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Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Eich cyf/Your ref
Ein cyf/Our ref DFM/0628/09

Gareth Jones
Chair of the Enterprise and Learning Committee
National Assembly For Wales
Cardiff Bay
Cardiff
CF99 1NA

25 June 09

Dear Gareth

Enterprise and Learning Committee Inquiry into Trunk Road Casualty Reduction and Trunk Road Management

Further to your Committee inquiry session on 4 June which my officials attended and gave evidence, I understand that your Committee has requested that further information be provided on:

- i. Details of the evaluation of road safety campaigns, in particular how initiatives are funded through Local Road Safety Grant and the Transport Grant for Safe Routes in Communities
- ii. A list of trunk roads in Wales where perceived and actual incidents occur
- iii. Figures on the safety of 3 lane and 2+1 lane trunk roads.

In regards to (i) I attach a report that is on the Welsh Assembly Government's website on the evaluation of the road safety grant. A contract to evaluate the Transport Grant for Safe Routes in Communities is due to be let shortly.

I attach a table for item (ii) and (iii). It is not possible to provide figures on the safety record for 2+1 lane trunk roads, as at present there are none in Wales.

Yours sincerely

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

Ieuan Wyn Jones
Gweinidog dros yr Economi a Thrafnidiaeth
Minister for the Economy and Transport

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Welsh Assembly Government

Evaluation of the Expenditure and Effectiveness
of the Road Safety Grant Issued to Local

Authorities: 2000-2007

Final Technical Report

December 2007

Halcrow Group Limited

Welsh Assembly Government

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Welsh Assembly Government

Evaluation of the Expenditure and Effectiveness of the Road Safety Grant Issued to Local Authorities: 2000-2007 Final Technical Report

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed
1	0	Draft Technical Report	Sep 07	BDM
1	1	Draft Technical Report	Oct 07	BDM
2	0	Final Technical Report	Dec 07	BDM

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1 Introduction

1.1 *Background*

1.1.1 Prior to the introduction of the Special Road Safety Grant in 2000, Local Authorities in Wales were able to fund road safety work in three possible ways:

- Transport Grant (TG) for major road engineering schemes;
- Transport Grant (TG) for Safe Routes to Schools;
- The Council's own resources for all other road safety work.

1.1.2 The Special Road Safety Grant was introduced in 2000 in response to concerns over the lack of direct funding for Road Safety schemes and its effect on casualty numbers. It is provided to local authorities each year by the Welsh Assembly Government to contribute towards solutions to road safety problems in their respective areas.

1.1.3 Since the grant was introduced in 2000, approximately £50m has been allocated via the Special Road Safety Grant. This included a £1.5m "Slower Speeds" Grant in 2002/03 and £2.1m for child pedestrian training prior to a separate grant from 2005/06 onwards. The annual sum has risen from £3.66m in the initial year, 2000/01, to £7.52m in 2007/08. The grant is in addition to local authority highway and traffic engineering budgets.

1.1.4 Local authorities are required to submit annual reports of projects undertaken using the grant, including before and after monitoring of collision statistics. These reports can be evaluated to examine expenditure for the most recent year, currently 2006/07, and to examine the effectiveness of the grant since its introduction in 2000. The intention is to build a year-by-year profile of all schemes implemented since the grant was introduced.

1.2 *Changes to the Reporting Procedure*

1.2.1 The requirement for local authorities to provide paper submissions and supporting documentation ended following the submission of reports in 2005. For schemes implemented in 2005/06, local authorities were requested to complete monitoring spreadsheets electronically and return them by e-mail. Inevitably some queries

were raised following the transition to electronic reporting and, as a consequence, a record of feedback was prepared which formed the basis of improvements to the monitoring procedure this year.

1.2.2

Means of improving the value of data are continually being sought. The following key improvements have been made to the reporting procedure in addition to those listed in the report of feedback:

- **Index of Multiple Deprivation (IMD):** The reporting of schemes within Communities First areas has been replaced with the IMD score for each scheme. The aim is to improve our understanding of the correlation between road safety expenditure and more deprived areas.
- **Removal of Engineering Scheme Cost Thresholds:** In previous years local authorities have provided collision and casualty records for all engineering schemes over £15,000. This threshold has been removed and local authorities are requested to provide collision and casualty records for all engineering schemes implemented in 2006/07 regardless of cost.

1.3

1.3.1

Structure of Report

The analysis of Special Road Safety Grant expenditure is undertaken in Chapters 2 and 3. Chapter 2 reviews the expenditure on Education, Training and Publicity (ETP) initiatives including a detailed review of the target age range of each scheme type, the evaluation methods adopted and their respective results. Chapter 3 analyses the expenditure on engineering schemes, providing a comparison with expenditure in previous years. Chapter 4 summarises the effectiveness of engineering schemes implemented since 2000. This includes a review of collision statistics in the vicinity of treated sites before and after the introduction of remedial measures. Chapter 4 also provides a financial summary of the schemes. The report concludes in Chapter 5 by summarising the key findings and making recommendations for future expenditure and monitoring.

1.4

Document Review

Road Safety Strategy for Wales (2003)¹

1.4.1

The Road Safety Strategy for Wales was published in January 2003. The vision for the strategy is to ‘reduce real and perceived danger on Welsh roads in order to promote safe and sustainable access for all members of society’. Accordingly, since 2003, local authorities have been asked to take into account the actions identified in the strategy and how they can help deliver them when allocating the grant in their area.

1.4.2

The strategy identifies how road safety can contribute to the strategic objectives of the Transport Framework for Wales by:

- Improving safety for children – especially as pedestrians and cyclists;
- Promoting safe use of “vulnerable” transport modes – walking, cycling, motorcycling and horse riding;
- Reducing excessive and inappropriate speed of motor vehicles;
- Targeting other poor driving practices – use of mobile phones, drink-driving, drug-driving and driving whilst tired.

1.4.3

The strategy has set ambitious targets for casualty reduction by 2010 compared to the average for 1994-1998:

- 40% reduction in the total number of killed or seriously injured (KSI) casualties;
- 50% reduction in the total number of child KSI casualties;
- 10% reduction in the rate of slight casualties per 100 million vehicle kilometres travelled.

1.4.4

The strategy identifies three organisations as having the ultimate responsibility for delivering the objectives and targets of the strategy: local authorities, Welsh Assembly Government and the police. However, the purpose of the strategy is to ensure that everyone, either as individuals or organisations, play a part in implementing the actions needed to improve safety on Wales’ roads.

¹ Road Safety Strategy for Wales (*Welsh Assembly Government, January 2003*).

Road Casualties in Wales, 2006²

- 1.4.5 This Statistical Release analyses the road accident database for Wales, held by the Welsh Assembly Government Statistical Directorate. This volume covers the calendar year 2006 but also provides some historical data.
- 1.4.6 The statistics are based on personal injury collisions on public roads reported to the police and forwarded to the National Assembly for Wales. The results act as a base from which comparisons can be drawn with schemes implemented using the Special Road Safety Grant to identify the impact of the grant in reducing casualties.
- 1.4.7 The key results for 2006 were:
- There were 8,701 road collisions involving personal injury recorded by the police in Wales;
 - These collisions resulted in 12,692 casualties, 41 (0.3%) less than in 2005;
 - There were 1,373 killed or seriously injured casualties in 2006, 47 (3.5%) more than 2005.
- 1.4.8 The report provides a comparison of the statistics against national targets for 2010 which were introduced in 2000. The targets are based on the average for 1994-1998:
- By 2006 the number of people killed or seriously injured was 32% lower than the average for 1994-1998;
 - By 2006, the number of children killed or seriously injured was 50% lower than the 1994-1998 average;
 - There was an estimated³ reduction of 24 per cent in the number of people slightly injured during 2006 compared to the average for 1994-98.

² Road Casualties in Wales, 2006. First Release (28th June 2007) Statistical Directorate, Welsh Assembly Government

³ 2006 road traffic data for this target are not yet available. The estimate is based on 2005 traffic volume data.

1.4.9 Assessing the Casualty Reduction Performance of Local Highway Authorities⁴
The report identifies differences in approach between the better performing Local Highway Authorities and others. The key findings of the study were that better performing authorities:

- Are those whose strategic aims make clear reference to road safety;
- Have a culture of casualty reduction, the poorer ones do not;
- Coordinate all work on the highway network, in particular, schemes relating to safety and maintenance. The officers also actively seek external sponsorship to enhance low-cost initiatives, usually associated with education, training and publicity (ETP).
- Have Road Safety Engineers working closely with Road Safety Officers, ETP staff, the police and other groups to deliver casualty reduction on an objective basis;
- Use their collision databases in an appropriate way to make an objective judgment of where casualty reduction funding can be spent most effectively;
- Carry out monitoring on an overall and project-by-project basis. Monitoring enables them to assess and evaluate past projects to give a beneficial input to new projects.

1.4.10 Guidelines for Evaluating Road Safety Education Interventions⁵
Education measures are an important part of an overall strategy to improve road safety and meet Government targets, particularly the target to halve the number of children killed or seriously injured by 2010.

1.4.11 The document is based on the premise that evaluation is important to establish the effectiveness of interventions at improving road user safety and how they can contribute towards Best Value Indicators for Local Authorities. This document establishes good practice guidelines in the delivery of road safety education and offers guidance on the appropriate types of evaluation and the methods to be employed when evaluating an initiative.

⁴ Assessing the Casualty Reduction Performance of Local Highway Authorities (*Department for Transport, August 2004*)

⁵ Guidelines for Evaluating Road Safety Education Interventions (DfT, August 2004)

1.4.12 The guidelines are based on a review of recent developments in evaluation techniques and more established measures in the fields of education, health and safety research. Advice is also included from evaluators who have tested the techniques on a number of innovative Road Safety Education programmes.

1.4.13 The Guidelines are intended to assist road safety practitioners when conducting their own evaluations. Therefore, the Guidelines were recommended to local authorities following the issue of the 2005/06 Road Safety Grant evaluation in December 2006.

2 Education, Training and Publicity Initiatives 2006-07

2.1 *Expenditure on Education, Training and Publicity*

2.1.1 Education, Training and Publicity (ETP) initiatives cover a variety of disciplines and target groups. They play an essential role in collision reduction by raising awareness and changing the perception that all road users have towards road safety.

