

## 12. MOORHOUSE AVENUE TRAFFIC MANAGEMENT AND SAFETY IMPROVEMENTS (HAGLEY AVENUE TO BARBADOES STREET)



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### PURPOSE OF REPORT

1. The purpose of this report is to:
  - (a) Seek Council approval for the Moorhouse Avenue Traffic Management & Safety Improvements project to proceed to implementation.
  - (b) Seek the Council's approval for new traffic restrictions associated with the project.

### EXECUTIVE SUMMARY

2. The Moorhouse cluster includes Moorhouse Avenue from Hagley Avenue to Barbadoes Street and Barbadoes Street from Ferry Road to Moorhouse Avenue. The Moorhouse Avenue component was supported by the relevant community boards in March 2006 subject to the resolution of an issue related to parking outside 179 Moorhouse Avenue. Two other reports have been submitted to the Hagley/Ferrymead Community Board relating to the Moorhouse Avenue/Barbadoes Street intersection and the Moorhouse Avenue/Montreal Street intersection, which are both associated with this project. These two associated reports were considered by the Hagley/Ferrymead Community Board at a meeting held on 20 December 2006, and are the subject of a separate report by the Board to the present Council meeting.
3. The Moorhouse Avenue section of this project was presented to the Council at a seminar in May 2006 but did not gain support from the Councillors in attendance. Issues relating to the inclusion of on-road cycle lanes on this arterial road were raised along with the desire to see more trees planted along the route. The Council later indicated at a cycle seminar in November 2006 that they were now supportive of the project and asked that the report be re-submitted for approval.
4. In 2003 the Council funded a Crash Reduction Study to identify, investigate and recommend remedial traffic engineering treatments at urban sites in the City that had a higher than average crash rate. Moorhouse Avenue, specifically at the intersections, was identified in the study as requiring remedial work. The study recommended that overhead signal mast arm poles be installed at each intersection on Moorhouse Avenue to improve the visibility of the intersections for motorists.
5. The Project Team is also proposing to implement a safer crossing facility on Moorhouse Avenue adjacent to the Science Alive complex and to install cycle lanes along Moorhouse Avenue.
6. This project is located in two Community Board areas, Hagley/Ferrymead and Spreydon/Heathcote. Hence, this Board report was presented at both relevant boards for support prior to seeking Council approval.
7. Consultation has included seminars with the Hagley/Ferrymead Community Board and the Spreydon/Heathcote Community Board to introduce the project to them and to invite feedback.
8. One to one consultation was then undertaken with businesses and organisations that would be impacted by the removal of on street parks. The plan was then amended where possible before it was formally publicised in January 2006.
9. Several amendments to the plan have been made to address the concerns raised by business operators and property owners in Moorhouse Avenue, in particular issues relating to parking.
10. Submissions were also received specifically in response to the proposal along Barbadoes Street. Consequentially additional investigations were undertaken for the Barbadoes Street section of the project. The Barbadoes Street section has therefore not been detailed or discussed in this report, and is presented in a separate report.

11. Two options have been outlined in this report. The preferred option includes the following:
  - Signalised pedestrian crossing adjacent to Science Alive.
  - Cycle lanes along both sides of Moorhouse Avenue between Hagley Avenue and Barbadoes Street.
  - Signal improvements at the intersections of Selwyn Street, Durham Street, Colombo Street, Manchester Street and Gasson Street/Madras Street.
12. The project team is confident that the project as it stands is justified and addresses the majority of consultation issues raised. Additionally, the proposed option will address the serious safety concerns identified in a Crash Reduction Study.

#### **FINANCIAL AND LEGAL CONSIDERATIONS**

13. The estimated total cost for the Moorhouse Avenue Traffic Management and Safety Improvements project in 2006/07 is approximately \$675,000, inclusive of all consultation, design, construction and project management (including the Barbadoes Street component).
14. The Moorhouse Avenue project is part of the Safety Improvement Programme and Cycleway Programme and is programmed for construction in the 2006/07 financial year. The combined budgets total \$700,000.
15. Without the approval of the resolutions for traffic restrictions, the restrictions will not be enforceable upon implementation.

