Appendix D

Integrated Transport Assessment

Falcons Residential Urban Growth Submission

Integrated Transport Assessment

PREPARED FOR YOURSECTION LTD | FEBRUARY 2021

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Stantec

Revision Schedule

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
A	9/12/2020	Final Report	Andrew Metherell	Andrew Leckie	Stacey Lloyd	Selena Tsai
B	9/2/2021	Revised Report to Address Council Comments	Andrew Metherell	Andrew Leckie	Stacey Lloyd	Selena Tsai

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1.0 INTRODUCTION

YourSection proposes to develop approximately 24 hectares of land in the southeast of Rolleston as a residential zone. A change is sought to the Operative Selwyn District Plan (OSDP) to rezone the land to Living Z. A submission is also being made in respect of the Proposed Selwyn District Plan (PSDP), to rezone the land from General Rural Zone (GRUZ) to General Residential Zone (GRZ).

As shown in Figure 1, the land highlighted in red is located immediately adjacent to land proposed to be zoned GRZ, and which is already being developed for residential purposes. It is bound by Lincoln Rolleston Road to the east and the existing Falcons Landing residential subdivision to the north. The site is east of Acland Park but does not directly adjoin that development. South of Falcons Landing, the immediate surroundings are currently rural in nature and use.

Figure 1: Site Location (Source: Proposed Selwyn District Plan)

The land is located within the "Projected Infrastructure Boundary" in the Canterbury Regional Policy Statement, and is also within the urban area planned in the Rolleston Structure Plan.

The zoning request is supported by an Outline Development Plan (ODP) and this report considers the integration of the proposed development with the surrounding transport network.

The rezoning will facilitate development of approximately 280 residential dwellings, and is supported by residential zoning of all the land required for completion of the eastern end of the CRETS Collector Road between Lincoln Rolleston Road and Springston Rolleston Road through the site. Additional road and pedestrian/cycle connections are also proposed to provide integration with surrounding development.

Included in the report is a description of the existing transportation environment in the area surrounding the proposed subdivision. The report then describes the key transportation aspects of the zoning request, includes a summary of transportation modelling carried out by Stantec in assessing the appropriateness of the network to accommodate additional traffic, and addresses the various provisions included in the zoning request to ensure integration with the transport network.

2.0 EXISTING TRANSPORT ENVIRONMENT

2.1 SITE LOCATION

Figure 2 shows the general location of the site in the southeast part of Rolleston.

Figure 2: Location of Site subject to Submission

2.2 ROAD INFRASTRUCTURE

2.2.1 Lincoln Rolleston Road

Lincoln Rolleston Road is classified in the District Plan as an Arterial Road. The road is a single traffic lane in each direction. The posted speed limit for the road varies along its length. From the roundabout intersection with Levi Road to approximately 250m south, along Lincoln Rolleston Road, the road speed is signed 50km/h. From this point to adjacent to the site Lincoln Rolleston Road is signed 60km/h. It then becomes 80km/h.

Figure 3: Lincoln Rolleston Road adjacent to Site, looking North

There are currently three intersections with residential subdivisions along Lincoln Rolleston Road. The formation of these intersections includes short right turn bays, with kerb and channel on the developed side of the road.

Alongside the Falcons Landing subdivision Lincoln Rolleston Road has an on-street parking lane with kerb and channel. There is a 2.5m wide foot/cycleway which runs along the west side of Lincoln Rolleston Road. Where the road becomes a rural formation (adjacent to the site) this path reduces to approximately 1.8m wide.

Figure 4: Channelised right-turn on approach to Falcon Road

2.2.2 Selwyn Road

Selwyn Road in the vicinity of the site is classified in the District Plan as a Local road. East of Lincoln Rolleston Road, Selwyn Road forms a continuation of Lincoln Rolleston Road and is an Arterial Road, forming a convenient link to Christchurch. It operates with an 80km/h speed limit. Selwyn Road meets Lincoln Rolleston Road at a priority T-intersection, with the western approach of Selwyn Road giving way. There are currently no formal turn lane facilities.

Figure 5: Lincoln Rolleston Road / Selwyn Road Intersection from North-Eastern Selwyn Road Approach

2.3 SUBDIVISION ROADS

2.3.1 Ed Hillary Drive

Ed Hillary Drive forms the primary access road into Acland Park, and is the western end of a section of Collector Road that continues up to the site boundary. At its western end, it has 5.5m wide lanes and indented parking bays, separated by a 2m wide median. It then transitions to an 11m wide road east of Clement Avenue. It includes a 2.5m wide path on the southern side of the road, and a 1.5m wide footpath on the northern side.

Figure 6: Ed Hillary Drive

2.3.2 Raptor Street

Raptor Street connects to the northern edge of the site, and has a 9m wide road carriageway, representing its local road function.

Figure 7: Raptor Street

2.3.3 Flight Close and Saker Place

Saker Place and Flight Close are cul-de-sacs adjacent to the northern site boundary, and they are connected by a reserve. As can be seen, in the photo, the southern side has a fence against the site boundary.

Figure 8: Saker Place

2.4 PUBLIC TRANSPORT

Figure 5 shows the existing bus routes servicing the Rolleston area. The primary route servicing Rolleston is the Yellow route, on a frequency of approximately half hourly through to central Christchurch.

The 820 bus route which runs between Burnham and Lincoln via Rolleston, approximately hourly in each direction, runs closest to the site, currently along Springston Rolleston Road. It provides options to interchange

to the Yellow buses into Christchurch City. There is currently a pair of bus stops on Dynes Road just west of Springston Rolleston Road, more than 1km from the site.

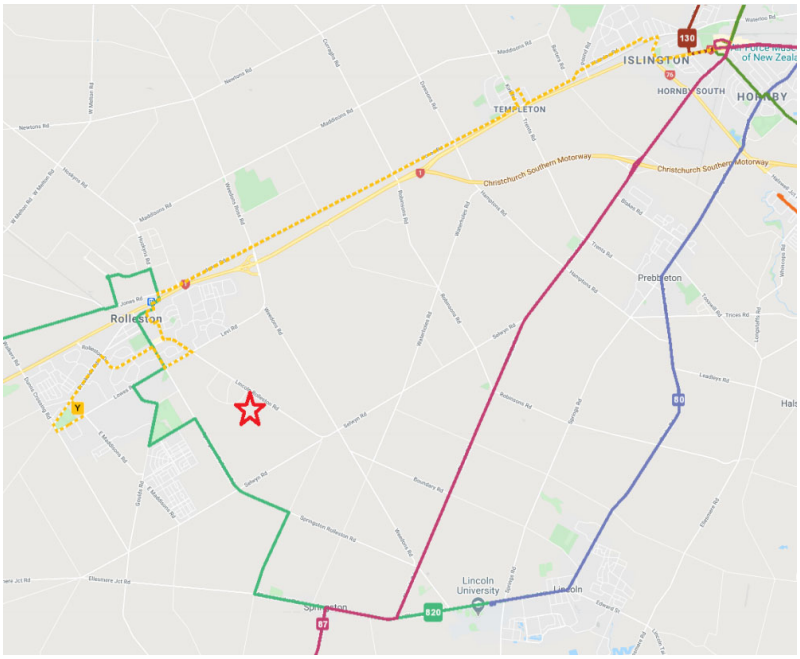


Figure 9: Existing bus routes

2.5 CYCLE NETWORK

Figure 10 shows the route of the Rolleston to Lincoln cycleway which runs along Lincoln Rolleston Road adjacent to the site.

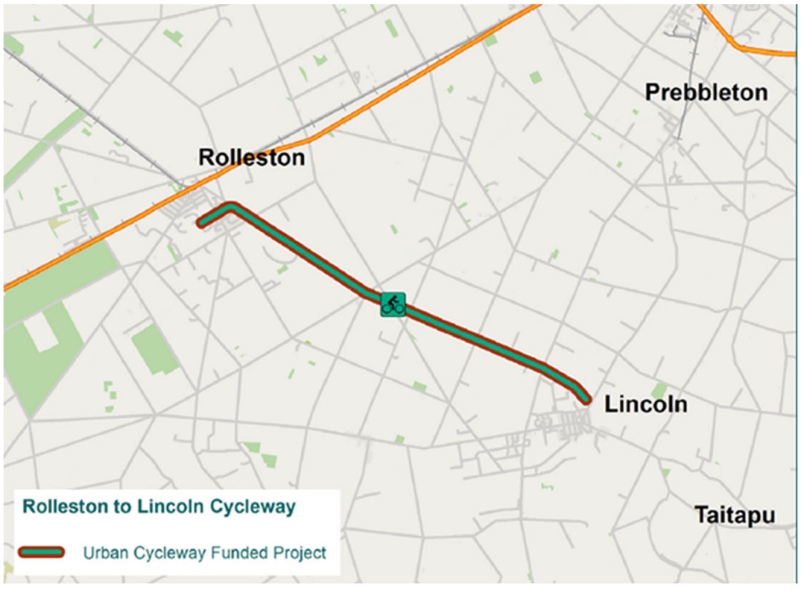


Figure 10: Rolleston to Lincoln Cycleway

2.6 PEDESTRIAN NETWORK

Subdivision roads in the area are being developed with footpaths to Council standards. The cycleway along Lincoln Rolleston Road also provides for pedestrians.

3.0 EXISTING TRAFFIC PATTERNS

3.1 DAILY TRAFFIC VOLUMES

Table 1 shows average daily traffic volumes on Lincoln Rolleston Road and Selwyn Road which were recorded by Selwyn District Council in recent years.

Table 1: Daily Traffic Volumes

Location	Daily Traffic Volume
Selwyn Road east of Lincoln Rolleston Road	10,000vpd
Lincoln Rolleston Road north of Selwyn Road	6,000vpd

3.2 HOURLY TRAFFIC PATTERNS

Figure 11 shows the hourly variations in traffic volumes along Lincoln Rolleston Road between Selwyn Road and Nobeline Drive, for a week in September 2019. On weekdays the peak traffic volumes occur between 8am-9am and 5pm-6pm, with inter-peak volumes roughly half that of the morning and evening peaks. On weekends the traffic volumes build up and are reasonably consistent between 10am-5pm, which is equivalent to the weekday inter peak period.

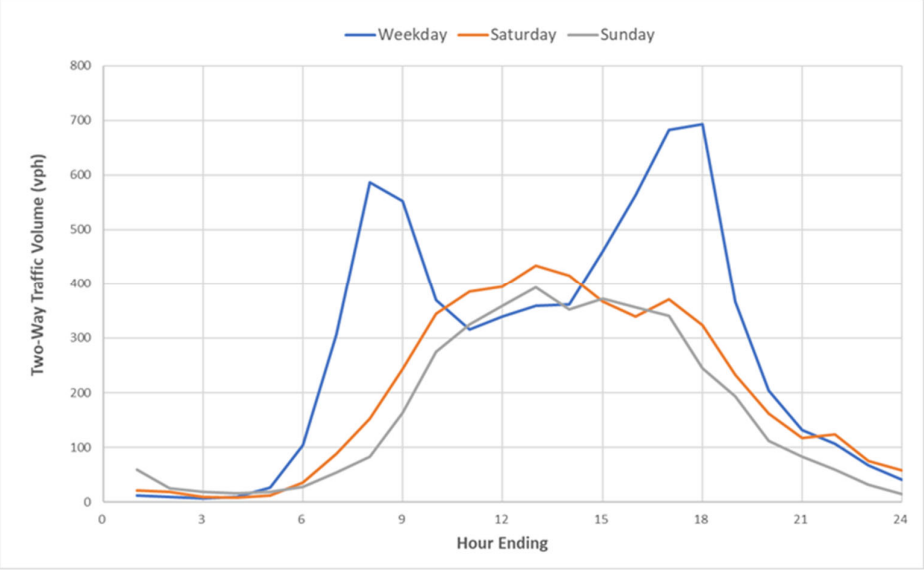
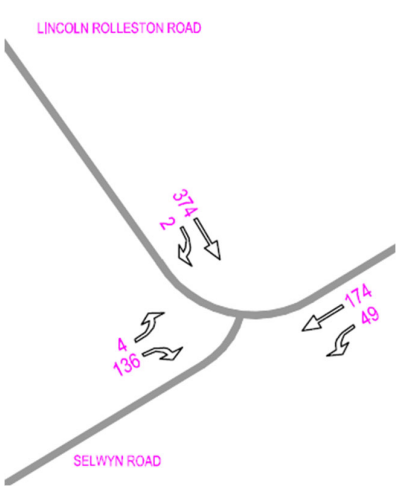


Figure 11: Hourly Variations in Traffic Volumes

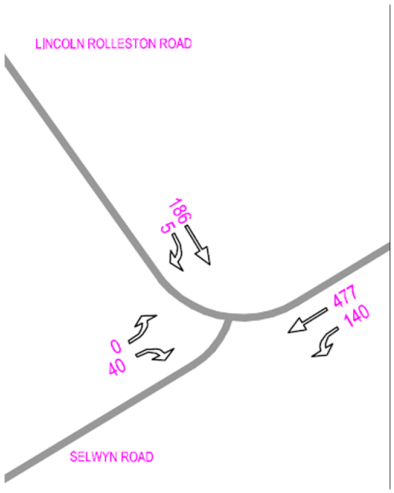
3.3 INTERSECTION TURNING COUNTS

Intersection turning counts are not available for the nearby area from Selwyn District Council.

As part of previous studies (Dryden Trust Rolleston Special Housing Area Integrated Transport Assessment, August 2016) in the area traffic volumes at the Lincoln Rolleston Road / Selwyn Road intersection were counted. These counts were completed on 31 May 2016, and as such will not directly relate to the current traffic patterns but give an indication of turning patterns.



AM peak Traffic Volumes



PM peak Traffic Volumes

Figure 12: 2016 Intersection Turning Counts

Two-way volumes on Lincoln Rolleston Road north-west of the intersection of 554vph in the AM peak and 668vph in the PM peak were recorded. At these traffic volumes the intersection was able to operate efficiently. By way of comparison, the 2019 traffic count on Lincoln Rolleston Road indicated a traffic volume of approximately 600vph in the AM peak and 700vph in the PM peak.

The Selwyn Road traffic volume east of Lincoln Rolleston Road was approximately 733vph in the AM peak, and 843vph in the PM peak.

The turning volumes indicate a tidal movement towards Christchurch in the morning peak, and from Christchurch in the PM peak. The predominant movement is between Lincoln Rolleston Road and Selwyn Road (east), with a secondary movement between the two Selwyn Road approaches.

4.0 ROAD CRASH ANALYSIS

A review of crash records in the area has been carried out using Waka Kotahi NZTA's Crash Analysis System (CAS), covering Lincoln Rolleston Road from Levi Road to Selwyn Road inclusive.

