

The Auditor-General  
Audit Report No.45 2006-07  
Performance Audit

# **The National Black Spot Programme**

**Department of Transport and Regional Services**

Australian National Audit Office

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of Australia 2007

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Canberra ACT  
19 June 2007

Dear Mr President  
Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in the Department of Transport and Regional Services in accordance with the authority contained in the *Auditor-General Act 1997*. I present the report of this audit and the accompanying brochure to the Parliament. The report is titled *The National Black Spot Programme*.

Following its tabling in Parliament, the report will be placed on the Australian National Audit Office's Homepage—<http://www.anao.gov.au>.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ian McPhee'.

Ian McPhee  
Auditor-General

The Honourable the President of the Senate  
The Honourable the Speaker of the House of Representatives  
Parliament House  
Canberra ACT

## AUDITING FOR AUSTRALIA

The Auditor-General is head of the Australian National Audit Office. The ANAO assists the Auditor-General to carry out his duties under the *Auditor-General Act 1997* to undertake performance audits and financial statement audits of Commonwealth public sector bodies and to provide independent reports and advice for the Parliament, the Government and the community. The aim is to improve Commonwealth public sector administration and accountability.

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## Abbreviations/Glossary

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ANAO	Australian National Audit Office
BCR	Benefit Cost Ratio. It is calculated by dividing the present value of estimated benefits by the estimated capital cost.
Casualty crash	A casualty crash is either a fatal or injury crash.
DOTARS	Department of Transport and Regional Services
DTEI	Department for Transport, Energy and Infrastructure (SA). DTEI is an agency of the Government of South Australia.
LGA	Local Government Authority
Main Roads WA	Main Roads Western Australia is Western Australia's State road transport authority.
NSW	New South Wales
Proponent	Entity submitting the project nomination. This is often the same entity responsible for delivering the road safety works.
RTA	The Roads and Traffic Authority is a NSW State Government agency.
SA	South Australia
State	Means all, or any, Australian states, the Australian Capital Territory and the Northern Territory
VicRoads	VicRoads is the registered business name of the Roads Corporation, a statutory Corporation within the Victorian Government infrastructure portfolio.
WA	Western Australia



# Summary and Recommendations



# Summary

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## Background

1. The National Black Spot Programme<sup>1</sup> targets sites or sections of the road network that experience a high incidence of vehicle crashes and fatalities (referred to as 'black spots'). It is a key element of the Australian Government's aim to reduce the national road fatality rate by 40 per cent over the decade to 2010. In April 2007, the Federal Government announced that funding for the Programme would continue to 2013–14 and that, as of 2009–10, annual funding would increase from \$45 million to \$60 million.

2. In 1996 the Black Spot Programme was reintroduced by the Government. At that time, the Notes on Administration were updated and endorsed by the then Parliamentary Secretary to the Minister for Transport and Regional Services. The Notes on Administration, which have been accepted by all States, are a guide to the administration of the Programme and are to be read in conjunction with the relevant legislation.<sup>2</sup>

3. Overall administration of the Programme is the responsibility of the Commonwealth Department of Transport and Regional Services (DOTARS). DOTARS administration is undertaken by a manager (who is also responsible for the Roads to Recovery Programme<sup>3</sup>) and two staff in the Canberra office of DOTARS. By way of comparison, programme delivery is more complicated than for the Roads to Recovery Programme. For the Roads to Recovery Programme, the Government considered Local Government Authorities (LGAs) best placed to make decisions on road investment at the local level. Accordingly, LGAs were given the freedom to use the funds as they wished, as long as it was for expenditure on roads, as defined by the legislation.<sup>4</sup>

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<sup>1</sup> The Notes on Administration applicable for the period of audit (replaced in July 2006) referred to the Programme as the 'National Black Spot Programme'. For consistency, the term National Black Spot Programme has been used throughout the audit report.

<sup>2</sup> The Programme was administered under the *Australian Land Transport Development Act 1998* (ALTD Act) until 30 June 2005. The Programme is now administered under Part 7 of the *AusLink (National Land Transport) Act 2005* (AusLink Act).

<sup>3</sup> See ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006.

<sup>4</sup> The legislation governing the Roads to Recovery Programme was framed around the following programme delivery decisions made by the Government: funds were to be paid directly to LGAs; project priorities were the choice of LGAs; and the process by which grants were paid to the LGAs was to be simple, with appropriate audit and accountability systems and arrangements put in place to ensure that there is due recognition by LGAs of the Commonwealth's contribution to local road projects.

4. Administration and delivery of the National Black Spot Programme depends to a significant extent on State road transport authorities and LGAs. Specifically, as illustrated by Table 1:

- National Black Spot projects are delivered both by State<sup>5</sup> road transport authorities and LGAs. In aggregate, for the period 2002–03 to 2005–06 inclusive, State road transport authorities have been approved to deliver 40 per cent of projects and receive just over 52 per cent of funding. While projects are delivered by both state and local government, it is the responsibility of the State road transport authorities to report to DOTARS on the physical delivery of all road safety projects being delivered within the State.
- State road transport authorities play an important role as the Commonwealth's agent in respect to projects approved for delivery by LGAs, including as the conduit through which funds are paid to local government. States are to account to DOTARS for their expenditure. For projects States deliver, this reporting relates to expenditure on road work delivery. For projects delivered by local government, the reporting relates to transfer payments to LGAs, not the actual cost of road works.

**Table 1**

**Programme administration and delivery responsibilities**

Element of the process	Responsibility
Nomination	Principally local government authorities (for local roads) and State road transport authorities (for State roads)
Assessment of project eligibility	State road transport authorities
Ranking of eligible projects	State road transport authorities and State Consultative Panels
Project approval and variation	Federal Minister and/or DOTARS (under delegation)
Payment for road works	State road transport authorities
Delivery of road works	Local government authorities and State road transport authorities
Collating and reporting physical project status	State road transport authorities

Source: ANAO analysis.

<sup>5</sup> Consistent with AusLink Act, the term 'state' used throughout this report includes the Australian Capital Territory and the Northern Territory.

5. The Notes on Administration specifically state that the Programme will fund all costs directly associated with an approved project, and that administrative overheads are indirect costs and therefore are not eligible for funding. Accordingly, State road transport authorities are expected to undertake their Programme administration role free of charge to the Commonwealth. However, in Victoria, the State road transport authority has adopted a practice of charging an administrative charge of 3 per cent to each 2005–06 project, rising to 4 per cent in 2006–07.

### **An evidence-based approach to road safety programmes**

6. According to Austroads<sup>6</sup>, effective road safety programs rely on an evidence-based approach. To support its member authorities, Austroads has published various technical guidelines, manuals and research reports. As road safety is a major strategic area for Austroads, it has developed a series of guidance in relation to the administration of effective, evidence-based road safety treatment programmes. In this respect, in relation to guidance on crash location identification and treatment, the Notes on Administration refer practitioners to Austroads guidelines. Further, it has been agreed by the Austroads Council<sup>7</sup> that the Austroads guidelines should be adopted widely as the primary national reference by member organisations in each relevant area of practice.

7. Consistent with Austroads guidance, the National Black Spot Programme requires evidence to be used as the basis for identifying black spots, developing proposed treatments and the cost of treatment, and ranking projects so that they can be prioritised for funding. This evidence-based approach to the administration of the Programme is intended to result in the

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<sup>6</sup> Austroads membership comprises the six state and two territory road transport and traffic authorities and the Commonwealth Department of Transport and Regional Services in Australia, the Australian Local Government Association and Transit New Zealand. Its purpose is to contribute to the achievement of improved Australian and New Zealand transport related outcomes by:

- undertaking nationally strategic research on behalf of Australasian road agencies and communicating outcomes;
- promoting improved practice by Australasian road agencies;
- facilitating collaboration between road agencies to avoid duplication;
- promoting harmonisation, consistency and uniformity in road and related operations; and
- providing expert advice to the Australian Transport Council and the Standing Committee on Transport.

<sup>7</sup> Austroads is governed by a council consisting of the chief executive officer (or an alternative senior executive officer) of each of its 11 member organisations, including DOTARS.

highest priority road safety Black Spot projects being selected and funded so as to achieve the highest benefits from Commonwealth expenditure in this area.

8. In addition to the guidance provided by Austroads publications, in December 2006, revised *National Guidelines for Transport System Management in Australia* were published by the Australian Transport Council. DOTARS advised ANAO in May 2007 that these principles based guidelines are the appropriate source of best practice relating to the general transport system management. One of the specified principles underlying the guidelines is that advice to decision-makers should be supported by the best available data and information, quantitative and qualitative, objective and subjective.

9. For the National Black Spot Programme, two forms of evidence are accepted as the basis for project nominations:

- funding is mainly available for the treatment of black spot sites or road lengths with a proven history of crashes (sometimes referred to as 'reactive' projects). For projects based on this evidence, a Benefit Cost Ratio (BCR)<sup>8</sup> is determined to assess the economic benefits and ranking projects so that projects can be prioritised for funding; and
- up to 20 per cent of Programme funds are available for the treatment of locations that may not meet the crash history criteria but which have been recommended for treatment on the basis of an official road safety audit report (sometimes referred to as 'proactive' projects).

10. In this context, the significant majority of National Black Spot Programme projects are nominated, ranked and approved on the basis of BCRs.<sup>9</sup> Of the 273 projects in ANAO's sample (which represented 18 per cent of all projects for the period examined), 259 (95 per cent) were nominated on the basis of their crash history. The remaining 14 projects (5 per cent) were nominated on the basis of a road safety audit report.

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<sup>8</sup> For a project nomination based on crash statistics, in addition to the criteria relating to number of casualty accidents being satisfied, the BCR must be greater than 2.0 to be eligible for Programme funding.

<sup>9</sup> Practices vary markedly across the States in terms of the relative proportion of projects that are nominated, recommended by the Consultative Panel and approved by the Federal Minister on the basis of road safety audits. For example, there were no projects between 2002–03 and 2005–06 in New South Wales (the State with the largest Programme allocation) that were nominated and approved on the basis of a road safety audit. In comparison, in South Australia, between 20 per cent and 22 per cent of projects in each of the four years were thought to have been approved on the basis of a road safety audit.



## Audit approach

11. This audit is being undertaken as part of a series of audits examining Commonwealth funding of land transport infrastructure (particularly roads). The first audit in this series examined the Roads to Recovery Programme. The report of this audit was tabled in the Commonwealth Parliament on 1 March 2006.

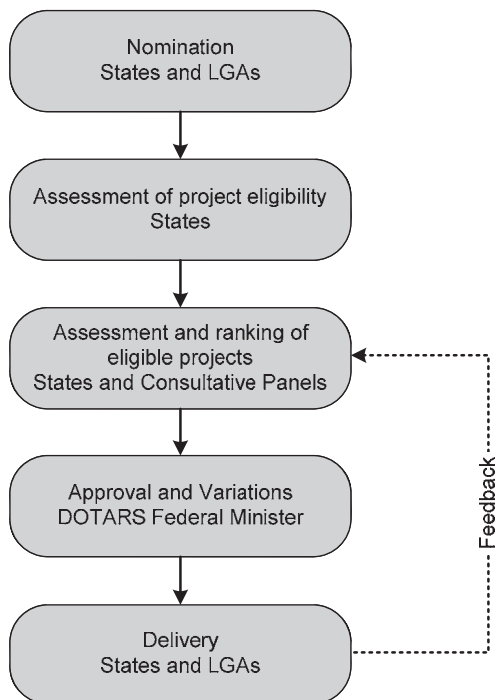
12. The objective of this performance audit was to assess the administration of the National Black Spot Programme. It was undertaken in a manner similar to the audit of the Roads to Recovery Programme. Specifically, the audit approach involved:

- examination of DOTARS records and discussions with officers in DOTARS and four of the State road transport authorities responsible for administering the Programme;
- analysis of project monitoring, reporting and payment arrangements; and
- selecting a sample of 45 LGA areas across four States so that ANAO could examine projects delivered with Commonwealth funding.

13. State road transport authorities play a key agency role in the administration and delivery of the Programme (see Figure 1). Accordingly, this role was examined as part of the audit. This included aggregate analysis of whether payments made under the National Black Spot Programme are made through a process that protects the Commonwealth's financial interests, including whether costs charged to the Programme have been substantiated and funds have been used as intended. It also examined the reporting and accountability arrangements in place between State road transport authorities and DOTARS including the physical progress and completion of projects.

**Figure 1**

**Project nomination, assessment, approval and delivery relationships**



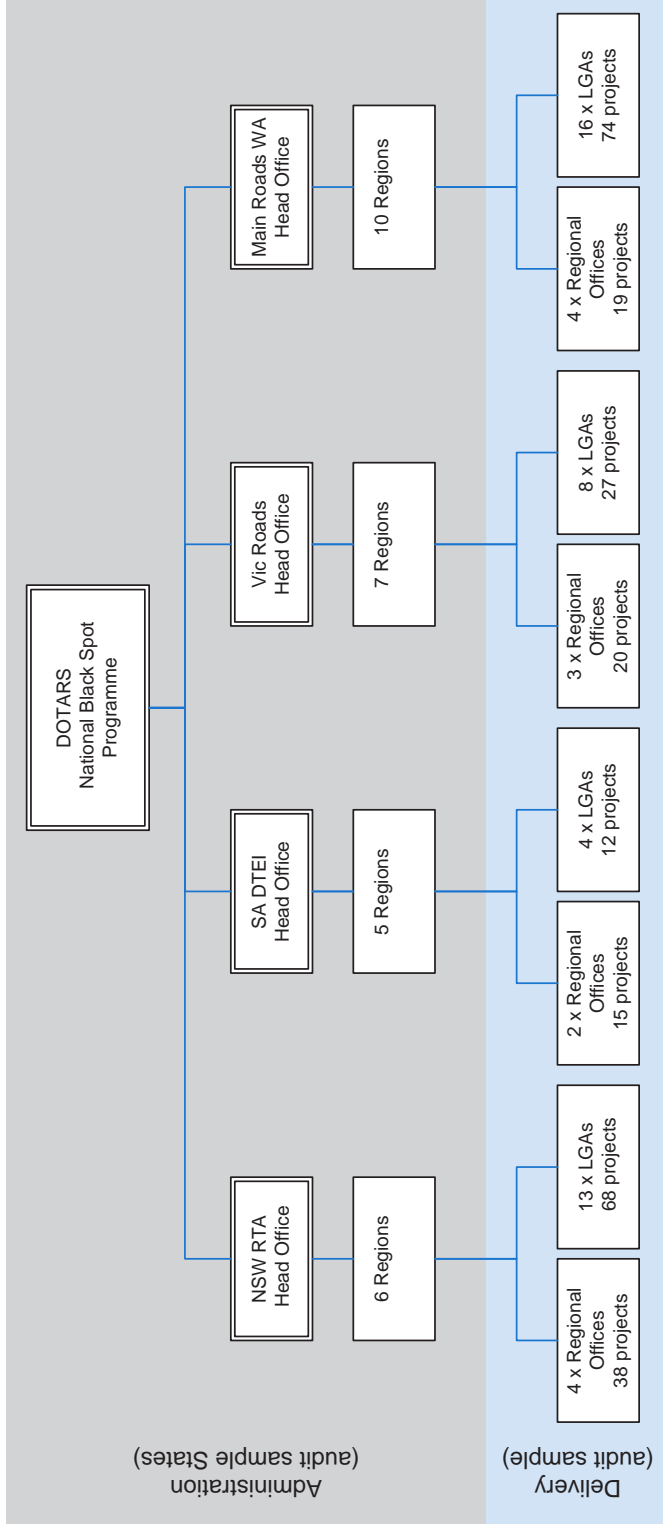
Source: ANAO analysis.

14. The States selected for inclusion were New South Wales (NSW), Victoria, Western Australia (WA) and South Australia (SA). For LGA areas in the sample, all projects approved under the National Black Spot Programme between 2002–03 and 2005–06 have been examined. In total, 273 projects were examined<sup>10</sup> in terms of their nomination, assessment, approval, delivery of approved road works, the cost of the works, timeliness of delivery, and monitoring and reporting of project information to DOTARS (see Figure 2). ANAO also undertook a site inspection for each project.

<sup>10</sup> For each project, ANAO sought the following information from the entity responsible for nominating and delivering the works (as DOTARS does not hold such information):

- Black Spot project nomination forms including details of the calculated Total Estimated Cost and the Benefit Cost Ratio, and supporting crash statistics (or, where applicable, the road safety audit report);
- any technical drawings relating to the work;
- the actual construction schedule;
- a detailed report of actual receipts and expenditure for individual projects;
- documentation associated with claims for payment from LGA's to the State road transport authority, and payments made to the State road transport authority based on the status reports; and
- any other information provided that would assist ANAO's examination of the relevant projects.

**Figure 2**  
**Programme administrative arrangements (audit sample)**



Source: ANAO analysis.

## Overall audit conclusions

15. The evidence-based approach to nominating, ranking and approving National Black Spot Programme projects is consistent with better practice principles for road safety programmes. However, the current administration arrangements have not consistently resulted in the highest priority road safety Black Spot projects being selected and funded. Further, project delivery arrangements do not provide DOTARS with sufficient assurance that approved road works are delivered as approved, in a timely manner, to address the road safety issue that underpinned the nomination and approval of the project for funding.

16. In this context, State road transport authorities play a key role in the administration of the National Black Spot Programme, particularly in relation to the assessment and ranking of projects against the Programme criteria, and as the conduit through which funds are paid for the delivery of road works either by the State or local government. However, ANAO found:

- in each of the four States examined, projects that did not satisfy the Programme eligibility criteria were recommended and approved for funding;
- economic appraisal practices are inconsistent across and within each of the four States examined such that the ranking of projects has resulted in lower priority road safety Black Spot projects being selected and funded; and
- the financial accountability arrangements are insufficiently transparent, with DOTARS having limited visibility of the final actual cost of approved projects with many instances of the completed cost being significantly different from that approved by, and reported to, DOTARS.

17. There have also been significant shortcomings in the delivery of approved and funded National Black Spot Programme projects. Timely delivery of the approved road works at the identified black spot location is fundamental to obtaining the expected benefits from the investment of funds in an evidenced-based road safety programme. However, 56 per cent<sup>11</sup> of projects in the audit sample were not delivered in this manner, comprising:

- 39 per cent were not delivered in the approved Programme year;

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<sup>11</sup> Some projects are included in more than one dot point but are only counted once in the overall figure.

- in the case of 32 per cent of projects, the State road transport authority or LGA delivered different road works to those approved by the Federal Minister, or did not deliver all of the approved road works;
- 8 per cent of projects only partially addressed the identified black spot location; and
- 1 per cent of projects were reported as complete yet road safety works were not evident on site.

18. In the context of the distributed administration arrangements (see Figure 2) for the National Black Spot Programme, there is a balance to be struck by DOTARS between obtaining the necessary assurance that the Programme is effectively delivering on its objectives, and the exercise of discretion by the State road transport authorities in how they discharge their responsibilities as set out in the Notes on Administration. In this context, the audit has demonstrated that, for the Programme to deliver the road safety outcomes the Government and the community expects, DOTARS should more clearly enunciate the Commonwealth's expectations of State road transport authorities and take a more active role in administration of the Programme. This is particularly in the key areas of assessing project eligibility, assessing and ranking of competing projects and the delivery of approved road safety works at the identified black spot location.

19. There would also be considerable merit in DOTARS implementing a risk-based program of road work site inspections. Such an approach would be consistent with the Department's agreement to improve its administration of the Roads to Recovery Programme by undertaking a risk-based program of site inspections so as to better manage delivery risks for Commonwealth funded road work projects. For efficiency reasons, inspections of National Black Spot Programme funded projects could be coordinated with site inspections of Roads to Recovery funded projects, in relation to both State-delivered and local government-delivered projects.

20. As mentioned earlier, the National Black Spot Programme was re-introduced in 1996. Five years later, in 2001, the Roads to Recovery Programme was introduced. Under the Roads to Recovery Programme, the Commonwealth directly funds LGAs for projects they are delivering. When announcing the Roads to Recovery Programme, the Government saw direct funding as providing programme delivery benefits. In its current inquiry into ANAO's 2005–06 performance audit of the Roads to Recovery Programme,<sup>12</sup>

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<sup>12</sup> ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006.

the then Chair of the Joint Committee of Public Accounts and Audit indicated that direct provision of funds to local government could be extended to other Commonwealth funding programmes.<sup>13</sup>

21. DOTARS has commented to ANAO that it is the Australian Government's policy to have different funding and operational models for the Roads to Recovery and National Black Spot Programmes. Nevertheless, the merits of different programme delivery methods is a matter that could beneficially be kept under review by the Department; decisions on the approach to be adopted for Programme delivery are ultimately a matter for the Government.

## **Recommendations**

22. ANAO made nine recommendations focused on maximising the road safety benefits from the Programme.

23. The first three recommendations address the governance arrangements for the Programme. The last six recommendations are focused on addressing shortcomings in administration that have resulted in lower priority road safety projects being selected and funded.

24. DOTARS agreed or agreed with qualification to all but one of the recommendations.

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<sup>13</sup> Joint Committee of Public Accounts and Audit, Official Committee Hansard, *Review of Auditor-General's Report Nos 7 to 34 (2005–06)*, Friday 23 June 2006, Canberra, p. PA11.

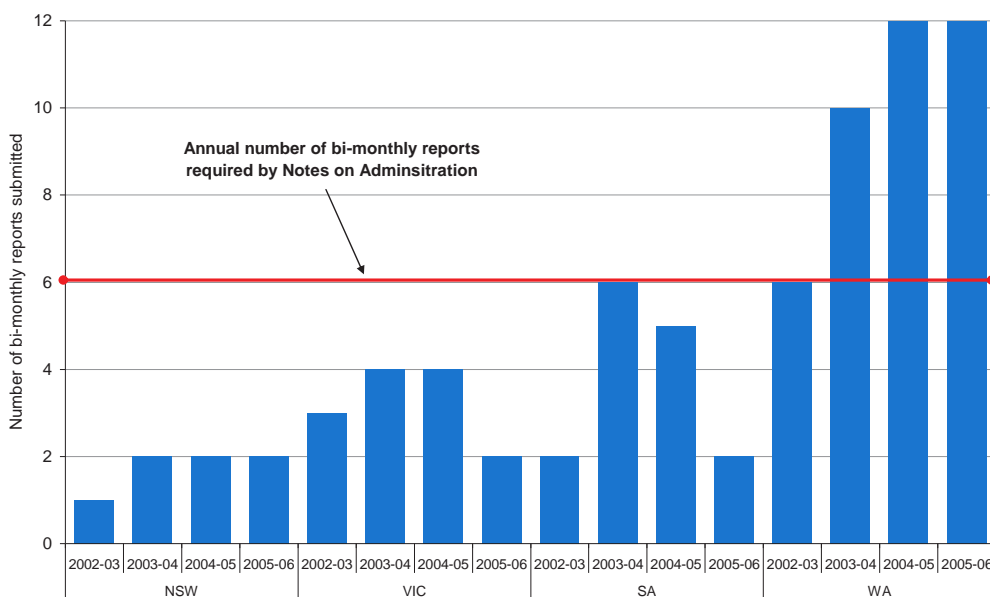
# Key Findings

## Reporting and payment arrangements

25. Under the National Black Spot Programme, payments are made by DOTARS to State road transport authorities. Payments to the States are underpinned by the requirement for a status report every two months that outlines expenditure and the physical and financial status of each project. In this context, 24 reports should have been submitted by each State road transport authority for the period 1 July 2002 to 30 June 2006 (six per year for four years). In practice, however, payments have not been made in accordance with bi-monthly programme funding requirements because (as shown in Figure 3) reporting has been less than the required frequency for three of the four States in the audit sample.

**Figure 3**

### Bi-monthly status reports submitted by State road transport authorities



Source: ANAO analysis.

26. The bi-monthly status reports are required to contain updated information associated with the start and completion dates of the project, the expenditure to date on the road safety works and the physical status of the project. As a result of DOTARS not obtaining regular status reports, it does not

have timely and up to date visibility of the status of road safety projects being delivered with National Black Spot Programme funding.

27. In most instances where a status report has been provided, a payment is made to the applicable State road transport authority. It is particularly evident in those States where bi-monthly status reports have not been submitted, that anticipated expenditure for the next two months has been overstated. As a result, some State road transport authorities (most notably NSW) have, on the basis of these reports, been in possession of considerable amounts of Commonwealth funds for an extended period of time.

28. As a result of the different practices for paying for local government-delivered projects within each State:

- some LGAs have been required to fund the delivery of the works prior to being paid by the State yet the State road transport authority may have been paid the funds in advance by DOTARS;
- restrictions are placed on LGAs by some State road transport authorities for end of financial year expenditure that are inconsistent with the practice employed by DOTARS in relation to National Black Spot Programme payments to the States; and
- DOTARS does not have timely visibility of the extent of road safety works being delivered on the ground, as the information contained in the status reports reflects the amounts on-paid to the LGA, not necessarily the amount spent on road works by the LGA, or the extent of work undertaken.

## **Annual reports to DOTARS**

29. Under the relevant legislation governing the National Black Spot Programme (and reiterated in the Notes on Administration), State road transport authorities are required to provide annual statements of expenditure to DOTARS. The statement is to be accompanied by a certificate from the funding recipient and a report by an 'appropriate auditor'. The legislation also requires that the statement be completed and forwarded to DOTARS for ministerial consideration no later than six months following the end of the financial year for which expenditure is being reported.

30. ANAO's assessment of DOTARS records in regards to the submission of the annual audited financial statements identified that statements were not submitted by the Northern Territory for 2005–06. DOTARS advised ANAO in



May 2007, that no payments have been made to the Northern Territory in 2006–07.

### **Annual reports to Parliament**

31. Also under the relevant legislation governing the National Black Spot Programme over the 2002–03 to 2005–06 audit sample period, the Department was required to provide an annual report to Parliament.

32. In November 2006, ANAO sought clarification from DOTARS regarding the earlier reports under the ALTD Act as the latest report that could be located was for the 2002–03 financial year, which was tabled in Parliament on 2 December 2003. In this regard, DOTARS advised ANAO in November 2006 that the 2003–04 and 2004–05 reports had yet to be printed and tabled. In February 2007, DOTARS advised the Senate Standing Committee on Rural and Regional Affairs and Transport, that the report to be tabled for the 2005–06 financial year was 'in preparation'.

33. As of May 2007, the reports for 2003–04 and 2004–05 still had not been presented to the Parliament. Similar concerns about reporting timeliness were raised in a 2003–04 ANAO performance audit report.<sup>14</sup>

### **State and Territory expenditure on black spot programmes**

34. The intention of the National Black Spot Programme has always been to reduce road trauma rather than to replace State expenditure on black spot treatment. In this respect, a new condition was added to the Programme Notes on Administration for the Black Spot Programme that operated between 1996 and 2002, stating that the Commonwealth expected States to retain their existing expenditure patterns on black spot programs and that, in the final determination of allocations to States, the Minister would take into account whether a State has maintained its own spending on black spot projects.

35. In August 2002, at the commencement of the Programme examined by ANAO, advice was sought from the States on the actual level of expenditure by each State on black spot treatments for 2000–01 and 2001–02. States were advised that this information would in future be collected as part of the Annual Programme Summary Report required by 31 July of each year. However, the only State in the audit sample that submitted an Annual Programme Summary Report in each year up to and including 2004–05 was

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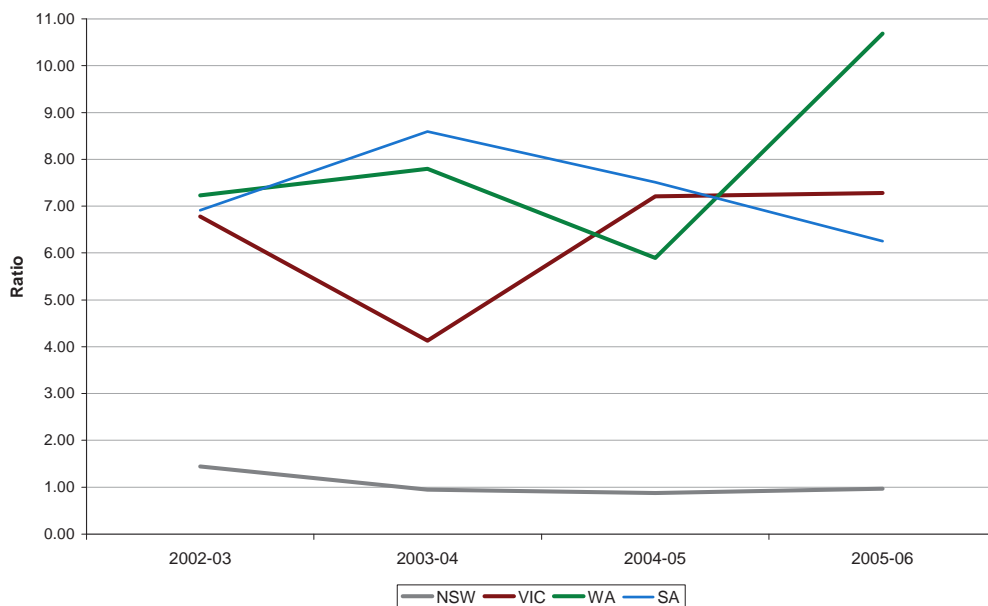
<sup>14</sup> ANAO Audit Report No.24 2003–04, *Agency Management of Special Accounts*, January 2004.

SA. Some States did not submit an Annual Programme Summary Report in any year. In aggregate, of the 24 reports that should have been obtained between 2002–03 and 2004–05, only seven were obtained (29 per cent).

36. As part of the audit, ANAO obtained information from the four States in the audit sample to determine whether its expenditure on road safety works had been maintained. Notwithstanding that these States advised ANAO that their own expenditure on black spot and black length projects had been maintained, based on the data provided, this had not been the case in NSW.<sup>15</sup> The data provided to ANAO by the State road transport authorities also highlighted the different relative commitment of financial resources being made (and maintained), having regard to their level of funding under the National Black Spot Programme. For example, Figure 4 shows that the State with the highest allocation of National Black Spot Funds (NSW), reported to ANAO that it spends less in absolute terms than the other States, particularly SA and WA who receive a significantly smaller allocation from the Programme.

**Figure 4**

**Ratio of State's own expenditure relative to National Black Spot Programme annual allocation**



Source: ANAO analysis.

<sup>15</sup> See page 235 regarding further advice from the RTA on the RTA's commitment to reducing road trauma.

37. The AusLink Notes on Administration prepared and issued by DOTARS in July 2006 have lessened the emphasis placed on States retaining their existing expenditure patterns on black spot programmes. Specifically, whilst the Notes on Administration continue to state that the Australian Government expects these patterns to be retained, there is no longer any statement of consequence should this not occur. DOTARS did not advise its Ministers that it proposed to take this approach to the Programme. By way of comparison, in other elements of AusLink, maintenance of expenditure by States and local government (as appropriate) has been emphasised.

## Project eligibility

38. The Notes on Administration require that project proposals based on crash history must be able to demonstrate a BCR of at least 2.0.<sup>16</sup> In addition, there are minimum crash criteria that must be satisfied, depending upon whether the nomination is for a discrete site or a road length, as follows:

- discrete sites are required to have had a history of at least three casualty<sup>17</sup> crashes over the most recent available five year period; and
- for road lengths, the minimum eligibility criterion is either:
  - an average of 0.2 casualty crashes per kilometre per annum over the length in question measured over the most recent available five year period; or
  - the length must be amongst the top 10 per cent of sites identified in each State that have an identified higher crash rate than other roads.<sup>18</sup>

39. This is summarised in Figure 5.

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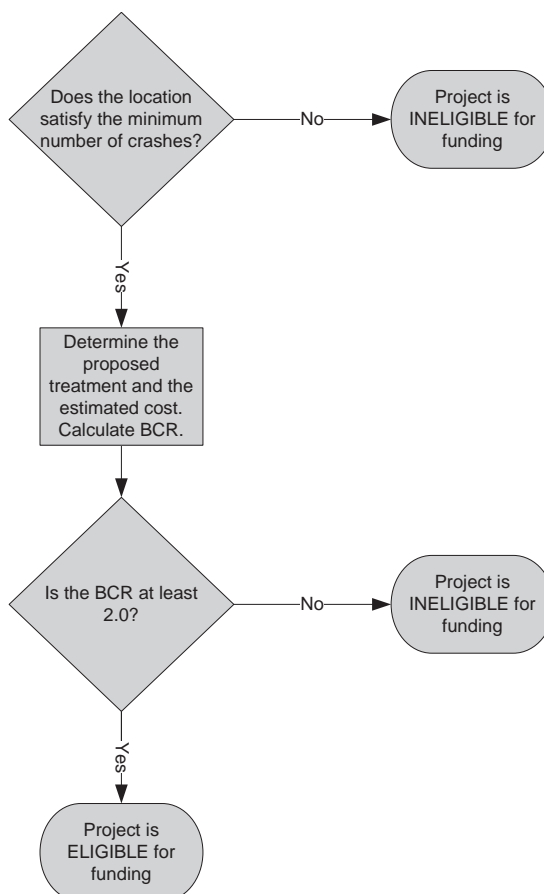
<sup>16</sup> The Notes on Administration do not, however, require the BCR to be calculated on a consistent basis between the States. As a result, the effect of the benchmark in terms of projects that can be assessed as eligible differs between the States. In addition, a project BCR supporting eligibility may not be calculated solely on the basis of target crashes to be addressed by the proposed treatment.

<sup>17</sup> A casualty crash is either a fatal or injury crash.

<sup>18</sup> There were no instances in ANAO's sample where this criteria was relied upon as the basis for project eligibility.

**Figure 5**

**Eligibility flow-chart for proposals based on crash history**



Source: ANAO analysis.

40. Responsibility for administering the Programme eligibility criteria rests with DOTARS (in that project nominations which fail to confirm to the eligibility criteria will not be considered for approval). However, through the Notes on Administration, DOTARS has devolved to State road transport authorities the responsibility for assessing project nominations against the Programme eligibility criteria.

41. There were 25 projects in ANAO’s sample (9 per cent) that were approved for funding notwithstanding they did not satisfy the eligibility criteria for the Programme. Most often this occurred due to insufficient causality crashes at the works location to be considered a black spot. Funding of \$6.94 million (14 per cent of the sample) was approved for these 25 projects.

42. ANAO's analysis of Programme administration arrangements in NSW, Victoria, WA and SA revealed that each of the State road authorities undertake checking of project nominations. However, the level of scrutiny, and the way in which it occurs, varies. In any event, as evidenced by the fact that in each of the States projects that did not satisfy the Programme eligibility criteria were recommended and approved for funding, none of the approaches has been sufficiently effective.

## Economic appraisal of projects

43. Each State participates in a Consultative Panel comprising, as appropriate, representatives of the relevant State road transport authority, local government, and community and road user groups. The purpose of each Panel is to consider and comment upon all nominations for black spot treatment within the State. The Federal Minister considers and endorses the final composition of the Consultative Panels, including appointment of the Chair. The Panel secretariats are provided by the State road transport authorities. In the audit sample the State road transport authorities consolidated and ranked the project nominations. At meetings, each Panel discussed the proposed ranking of projects, and applicable cut-off points for funding, with recommendations transmitted by the State road transport authority through DOTARS to the Federal Minister.

44. As noted above, the significant majority of National Black Spot Programme projects are nominated and approved on the basis of BCRs. A BCR is calculated by dividing the present value of the estimated benefits at the completion of the project by the project costs as shown in Figure 6.

**Figure 6**

### Formula for calculating a BCR

$$\text{Benefit Cost Ratio} = \frac{\text{Present value of estimated benefits}}{\text{Estimated cost of project}}$$

(the annual crash rate x accident reduction factor x average cost of a prevented crash discount factor determined by the life of the treatment and the applied discount rate)

Source: ANAO analysis.

45. As part of setting out the eligibility criteria for projects to be funded by the Programme, the Notes on Administration provide some guidance as to the inputs for determining the annual crash rate<sup>19</sup>, the discount rate and the

<sup>19</sup> The annual crash rate can also be referred to as the annual crash frequency when it relates to length projects.

accident reduction factors for typical treatments to be applied in the assessment of proposals. However, the use of the information included in the Notes on Administration is not mandatory. As a result, there are significant differences in the approaches adopted by the States in the audit sample to identifying and calculating project benefit inputs into the BCR calculation, as illustrated in Table 2.

**Table 2**  
**State determined inputs for BCR calculations**

State	Determination of an average cost of a prevented crash	Variation of accident costs between urban and rural	Types of crashes used to determine the annual crash rate	Number of crashes used to determine the annual crash rate	Basis of accident reduction factors
NSW	Crash type	Yes	Fatalities, casualties and property damage	Only crashes addressed by proposed treatment	Type of crash being addressed by treatment
SA	Crash type	Yes	Fatalities and casualties	Only crashes addressed by proposed treatment	Type of crash being addressed by treatment
VIC	Speed zone of crash location	No	Fatalities and casualties	All crashes in nomination location	Type of treatment being delivered
WA	Crash type	Yes	Fatalities and casualties	Only crashes addressed by proposed treatment	Type of crash being addressed by treatment

Source: ANAO analysis.

46. Although DOTARS does not require a nationally consistent approach, it does expect a consistent approach to be adopted within each State for a given year. In this respect, analysis of the projects in the audit sample found that there are major differences between and within States in important aspects of calculating project benefits. Specifically, BCR calculations have varied markedly in relation to:

- any documented rationale for adjustments made to crash reduction factors, particularly in instances where the adjustments significantly increase the BCR such that a project that would otherwise not have received funding is then successful;

- the estimated life for similar projects;<sup>20</sup>
- the inclusion or non-inclusion of property damage only (PDO) crashes;
- the inclusion or non-inclusion of crashes not being addressed by the proposed treatment; and
- delivery of works that differ significantly from the treatment that was nominated and approved, with the delivered works providing reduced safety benefits (with a BCR lower than that which was relied upon in approving the project nomination). As noted above, one third of projects in the audit sample were not delivered in accordance with the proposed treatment (which formed the basis of the accidents to be addressed and subsequently the road safety benefits to be achieved). However, changes in the location of works, or the nature of the works themselves, are often not advised to DOTARS.

### **Project scope and the proposed treatment**

47. In order to undertake a reliable economic appraisal, the National Black Spot Programme project nomination form requires a proposed treatment and an estimated cost to be identified.

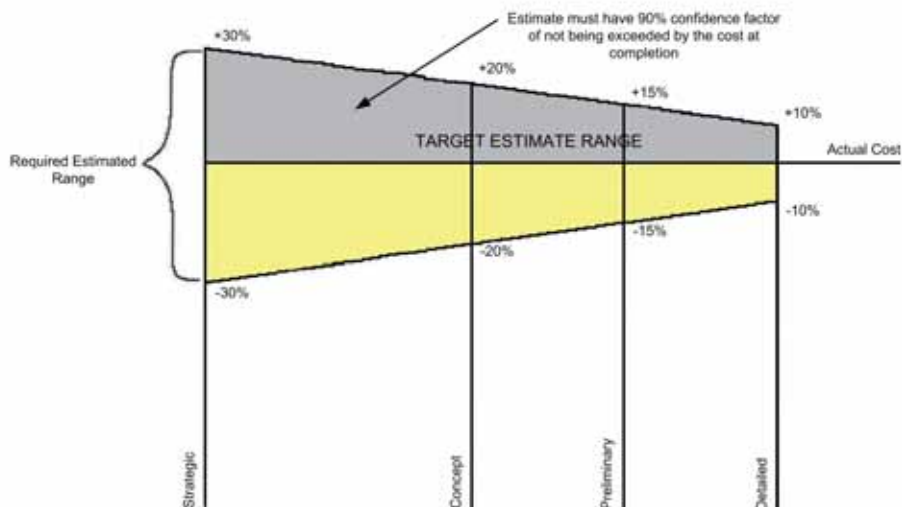
48. Construction projects are complex as well as dynamic, passing through several discrete phases of initiation, documentation and delivery. As the project scope and design detail is refined and the uncertainty reduced, it is reasonable to expect that project cost estimates become more accurate and variation from actual project costs should diminish over time. For example, Figure 7 from the Queensland Department of Main Roads shows how the levels of estimated cost variation reduce over the various project life cycles.

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<sup>20</sup> For example, in NSW, SA and Victoria a roundabout has an estimated life of 20 years, but in WA a roundabout has an estimated life of 10 years.

**Figure 7**

**Level of cost estimation accuracy over project life cycle**



Source: Queensland Department of Main Roads, *Project Cost Estimating Manual* Second Edition, December 2004.

49. In most States, the proposed treatment impacts on the possible benefits as well as the cost of the works. Across the different States, varying levels of detail are required for this estimate. For example, the guidance on BCR calculations disseminated in NSW requires that the cost of constructing the remedial treatment or combination of treatments be calculated to at least a strategic level. Whereas, in SA, the proposed treatment is to contain sufficient details and drawings for accurate cost estimating.

50. Detailed audit examination of 273 projects revealed that the level of design and development of a project prior to the project nomination being submitted has varied considerably. In most instances, once the proposal is approved the design and development processes continue, resulting in a final design and detailed estimate. As a result of detailed design not being commenced until after project nomination and approval, there can be significant time delays between the original nomination and works physically commencing. This leads to risks in terms of:

- project costs departing significantly from those estimated at the time of nomination and relied upon in ranking and approving projects for funding; and
- the nature of the works that are undertaken on-site varying from those that were nominated, ranked in BCR terms and approved for funding.



51. Where the costs have increased significantly, and/or the scope of work delivered is reduced so as to contain costs within the approved funding, there is a resulting risk that the National Black Spot Programme is not selecting and funding the highest priority road safety Black Spot projects.

52. The approved scope of work, in most part, is the proposed treatment included in the project nomination. The extent of the change in project scope after Federal Ministerial approval highlights a significant issue with the project estimate included in the nomination, which is supposed to be determined by the stated treatment. Further, in three of the four States in the sample, the BCR is calculated on the accident profile at the site, the proposed treatment and the estimated cost. While an alternative treatment may still address the accident profile at the same cost, the benefits of the treatment will change.

### Project construction costs

53. Identifying and funding the highest priority road safety works relies on sound estimates of project cost and appropriate control of costs as works are delivered.

54. According to Austroads, to ensure ranking of projects is unaffected, all capital costs should be included in the calculation of the BCR. However, the various States differ in the approach they take. Table 3 shows the approaches used in the four States in the audit sample.

**Table 3**

#### Costs included in the BCR calculation

State	Only contribution from the National Black Spot Programme is included in the BCR calculation	BCR is calculated on the total cost of the project
NSW	✓	
SA		✓
VIC	✓	
WA		✓

Source: ANAO analysis.

55. The Notes on Administration state that contributions from other sources other than the Commonwealth will be considered in making the assessment of which projects will be approved for funding. The Consultative Panel papers, however, have not consistently included a stated contribution where it was included in a project nomination. Also, the subsequent delivery

of the project has often demonstrated little regard to providing the nominated partner contributions. As a result, the relative safety benefits of projects have been prepared on different bases, impairing the comparability of projects within and between States.

56. Identifying all projects with partner contributions, and the amount of these contributions, is particularly important in the ranking of BCR-nominated projects as part of the assessment and approval process. This is because excluding partnership contributions understates the project cost thereby overstating the BCR.

57. There are also equity issues in that some LGAs are better placed than others to make a financial contribution to the cost of National Black Spot Programme projects. Ranking projects on the basis of the cost to the Programme rather than the full estimated project cost means that projects nominated by LGAs that can afford to make a financial contribution rank more highly than higher priority projects nominated by LGAs that cannot afford to make a financial contribution.

58. There were also indicators of 'gaming behaviour' in the cost estimates used for National Black Spot Programme project nominations in the audit sample. This has occurred in States where the BCR is calculated on only the National Black Spot Programme component with evidence that the proponent contributions have been adjusted in order to calculate a higher BCR so as to increase the likelihood of obtaining Commonwealth funding.

## **The use of road safety audits**

59. As mentioned earlier, the Notes on Administration state that up to 20 per cent of Programme funds may be used for the treatment of locations which may not meet the above crash history criteria, but which have been recommended for treatment in an official road safety audit report.<sup>21</sup>

60. Practices vary markedly across the States in terms of the relative proportion of projects that are nominated, recommended by the Consultative Panel and approved by the Federal Minister on the basis of road safety audits. For example, there were no projects between 2002–03 and 2005–06 in NSW (the State with the largest Programme allocation) that were nominated and

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<sup>21</sup> A road safety audit is a formal examination of a future road or traffic project, or an existing road, in which an independent, qualified team reports on crash potential and safety performance. Road safety auditing can be applied to all phases of a road project development or to an unsafe feature of an existing road system.

approved on the basis of a road safety audit. In comparison, in SA, between 20 per cent and 22 per cent of projects in each of the four years were approved<sup>22</sup> on the basis of a road safety audit.

61. The audit identified that there are differences of view, and therefore practice, across the States as to how road safety audits can be used to support a project nomination under the National Black Spot Programme. For example, in Victoria it is satisfactory for the audit to independently identify or confirm safety deficiencies at the site but it is not necessary that the audit recommend a treatment. In Victoria it is considered acceptable for LGAs and the State road transport authority project development engineers to determine an appropriate treatment. Whereas in WA, the practice is that the proposed treatment is required to be supported by the road safety audit (that is, the report contains a finding that a problem exists that the proposal will treat). These differences reflect different State-based approaches, rather than an approach that has been considered (and endorsed) by DOTARS for adoption within the National Black Spot Programme.

62. In addition to the use of road safety audits as the basis of a project nomination, design stage road safety audits can be used to assess the safety of designs for new road and traffic projects, and consciously include safety in the planning of new road networks and new developments. One of the advantages of undertaking a road safety audit as part of the design stage for an approved National Black Spot Programme project is that it manages the risk that the countermeasure constructed to address existing crash patterns may overlook other potential problems, or create new road safety risks.

63. In some States, design stage road safety audits are a requirement. For example, in WA, in most instances a road safety design audit must be conducted where the estimated project cost exceeds \$150 000. If project cost is less than \$150 000 but project treatments are complex, such as modification of road user behaviour at an intersection, a road safety design audit is to be considered. In comparison, the Notes on Administration are silent on whether the road safety audits should be conducted of major projects funded under the National Black Spot Programme.

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<sup>22</sup> In the 2002–03 Programme for SA, the Consultative Panel recommended contributions to road safety audit projects that amounted to \$760 000. As part of the approval process budgets amounting to \$966 500 were approved for these projects. This increased the percentage of road safety audits funded in 2002–03 from 22 per cent to 28 per cent.

64. The Notes on Administration for the Programme that operated under the ALTD Act stated that all costs directly associated with an approved project were eligible for funding. Consistent with this, ANAO's audit sample included instances of National Black Spot Programme funds being used to pay for a road safety audit undertaken during the design stage of a project approved on the basis of the location's crash history. The AusLink Black Spot Projects Notes on Administration issued in July 2006 also state that the Programme will fund the costs associated with an approved project. However, in addition, the guidance on ineligible costs has been expanded to state that costs involved in the preparation of road safety audits are ineligible for funding. The AusLink Notes do not differentiate between the cost of road safety audits used to support a project nomination, and design stage road safety audits for projects approved on the basis of their crash history.

### **Delivering the approved works, in the approved timeframe, at the approved cost**

65. Following High Court judgements in May 2001, the negligence liability of road authorities for injury or damage sustained from use of roads is now determined according to normal principles of negligence at common law. Of relevance to the National Black Spot Programme is that, Austroads has concluded that:

The loss of non-feasance may increase the liability of "funders" who provide Financial Assistance Grants to road authorities despite being remote from the specific road authority's public liability risks.

66. Accordingly, in addition to detracting from intended Programme outcomes, there are potential risks for the Commonwealth where National Black Spot Programme projects are not delivered. Programme management and liability issues also arise where works have not been undertaken at the identified black spot location, or in the manner approved.

### **Projects reported as completed, but road work not done**

67. Road works had been delivered on the ground for almost 99 per cent of the projects inspected by the ANAO. The three instances where a project was reported as complete but had not been delivered on the ground each involved a project in NSW.

## Implementing the approved treatment so as to achieve the expected road safety benefits

68. It is intended that the National Black Spot Programme fund those projects that will deliver the highest benefits. Accordingly, the projects ranked highest in BCR terms in each State are approved for funding. In this respect, where a project's proposed treatment changes, it affects the BCR of the project and therefore the project's ranking. In this context, even a relatively minor change in scope can significantly affect the BCR calculation.

69. In ANAO's sample, 78 projects (31 per cent) were not undertaken in accordance with the Federal Minister's approval. Of the 78 projects:<sup>23</sup>

- in 8 per cent of cases Programme funds were used to undertake both the approved works as well as additional, unapproved works. In these cases the expected benefits should be delivered but the Programme has been overcharged;<sup>24</sup>
- in 72 per cent of cases, the proposed treatment was only partially delivered such that the full anticipated benefits will not be achieved; and
- in 21 per cent of cases, the actual works delivered differed substantially from that which was approved such that the road safety benefits that are likely to be obtained may be significantly different.

70. While the changes may have occurred in order to maximise safety benefits of the project, they remain a change in scope from the project that was nominated and approved. On two occasions, most recently in July 2006, the Federal Minister has reinforced his expectation that the approved works be undertaken otherwise the National Black Spot Programme funding will be withdrawn. This approach reflects the evidence-based nature of the Programme in that the estimated project benefits are integrally linked to the initial treatment proposed, as is the project cost estimate. Accordingly, where works are undertaken in a manner inconsistent with the treatment used to calculate the project cost and the estimated road safety benefits used as the

<sup>23</sup> Where the Federal Minister or his delegate approved a variation to the project, the project has been assessed against the varied approved treatment (there being no instances where the location was varied). Note that figures do not add due to rounding.

<sup>24</sup> This is of particular importance as, in any expected programme year, more projects have been declared as black spots than could be constructed in order to ensure that States are able to expend the limit of their annual allocation. As such, project savings are to be reinvested in other approved road safety projects rather than additional unapproved works (which may or may not have road safety benefits).

basis of the project BCR, the National Black Spot Programme may not be funding the highest priority road safety works. However, in relation to the four States in ANAO's sample, with the exception of some projects delivered in SA and WA, there has not been a practice of a recalculated BCR for a project being considered as part of the approval process as a result of cost estimates being revised and/or the scope of the project being changed.

## **Project timing**

71. In relation to the actual delivery of works, LGAs are often advised by State road transport authority regional offices that, if the project is not completed prior to 30 June of the year of approval that 'all funds unspent at that date revert back to Federal Treasury' or 'it is important to be aware that funds unspent this financial year will not carry over into the next'. Some State road transport authorities have advised LGAs that projects are due for completion in the current financial year and that any projects not substantially complete by 30 June may have funding rescinded.

72. Assessment of the projects in the audit sample revealed that 61 per cent of projects were completed in the year of approval. However, some 39 per cent of projects were finalised in the subsequent year(s). Of the 39 per cent, in 63 per cent of cases the works were being delivered by LGAs, and in 37 per cent of cases works were being delivered by the State road transport authorities. In this respect, ANAO found that:

- the timing of the project assessment, ranking and approval processes were such that, by the time LGAs were formally advised they would be receiving funding under the National Black Spot Programme, their works schedules for the coming year had been settled, thereby making it more difficult for National Black Spot Programme projects to be delivered in the approved timeframe; and
- payments were being made by DOTARS to State road transport authorities notwithstanding that funds were not yet needed for road works. One factor leading to this situation is the infrequent progress reporting from three of the four States in the ANAO sample. In the State that has provided monthly reports, these reports have not reflected actual expenditure on road works by LGAs but, rather, transfer payments to local government in the same manner as State programme arrangements.

73. The pressure to complete projects within a 12 month timeframe can cause particular problems. In this respect, advice to LGAs by State road transport authorities in relation to project variations and expenditure by 30 June has been inconsistent with the Programme's Notes on Administration issued by the Commonwealth. Specifically, while the Notes require an explanation to be provided for projects not started or completed within 12 months of project funding approval, there is no mention of funding unspent within the 12 months (as at 30 June) being withdrawn.

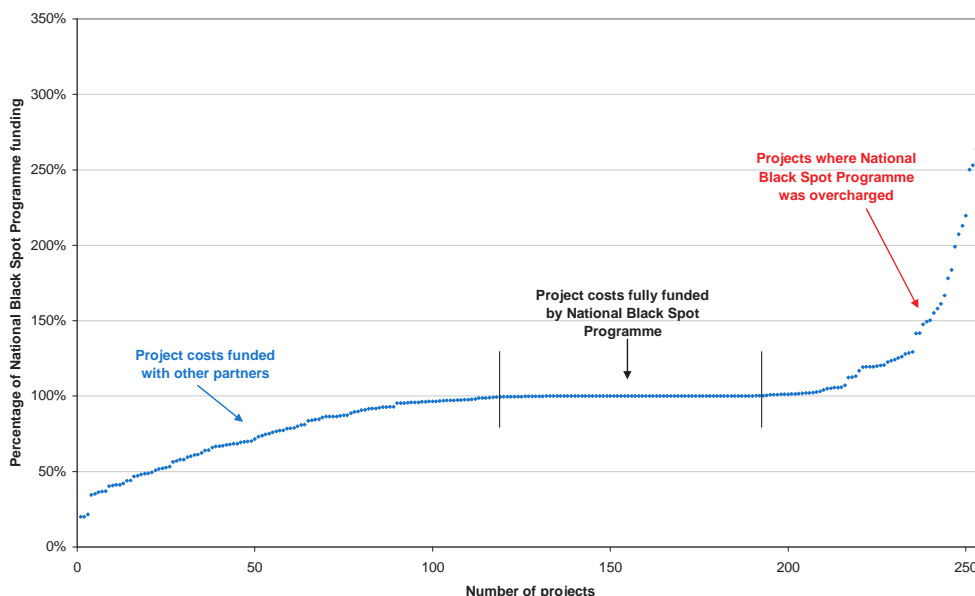
74. While there is an impetus to deliver road safety benefits in a timely manner, the pressure to deliver a project within an unrealistically tight timeframe has a flow on effect. For example, detailed design often results in significant changes to the project. LGAs have advised ANAO that this generally manifests in either a reduced scope of work or a substantial increase in costs and that delays experienced whilst seeking variations are difficult to deal with. As a result, visibility on the type and extent of road safety works is diminished.

### **Cost accountability**

75. Of the 255 projects in the audit sample where the final cost is known, the National Black Spot Programme fully funded 127 projects (50 per cent). Of the 128 instances (50 per cent) where the Programme did not fully fund the project, on average the National Black Spot Programme funded 74 per cent of project costs. Figure 8 shows the percentage of National Black Spot Programme funding per project in the audit sample.

**Figure 8**

**Percentage of National Black Spot Programme funding per project**



Source: ANAO analysis.

76. In March 2007, DOTARS advised ANAO that following approval, the Department's main priority is to capture the final cost to the Australian Government of each project. However, analysis of those audited projects where the final cost was known revealed that, for 164 projects (64 per cent)<sup>25</sup>, the actual cost of delivering the work differed by more than 15 per cent or \$15 000, whichever was the lesser,<sup>26</sup> compared to the originally approved cost on which the BCR<sup>27</sup> was calculated. Of these:

- 76 projects (46 per cent) were granted a cost variation by DOTARS. However, even in these instances, DOTARS remains unaware of the final costs for a significant proportion of projects. This is because the variation did not reflect the full extent by which costs had changed.

