8. MACKENZIE AVENUE - STREET RENEWAL PROJECT

General Manager responsible:	General Manager City Environment, DDI 941-8656
Officer responsible:	Manager Transport and Greenspace
Author:	Kirsty Ferguson, Consultation Leader - Transport

PURPOSE OF REPORT

1. The purpose of this report is to seek the approval of the Board to proceed to final design, tender and construction for the Mackenzie Avenue street renewal project, as shown in the plan for Board approval at **Attachment 1**.

EXECUTIVE SUMMARY

2. Mackenzie Avenue runs betweens Ensors Road and Richardson Terrace, and is 900 metres long. The existing carriageway is approximately 13.5 metres wide, with a high crown, kerb and dish channel, and footpaths. There is little in the way of enhancement in the street apart from a landscaped narrowing at Richardson Terrace. Sullivan Avenue, which runs parallel to Mackenzie Avenue, has recently been reconstructed.

3. The surrounding area is primarily residential in nature. The Church of the Latter Day Saints occupies a site towards the Ensors Road end of Mackenzie Avenue, and there is the Mackenzie Courts council-housing complex on the corner of Ensors Road and Mackenzie Avenue. There are no parks or reserves adjoining the street. There is a vacant building, which used to be a shop on the corner of Hopkins Street and Mackenzie Avenue. There is a dairy and takeaway shop on Hopkins Street, near its intersection with Mackenzie Avenue.

4. Initial consultation was undertaken with the community in September 2006. A survey was distributed to all residents of Mackenzie Ave and the adjoining side streets, asking what they would like, and would not like, to see in their reconstructed street. The key issues arising from the 123 responses received included:

   - Traffic speed along Mackenzie Avenue.
   - Lack of landscaping.
   - Condition of the road surface and footpaths.
   - Heavy vehicles parking along the street overnight and on the weekends.
   - Speed humps.
   - Width of the street.
   - Views of the Port Hills and Southern Alps, looking to each end of the street.

5. In accordance with the aims and objectives of the project, three options were developed for comparison for Mackenzie Avenue, and a preferred option was presented in a seminar to the Board on 8 November 2006.

6. There were 94 responses received on the consultation newsletter presented to the community and key stakeholders, which closed on 8 December 2006. Of these 93 responses, 39 (41%) were fully supportive of the project, 49 (53%) were generally supportive of the project, but included some comments in their feedback, three (3%) did not support the project, and three (3%) did not indicate any preference for or against the project, but did provide some comments. A summary of the feedback received is shown at **Attachment 2**.

7. The key issues arising from the responses received included:

   - Access to individual properties with trailers, caravans etc.
   - Planting of street trees.
   - Landscaping.
   - Chicane vs speed humps.
   - Raised platforms.
   - Width of footpaths vs grass berms.
   - Maintenance of landscaping and grass berms.
   - Lighting.
   - Under grounding of overhead services.

- Drainage and flooding.
- Cycle bypass.
- Timing of construction.
- Carriageway width.
- Views along street.
- Carriageway width on to Ensors Road.

8. Based on the feedback received, the following changes were made to the concept plan:

   - The raised threshold treatment at Ensors Road widened from the proposed seven metre width to nine metres, which is the existing carriageway width.
   - Widen some vehicle accesses to individual properties to accommodate car and trailer turning around the narrowed areas.
   - Inclusion of a street tree outside 140 Mackenzie Avenue, as requested by the resident.
   - Minor changes to the landscaping to include the removal of the yellow flowers at Ensors Road and the inclusion of roses in the landscaping outside 105 Mackenzie Avenue.
   - The turning circles for vehicles entering and exiting the properties in the vicinity of the chicane has been checked using a car and a trailer. All residents will be able to back a trailer into their access from at least one direction.

9. The key aspects of the preferred option are outlined in paragraph 41 below, and shown on the plan for Board approval at Attachment 1 to this report.