Between June 2015 and June 2020, there have been 17 recorded crashes, of which one resulted in serious injuries and two resulted in minor injuries. Figure 13 shows the locations of the injury crashes, all of which involved two vehicles. The only injury crash between intersections involved a u-turning vehicle, and the intersection crashes involved turning vehicles failing to give way.

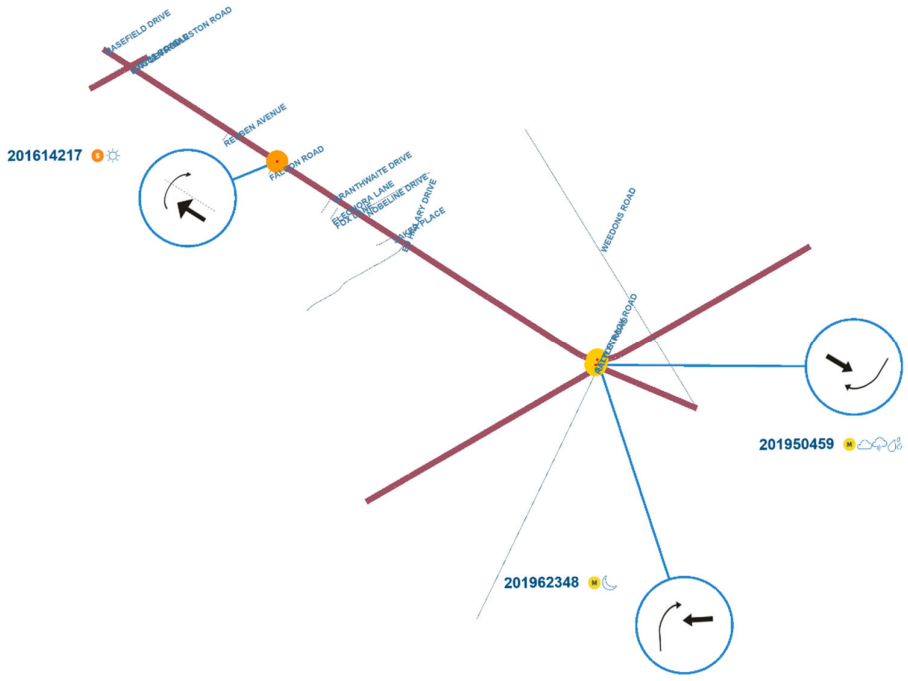


Figure 13: Injury Crash Locations and Movement Type

Figures 14 to 16 show all of the crashes, including non-injury. The prominent locations are around the Lincoln Rolleston Road / Selwyn Road, and slightly outside the core area Weedons Road / Selwyn Road intersections. The crashes were generally at the time that the speed limit was 100km/h, and this has since been reduced. Factors included weather and light conditions, intersection controls, tiredness and alcohol. Mid-block crashes involved a range of crash types including loss of control, hitting an animal, load hitting another vehicle, and hitting the rear end of a turning vehicle.

It is expected that as the road network develops and lower speed limits are put in place, the type of crashes is likely to change (less loss of control as urban infrastructure develops, and more intersection related crashes).

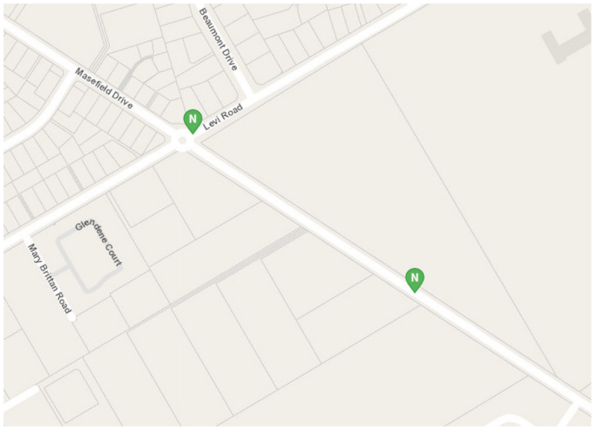


Figure 14: Crash Locations (North end of Lincoln Rolleston Road)

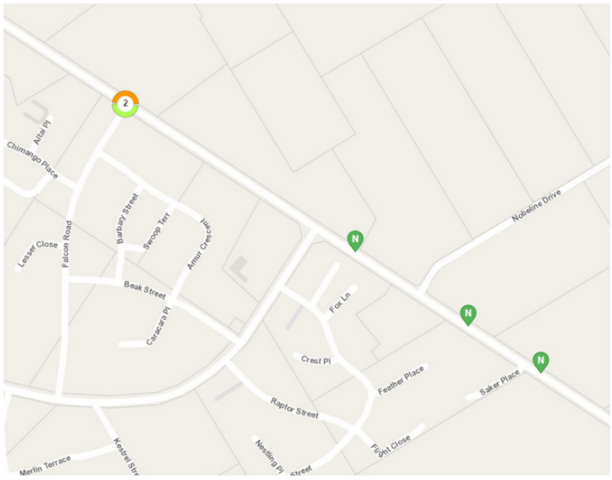


Figure 15: Crash Locations (Mid-section of Lincoln Rolleston Road)

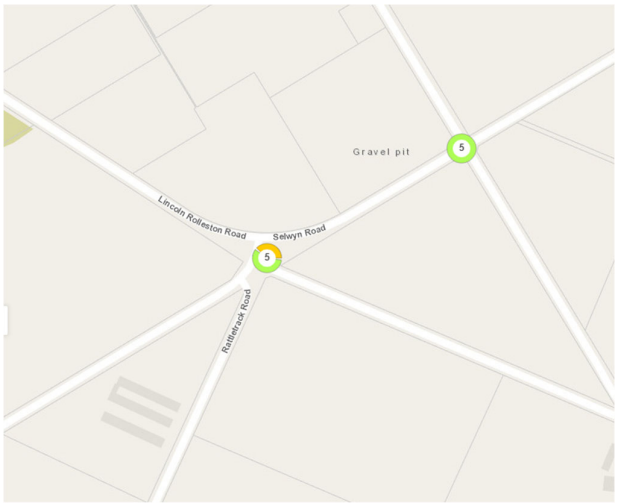


Figure 16: Crash Locations (South end of Lincoln Rolleston Road)

5.0 PLANNING CONTEXT

5.1 CHRISTCHURCH ROLLESTON AND ENVIRONS TRANSPORTATION STUDY (CRETS)

The Christchurch Rolleston and Environs Transportation Study (CRETS) was completed in 2007 and developed a transport strategy for the next 20 years. It has formed the basis of the transport network development in Rolleston since that time. An extract of the transport strategy road hierarchy and staging plan for Rolleston is provided below.

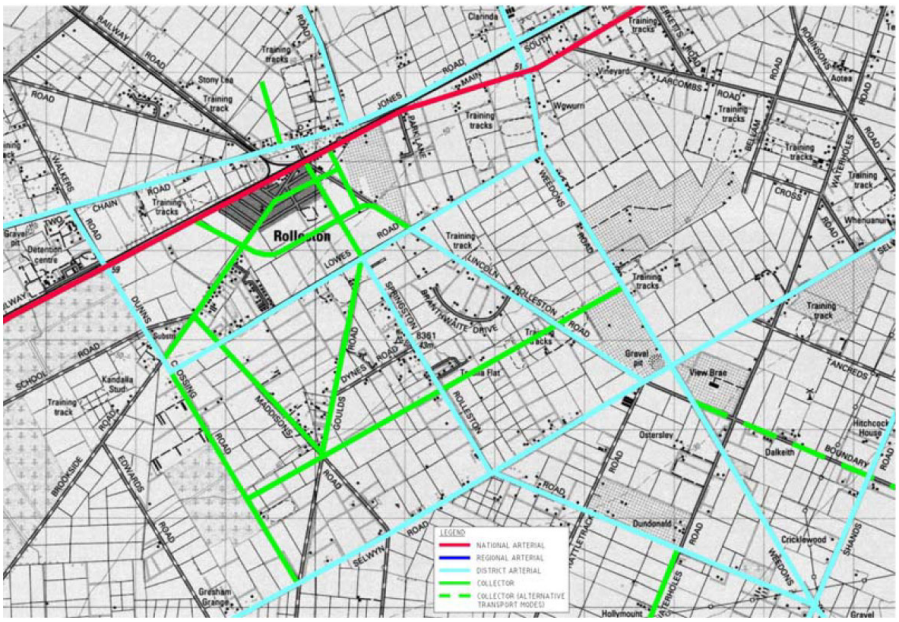


Figure 17: CRETS Transport Strategy Road Hierarchy for Rolleston

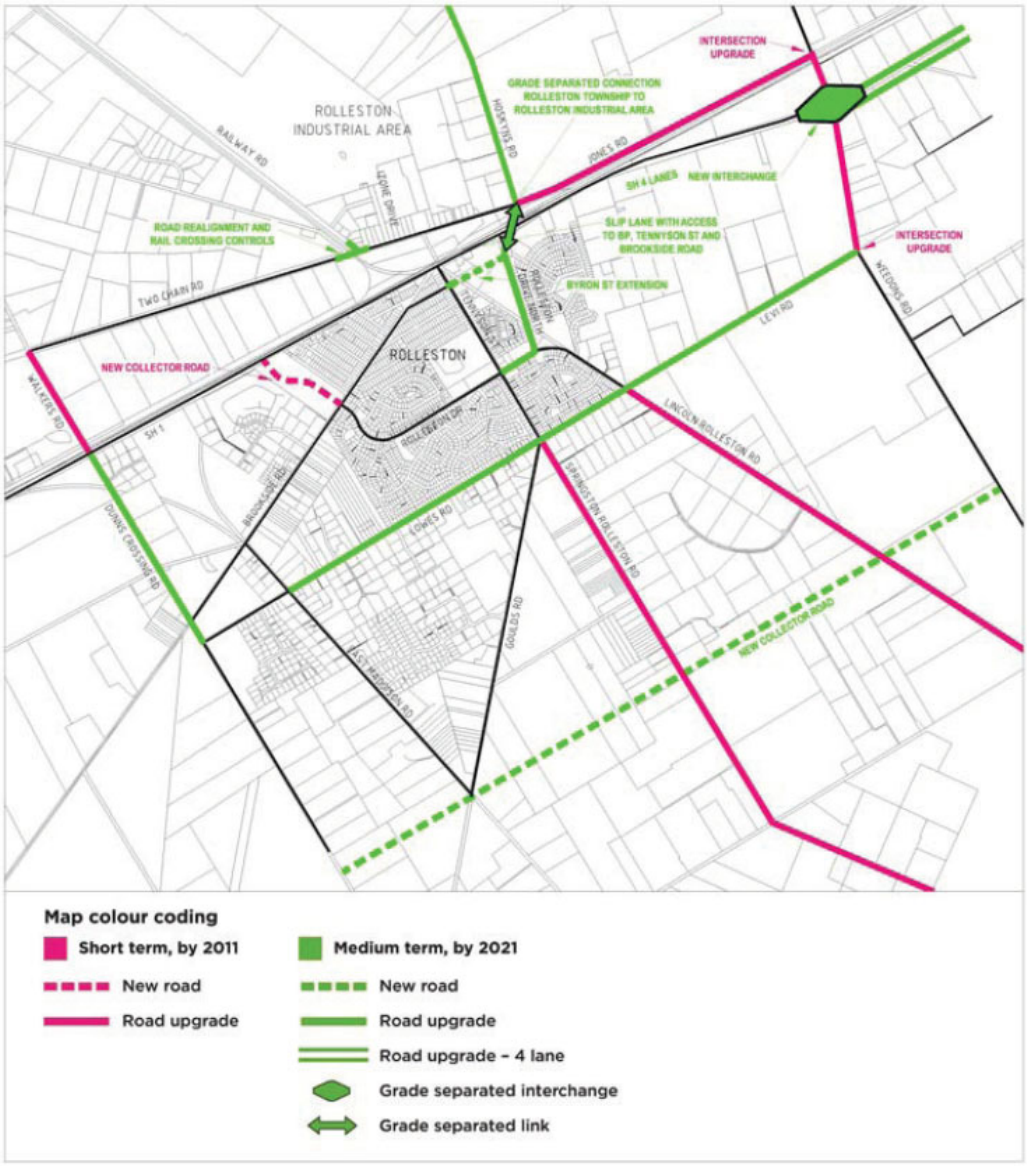


Figure 18: CRETS Staging Proposal for Rolleston

Part of the strategy included a new east-west Collector Road, which bisects the Falcons site subject to the zoning request. The Final CRETS report noted the following in relation to the Collector Road as part of the strategy:

> *"Construction of a new collector road on the Lincoln side of Rolleston between Dunns Crossing Road and Weedons Road as part of future subdivisional development. (Note this area is not currently zoned for residential development. Should this ever occur in the future then the new road could come about to serve such development on an alignment to provide the connections to the existing road network in general accordance with that shown)."*

As described earlier, the road has largely been developed to the west, and Plan Change 64 to the District Plan proposes development that would facilitate further extension at its western end. Essentially, the Falcons site with its current zoning would be a "missing link" in terms of its progression to Lincoln Rolleston Road.

5.2 ROLLESTON STRUCTURE PLAN

The Rolleston Structure Plan has set out a potential plan for the long-term Rolleston area that encapsulates the Falcon land, and generally all land in the Future Infrastructure Boundary defined in the Canterbury Regional Policy Statement (CRPS). It provides some high-level insight into the potential for long term connections for the road network, public transport and cycling.

