18. Rolleston to Lincoln Corridor Summary

18.1 Issues Raised

The issues raised that relate to this corridor have been taken from the Issues and Option Identification Report. The issues have been raised via three methods being, the initial consultation phase, study brief and through technical analysis. The issues that specifically relate to this corridor include:

- Concern regarding the safety of cyclists travelling between Rolleston and Lincoln – initial consultation,
- Concern regarding the traffic volume and speeds on Boundary Road – initial consultation,
- Concern regarding the safety of some corners along the route – initial consultation,
- Consider the function of roads with respect to the hierarchy – study brief,
- Concern regarding the safety of some intersections along the Lincoln Rolleston Road/Boundary Road and Springston Rolleston Road/Weedons Road routes – study brief.

18.2 Transport Strategy Works and Hierarchy

The works included in the Transport Strategy for this corridor are over and above the currently programmed works to 2011.

The works included in the Transport Strategy for this corridor are:

- Upgrading the Springston Rolleston Road/Weedons Road route to an appropriate two lane cross section. It is noted that this includes upgrades as appropriate to corners along the route,
- Upgrade of intersections to address safety concerns as appropriate,
- Changing priority to the route at the Waterholes Road/Springston Rolleston Road intersection giving priority to Springston Rolleston Road,
- Upgrading the Springston Rolleston Road/Weedons Road/Shands Road intersection to improve safety. This consists of creating a new T intersection for Weedons Road onto Springston Rolleston Road giving Springston Rolleston Road priority over Weedons Road,
- The use of Boundary Road as a route for alternative transport modes.

The works included in the Transport Strategy for this corridor are shown in Figure 35.

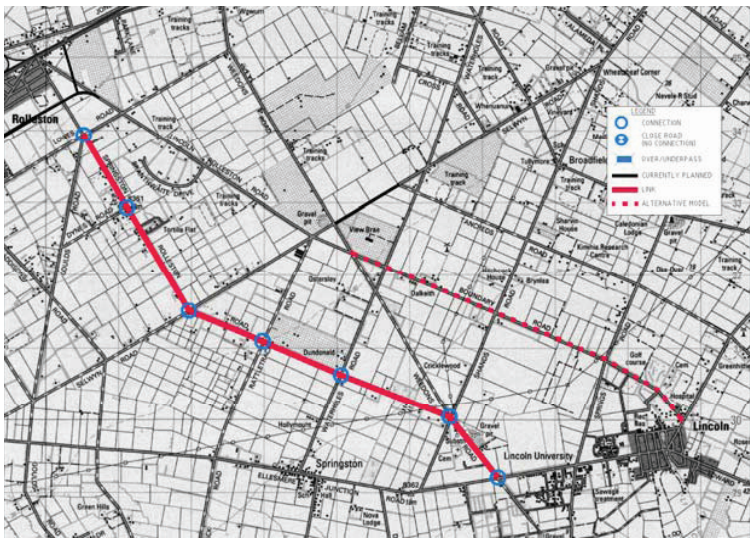

Figure 35
Rolleston to Lincoln Corridor Transport Strategy Works

These works are related to the hierarchy for the greater area in that the Springston Rolleston Road/Weedons Road route would become the district arterial for the area in the hierarchy. This means that the route would be developed to provide for travel between Rolleston and Lincoln. The suggested form (i.e. cross section) and amount of access to the route has specifically been selected to be consistent with the district arterial function.

The Selwyn District Council completed the construction in 2006 of a cycleway between Prebbleton and Lincoln as part of the overall Rail Trail and initiative connecting Hornby to Lincoln and beyond to Motukarara and Little River. This also has the potential to link to cycleways being promoted in conjunction with the first stage of the Southern Motorway Extension at the Halswell Junction Road/Springs Road intersection.

In recent times more thought has gone into the development of potential cycling networks and it has been identified that the route between Lincoln and Rolleston utilising Lincoln Rolleston Road and Boundary Road would be an ideal opportunity to provide an off road cycleway in the same manner as occurs on Birchs Road.

As with Birchs Road, the study has deliberately developed options to minimise traffic on Boundary Road to allow it to be used for cycling and buses as part of a proposed Park and Ride facility. Recently the Selwyn District Council undertook a Structure Planning exercise for the Lincoln Township. As part of this 5 options were identified and considered for a Park and Ride facility. Currently a facility located off Boundary Road close to the proposed Birchs Road alternative mode route is preferred.

The Transport Strategy hierarchy for this corridor is shown in Figure 36.

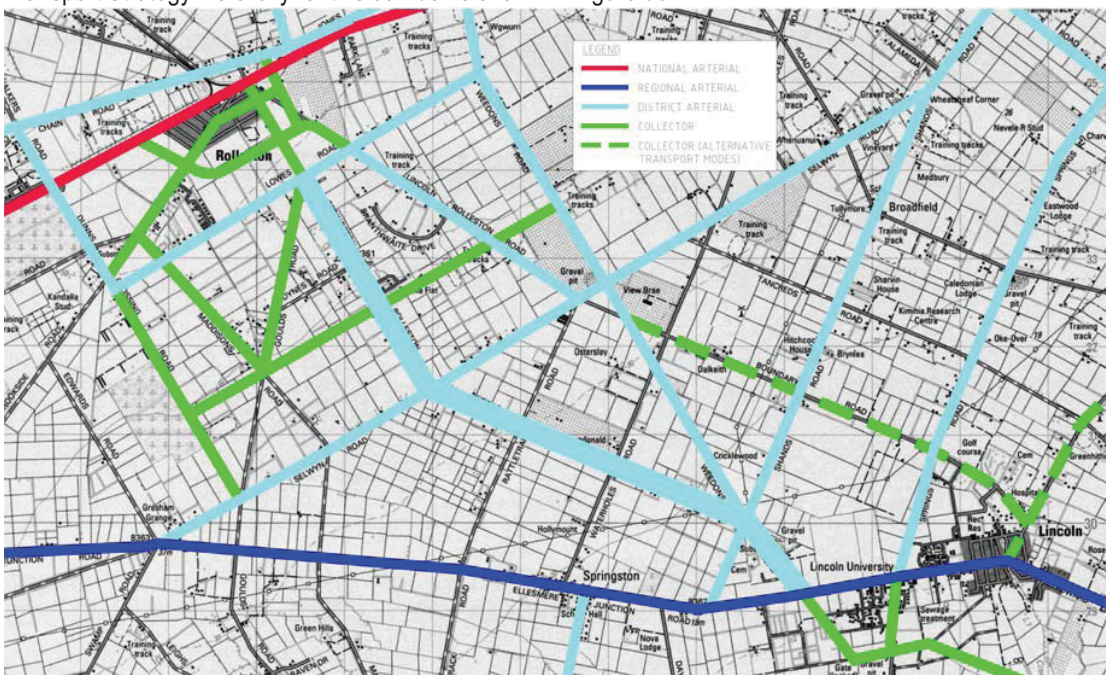

Figure 36

Rolleston to Lincoln Corridor Transport Strategy Hierarchy

The analysis carried out for this study has enabled the following comments to be made regarding the Transport Strategy:

- Both the Springston Rolleston Road/Weedons Road route and Lincoln Rolleston Road/Boundary Road route are predicted to have relatively low traffic volumes,
- The priority changes are based on the traffic volumes through the intersection. While the Springston Rolleston Road/Weedons Road route is a district arterial in the proposed hierarchy, Shands Road, which is also a district arterial, has a higher traffic volume, hence it is less efficient to have the Shands Road traffic giving way,

- The Lincoln Rolleston Road/Boundary Road route is not suggested as the preferred route as it doesn't provide good access to the current commercial areas of Lincoln, while the Springston Rolleston Road/Weedons Road via Ellesmere Junction Road route is likely to better serve future growth in the south and western areas of Lincoln,
- The Lincoln Rolleston Road/Boundary Road is not suggested as the preferred route as it passes two schools which have significant traffic accessing the road, hence the route is not consistent with the function of a district arterial. However, this route has been identified as a possible route for alternative modes i.e. buses and cyclists,
- A new link between Boundary Road and the intersection of Williams Street and North Belt has been considered as a means of connecting an arterial with Lincoln without passing the schools. Given the points above regarding accessing the commercial area of Lincoln, there is no current justification for constructing such a link in isolation. It may have some benefit in conjunction with other Lincoln growth scenarios for this part of Lincoln which is not part of this Study.
- The Springston Rolleston Road/Weedons Road route connects to an end of the southern bypass access road of Lincoln therefore also provides for travel between Rolleston and the areas east of Lincoln e.g. Tai Tapu,
- The Springston Rolleston Road/Weedons Road route provides more direct access to the centre of Rolleston via Tennyson Street than the Lincoln Rolleston Road/Boundary Road route. It also intersects the Rolleston Drive inner loop road and the outer loop road utilising Lowes Road,
- The closure of the eastern Lincoln Rolleston Road approach to the intersection of Selwyn Road/Lincoln Rolleston Road/Rattletrack Road is associated with the Christchurch to Rolleston corridor, as much as it is with this corridor. It is closed to enable the priority to be between Selwyn Road (northern approach) and Lincoln Rolleston Road (western approach) and also to promote the Springston Rolleston Road/Weedons Road route between Rolleston and Lincoln. This section of closed road could be utilised by cyclists as part of the proposed cycle route between Lincoln and Rolleston.

