Annexure Five: Transport Assessment

novogroup

Planning · Traffic · Development

Transportation Assessment prepared for

Park Lane Estates Ltd

1535 Main South Road, Rolleston

April 2013

Land Use Consent Application prepared for

Park Lane Estates Ltd

1535 Main South Road, Rolleston
April 2013

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INTRODUCTION

1. Park Lane Estates Ltd has commissioned Novo Group to prepare a Transportation Assessment (TA) for the proposed rural residential development at 1535 Main South Road, Rolleston.

2. This report provides an assessment of the transportation aspects of the proposed development. It also describes the traffic environment in the vicinity of the site, describes the traffic related components of the proposal and identifies compliance issues with the traffic provisions in the City Plan. It has been prepared broadly in accordance with the Integrated Transportation Assessment Guidelines specified in New Zealand Transport Agency Research report 422, November 2010.

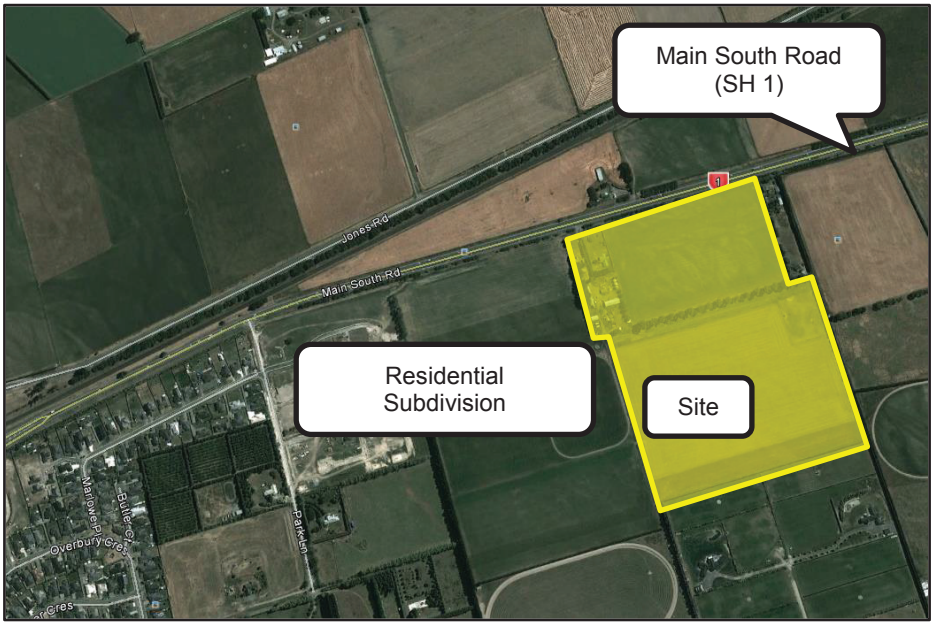
THE PROPOSAL

3. It is proposed to rezone the site at 1535 Main South Road for rural residential use. The site is currently zoned ***Rural Inner Plains*** and ***Living 2 zoning*** is sought. This is anticipated to enable development of approximately 36 rural residential allotments.

4. The proposed road network will connect to two new roads being created as part of the Park Lane Estates residential development[1] to the west of the site. These roads generally run east-west across the site. Two roads on a north-south alignment are also proposed as well as a short culs de sac to service around 6 properties located centrally within the site.

THE TRAFFIC ENVIRONMENT

5. The application site has frontage to State Highway 1, however vehicle access will be via the residential zoned area immediately to the west of the site. The location of the site and surrounding road layout is shown in Figure 1 below.



[1] For more detail on the development to the west of the site refer to the District Plan, Township Volume, Part E – Appendix 38 and Outline Development Plans of areas 3 and 8.