2.1.2 In 2003-04, the proportion of the Road Safety Grant spent on ETP initiatives was 17%. For 2004-05 onwards, local authorities were encouraged to spend more on ETP schemes. The Welsh Assembly Government recommended that local authorities allocate 20% of the Road Safety Grant to ETP initiatives to promote a holistic approach to road safety. Expenditure on ETP by each local authority as a percentage of their total grant allocation since 2004/05 is shown in **Table 2.1**. Red numbers show where local authorities spent less than 20%, green numbers show where local authorities spent 40% or more on ETP.

2.1.3 As part of the local authority reporting requirements, staff costs are considered separately to ETP expenditure. However, staff costs often represent the greater proportion of the total cost of some ETP initiatives. To allow a meaningful comparison to this element of the evaluation, all ETP and staff costs have been combined.

2.1.4 The following bullets provide a summary of the key results from **Table 2.1**:

- The percentage of the grant spent on ETP initiatives has increased for the fourth consecutive year. Indeed, 29% of the grant was spent on ETP initiatives in 2006/07, compared to 28% in 2005/06, 25% in 2004/05 and 17% in 2003/04;
- Eight Local Authorities have demonstrated a year-on-year increase in the percentage of their allocated grant spent on ETP initiatives;
- Eleven authorities have spent more than 20% of their allocation on ETP measures for three consecutive years;

- In 2006/07, only two authorities spent less than 20% of their allocation on ETP initiatives compared to six authorities in each of the previous two years. In both cases the recommended 20% was missed by only 1%;
- No local authorities have spent less than 20% for three consecutive years;
- Five authorities spent 40% or more on ETP initiatives. Neath Port Talbot have spent more than 40% of their allocation on ETP for three consecutive years.

2.2

2.2.1

Expenditure on ETP Scheme Types

ETP initiatives have been grouped into categories of similar types. **Table 2.2** shows the expenditure on each scheme category, by local authority in 2006/07, and shows the amount spent on that scheme as a percentage of all ETP expenditure. The results are summarised below:

- Local authorities in Wales use the grant to fund a wide range of ETP initiatives. Some ETP schemes span numerous authorities, such as the Children's Traffic Club, Pass Plus and Theatre in Education. However, most local authorities also have their own unique schemes which they fund from the grant;
- The greatest expenditure is on Pass Plus, which includes both Pass Plus Cymru and the original Pass Plus scheme. This is due to the following reasons: 1) The promotion of Pass Plus Cymru by Road Safety Wales and the Welsh Assembly Government; 2) The £40 increase in subsidy between Pass Plus Cymru and Pass Plus; 3) The overlap between the phasing out of Pass Plus and the introduction of Pass Plus Cymru.
- The second highest expenditure is on Theatre in Education, which delivers a general road safety message. Theatre in Education also delivers a drink/dangerous driving message, considered separately in **Table 2.2**;
- Many individual schemes implemented by numerous authorities are heavily funded, such as the Children's Traffic Club, Pass Plus, Junior Road Safety Officer, Theatre in Education and Pre-Driver Initiatives (including Megadrive).

Pass Plus and Pass Plus Cymru

A disproportionate number of collisions occur in Wales involving young people aged 17-25. Road Safety Wales, with the support of the Welsh Assembly Government, are encouraging young drivers to become better drivers to reduce collisions and casualties.

*Pass Plus Cymru*⁶ has been established to develop better driving skills, increase awareness of potential hazards and widen the experience of different road situations in young drivers. The scheme, supported by the Welsh Assembly Government and the Driving Standards Agency, is available to young people in Wales for just £20. Road Safety Wales are promoting the scheme through a principality-wide marketing tool-kit, funded by the Welsh Assembly Government.

Pass Plus Cymru was introduced in June 2006 with the intention of gradually replacing its predecessor, *Pass Plus*. Both courses were operated by some local authorities in 2006/07 prior to the phasing out of the original Pass Plus initiative. The advantage of Pass Plus Cymru is the addition of a group interactive three-hour theory session in addition to intensive practical in-car training. Local Authorities subsidise Pass Plus Cymru to the sum of £100 per person compared to £60 for Pass Plus.

2.3

2.3.1

Comparison of Expenditure (2004/05 – 2006/07)

There are some clear differences between the expenditure on ETP initiatives since 2004/05. These are demonstrated in **Table 2.3** and summarised in the following points:

- The greatest expenditure over the last three years has been on Pass Plus and Pass Plus Cymru. The second highest expenditure has been on Theatre in Education which delivers a general road safety message. Theatre in Education also delivers a dangerous/drink driving message which is considered separately. Theatre in Education has the greatest expenditure of all scheme types when the expenditure is aggregated for both target audiences;

⁶ Evaluation of the results of Pass Plus Cymru are given in Table 2.7.

- Consistently high expenditure is evident on well established schemes such as the Children's Traffic Club, Theatre in Education, Pass Plus and Junior Road Safety Officer's Scheme;
- There is a marked increase in expenditure on Pass Plus for reasons given in 2.2.1, bullet 2;
- There has been a year-on-year increase in expenditure on the Junior Road Safety Officer's Scheme, pre-driver assessments (e.g. Megadrive) and young driver initiatives (excluding Pass Plus);
- There has been a large increase in expenditure on some types of scheme which had little funding in 2004/05, such as car seat and seat belt checks and website design. In 2004/05, only Wrexham spent part of their grant allocation on car safety seat initiatives at a cost of £10,513. The Welsh Assembly Government launched a child car seat campaign in June 2005 and local authorities supported this by arranging car seat checks in their respective areas. In 2005/06, a total of seven authorities implemented car safety seat or seat belt checks at a total cost of £31,188. In 2006/07, seven authorities also implemented such schemes but at an increased cost of £48,591.
- Expenditure on general publicity has fluctuated over the last three years. £125,000 was spent on publicity from the 2006/07 grant, a reduction of 39% from 2005/06. There has also been a fluctuation in expenditure on road safety vehicles, trailers and mobile units, which could also be categorised as publicity.

2.4

2.4.1

Target Age Groups

As part of their monitoring submissions, local authorities are required to specify the target age group of each ETP scheme implemented in a given year. All ETP schemes implemented in Wales using the grant in 2005/06 and 2006/07 have been placed into the most appropriate category in **Table 2.4**. The total expenditure on schemes directed at each age group has been calculated and the results are summarised below:

- It is evident that local authorities are targeting ETP investment at schoolchildren, particularly below the age of eleven. Indeed, 95 ETP

schemes for 3-11 year olds were funded by the grant in 2006/07 with 37 of these directed at pre-school children;

- A total of 19% of all ETP expenditure is on young people and young adults between the ages of 16 and 25. This is largely attributable to the Megadrive scheme, which aims to promote positive attitudes to the responsibilities of driving in pre-drivers, and to the Pass Plus Cymru scheme, which improves driving standards in newly qualified drivers;
- Expenditure on adult targeted schemes covered a wide range of initiatives including publicity campaigns, car seat checks, cycle initiatives and older driver assessments;
- There is relatively low ETP investment in secondary schools in Wales, possibly due to ongoing curriculum commitments. This is concerning given that, in the UK as a whole, the number of children killed and seriously injured as pedestrians and cyclists peaks in early secondary school⁷. It could be argued that targeting children in the final years of primary school should equip them for their early secondary school years, however the disparity between the number of primary and secondary school initiatives is apparent. Local authorities were made aware of this disparity following the evaluation of the Grant in 2005/06.

2.4.2

It can be argued that, as the results presented in **Table 2.4** are based on simple analytical assumptions regarding the allocation of schemes to fixed categories, there is a danger that the proportion of ETP expenditure on some age groups could be misrepresented. A second method of analysis has been devised to test the results shown in **Table 2.4**. A tally chart was created with all ages between 3 and 65 represented as individual categories. A 'tick' was added to each year targeted by an ETP initiative implemented in 2006/07. The total for each age was summed and the results are shown in **Figure 2.1**.

2.4.3

The results of **Figure 2.1** support the conclusions of **Table 2.4** and provide clear evidence that fewer ETP initiatives are targeted at 12 to 16 year olds compared to younger children (3-11) and young adults (17-25). The age targeted by the greatest

⁷ Paragraph 4.27, Road Safety Strategy for Wales (*Welsh Assembly Government, January 2003*).

number of ETP initiatives is 17 year olds. This is understandable due to the widespread implementation of pre-driver assessments, such as Megadrive, which target 16-17 year olds, and young driver assessments, such as Pass Plus Cymru, which target 17-25 year olds.

2.5

Links with Engineering Schemes

2.5.1

A combined approach between engineering and ETP initiatives is implicitly promoted in the Road Safety Strategy for Wales. For example, the strategy states that speed campaigns should be holistic and involve a combination of education, publicity, engineering, environmental design and enforcement. The strategy explains that, to effectively change drivers' behaviour to achieve a reduction in vehicle speeds, publicity and encouragement should be integrated with engineering measures or enforcement campaigns.

2.5.2

For the 2006/07 submissions, 12% of all ETP initiatives specified a link to an engineering scheme. For publicity campaigns, linkages are primarily recorded as newsletters with information about specific engineering schemes. Educational links are more wide-ranging.

2.5.3

The monitoring spreadsheets were amended following the poor quality of response to this question from the 2005/06 submissions. The changes are described in section 1.2. It appears the interpretation of this question remains inconsistent. In some instances 'no' appears to have been selected as default, yet, in contrast, some authorities identify linkages from almost all ETP initiatives to an engineering scheme, with many linkages appearing questionable. Consideration should be given to the relative value of these responses and to ways of obtaining more meaningful data.

2.5.4

A new addition to the monitoring spreadsheets in 2006/07 is the reporting of opposite linkages, i.e. links to ETP initiatives from engineering schemes. A total of 17% of all engineering schemes were recorded as being linked to an ETP initiative. The majority of these linkages were from engineering measures implemented outside schools, particularly new footway schemes near schools in Gwynedd and Isle of Anglesey, and 20mph schemes, markings and signs in Rhondda Cynon Taf, Merthyr Tydfil, Neath Port Talbot and Swansea.

Example of Good Practice: ETP/Engineering Linkages in Merthyr Tydfil

Merthyr Tydfil have demonstrated how 20mph schemes can be planned in tandem with education and publicity initiatives to maximise the potential benefits the schemes provide. The following example refers to two 20mph schemes: one recently implemented in Troedyrhiw and a proposed scheme outside Edwardsville Primary School.

Merthyr Tydfil set out how the authority intends to contribute towards the reduction of road accident casualties through the production of a **Road Safety Strategy**. This is a planned approach to road safety, using a combination of engineering, education, promotion and enforcement measures. A **Microcomputer Accident Analysis Package (MAAP)** identifies the most vulnerable road users in the authority, which helped to select the schemes in Edwardsville and Troedyrhiw.

