11. Christchurch Southern Access Corridor Summary

11.1 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 technical analysis. The issues that specifically relate to this corridor include:

- Opposition for private land being taken for Southern Motorway Extension– initial consultation,
- Linking the Southern Motorway Extension to State Highway 1 at Templeton not Halswell Junction Road – initial consultation,
- The location of the extension of the Southern Motorway from Halswell Junction Road to State Highway 1 south of Halswell Junction Road – study brief,
- Capacity issues on Main South/Blenheim Road from Springs Road to Curletts Road – technical analysis,
- Capacity of the Blenheim Road/Curletts Road intersection – technical analysis.

The works considered for this corridor overlap/address issues in some other corridors. The most significant relationship in this regard is between this corridor and the Hornby to Burnham Corridor. The effects of the works associated with this corridor on the Hornby to Burnham Corridor will be discussed in summary for the Hornby to Burnham Corridor.

11.2 Transport Strategy Works and Hierarchy

There is significant work being planned for this corridor, which is not part of this study, being the Christchurch Southern Motorway Duplication and Extension project between Brougham Street and Halswell Junction Road. This work is currently in the planning stage, hence, the works have been considered in more detail in previous studies than in this study. However, for completeness consultation for this study included stage 1 of the Southern Motorway duplication and extension for which public feedback was sought.

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

- Duplication of the existing Christchurch Southern Motorway (Stage 1) between Barrington Street and Curletts Road. Extension of the Southern Motorway west of Curletts Road to Halswell Junction Road / Springs Road roundabout and a traffic management upgrade of Halswell Junction Road north to Main South Road. Local road overbridges at Nash Road and a realigned Awatea / Dunbars Road. Major interchanges at Barrington Street and Curletts Road,
- A further extension of the Christchurch Southern Motorway (Stage 2) from the intersection of Halswell Junction Road and Springs Road to State Highway 1 south of Dawsons/Waterholes Road. The form of the motorway would be a median divided, four lane cross section road. No U-turns would be allowed on the Motorway,
- Access to the Christchurch Southern Motorway would be limited to grade separated interchanges at State Highway 1, Shands Road, Curletts Road and Barrington Street with possible future south facing ramps to the Christchurch to Lincoln corridor (also refer Section 15). With the exception of Trents Road, none of the existing roads crossed by the motorway would be severed, as the motorway would be separated through the use of over bridges or underpasses.

The works included in the Transport Strategy for this corridor are shown in Figure 23.

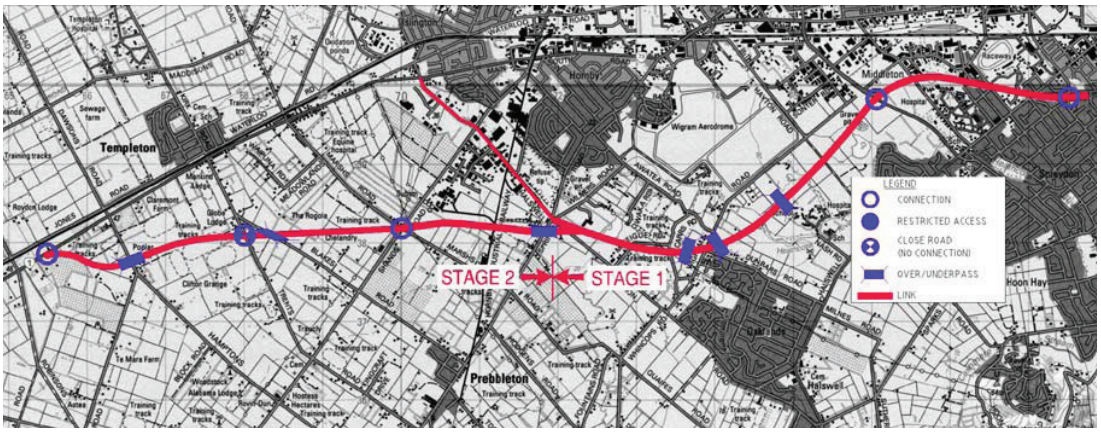

Figure 23

Christchurch Southern Access Corridor Transport Strategy

These works are related to the hierarchy for the greater area in that the major link in the corridor (the suggested Christchurch Southern Motorway) will become the National Arterial for the area in the hierarchy. This means that the motorway would be developed to provide for travel between Christchurch and areas of national importance to both the east (Port of Lyttelton) and south of Christchurch. The suggested form (i.e. cross section) and amount of access to the motorway has specifically been selected to be consistent with the National Arterial function. The suggested form will provide for unrestricted motor vehicle travel along the route with minimised interference from traffic accessing the route.

The Transport Strategy hierarchy for this corridor is shown in Figure 24.

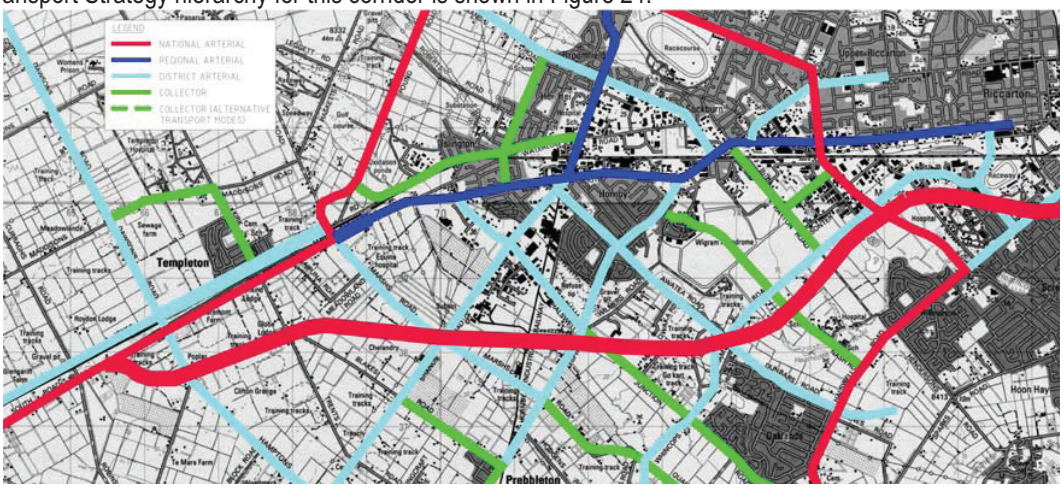

Figure 24

Christchurch Southern Access Corridor 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,
- The growth in travel demand could be provided for by a number of modes. However, analysis has determined that due to the limited catchments of a passenger rail based services, it will not have a significant effect on the growth in private vehicle traffic,
- The existing State Highway 1 through Templeton, Hornby and Sockburn is not of a standard to carry the additional traffic,

