8. FLOCKTON CLUSTER PROJECT

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PURPOSE OF REPORT

1. The purpose of this report is to seek the Board's approval to proceed to final design, tender and construction of the neighbourhood improvement works along Aylesford Street, Flockton Street and Francis Avenue, as shown in the plans detailed in attachments 1-6; (this project being otherwise known as the Flockton Cluster).

EXECUTIVE SUMMARY

2. The Flockton Cluster encompasses projects for Aylesford Street, Flockton Street and Francis Avenue between Warrington Street and Westminster Street, and Archer Street, Carrick Street, and Squire Street, which are all bounded by Aylesford and Flockton Streets.

3. Of these projects, Aylesford Street, Flockton Street and Francis Avenue were originally programmed as neighbourhood improvement works (all in 2005/2006) and the balance as the renewal of kerb and channel as programmed by the asset management planning process. It is now proposed to commence construction of Aylesford Street, Flockton Street and Francis Avenue in September 2006. Archer Street and Squire Street have been programmed for construction in 2014/2015 and 2016/2017 respectively, while a construction date for Carrick Street has yet to be finalised pending a capital programme review by the Transport and City Streets Unit.

4. As the implementation of improvement or upgrade works on any of these streets could significantly affect traffic volumes and behaviour on the adjacent streets, it was considered appropriate to manage the planning and investigation phase of these six projects as one. This methodology ensures that there is consistency in treatments throughout the cluster, as well as providing the opportunity to achieve financial savings.

5. The estimated total cost for the four streets that comprise this project (costs for Archer Street, Carrick Street and Squire Street have been excluded) is $271,700.

6. The primary aim of the Flockton Cluster project is to improve traffic and pedestrian safety in Aylesford Street, Flockton Street and Francis Avenue; and to replace the kerb and channel in Archer Street, Carrick Street and Squire Street. The proposed plans for all six streets have been appropriately consulted on, and have received good levels of community support. Further, the designs meet the project objectives, and do not adversely affect drainage in an area for which this is a sensitive issue. Three project plans (Flockton Street, Aylesford Street and Francis Avenue) are therefore submitted for Board approval, whilst Archer, Carrick and Squire Streets are submitted for information only (to reflect the overall integration of the planning process). They will be submitted for final community comment and Board approval at a time appropriate to their position on the capital programme.

FINANCIAL AND LEGAL CONSIDERATIONS

7. The neighbourhood improvement works and kerb and channel renewal works within the Flockton Cluster are programmed in the Transport and City Street Unit's capital programme as follows:

    - Aylesford Street, Flockton Street and Francis Avenue – September 2006
    - Carrick Street – To be finalised pending a capital programme review by the Transport and City Streets Unit
    - Archer Street – 2014/2015
    - Squire Street – 2016/2017.

8. The estimated total cost for the three streets that comprise this project (costs for Archer, Carrick and Squire Streets have been excluded) is $271,700. This budget is appropriately available in the 2006/07 neighbourhood improvement works category.

9. There are no legal implications relating to this project.

10. Community Board resolutions are required to approve the “No Parking” restrictions.

STAFF RECOMMENDATION

It is recommended that the Board:

(a) Approve four projects in the Flockton Cluster (Aylesford Street, Flockton Street, Francis Avenue and Carrick Street) to proceed to final design, tender and construction.

(b) Approve the deletion of all the Carrick Street no stopping restrictions.

(c) Approve the following new no stopping restrictions:

Aylesford Street

(i) That the stopping of vehicles be prohibited at any time on the west side of Aylesford Street, commencing at its intersection with Westminster Street and extending 36 metres in a southerly direction.

(ii) That the stopping of vehicles be prohibited at any time on the west side of Aylesford Street, commencing at a point 102 metres south of its intersection with Westminster Street and extending 29 metres in a southerly direction.

(iii) That the stopping of vehicles be prohibited at any time on the west side of Aylesford Street, commencing at a point 202 metres south of its intersection with Westminster Street and extending 24 metres in a southerly direction.

(iv) That the stopping of vehicles be prohibited at any time on the west side of Aylesford Street, commencing at a point 295 metres south of its intersection with Westminster Street and extending 26 metres in a southerly direction.

(v) That the stopping of vehicles be prohibited at any time on the west side of Aylesford Street, commencing at its intersection with Carrick Street and extending 33 metres in a southerly direction.

(vi) That the stopping of vehicles be prohibited at any time on the west side of Aylesford Street, commencing at a point 558 metres south of its intersection with Westminster Street and extending 29 metres in a southerly direction.

(vii) That the stopping of vehicles be prohibited at any time on the west side of Aylesford Street, commencing at a point 686 metres south of its intersection with Westminster Street and extending 18 metres in a southerly direction.

(viii) That the stopping of vehicles be prohibited at any time on the east side of Aylesford Street, commencing at its intersection with Westminster Street and extending 18 metres in a southerly direction.

(ix) That the stopping of vehicles be prohibited at any time on the east side of Aylesford Street, commencing at a point 98 metres south of its intersection with Westminster Street and extending 20 metres in a southerly direction.

(x) That the stopping of vehicles be prohibited at any time on the east side of Aylesford Street, commencing at a point 183 metres south of its intersection with Westminster Street and extending 35 metres in a southerly direction.

(xi) That the stopping of vehicles be prohibited at any time on the east side of Aylesford Street, commencing at a point 294 metres south of its intersection with Westminster Street and extending 27 metres in a southerly direction.

(xii) That the stopping of vehicles be prohibited at any time on the east side of Aylesford Street, commencing at a point 386 metres south of its intersection with Westminster Street and extending 30 metres in a southerly direction.

(xiii) That the stopping of vehicles be prohibited at any time on the east side of Aylesford Street, commencing at a point 556 metres south of its intersection with Westminster Street and extending 27 metres in a southerly direction.

