Lot Residential zoning (*LLRZ*) is estimated to yield 28 dwellings on the Site (including the existing dwelling), with

a corresponding site generation of around 230 vehicle trips per day and 25 vehicle trips per hour during peak periods.[1]

10 The adopted distribution of site generated traffic is based on 80% (22-23 vehicles per peak hour) travelling between the Site and SH1 Main North Road via Gladstone Road with a nominal 20% (2-3 vehicles per peak hour) using Petries Road. The adopted distribution has taken 2018 Census commuter travel data into account and assumes 32% of vehicle movements to and from the Site are associated with local destination trips within Woodend, while 45% are associated with origins / destinations south, 19% to the west and 4% to the north.

11 The Outline Development Plan (*ODP*) for the Site provides for a main collector road running north-south through the Site. This connects to Gladstone Road towards the western site boundary in order to avoid the Woodend Bypass designation and scheme design. The ODP also indicates future connectivity to the south, and an indicative local road provides for future connectivity to the west. These connections would only be realised through future development of adjacent land and therefore a single road connection would service the Site initially. Pedestrian and cycle facilities are also provided along the indicative road alignments, as well as to the east in the event that such facilities are also provided for in the Woodend Bypass design.

12 It is expected that there is sufficient space within the existing Gladstone Road boundaries to accommodate a simple T-intersection that would operate efficiently and safely without the need for auxiliary lanes or design features that might otherwise require additional land. Whilst a single road connection (prior to development of future connections through adjacent land) is not ideal in terms of connectivity, it is considered that this could be effectively designed and / or managed to function satisfactorily for the limited number of properties served and modest traffic volumes involved until such time as future connections to the south and / or west are established.

13 In terms of capacity, the modest site-generated traffic volumes expected with development of the Site under a LLRZ can be easily accommodated within the existing local road network. While SH1 Main North Road appears to be already operating at or above capacity during peak periods, the volume of additional site-generated traffic on SH1 Main North Road and at the Gladstone Road intersection is estimated to be only around 1% of existing peak hour volumes and therefore likely to be within daily fluctuations of those existing peak volumes. As such, I consider that the additional amount of site-generated traffic will have little impact on overall traffic conditions or levels of service on SH1 Main North Road. If the Woodend Bypass proceeds, and expected traffic volume

[1] Refer to Paragraphs 56-56 for traffic generation estimates.

reductions are realised, then I anticipated that the additional of site-generated traffic could be comfortably accommodated.

14 Whilst there are likely to be significant delays experienced by road users turning right out of Gladstone Road onto SH1 Main North Road at present, the adopted distribution of site-generated traffic suggests that only 2-4 additional vehicles per peak hour will be undertaking that manoeuvre. For those familiar with the area and traffic conditions, it is also noted that there are some alternate route choices available that could enable the right turn manoeuvre to be avoided.

15 In addition to pedestrian and cycle connections provided for within the ODP, the surrounding road network has established pedestrian and cycle facilities connecting through to Woodend and Pegasus. The Site is within 30 minutes walking distance to many of the main activities within Woodend and Pegasus, including two schools. Cycling times would be less than 10 minutes. Woodend is served by an existing public transport route that operates express services to and from Christchurch during peak periods. As such, it is considered that the Site is reasonably well located to support active and sustainable transport modes.

16 Overall, it is considered that the Proposal can be supported on transport grounds.

SITE LOCATION

17 The Site comprises two properties at 145 and 167 Gladstone Road, Woodend. The Site has a combined area of approximately 23ha and is located approximately 1km east of SH1 and the centre of the Woodend township.

18 The eastern portion of the Site is subject to a designation for the Woodend Bypass (Short Eastern Alignment), which reduces the land area to around 17.2ha.

19 The site is currently zoned *Rural* in the Operative District Plan and *Rural Lifestyle Zone* (RLZ) in the PDP.

EXISTING ROAD NETWORK

Gladstone Road

20 Gladstone Road is classified as a collector road in the PDP road hierarchy from SH1 Main North Road through to Gladstone Park east of the Site. Beyond that, it is a local road. It currently has a posted speed limit of 60 km/h east of Petries Road and 50 km/h west of Petries Road through to SH1 Main North Road.

21 Council's 2017 traffic count data[2] for Gladstone Road indicates daily volumes of around 260 vehicles per day near the Site, increasing to around 650 vehicles per day near the intersection with SH1 Main North Road.

22 In the vicinity of the Site, Gladstone Road has a semi-rural formation, with a sealed carriageway width of around 6-7m providing for a single 2.7m lane in each direction delineated by a marked centre line and edge lines plus variable width sealed shoulders.

23 A grit path with a width of approximately 2m is provided along the south side of Gladstone Road, with variable offsets to the sealed carriageway. There are cycle symbol and arrow pavement markings where the path crosses some nearby sealed property accesses, indicating that this is a bi-directional cycle facility. Presumably it also legally provides for pedestrian use.

24 The grit path extends some 400m east of the Site to Gladstone Park, where it then provides a connection through to the Pegasus settlement. To the west, the path continues its grit formation to Petries Road.

25 West of Petries Road, Gladstone Road changes to a more urban formation, with a sealed carriageway width of around 8.5m plus kerb and channel on the south side of the road. A marked centre line delineates an eastbound lane width of around 3.5m, leaving around 5m for the westbound lane and kerbside parking. A 2.5m wide sealed shared path is provided on the south side of the road adjacent to the boundary.