<sup>25</sup> This figure is based on the 255 projects. The remaining projects in the sample are excluded from this analysis as the final cost of the work is unknown.

<sup>26</sup> The ALTD Act Notes on Administration state that a formal variation should be sought where proposals are subject to a significant change. The Notes quantify a significant change as including a difference in the cost of an individual project of 15 per cent or \$15 000, whichever is the lesser.

<sup>27</sup> Or, for road safety audit projects, the Risk Cost Ratio or a Risk Reduction Cost Ratio. A Risk Cost Ratio is calculated through the use of the Austroads *Road Safety Risk Manager* software developed by the ARRB Transport Research Group. In WA and SA, a Risk Cost Ratio forms the basis of the prioritisation of Road Safety Audit project nominations.



Specifically, for 39 per cent of the 76 projects where a variation had been sought and approved, the actual cost differed by more than 15 per cent or \$15 000 from the varied approved cost.

- 88 projects (54 per cent) were not granted a cost variation by DOTARS simply because the administrative arrangements for the Programme do not ensure that the Department is informed of the full final costs of each project.

### *Over-charging*

77. As illustrated by Figure 8, there were 85 projects (33 per cent) in ANAO's sample where more than 100 per cent of the actual cost of the road safety work was claimed and paid by the National Black Spot Programme. That is, for 85 projects, some of the funds paid by DOTARS were not used on the approved road safety works. The majority of these instances related to LGAs claiming the approved project budget, rather than the actual cost of road works they were delivering. Also, as mentioned earlier, in Victoria, the State road transport authority has adopted a practice of charging an administrative charge of 3 per cent to each 2005–06 project,<sup>28</sup> notwithstanding that the Notes on Administration issued by DOTARS explicitly state that administration costs are ineligible.

78. In addition, in two States (WA and SA), ANAO found that the respective State road transport authorities had adopted a practice of identifying lengths of road that satisfied the Programme eligibility criteria and then obtaining funding for work on these sections as part of a broader programme of road works. In WA this related to shoulder sealing and audible edgelines projects, in SA it related to guardfencing installation. In both States, the National Black Spot Programme was charged a disproportionate share of the costs of delivering these works across the road network, due to deficiencies in the cost attribution approaches that had been adopted. In WA, the over-charging in the audit sample amounted to \$1 008 994, with Main Roads WA acknowledging an overcharging of \$338 076 but proposing to offset this against increased costs on other projects.<sup>29</sup> In SA, the over-charging on projects

<sup>28</sup> VicRoads advised ANAO that this charge rose to 4 per cent starting in 2006–07.

<sup>29</sup> The difference of \$670 918 relates to work originally nominated but not included in the Consultative Panel papers or the approval by the Federal Minister.

in the audit sample amounted to \$191 823 (some 20 per cent of the budget).<sup>30</sup> In both instances the approved budgeted amount of funds was claimed by each State, notwithstanding the actual cost of the works as approved by the Federal Minister was less than the amount claimed.

79. Cost attribution for a state-delivered National Black Spot Programme project delivered as part of a larger project was also identified in NSW. In this instance, economies of scale were obtained by combining two projects on the same stretch of road. While the road work costs were split between the two projects, the full design and project management cost was allocated to the National Black Spot Programme project. Had such costs been shared proportionally, the costs charged to the National Black Spot Programme would have been \$113 188 (16 per cent) lower. In this respect, the NSW Roads and Traffic Authority has acknowledged that charges may be unevenly accounted for between the State and Federal projects.

## Agency response to the audit

80. DOTARS provided the following comment on the report:

The audit found no evidence that Programme funds were not spent as intended by the Australian Government on high priority road safety Black Spot projects. The audit makes no finding that the administration of the Programme by the Department of Transport and Regional Services (the Department) is not efficient and effective nor does the audit suggest that positive road safety outcomes are not being delivered.

The audit raises some issues where consideration of future Programme administration would be warranted. The Department will work with states and territories to achieve greater consistency of understanding and interpretation of the Programme's operational requirements.

The Department agrees, or agrees with qualification, to all but one of the recommendations.

Recommendation No.1, which proposes that the Department examine the scope for direct payment of funds to Programme proponents, is not consistent with Australian Government policy for the AusLink Black Spot Programme and the AusLink legislation which states "the approval instrument for a Black

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<sup>30</sup> The report includes, at paragraphs 3.18 and 3.19 including Case Study 3.3, paragraph 4.35 and paragraph 6.32, information relating to the circumstances of this overcharging. Paragraphs 3.19, 4.35 and 6.32 include detailed comments from the DTEI on this issue, including earlier advice from the DTEI of changes it has made to its procedures to prevent recurrences.

Spot Project must identify the eligible funding recipient, being a state or authority of a state, to which funding may be paid”.

The report does not provide evidence that there might be sufficient benefits for the Australian Government were it to revise its policy, amend legislation and allocate the increased resources necessary to implement Recommendation No.1 nor does it provided evidence that implementing the recommendation would enhance the efficiency or effectiveness of the Programme.<sup>31</sup>

81. Comments from State road transport authorities in relation to this report are contained at Appendix 3.

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<sup>31</sup> ANAO comment in relation to the Department’s response to Recommendation No.1 of the report may be found at paragraphs 2.57 to 2.59.

# Recommendations

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**Recommendation No.1**  
**Paragraph 2.55**

ANAO *recommends* that the Department of Transport and Regional Services seek to better link Programme payments to the delivery of road works by examining the merits of directly funding the proponent (State road transport authorities and local government authorities) for road safety projects they are to deliver, with the proponent accounting directly to the Commonwealth for the delivery of these works, and the associated costs.

**DOTARS Response:** *Disagree.*

**Recommendation No.2**  
**Paragraph 2.65**

ANAO *recommends* that the Department of Transport and Regional Services take steps to promote greater consistency in whether administration costs are charged to the National Black Spot Programme by State road transport authorities and/or local government authorities.

**DOTARS Response:** *Agree.*

**Recommendation No.3**  
**Paragraph 2.102**

ANAO *recommends* that the Department of Transport and Regional Services seek to maximise the reduction in road trauma achieved through the National Black Spot Programme by assessing the benefits and risks of the change made to the Notes on Administration that reduced the emphasis given to States maintaining their own black spot expenditure.

**DOTARS Response:** *Agree with qualification.*

**Recommendation  
No.4****Paragraph 3.36**

ANAO *recommends* that the Department of Transport and Regional Services re-examine the role played by State road transport authorities in assessing project eligibility, with a view to the Commonwealth taking a more active role in assuring itself that National Black Spot Programme eligibility criteria are being applied to all project nominations.

**DOTARS Response:** *Agree.*

**Recommendation  
No.5****Paragraph 3.56**

ANAO *recommends* that the Department of Transport and Regional Services seek to maximise safety benefits from projects funded under the AusLink National Black Spot Programme by:

- (a) amending the Notes on Administration to clarify, for nominations based on road safety audits, whether the audit must recommend the treatment that is proposed for funding under the National Black Spot Programme;
- (b) assessing the merits of requiring a design stage road safety audit to be conducted for major construction projects approved by the Federal Minister; and
- (c) providing clearer guidance in the Notes on Administration about whether and in what circumstances the costs of road safety audits may be charged to the National Black Spot Programme.

**DOTARS Response:** *Agree.*

**Recommendation  
No.6**

**Paragraph 4.74**

ANAO *recommends* that the Department of Transport and Regional Services:

- (a) improve administrative procedures so that projects are selected based on:
- a rigorous estimate of the likely total estimated capital cost of the project;
  - the scope and nature of works likely to be delivered; and
  - the actual location at which works will be delivered; and
- (b) better inform its management and evaluation of the National Black Spot Programme by implementing systems and procedures that capture the total final cost for all approved projects, including any costs not passed on to the Commonwealth.

**DOTARS Response:** *Agree with qualification to part (a) and agree to part (b).*

**Recommendation  
No.7****Paragraph 5.77**

ANAO *recommends* that the Department of Transport and Regional Services seek to maximise road safety benefits from National Black Spot Programme funding by:

- (a) promoting the adoption of Austroads guidance by State road transport authorities and local government authorities when undertaking economic evaluations of proposed countermeasures, particularly in relation to:
  - the crash data that is used to develop proposed treatments and quantify the resulting benefits;
  - estimated accident reduction factors for the targeted crashes; and
  - the timeframe over which treatment benefits will be received; and
- (b) implementing a risk-based programme of audits to obtain assurance that the Australian Government's project approval processes may reasonably rely on the road safety benefit calculations undertaken by State road transport authorities and local government authorities that are used to inform ranking of projects.

**DOTARS Response:** *Agree with qualification.*

**Recommendation No.8**

**Paragraph 6.34**

ANAO *recommends* that the Department of Transport and Regional Services maximise the value for money from the National Black Spot Programme by:

- (a) addressing the funding eligibility of project nominations that involve the use of crash statistics to obtain Commonwealth funding for works being undertaken as part of a larger project and/or programme or works; and
- (b) explicitly addressing in the Notes on Administration the approach to be taken to apportioning costs where National Black Spot Programme funded works are undertaken as part of a larger project.

**DOTARS Response:** *Agree with qualification to part (a) and agree with part (b).*

**Recommendation No.9**

**Paragraph 6.60**

ANAO *recommends* that, to better manage the risk of National Black Spot Programme funded projects not being undertaken in the approved manner, at the approved location and in the approved timeframe, the Department of Transport and Regional Services implement a risk-based program of road work site inspections that, for efficiency reasons, is coordinated with site inspections of Roads to Recovery funded projects.

**DOTARS Response:** *Agree with qualification.*



# **Audit Findings and Conclusions**



# 1. Introduction

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*This chapter provides background information on the National Black Spot Programme including Programme allocations and evaluations as well as the adoption of an evidence-based approach to identifying road safety black spot locations, developing proposed treatments and the cost of treatment, and ranking projects so that they can be prioritised for funding. It also describes the audit objectives and approach.*

## Background

1.1 The National Black Spot Programme<sup>32</sup> is an Australian Government funding programme that targets sites or sections of the road network that experience a high incidence of vehicle crashes and fatalities. It is a key element of the Australian Government's aim to reduce the national road fatality rate by 40 per cent over the decade to 2010.<sup>33</sup>

1.2 Australia's first road safety Black Spot Programme<sup>34</sup> was set up in 1990. The Black Spot Programme was reintroduced in 1996 and has been extended on a number of occasions. The second extension of the Programme agreed to during the 2002–03 Budget process 'created' the National Black Spot Programme. This Programme was to operate from 1 July 2002 until 30 June 2006, with the Programme to be reviewed and a report provided to the Government in the context of the 2005–06 Budget. Funding of \$45 million per year was made available, of which \$44.5 million was to fund black spot projects and \$500 000 was for the administration, promotion and evaluation of the Programme.

1.3 The June 2004 White Paper, *AusLink: Building Our National Transport Future*, is the Government's policy statement on land transport.<sup>35</sup> The components of AusLink funding included \$90 million to support the White

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<sup>32</sup> The Notes on Administration applicable for the period of audit (replaced in July 2006) referred to the Programme as the 'National Black Spot Programme'. For consistency, the term National Black Spot Programme has been used throughout the audit report.

<sup>33</sup> DOTARS, *Annual Report 2005–06*, p. 73.

<sup>34</sup> The programme name was changed to the National Black Spot Programme with effect 1 July 2002.

<sup>35</sup> The Hon. John Anderson MP, Deputy Prime Minister and Minister for Transport and Regional Services and Senator the Hon Ian Campbell, Minister for Local Government, Territories and Roads, *AusLink White Paper*, June 2004, p.ii.

Paper announcement that the Government would continue the National Black Spot Programme for a further two years until the end of 2005–06.<sup>36</sup>

1.4 On 24 September 2004, as part of the Government’s election policy statement *Building Our National Transport Future*, the Government announced that, if it were re-elected, it would spend an additional \$90 million to extend the Black Spot Programme for a further two years, from 2006–07 to 2007–08. Funding for this extension was provided in the 2005–06 Budget.

1.5 In April 2007, the Government announced that funding for the Programme would continue to 2013–14 and that, as of 2009–10, annual funding would increase from \$45 million to \$60 million.<sup>37</sup>

1.6 Under the various Administrative Arrangements Orders, the matters dealt with by the Department of Transport and Regional Services (DOTARS) have included transport safety and land transport.<sup>38</sup> The National Black Spot Programme is an administered Programme within Outcome 1 (currently “Fostering an efficient, sustainable, competitive, safe and secure transport system”) of DOTARS. The Programme was administered under the *Australian Land Transport Development Act 1998* (ALTD Act) until 30 June 2005. The Programme is now administered under Part 7 of the *AusLink (National Land Transport) Act 2005* (AusLink Act).<sup>39</sup>

1.7 In 1996 when the Black Spot Programme was reintroduced, the Notes on Administration were updated and endorsed by the then Parliamentary Secretary to the Minister for Transport and Regional Services. The Notes on Administration are a guide to the administration of the Programme and are to

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<sup>36</sup> The Hon. John Anderson MP, Deputy Prime Minister and Minister for Transport and Regional Services and Senator the Hon Ian Campbell, Minister for Local Government, Territories and Roads, *AusLink White Paper*, June 2004, p. xi and 34.

<sup>37</sup> The Hon. Mark Vaile MP, Deputy Prime Minister, Minister for Transport and Regional Services and Leader of the Nationals, and The Hon. Jim Lloyd, Minister for Local Government, Territories and Roads, Joint Media Statement (057MV/2007 Joint), *Fixing the black spots on Australia’s roads*, 4 April 2007.

<sup>38</sup> The legislation administered by the Minister of State administering DOTARS has included the *Australian Land Transport Development Act 1988* (ALTD Act), under which the National Black Spot Programme was administered up to and including 2005–06. The Administrative Arrangements Order made on 21 July 2005 added the *AusLink (National Land Transport) Act 2005* and the *AusLink (National Land Transport—Consequential and Transitional Provisions) Act 2005* to the legislation administered by DOTARS’ Minister.

<sup>39</sup> While the legislation and subsequent governing arrangements changed with the introduction of AusLink, the delivery model (including the identification, nomination and assessment of possible projects; and the actual delivery of approved road safety works) did not change. The most substantive change related to black spot funding being approved by project, rather than on a State programme-basis. This led to changes in reporting requirements and the reduced level of flexibility for States to move funding between approved projects.

be read in conjunction with the relevant legislation. In August 2002 the Parliamentary Secretary sought formal agreement to participate in the National Black Spot Programme, including acceptance of the provisions of the revised Notes of Administration, from each State and Territory. By mid-November 2002 all States and Territories had accepted these conditions and agreed to participate in the Programme.

1.8 DOTARS administration is undertaken by a manager (who is also responsible for the Roads to Recovery Programme<sup>40</sup>) and two staff in the Canberra office of DOTARS. In this context, administration and delivery of the Programme depends to a significant extent on State road transport authorities and Local Government Authorities (LGAs), as illustrated by Table 1.1.

**Table 1.1**

**Administration and delivery of the National Black Spot Programme**

Element of the process	Responsibility
Nomination	Principally local government authorities (for local roads) and State road transport authorities (for State roads)
Assessment of project eligibility	State road transport authorities
Ranking of eligible projects	State road transport authorities and State Consultative Panels
Project approval and variation	Federal Minister and/or DOTARS (under delegation)
Payment for road works	State road transport authorities
Delivery of road works	Local government authorities and State road transport authorities
Collating and reporting physical project status	State road transport authorities

Source: ANAO analysis.

## Programme allocations

1.9 In March 2007, DOTARS commented to ANAO that:

States have a set allocation under the AusLink Black Spot Programme and projects in one state do not compete for funding against projects from a different state. States develop projects to the point of nomination consistent with the procedures internal to that state for doing so.

<sup>40</sup> See ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006.

1.10 In this context, in August 2002, at the commencement of the current National Black Spot Programme, the then Parliamentary Secretary to the then Minister for Transport and Regional Services advised each State and Territory roads minister of the allocation for their State/Territory should it continue to participate in the Programme. The correspondence advised that the proportion used to determine annual funding available to each state and territory had been revised for the extended programme, and was now based on 1994 to 1996 population and casualty data. The annual allocations determined at the commencement of the National Black Spot Programme in 2002 are shown in Table 1.2.

**Table 1.2**

**Annual allocations for the National Black Spot Programme**

State	Annual allocation (\$)
New South Wales	14 287 000
Victoria	10 428 000
Queensland	8 923 000
Western Australia	4 982 000
South Australia	3 490 000
Tasmania	1 116 000
Northern Territory	672 000
Australian Capital Territory	602 000
<b>Total</b>	<b>44 500 000</b>

Source: DOTARS records.

1.11 The extension of the Programme until 2007–08 announced in September 2004 once again used 1994 to 1996 population and casualty data (discussed in paragraph 1.10) to decide allocations to the States and Territories for the additional two years. Accordingly, whilst allocations are intended to be determined on the basis of population and casualty data, the data that underpins the current allocations is no longer current.<sup>41</sup> In this respect, DOTARS advised ANAO in April 2007 that:

*We have not updated the information in the spreadsheet [used to calculate the allocations in 2002]. It is our intention to do so and to recalculate state and*

<sup>41</sup> In April 2007, DOTARS advised ANAO that, as the Australian Transport Safety Bureau ceased collecting hospitalisation data in 1997, the previous funding ratios were continued for the Programme extensions.

territory allocations in the context of any decision by the Government to extend the programme beyond 30 June 2008.

1.12 Accordingly, when the Government announced a further extension of the Programme in April 2007, the Ministers stated that<sup>42</sup>:

The Coalition Government will spend \$345 million over six years to extend the Black Spot programme from 2008–09 to 2013–14. The extension is expected to fund about 2 300 extra road safety projects, and is divided as follows:

- \$45 million to extend the existing Black Spot Programme from June 2008 to June 2009. The extension will continue the existing state and territory funding shares.
- A 33 per cent increase in the programme's funding to \$60 million a year from 2009–10 to 2013–14, as part of the second stage of the Government's national land transport plan, AusLink 2.
- The state/territory funding shares will be recalculated at the start of the new programme in 2009–10 to use the most up-to-date population and road accident figures available. All the states and territories will be better off because of the 33 per cent increase in the overall funding for the programme.

## An evidence-based approach to road safety programmes

1.13 The Programme aims to provide financial assistance to improve the physical condition or management of locations noted for a high incidence of crashes involving death and injury, often termed 'black spots'. It also aims to encourage implementation of safety-related traffic management techniques and other road safety measures that have proven road safety value. In this respect:<sup>43</sup>

- Programme effectiveness is to be measured by the extent to which road crashes are reduced at treated sites, along with trauma and associated costs to the community; and
- Programme quality is to be measured by whether priority is given to proposals for cost-effective treatment of sites with a proven history of crashes.

<sup>42</sup> The Hon, Mark Vaile MP, Deputy Prime Minister, Minister for Transport and Regional Services and Leader of the Nationals, and The Hon. Jim Lloyd, Minister for Local Government, Territories and Roads, Joint Media Statement (057MV/2007 Joint), *Fixing the black spots on Australia's roads*, 4 April 2007.

<sup>43</sup> Transport and Regional Services Portfolio, *Portfolio Budget Statements 2006–07*, Budget Related Paper No.1.15, p. 38.

**1.14** As mentioned, the delivery of the Programme is governed by specific legislation (currently Part 7 of the AusLink Act). Notes on Administration issued by DOTARS provide guidance on the operation of the legislative arrangements. In particular, the Notes on Administration outline how the Programme will adopt an evidence-based approach to nominating, assessing and approving road works at road safety black spot locations. For the National Black Spot Programme, two forms of evidence are accepted as the basis for project nominations:

- funding is mainly available for the treatment of black spot sites or road lengths with a proven history of crashes (sometimes referred to as 'reactive' projects); and
- up to 20 per cent of Programme funds are available for the treatment of locations that may not meet the crash history criteria but which have been recommended for treatment on the basis of an official road safety audit report (sometimes referred to as 'proactive' projects).

### **Austrroads guidance**

**1.15** Using evidence to identify road safety black spot locations, develop proposed treatments and the cost of treatment, and rank projects so that they can be prioritised for funding is consistent with better practice guidance from Austrroads. Austrroads membership comprises the six state and two territory road transport and traffic authorities and the Commonwealth Department of Transport and Regional Services in Australia, the Australian Local Government Association and Transit New Zealand.<sup>44</sup> Its purpose is to contribute to the achievement of improved Australian and New Zealand transport related outcomes by:

- undertaking nationally strategic research on behalf of Australasian road agencies and communicating outcomes;
- promoting improved practice by Australasian road agencies;
- facilitating collaboration between road agencies to avoid duplication;
- promoting harmonisation, consistency and uniformity in road and related operations; and
- providing expert advice to the Australian Transport Council and the Standing Committee on Transport.

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<sup>44</sup> It is governed by a council consisting of the chief executive officer (or an alternative senior executive officer) of each of its 11 member organisations.



**1.16** To support its member authorities, Austroads has published various technical guidelines, manuals and research reports. As road safety is a major strategic area for Austroads,<sup>45</sup> it has developed a series of guidance in relation to the administration of effective, evidence-based road safety treatment programs. In April 2007, DOTARS advised ANAO that:

Austroads is an incorporated association focused on knowledge sharing between jurisdictions. It does not state Government policy and is not a regulatory authority. Consistent with this, Austroads guides (in particular those quoted in the [ANAO] Issues Papers) generally carry a disclaimer “this guide is produced by Austroads as a general guide. Its application is discretionary. Road authorities may vary their practice according to local circumstances and policies. Austroads believes this publication to be correct at the time of printing and does not accept responsibility for any consequences arising from the use of information herein. Readers should rely on their own skill and judgement to apply information to particular issues.”

**1.17** Nevertheless, in relation to guidance on crash location identification and treatment, the Notes on Administration refer practitioners to Austroads guidelines. Further, it has been agreed by the Austroads Council<sup>46</sup> that the Austroads guidelines should be adopted widely as the primary national reference by member organisations in each relevant area of practice.<sup>47</sup> Accordingly, in examining the administration of the National Black Spot Programme, ANAO has drawn upon Austroads as a suitable reference point for important elements of the audit analysis. Particular reference has been made to:

- the 1997 publication of *A Minimum Common Dataset for the Reporting of Crashes on Australian Roads*;
- 2002 guidelines titled *Road Safety Audit*<sup>48</sup> that aim to provide practitioners and decision-makers with ways of formally addressing road safety issues. The Notes on Administration specifically identify this document as a suitable standard for completion of a road safety audit;

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<sup>45</sup> Austroads, *Guide to Road Safety*, Part 1: Road Safety Overview, 2006, p. 17.

<sup>46</sup> Austroads is governed by a council consisting of the chief executive officer (or an alternative senior executive officer) of each of its 11 member organisations.

<sup>47</sup> Austroads, *Guide to Road Design – Part 1: Introduction to Road Design*, 2006, p. 1.

<sup>48</sup> Austroads, *Road Safety Audit*, Second Edition, 2002. This guideline was first published in 1994 and was fully revised and re-issued in 2002.

- 2004 guidelines for investigating and treating crash locations on the road network titled *Treatment of Crash Locations*. This document is aimed at providing practical, hands-on advice on how to investigate and treat crash locations. It forms a companion document for Austroads' *Road Safety Audit*;
- Austroads 2005 Guide to Project Evaluation, particularly Part 1 *Introduction to Project Evaluation*, Part 2 *Project Evaluation Methodology* and Part 7 *Post-completion Evaluation*; and
- the 2006 Guide to Road Safety particularly Part 1 *Road Safety Overview*, Part 2 *Road Safety Strategy and Evaluation* and Part 7 *Road Network Crash Risk Assessment and Management*.

1.18 In addition to the guidance provided by Austroads publications, in December 2006, the Australian Transport Council published revised *National Guidelines for Transport System Management in Australia* (comprising five volumes). In this regard, DOTARS advised ANAO in May 2007 that:

The National Guidelines for Transport System Management in Australia have been implemented at the direction of COAG [*Council of Australian Governments*]. These principles based guidelines are the appropriate source of best practice relating to the general transport system management.

1.19 The Guidelines are endorsed by all Australian jurisdictions and were developed collaboratively over several years by representatives from all levels of government in Australia through the Standing Committee on Transport (SCOT), in consultation with SCOT modal groups including Austroads.

1.20 It should be noted, however, that Volume 3 of the guidelines, *Appraisal of Initiatives*, defines small-scale initiatives as those which have an upper limit of investment cost of \$10 million. In relation to projects funded under the National Black Spot Programme, the maximum programme contribution is \$750 000.

## Programme evaluation

1.21 The then Bureau of Transport Economics (now the Bureau of Transport and Regional Economics—BTRE) within DOTARS evaluated the National Black Spot Programme in 2001. The purpose of the evaluation was to provide information to help the Government assess the merits of continuing to fund black spot treatment.<sup>49</sup> In its final report, the BTRE estimated that the first three

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<sup>49</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. xiii.

years of the Programme had generated a net present value of \$1.3 billion and a BCR of 14.1.<sup>50</sup> The BTRE concluded that its:

analysis supports continuing the Program, but suggests modifications to increase its effectiveness. The fall in benefit-cost ratios over the three years examined was not statistically significant. As a matter of good public policy, it would be advisable to evaluate the entire current six-year Program after its completion.<sup>51</sup>

**1.22** In respect to improving Programme effectiveness, the BTRE made a number of suggestions, including:

- that analysis of black spot expenditure by jurisdiction showed that the Notes on Administration may need to be updated to remove ambiguities about maintaining expenditure by State and Territory governments;<sup>52</sup>
- that road traffic authorities apply treatments with statistically significant beneficial effects where appropriate; and monitor the effects of unproven treatments more closely;<sup>53</sup>
- in capital cities, the use of improved lighting, pedestrian signals and pedestrian refuges, sealing road shoulders and edge lines needs to be re-examined;<sup>54</sup> and
- similarly, in regional areas, the use of non-skid surfaces, pedestrian overpasses, sealing road shoulders, indented right hand turn islands and signs need to be re-examined.<sup>55</sup>

**1.23** The finding that the Programme had returned benefits in its first three years of approximately \$14 for every dollar spent by the Australian Government has been relied upon by DOTARS in its performance reporting to the Parliament in each year between 2001–02 and 2005–06. However, in

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<sup>50</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 121.

<sup>51</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. xvii.

<sup>52</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001 p. 9.

<sup>53</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001 p. 119.

<sup>54</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 120.

<sup>55</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 120.

relation to the suggestions made by the BTRE to improve Programme effectiveness, DOTARS commented as follows to ANAO in March 2007:

Evaluators such as the BTRE and groups such as Austroads may express views and it is a matter for Governments to make policy decisions that may or may not be informed by such views.

1.24 As mentioned, the Government decided in the context of the 2002–03 Budget to extend the Programme for a further four years up to 2005–06, with the Programme to be reviewed and a report provided to the Government in the context of the 2005–06 Budget. This evaluation was to also be conducted by the BTRE. As also mentioned, the Programme was later extended to 2007–08, with the BTRE beginning its evaluation during 2005–06. As of May 2007, the evaluation was being finalised.

1.25 Both the 2001 and the current evaluation have adopted a before and after treatment approach. This involves comparing the number and severity of crashes after the black spots were treated with the number and severity of crashes that would have been expected with no treatment. The expected crash history is then estimated using the actual crash history of the black spots before treatment and data on other variables expected to affect crashes at black spots after treatment. In this respect, such evaluations rely upon data provided by DOTARS and/or State road transport authorities in relation to:

- crash data at the relevant site prior to treatment and following treatment;
- advice that the approved road safety treatment works had been undertaken at the approved black spot site;
- the timing of the work undertaken on site; and
- the cost of undertaking works.

1.26 Such variables are also key factors in the administrative processes through which National Black Spot Programme projects are nominated, assessed, ranked and approved for funding. In particular, Benefit Cost Ratios (BCRs) (see Figure 1.1) are used to assess the economic benefits of most projects with the key inputs to BCR calculations being:

- the annual crash rate at the proposed treatment site;
- estimates of the likely effectiveness of the proposed treatment in reducing particular accidents-types (referred to as the accident reduction factor);

- the present value of estimated savings in road crash costs which are expected to result from the proposed treatment works at the identified location over the life of the project as a consequence of reducing the number of crashes and/or the severity of crashes; and
- estimated project costs comprising the cost of construction and the present value of any maintenance costs.

**Figure 1.1**

### Formula for calculating a BCR

$$\text{Benefit Cost Ratio} = \frac{\text{Present value of estimated benefits}}{\text{Estimated cost of project}}$$

(the annual crash rate x accident reduction factor x average cost of a prevented crash x discount factor determined by the life of the treatment and the applied discount rate)

Source: ANAO analysis.

1.27 Whereas the BTRE necessarily relies upon advice received in relation to such data, this performance audit has incorporated an analysis of the reliability of the data that underpins BCR calculations. The later chapters of this report outline audit findings in this respect.

### Audit approach

1.28 This audit is being undertaken as part of a series of audits examining Commonwealth funding of land transport infrastructure (particularly roads). The first audit in this series examined the Roads to Recovery Programme. The report of this audit was tabled in the Commonwealth Parliament on 1 March 2006.

1.29 This performance audit of the National Black Spot Programme was conducted under section 15 of the *Auditor-General Act 1997*. Its objective was to assess the administration of the National Black Spot Programme.

1.30 The audit of the National Black Spot Programme was undertaken in a manner similar to the audit of the Roads to Recovery Programme. Specifically, the audit approach involved:

- examination of DOTARS records and discussions with officers in DOTARS and four of the State road transport authorities responsible for administering the Programme;
- analysis of project monitoring, reporting and payment arrangements;

- selecting a sample of 45 LGA areas across four States so that ANAO could examine projects delivered with Commonwealth funding.

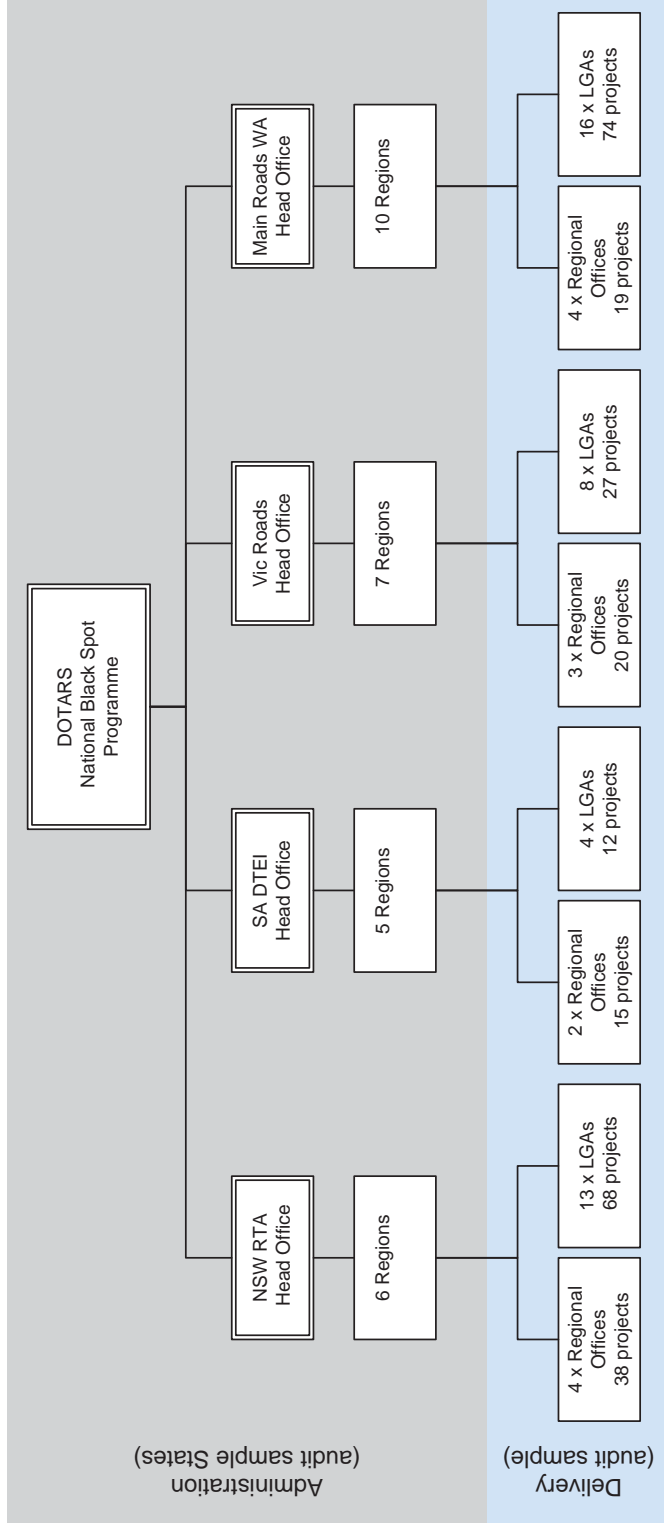
1.31 States selected for inclusion in the audit sample were NSW, Victoria, WA and SA. For LGA areas in the sample, all projects approved under the National Black Spot Programme between 2002–03 and 2005–06 have been examined. In total, 273 projects were examined<sup>56</sup> in terms of their nomination, assessment, approval, delivery of approved road works, the cost of the works, timeliness of delivery, and monitoring and reporting of project information to DOTARS. ANAO also undertook a site inspection to each project, including to assess the extent to which the works were delivered at the approved black spot location, and were in accordance with the treatment that had been approved by the Australian Government Minister (see Figure 1.2). Effective administration of this aspect of an evidence-based road safety programme is necessary to obtain the expected benefits from the investment of funds.

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<sup>56</sup> For each project, ANAO sought the following information from the entity responsible for nominating and delivering the works (as DOTARS does not hold such information):

- Black Spot project nomination forms including details of the calculated Total Estimated Cost and the Benefit Cost Ratio, and supporting crash statistics (or, where applicable, the road safety audit report);
- any technical drawings relating to the work;
- the actual construction schedule;
- a detailed report of actual receipts and expenditure for individual projects;
- documentation associated with claims for payment from LGA's to the State road transport authority, and payments made to the State road transport authority based on the status reports; and
- any other information provided that would assist ANAO's examination of the relevant projects.

**Figure 1.2**  
**Programme administrative arrangements (audit sample)**



Source: ANAO analysis.

**1.32** As noted and illustrated by Figure 1.2, State road transport authorities play a key agency role in the administration and delivery of the Programme. Accordingly, this role was examined as part of the audit. This included aggregate analysis of whether payments made under the National Black Spot Programme are made through a process that protects the Commonwealth's financial interests, including whether costs charged to the Programme have been substantiated and funds have been used as intended. It also examined the reporting and accountability arrangements in place between State road transport authorities and DOTARS including in relation to the physical progress and completion of projects.

**1.33** The audit commenced in February 2006. Audit fieldwork was undertaken between February 2006 and September 2006. Various issues were raised and discussed with DOTARS during the fieldwork phase. Issues Papers were provided to DOTARS between November 2006 and April 2007. The purpose of the Issues Papers was to outline, for discussion and clarification purposes, the preliminary audit findings. Similarly, State road transport authorities and LGAs included in the audit sample were given an opportunity to provide any comments or information in relation to the analysis and findings in relation to projects they were responsible for delivering and, for State authorities, the discharge of their agency role.<sup>57</sup>

**1.34** The audit was conducted in accordance with ANAO Auditing Standards, at a cost of \$535 000.

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<sup>57</sup> Both LGAs and State road transport authorities were advised by ANAO that the audit analysis and findings would assist to form the basis of ANAO's assessment of the management of the Programme. They were also advised that the audit work would culminate in a report tabled in the Commonwealth Parliament and that this report would be a public document.



## 2. Governance Arrangements

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*This chapter examines the reporting and payment arrangements associated with the administration of the Programme and State expenditure on black spot road works.*

### Introduction

2.1 DOTARS has advised ANAO that it is the Australian Government's policy to have different funding and operational models for the Roads to Recovery and National Black Spot Programmes. Nevertheless, in its current inquiry into ANAO's 2005–06 performance audit of the Roads to Recovery Programme,<sup>58</sup> the then Chair of the Joint Committee of Public Accounts and Audit indicated that direct provision of funds to local government could be extended to other Commonwealth funding programmes.<sup>59</sup> This would be so as to address concerns that Commonwealth funding provided through State and Territory Governments may not make it to their end target.

2.2 In this context, programme delivery is more complicated than for the Roads to Recovery Programme. For the Roads to Recovery Programme, the Government considered LGAs best placed to make decisions on road investment at the local level. Accordingly, LGAs were given the freedom to use the funds as they wished, as long as it was for expenditure on roads, as defined by the legislation. In this context, the legislation was framed around the following programme delivery decisions made by the Government:

- funds were to be paid directly to LGAs;
- project priorities were the choice of LGAs; and
- the process by which grants were paid to the LGAs was to be simple, with appropriate audit and accountability systems and arrangements put in place to ensure that there is due recognition by LGAs of the Commonwealth's contribution to local road projects.

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<sup>58</sup> ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006.

<sup>59</sup> Joint Committee of Public Accounts and Audit, Official Committee Hansard, *Review of Auditor-General's Reports Nos 7 to 34 (2005–06)*, Friday 23 June 2006, Canberra, p. PA11.

2.3 Whereas Roads to Recovery Programme funding is focused on local roads with the majority of funds paid direct to LGAs,<sup>60</sup> National Black Spot projects are delivered both by State road transport authorities and LGAs. In this context, Figure 2.1 shows the total number of projects approved to be delivered by State road transport authorities compared to those to be delivered by LGAs, and the percentage of approved costs for local projects compared to State projects across each State for the period 2002–03 to 2005–06.<sup>61</sup>

2.4 The information shown in Figure 2.1 highlights that, in aggregate, State road authorities have been approved to receive just over 52 per cent of funding with LGAs approved to receive nearly 48 per cent of funding. However, there are significant variations between the States:

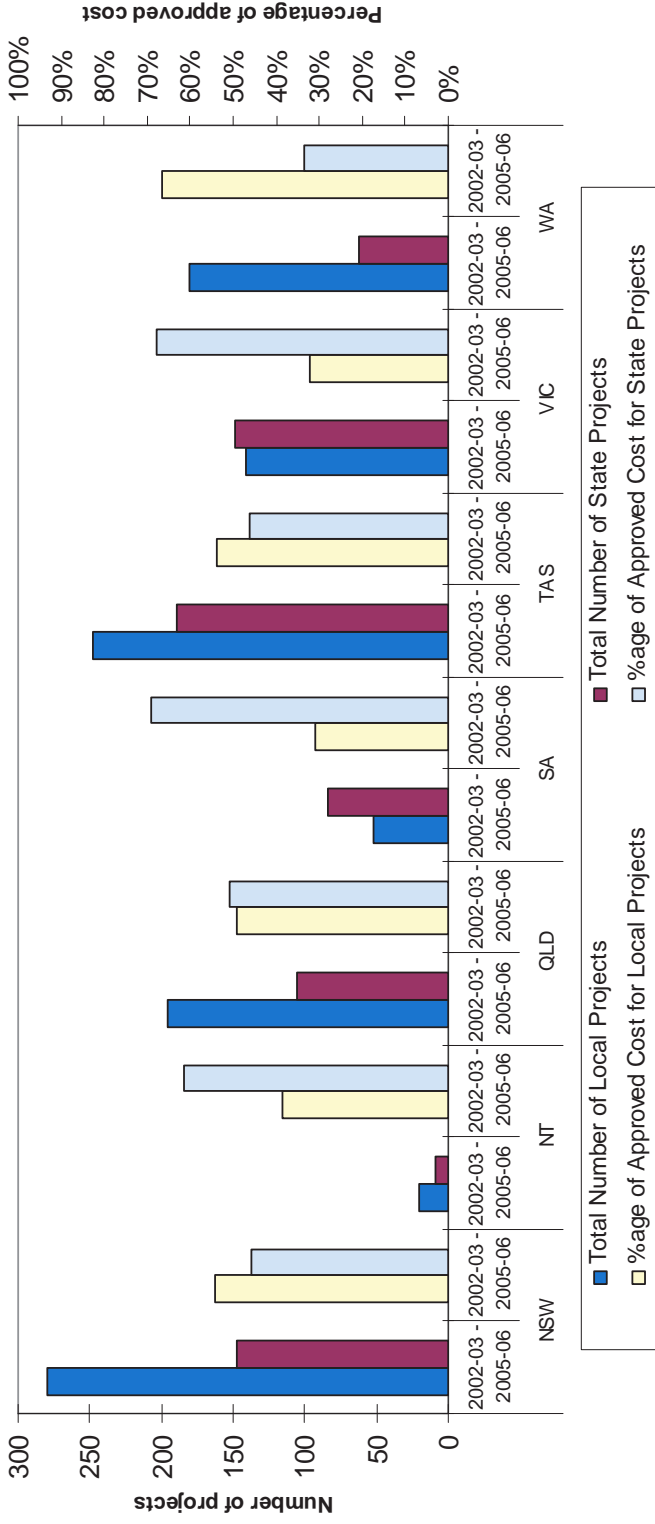
- in New South Wales (NSW), Queensland (Qld) and Tasmania, the greater average dollar value paid by the Commonwealth to State road authorities for State projects is offset fairly well by LGA's having many more projects. As a result, the share of funds is reasonably evenly divided.
- in the Northern Territory (NT) the average cost for local projects is less than a third of the average cost of State projects. This is partially offset by there being twice the number of local projects compared to State projects. However, the State has been approved to receive 62 per cent of the Programme funds while local government receives 38 per cent.
- Victoria's average cost for State projects is around twice that for local projects. This has not been offset by LGA's having more projects approved. In fact, there have been slightly more State projects approved than local projects resulting in the State road transport authority (VicRoads) being approved to receive more than twice as much Programme funds as LGAs.

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<sup>60</sup> The allocation of Roads to Recovery Programme funds within each State was determined using the formula applied by State Grants Commissions for the Financial Assistance Grants (FAGs) identified for local roads. In line with the arrangements for local roads FAGs, in WA, \$12.6 million, or 7 per cent of the Roads to Recovery Programme funding for the State was held back from LGAs for bridges and Aboriginal access roads; and in SA, \$15 million, or 15 per cent of the Roads to Recovery Programme funding for the State was held back from LGAs for distribution in connection with the State's Special Local Roads Program. Also, \$8 million was provided to State road transport authorities for those local government areas outside the FAGs funding arrangements know as unincorporated areas in NSW, SA and Victoria.

<sup>61</sup> The Australian Capital Territory was excluded from this analysis as there is no State/LGA split.

**Figure 2.1**  
**Projects approved for delivery by State road transport authorities and local government authorities**



Source: ANAO analysis.

- in South Australia (SA), the situation is even more pronounced than in NT or Victoria. Specifically, in addition to the average cost of State-delivered projects being greater than those for local government, there are 60 per cent more State projects than local projects and the State has been approved to receive 69 per cent of funds compared to 31 per cent for local government.<sup>62</sup>
- in Western Australia (WA), the higher average cost of State projects has been more than offset by there being nearly three times as many local projects approved for funding than State road transport authority (Main Roads WA) projects. As a result, local government has been approved to receive nearly twice as much Programme funding as the State government.

2.5 State road transport authorities play no role in the administration and delivery of the Roads to Recovery Programme, whereas they play a key role in the administration of the National Black Spot Programme, as agents of the Commonwealth. In particular:

- project nominations are submitted to State road transport authorities who are responsible for assessing the eligibility of the nomination against the Programme criteria and undertaking a benefit-cost assessment of a treatment proposal;
- all nominations are to be referred to a Consultative Panel in each State for consideration against the Programme criteria. In general, nominations are to be ranked according to priority based on the assessment undertaken by the State road transport authority. The State road transport authority may also include relevant comments arising from its assessment, to assist the Panel's consideration of the nomination;
- State road transport authorities, on behalf of their Consultative Panel, are invited to forward submissions to DOTARS comprising projects recommended by the Panel for consideration by the Australian Government Minister. It is a matter for the Minister as to which projects are approved for funding under the National Black Spot Programme;

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<sup>62</sup> On 28 May 2007, DTEI advised ANAO that, in SA, the State maintains around 23.2 per cent of the road network (which is more than any other State and Territory) including all arterial roads (except 38kms in the City of Adelaide) and that, in some other states, these roads are a local government responsibility with grants provided by the State to help fund their upkeep.

- State road transport authorities manage programmes of works within each state, with works being delivered by State agencies and/or local government; and
- funds provided under the Programme for road works are paid to State road transport authorities. For works delivered by LGAs, the States are responsible for making payments to the relevant LGA.

## Reporting and payment arrangements

2.6 The Commonwealth provides funding to and through the States under a variety of Specific Purpose Payment programmes.<sup>63</sup> In this context, the House of Representatives Standing Committee on Economics, Finance and Public Administration has commented as follows:<sup>64</sup>

With many SPPs to the States, it is the responsibility of the States to allocate the funding. Often there are limited tracking or auditing requirements placed on SPPs.

2.7 Because of these concerns, the Commonwealth's approach to making some payments through the States has been subject to reconsideration. A significant example of this is the Roads to Recovery Programme. When announcing the Roads to Recovery Programme, the Prime Minister stated that:

One of the greatest strengths of the Roads to Recovery Program is that the funding will go direct to Local Government and allow councils to spend the money according to their priorities.

2.8 In its current inquiry into ANAO's 2005–06 performance audit of the Roads to Recovery Programme,<sup>65</sup> the then Chair of the Joint Committee of Public Accounts and Audit indicated that direct provision of funds to local government could be extended to other Commonwealth funding programmes.<sup>66</sup> This would be so as to address concerns that Commonwealth funding provided through State and Territory Governments may not make it to their end target.

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<sup>63</sup> Government Response to the Report of the House of Representatives Standing Committee on Economics, Finance And Public Administration report titled '*Rates and Taxes: A Fair Share for Responsible Local Government*', June 2005, p. 5.

<sup>64</sup> House of Representatives Standing Committee on Economics, Finance and Public Administration, *Rates and Taxes: A Fair Share of Responsible Local Government*, October 2003, Canberra, p. 53.

<sup>65</sup> ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006.

<sup>66</sup> Joint Committee of Public Accounts and Audit, Official Committee Hansard, *Review of Auditor-General's Reports Nos 7 to 34 (2005–06)*, Friday 23 June 2006, Canberra, p. PA11.

2.9 The Roads to Recovery Programme gave LGAs the freedom to use Commonwealth funds as they wished, as long as it was for expenditure on roads (and they met other Programme Funding Conditions). However, under the National Black Spot Programme, projects are approved by the Federal Minister through a nomination and assessment process that relies on economic appraisals to identify black spots, develop proposed treatments and an estimate of the treatment cost, and rank projects so that they can be prioritised for funding. Subsequently, the Federal Minister approves the location at which works are to be undertaken, the nature of the road work to be delivered, the timeframe in which work is to be undertaken and the maximum amount that the Commonwealth will pay for these works.

2.10 In this context, to achieve the outcomes the Government and the community expects, effective oversight of the delivery of funded projects is even more important for the National Black Spot Programme than it is for the Roads to Recovery Programme. In this respect, in February 2007, DOTARS advised the Senate Standing Committee on Rural and Regional Affairs and Transport that:

We make a bulk payment to the states against their claims for expenditure each quarter. Then we get them to do a report at the end of each year about where projects are up to, or the moneys that they have handed over the *[sic]* individual councils. So sometimes councils undertake the projects and sometimes the state government does. They have to do an annual report to us.<sup>67</sup>

## **Status reporting and payments to States**

2.11 Under the National Black Spot Programme, payments are made by DOTARS to State and Territory road transport authorities. These funds are used by the State and Territory authorities to:

- meet some or all of the costs of approved Black Spot projects on State/Territory roads;
- make payments to local government bodies for some or all of the costs of approved Black Spot projects on local roads; and
- in some instances, meet administrative costs of the State road transport authority.

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<sup>67</sup> Senate Standing Committee on Rural and Regional Affairs and Transport, *Estimates Hansard*, 15 February 2007, Canberra, p. RRA&T 29.

2.12 By way of comparison, Roads to Recovery Quarterly Reports submitted by LGAs provided details on actual and forecast expenditure for each project listed in the works schedule. These Quarterly Reports were used to calculate payments to LGAs. In terms of addressing the risks and costs of projects being paid in advance of need, DOTARS agreed to ANAO recommendations that improvements be made to the administration and use of these reports to support payments. However, the payment and reporting arrangements for the National Black Spot Programme have not been reviewed by DOTARS in the light of experience of administering the Roads to Recovery Programme.

2.13 Prior to July 2006, the Notes on Administration for the National Black Spot Programme issued by DOTARS state that an initial payment up to 20 per cent may be made on approval and other payments are based on current expenditure plus forecast expenditure for the next two months. Examination of correspondence between DOTARS and State road transport authorities shows that, on 27 October 2003, the authorities were advised that:

Please note we will accept and pay monthly expenditure claims similar to the National Hwy and RONI [*Roads of National Importance*] program, notwithstanding that the Black Spot Notes on Administration requires claims to be submitted every second calendar month.

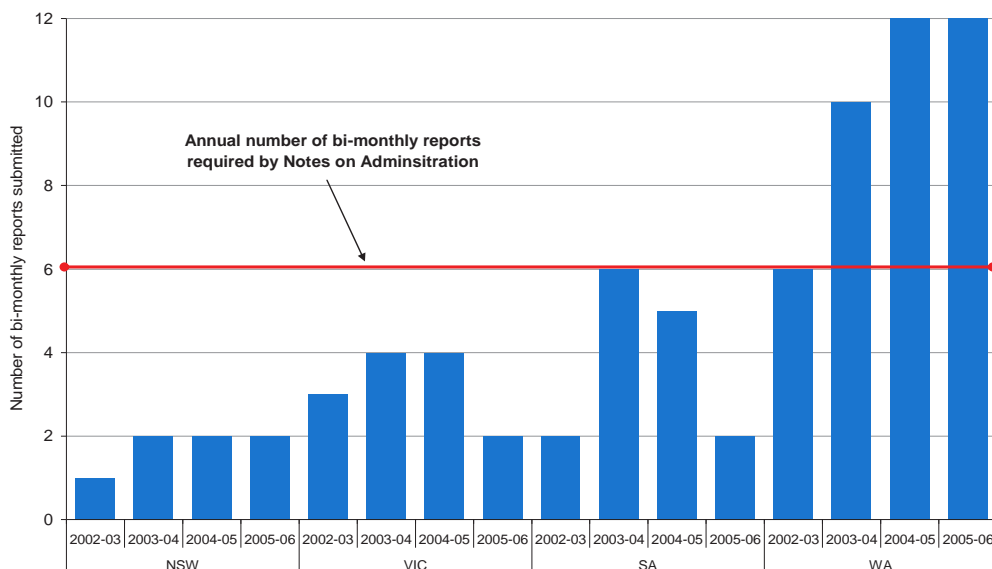
2.14 Payments to the States are underpinned by the requirement for a status report every two months<sup>68</sup> that outlines expenditure and the physical and financial status of each project. In this context, 24 reports should have been submitted by each State road transport authority for the period 1 July 2002 to 30 June 2006 (six per year for four years). In practice, however, payments have not been made in accordance with bi-monthly programme funding requirements because (as shown in Figure 2.2) reporting has been less than the required frequency for three of the four States in the audit sample. Only one State in the ANAO sample (WA) took on board the advice from DOTARS regarding monthly payments.

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<sup>68</sup> In February 2007, DOTARS erroneously advised the Senate Standing Committee on Rural and Regional Affairs and Transport that it made bulk payments each quarter (rather than on a bi-monthly basis). See Senate Standing Committee on Rural and Regional Affairs and Transport, *Estimates Hansard*, 15 February 2007, Canberra, p. RRA&T 29.

**Figure 2.2**

**Bi-monthly status reports submitted by State road transport authorities**



Source: ANAO analysis.

2.15 The bi-monthly status reports are required to contain updated information associated with the start and completion dates of the project, the expenditure to date on the road safety works and the physical status of the project. As shown in Figure 2.2, DOTARS does not obtain regular status reports. As a result, DOTARS does not have timely and up to date visibility of the status of road safety projects being delivered with National Black Spot Programme funding. In this respect, in February 2007, DOTARS advised the Senate Rural and Regional Affairs and Transport Committee that:

To the end of January we had actually paid only about \$2 million of Black Spot funding for the year, but let me say very quickly that that is not all uncommon. It is not uncommon for the states in the case of Black Spot to get on with the projects that they are doing and in essence bill us for the totality of the works they have undertaken during the final quarter of the year—so in their third-quarter claims. We actually do not make the bulk of the payments under Black Spot until the final quarter of the year. It is a very consistent pattern. It is a bad habit that we are trying to break them of.<sup>69</sup>

<sup>69</sup> Senate Standing Committee on Rural and Regional Affairs and Transport, *Estimates Hansard*, 15 February 2007, Canberra, p. RRA&T 29.



**2.16** However, in this regard, the NSW RTA advised ANAO in March 2007:

The RTA generally provides a status report twice yearly. The RTA understood this was acceptable to DOTARS. The issue of monthly reporting has been raised with DOTARS by the RTA and DOTARS advice at officer level was that they did not want monthly or even two monthly reports sent to them. DOTARS have not given clear advice as to what reporting frequency they prefer. However, the RTA can provide reports as required by DOTARS as they are done on a monthly basis within the RTA.

**2.17** Whereas the SA Department for Transport, Energy and Infrastructure (DTEI) advised ANAO in January 2007 that:

Bi monthly reports are the mechanism by which DTEI updates DOTARS on progress and submits expenditures to date on projects for reimbursement. It should be pointed out that the submission of status reports early in the financial year does not provide very meaningful information as projects are in their early stages.

**2.18** In May 2007, VicRoads advised ANAO that:

Typically very little expenditure occurs between July and December each year as projects are prepared for implementation. VicRoads considers that the preparation of fewer claims and associated reports as efficient administration. As program administration is not funded by DOTARS the aim is to keep these costs to a minimum.

**2.19** ANAO notes, however, that 39 per cent of projects in the audit sample were not complete in the year of project approval. Accordingly, for these projects, reports early in the year should be of value if DOTARS expects to monitor the delivery of National Black Spot Programme funded projects.