- The Christchurch Southern Motorway Duplication and Extension from Barrington Street to Halswell Junction Road (previous study) was developed to address the concerns through Hornby and Sockburn,
- The Christchurch Southern Motorway Duplication and Extension from Barrington Street to Halswell Junction Road does not address the high traffic volumes through Templeton, nor potential capacity constraints along Halswell Junction Road,
- It has been determined that extending the Christchurch Southern Motorway Extension from Halswell Junction Road to State Highway 1 south of Templeton results in lower travel times and distances, than upgrading State Highway 1 through Templeton to four lanes,
- The link, be it through Templeton or a new link, would be a National Arterial in the hierarchy. Hence, for it to perform its function as a mobility route, it must have limited access.

11.3 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 26 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)
Christchurch Southern Motorway south of Barrington Street	24,000	46,500
Christchurch Southern Motorway south of Curletts Road	NA	24,700
Christchurch Southern Motorway south of Shands Road	NA	20,700
Curletts Road south of Blenheim Road	35,500	33,300
Blenheim Road west of Curletts Road	40,200	31,500
Main South Road west of Sockburn Intersection	50,200	52,200
Main South Road west of Springs Road	26,600	19,900
Main South Road west of Carmen Road	16,400	11,000
Main South Road west of Halswell Junction Road	15,500	9,000
Main South Road west of Kirk Road	16,300	12,100

Table 26

Christchurch Southern Access Corridor Transport Strategy Major Link Traffic Volumes

11.4 Social and Environmental Effects

Existing/potential land uses: The Christchurch Southern Access Corridor element of the Transport Strategy involves the creation of new roads. The proposed roading alignment for the Motorway Extension adjoins industrial, service, and rural activities. The new road alignment (being an extension of the Southern Motorway) principally affects rural and rural-residential land uses, and the purchase of a significant amount of rural land will be necessary for the new road. Recent rural-residential developments, such as near the intersection of State Highway 1 and Dawsons/Waterholes Road, may require the new road to be aligned around them.

Designations: Designations will be required for the new roads, road widening, and to upgrade intersections. A Deed of Grant will also be required from ONTRACK for a new railway crossing for the new road link between Washbournes Road and Epsom Road (Haytons Extension).

Property access severance: As the Southern Motorway Extension involves the creation of a new road, no existing vehicle crossings will be severed. However, as the alignment cuts through properties, some access ways may be severed. For safety reasons, a LAR status will be applied to the new section of the Southern Motorway extension. Changes to the roading layout may seek to consolidate access onto key arterial routes and avoid the creation of new accesses where possible.

Landscape characteristics/quality: In respect of the Southern Motorway Extension, the study area is flat terrain consisting predominantly of grassed open farmland, rural-residential allotments, scattered buildings, some shelterbelts and trees. This element of the Strategy involves establishing a new road and constructing new structures, including grade separated interchanges 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, dwellings, non-residential 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 Trents Road intersection that is 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: There is the possibility of the presence of filled pits in the area between the Halswell Junction Road/Springs Road intersection and the Marshs Road/Shands Road intersection. This would require further detailed investigation. The new roads 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. In respect of the Southern Motorway Extension, new roads will introduce varying levels of vehicle noise to properties that are currently distant from high-volume traffic flows. Increases in traffic-generated noise levels on the new portions of road can be mitigated in areas of higher density residential use, such as the rural-residential development near the intersection of State Highway 1 and Dawsons/Waterholes Road through the employment of buffers or barriers.

In respect of the Sockburn roundabout, 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. Other roading improvements could facilitate higher traffic volumes with a consequent rise in traffic-generated noise, however if the other nearby works identified in the Strategy are carried out, traffic volumes will decrease in the area in question. An increase in traffic-generated noise is to be expected on routes with existing roading designations, the purposes of which are to carry traffic.

Maori, archaeological, cultural and heritage sites: There is a historic waka path on Owaka Road of significance to Ngai Tahu. It is recommended that further consultation with the relevant parties be undertaken at a more appropriate time such as the scheme assessment stage. There are no other known sites of Maori, cultural, historical or archaeological significance affected by the Strategy.

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 dwellings and/or reduction of the size of properties are likely to have significant adverse social effects for affected owners and occupiers. At the Trents Road intersection it is proposed that the road links be closed to provide priority to the Southern Motorway, causing disruption for persons who presently utilise this section of road. 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.

Public transport/cycle: The improved highway and roading network will enable public transportation to operate more efficiently. Given the high speed environment, no cycling will be allowed on the motorway extension. In respect of the Sockburn roundabout, there may be opportunities to provide for separate cycle lanes or at least improvements to the shoulders of the carriageway and footpaths.

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

- New roads: Several submissions were received raising concerns about the effects of the proposed alignment on the Claremont subdivision.

11.5 Staging and Timing (Also refer section 0)

The extension from Springs Road to State Highway 1 is triggered by State Highway 1, south of Barters Road reaching LOS mid E. This is estimated to be within the medium term. Increasing traffic flows and freight activity along Halswell Junction Road will also accelerate the need for the extension.