(xiv) That the stopping of vehicles be prohibited at any time on the east side of Aylesford Street, commencing at a point 667 metres south of its intersection with Westminster Street and extending 28 metres in a southerly direction.

(xv) That the stopping of vehicles be prohibited at any time on the north side of Crosby Street, commencing at its intersection with the north side of Aylesford Street and extending 17 metres in an easterly direction.

(xvi) That the stopping of vehicles be prohibited at any time on the south side of Westminster Street, commencing at its intersection with the east side of Aylesford Street and extending 15 metres in an easterly direction.

(xvii) That the stopping of vehicles be prohibited at any time on the south side of Westminster Street, commencing at its intersection with the west side of Aylesford Street and extending eight metres in a westerly direction.

Flockton Street

(i) That the stopping of vehicles be prohibited at any time on the west side of Flockton Street, commencing at its intersection with Warrington Street and extending 23 metres in a northerly direction.

(ii) That the stopping of vehicles be prohibited at any time on the west side of Flockton Street, commencing at a point 43 metres north of its intersection with Warrington Street and extending 36 metres in a northerly direction.

(iii) That the stopping of vehicles be prohibited at any time on the west side of Flockton Street, commencing at a point 125 metres north of intersection with Warrington Street and extending 26 metres in a northerly direction.

(iv) That the stopping of vehicles be prohibited at any time on the west side of Flockton Street, commencing at a point 300 metres north of its intersection with Warrington Street and extending 21 metres in a northerly direction.

(v) That the stopping of vehicles be prohibited at any time on the west side of Flockton Street, commencing at a point 435 metres north of its intersection with Warrington Street and extending 30 metres in a northerly direction.

(vi) That the stopping of vehicles be prohibited at any time on the east side of Flockton Street, commencing at its intersection with Warrington Street and extending 40 metres in a northerly direction.

(vii) That the stopping of vehicles be prohibited at any time on the east side of Flockton Street, commencing at a point 135 metres north of its intersection with Warrington Street and extending 27 metres in a northerly direction.

(viii) That the stopping of vehicles be prohibited at any time on the east side of Flockton Street, commencing at a point 286 metres north of its intersection with Warrington Street and extending 38 metres in a northerly direction.

(ix) That the stopping of vehicles be prohibited at any time on the east side of Flockton Street, commencing at a point 449 metres north of its intersection with Warrington Street and extending 14 metres in a northerly direction.

(x) That the stopping of vehicles be prohibited at any time on both sides of Flockton Street, commencing at its intersection with Westminster Street and extending 15 metres in a southerly direction.

(xi) That the stopping of vehicles be prohibited at any time on the south side of Westminster Street, commencing at its intersection with the east side of Flockton Street and extending eight metres in an easterly direction.

(xii) That the stopping of vehicles be prohibited at any time on the south side of Westminster Street, commencing at its intersection with the west side of Flockton Street and extending eight metres in a westerly direction.

(xiii) That the stopping of vehicles be prohibited at any time on the north side of Warrington Street, commencing at its intersection with the east side of Flockton Street and extending 15 metres in an easterly direction.

(xiv) That the stopping of vehicles be prohibited at any time on the north side of Warrington Street, commencing at its intersection with the west side of Flockton Street and extending 31 metres in a westerly direction.

Francis Avenue

(i) That the stopping of vehicles be prohibited at any time on the west side of Francis Avenue, commencing at its intersection with Warrington Street and extending 17 metres in a northerly direction.

(ii) That the stopping of vehicles be prohibited at any time on the west side of Francis Avenue, commencing at a point 103 metres north of its intersection with Warrington Street and extending 30 metres in a northerly direction.

(iii) That the stopping of vehicles be prohibited at any time on the west side of Francis Avenue, commencing at a point 253 metres north of its intersection with Warrington Street and extending 29 metres in a northerly direction.

(iv) That the stopping of vehicles be prohibited at any time on the west side of Francis Avenue, commencing at a point 105 metres south of its intersection with Westminster Street and extending 28 metres in a northerly direction.

(v) That the stopping of vehicles be prohibited at any time on the west side of Francis Avenue, commencing at its intersection with Westminster Street and extending 19 metres in a southerly direction.

(vi) That the stopping of vehicles be prohibited at any time on the east side of Francis Avenue, commencing at its intersection with Warrington Street and extending 14 metres in a northerly direction.

(vii) That the stopping of vehicles be prohibited at any time on the east side of Francis Avenue, commencing at a point 115 metres north of its intersection with Warrington Street and extending 30 metres in a northerly direction.

(viii) That the stopping of vehicles be prohibited at any time on the east side of Francis Avenue, commencing at a point 259 metres north of its intersection with Warrington Street and extending 32 metres in a northerly direction.

(ix) That the stopping of vehicles be prohibited at any time on the east side of Francis Avenue, commencing at a point 109 metres south of its intersection with Westminster Street and extending 30 metres in a northerly direction.

(x) That the stopping of vehicles be prohibited at any time on the east side of Francis Avenue, commencing at its intersection with Westminster Street and extending 19 metres in a southerly direction.

(xi) That the stopping of vehicles be prohibited at any time on the north side of Warrington Street, commencing at its intersection with the east side of Francis Avenue and extending 16 metres in an easterly direction.

(xii) That the stopping of vehicles be prohibited at any time on the north side of Warrington Street, commencing at its intersection with the west side of Francis Avenue and extending 31 metres in a westerly direction.

(xiii) That the stopping of vehicles be prohibited at any time on the south side of Westminster Street, commencing at its intersection with the east side of Francis Avenue and extending 30 metres in an easterly direction.

(xiv) That the stopping of vehicles be prohibited at any time on the south side of Westminster Street, commencing at its intersection with the west side of Francis Avenue and extending 16 metres in a westerly direction.

