

Transportation Impact Report

Kerepi Plan Change

Old Renwick Road

Marlborough

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1 INTRODUCTION

This report has been prepared as supporting material for an application for a Plan Change (PC) to the Marlborough Environmental Plan under Schedule 1 of the Resource Management Act.

The purpose of this report is to provide a traffic and transportation assessment to assist in the planning analysis of the environmental risks, opportunities, costs and benefits of the Plan Change site. This report also enables the development of planning provisions or the use of existing Plan provisions to avoid, remedy or mitigate any effects appropriately for the development site.

This assessment is sufficient for its intended purpose and will appropriately enable an analysis under the Resource Management Act and the Section 32 analysis.

At the end of this report is a concluding analysis of the anticipated transportation effects of the development site in light of the Plan provisions that will form part of the application.

It is considered the transportation analysis provides an accurate statement of the anticipated effects relevant to the environmental effects addressed in this report. It is recognised that some of the effects generated by the development site will be addressed at resource consent stage. The report author considers that this is the appropriate time and process by which those effects will be addressed.

The development site has a total land area of around 12 hectares and will provide around 200 homes. The development site is located close to the Blenheim Township and on the fringes of the existing urban residential area. The town centre of Blenheim is less than two kilometres to the south of the site which provides an excellent opportunity to encourage walking/cycling and passenger transport as a preferred transport mode. There will also be a variety of section types which will allow a cross section of the community to live and play in the development site. To the west of the development site is a recently approved subdivision which is currently being completed with the possibility of further residential development to the east of the site.

The development of the land will be completed over a number of different stages which will form part of the resource consent application.

2 SITE LOCATION AND DESCRIPTION

The site is located on the northern side of Old Renwick Road near the intersection of Old Renwick Road and McLauchlan Street.

Figure 1 shows the land holdings that form part of the plan change which will be an extension to the urban area of Marlborough.



Figure 1: Site location. Source (Marlborough Smart Maps)

The development site has a total land area of around 12 hectares with the land being flat. The development site is located close to the Blenheim central area which provides an excellent opportunity to encourage walking/cycling and passenger transport as a transport mode.

The access to the Development Site has legal frontage to Old Renwick Road which forms part of the strategic road network for Blenheim. Old Renwick Road is listed as a Secondary Arterial Road in the Marlborough Environmental Plan (MEP). It is understood the council is looking to make changes to the road hierarchy to better reflect recent changes in land use.

Other arterial roads in the vicinity of the development site include the following.

- Lansdowne Street – Secondary Arterial
- Colemans Road – Collector Road
- Hutcheson Street – Collector Road

The Structure Plan also enables, by the proposed development pattern, associated rules and standards, and a variety of section types, a cross section of the community to live and play in the new residential area.

Figure 2 shows the wider area along with identified future growth areas and walk times.



Figure 2: Site Context. (Source: AysonSurvey)

As shown the development site is located on the northern fringe of the Blenheim Township. Larger Scale plans are provided within the PC Request application. The northern edge of the Blenheim Township is around a 20-minute walk from the middle of the development site.

The major employment areas are shown in green with future rezoning areas shown in bright green with the majority of people working outside the central area. Schools are shown in red.

3 TRANSPORT ENVIRONMENT

This section provides information about the existing road network. The development site has access to the wider road network from Old Renwick Road. Other connections to the wider road network are likely to include new roads links into the adjacent development to the west and then onto Old Renwick Road via Rose Manor Drive.

3.1 Speeds

Figure 3 shows the posted speed limits for this part of Blenheim.

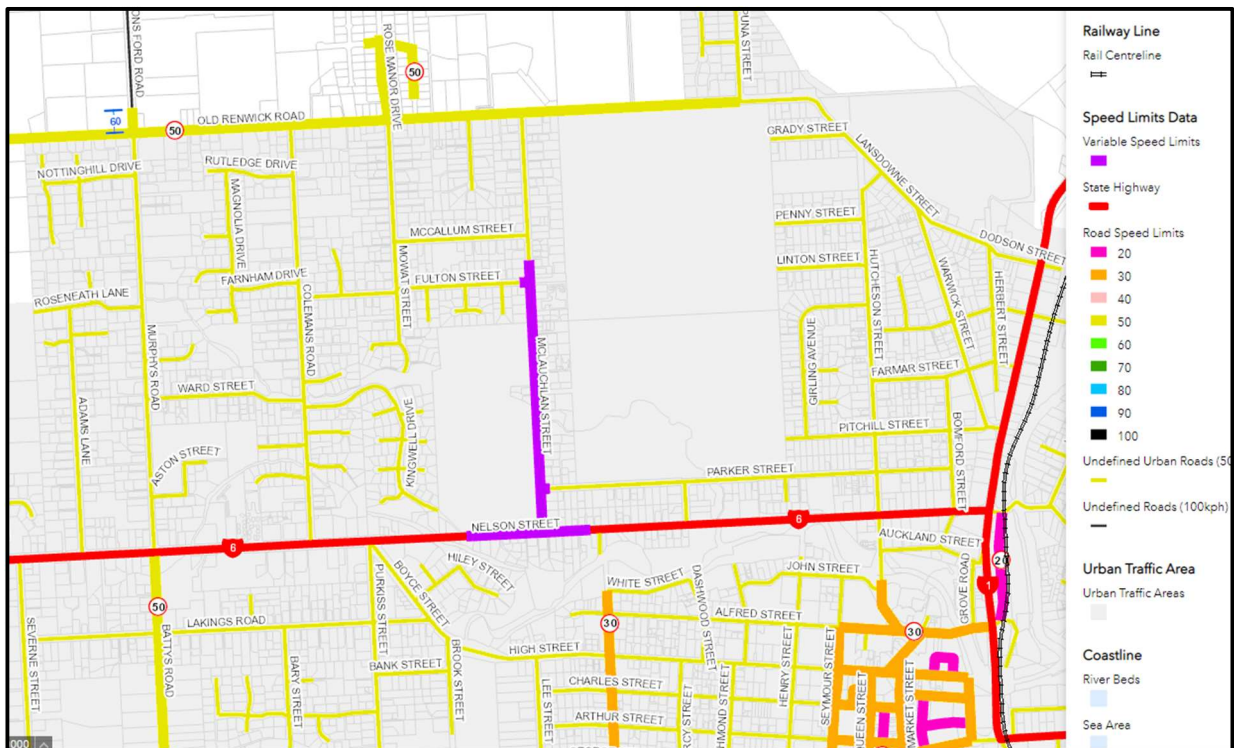


Figure3: Speed Map. (Source: Smart Maps)

As shown the posted speed limit for all of the roads near the development is 50 km/h except for the variable school limit of 40 km/h.