18.3 Traffic Effects

The traffic effects in terms of vehicle kilometres and minutes travelled have been determined for the Transport Strategy network as a whole. The effects of the works associated with this corridor cannot easily be isolated. Hence, specific details of the effects for this corridor are limited to changes in traffic volumes. Some of the changes in traffic volumes in this corridor are related to works for other corridors; hence the volumes quoted are not necessarily a direct result of the Transport Strategy works for this corridor.

Table 33 is a summary list of the traffic volumes on major links affected by the Transport Strategy works for the corridor.

Traffic Volume Location	2001 (veh per day)	2021 (veh per day)
Springston Rolleston Road east of Lowes Road	400	1,700
Springston Rolleston Road east of Selwyn Road	500	2,500
Springston Rolleston Road east of Waterholes Road	500	2,100
Weedons Road east of Shands Road	600	2,500
Weedons Road west of Shands Road	300	500
Lincoln Rolleston Road east of Lowes Road	1000	2,700
Boundary Road east of Waterholes Road	500	1,100
Boundary Road east of Shands Road	800	1,300
Boundary Road east of Springs Road	600	1,100
Ellesmere Junction Road east of Weedons Road	2,900	2,400

Table 33

Rolleston to Lincoln Corridor Transport Strategy Major Link Traffic Volumes

18.4 Social and Environmental Effects

Environmental effects: As the suggested works for this corridor involve upgrading roads and intersections within the existing road reserves, the environmental and social effects will be minor and will fall within what is anticipated by the

existing designation. If at the final design stage it becomes apparent that any additional land is required at intersections, the works will be of a minor scale with very localised effects.

Consultation to date: No topics were raised in the consultation process undertaken in 2006 which specifically affect this element of the Strategy, although general matters such as public transport, cycling, access to businesses and noise effects may be of relevance.

18.5 Staging and Timing (Also refer section 0)

The Rolleston to Lincoln work is driven by hierarchy and available road width to cater for the proposed traffic volumes. The route is predicted to carry relatively low traffic volumes in 2021, however the intersection changes and widening work should be undertaken to support the hierarchy. Suggested timing to upgrade the route is within the short term.

18.6 Response to Issues Raised

From the analysis carried out for this study the following points have been made in response to the issues raised:

- The promotion of the Springston Rolleston Road route is aimed at reducing the traffic volume on Boundary Road. The promotion of the Springston Rolleston Road route also removes the arterial type function off the Lincoln Rolleston Road route, hence it may be appropriate to carry out traffic calming on Boundary Road within the urban area,
- The upgrades have been suggested so that the route can perform its function safely and efficiently. This includes upgrading the cross section through corners along the route thereby improving safety,
- The hierarchy of the roads for travel between Rolleston and Lincoln has been considered. It has been found that due to the traffic volumes only one route is necessary. The Springston Rolleston Road route is suggested, as it connects to the southern bypass of Lincoln, provides the most direct route to Lincoln University and the commercial area of Lincoln, and connects directly to the centre of Rolleston,
- Utilising Boundary Road and Lincoln Rolleston Road as a route for alternative modes could provide a safe route for cyclists between Lincoln and Rolleston. In addition it would intercept the Selwyn/Shands Road route (refer to Hornby to Burnham Corridor) where a possible cycling connection north to Christchurch from Rolleston has been suggested.

19. Christchurch International Airport Summary

19.1 Issues Raised

This summary covers only the issues and works proposed within the Airport area itself. The issues and works relating to the Belfast to Hornby Corridor have been covered in that summary. This includes the ability to access and cross State Highway 1, however, as these issues are so closely related to the works within the Airport area the works have also been covered in this section. For a full discussion on the works associated with accessing and crossing State Highway 1 from the highway perspective refer to the Belfast to Hornby Corridor Summary.

The issues raised that relate to the Airport area have been taken from the Issues and Option Identification Report. The issues have been raised via three methods being, the initial consultation phase, study brief and through technical analysis. The issues that specifically relate to the Airport area include:

- Concern regarding the ability to cross and access State Highway 1 to and from the Airport – initial consultation,
- Consider the number and form of access points to the Airport for State Highway 1 – study brief,
- Consider the functions of roads within the Airport with respect to the hierarchy – study brief,
- Consider the capacity of roads within the Airport with respect to their capacity – study brief,
- Consider form and location of the connection from the airport development area in the southern corner development area between Avonhead Road and Greys Road – study brief,
- Consider the effects of putting security controls on the roads accessing the southern corner development area between Avonhead Road and Greys Road – study brief,
- Consider an extension of Orchard Road to McLeans Island Road – study brief,
- Consider the internal roading needs to cater for future growth – study brief,
- Capacity issues at intersections of Memorial Avenue and Harewood Road with State Highway 1 – technical analysis.

During this study the Christchurch International Airport Limited company (CIAL) has been developing its Master Plan. The CIAL has been considering the location of most activities on the airport campus and has requested the assessment of some significant changes be carried out during this study. These include changes such as moving all freight handling and fuel farm activities to the southern corner development area between Avonhead Road and Greys Road. This has a large impact on the pattern of traffic flows to and from the airport campus.

19.2 Transport Strategy Works and Hierarchy

The works included in the Transport Strategy for the airport are over and above the currently programmed works to 2011. The works suggested for State Highway 1 near the airport have been included here, however, for a discussion from the highway operation perspective refer to the Belfast to Hornby Corridor Summary.

The works included in the Transport Strategy for CIA are:

- Construct the CIAL proposed Capital A Road between Russley Road and Greys Road approximately 500m south of Avonhead Road,
- Extend Ron Guthrey Road south to Capital A Road,
- Install security controls at either end of Capital A Road and the Memorial Avenue end of Ron Guthrey Road that would limit the traffic on the roads to only the traffic that is accessing the activity in the area,
- Deviate the northern end of Ron Guthrey Road to form a signalised intersection at the current T intersection of Memorial Avenue and Peter Leeming Road,
- Four laning of the State Highway 1 (Johns Road, Russley Road, Masham Road, Carmen Road) route. The form of the route would be a four lane cross section upgrade of the existing route as per the previous study carried out for Transit New Zealand. No U-turns would be allowed on the route unless at intersections or u-turn slots and entry and exiting from any property with access to State Highway 1 would be limited to left turns only,

- The four laning requires that the form of many intersections along the route must be modified. Only changes to the proposed forms in the previous study carried out for Transit New Zealand have been mentioned here. The changes suggested have been listed below from north to south:
    - Convert the McLeans Island Road to allow for left turns into McLeans Island Road only. To allow for other movements a new link between McLeans Island Road and Sawyers Arms Road would be constructed.
    - Upgrade the Harewood Road roundabout to a full twin circulating lane roundabout.
    - Close the western approach of Wairakei Road and convert the eastern approach to allow for left turns into and out of Wairakei Road only.
    - Construct a full diamond, grade separated interchange at the Memorial Avenue intersection. The intersections of the ramps on and off State Highway 1 with Memorial Avenue would be controlled by signals.
    - Close the intersection of Avonhead Road completely.
    - Construct a signalised half seagull intersection at the CIAL proposed Capital A Road intersection. The right turn into Capital A Road would not be allowed. A seagull allows the southbound traffic on State Highway 1 to travel unimpeded with the traffic turning out of Capital A Road required to merge with it. The northbound traffic on State Highway 1 would be controlled by signals when traffic is exiting Capital A Road.
    - Convert the Ryans Road intersection to allow for left turns into and out of Ryans Road only.