11.6 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 need to upgrade the link providing access to the south of Christchurch means that no matter what route is chosen, private land will be required. The route suggested in the Transport Strategy has been designed to affect the lowest number of houses possible, however it will affect a number of properties.
- The conclusion reached is that the Christchurch Southern Motorway Extension be extended to State Highway 1 south of Templeton for the reasons previously mentioned.
- Six different alignments for the extension of the Christchurch Southern Motorway south of Halswell Junction Road have been considered. The route selected is the shortest route where no existing roads are used, and hence will not have property accessing the motorway directly.
- The traffic volumes along the Main South Road, Blenheim Road, Curletts Road route are reduced to a level below that of the 2001 volumes hence the technical issue raised of the capacity of Main South/Blenheim Road and the Blenheim Road/Curletts Road intersection would be addressed.

12 Belfast to Hornby Corridor Summary

12.1 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 technical analysis. The issues that specifically relate to this corridor include:

- Concern regarding the high traffic volumes and numbers of heavy vehicles on State Highway 1 (Johns Road, Russley Road, Masham Road, Carmen Road) – initial consultation,
- Concern regarding the noise associated with the traffic volumes on State Highway 1 – initial consultation,
- Concern regarding the lack of passing opportunities on State Highway 1 – initial consultation,
- Concern regarding the ability to access and cross State Highway 1 – initial consultation,
- Consideration of a bypass of Hornby to address traffic volume concerns through Hornby – initial consultation and study brief,
- The four laning as per Transit New Zealand's previous study is to be considered in the context of the road network hierarchy and its implication on the surrounding area – study brief,
- The appropriate form and necessary number of access points to State Highway 1. This includes considering the access changes recommended in the study of State Highway 1 carried out previously for Transit New Zealand and their implications – study brief,
- Capacity issues on the State Highway 1 route from Belfast to Hornby – technical analysis,
- Capacity issues at the intersections of State Highway 1 and Ryans Road, Memorial Avenue, Harewood Road, and Gardiners Road - technical analysis.

12.2 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:

- 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 median divided 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 need to 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 could be controlled by signals and linked to those at Ron Guthrey Drive.
    - Close the intersection of Avonhead Road completely.
    - Construct a signalised half seagull intersection at the Christchurch International Airport Limited Company proposed Capital A Road intersection. The right turn into Capital A Road from the north would be banned. A seagull allows the southbound traffic on State Highway 1 to travel unimpeded

with the right turning traffic out of Capital A Road required to merge with it. The northbound traffic on State Highway 1 would be controlled by signals as will the right turning traffic exiting Capital A Road.

- Convert the Ryans Road intersection to allow for left turns into and out of Ryans Road only.

Further works included in the Transport Strategy that fall into both this corridor and the Hornby to Burnham Corridor include:

- 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 be deviated to form T intersections with the new route,
- Associated with this is the upgrade of Pound Road to the required cross section of 10m wide with two lanes.

The works included in the Transport Strategy for this corridor are shown in Figure 25.

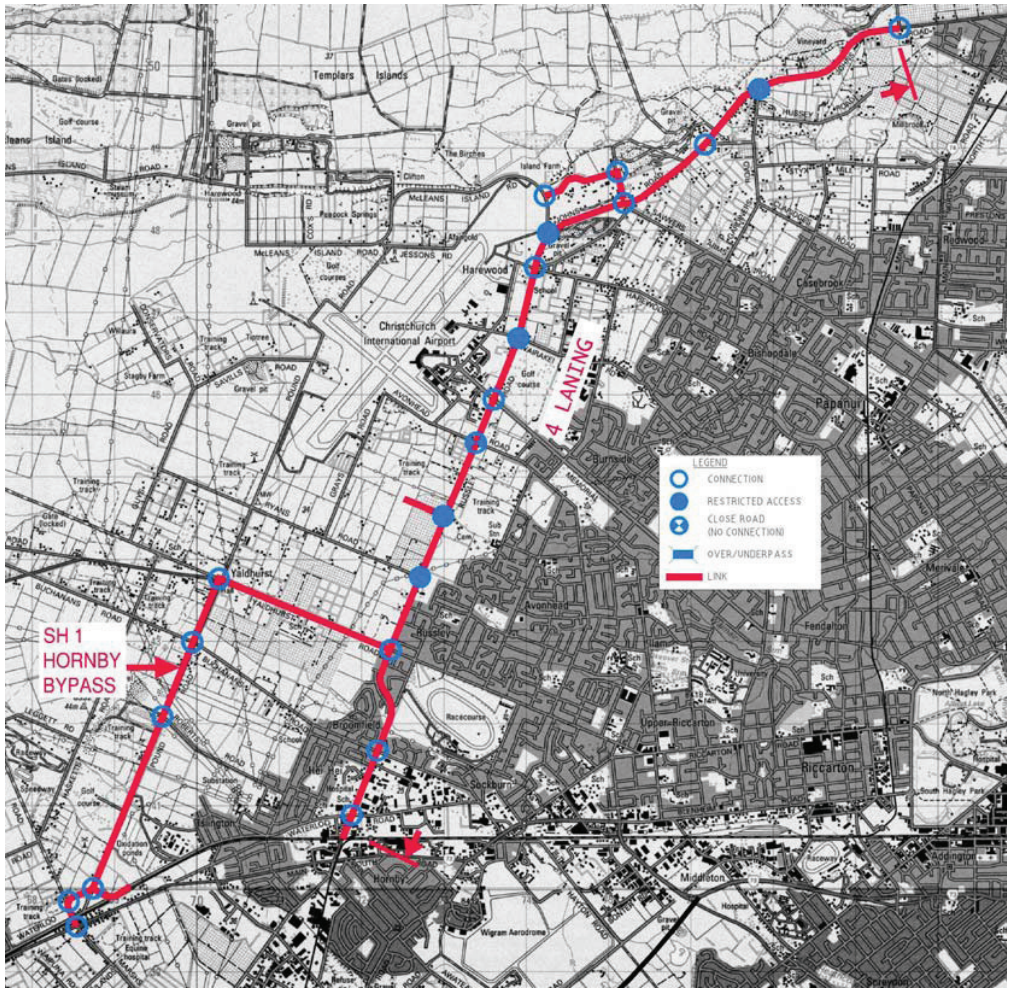

Figure 25

Belfast to Hornby Corridor 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. The promotion of a route that uses Yaldhurst Road and Pound Road as State Highway 1 is suggested. While this route may not carry as much traffic as Masham and Carmen Roads, a State Highway should have a National Arterial function in the hierarchy and it is considered that the Yaldhurst Road/Pound Road route can better provide this function. As there would still be significant traffic volumes on Masham