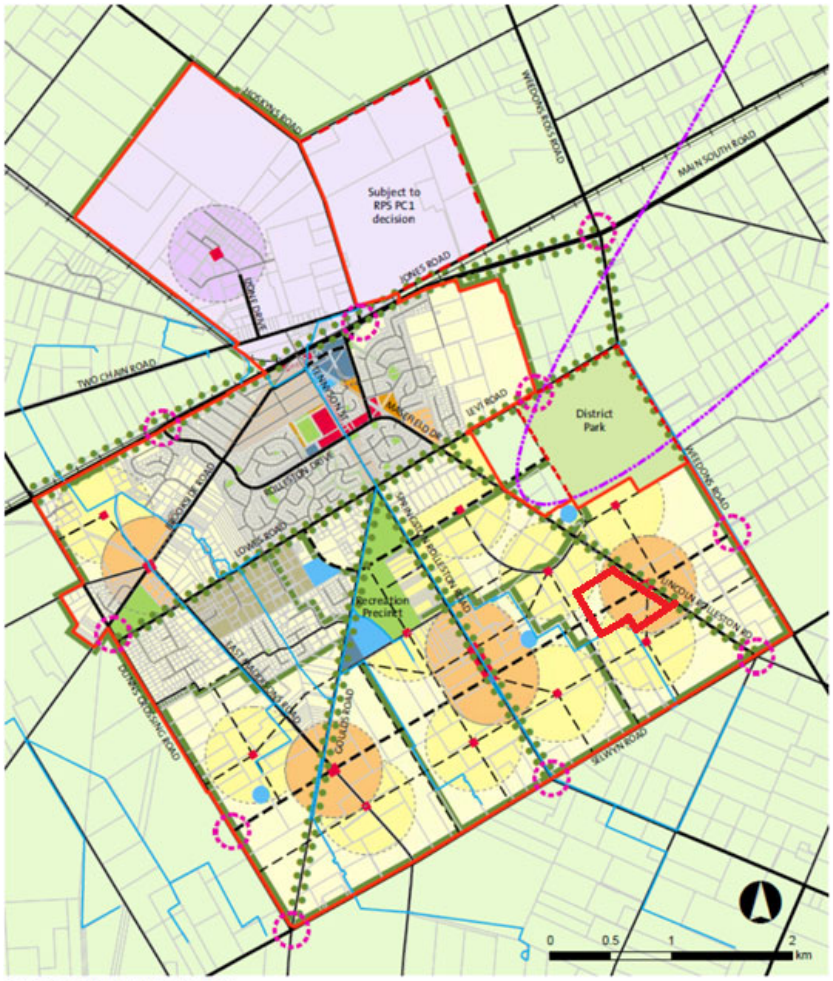


Figure 5.2: Rolleston Structure Plan

Figure 19: Rolleston Structure Plan (Site in Red)

As a reference for considering the long-term development of Rolleston, in the vicinity of the proposed development, the relevant transport diagrams included in Appendix A of this report indicate:

- That the site will not comprise Main (primary) movement network roads, but includes an east-west and generally north-south secondary road.

- Future bus services are indicated on Springston Rolleston Road, Selwyn Road and the CRETS Collector Road. A potential service could be located within the internal network of the site using an east-west road.
- Additional cycleways had been anticipated along Springston Rolleston Road and Selwyn Road.

It is important to note that the high-level transport planning provided for in the Rolleston Structure Plan requires on-going reconsideration as development of Rolleston progresses, also taking account of localised constraints. For this reason, it is considered a guidance document of a potential outcome upon full development of Rolleston.

5.3 REGIONAL POLICY STATEMENT

The Regional Policy Statement sets out the Projected Infrastructure Boundary and Greenfield Priority Areas for development. These areas were set following the Canterbury Earthquakes, and greenfield development is well advanced in most of the residential priority areas.

As shown in Figure 20, the site is located immediately adjacent to the Greenfield Priority Area-Residential, and well within the Projected Infrastructure Boundary.

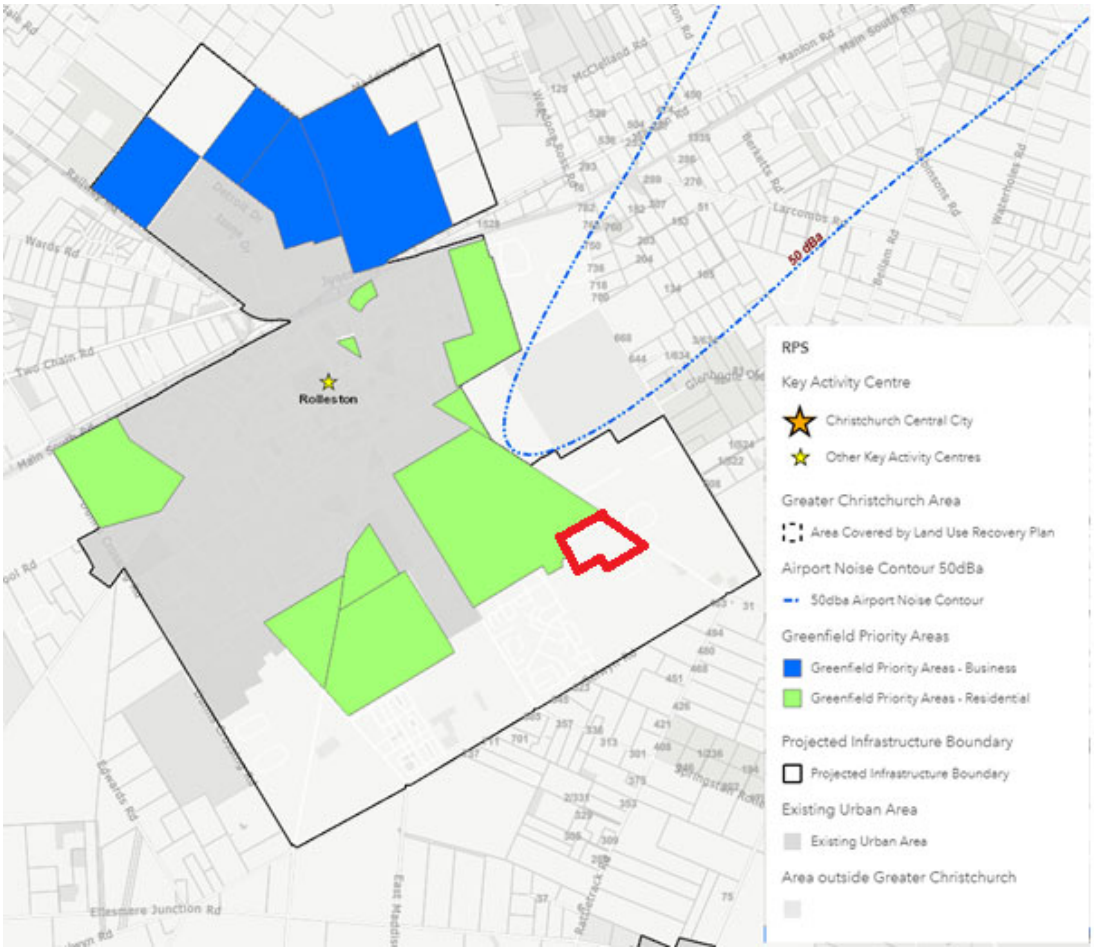


Figure 20: CRPS Urban Development Map for Rolleston (Site in red)

5.4 OUR SPACE 2018-2048

The Greater Christchurch Partnership prepared "Our Space 2018-2048: Greater Christchurch Settlement Pattern Update" in July 2019. The site is located in a Future Development Area, immediately adjacent to a Greenfield Priority Area.

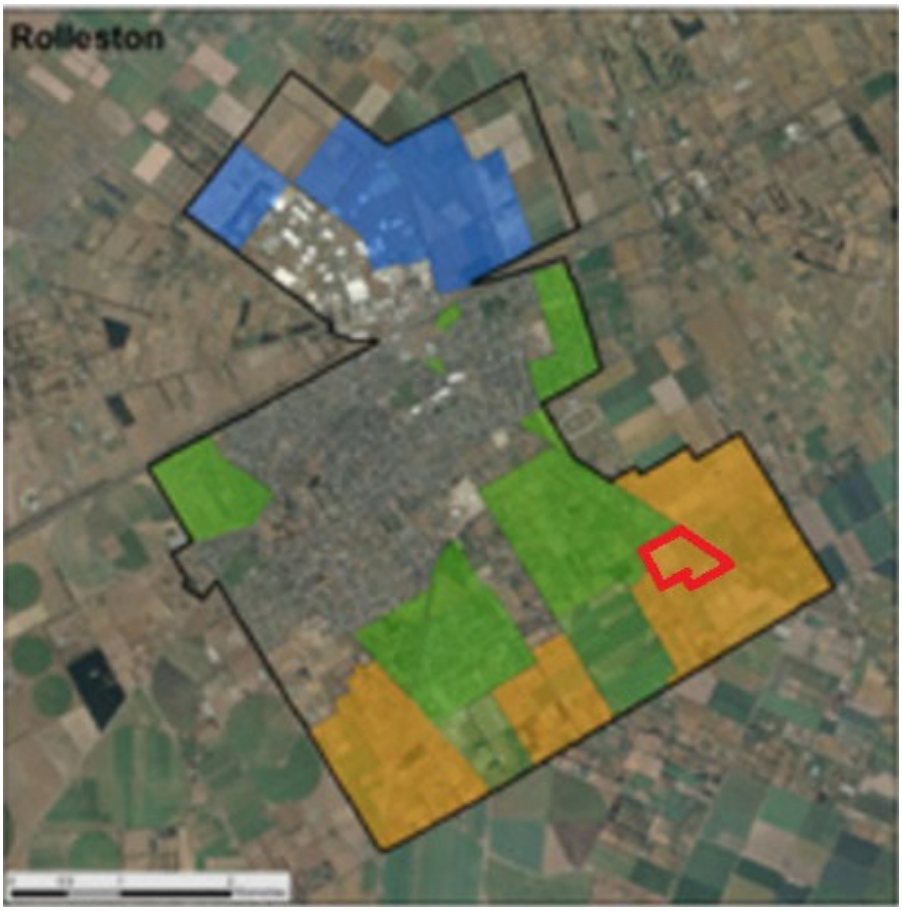


Figure 21: Extract from Our Space (Figure 15) (Site in Red)

5.5 ADJACENT SUBDIVISIONS

Immediately north of the site is the Falcons Landing Subdivision, and to the west (separated by other landholdings) is Acland Park. Both are well into development, and as such the opportunity for connections between the site and those developments can be considered.

Figure 22 broadly shows the site boundary in the context of the adjacent subdivisions and future connections allowed for at Falcons Landing and Acland Park. Road connections are shown in orange, and reserve connections in green.

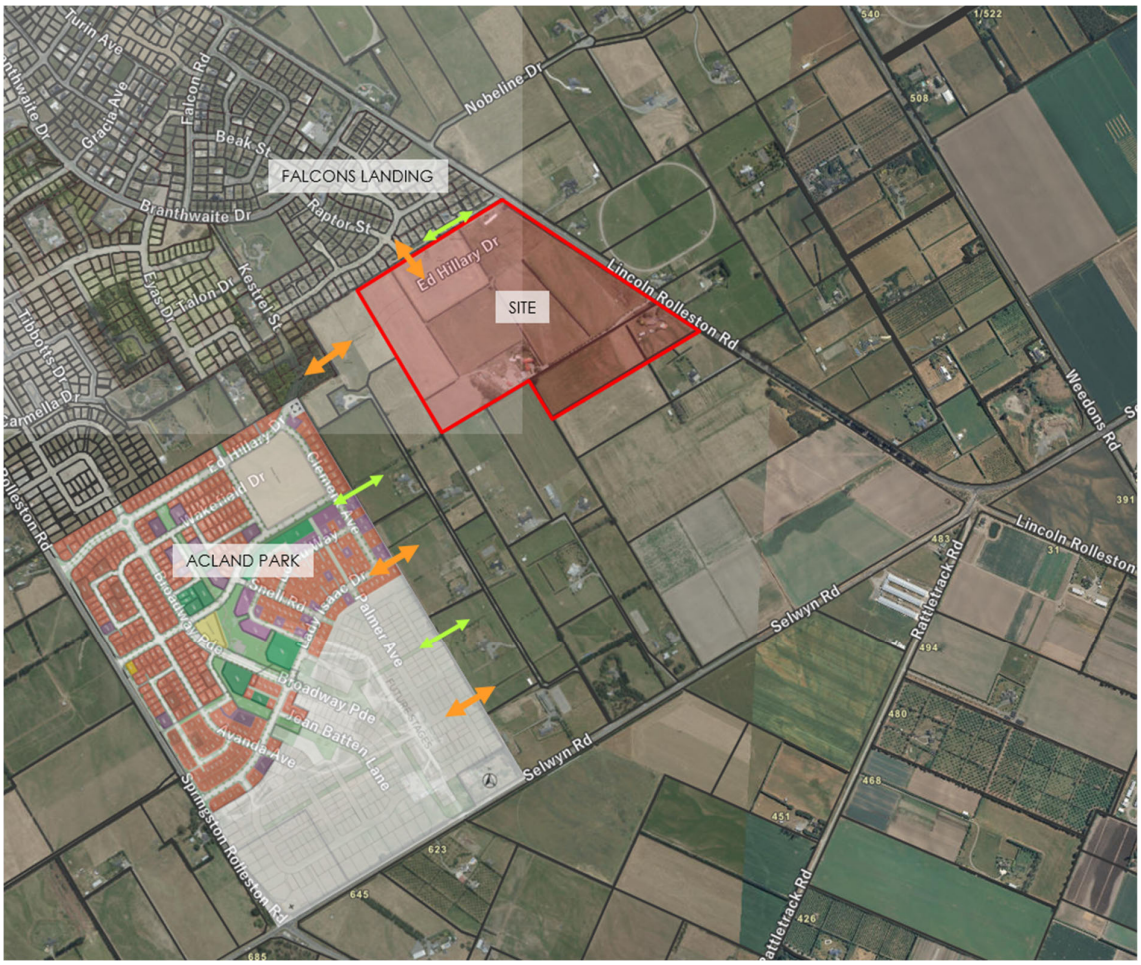


Figure 22: Subdivisions and Connection

To the north, Raptor Street extends to the site boundary, providing a 9m wide road carriageway which connects through to Branthwaite Drive. Two cul-de-sacs adjoin the northern boundary, which are connected with a reserve link.

To the west, Ed Hillary Drive is a collector road that is planned for implementation up to the eastern boundary of the Falcons Landing subdivision. Ed Hillary Drive generally forms the "CRETS" collector road which connects from Dunns Crossing Road and is intended to extend through to Lincoln Rolleston Road.

A new primary school is planned in the northern corner of Acland Park on Ed Hillary Drive. It is due to open in 2022.

5.6 OPERATIVE DISTRICT PLAN

Figure 23 shows the site location within the current zoning of the Selwyn Operative District Plan. It is zoned as Inner Plains, and the adjacent land is Living Z. The Acland Park residential subdivision to the west was established through the Special Housing Accord, and retains an Inner Plains zoning. Development areas are subject to Outline Development Plans, which have made allowance for the CRETS Collector Road where it is within the site. The existing zoning and subdivision that occurs facilitates construction of the CRETS Collector Road up to the western boundary of the Falcons site. However, completion of the section between Springston Rolleston Road and Lincoln Rolleston Road would require residential rezoning of the Falcons site.