#### **STAFF RECOMMENDATIONS**

It is recommended:

- (a) That the Council grant approval for the Moorhouse Avenue Traffic Management & Safety Improvements project to proceed to final design, tender and construction.
- (b) That the Council approve the following new traffic restrictions associated with the project:

##### **New No Stopping Restrictions:**

##### **Moorhouse Avenue north side**

That the stopping of vehicles be prohibited at any time in the following locations:

- (i) On the north side of Moorhouse Avenue commencing at its intersection with the east side of Selwyn Street and extending 21 metres in an easterly direction.
- (ii) On the north side of Moorhouse Avenue commencing at a point 48 metres west of its intersection with Montreal Street and extending 21 metres in a westerly direction.
- (iii) On the north side of Moorhouse Avenue commencing at its intersection with the east side of Durham Street and extending 13 metres in an easterly direction.
- (iv) On the north side of Moorhouse Avenue commencing at a point 115 metres west of its intersection with Madras Street and extending 28 metres in a westerly direction.

##### **Moorhouse Avenue south side**

That the stopping of vehicles be prohibited at any time in the following locations:

- (v) On the south side of Moorhouse Avenue commencing at its intersection with the west side of Selwyn Street and extending 22 metres in a westerly direction.
- (vi) On the south side of Moorhouse Avenue commencing at a point 33 metres east of its intersection with Antigua Street and extending 21 metres in an easterly direction.
- (vii) On the south side of Moorhouse Avenue commencing at a point 15 metres east of its intersection with Montreal Street and extending 43 metres in an easterly direction.
- (viii) On the south side of Moorhouse Avenue commencing at a point 20 metres east of its intersection with Durham Street and extending 27 metres in an easterly direction.
- (ix) On the south side of Moorhouse Avenue commencing at its intersection with the west side of Pilgrim Place and extending 25 metres in a westerly direction.
- (x) On the south side of Moorhouse Avenue, commencing at a point 102 metres east of its intersection with Pilgrim Place and extending 24 metres in an easterly direction.

- (xi) On the south side of Moorhouse Avenue, commencing at the intersection with Gasson Street and extending 16 metres in a westerly direction.
- (xii) On the south side of Moorhouse Avenue, commencing at the intersection with Waltham Road and extending 22 metres in an easterly direction.

**Durham Street east side**

- (xiii) That the stopping of vehicles be prohibited at any time on the east side of Durham Street commencing at its intersection with the south side of Moorhouse Avenue and extending 6 metres in a southerly direction.

**Durham Street east side**

That the stopping of vehicles be prohibited at any time in the following locations:

- (xiv) On the east side of Durham Street commencing at its intersection with the north side of Moorhouse Avenue and extending 7 metres in a northerly direction.
- (xv) On the east side of Durham Street commencing at its intersection with the south side of Moorhouse Avenue and extending 6 metres in a southerly direction.

**Durham Street west side**

- (xvi) That the stopping of vehicles be prohibited at any time on the west side of Durham Street commencing at its intersection with the north side of Moorhouse Avenue and extending 7 metres in a northerly direction.

**Pilgrim Place west side**

- (xvii) That the stopping of vehicles be prohibited at any time on the west side of Pilgrim Place commencing at its intersection with Moorhouse Avenue and extending 10 metres in a southerly direction.

**Removal of Existing No Stopping Restrictions:**

**Moorhouse Avenue south side**

That the present no stopping restrictions in the following locations be removed:

- (i) On the south side of Moorhouse Avenue commencing at its intersection with the west side of Durham Street and extending 32 metres in a westerly direction be removed.
- (ii) On the south side of Moorhouse Avenue commencing at its intersection with the west side of Gasson Street and extending 26 metres in a westerly direction be removed.