Road and Carmen Road and it provides access to a major industrial area, it is suggested that this route would be a Regional Arterial. To perform this function it would still require upgrading to a four lane road.

The Transport Strategy hierarchy for this corridor is shown in Figure 26.

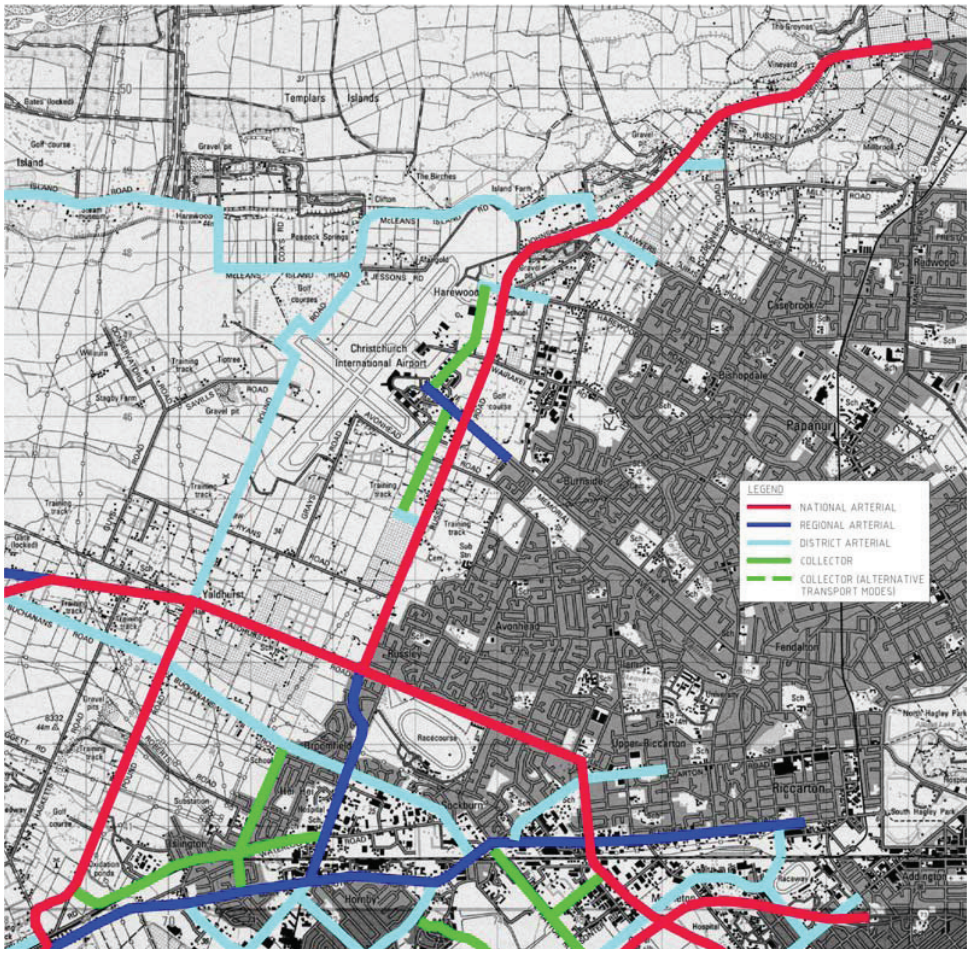

Figure 26

Belfast to Hornby Corridor 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,
- A bypass of Hornby was considered, however, whilst it attracted a significant volume of traffic, the traffic was mostly being attracted from Pound Road and Hasketts Road with only a small amount of traffic being attracted from the Carmen Road/Main South Road route. This would suggest that a large proportion of the traffic on either Carmen Road or Main South Road is not through traffic, but traffic wanting to either travel from the city to the south, from the north to the industrial area surrounding Hornby or to Hornby itself. Therefore a new road bypass is not being suggested,
- Given the findings of the Hornby Bypass testing, it is suggested that the Yaldhurst Road and Pound Road route be promoted as a State Highway with that designation removed from the Masham/Carmen/Main South Roads route. For this to occur it was determined that the modifications to Pound Road near Barters road would be required. It is noted that Transit New Zealand has already carried out investigations and developed solutions for upgrades to the intersection of Pound Road and Yaldhurst Road,
- 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 need 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 high traffic volumes and being the key access point to the Christchurch International Airport 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 Christchurch International Airport Ltd is considering significant changes to the location of various activities at the airport, also existing travel patterns may change significantly in the future.

12.3 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, so 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 27 is a summary list of the traffic volumes on major links affected by the Transport Strategy works for the corridor. For details on the traffic volumes on Memorial Avenue, Wairakei Road, Harewood Road etc refer to the Christchurch International Airport Growth Area Summary in Section 19. 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

Table 27

Belfast to Hornby Corridor Transport Strategy Major Link Traffic Volumes

12.4 Social and Environmental Effects

Existing/potential land uses: The Belfast to Hornby Corridor 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 including quarrying, industrial and service activities, the Christchurch International Airport, residential, recreation and rural activities. The new road links at the Pound Road/Barters Road intersection will affect rural and rural-residential land uses. The purchase of some rural land will be necessary for the new road links.