The variable speed limit on McLauchlan Street has been implemented to improve safety in the vicinity of the nearby schools. It is understood that the 40 km/h may reduce to 30km/h as part of speed changes by Waka Kotahi.

Figure 4 provides the current bus route in the vicinity of the development site.

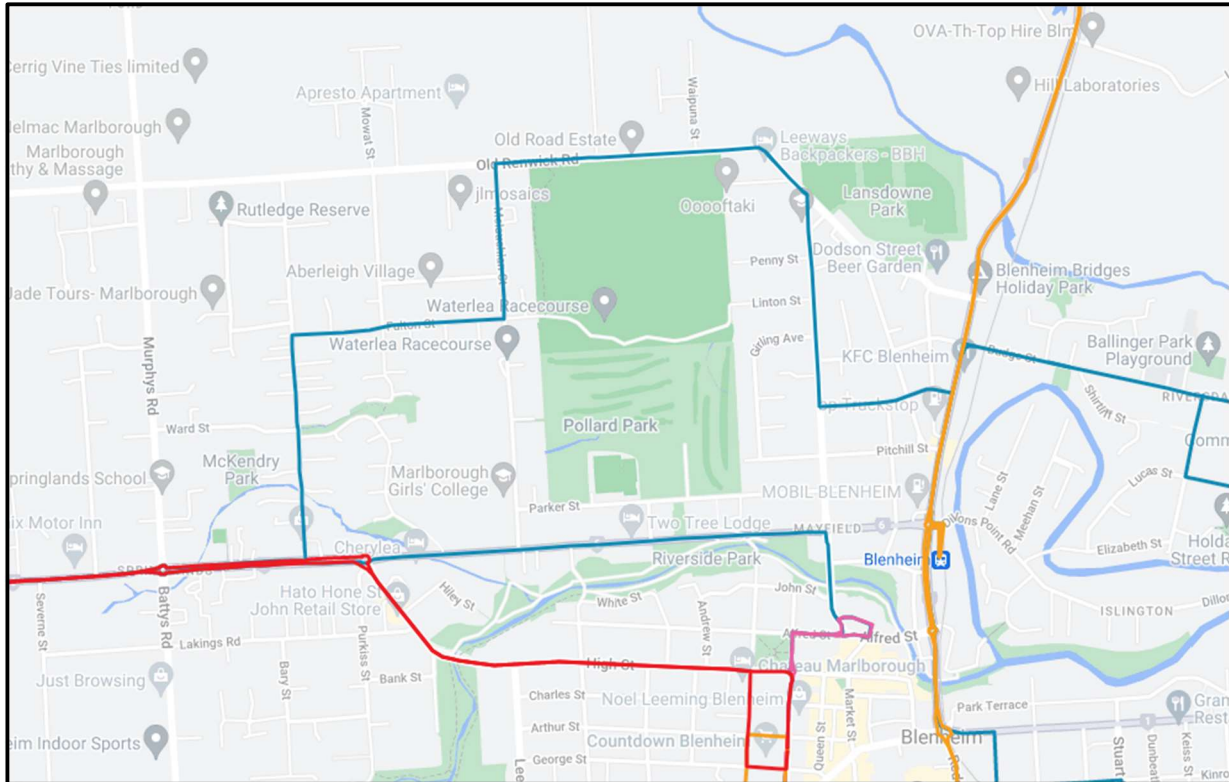


Figure 4: Bus Routes

As shown the bus route (in blue) provides a linkage from the town centre to the development site. It should be noted that is a one -way loop service that operates between 9 am and 3 pm. The service is being reviewed. The location of the development site will provide opportunities to improve the service.

3.2 Old Renwick Road

Old Renwick Road is an east – west connecting road that sits on the urban fringe of Blenheim. It provides a connection from SH1 to the east and SH6 to the west. As a result of other urban developments near the Development Site, the road formation of Old Renwick Road is currently undergoing change. This change is seeing the rural road being upgraded from a two-lane road with no kerb and channel or footpath to a standard urban road with new infrastructure towards the west. Better intersection controls and flush medians are also being installed as part of the redevelopment of Old Renwick Road with the new roundabout at Old Renwick Road and Rose Manor Drive being an example of this change.

Figure 5 shows the typical road environment along the frontage of the development site.



Figure 5: Old Renwick Road looking to the west

As shown, there is a footpath and kerb along the southern side of the road opposite the development site. Along the development side of the road there is no kerb or footpath provided with a relatively narrow sealed shoulder. The road is marked with edge lines along both sides of the road with a dashed centre line defining the traffic lanes. The road is around 6.5 metres wide between edge lines. A parking lane is marked along the southern side of the road.

Old Renwick Road, next to the Development Site carries around 4,000 vehicles per day. The traffic flows increase as you head to the east and west of the Development Site. The north-south connecting roads of Lansdowne Street and Colemans Road are important links for the Development Site to the wider road network and the Blenheim township.

3.3 Rose Manor Drive

Rose Manor Drive is located within a new development that is to the west of the Development Site. The Development Site is expected to link to Rose Manor Drive through a newly formed connection, Oakley Avenue.

Rose Manor Drive connects to Old Renwick Road through a newly constructed roundabout.

Figure 6 shows the road environment along Rose Manor Drive.



Figure 6: Rose Manor Drive

The new roads within the subdivision have been built to the most recent standard which seeks to control the operating speed through detailed design. Narrower roads with inset parking bays and landscaping are a typical feature of this new design philosophy. The roads within this development are typically around 6.0 metres wide with inset parking bays.

There are footpaths along both sides of the road, along with kerb and channel. There are no road markings along the roads in the new development except at the intersections.

3.4 McLauchlan Street

McLauchlan Street is one of three north-south connecting roads that could be used by future residents of the Development Site. It is located to the east of Development Site and provides a link to SH6 to the south. McLauchlan Street carries around 1,400 vehicles per day. It should be noted that the traffic volumes are higher at the south end of this street due to the schools in the area.

Figure 7 shows the general road environment along McLauchlan Street.



Figure 7: McLachlan Street. (Source: Google Maps)

As shown, there are footpaths along both sides of the road along with kerb and channel. McLachlan Street also forms part of the public transport network for Blenheim. The road is marked with a dashed centre line and standard markings at the intersections along its length.

The road is around 11.5 metres wide from kerb to kerb and provides for two-way traffic and parking along both sides of the road.

3.5 Lansdowne Street

Lansdowne Street is located further to the east of the Development Site and is likely to be the preferred route for residents of the Development Site travelling to the town centre of Blenheim via Hutcheson Street.

Lansdowne Street has a similar road environment to Old Renwick Road. Some parts of the road look more rural along one side of the road (due to sportsgrounds). Where development has occurred the level of infrastructure such as kerb, channel and footpaths have been installed.