Figure 1: Location of site and surrounding road network [source: Google earth]

Main South Road (SH1)

6. The site has frontage (but no vehicle access) to Main South Road which forms part of the State Highway network (SH1). Main South Road generally has one traffic lane in each direction however near the application site two lanes are provided in each direction providing a passing area. NZTA traffic volume counts indicate that SH1 is carrying around 19,900 vehicles per day (2012 count south of intersection with Weedons Ross Road).

Planned Road Network

7. A residential subdivision is currently being developed on the land west of the site. This includes provision of new local roads. These roads primarily connect to the surrounding collector / arterial roads (for example Levi Road). The remainder of the planned roads will be *Local* area and *Neighbourhood* type streets. The *local* area streets are able to accommodate future bus routes. Cycle lanes are proposed for the avenues (main roads connecting with collectors / arterials) with provision for shared use on other roads. Pedestrian access is primarily provided by the road network (footpaths on at least one side of the road) and supported by off-road paths, for example, through open spaces.

8. The outline development plans for the area to the west of the site are included in Part E - Appendix 38 of the District Plan (Township Volume). Areas 3 and 8 are relevant to this application. Figure 2 below shows extracts of the proposed road network of area 3 and 8.

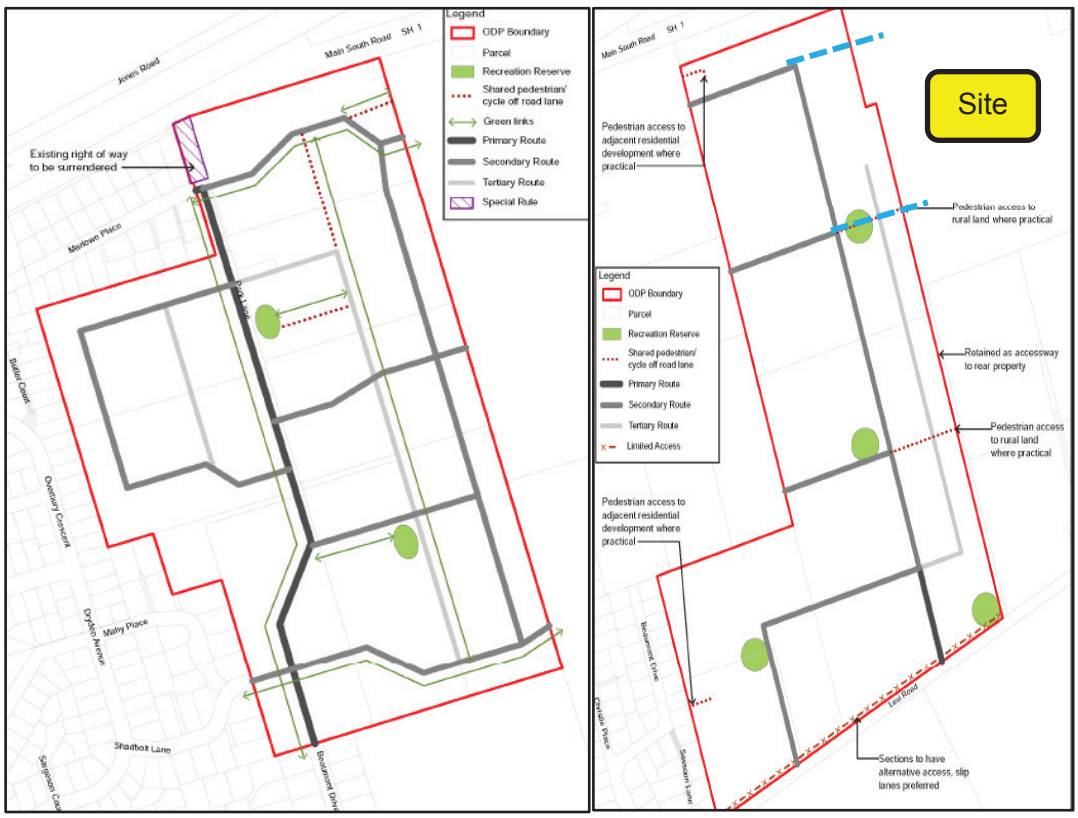


Figure 2: Outline development plans for adjoining residential development west of site

9. The northern end of this residential development is known as Park Lane Estates. The blue dashed lines on the top right corner of Figure 2 indicate the location of the two road connections to the proposed rural residential development (i.e., through Park Lane Estates).