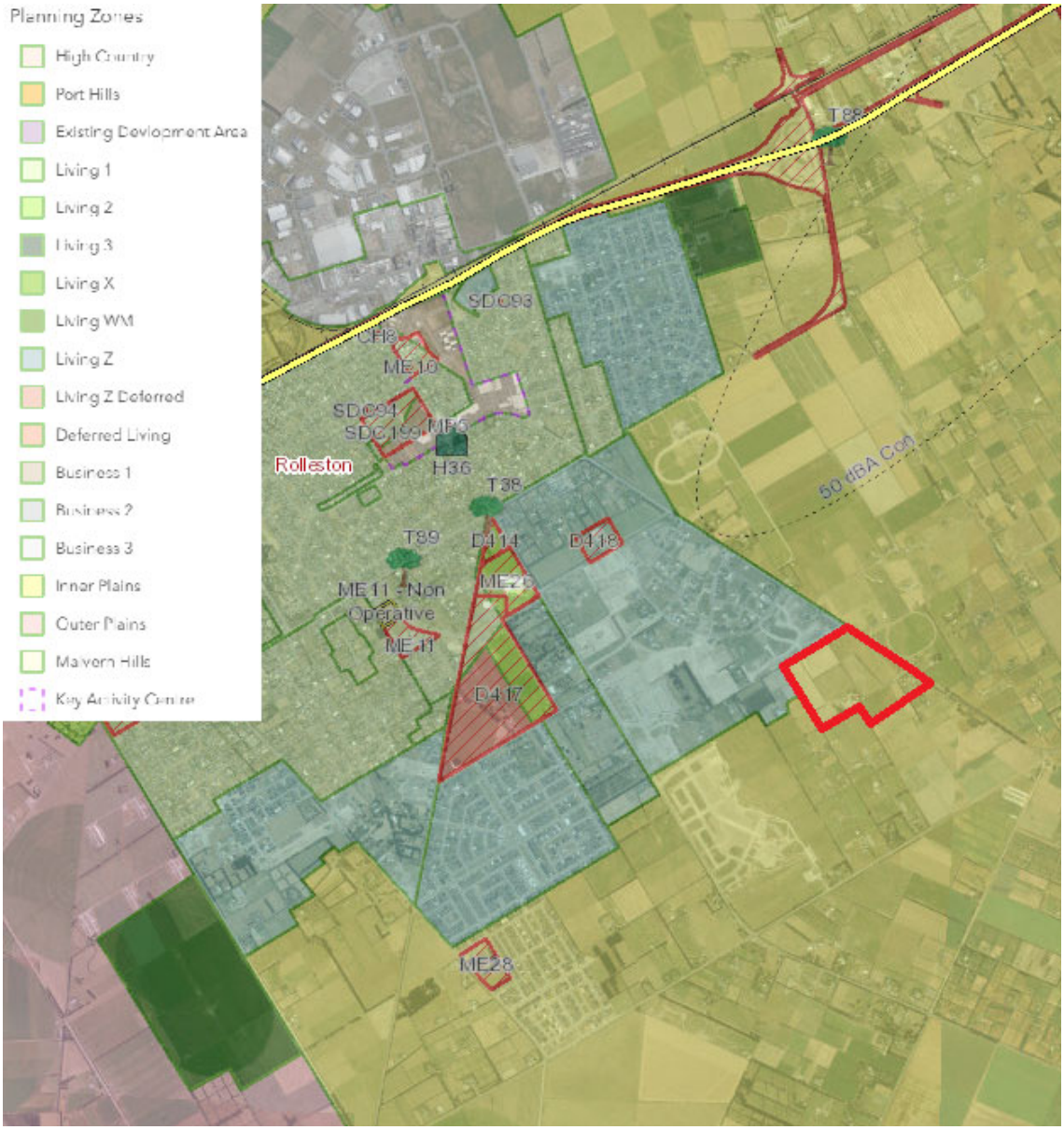


Figure 23: Selwyn Operative District Plan Map

It is noted that several Plan Changes have recently been received by Council, which if approved would extend the residential developments in the southern part of the town further to the south. Plan Changes 64 and 70 are well to the west of the proposed plan change site. Plan Change 71 is located off the eastern side of Lincoln Rolleston Road just north of Nobeline Drive, and Plan Change 78 is a large development area south of and directly adjoining the site.

5.7 PROPOSED DISTRICT PLAN

As shown in Figure 24, the Proposed District Plan sets a proposed township boundary for Rolleston (as indicated by the dashed blue line) immediately north of the land subject to this submission. Unusually, areas that were subject to the Special Housing Area developments have not been included in the township boundary even though development is well progressed. A Neighbourhood Centre Zone (NCZ) is shown in the Falcons Landing

subdivision to the north of the site. If implemented, that would provide small-scale commercial and community activities that support the immediate residential neighbourhood.

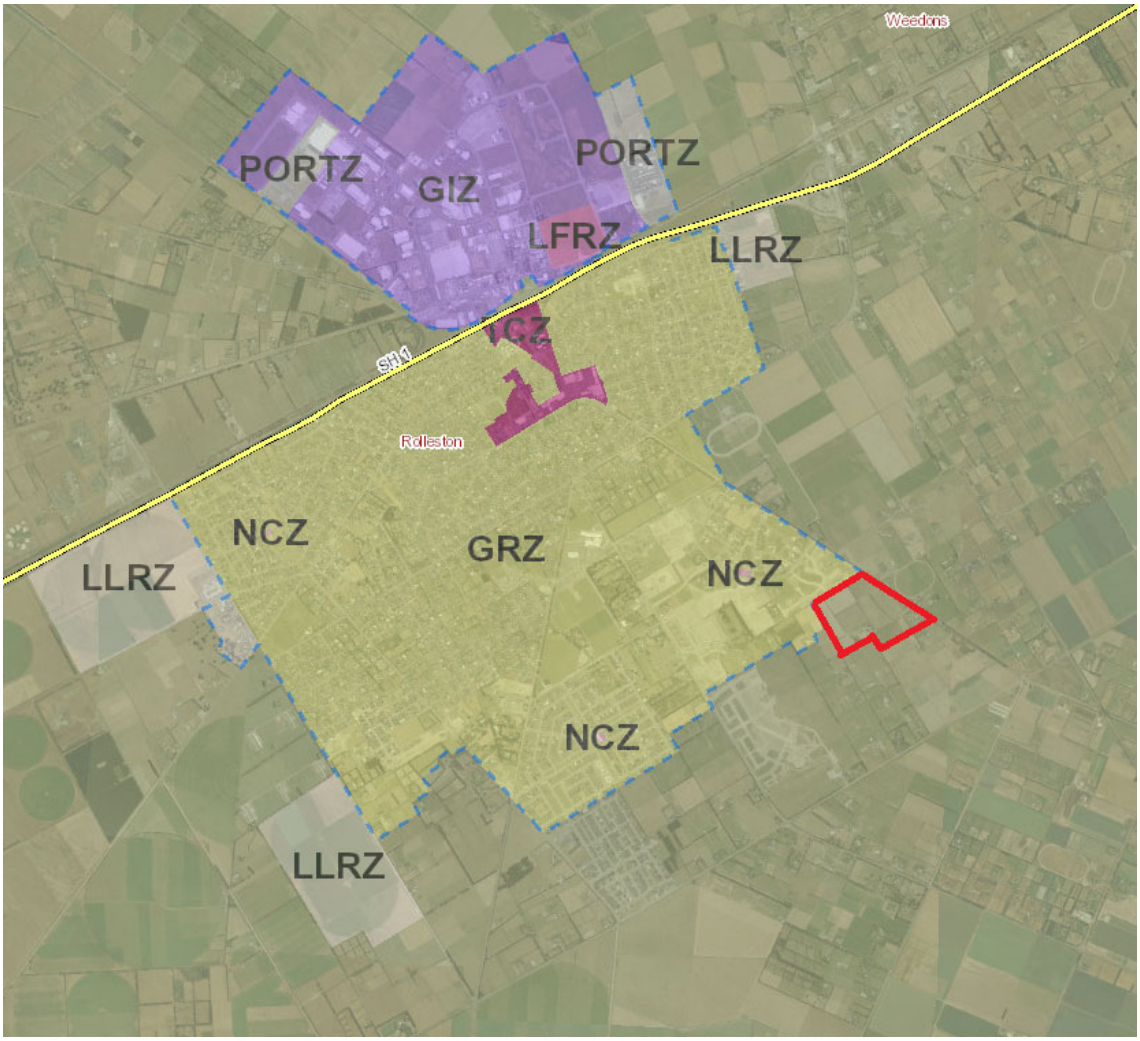


Figure 24: Proposed District Plan Zoning for Rolleston (Site in Red)

Greenfield "Development Areas" that have not yet been developed are subject to Outline Development Plans (ODP) to set the general pattern of development over an area. The Development Area ODP are supported by discussion (where relevant) of Context, Land Use, Access and Transport, Open Space, Recreation and Community Facilities, and Servicing. There are eight Development Areas subject to an ODP in Rolleston, none of which are in the immediate vicinity of the site.

5.8 LONG TERM PLAN

The Selwyn District Council Long Term Plan 2018-2028 includes plans for transport infrastructure improvements in Rolleston. Major projects are focused on access changes on SH1 following the completion of the Christchurch Southern Motorway. In the vicinity of the site there are no notable projects that would influence the site development characteristics. It is noted that as greenfield developments occur, most existing roads are brought up to an urban standard as part of the development, rather than through Council funding. Park n Ride development is provisioned beyond 2028.

6.0 PROPOSED DEVELOPMENT

6.1 OVERVIEW AND ODP

YourSection Limited seek the rezoning of approximately 24.7ha of land to GRZ. It is anticipated that the site will yield approximately 280 residential lots.

An ODP has been prepared for the site to align with the requirements of the CRPS and PSDP. The ODP includes key road and pedestrian/cycle linkages through the site, and at the boundaries. These have been carefully developed taking account of the planning context for the area described earlier. The ODP provides for a connected network of roads that will spread generated traffic efficiently through the site and beyond, and is shown in Figure 25.

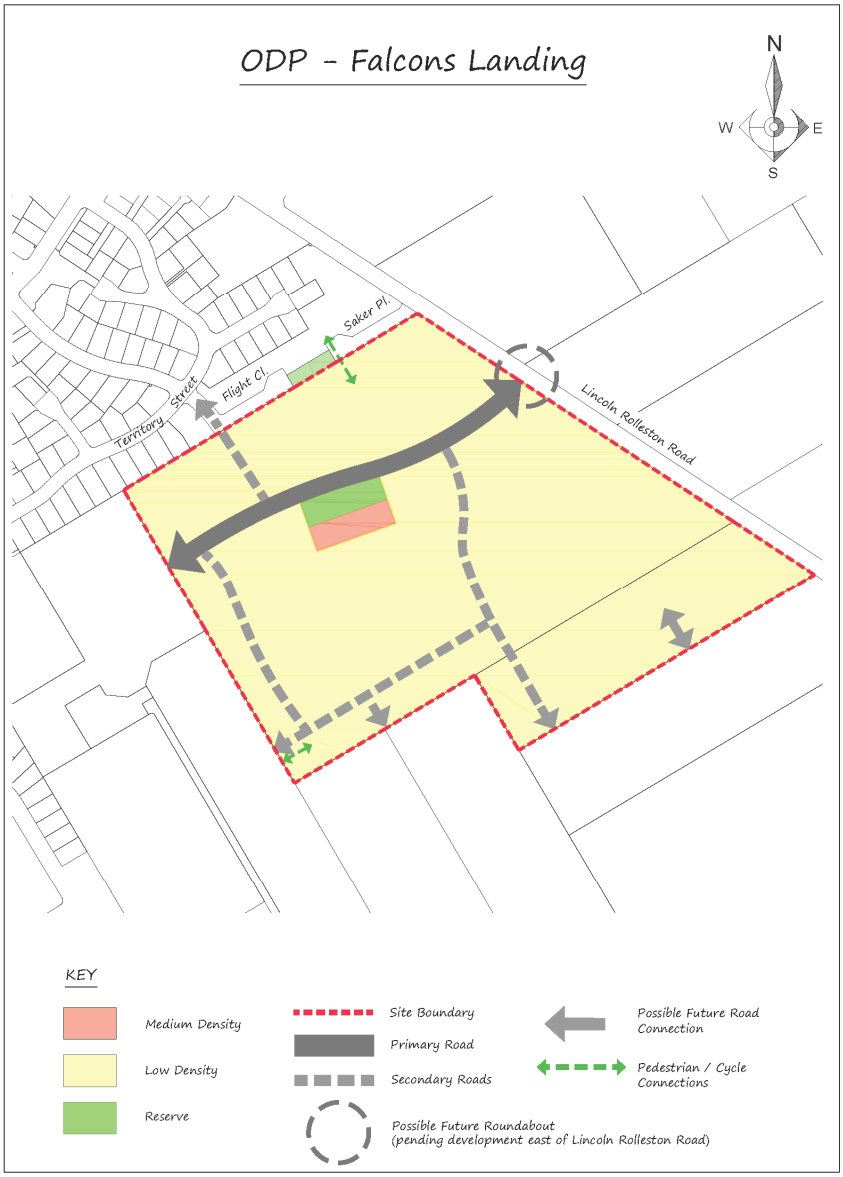


Figure 25: Proposed Outline Development Plan

6.2 MOVEMENT NETWORK

6.2.1 Primary Connection

The ODP provides for a primary road generally east-west through the site, connecting Ed Hillary Drive to Lincoln Rolleston Road. It is expected that this would be of a Collector Road standard, as it forms the continuation of the collector road through Acland Park, and picks up on the alignment generally anticipated by the Rolleston Structure Plan. The zoning of land enables provision of this link through to Lincoln Rolleston Road which supports a major improvement to network connectivity in the area.

The connection at the western end is aligned for connection to the existing section of the road further west. The eastern connection with Lincoln Rolleston Road is at a position that bisects existing residential dwellings on the eastern side of Lincoln Rolleston Road. The Rolleston Structure Plan (and the CRETS network before that) anticipate future connectivity through to Weedons Road. As there will be an arterial (Lincoln Rolleston Road) intersection with a Collector Road, allowance for the land requirement of a future roundabout (which would be subject to assessment at the time of subdivision) has been made at that location. With the rezoning, all of the land required for the east-west collector road link between Springston Rolleston Road and Lincoln Rolleston Road would be residentially developed or zoned. That would in turn enable the road to be completed which would otherwise not be possible. This supports an integrated transport network in the area where collector road traffic can avoid the need to use local roads. That in turn improves efficiency in movement for all transport modes.

The Primary network is shown in the Rolleston Structure Plan as including an orbital bus route servicing Rolleston. It is considered that there is no reason why such a service could not be accommodated given the Collector Road nature of the road. No specific notation is considered necessary, although discussion could be included in supporting text. Again, the rezoning to facilitate completion of the Collector Road allows the potential bus service to be provided, which would otherwise not be practicable if reliance was made on existing local subdivision roads.