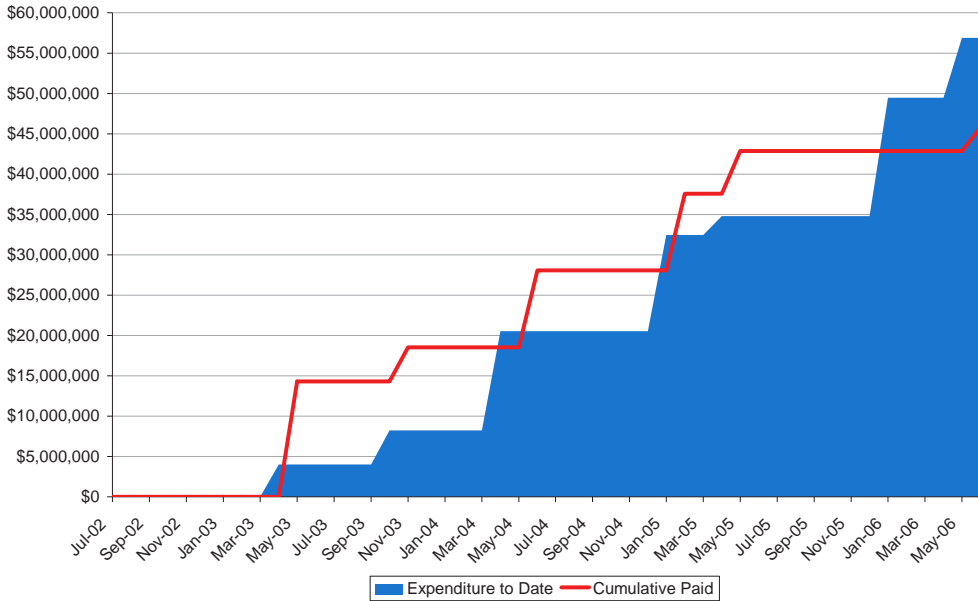
**2.20** In most instances where a status report has been provided, a payment is made to the applicable State road transport authority. Figure 2.3 to Figure 2.6 shows the payments made compared to the reported expenditure to date<sup>70</sup> for the programme of works being delivered within that State.

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<sup>70</sup> The expenditure to date reported by the States is generally only the amount of National Black Spot Programme funds expended on the project. In most instances it is not the total cost of the works (including contributions from other parties). In the case of NSW, expenditure to date on some State-delivered projects is higher than the approved maximum funding amount. As no financial variation has been sought and/or approved, the State has not been paid the additional amount. The cumulative paid is the amount of funds paid by DOTARS to the State road transport authority.

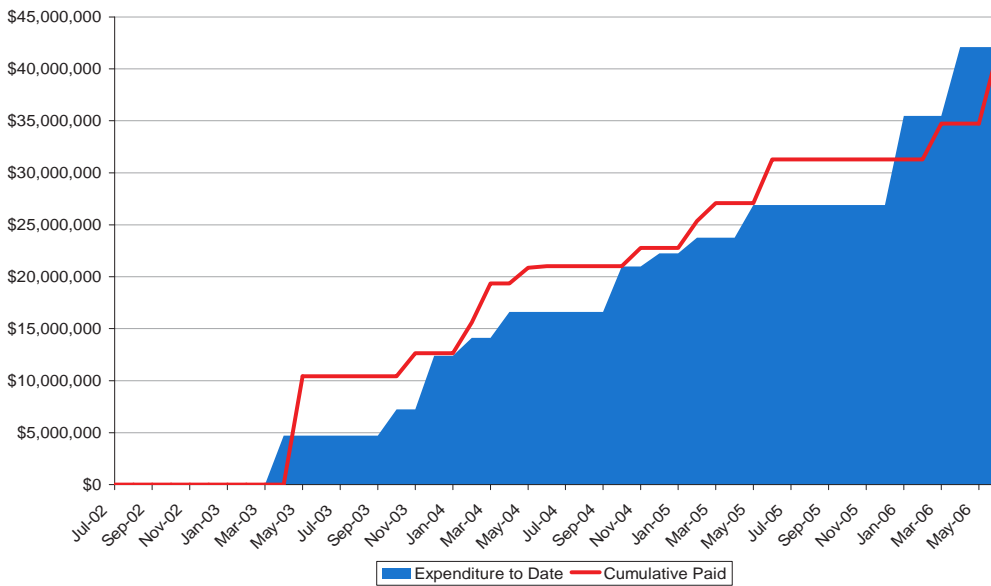
**Figure 2.3**

**Cumulative payments to NSW**



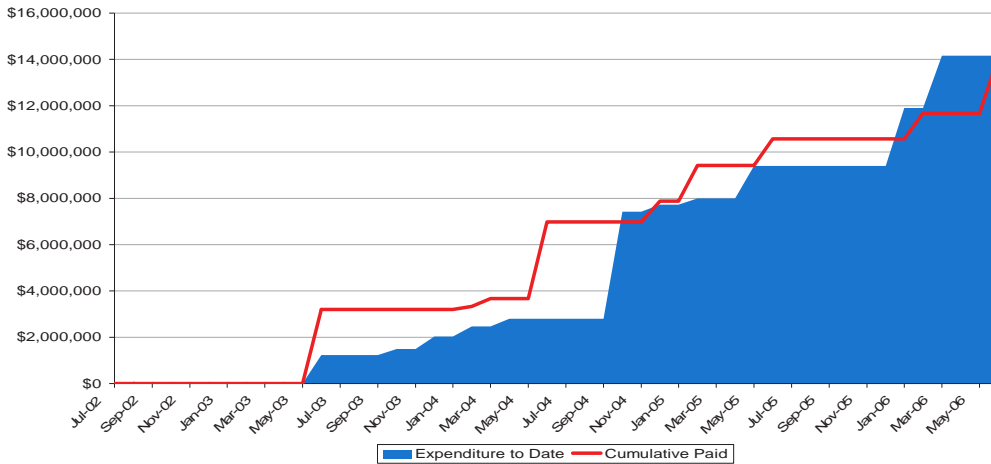
**Figure 2.4**

**Cumulative payments to Victoria**



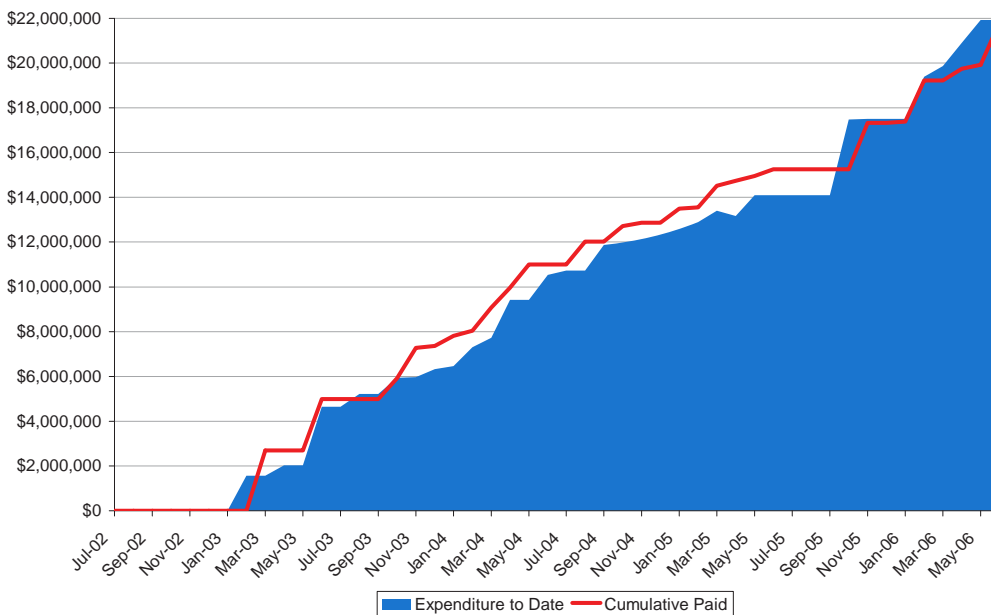
**Figure 2.5**

**Cumulative payments to SA**



**Figure 2.6**

**Cumulative payments to WA**



Source: ANAO analysis based on submitted status reports and reported expenditure to date.

2.21 It is particularly evident in those States where bi-monthly status reports have not been submitted, that anticipated expenditure for the next two months has been overstated. As a result, some State road transport authorities (most notably NSW) have, on the basis of these reports, been in possession of

considerable amounts of Commonwealth funds for an extended period of time. By way of comparison, the monthly status reports submitted by WA show a close match between forecast expenditure and actual expenditure. However, the status report is only showing the amounts retained by the States (for State-delivered projects and, at times, their administration and/or project management costs) or paid to LGAs (for local government-delivered projects). It does not necessarily reflect the cost of road safety works being delivered on the ground.

## **Payments in accordance with the delivery of works**

2.22 As noted above, funding from the National Black Spot Programme is paid to the States road transport authorities, which are then responsible for distributing project funds. As mentioned earlier, the Notes on Administration state that an initial payment up to 20 per cent may be made on approval and other payments are based on current expenditure plus forecast expenditure for the next two months.

2.23 The provision of upfront funding enables development and preconstruction costs to be funded.<sup>71</sup> However, the funding associated with National Black Spot Programme projects to LGAs is not on-paid in line with the Notes on Administration.

2.24 For example, in WA project payments for National Black Spot Programme projects have been made to councils on a 40:40:20 split. This is the general approach used by Main Roads WA for local government-delivered road projects under State Programs. On the 40:40:20 approach used in WA, Main Roads WA advised ANAO in April 2007 that:

The 40:40:20 approach relates to the payment of project funds which is clearly stated in the Notes on Administration as the responsibility of the States and therefore there is no inconsistency.

2.25 Whilst the Programme administration arrangements permit States to adopt their preferred approach to payments for projects within their state, the approach taken has implications for the Commonwealth. In respect to WA, the 40:40:20 approach has meant that, at times, some council's have been in possession of funds for a considerable period prior to the works being delivered. For example, in project W03195 (2005–06), the City of Rockingham had been paid \$116 000 of the \$145 000 approved funding by February 2006.

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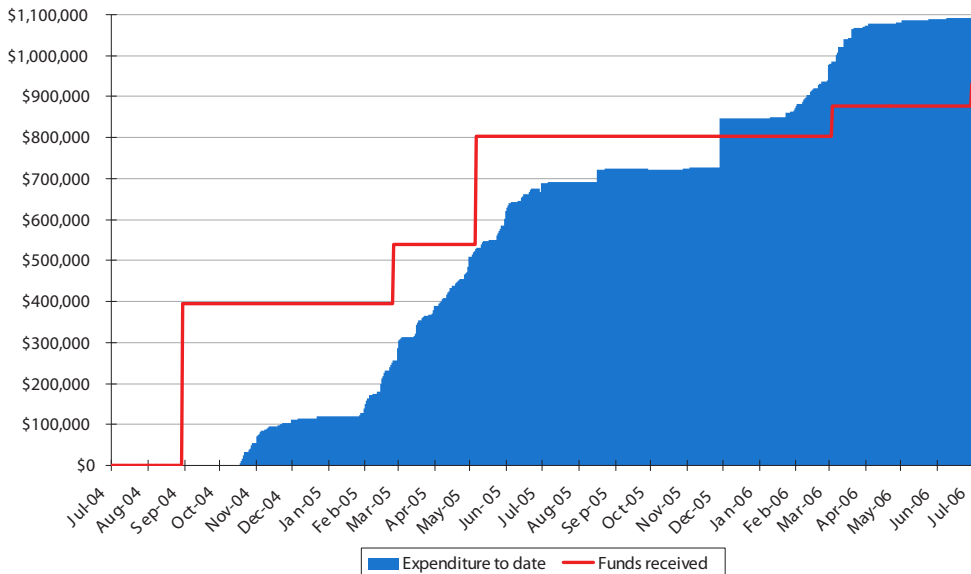
<sup>71</sup> In this respect, however, DOTARS advised ANAO in March 2007 that it did not want the Programme to be 'open to claims for reimbursement of planning costs for projects that did not proceed.'

Information provided by Main Roads WA to DOTARS in the 28 February 2006 status report showed the expenditure to date on the project as \$116 000. However, as at April 2006, less than \$3 000 had actually been spent by the City of Rockingham on road works or other project costs.

2.26 Similarly, the following chart summarises the payments made by the Shire of Busselton in respect of the six National Black Spot Programme projects it gained funding for as part of the 2004–05 Programme, together with the National Black Spot Programme funds claimed (and received) by Council.

**Figure 2.7**

**Shire of Busselton: Expenditure on road safety works compared to National Black Spot Programme funds available (2004–05 projects)**

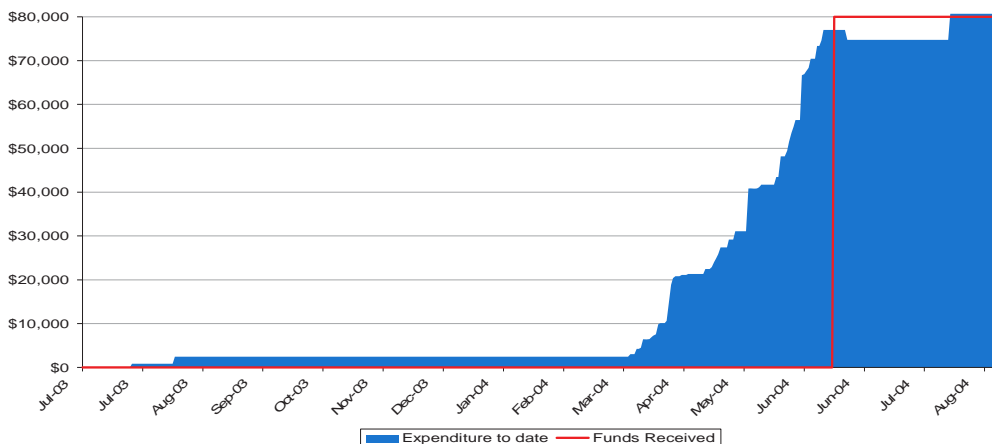


Source: ANAO analysis.

2.27 In comparison to the approach taken by Main Roads WA to paying councils, in SA, all payments for National Black Spot Programme projects are paid to councils in arrears. For example, project S03021 (2002–03 project) in Mount Gambier was for the installation of a roundabout at an estimated cost of \$180 000. As shown in the following graph, Council bore the costs of the project until reimbursement was made from SA DTEI in June 2004. While payments are for reimbursement of costs, and councils are encouraged to submit progress claims throughout the financial year, DTEI advised ANAO that councils tend to submit only one claim for payment at the end of the financial year.

**Figure 2.8**

**City of Mount Gambier: Project expenditure for S03021 (2002–03 project)**



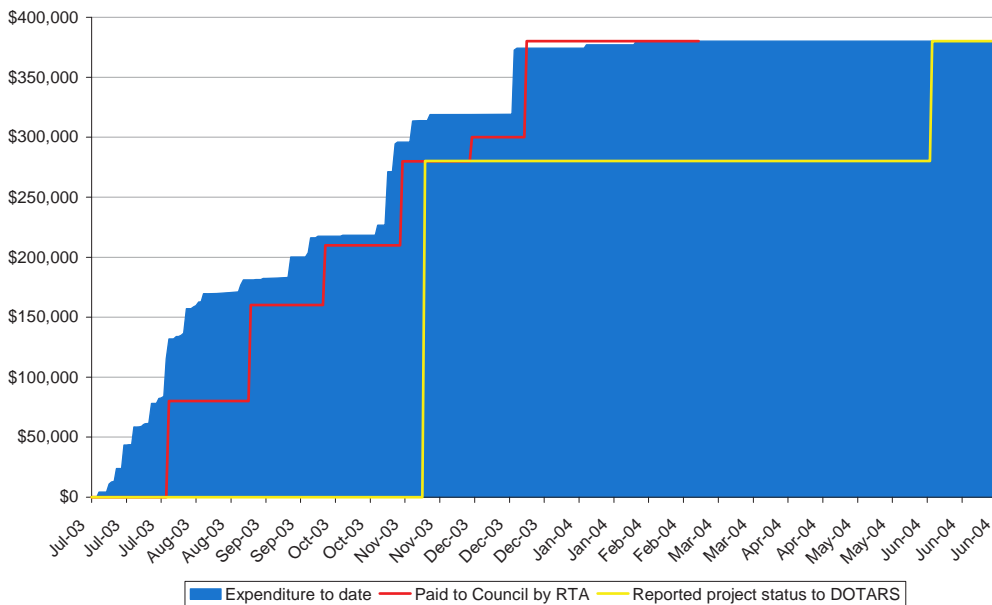
Source: ANAO analysis.

**2.28** Both NSW and Victoria make payments to LGAs based on reported expenditure included in monthly submissions from councils to the State road transport authority. As a result, where a project is undertaken over a period of time, councils have the opportunity to obtain funding as and when required. An example of where this occurred in NSW is project N03194 in Oberon, NSW as shown in Figure 2.9. This project involved the delivery of a sealed surface at two discrete intersections on the Abercrombie Road at Porters Retreat at a cost of \$380 000 to the National Black Spot Programme (discussed in Case Study 3.2 on page 112). Progress reporting indicates that payments to the RTA resulted in the RTA holding large amounts of money for a considerable period prior to the works being delivered, however, Council was paid in arrears for works delivered.<sup>72</sup> The diagram also shows the status of this project as reported to DOTARS through the infrequent status reports submitted by the RTA.

<sup>72</sup> The issue of paying in arrears was identified more broadly for projects delivered in NSW by councils, either as proponents for National Black Spot Programme projects, or as subcontractors to the RTA. This provides a further financial benefit to the RTA, this time at the expense of councils.

**Figure 2.9**

**Oberon Council: Project expenditure for N03194 (2003–04 project)**



Source: ANAO analysis.

**2.29** In Victoria, where a project is not delivered within the financial year, either ‘reimbursement’ of funds is claimed based on commitments rather than actual expenditure, or an application to carry-forward the funding is required. The issues raised in the first circumstance are illustrated by project V03206 (2004–05 project) delivered by the Shire of Campaspe. In relation to this project, the Shire advised ANAO in September 2006 that:

Difference of \$7 908 comprises an outstanding commitment to Southern Asphalt for a final seal that was programmed to occur after the end of the financial year in accordance with good engineering practice (better weather and time for any pavement defects to occur).

Expenditure for works was claimed where the works were incomplete, however, the works were scheduled to be completed shortly after the end of the financial year. This project highlights the fact that that the blackspot administrative procedures do not enable full project costs to be claimed where the works span beyond one financial year. Good engineering practice demands that works such as final seals span beyond one financial year especially where grants are allocated with only six months of the year remaining.

The further complication with this project is that the final seal has been overlooked and is now scheduled to occur this summer sealing season. Whilst the funds [*claimed in June 2005*] remain unspent they will be expended on the project shortly.

**2.30** An example which illustrates the consequence of councils not applying to carry-forward any unspent funding is project V03126 (2003–04 project) delivered by Warrnambool City Council. The estimated cost of the project was \$185 000, the project cost \$194 605 to deliver, yet Council only claimed reimbursement of \$170 065. Council advised ANAO in September 2006:

With regard to the question of why Council didn't claim the full amount of the project budget, verbal advice from VicRoads given to the Executive Manager – Infrastructure Services at the end of the 2003/04 year, was to the effect that Council was not able to make a claim in 2004/05 for the remaining funds as Council had not completed an application to carry-forward the funding before the end of the 2003/04 financial year, as per the provisions of a letter to Council dated 19 May 2004, under the hand of VicRoads' Regional Manager.

**2.31** Approval is also required in NSW to carry-over projects from one financial year to another. For example, project N03391 (2005–06) delivered by Bryon Shire Council with an estimated cost of \$320 000. In relation to this project, Council advised ANAO in April 2007:

The project was carried-over from the 2005/06 financial year to the 2006/07 with the approval of the RTA. The second and final seal of the road pavement was deferred for technical reasons. Permission was sought through the RTA for this deferment.

The project is now complete. The final costs of this project were \$316 891.65.

**2.32** As at 23 March 2007, the RTA had not submitted a status report to DOTARS since the 31 May 2006 report. For project N03391, the May 2006 status report advised DOTARS that the estimated date of completion was 8 May 2006. The financial records provided by Council in April 2007 show that works on the ground were still being undertaken in December 2006. As at 31 May 2006, the reported expenditure to date was the full project budget of \$320 000. As noted above, the project is now finalised and the final cost is \$316 891.65.

**2.33** As a result of the different practices for paying for local government-delivered projects within each State:



- some councils have been required to fund the delivery of the works prior to being paid by the State yet the State road transport authority may have been paid the funds in advance by DOTARS;
- restrictions are placed on councils by some State road transport authorities for end of financial year expenditure that are inconsistent with the practice employed by DOTARS in relation to National Black Spot Programme payments to the States; and
- DOTARS does not have up to date visibility of the extent of road safety works being delivered on the ground, as the information contained in the status reports reflects the amounts on-paid to the Council, not necessarily the amount spent or the extent of work undertaken.

**2.34** Under the Roads to Recovery Programme, the Commonwealth directly funds LGAs for projects they are delivering. Compared to funding and accounting for road works through an intermediary (as occurs under the National Black Spot Programme), the Roads to Recovery Programme arrangements provide greater potential for payments to be more closely aligned to expenditure on actual road works and clearer lines of accountability for the use of funds and the project delivery outcomes.

**2.35** DOTARS has commented to ANAO that it is the Australian Government's policy to have different funding and operational models for the Roads to Recovery and National Black Spot Programmes. Nevertheless, in its current inquiry into ANAO's 2005–06 performance audit of the Roads to Recovery Programme,<sup>73</sup> the then Chair of the Joint Committee of Public Accounts and Audit indicated that direct provision of funds to local government could be extended to other Commonwealth funding programmes.

**2.36** In the context of the distributed administration arrangements for the Programme, there is a balance to be struck by DOTARS between obtaining the necessary assurance that the Programme is effectively delivering on its objectives, and the exercise of discretion by the State road transport authorities in how they choose to discharge their responsibilities as set out in the Notes on Administration (see Figure 2.10). That said, the spread of practices that have developed across and within States in relation to Programme administration and delivery suggest there would be benefit in DOTARS providing greater clarity on its expectations in the key areas of assessing project eligibility,

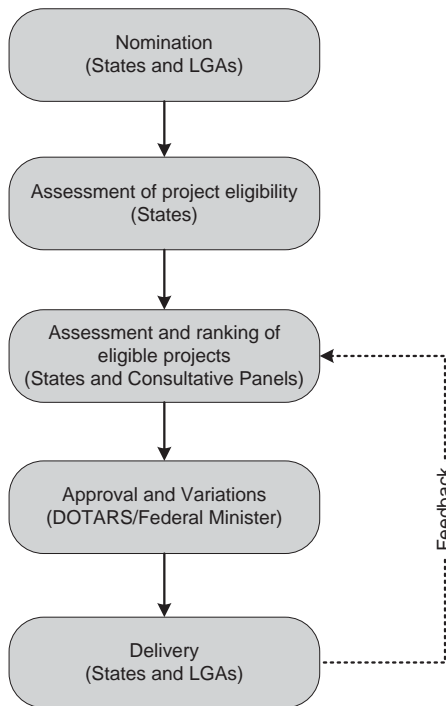
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<sup>73</sup> ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006.

assessing and ranking of competing projects and the delivery of approved road safety works at the identified black spot location.

**Figure 2.10**

**Project nomination, assessment, approval and delivery relationships**



Source: ANAO analysis.

**Actual cost of delivering the project**

2.37 Financial assessment of the projects in the audit sample found that the amount of National Black Spot Programme funding claimed for 66 per cent of projects (with an estimated cost of \$29.3 million) could be substantiated. There were, however, 34 per cent of projects (with an estimated cost of \$18.3 million) where the amount of National Black Spot Programme funding claimed for the project could not be substantiated by relevant documentation. Of these projects, 53 per cent were local government-delivered projects (with an estimated cost of \$7.3 million), and 47 per cent of projects (with an estimated cost of \$11.0 million) were delivered by the State road transport authorities.

2.38 In each State in the audit sample, additional costs were claimed for projects that did not relate to the approved project (description and/or location). This issue was evident in some local government-delivered projects

in three of the four States, and for some projects delivered by the State road transport authority in all States in the audit sample.

**2.39** In most States, the actual funding of National Black Spot Programme projects occurs at the regional level. Recoups submitted by councils form the basis of payment. No supporting cost information is required to accompany the claim for payment. In comparison, in SA, DTEI seeks to assure itself of the veracity of claims submitted by councils for payment. In this respect, DTEI advised ANAO in January 2007 that:

A package of information is forwarded to Councils who succeed in obtaining funding under the programme. This includes a standard proforma (developed by DTEI) to be used by Councils in claiming reimbursement of expenditure. Council claims need to be supported by appropriate extracts of expenditure from their financial systems.

**2.40** In WA, 18 per cent of local government-delivered projects claimed more than the actual cost of the road safety work, up to the originally approved cost. In local government authority areas in WA where this issue was identified, four councils indicated that unspent funding would be returned to Main Roads WA. In response to this issue Main Roads WA advised ANAO in April 2007 that:

The ANAO report raises the issue of the recoup process for funds. The process adopted by Main Roads for Local Government to recoup funds and to provide support that the claim is supported is by way of certification by the claiming Local Government. ...

The Certificate of Completion must be signed by two officers and the declaration by the CEO acknowledges that the details are correct and that Main Roads WA can assess financial records to verify the claim.

The issue identified in the ANAO report regarding Local Governments holding unspent funds became an issue two years ago. Main Roads WA reviewed the recoup process resulting in a strengthening of the recoup forms used and introduced audits into recoups by Local Government. The audits were based on random samples of Local Governments in the Metropolitan and Regional areas focussing on State funds being provided to Local Governments and the validity of their recoups. As a result of this action Main Roads has seen an increase in the return of unspent funds from Local Government.

Main Roads acknowledges that there have been issues relating to the return of unspent funds from Local Government. As outlined Main Roads has introduced steps to improve the compliance with the recouping of funds. While the focus has been on State grants there has been a flow on effect in

relation to National Black Spot projects. However Main Roads will broaden the scope of the audit to include a proportion of National Black Spot Projects.

**2.41** In comparison to WA, in Victoria ANAO identified that 48 per cent of projects delivered by LGAs claimed more than the cost of delivering the road works, up to the original estimated cost of the project. In a number of instances in Victoria, councils also claimed an administrative cost 'overhead' in addition to the cost of work. The Notes on Administration explicitly state that administrative overheads are ineligible costs under the Programme. In response to these issues, VicRoads advised ANAO in November 2006 that:

VicRoads has had a long standing arrangement with Councils that they can add an administrative fee for undertaking roadworks. The fee has been set at 2.5% for maintenance related activities and 5% for other roadworks.

VicRoads relies upon the certification of the Municipal Chief Executive or delegate and does not conduct an audit of Council records to verify that expenditure and works are as claimed by Council. This is the standard applied all transactions between Council and VicRoads, not just the National Black Spot Programme.

VicRoads considers the cost in terms of staff resource and expenditure to undertake site visits and auditing of Council records is not warranted.

**2.42** Analysis of local government-delivered projects in the audit sample revealed there is varied practice in relation to capturing project costs. Some councils directly attribute time (and associated charges) for internal design and project management staff, whereas others do not. In 10 per cent of local government-delivered projects in the NSW audit sample, the actual project cost supported by financial information was lower than the amount claimed for the project. In response to this issue, one NSW Council advised ANAO in December 2006:

Typically, many councils do not fully allocate indirect project costs across the entire scope of works, or projects they undertake. Council operates in this manner, and for example engineering staff and supervision costs remain as an "overhead". As mentioned earlier, a further amount of approximately 7% of project costs could be supported and attributed for engineering staff and supervision. It is therefore suggested that the unspent funds could be justifiably allocated as part of engineering staff and supervision costs. Overall the benefit of not allocating full engineering overhead costs to the NBSP [*National Black Spot Programme*] is that the scope of "on ground" work is maximised.

**2.43** In relation to full project budgets being claimed but not fully expended on the project, the RTA advised ANAO in March 2007 that:

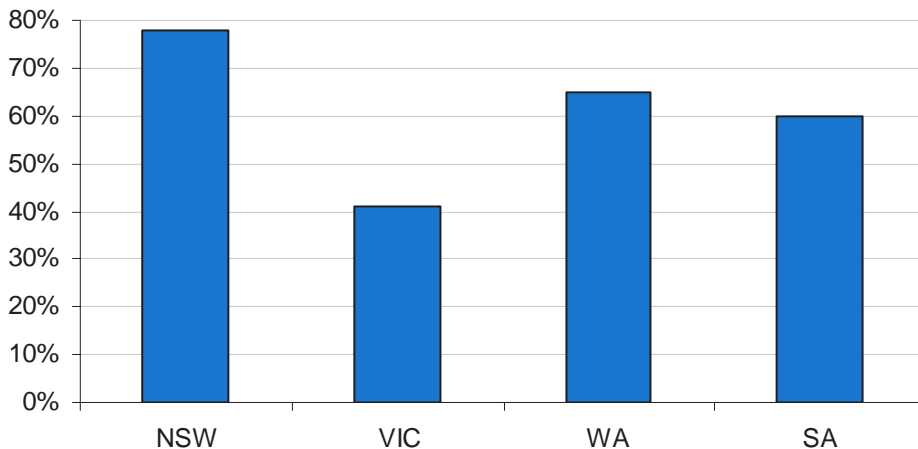
With the agreement of DOTARS officers, funds have been reallocated between projects at times. The RTA does verify Council Works and has recently written to all relevant councils advising they can expect an audit on any works funded by or through the RTA at any time.

Overcharging has not occurred in aggregate, and DOTARS has always allowed some variations in final costs within the total program budget. ...

**2.44** In addition to the issues associated with over charging the National Black Spot Programme, there were many instances in each State where finalised local government-delivered projects cost more than the amount reimbursed to council (see Figure 2.11).

**Figure 2.11**

**Percentage of local government-delivered projects exceeding amount reimbursed**



Source: ANAO analysis.

**2.45** In each State in the audit sample, regional offices of the State road transport authority communicate with the LGAs in relation to the possibility of obtaining financial variations. As part of the advice of the project nomination's success, it is made clear to councils that the project must be delivered within the approved budget, and in some regions, that no variations are available. For example, in Victoria, comments such as 'it is stressed that the proposed works are required to be delivered within the approved budget' were evident. Similarly, in NSW, councils are often advised that 'the Federal contribution is fixed at the agreed estimate or the final cost, whichever is the lesser, and in

accordance with the provisions of “Arrangements with Councils for Road Management”, no additional funds will be available if the estimate is exceeded.’ As a result of such advice, where councils have an ‘underspend’ in one project, some have adopted a practice of retaining it to compensate for overspends on other projects, as mentioned in paragraph 2.42. In regards to this ‘internal reallocation’ by some councils, one Victorian Council advised ANAO in June 2006:

Over expenditure on an individual project’s allocation is not uncommon for a VicRoads’ administered road programmes where several projects are listed, provided that the programme is delivered within the overall allocated funds.

**2.46** Similarly, one WA Council advised ANAO in November 2006 that:

It was believed at the time that if the difference in cost was less than \$1 000, the small difference of \$[amount] would not need to be returned. This was considering the cost of returning the money would be more than the amount returned.

The surplus funds were not transferred to another project that year but at the end of the year the funds were used to reconcile any cost overruns on the other National Black Spot projects.

**2.47** However, as there are some councils that only have one or two National Black Spot Programme projects over a number of years, they are unable to deliver a ‘programme’ type arrangement with their Black Spot project funding, leading to inequities between councils. This is compounded where councils are not given access to legitimate project variations (based on the promulgated advice from the State road transport authorities). For example, one regional NSW council advised ANAO in December 2006:

Council did not seek a financial variation for the project as advice at the time was that only the indicated funds were available for the project. A variation would have been sought if advised available.

**2.48** In this respect, even the State road transport authority may be unaware of the issue. For example SA DTEI advised ANAO in January 2007 that:

Project variations are sought for both Council and State projects. In some instances for some Council projects the increase in project cost is not known until completion. In these instances the Council would bear the cost. Similarly for the SA State Black Spot Programme, where project costs are shared between the State and Councils, late increases in project costs are borne by the Council.

Where there are project costs increases over the approved allocations for Local Council projects, the Councils often decide to contribute the balance. Councils also tend to submit only one claim at the end of the financial year and do not seek variation for these increases in project costs.

**2.49** In regards to minor project overruns, one Victorian Council advised ANAO in August 2006:

The reason for the minor discrepancies between the claim amounts and actual reported final costs is due to the committal accounting system used in the [council], where as purchase orders are raised initially for the works, including provisional items that may or may not be required at the commencement of the project. After the works are complete the relevant orders often require readjustment or cancellation of some amounts from the original purchase order. ...

As indicated in our previous correspondence, Council has exceeded expenditure for most of the projects delivered in the Federal Black Spot Program by supporting the completion of the works with the use of own funding. This was either due to gaps in the estimates provided at the time of application, external influences impacting on delivery costs (ie: market rates, contractor availability, weather conditions etc) and/or improvements to the site beyond that included in the original application.

**2.50** In NSW, WA and Victoria, minor variations were, however, obtained for state-delivered projects. This is a direct result of the status reports being submitted to DOTARS being extracted from the same financial system as the project-delivery agency. In this respect, Main Roads WA advised ANAO in April 2007:

With regard to small variations relating to Main Roads projects a review of the variations has not highlighted a significant number of small variations. However as a principle as the financial report that generates the variations is driven partly by Main Roads internal financial systems small variations would be highlighted by using internal financial systems. The inference intended or not that Main Roads looks more favourably to its own projects is rejected.

Main Roads makes it known to Local Governments that variations are available however the decision to apply for them is at the discretion of the Local Governments. As indicated by the fact that Main Roads internal financial systems are used to generate reporting on the National Black Spot program small variations would be automatically captured as opposed to the application of an inconsistent approach.

**2.51** As the full costs attributed to the state-delivered project are captured in the status reports, when DOTARS has reconciled the status reports against the estimated costs, variations have been processed. In Victoria and NSW reconciliation of completed 2002–03 to 2004–05 projects occurred in June 2006, to reflect the reported 'final' cost for each project as part of the transition to AusLink.

**2.52** In Victoria, DOTARS provided a blanket approval for 36 projects that had exceeded their project estimate by less than \$15 000 or 15 per cent (and 162 projects that had been delivered for less than the estimated cost). Eight of the 36 projects were in the audit sample. In each instance, VicRoads was the recipient of the project increase, even though five of the eight projects were local government-delivered projects. In this respect, in May 2007, VicRoads advised ANAO that:

Invariably discrepancies occur between project estimate and final cost. The process of periodically advising DOTARS of amended TECs [*Total Estimated Costs*] is considered to be efficient and allows funds to be freed up for reallocation thereby maximising benefits to the Programme. Surplus funds are applied to approved projects in order of priority and funding availability regardless of whether they are delivered by VicRoads or Council. VicRoads will always endeavour to expend the total program funds.

**2.53** In NSW, 149 completed projects from the 2002–03 to 2004–05 programme years were varied in June 2006. 44 of these varied projects were in the audit sample (22 local government-delivered projects and 22 state-delivered projects). Project increases were obtained for 13 local government-delivered projects, but only two projects resulted in an increase in funding paid to council. (In many local government-delivered projects the cost of the works was higher than the estimated cost but no variation was sought.) There were also increases in 12 state-delivered projects, 10 projects where the variation was in excess of \$15 000.

**2.54** Often where local government-delivered projects in NSW and Victoria were increased through this reconciliation process, it was to cover the State administrative and/or project management charges rather than providing an increase in payment to the Council.



## Recommendation No.1

2.55 ANAO *recommends* that the Department of Transport and Regional Services seek to better link Programme payments to the delivery of road works by examining the merits of directly funding the proponent (State road transport authorities and local government authorities) for road safety projects they are to deliver, with the proponent accounting directly to the Commonwealth for the delivery of these works, and the associated costs.

### *DOTARS response*

2.56 DOTARS disagreed with the recommendation, and commented as follows:

The recommendation is inconsistent with Australian Government policy for the AusLink Black Spot Programme and the Act which states “the approval instrument for a Black Spot Project must identify the eligible funding recipient, being a state or authority of a state, to which funding may be paid”. The report does not provide evidence that there might be sufficient benefits for the Australian Government were it to revise its policy, amend legislation and allocate the increased resources necessary to implement the recommendation nor does it provide evidence that implementing the recommendation would enhance the efficiency or effectiveness of the Programme.

### *ANAO comment*

2.57 This report properly recognises that decisions on the approach to be adopted for Programme delivery are ultimately a matter for the Government.<sup>74</sup> However, the recommendation is made against the background of:

- significant developments in programme delivery options such as direct funding and accountability arrangements under the Roads to Recovery Programme for road works being delivered by local government, and indications in June 2006 from the then Chair of the Joint Committee of Public Accounts and Audit that direct provision of funds to local government could be extended to other Commonwealth funding programmes; and

<sup>74</sup> In terms of the relationship between the policy objectives for the National Black Spot Programme and the legislative underpinnings for its operation, it is relevant to note that the Programme was not initially included in the drafting of the AusLink legislation. However, in November 2004, the then Minister for Transport and Regional Services advised the Prime Minister that, while future Black Spot project approvals could be administered on a non-legislative basis under administrative guidelines, including the Black Spot Programme in the AusLink legislation would demonstrate the Government’s commitment to the Programme.

- the audit demonstrating some loss of visibility over the physical status of Black Spot projects and the actual cost of road works approved for delivery under the Programme; lower priority road safety projects (including some that do not satisfy the Programme eligibility criteria) being recommended and approved for funding; and Programme funds being used for road works not approved by the Federal Minister.

2.58 Clearly, cost-benefit considerations of the different approaches need to be taken into account (as mentioned by VicRoads in its comments on the proposed report and reflected in the NSW RTA's proposals for improvements to Programme administration under the existing delivery model—see Appendix 3). This has been recognised by ANAO (and the Department of the Prime Minister and Cabinet) in a recent Better Practice Guide.<sup>75</sup>

2.59 An important role for all departments is to keep under review the effectiveness of delivery mechanisms in achieving government policy objectives and to be in a position to advise government on these matters. This recommendation is directed at DOTARS seeking to examine the merits of alternative delivery mechanisms that may achieve a greater alignment between an evidence-based approach to nominating, ranking and approving Black Spot projects and the payment and accountability arrangements for projects that are funded by the Australian Government.

## Administration costs

2.60 In the report of the audit of the Roads to Recovery Programme, DOTARS agreed to a recommendation that it instigate measures to promote a shared understanding with LGAs on the extent to which administrative costs may be charged to the Programme. The issue of a shared understanding of applicable administration costs is also relevant to the operation of the National Black Spot Programme.

2.61 For example, in addition to the actual costs of road works being overstated at times in Victoria, in 2005–06 projects, VicRoads applied an additional charge of 3 per cent to the reported expenditure of the project included in the status report. In this respect, VicRoads advised ANAO that:

VicRoads has a general policy of applying a 4% (previously 3%) charge to all projects to cover the costs of providing corporate support services. These

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<sup>75</sup> Department of the Prime Minister and Cabinet and ANAO, *Implementation of Programme and Policy Initiatives: Making implementation matter*, Better Practice Guide, Canberra, October 2006, p. 7.

corporate support services provide benefits to all projects including those funded under the National Black Spot Programme.

**2.62** In SA, however, DTEI advised ANAO in December 2006 that:

The cost of administering the National Black Spot Programme is funded from State funds in SA. This includes the cost of preparing bids and the Transport Planning Division's administrative costs.

**2.63** Similar to SA, Main Roads WA advised ANAO in April 2007 that:

Main Roads WA administers the National Black Spot Programme on behalf of the Commonwealth with no contribution or recognition in a public sense. This is in contrast to the old Australian Land Transport Development program that provided a 4% administration allowance.

Main Roads WA is cognisant that the Programme funds are being managed on behalf of the Commonwealth and to this end places a great deal of effort to ensure that the best return is achieved for the funds invested. However it must be stressed that this effort is balanced by the need to ensure we do not over invest State Government resources in managing a Commonwealth Programme. There is a point at which the Commonwealth must take responsibility for ensuring the Commonwealth funds are appropriately managed and not expect the States to do so without recognition.

Given that with the National Black Spot Programme a large percentage of funds is granted to Local Government projects it could be argued from a purely cost driven perspective the State should discontinue undertaking the administration burden of managing a Commonwealth program. This however may not result in the best road safety outcome for both the Commonwealth and Western Australia.

**2.64** In this regard, and as highlighted earlier in this chapter, in WA the total number of projects approved to be delivered by LGAs for the period 2002–03 to 2005–06 compared to those to be delivered by the State road transport authority was significantly higher. Accordingly, Main Roads WA's administrative activities involve relatively greater oversight of local government-delivered projects than VicRoads but it charges no administrative cost compared to VicRoads' 4 per cent.

## **Recommendation No.2**

**2.65** ANAO *recommends* that the Department of Transport and Regional Services take steps to promote greater consistency in whether administration costs are charged to the National Black Spot Programme by State road transport authorities and/or local government authorities.

## *DOTARS response*

2.66 DOTARS agreed to the recommendation.

### **Annual reports to DOTARS**

2.67 The Notes on Administration explain that annual statements of expenditure are to be provided to DOTARS. Specifically the Notes state:

Each state is required to submit to the Minister, as soon as practicable after 30 June each year, financial statements giving details of expenditure from amounts paid under [*the relevant legislation (AusLink Act or previously under the ALTD Act)*].

2.68 The legislation (and reiterated in the Notes on Administration) require the statement be accompanied by a certificate from the funding recipient and a report by an 'appropriate auditor'. The legislation also requires that the statement be completed and forwarded to DOTARS for ministerial consideration no later than six months following the end of the financial year for which expenditure is being reported.

2.69 In this respect, as noted above, in February 2007, DOTARS advised the Senate Standing Committee on Rural and Regional Affairs and Transport that the annual reports are important as they are to provide information on projects status.<sup>76</sup> However, ANAO's assessment of DOTARS records in regards to the submission of the annual audited financial statements found that statements were not submitted by the Northern Territory for 2005–06. In May 2007, DOTARS advised ANAO that no payments have been made to the Northern Territory in 2006–07.

### **Annual reports to Parliament**

2.70 Under the relevant legislation governing the National Black Spot Programme over the 2002–03 to 2005–06 period, an annual report was required to be provided to Parliament, by the Minister.

2.71 Under the ALTD Act, Section 41 required the Minister, as soon as practicable after 30 June in each year, to cause a report to be laid before each House of the Parliament setting out details of the operation of the Land Transport Reserve including a description of the progress made on all programs during the year under report.

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<sup>76</sup> Senate Standing Committee on Rural and Regional Affairs and Transport, *Estimates Hansard*, 15 February 2007, Canberra, p. RRA&T 29.

2.72 Under the AusLink Act, Section 94 requires as soon as practicable after the end of each financial year that ends after the commencement of Part 3, 4, 5, 6, 7 and 8, the Minister must cause a report to be tabled in each House of the Parliament on the operation of the Act during the financial year. Part 7 of the Act relates to the National Black Spot Programme.

2.73 In relation to the report to be tabled for the 2005–06 financial year, in February 2007, DOTARS advised the Senate Standing Committee on Rural and Regional Affairs and Transport<sup>77</sup> that:

There is a requirement for us to do an annual report on AusLink, and the first of those is in preparation at the moment.

2.74 In November 2006, ANAO sought clarification from DOTARS regarding the earlier reports under the ALTD Act as the latest report that could be located was for the 2002–03 financial year, which was tabled in Parliament on 2 December 2003.

2.75 In this regard, DOTARS advised ANAO in November 2006 that the 2003–04 and 2004–05 reports had yet to be printed and tabled.

2.76 The untimely nature of reporting to the Parliament on the operation of the ALTD Act was previously raised with DOTARS. The performance audit on Special Accounts (Audit Report No.24 2003–04) specifically examined the Department's reporting of the ALTD special account. Paragraph 2.47 of that report states:

ANAO identified four Accounts where a substantial period of time elapsed between the conclusion of the relevant financial year and the tabling of one or more annual reports. Whilst particular timeframes are not specified, the legislation establishing each of these four Accounts requires that a report be prepared as soon as practicable after the end of each financial year. The four Accounts involved were...

- the Australian Land Transport Development Account (ALTD Account) between 1997–98 and 2001–01, the tabling of reports varied from 11 months to more than two years after the end of the relevant financial years. On this issue, the Department of Transport and Regional Services (DOTARS) commented to ANAO in November 2003 that the *Australian Land Transport Development Act 1998* (ALTD Act) does not specify a timeframe in which the report is to be tabled and that, for various reasons, it took longer to secure tabling in some

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<sup>77</sup> Senate Standing Committee on Rural and Regional Affairs and Transport, *Estimates Hansard*, 15 February 2007, Canberra, p. RRA&T 29.

years than others. DOTARS advised ANAO in November 2003 that it did not consider that this reflected a deficiency in reporting in the sense that it had not breached legislation. However, DOTARS advised ANAO that it had taken action to ensure that reports are tabled in the six months following completion of the financial year.

**2.77** As of April 2007, the reports for 2003–04 and 2004–05 still had not been presented to the Parliament. In May 2007, DOTARS advised ANAO that:

The 2003–04 report is being printed ahead of tabling. The 2004–05 report has been finalised and will go to the Minister in the near future seeking permission to table.

## State and Territory expenditure on black spot programmes

**2.78** As mentioned in Chapter 1, the then Bureau of Transport Economics (now the Bureau of Transport and Regional Economics—BTRE) within DOTARS evaluated the National Black Spot Programme in 2001. In its final report, the BTRE concluded that its analysis of black spot expenditure by jurisdiction showed that the Notes on Administration may need to be updated to remove ambiguities about maintaining expenditure by State governments.<sup>78</sup> Specifically, the BTRE suggested that:

There could be merit in ensuring that the Notes on Administration for any future black spot program include more specific criteria about jurisdictions maintaining funding. The meaning of *maintenance* in this context is not clear. The Notes on Administration could specify, for example, whether States and Territories must maintain:

- expenditure in real terms – and if so, over what period and compared to what base period;
- a constant proportion of State or Territory budget outlays; or
- a minimum ratio of expenditure on black spot treatments relative to Federal Government expenditure on black spot treatments.

**2.79** While the Notes on Administration were revised and disseminated in August 2002, they were not amended to address the BTRE’s concerns.

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<sup>78</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 20.

## **DOTARS' monitoring of black spot programme expenditure by States and Territories**

2.80 The intention of the National Black Spot Programme has always been to reduce road trauma rather than to replace State expenditure on black spot treatment.<sup>79</sup> In this respect, a new condition was added to the Programme Notes on Administration for the Black Spot Programme that operated between 1996 and 2002, as follows:<sup>80</sup>

The Commonwealth expects States to retain their existing expenditure patterns on black spot programs. In the final determination of allocations to States, the Minister will take into account whether a State has maintained its own spending on black spot projects.

2.81 The BTRE concluded in 2001 that the 'available evidence suggests' that the Australian Government's expenditure on black spot treatment between 1996–97 and 1999–2000 added to rather than replaced State expenditure.<sup>81</sup> However, the BTRE noted that the available evidence needed to be interpreted with caution as it was affected by three data quality issues:

- it was likely that part of the increase in State expenditure would have resulted from improved record-keeping practices rather than an actual increase in expenditure;
- there were definitional inconsistencies with not all States using the Australian Government's definition of a black spot for programs they fund; and
- data was not available for expenditure on black spot treatments at local government level.

2.82 The BTRE analysis included data on actual expenditure for the period 1995–96 to 1998–99. It also included the amount budgeted for 2000–01 and noted that the level of State funding in 2001–02 was not available at the time the BTRE published its report.

2.83 In August 2002, at the commencement of the Programme, the then Parliamentary Secretary to the then Minister for Transport and Regional Services advised each State roads minister what the allocation would be for

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<sup>79</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 9.

<sup>80</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 9.

<sup>81</sup> See ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006, p. 10.

their State should it continue to participate in the Programme. Advice was sought on the actual level of expenditure by each State on black spot treatments for 2000–01 and 2001–02. DOTARS’ records included responses from all States except Queensland. States were also advised that:

Under the revised Notes on Administration for the National Black Spot Programme, this information will in future be collected as part of the annual programme summary report required by 31 July of each year.

**2.84** Specifically, the Annual Programme Summary Report required each State to report to DOTARS State road funding expenditure on black spot type projects outside the National Programme.<sup>82</sup> However, the only State that submitted an Annual Programme Summary Report in each year up to and including 2004–05 was South Australia. As outlined in Table 2.1, some States did not submit an Annual Programme Summary Report in any year. In aggregate, of the 24 reports that should have been obtained between 2002–03 and 2004–05, only seven were obtained (29 per cent).

**Table 2.1**

**Annual Programme Summary Reports obtained by DOTARS**

State/Territory	2002–03	2003–04	2004–05
New South Wales	Submitted	Not submitted	Not submitted
Victoria	Submitted	Submitted	Not submitted
Queensland	Submitted	Not submitted	Not submitted
Western Australia	Not submitted	Not submitted	Not submitted
South Australia	Submitted	Submitted	Submitted
Tasmania	Submitted, but incomplete as no data provided for State road funding on black spot type projects	Not submitted	Not submitted
Australian Capital Territory	Not submitted	Not submitted	Not submitted
Northern Territory	Not submitted	Not submitted	Not submitted
<b>Total submitted in full</b>	<b>4</b>	<b>2</b>	<b>1</b>

Source: ANAO analysis of DOTARS data.

<sup>82</sup> The Notes on Administration (p. 18) defined this term as follows:

Where there is no specific state-funded black spot programme, this figure may include spending by the state road agency on infrastructure projects at hazardous locations within other state road or road safety programmes.



2.85 DOTARS did not follow-up the non-provision of these reports. DOTARS did not otherwise obtain the necessary data on State road funding expenditure on black spot type projects outside the National Programme. Accordingly, as illustrated by Table 2.2, DOTARS did not gather the necessary data to analyse whether, and to what extent, States have maintained their own expenditure on black spot projects.

**Table 2.2**

**State and Territory expenditure on black spot type projects outside the National Black Spot Programme**

State/Territory	2002–03 \$	2003–04 \$	2004–05 \$	2005–06 \$
New South Wales	20 606 000	No DOTARS data	No DOTARS data	No DOTARS data
Victoria	70 695 000	43 081 000	No DOTARS data	No DOTARS data
Queensland	36 915 000	No DOTARS data	No DOTARS data	No DOTARS data
Western Australia	No DOTARS data	No DOTARS data	No DOTARS data	No DOTARS data
South Australia	24 100 000	29 989 000	26 224 000	No DOTARS data
Tasmania	No DOTARS data	No DOTARS data	No DOTARS data	No DOTARS data
Australian Capital Territory	No DOTARS data	No DOTARS data	No DOTARS data	No DOTARS data
Northern Territory	No DOTARS data	No DOTARS data	No DOTARS data	No DOTARS data
<b>Total</b>	<b>152 316 000</b>	<b>73 070 000</b>	<b>26 224 000</b>	<b>Nil</b>

Source: ANAO analysis of DOTARS data.

2.86 As part of the audit, ANAO obtained information from the four States in the audit sample to determine whether its expenditure on road safety works had been maintained. The figures provided by the four States are shown in Table 2.3.

**Table 2.3****State expenditure on black spot type projects outside the National Black Spot Programme**

State	2002–03 \$	2003–04 \$	2004–05 \$	2005–06 \$
New South Wales <sup>a</sup>	20 606 000	13 500 000	12 500 000	13 850 000
Victoria	70 695 000	43 081 000	75 200 000	75 900 000
Western Australia	36 008 449	38 848 586	29 366 552	53 217 290
South Australia	24 140 000	29 990 000	26 220 000	21 820 000

Note:

<sup>a</sup> RTA advised that, in addition to the figures provided for NSW there have also been major road safety programs targeting the Pacific Highway and the Princes Highway which have been completed or are currently underway (\$35 million and \$30 million respectively over three years).

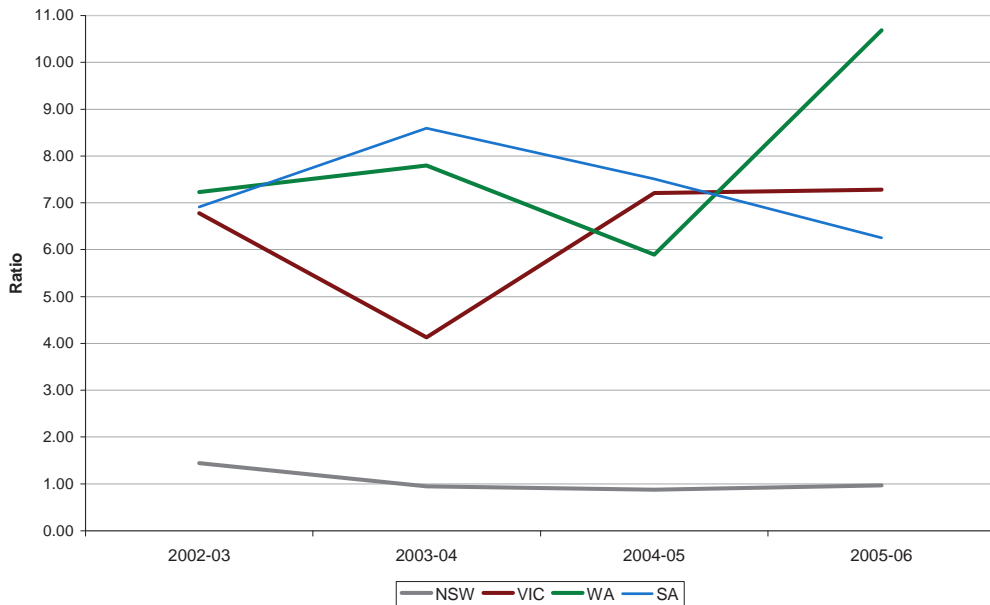
Source: Shaded cells indicate data provided by the State road transport authorities to ANAO.

**2.87** Notwithstanding that these States advised ANAO that their own expenditure on black spot and black length projects had been maintained, based on the data provided, this had not been the case in NSW. By way of comparison, WA advised ANAO that it has increased its expenditure on its State Black Spot Program over the period 2002–03 to 2005–06 as well as introducing new safety programs such as the Safer Roads Program.

**2.88** In May 2007, VicRoads advised ANAO that:

Victoria leads Australia in road safety investment and results. Victoria's baseline investment in blackspot programs at the commencement of the federally funded black spot programs was approximately \$4 million. However, this has been substantially increased since 1999.

**2.89** Using the information provided by the States, the ratio of the State's own expenditure data relative to the State's annual National Black Spot Programme allocation was calculated. The result of this analysis is shown in Figure 2.12. The data provided to ANAO by the State road transport authorities highlights the different relative commitment of financial resources being made (and maintained), having regard to their level of funding under the National Black Spot Programme. Among other things, Figure 2.12 shows that the State with the highest allocation of National Black Spot Funds (NSW), reported to ANAO that it spends less in absolute terms than the other States, particularly SA and WA who receive a significantly smaller allocation from the Programme (see Table 1.2).

**Figure 2.12****Ratio of State's own expenditure relative to National Black Spot Programme annual allocation**

Source: ANAO analysis.

**2.90** As indicated above, the Notes on Administration that operated under the ALTD Act provided that in the final determination of allocations to States, the Minister would take into account whether a State has maintained its own spending on black spot projects. However, in its advice to Ministers recommending approval of the annual programme of works for each State and the total amount available under the Programme in that year, DOTARS did not address whether or not the State had maintained its own spending on black spot projects. Accordingly, in practice, the annual allocations to the States were approved without having regard to whether States had maintained their own spending on black spot projects.

**2.91** In this respect, DOTARS advised ANAO in January 2007:

There was no expenditure maintenance requirement under the Black Spot Programme. The quantum of expenditure by a State was a matter for the Minister to take into account. The annual allocation for each State was established in the then Parliamentary Secretary's correspondence of August 2002 for a 4-year programme to 30 June 2006. There was no annual allocation as inferred by para [2.90].