10. Access for the proposed rural residential development will occur through this new residential development. Connections to the existing road network include Marlowe Place, Mahy Place, Shadbolt Lane, Beaumont Drive and Levi Road.

11. Access to the classified road network includes Levi Road (arterial road), Masefield Drive (collector), Rolleston Drive (collector), and Dryden Avenue (collector).

Public Transport

12. Two bus routes currently service Rolleston, including the 820 (Burnham / Lincoln) and the 88 (Rolleston). The closest bus stops are located on Rolleston Drive and Masefield Drive. Consideration has also been given to road design capable of accommodating future bus routes through the residential development west of the site. This will enable bus services to be provided closer to the site in the future.

Relevant Statutory Documents

13. A summary of the relevant statutory documents as they relate to this Plan Change is outlined below.

Regional Land Transport Strategy (RLTS) 2012-2042

14. The RLTS sets the direction for land transport in the Canterbury Region over the next 10 years. The RLTS is prepared under the requirements of the *Land Transport Act* 1998, as amended by the *Land Transport Management Act* 2003. The RLTS seeks the following outcomes:

- *Reduced greenhouse gas emissions from use of the domestic transport system.*
- *Improved land use and transport integration*
- *Reduction in fatal and serious injuries for all modes*
- *Improved health from increase in time spent travelling by active means*
- *Reduced community exposure to vehicle pollutants, noise and vibration.*
- *Increased proportion of the population travelling by active means.*
- *Increased energy efficiency per trip.*
- *Connectedness is enhanced.*
- *Increased travel choices for households to access urban and suburban centres*

Canterbury Regional Policy Statement (RPS)

15. The RPS provides an overview of significant regional resource management issues and the identification of policies and methods to achieve integrated, sustainable management of natural and physical resources within the region. The following objectives are of particular relevance:

Objective 5.2.3 – Transport network (Wider Region)

A safe, efficient and effective transport system to meet local regional, inter-regional and national needs for transport, which:

(1) supports a consolidated and sustainable urban form;

(2) avoids, remedies or mitigates the adverse effects of transport use and its provision;

(3) provides an acceptable level of accessibility; and

(4) is consistent with the regional roading hierarchy identified in the Regional Land Transport Strategy.

Policy 5.3.1 – Regional growth (Wider Region)

To provide, as the primary focus for meeting the wider region's growth needs, sustainable development patterns that:

(1) ensure that any (a) urban growth; and (b) limited rural residential development occur in a form that concentrates, or is attached to, existing urban areas and promotes a coordinated pattern of development;

(3) promote energy efficiency in urban forms, transport patterns, site location and subdivision layout;

Policy 5.3.7 – Strategic land transport network and arterial roads (Entire Region)

In relation to strategic land transport network and arterial roads, the avoidance of development which:

(1) adversely affects the safe efficient and effective functioning of this network and these roads, including the ability of this infrastructure to support freight and passenger transport services; and

(2) in relation to the strategic land transport network and arterial roads, to avoid development which forecloses the opportunity for the development of this network and these roads to meet future strategic transport requirements.

Policy 5.3.8 –Land use and transport Integration (Wider Region)

Integrate land use and transport planning in a way:

(1) that promotes:

(a) the use of transport modes which have low adverse effects;

(b) the safe, efficient and effective use of transport infrastructure, and reduces where appropriate the demand for transport;

Recovery Strategy for Greater Christchurch

16. The Recovery Strategy for Greater Christchurch (the Recovery Strategy) prepared by CERA under the Canterbury Earthquake Recovery Act became operative on 1 June 2012. It is a statutory document that must be "read together with, and forms part of" other relevant legislation within the greater Christchurch area. The City and District Plans (and a number of other statutory documents) must not be interpreted or applied in a way that is inconsistent with the Recovery Strategy. Only Sections 3-8 of the Strategy have statutory effect.