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 along Russley and Johns Roads. A new designation will be required to establish a new road at the Pound Road/Barters Road intersection.

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 and u-turn slots. For safety reasons, a LAR status will be applied to the section of Pound Road included in the Strategy.

Landscape characteristics/quality: The study area is flat terrain consisting predominantly of grassed open farmland, residential and rural-residential allotments, scattered buildings, some shelterbelts and trees, urban Christchurch, and Christchurch Airport. 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, dwellings, and other 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 is a waterbody within the vicinity of the site which runs from the nearby Templeton Country Club. The roads subject to this element of the strategy also pass over or near to the Styx River, Waimairi Creek, and Heathcote River.

Noise: There will be temporary noise effects during the construction phase. The 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. The new portion of road at the Pound Road/Barters Road intersection will take vehicle paths further from the existing dwellings, leading to a possible reduction in vehicle noise at the notional boundaries of these dwellings, although the higher traffic volumes may offset this reduction.

Maori, archaeological, cultural and heritage sites: There is a historical marker on Russley Road near Ryans Road, and remnant dry grasslands near Wigram Hotmix Plant (ecological heritage area 11.05 in the Operative Christchurch City Plan). The Styx River and its tributaries, the tributaries of the Heathcote River, and the surrounding area are well known as significant sites and areas to Ngai Tahu. Therefore, it is recommended that further consultation with the relevant parties be undertaken at a more appropriate time such as the scheme assessment stage. There are no other known sites of Maori, cultural, historical or archaeological significance affected by this element of the Strategy.

Social effects, social severance and property severance: This element of the Strategy seeks to minimise social severance within settlements by ensuring existing links are maintained. At some intersections it is proposed that road links be closed to provide priority to key arterial routes. The new roads will lead to the separation of land that is currently in the same ownership or otherwise provide a barrier between neighbours. The Pound Road realignment can be designed to minimise property severance, however, there will be adverse social effects for the affected owners and occupiers. The closure of some intersections, such as 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.

12.5 Staging and Timing (Also refer section 0)

The four laning of the section Belfast (The Groynes) to Yaldhurst Road is triggered by this section reaching LOS mid 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 four laning of the section Yaldhurst Road to the Main South Railway line (Hornby) would normally be triggered by the intersections along this section reaching LOS E. However, as the intersections here already been upgraded the trigger point is now traffic volume based. On this basis the upgrading work is within the short term.

The Pound Road Bypass is driven by Hierarchy and the desire to remove through traffic from the Hornby area. The timing of this is not critical, however it would be desirable to complete the required work on Pound Road so that it coincides with the completion of the Christchurch Southern Access work. For this reason this work should be complete within the medium term.

12.6 Response to Issues Raised

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

- An alternative route to remove traffic from Johns Road has not been considered as the route would be longer and take more time to travel than the existing route. There would be no benefit to travellers to use the route and it would cost significant sums of money. Hence, it would not be viable,
- Further to this, the analysis carried out, specifically the Hornby Bypass analysis, indicates that there is not large volumes of traffic wanting to travel from the north of the city to the south of the city without stopping somewhere in the city. This is considered to further support the argument that very little traffic would use an alternative route to Johns Road/Russley Road,
- If the traffic were to remain on the current route, detailed design of the four laning upgrade would need to include considering noise mitigation measures where necessary,
- If the suggested four laning of State Highway 1 was to be carried out the need to provide improved passing opportunities would be removed,
- The suggested improvements would 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,
- A bypass of Hornby has been investigated and it has been suggested that existing roads are used to perform this function,
- It is recommended that State Highway 1 remain as the National Arterial in the area, hence, given the suggested traffic volumes the four laning is considered appropriate. The form and number of intersections has also been considered in this context and a number of works suggested in this light,
- The works suggested for the State Highway 1 route would address the capacity issues raised at the intersections and on the links.

13. Russley to Aylesbury Corridor Summary

13.1 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 technical analysis. The issues that specifically relate to this corridor include:

- Concern regarding the safety of a number of intersections along State Highway 73 – initial consultation,
- Concern regarding the capacity of a number of intersections along State Highway 73 – initial consultation,
- Concern regarding the volume of heavy vehicles on State Highway 73 – initial consultation.

13.2 Transport Strategy Works and Hierarchy

The planning work that has previously been carried out for this corridor, specifically State Highway 73, by Transit New Zealand has been analysed during this study and considered appropriate and sufficient for the corridor. The works Transit New Zealand are considering during their standard practice planning process includes the installation of a roundabout at the intersection of Pound Road and State Highway 73, the installation of three sets of passing lanes between Christchurch and West Melton and the installation of right hand turning bays at selected intersections. All of these works have been considered and analysed in detail in previous studies. These works have been reconsidered during this study specifically in the context of the hierarchy developed during this study. It is suggested as part of the Transport Strategy that the works be carried out as per the suggestions of the previous studies and no other works are suggested.

Other work related to this corridor is the upgrade of the route from the State Highway 73 to Rolleston (State Highway 1). It has been determined that the upgrade of Hoskyns Road is the most efficient way to provide a route capable of performing the function of a District Arterial in the hierarchy. Originally it was considered that Railway Road would be able to form this function but with the State Highway and local access arrangements at Rolleston now proposed that utilises Hoskyns Road and Jones Road (refer Section 21), the use of this connection is better justified. In addition it is well positioned to be utilised to provide access to any expansion of Rolleston's industrial area to the northeast.