**New Parking Restriction:**

**Moorhouse Avenue north side**

- (i) That the parking of vehicles be restricted to a maximum period of 10 minutes on the north side of Moorhouse Avenue commencing at a point 16 metres east of its intersection with Waller Terrace and extending in an easterly direction for a distance of 6.5 metres.

**Moorhouse Avenue south side**

- (ii) That the parking of vehicles be restricted to a maximum period of 60 minutes on the south side of Moorhouse Avenue commencing at a point 46 metres east of its intersection with Grove Road and extending in an easterly direction for a distance of 30 metres
- (iii) That the parking of vehicles be restricted to a maximum period of 60 minutes on the south side of Moorhouse Avenue commencing at a point 8 metres west of its intersection with Durham Street and extending in a westerly direction for a distance of 17 metres.
- (iv) That the parking of vehicles be restricted to a maximum period of 60 minutes on the south side of Moorhouse Avenue commencing at a point 46.5 metres east of its intersection with Durham Street and extending in an easterly direction for a distance of 41 metres.
- (v) That the parking of vehicles be restricted to a maximum period of 10 minutes at any time on the south side of Moorhouse Avenue commencing at a point 76 metres east of its intersection with Pilgrim Place and extending in an easterly direction for a distance of 26 metres.

## **Relocation of Existing Parking Restrictions:**

### **Moorhouse Avenue north side**

- (i) That the existing P60 parking restriction on the north side of Moorhouse Avenue at its present position commencing 11.5 metres west of the intersection with Durham Street and extending 10 metres in a westerly direction be revoked, and be reinstated on the north side of Moorhouse Avenue commencing at a point 15 metres west of its intersection with Durham Street and extending in a westerly direction for a distance of 6 metres.
- (ii) That the existing P60 parking restriction on the north side of Moorhouse Avenue at its present position commencing 5 metres east of the intersection with Durham Street and extending 19 metres in an easterly direction be revoked, and be reinstated on the north side of Moorhouse Avenue commencing at a point 13 metres east of its intersection with Durham Street and extending in an easterly direction for a distance of 11 metres.
- (iii) That the existing P60 parking restriction on the north side of Moorhouse Avenue at its present position commencing 49 metres east of the intersection with Manchester Street and extending 31 metres in an easterly direction be revoked, and be reinstated on the north side of Moorhouse Avenue commencing at a point 49 metres east of its intersection with Manchester Street and extending in an easterly direction for a distance of 36.5 metres.

### **Moorhouse Avenue south side**

- (iv) That the existing P60 parking restriction from the south side of Moorhouse Avenue at its present position commencing 57 metres east of the intersection with Antigua Street and extending 23 metres in an easterly direction be revoked, and be reinstated on the south side of Moorhouse Avenue commencing at a point 53 metres east of its intersection with Antigua Street and extending in an easterly direction for a distance of 27 metres.

## **Removal of Existing Parking Restrictions:**

### **Moorhouse Avenue north side**

- (i) That the existing P60 parking restriction on the north side of Moorhouse Avenue commencing at a point 16 metres east of its intersection with Waller Terrace and extending in an easterly direction for a distance of 6.5 metres be removed.
- (ii) That the existing P60 parking restriction on the north side of Moorhouse Avenue commencing at a point 128 metres east of its intersection with Manchester Street and extending in an easterly direction for a distance of 20 metres be removed.

### **Moorhouse Avenue south side**

- (iii) That all the parking restrictions be removed from the south side of Moorhouse Avenue commencing at a point 76 metres east of its intersection with Pilgrim Place and extending in an easterly direction for a distance of 123 metres.

## **Loading Zone:**

### **Moorhouse Avenue south side**

- (i) That a "loading zone (goods vehicles only) time limit 5 minutes" be created on the south side of Moorhouse Avenue commencing at a point 182 metres east of its intersection with Pilgrim Place and extending in an easterly direction for a distance of 13 metres.

## **Taxi Stand:**

### **Moorhouse Avenue south side**

- (i) That a "taxi stand" be created on the south side of Moorhouse Avenue commencing at a point 15 metres west of its intersection with Gasson Street and extending in a westerly direction for a distance of 11 metres.

