
In the Matter of:

The Resource Management
Act 1991

and

Proposed District Plan
Change 22: 6-15 Kelso Grove,
Kelson. Rezoning of part of
the site as General
Residential Activity Area

Application By:

Hutt City Council

**Statement of Evidence of
Harriet Barbara Fraser**

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29 August 2011

Statement of Evidence of Harriet Barbara Fraser BEng (Hons), MSc

Introduction

1. My full name is Harriet Barbara Fraser. I hold a Bachelor of Civil Engineering degree from Imperial College, University of London and a Masters degree of Science in Transportation Planning and Engineering awarded with distinction by the University of Leeds. My background of experience includes 18 years consultancy experience in traffic and transportation matters. Since August 1998 I have worked as a Principal Transportation Planner in the firm of Traffic Design Group Limited practicing as a transportation planning and traffic engineering specialist throughout New Zealand
2. Traffic Design Group itself is routinely engaged by local authorities, private businesses and individuals across New Zealand to advise on traffic and roading issues of central, suburban and regional developments, including areas of planning, design and management. Within the Company, I provide traffic engineering advice, assessment and design across a wide range of traffic and transportation planning matters.
3. I have read the Code of Conduct for Expert Witnesses in the Environment Court Consolidated Practice Note (2006). I agree to comply with this Code of Conduct. This evidence is within my area of expertise, except where I state I am relying on what I have been told by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Background

4. In this matter, Traffic Design Group has been asked by Hutt City Council to examine and assess the traffic and transportation aspects arising from Proposed District Plan Change 22 which proposes to rezone part of the site at 6-15 Kelso Grove, Kelson to General Residential Activity Area.
5. A transportation assessment was advanced by Traffic Design Group during February 2011 and was included as Appendix 5 of the May 2011 Section 32 Report for Proposed District Plan Change 22. The details of that Assessment provide the basis of my evidence which follows.

Scope of Evidence

6. My evidence has a two-fold purpose, as follows:
 - (i) to determine the traffic and transportation effects that would result from the proposed rezoning;
 - (ii) to respond to concerns raised by submitters.
7. As a summary of my evidence which follows, it is my view that the rezoning included in Proposed District Plan Change 22 can, from a transportation perspective, be readily accommodated within the site and surrounding transport network.