(d) Remove all existing No Stopping:

(i) That all existing "No Stopping at any Time" areas in the aforementioned areas be revoked.

CHAIRPERSON'S RECOMMENDATION

Not seen by Chairperson. For discussion.

BACKGROUND ON FLOCKTON CLUSTER PROJECT

11. The Flockton Cluster encompasses projects for Aylesford Street, Flockton Street and Francis Avenue between Warrington Street and Westminster Street, and Archer Street, Carrick Street, and Squire Street, which are all bounded by Aylesford Street and Flockton Street.

12. These streets are all classified as local roads in the City Plan roading hierarchy, and currently have a width of 11-12 metres (kerb-to-kerb), with the exception of Francis Avenue (nine metres) and Carrick Street (14 metres with grass edges and a nine-metre wide sealed carriageway).

13. Of these projects, Aylesford Street, Flockton Street and Francis Avenue were originally programmed as neighbourhood improvement works (all in 2005/2006) and Archer Street, Carrick Street and Squire Street as kerb and channel renewal works as programmed by the asset management planning process. These works are now programmed for construction as follows:

    - Aylesford Street, Flockton Street and Francis Avenue – September 2006
    - Carrick Street – To be finalised pending a capital programme review by the Transport and City Streets Unit
    - Archer Street – 2014/2015
    - Squire Street – 2016/2017

14. As the implementation of improvement or renewal works on any of these streets could significantly affect traffic volumes and behaviour on the adjacent streets, it was considered appropriate to manage the planning and investigation phase of these six projects as one. This methodology ensures that there is consistency in treatments throughout the cluster, as well as providing the opportunity to achieve financial savings.

15. These streets are all located in the suburb of Mairehau, which falls within the jurisdiction of the Board.

16. An initial survey of property owners and occupiers of the six streets was carried out in 2004. The key issues raised included wide footpaths with no grass verges, lack of parking space for visitors, deep gutters are dangerous and prone to flooding, cul-de-sac option for shorter streets, use of roads for through-traffic, noise and traffic speed, dangerous bend in Francis Avenue with vehicles corner cutting, high traffic volumes at peak times, lack of street lighting and ugly power poles and lines.

17. Feedback received from the initial internal consultation and external issue identification survey was incorporated into the development of options and a preferred concept plan for each of the streets in the cluster.

18. Traffic volume and speed surveys were conducted on all streets with the following results:

	Volume (vpd)	**85th Percentile Speed (kph)**
Archer Street	142	43
Squire Street	78	40
Carrick Street	150	48
Flockton Street	2100	58
Francis Avenue	1400	57
Aylesford Street	2800	59

    From a technical perspective, this shows that volumes on all streets are appropriate for local roads, but that speeds on Francis Avenue, Aylesford Street and Flockton Street are faster than desired. Archer Street, Squire Street and Carrick Street speeds are appropriate.

19. The Land Transport New Zealand crash database records show 12 crashes between 1998 and 2003, six of which were on Aylesford Street near the intersection of side streets, two at the intersection of Aylesford Street and Westminster Street, and the remaining six associated with the intersection at Hills Road. Of these only two involved minor injuries.

20. The No. 46 Shirley bus route uses Flockton Street. There are two pairs of bus stops on Flockton Street, which are clear of the proposed traffic calming devices.

21. Francis Avenue has a special character created by the mature trees along both sides of the street, large grass berms, and the significant distance that houses are set back from the street, and is listed as a Special Amenity area in the City Plan (SAM 13).

22. Design issues raised in relation to the projects within the Flockton Cluster include a full road reconstruction of the Archer Street, Carrick Street and Squire Street proposals in a similar manner to Speight Street, which is a recently redesigned street within this cluster area. All of the remaining projects are neighbourhood improvement works, so there is no shoulder or reconstruction work required. None of the projects are located in a neighbourhood improvement plan area.

23. There are no notable or heritage trees, nor are there any heritage or historic buildings, places and objects, shown in the City Plan. No resource consents are required in relation to these works.

24. Undergrounding of existing overhead services is outside the scope and budget of this project. However, all of the proposals will require a street lighting upgrade.

25. The primary aim of the Flockton Cluster project is to improve traffic and pedestrian safety in Aylesford Street, Flockton Street and Francis Avenue; and to replace the kerb and channel in Archer Street, Carrick Street and Squire Street.

26. Subsequent to all of the issues raised above, the objectives of the Flockton Cluster project have been determined as:

- Reduce through-traffic on all roads within the cluster
- Reduce traffic speeds along Flockton Street, Aylesford Street and Francis Avenue
- Provide improved pedestrian crossing facilities at key points such as bus stops and intersections
- Improve the safety of cyclists
- Improve street lighting, where necessary
- Ensure that works undertaken on any one of Squire Street, Carrick Street, Speight Street (already constructed), and Archer Street does not adversely affect the flow of traffic on neighbouring streets
- Improve the safety of vehicles exiting from Squire Street, Carrick Street, Speight Street and Archer Street
- Maintain efficient access and thoroughfare for buses on Flockton Street
- Enhance the streetscape
- Ensure that proposed works recognise the special character of the area as a whole and of Francis Street in particular.

27. The concept plans for each street within the cluster were presented to the community in a consultation newsletter in April/May 2006 for formal consultation.

28. Ninety-nine submissions were received on the concept plans, of which 69 were generally in support, 15 were in opposition and 15 had no preference of support or opposition to the project. A summary of the number of submissions received for each street is outlined in the table below, and a summary of the comments received is outlined in attachment 7.