26 In older parts of Woodend, nearer SH1 Main North Road, Gladstone Road has a typical urban formation with a carriageway width of around 14m and kerb and channel both sides. It is noted however that a footpath is generally only provided on one side of the road (the south side), except for the short section between Stopforth Street and SH1 Main North Road where footpaths are provided on both sides. Further, it is noted that the 2.5m wide shared path appears to transition to a standard 1.6m wide footpath at the alleyway off the end of Keeper Close, and there is an absence of signage or markings to indicate where cyclists can legally ride beyond that.

SH1 Main North Road

27 SH1 Main North Road is classified as a strategic road in Council's road hierarchy. The Mobile Road desktop application[3] indicates an

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[2] https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.waimakariri.govt.nz%2F__data%2Fassets%2Fexcel_doc%2F0029%2F136559%2FWDC-Traffic-Data-April-20.xlsx&wdOrigin=BROWSELINK

[3] https://mobileroad.org/desktop.html

estimated December 2022 average daily traffic (*ADT*) volume of around 18,630 vehicles per day (15.85% heavy vehicles) in the vicinity of Gladstone Road. It has a permanent speed limit of 50 km/h through Woodend, and a 40 km/h variable speed limit 'School Zone' that extends from a point approximately 60m north of Gladstone Road through to a point approximately 60m south of Petries Road.

28 Through the main areas of Woodend, generally between Petries Road and Woodend Road, it has a typical urban formation with a carriageway width of around 14m between kerbs. This provides for a single traffic lane in each direction separated by a flush median, with cycle lanes on both sides. Kerbside parking is provided for along the east side of the road, whereas stopping restrictions (broken yellow line markings) are generally imposed on the west side (except for two indented parking bays).

29 Including Gladstone Road, all of the side road intersections with SH1 Main North Road south of Woodend Road are controlled by Stop signs and markings against the side road. Woodend Road and other side road intersections to the north have Give Way controls against the side roads.

30 At Gladstone Road, Eders Road and School Road, the flush median on SH1 Main North Road transitions to short right turn bays.

Petries Road

31 Petries Road connects with Gladstone Road approximately 160m west of the Site. The intersection of the two roads is controlled by Give Way signs and markings against Petries Road. It then extends approximately 250m south where it intersects with Copper Beech Road, before turning 90 degrees and extending west through to SH1 Main North Road.

32 In the PDP road hierarchy, Petries Road is classified as a collector road between Gladstone Road and Copper Beech Road, and a local road between Copper Beech Road and SH1 Main North Road. The entire length of Petries Road has a speed limit of 50 km/h.

33 Mobile Road traffic volume estimates indicate that Petries Road carries around 140 vehicles per day south of Gladstone Road, increasing to around 1,640 vehicles per day east of SH1 Main North Road.

34 The Petries Road formation is generally urban in nature, with kerb and channel plus a 2.5m wide shared path on the west side between Gladstone Road and Copper Beech Road. West of Copper Beech Road, there is kerb and channel on the north side of the road through to Hamlett Drive and then both sides of the road through to SH1 Main North Road. The shared path mentioned previously continues a short distance on the north side of Petries Road before

transitioning to a standard 1.6m wide footpath. West of Hamlett Drive there are footpaths on both sides of Petries Road.

Copper Beech Road

35 Copper Beech Road connects with Petries Road at a point approximately 250m south of Gladstone Road, from where it continues south through to Woodend Beach Road. Copper Beech Road is classified as a collector road in the PDP road hierarchy and has a 50 km/h speed limit. The intersection of Copper Beech Road and Petries Road is controlled by Give Way signs and markings against the west leg of Petries Road.

36 Copper Beech Road has a somewhat rural formation, with a sealed carriageway width of around 7.5m with wide grass verges both sides and a gently meandering alignment. Except at its intersections with Petries Road and Woodend Road there is no line marking, and generally no footpaths provided except on the west side between Woodend Beach Road and the southern end of Evergreen Drive.

Reported Crash History

37 A review of the NZ Transport Agency Waka Kotahi Crash Analysis System for Gladstone Road and the urban areas of Woodend revealed a total of 54 reported crashes for the full five-year period 2019-2023 and including available 2024 data to the end of February. **Figure 1** illustrates the search area and the locations of the reported crashes.