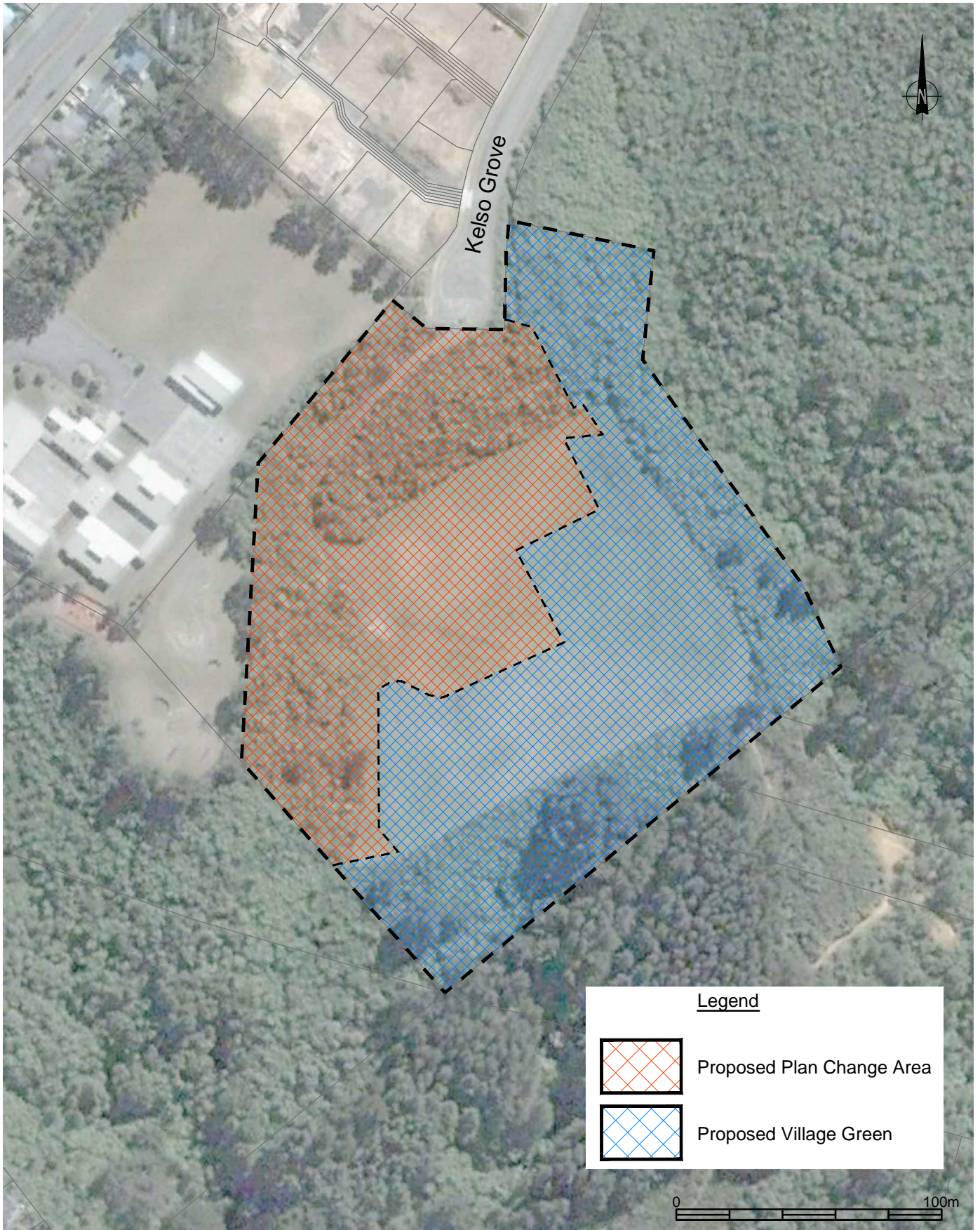
Proposed District Plan Change 22

8. Hutt City Council has identified that the Kelso Grove sports ground in Kelson is under-utilised, to the extent that the general recreational area zoning is no longer appropriate for the whole site. On this basis Council has obtained the Minister of Conservation's consent to revoke the reserve status from part of the sports ground and now seeks to rezone that area to General Residential, enabling it to be subdivided and developed. The transportation assessment was commissioned to evaluate the potential transportation related effects arising from the proposed rezoning to assist in the determination of the appropriateness of the proposed District Plan Change.
9. The approach undertaken in the assessment was to consider the level of development that could be anticipated as a permitted or control activity, and which activities would require further assessment as discretionary or non-complying activities. The next step in the assessment was then to evaluate the effects of permitted or controlled activities.

Site Location

10. Figure 1 shows the area to be rezoned (the site), which comprises 1.6 hectares of land on and around the Kelso Grove sports ground. This includes the bush clad slopes on the northern and eastern sides of the sports ground and part of the flat land on the northern side of the sports ground. This land is classified as recreation reserve but is generally underutilised partly due to the poor condition of the sports surface and partly due to the relatively isolated location. The proposal to enable urban development will bring surveillance and safety to the remaining area of recreation reserve. It is proposed that the remaining area of recreation reserve be developed as a Village Green. Increased utilisation is anticipated as a result, although it is noted that the well maintained Kelson School field will remain as an attractive facility immediately to the west of the site.