The preferred route to the central area will be via Hutcheson Street which forms a tee intersection with Lansdowne Street.

The roadway is wider than Old Renwick Road with the sealed width being around 12 metres wide. The road is marked with a solid centre line for most of its length. The traffic volumes along Lansdowne Street are around 2,800 vehicles per day.

3.6 Hutcheson Street

Hutcheson Street connects Lansdowne Street with Nelson Street (SH6). It is a straight road with a kerb-to-kerb width of around 12 metres. It has kerb, channel and footpaths along both sides of the road.

Figure 8 shows the road environment along Hutcheson Street.



Figure 8: Hutcheson Street. (Source: Google Maps)

The road is marked with a dashed centre line (which is missing due to road works) with solid lines around intersections. It was noted that the tee intersections are uncontrolled, and the crossroad intersections are controlled by give ways signs.

The traffic volumes are around 4,500 vehicles per day at the northern end and 6,000 vehicles per day at the southern end of the road.

Hutcheson Street is one of three roads on the northern side of Blenheim that has a bridge across the Taylor River, which will make it one of the key routes into the township.

The intersection of Hutcheson Street and SH6 is a roundabout which provides a high level of service for this busy junction.

3.7 Colemans Road

Colemans Road is located to the west of the Development Site and connects Old Renwick Road to Nelson Street (SH6).

Figure 9 shows the typical road environment along Colemans Road.



Figure 9: Colemans Road. (Source: Google Maps)

Colemans Road is around 9.5 metres wide with kerb and channel along both sides of the road. There is a footpath along the eastern side of the road with shorter sections of footpath along the western side of the road.

The road is marked with standard intersection markings with generally no centre line along its length.

Coleman Road also forms part of the public transport network for Blenheim.

The intersection of Coleman Road and SH6 provides for all vehicle movements and is a painted seagull junction.

Colemans Road provides an important link into the township of Blenheim with Boyce Street and High Street. There is a bridge crossing over Taylors River at High Street.

Colemans Road carries around 2,900 vehicles per day at the northern end and around 4,000 vehicles per day at its southern end near Nelson Street.

4 CRASH HISTORY

This section provides details of the crash history for the key roads related to the Development Site. A detailed search of the Waka Kotahi crash database was carried out for the five-year period from 2017 to 2021. The part year of 2022 was also reviewed and considered as part of the crash analysis.

Figure 10 shows the crashes spread across the search area for all reported crashes. It should be noted that the crash locations are approximate.

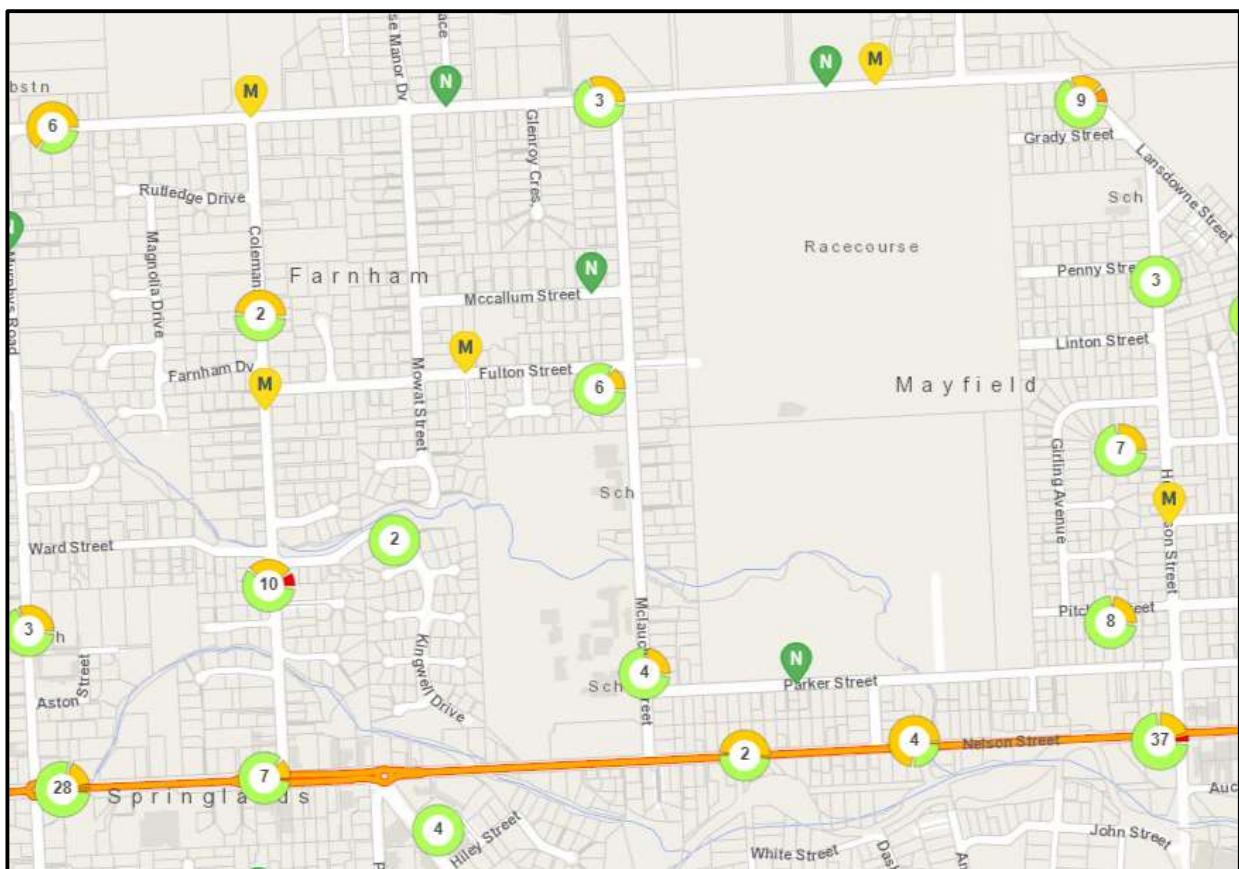


Figure 10: Crash Data. (Source: Waka Kotahi)

As shown, there are a number of crashes within the search area with one fatal, one serious, 13 minor and 56 non injury crashes reported from the roads and intersections noted above. For the purpose of the analysis only the reported injury crashes are considered.

Non-injury crashes are shown in light green, minor injury crashes in orange, serious injury crashes shown in dark orange and fatal crashes as red

Figure 11 shows the reported injury crashes for the area.