2.92 As mentioned in paragraph 2.90, in its advice to Ministers recommending approval of the annual programme of works for each State and the total amount available under the Programme in that year, DOTARS did not address whether or not the State had maintained its own spending on black spot projects. Accordingly, due to the absence of advice from DOTARS on this issue, it was not possible for the Minister to take into account the quantum of expenditure by a State.

### **Under AusLink, States are no longer required to provide data on their own black spot expenditure**

2.93 There were no AusLink Black Spots Notes on Administration in place for the 12 months between the commencement of the AusLink Program in July 2005 and June 2006. The Notes on Administration that were promulgated by DOTARS in July 2006 for the AusLink Black Spots Programme removed the requirement for States to submit an Annual Programme Summary Report. This means that, for 2005–06 onwards, States are not required to provide data to the Commonwealth on their road funding on expenditure on black spot type projects outside the National Programme.

2.94 In this respect, in January 2007 DOTARS advised ANAO:

Annual Summary Reports proved to be redundant, as information provided in these reported on project progress is available from the bi-monthly status reports provided by the States. Ceasing the requirement of Annual Summary Reports appropriately reduced the administrative burden of the programme without affecting accountability.

2.95 However, accountability has been reduced due the removal of any reporting of State's own expenditure on black spots. In this respect, the removal of the requirement for data from States on their expenditure on black spot type projects contrasts with the approach taken for the Roads to Recovery Programme where, to address the concern that LGAs were not maintaining their own spending on local roads, the annual certification from LGAs has been expanded to require them to specify the amount spent using their own sources in each year together with the reference average amount.<sup>83</sup>

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<sup>83</sup> ANAO's audit of the Roads to Recovery Programme noted that this should assist DOTARS to monitor compliance by LGAs with their expenditure maintenance obligation.

## Reduced emphasis on expenditure maintenance

2.96 The AusLink Notes on Administration prepared and issued by DOTARS have lessened the emphasis placed on States retaining their existing expenditure patterns on black spot programmes. Specifically, the following guidance has been removed:

In the final determination of allocations to States, the Minister will take into account whether a State has maintained its own spending on black spot projects.

2.97 Accordingly, whilst the Notes on Administration continue to state that the Australian Government expects these patterns to be retained, there is no longer any statement of consequence should this not occur. DOTARS did not advise its Ministers that it proposed to take this approach to the Programme.

2.98 In this context, in its October 2003 report titled *Rates and Taxes: A Fair Share of Responsible Local Government*, the House of Representatives Standing Committee on Economics, Finance and Public Administration made the following recommendation:<sup>84</sup>

The Committee recommends that SPPs directed to local government, such as roads, should be conditional on States not reducing their effort.

2.99 The Government's June 2005 response to the Committee's report included the following in relation to this recommendation:

The Australian Government supports this recommendation. The Government programmes of tied road funding to local government, the *Roads to Recovery* and *National Blackspot* programmes and the AusLink programme, contain this condition.

2.100 However, DOTARS advised ANAO in January 2007 that:

Black Spot Programme funds are paid by the Commonwealth to State Governments, not to LGAs, hence the programme is not one of those covered by the recommendation quoted.

The Government response cited may have been accurate at the time of preparation. However, from the commencement of the AusLink Act in July 2005 the AusLink Black Spot Programme does not require that States should maintain their effort.

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<sup>84</sup> House of Representatives Standing Committee on Economics, Finance and Public Administration, *Rates and Taxes: A Fair Share of Responsible Local Government*, October 2003, Canberra, Recommendation 10, p. 66.

2.101 Notwithstanding the current absence of any legislative requirement, the AusLink White Paper emphasised the importance of clarity about cost sharing responsibilities.<sup>85</sup> In this respect, the specific emphasis for elements of AusLink is shown in the following table.

**Table 2.4**

**Maintenance of own expenditure under AusLink Programmes**

AusLink Programme	Approach to expenditure maintenance
National Projects	According to the Notes on Administration for National Projects under the AusLink Investment Programme <sup>86</sup> in bilateral agreements the States have agreed to maintain expenditure from 'own source' revenue on both the AusLink Network and on regional and local transport infrastructure. The Notes on Administration further state that the States have also agreed to provide data to DOTARS that shows their direct and indirect land transport expenditure—including payments to local government—from their own source revenue in the preceding financial year. In addition, they are to provide data about their budgeted expenditure, by category, for the current financial year in an acceptable form as specified in the Bilateral Agreements.
AusLink Strategic Regional	For AusLink Strategic Regional Projects, Section 62(2) of the AusLink Act requires that funding agreements entered into with a local government body for provision of a Strategic Regional Project to include a condition that requires the body to maintain the level of expenditure on its roads, so far as that expenditure comes from sources other than Commonwealth, State or Territory funding.
National Black Spot Programme	States are expected to maintain their spending but this is not to be monitored with no adverse consequences if spending was to reduce.
Roads to Recovery	Maintenance of expenditure by local government <sup>87</sup> is a requirement of the Roads to Recovery Programme. Specifically, as the funding provided through the Roads to Recovery Programme to local government was to be additional to existing road funding, provisions were included in the <i>Roads to Recovery Act 2000</i> , the Funding Conditions and Administrative Guidelines requiring LGAs to maintain their own source expenditure, rather than substituting Commonwealth funding for their own, in constructing, upgrading and maintaining roads. <sup>88</sup> The expenditure maintenance requirements were expanded and clarified for the AusLink Roads to Recovery Programme that commenced on 1 July 2005.

Source: ANAO analysis.

<sup>85</sup> DOTARS, *Auslink White Paper 2004*, p. 91.

<sup>86</sup> DOTARS, *AusLink Investment Program: National Projects Notes on Administration*, March 2006, p. 22.

<sup>87</sup> The requirement does not apply to State/Territory governments in terms of maintaining their overall level of road funding to local government.

<sup>88</sup> See ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006, pp. 85–94.

## Recommendation No.3

2.102 ANAO *recommends* that the Department of Transport and Regional Services seek to maximise the reduction in road trauma achieved through the National Black Spot Programme by assessing the benefits and risks of the change made to the Notes on Administration that reduced the emphasis given to States maintaining their own black spot expenditure.

### *DOTARS response*

2.103 DOTARS agreed with qualification to the recommendation and made the following comment:

There is no expenditure maintenance requirement under the legislation now covering the programme. Under bi-lateral agreements with each state and territory for delivery of the AusLink National Land Transport Plan, each jurisdiction must report annually on expenditure from 'own source' revenue on both the AusLink Network and on regional and local road infrastructure and provide data that shows their direct and indirect land transport expenditure. The Government chooses to monitor in aggregate maintenance of effort by states and territories as it captures state/territory expenditure across the range of their programmes, all of which have a positive impact on road safety.





## 3. Project Eligibility

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*This chapter examines the criteria used to define a road safety black spot for the purposes of the National Black Spot Programme, and outlines audit findings concerning the extent to which funded projects in ANAO's sample satisfied these criteria.*

### Introduction

3.1 In terms of project eligibility, the Notes on Administration state as follows:

All nominations will be referred to the Consultative Panel. However, nominees should be aware that nominations for sites which fail to confirm to the criteria will not be considered for approval.

3.2 DOTARS has devolved to State road authorities the responsibility for assessing project nominations against the Programme eligibility criteria. This is reflected in the Notes on Administration stating that:

On receipt of a site nomination, the State will assess the eligibility of the nomination against the criteria and undertake a benefit-cost assessment of a treatment proposal.

3.3 DOTARS has not provided guidance to the States on the level of scrutiny they are expected to apply to the administration of the project eligibility criteria. In this respect, ANAO's analysis of Programme administration arrangements in NSW, Victoria, WA and SA revealed that each of the State road authorities undertake checking of project nominations. However, the level of scrutiny, and the way in which it occurs, varies. In any event, as evidenced by the fact that in each of the States projects that did not satisfy the Programme eligibility criteria were recommended and approved for funding, none of the approaches has been sufficiently effective.

### Legislative basis

3.4 Up to and including the approval of 2005–06 projects, the National Black Spot Programme operated under the ALTD Act<sup>89</sup>. Under Section 26(1)(bb) of the ALTD Act, the Federal Minister was empowered to invite or

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<sup>89</sup> All 2005–06 projects except those for QLD and ACT. These State 2005–06 programmes were not finalised prior to 21 July 2005, and were subsequently approved under the AusLink Act.

direct a State to submit particulars of projects of programmes commenced, or to be commenced, for:

- the road safety improvement of black spots, in accordance with Section 7B(1) which provided that:  
if the Minister is satisfied that a part of a road that is not part of a national highway is a site the nature of which has contributed to serious motor vehicle crashes involving death or personal injury, the Minister may declare the location to be a black spot for the purposes of this Act.
- the implementation of road safety measures. in accordance with Section 7B(2) which provided that the Federal Minister may:  
declare a measure to be a road safety measure for the purposes of this Act if the Minister is satisfied that the implementation of the measure is likely to reduce the incidence of motor vehicle crashes involving death or personal injury.

3.5 These projects or programmes could then be approved by the Federal Minister under Section 26(3) of the ALTD Act.

### **AusLink Black Spot projects**

3.6 The *AusLink (National Land Transport) Act 2005* (AusLink Act) includes more explicit legislative criteria for project eligibility that were included in the ALTD Act. Specifically, an AusLink Black Spot project may only be approved by the Minister if the Minister is satisfied that the project is eligible (Section 71) and appropriate (Section 72), as follows:

#### **71 What projects are eligible for approval?**

A project is eligible for approval as an AusLink Black Spot Project if:

- (a) the project is for the improvement of road safety of a site (being all or part of any road); and
- (b) the site is in a State; and
- (c) the nature of the site has contributed to, or is likely to contribute to, serious motor vehicle crashes involving death or personal injury; and
- (d) the site is not included in the National Land Transport Network.

#### **72 Is it appropriate to approve a project?**

The matters to which the Minister may have regard in deciding whether it is appropriate to approve a project as an AusLink Black Spot Project include, but are not limited to, the following matters:

- (a) the accident history of the site to which the project relates;

- (b) the results of any assessment of the safety benefits and the costs of the project;
- (c) the results of any road safety audit conducted in relation to the site;
- (d) the extent to which persons other than the Commonwealth propose to contribute funding to the project.

**3.7** All National Black Spot Programme projects in ANAO's sample for the period 2002–03 to 2005–06 were declared under the ALTD Act. As part of the AusLink transitional arrangements, on 12 October 2005, the then Minister for Transport and Regional Services determined<sup>90</sup> that:

1. The project approvals in force under subsection 26(3) of the *Australian Land Transport Development Act 1988* immediately before the commencement of Parts 3 to 8 of the *AusLink (National Land Transport) Act 2005* (the 'transition time'), and which are specified in Schedules 1 and 2 to this Determination, are to be taken, as from the transition time, to be approvals properly granted under the *AusLink (National Land Transport) Act 2005* (the 'AusLink Act');

Note: The transition time is 28 July 2005, the date when Parts 3 to 8 of the AusLink Act commenced.

2. Each of the approvals specified in Schedule 1 is to be taken to be an approval of an AusLink National Project within the meaning of the AusLink Act; and

3. Each of the approvals specified in Schedule 2 is to be taken to be an approval of an AusLink Black Spot Project within the meaning of the AusLink Act.

**3.8** Analysis of Schedule 2 shows that 271 of the 273 projects in ANAO's sample were included. The two projects excluded from Schedule 2 (N03076 and W03144) had been formally withdrawn from the Programme earlier in 2005.

## Evidence to support project nominations

**3.9** According to Austroads, effective road safety programs rely on an evidence-based approach.<sup>91</sup> As mentioned in paragraph 1.14, for the National Black Spot Programme, two forms of evidence are accepted as the basis for project nominations:

<sup>90</sup> The determination was made under item 2(1) of Schedule 2 of the *AusLink (National Land Transport—Consequential and Transitional Provisions) Act 2005*.

<sup>91</sup> Austroads, *Guide to Road Safety*, Part 1: Road Safety Overview, 2006, p. 15.

- funding is mainly available for the treatment of black spot sites or road lengths with a proven history of crashes (sometimes referred to as 'reactive' projects); and
- up to 20 per cent of Programme funds are available for the treatment of locations that may not meet the crash history criteria but which have been recommended for treatment on the basis of an official road safety audit report (sometimes referred to as 'proactive' projects).

3.10 Of the 273 projects in ANAO's sample, 259 (95 per cent) were nominated on the basis of their crash history. The remaining 14 projects (5 per cent) were nominated on the basis of a road safety audit report (see Table 3.1).

**Table 3.1**

**National Black Spot Programme Projects 2002–03 to 2005–06: ANAO Sample**

State	Based on Crash History		Based on Road Safety Audit		Total
	Number	%	Number	%	Number
New South Wales	106	100	0	0	106
Victoria	46	98	1	2	47
Western Australia	83	89	10	11	93
South Australia	24	89	3	11	27
<b>Total</b>	<b>259</b>	<b>95</b>	<b>14</b>	<b>5</b>	<b>273</b>

Source: ANAO analysis.

3.11 According to the BTRE,<sup>92</sup> there are four basic approaches to reducing crashes by applying engineering treatments or countermeasures:

- single sites or black spots, where specific sites or short sections of road are treated;
- route action, where known remedies are applied on a route with an abnormally high crash rate;
- area-wide action, where several treatments are applied over a wide area; and
- mass action, where a known remedy is applied to locations with common crash problems or causal factors.

<sup>92</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 3.

**3.12** The National Black Spot Programme eligibility criteria explicitly enable the first two approaches (specific sites/short sections of road and route action) to be funded.<sup>93</sup> In addition, ANAO's sample included instances of both area-wide and mass action treatments. Currently the Notes on Administration do not explicitly address whether area-wide and/or mass action treatments are eligible for funding and, if they are, the approach to be taken to nominating and assessing such proposals.

### **Area-wide treatments**

**3.13** ANAO's sample included instances where road works at different locations have been combined into a single nomination. In some instances, as part of the assessment process, the relevant State road transport authority has identified such projects and advised the State Consultative Panel that the nominated works are ineligible. The following Case Study provides an example of an area-wide project whose original project nomination was modified by the State road transport authority.

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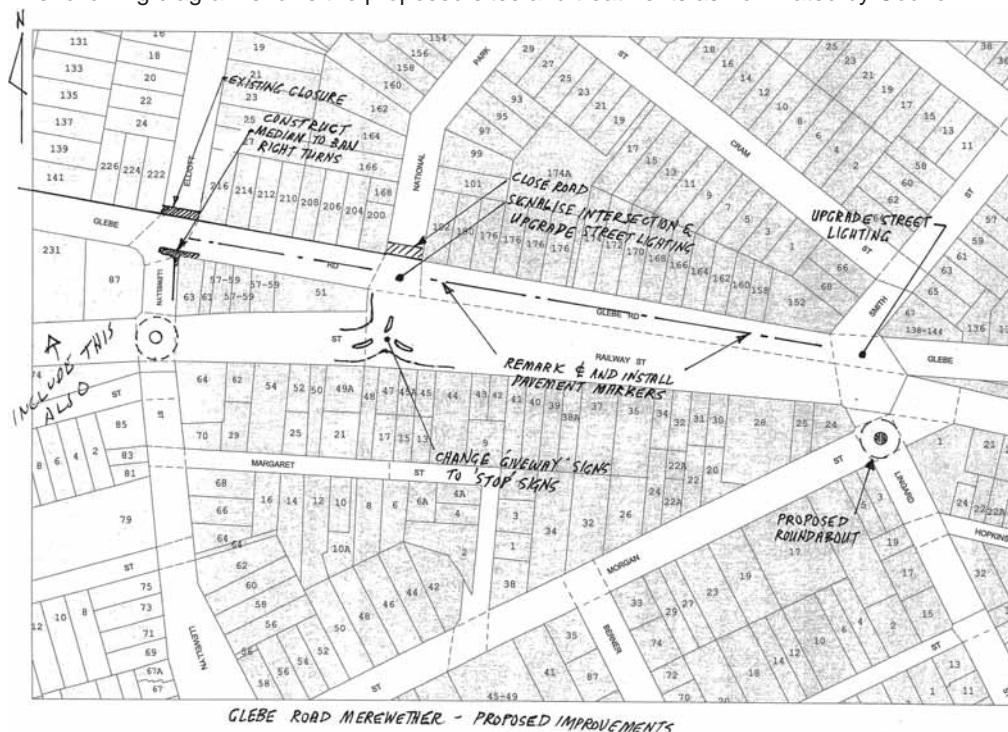
<sup>93</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 3.

## Case Study 3.1: Project N03333: Glebe Road – Llewellyn to Lingard Street, Merewether, NSW – Newcastle City Council

The project nomination form submitted to the New South Wales Roads and Traffic Authority (RTA) by Council sought Commonwealth funding for intersection works over 400m on Glebe Road, Merewether, between Llewellyn Street and Lingard Street. The proposed treatment was:

Half road closure to stop right turns into & out of Llewellyn St. Signalise National Park St intersection plus road closure on the north side of National Park St and change Giveaway sign to Stop signs at Railway Street. Upgrade lighting at National Park Street and Smith/Lingard Street intersections. Remark Glebe Rd centreline and install pavement markers. Construct roundabout at the intersection of Morgan St with Lingard St.

The following diagram shows the proposed sites and treatments as nominated by Council.



The 'project' was submitted based on its reported crash statistics – one fatality and 30 casualty crashes within a five year period (1 July 1998 to 30 June 2003). A BCR of 14.1 was included in the nomination form, calculated based on the various treatments at an estimated cost of \$425 000 to the National Black Spot Programme. The following table shows the combined project BCRs that were calculated by Council and included to support the nomination.

Site	Nominated cost	Discounted benefits	Discounted costs	BCR
Glebe Road and Llewellyn	\$25 500	\$4 125 348	\$30 111	137.0
Glebe Road and Smith Lingard	\$17 500	\$599 005	\$21 747	27.5
Lingard and Morgan	\$150 000	\$1 025 950	\$152 866	6.7
Glebe Road and National Park St	\$232 000	\$1 291 287	\$296 089	4.4
<b>Total</b>	<b>\$425 000</b>	<b>\$7 041 589</b>	<b>\$500 813</b>	<b>14.1</b>

In the papers provided to the NSW Consultative Panel for its November 2004 meeting, the RTA identified the combined project nominated by Council as 'not eligible or not supported'. The comment associated with the project stated 'these are all separate sites and must be nominated as such'. Instead, the Papers included two separate projects that were supported (by the RTA) for funding:

- Glebe Road – Llewellyn Street & Smith Street: partial closure of Llewellyn St – signalise National Park St – street lighting and raised reflective pavement markers (RRPMs); and
- Glebe Road – Morgan & Lingard Streets: install a single lane roundabout.

The first project was approved as part of the 2005–06 Programme with funding of \$275 000. The approved location was Glebe Road and Llewellyn Street and Smith Street with an approved description of work of 'partial road closure – extra signage – street lighting and RRPMs'. The approved location and description makes no mention of works on National Park Street. The works at this intersection accounted for \$232 000 of the \$275 000 in the BCR calculations. Despite not being part of the Federal Minister's approval, ANAO's site inspection found that the works on National Park Street were being undertaken.

Newcastle City Council advised ANAO in February 2007 that:

Clarification is required as to why the traffic signal work at National Park Street was not approved by the Federal Minister as these works were clearly identified in Council's nomination form and advices received from RTA and are an essential component of the project. The RTA advised that this work was mentioned in its submission to the Federal Government.

In this respect, the Consultative Panel papers show the signalisation of National Park Street was included in the project description but was excluded from the Federal Minister's approved description of works.

A decision was made by the NSW Consultative Panel at its annual meeting on 24 November 2004 to restrict to five the number of projects that a Council could be funded in a single year. As a result, the project for the roundabout on Lingard and Morgan Streets (although assessed as 'conforming crashes – other proposals') was not recommended for approval as part of the 2005–06 Programme. Instead, the 2006–07 National Black Spot Programme included \$150 000 for the installation of a roundabout at the intersection of Glebe Road, Morgan and Lingard Street.

Source: ANAO analysis.

**3.14** There have been other similar instances where proposed works at different locations have been recommended and subsequently approved for funding as a single project. This has resulted in the eligibility criteria being circumvented such that funding has been provided for road works that would not have been approved had they been nominated as a discrete site or road

length. As illustrated by the following Case Study, this has been achieved by grouping work at a location with a high BCR with another site (or sites) that has a lower BCR. This meant that works at the latter location was funded ahead of other works that had a higher road safety merit (in BCR terms).

### Case Study 3.2: Project N03194: Abercrombie Road (43.8–44.2 – 47.1–48.4), Oberon, NSW – Oberon Council

Two project nomination forms were submitted to the RTA by Council for works at two separate locations on Abercrombie Road: chainage 43.8km to 44.2km (the intersection with Felled Timber Road); and chainage 47.1km to 48.4km (the intersection with Cosgrove Road). The following diagram and photographs shows the two intersections, and the completed work undertaken with National Black Spot Programme funds, as follows:

- at the intersection of Felled Timber Road, the pavement was sealed; and
- at the intersection of Cosgrove Road, 1.3km of road was realigned.

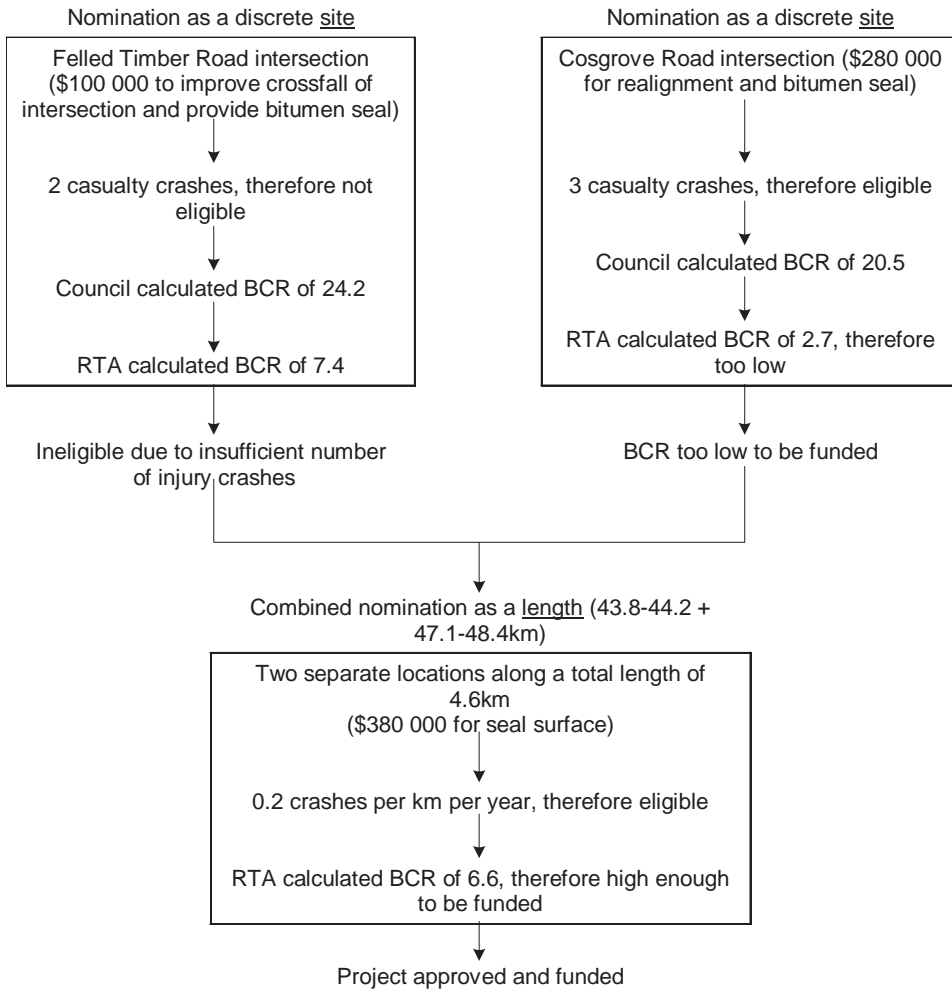


Separate nomination forms were submitted by Council for works at the intersection with Felled Timber Road and Cosgrove Road. Papers prepared for the NSW Black Spot Consultative Panel Meeting in Sydney on Friday 13 December 2002 categorised both nominations as 'Not Eligible or Not Supported'.

The Consultative Panel Meeting papers also included a project jointly sponsored by the RTA and Council that combined the two spot nominations into a length project. Based on the recommendation of the Consultative Panel, the combined project was approved by the Federal Minister as part of the 2003–04 National Black Spot Programme. The approved works were to 'Seal Surface' on Abercrombie Road, 43.8km to 48.4km from Oberon with an estimated cost of \$380 000.



A separate nomination was not submitted for the combined project. Instead, the crash data for the two site nominations was manipulated to combine the two projects that, on their own, were either ineligible or the BCR was not competitive (the cut-off in New South Wales for 2003–04 was 5.4). The combination represented the crash data as a length treatment instead of two spots in order for the project to be recommended. The following diagram summarises the nomination and approval process for Project N03194 on Abercrombie Road.



Source: ANAO analysis.

## Mass action treatments

**3.15** Mass action treatments can address groups of accidents of a similar type occurring across several sites or a series of accidents that have common features such that there will be numerous locations to be treated, with common characteristics.<sup>94</sup>

**3.16** Some of the mass action projects in ANAO's sample involved National Black Spot Programme funding being sought for a section (or sections) of a broader programme of works. These sections were nominated after proponents identified particular road lengths that had a higher incidence of casualty crashes, as these would satisfy the National Black Spot Programme eligibility requirements and result in a higher BCR. However, this approach to calculating BCRs does not accord with Austroads guidance, as follows:

For a mass action scheme the Net Present Value or BCR should be calculated for the scheme as a whole. Mass actions are implemented on the basis that individual sites may not have an accident problem, but collectively the type of road feature *is* known to have a worrying incidence of accidents. It is thus not correct to calculate the BCRs separately for each site or for those sites having the greatest number of crashes.

**3.17** In addition, ANAO's sample included some projects that were nominated on the basis of crash statistics over a particular section of road but work funded by the National Black Spot Programme did not address all crashes that were included in the BCR calculation. This underlines the principle that, for projects nominated on the basis of their crash history, it is important to identify whether the problem is amenable to treatment, and then to decide what (if anything) the treatment should be.<sup>95</sup>

**3.18** A prominent example of nominating projects on the basis of crash history but then implementing countermeasures that did not address all identified crash locations involved projects nominated by the SA DTEI for guardfence installation in the Adelaide Hills Local Government area. Specifically, there were seven guardfencing projects in ANAO's sample that were nominated based on a total of 49 crashes. However, the works treated only 21 (43 per cent) of the locations at which crashes were reported to have occurred. The following Case Study provides an example.

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<sup>94</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 40.

<sup>95</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 76.

### Case Study 3.3: Project S03094 Tea Tree Gully – Mannum Road, 2km east of Gumeracha – SA Department for Transport, Energy and Infrastructure

The project was nominated based on its reported crash statistics – six casualty crashes (including one fatality) within a five year period (1998 to 2002). A BCR of 12.80 was included in the nomination, calculated based on the total estimated cost of \$200 000. The BCR was calculated on the basis of 424m of guardfence being installed including a 40m box beam over a bridge, and minor shoulder sealing work. The BCR was calculated using a 55% crash reduction factor for each of the six 'off road, hit object' crashes (1998–2002 period).

Updated crash information provided to ANAO for the period 1999–2003, revealed a further three casualty crashes (one being fatal) had occurred on this length of road. This made a total of seven casualty crashes over five years, readily satisfying the eligibility criteria for site nominations (the road length was less than three kilometres).

ANAO's site inspection and analysis of records revealed that guardfence had been installed at only two of the seven crash locations. The South Australian DTEI advised ANAO in December 2006 that two of the crash locations consisted of several unprotected trees where it was not feasible to install guardfence as the guardfence would itself become a hazard (see the photograph below). The DTEI advised that a further two crash locations presented no significant observed roadside hazards and that, at the remaining three locations, existing standard guardfence treatments were already in place. Accordingly, DTEI advised ANAO that:

In retrospect, this project would have been better submitted as a proactive project. The guardfence treatments have been installed at the locations where the higher risk weightings were identified in order to maximise the real safety benefits to the community.



Source: ANAO analysis.

**3.19** More broadly, DTEI advised ANAO that its investigation of the issues raised by ANAO had highlighted a 'process flaw' in the way that guardfence projects in the Metropolitan Region were scoped and delivered. Specifically, DTEI advised that:

Many of the black spot guardfence projects were in the Adelaide Hills where winding roads, adjacent trees and steep embankments lead to the need for a high degree of roadside protection. Investigation has identified that there was

a “process disconnect” between the analysis of crash data supporting the nomination and the location of guardfence treatments delivered by the Metropolitan Regional Office.

A comprehensive database has been built up over time of locations where new guardfence installations (needs) are required in the Adelaide Hills. Assessment of need has been based on a proactive risk management approach taking into account geometry, slopes and existence and proximity of hazards. An experienced field officer who has a high degree of expertise in assessment of roadside hazards has undertaken this work over many years. This database is more comprehensive than for all other regions across the State.

The Planning Unit of the Metropolitan Region has used this “needs” database as a source for preparing nominations for Black Spot funding. Regional Planning Officers are provided with crash information maps to assist identification of locations meeting the black spot criteria. It has been discovered in the Metropolitan Region that, for those road lengths meeting the criteria in terms of number of crashes, that the project has been scoped directly from the guardfence needs database. There has been an underlying assumption by the Planning officers that identified sites would deal with the crash locations and sometimes this was the case, but sometimes it was not.

Once funding was obtained the field officer was then asked to check the specific location of new guardfence. Previously identified sites are checked (from a risk management approach), although the project has been submitted as a reactive project. A disconnect therefore occurred between the site design, the specific location of crashes and the crash reduction assumptions in the BCR. DTEI has confirmed that this did not occur in any other Regional Offices.

ANAO has identified (from a simple desk top audit) those specified crash locations that were not treated by the delivered projects. At some of the inspected sites the crash locations were dealt with and at some other sites they were missed.

On receipt of the ANAO letter this anomaly was immediately brought to the attention of the planning staff in all Regions and discussed at a recent Regional Managers’ meeting in order to ensure that the correct procedure and careful site analysis is conducted in future prior to submission of all bids.

## Proposals based on crash history

### 3.20 According to Austroads:<sup>96</sup>

The crash location treatment process can be applied to individual sites, to routes and to areas (i.e. a network of roads). Care is required in specifying the extent of any intersection, route length or area to be investigated.

Intersections are defined in the model guidelines as the area bounded by the projections of the property boundaries, plus 10m of the approach roads. Crashes occurring within this area are classified as 'intersection crashes' and all others as 'mid-block crashes'. But rear end crashes resulting from traffic control at an intersection can occur much farther away than 10m. These should be included in the investigation of the intersection.

3.21 The Notes on Administration require that project proposals based on crash history must be able to demonstrate a benefit cost ratio of at least 2.0. In addition, there are minimum crash criteria that must be satisfied, depending upon whether the nomination is for a discrete site or a road length, as follows:

- discrete sites are required to have had a history of at least three casualty<sup>97</sup> crashes over the most recent available five year period; and
- for road lengths, the minimum eligibility criterion is either:
  - an average of 0.2 casualty crashes per kilometre per annum over the length in question measured over the most recent available five year period; or
  - the length must be amongst the top 10 per cent of sites identified in each State that have an identified higher crash rate than other roads.<sup>98</sup>

3.22 This is summarised in Figure 3.1.

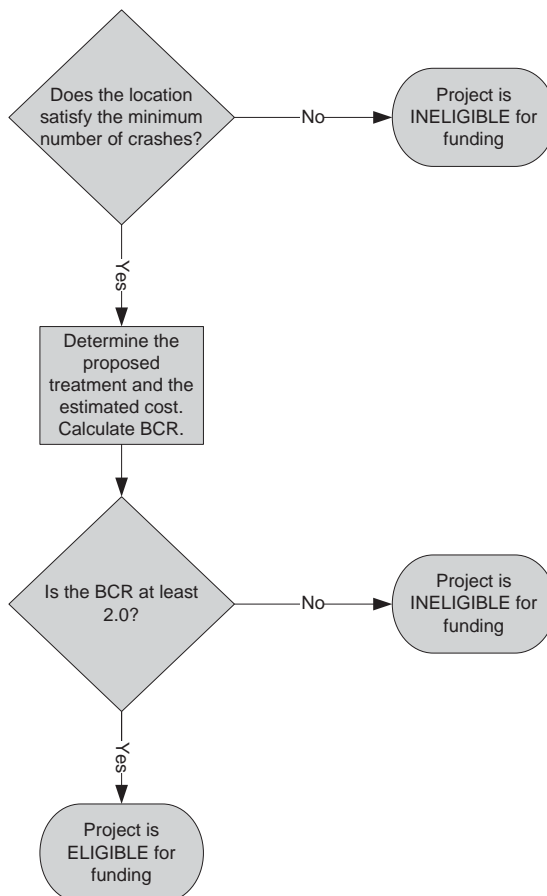
<sup>96</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 40.

<sup>97</sup> A casualty crash is either a fatal or injury crash.

<sup>98</sup> There were no instances in ANAO's sample where this criteria was relied upon as the basis for project eligibility.

**Figure 3.1**

**Eligibility flow-chart for proposals based on crash history**



Source: ANAO analysis of Notes of Administration.

**3.23** In this context, it is important that projects be correctly identified as either a discrete site or a road length. The Notes on Administration that operated under the ALTD Act defined a discrete site as:

for example, an intersection, mid-block or short road section

**3.24** Identical guidance has been included in the AusLink Notes on Administration. In addition, additional guidance has been provided as follows:

The road length criterion may only be applied to proposals for the treatment of road lengths of three kilometres or more. This is to ensure that the road length in question has a crash history similar to that required for a discrete site.

**3.25** In three of the four States in the audit sample, ANAO found that projects were correctly classified as discrete sites or road lengths. However, there were a number of short-road length projects in South Australia where the road length criteria of 0.2 casualty crashes per kilometre per annum was used rather than the discrete site criterion of three casualty crashes over five years. On this issue, the South Australian DTEI advised ANAO in December 2006 that:

The 3 kilometre limit as to what defines a 'road length' (as compared to a "short section") was only defined in the latest "Notes on Administration" published in July 2006. The former "Notes on Administration" which applied for the projects currently being audited made no reference to a 3 kilometre length demarcation. DTEI therefore interpreted discrete sites as intersections only and other projects as a road length.

**3.26** However, as outlined above, the former Notes on Administration advised that discrete sites included intersections, mid-block and short road sections. Accordingly, ANAO considers that DOTARS had provided sufficient guidance under the former Notes on Administration for all State road authorities to have been sufficiently well informed to apply the correct eligibility criterion to all projects.

## Crash locations

**3.27** According to Austroads:<sup>99</sup>

A cornerstone of an effective road safety program is that solutions, or treatments, must be focussed on particular problems. This is the approach of using 'countermeasures'. There are no 'general' road safety solutions: for a solution to be effective, it must be applied to a particular problem which it is known to affect. It must be an effective countermeasure.

**3.28** The Notes on Administration advises that measures of casualty crashes should be provided from the most recent available five year period. For each of the projects in ANAO's sample, ANAO requested a copy of the project nomination form and supporting crash statistics from the State road transport authority or LGA that nominated the project. As DOTARS does not hold this data, it was sought to assess whether each project satisfied the Programme eligibility criteria, and that the BCR was correctly calculated as discussed elsewhere in this report.

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<sup>99</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 21.

**3.29** In terms of the use and interpretation of crash data, DTEI advised ANAO in December 2006 that:

The accurate recording of location of road crashes is an ongoing issue that is common to all States. DTEI relies on the description of the accident location provided by the South Australia Police (SAPOL) or the description provided by the individual reporting the crash. The person coding the accident into the database then has to interpret the description to accurately locate the crash in the database. This inevitably has led to incorrect locations or general location details only being entered in some instances. These anomalies are corrected as they are discovered and the introduction of geocoding of crashes within the database has highlighted anomalies that are now progressively being corrected. More recently SAPOL have commenced recording GPS coordinates of some fatal crashes where their major crash unit is in attendance.

It needs to be recognised that the State's road crash database is continually being updated and corrected. The process of improving the quality of the road crash database is continual and includes correcting past errors in the coding of accidents that are picked up through auditing processes. These coding errors may apply to crash locations and/or crash type. For a number of years the coding of SA crash data was undertaken by external contract. More recently this activity has been brought back "in-house" within the Transport Services Division. A higher degree of accuracy is now being achieved and some past anomalies corrected.

... Furthermore the location of where a crash is recorded (vehicle finishes up) is not necessarily the location where the crash is initiated. Site knowledge of actual crash locations, crash characteristics and physical site features are therefore critical inputs into the optimal design and location of the treatments. Local on-site knowledge of where vehicles are known to leave the road or site assessment of causal or contributory infrastructure factors is important in targeting the works to the correct locations. Often it is not possible to treat all roadside hazards as other factors (such as presence of driveways and intersections) may preclude treatment.

**3.30** The updating of crash databases has two implications for the evidence supporting the eligibility of project nominations. Firstly, there were some instances where the updated data revealed that the particular site or length did not satisfy the Programme eligibility criteria, although the data available at the time of the nomination suggested otherwise. Secondly, there were instances where, based on the information available at the time of nomination, the Programme eligibility criteria were not satisfied and the project should not have been recommended for approval but updated data has revealed that the project did, in fact, satisfy the criteria.



**3.31** Project nominations can only be developed based on the best crash data that is available at the time of the nomination. Accordingly, ANAO's analysis is based on the information available at the time of the nomination. Where ANAO analysis indicated that a project did not satisfy one or more elements of the Programme eligibility criteria, the nominating entity was provided with ANAO's analysis and given the opportunity to make any comments and/or provide further relevant documentation.

**3.32** ANAO's analysis revealed there were a number of projects in the audit sample where there were insufficient crashes to satisfy the eligibility criteria yet the project was still assessed by the State road transport authority as eligible, recommended by the State Consultative Panel and submitted by DOTARS to the Federal Minister for approval. For example:

- Project W03225: Brand Highway – SLK 219.00–235.07 approved for delivery by Main Roads WA as part of the 2005–06 Programme for Western Australia for the sealing of shoulders and installation of audio tactile edgelines over 16.07 kilometres. The nomination was based on 14 casualty crashes equating to 0.174 crashes per kilometre per annum.
- Project S03118: Noarlunga-Victor Harbour Rd, from Main Rd to Old Willunga Hill Rd approved for delivery by the DTEI as part of the 2005–06 Programme for South Australia for shoulder sealing. The nomination was based on nine casualty crashes in five years over 12.56 kilometres which equates to 0.14 crashes per kilometre per annum.
- Project V03131 Murray Valley Highway Campaspe chainage 22.0 to 28.5km approved for delivery by VicRoads as part of the Victorian Programme for 2003–04 for reconstruction and sealing of shoulders and installation of guardrail. The original nomination included four casualty crashes over a distance of 6.6 kilometres giving a ratio of 0.12 crashes per kilometres per annum.<sup>100</sup>
- Project N03104: The Lakes Way (north of Boomerang Drive), Forster approved for delivery by Great Lakes Council as part of the New South

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<sup>100</sup> A project variation later increased the project length from 6.5 kilometres to 7.5 kilometres due to three crashes being incorrectly located. A project length of 7.5 kilometres with seven casualty crashes results in 0.19 crashes per kilometre per annum, still below the eligibility criteria. However, one of these seven crashes was outside the scope of works and, accordingly, the correct ratio is 0.16, even further below the minimum crash per kilometre per annum eligibility criteria. On 28 May 2007, VicRoads advised ANAO that, in this instance, the incorrect chainages and related crashes were due to a technical systems error that was discovered during the project preconstruction phase.

Wales Programme for 2002–03 for realigning curves, widening pavement and installation of safety barrier. Only two injury crashes had occurred in the nominated location (which was a short road section less than three kilometres in length) such that the test of three or more casualty crashes in five years was not met.

## Calculating Benefit Cost Ratios

**3.33** As mentioned, the Notes on Administration require that project proposals based on crash history must be able to demonstrate a BCR of at least 2.0. The Notes on Administration further advise that:

A table of crash reduction factors for typical treatments is provided at Appendix A to assist crash analysts and traffic management engineers. The table is not intended to replace more detailed information and professional judgement that may be available at the local level.

For guidance on crash location identification and treatment, practitioners are referred to Austroads guidelines.

**3.34** In this context, ANAO found that BCR calculation practices varied markedly across the States included in the audit sample, including in the following respects:

- calculations of the total estimated costs of the project. Issues identified included:
  - whether the cost was the full project estimated cost or only that amount that was nominated for funding under the National Black Spot Programme;
  - the veracity of the estimates themselves, with some Council’s advising ANAO that an accurate estimate is not possible until after the project has been approved for funding.<sup>101</sup> In this respect, subsequent project cost variations (whether or not funded by the Programme) can result in the project becoming ineligible or uncompetitive in BCR terms; and
  - the inclusion or non-inclusion of cost contingencies in project cost estimates;

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<sup>101</sup> For example, one Council advised ANAO that:

It must be appreciated that applications for grants are made on the basis of ballpark estimates and work limits and until detailed design work is undertaken the exact extent of work is unknown.

- any rationale for adjustments made to crash reduction factors, particularly in instances where the adjustments significantly increase the BCR such that a project that would otherwise not have received funding is then successful;
- the inclusion or non-inclusion of property damage only (PDO) crashes;
- the inclusion or non-inclusion of crashes not being addressed by the proposed treatment; and
- delivery of works that differ significantly from the treatment that was nominated and approved, with the delivered works providing reduced safety benefits (with a BCR lower than that which was relied upon in approving the project nomination). Changes in the location of works, or the nature of the works themselves, may or may not be advised to DOTARS.<sup>102</sup>

3.35 In ANAO's sample, these issues had a greater impact on project rankings than on project eligibility, as discussed in Chapters 4, 5 and 6 in this report.

## Recommendation No.4

3.36 ANAO *recommends* that the Department of Transport and Regional Services re-examine the role played by State road transport authorities in assessing project eligibility, with a view to the Commonwealth taking a more active role in assuring itself that National Black Spot Programme eligibility criteria are being applied to all project nominations.

### *DOTARS response*

3.37 DOTARS agreed to the recommendation and made the following comment:

DOTARS will examine administrative procedures with a view to implementing an enhanced validation of project and location descriptions and the crash statistics provided for each nomination. State/Territory authorities have the technical expertise and resources to assess projects. The Department

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<sup>102</sup> For example, one Council advised ANAO that:

Council's are generally very limited in their ability to expend resources and funds to accurately determine a project scope of works and an estimate at the time of nomination. In some instances, as is shown by this project, a survey and design investigation yields different outcomes to that envisaged at the time of nomination. This particular project is further complicated by post-nomination assessments, which appear to have made adjustments to the scope of works without detailed knowledge and information. However, from Council's perspective, the final scope of work, detailed design and cost estimates, were approved by the RTA prior to construction.

will work together with the states/territories to achieve consistent practice in the application of eligibility criteria.

## Proposals based on road safety audits

**3.38** A road safety audit is a formal examination of a future road or traffic project, or an existing road, in which an independent, qualified team reports on crash potential and safety performance.<sup>103</sup> According to the then BTRE in its evaluation of the first three years of the National Black Spot Programme:<sup>104</sup>

The Black Spot Programme allows for the funding of safety-audited projects. These projects are aimed at sites in the road network where crashes have not yet occurred but which are deemed to be *waiting for an accident to happen*.

**3.39** In its report, the BTRE noted that there were 111 road safety audit projects, which accounted for approximately \$8.9 million or 7.6 per cent of total expenditure, in the first three years of the Programme.<sup>105</sup> The BTRE's estimate that the first three years of the Programme had generated a net present value of \$1.3 billion and a BCR of 14.1. However, this figure excluded projects nominated on the basis of road safety audits as the BTRE did not calculate the net present value and BCR of these projects. This was on the basis that:

Safety-audited projects have no before treatment crashes against which treatment effects may be measured. Their effectiveness could be evaluated using proxies and assumptions based on similar sites possessing similar characteristics – including traffic volume and physical layout. Long periods of after treatment data are required to generate meaningful assessments of safety-audited projects using these approaches.

Because only short periods of after treatment data were available when this report was prepared, the BTRE concluded that it would be inappropriate to assess safety-audited projects. Therefore, the BTRE did not attempt to calculate the net present value and BCR of the safety-audited projects in the Black Spot Programme.

**3.40** Both sets of Notes on Administration issued since 2002–03 advise that a suitable standard for the completion of a road safety audit is described in the Austroads publication *Road Safety Audit (2<sup>nd</sup> Edition)*. The audit of designs is the

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<sup>103</sup> Austroads, *Road Safety Audit*, Second Edition, 2002, p. 3.

<sup>104</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 121.

<sup>105</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. xiv.

main focus of that publication, but it also covers audits of existing roads.<sup>106</sup> The use of design stage road safety audits for National Black Spot Programme approved projects is addressed further below.

### **Extent to which projects are approved based on road safety audits**

**3.41** Road safety auditing can be applied to all phases of a road project development or to an unsafe feature of an existing road system. As mentioned earlier, the Notes on Administration state that up to 20 per cent of Programme funds may be used for:

the treatment of sites which may not meet the above crash history criteria, but which have been recommended for treatment in an official road safety audit report.<sup>107</sup>

**3.42** As illustrated by Figure 3.2, practices vary markedly across the States in terms of the relative proportion of projects that are nominated, recommended by the Consultative Panel and approved by the Federal Minister on the basis of road safety audits. For example, there were no projects between 2002–03 and 2005–06 in NSW (the State with the largest Programme allocation) that were nominated and approved on the basis of a road safety audit. In comparison, in SA, between 20 per cent and 22 per cent of projects in each of the four years were thought to have been approved<sup>108</sup> on the basis of a road safety audit.

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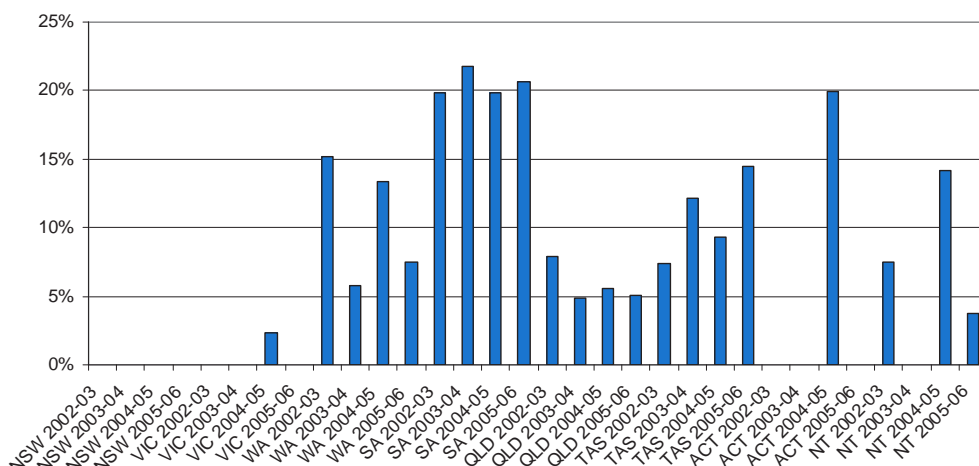
<sup>106</sup> Austroads, *Road Safety Audit*, Second Edition, 2002, p. v.

<sup>107</sup> A similar provision has been included in the AusLink Black Spot Projects Notes on Administration.

<sup>108</sup> In the 2002–03 Programme for SA, the Consultative Panel recommended contributions to road safety audit projects that amounted to \$760 000. As part of the approval process budgets amounting to \$966 500 were approved for these projects. This increased the percentage of road safety audits funded in 2002–03 from 22 per cent to 28 per cent.

**Figure 3.2**

### Projects nominated and recommended approval on the basis of road safety audits



Source: ANAO analysis.

### Use of road safety audits to support project nominations

3.43 In general, the objectives of a road safety audit are to:

- identify potential safety problems for a particular design or section of road;
- evaluate the road section in terms of interaction with its surrounds and nearby roads, and to visualise potential impediments and conflicts for road users; and
- report on the conclusions drawn and to make recommendations regarding aspects which involve unnecessary or unreasonable hazards.

3.44 In this context, Austroads suggests that:<sup>109</sup>

The findings of an audit should be recorded in a written report that is tendered to the client, usually the project manager or the road authority. Those findings, together with any recommendations that may have been made, should be carefully considered by the client. Each decision reached on a finding shall be recorded in writing. It is not anticipated that every finding or every recommendation of an audit should immediately be accepted by the client. When they are accepted by the client, a follow-up order should be made,

<sup>109</sup> Austroads, *Road Safety Audit*, Second Edition, 2002, pp. 25–26.

specifying the means of correction and the source of funding for such corrections, if necessary.

If an audit report finding or recommendation is not accepted, it is important that the client record both the decision not to accept it and the reasons that led the client to decide against it completely, modify it or not immediately implement the recommended course of action.

**3.45** However, there are differences of view, and therefore practice, across the States as to how road safety audits can be used to support a project nomination under the National Black Spot Programme. For example, in November 2006, VicRoads advised ANAO that:

VicRoads considers it satisfactory for the audit to independently identify or confirm safety deficiencies at the site. It is not necessary that the audit recommend a treatment and it is acceptable for Council/VicRoads project development engineers to determine an appropriate treatment.

**3.46** In comparison, in WA, the practice is that the proposed treatment is required to be supported by the road safety audit (that is, the report contains a finding that a problem exists that the proposal will treat). Indeed, as demonstrated by the following Case Study, there have been instances where the works delivered may be inconsistent with the Federal Minister's approval based on the project nomination and supporting road safety audit. ANAO's sample also included instances where only some of the recommended treatments were nominated for funding, with no contemporaneous record made of the reasons why only some recommended treatments were nominated for funding under the National Black Spot Programme.

### Case Study 3.4: Project W03049 Old Coast Road and Paris Road, Australind, WA – Shire of Harvey

There had been a total of 22 crashes reported in the five years between 1996 and 2000 at the intersection of Old Coast Road and Paris Road, Australind. An evaluation of the project was undertaken by Council indicating that installation of traffic lights with a right turn arrow into Paris Road from Old Coast Road would reduce the right angle crashes by 70 per cent and the right turn through crashes by 55 per cent. No change was expected to the frequency of rear end crashes. The BCR calculated by Council was 1.45, which is below the minimum required for funding under the National Black Spot Programme for projects nominated on the basis of crash statistics. Instead:

- A traffic study of the intersection was undertaken by [company name removed] in January 2001, which included an audit of the existing situation. The audit considered both a roundabout and traffic lights but concluded that the roundabout geometry that could be accommodated within the existing road reserve did not provide for B Double through movements and was therefore considered unsuitable. The key recommendation of this audit was that: 'The only viable and feasible option to improve the intersection was to install traffic signal control. However, prior to any decision regarding the provision of signals it is recommended that: a detailed cost-benefit analysis be carried out; and community views should be sought.'
- A Stage 2 Road Safety Audit of a traffic signalisation proposal was conducted in November 2001 by the Institute of Public Works Engineering Australia (WA Division). This Audit concluded that: 'The proposed signalised intersection is considered an appropriate treatment for this intersection.'

Accordingly, the project nomination of 22 March 2002 submitted by the Shire of Harvey relied on the road safety audits as the evidence for treatment of the site. The recommendations of the Western Australian Black Spot Consultative Panel at its 24 May 2002 meeting included the project nominated by the Shire of Harvey to 'Install traffic control signals'.

The project approved by the then Federal Minister as part of the 2002–03 Programme was 'Traffic Signals' with an estimated cost of \$365 000. The determination signed by the then Federal Minister on 12 October 2005 as part of the AusLink transitional arrangements specified that the approved description for this project as also being for 'Traffic Signals'. However, as illustrated by the following photograph taken during ANAO's May 2006 inspection of this project, a roundabout was constructed by Council.





In December 2006, Council provided ANAO with documentation that revealed that Main Roads WA had, in January 2003, approved the changed scope. Specifically, Main Roads WA had advised Council that:

With reference to the proposed treatment change from traffic control signals to a roundabout at the Old Coast Road/Paris Road intersection in Australind, an assessment of this proposal has been completed by MRWA and the installation of a roundabout appears to have slightly better road safety benefits than the traffic controls signals.

In view of this, the change in project scope is accepted and approval is given for your Council to proceed with the construction of a roundabout at this intersection.

However, Main Roads WA did not obtain approval from DOTARS for the change in works from that approved by the Federal Minister. In this respect, Council advised ANAO that:

Originally it was proposed to construct a roundabout at this site however it appeared there was insufficient room, therefore traffic lights were proposed instead. This was submitted under the Road Safety Audit proposals program as the BCR was only 1.26 and did not qualify under the crash history program. Note also that the roundabout proposal gave a BCR of 1.3, which is a similar benefit as both have advantages and disadvantages from a safety point of view and are not fundamentally different. Both treatments achieve the objectives of the Blackspot Program.

The project was approved as traffic lights. However it was then found that with a redesign it was possible to construct the roundabout. This proposal was submitted to the State Blackspot Panel and the change approved before work commenced.

That DOTARS were not informed of this change is not the responsibility of the Harvey Shire as all administrative matters are managed by MRWA.

In response to the issues raised, Main Roads WA advised ANAO in April 2007:

Importantly from the perspective of ensuring that the safety outcomes being sought via the original scope were still likely to be realised from the revised scope Main Roads undertook a Risk Cost Ratio assessment of the roundabout. The outcome of this assessment was that the revised scope of the roundabout returned a higher Risk Cost Ratio score than the original scope of traffic lights. Therefore it can be seen that the safety outcomes being funded by the Commonwealth were likely to be realised with the construction of the roundabout.

A December 2006 Main Roads WA commissioned report into the roundabout crash reduction performance and suitability concluded that:

On balance whilst there would appear to be some tracking and geometric issues associated with the implementation of a roundabout at the Old Coast Road/Paris Road intersection its implementation would appear to address the predominant crash patterns occurring prior to its construction.

The Project Status Report as at 28 February 2007 submitted to DOTARS by Main Roads WA continues to report this project as complete and involving the installation of traffic control signals. This is notwithstanding that the issue of a roundabout being installed was raised with DOTARS and Main Roads in September and December 2006 respectively.

Source: ANAO analysis.

**3.47** There are also differences of view, and therefore practice, concerning whether a formal road safety audit report is required. The National Black Spot Programme Notes on Administration require that nominations be based on 'an official road safety audit report provided by the proponent'. However,

guidance from Main Roads WA to its regional offices and LGA's in that State is that:

A Road Safety Audit is encouraged for all projects not based on crash criteria. A formal Road Safety Audit is MANDATORY for projects over \$40 000. Generally a project shall not consist solely of a Road Safety Audit; however, where agreed by the Regional Road Group, a small proportion of projects on rural local roads may consist of only a road safety audit. [*emphasis in original*]

3.48 In May 2007, Main Roads WA advised ANAO that:

While there may be some ambiguity in the guidelines the practice only applies to the State Black Spot Program projects. Main Roads requires all National Black Spot Road Safety Audit projects to be supported by a Road Safety Audit.