STREET	***Support***	***Oppose***	***Not specified***
Kerb & Channel Renewal			
Archer Street	*6*	*3*	*-*
Carrick Street	*9*	*-*	*-*
Squire Street	*2*	*1*	*1*
Neighbourhood Improvements			
Aylesford Street	*36*	*6*	*4*
Flockton Street	*9*	*3*	*1*
Francis Avenue	*14*	*1*	*2*
Other	*3*	*1*	*7*
TOTAL	***69***	***15***	***15***

OPTIONS

Archer Street

29. Two options were developed for comparison in Archer Street in addition to the common option of retaining the status quo. The key factors affecting the options were that Archer Street has a 15 metre wide road reserve, and power pole and overhead services are to remain.

30. Option one had an eight metre wide carriageway with a cul-de-sac at the eastern end of the street.

31. Option two had an eight metre wide carriageway with two large build-outs creating two one-lane sections (4.5 metres wide) in the street. The planted build-outs would block the view down the street from each end creating a slow trafficked local street.

Carrick Street

32. Two options were developed for comparison in Carrick Street in addition to the common option of retaining the status quo. The key factors affecting the two options were that Carrick Street has a 20 metre wide road reserve, and power pole and overhead services are to remain.

33. Option one had a nine metre wide carriageway with six metre wide narrowings at each end of the street and mid-block. The carriageway was offset slightly to avoid the existing water main.

34. Option two had a nine metre wide carriageway with three large build-outs creating three one-lane sections (4.5 metres wide) in the street. The large kerb build-outs were designed to match Thornton Street, including a cycle bypass along the kerb alignment, which could also act as a flow pathway for stormwater during heavy rainfall events. The planted build-outs would block the view down the street from each end creating a slow trafficked street.

Squire Street

35. Two options were developed for comparison in Squire Street in addition to the common option of retaining the status quo. The key factors affecting the three options were that Squire Street has a 15 metre wide road reserve and power pole and overhead services are to remain.

36. Option one had an eight metre wide carriageway with a cul-de-sac at the eastern end of the street. A cul-de-sac would provide a pocket park area within the street.

37. Option two had an eight metre wide carriageway with two large build-outs creating two one-lane sections (4.5 metres wide) in the street. The large kerb build-outs were designed to match Thornton Street, including a cycle bypass along the kerb alignment, which could also act as a flow pathway for stormwater during heavy rainfall events. The planted build-outs would block the view down the street from each end creating a slow trafficked street.

Aylesford Street

38. Two options were developed for comparison in Aylesford Street.

39. Option one had six humps spaced evenly down the street and approximately located mid-block along Aylesford Street (in the same location as option three). The humps were one metre off the kerb face so they would not restrict road-related stormwater flow.

40. Option two included six humps with stick-on kerb build-outs spaced evenly and approximately located mid-block along Aylesford Street. A Type C threshold treatment was proposed on Aylesford Street, at the Westminster Street end. The southern end of Aylesford Street at Hills Road has an existing island which will remain. The kerb build-outs would have some landscape planting, although this space is not large enough for trees.

Flockton Street

41. Two options were initially developed for comparison in Flockton Street because it was economic to build on the existing kerb build-outs at existing peaks.

42. Option one had three evenly spaced narrowings with “Armorflex” speed cushions installed. The speed cushions are designed so cars have at least one wheel over the hump but buses can have their wheels either side of the hump. Two of the narrowed sections were building on the existing nine metre wide narrowings that have proven to be too wide to be effective as a traffic calming device. The other narrowing is evenly spaced along the street with Type C thresholds at each end of the street. Cyclists have a bypass, which doubles as a secondary flow path when needed.

43. Option two involved discussing the option of using a pedestrian island at the Flockton/Warrington Street intersection.

44. Option one (a) had three island build-outs in the same locations as option one and the same intersection treatment at Warrington Street. The use of island build-outs gave a horizontal element to traffic claming and facilitated road-related stormwater along the kerb lines and cycle bypasses. This option could then have speed cushions added later to give vertical dimensions to the traffic calming. Because of the known poor pavement construction depths and local peat foundations, the pavement would need to be reconstructed to ensure that speed cushions could be securely anchored to the road surface and vehicles that traverse the speed cushions do not damage the pavement.

45. Option two (a) was essentially the same as option one (a) with three island build-outs in the same locations as option one (a) and the intersection treatment at Warrington Street. The use of island build-outs gave a horizontal element to traffic calming and facilitated road-related stormwater along the kerb lines and cycle bypasses. The key difference with this option is that there were no speed cushions. However, because of the known poor pavement construction depths and local peat foundations, the pavement would be reconstructed. This would ensure that if speed cushions were added at a later date, they could be securely anchored to the road surface and vehicles that traverse the speed cushions do not damage the pavement.

46. Option three (a) had no changes to the two existing kerb build-outs on Flockton Street. There was one new island build-out, just south of Carrick Street, the intersection build-out at Warrington Street, and kerbs around the Thornton Street intersection. Speed cushions could be added at both of the existing build-out locations to give a vertical element to the traffic claming.

Francis Avenue

47. Two options were developed for comparison in Francis Street.

48. Option one incorporated three stick-on kerb build-outs narrowing the carriageway to 5.5 metres width, but leaving the existing kerb and channel unobstructed and Type C thresholds at each end of the street. The 5.5 metre width is the minimum for two-way traffic and this is typically used for traffic calming. The space in the kerb build-outs was not large enough for planting, so these areas were cobbled. The street has existing berms and well established street trees. Footpaths around these narrowed sections were widened with angled corners to double as a cycle bypass when needed. The humps were to be raised, and the narrowed sections were spaced evenly down the street, approximately 90 to 140 metres apart, where there is sufficient space between driveways.

49. Option two included three one-lane sections down the street with Type C thresholds at each end of the street (the spacing is the same as option one). Cyclists were catered for with bypasses on each side that double as secondary stormwater flow paths when needed.