17. The Recovery Strategy sets out the vision, supporting goals, and priorities for the recovery of Greater Christchurch. The following goals are of particular relevance:

5. Develop resilient, cost effective, accessible and integrated infrastructure, buildings, housing and transport networks - by:

5.4 developing a transport system that meets the changed needs of people and businesses and enables accessible, sustainable, affordable and safe travel choices;

5.5 zoning sufficient land for recovery needs within settlement patterns consistent with an urban form that provides for the future development of greater Christchurch;

5.6 having a range of affordable housing options connected to community and strategic infrastructure that provides for residents participation in social, cultural and economic activities; and

Land Use Recovery Plan

18. The land use recovery plan contains several provisions relating to rural residential development including the following which are of relevance to transport.

Issue 6.1.6 - Rural residential impacts

Rural-residential development, if unconstrained, has the potential to change the character of rural areas and to create adverse effects on established rural, farming (including agricultural research farms) and quarrying activities through reverse sensitivity. It also can result in dispersed settlement patterns and the inefficient provision of services.

Explanation:

Many of the rural western areas of Greater Christchurch remained undamaged during the earthquakes and are also located out of the area identified as being prone to liquefaction, making them more desirable locations to live. However, rural residential development is associated with reverse sensitivity effects and can also give rise to requests for the extension of urban services and exacerbates dispersed settlement patterns, leading to inefficient use of infrastructure and impacts on rural production. This can lead to pressures for future urbanisation, which is difficult to achieve in an effective manner given that the land use pattern has been established for a different purpose.

Objective 6.2.4 – Integration of transport infrastructure and land use

Ensure that the planning of transport infrastructure is prioritised so that it maximises integration with the priority development areas and new settlement patterns and facilitates the movement of goods and provision of services in Greater Christchurch, while: (1) managing network congestion; (2) reducing dependency on private motor vehicles; (3) reducing emission of contaminants to air and energy use; and (4) promoting the use of active transport modes.

Principal reasons and explanation:

Land use patterns that are integrated with transport infrastructure minimise energy use through network optimisation, operation and maintenance, and provide for the social and economic wellbeing of the community, and peoples' health and safety. Recovery development that is not well integrated with transport infrastructure can result in increased car dependency, higher energy use, greater traffic volumes, and inefficient freight movement.

Discussion

19. The site is located along the eastern edge of the Rolleston township and can be serviced through existing and new roads within the urban area. This makes efficient use of transport infrastructure to accommodate the demand for rural residential growth.

20. The development of rural residential growth on the outskirts of the township will enable future residents easy access (by car and active modes) to the economic goods and services, and social / cultural activities within the Rolleston township. The site represents consolidation of rural residential growth around the urban limit, reducing the amount of travel between rural residential areas and destinations within townships. Residents will be within 2-3 km of the Rolleston town centre which makes travel by cycle and other active transport modes feasible. It will also enable reasonable access (closest existing route within approximately 2km) to public transport services for travel within the region (including to and from Christchurch City). As shown in Figure 2 the location of the site is such that the proposed road network is well integrated with the existing and planned road network servicing the Township.

21. The location of rural residential growth around the township also avoids the need for new connections to the State Highway (or any rural arterial roads) enabling optimisation of and efficient planning for expansion of the strategic road network. This site also consolidates rural residential growth on the same side of the State Highway (and main south rail line) as the existing township.

22. Overall the proposed plan change is therefore considered to be generally consistent with the above aspects of the relevant statutory documents.

DISTRICT PLAN PROVISIONS

23. The site is currently located in the ***Inner Plains zone*** as specified on Planning Map 13 in the District Plan. It is proposed to rezone the site for rural-residential purposes.

