9. ACCESS AND EGRESS

9.1 Road Standards

The internal road network within the Plan Change area will be developed during the detailed design stage of the project. There is no reason why full compliance with the standards of the Selwyn District Plan cannot be achieved.

Following development of the Plan Change area the section of Blakes Road along the site frontage will need to be developed to appropriate urban standards including footpaths and a 50km/h posted speed limit.

9.2 Road Intersection Spacing

The primary access point from the development site onto the road network will be on Blakes Road approximately 220m west of the Elmwood Drive intersection. The speed limit between these two intersections will be 50km/h for which the District Plan specifies a minimum distance between intersections of 125m; therefore the location of the new intersection is compliant with the District Plan.

9.3 Sight Distances

The District Plan specifies a minimum sight distance of 45m for Living Zones where the legal speed limit is 50km/h and 85m where the speed limit is 70km/h. While it is not possible to measure the sight distance at the proposed site of the new Blakes Road intersection because of the existing trees, Blakes Road is flat and straight at this location, therefore it is reasonable to expect the sight distance to exceed 45m to the east where the speed limit is 50km/h and 85m to the west where the speed limit is 70km/h when the intersection has been constructed. The potential sight lines are shown in Photographs 10 and 11 below.

Photograph 10: Potential sight line west from Blakes Rd Intersection

Photograph 11: Potential sight line east from Blakes Rd intersection

The development will also create a new intersection with Williams Street at a point adjacent to the children's playground. The kerbs and footpaths for the new intersection are already formed and measurements at the intersection indicate that the sight distance requirements of the District Plan will be exceeded. This intersection and the available sight lines are shown in Photographs 12 to 14.

Photograph 12: WIlliam Street Access to site

Photograph 13: Sight line East from new William Street Intersection

Photograph 14: Sight line West from new William Street Intersection

It is similarly not possible to measure other sight distances within the Plan Change area such as at the intersection of Cairnbrae Drive and the new connection into Warratah Park. However, as the area is generally flat and the proposed alignment of the roads generally straight, there is no reason why the District Plan sight distance cannot be achieved in all cases.

9.4 Maximum Gradient for Vehicle Access

Under the District Plan, the maximum gradient allowed for a vehicle accessway into a development from the road is 1 in 6. Since the development lies within an area of flat rural land, it is not anticipated that any road gradients will exceed 1:20 and will therefore be permissible.

10. PUBLIC TRANSPORT, CYCLISTS AND PEDESTRIANS

10.1 Public Transport

Currently, there are three buses per hour in each direction during the day and higher frequency services operating during morning and evening peak periods along with an express service. It is expected that the demand for public transport generated by the Plan Change area can be accommodated by these services and the Plan Change would not necessitate additional services.

The existing bus service through Prebbleton uses Springs Road and Birchs Road to travel between Christchurch and Lincoln via Prebbleton. Policy 1.2 of the Canterbury Regional Passenger Transport Plan 2006 sets out that at least 90% of people resident in Christchurch shall be no more than 500m from a bus route. A distance of 500m is identified as being equivalent to about five minutes walking time.

The majority of the new dwellings within the Plan Change area will be within 500m of Springs Road and would be within the target walking distance for any existing or future bus services that operate on Springs Road.

At present the existing bus services that use the Springs Road and Birchs Road route have most of Prebbleton within 500m of them. As Prebbleton grows and the residential areas form less of a linear development pattern along these roads, different bus routes may be considered by Environment Canterbury and Selwyn District Council.

The majority of the Plan Change area is within 500m of Blakes Road as well as Springs Road, should public transport connections ever be considered along this route which connects Prebbleton and Templeton.

A connection could be provided through the Plan Change area if this was justified in the future. Possible connections include the route provided by Cairnbrae Drive, the new subdivision roads and Blakes Road, or a connection could be investigated through Warratah Park. Provision can be made in the detailed development stage of the project to provide sufficient road width and pavement strength for such options to be available in the future should they be justified.

10.2 Cyclists

The New Zealand Supplement to the Austroads Guide to Traffic Engineering Practice – Part 14: Bicycles contains guidance on the recommended cycling facilities that should be provided on new roads based upon daily traffic volumes and vehicle speed. The low traffic volume, less than 2,000 movements per day, within the site and the low speed environment, typically less than 40km/h, of the new

development means that the roads within the site are suitable for mixed traffic and no specific cycling facilities need to be created.

The main cycleways along Springs Road can be accessed easily from the Plan Change area using Blakes Road, William Street and Cairnbrae Drive. The proposed internal road network has a grid layout and is therefore conducive to good cycling permeability. A pedestrian and cycle link is provided at the end of William Street to connect to the new subdivision road.

10.3 Pedestrians

The proposed road layout within the Plan Change area will include provisions for pedestrians in accordance with the District Plan internal road layout requirements. The footpaths within the Plan Change area will be able to connect with the existing footpaths on William Street and Cairnbrae Drive. On Blakes Road the existing footpaths east of the new intersection will be extended up to the new intersection to facilitate access to the school and church.