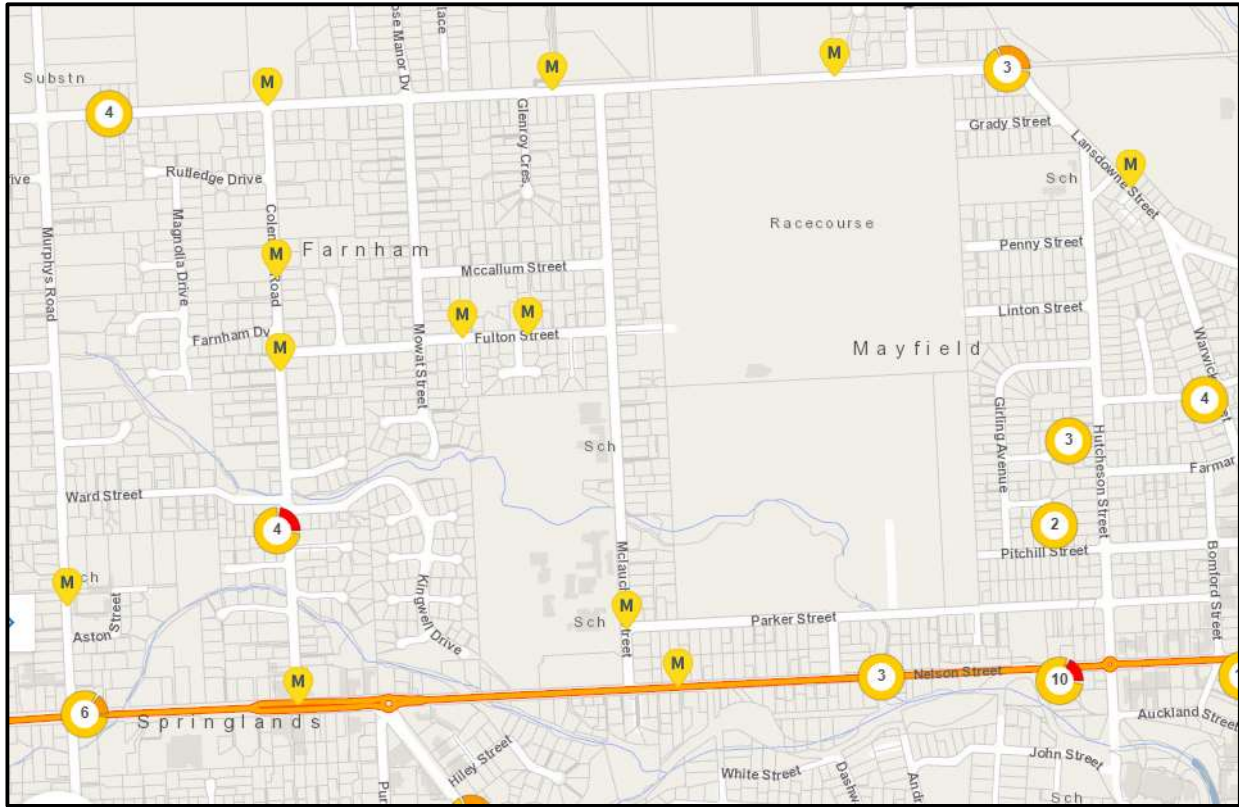


Figure 11: Reported injury Crashes 2017 to 2022. (Source: Waka Kotahi)

The reported injury crashes are evenly spread across the adjacent road network with the exceptions of the intersection of Hutcheson Street and Nelson Street and the intersection of Old Renwick Road and Lansdowne Street.

Table 1 provides the details of the crashes for the roads noted above.

Road	Location	Date	Collision Reference	Accident Description	Severity
Old Renwick Road	At Colemans Road	23/01/2018	201810492	The driver of vehicle was passing a cyclist and turned left across his path. The cyclist and car collided, throwing the cyclist from his bike.	Minor
	Outside 45 Old Renwick Road	06/03/2020	2020147479	A driver heading east on Old Renwick Road drifted across the road and crashed into a parked car that pushed it into an oncoming car.	Minor
	Outside 26 Old Renwick Road	09/09/2019	201966408	A driver travelling west on Old Renwick Road has lost control of their vehicle and crashed into a power pole on the opposite side of the road.	Minor

	At Lansdowne Street	11/02/2018	201811280	A driver travelling west and lost control on the corner ending up hitting fence on opposite side of the road.	Minor
		05/12/2020	2020172804	A driver travelling west and lost control on the corner ending up hitting fence and ending up half into the drainage ditch.	Minor
		19/09/2021	2021200721	A driver heading west on Old Renwick Road has crossed the oncoming lane and gone up onto the grass verge. The vehicle has crashed into a power pole.	Serious
Hutcheson Street	At Farmar Street	17/05/2021	2021188120	A driver turning right into Farmer Street has crashed into a southbound vehicle on Hutcheson Street.	Minor
		14/05/2021	2021187724	A driver turning right into Farmer Street has crashed into a southbound vehicle on Hutcheson Street.	Minor
	At Pitchill Street	22/07/2017	201716743	A driver heading north on Hutcheson Street has turned left across the path of a cyclist also heading north.	Minor
Hutcheson Street	At Nelson Street (SH6)	17/06/2020	2020155387	A driver heading south on Hutcheson Street has failed to give way and has been struck by a vehicle heading east on Nelson Street.	Minor
		04/10/2017	201717950	A driver heading south on Hutcheson Street has failed to give way and has been struck by a vehicle heading east on Nelson Street	Minor
		10/05/2018	201814189	A driver heading south on Hutcheson Street has failed to give way and has been struck by a vehicle heading east on Nelson Street.	Minor
		20/09/2017	201717489	A driver heading south on Hutcheson Street has failed to give way and has been struck by a cyclist heading east on Nelson Street.	Minor

		18/09/2017	201717548	A cyclist heading north into the roundabout has been struck by a vehicle heading east on Nelson Street.	Minor
		31/05/2022	2022224966	A driver heading east on Nelson Street has failed to give way and crashed into a vehicle coming from the right.	Minor
		04/07/2022	2022228128	A cyclist heading north into the roundabout has been struck by a vehicle heading east on Nelson Street.	Minor
McLauchlan Street	At Parker Street	18/06/2022	2022226452	A driver turning right into Parker Street has lost control and collided with a tree.	Minor
Colemans Road	Outside 66 Colemans Road	08/12/2018	201820289	A driver heading south on Colemans Road has lost control of their vehicle and crashed into an oncoming vehicle then into the fence.	Minor
	Outside 61 Colemans Road	17/04/2021	2021184823	A driver heading north on Colemans Road has crashed into a parked vehicle.	Minor
	At Kingwell Drive	30/04/2022	2022220589	A driver turning right out of Kingwell Drive has lost control of their vehicle.	Minor
	Outside 18 Colemans Road	27/07/2021	2021196491	A driver heading south on Colemans Road has collided with a parked car.	Minor
	At Orchard Lane	19/06/2017	201700168	A pedestrian crossing the road while talking on the phone has been struck by a vehicle heading north on Colemans Road.	Fatal
	At Nelson Street	09/09/2017	201717772	A driver heading west on Nelson Street has collided with a cyclist coming from Colemans Road.	Minor

Table 1: Reported Crashes 2017 to 2022 (Source: Waka Kotahi)

As shown there are a number of crashes on the identified roads and intersections. There are some common causes of movement factor in reviewing the crash data. The intersection of Hutcheson Street and Nelson Street has a number of drivers failing to give way for the southbound movement from Hutcheson Street and also east bound on Nelson Street. Colemans Road has a number of crashes with drivers hitting a parked vehicle. The corner at the

intersection of Old Renwick Road and Lansdowne Street has had three drivers that have lost control when heading west and negotiating the corner.