24. It is noted that any residential development on the proposed allotments could comply with all the relevant transport related requirements of the District Plan. This includes adequate parking, access and manoeuvring for each new property. Failure to comply with any of these standards would result in the requirement for additional resource consent approval to be considered separately to the Plan Change application that is the subject of this report.

Objectives and Policies

25. Section 32 of the Resource Management Act requires an assessment of whether the proposed methods are the most appropriate way in which to efficiently and effectively achieve the objectives of the Plan. The objectives and policies relating to transportation aim to provide for a more sustainable land transport system, better urban form and to cater for future transport networks. They place a strong emphasis on integration between transport and land use; promotion of multiple transport modes, including active transport (cycling and walking) and public transport; and ensuring good connectivity between existing and proposed development areas.

26. Key relevant objectives and supporting policies are outlined below.

Objective B2.1.1
An integrated approach to land use and transport planning to ensure the safe and efficient operation of the District's roads…is not compromised by adverse effects from activities on surrounding land or by residential growth.

Objective B2.1.2
An integrated approach to land use and transport planning to manage and minimise adverse effects on the transport networks on adjoining land use, and to avoid "reverse sensitivity" effects on the operation of transport networks.

Policy B2.1.2
Manage effects of activities on the safe and efficient operation of the District's existing and planned road network, considering the classification and function of each road in the hierarchy.

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

Policy B2.1.12
Address the impact of new residential or business activities on both the local roads around the site and the District's road network, particularly Arterial Road links with Christchurch City.

27. The site is located along the eastern edge of the Rolleston township and can be serviced through existing and planned transport network which makes efficient use of transport infrastructure to accommodate the demand for rural residential growth. This will ensure good access to the goods, services and facilities within the Rolleston township. No access is proposed to Main North Road (SH1) which will protect the safety and efficiency of the State Highway.

28. The objectives and policies outlined above form the basis for the following assessment of effects.

ASSESSMENT OF EFFECTS

29. An application for a zone change enables all potential effects to be considered. In terms of traffic related issues, these effects relate to issues such as the geometric layout of the site and the effects of site generated traffic on the capacity of the surrounding road network.

30. On this basis the following assessment of effects will consider:

- The daily and peak hour volume of traffic estimated to be generated by the proposal and its distribution onto the surrounding road network; and
- The ability of the surrounding road network to cater for increased traffic flow.
- Design and layout of the ODP and connection with the adjoining transport network.

Daily Traffic Generation

31. It is understood that rural residential development of the site would result in approximately 36 allotments.

32. There is a substantial library of research on the traffic generation of residential developments. This data reveals a range of 6-14 trips per day per dwelling unit.

33. The traffic generation research indicates that the trip generation per dwelling unit is influenced by proximity to non-residential activities (shopping, schools, work places and general entertainment and other amenities), and the separation distance from the primary commercial district for the wider area (research indicates that increased separation distance from a major CBD results in more trip linking and a lower overall generation rate per dwelling unit). The location of the site on the edge of the Rolleston Township suggests that the bulk of dwellings will encompass a range of residential travel patterns (including some commuting to and from Christchurch), and therefore a generation rate of 8 (or less) trips per day per unit is considered appropriate.

34. It therefore follows that the site with say 36 rural residential allotments could generate around 288 vehicle trips per day (36 allotments x 8 trips each per day = 288). Peak hour traffic generation is typically around 10 percent of the daily traffic, in order to be conservative a peak hour traffic generation rate of 1 trip per allotment is adopted. This suggests around 36 trips in the peak hour.

35. This peak hour generation is likely to be tidal in nature where most of the peak hour traffic would be exiting the subdivision during the morning peak hour and then returning during the evening peak hour.

Road Network

36. All vehicle access is through the residential development to the west of the site as shown in Figure 2 above. This avoids the creation of any new road intersections with Main South road (SH1).

37. Connections to the existing road network include Marlowe Place, Mahy Place, Shadbolt Lane, Beaumont Drive and Levi Road (all connected via new roads to be created as part of the residential development of the land to the west of the site).