### **Use of road safety audits to design and construct safe remedial treatments**

3.49 According to Austroads, design stage road safety audits can be used to assess the safety of designs for new road and traffic projects, and consciously include safety in the planning of new road networks and new developments.<sup>110</sup> Austroads advises that:<sup>111</sup>

Road safety audit has the greatest potential for improving safety and is most cost-effective when it is applied to a road or traffic design before the project is built. It can be conducted on any design proposal that involves changes to the ways road users will interact, either with each other or with their physical environment.

3.50 One of the advantages of undertaking a road safety audit as part of the design stage for an approved National Black Spot Programme project is that it manages the risk that the countermeasure constructed to address existing crash patterns may overlook other potential problems, or create new road safety risks. Austroads advocates that:

An audit can be undertaken at any stage of design and implementation: the feasibility stage; the preliminary design stage; the detailed design stage; and prior to the opening of the project.

But the earlier the design is audited, the easier it is to consider and incorporate changes, resulting in less wasted design time and effort.

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<sup>110</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 3.

<sup>111</sup> Austroads, *Road Safety Audit*, Second Edition, 2002, p. 3.

**3.51** In some States, design stage road safety audits are a requirement. For example, information provided to ANAO by Main Roads WA stated that design audits may be required in that State for National Black Spot Programme projects. For projects funded under the WA State Black Spot Programme, design audits are required for all projects costing over \$150 000.

**3.52** In comparison, the AusLink Black Spot Projects Notes on Administration are silent on whether the road safety audits should be conducted of major projects funded under the National Black Spot Programme. In this respect, ANAO notes that Austroads advocates that:

Designs for crash remedial treatments should not be considered immune from potentially unsafe design flaws. Indeed, because the aim of a crash remedial treatment is to reduce the number or severity of crashes, it would be unfortunate if new and unforeseen crash problems were to result from some aspect of the new design. The chances of this happening can be minimised by having the preliminary design road safety audited.

*Funding the costs of design stage road safety audits*

**3.53** The Notes on Administration for the Programme that operated under the ALTD Act stated that all costs directly associated with an approved project were eligible for funding. Consistent with this, ANAO's audit sample included instances of National Black Spot Programme funds being used to pay for a road safety audit undertaken during the design stage of a project approved on the basis of the location's crash history. The following Case Study is one such example.

### Case Study 3.5: Project V03222 Midland Highway and Bell Street, Ballarat, VIC – VicRoads

The project was submitted based on its reported crash statistics – five casualty crashes at the intersection in a five year period. A BCR of 4.79 was included in the nomination, calculated based on the treatment at an estimated cost of \$147 720 (including a 20% contingency). The BCR was calculated based on a 45% casualty accident reduction in a 60km/hr speed zone, and a 6% discount rate. The amount of project funding sought from the National Black Spot Programme was rounded to \$150 000 in the nomination.

The project description as approved by the Federal Minister for Transport and Regional Services was ‘Install splitter islands – improve channelisation – signage and linemarking’. The project was approved as part of the 2004–05 National Black Spot Programme with an estimated cost of \$150 000.

ANAO’s visual inspection on 8 March 2006 found that works were undertaken in accordance with the project nomination and the plans as provided to ANAO. The works observed are shown in the following photograph.



The project nomination was approved by the Federal Minister on 4 March 2004. The amount charged to the National Black Spot Programme for this project was \$150 000. This amount included a \$1 500 charge for a road safety audit in May 2004. In November 2006, VicRoads advised ANAO that:

The charge of \$1 500 was for the audit by [company name removed] of the detailed design prior to construction. VicRoads policy is that all infrastructure projects undergo a road safety audit to ensure appropriate design. This can occur post project approval. In this case, it is correct for this expense to be incurred after the project has been approved.

Source: ANAO analysis.

3.54 The AusLink Black Spot Projects Notes on Administration issued in July 2006 also state that the Programme will fund the costs associated with an approved project. In addition, the guidance on ineligible costs has been expanded to state that costs involved in the preparation of road safety audits are ineligible for funding. The AusLink Notes do not differentiate between the cost of road safety audits used to support a project nomination, and design stage road safety audits for projects approved on the basis of their crash history.

3.55 Similarly, guidance from the South Australian DTEI to its regional offices and LGA's in that State is that costs involved in the preparation of road safety audits cannot be charged to the National Black Spot Programme. In comparison, guidance from Main Roads WA to its regional offices and LGA's in that State is that the cost of road safety audits can be charged to the National Black Spot Programme.

## Recommendation No.5

3.56 ANAO *recommends* that the Department of Transport and Regional Services seek to maximise safety benefits from projects funded under the AusLink National Black Spot Programme by:

- (a) amending the Notes on Administration to clarify, for nominations based on road safety audits, whether the audit must recommend the treatment that is proposed for funding under the National Black Spot Programme;
- (b) assessing the merits of requiring a design stage road safety audit to be conducted for major construction projects approved by the Federal Minister; and
- (c) providing clearer guidance in the Notes on Administration about whether and in what circumstances the costs of road safety audits may be charged to the National Black Spot Programme.

### *DOTARS response*

3.57 DOTARS agreed to all parts of the recommendation.



## 4. Estimating, Approving and Managing Project Costs

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*This chapter examines processes involved in estimating, approving and managing costs for National Black Spot Programme projects.*

### Introduction

4.1 In addition to satisfying the evidence requirements (see paragraph 3.9), the proponent (person submitting the project nomination) must identify the suitable treatment and resulting estimated cost. These two elements are the key inputs into the BCR or Risk Cost Ratio (RCR)<sup>112</sup> used to assess the economic benefits from the proposed project.

4.2 In this context, the significant majority of National Black Spot Programme projects are nominated and approved on the basis of BCRs.<sup>113</sup> The Notes on Administration require that project proposals based on crash history must be able to demonstrate a BCR of at least 2.0.<sup>114</sup> Projects that satisfy this eligibility criterion are then ranked according to their BCR, with the projects with the highest BCRs to be funded.

4.3 The effect of this economic appraisal approach is that funding is intended to be focused on works that have a history of crashes and are cost-effective to treat. In this respect, as noted by the Queensland (Qld) Government Department of Main Roads<sup>115</sup>, identifying and funding the highest priority works relies on sound estimates of project cost and cost control to ensure the integrity of decisions relating to project justification, government priorities and programming.

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<sup>112</sup> The RCR is also referred to as a Risk Reduction Cost Ratio. An RCR is calculated through the use of the Austroads *Road Safety Risk Manager* software developed by the ARRB Transport Research Group. In Western Australia and South Australia, a RCR forms the basis of the prioritisation of Road Safety Audit project nominations.

<sup>113</sup> Of the 273 projects in ANAO's sample, 259 (95 per cent) were nominated on the basis of their crash history using BCRs. The remaining 14 projects (5 per cent) were nominated on the basis of a road safety audit report.

<sup>114</sup> However, as outlined in Chapter 3, in each of the four States included in this audit, projects that did not satisfy the Programme eligibility criteria were recommended and approved for funding.

<sup>115</sup> Queensland Government Department of Main Roads, *Project Cost Estimating Manual*, Second Edition, December 2004, p. 13.

4.4 Accordingly, selecting and funding projects where the highest benefits can be achieved is not promoted where cost estimates relied upon to rank projects nominated for funding under the National Black Spot Programme:

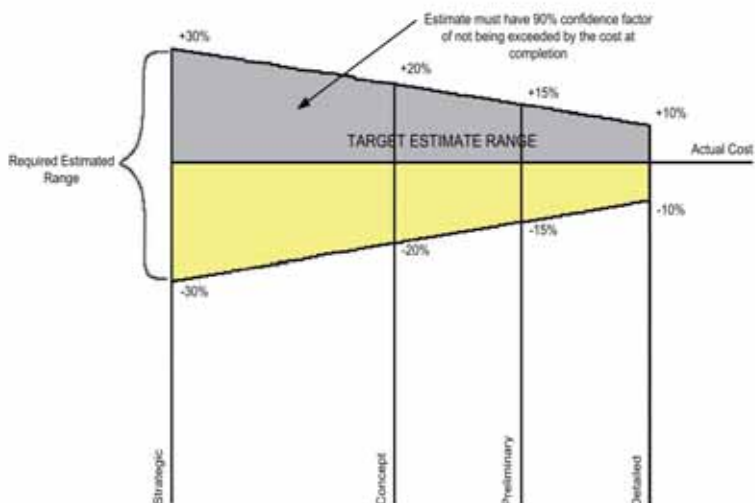
- do not reflect a rigorous estimate of the likely capital cost of the project either because of timing issues or inadequacies in project scoping; and/or
- are incomplete, in that they only reflect the amount to be funded by the National Black Spot Programme, not the full estimated capital cost of the project.

### Cost estimating and approval gateways

4.5 A number of State road transport authorities have procedures which involved the use of a business case concept estimate to assess the economic justification of the project (the assessment of the benefits and costs of the project). The subsequent development phase of projects that receive concept approval is then to include the development of a total project cost estimate based on the final design solution (but prior to commencement of design detailing and documentation). For example, the following diagram from the Qld Department of Main Roads shows how the levels of estimated cost variation reduce over the various project lifecycles.

**Figure 4.1**

#### Level of cost estimation accuracy over project lifecycle



Source: QLD Department of Main Roads, *Project Cost Estimating Manual* Second Edition, December 2004.



4.6 In relation to the accuracy of concept estimates, Qld Department of Main Roads policy<sup>116</sup> states:

The concept estimate needs to forecast the final project cost with sufficient accuracy for the business case evaluation decisions to be valid and the total budget allocation to be realistic. For this reason, a substantial itemized contingency amount might need to be included in the concept estimate to cover the high inherent risks and uncertainties in estimating costs at this stage of the project.

4.7 The issues surrounding project estimate accuracy are also relevant to local government in its delivery of road works. This has been particularly the case for projects delivered under the National Black Spot Programme where it is common for State road transport agencies (who act as the Commonwealth's agent) to apply their project management procedures to the delivery of National Black Spot Programme projects. In this context, one Council in NSW advised ANAO in September 2006 that:

Every engineering project evolves through a process of:-

1. Concept
2. Scope and feasibility
3. Survey, investigation and design
4. Consultation, review and amendment
5. Environmental approval
6. Final design and detailed estimating
7. Construction planning and preconstruction estimating
8. Variation during construction

It is normal for a project to become subject of a Black Spot Program proposal at stage 2. If the proposal is approved the processes continue, resulting in the final design and detailed estimate. This is submitted for approval and issue of a schedule of works. It is usual and expected for variation in the scope and estimate/cost of a project during its evolution from concept to construction. From Council's perspective, variations in scope are approved when the RTA [*NSW Roads and Traffic Authority*] approves the final design and issue a schedule of works.

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<sup>116</sup> Qld Department of Main Roads *Preconstruction Processes Manual*, June 2005, pp. 3–13.

**4.8** Council also advised:

It is not until after design has been completed that the project can be estimated in any detail. This estimate submitted with the design to the RTA for approval forms the basis of the revised Council contribution to the project.

Construction work is, by its nature, subject to variation from estimate to actual cost. For the more straightforward projects that do not involve much excavation, the variation between estimate and actual cost is small, whereas for more complex jobs involving greater earthworks and ground variability, the variation is larger. Nevertheless, some of the project cost variations are larger than would be expected, and greater attention is now being given to accurate preconstruction estimating.

**4.9** Another Council advised ANAO that:

It must be appreciated that applications for grants are made on the basis of ballpark estimates and work limits and until detailed design work is undertaken the exact extent of work is unknown.

**4.10** This is demonstrated in relation to the City of Ballarat's six National Black Spot Programme projects approved for delivery in 2005–06. The estimated cost of the projects included in the project nominations submitted for funding under the National Black Spot Programme were based on concept estimates (including a contingency). A cost estimate was subsequently developed at the tender stage for each project. Table 4.1 outlines the concept estimate and tender estimate for each of these projects together with the actual cost of delivering the road works and the amount paid to Council from National Black Spot Programme funds.

**Table 4.1****City of Ballarat 2005–06 projects: estimates, final cost and amount paid**

Project Number	Concept estimate	Tender estimate	Actual cost of project	Amount paid to Council
V03264	\$9 502.50 (including 5% contingency)	\$4 664	\$6 630	\$6 630
V03271	\$64 491 (including 11% contingency)	\$66 479	\$77 334	\$65 000
V03275	\$31 240 (including 10% contingency)	\$24 972	\$30 741	\$32 000
V03276	\$390 942 (including 11% contingency)	\$306 262	\$381 147	\$391 000
V03278	\$286 770 (including 10% contingency)	\$196 805	\$280 872	\$287 000
V03289	\$71 060 (including 10% contingency)	\$43 386	\$77 334	\$72 000

Source: ANAO analysis.

**4.11** In respect to this issue, on 30 August 2006, the City of Ballarat advised ANAO that:

Council has exceeded expenditure for most of the projects delivered in the Federal Blackspot Program by supporting the completion of the works with the use of its own funding. This was either due to gaps in the estimates provided at the time of application, external influences impacting on delivery costs (ie: market rates, contractor availability, weather conditions, etc) and/or improvements to the site beyond that included in the original application.

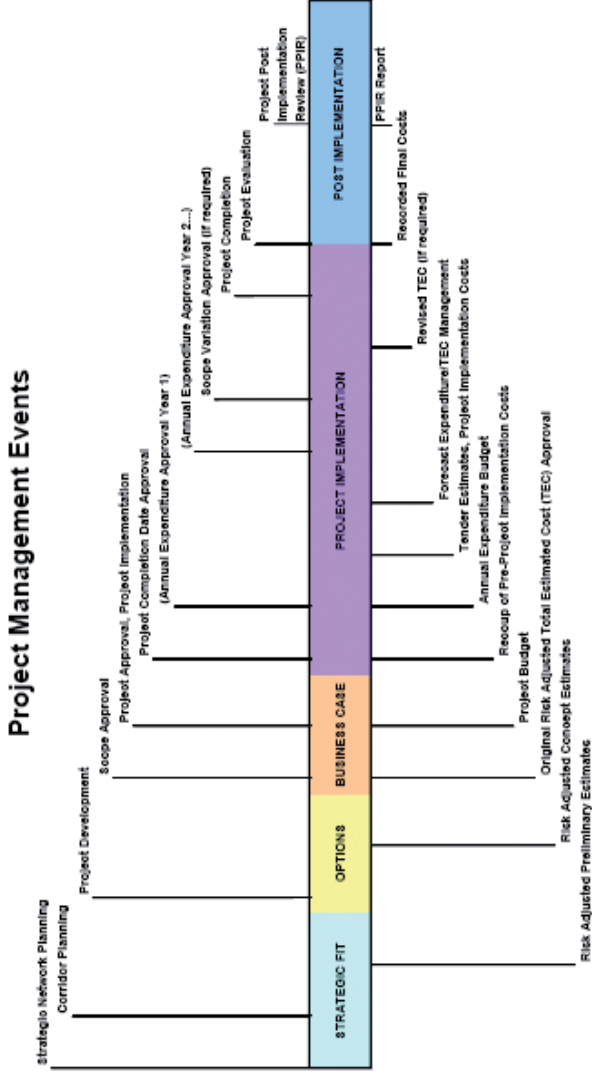
The City of Ballarat example illustrates that construction projects are complex as well as dynamic, passing through several discrete phases of initiation, documentation and delivery. As the project scope and design detail is refined and the uncertainty reduced, it is reasonable to expect that project cost estimates become more accurate and variation from actual project costs should diminish over time. In this respect, Figure 4.2 shows how VicRoads intends to coordinate its project management events with the cost control elements to ensure effective scope and cost control.

**4.12** In this context, the nomination and approval processes for the National Black Spot Programme play an important role in terms of whether:

- the timing of these processes encourages the use of accurate, up to date and reliable project cost estimates; and
- project cost estimates reflect the full estimated cost of the project.

**Figure 4.2**

**VicRoads: Project management and cost control events**



**Cost Control Elements**

Source: VicRoads, *Scope, Cost and Time Control Project Management Guidelines*, September 2005.

## Timeliness of nomination and approval processes

4.13 The Notes on Administration state that nominations of sites are invited from state and local governments, community groups, clubs and associations, road user groups and industry. All nominations are to be referred to the Black Spot Consultative Panel care of the applicable State road transport authority. Often the State road transport authority advises the LGAs in its state that nominations are open for the coming years' programme.

4.14 The invitation to submit project nominations often includes a timetable for the applicable State. For example, Table 4.2 shows the proposed timetable for the 2007–08 National Black Spot Programme in Western Australia.

**Table 4.2**

### 2007–08 Programme Timetable for Western Australia

Month	Action
April 2006	Call for submissions
April/May 2006	Workshops (As required/requested)
28 July 2006	Submissions close
August 2006	Assessment of submissions
September 2006	Prepare recommended program
October 2006	State Panel Meeting
October 2006	Submit program for Federal Government approval
January 2007	Announcement of approval of program
30 June 2008	Final expenditure for 2007/2008 program

Source: ANAO interpretation of Main Roads WA data.

4.15 As Table 4.2 shows there is planned delay from when the project nominations are developed and the project subsequently being approved for delivery. Table 4.3 shows the actual range of dates of submitted project nominations, consideration by the relevant State Consultative Panel and the subsequent approval by the Federal Minister for all States in ANAO's sample.

**Table 4.3**

**Timing of project nominations to approval in ANAO’s sample**

State	Programme year	Average date of nomination <sup>a</sup>	Date of Consultative Panel meeting	Date of approval by the Federal Minister
NSW	2002–03	April 2002	7 May 2002	28 August 2002
	2003–04	October 2002	13 December 2002	4 March 2003
	2004–05	August 2003	9 December 2003	11 February 2004
	2005–06	August 2004	24 November 2004	8 February 2005
SA	2002–03	August 2002	7 November 2002	6 January 2003
	2003–04	January 2003	13 March 2003	8 May 2003
	2004–05	November 2003	17 March 2004	30 June 2004
	2005–06	November 2004	22 February 2005	14 April 2005
VIC <sup>b</sup>	2002–03	unknown	19 July 2002	19 September 2002
	2003–04	October 2002	20 November 2002	21 February 2003
	2004–05	August 2003	17 December 2003	4 March 2004
	2005–06	September 2004	4 February 2005	11 March 2005
WA	2002–03	March 2002	24 May 2002	12 September 2002
	2003–04	September 2002	29 November 2002	21 February 2003
	2004–05	September 2003	11 November 2003	11 February 2004
	2005–06	August 2004	15 December 2004	14 February 2005

Notes:  
<sup>a</sup> Average date based on those projects in ANAO’s sample where a copy of the nomination was available.  
<sup>b</sup> Dated project nominations not readily available.

Source: ANAO analysis.

**4.16** Detailed audit examination of 273 projects revealed that the level of design and development of a project prior to the project nomination being submitted has varied considerably. In most instances, once the proposal is approved the design and development processes continue, resulting in a final design and detailed estimate. As a result of detailed design not being commenced until after project nomination and approval, there can be significant time delays between the original nomination and works physically commencing. This leads to risks in terms of:

- project costs departing significantly from those estimated at the time of nomination and relied upon in ranking and approving projects for funding; and

- the nature of the works that are undertaken on-site.

**4.17** In relation to National Black Spot Programme projects, in May 2007 the NSW RTA advised ANAO that:

... projects are generally developed on a concept, without detailed engineering design, the scope and costs are “strategic estimates” and it is impossible at the time to determine what factors may affect financial estimation until thorough detailed investigations have been undertaken. This situation may be due to unforeseen geotechnical or other concerns which sometimes cannot be identified until after the project construction has begun. ...

Like all other road infrastructure projects, Black Spot projects are required to undergo many preconstruction development activities (eg environmental, social and heritage assessments, community consultation and design etc). These processes and their outcomes can lead to scope changes and/or cost increases which could not be accounted for at the time strategic cost estimates are made. However, unlike many other road infrastructure programs, both the preconstruction activities and the construction of the project are required to be delivered in the same program year. As such, Black Spot projects, by nature of them having one-year time frames, are more prone than other road infrastructure project to scope and cost variations.

**4.18** In order to minimise the occurrence of these risks, it is common practice in the construction industry for approvals to be undertaken in more than one stage and/or to adopt more than one approval ‘gateway’. However, for the four States in ANAO’s sample, with the exception of some projects delivered in SA and WA, there has not been a practice of the BCR for a project being revisited as a result of cost estimates being revised and/or project scopes being refined. Where the costs have increased significantly, and/or the scope of work delivered is reduced so as to contain costs within the approved funding, there is a resulting risk that the National Black Spot Programme is not meeting the Government’s policy intention that high priority road safety Black Spot projects are selected and funded. An example of this situation is provided by the following Case Study of project W03163, Shire of Derby/ West Kimberley in WA.

## Case Study 4.1: Project W03163, Shire of Derby/ West Kimberley, WA

The project nomination by Council sought Commonwealth funding for works at Sandford Road, Fitzroy Crossing. The project description as approved was 'Install DUP [Dual Use Path] 2.5m for 1.56 km and install 10 dual solar powered lights along path'. The project was approved as part of the 2004–05 National Black Spot Programme with an estimated cost of \$187 385. The project is also relevant to the Crossing Aboriginal Pedestrian Road Safety Project which aimed to reduce pedestrian deaths and injuries among Aboriginal people living in the Fitzroy Valley.

A report from the Shire to Main Roads WA in May 2005 advised that the tender for the works was let and the footpath work was underway. Completion of the works was predicated to be late June or early July 2005. Main Roads WA was also advised that the lighting requirements were difficult to obtain and that final completion may be delayed.

ANAO's visual inspection on 29 April 2006 found that works were only partially completed. In particular only 0.9km of dual use concrete path was constructed from the hotel end of the street and not the 1.56km as nominated and approved. Also, the 10 dual solar powered street lights had yet to be installed. In correspondence of 6 April 2006, the Shire advised that the lighting will be supplied and installed within the forthcoming financial year.

No variation (reduction) in scope was sought through Main Roads WA from DOTARS nor was a price variation sought to enable all works as approved to be delivered. As a result, approval for the reduced scope of works delivered with the project funds was not obtained from DOTARS.

The stated nature of concern in the project nomination was 'The road is used by pedestrians to walk from the residential community to the local hotel and return. The road is poorly lit and pedestrian crashes occur.' In this context, by reducing the scope of work, the identified accident risk has only been partially addressed. This is evident from the following photograph which advises pedestrians that, for safety, they should walk on the footpath, yet the path was non-existent for more than 60 per cent of the length of Sandford Road.





In relation to these matters, Council advised ANAO in August 2006 that:

The time period from application early in 2003 and the approval by the Minister of the project, commencement of the 2004/05 financial year and the construction date May 2005, saw the cost of poured concrete rise significantly. At the time of initial application the estimated cost for the delivery and placement of concrete was approximately \$85 per lineal metre for a 2.5m wide path; at the time of construction this construction cost had risen to approximately \$145–\$150 per lineal metre. This is greater than a 30% increase in costs and is reflected in the increase in construction costs within this particular region.

ANAO indicated (in the interview) to the Shire that an application for variation from the original funding application could have been undertaken and submitted due to cost increases. The Shire of Derby/ West Kimberley was personally unaware that there was a process for applying for additional funds or for altering the scope of works. We now recognise, after further investigation, it is highlighted within the grant guidelines that alterations/extensions can be submitted.

Accordingly, in a region where inflation is currently rated at approximately 1% per month for the construction industry and a timeframe of approximately two years between application submission and works commencement indicates a major review as to future costing processes is needed by grant funding authorities and the applicant.

Source: ANAO analysis.

## Advice of project approval

**4.19** In addition to the level of project detail available at the time of project nomination, and the time elapsed between project nomination and Ministerial approval, the timely advice of a project nominations success or otherwise is required for the project to be appropriately planned and delivered.

**4.20** The National Black Spot Programme Notes on Administration state:

The Minister will declare projects as black spots or road safety measures under the Act and approve a programme of projects for each State.

State Ministers will be advised of the outcome of the Minister's decision. The Minister may announce publicly the approval of a state programme at the same time as notifying the states.

No public announcement concerning the programme or individual projects shall be made by a State agency or Minister before the federal Minister's announcement.

**4.21** ANAO has not observed any instances where a public announcement has been made prior to Federal Minister's approval. However, there have been significant delays between the Federal Minister's approval and project proponents being formally advised that their project has been approved for funding. In this respect, in some States there appears to be a misunderstanding of who is responsible for initially advising Councils that their project(s) are successful. Some Councils advised ANAO that the first they hear about their

project nomination being successful is in a press release or the local press. Others said they are verbally advised by their regional State road transport authority however the formal advice is not received for some time. This issue was present at the commencement of the programme and remained in 2005–06. For example:

- in NSW, the 2002–03 programme of projects was approved by the Federal Minister in August 2002, yet it was not until March 2003 that an RTA regional office wrote to itself advising that funds were available for the works to be undertaken;
- NSW councils in ANAO’s sample were advised on 16 May 2005 that roads in their municipality were successful in obtaining National Black Spot Programme funding for 2005–06, yet the Federal Minister approved the projects on 8 February 2005;
- in Victoria, councils in ANAO’s sample were advised on 4 May 2005 that roads in their municipality were successful in obtaining National Black Spot Programme funding for 2005–06, yet the Federal Minister approved the projects on 11 March 2005;
- in respect to the 2003–04 Programme a council in Victoria advised ANAO:  
Council received official notification by VicRoads of funding in a letter dated 8 April 2003 which followed the initial verbal notification in March 2003.
- SA councils in ANAO’s sample were advised on 25 May 2005 that roads in their shires were successful in obtaining National Black Spot Programme funding for 2005–06, yet the Federal Minister approved the projects on 14 April 2005.

**4.22** The timeliness of advice to those Councils whose project nominations are successful has a direct impact on the ability of the Councils to deliver the works in the year of approval. In this respect, ANAO has also been advised by councils that, at times, they are not informed that their project nomination is successful until after the following years program of Council works has already been finalised. This was particularly the case in 2002–03 when project nominations were not submitted and approved until well into the year of delivery. For example, one Council in South Australia submitted a project in September 2002 and again in December 2002 to the SA DTEI. The 2002–03 National Black Spot Programme projects in SA were approved on 6 January 2003 but were not publicly announced until 21 January 2003. Council advised ANAO that:

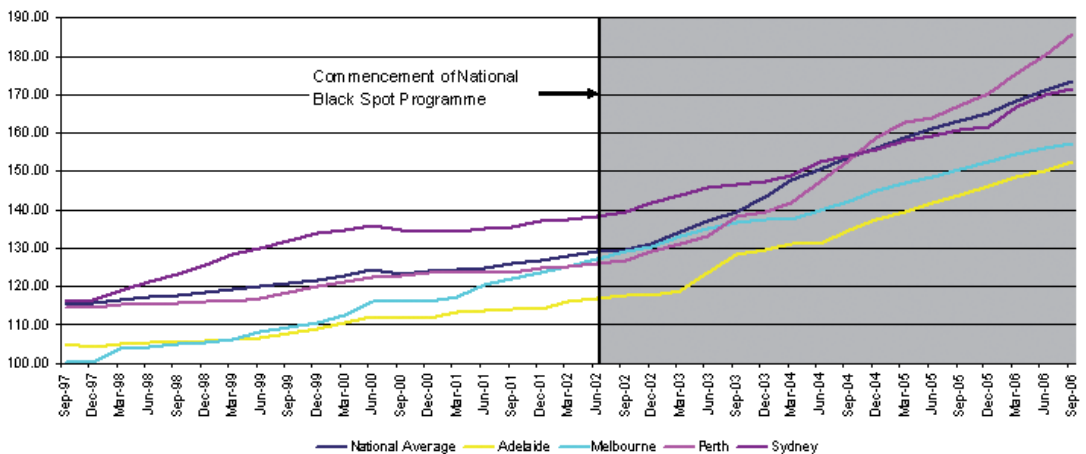
By January 2003 Council was fully committed to its works schedule and it was not possible to ‘slot’ this project into the 2002/03 year without a great degree of difficulty.

**4.23** Consequently, the allocation of resources to project design and delivery is, at times, delayed until after existing planned non-Black Spot Programme works are delivered. One result of this is that National Black Spot Programme projects are often not physically commenced until towards the end of the year in which works have been approved for delivery or even later. As a result, the accuracy of the project cost estimates and the associated economic evaluation included in the project nominations by the time work is commenced can be diminished simply due to the expiry of time. This is exacerbated where there is significant movement in the cost of resources to undertake the project in the particular geographic location, as often incurs in the current environment of increasing construction costs.

**4.24** In this latter respect, Figure 4.3 illustrates the significant increases in construction costs since the commencement of the current National Black Spot Programme.

**Figure 4.3**

**State Building Price Indices for States in ANAO’s sample**



Source: Rawlinsons *Australian Construction Handbook*, Edition 24, 2006.

**4.25** A specific instance where the rise in construction cost has had a direct impact on a proponent’s ability to deliver a National Black Spot Programme project is project W03163 discussed earlier in Case Study 4.1.

## Project scoping

4.26 Accurate project scoping and cost estimating are fundamental requirements for project justification, budgeting and cost control. Accordingly, producing an accurate cost estimate requires clear definition of the project scope.

### Approved works

4.27 The National Black Spot Programme project nomination forms require a proposed treatment and an estimated cost. In addition to the method of BCR calculation, in most States the proposed treatment impacts on the possible benefits as well as the cost of the works. Across the different States, varying levels of detail are required for this estimate. For example, the guidance on BCR calculations disseminated by the NSW RTA requires that the cost of constructing the remedial treatment or combination of treatments be calculated to at least a strategic level. Whereas the SA DTEI requires the proposed treatment to contain sufficient details and drawings for accurate cost estimating.

4.28 In the audit sample, one third of projects were not delivered in accordance with the approved scope of work (see Chapter 6 for further details). The approved scope of work, in most part, is the proposed treatment included in the project nomination. The extent of the change in project scope after Federal Ministerial approval highlights a significant issue with the project estimate included in the nomination, which is supposed to be determined by the stated treatment. For example, project N03400 was approved \$300 000 for the installation of traffic signals. The design brief compiled in June 2005 (after project approval) stated:

A concept for this project has not yet been developed although traffic signals are proposed. Alternative projects will be considered at *this location* provided the accident profile is being addressed and provided the client has approved a change in scope to the project.

4.29 This highlights a further issue as, in three of the four States in the sample, the BCR is calculated on the accident profile at the site, the proposed treatment and the estimated cost. While an alternative treatment may still address the accident profile at the same cost, the benefits of the treatment will change. For example, in project N03183, the project had a BCR of 6.3 based on the installation of traffic signals for \$350 000. The scope was changed to banning right turns. The revised scope was approved by DOTARS even

though the BCR was 4.6 (which was lower than the BCR cut-off for urban projects in 2003–04). The project also obtained a financial variation in June 2006 for an additional \$50 239 which lowered the BCR further. The issue of works not being delivered in accordance with the Federal Minister's approval and the associated issues concerning the calculation of project benefits is discussed in Chapter 6.

**4.30** Proposed treatments and subsequent project costs can also change from the project nomination as a result of site deterioration or after detailed design and community consultation. For example:

- for project V03214 in Corangamite Shire (Victoria), the initial report commissioned by Council on the preferred treatment was undertaken in September 2003, the project nomination was considered in December 2003 and approved in March 2004. The order to carry out the works was issued in February 2005. Council advised ANAO in June 2006 that:

On inspection of the site by the works contractor in March 2005 it was observed that the through pavement had deteriorated to a very poor condition. The works contractor reported this to Council's design engineers who inspected the site and assessed that it was inappropriate to undertake shoulder widening adjacent to through lanes which had badly deteriorated. This type of treatment would create additional safety concerns with traffic favouring the newly constructed shoulders rather than the through lanes.

...In relation to the Blackspot program, the delay from the time of inspection on the site and time works are carried out have created issues in this circumstance. Council is unaware of a process to implement changes to funded programs due to asset deterioration between funding application and works approval which require amendment to address the subsequent changes to the environment at the site of the works.

- project S03070, a 2003–04 project delivered by the SA DTEI, was to 'close one road and convert to stagger-t arrangement' for an estimated cost of \$250 000. In March 2006 the SA Consultative Panel considered a financial variation for the project. The variation documentation stated:

A significant change in project cost is being sought for this project. The increased costs were due to a necessary increase in scope. The original proposal was to upgrade and stagger the intersection of Tatachilla Road and Main Road, and close the Aldersey Street leg of the Main Road/ Aldersey Street/ Field Street intersection. After detailed design and community consultation it was identified that the closure of Aldersey Road to two-way traffic would adversely affect the operation of the adjacent leg (Field Street).

Also as a result of community consultation, it was necessary to increase the scope to include the upgrade of the Main Road/ Aldersey Street/ Field Street intersection. ...

It is estimated that the project will now cost approximately \$445 000. With an increased cost this project still meets black spot criteria with a BCR of 3.4, further it was a priority project for this fast growing wine producing region and tourist community.

**4.31** This project variation was discussed but not endorsed by the Consultative Panel. The SA DTEI advised the Panel that:

the State would fund (from its own source funding) the additional expenditure over and above the approved allocation.

**4.32** The advice to the Consultative Panel is consistent with ANAO's observations made during its site inspection. During this inspection ANAO was advised that the actual construction was different to the concept drawings due to the angle of the road and underground services. The design also changed from that proposed as a result of extensive community consultation.

## **Approved locations**

**4.33** There are projects in ANAO sample where the States have nominated projects for a specific location that satisfied the project nomination requirements but have then used the funding to cover a larger area than originally nominated. Had these original locations and/or lengths been included, the projects would not have been eligible for National Black Spot Programme funding.

**4.34** For example, in WA funding was obtained for advance warning signs at a railway crossing yet the amount charged to the National Black Spot Program was for two railway crossings some three kilometres apart on the same road. In this instance, \$151 585 (40 per cent of the claimed project cost) was over charged to the Programme.

**4.35** Another example in WA relates to work on the Albany Highway which was is discussed in Case Study 6.1. Similarly, in SA, funding was obtained for the installation of guardrail along sections of roads in the Adelaide Hills district. The project nominations were based on accidents that were to be addressed by the treatment. However, rather than install the guardrail in the crash locations as nominated, works were undertaken in surrounding areas. The full estimated cost was claimed for these projects but the funds were not

necessarily spent on the nominated locations. In response to this issue, in January 2007 DTEI advised ANAO:

Detailed DTEI investigation of issues raised in the ANAO letter audit has highlighted a process flaw in the way that guardfence projects in the DTEI Transport Services Metropolitan Region Office were scoped and delivered. This has resulted in a number of crash locations specified in the nominations not being addressed.

...

For a number of the guardfence projects delivered in 2004/05 (S03098, S03094, S03092 and S03093) it was found that the initial estimate and approved budget for the planned guardfence locations was overestimated. This occurred after the original PDR [*Project Definition Report*] prepared by the Region was reviewed by the Projects Section of Transport Services Division who were to deliver the projects. The decision was taken for the Region to identify further guardfence sites that were warranted within the approved project length, again based on a risk approach. Where there were insufficient sites within the approved length, sites immediately adjacent to the length were identified up to the approved budget for the project. It is acknowledged that this change in scope for these projects was not submitted to DOTARS for approval.

**4.36** These instances have involved economies of scale being obtained by bundling works together. It might be expected that the cost savings would be shared. This has not necessarily occurred as illustrated by Case Study 4.2.

#### Case Study 4.2: Project N03086, Gosford NSW – RTA

Project N03086 was approved as part of the 2002–03 National Black Spot Programme with an estimated cost of \$700 000. The project description as approved by the Federal Minister was 'Median safety barrier/ reconstruct alignment'.

In this project, RTA combined the Black Spot Programme Project on York Street and Mason Parade and 'Project 096253 MR336 Mason Parade access to Waterfront carpark' as the roadwork was in the same vicinity. The project description for the combined project included in the RTA *Review of Environmental Factors Decision Report* dated 21 May 2003 was:

##### PROJECT DESCRIPTION

The proposed project involves widening of the western side of Masons Parade to provide for a right-turn lane into the waterfront carpark.

The works would include:

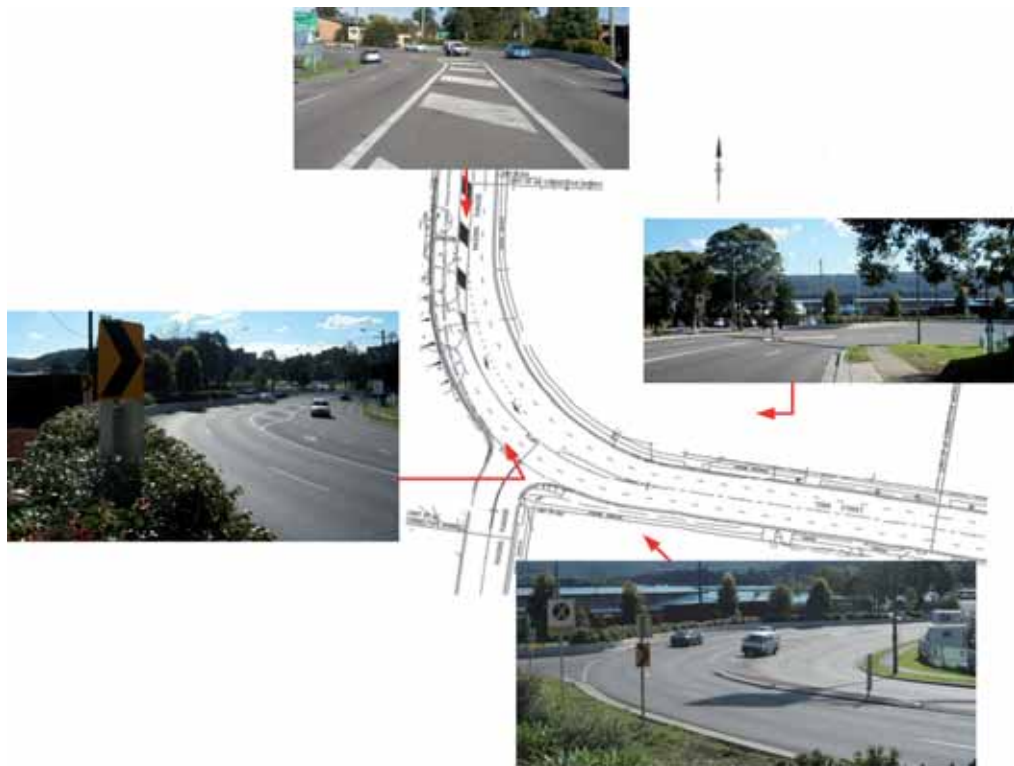
- Removal of existing kerb and guttering and reconstruction upon widening of the road;
- Removal of existing bus bay shelter and reinstate upon realignment and construction of ramps where required;
- Reclaiming approximately 200 square metres of vegetation strip;
- Provision of asphalt overlay over part of the existing road surface to improve pavement fall and drainage;
- Construction of a concrete barrier on the western side of Masons Parade with York Street;

- Removal of nine (9) trees; and
- Provision of a concrete median strip and a painted media strip.

The aim of the proposed intersection improvement works at the intersection of York Street and Masons Parade is to cater for improved traffic flow. This will allow the following objectives to be met:

- Remove existing congestion point;
- To provide safer, more efficient travel and improved local access for motorists, pedestrians and cyclists; and
- Identify and minimise the impact of intersection improvement works on the environment.

The original scoping document and the Decision Report made no mention of the description of work included in the project nomination nor the Federal Minister's approved description of work. Assessment of other documentation confirms that even the preliminary design did not include the installation of a median barrier as shown in the following diagram.



Due to the proximity of the two projects, the works were designed and constructed together. The contracted construction charges were split between the two projects, yet all the design and management charges were allocated to the National Black Spot Programme.

As economies of scale were obtained by combining the two projects on the same stretch of road, the savings should have been proportionally adjusted between the two projects (rather than the State funded project achieving all the savings). Accordingly, the amount of \$696 595 claimed by the RTA from the Commonwealth for this project contained costs that should not reasonably have been charged to the Black Spot project. Had costs been shared proportionally between the two projects, the costs charged to the National Black Spot Programme would have been \$113 188 (16 per cent) lower.

Source: ANAO analysis.



## Identifying the total estimated cost of nominated projects

4.37 According to Austroads, to ensure ranking of projects is unaffected, all capital costs should be included in the calculation of the BCR.<sup>117</sup> However, the various states differ in the approach they take. The following table shows the approaches used in the States in the audit sample.

**Table 4.4**

### Costs included in the BCR calculation

State	Only contribution from the National Black Spot Programme is included in the BCR calculation	BCR is calculated on the total cost of the project
NSW	✓	
SA		✓
VIC	✓	
WA		✓

Source: ANAO analysis.

4.38 The Programme's Notes on Administration stated that contributions from other sources other than the Commonwealth will be considered in making the assessment of which projects will be approved for funding. The Consultative Panel papers, however, do not always include a stated contribution where it is included in a project nomination. Also, the subsequent delivery of the project often has little regard to adhering to this nominated contribution. As a result, the relative safety benefits of the projects are distorted where contributions are included in some but not all projects.

4.39 In this respect, in May 2007, VicRoads advised ANAO that:

The BCR process considers cost and crashes and ensures the best application of Federal funds. A project TEC [*Total Estimated Cost*] reduced by the application of an external contribution does not cause ineligible projects to be funded as the eligibility requirements of crashes and crash rate must be met. The guidelines also promote contributions from external sources.

In Victoria over the past six years there have been fifteen projects with external contributions. A number of these involved contributions from developers undertaking works in association with the road safety project.

<sup>117</sup> Austroads, *Project Evaluation Methodology*, 2005, p. 25. An exception relates to private sector developer contributions which are made to make a project more attractive, given the benefits to the developer of the project proceeding.

VicRoads does not consider contributions by Councils to constitute “gaming behaviour”. Rather it demonstrates a Council’s commitment to resolving road safety problems for the community.

**4.40** By way of comparison, in May 2007 the NSW RTA advised ANAO that:

There is a need for greater clarification as to the “rules” for approval, funding and management of those projects where National Black Spot funding constitutes only part of the project cost. It is proposed that the States enter into discussions with DOTARS with a view to enhancing the Notes or providing supplementary guidance in this regard.

**4.41** One reason why it is important for project nominations to be assessed in terms of the total estimated cost of the project is that it contributes to the objective of funding the works that provide the greatest benefit for the cost involved to the community as a whole. In this respect, Main Roads WA advised ANAO that one of the reasons it requires the BCR to be based on the full cost of the project is to remove the capacity of proponents ‘buying projects’.

**4.42** There are also equity issues in that some LGAs are better placed than others to make a financial contribution to the cost of National Black Spot Programme projects. Ranking projects on the basis of the cost to the Programme rather than the full estimated project cost would mean that projects nominated by LGAs that can afford to make a financial contribution would rank more highly than higher priority projects nominated by LGAs that cannot afford to make a financial contribution.

**4.43** There were instances of proponent contributions being adjusted in order to obtain a competitive BCR. The following Case Study provides an example. Impairing project rankings in this manner is not possible where the BCR is calculated on the full project cost, rather than only the National Black Spot Programme component

### Case Study 4.3: Project V03279 Shire of Campaspe, Victoria

In Project V03279, Council sought Commonwealth funding for works at the intersection of Nish Street and Pakenham Street, Echuca. The project was approved as part of the 2005–06 National Black Spot Programme with an estimated cost of \$150 000. The project description as approved by the Federal Minister for Transport and Regional Services was 'Construct roundabout'.

ANAO's visual inspection on 6 March 2006 found that works were undertaken in accordance with plans provided by Council, as shown by the following photograph.



In this project the Black Spot programme contribution was changed after the project nomination had already been submitted. In this project the Scope Approval Report<sup>118</sup> of 8 August 2004 noted that the project estimate was \$310 000 (including a 30% contingency). The cost was intended to be funded through a \$200 000 allocation under the National Black Spot Programme and a council contribution of \$110 000. The Scope Approval Report included a BCR of 4.1 that was calculated based on the \$200 000 cost component to be carried by the Black Spot Programme. Following a telephone call between relevant VicRoads officers on 28 October 2004, Campaspe Shire sought to revise their National Black Spot Programme bid for a proposed roundabout. No details of the reasons for the last minute change in partner contributions were provided. The only information available was a direction back to the VicRoads National Black Spot Programme Consultative Panel secretariat officer which stated:

Council now wants to bid for \$150K from the Commonwealth Government and they will contribute \$160K to the project. This produces a revised BCR of 6.1.

Would you please change your spreadsheet to reflect this revised TEC of \$150K and BCR of 6.1 and also release the bid in the Projects database so that I can amend the Regional bid information.

Source: ANAO analysis.

<sup>118</sup> These reports are similar to those developed by VicRoads for their nominated National Black Spot Programme projects. They contain all the information that is normally included in a project nomination form, but in a different format. ANAO has treated each report as though it is the project nomination form.

## Treatment of maintenance costs

### 4.44 According to Austroads:<sup>119</sup>

As the aim of an economic appraisal of an crash location treatment program is to assess how to obtain the greatest benefits *for a given capital expenditure* (including design costs as well as construction costs), it makes sense that the 'cost' should be restricted to the initial capital cost, i.e. only the costs incurred up-front, as the project is designed and built. Other 'costs', such as any ongoing increase in operating or maintenance costs, should be considered in calculations as a negative on the 'benefits' side of the balance sheet.

4.45 However, in the BCR models developed by NSW and WA, anticipated annual maintenance or running costs for the remedial treatment are sometimes used in the BCR calculation. These costs are then discounted over the life of the proposed treatment. These costs are included on the cost side of the ledger and are therefore inconsistent with the Austroads policy above. Also, maintenance costs have not consistently been included in the project nominations for those projects in ANAO's sample. For example:

- In NSW in 2002–03 both project N03092 and project N03117 proposed to install a roundabout. One project (N03117) included an annual maintenance fee of \$1 000 whereas the other project did not. By including the maintenance fee, the discounted costs used in the BCR calculation increased project N03117's costs by \$12 409 which resulted in a BCR of 3.46. Had the maintenance costs not been included, the BCR would have been 3.60. Alternatively, had project N03092 included \$1 000 annual maintenance costs for the estimated life of the project, the BCR would have reduced from 5.02 to 4.67.
- Similarly in WA in 2002–03, projects W03043 and W03063 also proposed to install roundabouts. In this example, project W03043 included running costs of \$500 per year over the 15 year life, whereas W03063 did not include annual running costs. By removing the running costs, the BCR for project W03043 increased from 4.11 to 4.30. Alternatively, had W03063 included the annual running costs, the BCR would have reduced from 3.01 to 2.85.

4.46 While the BCR movements discussed above are relatively small, they could effect whether a project is above or below the BCR cut-off for that year's programme.

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<sup>119</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 88.

## Cost outcomes

**4.47** In its evaluation of the first three years of the National Black Spot Programme, the BTRE estimated that the Programme had generated a net present value of \$1.3 billion and a BCR of 14.1.<sup>120</sup> In identifying project costs for the purpose of its analysis, the BTRE was reliant upon the data provided to it to identify any contributions made by other parties. Specifically, the information requested from each State and Territory included:<sup>121</sup>

*Project total cost.* In some cases, the cost of site treatment was not fully met by the Federal Government. States and Territories were asked to identify projects which received supplementary funding—either because of prior intent or because projects went over budget. They were also asked to provide the total cost of these projects—that is, the cost to the Federal Government plus the cost to the relevant State or Territory Governments.

**4.48** In this respect, the BTRE analysed 946 projects<sup>122</sup> which had a total capital cost of \$102.09 million.<sup>123</sup> The approach adopted was to consider whether the project should have gone ahead, including all benefits and costs.<sup>124</sup> In this respect, the BTRE reported that:

For those projects where the jurisdictions involved supplemented the Federal Government's allocations, the relevant costs considered for evaluation purposes were the Federal Government's costs plus the jurisdictions' costs. The Federal Black Spot Program contributed more than 95 per cent of the identified funding on a project by project basis.

**4.49** In total, there were 273 projects in ANAO's sample for the period 2002–03 to 2005–06. ANAO provided those entities responsible for delivering these projects the opportunity to substantiate the costs charged to the National Black Spot Programme. Of the 273 projects, final costs were provided in relation to 255 projects (94 per cent). The respective roles and responsibilities of DOTARS, State road authorities (as the Commonwealth's agent and as a deliverer of projects) and councils (where they deliver projects) in providing

<sup>120</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 120.

<sup>121</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 167.

<sup>122</sup> The analysis excluded projects with no casualty crashes, projects nominated on the basis of a road safety audit and projects with data deficiencies.

<sup>123</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 129.

<sup>124</sup> Bureau of Transport Economics, Report 104, *The Black Spot Program 1996–2002: An Evaluation of the First Three Years*, July 2001, p. 115.

and/or obtaining assurance that National Black Spot Programme funds have been wholly expended on approved purposes in relation to the funded project as discussed in Chapter 6.

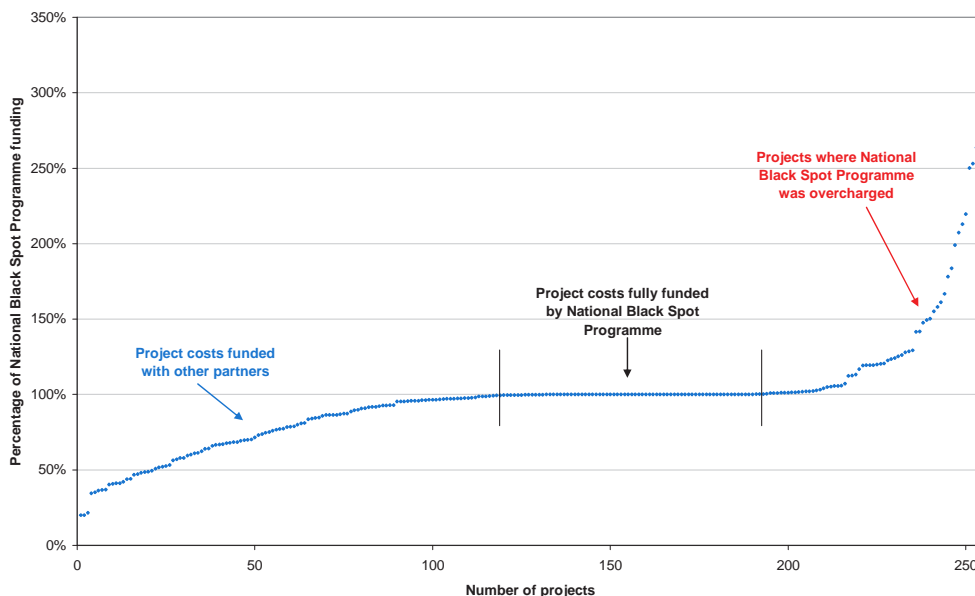
4.50 In March 2007, DOTARS advised ANAO that:

Following approval, the Department’s main priority is to capture the final cost to the Australian Government of each project.

4.51 In this respect, ANAO analysis of the 255 projects where the final cost was able to be substantiated revealed that the National Black Spot Programme fully funded 127 projects. Of the 128 instances (50 per cent) where the Programme did not fully fund the project, on average the National Black Spot Programme funded 74 per cent of project costs. As illustrated by Figure 4.4, this indicates that, for a significant proportion of projects, the identification and assessment of partner contributions to project costs is an important issue. However, in DOTARS’ National Black Spot Programme database, only 17 of the 128 projects were reported to have partner contributions. A further three projects reportedly had partner contributions but the National Black Spot Programme fully funded the project.

**Figure 4.4**

**Percentage of National Black Spot Programme funding per project**



Source: ANAO analysis.

4.52 Identifying all projects with partner contributions, and the amount of these contributions, is particularly important in the ranking of BCR-nominated projects as part of the assessment and approval process.<sup>125</sup> This is because excluding partnership contributions understates the project cost thereby overstating the BCR. In this respect, it is apparent that DOTARS is unaware of the full costs of projects being delivered under the National Black Spot Programme.<sup>126</sup> This is the case even where approved costs are varied.

### Project cost variations

4.53 Prior to the 2002–03 Programme, DOTARS was responsible for approving all project scope and financial variations. As a result of the move to ‘Programme’ approval rather than individual projects<sup>127</sup>, the Programme’s Notes on Administration were amended. However, the requirement for DOTARS approval was still required for a significant change. Specifically, the National Black Spot Programme Notes on Administration published under the ALTD Act stated that:

Formal variation of existing approvals should be sought where proposals are subject to significant change. A significant change includes a difference in the cost of an individual project of 15% or \$15 000 which ever is the lesser.

4.54 While the Notes on Administration allow for financial variations, the practice has varied between the States. Although it is recognised by the State road transport authorities that the project scope may vary once the designed design is undertaken, there is reluctance to allow a change in project estimated cost to match the revised scope. One of the reasons for this reluctance is that the number of projects approved each year in the State’s programme often exceeds the allocated funding from the Commonwealth. This means that, in order for all approved projects to be delivered, unless there are reductions in the cost of other projects (or projects are withdrawn), the State may have to fund some or all of the costs for some projects.

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<sup>125</sup> Similarly, the identification, assessment and management of partner contributions to approved and funded projects is a key responsibility in relation to DOTARS’ administration of the Regional Partnerships Programme, which is currently the subject of an ANAO performance audit.

<sup>126</sup> As outlined below, State road authorities are also unaware of the total cost of some projects due to the project delivery entity (either a State road authority region or the council) misreporting the costs they incurred in undertaking the projects.

<sup>127</sup> With the introduction of the *AusLink (National Land Transport) Act 2006*, this change has been reversed such that the Federal Minister again approves individual projects.

## *Variation policy*

4.55 Both SA and WA have developed process guidelines for the management of the black spot programs within their respective States. In regards to project variations the guidelines for both States state:

The [*AusLink and State Black Spot Programs*] are fully allocated programs without allowance for cost or scope variations. Any cost variation must therefore be contained within the overall program budget.

Project estimates must therefore be accurate to ensure delivery of the overall program without any project deferrals. Any variation to the approved scope of a project or to the total estimated cost must be authorised by [*the approving authority*] prior to any scope variation being implemented and/or expenditure exceeding the approved cost.

Variations to the approved cost must be sought immediately, under the normal authorisation limits, if estimates are increased. A revised project benefit/cost ratio must be considered as part of the approval of any variations.

[*State Black Spot administrative area*] shall/must be advised of any variations leading to savings in total cost or were the projects final cost is less than the allocation from the program. Any savings will be returned to the Program for re-allocation.

4.56 However, in NSW, councils are often advised that:

The Federal contribution is fixed at the agreed estimate or the final cost, whichever is the lesser, and in accordance with the provisions of "Arrangements with Councils for Road Management"<sup>128</sup>, no additional funds will be available if the estimate is exceeded.

4.57 Similarly, once NSW councils have submitted a design for approval by the RTA, they are often advised that:

Please note that the Federal Funding is limited to [*\$amount*] and that this funding will lapse on 30 June 200[x] should it not be expended. Council should note that any expenditure over [*\$amount*] will need to be funded by Council.

4.58 Further, in Victoria, once councils have submitted a design for approval by VicRoads, they are often advised that:

It is stressed that the proposed works are required to be delivered within the approved budget of [*\$amount*].