PREFERRED OPTIONS WITHIN THE FLOCKTON CLUSTER

Archer Street

50. The preferred option (option two) for Archer Street has a carriageway that is predominantly eight metres in width with two narrowings spaced evenly along the street. It is proposed to install two kerb build-outs opposite numbers 7 and 30 Archer Street. At the narrowings there is 4.5 metres width between the kerbs, which is enough for a single vehicle and cyclist to use the road. The kerb build-outs are offset from the kerb to create an optional cycle bypass and stormwater flow pathway. Broken yellow no stopping lines are required on the approaches to and departures from the build-outs to keep the bypasses clear from parked vehicles.

51. The intersection of Archer Street with Flockton Street is narrowed to six metres width with the Archer Street approach alignment perpendicular to Flockton Street. The footpaths are located against the property boundary, and the balance is grass berm area against the kerb. The preferred option for Archer Street is considered to constitute medium traffic calming and is consistent with Thornton Street.

Carrick Street

52. The preferred option (option two) for Carrick Street has a carriageway that is predominantly nine metres wide, with three narrowings spaced evenly along the street. It is proposed to install three kerb build-outs opposite number 12 and outside numbers 28 and 35 Carrick Street. At the narrowings, there is 4.5 metres between the two kerb lines, which is enough for a single vehicle and cyclist to use the road. The kerb build-outs are offset from the kerb, to create a 1.2 metre wide optional cycle bypass and stormwater flow pathway. Broken yellow no-stopping lines are required on the approaches to and departures from the build-outs to keep the bypasses clear from parked vehicles.

53. The Carrick Street and Aylesford Street intersection has a reduced corner radius, and the approach to Aylesford Street is narrowed to nine metres with a single lane entry and exit. The Carrick Street approach to the Flockton Street intersection is narrowed to six metres with the Carrick Street approach alignment perpendicular to Flockton Street.

Squire Street

54. The preferred option (option 2) for Squire Street has a carriageway that is mostly eight metres in width with two narrowings spaced evenly along the street. It is proposed to install two kerb build-outs opposite numbers 3 and 20 Squire Street. At the narrowings there is 4.5 metres between kerbs, which is enough for a single vehicle and cyclist to use the road. The kerb build-outs are offset from the kerb, creating an optional bypass and stormwater flow pathway. Broken yellow no stopping lines are required on the approaches and departures to keep the bypasses clear from parked cars.

55. The corner radius at the Squire Street and Aylesford intersection is reduced. The Squire Street approach to Aylesford Street is narrowed to eight metres with a single lane entry and exit. The Squire Street and Flockton Street intersection is narrowed to six metres width with the Squire Street approach alignment made perpendicular to Flockton Street.

Aylesford Street

56. The preferred option for Aylesford Street (option two) includes installing six stick-on islands incorporating raised platforms with a kerb-to-kerb dimension of six metres.

57. At the intersection of Aylesford Street with Westminster Street, a kerb extension on the eastern side of Aylesford Street will be installed to achieve a 6.6 metre wide threshold, and a standard 75 mm raised platform.

Flockton Street

58. The preferred option for Flockton Street (option three (a)) includes installing stick-on islands outside 25 Flockton Street (on both sides), with 6 metres between the kerbs. The islands are offset from the kerb to create a cycle bypass route. Broken yellow no-stopping lines on the approaches to and departures from the islands will keep the bypass route clear from parked vehicles.

59. Speed cushions will be installed in sets of three outside 25 Flockton Street, 49/51 Flockton Street, and 83 Flockton Street to allow buses to travel along Flockton Street relatively unimpeded.

60. It is also proposed to install a 50 mm raised platform at the intersection of Flockton Street and Warrington Street. The Flockton Street approach is narrowed to eight metres width by extending the kerb on the western side of Flockton Street.

61. The narrowing and the threshold treatment complement the two existing mid-block narrowings along Flockton Street, and the existing threshold at the intersection of Flockton Street and Westminster Street. The narrowings are spaced at intervals of approximately 160 metres. This proposal is considered to constitute mild traffic calming. The existing threshold at the intersection of Flockton Street and Thornton Street will be replaced and upgraded.

Francis Avenue

62. The preferred option for Francis Avenue (option one) includes installing three stick-on islands incorporating raised platforms with a kerb-to-kerb dimension of 5.5 metres. Cycle bypasses are provided along the footpaths with the berms chamfered where appropriate, i.e. where there is only 600 mm between kerb faces.

63. It is further proposed to install a standard raised platform at the existing threshold at the intersection of Francis Avenue with Westminster Street. At the intersection of Francis Avenue with Warrington Avenue, a kerb extension is installed on the eastern side of Francis Avenue to achieve a seven metre wide threshold and a 75 mm raised platform.

ASSESSMENT OF OPTIONS

Alternative Options

Archer Street

64. The shortfalls associated with each of the options for Archer Street were:

- Option one – cul-de-sac of the street negatively affects the traffic distribution on the surrounding streets and was therefore not considered further. A cul-de-sac can inconvenience residents in gaining access to their properties, shift traffic volumes to adjacent streets, and may restrict access by emergency vehicles.

- Option two was recommended as the concept plan for consultation, as it provided a better fit to the project's objectives.

Carrick Street

65. The shortfalls associated with each of the options for Carrick Street were:

- Option one scheme , with the narrowing at the eastern end of the street was ruled out due to flooding problems from the drain in Aylesford Street. It does not address the requirement to maintain a cleat flow path for storm water.

- Option two was recommended as the concept plan for consultation.

Squire Street

66. The shortfalls associated with each of the options for Squire Street were:

- Option one negatively affects the traffic distribution on the surrounding streets and was therefore not considered further. A cul-de-sac can inconvenience residents in gaining access to their properties, shift traffic volumes to adjacent streets, and may restrict access by emergency vehicles.

- Option two was recommended as the concept plan for consultation.