The works included in the Transport Strategy for CIA for this corridor are shown in Figure 37.

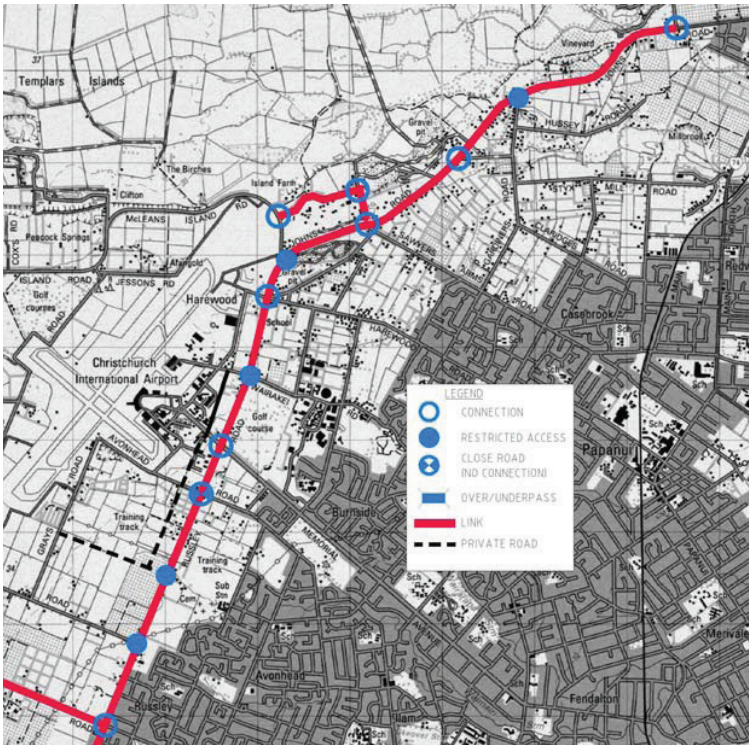

Figure 37

Christchurch International Airport Transport Strategy Works

These works are related to the hierarchy for the greater area in that the major link in the corridor (State Highway 1) will become the national arterial for the area in the hierarchy. It is also suggested that Memorial Avenue become a regional arterial, that Harewood Road become a regional arterial and that Orchard Road become a collector in the hierarchy. The suggested works are considered appropriate for these roads to perform these functions.

The Transport Strategy hierarchy for CIA is shown in Figure 38.

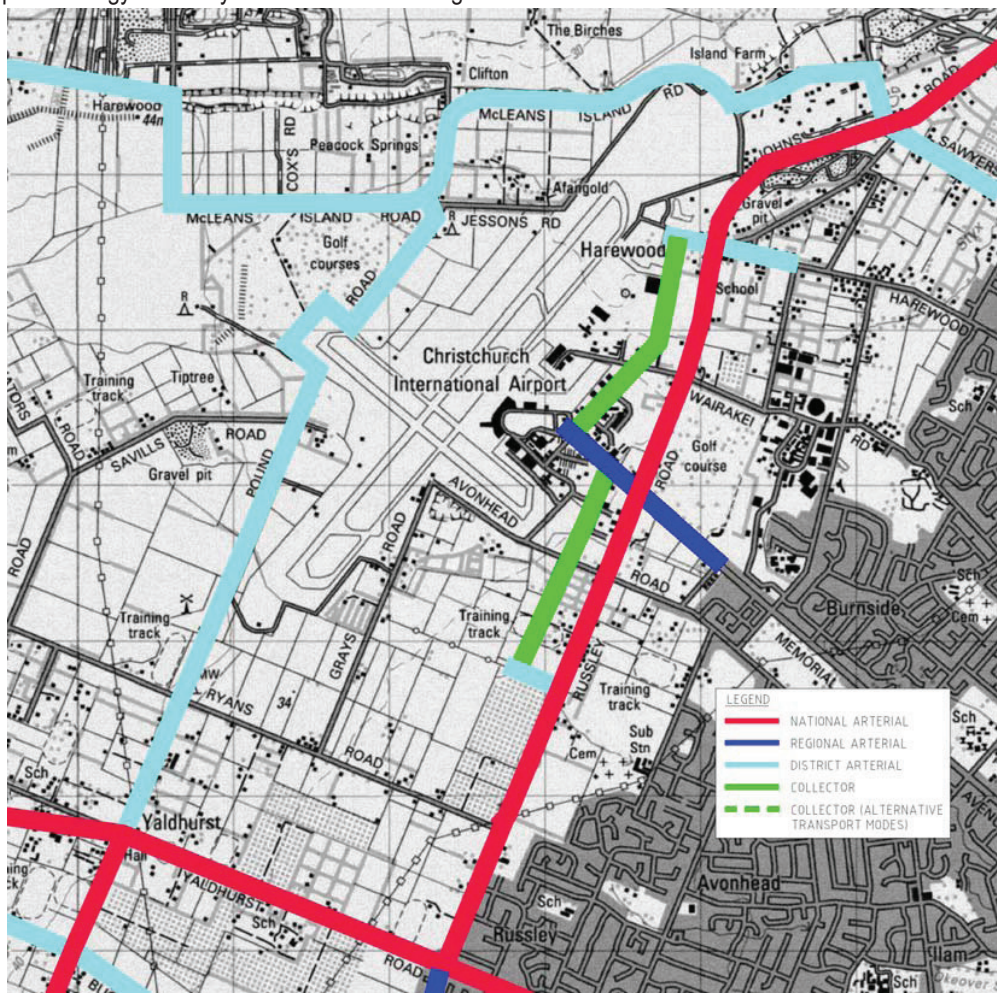

Figure 38

Christchurch International Airport Transport Strategy Hierarchy

The analysis carried out for this study has enabled the following comments to be made regarding the Transport Strategy:

- Due to the significant growth in population and employment predicted there will be a significant increase in the demand for travel. The predicted increase in trips is in the order of 75% for the study area,
- Capital A Road and the extension of Ron Guthrey Road are required to service the proposed southern corner development area between Avonhead Road and Greys Road,
- The security controls on Capital A Road and Ron Guthrey Road are considered necessary by CIAL to increase the security to levels required by international airline carriers,
- The deviation of the northern end of Ron Guthrey Road to the intersection of Memorial Avenue and Peter Leeming Road needs to be signalised due to safety concerns,
- The Johns/Russley/Masham/Carmen Roads route does not have sufficient capacity to carry the projected traffic volumes, hence the four laning upgrade is suggested,
- For the Johns Road and Russley Road route to function as well as possible as a National Arterial access to it or the effects of access to it needs to be minimised. It is for this reason that works such as reducing the number of movements at some intersections, and providing additional capacity at others has been considered,

- It is a result of the very high traffic volumes that a grade separated interchange has been suggested for the intersection of Memorial Avenue and Russley Road. The traffic volumes at other intersections along the route do not justify such expenditure,
- An overbridge for Wairakei Road has been considered, however, it has been determined that the traffic volume using the overbridge would not justify such an expense given that alternatives are available. It is also worth noting that the Christchurch International Airport Company are considering significant changes to the location of various activities at the airport hence existing travel patterns will change significantly in the future,
- The extension of Orchard Road to the McLeans Island Road has been considered, however, there is little benefit associated with this. The cost of the extension would be high given that an old gravel borrow pit is on the potential path.

19.3 Traffic Effects

The traffic effects in terms of vehicle kilometres and minutes travelled have been determined for the Transport Strategy network as a whole. The effects of the works associated with the Airport cannot easily be isolated. Hence, specific details of the effects for the Airport are limited to changes in traffic volumes. Some of the changes in traffic volumes are related to works for other corridors, hence the volumes quoted are not necessarily a direct result of the Transport Strategy works for the Airport.

Table 34 is a summary list of the traffic volumes on major links affected by the Transport Strategy works for the Airport. The base year traffic volumes around the airport are from 2004 rather than 2001 as a separate 2004 transportation model was developed for the airport.