Initiatives implemented in Edwardsville and Troedyrhiw Primary Schools to support the 20mph schemes include the **'Tiny Giants' Theatre in Education initiative**, delivering a message to school children that they are responsible for their own actions and not to take risks. Additional Theatre in Education topics were aimed at older children at schools in the area to demonstrate the dangers of reckless and unsafe driving, of distracting the driver, losing concentration and the consequences of speeding. **'Kerbcraft'** has also been undertaken at both schools to teach pedestrian training to children at a young age and both schools are operating a **'Walk to School'** initiative.

2.6

2.6.1

Evaluation Methodology

All authorities are required to provide details of the methodology used to evaluate ETP initiatives and provide a brief summary of the results. Every ETP scheme implemented by each authority has been assigned to a category which best reflects the evaluation methodology. The numbers of schemes in each category have been summed and the results are presented in **Table 2.5**. For some schemes it was not clear what type of evaluation was undertaken. These schemes have been removed from the analysis. The key points are summarised below:

- Over a quarter (26%) of schemes implemented using the grant in 2006/07 were evaluated by simply counting the number of people engaged in a given scheme or the number of people reached by publicity. Such techniques do not necessarily evaluate the success of schemes at accomplishing their objectives as no assessment or evaluation of the

initiative itself is undertaken. However, in 2006/07 a greater number of schemes were evaluated using a more robust methodology;

- Similarly, observations and anecdotal evidence, which was used to evaluate 16% of schemes, may provide an impression of the success of the scheme but there is no tangible evidence to support it;
- A total of 38% of all schemes were evaluated through the use of a questionnaire, feedback form or survey. This was the most widely used evaluation methodology;
- Only 3% of schemes were evaluated by some form of assessment;

2.6.2

The evaluation methodology has been examined further for selected schemes widely implemented in 2006/07, as the high sample sizes and established evaluation techniques are likely to lend themselves to more meaningful analysis. The results are described in **Table 2.6** and summarised below:

- Some schemes have a clear evaluation technique such as a participant questionnaire for the Megadrive scheme, and the use of questionnaires and feedback forms for Theatre in Education;
- The JRSO scheme has a wide range of evaluation techniques, which are implemented depending on each authority's preference;
- Pass Plus Cymru is monitored by MAC⁸, the scheme creators, through the use of a participant questionnaire. However, it appears that few local authorities have seen the results from 2006/07. The evaluations carried out by MAC have the potential to shed light on the effectiveness of this scheme and local authorities should ensure they receive the results of all evaluations and include them in future monitoring submissions.

2.6.3

The Welsh Assembly Government wish to improve the way ETP schemes are evaluated in future years. Indeed the Special Grant Report issued to local authorities in March 2006 referred them to the Department for Transport

⁸ MAC is a consultancy that provides advice on road risk management, driver development for corporate users and road health and safety.

publication “Guidelines for Evaluating Road Safety Education Interventions⁹”, to assist with the effective evaluation of ETP schemes funded through the grant. There is some evidence that this guidance has influenced the evaluation techniques of some local authorities. For example, Neath Port Talbot and Powys have established focus groups to evaluate the effectiveness of numerous ETP schemes. Focus groups are one of a group of techniques evaluated within the guidance document.

Example of Good Practice: Focus Groups in Neath Port Talbot

Focus groups allow the Neath Port Talbot Road Safety Unit to evaluate its achievements, or otherwise, in order to construct future initiatives in a more meaningful manner. Focus groups ask open ended questions which are useful when examining the attitudes and opinions of groups. The advantage of a focus group is that the comments of one participant may stimulate the ideas of others.

Pass Plus Cymru Focus Group

The Group consists of representatives from Mid & South West Fire Service, Pass Plus Cymru Candidates and the Neath Port Talbot Road Safety Manager.

Theatre in Education

The Group consists of Road Safety Representatives and Teachers in secondary education. The group was set up in order to gauge the impact of the initiative on secondary school age pupils.

School Travel Plan Focus Group

A Working Group is formed in each school and consists of the Head Teacher, Councillors, parents, PTA Representatives, pupils of the school and a member of the Road Safety Unit.

Safe Routes to School Co-ordinator

A Group was formed to promote the ‘Safe Routes to School’ ethos, provide support for initiatives and assess local issues around the schools. This group consists of Road Safety Representatives, the Safe Routes to School Coordinator and representatives from the Engineering Department.

Promotions & Competitions

⁹ Guidelines for Evaluating Road Safety Education interventions (DfT, August 2004)

The Road Safety Manager, Education Department and media groups meet regularly to discuss the viability of promotions and competitions throughout the county borough.

Crucial Crew

The Group consists of Community Safety Representatives, schools and outside agencies.

2.7

Evaluation Results

2.7.1

The monitoring submissions provided by each local authority contain the evaluation results of each scheme in isolation. A summary of each of the scheme types implemented across many authorities is presented in **Table 2.7** and summarised below:

- There are some clear differences in participation numbers for some schemes across Wales. Pass Plus Cymru, for example, had 130 participants in Gwynedd by only 3 in Blaenau Gwent, despite heavy promotion;
- Some local authorities appear to have difficulty attracting or retaining interest from young adults to complete young people's driver training courses. For example, only approximately half of the registered attendees actually undertook the Megadrive course in two authorities;
- Schemes aimed at younger pupils, such as the JRSO scheme and Children's Traffic Club, reported evidence of improved knowledge and heightened awareness;
- Following Theatre in Education productions, some authorities reported that themes had been followed up by teachers later in the year and important messages had been retained.

2.8

Staff Appointments

2.8.1

A total of 47 posts were funded, or part-funded, by the Special Road Safety Grant in 2006/07 at a total cost of £735,113. The monitoring results describe only the staff costs funded by the Road Safety Grant, which fall into one of the following categories:

- Full-time or part-time staff employed exclusively for ETP purposes, salary funded exclusively by the Road Safety Grant;

- Full-time or part-time staff employed exclusively for ETP purposes, salary part-funded by the Road Safety Grant;
- Full-time or part-time staff not employed exclusively for ETP purposes, Road Safety Grant funds the ETP element of their role on a pro rata basis;
- Full-time or part-time staff not employed for ETP, but assist with ETP tasks outside of normal working hours. The Grant is used to 'top-up' wages for overtime worked on ETP tasks.

2.8.2

The appointments funded by the Grant are shown in **Table 2.8** and summarised below:

- Five local authorities formerly of Gwent County employ a single consultant to coordinate their ETP initiatives. A team of ETP practitioners including two 'Special Project Officers' has been established who share their time between special projects in each of the authorities. Strategies for the forthcoming year are agreed with each local authority early in the year following knowledge of their impending Road Safety Grant allocation. Meetings are arranged at regular intervals throughout the year to monitor progress.
- The 'ETP Special Project Officers' job description includes responsibilities for the management of one or more of the following projects: Early Years, Children's Traffic Club, Junior Road Safety Officers, Megadrive, Website, Student Lecture, Music Challenge, Pass Plus Cymru and cycling schemes.
- There were eleven 'Road Safety Officers' funded by the Grant. Their responsibilities overlap those of the 'ETP Special Project Officers', particularly the coordination of ETP projects. However, their role encompasses wider management responsibilities, often including the control of budgets, developing structured education and training programmes, management of a team, developing road safety strategies, analysing collision statistics and monitoring the effectiveness of schemes.
- A 'ring-fenced' fund, which is separate from the Road Safety Grant, is allocated to each local authority to implement Kerbcraft child pedestrian training schemes. However, there were five Kerbcraft Coordinators and an additional four Assistant Coordinators funded by the Road Safety Grant in 2006/07. Caerphilly employs two full-time Kerbcraft Coordinators and four part-time Assistant Coordinators funded by the

Grant. Caerphilly has found the scheme to be highly effective and has used the Grant to expand the scheme to a wider audience than the ring-fenced fund allows. The Grant enables Caerphilly to train approximately half the year 1 children in the county.

- Three local authorities confirmed that no staff were appointed using the Grant in 2006/07.

3 Engineering Scheme Expenditure 2006-2007

3.1 *Expenditure by Unitary Authority*

3.1.1 The categories of engineering schemes used in the analysis relate to the list included in Chapter 5 of the RoSPA Road Safety Engineering Manual¹⁰. There are occurrences where initiatives undertaken by authorities do not fit naturally with the remedial treatments listed by RoSPA and additional categories have been created to accommodate these.

3.1.2 The sum of expenditure on each scheme type by all authorities has been calculated and the results are shown in **Table 3.1**. The key findings are summarised below:

- The scheme type entitled ‘Package of Measures’ describes a location where combinations of two or more individual measures are implemented simultaneously to remedy a road safety problem. ‘Packages of measures’ in a single location has a higher proportion of the Grant allocated to them than any single measure.
- Junction improvements, footway improvements and controlled crossings are the individual measures allocated the greatest proportion of grant. However, the average cost of a controlled crossing is less than half the average cost of junction improvement schemes. Junction improvements represent 15% of total expenditure but only 4% of the total number of schemes.
- The Welsh Assembly Government has recommended that 20mph schemes be introduced, where appropriate. A total of 36 schemes of this type were implemented at a total cost of over £470,000. The average cost per scheme remained low at £13,000.

¹⁰ Road Safety Engineering Manual. The Royal Society for the Prevention of Accidents (RoSPA)

- There was considerable expenditure on other lower cost schemes, such as anti-skid surfacing, warning signs and markings & signs. Road markings and speed reductions were other widely used lower cost measures.

3.2

Comparison of Expenditure (2004/05 – 2005/06)

3.2.1

A comparison is made in **Table 3.2** between the expenditure on different engineering scheme types in 2005/06 and expenditure in 2006/07. Only schemes over £15,000 were available for 2004/05 and have not been included in this analysis. The key findings are summarised below:

- In the two-year period April 2005 to March 2007, over £10 million of Road Safety Grant funding has been spent on 519 engineering measures at an average cost of £20,426;
- The highest number of schemes of a single type implemented in the two year period were 20 mph schemes (73 schemes), closely followed by warning signs (65);
- Junction improvement schemes and traffic calming were the single measures allocated the greatest expenditure with £1.6 million and £1.1 million respectively. Combined, these scheme types have had 26% of the total engineering expense allocated to them;
- Anti-skid surfacing and markings and signs have been implemented more widely in 2006/07 compared with 2005/06. However, controlled crossings and footway improvement schemes have been allocated the greatest increase in cost allocation.