The proposed internal road network has a grid layout and is therefore conducive to good pedestrian permeability. A pedestrian and cycle link is provided at the end of William Street to connect to the new subdivision road.

Other opportunities for pedestrian connections may arise during the detailed design of the Plan Change area and these can be pursued by the Applicant and Selwyn District Council.

11. EFFECTS ON THE TRANSPORT NETWORK

11.1 Effect of Development Traffic on Road Network

11.1.1 Cairnbrae Drive/Springs Road Intersection

Cairnbrae Drive provides the main route south from the Plan Change area and as a result, traffic volumes along this road will increase. Based on the predicted trip distribution, the peak two-way volume is predicted to increase from 48vph to 182vph. Analysis of the intersection performance using aaSIDRA suggests that the additional traffic volumes will cause a small increase in the average delay per vehicle for vehicles exiting from Cairnbrae Drive. The estimated delay of 11 seconds/vehicle falls with the band of Level of Service B.

11.1.2 Tosswill Road/Springs Road Intersection

The Tosswill Road/Springs Road intersection carries nearly as much traffic as the Blakes Road/Springs Road intersection. The pattern of delays though is different because there are a greater number of vehicles making a right turn out of Tosswill Road than turning right out of Blakes Road. The average delay per vehicle on each movement during the morning peak period has been estimated for the current and predicted future traffic volumes using aaSIDRA. The movement having the greatest delay is the right turn movement from Tosswill Road and is estimated as 19 seconds/vehicle with current traffic volumes which represents a Level of Service C. The estimated delay per vehicle for the right turn movement increases to 22 seconds with the higher traffic volumes resulting from the residential development of the Plan Change area which remains within Level of Service C.

11.1.3 Charles Street/Springs Road Intersection

Since the new roads within the Plan Change area do not link directly onto Charles Street, the only impact on this intersection will be a small increase in the traffic volume along Springs Road resulting from vehicle trips between the northern end of the development site and Lincoln via William Street. It is estimated that the through traffic volume will increase by up to 94vph in either direction during the AM peak period. This will create a small and negligible increase in the delays incurred by vehicles entering and exiting Charles Street with all movements remaining at Level of Service B or better.

11.1.4 William Street/Springs Road Intersection

William Street is likely to be used by about 30% of vehicles travelling between the northern section of the Plan Change area and locations south of Prebbleton. An intersection analysis using aaSIDRA using the current traffic volumes provided an estimate of the average delay of 13 seconds/vehicle. With the additional traffic volumes from the residential development of the Plan Change area, it has been estimated that the average delay per vehicle will increase to 15 seconds/vehicle which corresponds to a Level of Service B.

11.1.5 Blakes Road/Springs Road Intersection

The Blakes Road/Springs Road intersection carries a higher volume of traffic during the peak hour than any of the surrounding intersections. It is estimated that the residential development of the Plan Change area will increase the traffic volume during the morning peak hour at the intersection from 1130vph to 1296vph. Analysis of the intersection performance using aaSIDRA suggests that the greatest existing average delay for any movement is 14 seconds/vehicle and this will increase to 16 seconds/vehicle following the residential development. The largest delays and worst level of service for the intersection occur on the Blakes Road approach where a Level of Service C has been estimated both for the current traffic volumes and the predicted future volumes.

11.1.6 Norris Street/Blakes Road Intersection

As with the Charles Street/Spring Road intersection, there is not expected to be any increase in the turning movements at the Norris Street/Blakes intersection because it does not lie on the expected routing for vehicles going to or from the Plan Change area. The volume of traffic on Blakes Road will increase as a result of the proposed residential development and therefore there will be a small increase in the delays incurred by vehicles turning into or out of Norris Street.

11.1.7 Subdivision Road/Blakes Road Intersection

Analysis of the intersection using aaSIDRA suggests that the largest delays will occur on the new subdivision road as it exits onto Blakes Road. The estimated delays though are less than 10s which represents a Level of Service A.

12. CONCLUSIONS

Having undertaken a thorough investigation of all the traffic and transportation issues associated with the proposed Plan Change it is concluded that the transportation needs of the development will not have any significant adverse effects on the transportation system.

The traffic effects of the Plan Change and in particular the impact on Springs Road which provides the major transportation corridor in the area have been assessed in detail and it has been demonstrated that the proposed Plan Change can be accommodated with the retention of the existing good levels of service for road users.

In terms of the sustainable transport modes of walking, cycling and public transport the Plan Change area is well located on a public transport corridor within easy walking distance and with local shops and services also within walking and cycling distance.

It is concluded that from a transportation viewpoint the Plan Change will facilitate the establishment of an urban development that will prove to be a desirable extension of the Prebbleton Village area.

Traffic Design Group Ltd
27 March 2008