Friday, 4 February 2011

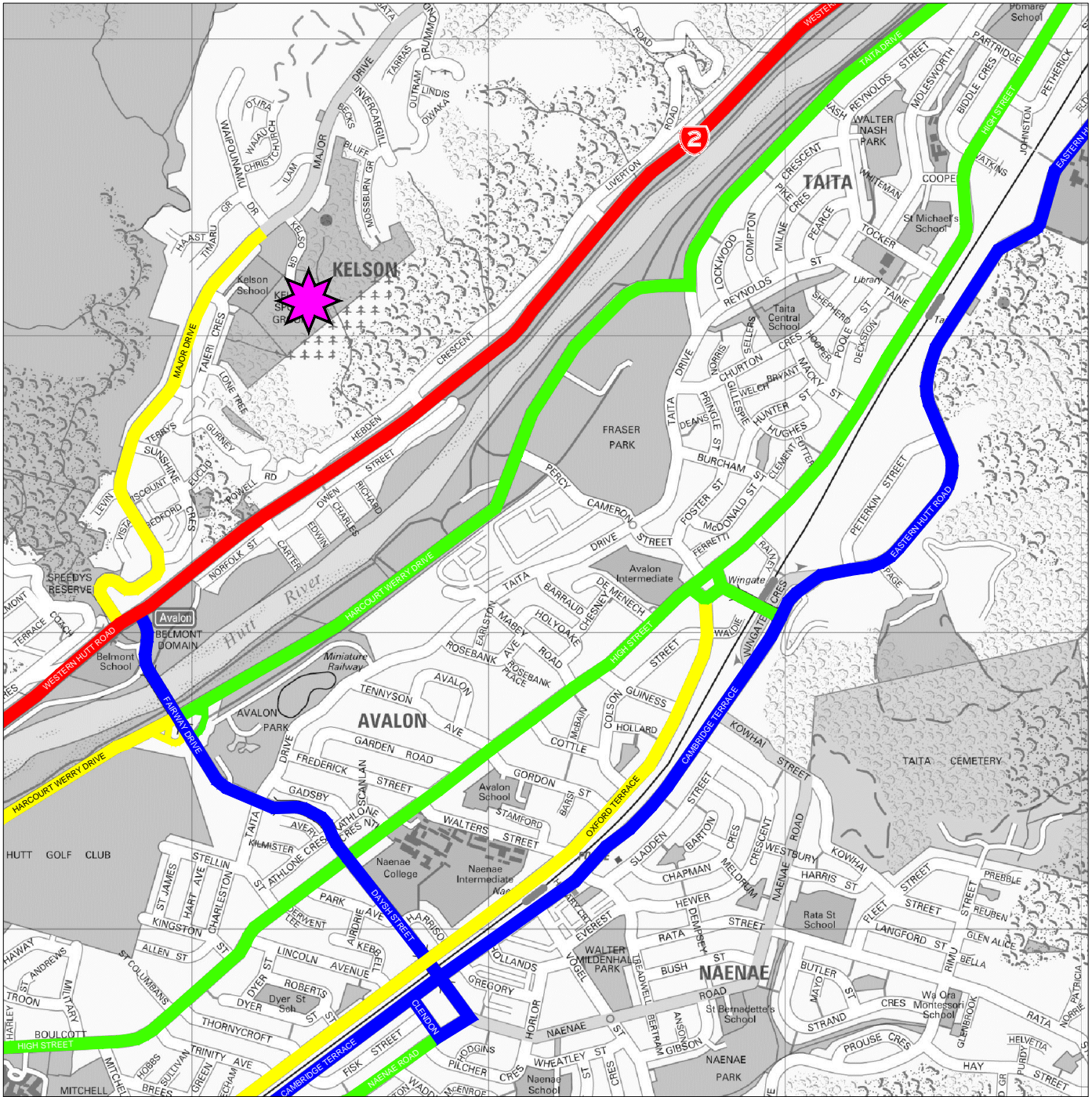


Kelso Grove Sportsground Residential Plan Change Proposed Area To Be Rezoned

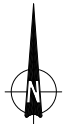


Transport Environment

11. Figure 2 shows the location of the site in the context of the surrounding transport network. The site is accessed from the end of Kelso Grove, which is a 230m long cul-de-sac providing access to 24 houses. Towards the cul-de-sac head Kelso Grove has a carriageway width of 9.2m with a 1.5m wide footpath along the western side. Alongside the footpath there is a 1.9m wide grass kerbside berm and a 0.6m wide grass boundary berm. Direct access is available from Kelso Grove to the Kelson School and through there to the Kelson Kindergarten. Kelso Grove is defined in the District Plan as an Access Road.
12. Kelso Grove connects to Major Drive which is a Local Distributor Road. Major Drive forms part of a bus route providing services every 30 minutes throughout the day, taking passengers to Naenae, Waterloo Station, central Lower Hutt and Petone. The nearest stop to the site is just west of Waipounamu Drive, a walk of approximately 450m.
13. A traffic count undertaken by Council in August 2009 recorded a daily traffic flow on Major Drive between Taieri Crescent and Waipounamu Drive of some 4,000 vehicles per day (vpd). A peak hour flow of 450 vehicles per hour (vph) was recorded between 5pm and 6pm. This count location is to the south and downhill from the Kelso Grove intersection with Major Drive. With some 180 houses accessed via Waipounamu Drive and predominantly travelling to and from the south I estimate that traffic flows along Major Drive through the Kelso Grove intersection would peak at no more than 300vph.
14. The approved but yet to be developed Kelson Heights subdivision is expected to generate up to some 90vph along Major Drive through the intersection with Kelso Grove during peak hours of traffic activity.
15. Major Drive is relatively steep and climbs up from the valley floor with gradients of up to 10%. This presents a long, challenging climb for cyclists to an extent that there is relatively little uptake of cycling as a commuting option for residents of Kelson.
16. In a similar vein, walking destinations from the site are relatively few, with the Kelson shops having a relatively limited offer and being a 1.3km walk away. That aside, the site is very close to the school and kindergarten and will have the Village Green immediately adjacent to it.
17. On the whole, the topography of Kelson is such that the primary travel modes are bus and private car, with the one notable exception being trips to and from the primary school and kindergarten.



- █ Primary Distributor
- █ Major District Distributor
- █ Minor District Distributor
- █ Local Distributor
- █ Pedestrian Streets