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<sup>128</sup> The *Arrangements with Councils for Road Management* is a NSW RTA publication issued in July 2003.



**4.59** Assessment of the projects in ANAO's sample has revealed that for 164 projects (64 per cent)<sup>129</sup>, the actual cost of delivering the work differed by more than 15 per cent or \$15 000, whichever was the lesser,<sup>130</sup> compared to the originally approved cost on which the BCR<sup>131</sup> was calculated. Of these:

- 76 projects (46 per cent) were granted a cost variation by DOTARS. However, even in these instances, DOTARS remains unaware of the final costs for a significant proportion of projects. This is because the variation did not reflect the full extent by which costs had changed. Specifically, for 39 per cent of the 76 projects where a variation had been sought and approved, the actual cost differed by more than 15 per cent or \$15 000 from the varied approved cost.
- 88 projects (54 per cent) were not granted a cost variation by DOTARS simply because the administrative arrangements for the Programme do not ensure that the Department be informed of the full final costs of each project.

**4.60** Many of the formal variations across the States occurred in mid-2006 in order to reflect the final cost for each project as a result of the projects being carried over from the ALTD Act to the AusLink Act. In NSW, for example, the 31 May 2006 Status Report submitted by RTA showed that expenditure to date for some 149 completed projects from the 2002–03 to 2004–05 programme years did not match the approved estimated cost. All 149 projects were varied to the expenditure to date figure, notwithstanding the absence of a request from the RTA for a cost variation. Moreover, the covering Minute to the Federal Minister's delegate entitled '*AusLink Black Spot Programme: Variation of NSW Projects to Complete Transition to Project Administration*' dated 16 June 2006 stated:

As the Department has not undertaken a reconciliation process for NSW to formally vary approved funding to match final costs, we are now effectively reclaiming funds previously expended by NSW in good faith under the programme arrangements in place at the time. The reconciliation process is

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<sup>129</sup> This figure is based on the 255 projects. The remaining projects in the sample are excluded from this analysis as the final cost of the work is unknown.

<sup>130</sup> The ALTD Act Notes on Administration state that a formal variation should be sought where proposals are subject to a significant change. The Notes quantify a significant change as including a difference in the cost of an individual project of 15 per cent or \$15 000, whichever is the lesser.

<sup>131</sup> Or, for road safety audit projects, the Risk Cost Ratio or a Risk Reduction Cost Ratio. A Risk Cost Ratio is calculated through the use of the Austroads *Road Safety Risk Manager* software developed by the ARRB Transport Research Group. In WA and SA, a Risk Cost Ratio forms the basis of the prioritisation of Road Safety Audit project nominations.

also important for the Department to be able to easily and accurately report on project funding.

Completed projects in NSW from 2002–03 to 2004–05 should now be varied to complete the transition from programme administration under the ALTD Act to project administration under the AusLink Act. We have previously sought reasons from each jurisdiction for any individual project increases of more than \$15 000 or 15% although this is not a requirement for a project variation. Given the time that has passed since the majority of projects in question have been completed and that analysis of variations proposed shows that any increases are more than balanced by the decreases, we do not propose to seek reasons for cost increases to these 2002–03 to 2004–05 projects.

**4.61** As a result of this Variation Instrument, a number of NSW projects in ANAO's sample had their maximum funding amount increased. This was notwithstanding that the RTA had agreed to contribute a specified amount to the project. There were also instances where the substantiated cost of the works was less than the increased amount. Irrespective of these issues, the RTA was paid the maximum funding amount for these varied projects in the 21 June 2006 payment run.

**4.62** While the State road transport authorities may have guidance on project variations, the awareness that variations are possible is not widely known. In this respect, one council in WA advised ANAO that it had not sought variations for the increased cost of works delivered under the National Black Spot Programme because:

In short, we did not know that we could.

As background for you, most of our experience is with the State black spot program where upwards cost variations are not normally available and must be justified, and generally on the principle that the BCR rating should not decrease, and certainly not below the next highest ranked project. There is also a proviso that unspent grant funds be returned to the State.

#### *Minor project variations*

**4.63** While the instructions in each state are that the project budget or the project costs, whichever is the lesser, can be claimed, there are examples in three of the four States where councils have claimed the full project budget even though the approved project works cost less. In this respect, where councils have a number of National Black Spot Programme projects, some councils internally reallocate project budgets to offset their expenditures.

**4.64** For example, Hepburn Shire Council in Victoria delivered three projects funded under the National Black Spot Programme over two years. The approved allocations for two of the three projects were claimed through VicRoads, with the amount claimed for the third being \$1 585 less than the allocation due to a financial year carryover error. Only one of the three projects cost in excess of the amount claimed. The costs associated with the remaining two projects were well under the amount claimed as having been spent on each project. In addition, one of these projects while having funds available did not deliver all the works as nominated by Council and approved by the Federal Minister for Transport and Regional Services. In regards to these issues, Council advised ANAO:

Council has expended \$614 057.83<sup>132</sup> on the three projects in accordance with the total overall allocation of funding from VicRoads of \$608 000.00.

Over expenditure on an individual project's allocation is not uncommon for a VicRoads' administered road programme where several projects are listed, provided that the programme is delivered within the overall allocated funds.

**4.65** State road transport authorities are often not aware of these reallocations. This has been a result of claims submitted by councils not identifying the actual cost of works. Instead, claims often show the approved budget for the works. The actual cost is not identified due to the advice that council must not exceed the budget.

**4.66** For example, 49 of the 67 NSW projects in ANAO's sample delivered by councils cost more than the amount claimed from the National Black Spot Programme. Of the 67, 14 received an upwards financial variation, yet in 10 of the 14 instances the variation was a result of RTA charges being added to the approved budget. As a result, only four of the 49 projects that cost more to deliver than the original estimate were provided with an increase in funding to cover some or all of the costs of work.

**4.67** In WA, minor cost variations tend to only occur for projects delivered by Main Roads WA Regional Offices, but not for council delivered projects. Based on current data, in 32 of the 92 projects actual costs were higher than the total estimated costs, yet council did not seek an upwards financial variation.

**4.68** In Victoria, all 2005–06 council delivered projects in ANAO's sample had their original project estimate increased by 3 per cent. This increase in

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<sup>132</sup> ANAO disagrees with this figure. Based on ANAO's calculations, only \$499 560.22 was expended on works in the nominated and approved locations.

costs was a result of a VicRoads applied administration charge. A minor variation for these projects was approved by DOTARS on 19 June 2006. On this issue, in November 2006 VicRoads advised ANAO:

VicRoads has a general policy of applying a 4% (previously 3%) charge to all projects to cover the costs of providing corporate support services. These corporate support services provide benefits to all projects including those funded under the National Black Spot Programme. These services include:-

- Contract services – development of tender and contract documentation, policies and guidelines, advice on contract management issues, provision of Principal Arranged Public Liability insurance, contract dispute management, performance measurement criteria and systems, contract variations.
- Executive management and planning services – forward planning and strategic direction, policy development, working with Government at all levels to influence policy development, Freedom of Information and privacy management, internal audit functions, governance, research & development.
- Legal services – legislative development and compliance, litigation management, legal aspects of contract documentation and disputes.
- Property management services – manage purchase and acquisition of land for road projects, manage compensation payments under Planning & Environment Act.
- Information technology and management services – strategic planning and development of information technology and information management systems and solutions including crash data systems.
- Financial services – procurement, accounts payable, payroll, risk management, taxation compliance, cash management, financial reporting, financial systems integrity development and support.
- Human resource services – occupational health and safety, staff development and training, workforce planning.

It is noted that the direct administration of the National Black Spot Programme undertaken by VicRoads' Road Safety staff is funded from State Government appropriations and not included in the corporate support services charge.

**4.69** However, such costs are ineligible, as is explicitly stated in the National Black Spot Programme Notes on Administration:

The Programme will fund all costs directly associated with an approved project. Administrative overheads are indirect costs and therefore are not eligible for funding. Ongoing running costs are not eligible for funding.

*Major variations*

**4.70** The approach for major variations also differs between the States. In WA and SA for example, variations have been sought for both council and State delivered projects. In both of these States, the BCR is recalculated to determine whether the project still has a high enough BCR to have received funding in the applicable year.

**4.71** In one instance, a significant project variation was negotiated between Main Roads WA and DOTARS for a council delivered project, W03033 (City of Gosnells) that required the total project estimate to be capped at \$365 000 so that the BCR remained above the cut-off. While DOTARS was advised that the scope of work was reduced to lower the total estimated cost, the 'required' reduction in scope and capping of the project cost was not advised by Main Roads WA to Council (which was delivering the project). The final project cost for the works was \$570 973. This outcome was never advised to DOTARS.

**4.72** In SA, a variation was sought for the City of Onkaparinga's project S03117. This project is discussed in Case Study 4.4.

**4.73** While these examples show that, on occasion the BCR is reconsidered before a project variation is approved, as discussed in paragraphs 4.59 and 4.60, there has not been a consistent approach applied by DOTARS.

## Case Study 4.4: Project S03117, Sellicks Beach Road and Justs Road, Sellicks Beach, SA – City of Onkaparinga

The project description as approved by the Federal Minister for Transport and Regional Services was 'Implement staggered t-intersection & install street lighting'. The project was approved on 17 April 2005 as part of the 2005–06 National Black Spot Programme with an estimated cost of \$90 000.

ANAO inspected the project site on 16 March 2006. The project had not commenced as Council was in the process of seeking a project variation due to a significant change in estimated project cost. No construction work was commenced on the project pending advice on the level of funding available.

The variation was due to a more detailed investigation and design of the initial project concept. It had been identified that the extent of works needed to increase so as to enable the safe movement of heavy vehicles through the staggered t-type intersection arrangement, and also to smoothly transition through vehicles on Sellicks Beach Road, through the intersection.

The expected outcome from the revised concept was to improve the sight distance for vehicles entering Sellicks Beach Road from Justs Road. The revised concept was also considered to produce traffic calming for vehicles intent on travelling Justs Road as well as facilitating a better traffic movement for vehicles travelling along Sellicks Beach Road. The road re-alignment with the associated increased infrastructure works (lighting, drainage and minimal pavement) had an estimated cost of \$200 000.

The SA Consultative Panel discussed the proposed variation in its meeting held in March 2006. The Panel determined that the project variation would not be endorsed and the approved project limit of \$90 000 would remain. The project variation was not supported on the basis that the BCR would fall from 6.3 to 2.8 and the project would not have been recommended by the Panel had it originally been put forward with the increased cost.

Advice from SA DTEI to DOTARS on 21 March 2006 stated that the City of Onkaparinga had been advised that the variation would not be endorsed and that Council was considering its position on whether to continue with the project or not under the National Black Spot Programme.

On 22 March 2006, Council confirmed to DTEI that it would be undertaking the project, but due to the time taken to seek a variation to the funding, the works had been deferred until the 2006–07 financial year.

On 23 March 2006, the following was confirmed between Council and DTEI:

- The scope of the project is reduced to bring the total project cost to \$150 000.
- The works now includes staggering the junction, with right turn lanes on Sellicks Beach Road, sealing shoulders and road lighting.
- Kerbing of the junction originally part of the scope is now to be undertaken by Council along with further upgrade of Sellicks Beach Road.
- Council will be undertaking works utilising \$90 000 from the AusLink Black Spot Programme in 2006–07 and Council will be contributing the remaining \$60 000.

On 6 April 2006, a 30 year old motorcyclist was killed at the intersection of Sellicks Beach Road and Justs Road when his motorcycle collided with a car. A newspaper article dated 14 June 2006 stated that while 'the motorcycle was travelling at a fast speed, the car had not stopped at the Give Way sign'.

As shown in the following photograph taken in March 2006, the sole traffic control measure on the site was the Give Way signs on Justs Road. The photograph also shows the five red markers that stand as a reminder of the injuries that had been sustained at the intersection.



ANAO reinspected the site in December 2006. The revised works had recently been undertaken as shown in the following photograph.



Source: ANAO analysis.

## Recommendation No.6

4.74 ANAO *recommends* that the Department of Transport and Regional Services:

- (a) improve administrative procedures so that projects are selected based on:
  - a rigorous estimate of the likely total estimated capital cost of the project;
  - the scope and nature of works likely to be delivered; and
  - the actual location at which works will be delivered; and
- (b) better inform its management and evaluation of the National Black Spot Programme by implementing systems and procedures that capture the total final cost for all approved projects, including any costs not passed on to the Commonwealth.

### *DOTARS response*

4.75 DOTARS agreed with qualification to part (a) of the recommendation and agreed to part (b) the recommendation. In respect to part (a) DOTARS commented that:

Existing administrative arrangements require projects to be selected using these inputs and that they are assessed based on the best available information available at the time of nomination and assessment. There is often a difference between the estimated cost at the time of nomination and the final cost of the project; this is normal in the way road projects are developed from concept stage through to delivery. DOTARS will work together with the states/territories with a view to reducing the incidence of unexpected differences and to achieve best practice in the selection of projects.



## 5. Identifying and Assessing Project Benefits

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*This chapter examines processes involved in identifying and assessing road safety benefits from proposed National Black Spot Programme projects in order to promote the selection and approval of the highest priority road work projects.*

### Introduction

5.1 Austroads defines a project's benefits as:<sup>133</sup>

The benefits of a crash location treatment principally comprise *savings in road crash costs* which are estimated to result from its construction. The benefits are due either to a reduction in the *number* of crashes or a reduction in the *severity* of crashes. Other significant cost reductions or increases resulting from the treatment should also be included. Unlike the 'cost' which is usually incurred in one (or possibly two) years when the project is designed and built, the benefits are gained over the life of the project.

5.2 The standard formula for calculating project benefits as part of a BCR is:

$$PV_{\text{safety benefits}} = A_a \times F_{ar} \times A_c \times F_d$$

Where:  $A_a$  = the annual crash rate

$F_{ar}$  = accident reduction factor

$A_c$  = average cost of a prevented crash

$F_d$  = discount factor associated with the life of the treatment based on the applied discount rate

5.3 As part of setting out the eligibility criteria for projects to be funded by the Programme, the National Black Spot Programme Notes on Administration provide some guidance as to the inputs for determining the annual crash rate, the discount rate and the accident reduction factors for typical treatments to be applied in the assessment of proposals.

### Inconsistencies in project evaluation

5.4 The 1997 Austroads publication '*A Minimum Common Dataset for Reporting of Crashes on Australian Records*'<sup>134</sup> identified that:

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<sup>133</sup> Austroads, *Treatment of Crash Locations*, 2004. p. 89.

<sup>134</sup> Austroads, *A Minimum Common Dataset for the Reporting of Crashes on Australian Roads*, AP-126/97, 1997. p. 1.

Road crash data basically serves two purposes. Road crash statistics enable the monitoring of trends in road crashes and casualties. Monitoring of road crash trends is used to alert authorities to changes in crash frequency or patterns and also to evaluate the effectiveness of current road safety measures. Intra-State comparisons only require that the data is reasonably consistent over time; however, national aggregations, for example, the national road toll, or comparisons between States and territories require the data is consistent across jurisdictions.

The second use of road crash data is to analyse the causal factors involved in road crashes and to develop appropriate policies and countermeasures in response to these findings. The number of cases available for study is an important determinant of researcher's ability to identify cause and effect. A national collection of road crash data offers strong advantages to road safety researchers. This function also requires consistent data across States and Territories.

In effect, the quality of decision making in road safety is dependent on the quality of data on which these decisions are based and by which these policies will ultimately be judged.

5.5 Consistent with the Austroads guidance, earlier Notes on Administration issued by the Australian Transport Safety Bureau when it had administrative responsibility for the Programme stated that:

It is central to this Programme that proposals from around Australia are able to be considered on a rational and consistent basis.

5.6 In this respect, the Notes on Administration also include (in an appendix) a table of estimated crash reduction figures and crash costs for typical road safety treatments.<sup>135</sup> The crash-type/accident-type matrix<sup>136</sup> looks at the generic influence that a remedial treatment has in reducing certain types of crashes at a site. The matrix also addresses where the treatment has a negative effect, that is, increases the likelihood of a particular crash type.<sup>137</sup>

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<sup>135</sup> The table is also referred to as a matrix. It was originally developed by Dr David Andreassen of Data Capture and Analysis, Ringwood, based on a concept developed by Dennis Walsh, Queensland Transport.

<sup>136</sup> DOTARS records from 2002 state:

Dr David Andreassen pioneered the crash type methodology for crash costing. It is widely regarded as the most accurate and relevant basis for crash costing, particularly as a basis for the assessment of 'black spot' proposals. This approach to crash costing appears to be unique in the world. Dr Andreassen is certainly the expert in this field within Australia, and is pushing the frontiers of this aspect of road safety on the international stage.

... It is not apparent that there is as yet any other person or organisation as skilled or even competent in this field as Dr Andreassen himself...

<sup>137</sup> For example, by installing a roundabout, there is a likelihood that rear end crashes will increase at that intersection.

Different accident costs are provided for metropolitan and rural areas. However, the use of the matrix included in the Notes on Administration is not mandatory. This is notwithstanding a 2003 review of the matrix commissioned by DOTARS which concluded that:

As not all State road agencies are using the matrix and accident-types as their guide in identifying potential blackspots, getting them to do so is the first priority as is the use of a common coding procedure for determining the accident-types of their crashes.

5.7 However, proposals from around Australia are not required to be considered on a consistent basis. As a result, there are significant differences in the approaches adopted by the States in the audit sample to identifying and calculating project benefit inputs into the BCR calculation (see Table 5.1).

**Table 5.1****State determined inputs for BCR calculations**

State	Determination of an average cost of a prevented crash	Variation of accident costs between urban and rural	Types of crashes used to determine the annual crash rate	Number of crashes used to determine the annual crash rate	Basis of accident reduction factors
NSW	Crash type	Yes	Fatalities, casualties and property damage only	Only crashes addressed by proposed treatment	Type of crash being addressed by treatment
SA	Crash type	Yes	Fatalities and casualties	Only crashes addressed by proposed treatment	Type of crash being addressed by treatment
VIC	Speed zone of crash location	No	Fatalities and casualties	All crashes in nomination location	Type of treatment being delivered
WA	Crash type	Yes	Fatalities and casualties	Only crashes addressed by proposed treatment	Type of crash being addressed by treatment

Source: ANAO analysis.

**5.8** Although DOTARS does not require a nationally consistent approach, it does expect a consistent approach to be adopted within each State for a given year. Specifically, when commenting on an ANAO Issues Paper relating to project eligibility, in March 2007, DOTARS advised ANAO that:

DOTARS has sought to ensure that the methodology used by a state is applied consistently to all nominations in that state. DOTARS understands that the states model their assessment of AusLink Black Spot Programme nominations on their procedures for assessing applications for state funding. As there are differences between states in their assessment procedures for state funding, so too are there differences from state to state in assessment procedures for Australian Government funding.

...State authorities have the technical expertise to assess projects and do so consistently within their jurisdictions.

The Department accepts that there are minor differences between states in some aspects of project assessment, which do not impact on the efficiency or effectiveness of the programme.

5.9 In this respect, analysis of the projects in the audit sample found that there are major (not minor) differences between and within States in important aspects of calculating project benefits. Specifically, BCR calculations have varied markedly in relation to:

- any rationale for adjustments made to crash reduction factors, particularly in instances where the adjustments significantly increase the BCR such that a project that would otherwise not have received funding is then successful;
- the estimated life for similar projects;
- the inclusion or non-inclusion of property damage only (PDO) crashes;
- the inclusion or non-inclusion of crashes not being addressed by the proposed treatment; and
- delivery of works that differ significantly from the treatment that was nominated and approved, with the delivered works providing reduced safety benefits (with a BCR lower than that which was relied upon in approving the project nomination). One third of projects in the audit sample were not delivered in accordance with the proposed treatment (which formed the basis of the accidents to be addressed and subsequently the road safety benefits to be achieved). Changes in the location of works, or the nature of the works themselves, may or may not be advised to DOTARS.

#### *Inconsistencies within the state*

5.10 Most of the instances of varying methodology occurred in NSW. Most projects in NSW used the BCR model provided by the RTA. However, ANAO's assessment of the use of the model revealed that, while guidelines exist, the model was not completed in a consistent manner.

5.11 More specifically, the calculation of 59 per cent of BCRs (62 per cent for RTA delivered projects and 57 per cent council delivered projects) cannot be substantiated. In addition to the errors resulting from the completion of the BCR model, ANAO found:

- insufficient supporting information was available for the benefits calculation;
- project BCRs were changed from the nomination form to what was considered by the NSW Consultative Panel, without documented explanation; and/or

- project benefits were calculated using crashes that were outside the areas of works being delivered. The use of crashes outside the area of work impacts on both the project's eligibility and the annual crash rate used to determine the project benefits.

5.12 The significant majority of National Black Spot Programme projects are nominated, assessed and approved on the basis of BCR calculations. Accordingly, such differences in the way the BCR is calculated undermine the policy objective that the Programme fund those projects that provide the highest benefits.

## Crash data

5.13 The annual crash rate is primarily based on the accuracy and level of detailed crash data available at the time of developing the project nomination. According to Austroads:<sup>138</sup>

Crashes occur across the road network. To treat their occurrence or their severity, road authorities need [to] have information about them. The whole process of investigating, analysing and effectively treating crash locations relies on the availability of comprehensive and accurate data about crashes and about road and traffic characteristics of the crash locations.

5.14 In addition to the availability of crash data, the determination of the annual crash rate for a Black Spot Programme nomination is dependent on the following considerations:

- the period for analysis;
- the level of accident data considered;
- the target crashes to be addressed by treatment; and
- the inclusion of crashes outside the proposed treatment of works.

## Period for analysis

5.15 According to Austroads<sup>139</sup>, when deciding on the time period of accident data for a potential site:

Accident data for a five year period is typically used, as this period usually provides statistical reliability. A three year period may be adequate, for

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<sup>138</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 25.

<sup>139</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 40.

example if the data base includes property damage accidents and accident frequencies are high at the sites being considered.

**5.16** The Notes on Administration state that measures of casualty crashes should be provided for the most recently available five year period. However, the NSW RTA's guidance on the use of the BCR calculation spreadsheet states:

For State funded projects this is the most recent three (3) years of data, and for the National Black Spot program it is the most recent five (5) years of data (check the requirements in the bidding guidelines produced by the relevant Road Authority). However in special circumstances a lesser accident period can be used. For example, the site being investigated could have been treated with a measure which has only been installed for two years, but which has already resulted in a demonstrated accident history. In these circumstances the two years would be used.

**5.17** The risks inherent in this approach are identified by the SA DTEI's *Guidelines for the calculation of Benefit-Cost Ratio*, which states:

Use, as a minimum, the last 5 years of crash data to determine the average number of crashes or crash rate per annum. Selecting the worst 3 consecutive years with the highest crash rate does not give a true representation of crash history. A period of 5 years or more should give a realistic average crash rate for the site. A shorter, more recent period will be acceptable where it can be justified, e.g. recent increases in traffic volumes as a result of recent development or changes in traffic patterns.

**5.18** An issue not addressed in either State guidance document is whether an accident period of greater than five years can be used. In this respect, Austroads<sup>140</sup> states:

A period longer than five years can be used, but it is more likely that changes in road features will have occurred which will affect accident causes.

**5.19** However, a number of the projects audited in NSW used an accident period of greater than five years. For most of these, the data was converted correctly into an annual rate. However, in the instances where the data was not correctly converted to an annual rate, project benefits were overstated relative to other project nominations.<sup>141</sup>

<sup>140</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 40.

<sup>141</sup> For example, in project N03183 the number of accidents and DCA codes used in the BCR calculation match the supporting crash data however they include the two crashes outside the most recent five year period. As the BCR Matrix only referred to five years of accident data (rather than 5.5 years) the two older crashes should not have been included in the assessment. Recalculating the BCR excluding these crashes resulted in the BCR reducing from 7.2 to 6.6.

## Level of accident data considered

### 5.20 According to Austroads:<sup>142</sup>

There is a minimum set of data about each crash which is necessary as a basis for the sound and satisfactory investigation of a crash location. All states and territories have agreed to work towards implementation of the minimum data set described in Austroads Report No.AP126 'A Minimum Common Dataset for the Reporting of Crashes on Australian Roads' (Austroads 1997). Many jurisdictions collect data in greater detail. This can assist in providing a greater understanding of the causes or consequences of a crash.

All jurisdictions have requirements for reporting accidents (to the police). For example, in all jurisdictions fatal accidents must be reported. At the other end of the severity scale, some jurisdictions require property damage (non-injury) accidents over a minimum cost threshold to be reported, while other jurisdictions require property damage accidents to be reported only if the property owner was not present. Consequently there is a high level of reporting of the most severe injury accidents and a lower level and variable amount of reporting of lower cost accidents.

In addition to reporting criteria, there are differences between jurisdictions on which reported accidents are recorded in the database. ...

Because the types of problems which can lead to some typically lower cost accident-types can be different from those which can lead to casualty accidents, the absence of property damage accidents from the database can give a misleading picture of the nature of crash problems at a location.

5.21 While the Notes on Administration specify that casualty (fatal and injury) crashes be considered for a project's eligibility, no mention is made of whether the annual crash rate used in the economic analysis of the proposal should be restricted to casualties or whether it can also include property damage only (PDO) crashes.

5.22 As a result of the different levels of accident data captured around Australia, and the lack of clear guidance in the Notes on Administration, the basis of the benefit calculation differs as highlighted in Table 5.1 above. This table demonstrated that the different states determine the annual crash rate using different levels of accident severity. Some include all casualty accidents at the site, some use the casualty accidents addressed by the proposed treatment, and others use the casualty accidents and PDO accidents addressed

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<sup>142</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 26.



by the treatment. In each instance, the annual crash rate being addressed by the proposed treatment would be different. In this respect:

- The SA *Guidelines for the calculation of Benefit-Cost Ratio* states:  
Exclude property damage only (PDO) crashes in the analysis. The ratio of PDO crashes to casualty crashes generally does not vary significantly and so their inclusion will have minimal effect on the ranking of projects. Furthermore, the value of PDO crashes is very much less than casualty crashes.
- However, in NSW, guidance on undertaking detailed analysis of accident data states:<sup>143</sup>

For road base countermeasures, the RTA's methodology is to examine accident data by accident-type of DCA Codes (or RUM Codes) and not by severity (e.g. fatal, injury and tow-away property damage accidents). Most road treatments generally affect particular types of accidents and not the severity of accidents. For example, determining that 15 right angle accidents occurred at an intersection can reasonably lead to the selection of traffic signals, a roundabout or more conspicuous stop signs as appropriate countermeasures. However, determining that the injuries were 0 killed and 6 injured does not help very much in determining a suitable road treatment. Another advantage of extracting accident data by accident-type is that it is better able to describe the accident process whereas severity only describes the outcomes of the accident. By describing processes, it is often easier to determine what sort of countermeasures are appropriate.

**5.23** Accordingly, in NSW all available accident data to be addressed by the proposed countermeasure, regardless of severity, is included in the calculation of project benefits. While PDO crashes are captured in the RTA's Traffic Accident Database System where at least one motor vehicle was towed away, accident data obtained from this system does not contain self-reported or non-towaway accidents. The information provided to the NSW Consultative Panel however, only includes the total injury crashes at the site rather than the number of PDO crashes, or the number of crashes that the BCR is based on.

**5.24** In the audit sample, the issue of including PDO crashes in the benefits calculation but not advising the relevant state Consultative Panel of such inclusion was evident also in WA. Specifically, the WA Consultative Panel papers only include the average number of casualty crashes per year.

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<sup>143</sup> RTA, Technical Direction for Road Safety Practitioners, *TD2004/RS01: Accident Reduction Guide, Part 1 – Accident Investigation and Prevention*, March 2004, pp. 11 and 12.

5.25 Assuming that a project had the same number and type of accidents and proposed treatment, the BCR would differ across the states as a result of the levels of severity included in the calculation of the project benefit.

### **Target crashes to be addressed by treatment**

5.26 According to Austroads:<sup>144</sup>

A cornerstone of an effective road safety program is that solutions, or treatments, must be focussed on particular problems. This is the approach of using 'countermeasures'. There are no 'general' road safety solutions: for a solution to be effective, it must be applied to a particular problem which it is known to affect. It must be an effective countermeasure.

5.27 Consistent with Austroads guidance, the crash-type/accident-type matrix attached to the Programme's Notes on Administration identifies parameters for calculating the safety benefit based on a specific treatment (countermeasure) and specific accident type. In 2002, DOTARS commissioned a review of the estimated crash reduction factors and crash costs figures included in the crash-type/accident-type matrix. This review<sup>145</sup>, finalised in July 2003, evaluated some of the projects approved for the first three-year phase of the Programme. VicRoads and RTA were contacted in 2002 to provide crash data for the sites treated under the Programme, for the three years of 1996–97 to 1998–99. For the analysis, the number of 'crashes per year' for accident-types in the before period was then compared with those in the after period.

5.28 The review found that:

The use of the criterion of 3 casualty crashes in 3 years [etc] for a site to be included in the Blackspot program, without a qualification as to the treatment being relevant to the accident-types occurring, might have resulted in some treatments being applied to the locations where the relevant accident-type/s for that treatment was not present. It is considered that so-called 'target crashes' should be included in the program

5.29 The review recommended<sup>146</sup> that 'target crashes' should be included as part of the criteria for a Black Spot so that projects are evaluated on the basis of

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<sup>144</sup> Austroads, *Treatment of Crash Locations*, 2004, p. 21.

<sup>145</sup> DCA Data Capture Analysis, *Review of the Black Spot Matrix: Conducted for The Manager National Black Spot Program*, Department of Transport and Regional Services, July 2003.

<sup>146</sup> DCA Data Capture Analysis, *Review of the Black Spot Matrix: Conducted for The Manager National Black Spot Program*, Department of Transport and Regional Services, July 2003, p. 7.

crashes of an accident-type amenable to being corrected by the treatment proposed.

**5.30** The review of the crash-type/accident-type matrix was forwarded to State and Territory road authorities for comment before changes to the matrix were to be considered. DOTARS records show that responses were received from Queensland, SA and WA. No response was on file for either Victoria or NSW, the States directly involved in the review.

**5.31** The Notes on Administration have not been updated to reflect the guidance promulgated by Austroads, or as recommended by the 2003 review.

**5.32** In addition to the concerns raised that crashes not being targeted for treatment were being incorrectly included so as to satisfy Programme eligibility requirements, there is a risk that such crashes would also be included in BCR calculations, thereby increasing the chances of a project being funded. In this respect, as outlined in Table 5.1, practices differ markedly between the four States in the audit sample. In three States, BCRs were calculated using only those crashes that were being addressed by the proposed treatment. In this respect, the RTA's guidance states:<sup>147</sup>

Care must be taken in estimating accident savings. Credit cannot be claimed for preventing accidents that the treatment will not or cannot have an effect on. For example, if a wide variety of accident-types are present at an intersection, only those accidents directly affected by the proposed treatment can be used in determining the accident "savings". It is wrong to estimate the accident savings based on all the accidents at the intersection. In addition to the accident type, the specific location of the accidents also has a bearing on whether it is likely to be addressed by the treatments. A crash 20m from an intersection may not necessarily be affected by the treatment at the intersection.

**5.33** However, in Victoria, BCR calculations included all crashes at the nominated location, irrespective of whether they were being addressed by the nominated countermeasure, combined with an accident reduction factor based on the type of treatment being delivered (rather than the type of crash being addressed by the treatment). In this respect, in May 2007, VicRoads advised ANAO that:

The audit report comments on the fact that Victoria applies all crashes at a site regardless of the fact that they will not benefit from the treatment. This is done

<sup>147</sup> RTA, Technical Direction for Road Safety Practitioners, *TD2004/RS01: Accident Reduction Guide, Part 1 – Accident Investigation and Prevention*, March 2004, p. 12.

because the crash reduction factors are based on research undertaken by MUARC [*Monash University of Accident Research Centre*], which considered all crashes at the site.

**5.34** However, the Victorian approach does not reflect the benefits intended to be achieved from a National Programme. The design of the Programme was intended to address concerns about a diversity of approaches to defining a hazardous location, a diversity of accident cost values and a diversity of project ranking making it unlikely that a particular project would be given the same ranking in all States and Territories.

**5.35** An example where all crashes were included in the benefits calculation, regardless of whether they were to be addressed by the proposed treatment is project V03279 (included as Case Study 4.3: Project V03279 Shire of Campaspe, Victoria). In this project, the reported crash statistics showed three injury crashes at the intersection in a five year period. The benefit calculated for this project was based on adopting an 85 per cent accident reduction factor over a 20 year project life span of the treatment (a roundabout) for all three crashes. One of the three crashes at the intersection, a rear end crash, would not be prevented by the proposed treatment; rather, based on the crash-type/accident-type matrix attached to the Notes on Administration, this type of crash is expected to increase with the installation of a roundabout. Had the benefits been calculated based on the casualty accident reduction percentages for the roundabout treatment combined with the type of crashes at the site, it is unlikely that this project would have been funded by the National Black Spot Programme.

**5.36** In addition, where injury crashes are used as the basis of the project's eligibility, the target treatment does not necessarily address the majority of injury crashes at the site as discussed in the following Case Study.

### **Case Study 5.1: Project W03042 South Street and Calley Drive, Bullcreek, WA**

Project W03042 sought Commonwealth funding for works at the intersection of South Street and Calley Drive, Bullcreek in WA. The nature of concern was 'pedestrian crash'. The proposed treatment was 'Remodel the traffic signal to enable the relocation of the pedestrian crossing facilities from the west side to the east side of the intersection'. The project nomination was dated 15 March 2002.

The project was submitted based on its reported crash statistics – one fatality, with a total of 54 crashes within a five year period (1996–2000). The supporting crash data shows that the figure of 54 includes property damage only (PDO) crashes. Of the 54 crashes, 21 were casualty crashes, with two of these crashes relating to pedestrians.

While the 21 crashes were used to justify the project's eligibility (three or more casualty crashes in the most recent five year period), the benefits for the project were determined by only addressing the two pedestrian crashes. The supporting information for the project nomination had calculated a BCR of 8.24, based on a 100 per cent accident reduction for the two pedestrian accidents. A BCR of 4.12 was handwritten on the nomination. This figure was determined by adjusting the accident reduction factor to 50 per cent. The estimated project cost used in the BCR calculation was \$25 000.

ANAO assessment of the projects approved under the National Black Spot Programme revealed that, in 2000–01, works were funded at the same intersection for the installation of pedestrian fencing in the median for \$12 000. The problem to be addressed by this treatment was 'pedestrian crashes'. The submission included one fatality and 13 injury crashes. Analysis has revealed that an overlap in the crash statistics has occurred to enable two projects to be funded using some of the same data. Also, the pedestrian crash of 17 July 1997 was used in both benefit calculations.

The crash rate included in the WA Consultative Panel papers for project W03042 was based on the 21 casualty crashes. The stated BCR was 4.12 and the estimated cost of the project was \$25 000. No mention was made in the Minutes of the Consultative Panel Meeting of the earlier work undertaken on this site to address the similar issue of pedestrian crashes. Also no mention was made that the proposed treatment was only addressing two of the 21 injury crashes at the site. Photographs of both projects are shown below.

In regards to this project, Main Roads WA advised ANAO in April 2007 that:

Based on the BCR/ crash data assumptions, project W03042 should have reflected the crash reduction effect that was anticipated to be derived from the earlier project. The reduction would not however have changed the funding priorities for the 2002–03 year.



Source: ANAO analysis.

## Inclusion of crashes outside the proposed treatment of works

5.37 As mentioned above, according to Austroads countermeasures must be focussed on particular road safety problems. In this respect, the inclusion of crashes that are outside the area of work does not represent an effective approach to treating road safety black spots. Including crashes that are outside the treatment area overstates project benefits.

5.38 Examples where crashes were incorrectly included in a project's evaluation were observed in all states in the audit sample. For example, in one

instance, project N03096, comparison of the actual location of works to the crash data found that there are no crashes at the actual location of works. This project is discussed in Case Study 5.2.

### Case Study 5.2: Project N03096, Myall Way, Tea Gardens, NSW – Great Lakes Council

Project N03096 was for works on a 2500 metre road length – 6.6 kilometres north of Tea Gardens on Myall Way. The proposed treatment was ‘Realign curves–widen–add guardrail’. The nomination was dated 22 March 2002. The project originally sought \$220 000 for the \$420 000 project. The final amount of works funded by the National Black Spot Programme was \$276 568, with the final cost of the total project being \$754 075.

The project was submitted based on its reported crash statistics – one fatality per kilometre and four casualty crashes per kilometre within a five year period (1994–1999). The requirements of the National Black Spot Programme state that the measures of casualty crashes should be provided from the most recent available five year period. Accordingly, the nominated crash period and associated crashes are too old.

In order to assess whether the eligibility criteria of the National Black Spot Programme was satisfied, assessment was made of the various sources of crash data, including the updated data provided by Council during the site visit, for crashes on Myall Way between 1 January 1996 and 31 December 2001. As the project nomination was dated March 2002, this six year period covers all the possible five-year period variations for the availability of data at that time.

The following table shows the number of injury and Property Damage Only (PDO) crashes that had occurred during the nominated time period. There were no reported fatalities on this road in the 1996–2001 period.

Year	Injury	PDO
1996	0	0
1997	3	1
1998	2	1
1999	1	1
2000	1	2
2001	3	0
<b>Total</b>	<b>10</b>	<b>5</b>

Based on the various forms of crash data there have been 10 injury crashes and five PDOs on Myall Way between 1996 and 2001. The crashes and the location of works delivered with the National Black Spot Programme funding are plotted on the following diagram.



Great Lakes Council advised ANAO in December 2006:

With regards to the age of the data used in this submission, discussion with Council's staff indicated that this was in the early stages of development of Council's Geographic Information System, and receipt and inputting of accident data was some period in arrears. This is the only suggestion that has been provided to explain this discrepancy.

Council did not offer any comment on the location of the National Black Spot Programme funded works not coinciding with any of the reported crash locations along Myall Way, even though addressing these crash locations was the basis of obtaining the project funding.

Source: ANAO analysis.

## Accident reduction factors

5.39 In relation to applying an accident reduction factor when calculating a benefit for a proposed project, Austroads<sup>148</sup> states:

The accident-types at the crash location are known to us, from the diagnosis of the crash pattern. Using information about the percentage effectiveness of particular treatments in reducing particular accidents-types, estimate the effect of the proposed treatment on these accident types. Apply a "percentage effectiveness" only to those accident-types which are affected by the treatment; exclude unaffected accident-types from the calculations.

5.40 Consistent with the Austroads approach, the crash-type/treatment-type matrix included in Appendix 1 to the National Black Spot Programme Notes

<sup>148</sup> Austroads, *Treatment of Crash Locations*, 2004. p. 89.

on Administration provides guidance on the applicable accident reduction percentages.

**5.41** In determining the accident reduction factors, three of the four States (NSW, SA and WA) apply a crash by type BCR methodology based on the matrix which accompanies the Notes on Administration. NSW has developed a detailed spreadsheet which expands on the details included in the tables attached to the Notes on Administration which includes a high-speed list of reduction percentages for rural roads, and a low-speed list for urban roads. Similarly Main Roads WA's CRASHTool software expands on the tables in the Notes. SA DTEI recommends the use of the tables in the Notes.

**5.42** BCR calculations in Victoria, however, determine the casualty reduction factor based on the proposed treatment, without having regard to the type of accident(s) involved at the location. The *2004–05 VicRoads guidelines for Site Identification and Project Evaluation* state that:

2. Reductions apply to TOTAL casualty accidents within single intersections or single midblocks that contain the treatment.

3. Crash reduction factors were revised 23 June 1998 to reflect actual reductions found by MUARC [*Monash University Accident Research Centre*] evaluation March 1998.

**5.43** The DOTARS commissioned review of the crash-type/treatment-type matrix in 2003 found that a system for the identification and treatment of black spots based on accident-types and crash costs is clearly superior to a system based solely on casualty crashes without the consideration of accident-type (target crashes) in either the identification or economic appraisal of candidate black spots. The review found that:

The process used in Victoria appears to fall mostly in the second type of system and should be changed.

**5.44** As mentioned in paragraph 5.6, the DOTARS commissioned review of the crash-type/treatment-type matrix in 2003 concluded that:

As not all State road agencies are using the matrix and accident-types as their guide in identifying potential blackspots, getting them to do so is the first priority as is the use of a common coding procedure for determining the accident-types of their crashes.<sup>149</sup>

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<sup>149</sup> DCA Data Capture Analysis, *Review of the Black Spot Matrix: Conducted for The Manager National Black Spot Program, Department of Transport and Regional Services, July 2003*, p. 7.



5.45 No information was available in DOTARS records assessed by ANAO to show that this finding was considered by the Department, and whether it was actioned. Assessment of project nominations in ANAO's Victorian sample shows that the BCR methodology did not change over the assessment period of 2002–03 to 2005–06. ANAO sought DOTARS advice on why this conclusion was not addressed but the Department did not respond.

### **Adjustment of recommended accident reduction factors**

5.46 The WA CRASHTool 2005 software contains pre-set accident reduction factors. The cells are protected and can not be adjusted. While CRASHTool does not enable adjustment, ANAO found that, during the review phase undertaken by the Regional Offices, these factors have, at times, been manually adjusted.

5.47 In comparison, in NSW the BCR calculation matrix contains assumed accident reduction factors but enables these factors to be customised. The guidelines provided by the RTA which accompanies the matrix states:

Once a non-zero number is added into the custom reduction column, then this value rather than the generic reduction rate is used in the cost benefit calculations.

*NB: These should only be used after an extensive systematic onsite investigation has been conducted and more robust reduction values derived. Full documentation of the reasons for the use of alternative reductions should be made available.*

5.48 As the SA method for BCR calculation is manual, the use of specified accident reduction factors can be readily adjusted. The guidelines for the calculation of a BCR in SA states:

Apply the crash reduction factors given in the Treatment/Crash Reduction Matrix in a reasonable manner. Adjust the figure given in the matrix if the treatment does not fully meet the intended description.

5.49 The *2004–05 VicRoads guidelines for Site Identification and Project Evaluation* provide a crash reduction factor for a proposed treatment. The Microsoft Excel spreadsheet provided by VicRoads requires the crash reduction factor to be manually inserted. As a result, the factor can also be readily adjusted.

5.50 Where a BCR calculation methodology enables the accident reduction factors to be overridden, the outcome of the calculation can be significantly distorted as discussed in the following Case Study.

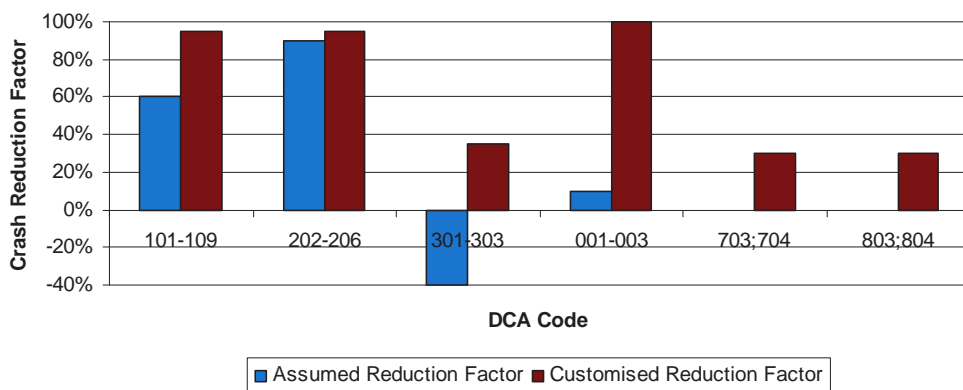
## Case Study 5.3: Projects N03232 and N03233, RTA Hunter Region, NSW – Adjustment of accident reduction factors

The following two projects were for the same type of project, on the same road, nominated in the same year. The accident reduction factors were customised for each project, but to different percentages. In one project the BCR changed from being ineligible (with a BCR less than 2.0) to a project with a competitive BCR. No explanation was included in the project nomination for the customisation in either project.

### Project N03232: Intersection of The Entrance Road and Tuggerah Parade, Long Jetty

Project N03232 was for works at the intersection of The Entrance Road and Tuggerah Parade, Long Jetty. The nature of concern was 'Turning and rear end accidents'. The proposed treatment was 'Install traffic control signals'. The project nomination was dated 10 September 2003.

Rather than use the 'assumed reduction' factors that are standard for each crash type based on the proposed treatment, the reduction factors were customised. As shown in the chart below, the factors in some instances were changed significantly.



As shown in the graph, the BCR Matrix does not include an assumed reduction factor for DCA (Definitions for Coding Accidents) codes 703;704 and 803;804. These crash types relate to 'off carriage way' type crashes that often occur on mid-block and length sections and are not normally addressed by the installation of traffic lights at an intersection. No information was included in the nomination to explain why the accident reduction factors were adjusted, or, in relation to these DCA codes added.

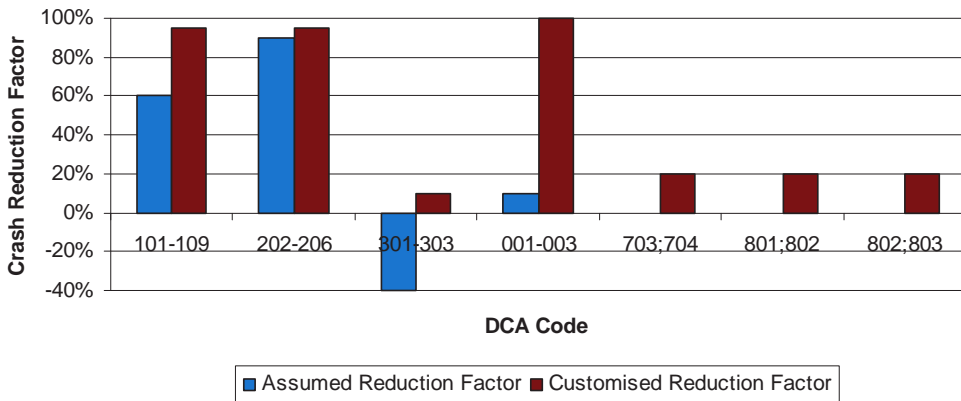
In order to determine the impact of the changes, recalculating the BCR assuming that these adjustments were not made results in the BCR reducing from 6.9 to 1.0. This BCR is lower than 2.0 which is required to be eligible for funding under the Programme. The BCR cut-off for the 2004–05 Programme for urban projects was 6.4. Accordingly, had these changes not been made, the project would not have been eligible for funding.

### Project N03233: Intersection of MR336 The Entrance Road and Bonnal Road, Erina

The proposed installation of traffic signals undertaken under Project N03233 was originally nominated for funding in the 2003–04 Programme. The NSW Consultative Panel papers report that there were six casualty crashes at the location in a five year period, and that the project had a BCR of 5.4. In the 2003–04 Programme for NSW, the BCR cut-off for urban projects was 6.2. As a result, this project nomination was not successful as the BCR was too low.

The project was resubmitted for consideration in the 2004–05 Programme. In this later submission, the BCR was proposed as 6.8, also based on six casualty accidents (however, the BCR was calculated including seven PDO accidents not advised to the Consultative Panel).

Rather than use the 'assumed reduction' factors that are standard for each crash type based on the proposed treatment, the reduction factors in the BCR matrix were customised. As shown in the chart below, the factors in some instances were changed significantly.



As shown in the graph, the BCR Matrix does not include an assumed reduction factor for DCA codes 703;704, 801;802 and 803;804. These crash types relate to 'off carriage way' type crashes that often occur on mid-block and length sections and are not normally addressed by the installation of traffic lights at an intersection. No information was included in the nomination to explain why the accident reduction factors were adjusted, or, in relation to these DCA codes added.

In order to determine the impact of the changes, recalculating the BCR assuming that these adjustments were not made results in the BCR reducing from 6.8 to 3.0. The BCR cut-off for the 2004–05 Programme for urban projects was 6.4. Accordingly, had these changes not been made, the project would not have had a high enough BCR to have received funding.

Source: ANAO analysis.

### Combined effect of undertaking a number of treatments

5.51 The Notes on Administration do not provide guidance on how to address the combined effect of undertaking a number of treatments at the same location. Different guidance is provided by the various states on how combined treatments should be calculated. For example, in SA, proponents are advised:

The arithmetic sum should not be used: however, logic suggests there would be a combined effect from multiple treatments, but not to the extent of the sum of individual treatments.

5.52 The SA guidelines also recommends a manual method of calculation for applying two or more percentage reductions.

5.53 In Victoria, the *2004–05 VicRoads guidelines for Site Identification and Project Evaluation* state that:

Crash reductions are NOT ADDITIVE, use highest value if multiple treatments are proposed.

**5.54** WA's CRASHTool 2005 software can model 100 countermeasures (road infrastructure modifications) to address specific crash performance problems. These countermeasures can be applied to one or more legs of the intersection or road section. The model enables up to four countermeasures to be considered simultaneously at the proposed location.

**5.55** In NSW, the BCR matrix also enables combined treatments to be considered. The guidelines state that, where a combination of treatments is being implemented at a site, the model can be used to determine the economic worth of these combined treatments. The model requires the treatments to be analysed in the order that they would reduce the outcome of the crash. The guidelines explain that:

If a length of road is being treated with enhanced curve warning signs (Treatment A), raised profile edgelines (Treatment B) and safety barriers (Treatment C) then they must be evaluated in that order. This is because the signs would reduce a number of the crashes before the profile edgelines take effect, and then the profile edgelines would also reduce some of the crashes before the vehicle hits the safety barrier. Eg. Treatment A will reduce 13 run off road crashes by approximately 20%. Treatment B can then only reduce the remaining 10.4 crashes not affected by Treatment A. Similarly, Treatment C can only claim 70% of these (7.28 crashes) as Treatment B has already reduced these 10.4 crashes by 30%. The overall safety benefit cost of these treatments are derived by adding the discounted benefits and discounted costs together and dividing the two totals to give the overall safety benefit cost ratio.

**5.56** In one project (N03210) however, rather than include the total number of target accidents in each treatment, each of the 33 accidents to be addressed was only used once rather than three times. Had the BCR matrix been completed correctly, the BCR would have been higher.

## **Average cost of preventing a crash**

**5.57** As highlighted in Table 5.1, NSW and SA determine costs savings (benefits) provided by the treatment based on the cost of the average cost of the accident type being addressed. In February 2004, Main Roads WA advised DOTARS that:

Main Roads accepts in principle that the National Black Spot Programme Matrices are generally the best crash factor matrixes available at present. In

Western Australia, we do not use the cost per casualty crash provided by DOTARS, instead we use Western Australian average crash type cost for built-up and open road crashes averaged across all severities.

**5.58** In determining the crash cost savings category for the BCR calculation, the guidelines for using WA's CRASHTool 2005 software advises proponents that:

Don't forget to modify this to suit the road environment of your study area. Selecting the wrong option can have dramatic effects on the economic analysis. This must be set correctly BEFORE you click "Calculate crash cost saving" button.

**5.59** The options that can be selected in CRASHTool are listed below. The level of crash savings are determined based on the selection. As noted above, the crash costs also differ depending on the crash-type. Annually, Main Roads WA updates the average crash costs by CPI.

- Nature – Built Up
- Nature – Open Road
- Nature – All Roads
- Severity

**5.60** The NSW BCR matrix also uses updated crash costs by type compared to the Notes on Administration. The RTA *Road Environment Safety Update* published in February 2006 states:

The safety benefit cost model is updated at yearly intervals. Updates include:

- Annual updates of accident costs.
- Additional standard treatments based on the identified need for additional categories.
- Changes in treatment effectiveness in response to monitoring the effects if implemented treatments.

**5.61** In comparison to the approach being taken in other States, in Victoria the benefits are based on speed zoning<sup>150</sup> only rather than the individual costs of types of accidents and savings determined by specific treatments. These speed zoning figures are higher than the average benefits for metropolitan and

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<sup>150</sup> VicRoads advised ANAO that the distinction between urban and rural crash costs is addressed by the application of different speed zone crashes because rural roads generally have higher speed zones and as a consequence higher crash severity.

rural areas identified in the BCR matrix attached to the Programme's Notes on Administration.

5.62 As mentioned in paragraph 5.27, the 2003 review of the matrix attached to the Notes on Administration included updating the crash costs. While the revised crash costs were finalised by July 2003, the crash data included in the matrix (which is used by SA) was not updated in the Notes on Administration until they were published under the AusLink Act in July 2006.

## Discount factor and appraisal factor

5.63 In order to determine the discount factor<sup>151</sup>, the applied discount rate and appropriate appraisal period need to be known. All projects in the audit sample were approved prior to July 2006 (when the AusLink Notes on Administration were published). The Notes on Administration suggested that a discount rate of 5 per cent be used.<sup>152</sup>

5.64 The selection of an appraisal period has a critical impact on the value of the benefits. According to Austroads:<sup>153</sup>

Once the estimated level of savings based on the proposed treatment is determined, it is discounted over an appropriate appraisal period.

But over what length should be benefits be counted? The selection of an appraisal period has a critical impact on the value of the benefits. The potential economic life of the project (often viewed as twenty or thirty years) should not be used as the appraisal period because:

- Traffic patterns, traffic management objectives, signal hardware, etc will all change over the whole economic life of the works; and
- An economic appraisal is a tool to aid the distribution of *scarce* resources within a *limited* budget. A project which cannot show a return on investment within 10 years is unlikely to be a good use of those resources.

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<sup>151</sup> The discount factor can be referred to as a uniform series present worth factor. These factors apply where costs or benefits accrue uniformly over a number of years (N).

<sup>152</sup> Where BCR calculation data has been available for assessment, some projects had used a 7 per cent discount rate. This in effect, understated the potential benefits of the project compared to the other projects within the State. The VicRoads policy has been to use a discount factor of 6 per cent.

<sup>153</sup> Austroads, *Treatment of Crash Locations*, 2004. p. 89.

Consequently, the period used for appraisal should be no greater than five years preferably and certainly no greater than 10 years.<sup>154</sup>

**5.65** Rather than determine an appropriate appraisal period as recommended by Austroads, ANAO found that the potential economic life of the project (often viewed as 20 or 30 years) has been used.

**5.66** Each State provides different guidance to the length of the appraisal period. The guidance refers to the estimated project life or typical treatment life. The guidelines produced by the States have varying levels of detail. In addition, other than in WA where CRASHTool is used, the application of the recommended treatment lives is not automatically generated based on the proposed treatment.

**5.67** In NSW, the guidelines for producing the BCR refer to the term project life and provide estimated figures. Use of these figures is not, however, required. The guidance for completing the BCR matrix states:

This is the assumed length of time before the project needs replacing. Benefits will accumulate over this period. The RTA has compiled a list of assumed project lives for varying treatment types. (The model allows for project lives of up to 30 years but in safety projects **a maximum of 20 years should be used**).  
[ANAO emphasis]

**5.68** Assessment of the NSW RTA project life guidelines revealed that no project had an estimated life greater than 20 years. However, benefits for 21 of the 106 NSW projects in the audit sample had benefits calculated over a 30 year life. In this context it is unclear to ANAO why the RTA and DOTARS perceive that road safety benefits will be received over a period greater than the project life.