Overall, the primary connection provides an important transport link which will be of benefit to the wider transport network and community.

6.2.2 Secondary Connections

A secondary local road connection is provided between the primary road and Raptor Street, providing linkages to Falcons Landing. This will provide additional connectivity between the southern part of the existing Falcons Landing subdivision and Lincoln Rolleston Road.

A secondary local road connection is shown extending from the eastern part of the Collector Road through to the southern site boundary. As indicated by the Rolleston Structure Plan, this will provide linkage through to an additional east-west collector road further south.

Any additional connection to Lincoln Rolleston Road would be assessed through subdivision, although it is noted there is opportunity for a connection at the southern end. As this will be dependent on wider zoning and network considerations, it is not included in the ODP.

6.2.3 Future Connections

The other road connections and future connections indicated support development of a connected local road network with walkable blocks. The specific pedestrian / cycle connections shown align with the existing opportunities to connect to Acland Park and Falcons Landing. The road connections in the southwest of the site recognise that there is likely to be a need for a north-south link on adjacent property between the collector road and the future-east-west collector road further south (an extension of Lady Isaac Drive). Connections can be reviewed based on adjacent zoning and land development expectations at the time of subdivision.

Overall, it is considered the ODP provides a well-connected network for vehicles, cyclists and pedestrians, that supports improved connection of the wider arterial network with existing subdivisions in the short term, and opportunities for future connectivity with Future Development areas.

6.3 SUBDIVISION ACCESS

The ODP illustrates the location of a connection to Lincoln Rolleston Road. The site access is located approximately 150m from Saker Place (measured centre-line to centre-line). Saker Place is in the vicinity of the existing transition of the Lincoln Rolleston Road speed limit from 60kmh north of the proposed access.

It is noted in the PSDP that where new roads are proposed on a site subject to an ODP the intersection spacing is to be designed for the proposed future speed limit within the ODP and on immediately adjoining roads. As the Lincoln Rolleston Road character will change from rural to an urban context due to the residential development it is anticipated that the future road operating speed for the road will change to 60km/h along the site boundary.

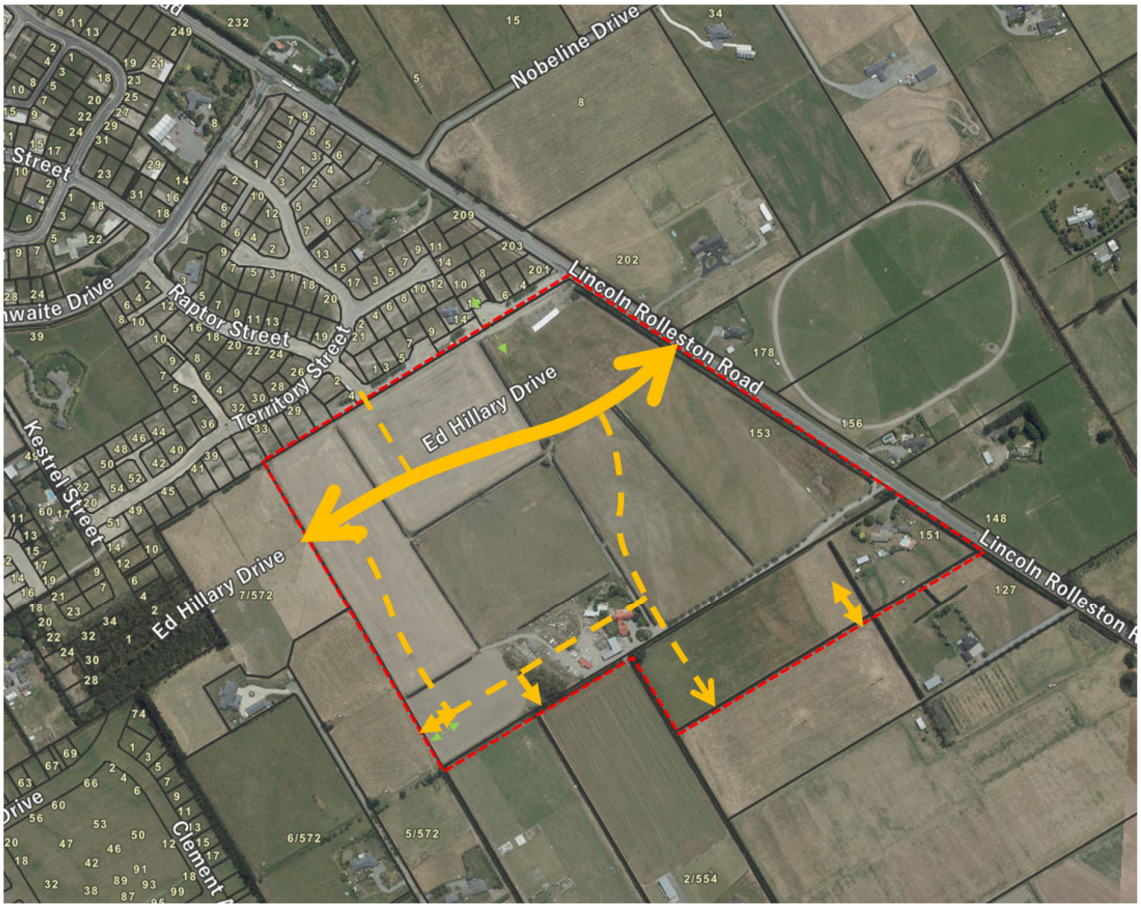


Figure 26: ODP in Context of Existing Development

The minimum distance between intersections as listed in Tran–Table 8 of the PSDP is 151m, based on the Lincoln Rolleston Road future speed limit of 60km/h. The proposed location of the principal site access onto Lincoln Rolleston Road as shown in the ODP can satisfy intersection separation criteria, although it is almost exactly the minimum separation from Saker Place. Given the very low use of Saker Place, it is considered the separation will be suitable for future development.

Existing vehicle access to 178 and 202 Lincoln Rolleston Road is separated by approximately 60m, and the intersection will need to be located between those accesses. In the longer term, as that land is rezoned for residential, it is anticipated that future access to those properties will be achievable via the collector road network. In the interim, the vehicle crossings are likely to be placed in a position where any further development on those properties would require resource consent due to limited separation from the new intersection.

If the vehicle accesses were the driver of the intersection location, then the intersection would most likely need to be opposite or just north of the 202 Lincoln Rolleston Road access to avoid any conflict with a potential right turn bay. This in turn increases conflict with the Saker Place intersection. Given the very low use of the accesses, it is considered the proposed access location can be supported, noting the likelihood of long-term extension of the Collector Road to the east.

6.4 ROAD CROSS-SECTIONS

The internal road formation will be considered in accordance with District Plan road cross-section rules. The east west link will be a continuation of an existing Collector Road, and as such should be considered in that context, as well against the tabulated dimensional requirements to be included for general subdivision requirements in the PSDP.

6.5 LINCOLN ROLLESTON ROAD FRONTAGE

Allowing for a reduced speed limit on Lincoln Rolleston Road of 60km/h past the site as part of future development, subdivision within the Plan Change would require a road frontage upgrade to provide a comparable road cross section and frontage environment as further north on Lincoln Rolleston Road (Figure 4 earlier in this report). This is a standard matter for assessment and consideration through subdivision planning. In this case, specific consideration would need to be made for the Lincoln Rolleston cycleway which already exists along the site frontage (Figure 3 earlier in this report).

7.0 TRANSPORT MODELLING

7.1 OVERVIEW

The Selwyn District Council has developed a micro-simulation model of Rolleston, to plan a transport network that can accommodate the traffic expected from development in the long term.

The Selwyn District Council provided their latest transport model on 27 November 2020. It included 2018, 2028, and 2048 models. The 2048 model was intended to represent full development of Rolleston as intended by the spatial planning documents. Modelled periods are the AM peak, and PM peak periods, being the busiest time in the transport network.

The models have been broadly reviewed prior to use in this assessment. It is noted that full model development and validation reports were not provided, although it is understood the model has been utilised for transport planning in Rolleston for some time. It currently represents the most comprehensive modelling tool available for Rolleston.

It is noted that the future year models include representations of landuse intensification outside the planned township limit included in the District Plan. In that respect, any network performance measures are likely to be worse than will occur. Nevertheless, in a broad manner it will allow for cumulative effects associated with other zoning requests and Plan Changes that could occur.

A number of model modifications have been made in the 2028 model to better reflect the proposed development to be facilitated by the District Plan in the vicinity of the site. These include:

- Removing trips in the area between Acland Park, Selwyn Road, Lincoln Rolleston Road, and Falcons Landing in the 2028 scenario without the development. The existing level of development is a nominal generator of traffic.
- For the with development scenario, the pattern of trips has been factored to represent the forecast traffic generation of the fully developed site.
- Breaking the Collector Road link between Ed Hillary Drive and Lincoln Rolleston Road in 2028 without the development. This link would not be completed if the land is not zoned for urban development.
- The Collector Road link is then reinstated for the with development scenario.
- Allowing traffic turning left from Lincoln Rolleston Road into Selwyn Road to pass the right turning vehicles into Selwyn Road. The model coding created unrealistic behaviour and extensive queuing associated with a very small number of right turns, which could influence wider traffic patterns.

In the 2048 model, the primary change was to connect the Ed Hillary Drive and Lady Isaac Drive extension roads by a north south road, which passes through the site.

Overall, the changes are minor in the wider context of the model network and performance, but enable the change in traffic patterns as a result of the zoning to be better understood.

7.2 TRAFFIC GENERATION

In the outer suburban area of Rolleston, it is typical to anticipate a traffic generation per household of approximately 8 vehicle movements per day. Previous assessments in the area have applied a peak hour trip generation rate of 0.9 vehicle movements per household for the purpose of network performance assessment. For the 280 households, this would generate approximately 2,240vpd and 252vph.

7.3 TRAFFIC FORECASTS

7.3.1 2028 Traffic Forecasts

Each of the 2028 year models has been run, and statistics have been collected for a peak hour within each peak period. The 2028 PM peak forecasts are shown diagrammatically below, without, and with development.

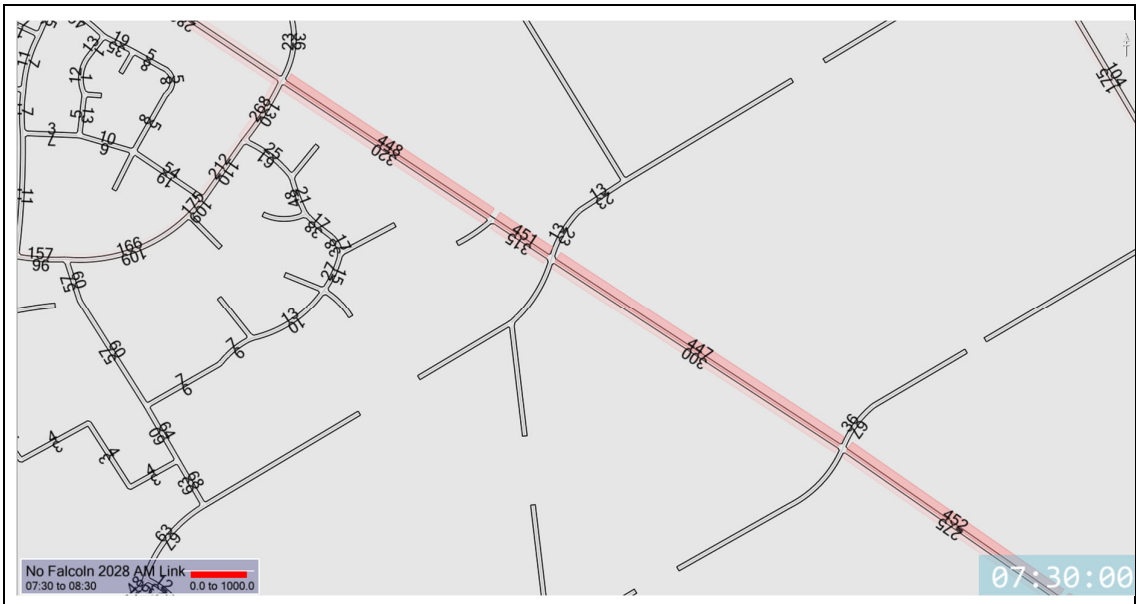
Without Development

With Development

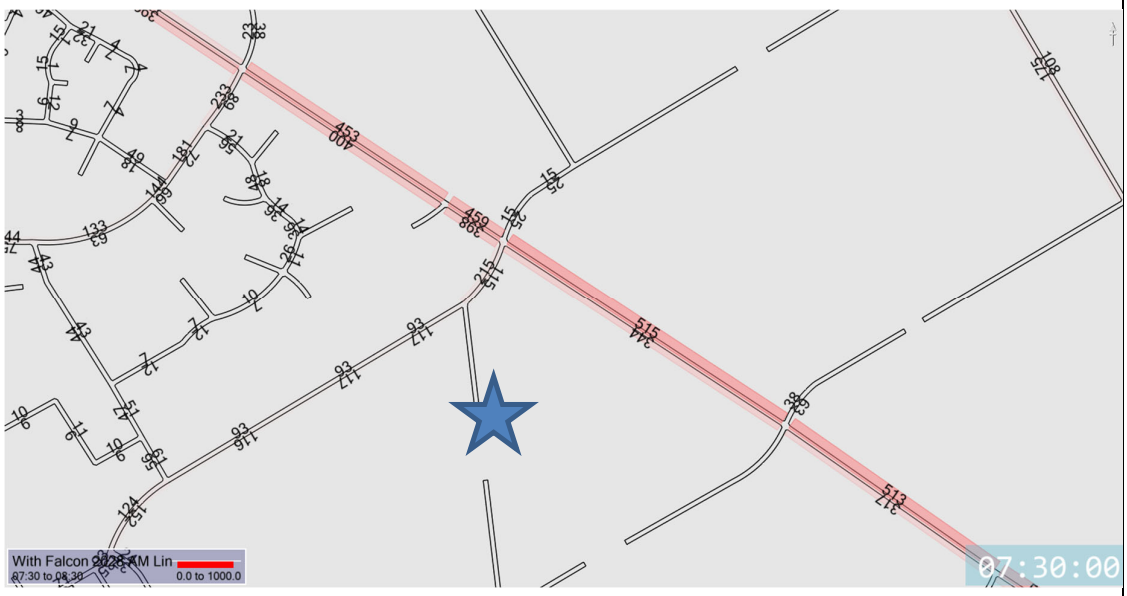
Figure 27: 2028 PM Peak Traffic Volume Bandwidth Diagrams

The 2028 bandwidth plots show that the zoning request does not have a notable change to overall traffic patterns, with the nearby road corridors all operating at a moderate level of busyness compared to the roads at the northern end of Rolleston. A similar pattern is observed in the AM peak (diagrams not shown).