FINANCIAL AND LEGAL CONSIDERATIONS

10. The street renewal works for Mackenzie Avenue are recommended in the Transport and Greenspace Unit's capital programme for implementation in the 2007/2008 financial year. The estimated cost of this project is $2,131,500. This cost exceeds the budget for the project, which is $1,840,284. The extra expenditure required will be managed through the 2007/2008 kerb and channel renewal budget. It is expected that the project works will start in the 2006/2007 financial year, to compensate for works that have been delayed elsewhere.

11. There are a number of land ownership issues associated with this project; however, none of these issues affect the scheme design for Mackenzie Avenue, and it is not intended to action any of the resumptions or acquisitions as part of this project. Where existing hedges intrude into the legal road, they will be trimmed back or a landscape strip will be added to the front of the property.

12. There are no notable or heritage trees, and no heritage or historic buildings, places and objects, shown in the City Plan or on Webmap2 on the intranet.

13. The City Plan defines minimum roadway widths for different road classifications. Mackenzie Avenue has a road width of nine metres, which is the minimum for a local road. Where kerb build-outs are introduced along a street, the length of roadway subject to a width of less than nine metres is less than 60 metres in length, which permits a waiver of the need to obtain resource consent. Therefore no resource consent is required, and there appear to be no legal implications for this project.

14. Community Board resolutions are required to approve the new traffic restrictions.

STAFF RECOMMENDATIONS

It is recommended that the Board:

(a) Approve the Mackenzie Avenue street renewal project to proceed to final design, tender and construction, as shown in the plan for Board approval at Attachment 1.

(b) Approve the following traffic restrictions:

   (i) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing at its intersection with Ensors Road and extending 16 metres in an easterly direction.

(ii) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Ensors Road and extending nine metres in an easterly direction.

(iii) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing at a point 125 metres from its intersection with Ensors Road and extending 25 metres in an easterly direction.

(iv) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at a point 125 metres from its intersection with Ensors Road and extending 20 metres in an easterly direction.

(v) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing at a point 188 metres west of its intersection with Finlay Place and extending 14 metres in a westerly direction.

(vi) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at a point 179 metres west of its intersection with Finlay Place and extending 20 metres in a westerly direction.

(vii) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing at its intersection with Hopkins Street and extending 14 metres in a westerly direction.

(viii) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing at its intersection with Hopkins Street and extending 12 metres in an easterly direction.

(ix) That the stopping of vehicles be prohibited at any time on the western side of Hopkins Street commencing at its intersection with Mackenzie Avenue and extending 13 metres in a northerly direction.

(x) That the stopping of vehicles be prohibited at any time on the eastern side of Hopkins Street commencing at its intersection with Mackenzie Avenue and extending 11 metres in a northerly direction.

(xi) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Finlay Place and extending nine metres in a westerly direction.

(xii) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Finlay Place and extending 18 metres in an easterly direction.

(xiii) That the stopping of vehicles be prohibited at any time on the western side of Finlay Place commencing at its intersection with Mackenzie Avenue and extending 10 metres in a southerly direction.

(xiv) That the stopping of vehicles be prohibited at any time on the eastern side of Finlay Place commencing at its intersection with Mackenzie Avenue and extending 10 metres in a southerly direction.

(xv) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing at a point three metres west of its intersection with Keswick Street and extending 14 metres in an easterly direction.

(xvi) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Keswick Street and extending 13 metres in a westerly direction.

(xvii) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Keswick Street and extending 10 metres in an easterly direction.

(xviii) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing seven metres west of its intersection with Seaforth Place and extending 27 metres in an easterly direction.

(xix) That the stopping of vehicles be prohibited at any time on the western side of Seaforth Place commencing at its intersection with Mackenzie Avenue and extending 10 metres in a southerly direction.

(xx) That the stopping of vehicles be prohibited at any time on the eastern side of Seaforth Place commencing at its intersection with Mackenzie Avenue and extending 10 metres in a southerly direction.

(xxi) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Seaforth Place and extending 12 metres in a westerly direction.

(xxii) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Seaforth Place and extending five metres in an easterly direction.

(xxiii) That the stopping of vehicles be prohibited at any time on the southern side of Mackenzie Avenue commencing at its intersection with Richardson Terrace and extending 15 metres in a westerly direction.