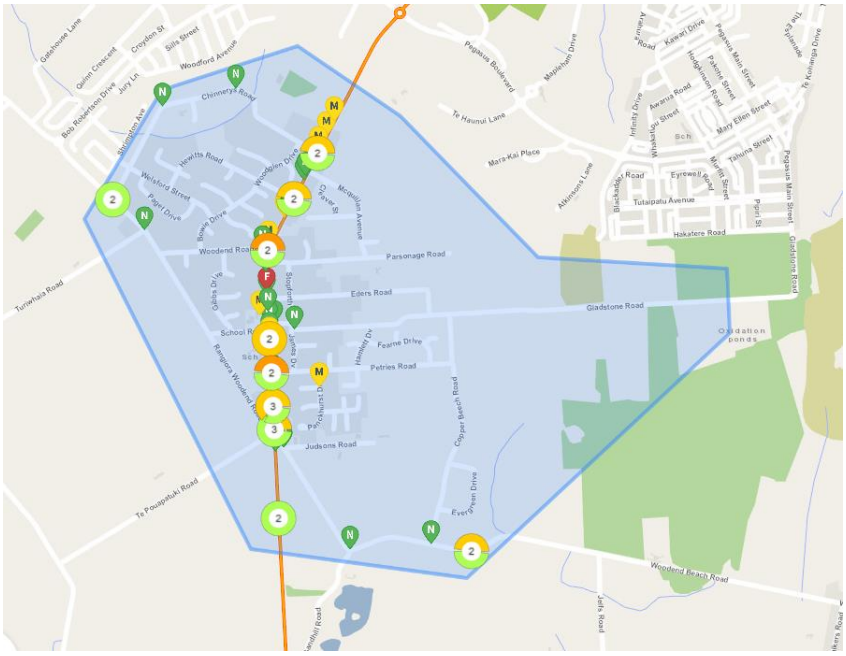

Figure 1: Search Area and Location of Reported Crashes (Source: Waka Kotahi)

38 As can be seen, the vast majority (43 of 54) of the crashes occurred on SH1 Main North Road. This includes a pedestrian fatality crash that occurred between Eders Road and Parsonage Road in January 2023. Of the other crashes, two resulted in serious injury and 17

resulted in minor injury. The remaining 34 crashes were recorded as non-injury crashes.

39 The most represented crash types included rear end collisions / collisions with obstructions (24 instances) and loss of control / head on crashes on bends and straights (19 instances combined). Crossing / turning crashes accounted for seven of the reported crashes, and the remaining four were recorded as involving pedestrians.

40 Of relevance to the Proposal, there was only one (non-injury) crash at the Gladstone Road – SH1 Main North Road intersection. This August 2019 crash involved a vehicle turning right into Gladstone Road that collided with a southbound vehicle that had just pulled out of a parked position, on the east side of SH1, immediately north of Gladstone Road. The description given in the traffic crash report suggests that the drivers of both vehicles had taken a gap in the southbound traffic stream at the same time.

41 There were no recorded crashes at or associated with the operation of the School Road intersection or the back-to-back right turn bays between the School Road and Gladstone Road intersections.

42 There were two recorded crashes at the Petries Road intersection, one serious injury and one non-injury. The non-injury crash was a single vehicle, loss of control incident involving a vehicle turning right out of Petries Road. The serious injury crash involved a northbound truck colliding with the rear of a car waiting to turn right into Petries Road.

FUTURE ROAD NETWORK

Woodend Bypass (Short Eastern Alignment)

43 The eastern portion of the Site is subject to a designation for the planned Woodend Bypass (also referred to as the Short Eastern Alignment). It is unclear when or if the Woodend Bypass will be implemented, however the National Party's *Transport for the Future* policy document (undated)[4] identifies the Woodend Bypass as a 'Road of National Significance' and signals an expected commencement timeframe of 1-3 years.

44 In an August 2023 media release prior to the last general election, National Party MP for the Waimakariri District, Matt Doocey (now Associate Transport Minister), suggested that "*…a National Government will build the Belfast to Pegasus Motorway including the*

[4] https://www.national.org.nz/transportforthefuture

Woodend Bypass, with construction starting in the first term of government…".[5]

45 The policy document lists expected benefits of the Woodend Bypass as:

45.1 Improved resilience in the Northern Canterbury region's roading network.

45.2 Reduction in congestion through Woodend and an estimated five minutes in reduced travel times from bypassing the Woodend township.

45.3 Reduced fatalities on State Highway 1 between Belfast and Pegasus, currently one of the most dangerous stretches of road in the South Island.

46 I am not aware of expected traffic volume reductions of the Woodend Bypass, should it eventuate, however a Waka Kotahi NZ Transport Agency media release from 23 January 2014[6] (around the time of the Notice of Requirement for the designation was notified) suggested that the Bypass "*…is expected to carry 80 per cent of the 14,000 vehicles that currently pass through the town each day.*"

47 It is unclear if the signalled 80% reduction applies to all SH1 Main North Road traffic, or just traffic passing through Woodend with no local origin or destination. Regardless, the 80% figure referred to suggests a significant reduction in existing traffic volumes on SH1 Main North Road if the Woodend Bypass is constructed.

48 It is understood that the extent of the Woodend Bypass designation was informed by a concept scheme design plan prepared by MWH[7] for Waka Kotahi. A copy of the plan (dated October 2013) has been obtained from Waka Kotahi and is attached to this evidence as **Appendix 1**.

49 The scheme plan shows that the intention is for Gladstone Road to be grade separated over the Woodend Bypass, with the overbridge ramps and side safety barriers extending west across the site frontage to a point around 40-50m east of the western boundary of the Site. It is not clear from the scheme plan whether a shared pedestrian / cycle path running parallel with the Woodend Bypass will be included in future designs.

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[5] https://mattdoocey.national.org.nz/woodend_bypass_commitment_for_national_s_first_term

[6] https://www.nzta.govt.nz/media-releases/woodend-corridor-designation-to-be-notified/

[7] Now Stantec.

PROPOSAL

Overview

50 The Proposal seeks to rezone the areas of the Site west of the Woodend Bypass designation to *LLRZ* from the *RLZ* that has been applied to the Site in the PDP.

