

**REPORT TO: PLANNING AND TRANSPORTATION COMMITTEE
4 DECEMBER 2000**

**REPORT ON: ROAD SAFETY MEASURES, ACCIDENT SAVINGS AND ECONOMIC
BENEFIT**

REPORT BY: DIRECTOR OF PLANNING AND TRANSPORTATION

REPORT NO: 553-2000

1 PURPOSE OF REPORT

1.1 The purpose of the report is to advise Committee of the effectiveness of the Accident Investigation and Prevention (AIP) measures and traffic calming measures implemented in Dundee in terms of both accident and economic savings.

2 RECOMMENDATIONS

2.1 It is recommended that the Committee note that the accident saving and economic return achieved by road safety measures implemented in Dundee are in excess of that expected by the Institution of Highways and Transportation.

3 FINANCIAL IMPLICATIONS

3.1 There are no financial implications as a result of this report.

4 LOCAL AGENDA 21 IMPLICATIONS

4.1 AIP and traffic calming schemes promote a safer environment for all road users and encourages walking and cycling, which are environmentally benign modes of transport.

5 EQUAL OPPORTUNITIES IMPLICATIONS

5.1 AIP and traffic calming schemes promote safety, especially for vulnerable groups such as the elderly and children, thus ensuring that the local road network meets the transport needs of all road users.

6 BACKGROUND

6.1 Introduction

6.1.1 Under the banner of Road Safety, the Planning and Transportation Department has finance allocated to two distinct headings: Accident Investigation and Prevention (AIP) (revenue) and Traffic Calming (capital).

6.1.2 Accident Investigation and Prevention (AIP) as the name suggests, involves using the Council's computerised accident database to identify and treat accident spots in Dundee. The current criteria for a 'cluster site' to be investigated is five or more injury accidents occurring within the previous three year period within a 50 metre radius. This 'cluster site' programme tends to identify junctions, since this is where the greatest conflict between all road users exists. Once a 'cluster site' has been identified and prioritised, low cost remedial measures are then designed to improve safety, such as improved signing, revised road markings, anti-skid surfacing, etc.

6.1.3 Traffic Calming seeks primarily to protect vulnerable road users by reducing vehicle speeds and/or enhancing pedestrian safety and may also, but not necessarily, reduce non-essential

traffic. Traffic calming can involve area wide comprehensive treatment of a network of local roads (usually in a residential area) or route treatment or treatment at a specific hazardous location. The traffic calming measures installed can include vertical deflection such as speed humps, cushions or tables, horizontal deflection such as chicanes, mini roundabouts and pedestrian safety measures such as pedestrian refuge and kerb build-outs. Similar to AIP measures, sites suitable for traffic calming are prioritised after performing hazardous assessments.

- 6.1.4 These road safety initiatives are achieving an annual reduction of 17 injury accidents with a social cost saving of approximately £1 million per year.

6.2 Cost of an Injury Accident

- 6.2.1 The latest figures from the Scottish Executive give the average cost of an injury accident in a built-up area as £45,947 (at 1998 prices). In a non built-up area the average cost is £105,824. There are a number of elements that make up this cost. Casualty related costs include economic costs covering lost output and medical/ ambulance cost and a value placed on the human cost of pain, grief and suffering. In addition there are costs related to police/administration and damage to property.

- 6.2.2 It should be noted that both AIP and traffic calming are aimed at reducing accidents that cause injury, be it fatal, serious or slight. As such in calculating the cost savings of an AIP or traffic calming scheme no account is taken of damage only accidents although there is obviously a cost to the vehicle owner.

- 6.2.3 Although an economic value has been attached to pain, grief and suffering, this value is ethereal in that the injured person or friend/relative does not actually receive this value, but rather it is a value based on a 'willingness to pay' to avoid the injury. As well as this cost, it must be remembered that there is real human grief, pain and suffering experienced in any road accident resulting in injury.

6.3 Scheme Costs, Accident Savings and Economic Returns

- 6.3.1 In order to evaluate the accident savings made by each AIP and Traffic Calming scheme it is necessary to know the average annual accidents occurring at each scheme site before and after installation. Therefore, there must be a minimum of 12 months accident information available for the after period. This means that currently only schemes implemented in financial years 1996/97, 1997/98 and 1998/99 can be evaluated, although further schemes (such as Fintry traffic calming) have been implemented in financial year 1999/2000.

- 6.3.2 It can be seen from Appendix 1 that a total of £437,597 has been spent on AIP and traffic calming schemes during financial years 1996/97, 1997/98 and 1998/99. The accident saving accrued from these schemes totals an average of 17 injury accidents per annum, giving monetary savings of £988,756 per year. The single year rate of return achieved is 226%.

- 6.3.3 Of all the measures introduced, only two give a negative return and these are currently being investigated for further AIP work.

- 6.3.4 The Institution of Highways and Transportation's (IHT) guidelines on road safety give the economic rate of return and average accident reduction that can be expected from a number of remedial measures/ strategies. As a maximum it states that an average accident reduction of 33% and not less than a 50% single year rate of return can be expected. It can be seen from paragraph 6.3.2 that the road safety schemes implemented in Dundee achieve a greater accident reduction and significantly better single year rate of return than that expected by the IHT. Therefore it can be concluded that the objectives of Dundee City Council's road safety measures have been fully achieved in terms of both accident savings and economic return.