These works are related to the hierarchy for the greater area in that the major link in the corridor (State Highway 73) will become the national arterial for the area in the hierarchy. The works will enable State Highway 73 to better perform its function as a national arterial in the hierarchy. Given the current function of the Old West Coast Road it is suggested that this road become a regional arterial in the 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,
- It has been confirmed during this study that there will be capacity issues at the intersection of Pound Road and State Highway 73 and that the installation of a roundabout is appropriate with respect to the hierarchy,
- The installation of passing lanes is consistent with Transit New Zealand's National State Highway Strategy of installing passing lanes at nominal 5km spacings on routes with traffic volumes in excess of 4,000 vehicles per day in that the traffic volumes are predicted to be above the criteria,
- The intersections along the route are not predicted to have capacity issues. However, this study supports the right hand turn bay safety improvements as previously suggested.
- Hoskyns Road from State Highway 73 to Jones Road is to be widened to 8.5m including the improvements to low speed bends and intersections along the route.

13.3 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 28 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)
Yaldhurst Road west of Russley Road	9,100	9,500
Yaldhurst Road west of Pound Road	9,700	11,200
West Coast Road west of Buchanans Road	5,800	7,000
West Coast Road west of Dawsons Road	5,100	6,500
West Coast Road west of Weedons Ross Road	3,500	5,000
Old West Cost Road west of Buchanans Road	3,300	4,200
Old West Coast Road west of Weedons Ross Road	1,200	1,600
Hoskyns Road east of West Melton Road	300	800

Table 28

Russley to Aylesbury Corridor Transport Strategy Major Link Traffic Volumes

13.4 Social and Environmental Effects

Environmental effects: As no major 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.

13.5 Staging and Timing

No major works are proposed for this element of the strategy.

13.6 Response to Issues Raised

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

- Transit New Zealand standard practice is to monitor the safety of the roading network and address safety concerns as appropriate when they arise. The planed right hand turn bays for some intersections along State Highway 73 will help address safety concerns raised,
- The analysis in this study has not highlighted any capacity issues at intersections other than the Pound Road/Yaldhurst Road intersection for which there is works currently planed outside this study,
- The traffic volumes along State Highway 73 do not justify any works to decrease the traffic volumes (including heavy traffic) along the route.

14. Hornby to Burnham Corridor Summary

14.1 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 ability to safely access and cross State Highway 1 at the Templeton intersections i.e. Barters Road and Kirk Road – initial consultation,
- Concern regarding the ability to safely access and cross State Highway 1 at the Rolleston intersections i.e. Weedons Road, Hoskyns Road, Rolleston Drive North, Tennyson Street, Brookside Road, Dunns Crossing Road – initial consultation,
- Concern regarding the ability to safely access and cross State Highway 1 at Burnham i.e. at Burnham Road – initial consultation,
- Concern regarding the traffic volume on State Highway 1 the effects on travel speed and passing opportunities. There were responses expressing a desire to four lane State Highway 1 as a solution to the congestion issues – initial consultation,
- Consider a number of forms for State Highway 1 including:
    - A two lane limited access road with passing lanes – study brief
    - A four lane limited access road – study brief
    - The use of other roads or alignments with appropriate access controls – study brief
    - A new two lane limited access road – study brief
    - A combination of the above forms – study brief
- Capacity issues on State Highway 1 from Hornby to Rolleston – technical analysis,
- Capacity issues at most intersections on State Highway 1 between Rolleston and Hornby – technical analysis.

The works considered for this corridor address issues in some other corridors. The most significant relationship in this regard is between this corridor and the Christchurch Southern Access Corridor. The relationships between this corridor and the Christchurch Southern Access Corridor have been discussed in this summary. However, it is recommended that the Christchurch Southern Access Corridor Summary is read in conjunction with this summary (refer Section 11).

14.2 Transport Strategy Consultation Works and Hierarchy

The works for this corridor are over and above the currently programmed works to 2011. Analysis has revealed that any extension of the Christchurch Southern Motorway south of Halswell Junction Road has a significant effect on State Highway 1 north of the Motorway connection. The Shands Road/Selwyn Road/Lincoln Rolleston Road route is considered an important secondary route between Christchurch and Rolleston, hence is also a part of this corridor. Therefore to ensure that this route can function efficiently and safely, works have also been considered for the route.

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

- Upgrading State Highway 1 from the southern end of the Christchurch Southern Motorway Extension to Weedons Ross Road/Weedons Road to a median divided four lane road. No U-turns would be allowed on the four lane section of the route unless at intersections, and entry and exiting from any property with access to State Highway 1 would be limited to left turns only,
- Retaining the passing lanes between Weedons Ross Road/Weedons Road and Hoskyns Road and new service lane for access to BP Service Station, Tennyson Street and Brookside Road. Installation of median dividers as required,
- New separated grade access across State Highway 1 between Hoskyns Road/Jones Road and Rolleston Drive North intersection with proposed Byron Street extension,
- A further extension of the Christchurch Southern Motorway from the intersection of Halswell Junction Road and Springs Road to State Highway 1 south of Dawsons/Waterholes Road. This extension of the motorway

alleviates the need to four lane State Highway 1 north of the motorway connection and with an interchange at the Shands Road/Marshs Road intersection optimises the use of the alternative local roading route of Lincoln Rolleston Road/Selwyn Road/Shands Road,