67. The main outcomes of consultation in relation to the development of options for Archer Street, Carrick Street and Squire Street included:

- Cul-de-sacs are not an option. Although Speight Street is a cul-de-sac, this provides a pocket park near the centre of the entire cluster area. Maintaining through-traffic is necessary in order to maintain overall traffic network integrity.

- Squire Street, Archer Street and Carrick Street are to have the same treatment as Thornton Street. This "slow" street treatment, including landscaping, is appropriate for these streets.

- The flooding problems in this area require any kerb build-outs to not restrict storm water flow.

- The large kerb build-outs to match Thornton Street incorporating a cycle bypass along the kerb alignment to act as a stormwater flow path when necessary.

- Pavers in Thornton Street are flush, with a more aesthetic purpose than traffic calming. Due to the volume and speed data for the street it was considered they did not need to be raised.

The preferred options, identified above, meet the issues raised during consultation.

Aylesford Street

68. The shortfalls associated with each of the options for Aylesford Street were:

- Option one was recommended as the concept plan for consultation.

- Option two results in a reduction of parking at the kerb build-outs. This is not seen as an issue as this is not an area with a high parking demand. The use of stick-on islands is usually not preferred. However, these are used in Aylesford Street for road-related stormwater purposes while minimising construction costs.

69. The main outcomes of consultation in relation to the development of options for Aylesford Street included:

- The drain on the eastern street being due for an upgrade, but is not expected to happen within the next ten years.

- Flooding problems caused by insufficient capacity pipes at the bottom of the catchment causing water to back up in the Aylesford Street drain. This then overflows the road and flows down the side streets. It was recommended that all kerb and channel be kept straight without build-outs interrupting the flow path.

- Mid-block treatments are recommended to keep the road related storm water flow across the intersection clear of obstructions and reduce the potential write-off costs if the Aylesford Drain was ever enhanced.

- No permanent works should be undertaken on the eastern side of the street due to the waterway renewal in the future.

Flockton Street

70. The shortfalls associated with each of the two initial options for Flockton Street were:

- Option one sees the removal of 170 metres of existing kerb and flat channel due to the enlargement of the small kerb build-outs and the narrowing at Warrington Street as proposed. There are also maintenance sweeping issues with the cycle bypass and road related stormwater flow path behind the kerb build-out.

- Option two recommends using a pedestrian island at the Flockton Street/Warrington Street intersection. This option was not developed further as it was considered to be an appropriate treatment for a minor arterial to local road treatment. The proposed kerb build-out creates a greater distance between the existing island on Warrington Street and the entrance to Flockton Street. This option was not proceeded with, as this was considered an appropriate treatment for a minor arterial to local road treatment. Also, the proposed kerb build-outs create a greater distance between the existing island on Warrington Street and the entrance to Flockton Street.

71. Three further options were developed, and the shortfalls associated with these options were:

- Option one (a) was not adopted because of the increased construction costs associated with the enhancement of the existing kerb build-outs. As opposed to option three (a) where speed cushions were to be "trialed" at the existing kerb-build outs without other enhancements.

- Option two (a) was not supported due to the cost associated with the enhanced kerb build-outs. The lack of any vertical displacement traffic calming devices would not enable a significant reduction in the traffic speed.

- Option three (a) was recommended as the proper environment to trial the modular speed cushions. This option was developed as the concept plan for consultation on Flockton Street.

72. The main outcomes of consultation in relation to the development of options for Flockton Street included:

- Flockton Street being a bus route where extra width is desirable with minimal vertical deflection.

- The inclusion of a pedestrian crossing point at Speight Street.

- An issue with the roading hierarchy treatment for Flockton Street.

Francis Street

73. The main outcomes of consultation in relation to the development of options for Francis Street included:

- Widening the footpath at the narrowing for cycle bypasses.

- Constructing the platforms to 75 mm height.

- Stick-on build-outs 600 mm off existing kerbs to facilitate the one metre wide cycle bypass, and street sweeping.

74. The shortfalls associated with each of the options for Francis Avenue were:

- Option one has a loss of on-street parking at the three narrowed and humped areas down the street. This is not seen as an issue due to the available parking space that remains and low parking demand. Due to the flooding problems identified, the narrowings would have to be constructed as a stick-on facility (i.e. not connected to the kerb), to keep channels clear. The build-outs may cause kerb blockages during flooding events if the streets are not routinely swept behind the kerb build-outs.

- Option two has a loss of on-street parking at the three narrowed points along the street. This is not seen as an issue due to the available parking space that remains and the low parking demand. The permanent kerb build-outs can cause problems during flooding events as they are artificial peaks along the road alignment.

Maintain the Status Quo

75. The option to maintain the status quo within the streets that make up the Flockton Cluster essentially means to do no capital works, which would retain the existing road environments in their current condition.

76. This option to maintain the status quo would be inconsistent with the Community Outcomes outlined in the LTCCP, and would be inconsistent with Council strategies, including the road safety strategy, pedestrian strategy, cycle strategy, and asset management plan.

77. It is therefore considered to be inappropriate to maintain the status quo because the opportunity to contribute to ensuring the development of an efficient, safe and sustainable transport system in the city, whilst providing for all modes of transport, would not be achieved.

The Preferred Option

Archer Street

78. The preferred option for Archer Street meets the aims and objectives of the project as follows.

- **Improve traffic and pedestrian safety**

  The proposed carriageway narrowing to eight metres width will reduce through-traffic speeds, particularly when the street has vehicles parked along both sides. This will also reduce pedestrian crossing distances. The reduced radius at the Archer Street intersections will reduce traffic turning speeds and reduce pedestrian crossing distances at the intersections.

- **Improve safety of vehicles exiting Archer Street**

  The Archer Street and Flockton Street intersection will be narrowed to six metres with the Archer Street alignment made perpendicular to Flockton Street. This position will be better for exiting vehicles as it increases their visibility upon departing the street.