5 THE PLAN CHANGE

The PC seeks to rezone the current site to residential use. The approved Plan Change area will be subject to the various Policies, Objectives, Rules and Standards as set out in the Marlborough Environmental Plan (MEP).

The PPCR will provide for around 200 lots for the construction of new homes. The layout of the subdivision will be subject to separate consenting processes and the actual number of houses could be more or less than 200 over time depending on opportunities and constraints. For the purpose of the assessment below the figure of 200 homes has been used for the high-level analysis.

The Plan Change area will be developed in stages with around 30 to 40 lots being made available each year. The land will be developed roughly into a variety of lots sizes from 150 m² up to 700 m². It is also proposed to provide internal pathways and reserves.

Future development of the land is expected to meet the provisions of the MEP. Where the requirements of the MEP cannot be met a resource consent will be required for any non-compliances. The infrastructure required to address any of the effects relating to the development of the land will rest with the future subdivision applications and requirements of the MEP.

The established mechanisms to manage effects of the development are included in the volumes and sections within the Marlborough Environment Plan. This is covered in the next Section.

Figure 12 shows the Development Site along with an indicative subdivision layout.



Figure 12: Structure Plan

The Structure Plan shows the indicative road connection to the south and Old Renwick Road. A connection is also shown to the adjacent development to the west which connects to Rose Manor Drive. There are also discussions about connecting Oakley Avenue to the property to the east through Lot 81.

Due to the location of the Development Site being around two kilometres from the Blenheim town centre, it will be able to provide excellent opportunities to enable and encourage alternative transport modes rather than relying on the use of a vehicle.

6 PLANNING

6.1 General

This section provides information relating to the Marlborough Environment Plan and in particular the key outcomes which the PPCR needs to meet. There are various sections in the MEP that set direction for development. The parts relevant to Transportation matters are found in various sections of the MEP include Volume 1 (Policy) Chapter 17, Volume 2 (Rules) Chapter 2 and Chapter 24 and Volume 3 (Appendices) Appendix 17.

6.2 Volume 1 - Chapter 17 – Transportation

Chapter 17 – Transportation of the MEP provides the policy direction for the region with identified issues and a set of objectives and policies to address the issues. Land Transport is covered under Issue 17C, Issue 17D and Issue 17E and the corresponding Objectives being Objective 17.3, 17.4, 17.5 and 17.6. These are as follows:

Issue 17C - The land transport network is an important regional resource, providing for the movement of people, goods, services and resources. It is important to ensure an efficient infrastructure is maintained to enable people and communities to provide for their economic and social wellbeing.

Objective 17.3 – An efficient land transport network that recognises and provides for different users.

Issue 17D – Land use, water and subdivision activities can have adverse effects on the sustainable use management and planned function of the land transport network and how this network supports the district.

Objective 17.4 – Conflict between new and altered land use and subdivision activities and use of the land transport network is avoided, remedied or mitigated.

Objective 17.5 – The safety and accessibility of roads for all users as they travel along the road network in general is maintained and/or improved.

Issue 17E – The land transport network can have adverse effects on Marlborough’s natural and physical resources and the wellbeing of the community.

Objective 17.6 – Development, maintenance and use of the land transport network in a way that Marlborough’s natural and physical resources and the health, safety, and wellbeing of the community are maintained.

The Development Site is able to meet these high-level outcomes that are contained in the Marlborough Environment Plan. The development is well located in terms of the adjacent network and its proximity to the central area. Internally the development will also meet these outcomes with any potential effects being considered, managed and addressed as part of the

subdivision process and the rules and standards contained in the relevant sections of the MEP. These sections are Volume 2 Chapters 2, 5 and 24.

The method of achieving the objectives and policies is also provided within Sections 17.M.6 through to 17.M.16. The mechanisms to achieve the objectives noted above are through the different strategic documents such as the Regional Land Transport Plan, a Walking and Cycling Strategy, Long Term Plan, MEP Rules and Standards and the Code of Practice for Subdivision and Development.

Overall, the Plan Change area aligns well with the expected outcomes of the Marlborough Environment Plan with any deviations being controlled and managed by Rules and standards, so any effects are less than minor.

6.3 Volume 2 - Chapter – 2 and 5 – General and Residential Rules

These chapters provide the detail around rules and standards that are required to be met for residential areas and across the whole district. Again, these can be met for development of the Plan Change area with any exceptions being controlled by the consenting process.

Chapter 2 – Transportation set out a number of Rules relating to the design and formation of parking areas, vehicle manoeuvring, loading and vehicle crossings. The subdivision consents lodged for the development are expected to meet the requirements of Chapter 2. If there are any non-compliances, these will be sought and assessed as part of the resource consent process.

Effects from the subdivision will be managed and controlled by the consent process and the provisions within the Marlborough Environment Plan.

6.4 Chapter 24 - Subdivision

These chapters provide the Rules that are required to be met for subdivisions across the whole district. Again, these can be met for development of the Plan Change area with any exceptions being controlled by the consenting process.

Notably Rule 24.1.4 states the following:

Where access is to be provided to a legal road, the applicant must provide roading, and access to that roading, for all allotments. The applicant must upgrade, or contribute to the upgrade of, the road where the upgrade is required as a consequence of the subdivision.

This Rule provides the mechanism for the management of effects relating to the new intersection that will be constructed onto Old Renwick Road.

Access standards are provided in Rule 24.3.1.3. which will be met and any non-compliances will be addressed as part of the resource consent process for subdivision.

Effects from the subdivision will be managed and controlled by the consent process and the provisions within the Marlborough Environment Plan. Any non-compliances with the MEP will be assessed at the time of subdivision.

The new road connection from the Plan change area on to Old Renwick Road will not be able to meet the intersection separation requirement of NZS4404: and therefore, the Marlborough Code of Practice. This standard requires 150 metres from centre line to centreline whereas 85 metres is provided. This shortfall is addressed with the provision of a right turn bay or flush median, so any effects are less than minor.