3.3

Index of Multiple Deprivation

3.3.1

A new addition to the monitoring process for 2006/07 is the inclusion of the Index of Multiple Deprivation (IMD). Local authorities were requested to provide the ‘overall’ IMD score for the Lower Super Output Area (LSOA) containing the engineering scheme to understand the relationship between the location of road safety expenditure and more deprived areas.

3.3.2

There are 1896 LSOAs in Wales with overall IMD scores between 1.4 and 78.9, 1.4 being the least deprived and 78.9 the most deprived. The LSOAs have been split into seven categories, by score. The Road Safety Grant funded engineering schemes in 2006/07 have been allocated to the respective category to understand

the number of scheme types and average expenditure on LSOAs within each band. The sample size for this analysis is 168, which is lower than the total of 245 engineering schemes implemented in 2006/07. The difference is primarily due to difficulties experienced by local authorities locating schemes within LSOA boundaries. The results are shown in **Table 3.3** and illustrated in **Figure 3.1**. A summary of the key findings are described below:

- There is no clear bias towards areas with a higher or lower IMD score regarding either the number of engineering schemes implemented or the amount of Grant expenditure;
- Average expenditure per LSOA peaks in areas with an IMD score between 30 and 40, with average expenditure approximately double that for areas with the highest and lowest IMD scores;
- Conversely, the number of schemes implemented per LSOA peaks in areas with a score between 50 and 60, areas considered to be more deprived than the average area;
- Examination of individual schemes shows that a junction signalisation implemented by Denbighshire, at a cost of £52,000, was the scheme in the most deprived area, in Rhyl West, with an IMD score of 77.4;
- No further schemes were implemented in LSOAs with an IMD score greater than 62.2. The scheme in an area scoring 62.2 was a Variable Message Sign implemented by Blaenau Gwent in Tredegar;
- The only additional engineering scheme implemented in an area with an IMD score greater than 60 was a 20mph scheme implemented by Swansea outside a school in Mynyddbach.
- Future work could compare the effectiveness of schemes at reducing collisions and casualties in the least deprived areas against the effectiveness of similar schemes in more deprived areas. It would be pertinent to explore the benefits of this knowledge against the costs of acquiring it.

4 Grant Effectiveness (Outcomes) of Engineering Schemes 2000-06

4.1 *Scheme Effectiveness*

4.1.1 Each local authority is required to provide monitoring data for engineering schemes implemented using the Special Road Safety Grant since its introduction in 2000. Personal Injury Collision (PIC) and Killed or Seriously Injured (KSI) Casualty statistics are requested for a three year period before implementation of each scheme and annually thereafter up to a maximum of 3 years. At least one year of post implementation records must be available for meaningful analysis. Therefore, post implementation statistics are only available for schemes up to the end of financial year 2005/06.

4.1.2 **Tables 4.1** and **4.2** show engineering scheme categories and their effectiveness at reducing PICs (**Table 4.1**) and KSIs (**Table 4.2**) during the period 2000-06. The values in **Table 4.1** sum the annual average collision and casualty savings for each scheme type between 2000 and 2006. The collision and casualty data from 3 years before the implementation of each scheme has been divided by 3 to provide an annual average. Up to 3 years collision and casualty data after the implementation of each scheme has been divided by the number of years provided to give an annual average after the implementation of the scheme. All data is for the closest full 12 month periods before and after implementation.

4.1.3 In previous years, analysis has been undertaken on engineering schemes over £15,000 only. This threshold has been removed to include schemes under £15,000. However, reliable data for schemes under £15,000 is only available from 2005/06. In summary, the sample of engineering schemes for analysis includes:

- Engineering schemes over £15,000, implemented between 2000-05;
- All engineering schemes, regardless of cost, implemented between 2005-06.

4.1.4 Examination of **Tables 4.1** and **4.2** shows that:

- A total of 615 schemes were assessed for the period 2000-06, compared to samples in previous years of 390 for 2000-05 and 134 for 2000-04;

- The 615 schemes save an annual average of 346 PICs and 94 KSIs, representing a 46% annual average reduction in PICs and 52% annual average reduction in KSIs;
- Road Improvements, 20mph limits and anti-skid surfacing reduced PICs by more than 75% and an additional five scheme types reduced PICs by more than 50%;
- No scheme type experienced an increased number of PICs following implementation;
- There is evidence of a negative correlation between the quantity of scheme types and the percentage reduction in KSIs. However, an individual scheme could have a disproportionate influence on the overall results for that scheme type within a small sample;
- Two scheme types, 20mph limits and mini roundabouts, reduced KSIs by 100% and an additional seven reduced KSIs by more than 75%. No scheme type experienced an increased number of KSIs following implementation;
- 20 mph zones demonstrate a minor reduction in KSIs. Further examination of local authority monitoring returns show that one authority implemented ten schemes of this nature in 2005-06 with a total of six KSIs during the three year period before their implementation (annual average of 2), yet a total of eight KSIs in the one year since implementation (annual average of 8). The results from this local authority have skewed the overall performance of 20mph schemes. It should be noted that 20mph zones previously implemented by this authority have reduced KSIs, and 20mph zones implemented by numerous other authorities have also reduced KSIs. Without the inclusion of the ten schemes, the results show that 20mph zones reduce both collisions and casualties by 44%.
- Interestingly the ten schemes mentioned above reduced annual average PICs by seven contributing to an overall reduction in PICs of 39% for 20mph zones. Similar trends have occurred elsewhere. Anti-skid surfacing, for example, reduced PICS by 77% but KSIs by 57%.

Conversely, pedestrian refuges reduced PICs by only 15% but KSIs by 80%.

- Warning signs demonstrate a reduction in PICs and KSIs of 44% and 77%. However, a decision has been made to exclude from the analysis four vehicle activated signs purchased by Wrexham, which in previous years have contributed to increased, and arguably inflated, results. These signs are moveable and rotated throughout various sites on a fortnightly basis and, as such, their contribution to annual collision and casualty records in each location is difficult to monitor in the context of this report.

4.2

Grant Effectiveness by Scheme Type

4.2.1

This chapter demonstrates the value for money achieved by each scheme type by calculating the return on investment in the form of First Year Rates of Return (FYRR). The results are presented in **Table 4.3**. A cost has been assigned to the collision savings achieved by each scheme type according to the average 'all injury' value provided in **Table 4a** of the Highways Economic Note (HEN) No.1 2005¹¹. The HEN provides cost estimates for road collisions by severity: fatal, serious and slight. The average value of preventing a collision is £64,440, based on the following elements:

- Loss of output due to injury;
- Ambulance costs and the costs of hospital treatment;
- Human costs.

4.2.2

The key findings from **Table 4.3** are summarised below:

- All scheme types demonstrate a positive return on investment;
- A total of 11 scheme types provide a total return on investment (100% or more) within one year. A further three schemes provide a return on investment of between 50% and 100% suggesting that the scheme might provide a full return on investment after the second year;

¹¹ Department for Transport, Highways Economic Note No.1: 2005. Valuation of the Benefits of Prevention of Road Accidents and Casualties.

- A number of lower-cost schemes achieve a high return on investment. The best performing scheme type in terms of value for money is anti-skid surfacing with a FYRR of 479%. This suggests that local authorities would achieve an average 479% return on their investment in the first year for each anti-skid treatment implemented. The second and third best performing schemes are also low cost schemes. Warning signs and markings and signs provide returns of 357% and 276% respectively;
- A comparison of **Table 4.3** with **Tables 4.1** and **4.2** demonstrates some clear differences between schemes that significantly reduce collisions and casualties and those which represent good value for money. For example, markings and signs and warning signs are the 11th and 12th best performing schemes at reducing collisions, but provide the 2nd and 3rd best returns on investment;
- Conversely, mini roundabouts have saved 100% of KSIs but provide a low rate of return of just 41%;
- Some schemes perform well in both tables, such as anti-skid surfacing.

4.3

Comparison with National Casualty Trends

4.3.1

Monitoring records of all engineering schemes funded by the Road Safety Grant in the financial year 2005/06 have been updated to include collision and casualty statistics for the first year since completion. These records provide the most recent available data with complete before and after statistics for use as a comparison with national trends.

4.3.2

The document 'Road Casualties in Wales, 2006 (see 1.4) provides a detailed analysis of road collisions reported to the police in 2006. Some of the key statistics can be used to compare the impact that the Special Road Safety Grant has on casualty statistics nationally.

4.3.3

Direct examination of the impact of the road safety grant on national casualty reduction is difficult because:

- Road Safety Grant funded schemes were implemented in the financial year April 2005 to March 2006, whereas 'Road Casualties in Wales' provides statistics for the calendar year 2006;

- The impact of Education, Training and Publicity initiatives are not taken into account.

4.3.4

The results below show the number of KSI casualties in Wales in 2006 and the reduction from the previous year. Also shown are the number of KSI casualties saved from engineering schemes implemented using Road Safety Grant funding in 2005/06. The latter was calculated by subtracting the total KSIs recorded during the first year after the implementation of schemes from the annual average KSI casualties before the implementation of the schemes.

- KSI casualties on roads in Wales in 2006 = 1373
- Change in KSI casualties on roads in Wales (2005–2006) = +47
- Number of engineering schemes using RSG funding 2005/06 = 245¹²
- Average annual KSI's prior to implementation = 65.0
- KSIs during first year after implementation = 34.0
- KSI savings (2005–2006) = 31.0

4.3.5

Principality-wide KSI casualties increased by 47 in 2006 when compared to 1326 in 2005¹³. However, an annual reduction of 31 KSI casualties was calculated for the first year following the implementation of 245 engineering schemes using the Road Safety Grant in 2005/06. The actual effect of the grant is likely to be significantly higher due to the contribution of ETP interventions.

4.3.6

The Welsh Assembly Government published a series of road safety targets to be achieved by 2010 in its Road Safety Strategy for Wales. One of these was to achieve a reduction in KSI casualties by 40% between 2000 and 2010. A total of 615 engineering schemes funded by the road safety grant since 2000 have been analysed. Combined, these schemes have demonstrated an average annual reduction in KSI casualties of 52%. It is clear that the grant will continue to

¹² The total schemes is less than the 274 reported in table 3.2 as collision and casualty statistics are not available for all schemes. This is largely due to some local authorities employing external organisations to validate their collision and casualty statistics. In some instances reports are returned every quarter and are not expected until December.

¹³ Road Casualties in Wales: 2005 (Revised) (*Statistical Directorate, National Assembly for Wales, issued 29th June 2006*)

contribute towards the KSI reduction target if future schemes funded by the road safety grant achieve similar reductions.