The more detailed 2028 model forecasts in the vicinity of the site are shown below.



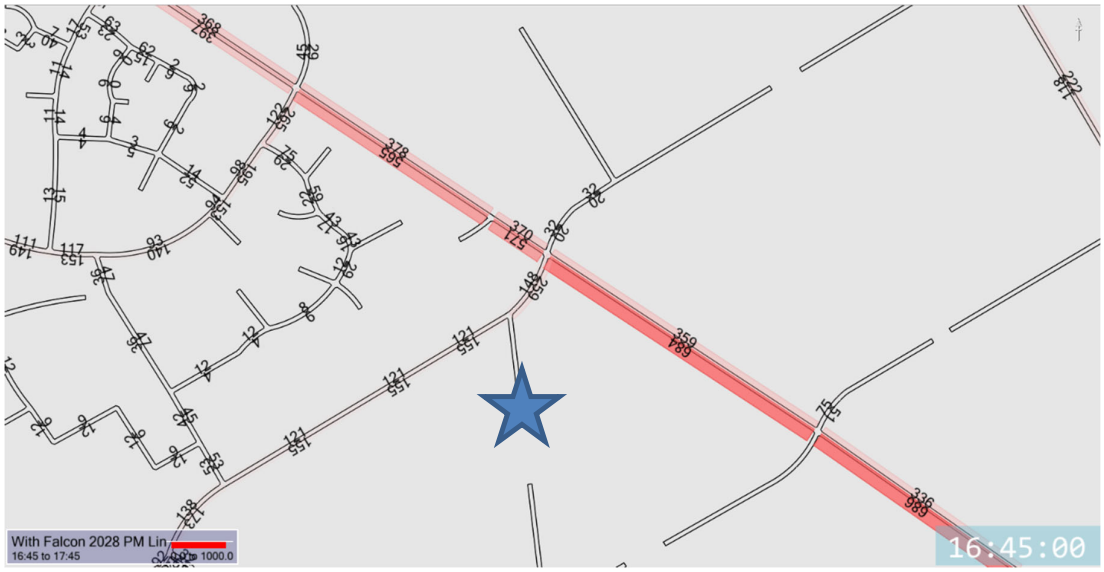
Without Development



With Development (250vph loaded at point with the star)

Figure 28: 2028 AM Peak Traffic Volumes (vph)

Without Development



With Development (250vph loaded at point with the star)

Figure 29: 2028 PM Peak Traffic Volumes (vph)

At 2028 with the development, the Ed Hillary Drive extension is indicated to carry approximately 200 to 400 vpd, equivalent to a daily traffic volume of approximately 2,400vpd at the western boundary, and up to approximately 3,300vpd at the eastern end. This is comparable to Branthwaite Drive traffic volumes.

Lincoln Rolleston Road near the site is forecast to be carrying up to 932vph south of the site, and with development this would increase slightly to approximately 1,043vph. On a daily basis, traffic volumes would be in the order of 8,600vpd.

Some of the changes are associated with the additional connectivity allowing drivers to take the most efficient route via suitable roads in the hierarchy. Some reductions in traffic through the existing Falcons Landing subdivision can be observed as traffic moves to the more direct Ed Hillary Drive extension. Investigation of the

wider area shows the network also has slightly less traffic on Selwyn Road west of Lincoln Rolleston Road with development, due to the introduction of the through route.

A select link analysis on the section of the Ed Hillary Drive extension immediately west of Lincoln Rolleston Road indicates that in 2028 approximately 143vph in the AM peak and 219vph in the PM peak (approximately 1,600vpd) use the new road link, and are not generated by the development. In that respect, those movements will result in reduced movement on other less efficient routes. This indicates that there will be network efficiency improvements with the new Collector Road link that will result from the development, and use of lesser roads would be minimised.

7.3.2 2048 Traffic Volumes

To understand the future traffic demands on this part of the transport network if Rolleston grows out to its urban boundary as intended by the spatial planning provisions, the 2048 models have been run to generate traffic forecasts. The PM peak wide area bandwidth volume plot indicates that the northern section of Lincoln Rolleston Road takes on a higher level of importance, and traffic is distributed across the supporting network in the southeast part of Rolleston.

Figure 30: 2048 PM Peak Traffic Forecast Bandwidth

The more detailed traffic forecast plots indicate that the north south link has the potential to carry higher traffic volumes as traffic from the developments further west find their way through the network. The volumes will depend on the positioning and wayfinding generated by the supporting road network. For example, a higher volume of traffic could use the east-west collector roads instead of making the strong movement between the east west collector roads.

It is also noted that the actual volume will also be spread over several road links at this point, whereas a coarse representation of the traffic network has been applied for this future sensitivity test. Nevertheless, it suggests that at least one north south road should be provided at a higher standard than a local road. It also indicates that there will be sufficiently high traffic movement across Lincoln Rolleston Road, largely associated with wide area

traffic movements, that a future roundabout layout would need to be allowed for in the subdivision boundaries (i.e. through larger corner splays than would be required for the standard tee-intersection). A roundabout would service a much wider network purpose, and would only be warranted if long term development of Rolleston proceeds as broadly indicated by the long term spatial plans.

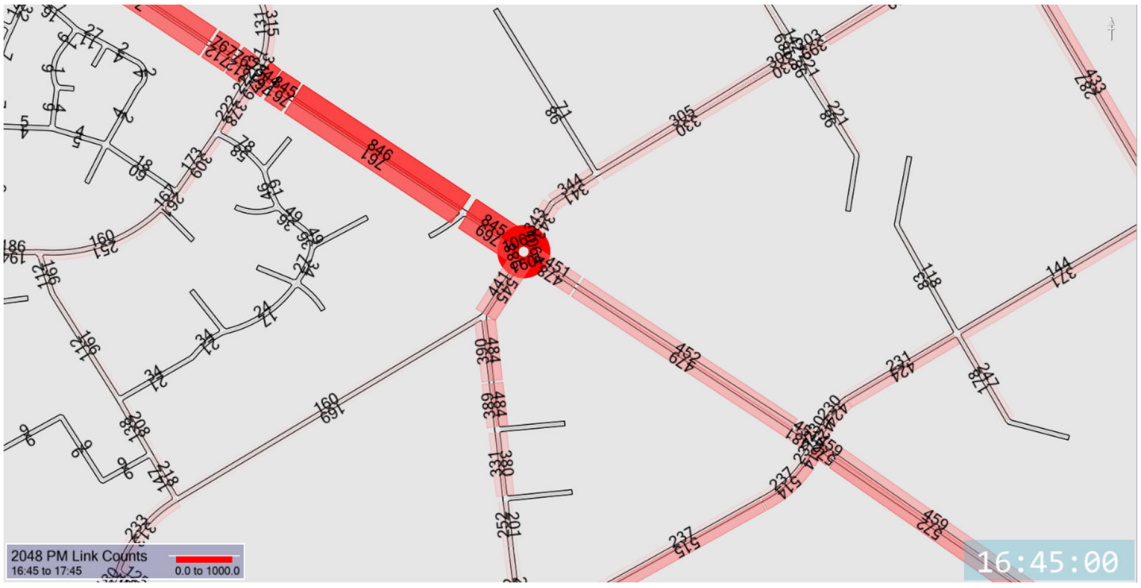


Figure 31: 2048 PM peak Traffic Forecasts in vicinity of site

7.4 INTERSECTION PERFORMANCE

The intersection performance has been assessed from the simulation model outputs. The movement by movement outputs are provided below. These indicate that the network will operate with good levels of service in 2028, and the development will ease delays at Branthwaite Drive by redistributing traffic.

The model includes a roundabout at the Weedons Road / Selwyn Road intersection (planned for approximately 2028) and this is shown to generate some delay on the eastern approach in the PM peak both without, and with development. The traffic volumes are very similar and generate different levels of delay indicating some variability in results. It is expected the form of intersection will be suitably designed to accommodate the desired level of performance. It is considered the change in traffic as a result of the site development would not notably change that design level.

The Lincoln Rolleston Road / Selwyn Road intersection is shown to operate efficiently in the 2028 assessment, and the long term 2048 model supplied by Council provided for a revised intersection form. The existing road safety assessment shows that the intersection had two minor injury turning crashes, and three non-injury crashes. The traffic model forecasts show a large increase in the traffic movement between the two Selwyn Road approaches as a result of general growth to the southwest of Rolleston. The with Plan Change scenario shows a reduction in the turning movements because of the additional connectivity provided. There will be an increase in through movement on the arterial Lincoln Rolleston Road, although the net change in volume through the intersection is only 34vph in the AM peak hour, and 10vph in the PM peak hour. As the safety of the intersection is expected to be mostly related to the high right turn from Selwyn Road west, and that will be reduced substantially, it is considered that the Plan Change may have a small positive safety benefit for the intersection. In the long term, the intersection is included with an upgrade to manage the conflicts between through and turning traffic. It is considered the proposed Plan Change would have a negligible effect on the timing or form of upgrade.

In 2048, the Ed Hillary Drive extension / Lincoln Rolleston Road intersection has the potential to operate with slightly higher delays. A single lane roundabout has been modelled, and as noted the volumes could be more

balanced between Ed Hillary Drive and the other east-west roads depending on overall lower order road network form.

			No Falcons 2028			With Falcons 2028			Full Development 2048		
Intersection	Approach	Mvmt	Volume	Delay	LOS	Volume	Delay	LOS	Volume	Delay	LOS
Branthwaite Dr / Lincoln Rolleston Rd	East*	L	3	25	C	5	25	C	8	2	A
		T	11	20	C	10	17	C	62	7	A
		R	23	25	C	24	27	D	61	4	A
	South	L	97	11	B	58	11	B	80	2	A
		T	214	21	C	332	21	C	839	2	A
		R	3	11	B	4	12	B	27	5	A
	West	L	20	25	C	17	29	D	53	3	A
		T	7	18	C	5	22	C	50	8	A
		R	182	30	D	158	34	D	170	6	A
	North	L	13	7	A	14	6	A	25	1	A
		T	227	18	C	259	18	C	448	2	A
		R	20	12	B	21	10	A	17	8	A
Ed Hillary Dr (Ext) / Lincoln Rolleston Rd	North	L	10	2	A	8	2	A	93	12	B
		T	435	12	B	410	13	B	454	15	B
		R	0	-		33	3	A	123	15	B
	East*	L	6	19	B	3	20	B	20	25	C
		T	0	-		6	7	A	139	23	C
		R	17	2	A	16	7	A	155	25	C
	South	L	0	-		75	0		62	25	C
		T	297	0		266	0		519	32	C
		R	2	0		2	0		13	27	C
	West	L	0	-		115	0		10	33	C
		T	0	-		4	0		48	37	D
		R	0	-		97	0		11	41	D
Lady Isaac Dr (ext) / Lincoln Rolleston Rd	North	L	22	0		25	1	A	39	1	A
		T	425	8	A	490	8	A	441	2	A
		R	0	-		0	-		17	2	A
	East*	L	28	8	A	24	11	B	16	3	A
		T	0	-		0	-		132	5	A
		R	38	17	B	40	20	B	167	4	A
	South	L	0	-		0	-		70	2	A
		T	261	17	B	305	19	B	376	2	A
		R	14	4	A	12	5	A	8	4	A
	West*	L	0	-		0	-		50	3	A
		T	0	-		0	-		130	6	A
		R	0	-		0	-		130	4	A
Selwyn Rd / Lincoln Rolleston Rd	North	T	438	4	A	505	5	A	584	1	A
		R	14	5	A	8	4	A	2	26	D
	East	L	240	4	A	214	4	A	335	2	A
		T	268	3	A	310	3	A	449	1	A
	South	L	6	1	A	6	0		3	33	D
		R	382	3	A	340	3	A	386	31	D
Selwyn Rd / Weedons Rd	North	L	8	13	B	9	14	B	57	35	C
		T	54	11	B	54	12	B	69	36	D
		R	56	9	A	58	11	B	0	6	A
	East	L	0	-		0	-		0	-	
		T	280	3	A	284	3	A	507	6	A
		R	10	2	A	8	3	A	48	6	A
	South	L	171	3	A	181	3	A	276	9	A
		T	77	3	A	75	3	A	76	9	A
		R	0	-		0	-		0	-	
	West	L	72	8	A	78	8	A	11	12	B
		T	630	8	A	647	8	A	783	13	B
		R	121	8	A	123	8	A	183	12	B

* A modelled link generates traffic volumes, but in practice will not exist at 2028 under any scenario

Table 2: AM Peak Intersection Performance

			No Falcons 2028			With Falcons 2028			Full Development 2048		
Intersection	**Approach**	**Mvmt**	Volume	Delay	LOS	Volume	Delay	LOS	Volume	Delay	LOS
Branthwaite Dr / Lincoln Rolleston Rd	East*	L	3	26	D	3	2	A	30	8	A
		T	9	37	E	8	22	C	220	13	B
		R	23	31	D	18	9	A	56	5	A
	South	L	297	12	B	207	3	A	140	2	A
		T	309	23	C	349	5	A	620	2	A
		R	7	15	B	8	4	A	15	7	A
	West	L	16	25	C	11	3	A	17	2	A
		T	10	20	C	8	12	B	60	9	A
		R	117	31	D	77	9	A	103	6	A
	North	L	33	14	B	30	7	A	46	2	A
		T	218	26	D	291	12	B	700	3	A
		R	44	27	D	49	21	C	31	6	A
Ed Hillary Dr (Ext) / Lincoln Rolleston Rd	North	L	20	2	A	22	19	B	182	25	C
		T	320	12	B	264	23	C	432	27	C
		R	0	-		84	32	C	240	27	C
	East*	L	4	10	A	2	3	A	15	33	C
		T	0	-		4	28	C	234	44	D
		R	20	6	A	14	16	B	102	47	D
	South	L	0	-		173	3	A	45	56	E
		T	600	0		507	4	A	472	59	E
		R	7	0		7	3	A	8	50	D
	West	L	0	-		53	8	A	4	18	B
		T	0	-		3	17	B	81	20	B
		R	0	-		92	9	A	26	14	B
Lady Isaac Dr (ext) / Lincoln Rolleston Rd	North	L	37	1	A	36	2	A	78	2	A
		T	288	8	A	323	4	A	343	2	A
		R	0	-		0	-		64	4	A
	East*	L	17	8	A	13	4	A	9	5	A
		T	0	-		0	-		310	7	A
		R	32	20	B	39	13	B	110	5	A
	South	L	0	-		0	-		166	2	A
		T	575	18	B	647	6	A	397	2	A
		R	40	5	A	39	4	A	13	3	A
	West*	L	0	-		0	-		18	3	A
		T	0	-		0	-		145	7	A
		R	0	-		0	-		113	5	A
Selwyn Rd / Lincoln Rolleston Rd	North	T	299	4	A	334	2	A	464	1	A
		R	6	80	F	2	73	F	1	296	F
	East	L	486	5	A	424	0		454	2	A
		T	603	4	A	677	2	A	571	1	A
	South	L	10	2	A	10	3	A	4	25	C
		R	235	4	A	203	4	A	257	37	E
Selwyn Rd / Weedons Rd	North	L	11	5	A	12	4	A	48	10	A
		T	79	5	A	83	6	A	93	11	B
		R	80	5	A	111	7	A	1	12	B
	East	L	0	-		0	-		2	133	F
		T	856	65	E	855	117	F	775	145	F
		R	22	61	E	20	116	F	101	144	F
	South	L	153	41	D	158	50	D	254	153	F
		T	51	39	D	50	46	D	99	153	F
		R	0	-		0	-		0	-	
	West	L	61	5	A	61	2	A	16	5	A
		T	325	6	A	326	3	A	490	7	A
		R	150	6	A	151	3	A	215	7	A
* A modelled link generates traffic volumes, but in practice will not exist at 2028 under any scenario											

Table 3: PM Peak Intersection Performance

In summary, it is considered that the proposed development will be accommodated efficiently on the road network. Some changes in traffic distribution onto the network occur as a result of completion of the east-west collector road, and this is considered a positive outcome for the transport network as it will minimise use of less efficient routes.