## **Relocation of Existing Bus Stops:**

### **Moorhouse Avenue north side**

- (i) That the existing bus stop presently located on the north side of Moorhouse Avenue at a point commencing 86 metres east of the intersection with Manchester Street and extending 27 metres in an easterly direction be removed, and reinstated on the north side of Moorhouse Avenue commencing at a point 128 metres east of its intersection with Manchester Street and extending in an easterly direction for a distance of 20 metres.

### **Moorhouse Avenue south side**

- (ii) That the existing bus stop presently located on the south side of Moorhouse Avenue at a point commencing 17 metres west of its intersection with Montreal Street and extending 15 metres in a westerly direction be removed, and reinstated on the south side of Moorhouse Avenue commencing at a point 34.5 metres west of its intersection with Montreal Street and extending in a westerly direction for a distance of 20 metres.
- (iii) That the existing bus stop presently located on the south side of Moorhouse Avenue at a point commencing 32 metres west of its intersection with Durham Street and extending 28.5 metres in a westerly direction be removed, and reinstated on the south side of Moorhouse Avenue commencing at a point 25 metres west of its intersection with Durham Street and extending in a westerly direction for a distance of 31 metres.
- (iv) That the existing bus stop presently located on the south side of Moorhouse Avenue at a point position commencing 132 metres east of its intersection with Pilgrim Place and extending 37 metres in an easterly direction be removed, and reinstated on the south side of Moorhouse Avenue commencing at a point 125 metres east of its intersection with Pilgrim Place and extending in an easterly direction for a distance of 56 metres.

## **Removal of Existing Bus Stop:**

### **Moorhouse Avenue north side**

- (i) That the existing bus stop on the north side of Moorhouse Avenue commencing at a point 53 metres west of its intersection with Durham Street and extending 20 metres in a westerly direction be removed.

## **BACKGROUND ON THE MOORHOUSE AVENUE TRAFFIC MANAGEMENT & SAFETY IMPROVEMENTS PROJECT**

16. The Moorhouse cluster includes Moorhouse Avenue from Hagley Avenue to Barbadoes Street and Barbadoes Street from Ferry Road to Moorhouse Avenue. The Moorhouse Avenue (Hagley Avenue to Barbadoes Street) section of the project was supported by the Hagley/Ferrymead Community Board in March this year. It was also supported by the Spreydon/Heathcote Community Board. The report was then forwarded to the Council for final approval. However, the Council sought a seminar to allow more consideration of the project. This seminar was held on 2 May 2006 and a number of issues were raised primarily in relation to the appropriateness of the cycle lanes on this arterial road and the desire to see more trees planted in Moorhouse Avenue.
17. These issues were investigated and are reported on fully in this report, including this section of the project, which requires Community Board support. A Council cycleway workshop held on 21 November 2006 showed that the Council was supportive of the project and willing to have the report re-submitted for consideration.
18. Two other reports have been submitted to the Hagley/Ferrymead Community Board relating to the Moorhouse Avenue/Barbadoes Street intersection and the Moorhouse Avenue/Montreal Street intersection, which are both associated with this project. These two associated reports were considered by the Hagley/Ferrymead Community Board at a meeting held on 20 December 2006, and are the subject of a separate report by the Board to the present Council meeting.

### **DESCRIPTION OF SITE**

19. The study area relating to this report includes the length of Moorhouse Avenue from Hagley Avenue to Barbadoes Street. An additional study was undertaken for the section of Barbadoes Street between Moorhouse and Ferry Road, the outcomes of which are detailed in a separate Board report for the reasons outlined in clauses 34 and 35 of this report.
20. Moorhouse Avenue is a six lane median divided arterial route that carries approximately 40,000 vehicles per day and has a poor accident history.
21. The surrounding area contains a number of businesses including Science Alive, Hoyts 8, Pak N Save, Moorhouse Central and a number of car sales yards. Additionally, the Christchurch Polytechnic Institute of Technology (CPIT) and Catholic Cathedral College are located at the intersection of Moorhouse Avenue and Barbadoes Street.
22. The project is located in two Community Board areas, Hagley/Ferrymead and Spreydon/Heathcote. Hence, this Council report was presented to both boards for support prior to seeking Council approval.