38. Access to the classified road network includes Levi Road (arterial road), Masefield Drive (collector), Rolleston Drive (collector), and Dryden Avenue (collector).

39. Given the location of the site relative to the town centre and the closest intersection with SH1 it is likely that most trips will occur through Marlowe Place, Dryden Avenue and Rolleston Drive. Given the collector road status of both Dryden Avenue and Rolleston Drive, this is considered to be an appropriate route.

40. It is likely that this route will also be used by future residents in Areas 3 and 8, particularly those located towards the northern end of the development. It is difficult to estimate future traffic volumes on these roads however for the purposes of this assessment it is conservatively estimated that these areas could accommodate around 720 households (assuming around 72ha and 10 households per ha). This would equate to some 720 trips in the peak hour (using the assumption above that peak hour traffic will equate to one trip per household). If it is assumed that around one third to one half of trips occur via the Dryden Avenue route (240-360 trips) then it is clear that the 38 trips in the peak hour associated with the proposed rural residential development are unlikely to be noticeable above that of the residential traffic from Areas 3 and 8.

41. Even when existing traffic volumes on these roads are allowed for (CAS estimate of 1,600vpd (assumingly 160 vph) on Dryden Avenue near intersection with Rolleston Drive) it is noted that traffic volumes would remain relatively low (160 vph existing + 360 vph Areas 3 and 8 + 38 proposed = 558 vph) and well below the physical capacity for a two lane road (around 1,800 vehicles per hour).

42. This level of traffic is not significant in the context of anticipated traffic volumes on collector roads.

43. The intersection of Dryden Avenue and Rolleston Drive is a T intersection and is stop controlled on Dryden Avenue. Dedicated right and left turn lanes are provided on Rolleston Drive. This is considered to be an appropriate design and layout for the intersection of two collector roads.

Design and Connection

44. The proposed road layout includes two road connections to the west which connect to the Area 3 and 8 developments. These are linked by two north-south roads. This provides good access to all future allotments. The provision of two road connections to the adjoining road network provides a degree of resilience in terms of enabling access in the event that one of the road connections is temporarily damaged or blocked.

45. The two roads provide a continuation of roads within the northern part of the adjoining Area 3 development (Park Lane Estates). This avoids the need for new intersections onto the adjoining roads. Two ‘T’ intersections will be created within the rural residential development. These will be able to meet the sight distance and separation requirements of the District Plan (assuming a future speed limit of 80 km/h or less).

46. The internal roads will be designed and formed in accordance with the District Plan standards for rural residential roads (Living 2 zone) as specified in Table E13.8 including a legal width of 18-20 metres, and a carriageway width of 6.0-6.5 metres. This legal and formed width will be sufficient to cater for the likely traffic volumes and site access and will be sufficient to accommodate the more detailed design aspects which are determined at subdivision stage.

CONCLUSIONS

47. The proposal to rezone the site at 1535 Main South Road for rural residential use would result in around 36 allotments equating to around 288 vehicle trips per day and around 36 trips in the peak hour. The proposed road layout is sufficient to cater for all likely traffic generation and provide efficient property access. The site has two road connections to residential development located west of the site. This provides suitable access to the wider road network and particularly to existing collector roads such as Dryden Avenue and Rolleston Drive.

48. The site is located along the eastern edge of the Rolleston township and can be serviced through existing and planned transport network which makes efficient use of transport infrastructure to accommodate the demand for rural residential growth.

49. The development of rural residential growth on the outskirts of the township will enable future residents easy access (by car and active modes) to the economic goods and services, and social / cultural activities within the Rolleston township. It will also enable reasonable access to public transport services for travel within the region (including to and from Christchurch City). The location of the site is such that the road network is well integrated with the existing and planned road network servicing the Township.

50. For the reasons outlined above any transport related adverse effects are considered to be less than minor and as such the proposal can be supported from a traffic perspective.