- **Improve safety for cyclists**

  Cyclists will benefit from a possible speed reduction in Archer Street. It is proposed to install two large kerb-side build-outs opposite numbers 7 and 30 Archer Street. At the narrowing, there will be 4.5 metres between kerbs, enough for a single vehicle and a cycle to use the road. However, the large build-outs will be offset from the kerb, creating an optional cycle bypass. Broken yellow no stopping lines are required on the approaches and departures to keep the bypasses clear from parked vehicles.

- **Provide improved pedestrian crossing facilities**

  The footpaths are located against the property boundary and the balance of the berm area is grass against the kerb. The crossing distances for pedestrians along Archer Street will be reduced to eight metres and the proposed intersections will discourage motorists from turning at speed. Due to the implementation of these best practice road treatments, no specific pedestrian facilities are required.

- **Enhance the streetscape**

  The proposed kerb build-outs will provide areas that can be landscaped, and this can be done in keeping with Thornton Street, with a mixture of native ground covers and exotic specimen trees. The proposed kerb build-outs will make Archer Street appear short and not a likely through-route. They will also keep the form of the street simple and appropriate for this cluster area.

- **Improve street lighting where necessary**

  The level of street lighting has been checked during the concept stage of design to ascertain if the existing level is sufficient, or whether an upgrade is required. A lighting upgrade is necessary for Archer Street.

Carrick Street

79. The preferred option for Carrick Street meets the aims and objectives of the project as follows.

- **Improve traffic and pedestrian safety**

  The proposed narrowing to nine metres will reduce pedestrian crossing distances and reduce traffic speeds, particularly when cars are parked on both sides of the road. The reduced radius at the intersections will reduce traffic turning speeds and reduce pedestrian crossing distances. The Carrick Street and Flockton Street intersection will be narrowed to six metres with the Carrick Street approach alignment made perpendicular to Flockton Street. This also reduces pedestrian crossing distances and provides a better position for visibility of vehicles exiting the street.

- **Improve safety for cyclists**

  Cyclists will benefit from a possible speed reduction. It is proposed to install kerb build-outs opposite number 12, and outside numbers 28 and 35 Carrick Street. There will be 4.5 metres between the two kerb lines, enough for a single vehicle and a cyclist to use the road. However, the kerb build-outs will be offset from the kerb, creating a 1.2 metre wide optional cycle bypass. Broken yellow no stopping lines will be required on the approaches to and departures from the kerb build-outs to keep the bypasses clear from parked vehicles.

- **Provide improved pedestrian crossing facilities**

  The footpaths are located against the property boundary and the balance of the berm area is grass against the kerb. The crossing distances for pedestrians along Carrick Street will be reduced to nine metres and the proposed intersections will discourage motorists from turning at speed. For these reasons, it is considered that no specific pedestrian facilities are required.

- **Improve safety of vehicles exiting Carrick Street**

  The Carrick Street and Flockton Street intersection will be narrowed to six metres with the Carrick Street approach alignment made perpendicular to Flockton Street. This position will be better for exiting vehicles as it increases their departure visibility.

- **Enhance the streetscape**

  The proposed kerb build-outs opposite number 12 and outside numbers 28 and 35 Carrick Street will provide areas that can be landscaped. This can be done in keeping with Thornton Street, which was previously upgraded within this cluster of streets, with a mixture of native ground covers and exotic specimen trees. The proposed kerb build-outs will make Carrick Street appear short and not a possible through-route. They will also keep the form of the street simple and appropriate for this cluster.

- **Improve street lighting where necessary**

  The level of street lighting has been checked during the concept stage of design, to ascertain if the existing level is sufficient, or whether an upgrade is required. A lighting upgrade is necessary for Carrick Street.

Squire Street

80. The preferred option for Squire Street meets the aims and objectives of the project as follows.

- **Improve traffic and pedestrian safety**

  The proposed narrowing to eight metres will reduce pedestrian crossing distances. The reduced radius at the Squire Street and Aylesford Street intersection will reduce traffic turning speeds and reduce pedestrian crossing distances. The Squire Street and Flockton Street intersection will be narrowed to six metres with the Squire Street approach alignment made perpendicular to Flockton Street. This also reduces pedestrian crossing distances and provides a better position for visibility of vehicles exiting the street.

- **Improve safety of vehicles exiting Squire Street**

  The Squire Street and Flockton Street intersection will be narrowed to six metres with the Squire Street approach alignment made perpendicular to Flockton Street. This position will be better for exiting vehicles as it increases their departure visibility.

- **Improve safety for cyclists**

  Cyclists will benefit from a possible speed reduction. It is proposed to install kerb build-outs opposite numbers 3 and 20 Squire Street. There will be 4.5 metres between the two kerb lines, which is enough for a single vehicle and a cyclist to use the road. However, the kerb build-outs will be offset from the kerb, creating an optional cycle bypass. Broken yellow no stopping lines will be required on the approaches to and departures from the kerb build-outs to keep the bypasses clear from parked vehicles. Therefore, cyclists are not adversely affected by the proposal.

- **Provide improved pedestrian crossing facilities**

  The footpaths are located against the property boundary and the balance of the berm area will be grass against the kerb. The crossing distances for pedestrians along Squire Street will be reduced to eight metres and the proposed intersections will discourage motorists from turning at speed. For these reasons, it is considered that no specific pedestrian facilities are required.

- **Enhance the streetscape**

  The proposed kerb build-outs opposite numbers 3 and 20 Squire Street will provide areas that can be landscaped. This can be done in keeping with Thornton Street, which was previously upgraded within this cluster of streets, with a mixture of native ground covers and exotic specimen trees. The proposed kerb build-outs will make Squire Street appear short and not a possible through-route. They will also keep the form of the street simple and appropriate for this cluster.