### **PROJECT INITIATION AND DEVELOPMENT**

23. In 2003 the Council funded a Crash Reduction Study to identify, investigate and recommend remedial traffic engineering treatments at urban sites in the City that had a higher than average crash rate.
24. The study identified Moorhouse Avenue as an area that required remedial safety work, specifically at the intersections. The study indicated that by installing overhead signal mast arm poles the visibility of the intersections for motorists would be improved and result in a decrease of crashes.
25. The Project Team are also proposing to implement a safer crossing facility on Moorhouse Avenue adjacent to Science Alive and to install cycle lanes along Moorhouse Avenue.

## **CONSULTATION**

26. Due to the project being safety driven initial external consultation was not undertaken. However, internal consultation resulted in the following project objectives being identified:
- Improve the visibility of traffic signals for traffic on Moorhouse Avenue
  - Improve lane marking and signal phasing at the Moorhouse/Barbadoes/Waltham intersection.
  - Improve the safety of cyclists
  - Address the safety issue of pedestrians crossing Moorhouse Avenue outside Science Alive.
  - Maintain the capacity of Moorhouse Avenue and its intersections, including all bus movements.
  - Ensure adequate provision is made for vision impaired pedestrians.
27. Once the draft preferred scheme options were developed, based on the objectives identified above, consultation was undertaken with the surrounding community and interested stakeholders.
28. The aim of the consultation was to implement an 'inform' consultation, that is, to provide interested and affected groups in the community with information about the project and to ensure that due consideration is given to any concerns raised, albeit within a project that has set engineering requirements. It was also proposed that one on one consultation was undertaken with business operators and property owners within the proposed area that are directly affected by the proposal before the proposal was delivered to the wider community.
29. The scheme plan and consultation method for the 'Moorhouse Avenue/Barbadoes Street Traffic Management and Safety Improvements' project was presented in seminars to the Hagley/Ferrymead Community Board on 24 August 2005 and the Spreydon/Heathcote Community Board on 6 September 2005.
30. Following the Board seminars consultation was undertaken directly with those property owners and business operators who were potentially affected by the proposed loss of parking. Feedback received during this time showed significant concerns for the loss of parking along Moorhouse Avenue, and, in particular, those on street parks proposed to be removed from adjacent to the Basilica in Barbadoes Street.
31. Consequently, prior to wider consultation the project team meet to discuss the issues raised and the Barbadoes Street plan was amended prior to consultation. The updated plan was then presented to both Community Boards in October 2005, prior to being delivered for formal consultation.
32. Formal consultation was implemented in January 2006 with the release of the 'Moorhouse Avenue/Barbadoes Street Traffic Management & Safety Improvements' booklet (see Attachment 1). The submission close off date was Friday 3 February 2006. The formal publicity was delivered to every business along Moorhouse Avenue from Lincoln Road to Ferry Road and to the Music Centre, the Catholic Cathedral School, the Catholic Diocese and the CPIT in Barbadoes Street. Approximately 1,500 consultation booklets were delivered.

## **FEEDBACK FROM CONSULTATION**

33. Thirteen written submissions were made in support of the project, all from cyclists supporting the proposed cycle lanes. Four written submissions were received, requesting amendments to the proposal with regard to on street parking.
34. Submissions were also received specifically in response to the proposal along Barbadoes Street. Consequentially the project team decided that additional investigations were required for the Barbadoes Street section of the project.