51 An ODP has been prepared for the Site and attached as **Appendix 2**. The key transport elements of the ODP are:

51.1 Illustration of the Woodend Bypass designation, generally running north-south over the eastern portion of the Site, and an indicative landscape treatment strip and acoustic buffer along the western edge of the designation.

51.2 Extent of *LLRZ* sought west of the designation, and small residual areas of *RLZ* to be retained east of the designation.

51.3 An indicative collector road alignment running north-south generally through the centre of the requested *LLRZ* area, with connection to Gladstone Road towards the western boundary of the site (avoiding the overbridge ramp and safety barriers indicated on the concept scheme plans for the Woodend Bypass) and allowance for future connections to land to the south, that could potentially be developed through to Woodend Beach Road.

51.4 An indicative local road connection to land to the west, that could potentially be developed through to Petries Road and Copper Beech Road.

51.5 Indicative cycle and pedestrian network links running alongside the collector road alignment as well as out to the west to align with the indicative local road connection and to the east that would allow for connection to any future cycle / pedestrian infrastructure that might be developed with the Woodend Bypass.

52 As presented in the evidence of **Ms Hampson**, it is understood that the requested *LLRZ* land area being sought would yield around 27 lots with an average area of 5,000m² in addition to a larger 9,500m² lot to accommodate the existing dwelling and associated buildings.

53 By comparison, Ms Hampson's evidence suggests that the currently proposed *RLZ* would allow for an additional three lots / dwellings (subject to subdivision of the site and other planning considerations).

54 Based on the above, the requested *LLRZ* is expected to result in an additional 27 dwellings on the Site compared to the current situation or 24 additional dwellings compared to the proposed *RLZ*.

Traffic Generation and Distribution

55 *New Zealand Transport Agency (NZTA) Research Report 453: Trips and Parking Related to Land Use*[8] indicates 85th percentile trip rates for residential outer-suburban dwellings of 8.2 trips per unit per day and 0.9 trips per unit in the peak hour.

56 Adopting the above rates suggests that development of the Site under the requested *LLRZ* (i.e., 28 residential dwellings, including the existing dwelling) could result in a total site generation of around 230 vehicle trips per day and 25 vehicle trips per peak hour.

57 By comparison, and applying the same trip rates, the existing site generation is estimated to be 8 vehicle trips per day and 1 vehicle trip per peak hour. Development of 3 additional dwellings under the PDP proposed *RLZ* (i.e,. a total of 4 dwellings including the existing dwelling) would be estimated to result in a site generation of around 33 vehicle trips per day and 4 vehicle trips per peak hour.

58 For the purpose of this evidence, and to present a robust assessment, the estimated potential future site generation volumes of 230 vehicle trips per day and 25 vehicle trips per peak hour will be adopted, regardless of what is currently generated by the existing activities on the Site or could potentially be generated under the PDP proposed *RLZ* of the Site.

59 The Institute of Transport Engineers (*ITE*) *Trip Generation Handbook* suggests that the distribution of vehicle trips associated with single family homes is around 25% inbound / 75% outbound during the AM peak period and 63% inbound / 37% outbound during the PM peak. Daily trips are nominally assumed to be distributed 50% inbound / 50% outbound. On that basis, future vehicle movements under the *Large Lot Residential* zoning sought are estimated as summarised in **Table 1**.

Table 1: Estimated Site Generation (Large Lot Residential)

	In	Out	Total
Daily (vehicles per day)	115	115	230
AM Peak (vehicles per hour)	6	19	25
PM Peak (vehicles per hour)	16	9	25

60 An analysis of the *Commuter Waka* desktop application[9] indicates that, based on 2018 Census data, 68% of people travel outside of Woodend for work & school while 32% of departures are associated with those who live and attend work / school within Woodend. Areas to the south (including Kaiapoi, Christchurch central and suburbs,

[8] https://www.nzta.govt.nz/resources/research/reports/453/

[9] https://commuter.waka.app/

and the Christchurch airport) combine to represent about 45% of total departures, while areas to the west (i.e., Rangiora and surrounds) combine to represent around 19% of total departures. The remaining 4% travel to areas north such as Pegasus, Waikuku and Ashley / Sefton.

61 Based on the above, and considering that there is little to attract regular traffic movements east of the Site (except for Gladstone Park), it is assumed that all traffic movements to and from the Site will initially be via Gladstone Road to the west of the proposed collector road connection. Thus, the predominant movements at the new Gladstone Road intersection will be left turns out of the Site and right turns into the Site.

62 Beyond the Site, it is assumed that most site generated traffic (including that travelling between the site and locations within Woodend) will use the Gladstone Road – SH1 Main North Road intersection. A small amount of traffic however may disperse over the local road network east of SH1 Main North Road. In particular, it is expected that traffic travelling between the Site and destinations / origins to the south may choose to use Petries Road to avoid the signalised pedestrian crossing at peak before and after school times. A figure of 20% has been nominally assumed for this possibility.

63 It is also possible, though not considered further in this evidence, that trips between the Site and destinations / origins to the south, could use Copper Beech Road, Woodend Beach Road and Sawmill Road to access SH1 Main North Road. Similarly, traffic travelling between the Site and destinations / origins to the west and north (as well as local Woodend destinations and origins) may choose to filter across to Eders Road via Stopforth Road in order to access SH1 Main North Road.