- **Improve street lighting where necessary**

  The level of street lighting has been checked during the concept stage of design, to ascertain if the existing level is sufficient, or whether an upgrade is required. A lighting upgrade is necessary for Squire Street.

Aylesford Street

81. The preferred option for Aylesford Street meets the aims and objectives of the project as follows.

- **Improve traffic and pedestrian safety**

  The proposed narrowings combined with the vertical deflection from the platforms will reduce the mid-block speed. The spacing of the elements varies from 100 metres to 130 metres. The speed reduction will improve safety.

- **Reduce through-traffic**

  The proposed traffic calming will make the street less appealing to some motorists, as they are restricted in their travel speed. It can thus be expected that the through-traffic volume will reduce.

- **Improve safety for cyclists**

  Cyclists will benefit from the anticipated speed reduction and 1.2 metre wide cycle bypasses will be available at the six metre wide narrowings, so cyclists are not adversely affected.

- **Provide improved pedestrian crossing facilities**

  The crossing distance at the intersection of Aylesford Street with Westminster Street has been slightly reduced. Pedestrians will mostly benefit from the reduced speed environment.

- **Enhance the streetscape**

  It is proposed to landscape the stick-on islands.

- **Improve street lighting where necessary**

  The level of street lighting has been checked during the concept stage of design to ascertain if the existing level is sufficient, or whether an upgrade is required. A partial lighting upgrade is necessary for Aylesford Street.

Flockton Street

82. The preferred option for Flockton Street meets the aims and objectives of the project as follows.

- **Improve traffic and pedestrian safety**

  The proposed narrowing will reduce the maximum spacing of the traffic calming elements to approximately 160 metres. Together with the threshold at Warrington Street, a slight reduction in mid-block speed may be achieved. The crossing distance for pedestrians along Warrington Street will be reduced and the threshold will discourage motorists from turning at speed.

- **Maintain traffic capacity for Flockton Street**

  The scheme has been developed to maintain traffic capacity through mild traffic calming measures that will not deter traffic from using the street.

- **Maintain efficient access and thoroughfare for buses**

  The mid-block calming device will not hinder bus movements. The left turn from Warrington Street into Flockton Street has been checked to ensure bus tracking sweep paths and the kerb layout will accommodate buses.

- **Improve safety for cyclists**

  Cyclists will benefit from a potential reduction in speed of vehicles. The six metre narrowing has been fitted with cycle bypasses, to ensure cyclists are not adversely affected.

- **Provide improved pedestrian crossing facilities**

  The crossing distance at the intersection of Flockton Street with Warrington Street has been reduced. Given the local road nature of Flockton Street, it was not considered necessary to provide specific pedestrian facilities at the four Flockton Street bus stops.

- **Enhance the streetscape**

  The proposed kerb extension and the two stick-on islands will be landscaped.

- **Improve street lighting where necessary**

  The level of street lighting has been checked during the concept stage of design, to ascertain if the existing level is sufficient, or whether an upgrade is required. A partial lighting upgrade is necessary for Flockton Street.

Francis Avenue

83. The preferred option for Francis Avenue meets the aims and objectives of the project as follows.

- **Improve traffic and pedestrian safety**

  The proposed narrowings combined with the vertical deflection from the platforms will reduce the mid-block speed. The spacing of the elements varies from 90 metres to 140 metres. The speed reduction will improve safety.

- **Reduce through-traffic**

  The proposed traffic calming will make the street less appealing to some motorists, as they are restricted in their travel speed. It is expected that the through-traffic volume will reduce.

- **Recognise the special character of Francis Avenue**

  The special character of Francis Avenue is created by three elements. Mature trees on both sides of the street, large grass berms and the significant distance that houses are set back from the street. The proposed stick-on islands and raised platforms will be cobbled. The islands are too narrow for landscaping; however, the cobbles will complement the traffic calming elements, making them more aesthetically pleasing. They will not look like utility devices, which could detract from this character avenue.

- **Improve safety for cyclists**

  Cyclists will benefit from the anticipated speed reduction. Cycle bypasses will be made available at the 5.5 metre wide narrowings, for cyclists to access the footpath. This should ensure that cyclists are not adversely affected.

- **Provide improved pedestrian crossing facilities**

  The crossing distance at the intersection of Francis Avenue with Warrington Street has been slightly reduced. Pedestrians will mostly benefit from the reduced speed environment.

- **Enhance the streetscape**

  Francis Avenue is a beautiful tree-lined street that does not require any enhancements. The proposed work will not further enhance the avenue and the cobbles will ensure that the traffic calming elements do not detract from the tree-lined avenue.

- **Improve street lighting where necessary**

  The level of street lighting has been checked during the concept stage of design to ascertain if the existing level is sufficient, or whether an upgrade is required. A partial lighting upgrade is necessary for Francis Avenue.

Budgets and Timeframe

84. It is proposed to commence construction of Aylesford Street, Flockton Street and Francis Avenue in September 2006, and this will take approximately 11 weeks to complete.

85. The construction programme for Carrick Street will be finalised pending a review of the capital programme by the Transport and City Streets Unit. It is anticipated that this work will take approximately ten weeks to complete.

86. Archer Street and Squire Street have been reprogrammed for construction in 2014/2015 and 2016/2017 respectively. The construction programme for Carrick Street has not been finalised. It is not proposed to seek the approval of the Board at this time, as it is conceivable that consultation and future Board confirmation will be required prior to the commencement of this work.

87. The total estimated cost of upgrading these six streets is $1,466,200, which is comprised of the following estimates for each of the streets.

- Aylesford Street $116,500
- Flockton Street $ 53,700
- Francis Avenue $101,500
- Archer Street $331,300
- Carrick Street $575,700
- Squire Street $287,500