7 NETWORK ANALYSIS

7.1 General

This section considers the network issues in the existing network that may require some attention by way of improvements or some other form of migration, whether that is immediately or sometime in the future. It should be noted that some of the gaps in the network are existing deficiencies that need to be addressed regardless of this PC. That said the Development Site will add traffic volumes and so depending on the timing of stages may well require some mitigation measures to address any effects.

In terms of the Development Site the most likely route choices for future residents will be either via Hutcheson Street or Colemans Road. In regard to Colemans Road some residents will use Rose Manor Drive to access the wider road network, and some will use Old Renwick Road. Other route choices are less attractive due to the lack of connectivity such as a bridge crossing to access the central area of Blenheim. Accordingly, it is expected that around 80% of the traffic will use one of two roads (Colemans Road and Hutcheson Street) to access the wider road network. The remaining 20% will use Old Renwick Road to head towards the west (5%) or east (15%). Cyclists are expected to use McLauchlan Street. From that point the traffic will become more dispersed with any impacts being immaterial against the network as a whole.

Figure 13 shows the typical routes residents may use to and from the development site.

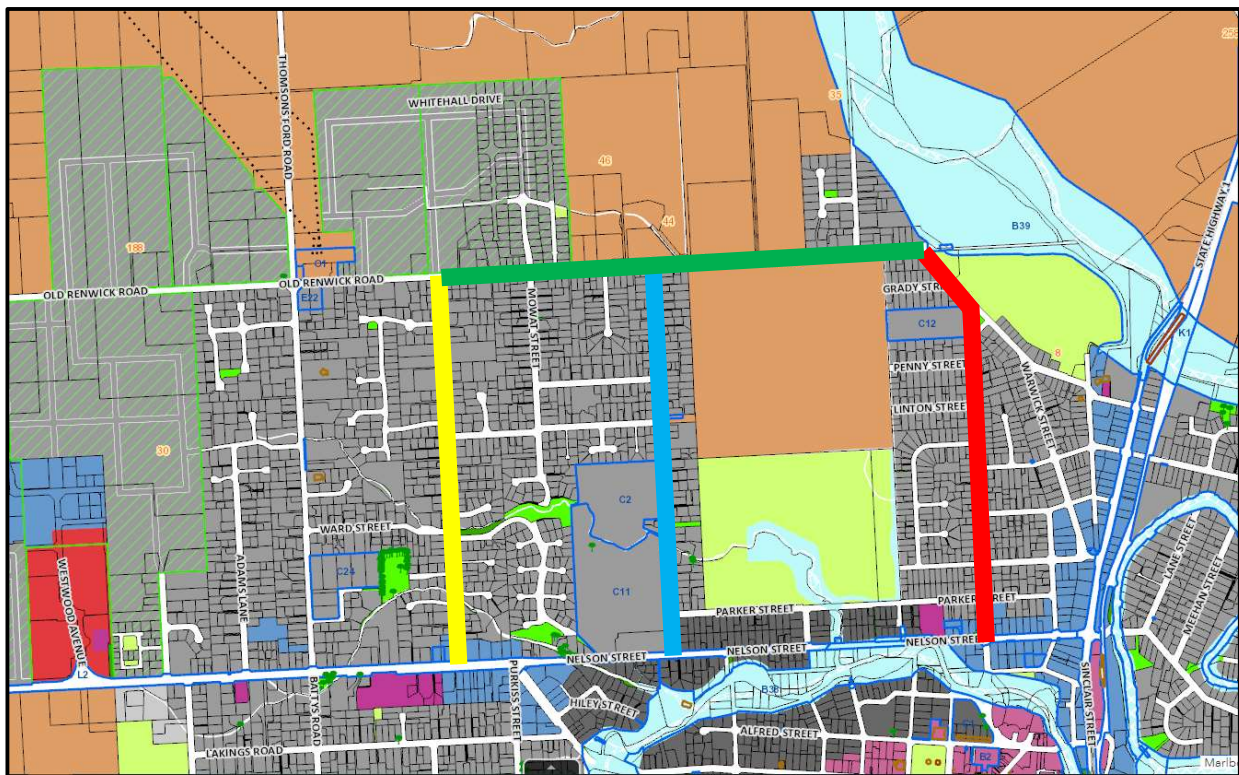


Figure 13: Trip routes

It should be noted that there are different employment and service areas within the Blenheim township. This includes the Westwood Development to the west of the Plan change, Industrial area (East side of Blenheim) and Riverlands Estate to the south of the Development Site. There are also rural employment opportunities such as viticulture and other land-based activities. The spread of the different employment opportunities will also lead to a more dispersed trip distribution. However, it is expected that most of the movements will be to the south of the Development Site.

This section looks at the Plan change area and provides an analysis of the road network. The assessment of the potential positive and other effects, shortfalls in the adjacent road network and mitigation measures are recommended below, where required.

It should be noted that the assessment looks at the impacts which will form the framework for future development of the Plan Change area. Appropriate analysis and assessment will be prepared as part of the future subdivisions which will include an assessment of the traffic impacts, road layouts and any measures required to address any adverse effects. The consent process is the planning mechanism to achieve future needs of the development and managing the effects.

The key aspects of the Development Site will be the traffic generated from the site, the connections to the wider road network, the cycle and pedestrian linkages and its proximity and location to Blenheim township.

The potential negative and positive impacts of the Development Site on the wider road network are likely to be most evident at its new intersection with Old Renwick Road. The adjacent immediate road network is operating below its potential operating capacity except for some locations, mainly at intersections with Nelson Street. The impacts of the Development Site become less noticeable as you move further from the site and more road connections are available.

7.1 Traffic Generation

The calculation of trip generation for the developments are usually based on research undertaken by NZTA and is set out in Research Report 453 (RR453). While this document has been updated recently to reflect changes in travel choice that has occurred for a number of reasons, it still is useful as a conservative assessment tool for calculating the trip generation that could occur at the upper limits. The document RR453 provides figures of 10.7 per dwelling per day or around 1.3 trips per home in the peak hour.

More recent traffic count data for residential development shows that trip rates have reduced from this high figure of 10.7 per day. Even some of the more recent information from Waka Kotahi research shows trip rates between six and eight movements per household. This aligns well with surveys conducted on urban developments that show similar rates.

As noted above, the location of the Development Site is placed to make use of alternative transport modes including walking and cycling. This will further reduce trip generation rates. There is also the public transport nearby.

For the purpose of analysis, the number of new trips from the Development Site is expected to fall within the range of 120 to 200 vehicles per hour in the peaks. This is based on trip rates of six to ten, respectively. Based on these assumptions above, a trip generation rate of around 7.5 vehicles per day per dwelling has been used. The 200 homes are expected to generate around 1,500 vehicles per day or 150 vehicles in the peak hour.