The east-west Collector Road will operate with modest traffic volumes, but if Rolleston grows to its fullest extent indicated by spatial plans it could potentially carry up to 1,000vph at its eastern extent if a significant north south link is added through the site. If additional land is zoned in Rolleston, refined assessment may be necessary in the area as the volume will be sensitive to network configuration and the modelled volumes will be a worst case.

8.0 PLANNING REQUIREMENTS

8.1 OPERATIVE DISTRICT PLAN PROVISIONS

8.1.1 Transport Network Objectives and Policies

Section B2.1 of the District Plan contains objectives and policies related to transport network issues. Relevant policies are listed below in italics and each policy is followed by discussion on the degree to which the proposed Plan Change achieves the policies.

> *Policy B2.1.2- Manage effects of activities on the safe and efficient operation of the District's existing and planned road network, considering the classification and function of each road in the hierarchy.*
>
> *Policy B2.1.3- Recognise and protect the primary function of roads classified as State Highways and Arterial Roads to ensure the safe and efficient flow of 'through' traffic en route to its destination.*
>
> *Policy B2.1.12- Address the impact of new residential or business activities on both the local roads around the site and the District's road network, particularly Arterial Road links with Christchurch City.*

These three policies are closely related.

As discussed previously, additional traffic that could be generated by the proposed site would be accommodated on the wider road network, and is being planned for through the longer term transport planning forecasting and infrastructure plans of the Council. The ODP makes provision for a higher standard primary road east-west through the site that will contribute to completion of a further section of the CRETS road, a key strategy relied on for development of the Rolleston Transport network. This will improve outcomes for local roads in the network that would otherwise be required to accommodate the through traffic from subdivisions west of the site wanting to connect to Lincoln Rolleston Road. The ODP also makes provision for potential future extension of that road further east, which will include provision of a fully controlled intersection (indicated as a roundabout) to assist safe and efficient movement of traffic and to manage effects on the arterial Lincoln Rolleston Road. Subdivision development will be subject to consideration of the road hierarchy in application of the transport rules, which will provide the usual additional protections of the arterial function of Lincoln Rolleston Road.

> *Policy B2.1.10- Ensure vehicle crossings, intersections, pathways, roadside signs and noticeboards are designed and positioned to ensure good visibility for all road users, and to allow safe passage, access and egress*

Lincoln Rolleston Road in the location of the proposed intersection for the Falcons area is straight, and as such there are no expected impediments to sightlines. The intersection will be located between two residential accesses located on the opposite side of Lincoln Rolleston Road. In the short term, it is considered those accesses will continue to operate safely and efficiently. In the longer term, if or when the land east of Lincoln Rolleston Road develops, it would be expected the full extent of Lincoln Rolleston Road would be urbanised, and there would be opportunities to access a Collector Road extension.

Other details of subdivision design will also be considered at a later stage. It is considered safe pedestrian and road networks will be able to be provided in the proposed residential area.

> *Policy B2.1.11- Ensure roads are designed, constructed, maintained and*

> *upgraded to an appropriate standard to carry the volume and types of traffic safely and efficiently*

Traffic modelling indicates that the completion of the Collector Road link will remove the reliance of other parts of the road network. This will support this policy, as the existing local road network will support local traffic, rather than through traffic.

> *Policy B2.1.5- Ensure the development of new roads is:*
> *-integrated with existing and future transport networks and landuses; and*
> *-is designed and located to maximise permeability and accessibility; through achieving a high level of connectivity within and through new developments to encourage use of public and active transport; whilst having regard to the road hierarchy.*

> *Policy B2.1.13- Minimise the effects of increasing transport demand associated with areas identified for urban growth by promoting efficient and consolidated land use patterns that will reduce the demand for transport*

> *Policy B2.1.14- 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.*

> *Policy B2.1.15- Require pedestrian and cycle links in new and redeveloped residential or business areas, where such links are likely to provide a safe, attractive and accessible alternative route for pedestrians and cyclists, to surrounding residential areas, business or community facilities.*

These four policies are primarily related to pedestrian and cyclist connectivity, and minimising the need for additional roading infrastructure.

The site land proposed to be developed for residential use has been identified for future development in all of the strategies for Rolleston, and as such the transport networks have been planned on that basis. The site is located adjacent the Lincoln Rolleston Road cycle route. Connections to existing pedestrian networks are ensured through the provision of the ODP connections. A school will be located in Acland Park within walking distance.

The completion of the Collector Road through to Lincoln Rolleston Road allows opportunity to establish the potential orbiter bus service indicated in the Rolleston Structure Plan. It also improves efficiency of cycle connections.

8.1.2 Growth of Townships Objectives and Policies

Section B4 of the District Plan contains objectives and policies related to the growth of townships. Of particular relevance to this application is the following objective:

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

It is clear from the transport modelling that the proposed development will support an efficient extension of the transport network, which includes zoning of remaining land that contributes to completion of the CRETS Collector Road link through to Lincoln Rolleston Road. That in turn will support more efficient travel in the area, and provide opportunities for improved public transport (if an orbital route as intended by the Rolleston Structure Plan

is provided), cycling and walking connections. The modelling indicates that the planned infrastructure upgrades will remain appropriate for accommodating the land development.

8.2 PROPOSED DISTRICT PLAN PROVISIONS

The Proposed District Plan (as notified) includes a range of matters relevant to consideration of the rezoning of the land.

The key matter at this planning stage is to ensure that there is consistency between the zoning proposal, including the ODP, and the PSDP Objectives and Policies, and higher-level planning documents. The rules are matters to be considered through future subdivision and land development, and will likely be subject to some change through the PSDP process.

An analysis of the PSDP objectives and policies has been carried out.

The District Wide – Strategic Directions included:

> *SD-UFD-O1 Urban growth is located only in or around existing townships and in a compact and sustainable form….*
>
> *SD-UFD-O3 Urban growth and development:*
>
> 1. *is well-integrated with the efficient provision, including the timing and funding, of infrastructure; and*
> 2. *has the ability to manage or respond to the effects of climate change.*

The site is located within an area where development has been anticipated, being adjacent to current subdivision and near to facilities such as a new primary school, the high school and recreational facilities.

The development will allow completion of important road network linkages which minimise overall network travel in the area. The change in traffic volumes and performance is of a sufficiently low scale that it would be unlikely to alter the timing of wider area transport network improvements that are either included in the Long Term Plan, or anticipated through long term transport modelling investigations.

As the site is located adjacent to an arterial road, and an indicative orbital bus route, there is good opportunity for the site to ultimately be serviced by public transport. In the meantime, opportunities for Park n Ride exist within Rolleston for travel to Christchurch.

The Transportation section includes objectives as follows:

> *TRAN-O1*
>
> *People and places are connected through safe, efficient, and convenient land transport corridors and land transport infrastructure which is well integrated with land use activities and subdivision development.*
>
> *TRAN-O2*
>
> *Land transport corridors and land transport infrastructure are protected from incompatible land use activities and subdivision development.*
>
> *TRAN-O3*
>
> *Land transport corridors and land transport infrastructure support the needs of people and freight, while ensuring adverse effects on the surrounding environment from their establishment and operation are managed.*

As discussed earlier, the site development is able to integrate with existing development where future connections to the site have already been anticipated at the time of subdivision. The additional links improve

connectivity and integration of the local transport network. The use of an ODP, combined with Transport rules will protect the arterial Lincoln Rolleston Road from inappropriate access. The higher order roads in the ODP can support cycle and pedestrian access, as well as a potential orbiter bus route as indicated by the Rolleston Structure Plan.

The PSDP includes a road hierarchy, and the existing Ed Hillary Drive does not have a classified road status. It is considered that the east-west Collector Road could be formalised through the District Plan given subdivision is well advanced, and residential development can occur over a short period of time when the relevant rules apply.

8.3 CANTERBURY REGIONAL POLICY STATEMENT

The Canterbury Regional Policy Statement objectives and policies in Chapter 5 Land-Use and Infrastructure and Chapter 6 Recovery and Rebuilding of Greater Christchurch have been reviewed.

The relevant Chapter 5 policies relate to urban growth being attached to existing urban areas, the safety and efficiency of the strategic and arterial road network being maintained, and connectivity for pedestrians and cyclists being provided. Chapter 6 focusses on new residential development occurring in the planned locations, transport effectiveness and integration of land use and infrastructure. The site is located within the projected infrastructure boundary for Rolleston as shown on Chapter 6 Map A.

Generally, the policies relating to transport are similar to those in the PSDP which have been discussed previously. The proposed zoning request area is adjacent to the existing Falcons Landing subdivision and there is good connectivity from the area through the existing subdivisions and to the remainder of Rolleston.

Whilst the additional development may generate additional demand for public transport which is currently not well provided for in this part of Rolleston, the additional demand could assist the viability of an orbital route in Rolleston, and increasing frequency of the other services. The physical requirements of a bus route can be considered through road design in accordance with the District Plan.

8.4 NATIONAL POLICY STATEMENT – URBAN DEVELOPMENT

The National Policy Statement Urban Development 2020 sets policy around urban development. New development capacity is considered against whether that development capacity is “infrastructure-ready”. Based on the assessment provided, it is considered that there is adequate existing and planned infrastructure to support the wider transport needs of the proposed development. The ODP further requires connections to the existing transport network in locations that support safe and efficient integration of the site. It is also considered that the development is generally well connected along the transport corridors. Public transport services are currently limited, although opportunities exist to access future service improvements either locally, or at nearby park and ride locations.

9.0 CONCLUSION

With the level of development planned and provisions assessed, the submission to rezone the land to Living Z/Residential can be supported from a transportation perspective. The submission proposes an extension of the Rolleston urban area to the southwest of Lincoln Rolleston Road, providing for residential housing. This would result in the area being able to potentially accommodate approximately 280 more residential lots.

The additional residential lots could generate extra traffic volumes of approximately 250 vehicle movements per hour. Across the wider traffic network, including on Lincoln Rolleston Road, traffic modelling demonstrates that the additional traffic volumes would be accommodated without altering the form of already planned and anticipated network improvements.

An ODP is proposed that will enable integration with the Falcons Landing subdivision and existing urban area. Importantly, the extension of Ed Hillary Drive to Lincoln Rolleston Road has been included to support improved connectivity in the area. This road should be considered to be a Collector Road for the purpose of design and assessment against District Plan Rules.

Long term traffic modelling indicates the potential for higher north south traffic volumes through the site, although this is partly due to a coarse representation of the road network. The ODP allows for secondary roads, which based on the planned urban growth boundary will be adequate for the life of the District Plan.

The new intersection on Lincoln Rolleston Road is proposed in a location to enable safe connection to the transport network, and future extension to the east (if land is rezoned in the future). To allow for the long-term expansion of residential areas to the east of Lincoln Rolleston Road, it is considered appropriate to provision for the land requirements of a future single lane roundabout.

There is good access to the existing cycle network on Lincoln Rolleston Road, and via the developing local road network. Pedestrian and cycle connectivity are provisioned for within the ODP where dedicated links to surrounding land need to be considered.

Whilst the site is currently not well serviced by public transport, there is no reason that the site could not form part of an orbital route as anticipated by the Rolleston Structure Plan. The site is also well located if future routes follow the arterial Lincoln Rolleston Road. In the interim, access is available to nearby Park n Ride locations in Rolleston for travel to Christchurch.

With the level of development planned and provisions assessed, the submission to rezone the land to Living Z (OSDP) / Residential General (PSDP) can be supported from a transportation perspective.