Traffic Volume Location	2004 (veh per day)	2021 (veh per day)
Johns Road south of Gardiners Road	11,200	19,300
Johns Road south of Sawyers Arms Road	19,200	24,400
Russley Road south of Harewood Road	18,800	25,700
Russley Road south of Memorial Avenue	22,300	28,900
Masham Road south of Yaldhurst Road	16,100	24,000
Carmen Road south of Waterloo Road	17,100	24,400
Yaldhurst Road west of Russley Road	9,100	9,500
Pound Road south of Yaldhurst Road	3,200	5,800
McLeans Island Road west of the potential new link to Sawyers Arms Road	900	4,700
Harewood Road east of Johns Road	6,700	11,900
Harewood Road west of Johns Road	6,100	12,900
Wairakei Road east of Russley Road	5,600	3,900
Wairakei Road west of Russley Road	4,200	500
Memorial Avenue east of Russley Road	13,800	26,200
Memorial Avenue east of Orchard Road	12,000	24,000
Ron Guthrey Road south of Memorial Avenue	2,600	8,100
Orchard Road south of Wairakei Road	7,700	12,800
Capital A Road west of Russley Road	NA	3,100

Table 34

Christchurch International Airport Transport Strategy Major Link Traffic Volumes

19.4 Social and Environmental Effects

Existing/potential land uses: The Christchurch International Airport element of the Transport Strategy utilises existing roads as well as involving the creation of new roads. The existing roads adjoin a range of different land uses from industrial and service activities, the Christchurch International Airport, residential and rural activities. The new roads outlined in this element of the Strategy will be over land owned by Christchurch International Airport Ltd.

Designations: Designations will be required to upgrade intersections. There is an existing designation for the widening of State Highway 1. Most land required for the new roads is owned by Christchurch International Airport Ltd, no

designations will be required to establish new roads for Capital A Road and the extension of Ron Guthrey Road. The exception is the section between McLeans Island Road and Sawyers Arms Road where new designations will be required.

Property access severance: This will be an issue principally affecting State Highway 1 with the construction of a four-lane median divided road. Existing properties will have access to the highway in one direction only (left in and left only) and cross movement will be limited to the main intersections.

Landscape characteristics/quality: The study area is flat terrain consisting predominantly of land used for airport purposes, business activities, grassed open farmland, rural-residential allotments, scattered buildings, some shelterbelts and trees. The Strategy involves widening existing roads, establishing new roads, and constructing new structures like grade separated interchanges and roundabouts that will create local adverse visual effects. The Strategy will also require the removal or relocation of existing features in the landscape such as trees and vegetation, buildings, fencing, lighting and power poles.

Mitigation of effects on landscape: To ensure that the roading will be integrated into the existing environment, areas of roading improvements will be suitably landscaped where appropriate, as will the intersections that are to be closed. Design and landscaping will assist in mitigating some of the adverse effects arising from the establishment of the new roads, however such measures will have limited positive impacts on raised structures such as interchanges and overpasses, which due to the flat nature of the terrain will change the local landscape of the affected areas.

Geological/geotechnical considerations: New roads, widening, and changes at intersections will require detailed geotechnical investigations during the design phase of roading improvements. This is particularly important when establishing new structures such as those at grade separated interchanges.

Drainage: There are no sensitive waterbodies within the vicinity of the land affected by this element of the strategy. However, the Styx River, its tributaries, and the surrounding area are well known as significant sites and areas to Ngai Tahu. Therefore, it is recommend that further consultation with the relevant parties be undertaken at a more appropriate time such as the scheme assessment stage.

Noise: There will be temporary noise effects during the construction phase. New roads will introduce vehicle noise currently distant from high-volume traffic flows, however, given that these new roads are on land owned by Christchurch International Airport Ltd, the effects will be no more than minor as there are no sensitive activities which would be adversely affected by an increase in traffic-related noise. Other roading improvements will facilitate higher traffic volumes with a consequent rise in traffic-generated noise or increase noise levels at the notional boundaries of existing dwellings by bringing vehicle paths closer to existing dwellings. An increase in traffic-generated noise is to be expected on routes with existing roading designations, the purpose of which is to carry traffic.

Maori, archaeological, cultural and heritage sites: There are no known sites of Maori, cultural, historical or archaeological significance affected by the Strategy. However, the Styx River, its tributaries and the surrounding area are well known as significant sites and areas to Ngai Tahu. Therefore, it is recommend that further consultation with the relevant parties be undertaken at a more appropriate time such as the scheme assessment stage.

Social effects, social severance and property severance: The majority of the new roads are located on land owned by Christchurch International Airport Ltd, and as such limited property and social severance effects will occur from the establishment of the same. At some intersections it is proposed that road links be closed to provide priority to key arterial routes. The closure of some intersections, such as Avonhead Road and the western airport-side portion of Wairakei Road, will cause disruption for persons who presently utilise these intersections.

Public transport/cycle: The improved highway and roading network will enable public transportation to operate more efficiently. There may also be opportunities to provide for separate cycle lanes or at least improvements to the shoulders of the carriageway and footpaths.

Consultation to date: No topics were raised in the consultation process undertaken in 2006 which specifically affect this element of the Strategy, although general matters such as public transport, cycling, access to businesses and noise effects may be of relevance.

19.5 Staging and Timing (Also refer section 0)

Work relating to the airport is closely related to Corridor B – Belfast to Hornby. For completeness work within Corridor B directly relating to the airport is repeated in this section.

Four laning of the section Belfast (The Groynes) to Yaldhurst Road is triggered by this section reaching LOS med E. This is estimated as follows:

i. The Groynes to Sawyers Arms Road – long term
ii. Sawyers Arms Road to Harewood Road – short term
iii. Harewood Road to Memorial Avenue – medium term
iv. Memorial Avenue to Yaldhurst Road – short term

The restricted access of McLeans Island Road / State Highway 1 intersection and the new link via Sawyers Arms Road is triggered by the State Highway 1 four laning. As shown above, this is within the short term.

The Russley Road (State Highway 1), Memorial Avenue interchange is required when LOS at this intersection reaches D. For the AM peak this is 2025 and for the PM peak this is 2009. The mean of the two peaks has been taken, which is within the medium term.

The Capital A intersection and upgrades to Ron Guthrey Road and Peter Lemming Road are associated with the new Airport freight facility being established. At this stage the date is not confirmed, so for the purpose of this report, it is assumed that this work will be done at the same time as Russley Road / Memorial Avenue interchange, being within the medium term.

19.6 Response to Issues Raised

From the analysis carried out for this study the following points have been made in response to the issues raised:

- The suggested improvements will significantly improve the ability to access and cross State Highway 1 to and from the airport,
- The number of access points for the airport is maintained at three. However, the Wairakei Road access point is replaced with the Capital A Road access point. The changes in land use and this change in access point are expected to provide some segregation (but not complete segregation) between the light and heavy commercial vehicles accessing the airport. This is desirable from a social amenity and safety perspective,
- With the exception of Capital A Road and Wairakei Road the function of the roads in the airport is not considered to be significantly different from the existing functions. The implementation of the suggested hierarchical designations is considered appropriate to protect the roads so they may continue to perform their functions,
- The form of the roads in the airport is considered appropriate for the traffic volumes they are projected to carry. Interaction between vehicles using the roads will, however become more apparent to road users given the growing number of vehicles,
- The form of the intersection of Capital A Road and Russley Road has been considered in detail with numerous forms being considered. The suggested form is considered to be the most appropriate given the desire to not introduce new delays to Russley Road and yet provide safe access for a reasonable cost. The suggested form will not impose any delays to south bound traffic on Russley Road and only minimal delays to north bound traffic. The suggested form will allow for all movements except the right turn into Capital A Road from the north, which can use the Memorial Avenue Interchange,
- The location of the intersection of Capital A Road with Russley Road is affected by the proximity of other intersections. Given the suggestion to completely close Avonhead Road the nearest intersection is that of Memorial Avenue and Russley Road, which is approximately one kilometre to the north,
- The extension of Orchard Road to McLeans Island Road is not justified given the low benefit and high cost,
- The suggested improvements will enable significantly easier access at the Memorial Avenue/Russley Road intersection. The intersection of Harewood Road and Johns Road is predicted to operate in a similar manner to the current Memorial Avenue/Russley Road intersection.