(xxiv) That the stopping of vehicles be prohibited at any time on the northern side of Mackenzie Avenue commencing at its intersection with Richardson Terrace and extending 15 metres in a westerly direction.

(xxv) That the stopping of vehicles be prohibited at any time on the western side of Richardson Terrace commencing at its intersection with Mackenzie Avenue and extending 10 metres in a northerly direction.

(xxvi) That the stopping of vehicles be prohibited at any time on the western side of Richardson Terrace commencing at its intersection with Mackenzie Avenue and extending 10 metres in a southerly direction.

CHAIRPERSON'S RECOMMENDATION

That the staff recommendation be adopted.

BACKGROUND

SECTION ONE

15. Mackenzie Avenue runs betweens Ensors Road and Richardson Terrace, and is 900 metres long. The existing carriageway is approximately 13.5 metres wide, with a high crown, kerb and dish channel, and footpaths. There is little in the way of enhancement in the street apart from a landscaped narrowing at Richardson Terrace. Sullivan Avenue, which runs parallel to Mackenzie Avenue, has recently been reconstructed.

16. Mackenzie Avenue is located in the Hagley/Ferrymead Ward, which falls within the jurisdiction of the Board. It is classified as a local road in the Council's roading hierarchy. The traffic volume along Mackenzie Avenue has been measured at 700 vpd[1] at the Richardson Terrace end of Mackenzie Avenue, with 1700 vpd outside 64 Mackenzie Avenue and at the Ensors Road end of Mackenzie Avenue.

17. The surrounding area is primarily residential in nature. The Church of the Latter Day Saints occupies a site towards the Ensors Road end of Mackenzie Avenue, and there is the Mackenzie Courts council-housing complex on the corner of Ensors Road and Mackenzie Avenue. There are no parks or reserves adjoining the street. There is a vacant building, which used to be a shop on the corner of Hopkins Street and Mackenzie Avenue. There is a dairy and takeaway shop on Hopkins Street, near its intersection with Mackenzie Avenue.

18. Initial consultation was carried out with internal stakeholders in September 2006, which resulted in the following issues being raised:

- **Transport Issues** - Mackenzie Avenue is not part of the designated cycle network; however, it does provide a useful link from the footbridge over the Heathcote River at Richardson Terrace through to Charleston and into the city centre. There were no pedestrian, public transport or network issues raised.
- **Traffic Operations** - Traffic volume and speed surveys were undertaken in September 2006, with 700 vpd measured at the Richardson Terrace end of Mackenzie Avenue, and 1700 vpd measured outside 64 Mackenzie Avenue and at the Ensors Road end of Mackenzie Avenue. The 85th percentile speed was measured at 58.7 km/hr, with a mean speed of 51.1 km/hr. On-street parking demand along Mackenzie Avenue is minimal, and a parking survey was carried out at 10am on a Sunday (1 Oct 2006) to record the number of vehicles parked on the street. The Church has adequate off-street parking to cater for events held there. Regularly observed tyre marks along Mackenzie Avenue indicate an active "boy-racer/hoon" use of the road.
- **Asset Issues** - There is a length of kerb and flat channel on the north side of the street that runs from Hopkins Street to the east for a length of approximately 100 metres.
- **Urban Planning Issues** - This is neither a NIP[2] nor SAM[3] area; however, consistency with Sullivan Avenue is desirable.
- There were no waste and water issues, parks and waterway issues or Treaty issues identified, and only limited property issues identified.

19. The Land Transport New Zealand Crash Analysis System shows there have been four crashes recorded on Mackenzie Avenue for the five-year period between 2001 and 2005. Two of the crashes involved vehicles turning right out of Mackenzie Avenue onto Ensors Road being struck by vehicles travelling south on Ensors Road. The other two crashes occurred at the Richardson Terrace/Mackenzie Avenue intersection, where one involved a vehicle colliding with a parked vehicle on Richardson Avenue, and the other involved a vehicle travelling along Mackenzie Avenue in the early hours of a Sunday morning in wet conditions missing the intersection. The proposed changes along Mackenzie Avenue are expected to improve safety by slowing vehicles down and highlighting intersections with kerb build-outs and threshold treatments.