35. The remainder of this report has therefore been written with respect to the Moorhouse Avenue project between Hagley Avenue and Barbadoes Street. The Barbadoes Street project is the subject of a separate report by the Hagley/Ferrymead Community Board to the present Council meeting.
36. The amendments made to the plan after the formal consultation are outlined as follows:
- Property owner at 192 Moorhouse Avenue (Madisons Hotel) has requested that the existing bus stop located adjacent to his business be swapped with the car park location. - **This amendment has been made.**
  - Business operator at 175 Moorhouse Avenue (Popular Cars) has requested that all three on street parks proposed to be removed to provide an extended left turn lane on Moorhouse Avenue into Montreal Street, be reinstated. - **The project team has agreed to reinstate one on street park:** This decision is based on the results of a video survey undertaken in November 2005. An analysis was undertaken in regard to the number of parked vehicles and queuing issues, which concluded that the western most car park could be reinstated without a significant negative effect on queuing. The other two car parks are the subject of a separate report (Moorhouse Ave at Montreal Street).
  - The owner of 231 and 237 Moorhouse Avenue has requested that the kerb build-outs proposed adjacent to his properties be shortened to provided space for one on street park outside each property.- **This amendment has been made.**
  - The business operator at 85a Moorhouse Avenue has requested that with the existing P60 area adjacent to her business, one short term car park or loading zone be installed. - **One P10 car park will be installed.**

#### TREES IN MOORHOUSE AVEUNE

37. At the May 2006 seminar the Council requested that options to increase the number of trees in Moorhouse Avenue be investigated to enhance the avenue effect.
38. Currently there are 103 trees within the road reserve, 56 are in the central median. There are also numerous trees on private property adjacent to the road reserve that add to the greenery of the street. The trees in the median are struggling to thrive owing to the unsuitable soil conditions and lack of moisture. The Transport and Greenspace Tree Team will be undertaking a more comprehensive review of these trees and indicate that in two to three years time the median will be assessed for replanting with mature specimens.
39. Although this project is focused on safety the preferred option does allow another 30 trees to be planted in Moorhouse Avenue where space allows. The new trees are located in kerb buildouts, berms and the central median adjacent to Science Alive. Options to increase this number were investigated but found to be not viable, for the following reasons:
- Trees in the footpath – too many underground services
  - Trees in the planter boxes on the footpath – the box required was too large and would cause pedestrian safety issues.
  - Additional kerb build outs – involves too much loss of parking in this predominantly commercial area.



## OPTIONS

40. Two options for the Moorhouse Avenue Traffic Management and Safety Improvements project have been investigated:

- Option A: Retain the status quo
- Option B: Implement the proposed option (2) to install a pedestrian crossing, upgrade traffic signals and cycle lanes.

(Note that developing the proposed option, Option b, was an iterative process. Hence, no other standalone corridor options for Moorhouse Avenue have been identified or discussed in this report.)

### Option A – The Status Quo:

41. Maintaining the status quo will not result in any social, environmental or economic benefit. Maintaining the status quo is not consistent with the Road Safety Strategy and it does not meet the needs raised through the 2003 Crash Reduction Study.