20. Templeton Township Summary

20.1 Issues Raised

This summary covers only the issues and works proposed within Templeton itself. The issues and works relating to travel between Templeton and Christchurch have been covered in the Christchurch to Burnham Summary. This includes the ability to access and cross State Highway 1, however, as these issues are closely related to travel within Templeton the works have also been covered in this section. For a full discussion on the works associated with accessing and crossing State Highway 1 from the highway perspective refer to the Hornby to Burnham Corridor.

The issues raised that relate to Templeton Township and industrial area have been taken from the Issues and Option Identification Report. The issues have been raised via three methods being, the initial consultation phase, study brief and through technical analysis. The issues that specifically relate to this township and industrial area include:

- Concern regarding the social amenity effects of traffic in Templeton – initial consultation,
- Concern regarding the noise associated with traffic in Templeton – initial consultation,
- Concern regarding the traffic volumes in Templeton – initial consultation,
- Concern regarding the number of heavy vehicles in Templeton – initial consultation,
- Consider the effects of segregating the township by State Highway 1 – initial consultation,
- Consider the functions of roads within Templeton with respect to the hierarchy – study brief.

20.2 Transport Strategy Works and Hierarchy

Due to the effects of the Christchurch Southern Motorway, the modifications to State Highway 1 and the Pound Road/Yaldhurst Road upgrades no works have been developed for within Templeton itself. The works for State Highway 1 and the Pound Road/Yaldhurst Road route have been covered in this summary, however, as they effect the traffic patterns within Templeton.

The State Highway 1 and the Pound Road/Yaldhurst Road route works included in the Transport Strategy are:

- Upgrade of the route from Pound Road to State Highway 1 at Templeton. This would involve deviating Pound Road to Barters Road further north and giving the Pound Road/Barters Road route priority right through to State Highway 1,
- Associated with this both Barters Road and Waterloo Road would need to be deviated to form T intersections with the new route,
- Also associated with this is the upgrade of Pound Road to the required cross section of 10m wide with two lanes,
- Modifications to some of the State Highway 1 intersections between Halswell Junction Road and Dawsons Road to either limit the number of different turns able to be made or providing for all movements with less delays and improved safety. The changes suggested have been listed below from north to south:
    - No modification to the signals Transit New Zealand is currently considering for the Halswell Junction Road intersection.
    - Upgrade of the Barters Road intersection to signals to accommodate the promotion of Yaldhurst Road/Pound Road as State Highway 1.
    - No modifications to the current Kirk Road intersection.
    - No modifications to the current Dawsons Road intersection.

The works included in the Transport Strategy for this corridor are shown in Figure 39.

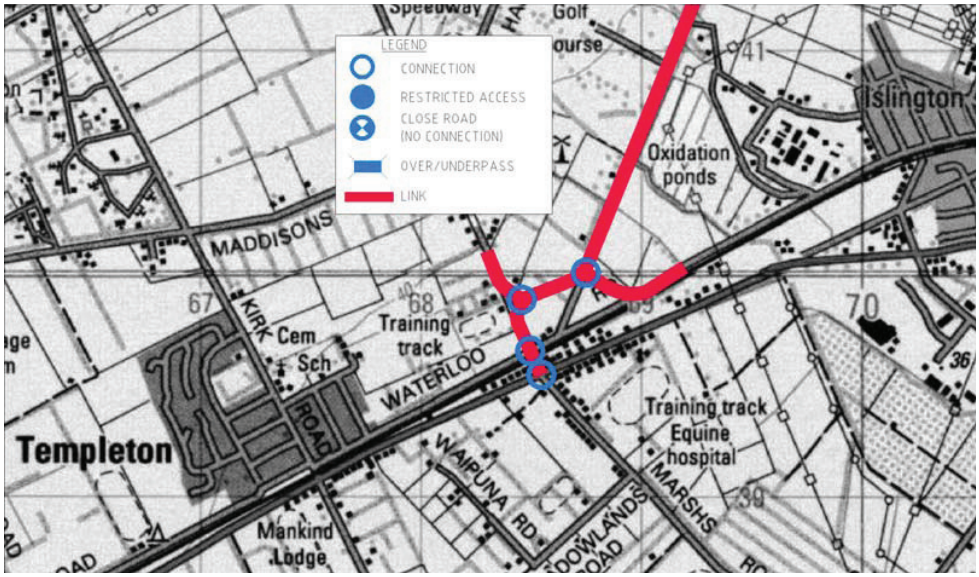

Figure 39

Templeton Township Transport Strategy Works

The works for the State Highway 1 and the Pound Road/Yaldhurst Road routes relate to the hierarchy for the greater area. It is suggested that Jones Road and Dawsons Road be designated district arterials, as it is identified that they will have a mobility function. It is also suggested that Kirk Road between Jones Road and Maddisons Road and Maddisons Road between Kirk Road and Dawsons Road be designated collector roads as they will collect traffic from local roads and distribute it to the Arterials.

The Transport Strategy hierarchy for this corridor is shown in Figure 40.

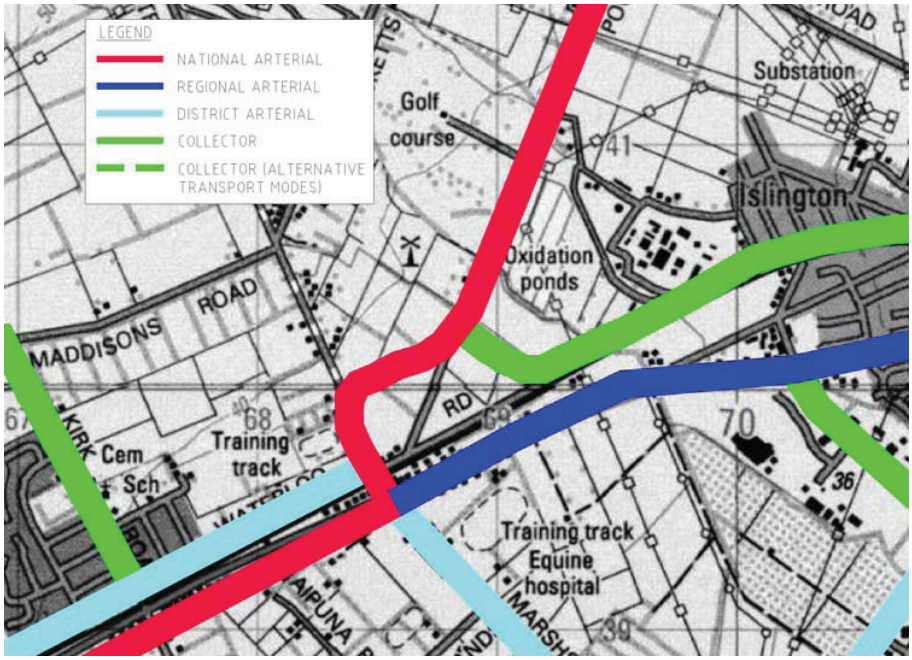

Figure 40

Templeton Township Transport Strategy Hierarchy

The analysis carried out for this study has enabled the following comments to be made regarding the Transport Strategy:

- It has been predicted that with the Transport Strategy in place the traffic volumes through Templeton on State Highway 1 will be less than the volumes in 2001,
- The predicted growth in traffic volumes on the local roads within Templeton is low,
- The predicted traffic volumes are well within the capacity of the existing roads.

20.3 Traffic Effects

The traffic effects in terms of vehicle kilometres and minutes travelled have been determined for the Transport Strategy network as a whole. The effects of the works associated with this township cannot easily be isolated. Hence, specific details of the effects for this township are limited to changes in traffic volumes. Some of the changes in traffic volumes in this township are related to works for connecting corridors, hence the volumes quoted are not necessarily a direct result of the Transport Strategy works for this township.

Table 35 is a summary list of the traffic volumes on major links affected by the Transport Strategy works for the township.

Traffic Volume Location	2001 (veh per day)	2021(veh per day)
Waterloo Road south of Barters Road	4,800	8,700
Jones Road south of Kirk Road	800	4,200
Kirk Road west of Jones Road	5,000	6,600
Maddisons Road south of Kirk Road	1,000	700

Table 35

Templeton Township Transport Strategy Major Link Traffic Volumes

20.4 Social and Environmental Effects

Environmental effects: As no works are proposed for this element of the Strategy, no assessment of social and environmental effects is necessary.