[1] Vehicles per day

[2] Neighbourhood Improvement Project

[3] Special Amenity Area

20. Initial consultation was undertaken with the community in September 2006. A survey was distributed to all residents of Mackenzie Ave and the adjoining side streets, asking what they would like, and would not like, to see in their reconstructed street. The key issues arising from the 123 responses received included:

- Traffic speed along Mackenzie Avenue.
- Lack of landscaping.
- Condition of the road surface and footpaths.
- Heavy vehicles parking along the street overnight and on the weekends.
- Speed humps.
- Width of the street.
- Views of the Port Hills and Southern Alps, looking to each end of the street.

21. Based on the feedback received, the initiating aim of the project was confirmed as the renewal of the existing kerb and dish channel with kerb and flat channel, with the following objectives:

- To replace the existing kerb and dish channel with kerb and flat channel.
- To reduce the width of the carriageway, as appropriate, and with reference to the City Plan.
- To maintain or improve safety for pedestrians, cyclists and vehicles.
- To reduce the speed of vehicles in the street, thus improving the residential amenity for residents.
- To ensure the design caters for cyclists.
- To ensure the design meets the demand for on-street parking.
- To provide landscape enhancement, where possible, in conjunction with the kerb and channel renewal.
- To ensure adequate drainage design.

22. In accordance with the aims and objectives of the project, three options were developed for comparison for Mackenzie Avenue, and a preferred option was presented in a seminar to the Board on 8 November 2006.

23. There were 94 responses received on the consultation newsletter presented to the community and key stakeholders, which closed on 8 December 2006. Of these 93 responses, 39 (41%) were fully supportive of the project, 49 (53%) were generally supportive of the project, but included some comments in their feedback, three (3%) did not support the project, and three (3%) did not indicate any preference for or against the project, but did provide some comments. A summary of the feedback received is shown at Attachment 2.

24. The key issues arising from the responses received included:

- Access to individual properties with trailers, caravans etc at the carriageway narrowing locations.
- Planting of street trees.
- Landscaping.
- Chicane vs speed humps.
- Raised platforms.
- Width of footpaths vs grass berms.
- Maintenance of landscaping and grass berms.
- Lighting.
- Under grounding of overhead services.
- Drainage and flooding.
- Cycle bypass.
- Timing of construction.
- Carriageway width.
- Views along street.
- Carriageway width on to Ensors Road.

25. Based on the feedback received, the following changes were made to the concept plan:

- The raised threshold treatment at Ensors Road widened from the proposed 7-metre width to 9 metres, which is the existing carriageway width.

- Widen some vehicle accesses to individual properties to accommodate car and trailer turning around the narrowed areas.
- Inclusion of a street tree outside No. 140 Mackenzie Avenue, as requested by the resident.
- Minor changes to the landscaping to include the removal of the yellow flowers at Ensors Road and the inclusion of roses in the landscaping outside No. 105 Mackenzie Avenue.
- The turning circles for vehicles entering and exiting the properties in the vicinity of the chicane has been checked using a car and a trailer. All residents will be able to back a trailer into their access from at least one direction.

26. The key aspects of the preferred option are outlined in paragraph 41 below, and shown on the plan for Board approval at Attachment 1 to this report.

SECTION TWO

27. There were three options developed for comparison for Mackenzie Avenue - do nothing, traffic calming with a chicane, and traffic calming with speed humps.

Option 1 - Do Nothing

28. Option 1 involves making no changes to the existing street arrangement. The existing street width is 14 metres with kerb and dish channels. No landscaping is provided along the street except where it exists at the intersections with Ensors Road and Richardson Terrace.

Option 2 - Chicane

29. Option 2 involves the full pavement reconstruction of Mackenzie Avenue and the replacement of the existing kerb and dish channel with kerb and flat channel. There is a length of kerb and flat channel that will need replacing to the east of Hopkins Street. This option reduces the existing carriageway width from 14 metres to nine metres.