**5.69** Although DOTARS desires consistency within States, ANAO found considerable inconsistencies within States in relation to the period used for appraisal. For example, in comparison to Austroads guidance that the period used for appraisal should be no greater than five years preferably and certainly no greater than 10 years, in NSW, 86 per cent of projects in the sample had benefits calculated over a period greater than 10 years. This is shown in Figure 5.1. More specifically, there were only 15 projects in the sample where the period of appraisal was consistent with Austroads Guidance. In two instances, an appraisal period of five years was used and in 13 instances an appraisal period of 10 years was used.

<sup>154</sup> Austroads, *Treatment of Crash Locations*, 2004. p. 89.

5.70 In NSW there are 51 out of the 106 projects where the primary treatment<sup>155</sup> estimated project life is different to the guidance provided by RTA. There were also instances where the same treatments, in the same year, used different appraisal periods. In one instance, the exact same treatment was proposed, for the same year, in the same RTA region but a different estimated life was used as explained in Case Study 5.4. There were also four local government authority areas in the NSW sample where projects for the same primary treatment have used different estimated lives for the appraisal period.

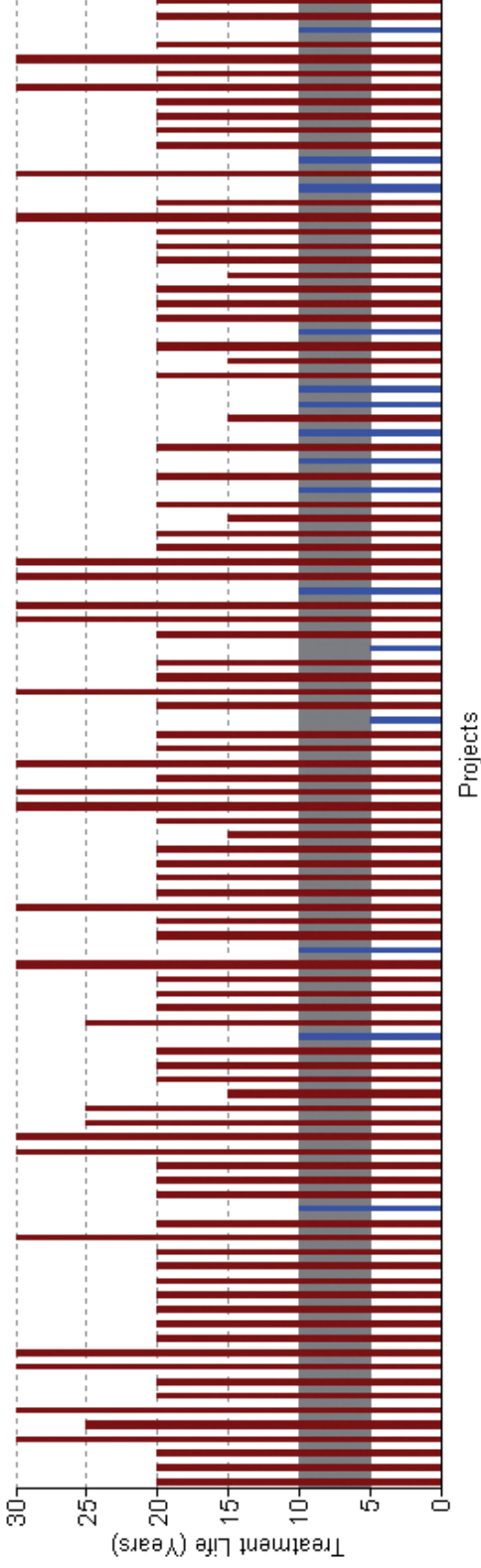
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<sup>155</sup> Consistent with RTA's guidance for multiple treatments discussed in paragraph 5.55, ANAO has determined the primary treatment as the one included first in the BCR matrix.



**Figure 5.1**

**NSW projects: Appraisal period used in determining project benefits**



Source: ANAO analysis. Shading in figure represents Austroads guidance.

## Case Study 5.4: Projects N03372 and N03391, Change to vertical and horizontal alignment, NSW

RTA Head Office disseminates a publication called *'Notes on the Use of the RTA's Road Safety Benefit Cost Spreadsheets'*. The publication states that the models have been produced to assist practitioners in calculating the road safety BCRs for remedial treatments at identified sites. It also states:

The models have been produced to simplify both the calculation for safety BCR's and to ensure that submissions for State or federal funding have been economically evaluated in a consistent manner.

In the audit sample, both N03372 (Ballina Shire Council) and N03391 (Bryon Shire Council) were for reconstruction and realignment of a mid-section of road. The projects are in bordering local government authority areas. Both projects were funded by the National Black Spot Programme in NSW's 2005–06 Programme of works.

The crash statistics and calculated benefits included in each project's BCR calculation attached to the project nominations are shown in the following table. Both BCR calculations selected RTA treatment "94. Alignment – Change Horz & Vert".

	Project N03372 (20 year life)		Project N03391 (30 year life)	
DCA Code	Number of crashes	Benefit	Number of crashes	Benefit
201	1	\$659 542	1	\$1 371 067
801;802	3	\$698 454	0	0
803;804	5	\$1 207 567	0	0
805	1	\$206 080	4	\$2 008 246
<b>Totals</b>	<b>10</b>	<b>\$2 771 643</b>	<b>5</b>	<b>\$3 379 313</b>

As the table shows, depending on the typical project life selected for a project, a marked difference in the project benefits results. In this example, the project which is addressing twice the amount of vehicle accidents but which used the RTA recommended project life ends up with a lower estimated benefit from the same proposed treatment.

Source: ANAO analysis.

5.71 In Victoria, guidance is provided on a typical treatment life for 70 different treatments. These range from one year to 20 years, with an average treatment life of 16.66 years. While guidance is provided, it can be readily overridden. For example, the BCR calculation of project V03214 was for delineation. The VicRoads recommended life for delineation treatments is five years, yet the VicRoads completed Project Development form for this project showed the BCR was calculated on a 10 year project lifespan. Had the project been calculated on the recommended life for the treatment, the BCR would have been 2.94 rather than the 5.13 that was used to obtain funding. In relation to this example, in May 2007, VicRoads advised ANAO that the project predominately involves the installation of reflectorised guideposts and other

signage and, as such, a project life of 10 years was considered appropriate and accords with the VicRoads crash reduction factors.<sup>156</sup>

**5.72** In South Australia, guidance is provided for indicative lifetimes of treatments for 18 treatments ranging from five to 20 years. The average indicative treatment life was 12.22 years. The *SA Guidelines for the calculation of Benefit-Cost Ratio* states:

We have provided, as Table 1, some indicative treatment lives for some typical road safety improvements and suggest that these be used in the benefit-cost calculations. Other evaluation periods can be used but require justification.

**5.73** The estimated project life for projects in WA are included in the CRASHTool software. There are 62 treatment types, with the typical project life ranging from five to 20 years. On average, the treatment life is 8.79 years. Similar to the accident reduction factors in CRASHTool, the cells are protected and cannot be modified. WA is the State in the audit sample most consistent with the recommendations of Austroads for the length of appraisal period.

**5.74** Assessment of the different guidance shows that the calculated benefit for the same treatment could have a different appraisal period. For example:

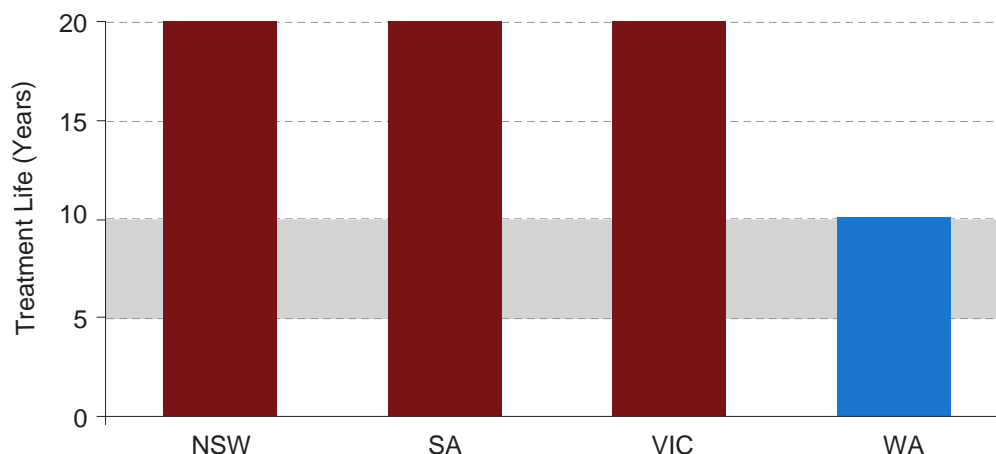
- in NSW, SA and Victoria, a roundabout has an estimated life of 20 years but in WA a roundabout has an estimated life of 10 years (shown in Figure 5.2) ;
- in SA, installation of guardfencing (guardrail) has an estimated life of 20 years but in Victoria, the estimated life is 15 years;
- in WA installation of a traffic signal mast arm has an estimated life of 10 years but in Victoria mounting traffic signal heads on mast arms has an estimated life of 15 years; and
- in Victoria, a right turn lane has an estimated life of 20 years, but in WA, a right turn lane has an estimated life of 10 years.

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<sup>156</sup> However, as discussed in paragraph 4.30, the scope of works for this project changed during the preconstruction phase. Records provided from VicRoads to DOTARS do not reflect this change in scope.

**Figure 5.2**

**Typical project life for ‘roundabout’**



Source: ANAO analysis. Shading in figure represents Austroads guidance.

*Typical treatment life compared to the works delivered*

5.75 In all States included in the audit sample, there were instances where the applied appraisal period had no correlation to the physical life of the treatment. This was particularly evident where the safety benefits were to be achieved by the use of linemarking or the installation of audio tactiles edgelines.

5.76 In all States included in the audit sample, there were also instances of projects where National Black Spot Programme funding was obtained, but, at the time of site inspection the works were not possible to be inspected as they had been ‘sealed-over’ or incorporated in new works at the site as discussed in the following Case Study. This raises further issues about the appraisal periods used for economic appraisal to obtain funding.

**Case Study 5.5: Project N03159, Pacific Highway, NSW – RTA**

Project N03159 involved \$750 000 provided to the RTA for ‘install seagull island, non-skid pavement, move access road and restrict movements’ on the Pacific Highway between Failford Road and Possum Brush Road. The project was approved for delivery in the NSW 2003–04 National Black Spot Programme of works.

While the approved description of works was for numerous treatments (mentioned above), the project’s BCR was calculated on two elements only: Seagull island (painted) for \$500 000 and non-skid surfacing for \$250 000. The assumed project life used in the BCR calculation was 20 years.

The NSW Consultative Panel considered this project in its 12 December 2002 meeting. The Minutes of the meeting note that, when this project was considered for funding, a member of the Panel queried how long it would be until that length of the Pacific Highway would be duplicated. The Minutes note that, in response, the member was advised by an RTA Officer that the duplication was '>4 years away'.

While the duplication of the Pacific Highway was only some four years away, the Consultative Panel was not advised that the project's economic appraisal used a 20 year treatment life. The project nomination contact officer was the same RTA Officer who advised the Panel of the anticipated timing of the Highway's duplication.

As a result of the Pacific Highway upgrade work underway at the time of ANAO's site inspection in July 2006, it was not possible to determine whether the seagull island had been installed. No seagull island was evident on site as shown in the following photograph. Accordingly, at best, the discounted benefits of \$4 967 400 calculated for the seagull treatment were applicable for three of the 20 years used to justify the project funding. This reduces the discounted benefits to some \$1 085 398. Based on the estimated cost for this element of work, the BCR reduces from 9.7 to 2.1.

Also as shown in the following photograph, the access road to the local cemetery was still available from both directions of the Pacific Highway. Based on the Panel Minutes, and the approved project description, access to this road from the Pacific Highway was to be closed.



In May 2007, the NSW RTA advised ANAO that:

Drainage issues were identified with this project. Also community consultation for the closure of Bullocky Way raised significant opposition to the proposal to ban right turn movement.

Thus, scope was altered to address drainage problems through cross-fall corrections. All works completed at this location had a total cost of \$3.87 million with State expenditure \$3.12 million. Federal Black spot money was spent on part of this work between Failford Road and Bullocky Way.

The project scope, as approved, was not delivered. DOTARS records do not show the change in scope. Further, the RTA 31 May 2006 status report shows this project as 'complete'.

Source: ANAO analysis.

## Recommendation No.7

5.77 ANAO *recommends* that the Department of Transport and Regional Services seek to maximise road safety benefits from National Black Spot Programme funding by:

- (a) promoting the adoption of Austroads guidance by State road transport authorities and local government authorities when undertaking economic evaluations of proposed countermeasures, particularly in relation to:
  - the crash data that is used to develop proposed treatments and quantify the resulting benefits;
  - estimated accident reduction factors for the targeted crashes; and
  - the timeframe over which treatment benefits will be received; and
- (b) implementing a risk-based programme of audits to obtain assurance that the Australian Government's project approval processes may reasonably rely on the road safety benefit calculations undertaken by State road transport authorities and local government authorities that are used to inform ranking of projects.

### *DOTARS response*

5.78 DOTARS agreed with qualification to both parts of the recommendation. DOTARS commented that:

- (a) The Council of Australian Governments has endorsed jurisdictions' adopting the National Guidelines for Transport System Management in Australia to serve as a broad model for planning and development of land transport systems. These supersede some of the Austroads technical guides. DOTARS will work together with the states/territories to investigate the continued relevance of Austroads guidance and its applicability for this programme.
- (b) DOTARS will work together with the states/territories to achieve consistent practice in their assessment procedures and will consider the documentation supporting the road safety benefit calculations of a sample of projects in each state/territory.

## 6. Project Delivery

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*This chapter examines the current administrative arrangements for the management and delivery of road works for approved National Black Spot Programme projects.*

### Introduction

6.1 The Australian Government has chosen to make financial contributions to other levels of government under the various components of the AusLink National Land Transport Plan. In this context, DOTARS advised ANAO in January 2007 that:

The States and Local Government Authorities (LGAs) are the asset owners for all roads in Australia and financial liability never moves from these owners. Under the various components of AusLink, the Australian Government chooses to make valuable financial contributions to the other levels of government but liability never moves; States, Territories and LGAs cannot be held accountable for Australian Government decisions.

6.2 This advice implicitly recognises that the Commonwealth has a strong interest in seeing its financial contributions through AusLink resulting in the delivery of actual road works, at the approved location, in the approved manner. In this context, ANAO's recent performance audit of the Roads to Recovery Programme<sup>157</sup> demonstrated the importance of program management and accountability mechanisms giving reasonable assurance that road projects are undertaken in accordance with agreed scope and timelines.

6.3 It was recognised at the time the initial Roads to Recovery Programme was being implemented that the payment of funds direct to local government placed an onus on DOTARS to ensure the funds are spent on roads, and that the funds were properly accounted for. In relation to National Black Spot Programme projects, this task is more challenging. This is because funds are paid to State road transport authorities who either:

- act as the Commonwealth's agent in respect to projects approved for delivery by LGAs, including as the conduit through which funds are paid to LGAs, and by reporting to DOTARS on project delivery; and
- directly deliver road works on State roads, and report to DOTARS on the delivery of these projects.

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<sup>157</sup> ANAO Audit Report No.31 2005–06, *Roads to Recovery*, March 2006, p. 113.

**6.4** In the context of programme administration and the associated costs, Main Roads WA commented as follows to ANAO in April 2007:

if the view is adopted that tighter and more stringent control mechanisms are warranted then the Commonwealth should not expect or rely on the State to pick up the additional burden beyond the level that is currently being accepted. The Commonwealth must accept responsibility and not simply off load the responsibility to the State Authorities.

## **Road works not being delivered**

**6.5** Site inspections undertaken as part of ANAO's audit of the Roads to Recovery Programme revealed that 32 per cent of projects audited were not undertaken as had been reported to DOTARS. Reporting of some projects was understated (in that more work has been done than indicated in the works schedule description) while others were overstated. There were also a small number of projects that had not been undertaken at the time of the audit site visit. In this respect, ANAO concluded that the management and monitoring of the Roads to Recovery Programme implementation was not delivering the outcomes the Government and the community expected. To help address this finding, DOTARS agreed to an audit recommendation that it implement a risk-based program of site inspections.

**6.6** In addition to detracting from intended Programme outcomes, there are potential risks for the Commonwealth where National Black Spot Programme projects are not delivered. Specifically, following High Court judgements on 31 May 2001, the negligence liability of road authorities for injury or damage sustained from use of roads is now determined according to normal principles of negligence at common law. In this respect, at its 8 June 2001 meeting, the Council of Australian Governments (COAG) agreed to commission Australian Transport Council (ATC) to examine the implications of the High Court decision and report back to COAG. At the 27 September 2001 meeting, the Standing Committee on Transport asked Austroads, acting as the ATC Roads Modal Adviser, to address this issue as a matter of urgency by setting up a small project team to prepare an interim report for ATC. Austroads subsequently concluded that:



The loss of non-feasance may increase the liability of “funders” who provide Financial Assistance Grants to road authorities despite being remote from the specific road authority’s public liability risks.<sup>158</sup>

6.7 In this context, road works had been delivered on the ground for almost 99 per cent of the projects inspected by the ANAO. The three instances where a project was reported as complete but had not been delivered on the ground each involved a project in NSW.

### First instance

6.8 The first such project was N03227: Lambton Road, New Lambton approved for delivery by the City of Newcastle. Based on the detailed crash statistics there had been 56 crashes in this location in the period September 1997 to September 2002. Of these 56 crashes, there was one fatality and 23 serious injury crashes. The nature of the concern stated in the nomination was adjacent approach crashes and opposing vehicle crashes. It was approved based on a BCR of 9.2.

6.9 The project was approved for \$200 000 in Programme funding for the installation of medians and turning bays. Reports provided by the RTA to DOTARS report the physical status of the project as ‘complete’ at a cost of \$22 493. The substantially lower reported delivery cost compared to approved funding did not cause DOTARS to question the information provided to it by the RTA. In this respect, ANAO’s visual inspection on 23 July 2006 found that works had not commenced on site as shown in the following photographs. The first photograph is at the intersection of Royal Place (where right turns were to be banned), the second shows the intersection of Lambton Road and Greta Road (where the central median was to be closed to through traffic).

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<sup>158</sup> On 28 May 2007, DOTARS advised ANAO that:

Legal advice received from the AGS [Australian Government Solicitor’s Office] regarding the decisions in *Brodie v. Singleton Shire Council* and *Ghantous v. Hawkesbury City Council* decided on 31 May 2001 to which we assume ANAO is referring suggest that there will not be any major increase in liability exposure on account of these decisions. It is also difficult to see how these decisions are relevant to the black spot programme as changes at common law do not affect the principles of negligence.



**6.10** In February 2007, the City of Newcastle confirmed to ANAO that the project had not been undertaken. ANAO was further advised that:

Following extensive consultation with the community and reporting to Council, agreement could not be reached on a suitable design. The RTA was advised on 4 April 2005 that the project would not proceed.

**6.11** As noted, the RTA claimed \$22 493 from DOTARS for this project. Information provided to the ANAO by the RTA shows that \$20 000 was paid to Council between March and April 2005. However, the City of Newcastle's

design costs had amounted to only \$8 527.<sup>159</sup> In February 2007, the City of Newcastle advised ANAO that it had reimbursed \$11 473 to the RTA, but at the time of preparation of this report no such reimbursement has yet been made by the RTA to DOTARS.

**6.12** In May 2007, the NSW RTA advised ANAO that:

You are correct that the works were not completed in this instance.

The project was abandoned by Newcastle City Council due to strong community opposition to the initial proposal. The community demanded that, if the project was to proceed, a local road would require full reconstruction. This increased the relevant costs (and the BCR), and Council decided to abandon the project.

However, Council has been paid costs for project development prior to the project being abandoned; and the RTA understands that Council is eligible for this payment.

## Second instance

**6.13** The second instance of works not being undertaken but reported as complete was a project that was to have been delivered by the RTA (project N03344). The project nomination sought Commonwealth funding for works at the intersection of The Boulevard and Cook Street, Toronto in the RTA Hunter region. The nature of concern was 'turning movement crashes' with a proposed treatment of 'Fully control right turn with arrows'. The project was submitted based on its reported crash statistics – three casualty crashes within a 5.5 year period. With a BCR of 12.0, the Federal Minister approved the installation of fully controlled right turn arrows at existing signals for a cost of \$50 000. The RTA has reported that this work has been completed.

**6.14** The BCR was calculated on fully controlling right turn with arrows. However, ANAO's analysis and inspection of this project revealed that only one of the four approaches had right turn arrows installed, and, at this approach, filter turns<sup>160</sup> are still allowed. In response, the RTA advised ANAO

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<sup>159</sup> Charging such costs to the Programme has occurred notwithstanding DOTARS advising the ANAO in March 2007 that:

It is the Department's view that approving the detailed design and documentation of a range of possible projects and reassessing them at that stage would lay the programme open to claims for reimbursement of planning costs for projects that did not proceed.

<sup>160</sup> A filter turn means a turning movement that must give way to and find safe gaps in conflicting (opposing) vehicle or pedestrian traffic before proceeding, for example filter right-turn, slip-lane left turn, left turn on red. A filter turn is generally related to vehicles facing a signal.

that, from its perspective, the duration of the single hold arrow addresses the timing of right turn crashes for the right turn approach.

### Third instance

6.15 Project N03077 involved \$750 000 being paid in 2003–04 as part of a Council project to realign the road and replace two bridges on Tevan Road in West Ballina. National Black Spot Programme records maintained by DOTARS show a project start date of 12 September 2003 and a finish date of 28 February 2004 with the status reported as complete. ANAO’s visual inspections in July and September 2006 found that construction of the road base for the road realignment between the two bridges has been done. New embankments for the replacement bridges have also been constructed. However, traffic is still travelling on the two old bridges and the old road. In this respect, Ballina Shire Council advised ANAO in December 2006 that:

Council had regularly communicated with the RTA and advised of programming throughout the project. The implementation of the project needed to recognise the timeline for acquittal of the National Black Spot Program. Delivery of the project was structured to achieve early works packages and design, manufacture and delivery of bridge deck units was one such works package. Council cannot comment on the records maintained by DOTARS that record this project as “being completed”. Clearly the project expenditure can substantiate the acquittal of grant funds, and this has been the communication from Council.

6.16 For its part, the RTA advised ANAO in March 2007 that:

For example, “project completion” can be a misleading term when the national black spot funding is AGREED to be part funding of a project. The \$750 000 limit for Teven Road Bridges over Emigrant and McGuire’s Creek (Project No.3077) (2002–03) was supplemented by the State and Council with the whole project costs being \$1.4m.<sup>161</sup> “Project completion” in this case refers to full expenditure of National Blackspot funding that enabled preconstruction activity and the manufacture of the necessary bridge beams to undertake the works. Flooding also collapsed a large section of embankment, causing further delays. Perhaps an additional code is needed to confirm “built”. That particular project, through the intervention of nature, will now be “built” by June 2008 and DOTARS officers were made aware of all relevant issues by phone.

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<sup>161</sup> The actual budget is \$3.89 million.

6.17 Notwithstanding the RTA advice to ANAO that DOTARS was made aware that the construction work had yet be undertaken and completed, the AusLink website (in relation to Roads to Recovery funds that are also being applied to this project) states that construction has been completed as shown in Figure 6.1.<sup>162</sup>

Figure 6.1

### Extract from AusLink website for works on the two Teven Road bridges

**Australian Government**  
Department of Transport and Regional Services

Teven Road, Teven, at Emigrant Ck and Maguires Ck

Funding Program:	AusLink Roads to Recovery
Status:	Construction completed
Transport Mode:	Road
Expected Start/Finish:	March 2006 - June 2006
Australian Government Contribution:	\$298,376
Local Council/State:	BALLINA
State:	NDW

Click here to see the Legend

**Project Overview**

Two old single lane timber bridges (runeerly with load limits) on poor alignment with high accident rate.

Replace both bridges with two lane concrete bridges on parallel alignment. Includes road realignment. Each bridge is 90m long x 10m wide, associated road works for each of the bridge approaches is a total length of 310m (average 10m wide)

Total cost of proposed project is \$3,890,000

**MAP LEGEND**

Corridors : Road Rail

Projects : National Projects Road National Projects Rail Roads to Recovery Strategic Regional Black Spots National Projects Non-Network

Project details last updated: 10/03/2007

Source: <[http://www.auslink.gov.au/projects/ProjectDetails.aspx?Project\\_id=3343\\_1](http://www.auslink.gov.au/projects/ProjectDetails.aspx?Project_id=3343_1)> [ANAO emphasis].

6.18 Further details of this project are provided in Appendix 1.

<sup>162</sup> As the National Black Spot Programme project was approved in 2002–03 its status is not reported on the AusLink website.

## Use of funds for road works not approved by the Federal Minister

6.19 Programme management and liability issues also arise where works have not been undertaken at the identified black spot location, or in the manner approved. In ANAO's sample, 32 per cent of projects were not undertaken in accordance with the Federal Minister's approval. Of the 78 projects (32 per cent) that were not undertaken in the approved manner:<sup>163</sup>

- in 8 per cent of cases, Programme funds were used to undertake both the approved works as well as additional, unapproved works. In these cases the expected benefits should be delivered but the Programme has been overcharged;<sup>164</sup>
- in 72 per cent of cases, the proposed treatment was only partially delivered such that the full anticipated benefits will not be achieved; and
- in 21 per cent of cases, the actual works delivered differed substantially from that which was approved such that the road safety benefits that are likely to be obtained may be significantly different.

6.20 The 2002–03 National Black Spot Programme project N03076: Raymond Terrace Road and Seaham Road, Nelson Plains, NSW set a precedent regarding when projects are delivered not in accordance with the Federal Minister's approval (and no variation in scope is obtained). In that instance, the project nomination sought \$500 000 for the installation of a roundabout. DOTARS was advised by the RTA that, following approval of the bid, further development revealed that the \$500 000 allocated for the project was less than half the funding needed to construct the roundabout as expensive land acquisition would be required to fit it in. As a result, it was agreed between the RTA Regional Office and Port Stephens Council that a 'seagull' treatment would be installed.

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<sup>163</sup> Where the Federal Minister or his delegate approved a variation to the project, the project has been assessed against the varied approved treatment (there being no instances where the location was varied). Note that figures do not add due to rounding.

<sup>164</sup> This is of particular importance as, in any expected programme year, more projects have been declared as black spots than could be constructed in order to ensure that States are able to expend the limit of their annual allocation. As such, project savings are to be reinvested in other approved road safety projects rather than additional unapproved works (which may or may not have road safety benefits).

**6.21** On 9 July 2003 the local Federal Member contacted DOTARS about the change in scope, expressing concern that the proposed 'seagull' would not suffice. As a result of this concern, the project scope variation was investigated.

**6.22** Because a formal variation request for the changed scope was not submitted and the Commonwealth was not otherwise advised of the changed work scope, the RTA was advised on 31 May 2004 that the then Federal Minister had directed that funding to NSW equivalent to the recommended cost of the project (\$500 000) be withheld on the basis that the approved works have not been undertaken.

**6.23** The RTA wrote to DOTARS on 25 August 2004 and to the then Federal Minister on 4 November 2004 requesting that the withheld funds be reinstated. As part of the review of the decision to withhold funding from NSW, the then Federal Minister was advised by DOTARS on 31 January 2005 that:

- The decision to change the scope of the project was taken at a local level and construction had already commenced when the issue became apparent.
- The RTA acknowledges that a mistake was made in this case and has since implemented procedures to ensure that this situation does not arise in the future.

**6.24** On 29 March 2005, DOTARS wrote to the RTA advising that the then Federal Minister had directed that the previously withheld funding of \$500 000 be restored to NSW on the proviso that the funds not be attributed to the works undertaken at the intersection of Raymond Terrace Road and Seaham Road.

**6.25** The issue of the Commonwealth funding being provided for an approved purpose at approved locations was reiterated by the current Federal Minister in correspondence to Gosford City Council in July 2006 in relation to project N03390. The Minister noted that the Programme guidelines recognised that detailed planning may identify works other than those approved and there is scope to seek a variation of the approved works. In the event that a variation was not sought, the Federal Minister advised that the Commonwealth would honour its commitment and meet the cost of the approved description up to the approved funding limit, however, the cost of works undertaken that differ from the approval would be wholly the responsibility of the council.

**6.26** In the audit sample, 57 per cent of the projects not in accordance with the Federal Minister's approval occurred in NSW. Of these, 49 per cent were

RTA-delivered projects and 51 per cent were local government-delivered. This illustrates that issues exist both in relation to oversight of Councils and delivery within the RTA. As noted above, in January 2005, DOTARS advised the then Federal Minister that procedures have been implemented to ensure works funded under the National Black Spot Programme for delivery by the RTA would be in accordance with the approved scope of works. However, such issues persisted in 2004–05 and 2005–06 projects.

**6.27** In relation to the projects not in accordance with the Federal Minister’s approval, the RTA advised the ANAO in March 2007 that:

In most cases the scope changes have occurred to maximise safety benefits of the projects (which is the programme’s high order aim). The letter you refer to from the Federal Minister to Gosford City Council in July 2006 advises, as you confirm that “In the event that a variation is not sought, the Federal Minister will honour its commitment and meet the cost of the approved description up to the approved funding limit”. It is understood the spirit of this approach is to reduce the need for DOTARS to approve many minor scope variations. Perhaps what is needed is a simplified process for dealing with scope change so as to continue to give assurance. ...

The RTA accepts that in some instances, project scope variations were not submitted to DOTARS when they should have been.

**6.28** While the changes may have occurred in order to maximise safety benefits of the project, they remain a change in scope from the project that was nominated and approved. The change without approval is not the essence of the issue, rather, the basis of the project funding (and therefore the project benefits) are integrally linked to the initial treatment proposed. Accordingly, the National Black Spot Programme may not be funding the highest priority road safety works in such circumstances.

## **Additional works**

**6.29** Of the 79 projects in the audit sample where works were not undertaken in accordance with the Federal Minister’s approval, there were six (8 per cent) where the approved works had been undertaken but Commonwealth funds had also been used to undertake additional, unapproved road works.

**6.30** The selective use of crash statistics to obtain funding from the National Black Spot Programme to contribute to the overall cost of road work over a greater distance is further complicated by the approach that has been taken in these circumstances to financial accountability. In order to obtain cost



efficiencies, the National Black Spot Programme funded works were often delivered as part of a larger project/contract. However, as outlined in the following Case Study, invariably the National Black Spot Programme was charged for an amount greater than the actual proportionate cost of delivering road safety works on that section of road that satisfied the crash eligibility criteria and had therefore been approved for funding.

### **Case Study 6.1: Projects for shoulder sealing and audible edgelines undertaken on the Albany Highway – Main Roads WA**

For the 2002–03 National Black Spot Programme, Main Roads WA nominated 14 projects on the Albany Highway between Perth and Albany. Each nomination proposed sealing of shoulders and/or installation of audible edgelines. In the nominations, Main Roads WA stated that:

Albany Highway is a major road linking Perth to Albany (400km apart) and is sealed to two lanes and edge lined. It is not unusual for road users to travel long distances to their destination, hence drivers are often fatigued. The installation of audible edge lines is an inexpensive treatment that will lead to a reduction of the number of fatigue related crashes. However, for audible edge lining to be effective a sealed recovery area is also required (i.e, 1m sealed shoulder).

The WA Consultative Panel did not recommend three of the nominated projects as the calculated Benefit Cost Ratio was too low. On the basis of the Panel's recommendations, the Federal Minister approved 11 of the 14 projects. This involved:

- seven projects with an approved description of 'Seal Shoulders/ Audible Edgelines' with an aggregate estimated cost of \$1 080 000; and
- four projects with an approved description of 'Audible Edgelines' with an aggregate estimated cost of \$244 000.

The delivery of the seven projects involving sealing of shoulders and installation of audible edgelines was effected by Main Roads WA through two contracts, as follows:

- In April 2003 a contract was let for widening various sections of the Albany Highway from 76 to 158 SLK. While the contract covered works for an 82km stretch of the Albany Highway, 52.21km was required on the right hand side and 54.315km of shoulder seal was required on the left hand side. In total, 106.525km of work were required to be delivered.
- In June 2003 an audible edge line contract was let for various sections along the Albany Highway from 79.045 to 156.02 SLK. The total audible edge line requirement for left and right sides of the road was 73.105km.

In May 2006, ANAO inspected the five projects for sealing of shoulders and installation of audible edgelines that were located in the Shire of Boddington (as illustrated in the following photographs). The scope of works for the two contracts confirmed the anomalies noted during the site inspection. Specifically, audible edge lines were not contracted to be installed for all sections included in the projects approved by the Federal Minister and, similarly, shoulders were not required to be sealed for all sections included in the projects approved by the Federal Minister.



For the seven projects with the approved description of shoulder sealing and audible edgelines, the nominated lengths to be funded by the Commonwealth were 37.98km (18.99km each side of the road) of the 106.525km of work contracted to be delivered (36 per cent). However, National Black Spot Programme funds of \$1 080 000 were claimed by Main Roads WA. This represented 79 per cent of the total payments made under the two contracts of \$1 365 378.

Discussions by ANAO with Main Roads WA revealed that the funding for the National Black Spot Programme was 'pooled' and expended on works outside the nominated project areas. Main Roads WA provided ANAO with detailed project information that enabled ANAO to calculate the costs that could reasonably be charged to the National Black Spot Programme. After making adjustments for National Black Spot Programme chainages where shoulders were already sealed and excluding sections where audible edgelines were not installed, ANAO calculated that \$679 178 of Commonwealth funds were claimed for works on sections of the Albany Highway that had not been approved for funding under the National Black Spot Programme.

In response to these issues, Main Roads WA advised ANAO in April 2007 that:

In determining the unit rate the ANAO report treated W03014 as a sealing shoulder and installing audible edge line project. This assumption is incorrect because the project submission was to, as per the nomination form, "construct a 2 m shoulder, seal 1m of shoulder, install audible edge lines and install turning pockets".

While the shoulder sealing and audible edge line was undertaken as part of TNC 5 Contract for \$1.365M the turning pockets at Narrakine SRP 152.83 to 153.73 SLK were undertaken separately under Contract 0005/099-0224. The cost of the works was \$670 918.33 charged to a State funding source even though it was a National Black Spot Programme approved works.

Overall \$1 071 740.33 was spent against the claims made to the Commonwealth of \$1 080 000 an over claiming of \$8 259.67. Variations to alter the individual project allocations was never sought from the Commonwealth.

Assessment of the additional information provided by Main Roads WA confirms that the project nomination and BCR calculation for project W03014 was based on the more comprehensive project description. However, when the papers for the WA Consultative Panel were prepared, the description of works excluded this extra work. As a result, the Federal Minister approved only the sealing of shoulders and installation of audible edgelines.

Source: ANAO analysis.

**6.31** In this context, the claiming of \$670 918.33 for works not approved by the Federal Minister is contrary to the approach adopted by the Federal Minister in relation to projects N03076 and N03390 (see paragraphs 6.20 to 6.25). However, Main Roads WA advised ANAO in April 2007 that it only proposed to return the excess charging for shoulder sealing and audible tactile

work (\$8 260), together with excess charging identified in relation to other projects amounting to some \$338 076 (rather than the full \$1 008 994 spent on works that had not been approved). More broadly, Main Roads WA advised ANAO that:

The Performance Audit has highlighted issues in relation to cost control, charging and accounting of National Black Spot funds received by Main Roads WA for Main Roads WA managed projects. Main Roads WA will be transferring to a new financial management system later this year that may provide an opportunity during training to address this issue. In the interim the advice will be provided to Main Roads WA Regional Program Coordinators that there is a need to ensure appropriate cost attribution for National Black Spot Programme projects undertaken within larger packages of work.

**6.32** Similar issues were identified in relation to the cost attribution approaches that had been adopted for some projects in SA delivered by the DTEI. In this respect, DTEI advised ANAO in January 2007:

For a number of the guardfence projects delivered in 2004/05 (S03098, S03094, S03092 and S03093) it was found that the initial estimate and approved budget for the planned guardfence locations was overestimated. This occurred after the original PDR [*Project Definition Report*] prepared by the Region was reviewed by the Projects Section of Transport Services Division who were to deliver the projects. The decision was taken for the Region to identify further guardfence sites that were warranted within the approved project length, again based on a risk approach. Where there were insufficient sites within the approved length, sites immediately adjacent to the length were identified up to the approved budget for the project. It is acknowledged that this change in scope for these projects was not submitted to DOTARS for approval.

These additional lengths and extension of scope occurred for these projects only, has not occurred in subsequent years and was limited to the Metropolitan Region. DTEI points out that a greater safety benefit has been delivered in all instances as a result. Subsequent discussion with the Region has highlighted the need for more accurate estimating for these projects that is likely to assist improved benefit cost ratios in future, and the need for approval of scope variations.

**6.33** In its response to ANAO, of the combined budget of \$960 000 for these projects, DTEI recalculated the applicable amounts for the works deliver within the 'approved zone' as \$768 177. The balance of \$191 823 (some 20 per cent of the budget) was expended on works immediately adjacent to the approved zone.

## Recommendation No.8

6.34 ANAO *recommends* that the Department of Transport and Regional Services maximise the value for money from the National Black Spot Programme by:

- (a) addressing the funding eligibility of project nominations that involve the use of crash statistics to obtain Commonwealth funding for works being undertaken as part of a larger project and/or programme or works; and
- (b) explicitly addressing in the Notes on Administration the approach to be taken to apportioning costs where National Black Spot Programme funded works are undertaken as part of a larger project.

### *DOTARS response*

6.35 DOTARS agreed with qualification to part (a) of the recommendation and agreed to part (b) of the recommendation. In respect to part (a) DOTARS commented that:

DOTARS will work together with the states/territories to achieve consistent application of the programme's Notes on Administration.

### **Implementing countermeasures at the identified black spot location**

6.36 Similar to the Roads to Recovery Programme, nominations for National Black Spot Programme funded projects require site nomination details, as shown in Figure 6.2.

Figure 6.2

### Site nomination details

13. Shire or Council area in which site nomination is located:		<input type="text"/>
14. Suburb/Town etc	<input type="text"/>	15. Postcode (of site) <input type="text"/>
16. Site Description: (eg 'intersection, 5km road length, 20kms west of Smithville')		
<input type="text"/>		
17. Road Name(s):		
Primary Road:	<input type="text"/>	
Intersecting Road: (If any)	<input type="text"/>	
18. Nature of Concern:		
<input type="text"/>		

Source: National Black Spot Programme Nomination Form, page 1.

6.37 The submitted information contained in Figure 6.2 is provided to enable the relevant State road transport authority to assess the site and treatment proposal. This information is also used to identify the location of the project as part of the Federal Minister's legislative approval process. The site nomination information is used in the AusLink website to advise the public of those projects approved for funding under the National Black Spot Programme. Along with other projects funded under AusLink, the approved site location of a Black Spot Project is also mapped on the AusLink website.

6.38 As the National Black Spot Programme is an evidenced-based programme and projects are funded based on anticipated project benefits compared to project cost once a project's scope and location is declared under the National Black Spot Programme, a change in either aspect requires approval from the Federal Minister (or delegate).

#### *Crash location data*

6.39 Evidence (crash data) supporting a project nomination is location specific. As outlined in Chapter 5, according to Austroads, countermeasures must be focussed on particular road safety problems. In this respect, the inclusion of crashes that are outside the area of work does not represent an effective approach to identifying and treating road safety black spots. Among other things including crashes that are outside the proposed treatment area overstates project benefits. Examples where crashes were incorrectly included

in a project's evaluation were observed in all states in the audit sample. For example, project N03096 was discussed in Case Study 5.2.

**6.40** Further, where a specified location of works is proposed, achieving the expected benefits for which funding has been approved requires that road safety road works be undertaken at the nominated and assessed black spot location. For example, where the project is a mid-block or length project (such as those involving reconstructing road pavements and/or sealing shoulders), it would be expected that works will be delivered along the nominated length. However, ANAO's sample included 20 instances where works were undertaken across only some of the nominated length and, as a result, the works do not address all crash locations used to justify the project funding. An example illustrating this issue is project N03108, discussed in the following Case Study.

### **Case Study 6.2: Project N03108, The Lakes Way, Pacific Palms, NSW – Great Lakes Council**

The project nomination form submitted by Great Lakes Council for Project N03108 sought Commonwealth funding for a 1 kilometre road length on The Lakes Way – 1000 metres north of Lakeside Cr – Pacific Palms.

The project description as approved by the Federal Minister was 'Realign curves/ widen pavement/ safety barrier'. The project was approved as part of the 2002–03 National Black Spot Programme with an estimated cost of \$250 000.

The plans provided by Council show that the work actually delivered using National Black Spot Programme funds commenced approximately 1 kilometre north of the intersection, but, rather than 1 kilometre of work being undertaken, the plans from Council show the works were only undertaken on 370.8 metres.

ANAO's visual inspection on 21 July 2006 found that works had been undertaken in accordance with the plans as provided. Accordingly, curve and pavement alignment and guardrail was observed on site, but only 370.8 metres was completed with National Black Spot Programme funds rather than the nominated and approved 1 kilometre of work. DOTARS records do not show that approval was sought for a reduction in scope of works.

The BCR used to substantiate the project funding was calculated based on six crashes being addressed by the treatment. The location of crashes used in the BCR to support the project nomination, and the proposed and actual location of work, is shown in the following diagram. As the diagram shows, only three crashes are addressed by the reduced scope of work.



The approved cost of the project was \$250 000. Based on information as at 31 May 2006, included in a status report by the RTA to DOTARS, the reported cost of the project was \$254 864.16. Of this amount, Great Lakes Council was paid \$250 000. Based on financial information provided by Council, the actual cost of the works was \$489 185.55.

In regards to this project, Great Lakes Council advised ANAO in December 2006 that:

With regard to the extent of work, Council records do not indicate any reason for the reduced work. However, from an engineering knowledge of the costs associate with this type of work, it is apparent that the available funds were insufficient to completely reconstruct a 1km length of road. It is suggested that, following design, the work involved was far more extensive than was originally envisaged, so the extent of work was reduced to coincide with available funds.

With regards to the question of final costs and whether Council sought a variation, such discussions took place with RTA officers on a regular basis. Council's applications were submitted on the basis of a proposed scope of works and this invariably changed as a result of detailed design. The general advice from the RTA is that additional funds are unavailable and as such Council has accepted that any additional funds must be sourced elsewhere, unless there are minor savings in other Blackspot projects.

Source: ANAO analysis.

## Implementing the approved treatment so as to achieve the expected road safety benefits

6.41 Through the project nomination and approval process, a treatment is proposed and road safety benefits are subsequently calculated. The Federal Minister's project approval is based on the information submitted to the State Consultative Panel.

6.42 As discussed in earlier chapters of this report, it is intended that the National Black Spot Programme fund high priority road safety Black Spot projects where the highest benefits can be achieved. Accordingly, those projects which are ranked highest in BCR terms in each State, are subsequently approved. Where a project's proposed treatment changes, it affects the BCR of the project and therefore the project's ranking. In this context, project N03182 in the following Case Study illustrates that even a relatively minor change in scope can significantly affect the BCR calculation.

### Case Study 6.3: Project N03182, Prince Street and Anson Street, Orange, NSW

The project nomination form submitted for project N03182 sought Commonwealth funding for the installation of traffic signals at the intersection of Prince Street and Anson Street, Orange. The nomination form proposed two options for the installation of traffic signals – a) with filter turns and b) without filter turns.

The BCR calculation forms attached to the nomination provided from RTA Head Office show that, for an estimated cost of \$150 000 to the National Black Spot Programme the resulting BCRs are as follows:

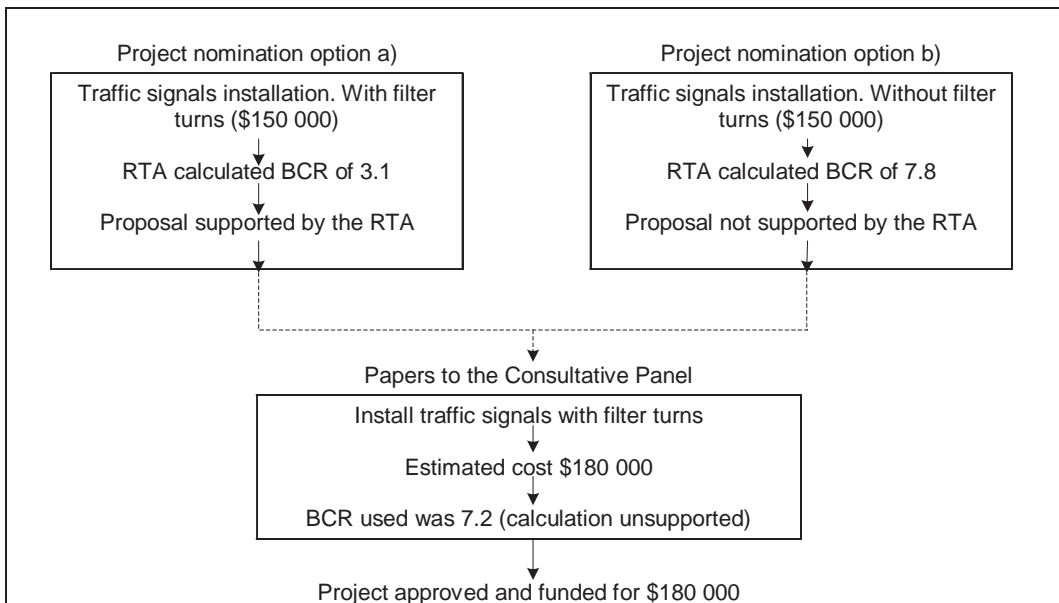
- New traffic signals. No filter turns allowed. BCR is 7.8.
- New traffic signals. Filter turns allowed. BCR is 3.1.

The project description and supporting information included in the papers to the NSW Consultative Panel was not transposed correctly as illustrated in the following diagram. The project description in the papers states 'Install traffic signals with filter turns'. The project estimate included was increased to \$180 000 and the BCR was reduced to 7.2.

Based on the underlying crash data, in order to obtain a BCR of 7.2 for the increased cost of \$180 000 the BCR was based on the benefits estimated from installing new traffic signals with no filter turns allowed. The discounted estimated annual maintenance costs were reduced from \$3 000 per annum to \$1 500 per annum. No evidence supporting the revised BCR of 7.2 has been available.

In 2003–04, only rural projects with a BCR of 5.5 or higher were eligible for funding. Therefore, had the lower, correct, BCR (a BCR of 2.8 based on the \$180 000 capital cost and a discounted \$1 500 annual maintenance cost) for the project description considered by the Panel been included in the papers, the project would not have received funding.





The RTA advised ANAO in March 2007 that:

The design that evolved was for a two phase system with filter turns – which was what the approved project description required.

A two phase system was observed by ANAO on site as shown in the following photograph. The phasings of the lights allow traffic travelling north-south to turn both left and right. Similarly traffic travelling east-west can turn both left and right when they have a green light. This does not reduce the high number of 'opposing vehicles; turning' accidents that contributed to the high BCR that the project nomination used as the basis of funding.



Source: ANAO analysis.

**6.43** A similar issue is present where channelisation treatments are to be 'painted' or 'raised'. The change to the works and the associated costs are minimal yet the benefits to be obtained from the treatment can be substantial. For example, in project N03139, a BCR of 8.1 was included in the nomination form, calculated based on the installation of a 'seagull island without acceleration lane, painted island' at an estimated cost of \$7 000 to the National Black Spot Programme. The BCR was based on an assumed project life of four years. The project details provided to the NSW Consultative Panel, however, included a BCR of 12.2 and the funding amount increased to \$10 000. The nomination form provided by the RTA shows that the project estimate was increased to \$10 000 and the assumed project life was increased from four years to 10 years. The treatment was changed from a 'painted island' to a 'raised island'. The crash date for the intersection was identical in each BCR calculation.

**6.44** The issue of implementing the approved treatment so as to achieve the expected road safety benefits comes into even greater prominence where there have been major variations in project scope. For example, project N03119 is discussed in the following Case Study.

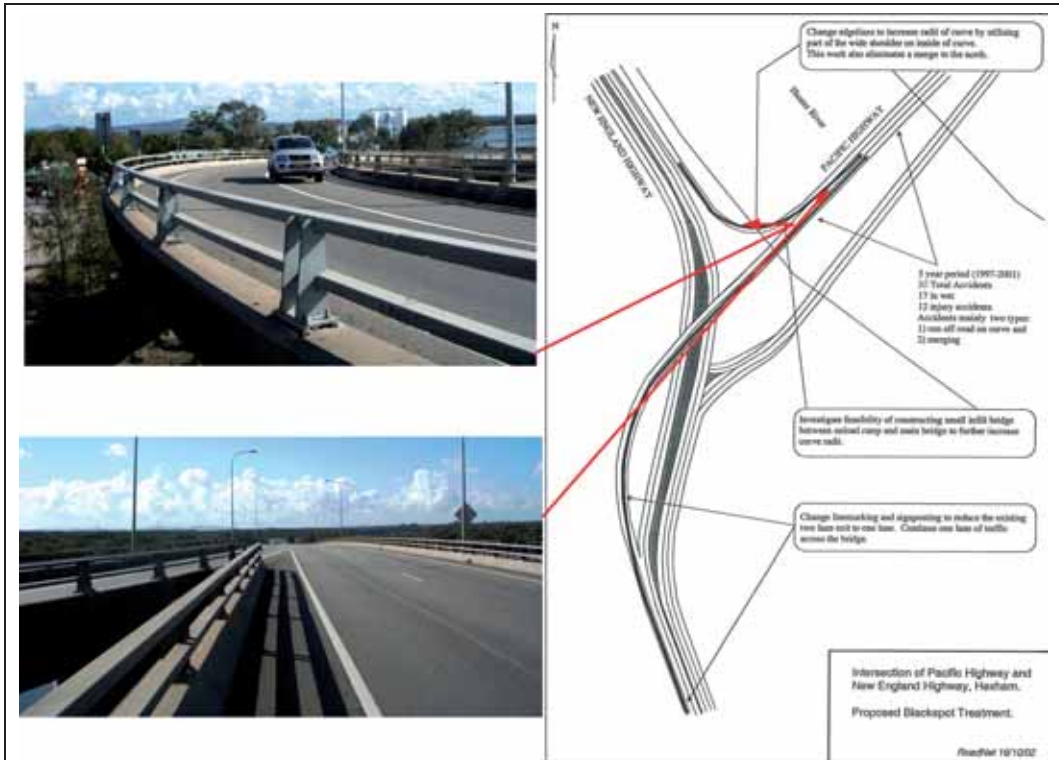
#### **Case Study 6.4: Project N03119, Intersection of the New England Highway and the Pacific Highway, Hexham, NSW – RTA**

The project nomination form for project N03119 sought Commonwealth funds for works at the Pacific Highway and the New England Highway, Hexham, NSW. The reported nature of concern was 'Accidents due to sharp curve from onloading ramp onto bridge over the Hunter River plus a merging problem to the north.' The proposed treatment in the nomination was 'Extensive changes to linemarking and signposting to create improved acceleration lane and large radii on curve. Investigate bridge extension to further improve curve radii.'

A BCR of 26.0 was included in the nomination. The proposed combined treatments used in the BCR calculation were 'Left turn acceleration lane' for \$80 000 and 'Change horizontal alignment' for \$20 000. In total, the project was estimated to cost \$100 000. All 30 crashes were included in the matrix form however only 20 of the crashes were expected to be addressed by the proposed treatment and were subsequently used in the BCR calculation. For one of the accident types (DCA codes 703 and 704), the assumed accident reduction factor was increased from zero to 40 per cent for the left turn acceleration lane. No explanation was included in the project nomination or the BCR matrix printout explaining the reasons for this change. Details explaining the crashes used in the BCR calculation were not available.

The project description as approved by the Federal Minister was 'Improved existing acceleration lane and enhance signposting and linemarking'. The project was approved as part of the 2003–04 National Black Spot Programme with an estimated cost of \$100 000.

The RTA provided ANAO with a one page plan of the proposed works as scanned in below. This plan was used as the basis of the site inspection on 22 July 2006.



ANAO found during the inspection that none of the work as nominated and approved had been undertaken as shown in the photographs above. Rather than deliver the approved scope of works, a heavy vehicle sensor and sign had been installed on the onloading ramp. The sensors (located at the bottom of the onloading ramp) pick up the vehicle and speed. If the vehicle is assessed as travelling too fast for the curve a warning appears on the overhead sign. The sign advises the vehicle of the recommended speed for the curve and that the vehicle should reduce speed as shown below. The sign is only triggered by large vehicles.



The change in scope does not address the smaller vehicles approaching the sharp curve, nor the merging issues to the north of the curve. No variation was sought.

Source: ANAO analysis.

## Delivery timeframes

6.45 National Black Spot Programme projects are approved for delivery in a particular year. The ALTD Act Notes on Administration stated that one of the factors taken into account by the Minister in the assessment of which projects were to be funded under the Programme was:

- whether the project can be completed within the timeframe of the Programme.

6.46 The 'timeframe of the Programme' referred to in the Notes on Administration was not defined by the Notes. The Notes required an explanation from the State road transport authority to be provided for projects not started or completed within 12 months of project funding approval. The Notes also stated that projects not started within two years of approval would be automatically cancelled.<sup>165</sup>

6.47 The project nomination form includes three elements regarding the timing of project delivery as shown in Figure 6.3.

**Figure 6.3**

### Timeliness factors in project nomination form

<b>17. Environmental clearances:</b>		
Are there any environmental or heritage concerns with this project: (Y/N)		<input type="text"/>
If 'YES, have clearances been obtained?	(If YES, please attach)	<input type="text"/>
<b>18. Expected start date (physical construction)</b>	<input type="text"/>	
<b>19. Expected completion date (physical construction)</b>	<input type="text"/>	

Source: National Black Spot Programme Nomination Form, page 3.

6.48 Examination of the State Consultative Panel papers (that form the basis of the Minister's approval) in the audit sample revealed that none of the four States provided the timing information collected in the project nomination to the Consultative Panel.<sup>166</sup> An assessment more broadly across all states found

<sup>165</sup> In May 2002 DOTARS sought internal legal advice on whether it was necessary to revoke declarations if the projects were not to be undertaken in the current financial year. The view expressed in the advice was:

Once a site or measure is declared a black spot it may remain such until remedied. This approach would give a State the flexibility to remedy a site as a priority or to postpone work (or part thereof) to another financial year. There is no legal reason to revoke a declaration unless a site or measure no longer meets the eligibility criteria set out in section 7B.

<sup>166</sup> Project nominations for Victorian projects in the audit sample did not contain this information.

that the anticipated timeliness factors were only included in the Consultative Panel papers for two States/Territories (Queensland and Northern Territory). As a result, the proponent's own assessment of when the project can be delivered is often not considered as part of the project's recommendation and subsequent approval. Accordingly, it is not possible for the Notes guidance referred above in paragraph 6.45 to have been implemented.

**6.49** In this respect, in May 2007, VicRoads advised ANAO that:

While approximate start and finish dates could be provided at the time of project nomination these dates are subject to considerable review when devising the overall construction schedules for VicRoads infrastructure programs. Estimated start and finish dates for each project are provided to DOTARS after VicRoads has determined its annual works program.

VicRoads aims to complete projects in the year of funding.