5 Summary and Conclusions

5.1 *Lessons Learnt*

5.1.1 The DfT document ‘Assessing the Casualty Reduction Performance of Local Highway Authorities (September 2004)’, found that better performing Local Highway Authorities carry out monitoring on an overall and project-by-project basis. Monitoring enables them to assess and evaluate past projects to give a beneficial input to new projects. It is not known whether this practice currently occurs, however comparisons can be made between the effectiveness of schemes undertaken since 2000 and the expenditure on schemes in 2006/07.

5.1.2 A correlation is found between the schemes providing the greatest return on investment between 2000 and 2006 and those most widely implemented in 2006/07. The three most widely implemented scheme types in 2006/07 were Warning signs, Markings & Signs and 20 mph schemes. Analysis of schemes implemented since 2000 showed that these schemes are amongst the most cost effective scheme types. Chapter 4 demonstrated the better financial return gained from lower cost schemes, and the lower cost may go some way towards explaining the high quantity of these schemes implemented in 2006/07.

5.1.3 The most effective schemes at reducing collisions and casualties are not necessarily the most cost-effective due to their higher implementation costs. For example, 20mph limits, mini roundabouts and new traffic lights reduce the greatest percentage of KSIs, and road improvements, 20mph limits and anti-skid surfacing reduce the greatest number PICs. Of these scheme types, only 20 mph schemes are amongst the most widely implemented schemes in 2006/07, or the most heavily funded.

5.2 *Reporting Feedback*

5.2.1 Significant changes were made to the reporting procedure in 2005/06, including the transition to electronic reporting. However, as expected during any period of transition, a number of impediments to progress were exposed which were used to inform the development of the evaluation procedures this year. These changes helped deliver a marked improvement to the quality and quantity of data received from local authorities which, in turn, has allowed a greater degree of analytical accuracy and more robust conclusions.

5.3 ***Summary and Recommendations***

5.3.1 This section summarises the key findings of the study and makes recommendations based on these findings.

5.3.2 The Welsh Assembly Government recommended that local authorities allocate 20% of the Road Safety Grant to ETP initiatives. In 2003-04, the average proportion of the Road Safety Grant spent on ETP initiatives was 17%. This increased to 25% during 2004-05 and increased again in 2005-06, with a total of 28% being spent on ETP and staff. This report found the percentage spent on ETP has risen for the fourth year running; indeed 29% of the grant was spent on ETP and staff in 2006/07. In previous years, there has been a large disparity between the expenditure by local authorities on ETP with six local authorities spending less than 20% in 2005/06. This year, there is much greater consistency with only two local authorities spending less than 20%, and in each case the local authorities spent 19%.

Local authorities should continue to allocate an appropriate proportion of their Road Safety Grant allocation to ETP initiatives.

5.3.3 In the UK as a whole, the number of children killed and seriously injured as pedestrians and cyclists peaks in early secondary school (11-16 year olds). However, there continues to be a lower proportion of Road Safety Grant funded ETP investment for secondary school aged pupils, compared to other age groups.

Local authorities should continue to be encouraged to develop more road safety initiatives for secondary school pupils.

5.3.4 Combining engineering and ETP schemes can achieve greater success at treating road safety problems in some areas. This message has been taken on board by some local authorities, for example Merthyr Tydfil has supported 20mph schemes with education and publicity measures. However, the analysis of monitoring submissions demonstrated a clear need for local authorities to adopt a more holistic approach to road safety, where possible.

There is a need for local authorities to adopt a more holistic approach to road safety so that engineering schemes are supported by ETP initiatives where possible.

5.3.5 Many of the ETP evaluation methodologies do not provide a robust appraisal of the effectiveness of schemes. Over a quarter of schemes (26%) were evaluated by simply counting the number of people engaged in a given scheme or the number

of people reached by publicity. Such techniques do not necessarily evaluate the success of schemes at accomplishing their objectives as no assessment or evaluation of the initiative is undertaken. Similarly, observations and anecdotal evidence, which was used to evaluate 16% of schemes, may provide an impression of the success of the scheme but there is no tangible evidence to support its effectiveness. A total of 38% of all schemes were evaluated by asking for an assessment through the use of a questionnaire or feedback form.

5.3.6

The Welsh Assembly Government wish to improve the way ETP schemes are evaluated in future years. Indeed the Road Safety Grant Report issued to local authorities in March 2006 referred them to the Department for Transport publication “Guidelines for Evaluating Road Safety Education Interventions¹⁴”, to assist with the effective evaluation of ETP schemes funded through the grant. New evaluation methodologies have been recorded this year, some of which are in line with the Guidance. For example, 4% of schemes are now evaluated by consultation, interviews or focus groups, which are one of a group of techniques evaluated within the guidance document.

Local authorities, or specific organisations responsible for delivering ETP initiatives, should be encouraged to undertake more robust evaluations to examine the effectiveness of these measures.

5.3.7

External organisations are employed to coordinate some ETP activities. These organisations are also given responsibility to monitor and evaluate the activities. However, there is evidence to suggest that, on occasion, the results of the evaluations are not being reported to local authorities.

Local authorities should ensure effective communication of ETP programme results from external organisations. Local authorities should ensure the evaluation results are included in future monitoring submissions.

5.3.8

The best performing engineering scheme types at reducing Personal Injury Collisions are Road Improvements, 20mph limits and anti-skid surfacing. The most effective scheme types at reducing Killed or Seriously Injured casualties are 20mph limits, mini roundabouts and new traffic lights. A total of 11 out of 21 scheme types provide a total return on investment (100% or more) within one

¹⁴ Guidelines for Evaluating Road Safety Education interventions (DfT, August 2004)

year. The most cost-effective engineering measures are anti-skid surfacing, warning signs and combined marking and signing schemes.

Collision and Casualty data should continue to be scrutinised in detail to understand why certain schemes have been effective or otherwise at reducing collisions and casualties.

5.3.9 Local Highway Authorities with a more successful history of casualty reduction carry out monitoring on an overall and project-by-project basis. This enables them to make an objective judgement of where casualty reduction funding can be spent most effectively.

That local authorities continue to monitor the collision record of previous schemes. This should provide a beneficial input to new projects.

5.3.10 The findings of this study summarise the local authority expenditure on road safety schemes using the grant and analyse the cost effectiveness of engineering scheme types at reducing collisions and casualties.

That findings be shared with local authorities to promote good practice.

5.4 ***Summary of Changes since 2005/06***

5.4.1 The following points demonstrate how expenditure on ETP schemes in 2006/07 differs from expenditure in 2005/06:

- Local authorities spend, on average, 29% of their allocation on ETP and staff compared to 28% in 2005/06;
- Although £80,000 less has been spent on general publicity in 2006/07, local authorities have allocated more than £100,000 in additional funding to Pass Plus schemes, including the original Pass Plus scheme and Pass Plus Cymru¹⁵;
- More than £100,000 of additional funding has been allocated to ETP schemes targeted at young adults (17-25), reflecting the additional expenditure on Pass Plus Schemes;

¹⁵ Refer to section 2.2 for full explanation.

- Minor changes have occurred to the methodology employed to evaluate ETP schemes since 2005/06. The proportion of schemes evaluated using a feedback form has increased from 33% to 38%, whilst a simple count of the number of people engaged in a scheme has reduced from 32% to 26%.

5.4.2

The following points demonstrate how expenditure on engineering schemes in 2006/07 differs from expenditure in 2005/06:

- Expenditure on traffic calming schemes has reduced by almost £450,000 to £344,000 in 2006/07 from £792,000 in 2005/06;
- Expenditure on footway improvements has increased from £400,000 in 2005/06 to over £600,000 in 2006/07;
- Expenditure on controlled crossings has increased from £310,000 in 2005/06 to £518,000 in 2006/07.

5.4.3

In 2006/07, local authorities supplied an additional 12-months post-scheme collision and casualty monitoring data for engineering schemes implemented in previous years. The additional monitoring data, coupled with the inclusion of schemes under £15,000 for 2005/06, increased the sample size for analysis from 390 to 615. This resulted in an increased sample size for most individual scheme types, thus providing a more reliable 'average' for the performance of each scheme. The scheme types whose performance is most affected by the increased sample sizes are described below:

- The effectiveness of 20mph zones at reducing collisions and casualties is lower than recorded in 2005/06. Between 2000-06 a total of 113 20mph zones recorded a 39% saving in PICs and 9% saving in KSIs compared to 62% and 89% from a sample of 79 recorded between 2000-05. However, the results have been skewed by the inclusion of ten schemes from a single local authority implemented in 2006/07. None of the ten schemes reduced the number of casualties and three of the schemes experienced more casualties after the implementation of the 20mph zones. Without the inclusion of the ten schemes, the results show that 20mph zones reduced both collisions and casualties by 44%.

- For the analysis undertaken in 2005/06, there were only two anti-skid surface schemes which have now increased to 20 schemes. This has allowed meaningful analysis of anti-skid treatments, which are evidently one of the most effective measures at reducing PICs. Analysis of 20 schemes between 2000-06 showed a 78% reduction in PICs compared to a 12.5% increase from the two schemes previously analysed.