- ★ Site Location



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**Kelso Grove Sportsground Residential Plan Change
Location In The Road Network**



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Potential Development

18. Following the District Plan Change it will be necessary to obtain a subdivision consent. Development plans prepared by Tonkin and Taylor suggest that such a subdivision is likely to involve up to around 24 lots.
19. The permitted activity provisions of the District Plan will then enable each lot to accommodate any of the following:
 - (i) a single dwelling;
 - (ii) a home occupation with no more than two additional people working there;
 - (iii) a childcare facility for up to five children; or
 - (iv) a residential facility for eight to ten people.
20. All other more intensive traffic generating activities will require a separate assessment of transportation effects as restricted discretionary activities (comprehensive residential developments, healthcare services and accessory buildings on legal road) or discretionary activities. Even more significant developments such as retail would be a non-complying activity again requiring a separate assessment.
21. Based on development patterns elsewhere in Kelson, there is no reason to expect that a significant number of the anticipated lots will be used for home occupations, childcare or residential facilities. On this basis my assessment has focused on the likely development involving 24 private dwellings. I do however note in this regard the District Plan requires on-site parking at a rate which generally makes most activities self-sufficient, including two parking spaces for dwellings, an additional space for home occupations, one space per staff member for childcare facilities and four spaces for a residential facility. On this basis I consider that on-street parking will generally only need to accommodate guests and visitors to the Village Green.

Sustainable Transport

22. As previously described, the location of the site is such that the development will generally be reliant on public transport and private car. It does however fit into an existing residential environment and is expected to enable increased utilisation of the local sports ground. This may be to an extent that it reduces need for other residents of Kelson to travel further afield.
23. The walk distance of 450m to the Major Drive bus stop is in general accord with the best practice guideline of a 400m walk, such that bus travel will be popular for residents,

particularly for commuting. I note in this regard that the bus services are timed to connect with the trains to Wellington.

24. In my view, this infill location is appropriately served by public transport and can be considered preferable to many other greenfields sites for residential development.