30. Kerb build-outs are proposed as a threshold treatment at the Ensors Road intersection, which replaces the existing nine metre wide threshold treatment. This will reduce the carriageway width from nine metres to seven metres on Mackenzie Avenue for the first 15 metres. The next kerb build-out at 27/30 Mackenzie Avenue is located on a slight curve, which reduces the carriageway width to seven metres for 20 metres.

31. At the intersections of Hopkins Street/Finlay Place, Keswick Street and Seaforth Place, the carriageway will be reduced to seven metres width, by reducing the carriageway by two metres on one side. At Hopkins Street/Finlay Place intersection, the two metre reduction is on the south side of the street, along with a reduction in width on Hopkins Street from 10.5 metres to seven metres. This kerb build-out is 15 metres long and is located on the west side of Hopkins Street. It is approximately 3.5 metres wide to increase the centreline offset with Finlay Place from four metres to seven metres.

32. The Keswick Street intersection will be narrowed at the intersection from the proposed nine metre width (currently 14 metres wide with grass berms) to seven metres for a length of 15 metres. At the Seaforth Place intersection, the two metre reduction is on the north side of the street, and is approximately 30 metres long.

33. A kerb build-out is also proposed as a threshold treatment at the Richardson Terrace intersection, which involves minor changes to the existing seven metre wide threshold treatment.

34. Along with the threshold treatments detailed above, an angled chicane will be installed with a width of 3.5 metres, which includes a short off-road cycle path on both sides of the carriageway. This will allow cyclists to manoeuvre through the narrowed area without conflicting with vehicles using the narrowing.

35. The existing footpaths will be removed and a new 1.65-metre wide footpath will be installed on both sides of the carriageway. The footpath will be located against the property boundaries for the full length of the street. The footpath has been located so the existing power poles are located within the grass berm area.

36. The new kerbside berm will be approximately 3.5-4.0 metres wide on the northern side of the carriageway, and 4.0-4.5 metres wide on the southern side of the carriageway. Landscaping and the inclusion of street trees are proposed in the berm areas on both sides of the carriageway, as services permit. A street lighting upgrade has been investigated, and will be implemented.

37. “No Stopping” areas are proposed at the following locations:

- Ensors Road intersection.
- Narrowing outside 27/30 Mackenzie Avenue.
- 3.5-metre wide narrowing outside 70/71 Mackenzie Avenue.
- Hopkins Street/Finlay Place intersection.
- Keswick Street intersection.
- Seaforth Place intersection.
- Richardson Terrace intersection.

38. Narrow vehicle crossovers will be widened to 3.5 metres as part of the works.

Option 3 - Speed humps

39. Option 3 is similar to Option 2; however, instead of installing the angled chicane in the street, speed humps are proposed along Mackenzie Avenue, spaced at approximately every 100-150 metres.

40. This option was not explored in detail; due to the 85th percentile speed of 58.7 km/hr not being significant enough to warrant the inclusion of speed humps along the street. The local residents have a mixed view regarding the installation of speed humps along the street.

PREFERRED OPTION

41. Option 2 is the preferred option, subject to various amendments as a result of the consultation responses, and incorporates the following features:

    (a) Full pavement reconstruction of Mackenzie Avenue and the replacement of the existing kerb and dish channel with kerb and flat channel. There is a length of kerb and flat channel that will need replacing to the east of Hopkins Street.

    (b) Reduction of the existing carriageway width from 14 metres to nine metres.

    (c) Kerb build-outs as a threshold treatment at the intersection of Mackenzie Avenue with Ensors Road. This threshold retains its existing nine metre wide threshold treatment but includes the installation of a raised platform.

    (d) Kerb build-out at 27/30 Mackenzie Avenue on a slight curve, which reduces the carriageway to seven metres width for 20 metres.