64 However, for simplicity, this evidence will consider the distribution of AM and PM peak site generated traffic as illustrated in **Figure 2** and **Figure 3**. For these distribution scenarios it is nominally assumed that local Woodend traffic associated with the Site is equally distributed north and south at the Gladstone Road – SH1 Main North Road intersection in accordance with the respective AM and PM Peak inbound / outbound distribution percentages. Note that these local trips are not shown in the diagrams beyond the Gladstone Road – SH1 Main North Road intersection.

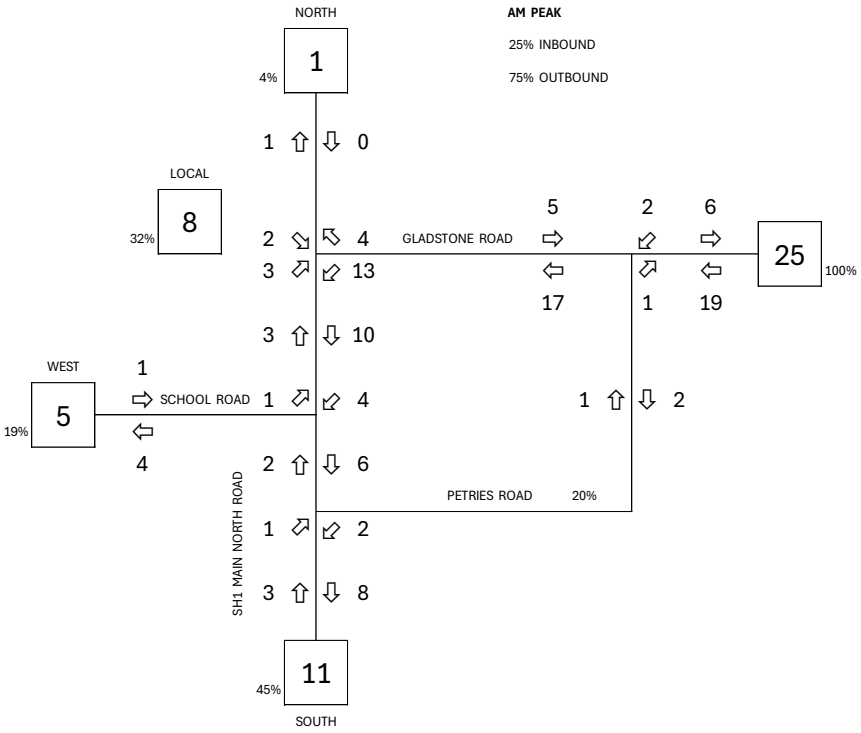

Figure 2: Assumed AM Peak Site Generated Traffic Distribution

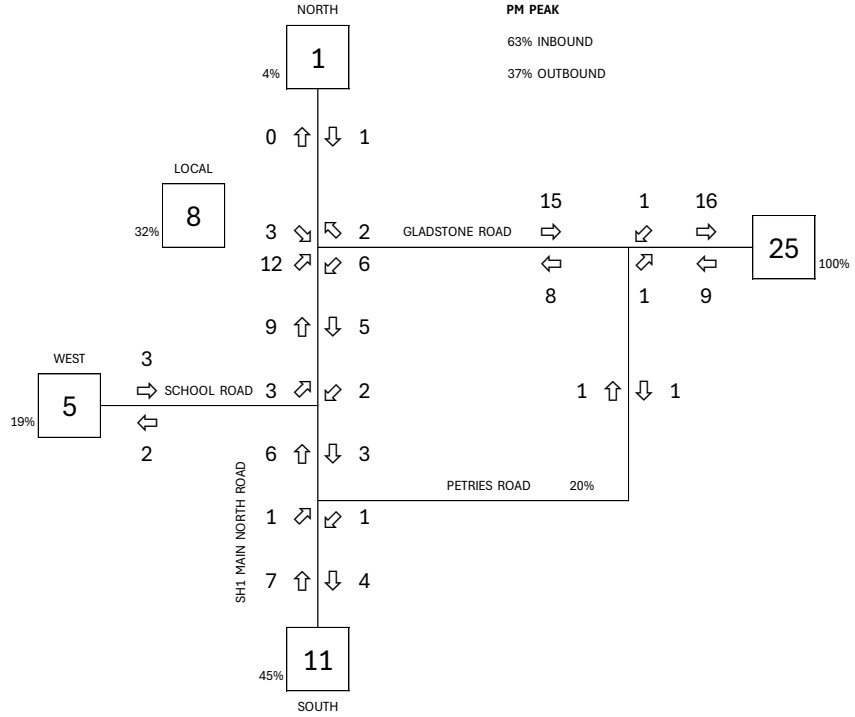

Figure 3: Assumed PM Peak Site Generated Traffic Distribution

ROAD NETWORK EFFECTS

New Gladstone Road Intersection Location and Design

65 As discussed, the ODP layout includes a collector road connection and new intersection on Gladstone Road located towards the western boundary of the Site in order to clear the overbridge ramp and safety barriers as indicated on the Woodend Bypass scheme plan.

66 This location would achieve a sightline of approximately 250m east of the intersection to the top of the overbridge, which notably exceeds the recommended safe intersection sight distance of 151m in Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* based on a 70 km/h operating speed environment and a 2.0 second reaction time. Due to the straight and flat alignment of Gladstone Road west of the indicative intersection location, sight distances in this direction would exceed 400m.