*Advice of project nomination's success and subsequent delivery*

**6.50** As mentioned in Chapter 3, detailed audit examination of 273 projects revealed that the level of design and development of a project prior to the project nomination being submitted has varied considerably. In most instances, once the proposal is approved the design and development processes continue, resulting in a final design and detailed estimate. In this respect, in March 2007, DOTARS suggested to ANAO that:

Estimates of the likely capital cost and scope and location of works to be delivered are based on the best available information at the time of nomination.

**6.51** Notwithstanding DOTARS' perspective, the Australian Local Government Association advised ANAO in February 2007 that:

There have been some issues where projects are approved for funding on the basis of initial scope of works which can change when detailed designs are completed. The alternative would be for councils to undertake the detailed design work on the prospect that the project will be funded. Councils are generally unwilling to undertake the cost of the detailed design until there is a commitment of funds.

**6.52** As a result of detailed design not being commenced until after project nomination and approval, there can be significant time delays between the original nomination and works physically commencing. In addition to the timing delays from project nomination to advice of project success, it is well understood that delays can occur where construction work is involved. For example, one Council in WA advised ANAO:

The [council] always endeavours to complete projects in the approved timeframe but factors outside our control and the size or complexity of a project can cause delays. Contractors not completing work in a specified timeframe, resident issues, availability of materials and whether conditions can affect our programmes.

**6.53** In regards to actual delivery of works, councils are also often advised by State road transport authority regional offices that if the project is not completed prior to 30 June of the year of approval that 'all funds unspent at that date revert back to Federal Treasury' or 'it is important to be aware that funds unspent this financial year will not carry over into the next'. Some State road transport authorities have advised councils that projects are due for completion in the current financial year and that any projects not substantially complete by 30 June may have funding rescinded.

**6.54** Assessment of the projects in the audit sample revealed that 61 per cent of projects were completed in the year of approval. However, some 39 per cent of projects were finalised in the subsequent year(s). Of the 39 per cent, in 63 per cent of cases the works were being delivered by LGAs, and in 37 per cent of cases works were being delivered by the State road transport authorities.

**6.55** This pressure to complete projects within a 12 month timeframe can cause particular problems as advised by one NSW council:

For a regional Council with limited resources it is not possible to undertake any significant analysis of a project prior to submission of an application. Resources are only allocated once a grant is received and this then requires design, approval and construction within a 12 month period. Limited access to consultants, contractors and materials means that these projects are always rushed at the end of the financial year and any significant variations during design severely impact on the ability of Council to complete the job within the allocated time.

**6.56** In this respect, advice to councils by State road transport authorities in relation to project variations and expenditure by 30 June has been inconsistent with the Programme's Notes on Administration issued by the Commonwealth. Specifically, the Notes allow for financial variations. While the Notes require an explanation to be provided for projects not started or completed within 12 months of project funding approval, there is no mention of funding unspent within the 12 months (as at 30 June) being withdrawn.

**6.57** In relation to this matter, the RTA advised ANAO in March 2007:

In terms of the 30 June issue, we are seeking to have projects completed as early as possible to realise the road safety benefits. In practice the RTA uses and negotiates around a 30 June completion target. The RTA acknowledges projects can extend beyond the financial year and appreciates that they are still funded.

**6.58** While there is an impetus to deliver road safety benefits in a timely manner, the pressure to deliver a project within an unrealistic tight timeframe has a flow on effect. In this regard, one NSW Council advised ANAO:

Detailed design often results in significant changes to the project. This generally manifests in either a reduced scope of work or a substantial increase in costs. Because of the tight timeframe [referred to in paragraph 6.55], delays experienced whilst seeking variations is almost impossible to deal with.

**6.59** The issue of delays resulting from seeking a project variation were also discussed in Case Study 4.4.

## Recommendation No.9

**6.60** ANAO *recommends* that, to better manage the risk of National Black Spot Programme funded projects not being undertaken in the approved manner, at the approved location and in the approved timeframe, the Department of Transport and Regional Services implement a risk-based program of road work site inspections that, for efficiency reasons, is coordinated with site inspections of Roads to Recovery funded projects.

### *DOTARS response*

**6.61** DOTARS agreed with qualification to the recommendation and made the following comment:

It is the responsibility of the project proponents to report correctly on project delivery. DOTARS will work together with the states/territories to achieve consistent application of the programme's Notes in Administration. DOTARS will undertake black spot project site inspections as resources allow.



Ian McPhee  
Auditor-General

Canberra ACT  
19 June 2007





# Appendices



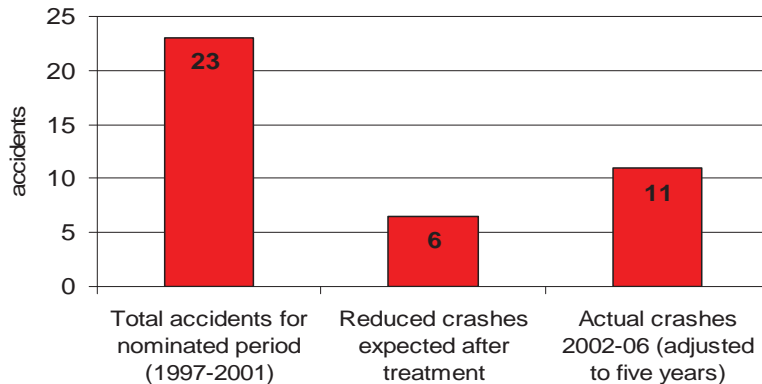
## Appendix 1: Project N03077, Teven Road, West Ballina, NSW

### Project nomination

1. The project nomination submitted to the RTA by Council sought Commonwealth funding for works on Teven Road, West Ballina. The site was described as a 'rural road with two 'hump style' old timber bridges on a substandard horizontal alignment, 680m long, causing very restricted sight distance'. The nomination summarised the description of works as: 'Realignment of road and bridges including widening of bridges. Raise road pavement levels to provide standard sight distance.' As part of the 2002–03 Programme, the project description approved by the Federal Minister was 'Reconstruct alignment / widen bridges'. The estimated cost to the Programme was \$750 000. The nomination also included a contribution of \$1 139 195 from the Ballina Shire Council bringing the total estimated cost of the works to \$1 889 195.
2. Reports to Ballina Shire Council state that securing the National Black Spot Programme funding 'kick-started' the replacement of the Teven bridges. On 13 September 2002, the RTA advised Council that the project had been approved for construction under the National Black Spot Programme. Council was advised that it was important that the project be completed by 30 June 2003 'as all funds unspent at that date would revert to Federal Treasury.'
3. National Black Spot Programme records maintained by DOTARS show this project's progress status as complete. DOTARS records show the project's start date as 12 September 2003 and the finish date as 28 February 2004.
4. ANAO's visual inspections in July and September 2006 found that construction of the road base for the road realignment between the two bridges has been done. New embankments for the replacement bridges have also been constructed. However, as illustrated by the photographs on the following site map, traffic is still travelling on the two old bridges and the old road.



5. Rather than improve the sight distance, during the extended construction phase, the new embankments have resulted in a further deterioration in the sight distance for those vehicles required to give way to traffic on the Maguires Creek bridge. Council advised ANAO that this has been somewhat offset by a reduction in vehicle speed due to the commencement of embankment works and the introduction of 10 kilometre per hour speed restrictions, the number of crashes at this site has reduced. While crashes have reduced, they have not reduced to the level expected by the BCR nomination. As illustrated in the following chart, the road safety benefits expected to have been achieved from the 'completion' of the \$750 000 in National Black Spot Programme funding that was paid by DOTARS to the RTA in November 2003 and on-paid by the RTA to Council between September 2003 and January 2004 has not eventuated.



### Cause of delays and National Black Spot Programme funding issues

6. Council was advised by the RTA on 21 March 2003 that it would have to complete the project without National Black Spot Programme funds unless the Federally-funded component of the project was delivered by 30 June 2003. Later advice, on 21 May 2003, from the RTA was that unless the necessary approvals were in place and funds spent by 30 August 2003, the project would be abandoned from the 2002–03 National Black Spot Programme but could be re-submitted for funding in the 2005–06 Programme.
7. As the National Black Spot Programme funds were an essential element of Council’s funding package for the overall project, early purchase of the bridge deck units was undertaken due to the expiry date associated with these funds advised to Council by the RTA. Two days after the 21 May 2003 advice from the RTA, Council advertised a tender for the design, manufacture and delivery of the bridge deck units, with the successful tender accepted on 10 July 2003. The bridge deck units were manufactured between September and December 2003. Council received the \$750 000 in National Black Spot Programme funds between September 2003 and January 2004. Since the time of manufacture, the bridge deck units have been stored at Council’s depot in Ballina as shown in the following photographs taken during ANAO’s September 2006 site visit.



8. Geotechnical work was used by Council to guide both design and construction aspects of the project. The design work revealed poor geotechnical conditions but indicated that a site failure would not occur. However, in August 2005, as construction was commencing, an embankment failure occurred along Emigrant Creek. Construction was ceased with a monitoring program implemented to assess embankment settlement. Additional work was also undertaken including large rock protection to stabilise the work site.
9. In June 2006, Council decided, as part of its strategy to address the geotechnical issues, to extend the bridge over Emigrant Creek by two spans to nine spans. The bridge deck units constructed in late 2003 using National Black Spot Programme funds provide for seven spans.


Accordingly, to be able to complete the Emigrant Bridge replacement, Council will have to procure additional bridge deck units.

10. In 2005–06, \$298 976 of Roads to Recovery funds was spent on the Teven Bridge Project. Roads to Recovery funds budgeted for 2006–07 are expected to contribute to construction costs, including the additional bridge deck units.
11. The total estimate cost of the project included in the March 2002 National Black Spot Programme project nomination was \$1 889 195. By September 2002, preliminary works indicated that the project would require \$2.1 million. The project budget as at March 2006 was some \$3.89 million.

### **DOTARS records regarding project status**


12. Assessment of the status reports submitted to DOTARS from the RTA showed as early as 30 October 2003 the reported expenditure for the project was greater than \$750 000 and the projects' physical status was reported as complete. As the National Black Spot Programme project was approved in 2002–03 its status is not reported on the AusLink website. The Roads to Recovery project mentioned above, was however included. The status of the project is shown in the following image. No mention is made of the \$750 000 contribution to this project from the National Black Spot Programme.

## Extract from AusLink website for works on the two Teven Road bridges

 Australian Government  
Department of Transport and Regional Services

Teven Road, Teven, at Emigrant Ck and Maguires Ck

<b>Funding Program:</b>	AusLink Roads to Recovery
<b>Status:</b>	Construction completed
<b>Transport Mode:</b>	Road
<b>Expected Start/Finish:</b>	March 2006 - June 2008
<b>Australian Government Contribution:</b>	\$298,976
<b>Local Council/Share:</b>	BALLINA
<b>State:</b>	NSW






[Click here to see the Legend](#)

**Project Overview**

Two old single lane timber bridges (currently with load limits) on poor alignment with high accident rate.

Replace both bridges with two lane concrete bridges on parallel alignment. Includes road realignment. Each bridge is 90m long x 10m wide, associated road works for each of the bridge approaches to a total length of 310m (average 8m wide)



Total cost of proposed project is \$3,890,000







  

[Find a project using text search](#) [Find a project using map search](#)

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**MAP LEGEND**

Corridors:  Road  Rail

Projects:  National Projects Road  National Projects Rail  Roads to Recovery  Strategic Regional  Black Spots  National Projects Non-Network

[Close](#)

Project details last updated: 10/03/2007

Source: <[http://www.auslink.gov.au/projects/ProjectDetails.aspx?Project\\_id=3343\\_1](http://www.auslink.gov.au/projects/ProjectDetails.aspx?Project_id=3343_1)> [ANAO *emphasis*].

13. Ballina Shire Council advised ANAO in December 2006 that:

Council had regularly communicated with the RTA and advised of programming throughout the project. The implementation of the project needed to recognise the timeline for acquittal of the National Black Spot Program. Delivery of the project was structured to achieve early works packages and design, manufacture and delivery of bridge deck units was one such works package. Council cannot comment on the records maintained by DOTARS that record this project as “being completed”. Clearly the project expenditure can substantiate the acquittal of grant funds, and this has been the communication from Council.

14. In regards to this project, the RTA advised ANAO in March 2007 that:

For example, “project completion” can be a misleading term when the national black spot funding is AGREED to be part funding of a project. The \$750 000 limit for Teven Road Bridges over Emigrant and McGuire’s Creek (Project N0.3077) (2002–03) was supplemented by the State and Council with the whole



project costs being \$1.4m. "Project completion" in this case refers to full expenditure of National Blackspot funding that enabled preconstruction activity and the manufacture of the necessary bridge beams to undertake the works. Flooding also collapsed a large section of embankment, causing further delays. Perhaps an additional code is needed to confirm "built". That particular project, through the intervention of nature, will now be "built" by June 2008 and DOTARS officers were made aware of all relevant issues by phone.

15. As noted above from information provided by Council, the RTA advice is incorrect in the following respects:

- the original total estimated cost of works was \$1.89 million. As at March 2006, the project costs have increased to a total estimated cost of \$3.89 million rather than the \$1.4 million suggested by the RTA; and
- the August 2005 embankment failure comprised the failure of soft soil foundation material due to a rise in pore water pressure associated with loads imposed by fill, not as a result of flooding (as was suggested by the RTA).

## Appendix 2: DOTARS Formal Comments on the Proposed Report

The audit found no evidence that programme funds were not spent as intended by the Australian Government on high priority road safety Black Spot projects.

The audit makes no finding that the administration of the programme by the Department of Transport and Regional Services (the Department) is not efficient and effective nor does the audit suggest that positive road safety outcomes are not being delivered.

The Government's policy objective is being promoted under current programme arrangements. State road authorities play an important co-ordinating role in assisting the Department's administration of the programme. Each state/territory utilises administrative procedures which are consistent with their broader organisational processes in assessing potential black spots and there is no evidence in the audit report that suggests systemic problems in any state's or territory's processes.

The audit raises some issues where consideration of future programme administration would be warranted. The Department will work with states and territories to achieve greater consistency of understanding and interpretation of the programme's operational requirements.

The Department agrees, or agrees with qualification, to all but one of the recommendations.

Recommendation No.1 is not consistent with Australian Government policy for the AusLink Black Spot Programme and the AusLink legislation which states "the approval instrument for a Black Spot Project must identify the eligible funding recipient, being a state or authority of a state, to which funding may be paid".

The report does not provide evidence that there might be sufficient benefits for the Australian Government were it to revise its policy, amend legislation and allocate the increased resources necessary to implement Recommendation No.1 nor does it provided evidence that implementing the recommendation would enhance the efficiency or effectiveness of the programme.

Australian Government policy is to have different funding and operational policies for the AusLink Black Spot Programme and the AusLink Roads to Recovery Programme, which are designed to achieve different policy outcomes. This position is reflected in the structure of the *AusLink (National Land Transport) Act 2005* which establishes different regimes for these two programmes, as did the Roads to Recovery and ALTD Acts which preceded it.

## Appendix 3: State Road Transport Authorities Formal Comments on the Proposed Report

*State road transport authorities and LGAs included in the audit sample were given an opportunity to provide any comments or information in relation to the analysis and findings in relation to projects they were responsible for delivering and, for State authorities, the discharge of their agency role. Both LGAs and State road transport authorities were advised by ANAO that the audit analysis and findings would assist to form the basis of ANAO's assessment of the management of the Programme. They were also advised that the audit work would culminate in a report tabled in the Commonwealth Parliament and that this report would be a public document. In addition, as State road transport authorities play a key agency role in the administration and delivery of the Programme, a copy of the proposed report was provided to the State road authorities for the states in the audit sample.*

*The ANAO has had regard to the comments provided by the State road transport authorities provided in response to the proposed report. Where applicable, comments have been included in the body of the report or revisions have been made.*

### New South Wales Roads and Traffic Authority

On a general note, the Roads and Traffic Authority (RTA) has taken all comments in the Performance Audit on board and accepts the need to continually improve in the management and delivery of Black Spot Program, and in reducing the road toll in general. Some initiatives we are taking in this regard include:

1. **RTA Commitment to reducing road trauma:** The RTA is fully committed to reducing road trauma on the entire NSW road network. We provide over \$100 million per year directly to road safety programs and indirectly through the \$3.3 billion programs addressing all road issues. The RTA has initiated a number of internal reviews specifically focussed on achieving a better road safety result for NSW. These include the RTA Refocus which is aligning the development and delivery of road safety engineering programs with the development and delivery of all road programs in NSW. This will give a greater synergy with other programs and allow for optimisation of resources in delivering road safety outcomes. The RTA has also initiated the 'Road Safety Challenge' with the aim of mainstreaming road safety across all programs. All program areas will have road safety key performance

indicators to address, with the aim of having road safety inherent in the planning and delivery of all roads projects.

Road Safety engineering programs, in particular, have been an area of increased focus over the last four years. Over that time, in addition to the ongoing State-funded Black Spot and Mass Action Programs, the RTA conducted detailed safety reviews of the Pacific and Princes Highways.

2. **Highway Safety Reviews:** In June 2004, the then NSW Minister for Roads, Carl Scully announced a three-year \$35 million program, which combined the existing \$14 million program, resulted in a \$49 million program of safety improvements for the Pacific Highway. This program included engineering, behavioural and enforcement strategies to complement the planned Pacific Highway Upgrade program. Key activities included:

- reducing cross centreline crashes by providing median wire rope separation;
- providing adequate clearzones to reduce run-off-the-road crashes; and
- eliminating dangerous or inadequate intersections.

The original State Government commitment was exceeded, with approximately \$52 million spent on the Program. There was a significant reduction in deaths and injuries over the period of the Program, compared to the 12 months prior to the Program and to the three year average. On the length of the Pacific Highway reviewed, from Hexham to the Queensland border, fatalities reduced from 55 in 2003 to 34 in 2005, and down again to 25 in 2006.

The review and subsequent program was so successful it provided the impetus for a joint Commonwealth/NSW funding Program for Bonville and \$20 million Federal Road Safety Package – worth of safety works along the length of the Pacific Highway.

In December 2004, the NSW Government funded another targeted Road Safety Program for the Princes Highway from Yallah to the Victorian border. More than \$30 million worth of safety improvements over three years is being carried out including:

- improving road alignment;

- improving junctions;
- increasing skid resistance of the roadway;
- installation of safety barriers and warning signs; and
- shoulder and curve widening.

This program has halved the toll on the Highway from 24 in 2004 to 12 in 2005, and then 4 in 2006. The preliminary NSW road toll for 2006 stands at 499, the lowest since World War II. The NSW road toll has been historically low for the last few years. This is as a direct result of robust road-safety projects including engineering, education and enforcement aspects. NSW has introduced Fixed Digital Speed cameras, a more rigorous approach to speed management, the introduction of random drug testing for drivers, public and school education programs aimed at changing risk-taking behaviour associated with driving, rigorous vehicle safety policies and the continued support for the robust engineering crash reduction program.

My specific comments with regard to the Performance Audit are:

#### Legislative Change

A number of changes in governance of the Federal Blackspot Program appear not to have been considered in the Audit Report as follows:

- Changes in the provisions and requirements of the Federal legislation governing the National Black Spot Program. Prior to July 2005, the Program was “governed” by the *Australian Land Transport Development ACT 1988*. In 2005, the Federal Government introduced the *AusLink (National Land Transport) Act 2005*. A key change in legislation was the reduced flexibility given to the States in managing the Program. Details are set out in Tab 1. Although transition arrangements were put in place to govern those projects still under development at the time of legislative change, many projects cited in the audit were developed in the early years of the Program.
- The requirements of the *Notes on Administration*. It should be noted that the *Notes on Administration* for the National Black Spots Program under Auslink were issued a year after the introduction of the legislation, that is, in July 2006.

As a consequence, a number of adverse comments about the RTA’s management of the Program are based on preferred ANAO practice of

Program Management rather than being based on the relevant legislation and the Notes' requirements.<sup>167</sup>

However, the RTA supports Best Practice in project and program administration and is of the view that program administration and management could be enhanced by clarifying and strengthening the *Notes on Administration*, I have detailed these in an attachment to my letter.

### Variation and Scope Change

In relation to the National Black Spot Program, it must be noted that on many occasions where the final cost of projects have exceeded strategic estimates and the associated Federal funding allocation, the NSW Government has effectively underwritten these projects and provided the extra funding required to complete these projects. NSW will continue to provide this additional funding to complete worthwhile road safety projects.

One of the issues raised in the Audit Report was the change in cost of a project once it is underway. As projects are generally developed on a concept, without detailed engineering design, the scope and costs are "strategic estimates" and it is impossible at the time to determine what factors may affect financial estimation until thorough detailed investigations have been undertaken. This situation may be due to unforeseen geotechnical or other concerns which sometimes cannot be identified until after the project construction has begun. To abandon these projects at a stage when works have begun would not only incur a financial imposition but would leave a recognised road safety concern unaddressed.

Like all other road infrastructure projects, Black Spot projects are required to undergo many preconstruction development activities (eg environmental, social and heritage assessments, community consultation, design etc). These processes and their outcomes can lead to scope changes and/or cost increases which could not be accounted for at the time strategic estimates are made. However, unlike many other road infrastructure programs, both the preconstruction activities and the construction of the project are required to be delivered in the same program year. As such, Black Spot projects, by nature of them having one-year time frames, are more prone than other road

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<sup>167</sup> As outlined at paragraph 1.17, in addition to legislative requirements and the Notes on Administration, ANAO has drawn upon Austroads guidance as a suitable reference point for important elements of the audit analysis. The Notes on Administration refer practitioners to Austroads guidelines. Further, it has been agreed by the Austroads Council (whose membership includes DOTARS and the RTA) that the Austroads guidelines should be adopted widely as the primary national reference by member organisations in each relevant area of practice.

infrastructure project to scope and cost variations.

### Benefit Cost Ratio (BCR) Issues

The issue of Benefit Cost Ratio's (BCR) where scope change has been necessitated and where works have already been commenced needs clarification.

If works have commenced it is impractical and unsafe to abandon partially constructed projects where scope change, due to unforeseen concerns, changes the BCR of the project.<sup>168</sup> Costs have already been incurred and costs will need to be incurred to restore the site to its original configuration with no road safety benefit gained. It is proposed that the BCR for the scope change be calculated on the extra costs proposed only. The reasoning for this is:

- The project cannot be abandoned mid construction.
- Costs will be incurred to restore the project, further dampening the overall BCR for the whole program.
- If restored no road safety gain has been achieved and the site will remain as a Black Spot.
- The additional proposed costs are now the governing factor to the project completion.

### *[Case studies]*

...The RTA acknowledges that we can improve our reporting and governance processes. To this end, the RTA has already put in place arrangements for strengthened project management, and the RTA will ensure it meets the reporting requirements.

NSW is pleased to note that the Federal Minister for Transport and Regional Services recently announced an extension of the Federal Black Spot Program until 2009–10. I believe that refinements to the Notes of Administration as suggested here will improve our ongoing collaboration.

## **Tab 1: Issues raised by Audit**

There are five major issues raised by the ANAO audit of the National Black Spot Program. These are:

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<sup>168</sup> The audit report does not suggest that such projects be abandoned. ANAO analysed whether the original scope and project budgets were reliable and the manner in which project scope and cost variations have been managed under the Programme.

1. Processing and checking of the validity, feasibility, costing and buildability of approved submissions.
2. Funding of projects.
3. Management of variation and scope change.
4. Consistency in management of the Program across NSW.
5. Monitoring and reporting of the Program.

## **1. Processing and checking the validity, feasibility, costing and buildability of approved submissions**

### Current arrangements

The RTA currently follows the process of managing nominations and assessments as set out in the *Notes of Administration*. The information required in nominations is also set out in Appendix B of these *Notes*.

Both Council and RTA submissions are received and assessed and Benefit-Cost Ratios (BCRs) and other details are checked. If, the RTA considers the BCR needs revision, it will do so and re-assess the eligibility and priority of nominations. Currently, this process is a “desk-top review” involving the National Black Spot co-ordinator in discussion with RTA regions.

The ANAO audit raised a number of concerns regarding the documentation of any RTA changes to BCRs.

### Proposed arrangements

It is proposed that the RTA and DOTARS discuss options for ensuring that nominations are accompanied with sufficient information to ensure that any project funded would be feasible and buildable. The feasibility of the project should be with regards to design, cost and proposed timetable, with options and risks having been considered. The *Notes on Administration* should require sufficient information to achieve this.

Models, ie possible template for such an approach include:

- Auslink’s National Projects “Project Proposal Report” (Appendix 1 Part 1); or
- RTA’s Project Development Proposal template.

Benefits of such enhancements would be that:

- only those proposals that have been more rigorously tested for feasibility will be supported by the RTA; and



- there should be fewer variations and scope changes as a result of proposals having been examined beyond an initial concept stage.

Care needs to be taken that any additional requirements are not administratively onerous for all parties, and that effort in processing does not outweigh risks, benefits and “materiality” considerations.

The NSW Government is happy to continue leveraging funding in order to maximise the road safety benefits from Black Spot projects.

In addition, projects should be clearly identified as being nominated:

- on the basis of BCRs; or
- as a result of an official road safety audit report.

## **2. Funding of Projects**

### Current arrangements

The National Black Spot Program allows for joint funding of projects, ie RTA or Council can supplement the funding of the approved work or fund supplementary but related work.

### Proposed arrangements

There is a need for greater clarification as to the “rules” for approval, funding and management of those projects where National Black Spot funding constitutes only part of the project cost. It is proposed that the States enter into discussions with DOTARS with a view to enhancing the Notes or providing supplementary guidance in this regard.

## **3. Management of variation and scope change**

The legislation changes have impacts on the management of minor and routine project variations and scope change. Under the ALTD Act 1988, the Federal Minister approved a set level of funds for each State and approved projects, their location, treatment and funding. States had greater flexibility in managing variations within the Program. States were able to move funds between projects or advise of new candidate projects, subject to approval, up to the total level of approved funds.

Auslink does not allow this level of flexibility. As such, payments to States are calculated on a project by project basis. This new arrangement has resulted in NSW receiving \$12.98 million of the approved \$14.29 million for 2005/06. Many of the projects in the audit sample were managed under the earlier provisions.

The DOTARS process for managing variations is currently a manual process. DOTARS has advised they are currently developing a new computer system to automatically upload reports and recommended projects and automatically manage minor bulk variations on-line. There will be a separate form for projects with scope changes and large cost variations. RTA is willing to assist with any initiatives which lead to more efficient management of the Program.

The *Notes of Administration* provide arrangements for managing variations in cost and scope. The RTA considers that financial management could be improved by:

- more clearly differentiating between variations and scope change;
- defining the limits of the total sum of cost variations allowed/payable by the DOTARS; and
- defining "acceptable" scope change;
- ensuring any submission for a cost variation or scope change, must be accompanied by an updated BCR analysis; and
- clarifying the circumstances where a cost or scope change is acceptable if the sponsoring body (ie, the RTA or Council) provides the required funding (works and administrative overhead).

Such amendments require change to the Notes which should make provisions for time variations as per the *Notes of Administration for National Projects*.

## **More clearly differentiating between variations and scope change**

### *Current arrangements*

The *Notes* discuss variations in terms of project costs but need a clear statement of the distinction between variation and scope change.

### *Proposed arrangements*

The following documents are useful sources in attempting to clarify differences between variations and scope change:

- *Notes on Administration for National Projects*
- *RTA Engineering Contracts Manual*
- *RTA Delegations Manual*.

Variations usually refer to cost variation (and more or less of same kind of works); whilst scope change usually refers to nature of works. Some scope changes may be acceptable, provided they are justified and approved (see below).

## Defining the limits of the total sum of cost variations allowed/payable by the DOTARS

There is some confusion in the *Notes* as to whether the allowed variations relate to:

1. the total cost of those variations; or
2. the amount of each individual variation, as set out below:

For example, Section 6.1 of the *Notes of Administration* state that that formal approvals must be sought prior to the commencement of construction where it is *known* that the cost of an individual project (implying total cost of all variations) is subject to an increase of 20% or \$30 000, whichever is the lesser. However, in the same section, the *Notes* also state that “formal variation of all minor increases (implying each individual variation) in the cost of approved projects must be sought as soon as practicable. Such minor variations are expected to be of a routine nature and need not be sought in advance of construction”.

### Proposed arrangements

It is proposed that two actions be taken:

- Procedures be established for the Federal Black Spot program to ensure that management of cost variations are in line with the RTA Engineering Manual and Delegations Manual; and
- Clarification of the *Notes* by setting out a number of specific principles:
  - The *total* cost of any project must not be varied by \$30 000 or 20%, whichever is the lesser;
  - Where the *total* cost variation is \$30 000 *and* less than 20%, *one submission* to approve this variation must be sought as soon as the variation is known and confirmed;
  - Where the total cost variation is \$30 000 *and* 20%, then the project should be subject to immediate review by DOTARS and the RTA.

In this process:

- Clarity is needed as to whether total project cost, the BCR and the acceptable cost variation and/or scope change relate to the project as a whole or the Federal Black Spot funded component; and
- BCR variation advice needs to relate to the remaining expenditure on the project (not funds expended to date).

## **Defining “acceptable” scope change;**

### *Current arrangements*

The *Notes* currently state that “formal approval for significant changes to the scope of approved projects must be sought prior to the commencement of construction”. The *Notes* indicate that significant changes include:

- additional treatments
- omission of approved treatments
- changes to the original proposal.

### *Proposed arrangements*

It is proposed that a more rigorous definition of scope change (acceptable and non-acceptable) be provided:

- Acceptable changes should include any minor changes to the project without changing the basic concept or design.
- Unacceptable scope change should relate to works that are:
  - unrelated to the work approved
  - expressly excluded from the approved project
  - carried out at a different site
  - more appropriately carried out under a separate contract
  - a change to the character or quality of the approved project
  - likely to render the BCR below the lowest BCR funded project.

It is recommended that RTA and DOTARS consider whether a formal mechanism should be established to:

- manage and resolve instances of unacceptable scope variation;
- resolve disputes using an agreed dispute resolution procedures, if required.

## **4. Consistency in management of the Program across NSW**

### *Current arrangements*

RTA Regions and Councils are provided with a set of the *Notes of Administration*. In addition, funds to Councils are managed in accord with the *Yellow Book*.

It is proposed that in addition to enhanced *Notes* and/or DOTARS Guidelines, the RTA develop a specific set of Guidelines for RTA Regions and Councils utilising:

- RTA's *Yellow Book*
- a revised set of *Notes of Administration*
- any new *Guidelines* developed by DOTARS
- *RTA Engineering Contracts Manual*
- *RTA Delegations Manual*
- *Notes on Administration National Projects*
- NSW Premier's Department *Good Practice Guide to Grants Administration*
- *RTA Project Development Plan* template.

This approach together with more detailed project information at nomination stage, should improve quality and consistency in the deliver of projects.

## 5. Monitoring and reporting of the program

### Current arrangements

The *Notes* (Appendix C) provide for regular monitoring – mainly financial with minor provision for “physical status”. These Status Reports should occur every two months, with an Annual Statement of Expenditure as soon as practicable after 30 June, and no later than 31 December. Whilst there had been agreement between DOTARS and the RTA that monitoring and reporting of the Program every two months would be onerous for small projects, the RTA has no objection to bimonthly reporting.

### Proposed arrangements

It is proposed that the RTA provide:

- bi-monthly reports, in line with the *Notes*, and
- photographs of works nine months after projects approval and at the project completion.

## Summary of RTA Proposals

Issue	Comment	Proposed Solution
<b>Eligible projects</b>		
Variation of project nominations (BCR calculations)	RTA Secretariat adjusts BCRs where necessary	RTA ensures changes to BCRs adequately documented
<b>RTA General Management</b>		
No documented procedures specific to National Black Spot program	Currently utilise <i>Notes</i> and <i>Yellow Book</i> for payment to councils	<p>RTA will reissue advice to Councils</p> <p>In addition, RTA will develop a specific set of Guidelines utilising:</p> <ul style="list-style-type: none"> <li>• RTA's <i>Yellow Book</i></li> <li>• a revised set of <i>Notes of Administration</i></li> <li>• any new <i>Guidelines</i> developed by DOTARS</li> <li>• <i>RTA Engineering Contracts Manual</i></li> <li>• <i>RTA Delegations Manual</i></li> <li>• <i>Notes on Administration National Projects</i></li> <li>• NSW Premier's Department <i>Good Practice Guide to Grants Administration</i></li> <li>• <i>RTA Project Development Plan</i> template</li> </ul> <p>Include more detailed project plan information at nomination stage (as per National Projects or Northern Region Project approval process)</p>
Variable performance in reporting project status	Informal agreement between RTA and DOTARS re reduced frequency of reporting	<p>Bi-monthly reporting as per the <i>Notes on Administration</i></p> <p>Enhanced reporting utilising photos and new blackberry technology</p>

Issue	Comment	Proposed Solution
<b>Financial Management</b>		
Funding irregularities as a result of work not done at all or in accord with Federal Minister's approval	Misunderstandings, especially where projects delayed or varied in cost and/or scope, especially for those projects that are jointly funded.	<p>RTA and DOTARS consider options to improve submission information and process</p> <p>Clarification and enhanced management of cost variation and scope change</p> <p>Acceptable and unacceptable variations in cost and scope defined</p> <p>Clarification re "rules" regarding jointly funded projects</p> <p>Review threshold triggering approval for cost variation so that it is set at a level and/or percentage of project cost reflecting materiality and risk and does not impose onerous administration on DOTARS or the States.</p>
Irregularities in the amounts claimed for road works	Funds reallocated across projects with agreement of DOTARS officers	Improved and enhanced management of cost and scope variation as outlined above
Cost variation – Inconsistent approach to the cost variation	Some inconsistency in management of cost variations across Regions. This applied to RTA management of Councils.	<p>RTA will reissue advise to Council</p> <p>In addition:</p> <p>Develop a specific set of Guidelines as outlined above</p>
Commonwealth funds paid in advance of need		Section 7.2 of the Notes allowed for payment according to actual expenditures incurred plus forecast expenditures for the following two months
<b>Policy</b>		
State spending on Black Spots	State funds on Black Spot works to be maintained and Additional Route Safety Strategies implemented (Pacific Highway \$49M) and Princes Highway \$30M).	State commitment to be maintained

## South Australian Department of Transport, Energy and Infrastructure

In general the report appears to reasonably reflect previous correspondence and discussion with this Department on the SA sample projects that were used in the audit. In light of the proposed content of the draft report, I have set out below a number of comments DTEI asks to be taken into account in formulation of the final report.

We have had considerable discussion previously with regard to the guardfence related projects. The report (paragraph 78) states that SA overcharged on some sample projects in the order of \$191 823. We consider this statement misleading as there was no context given other than it was associated with guardfence installations, nor was there a balanced view provided.<sup>169</sup> The statement is true, if viewed purely in terms of the original physical scope of works, but misleading from the perspective of the approved budget and safety benefits obtained. DTEI took the approach of providing the maximum safety benefit with the approved budget on these projects by delivering increased length of guardfence compared to original scope (only where possible within the original approved budget). The audit simply reports this as “overspending” despite the approved budgets being met. Conversely, DTEI would assert that the safety benefit of these projects was increased. A more balance view is required on this point in the final report.

Section 2.4 of the report discussed the relative funding to States and Councils under the programme. The high proportion of State projects as opposed to Council projects in SA is highlighted. These comparisons are not appropriate without taking into account the different road responsibility arrangements in each State. In SA, the State maintains around 23.2% of the road network—more than any other State and Territory. This includes 10 220kms of local roads, most of which are in the large unincorporated are of South Australia. In addition, in SA, the State fully maintains all arterial roads (except 38kms in the City of Adelaide). This includes all Austroads class 3 roads (regional roads) in rural areas and Austroads class 8 roads in urban areas. In some other states, NSW for example, these roads are a local government responsibility with grants provided by the State to help fund their upkeep. Consequently, in NSW, blackspot projects on class 3 and class 8 roads would be local government

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<sup>169</sup> The report includes, at paragraphs 3.18 and 3.19 including Case Study 3.3, paragraph 4.35 and paragraph 6.32, information relating to the circumstances of this overcharging. Paragraphs 3.19, 4.35 and 6.32 include detailed comments from the DTEI on this issue, including earlier advice from the DTEI of changes it has made to its procedures to prevent recurrences.



management, but are State managed in SA. DTEI considers therefore that it is misleading to compare the level of funding provided to local government projects versus state projects, without at least some annotation explaining the different road responsibility arrangements in SA.

DTEI also believes that a mechanistic approach to the treatment of crash locations by installation of guardfence along road sections at specific crash sites only is not necessarily optimising the potential safety benefit possible on that road length. Given the sometimes random nature of crashes and difficulties in precisely locating crashes, a risk based approach to installation of guardfence is considered a more beneficial approach for most road sections. The current guidelines and ANAO audit approach has continued to assess projects from the perspective of process as opposed to optimum safety benefit. DTEI considers that the audit should also address changes to the guidelines that could result in better road safety outcomes as well as checking adherence to existing processes.<sup>170</sup>

DTEI notes that the recommendations place considerably more responsibility and burden on DOTARS in closely managing the development and delivery of projects. Changing some of the responsibilities from the States to DOTARS is not necessarily going to solve some of the issues identified in monitoring delivery and accounting for costs. While improvements can be made, local involvement in these processes is still seen as the more effective means.

Currently the AusLink Black Spot programme does not provide funding for safety issues on the AusLink network. The “rolling in” of safety and urgent minor works into the current inadequate and capped AusLink maintenance allocation severely restricts available safety funding to this network. DTEI views this as a significant restriction in the programme as the AusLink network is generally the most highly trafficked component of the network with potentially the highest safety benefits to be achieved through black spot type interventions. There is potential for considerably increased benefit from the available funds if this scope is widened.

The current project cost upper limit of \$750 000 is also a limiting factor for urban type projects where the appropriate treatment may be the installation of traffic signals. The cost of such installations at major junctions generally

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<sup>170</sup> ANAO has drawn upon Austroads guidance as a suitable reference point for important elements of the audit analysis. This includes the principles espoused in relation to use of crash statistics (as occurred in this case) rather than a road safety audit approach (as is suggested by the DTEI comments). The DTEI had earlier advised ANAO that it accepted that projects such as these would more appropriately have been nominated and assessed on the basis of a road safety audit.

prohibits consideration under the Black Spot programme where major safety benefits could be achieved. Consideration should be given to raising the project funding limit on urban black spot projects.

DTEI considers the relative level of effort and effectiveness applied within this Department to the administration and management of this programme is appropriate, given this programme's relatively low budget and the more significant issues that appear to have been identified in other States. Notwithstanding this, minor management issues that have come to light as a result of this audit are being, or already have been, addressed.

Thank you for the opportunity to provide comment and we look forward to continue to work with DOTARS to improve the safety of our road networks.

## VicRoads

Thank you for affording VicRoads the opportunity to comment. VicRoads is impressed with the level of detail investigation and comprehensiveness of the report. Although the recommendations are directed at the Department of Transport and Regional Services, VicRoads wishes to provide comment as their adoption would impact on Victoria's management of future AusLink Black Spot Programmes. VicRoads believes that the Victorian Programme is well managed, efficient, and provides effective road safety outcomes.

### Comments on Recommendations

#### *Recommendation No.1*

The recommendation proposes that Councils and the State Road Authority be paid directly and separately for project works undertaken by each party. The implementation of this recommendation would prevent the single point of management and reporting of the programme in Victoria. VicRoad's view is that this would increase the overall programme cost of administration whilst reducing the overall effectiveness of the programme.

The submission of the Council Tax Invoice to VicRoads serves as a source document for the corporate accounting system which provides management accounting reports to assist programme management. A key benefit of central programme administration at State level is that it ensures surplus resources from project savings can be reallocated or applied to new projects.

#### *Recommendation No.2*

VicRoads would support a review of administrative costs charged to the programme with the aim to amending the Notes on Administration to allow funding of program overheads. The State currently bears full cost of program management costs.

#### *Recommendation No.3*

Victoria is investing unprecedented levels of funds in road safety infrastructure and has done so for many years.

#### *Recommendation No.4*

VicRoads holds the view that the programme is filled with eligible projects, not withstanding the error identified. All projects are scrutinised by VicRoads for eligibility and suitability. The information subject to review by DOTARS would be the same as that scrutinised by VicRoads and the Consultative Panel.

Currently, this process of scrutiny involves considerable liaison with regional office staff. VicRoads does not consider that DOTARS is best placed to carry out this role. Implementation of Recommendation No.4 would increase the overall programme cost of administration.

*Recommendation No.5*

*Recommendation No.5a*

VicRoads requires project development engineers to have input into the design of all blackspots, including potential blackspots. However, it does not preclude road safety auditors from making recommendations. VicRoads wishes to retain technical input into all road safety projects.

*Recommendation No.5b*

Audits should not be limited to the design stage. It is VicRoads' policy for all state funded road safety projects to be audited during the projects life cycle depending on the projects scope and risk.

*Recommendation No.5c*

It seems appropriate that road safety audit costs be attributed to the programme as they are integral to the process of ensuring appropriate project development and implementation.

*Recommendation No.6*

*Recommendation No.6a*

VicRoads considers that the current level of administration is appropriate and achieved the desired goals of identifying project cost, scope and location.

*Recommendation No.6b*

The recommendation does not cause any concern as VicRoads can, and does, readily supply final project costs to DOTARS. However, it can only provide costs that are included in the corporate accounting system. This would not be the case if Recommendation 1 was adopted.

*Recommendation No.7*

The recommendation proposes that State Road Authorities adopt the Austroads guidelines for project BCR prioritisation and that DOTARS conduct audits to ensure State Road Authorities carry out appropriate project benefit calculations.

*Recommendation No.7a*

Whilst VicRoads does utilise the Austroads evaluation model for project prioritisation for project BCR, it does not support the full adoption of Austroads guidelines for economic evaluation of blackspot proposals. The reasons for this are covered at items 3, 7 and 8 in Appendix A.

*Recommendation No.7b*

VicRoads would advise DOTARS that audits of the nature proposed would duplicate scrutiny undertaken by VicRoads. VicRoads would support this recommendation providing it does not impose additional costs to Victoria.

*Recommendation No.8**Recommendation No.8a*

VicRoads does not support manipulation of crash data and scrutinises projects to ensure that the best selection of projects are recommended for approval. There is little evidence of selective use of crash data in Victoria.

*Recommendation No.8b*

This recommendation has had little relevance to Victoria to date. However, the notion of improved guidance is supported.

*Recommendation No.9*

This recommendation proposes that site inspections be undertaken by DOTARS. VicRoads supports this recommendation providing there is no additional cost to Victoria.

**Appendix A****Reporting and Financial Management***1. Report reference: Report & Payment Arrangements*

Typically very little expenditure occurs between July and December each year as projects are prepared for implementation. VicRoads considers that the preparation of fewer claims and associated reports as efficient administration. As program administration is not funded by DOTARS the aim is to keep these costs to a minimum.

*2. Report reference: Actual cost of delivering the project*

Point 2.51. The audit identified that VicRoads had sought "blanket" approval for 36 Total Estimated Cost (TEC) increases and 162 TEC

reductions. The increase were each less than \$15 000 or 15% of TEC. VicRoads understanding of the Programme Notes on Administration is that the State Road Authority must seek formal variation to vary project TEC when the TEC increase exceeds \$15 000 or 15% (the lesser of). Variations less than this do not require formal variation for DOTARS prior to project implementation. In July 2006 the variation notification limits were amended to \$30 000 or 20% (lesser of).

Invariably discrepancies occur between project estimate and final cost. The process of periodically advising DOTARS of amended TECs is considered to be efficient and allows funds to be freed up for reallocation thereby maximising benefits to the Programme. Surplus funds are applied to approved projects in order of priority and funding availability regardless of whether they are delivered by VicRoads or Council. VicRoads will always endeavour to expend the total program funds.

### Project Assessment and Evaluation

#### 3. *Report reference: Benefit Cost Ratio (BCR) calculations*

The audit report highlights the different approaches taken by States when determining a project's BCR. VicRoads adopts crash reduction factors founded on research undertaken by the Monash University of Accident Research Centre. The distinction between urban and rural crash costs is addressed by the application of different speed zone crash costs. Rural roads generally have higher speed zones and as a consequence higher crash severity.<sup>171</sup>

VicRoads considers that its project selection and treatment proposals are effective. This is supported by the outcomes of the Bureau of Transport Economics report 104—The Black Spot Programme 1996–2002 An Evaluation of the First Three Years where Victoria achieved an overall Programme BCR of 20, and also the evaluation of the state funded \$240m Statewide Blackspot Program (1999–2002).

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<sup>171</sup> As noted at paragraph 5.34, the Victorian approach does not reflect the benefits intended to be achieved from a National Programme. The design of the National Black Spot Programme was intended to address concerns about a diversity of approaches to defining a hazardous location, a diversity of accident cost values and a diversity of project ranking making it unlikely that a particular project would be given the same ranking in all States and Territories.

4. *Report reference: Costs included in the BCR calculation*

The audit report notes that Victoria nets off any external contribution from project cost when calculating a project BCR and that this distorts investment in the programme overall. VicRoads considers external contributions as an additional source of funds and not a draw on the overall programme allocation.

The BCR process considers cost and crashes and ensures the best application of Federal funds. A project TEC reduced by the application of an external contribution does not cause ineligible projects to be funded as the eligibility requirements of crashes and crash rate must be met. The guidelines also promote contributions from external sources.

In Victoria over the past six years there have been fifteen projects with external contributions. A number of these involved contributions from developers undertaking works in association with the road safety project.

VicRoads does not consider contributions by Councils to constitute "gaming behaviour". Rather it demonstrates a Council's commitment to resolving road safety problems for the community. Comments on Case study 4.3 are referred to at paragraph 12. ...

5. *Report reference: Identifying the total estimate cost of nominated projects*

The audit report identified that various States approach the application of external contributions when determining project TEC and BCR differently. The Notes on Administration are silent on the treatment of external contributions, however the approach taken by VicRoads has remained constant since the introduction of the Federal/National Black Spot Program in 1990.

6. *Report reference: The use of road safety audits*

The audit report noted that Victoria will consider a project based on an official road safety audit but it does not require the road safety auditors to recommend a solution as this is left to Council or VicRoads engineers to prepare an appropriate treatment. VicRoads does not see this as a deficiency and it should be noted that all candidate projects are subject to independent scrutiny.

Only one audit based project in six years has been recommended for funding in Victoria as the Victorian Consultative Panel considers that it is better to treat sites with a crash history.

7. *Report reference: Target crashes to be addressed by treatment*

The audit report comments on the fact that Victoria applies all crashes at a site regardless of the fact that they will not benefit from the treatment. This is done because the crash reduction factors are based on research undertaken by MUARC, which considered all crashes at the site. Also refer to item 3 above.

8. *Report reference: Accident reduction factors*

Point 5.41, 5.42 & 5.43 notes that Victoria does not use the Austroads matrix of crash reduction factors (CRF). It suggests that Victoria should consider changing its approach. However,

- The extra complexity may not result in better project selections. Recent evaluations indicate that Victoria is achieving extremely good results.
- At a meeting of State Road Authorities in Canberra in 2006 there was doubt concerning the relevance/accuracy of the Austroads matrix. NSW indicated that it will be undertaking new research.
- VicRoads needs to have a consistent approach applied to all projects regardless of the funding source in order to limit the degree of rework as projects are shifted between funding sources prior to approval.

9. *Report reference: Adjustment of crash reduction factors*

Point 5.49. The audit report indicates that CRF data can be manually manipulated in the BCR template spreadsheet. All CRFs are scrutinised for appropriateness by VicRoads' Road Safety group.

10. *Report reference: Average cost of preventing a crash*

Point 5.61. With respect to differentiating costs associated with rural and metropolitan speed zones, this is covered in paragraph 3 above.



## Main Roads Western Australia

### General Observation

While it is understood that the sample selection was by Local Government area the audit was guided by the results of a project based analysis. On this basis the project sample size for Western Australia is noted with interest particularly when compared to Western Australia's % share of the indicative funding as highlighted in the table.

State	Indicative funding %	Sample project %	Sample LG %
New South Wales	43%	41%	32%
<b>Western Australia</b>	<b>15%</b>	<b>33%</b>	<b>39%</b>
Victoria	31%	17%	20%
South Australia	11%	10%	10%

Unfortunately Main Roads WA is unable to provide any comment with regard to the overall conclusions relating to the aggregated project findings for Western Australia. This is due to not being aware of the audit outcomes relating to the LG projects nor the conclusions reached following Main Roads WA's reply to the preliminary assessment of Main Roads WA projects undertaken by ANAO.<sup>172</sup>

### Specific Comments

The draft report has been reviewed and the following comments are provided:

- The statements referring to Main Roads WA road safety audit practice requiring the particular treatment to be recommended is incorrect (paragraphs 61 and 3.46). Main Roads WA practice is that the proposed treatment is required to be supported by the road safety audit (i.e. contain a finding that a problem exists that the proposal will treat).
- Reference is made in the draft report (paragraph 78) to Main Roads WA proposing to return \$338 076. While this comment is made in relation to the cost attribution of co-delivered works it should be noted that there

<sup>172</sup> A detailed report on audit findings applicable to Main Roads WA-delivered projects in the audit sample and Main Roads WA's broader Programme administration was provided by ANAO to Main Roads WA on 16 November 2006. In December 2006, at ANAO's request, Main Roads WA met with the ANAO to discuss the preliminary audit findings, including those pertaining to projects delivered by LGAs. Main Roads WA provided written comments on the preliminary audit findings to ANAO on 3 April 2007 by which time the proposed report of the audit was being finalised for issue to agencies. Nevertheless, Main Roads WA's comments were taken into account and have been reflected in the overall audit analysis.

are a number of projects delivered by Main Roads WA where the final costs have exceeded the funding provided by the Commonwealth. Main Roads WA will be discussing this issue with the Department of Transport and Regional Services with a view to recovering funding shortfalls.

- In relation to the Albany Highway project Main Roads does not agree with the view taken by ANAO. We appreciate that Main Roads position has been included in the report but make the following additional comments:

With respect, your comments relating to Main Roads WA using the project nomination details as opposed to the approved works by the Federal Minister is disappointing as Main Roads WA position is based on the same approach used by ANAO during the preliminary assessment of WA projects. This is highlighted in the Albany Road project W03018 example where ANAO deemed that the project was not undertaken as per the project approval. The comment in the ANAO report was “No. Shoulder width 0.9m not 1m at the commencement of this project” which was based on the treatment description as contained in the nomination form and not the description in the Consultative Panel papers or the approval by the Federal Minister which referred only to “SEAL SHOULDERS / AUDIBLE EDGELINES”. In providing our original comment relating to the project scope Main Roads WA adopted the same principle as ANAO, that is, by referring to the nomination form as the source document to determine the works to be undertaken.<sup>173</sup>

The information provided to the Consultative Panel is a summary of the project nomination form (in this case a 12 page nomination). It is accepted that it would have been more appropriate that the construction of the turning pockets be included in the summary of the works to be undertaken, however, when the nomination details were summarised this did not occur. When considering projects the Consultative Panel are in effect considering the project nomination as submitted (which is available during the meeting). When assessing the scope it is always important to refer back to the nomination form as the source document –

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<sup>173</sup> ANAO considered both the project nomination and the approved description as part of the assessment of each project. However, after consideration of the comments provided by Main Roads WA, the assessment of project W03018 has been adjusted to ‘Yes. In accordance with approved description’ as the approved description did not specify the width of the shoulder seal. Accordingly, the total number of projects assessed as not being in accordance with the Federal Minister’s approval has been increased and reflected in the audit findings in paragraphs 69 and 6.19.

as ANAO did when undertaking the audit.<sup>174</sup> The other option would have been to repeat the full project treatment verbatim from the nomination form, and as repeated in full below, which would have been confusing for the Consultative Panel to work through.

***“Treatment to Reduce Drive Fatigue Related Crashes***

*Albany Highway is a major road linking Perth to Albany (400 km apart) and is sealed to two lanes and edged lined. It is not unusual for road users to travel long distances to their destination, hence drivers are often fatigued.*

*The installation of audible edge lines is an inexpensive treatment that will lead to a reduction of the number of fatigue related crashes.*

*However, for audible edge lining to be effective a sealed recovery area is required (ie, 1m sealed shoulder). The seal width of this section of road varies from 7.4 m and 7.8 m. It is proposed to construct a 2 m shoulder, sealing 1 m. This will enable the installation of effective audible edge lines.*

*In addition to reducing casualty crash costs, sealing the shoulders will reduce maintenance costs. (Refer to Tables 1 and 2)*

*An 1 m sealed shoulder will significantly reduce “drop offs” at the sealed edge. Vehicle wind turbulence and vehicles driving on the gravel shoulders cause “Shoulder Drop offs”. Excessive shoulder drop offs is a safety hazard that is controlled by regular shoulder maintenance. Widening the seal from 7.4 m to 9.0 m will not only provide a recovery area for vehicles meandering from the main driving lane onto the shoulder it will also reduce the frequency of shoulder maintenance.*

***Treatment to Reduce Crashes at Driveways to Grain Storage Facilities***

*Within this section of “open” road two driveways accessing Grain Storage Facilities are located within 200m of each other. Drivers at this remote high speed location don’t expect trucks to slow down to turn.*

*In order to reduce the collisions with trucks entering and exiting driveways at the Grain Storage Facilities turning pockets will be installed.”*

Main Roads WA agrees with the view of ANAO as described in the report

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<sup>174</sup> The ANAO methodology involved examining the project nomination forms as the essential underpinning for the project that was ultimately approved by the Federal Minister but, in terms of assessing whether approved works were delivered, the audit methodology had regard to the project approved by the Federal Minister which, by virtue of the legislative provisions, can differ from the project originally nominated for funding which, in this case, did not include turning pockets.

(paragraph 70) which states "...in that the estimated project benefits are integrally linked to the initial treatment proposed, as is the project cost estimate". The project cost estimate and estimated project benefits submitted to the Consultative Panel for the Albany Highway project were based on the full scope of works as per the nomination form. To portray the project as not including the turning pockets does not recognise the integral linkage between the scope, estimate and benefits. It also pays no regard for the fundamental objectives of the project. In addition the use of the words "extra work" as used in the ANAO report does not accurately reflect the fact that the project always included the three treatments.<sup>175</sup>

In summary the Albany Highway project approved by the Consultative Panel always included the turning pockets as evidence by the estimated benefits presented to the Consultative Panel, and hence Main Roads WA never considered that a modification to the scope of the project was necessary. Main Roads WA acknowledges that the words "construct turning pockets" were omitted from the papers presented. In recognising this Main Roads considers ANAO would adopt the same principle in this instance as that used by ANAO in the preliminary findings report, which is to refer to the project nomination details to determine what works formed part of the approved nomination.<sup>176</sup>

It is clear that the approach taken to the performance audit of the Albany Highway project confirms our view that traditional compliance audit philosophies have been adopted.<sup>177</sup>

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<sup>175</sup> As noted, the Federal Minister was not asked to approve a project involving turning pockets and this approval, as for other similar projects nominated in this year, did not include authorisation for Programme funds to be used on the construction of turning pockets.

<sup>176</sup> See footnote 174.

<sup>177</sup> The audit methodology is outlined at paragraphs 1.28 to 1.32.

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