    (e) At the following intersections, where the carriageway will be reduced to seven metres width by a reduction in width of two metres on one side of the carriageway:

        (i) Hopkins Street/Finlay Place intersection - two metre reduction on the south side, along with a reduction in width on Hopkins Street from 10.5 metres to seven metres. The kerb build-out is located on the west side of Hopkins Street, approximately 3.5 metres wide, to increase the centreline offset with Finlay Place from four metres to seven metres. This kerb build-out will be 15 metres long.

        (ii) Keswick Street intersection - narrowed from the proposed nine metres width to seven metres for a length of 15 metres. The carriageway is currently 14 metres wide, including the grass berms, along Keswick Street.

        (iii) Seaforth Place intersection - two metre reduction on the north side, approximately 30 metres long.

    (f) Angled chicane with a width of 3.5 metres, which will include a short off-road cycle path on both sides of the carriageway. This will allow cyclists to manoeuvre through the narrowed area without conflict with vehicles using the narrowing.

    (g) Removal of the existing footpaths and installation of a new footpath, 1.65-metres wide, on both sides of the carriageway. The footpath will be located against the property boundaries along the full length of the street, and the footpath has been located so the existing power poles are located within the grass berm area.

    (h) The new kerbside berm will be approximately 3.5-4 metres wide on the northern side of the carriageway, and 4-4.5 metres wide on the southern side of the carriageway.

    (i) Landscaping and the inclusion of street trees are proposed in the grass berm areas on both sides of the carriageway.

    (j) “No Stopping” restrictions are proposed at the locations as detailed above.

    (k) A street lighting upgrade has been investigated and will be implemented.

    (l) Narrow vehicle crossovers will be widened to at least 3.5 metres as part of the works, and in some cases, the vehicle crossovers will be wider to accommodate vehicle tracking at the chicane.

SECTION THREE

Maintain the Status Quo

42. The option to maintain the status quo essentially means to undertake no capital works along Mackenzie Avenue. This would retain the street and road environment in its existing condition, including deep-dish kerb and channel.

43. This option would be inconsistent with the Community Outcomes outlined in the LTCCP, and would be inconsistent with Council strategies, including the pedestrian strategy, cycling strategy, road safety strategy and parking strategy, as well as the Council's asset management plan.

44. Therefore, it is considered inappropriate to maintain the status quo because of the opportunity to contribute to an efficient, safe and sustainable transport system within this area of the City, whilst providing for all modes of transportation.

The Preferred Option

45. Option 2, subject to various amendments, is the preferred option and satisfies all of the project objectives as follows:

Replace the existing kerb and dish channel with kerb and flat channel

46. The existing kerb and dish channel will be replaced with kerb and flat channel for the full length of Mackenzie Avenue. There is a length of approximately 100 metres of existing kerb and flat channel that will be removed due to the new alignment and the reduction in carriageway width.

Reduce the width of the carriageway as appropriate and with reference to the City Plan

47. The existing carriageway will be reduced in width from 14 metres to nine metres. The City Plan (Part 14, Appendix 5) details minimum roadway widths (ie that portion of the road devoted particularly to the use of motor vehicles, inclusive of shoulder and auxiliary lanes) for different road classifications. The minimum road width for a local road is nine metres, and therefore this scheme meets the City Plan requirements.

48. The nine metre carriageway width will allow parking on both sides of the street and two-way flow of traffic. A number of kerb build-out areas are also proposed, which further reduce the width of the street to seven metres in these areas, and 3.5 metres at the angled chicane.

Maintain or improve safety for pedestrians, cyclists and vehicles

49. The road narrowing in the kerb build-out areas, the threshold treatments at each end of the street and the inclusion of the angled chicane mid-way along the street are expected to reduce vehicle speeds along Mackenzie Avenue. Speed reduction measures will reduce the likelihood and severity of future accidents thereby improving safety for all road users.

50. The proposed off-road cycle bypass on both sides of the angled chicane will maintain safety for cyclists along the route. The expected reduction in vehicle speeds along the street will also improve safety for cyclists by providing a slower speed environment.

51. Pedestrian facilities along Mackenzie Avenue will be improved by increasing the width of the existing footpath from 1.2 metres to 1.65 metres on both sides of the carriageway. The footpaths will be located against property boundaries, and wide berms will be run adjacent to the roadway for the full length of the street. The new footpaths have been located so that existing power poles, which are currently located at the edge of the footpath, are located within the berm area. Improved lighting along the street will improve pedestrian safety at night.