Consultation to date: No topics were raised in the consultation process undertaken in 2006 which specifically affect this element of the Strategy.

20.5 Staging and Timing (Also refer section 0)

No direct work is proposed for Templeton Township. However, the suggested Pound Road bypass including new traffic signals at the State Highway 1 / Barters Road intersection and associated Pound Road / Waterloo Road intersection realignment indirectly affects Templeton. The timing of this is not critical, however it would be desirable to complete this work so that it coincides with the completion of the Christchurch Southern Access work. For this reason this work should be completed within the medium term.

20.6 Response to Issues Raised

From the analysis carried out for this study the following points have been made in response to the issues raised:

- Whilst it is undesirable for a major road to segregate a township it is not justified in this case to remove the segregation. Instead the 2021 traffic volumes have been reduced to below the 2001 traffic volumes by the Transport Strategy including the extension of the Christchurch Southern Motorway to State Highway 1 south of Templeton,
- The reduction of the traffic volume through Templeton on State Highway 1 will result in less traffic noise,
- The minor increase in traffic volumes on the roads within Templeton will result in a minor increase in noise,
- The function of the roads in Templeton and how they interact with each other and the function of State Highway 1 has been considered in detail during the development of the suggested hierarchy.

21. Rolleston Township and Industrial Area Summary

21.1 Issues Raised

This summary covers only the issues and works proposed within Rolleston and the Industrial Area itself. The issues and works relating to travel between Rolleston and Christchurch and Rolleston and Lincoln have been covered in other summaries. This includes the ability to access and cross State Highway 1, however, as these issues are so closely related to the works within Rolleston and the Industrial area, the works have also been covered in this section. For a full discussion on the works associated with accessing and crossing State Highway 1 from the highway perspective, refer to the Hornby to Burnham Corridor.

The issues raised that relate to the Rolleston Township and industrial area have been taken from the Issues and Options Identification Report. The issues have been raised via three methods being, the initial consultation phase, study brief and through technical analysis. The issues that specifically relate to the Rolleston Township and industrial area include:

- Concern regarding the social amenity effects of traffic in Rolleston – initial consultation,
- Concern regarding the noise associated with traffic in Rolleston – initial consultation,
- Concern regarding the traffic volumes in Rolleston – initial consultation,
- Concern regarding the number of heavy vehicles in Rolleston – initial consultation,
- Concern regarding the interaction of pedestrians and cyclists with vehicles due to lack of facilities for pedestrians and cyclists – initial consultation,
- Consider the functions of roads within Rolleston with respect to the hierarchy – study brief,
- Consider the ability of the Inner Ring Road (Rolleston Drive) and Outer Ring Road (Weedons Road/Levi Road/Lowes Road/Dunns Crossing Road/Walkers Road/Two Chain Road/Jones Road/Weedons Ross Road) to perform the function of arterials. Along with this any possible upgrades that would enable them to act as arterials are to be considered – study brief,
- Consider the ability of the exiting roads to service the Industrial Area – study brief,
- Consider the most appropriate route to provide access to Rolleston and the Industrial Area from the north west – study brief,
- Consider the effects of the segregation between the township and the Industrial Area by State Highway 1 – study brief.

21.2 Transport Strategy Works and Hierarchy

The works included in the Transport Strategy for the Rolleston Township and industrial area are over and above the currently programmed works to 2011.

The works included in the Transport Strategy for Rolleston are:

- Upgrading of the cross section of the Inner and Outer Ring Roads,
- Upgrading intersections along these routes so there is increased visibility, turning bays, and cycle lanes as appropriate. No significant changes to the control given that the current intersection forms are considered appropriate (may require some upgrading e.g. installation of right hand turn bays, subject to more detailed design analysis) for the projected traffic volumes,
- A short road realignment and rail crossing controls at Two Chain Road / Jones Road,
- Upgrading Hoskyns Road from Jones Road to State Highway 73,
- Providing a connection between Byron Street and Rolleston Drive north, referred to as the Byron Street Extension,
- Extension of Rolleston Road South between Brookside Road and State Highway 1 as part of future subdivisional development (currently under construction),

- 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),
- Modifications to most intersections to either limit the number of different turns that can be made or provide for all movements with less delays and improved safety are likely to be necessary. These will be confirmed through more detailed analysis beyond the scope of this study. Only the changes from Weedons Road to Dunns Crossing Road have been listed, refer to the Christchurch to Burnham Corridor Summary for all of State Highway 1. The changes recommended are from north to south:
    - Construct a full diamond, grade separated interchange at the Weedons/Weedons Ross Road intersection. The intersections of the ramps on and off State Highway 1 with Weedons/Weedons Ross Road would be priority intersections.
    - Provide a new separated grade connection between Rolleston Township and Rolleston Industrial Area by connecting Rolleston Drive North with the intersection of Hoskyns Road and Jones Road upgraded to a roundabout, with State Highway 1 being bridged under the new connection.
    - New service lane for access to BP Service Station, Tennyson Street and Brookside Road intersection having left turns in and out only off the service lane.
    - Evoke the previously imposed planning condition that with the construction of Rolleston Drive south and when the new intersection with State Highway 1 is created, then the Elizabeth Street intersection is closed. For this reason this work is part of the Do Min works to 2011 that are given for this study.
    - A condition of the construction of Rolleston Drive south, is that the Elizabeth Street intersection is closed. For this reason this work is part of the Do Min works to 2011 that are given for this study.
    - Convert the Rolleston Drive South intersection to allow left turns in and out only at the time when the volume of traffic on State Highway 1 requires the ban of right turns for safety reasons.

The works included in the Transport Strategy for this corridor are shown in Figure 41.

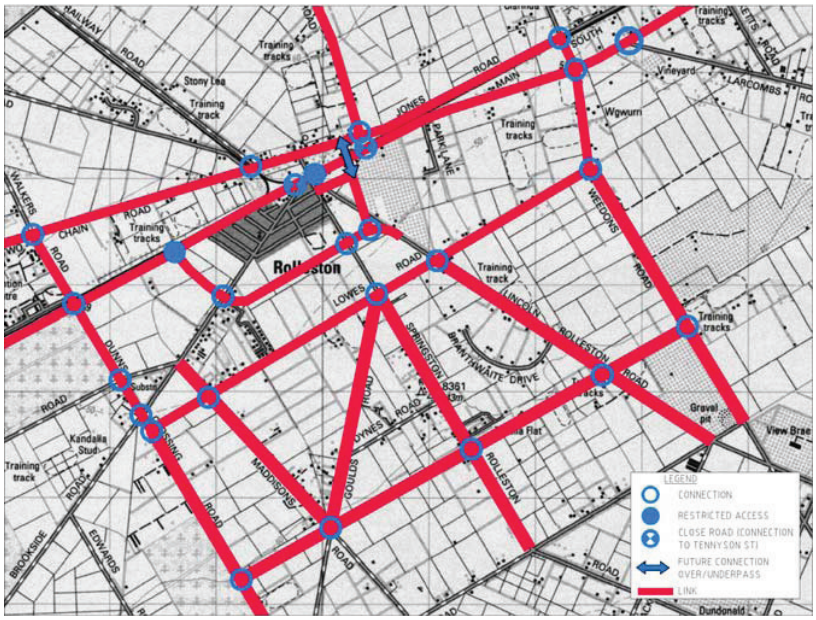

Figure 41

Rolleston Township and Industrial Area Transport Strategy Works

These works are related to the hierarchy for the greater area in that the Outer Ring Road route would become the district arterial for the area in the hierarchy. This means that the route would be developed to provide for travel from

Rolleston or the Industrial Area to State Highway 1, or to the District Arterials to Lincoln, Aylesbury, West Melton, Christchurch, or Templeton. The suggested form i.e. cross section of the route has specifically been selected to be consistent with the district arterial function.

It is suggested that other roads in Rolleston be designated as Collector Roads thereby providing for travel from the connecting local roads to the Outer Ring Road or State Highway 1. These roads are the Inner Ring Road, Masefield Drive, Tennyson Street, Brookside Drive and Byron Street (including its extension). The suggested form i.e. cross section of the roads has specifically been selected to be consistent with the district arterial function.