7.2 Trip Distribution

As shown above, the Development Site is well located to take advantage of the connections provided by the adjacent road network. Blenheim's grid like road network provides a number of alternative routes with access across Taylor River being the only obstruction. Regardless of this obstruction, the Development Site still has ready access to the wider Marlborough area.

It is assumed that most of the residents of the Development Site will work and require goods and services from the Town Centre. However, it is noted that with rural townships the employment zones are much more variable due to the large rural area (and production). The diverse nature of the origin and destination will lead to a greater dispersion of the trip routes and trip distribution across the wider road network.

The following simple assumptions have been made for the purpose of analysis. Most of the residents from the Development Site will work or have business in the Blenheim Township or industrial areas to the east and south of Blenheim such as Riverlands. The traffic generated by these residents is expected to mostly go towards Lansdowne Street as this is a simple left turn and a right turn down Hutcheson Street to access the northern part of Blenheim. The rest of the traffic will use Colemans Road. The split of the 80% of the development traffic between Hutcheson Street and Colemans Road is 65% and 35% respectively. This equates to around 78 vehicles per hour using Hutcheson Street at peak times with 42 vehicles per hour using Colemans Road.

The remaining 20% of traffic (around 30 vehicles) from the Development Site will use Old Renwick Road to access other areas of Blenheim such as the Westwood Development to the west or the industrial/commercial areas to the east.

The flows from the Development Site are considered to be at the low to moderate end with one vehicle every 30 seconds accessing the adjacent road network via Old Renwick Road which then reduces down very quickly with the multiple route choices.

An analysis of the effect of trip rates on traffic flows has been carried out to better understand the potential effects on the adjacent roads. The analysis included using trips rates of 6.0, 7.5 and 10 movements per dwelling per hour.

Table 2 shows the expected traffic volumes for different trip rates.

Street	Trip Rate 0.6	Trip rate 7.5	Trip 10.0
Old Renwick Road	120	150	200
Colemans Road	34	42	56
Hutcheson Street	62	78	104
To the East on Old Renwick Road	18	22	30
To the west on Old Renwick Road	6	8	10
Total	120	150	200

Table 2: Trip Rate Analysis

The table above shows the different flows for different trip rates. It should be noted that it is assumed that all traffic will not use Rose Manor Drive to access the wider road network in practice may not be the case. Most of the traffic movements are to the south and east of the development site.

7.3 Old Renwick Road

As noted above Old Renwick Road is undergoing a change. As more development on the northern side occurs, the need for appropriate roading standards to provide for this growth is required and will be done. There are some complications around the roading network and how it is improved to accommodate for the increase in traffic. For example, some of the development is located on rear sections with the existing properties/homes remaining alongside Old Renwick Road. While the developments will address the change in road frontage, typically it only relates to that frontage. Council will collect financial contributions from developers to upgrade the road network as required. This can be done through the Rules within the MEP.

The Development Site has a large rear section with a legal road frontage to Old Renwick Road of only around 30 metres which includes a stream.

As noted in past Plan Change requests there is a need to upgrade Old Renwick Road to accommodate growth in the area which has already occurred or is planned. This Development Site is expected to contribute to that upgrade which will include a right turn bay to access the Plan Change area at the new intersection. This intersection will be able to accommodate the expected flows from the Development Site with the increased number of trips on the adjacent road being between 140 to 200 vehicle movements. As noted above these are expected to be

dispersed across the wider road network with most going towards the east and the various employment areas.

Old Renwick Road carries around 4,000 vehicles per day with the Development Site adding around 1,500 vehicles per day. While this is a noticeable increase in terms of percentage, the adjacent network is able to accommodate this increase as the total flow is below the operating capacity of Old Renwick Road. The flows will also be split towards the west and east from the Development Site which will reduce the impact.

7.4 Rose Manor Drive

Rose Manor Drive is a new road recently built to serve the subdivision. At its intersection with Old Renwick Road and Mowat Street a roundabout has been installed. This intersection control (Roundabout) provides an excellent and safe connection to the wider road network for potential residents of the Plan Change area. Access to the roundabout will be via Old Renwick Road, or via Oakley Avenue and Rose Manor Drive.

Most traffic from the Development Site that uses the new roundabout is expected to continue west on Old Renwick Road and make a left turn onto Colemans Drive. Some of the vehicles will head further east and to Westwood and beyond. Vehicles heading towards the east are more likely to use the new intersection onto Old Renwick Road created by the Development Site.

Rose Manor Drive provides a design which encourages low speeds through its narrow width. While the road is relatively narrow it is sufficiently wide enough to allow for unobstructed two-way flow. The roundabout at its intersection with Old Renwick Road will accommodate the increased flows from the Development Site.

Accordingly, any effects are expected to be accommodated within the road network.

7.5 Wider Road Network

As noted above the flows as you move away from the Development Site start to disperse fairly quickly with multiple route choices depending on the user's origin and destination. Hourly flows along Colemans Road and Hutcheson Street are anticipated to be around 36 vehicles per hour and 68 vehicles per respectively. These are likely to be less as the assumptions are coarse and do not account for rural employment area with the analysis focusing on the larger employment zones of Blenheim township, Riverlands, Westwood and the industrial area east of Blenheim. There are many wineries, a timber mill and other smaller activities that will attract trips.

There are some key intersections that will see more traffic at peak times including the following junctions:

- Intersection SH1 and Nelson Street (SH6)
- Intersection of Lansdowne Street and Hutcheson Street
- Intersection of Hutcheson Street and Nelson Street

- Intersection of Old Renwick Road and Colemans Road
- Intersection of Colemans Road and Nelson Street

Some of these intersections at peak times have a low level of congestion with the Level of Service (LoS) still being within normally acceptable thresholds (better than LoS D) for an urban junction. The relatively small increases in additional traffic across the road network and through these intersections is likely to be indiscernible to road users with the LoS remaining within the acceptable LoS thresholds.

The only exception could be the SH1 intersection which experiences significant congestion at peak times and is estimated to be operating at LoS E or F at these times. The availability of different route choices will allow new trips from the Development Site to disperse wider and find alternative routes and avoid the SH 1 intersection

7.6 Road Linkages and Network Resilience

The Development Site will include linkages to the ~~east and~~ west via Oakley Avenue and Rose Manor Drive. This will provide a level of resilience to the road network should there be a closure of any the roads within the Development Site and also within the adjacent subdivisions.

7.7 Cyclists and Pedestrians

The PPCR area is located very close to the city centre (~~around two kilometres as the crow flies~~). This will see the possibility of increased use of alternative transport as the preferred form of transport for work and recreational trips. This aligns well with the current government's focus on promoting more sustainable transport modes.