Reduce the speed of vehicles in the street, thus improving the residential amenity for residents

52. The proposal has an angled chicane, a threshold treatments at each end of the street (ie two in total), and a number of kerb build-out areas along the street to ensure that vehicles cannot travel through the street at high speed. These traffic calming measures, along with the reduction in the carriageway width, will also discourage the "boy racer/hoonish" behaviour that is currently occurring along the street.

Ensure the design caters for cyclists

53. The scheme includes cycle bypasses at the 3.5-metre wide angled chicane to provide for cyclists in this location, and reduce the conflict between vehicular traffic and cycle traffic at this location. The cycle bypasses will provide cyclists with a quick route through this area without having to manoeuvre through the chicane with vehicle traffic.

54. The 9-metre wide carriageway width is adequate to cater for all modes of transport as well as on-street parking. At the kerb build-out locations, no stopping lines will be installed to ensure there is still sufficient space for both vehicle and cycle traffic.

Ensure the design meets the demand for on-street parking

55. A parking survey was conducted along Mackenzie Avenue on Sunday 1 October 2006 at 10.00am. This time was chosen to determine the on-street parking demand for the Church of the Latter Day Saints. The parking survey showed that there was no on-street parking demand outside the church, due to the significant amount of off-street parking being provided at the church. Overall, there were 15 cars parked in the street at this time, which indicates that on-street parking demand is low along the street.

56. There will be approximately 20-25 on-street parking spaces removed along the street due to the kerb build-outs and the angled chicane. However, the on-street parking demand is low and the proposed parking supply will still be sufficient to cater for the expected parking demand.

Provide landscape enhancement where possible in conjunction with the kerb and channel renewal

57. Landscaping enhancement will be provided along the full length of Mackenzie Avenue with the inclusion of wide grass berms on both sides of the carriageway, street trees located in the new berm areas along the length of Mackenzie Avenue, and landscaping will be provided at most of the kerb build-out areas along the street and at the angled chicane. The preferred option will thus contribute significant aesthetic enhancement to the street.

Ensure adequate drainage design

58. A drainage review has been completed for Mackenzie Avenue, highlighting a number of existing drainage issues along the street due to its location adjacent to the Heathcote River and its relatively flat alignment. At the Richardson Terrace end of the street, an existing 1,800mm diameter storm water pipe is located in the carriageway with approximately 300mm cover.

59. The drainage has been looked at extensively along the street to confirm the carriageway alignment, so the kerb lines fit around the existing 1,800mm diameter pipe, and the drainage that is required so the road level does not need to be lowered. A number of existing drainage problems have also been highlighted by local residents and these have been taken into consideration during the scheme design process. Adequate drainage design has thus been allowed for during the scheme design process.

Alternative Options

60. Option 1 only partially meets the objective to maintain or improve safety for pedestrians, cyclists and vehicles, by maintaining the existing arrangement. It also meets the objective to ensure the design meets the demand for on-street parking, because no changes are proposed and therefore the parking supply is unchanged. Otherwise this option does not meet any of the remaining objectives of the project, as stated above, and was therefore not selected as the preferred option.

61. Option 3 meets all the objectives of the project, except for the objective to ensure the design meets the demand for on-street parking. The installation of a number of speed humps along Mackenzie Avenue would involve the removal of a significant amount of on-street parking. Although the parking demand along Mackenzie Avenue is low, the reduction in parking supply for this option would be significantly more than for Option 2.

62. Speed humps are not always popular with residents in a street as there is increased noise from acceleration and deceleration. There can also be significant inconvenience to residents, and other options can provide similar benefits with less disruption.

63. Option 3 was not selected as the preferred option due to traffic speed surveys showing that the speeds are not high enough to warrant the inclusion of speed humps along the street. In addition, speed humps would increase the reduction in on-street parking supply, and there are mixed views on speed humps shown by local residents.