The roads would be upgraded where necessary at a time when traffic volumes and use would require this in line with their hierarchical classification.

The Transport Strategy hierarchy for Rolleston is shown in Figure 42.

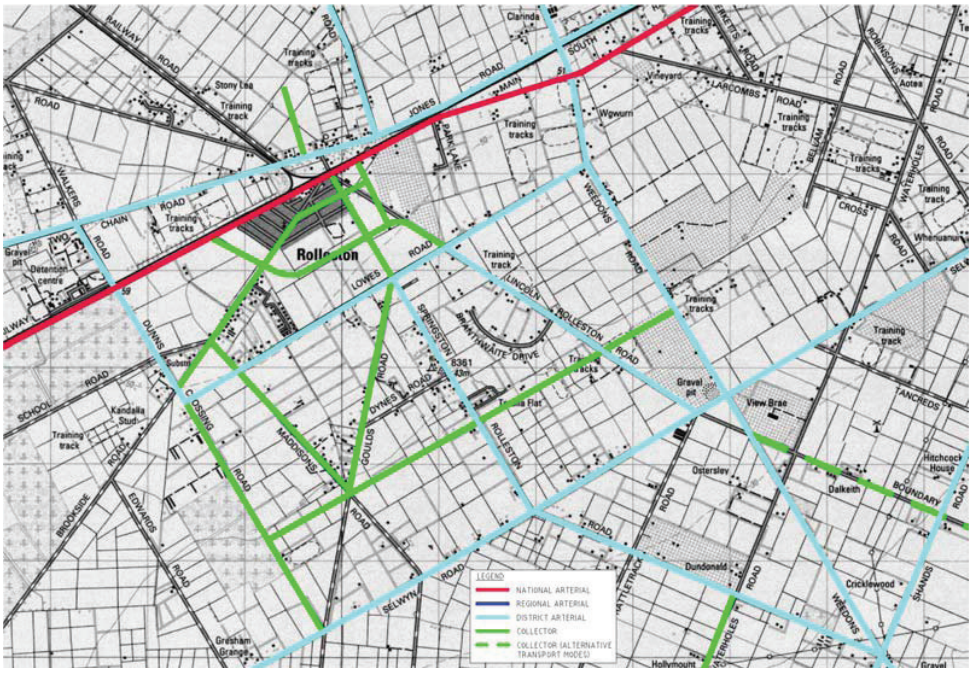

Figure 42

Rolleston Township and Industrial Area Transport Strategy Hierarchy

The analysis carried out for this study has enabled the following comments to be made regarding the Transport Strategy:

- Significant growth in the population of Rolleston is expected with a consequential increase in vehicle trips. The population is predicted to grow from around 2,500 people in 2001 to 14,000 people in 2021, (however under sensitivity testing relating to the Urban Development Strategy (UDS) this could rise to approx 19,000 people in 2026, refer to Section 25),
- Suggested cross sections have been included in the appendices, however the final form will need to be determined during detailed design. Components such as cycle lanes, flush medians, pedestrian islands, curb extensions, street trees etc all need to be considered. The key point is that the current cross sections result in parked vehicles restricting the space for passing vehicles, including cyclists,
- The widening of Hoskyns Road has been considered against sealing Railway Road. While Railway Road provided a more direct route, with the advent of the connection of Rolleston Drive North to Jones and Hoskyns Road in conjunction with a roundabout, this has become an important intersection that has warranted the northwest connection from State Highway 73 being made to the proposed roundabout. In addition it is likely Hoskyns Road will be utilised more in the future for access to the expanding industrial area,
- The Byron Street extension is proposed to mitigate the effects of the restriction of turns in and out of the Tennyson Street and Brookside Road/State Highway 1 intersection. It also provides an important local

roading connection between the east and west of Rolleston that connects between Brookside Road and Rolleston Drive North and beyond to Jones Road and the proposed interchange at Weedons Ross Road/State Highway 1. It has been suggested that Moore Street should be extended rather than Byron Street; however, a Moore street extension would not mitigate the effects as well compared to the more northern connection beyond that provided by the Rolleston Drive loop road. The extension of Byron St also has the potential to be utilised to improve access to Rolleston School and local access to the BP Garage. It can also be utilised in the future for a proposed Park and Ride facility in the area to the south of State Highway 1. In addition, the new road will be required to provide access to the new Selwyn District Council's Headquarters and a connection can be provided to the north from Byron Street Extension to serve further development in the immediate area,

- A number of combinations of intersection forms have been considered for the intersections of local roads and State Highway 1. The suggested combination utilising the interchange at Weedons Ross Road, connecting Rolleston Drive to Hoskyns Road with no access to the highway, slip lane for access to Tennyson Street and Brookside Road, closing Elizabeth Street, and consolidating southern access via Rolleston Drive South and at Dunns Crossing Road is considered the most appropriate long term option for Rolleston as well as State Highway 1. Retaining access from Rolleston Drive to State Highway 1 at Rolleston Drive North results in high traffic volumes (in the order of 11,000 vehicles per day versus the current 3,000) on Rolleston Drive north of Tennyson Street. This would have a detrimental effect on the noise, social amenity, and safety of Rolleston Drive North. Under the proposed access arrangements traffic volumes would be approx 6,000 vehicles per day which is considered more sustainable for this environment,
- If all current roads from State Highway 1 to Rolleston were left open (excluding Elizabeth Street), Rolleston would have seven access points to State Highway 1. This is considered unnecessary, is unsafe and is inconsistent with the function of State Highway 1. As a result, access has been limited to three key locations that would be upgraded to provide safe and efficient access,
- A grade separated connection has been included utilising the connection of Rolleston Drive to Hoskyns Road to provide for travel between Rolleston residential area and the Industrial Area as well as providing a shorter route to travel north from the Byron Street area to State Highway 1 via Jones Road and the Weedons Ross Road interchange. A more localised grade separated pedestrian/cycle crossing could be utilised between Tennyson St and George Holmes Road to promote the use of alternative modes as more people work and live in Rolleston.

21.3 Traffic Effects

The traffic effects in terms of vehicle kilometres and minutes travelled have been determined for the Transport Strategy network as a whole. The effects of the works associated with this township cannot easily be isolated, hence specific details of the effects for this township are limited to changes in traffic volumes. Some of the changes in traffic volumes in the Rolleston Township are related to works for connecting corridors, hence the volumes quoted are not necessarily a direct result of the Transport Strategy works for this township.

Table 36 is a summary list of the traffic volumes on major links affected by the Transport Strategy works for the township.

Traffic Volume Location	2001 (veh per day)	2021(veh per day)
Weedons Road east of State Highway 1	900	7,300
Levis Road south of Weedons Road	600	6,800
Lowes Road south of Masefield Drive	600	4,300
Lowes Road south of Tennyson Street	200	3,700
Dunns Crossing Road east of State Highway 1	200	2,000
Walkers Road west of State Highway 1	500	1,400
Two Chain Road south of Wards Road	400	500
Jones Road north of George Holmes Road	1,500	7,100
Jones Road south of Weedons Ross Road	700	8,600
Hoskyns Road west of Jones Road	600	1,700
Rolleston Drive east of State Highway 1 (2001) or east of Jones Road (2021 at new roundabout with Hoskyns Road)	2,400	9,700
Rolleston Drive south of Masefield Drive	1,200	5,700
Rolleston Drive south of Tennyson Street	500	2,900
Rolleston Drive east of State Highway 1	NA	500
Rolleston Drive east of Brookside Road	NA	1,900
Rolleston Drive west of Brookside Road	NA	100[1]
Brookside Road south of Byron Street	600	5,600[2]
Brookside Road south of Rolleston Drive	500	7,900
Byron Street extension south of Rolleston Drive	NA	4,900
Byron Street south of Tennyson Street	1,600	5,100
Tennyson Street east of State Highway 1	2,100	2,600
Tennyson Street east of Rolleston Drive	1,200	6,600
Masefield Drive east of Rolleston Drive	1,400	3,000
Lincoln Rolleston Road east of Levis Road	900	2,700
Springston Rolleston Road east of Lowes Road	400	1,700

Table 36

Rolleston Township and Industrial Area Transport Strategy Major Link Traffic Volumes

Note [1] – volume based on Rolleston Drive being L in/out with State Highway 1.
Note [2] – may vary as influenced by zone boundary.