Traffic Effects

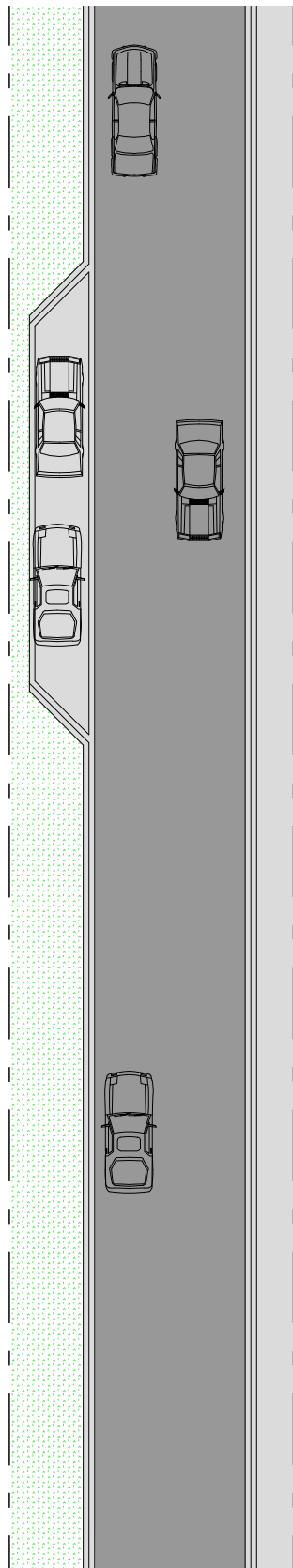
25. Given the location of the site, I expect each dwelling to generate around 8vpd. Using this rate, the anticipated development of 24 lots will result in the addition of 192vpd to Kelso Grove. By applying that same rate to the existing 24 houses on Kelso Grove, I estimate the total future traffic flow on Kelso Grove at just under 400vpd, of which 40vph can be expected during the peak hour. Increased use of the sports ground may add to this figure such that I have adopted a conservative peak hour flow of 60vph.
26. The industry adopted Austroads guide to Traffic Management Part 6: Intersections, Interchanges and Crossings provides a guideline for assessing the capacity of the intersection of Kelso Grove and Major Drive. Table 2.4 of the Austroads Guide provides that intersections carrying fewer than 500vph on a major road and 200vph on a minor road will have sufficient capacity without need for detailed traffic modelling. Given that Major Drive is expected to carry a peak hour flow of around 390vph when Kelson Heights is developed and that Kelso Grove is forecast to carry only around 60vph, I conclude that the existing intersection will have sufficient capacity to accommodate the foreseeable traffic resulting from the proposed plan change.
27. Kelso Grove itself has a reasonably generous carriageway width of 9.2m which is sufficient for cars to park on either side while maintaining slow speed two-way movement. Occasional movement by large vehicles would however require an oncoming vehicle to pull to the side in a location where there are no parked cars (such as at a driveway) and give way. Such a scenario is however relatively rare, with the residential uses giving very little demand for on-street parking. The one exception is activity from the Discovery Christian Centre which I expect to generate on-street parking demand on Sundays.
28. On the whole, a residential street like Kelso Grove is generally considered capable of accommodating around 2,000vpd, as recorded in the New Zealand Standard for Land Development NZS4404:2010. On this basis the projected daily traffic flow resulting from the proposed plan change will remain well within the available capacity of the street.
29. I have also investigated safety patterns by searching the NZTA crash analysis system. A search covering the ten year period from 2001 to 2010 has not found any reported

crashes on Kelso Grove or at the intersection with Major Drive. This, in combination with a site inspection that did not find any safety issues, leads to my conclusion that the anticipated traffic can be accommodated safely.