67 Given the very modest traffic volumes estimated for the Site, as well as the relatively low ambient traffic volumes on Gladstone Road past the Site, it is expected that the new intersection would operate with minimal delays and a corresponding excellent level of service without the need for auxiliary turning lanes. It is also considered that the speed environment on Gladstone Road is such that lengthy acceleration / deceleration tapers will not be required on Gladstone Road either side of the intersection. As such, it is expected that a simple T-intersection design to service the Site could be accommodated within the existing Gladstone Road boundaries and clear of the indicative Woodend Bypass overbridge ramps and safety barriers.

Road Network Connectivity

68 Initially the Site would be serviced by a single road connection to Gladstone Road. A second road connection to Gladstone Road is not physically possible due to the Bypass and the Gladstone Road overbridge ramps and safety barriers. Whilst this is not ideal in terms of network resilience, emergency service access or an evacuation route perspective, it is noted that the ODP provides for future connections to the south and west should that land be developed in time.

69 However, given the relatively low number of properties that the initial single road connection would serve, it is considered that this is acceptable and could be effectively designed and/or managed to minimise effects. It is also noted that there are already other examples of multiple properties being serviced effectively by a single road network connection. This includes all the properties on Panckhurst Drive, Simon Place, McLean Place and Parkinson Place (plus the private lanes / ROWs off Parkinson Place) that must all use the Panckhurst Drive – Petries Road intersection to access the surrounding road network.

Road Network Capacity

70 Based on the estimated current traffic volumes discussed earlier for Gladstone Road, Petries Road and Copper Beech Road, there is ample spare capacity to accommodate the modest estimated site generated traffic volumes for the Site.

71 Nominally, assuming a peak period factor of 10-12%, the Mobile Road estimate of 18,630 vehicles per day for SH1 Main North Road suggests AM and PM peak volumes of around 1,900 – 2,200 vehicles per hour. Table 6.1 of the Austroads *Guide to Traffic Management Part 3: Transport Study and Analysis Methods* indicates typical mid-block capacities of 900-1,000 vehicles per hour per lane for various types of urban arterial roads operating with interrupted flow conditions. This suggests that SH1 Main North Road is already operating near (or over) capacity through Woodend during peak periods.

72 That said, the estimated site generated traffic volumes and distribution assumptions presented in **Figure 2** and **Figure 3** are expected to result in very modest amounts of additional traffic on SH1 Main North Road of no more than 13 vehicles per hour in any one direction. This represents only around 1% of the likely peak volumes on SH1 Main North Road, and is expected to be within daily fluctuations of normal traffic flows such that the additional 13 vehicles (or less) will generally be imperceptible to other road users and will have little impact on overall traffic conditions or levels of service.

73 If the Woodend Bypass proceeds, and the reported levels of expected traffic volume reductions on SH1 Main North Road are realised, then the modest volumes of additional site generated traffic will not prevent resultant traffic volumes on SH1 Main North Road through Woodend lowering below capacity limits and improved levels of service being achieved.

Gladstone Road – SH1 Main North Road Intersection

74 The estimated site generated traffic volumes and distribution assumptions presented in **Figure 2** and **Figure 3** indicate additional traffic movements through the Gladstone Road – SH1 Main North Road intersection of around 22-23 vehicles per hour during peak periods. The majority of these movements are expected to be left turns out of Gladstone Road in the AM peak period (13 vehicles) and right turns into Gladstone Road in the PM peak period (12 vehicles). Importantly, the number of additional right turn movements out of Gladstone Road is expected to be low in both the AM peak and PM peak periods (4 vehicles and 2 vehicles respectively).

75 While it is acknowledged that vehicles undertaking the right turn manoeuvre out of Gladstone Road are likely to experience significant delay at times, those familiar with the area and who drive this route regularly are likely to adjust their route to avoid the right turn at this location during peak times. This could include turning left out of

Gladstone Road and then right into School Road, then either rerouting to say Woodend Road or turning around and heading back out of School Road to turn left onto SH1 Main North Road in order to continue north. If a right turn out of Gladstone Road is associated with a local destination it may be possible for that destination to instead be reached by rerouting through Stopforth Street to Eders Road or Parsonage Road where a left turn out onto SH1 Main North Road could then be undertaken.

76 Again, if the Woodend Bypass proceeds, and the reported levels of expected traffic volume reductions on SH1 Main North Road are realised, then the performance of the Gladstone Road SH1 Main North Road intersection will improve dramatically. Regardless, it is expected that the modest number of additional turning movements associated with site generated traffic at the Gladstone Road SH1 Main North Road intersection will have little influence on delays experienced by other traffic, associated levels of service and overall safety of the intersection.

Sustainable Transport Modes

77 The Site is reasonably well connected to the commercial, educational and recreational areas in and around Woodend for pedestrians and cyclists. The existing 2m wide grit path past the Site is well formed and provides a suitable all-weather, relatively level surface for pedestrians of all modes, ages and most abilities. West of Petries Road, there is a reasonably well-connected network of sealed footpaths / shared paths.

78 The grit path also appears to provide for cycle use and, as noted previously, connects to shared path facilities west of Petries Road.

79 To the east, the grit path provides access to Gladstone Park where there are then connections through to Pegasus.

80 The ODP for the Site provides for pedestrian and cycle facilities along the main collector road as well as possible future connections to the west and east (should there be pedestrian and / or cycle facilities provided with the Bypass).