7 CONSULTATIONS

- 7.1 The Chief Executive, Director of Finance, Director of Support Services, Director of Corporate Planning, Director of Personnel and Management Services, Director of Education, Director of Economic Development, Director of Environmental and Consumer Protection, Director of Neighbourhood Resources and Development, Director of Public Relations, Legal Manager and the Chief Constable, have been consulted and are in agreement with the contents of this report.

8 BACKGROUND PAPERS

- 8.1
- Report No 394/1996 – Traffic Calming Schemes
 - Road Accidents Scotland 1998 – Scottish Executive
 - Highway Safety, Guidelines for Accident Reduction and Prevention – The Institution of Highways and Transportation.

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10 November 2000

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Accident Saving and Economic Return

AIP

| Financial Year | Route | Scheme Name | Cost | Annual Average Accidents Before | Annual Average Accidents After | Annual Average Accident Reduction | Accident Cost | Annual Average Accident Savings | Single Year Rate of Return |
|------------------|-------|---------------------------------------|----------------|---------------------------------|--------------------------------|-----------------------------------|---------------|---------------------------------|----------------------------|
| 1996-1997 | A92 | Balmossie Bends | £16,679 | 4 | 0.50 | 3.5 | £105,824 | £370,384 | 2221% |
| 1996-1997 | C202 | Macalpine Rd/Americanmuir Rd Pelican | £3,335 | 0.75 | 0 | 0.75 | £45,947 | £34,460 | 1033% |
| 1996-1997 | A923 | Coupar Angus Rd/South Rd Pelican | £2,163 | 0.75 | 0 | 0.75 | £45,947 | £34,460 | 1594% |
| 1996-1997 | C253 | Hawkhill/Westport Pelican | £4,203 | 0.75 | 0 | 0.75 | £45,947 | £34,460 | 820% |
| 1996-1997 | A991 | East Marketgait/King St | £4,203 | 2 | 4 | -2 | £45,947 | -£91,894 | -2187% |
| 1996-1997 | | | £30,581 | 8.25 | 4.5 | 3.75 | | £381,871 | 1249% |
| 1997-1998 | A85 | Riverside Dr/Railway Station Junction | £2,430 | 0.67 | 0 | 0.67 | £45,947 | £30,784 | 1267% |
| 1997-1998 | U/C | Alexander St/North William St Pelican | £7,011 | 1.33 | 1 | 0.33 | £45,947 | £15,163 | 216% |
| 1997-1998 | C222 | Strathmore Ave/Johnston Ave | £4,096 | 2 | 0 | 2 | £45,947 | £91,894 | 2244% |
| 1997-1998 | A929 | Victoria Rd East of Hilltown | £10,529 | 3.33 | 1 | 2.33 | £45,947 | £107,057 | 1017% |
| 1997-1998 | | | £24,066 | 7.33 | 2 | 5.33 | | £244,898 | 1018% |
| 1998-1999 | | N/A | Nil | Nil | Nil | Nil | N/A | Nil | Nil |
| 1998-1999 | | | £0 | 0 | 0 | 0 | | £0 | 0% |

Traffic Calming

| Financial Year | Route | Scheme Name | Cost | Annual Average Accidents Before | Annual Average Accidents After | Annual Average Accident Reduction | Accident Cost | Annual Average Accident Savings | Single Year Rate of Return |
|------------------|-------|----------------------|-----------------|---------------------------------|--------------------------------|-----------------------------------|---------------|---------------------------------|----------------------------|
| 1996-1997 | | Caird Avenue | £3,952 | 1 | 0.5 | 0.5 | £45,947 | £22,974 | 581% |
| 1996-1997 | | Rosemount Road | £11,720 | 1.33 | 0 | 1.33 | £45,947 | £61,263 | 523% |
| 1996-1997 | | Alexander Street | £2,143 | 1.33 | 1.5 | -0.17 | £45,947 | -£7,658 | -357% |
| 1996-1997 | | Arbroath Road | £6,280 | 0.67 | 0 | 0.67 | £45,947 | £30,631 | 488% |
| 1996-1997 | | South Road | £9,900 | 0.67 | 0.5 | 0.17 | £45,947 | £7,658 | 77% |
| 1996-1997 | | | £33,994 | 5 | 2.5 | 2.5 | | £114,868 | 338% |
| 1997-1999 | | Douglas Housing Area | £348,956 | 14.38 | 9 | 5.38 | £45,947 | £247,120 | 71% |
| 1997-1999 | | | £348,956 | 14.38 | 9 | 5.38 | | £247,120 | 71% |
| Total | | | £437,598 | 35 | 18 | 17 | | £988,756 | 226% |

* all monetary values at 1998 prices

| | |
|---------------------------|-----|
| Annual Accidents (Before) | 35 |
| Annual Accidents (After) | 18 |
| Annual Accident Savings | 17 |
| % Reduction | 49% |