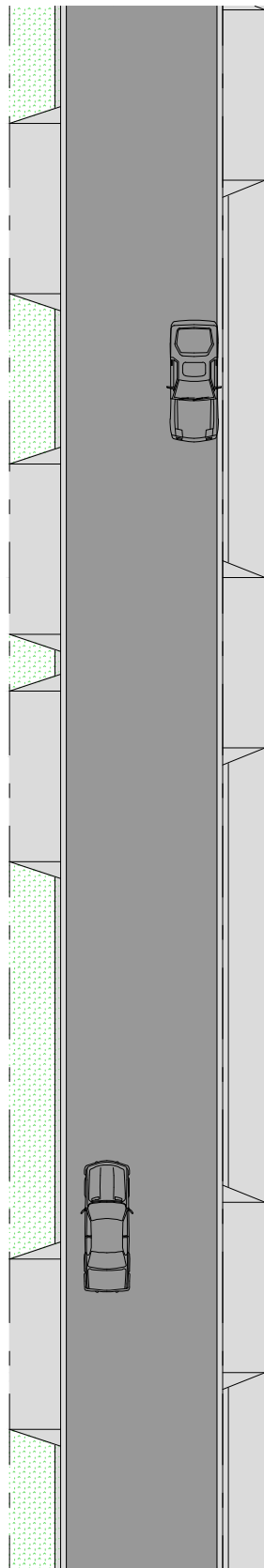
Anticipated Design Standards

30. While design standards will be assessed at the subdivision stage, it is helpful for evaluation of the proposed plan change to develop and provide some indication of appropriate street design standards.
31. Section 14A(i)2.1 of the District Plan sets out expectations for street design which, for an Access Road serving less than 100 dwellings, include:
 - (i) a 7.2, carriageway;
 - (ii) a maximum gradient of 13%;
 - (iii) footpaths on both sides; and
 - (iv) a 2.0m kerbside berm and a 0.9m boundary berm on each side of the road.
32. These sum to an expected road reserve width of around 15.8m.
33. However it is also relevant to consider the provisions of NZS4404 (2010) which represents the most up to date best practice for developing walkable and liveable streets that remove the dominance of the motor vehicle in environments that should more appropriately be focused on pedestrians. By considering the guidance in NZS4404, my initial recommendation for an indicative design is shown in Figure 3.
34. Three categories are shown, including the extension of Kelso Grove, the lane running along the northern edge (Road A) and the two short access lanes toward the south of the site (Roads B and C).
35. I recommend the Kelso Grove extension include a 5.7m wide carriageway with provision to reach a steep grade of 16% as currently exists. I recommend that a 1.5m wide footpath be provided on the eastern side to provide access to the houses there and also facilitate turning into driveways if vehicle access is considered appropriate from the steep driveway. Given the steep, sloping nature of the site I do not consider it strictly necessary to include a berm on the eastern side and the need for a berm on the western side could be discussed in relation to services. Parking bays should be provided on the

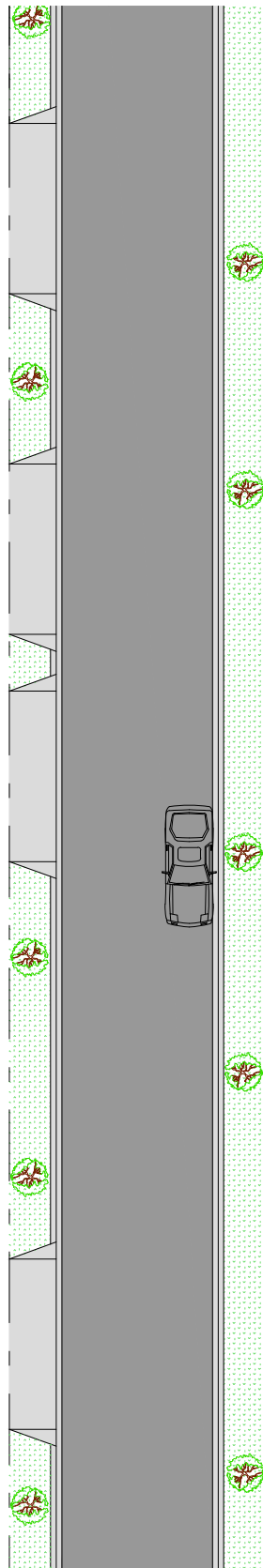
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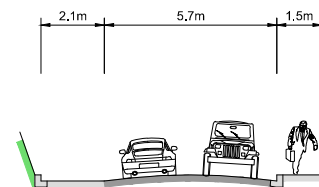
Kelso Grove Extension