Tables

- 2.1. The Percentage of Total Road Safety Grant Expenditure by Local Authorities on ETP
- 2.2. Total Expenditure on each ETP scheme type 2006/07 Measures, including Staff
- 2.3. A Comparison of Expenditure on ETP, 2004/05 – 2006/07
- 2.4. ETP Expenditure by Target Age Group
- 2.5. The Type of Methodology used to Evaluate ETP Initiatives
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- 4.1. Annual Average Change in PICs following Engineering Schemes Implemented 2000 - 2006
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- 2.1. ETP Schemes: Target Age Range
- 3.1. Engineering Scheme Expenditure by IMD Score

Table 2.1: The Percentage of Total Road Safety Grant Expenditure by Local Authorities on ETP Measures, including Staff Wages, 2004-07

Local Authority	2004/05 (%)	2005/06 (%)	2006/07 (%)
Blaenau Gwent	22	16	22
Bridgend	14	27	32
Caerphilly	33	24	39
Cardiff	33	17	19
Carmarthenshire	14	25	23
Ceredigion	38	28	36
Conwy	32	51	19
Denbighshire	23	22	22
Flintshire	23	28	32
Gwynedd	24	41	22
Isle of Anglesey	8	19	23
Merthyr Tydfil	11	14	23
Monmouthshire	31	42	53
Neath Port Talbot	41	65	46
Newport	16	20	25
Pembrokeshire	34	31	26
Powys	39	43	47
Rhondda Cynon Taff	25	17	26
Swansea	14	41	43
Torfaen	46	31	46
Vale of Glamorgan	23	18	28
Wrexham	23	32	27
Wales	25	28	29

Table 2.2: Total Expenditure on each ETP scheme type, 2006/07

Rank	Scheme Type	Total Expenditure	% Total ETP Expenditure
1	Pass Plus & Pass Plus Cymru	£250,501	17.4
2	Theatre in Education: General Road Safety	£169,147	11.8
3	Children's Traffic Club	£129,809	9.0
4	General Publicity (Advertising/Newsletter)	£124,680	8.7
5	Resources	£99,307	6.9
6	Road Safety Vehicle/trailer/mobile unit	£96,838	6.7
7	Junior Road Safety Officer Scheme	£76,390	5.3
8	Pre-driver initiatives (inc. MegaDrive)	£67,004	4.7
9	Other Young Driver initiatives (not Pass Plus)	£48,931	3.4
10	In car safety (car seat & seat belt checks)	£48,591	3.4
11	Other individual lower cost initiatives	£42,910	3.0
12	Roadshows & event attendance	£37,091	2.6
13	Website (inc. Roadstuff)	£35,193	2.4
14	Cycle Training & Initiatives	£34,311	2.4
15	Theatre in Education: Drink/Dangerous driving	£29,275	2.0
16	School Travel Plans	£28,623	2.0
17	Other Driver Training	£22,980	1.6
18	Road Safety Mascot	£19,400	1.4
19	Early Years (Surestart)	£18,190	1.3
20	Walk to school initiatives	£10,770	0.7
21	Motorcycle & Moped campaigns	£9,000	0.6
22	Bus Driver Training	£8,020	0.6
23	Traffic Playground Layout, or similar	£7,620	0.5
24	Older Driver Assessments	£7,085	0.5
25	Crucial Crew	£4,751	0.3
26	Kerbcraft	£4,380	0.3
27	Be Bright Be Seen/Be Safe Be Seen	£2,790	0.2
28	Staff training fees	£1,390	0.1
29	Road Safety Strategy	£1,230	0.1

Table 2.3: A Comparison of Annual Expenditure on ETP, 2004-2007				
Scheme Type	2004/05	2005/06	2006/07	3-Year Total
Pass Plus & Pass Plus Cymru	£131,028	£146,926	£250,501	£528,455
Theatre in Education: General Road Safety	£178,020	£158,898	£169,147	£506,065
General Publicity (Advertising/Newsletter)*	£108,990	£204,578	£124,680	£438,248
Children's Traffic Club	£140,947	£148,826	£129,809	£419,582
Resources	£105,889	£112,568	£99,307	£317,764
Road Safety Vehicle/trailer/mobile unit	£25,593	£100,661	£96,838	£223,092
Junior Road Safety Officer Scheme	£55,781	£64,397	£76,390	£196,568
Other individual lower cost initiatives	£63,622	£44,547	£42,910	£151,079
Road Safety Mascot	£32,932	£94,766	£19,400	£147,098
Pre-driver initiatives (inc. MegaDrive)	£33,243	£46,053	£67,004	£146,300
In car safety (car seat & seat belt checks)	£10,513	£31,118	£48,591	£90,222
Theatre in Education: Drink/Dangerous driving	£8,000	£49,950	£29,275	£87,225
Cycle Training & Initiatives	£37,358	£15,210	£34,311	£86,879
Website (inc. Roadstuff)	£13,593	£28,304	£35,193	£77,090
Other Young Driver initiatives (not Pass Plus)	£3,343	£18,800	£48,931	£71,074
School Travel Plans	£23,092	£19,176	£28,623	£70,891
Road Safety Strategy	£55,700	£0	£1,230	£56,930
Early Years (Surestart)	£19,139	£16,098	£18,190	£53,427
Roadshows & event attendance	£186	£8,850	£37,091	£46,127
Staff training fees	£10,000	£22,667	£1,390	£34,057
Bus Behaviour Initiative	£23,015	£0	£0	£23,015
Other Driver Training	0	0	£22,980	£22,980
Motorcycle & Moped campaigns	£4,950	£2,875	£9,000	£16,825
Competitions	£5,743	£8,611	£803	£15,157
Older Driver Assessments	£250	£4,800	£7,085	£12,135
Walk to school initiatives	0	0	£10,770	£10,770
Crucial Crew	£0	£5,165	£4,751	£9,916
Bus Driver Training	0	0	£8,020	£8,020
Traffic Playground Layout, or similar	0	0	£7,620	£7,620
Speed Detectors	£4,213	£2,113	£0	£6,326
Be Bright Be Seen/Be Safe Be Seen	£0	£3,261	£2,790	£6,051
Kerbcraft	0	0	£4,380	£4,380

*Bus back advertising has been combined with General Publicity.

Table 2.4. ETP Expenditure by Target Age Group, 2005/06 – 2006/07

Age Description	Age Range	2005/2006		2006/2007	
		No. of Schemes	Expenditure	No. of Schemes	Expenditure
Pre-School	3-4	30	£210,545	37	£183,341
Infant School	4-7	5	£37,573	5	£22,114
Junior School	7-11	30	£77,454	23	£97,146
Primary School	4-11	32	£152,787	30	£183,935
Secondary School	11-16	12	£30,551	6	£37,035
All School Ages	4-18	20	£138,408	18	£102,719
Pre-drivers	16-17	15	£73,753	23	£94,024
Young Adults	17-25	24	£190,845	38	£295,972
Adults	18+	35	£178,671	22	£79,294
Older People	60+	2	£4,800	4	£37,685
All ages	-	35	£289,539	32	£345,235
Total	-	240	£1,384,926	238	£1,478,501

Table 2.5. The Type of Methodology used to Evaluate ETP Initiatives, 2005/06 – 2006/07					
Evaluation Methodology	Description	2005/06		2006/07	
		No. of schemes	% of all ETP Evaluated	No. of schemes	% of all ETP Evaluated
Assessment	Quiz, exam, pass rate, assessment. Includes cycle training assessments and eye sight tests.	3	2%	7	3%
Feedback form / questionnaire / survey	Feedback forms and questionnaires for participants, teachers and ETP staff. Classroom surveys and quizdom.	65	33%	81	38%
Consultation	Consultation, interviews and focus groups.	4	2%	9	4%
Observation	General observation, informal feedback and anecdotal evidence.	31	16%	34	16%
Statistical analysis	Before and after statistical analysis.	10	5%	15	7%
No. of people engaged or reached	No. of participants, circulation list, audience reached, website hits, competition responses.	63	32%	55	26%
Other	Media coverage, number or variety of activities.	11	6%	6	3%
Not evaluated	No evaluation undertaken.	8	4%	7	3%
Total		195	100%	214	100%

Table 2.6. Evaluation of Selected National/Widespread ETP Initiatives, 2006/07

ETP Initiative	Analysis of Evaluation Methodology
Pass Plus Cymru	<p>Pass Plus Cymru is monitored by MAC, the scheme creators, through the use of a participant questionnaire. However, it appears the few local authorities have seen the results of these evaluations.</p> <p>Most local authorities simply recorded the take-up alongside informal observations and feedback. Some local authorities stated that the scheme had not yet started. The results are similar to last year when six different methodologies were recorded, with seven authorities simply recording take-up.</p>
JRSO Scheme (Junior road safety officer)	<p>It is evident that no single recognised methodology has been followed. The most popular was to record the number and/or variety of activities carried out. General observations were also popular. This is in line with the methodologies recorded last year.</p> <p>Neath Port Talbot relaunched the scheme during 2006/07 to encourage wider school participation. 3-year summative evaluation online focus groups are to be introduced allowing Neath Port Talbot schools to interact with each other and share best practice.</p>
Children's Traffic Club	<p>The Children's Traffic Club has been established nationally based on external research and proven effectiveness, therefore 73% of authorities that implemented the Children's traffic Club simply evaluated the scheme by recording the take-up. This compares to 78% last year.</p>
Megadrive	<p>This scheme had the most defined evaluation methodology with 88% of local authorities implementing Megadrive using a participant questionnaire to record effectiveness.</p> <p>The evaluation methodology has changed since last year when a combination of recording participants, recording media coverage or using a participant questionnaire was used.</p>
Theatre in Education (General)	<p>A variety of methodologies were incorporated with the most popular being a participant questionnaire, used by 40% of local authorities implementing schemes of this nature.</p> <p>This initiative had a common approach to evaluation last year with 12 out of 13 local authorities using a questionnaire or feedback form.</p>
Theatre in Education (Drink Driving)	<p>A total of 80% of local authorities implementing this initiative used a participant questionnaire or feedback form to evaluate its effectiveness. This is in line with the evaluation of schemes in previous years.</p>

Table 2.7. A Summary of the Evaluation Results of Popular ETP Initiatives, 2006/07

Scheme Type	Results
Pass Plus Cymru	<p>The Pass Plus Cymru scheme has had teething troubles, although uptake is expected to improve with time and publicity. One authority reported a negative response from most ADIs who refuse to support the scheme in its present format citing contractual and financial reasons and questionable added value over existing scheme.</p> <p>Participation varies enormously between local authorities. The Pass Plus Cymru scheme had 130 participants in Gwynedd alone during a 12 month period. However, only 3 participants were trained in Blaenau Gwent despite heavy promotion and the occurrence of multi-fatal crashes involving this age group.</p> <p>Most local authorities do not report the results of the evaluations from external organisers. Flintshire are one exception, who report that ‘the majority of returned questionnaires reflected positive outcomes in terms of experience and skills gained’. Quotes from the tutor included “the scheme has an excellent basis but it could be bettered with some group exercises to heighten the level of integration within the session, such as those used during the Driver Improvement scheme.” Delegate comments included “good course, well worth doing”, “I found the practical side of the course good fun and really interesting, and it definitely improved my awareness as a driver.”</p>
JRSO Scheme	<p>The majority of feedback from teachers, parents and pupils was positive, reporting evidence of improved knowledge and heightened awareness of road safety. Six local authorities reported the number of participating schools, ranging between 5 and 17.</p>
Children’s Traffic Club	<p>The Children’s Traffic Club organisers, DBDA, monitor the effectiveness of the scheme. Their research shows that club members have had 12% fewer road casualties than non-members and 4% fewer casualties when walking.¹⁶ Overall there is positive feedback from parents, schools and health visitors. Individual authorities reported an average take-up of between 29.5% and 50%. Many local authorities report a continuous increase in the number of children registering. Two authorities reported a marked increase in take-up during the month following other initiatives, such as the Early Years Roadshow.</p>
Megadrive	<p>Student participation, by authority, ranged between 54 and 202. In the case of two authorities, the turnout was approximately half the number originally booked on the scheme, which disappointed the organisers. ETP coordinators within these authorities are working hard to reduce ‘no shows’ next year. The results of the participant questionnaires showed the scheme was well received with a positive change of attitude.</p>
Theatre in Education (all types)	<p>All feedback from teachers and pupils is very positive. No negative comments received by local authorities. Many authorities reported that important messages had been retained and that themes had been followed up by teachers later in the year.</p> <p>Cardiff reported “Schools have indicated that follow-up curriculum work with pupils has been undertaken. All schools involved have indicated that they would welcome future performances from drama groups.”</p> <p>Powys reported “Evaluation sheets reflected a continued awareness of the issues raised by performance 3 months later. Focus groups immediately following performance found intervention powerful and memorable, repeat focus groups 3 months later found impact to have wained.”</p>