Appendices

We design with community in mind

Appendix A ROLLESTON STRUCTURE PLAN DIAGRAMS

Appendix A Rolleston Structure Plan Diagrams

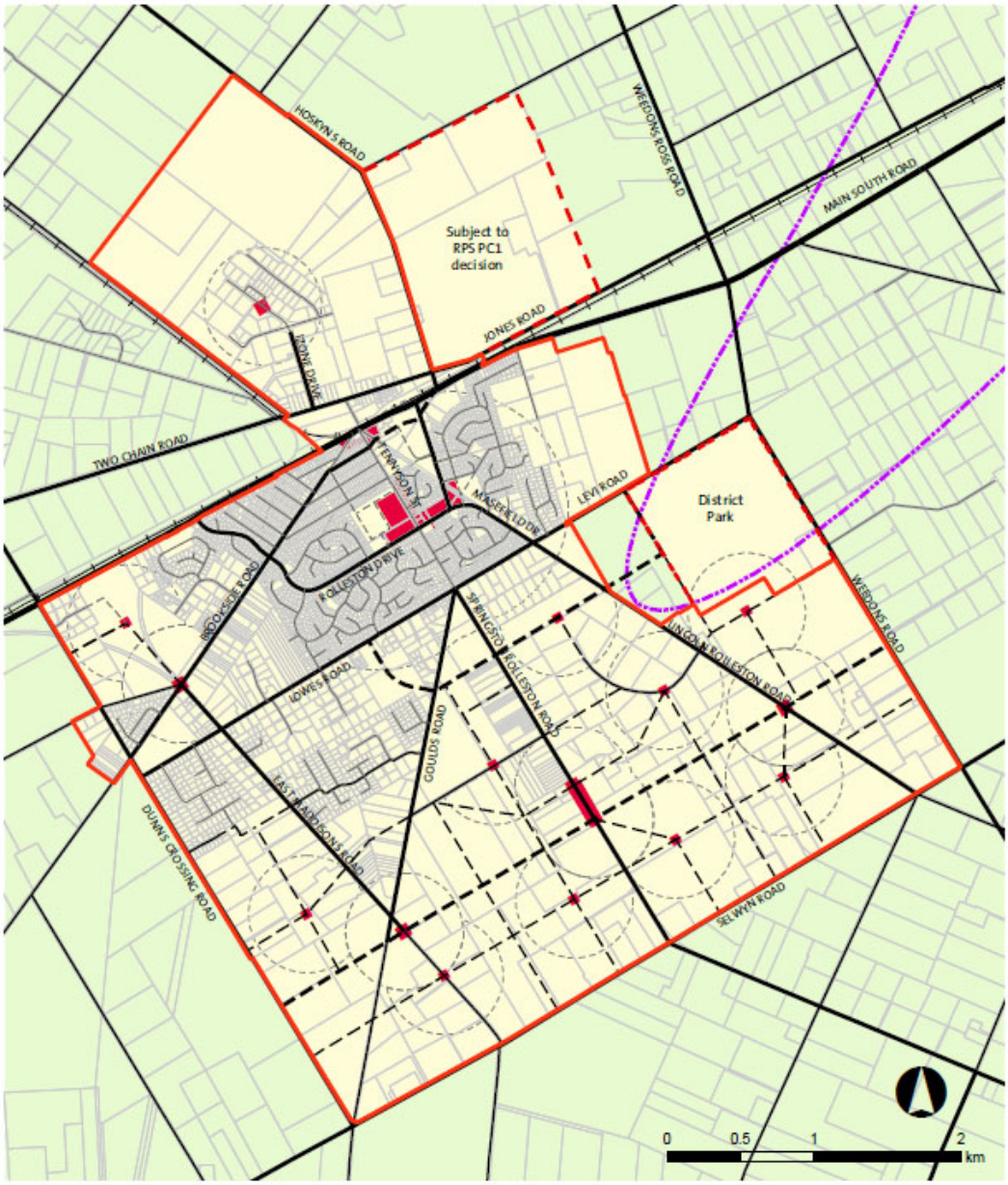
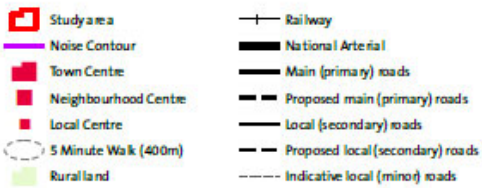


Figure 8.2: Main Roads - Primary Network



Appendix A Rolleston Structure Plan Diagrams

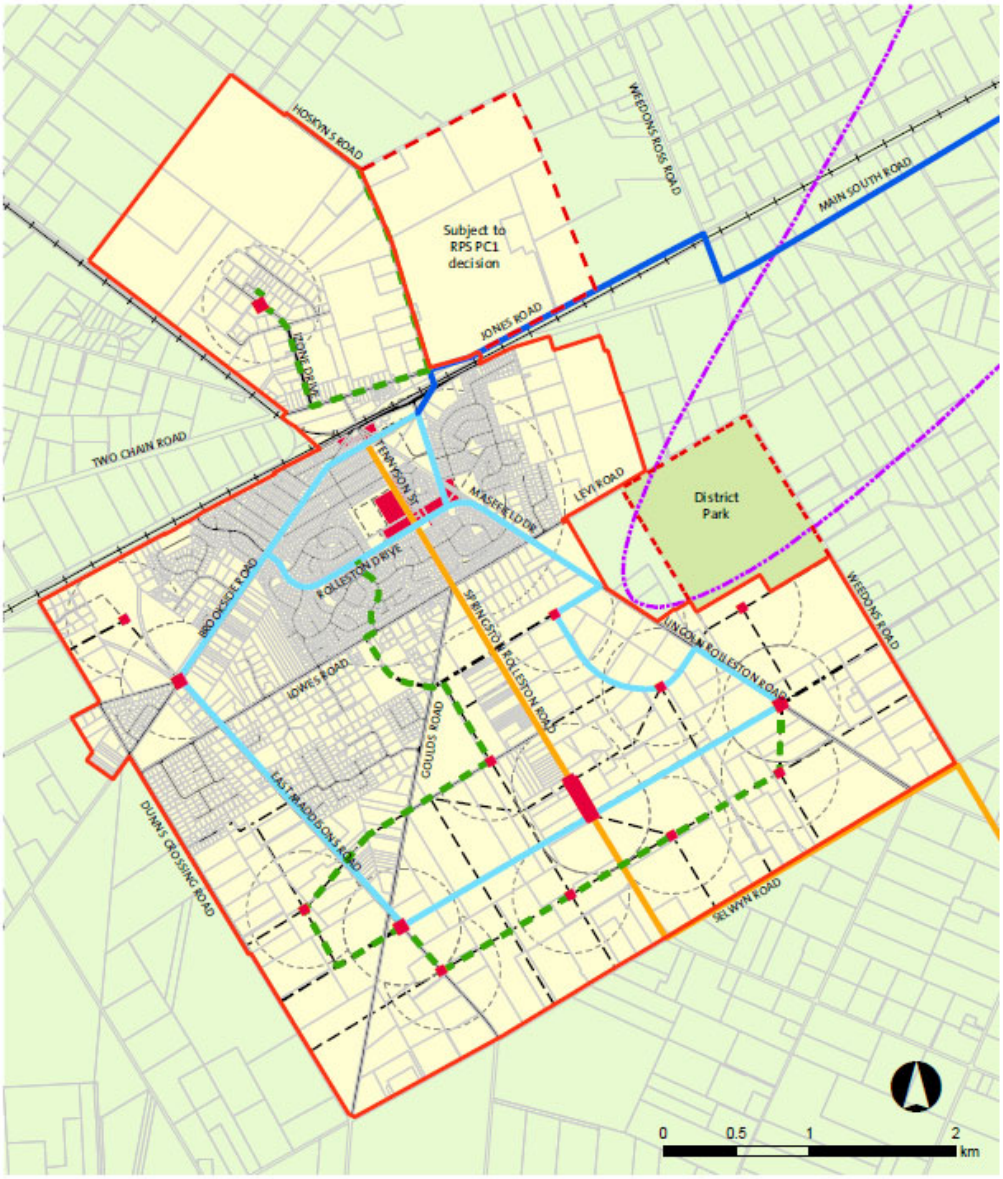


Figure 8.5: Public Transport Route Patterns

Appendix A Rolleston Structure Plan Diagrams

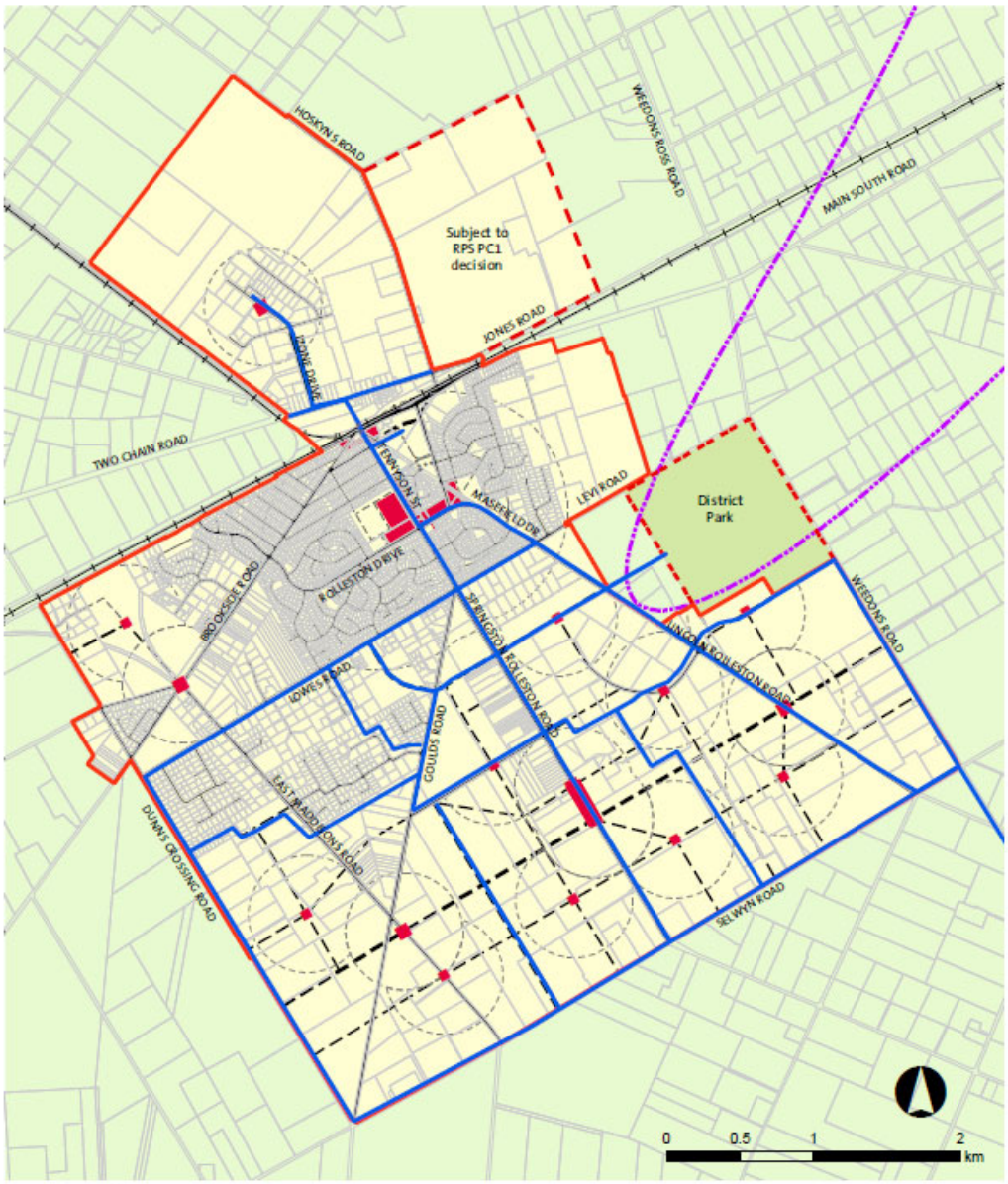
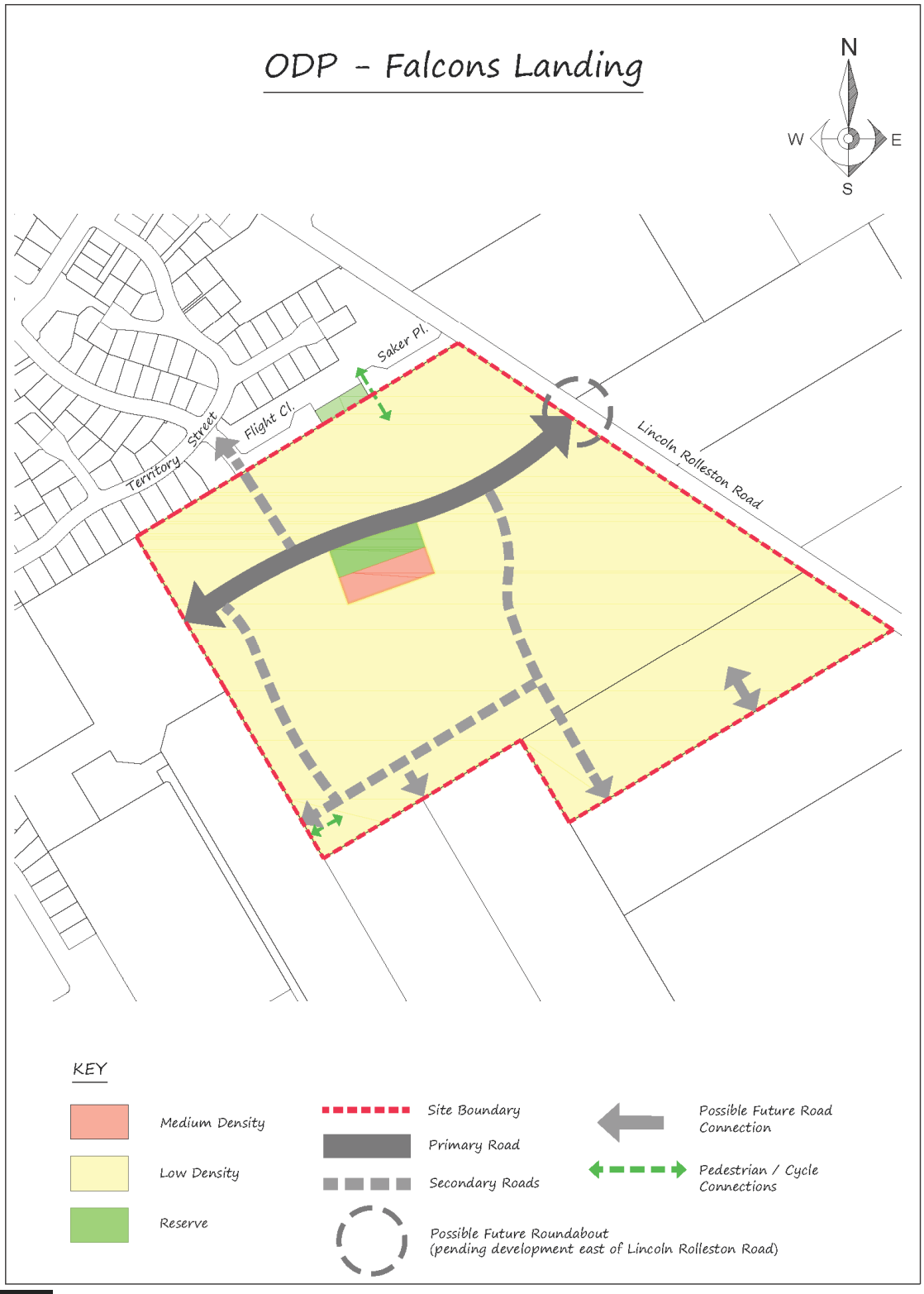


Figure 8.4: Cycleway Routes

- Study area
- Noise Contour
- Town Centre
- Neighbourhood Centre
- Local Centre
- 5 Minute Walk (400m)
- Rural land
- Cycle Routes
- Railway
- National Arterial
- Main (primary) roads
- Proposed main (primary) roads
- Local (secondary) roads
- Proposed local (secondary) roads
- Local (minor) roads
- Indicative local (minor) roads
- Walking and Cycling Link

Appendix B OUTLINE DEVELOPMENT PLAN



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