Cycle connections are available from McLauchlan Street that link through Pollard Park and onto the Taylor River Trail and the wider area. Cyclists would need to ride along McLauchlan Street to access the off-road facility. McLauchlan Street carries around 1,400 vehicles per day at its northern end and much higher at the SH6 end. The kerb to kerb width is around 11.5 metres wide. This environment will be safe for cyclists to use as there is enough width for these users to be clear of the moving traffic lane. Consideration could be given to the marking of cycle lanes. This would assist in reducing speeds and provide a dedicated space for these users.

The popularity of e-bikes will further encourage less use of cars. There is also a public bus route past the front of the Development Site on Old Renwick Road. This provides alternative choices to the car with the Development Site being able to reduce vehicle use but currently is underused due to its scheduling and lack of incentive due to private vehicle being more accessible and convenient.

The location of the Development Site is considered to have a positive effect with the development being ideally located to promote the use of alternative transport. It is understood that council is using the Network Operating Framework (NOF) to prioritise cycle routes.

7.8 Road Safety

Generally, the road network that will be used for the Development Site is operating safely. There are only a couple of isolated locations within the wider road network that will require improvement projects to address existing problems.

It is likely that with no improvements these locations could see an increase in the number of crashes with or without traffic from the Development Site. Otherwise, there are no obvious safety deficiencies in the road network that the future traffic from the Plan Change area will use apart from the three identified below.

Corner at Old Renwick Road and Lansdowne Street

As noted above in this report the crash data suggests that there is an existing deficiency at the corner of Old Renwick Road and Lansdowne Street. There has been three injury and six non injury crashes at this location. The crashes are mostly loss of control with speed being a cause factor.

The crash location has 35 km/h speed advisory chevron boards for both directions which are positioned correctly. The injury crashes all occurred in the westbound direction. There are power poles along the road that could suggest to motorists that the road goes straight ahead. The nature of the intersection suggests more delineation and signage may be required.

This crash location should be investigated and improvements made to make it safer.

Colemans Road

There have been seven non-injury crashes, five minor injury crashes and one fatal crash along Colemans Road. The common factor in these reported crashes is speed with loss of control and colliding with parked vehicles being noted in the Traffic Crash Reports (TCR).

Colemans Road is around 9.5 metres wide and straight which encourages higher speeds on the sections where the parking demand is low (being most of the street).

The Development Site will increase the number of vehicles using this road for access to the north and south.

Possible treatments would need to focus on bringing the operating speed down and possibly providing more guidance to motorists using this route.

Nelson Street/Hutcheson Street Intersection

There have been seven minor injury crashes and 23 non-injury crashes at this busy intersection.

Four of the crashes involved vehicles heading south and the other crashes involved movements associated with the western approach. Motorists failed to give way to traffic on the roundabout.

A crash study should be undertaken at this intersection to determine if there are any improvements that can be implemented to improve road safety.

The Development Site will also add additional traffic to this intersection. The increase in the number of interactions at the intersection will lead to a higher exposure and number of conflicts. This will in turn lead to a greater chance of crashes occurring at the intersection. The vehicle speeds are expected to remain low and therefore the crash severity is likely to be damage-only crashes.

8 NETWORK IMPROVEMENTS

The PC area will add around 1,500 vehicles per day with the effect mostly being felt on Old Renwick Road as the first points of access to the wider road network. While there are some existing deficiencies within the surrounding road network, there is a need to provide some improvements to the road network to accommodate the Development Site.

There are rules in the MEP that provide the mechanisms to gain funds or require works to carry out improvements to roads as a result of subdivisions. The subdivision process is the best process to manage the effects and the improvement requirements.

8.1 Old Renwick Road

As noted above Old Renwick Road has a number of different levels of service with regard to its formation including a typical urban layout with footpaths, kerbs and flush medians as with other parts there is very little road infrastructure. This is the case with the road frontage for the proposed development where there is very little road infrastructure installed.

Old Renwick Road along the frontage of the site will need to be brought up to an urban standard a right turn bay installed at the new intersection on to Old Renwick Road. Due to the narrow road frontage of the development site it will be necessary to extend the road improvements past the site frontage to include the tapers for the right turn bay or extend the flush median.

8.2 Cycle Improvements

The cycle linkages from this part of Blenheim (north to south) to the township are very limited which may be an impediment to cycle use in the future. With this Development Site along with the adjacent subdivision's consideration should be given to providing cycle lanes to link into the Taylor River path.

McLauchlan Street would seem to be the most logical route as it provides linkages to the schools and linkages across Taylor River at Beaver Road and Henry Street. The connection across SH6 at Beaver Road will need to be improved.

Other north south connections could also be considered such as Colemans Road and Hutcheson Street however McLauchlan Street is considered to be the optimum route.

8.3 Wider Network Issues

As noted above there are some existing network constraints that the traffic from the Development Site will further degrade. However, this is not likely to be at a level that road users will notice against the existing LoS.

Consideration of the overall network and the need for improvements from multiple changes to land use and activities is required. It is understood that some analysis work by council is being carried out or planned around the wider road network needs for the future.

8.4 Road Safety

The Development Site is not expected to make any changes to the current levels of safety experienced by existing road users. The introduction of a right turn bay/flush median along Old Renwick Road will assist in providing for turning movements and also reduce speeds along this section of the road.

The suggested introduction of cycle facilities is also expected to have a positive effect.

The analysis above shows the existing network deficiencies relating to road safety and with some improvements will provide an overall improvement to all road users existing and future.

9 CONCLUSION

The Plan Change area consists of around 12 hectares of flat land located on the north side of the Blenheim urban area and Old Renwick Road. The Development Sites seeks to rezone the land and provide residential land for around 200 homes with connections to the wider road network via Old Renwick Road and Oakley Avenue.

The Development Site is ideally suited to use existing road infrastructure on the northern side of Blenheim with the site being around two kilometres from the centre of the town. It provides an excellent opportunity to encourage alternative transport modes such as walking and cycling. There is also a bus route that goes past the Development Site on Old Renwick Road.

The adjacent road network is operating below capacity with some intersections on SH1 and Nelson Street (SH6) having congestion at peak times. While the Development Site will add new trips to the road network, these are expected to disperse across the various routes reducing the impacts at the locations. It is noted that there are other green field sites which will add traffic to the wider road network.

There is a need for some improvements to the road network to accommodate the Development Site which include the upgrade of Old Renwick Road adjacent to the Development Site to provide for a right turn bay and/or flush median. It is also suggested that the provision/improvements to cycle linkages from the north of Blenheim to the town centre are also implemented. This will provide safe facilities from the Development Site and other subdivisions that should encourage the use of alternative transport modes.

Overall, the Development Site is considered to be a logical extension to the existing urban edge that uses existing road infrastructure and is located on the northern side of Blenheim where there is some capacity in the adjacent road network. Any adverse effects can be managed through the existing provisions within the Marlborough Environment Plan.