¹⁶ The Children’s Traffic Club (DBDA) <http://www.trafficclub.co.uk/pros/research.asp>

Table 2.8. Total Staff Appointments funded by the Special Road Safety Grant in 2006/07

Position	No. of Appointments
Road Safety Officer	11
Kerbcraft coordinator/assistant	9
Safer Routes to School Officer	6
School Travel Plan Coordinator	3
ETP Officer	3
Special Projects Officer	2
Driver Training coordinator	1
Other	12
Total	47

Table 3.1: Expenditure on Engineering Schemes from the 2006/07 Grant					
Rank	Scheme Type	Expenditure	% of Total Expenditure	No. of Schemes	Average Cost
1	Package of Measures	£900,403	16.9%	33	£27,285
2	Junction Improvement	£783,220	14.7%	10	£78,322
3	Footway Improvements	£603,623	11.3%	17	£35,507
4	Controlled Crossing	£518,078	9.7%	15	£34,539
5	20 mph schemes	£471,662	8.9%	36	£13,102
6	Crossing Improvement	£425,160	8.0%	14	£30,369
7	Traffic Calming	£344,471	6.5%	15	£22,965
8	Anti Skid Surface	£263,296	4.9%	21	£12,538
9	Warning Signs	£254,499	4.8%	27	£9,426
10	Markings and Signs	£197,188	3.7%	28	£7,042
11	Other single measure	£196,207	3.7%	8	£24,526
12	Road Improvement	£143,696	2.7%	6	£23,949
13	New Traffic Lights	£122,610	2.3%	3	£40,870
14	Speed Reductions	£40,455	0.8%	5	£8,091
15	Mini Roundabout	£27,874	0.5%	1	£27,874
16	Refuges	£24,312	0.5%	1	£24,312
17	Markings	£10,996	0.2%	4	£2,749
18	Visibility Improvement	£671	0.0%	1	£671
Total		£5,328,422	100%	245	£21,749

Table 3.2. A Comparison of Engineering Expenditure, Without Scheme Cost Thresholds, 2005/06 and 2006/07

Scheme Type	2005/06			2006/07			Sum 2005-07		
	Number	Cost	% Cost	Number	Cost	% Cost	Number	Cost	% Cost
Package of Measures	27	£988,568	19%	33	£900,403	17%	60	£1,888,971	18%
Junction Improvement	13	£853,088	16%	10	£783,220	15%	23	£1,636,308	15%
Traffic Calming	30	£784,704	15%	15	£344,471	6%	45	£1,129,175	11%
Footway Improvements	14	£399,864	8%	17	£603,623	11%	31	£1,003,487	9%
20 mph schemes	37	£428,266	8%	36	£471,662	9%	73	£899,928	8%
Controlled Crossing	14	£309,788	6%	15	£518,078	10%	29	£827,866	8%
Crossing Improvement	19	£282,394	5%	14	£425,160	8%	33	£707,554	7%
Warning Signs	38	£353,117	7%	27	£254,499	5%	65	£607,616	6%
Anti Skid Surface	18	£173,503	3%	21	£263,296	5%	39	£436,799	4%
Markings and Signs	11	£131,366	2%	28	£197,188	4%	39	£328,554	3%
Road Improvement	5	£154,684	3%	6	£143,696	3%	11	£298,380	3%
Other	8	£99,215	2%	8	£196,207	4%	16	£295,422	3%
New Traffic Lights	4	£29,186	1%	3	£122,610	2%	7	£151,796	1%
Refuges	7	£87,652	2%	1	£24,312	0%	8	£111,964	1%
Markings	8	£100,583	2%	4	£10,996	0%	12	£111,579	1%
Speed Reductions	14	£46,792	1%	5	£40,455	1%	19	£87,247	1%
Visibility Improvement	1	£34,000	1%	1	£671	0%	2	£34,671	0%
Mini Roundabout	0	£0	0%	1	£27,874	1%	1	£27,874	0%
Guard Rail	2	£10,331	0%	0	£0	0%	2	£10,331	0%
Signal Improvement	1	£3,000	0%	0	£0	0%	1	£3,000	0%
Traffic Study	2	£2,112	0%	0	£0	0%	2	£2,112	0%
Right Turn Lane	1	£500	0%	0	£0	0%	1	£500	0%
Total	274¹⁷	£5,272,713	100%	245	£5,328,421	100%	519	£10,601,134	100%

¹⁷ The provision of definitive scheme data from some local authorities in their 2006/07 submissions has increased total schemes from 237 reported in 2005/06. Predominantly, this is the separation of mass action schemes into their component parts resulting in only a £65,000 increase in expenditure (1% increase from 2005/06).

Table 3.3. Engineering Scheme Expenditure by IMD Score, 2006/07

IMD range (overall score)	No. of Lower Super Output Areas in IMD range	No. of engineering schemes in IMD range (2006/07)	No of schemes per Lower Super Output Area in IMD range	Total expenditure on schemes in IMD range	Average expenditure per Lower Super Output Area in range
0-9.9 Least deprived	385	36	0.09	£512,948	£1,332.33
10-19.9	695	68	0.10	£1,047,283	£1,506.88
20-29.9	369	28	0.08	£511,289	£1,385.61
30-39.9	223	20	0.09	£621,770	£2,788.21
40-49.9	121	6	0.05	£246,457	£2,036.83
50-59.9	57	7	0.12	£74,006	£1,298.36
>60 Most deprived	46	3	0.07	£61,075	£1,327.72
Total	1896	168	0.09	£3,074,829	£1,621.75

Table 4.1. Annual Average Change in PICs Following the Implementation of Engineering Measures between 2000 and 2006					
Scheme Type	Number	Before	After	Savings	% Savings
Road Improvement	8	11.7	1.0	10.7	91%
20 mph limits ¹⁸	7	4.0	0.5	3.5	88%
Anti Skid Surface	27	37.7	8.7	29.0	77%
Visibility Improvement	6	7.3	2.0	5.3	73%
New Traffic Lights	7	23.7	8.0	15.7	66%
Mini Roundabout	7	6.7	2.3	4.3	65%
Signal Improvement	11	34.3	13.2	21.2	62%
Footway Improvements	32	12.3	5.5	6.8	55%
Traffic Calming	69	89.0	46.7	42.3	48%
Crossing Improvement	60	32.0	16.8	15.2	47%
Markings and Signs	44	51.3	27.5	23.8	46%
Warning Signs	52	72.3	40.8	31.5	44%
Package of Measures	80	169.7	99.0	70.7	42%
20 mph zones	113	103.7	62.8	40.8	39%
Controlled Crossing	23	12.3	7.7	4.7	38%
Junction Improvement	27	33.7	21.5	12.2	36%
Markings	10	10.3	7.5	2.8	27%
Speed Reductions	9	12.7	10.7	2.0	16%
Refuges	8	9.0	7.7	1.3	15%
Other	12	7.0	6.0	1.0	14%
Right Turn Lane	3	6.0	5.2	0.8	14%
Totals	615	746.7	401.0	345.7	46%

¹⁸ The category of '20mph schemes' in Chapter 3 has been split into '20mph limits' and '20mph zones' for Chapter 4.

Table 4.2. Annual Average Change in KSIs Following the Implementation of Engineering Measures between 2000 and 2006

Scheme Type	Number	Before	After	Savings	% savings
20 mph limits	7	1.3	0.0	1.3	100%
Mini Roundabout	7	2.3	0.0	2.3	100%
New Traffic Lights	7	5.0	0.3	4.7	93%
Speed Reductions	9	7.0	0.7	6.3	90%
Signal Improvement	11	13.0	1.8	11.2	86%
Road Improvement	8	6.3	1.0	5.3	84%
Refuges	8	3.3	0.7	2.7	80%
Warning Signs	52	16.3	3.8	12.5	77%
Visibility Improvement	6	5.3	1.3	4.0	75%
Other	12	1.0	0.3	0.7	67%
Markings	10	1.0	0.3	0.7	67%
Junction Improvement	27	11.0	4.0	7.0	64%
Crossing Improvement	60	9.0	3.3	5.7	63%
Anti Skid Surface	27	10.0	4.3	5.7	57%
Markings and Signs	44	13.0	7.3	5.7	44%
Controlled Crossing	23	2.7	1.7	1.0	38%
Traffic Calming	69	13.3	9.2	4.2	31%
Package of Measures (Mass action)	80	32.0	22.2	9.8	31%
Footway Improvements	32	7.3	5.5	1.8	25%
20 mph zones	113	20.0	18.2	1.8	9%
Right Turn Lane	3	0.3	0.3	0.0	0%
Totals	615	180.7	86.3	94.3	52%

Table 4.3: The First Year Rate of Return for each Engineering Scheme Category for Schemes Implemented between 2000 and 2006