- Modifications to most intersections along State Highway 1 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 recommended are 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.
    - Construction of a new 'Y' shaped interchange for the Christchurch Southern Motorway south of the Dawsons / Waterholes Road intersection. The 'Y' shaped interchange would allow for movements from Rolleston to Hornby or Rolleston to the Motorway and vice versa. The interchange would not provide for movements from the Motorway to Hornby and vice versa, these movements would be provided for via an interchange at the intersection of Marshs Road and Shands Road.
    - Convert the Curraghs Road (western) approach to allow for left turns in only and convert the Robinsons Road (eastern) approach to allow for left turns in and out only.
    - Convert the Berketts Road intersection to allow for left turns in and out only.
    - Convert the Larcombs Road intersection to allow for left turns in only.
    - 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.
    - Remove the current traffic lights on State Highway 1 at Rolleston Drive and Hoskyns Road and 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, with State Highway 1 ***being bridged under the new connection*** to allow the new connecting road to remain at grade with the railway crossing and existing ground levels.
    - New service lane for access to BP Service Station, Tennyson Street and Brookside Road with these intersections having left turns in/out only off the service lane.
    - Invoke a previous plan change condition for the construction of Rolleston Drive South, 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 plus right turns out only at the time when traffic on State Highway 1 requires the ban of right turns for safety reasons.
- Upgrade the cross section of the Shands Road/Selwyn Road/Lincoln Rolleston Road route to a wide two lane road,
- Upgrade the intersections along the Shands Road/Selwyn Road/Lincoln Rolleston Road route with minor safety improvements as necessary,
- Upgrade the following intersections along Shands Road/Selwyn Road/Lincoln Road with the suggested modifications:
    - Convert the intersection of Selwyn Road and Shands Road to a 90 degree T intersection to improve safety.
    - Modify the intersection Waterholes Road and Selwyn Road so that Selwyn Road has priority.
    - Modify the intersection of Weedons Road and Selwyn Road so that Selwyn Road has priority.
    - Upgrade the intersection of Selwyn Road and Lincoln Rolleston Road so that the route has priority. Create a new T intersection of Rattletrack Road and Selwyn Road and T Selwyn Road intersection into the route. Close the eastern approach of Lincoln Rolleston Road of the intersection to traffic but

retain a connection to be used for a possible walking and cycling off carriageway pathway linking Lincoln and Rolleston utilising Boundary Road and Lincoln Rolleston Road.

The works included in the Transport Strategy for this corridor are shown in Figure 27.

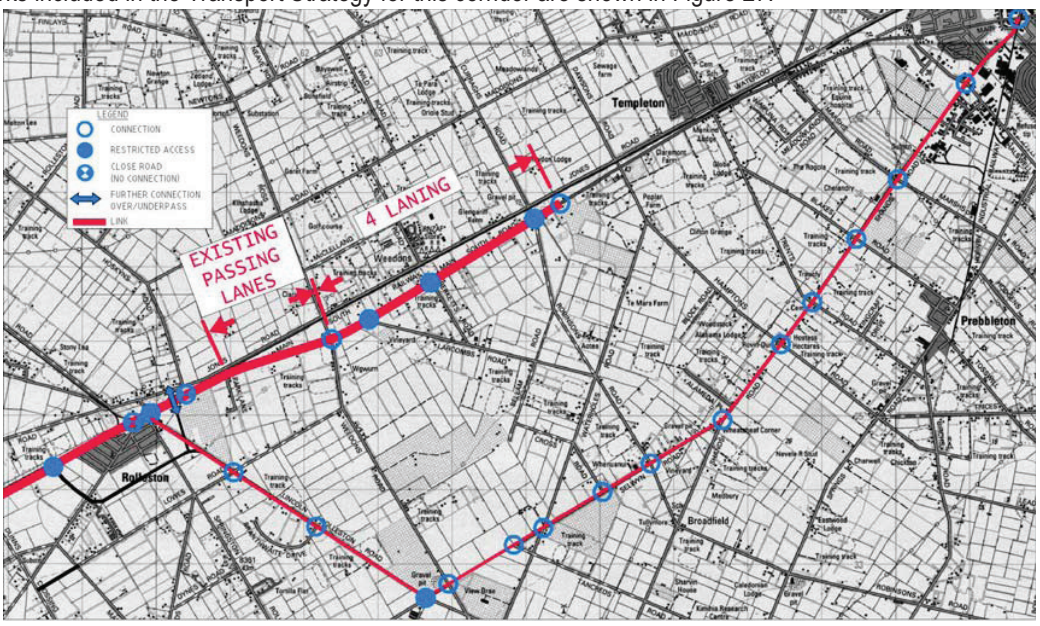

Figure 27

Hornby to Burnham Corridor 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 from the Barters Road south) would become the national arterial for the area in the hierarchy. This means that the Highway would be developed to provide for travel between Christchurch and areas of national importance to the south of Christchurch. The suggested form (i.e. cross section) and amount of access to the highway has specifically been selected to be consistent with the national arterial function. The suggested form will provide for high speed travel along the route with minimised interference from traffic accessing the route.

State Highway 1 (Main South Road) north of Barters Road would become a Regional Arterial in the hierarchy and it would have the State Highway designation removed due to Pound Road/Yaldhurst Road being suggested as State Highway 1. Main South Road from Barters Road north would therefore have a similar function to State Highway 1, however, slightly more access would be acceptable. The works suggested for this route are consistent with this.

The Transport Strategy hierarchy for this corridor is shown in Figure 28.