81 From the centre of the Site, many of the likely destinations in Woodend would lie within 2km walking distance. This includes retail and service activities as well as Woodend School. Gladstone Park would be approximately 1.2km from the centre of the Site, while Pegasus Bay School would be approximately 2.0km and the Pegasus town centre would be approximately 2.6km. Waka Kotahi NZ Transport Agency's Pedestrian Network Guidance suggests using walking speeds of 4.8-5.0 km/h (1.3-1.4 m/s) when considering walking catchments. On this basis, many areas in Woodend would lie within an approximate 25-minute walk of the centre of Site, while times to reach Gladstone Park and Pegasus would be around 15 minutes and 30 minutes respectively. These times would generally

be less for pedestrians using devices such as scooters, e-scooters and mobility scooters.

82 Assuming average speeds of 20 km/h and 25km/h for cycles and e-bikes respectively, travel times to Woodend would be around 5-6 minutes while Pegasus could be reached in around 6-8 minutes.

83 While there are no public transport services in the immediate vicinity of the site, Woodend is serviced by the No.95 (City / Waikuku and Pegasus) route. This route typically operates at an hourly frequency during the day with more frequent express services to Christchurch in the morning and from Christchurch in the afternoon.

CONCLUSION

84 Overall, it is considered that the requested *LLRZ* can be supported from a transport perspective. The traffic volumes associated with *LLRZ* of the Site can be accommodated on the existing surrounding road network, and the future road network should the planned Woodend Bypass proceed.

85 Further, it appears that there would be sufficient space within the existing boundaries of Gladstone Road, and clear of the Woodend Bypass designation, to accommodate a new intersection design appropriate for the expected future traffic volumes.

86 Lastly, the Site location and proposed ODP are considered to adequately support active and sustainable transport modes including walking, cycling and access to public transport.

Dated: 5 March 2024

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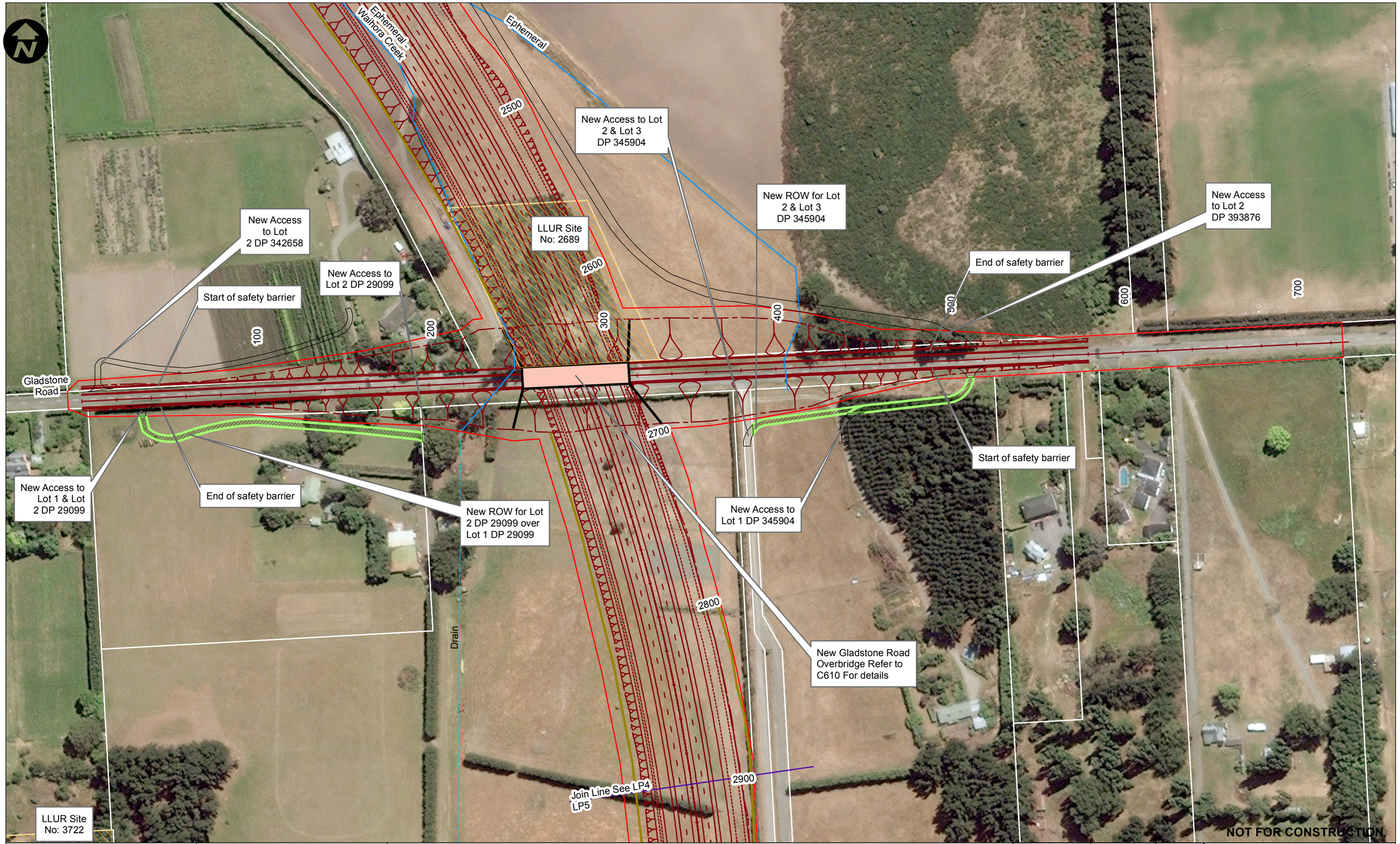
Wayne Gallot