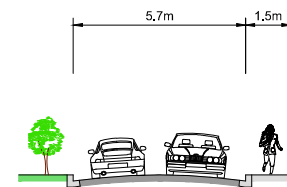
Road A



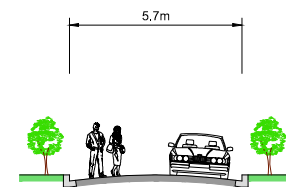
Roads B and C



Kelso Grove Extension



Road A



Roads B and C



REVISION	DATE	DESCRIPTION
A	04/02/2011	Creates from Google aerial and boundary data

Kelson Grove Sportsground Residential Plan Change
Indicative street Designs

DRAWN: Quentin O'Shaughnessy
 DATE: 04.02.2011
 SCALE: 1:250 @ A3
 DWG NO:10998W1A



western side at a rate of one bay for every one or two lots. It would be advantageous to encourage the front doors of the houses to be located at the upper level and accessed from the Kelso Grove extension.

36. I recommend the flat section along the base of the northern slope (Road A) comprise a 5.7m wide carriageway with a 1.5m footpath on the southern side. A hammerhead would be required at the eastern end to facilitate turning.
37. The smaller lanes (Roads B and C) should also include a 5.7m carriageway but without need for a separate footpath. Pedestrians would generally be accommodated on the carriageway in a shared environment. I anticipate that parking for the Village Green could be incorporated by extending angle parking into the recreation reserve land as needed. Other than that, intermittent on-street parking can be readily accommodated within the 5.7m carriageway for the low flows anticipated on roads A, B and C.
38. While the exact details of road layout and design will be provided at the subdivision consent stage, these guidelines may be helpful to understanding how a subdivision might look and to gauge the associated effects.

Issues Raised in Submissions

39. I have read and reviewed the traffic and transportation related submissions received in respect of the proposed plan change. The concerns relating to matters of traffic and transportation can be summarised as follows:
 - (i) pedestrian access to the reserve;
 - (ii) combined traffic effects with the approved but as yet undeveloped Kelson Heights subdivision;
 - (iii) effect on availability of parking on Kelso Grove for use for access to the school and kindergarten.
40. I respond to each of these matters in turn.

Pedestrian Access to Reserve

41. One of the submissions includes concerns regarding continued pedestrian access to the reserve and the adequacy of the width of the footpath to accommodate buggies and dogs.
42. The indicative plans for the proposed subdivision include public access to the reserve via the Kelso Grove Extension and then either of Road A, B or C. At present there is a

single 1.5m wide footpath along Kelso Grove. I envisage that a 1.5m wide footpath will be provided into the subdivision and included along Road A. As such, an option for full footpath access to the Reserve is anticipated. Pedestrian access along Roads B and C will be in a shared environment with small and intermittent traffic flow and slow travel speeds.

43. It should however be noted that while the topography and natural direction via NZS4404, suggest a lesser roading provision is appropriate, any future subdivision will require a resource consent and the provision of less than the District Plan requirement of footpaths and berms on each side will require discretionary consideration by Council.
44. In my view, given the topography and site layout which restricts building to one side of the extension, the existing footpath arrangement along Kelso Grove, and the small pedestrian and traffic volumes, the provision of a single footpath with a width of 1.5m is appropriate and well matched to the local needs and environment.

Kelson Heights Subdivision

45. Concerns regarding the combined traffic effects of the proposed plan change and the approved but as yet undeveloped Kelson Heights subdivision are raised in one of the submissions. The traffic assessment has been updated to include consideration of the planned subdivision at 64 Waipounamu Drive.
46. As set out earlier in my evidence, the forecast traffic flows through the Major Drive intersection with Kelso Grove are such that the ongoing spare capacity can readily accommodate the potential additional traffic activity associated with this plan change.
47. With regard to any affect on the performance of the intersection between Major Drive and State Highway 2, I note that during the weekday morning peak with some 24 additional dwellings, an average of one extra vehicle will arrive on the Major Drive approach to the signals during each cycle of the signals (assuming a 120s cycle at peak times). I do not expect this additional level of traffic activity to have any noticeable effect whatsoever on the performance of the intersection.