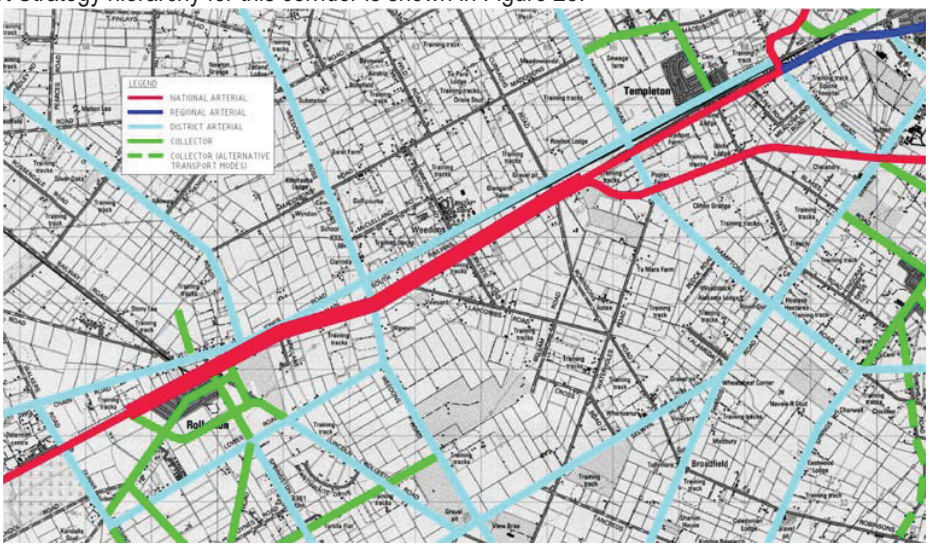

Figure 28

Hornby to Burnham Corridor 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,
- The growth in travel demand could be provided for by a number of modes, however, analysis has determined that due to the limited catchments of a passenger rail services it will not have a significant effect on the growth in private vehicle traffic, however a Park and Ride facility at Rolleston utilising bus services has been identified as good opportunity to expand the use of public transport,
- The existing State Highway 1 from Rolleston to Hornby is not of a standard to carry the additional traffic,
- The traffic lights installed in 2007 on State Highway 1 at Rolleston Drive and Hoskyns Road are to remain as an intermediate solution until longer term access provisions proposed utilising an interchange at State Highway 1/Weedons Road/Weedons Ross Road and the Rolleston Drive North link to Hoskyns Road/Jones Road intersection are implemented,
- The Christchurch Southern Motorway extension alleviates the need to four lane State Highway 1 north of the motorway connection. This applied to all options tested for the motorway, however, it was found that the alignment suggested as part of the Transport Strategy was the most efficient. Hence extending the motorway route further south to avoid four laning State Highway 1 was not justified,
- A large number of intersection forms have been considered including a number of combinations of signals, roundabouts, closures and turn restrictions. The suggested combination has been reached as a means of providing for as many residents as possible whilst maintaining the function (mobility) and improving the safety of the route.

14.3 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 29 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)
Main South Road south of Halswell Junction Road	15,500	9,000
Main South Road south of Kirk Road	16,300	12,100
Main South Road south of Dawsons Road	15,700	11,100
Main South Road south of Robinsons Road	15,300	31,800
Main South Road South of Weedons Road	14,700	19,400
Main South Road south of Tennyson Street	9,600	14,600
Main South Road south of Dunns Crossing Road	9,400	14,300
Jones Road south of Dawsons Road	1,400	5,400
Jones Road south of Weedons Ross Road	1,000	8,600
Shands Road south of Marshs Road	8,500	14,200
Selwyn Road south of Shands Road	3,200	5,000
Lincoln Rolleston Road south of Levi Road	900	2,700

Table 29

Hornby to Burnham Corridor Transport Strategy Major Link Traffic Volumes

14.4 Social and Environmental Effects

Existing/potential land uses: The Hornby to Burnham Corridor element of the Strategy utilises existing roads, which adjoin residential activities and rural activities. The new roads outlined in the Strategy principally affect rural and rural-residential land uses. The purchase of land will be necessary for some of the upgraded intersections.

Designations: Designations will be required to upgrade some of the intersections. There is an existing designation for the widening of State Highway 1.

Property access severance: This will be a significant issue arising from 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.

Landscape characteristics/quality: The study area is flat terrain consisting predominantly of grassed open farmland, residential and rural-residential allotments, scattered buildings, some shelterbelts and trees. The Strategy involves widening existing roads and constructing new structures like grade separated interchanges 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: Road 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 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 the existing roading designation, 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 this element of the Strategy.

Social effects, social severance and property severance: At some intersections it is proposed that road links be closed or restricted to left in/left out access only, to provide priority to key arterial routes. 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. A Park and Ride facility at Rolleston utilising bus services has also been identified.

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.

14.5 Staging and Timing (Also refer section 0)

The four laning of the section between the Christchurch Southern Motorway extension and Weedons Road is triggered by this section reaching LOS mid E. However, it must also be in place when the Christchurch Southern Motorway extension is complete. Both are estimated to be within the medium term.

The construction of the interchange at the State Highway 1 / Weedons intersection is an integral item of work associated with the four laning of State Highway 1. The interchange must therefore be constructed at the same time which is estimated to be within the medium term.

14.6 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 for this corridor and the Christchurch Southern Access Corridor result in a significant decrease in traffic volumes through Templeton to below the 2001 traffic volume levels. As a result of the low traffic volumes and the intersection improvements, the ease and safety of accessing and crossing Main South Road will be significantly improved,
- The suggested improvements for this corridor provide capacity for the projected traffic volumes on State Highway 1 and enable State Highway 1 to provide its function of mobility in the hierarchy, while at the same time improve the ease and safety of accessing and crossing State Highway 1,
- Slightly more travel on local roads will be required. However, given the grid like nature of the network there will be very little difference in travel distance and time,
- The exception is those properties with access directly onto State Highway 1 between the Christchurch Southern Motorway Extension and Weedons Road and those properties to the east of State Highway 1 between the Christchurch Southern Motorway Extension and Weedons Road. These properties will have to travel further and hence take more time due to the turning restrictions on State Highway 1. These effects have been considered against the safety and cost implications of providing for all movements. The suggested works are considered to be the most appropriate for the corridor,
- It is recommended that if the suggested works are progressed the opportunity to provide a U-turn facility on State Highway 1 somewhere between Berketts Road and Robinsons Road be investigated,
- The traffic volumes through the Burnham Road intersection are considered appropriate for the intersection form i.e. priority control. Minor safety improvements should be carried out as necessary,
- The upgrades to State Highway 1 and traffic volume reduction on the northern portion will result in improved travel speeds and passing opportunities,
- All of the forms to be considered as specified in the study brief have been considered including upgrades to the existing route, use of alternative roads, construction of new roads and combinations of all. It has been found that the suggested form is the most appropriate,
- The suggested improvements remove both the link and intersection capacity issues predicted during the technical analysis,
- The Lincoln Rolleston Road/Selwyn Road/Shands Road arterial route can also be utilised to provide for a cycling and walking connection either on or off road facilities to connect to existing and planned networks south of Christchurch.