APPENDIX 1



MWH
BUILDING A BETTER WORLD

NZ TRANSPORT AGENCY
WAKA KOTAHI

50 0 50 100 150 Metres

Refer to Sheet Legend sheet for legend Scale 1:2,000 (A3)

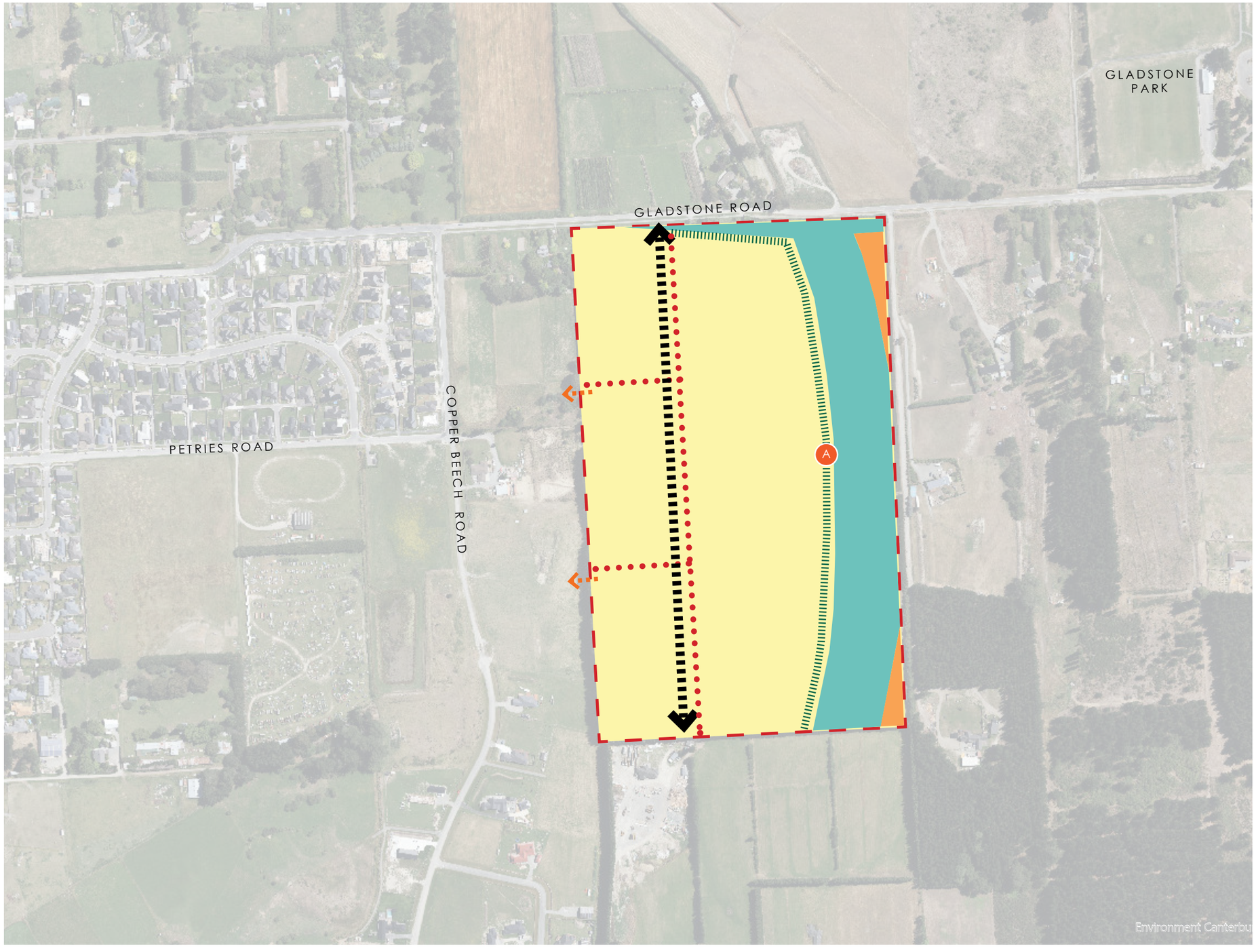
Woodend Corridor Investigation
Short Eastern Alignment
Scheme Layout Plan (MC20) Stn 0 - 700

Gladstone Road Underpass Sheet LP17 of 20 Rev: A

	Name	Date	Preliminary
Drawn	SWT	21/10/13	October 2013
Checked	NGR	21/10/13	Job Number: Z1873604
Reviewed	KHW	21/10/13	
Approved	SGW	21/10/13	

LEGEND

- Outline Development Plan Area
- Rural Lifestyle Zone
- Large Lot Residential Zone
- Woodend Bypass Designation
- Indicative (Collector) Road
- Indicative Local Road Connection
- Indicative Pedestrian-Cycle Network
- Indicative Stormwater Management Areas (size and location to be confirmed)
- A Landscape Treatment A



A. OUTLINE DEVELOPMENT PLAN (5,000@A3)

Map / image source: CANTERBURY MAPS