21.4 Social and Environmental Effects

Existing/potential land uses: This element of the Strategy utilises existing roads as well as involving the creation of a new portion of roading between Byron Street and Rolleston Drive North. The existing roads adjoin land uses from residential, business, and rural activities. The new road links principally affects rural, residential and business land uses, and the purchase of some land used for these activities will be necessary for these new roads. A slip road will be created parallel to State Highway 1 to provide access to the BP petrol station and other businesses.

Designations: Designations will be required for new roads, road widening, and to upgrade intersections. There is an existing designation for the widening of State Highway 1.

Property access severance: This will be an issue principally affecting State Highway 1 with the construction of a four-lane median divided road. Existing properties will have access to the highway in one direction only and cross movement will be limited to the main intersections. Changes to roading hierarchies will seek to consolidate access onto key arterial routes and avoid the creation of new accesses where possible, such as Jones Road and Lowes/Levi Roads in particular.

Landscape characteristics/quality: The study area is flat terrain consisting predominantly of urban buildings, grassed open farmland, rural-residential allotments, scattered buildings, some shelterbelts and trees. The Strategy

involves widening existing roads, establishing new roads, and constructing new structures like grade separated interchanges and roundabouts that will create local adverse visual effects. The Strategy will also require the removal or relocation of existing features in the landscape such as trees and vegetation, buildings, fencing, lighting and power poles.

Mitigation of effects on landscape: To ensure that the roading will be integrated into the existing environment, areas of roading improvements will be suitably landscaped where appropriate, as will the intersections that are to be closed. Design and landscaping will assist in mitigating some of the adverse effects arising from the establishment of the new roads, however such measures will have limited positive impacts on raised structures such as interchanges and overpasses, which due to the flat nature of the terrain will change the local landscape of the affected areas.

Geological/geotechnical considerations: This would require further detailed investigation. New roads, widening, and changes at intersections will require detailed geotechnical investigations during the design phase of roading improvements. This is particularly important when establishing new structures such as those at grade separated interchanges.

Drainage: There are no sensitive waterbodies within the vicinity of the land affected by this element of the strategy.

Noise: There will be temporary noise effects during the construction phase. The new roads will bring vehicle noise marginally closer to some buildings, however, given the commercial nature of the land uses, this is not anticipated to be a significant matter. Grade separated portions of new road are likely to increase noise. Other roading improvements will facilitate higher traffic volumes with a consequent rise in traffic-generated noise or increase noise levels at the notional boundaries of existing dwellings by bringing vehicle paths closer to existing dwellings. An increase in traffic-generated noise is to be expected on routes with existing roading designations, the purposes of which are to carry traffic. Increases in traffic-generated noise levels on the new portions of road can be mitigated in areas of higher density residential use through the employment of buffers or barriers.

Maori, archaeological, cultural and heritage sites: There are no known sites of Maori, cultural, historical or archaeological significance affected by the Strategy.

Social effects, social severance and property severance: The Strategy seeks to minimise social severance within settlements by ensuring existing links are maintained while new roads bypass settlements. The potential removal of some buildings and/or reduction of the size of properties will have significant adverse social effects for affected owners and occupiers. At some intersections it is proposed that road links be closed to provide priority to key arterial routes. New roads will lead to the separation of land that is currently in the same ownership or otherwise provide a barrier between neighbours. There will be considerable adverse social effects for the affected owners and occupiers. The closure of some intersections will cause disruption for persons who presently utilise these intersections.

Public transport/cycle: The improved highway and roading network will enable public transportation to operate more efficiently. There may also be opportunities to provide for separate cycle lanes or at least improvements to the shoulders of the carriageway and footpaths on other roads. By creating a clearer hierarchy of roads, traffic will be channelled to identified strategic routes, thereby reducing the level of use of other roads and making the same more suitable for alternative travel modes such as cycling. A Park and Ride facility has been identified as being an option for Rolleston to promote increased use of Public Transport i.e. buses, especially to cater for peak morning and evening commuter traffic to and from Christchurch. Currently a site south of State Highway 1, between State Highway 1 and the Byron Street Extension opposite the current Railway Station, has been identified as having some potential. Feasibility studies will be required to determine if and when such a service would be viable.

Consultation to date: The following topics were raised in the consultation process undertaken in 2006:

- Access. The inclusion of a slip lane parallel to State Highway 1 as discussed above will mitigate the majority of the concerns raised regarding this issue,
- New roads, including increases in noise. The location of the proposed new collector road south of Rolleston attracted several submissions,
- Business impacts. The inclusion of a slip lane parallel to State Highway 1 as discussed above will mitigate the majority of the concerns raised regarding this issue.

21.5 Staging and Timing (Also refer section 0)

Work relating to Rolleston Township and the Rolleston Industrial Area relate closely to Corridor D – Hornby to Burnham. For completeness, work within Corridor D directly relating to Rolleston and the Rolleston Industrial Area is repeated in this section.

The construction of the grade separated interchange at the Weedons / Weedons Ross Road intersection is required when State Highway 1 between the Christchurch Southern Access Corridor extension and Weedons Road is four laned. This is estimated to be within the medium term.

The Rolleston Drive North connection to Hoskyns Road/Jones Road and Byron Street Extension are part of the Rolleston strategy of having one main Northern, and one main Southern access, with a connection between the Rolleston Residential and Rolleston Industrial area. This connection can be constructed any time after the Northern access (Weedons / Weedons Ross Road interchange) has been completed or when the level of service provided by current traffic signals on the State Highway becomes compromised with the Weedons / Weedons Ross Interchange estimated to be constructed within the medium term. It is suggested that the Rolleston Drive North Hoskyns Road/Jones Road connection and Byron Street extension can also be constructed within the medium term but one year following the construction of the State Highway 1 / Weedons / Weedons Ross Interchanges.

Hoskyns Road is included in the Transport Strategy to become a District Arterial connecting the Rolleston Residential and Rolleston Industrial areas to the west. This part of the strategy can be implemented once the Rolleston Drive North Hoskyns Road/Jones Road connection, including the roundabout, has been constructed. This work is therefore within the medium term.

It is suggested that the upgrade of the inner and outer ring roads is encouraged as early as possible, in particular Rolleston Drive North and the Rolleston Drive/Tennyson Street intersection. While a number of the road cross sections can cater for the current traffic use, Walkers Road, Jones Road (between Hoskyns and Weedons Ross Roads) and Weedons Road (between State Highway 1 and Levi Road) are considered too narrow and should be widened including intersection upgrades at Jones / Weedons Ross Roads and Weedons / Levi Roads in the short term.

21.6 Response to Issues Raised

From the analysis carried out for this study the following points have been made in response to the issues raised:

- Due to the increasing population of Rolleston, the traffic volumes will continue to grow. The growth in traffic will have growing detrimental social amenity, noise, and safety effects in Rolleston. The Transport Strategy has been developed to minimise the effects,
- Any work carried out in Rolleston that is done to best engineering practice should incorporate provisions for pedestrians and cyclists. The suggested cross sections and intersection upgrades incorporate cycle facilities and footpaths where appropriate,
- The function of the roads in Rolleston and how they interact with each other, State Highway 1 and the commercial/educational areas has been considered in detail during the development of the suggested hierarchy,
- In considering the function of the roads it has been determined that the Inner Ring Road is best changed from being an arterial to a collector road considering the amount of existing properties that already have access to it. It is considered appropriate for the Outer Ring Road to be a District Arterial as in most cases access can be controlled to support this function,
- The routes to provide access to Rolleston and the Industrial Area from the North West have been considered and it suggested that Hoskyns Road from State Highway 73 to Jones Road be upgraded,
- Whilst it is undesirable for State Highway 1 and the railway line to segregate the residential area from its industrial area it is not justified or practical in this case to remove the segregation. Instead a connection between the two areas has been suggested i.e. the Rolleston Drive North Hoskyns Road/Jones Road connection. This connection allows traffic to travel between the Residential Area and Industrial Area unimpeded by the State Highway 1. A further grade separated pedestrian/cycle link closer to Tennyson Street can also be considered to encourage the use of these modes for people working and living in Rolleston.