Parking Availability

48. One of the submissions includes concerns regarding the ongoing provision of parking on Kelso Grove for use for drop-off and pick-up at the school and kindergarten. I agree that the current arrangement provides safe and convenient access to the school and kindergarten and I have observed up to eight cars parked close to the turning head at the end of Kelso Grove for this purpose.

49. Given the road reserve width in this location I expect that it will remain possible to include a number of parking spaces in this location and in any case I have observed little if any residential demand for kerbside parking along the adjoining section of Kelso Grove at peak times of activity associated with the school and kindergarten. On this basis, I do not expect the anticipated development of the Kelso Grove Sports Ground to alter the convenience and safety of Kelso Grove as a drop-off and pick-up location.

Other Matters

50. Separate to the submissions, Council has asked for comment with regard to the following matters:
- (i) the width of the Kelso Grove extension if it is to fully comply with the District Plan requirements;
 - (ii) whether the Kelso Grove extension could result in the need to clear vegetation from indicative Lots 14 and 15;
 - (iii) the number of carparking spaces likely to be required for the reserve.
51. My interpretation of the District Plan provisions for an access road such as the Kelso Grove extension would mean that a fully complying cross-section which required no discretionary assessment would comprise:
- (i) a 7.2m wide carriageway;
 - (ii) a 2.0m wide kerbside berm on each side;
 - (iii) a 1.4m wide footpath on each side;
 - (iv) a 0.9m wide boundary berm on each side.
52. An overall road reserve width of 15.8m would be required.
53. Given the topography, the existing provision of a single footpath along Kelso Grove, the expected low pedestrian volumes, the potential to develop houses along only one side of the road and that the District Plan includes assessment criteria in this regard, I consider it reasonable to assume that a cross-section would likely comprise the following, giving consideration to the District Plan requirements and NZS4404:2004:
- (i) a 7.2m wide carriageway;
 - (ii) on the developed side, a 0.9m wide boundary berm, a 1.4m wide footpath and a 2.0m wide kerbside berm;
 - (iii) on the undeveloped side, a 0.5m wide berm.

54. An overall road reserve width of 12m would be required and Council would need to apply some discretion.
55. The indicative site plans prepared by Tonkin and Taylor show an indicative road reserve width of 12 to 14m, which is well matched to a cross-section that would include a footpath along one side only.
56. The provision of a 15.8m road reserve would require the indicative road reserve width to be increased by some 1.8 to 3.8m. Given that indicative Lots 14 and 15 have frontage onto the existing turning head at the end of Kelso Grove, and that the road reserve width in this location is already in excess of 15.8m, it is considered unlikely that any change would be needed to these boundaries.
57. With regard to parking provision associated with the public use of the reserve, I anticipate that some shared use will be made of the on-street residential parking provision. If the site is developed in such a way that includes access roads along the edge of the reserve as shown in the indicative site plans, and given the flat topography of this part of the site, there is the potential to include extensive parking along the edge of the reserve. I would suggest that any kerbing and landscaping along the edges of the reserve where road access is provided should allow for the possible future addition of parking as needed.

Conclusion

58. Subject to appropriate design, I conclude that this site at the end of Kelso Grove represents a good location for residential zoning. My assessment has found that the transportation related effects of the anticipated level of residential development will be no more than minor with the forecast levels of traffic being readily accommodated by the surrounding road network. The provisions of the District Plan provide that any more intensive land uses will be separately assessed if and when a consent application is made for them. It can therefore be concluded that the effects relating to transportation are appropriately addressed by the proposed plan change and can therefore be supported.

Harriet Barbara Fraser
Traffic Design Group Ltd

29 August 2011