### Option B – Install a signalised pedestrian crossing, upgrade traffic signals and cycle lanes:

42. The Moorhouse Avenue proposal is detailed in Attachment 1 and consists of the following elements:

- **Cycle Lanes:** New cycle lanes are proposed along Moorhouse Avenue between Hagley Avenue and Colombo Street. Additionally, the existing cycle lanes between Barbadoes Street and Colombo Street are to be upgraded to a minimum width of 1.7m. It is proposed to install cycle advance stop boxes at the Selwyn Street, Antigua Street, Montreal Street and Durham Street South intersections. The use of red coloured surface at intersection has been included to highlight the potential conflict areas.
- **Signal Upgrade:** Overhead signal mast arm signals are proposed at the Madras Street, Manchester Street, Durham Street and Selwyn Street intersections. Build-outs are proposed at these intersections to accommodate the signals. Additionally, the existing signals at the Colombo Street intersection are to be relocated into a proposed new build-out.
- **Signalised Pedestrian Crossing:** A signalised pedestrian crossing is proposed adjacent to Science Alive. This will be a two staged signalised crossing to ensure coordination with the adjacent signalised intersections.
- **Moorhouse Avenue/Barbadoes Street / Waltham Road:** It is proposed to modify the existing build-outs and to upgrade the lane markings and cycle lanes on the Moorhouse Avenue and Waltham Road approaches at this intersection. Any signal upgrades, including phasing modifications and changes to the Barbadoes Street approach, will be detailed separately for the reasons described in sections 34 and 35 of this report.
- **Hagley Avenue Slip Lane:** The left turn slip lane from Hagley Avenue to Moorhouse Avenue will be realigned, with the control changed from a free left turn to a 'Give Way' control.
- **Landscaping:** Trees have been included in a number of build-outs, including those at the Selwyn Street, Colombo Street and Manchester Street intersections. Trees are also proposed on the southern side of Moorhouse Avenue just east of Grove Road, on the south-east corner of the Moorhouse Avenue/Durham Street south intersection, at the Moorhouse Avenue/Barbadoes Street intersection and along the median island adjacent to Science Alive.
- **Central Islands:** To adhere to current best practice the median island has been trimmed on the west and south sides at Moorhouse Avenue/Madras Street/Gasson Street intersection.

- **Lane markings:** Stop control lines have been upgraded to current best practice (300mm wide) at all intersections. Additionally, lane markings, pedestrian crosswalk markings and lane arrows have been remarked where required to ensure correct alignment.
  - **Reduced P60 Parking:** The proposed work will require the removal of a minimal amount of existing on street parks so that kerb build-outs can be installed to accommodate the new traffic signals. Additionally, two parks will be removed on the north-west side of Durham Street south intersection to accommodate a lengthened left turn lane to improve capacity. The locations of the car parks to be removed are detailed on the recommended plans (Attachment 2).
  - **Restricted Parking & Bus Stop Rationalisation:** The bus stop west of Montreal Street, adjacent to the Madisons Hotel, is to be swapped in location with the adjacent P60 parking, as requested by the adjacent property owner. The existing bus stop and shelter currently adjacent to 343 Moorhouse Avenue, east of Madras Street, will be relocated further east and the restricted parking rationalised adjacent to Science Alive. Bus stop rationalisation has also resulted in the loss of the existing bus stop adjacent to 223 Moorhouse Avenue, west of Durham Street south. In addition, a P10 parking zone is to be installed adjacent to 85 Moorhouse Avenue as requested by the business owner.
43. This option will fulfil the shortcomings identified through the 2002 Crash Reduction Study and will result in the following social, environmental and economic benefits:
- **Social:** Improvement to safety for all road users, including pedestrians and cyclists
  - **Economic:** Improvement of a Council infrastructure asset and accident savings
  - **Environmental:** Improvement of the landscape with the installation of trees and landscaping

#### PREFERRED OPTION

44. Option b has been selected as the preferred option, as outlined in Attachment 2. This option is comprehensively detailed in the options section of this report. In summary this option includes the following aspects:
- Pedestrian crossing adjacent to Science Alive
  - Cycle lanes along both sides of Moorhouse Avenue between Lincoln Road and Barbadoes Street.
  - Signal improvements at:
    - Moorhouse Avenue/Selwyn Street
    - Moorhouse Avenue/Durham Street
    - Moorhouse Avenue/Colombo Street
    - Moorhouse Avenue/Manchester Street
    - Moorhouse Avenue/Gasson Street/Madras Street
    - Moorhouse Avenue/Barbadoes Street
45. The preferred option has been selected because:
- It best satisfies the project's aims and objectives from the options considered.
  - It will fulfil the shortcomings identified through the 2002 Crash Reduction Study.
  - It will result in social, environmental and economic benefits.
  - It will upgrade Moorhouse Avenue with current standard linemarking treatments.
  - It has the full support of the project team.
  - It is expected to have a good degree of community support and addresses the majority of concerns, in particular parking issues, raised during consultation.