Scheme Type	No. of Schemes	Total Value	Annual Average PIC savings		Actual FYRR (%)
			Number	Value of savings	
Anti Skid Surface	27	£389,873	29.0	£1,868,760	479
Warning Signs	52	£568,554	31.5	£2,029,860	357
Markings and Signs	44	£555,709	23.8	£1,535,820	276
Road Improvement	8	£372,389	10.7	£687,360	185
Visibility Improvement	6	£250,686	5.3	£343,680	137
20 mph limits	7	£184,556	3.5	£225,540	122
Signal Improvement	11	£1,141,009	21.2	£1,363,980	120
Package of Measures	80	£3,843,292	70.7	£4,553,760	118
Markings	10	£162,083	2.8	£182,580	113
20 mph zones	113	£2,402,129	40.8	£2,631,300	110
New Traffic Lights	7	£964,993	15.7	£1,009,560	105
Traffic Calming	69	£2,785,329	42.3	£2,727,960	98
Crossing Improvement	60	£1,351,781	15.2	£977,340	72
Speed Reductions	9	£256,106	2.0	£128,880	50
Refuges	8	£173,719	1.3	£85,920	49
Footway Improvements	32	£945,281	6.8	£440,340	47
Junction Improvement	27	£1,798,113	12.2	£784,020	44
Mini Roundabout	7	£675,858	4.3	£279,240	41
Right Turn Lane	3	£131,000	0.8	£53,700	41
Controlled Crossing	23	£1,082,590	4.7	£300,720	28
Other	12	£254,942	1.0	£64,440	25
Total	615	£20,289,992	345.7	£22,274,760	110

Figure 2.1. ETP Schemes: Target Age Range

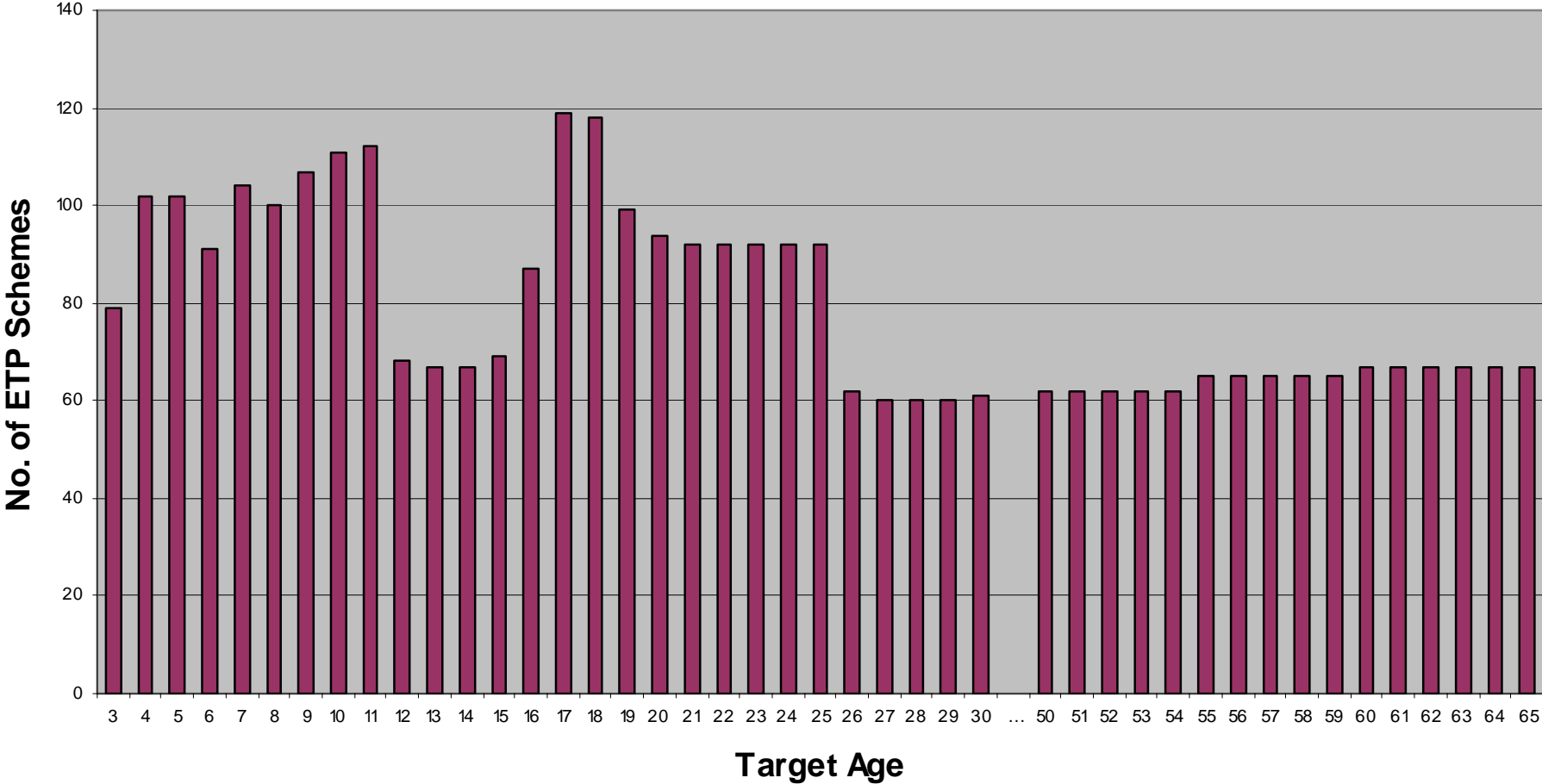


Figure 3.1. Average RSG Expenditure on Engineering Schemes per Lower Super Output Area in IMD Range

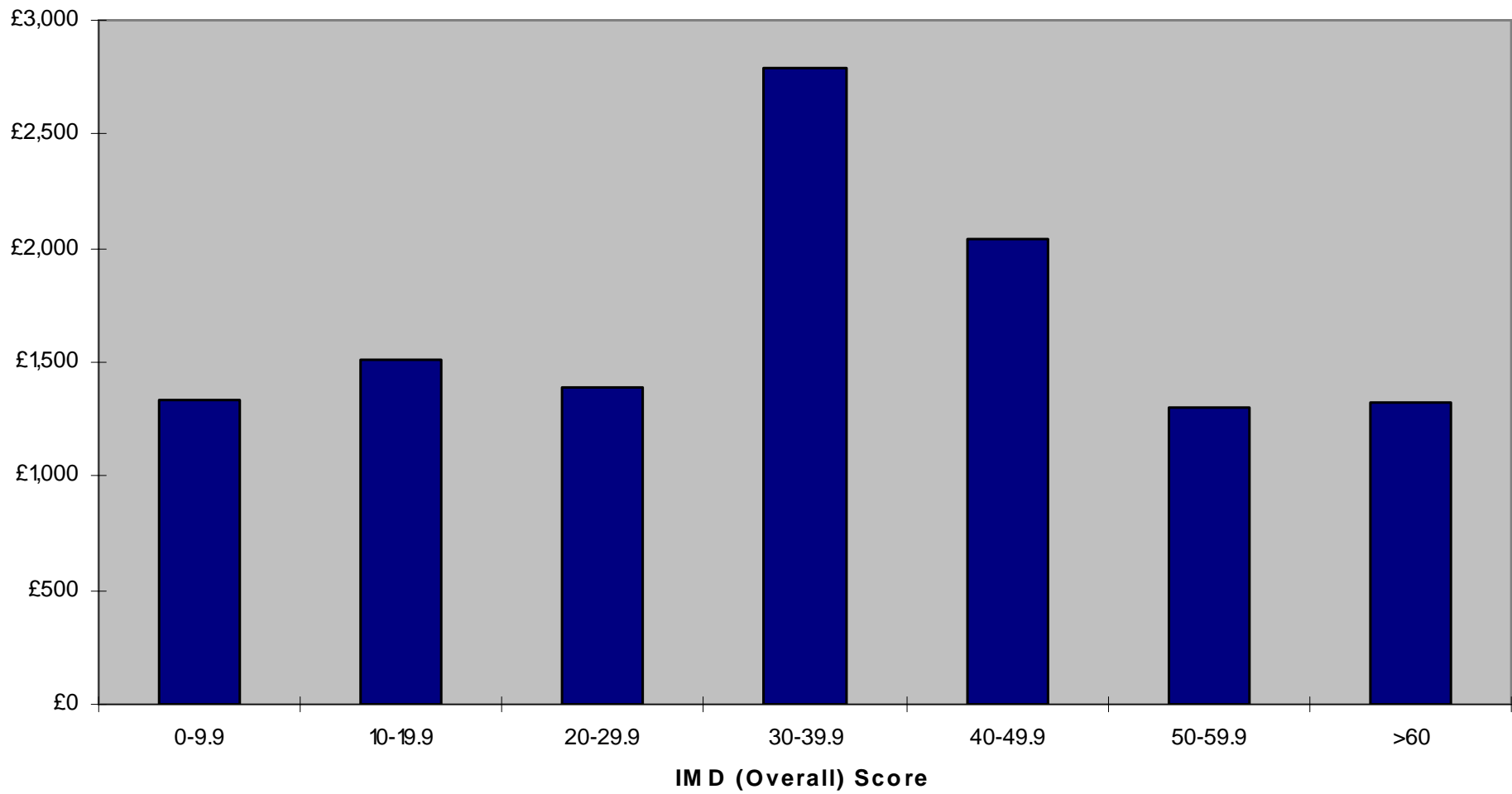


Table 1: Road casualties in Wales: 2007

	Number of people				
	<u>Killed</u>	<u>Serious</u>	<u>KSI</u>	<u>Slight</u>	<u>All casualties</u>
Motorway & A(M)	14	28	42	437	479
A Trunk	45	201	246	1,101	1,347
A Non-Trunk	54	425	479	3,847	4,326
Other Roads	48	584	632	5,485	6,117
Total - all roads	161	1,238	1,399	10,870	12,269

	Percentage of total				
	<u>Killed</u>	<u>Serious</u>	<u>KSI</u>	<u>Slight</u>	<u>All casualties</u>
Motorway & A(M)	9%	2%	3%	4%	4%
A Trunk	28%	16%	18%	10%	11%
A Non-Trunk	34%	34%	34%	35%	35%
Other Roads	30%	47%	45%	50%	50%
Total - all roads	100%	100%	100%	100%	100%

There were 288 killed and serious casualties on trunk roads in Wales in 2007, compared with 1,111 on other, local authority, roads. This means that 14 per cent of the killed and seriously injured casualties in Wales in 2007 were on trunk roads (motorways plus A trunk roads) and 86 per cent of these casualties were on local authority roads. To consider this in context, the trunk road network in Wales carries 35% of vehicle movement.

Collisions along the whole route							
Trunk Road	Length Km (2008)	2003	2004	2005	2006	2007	Average Annual rate per km
A40	212.51	162	180	128	149	163	0.74
A4042	26.04	42	40	41	29	41	1.48
A4060	6.15	5	7	5	3	4	0.78
A4076	12.92	29	25	32	36	32	2.38
A4232	5.45	15	10	9	12	18	2.35
A44	39.06	23	25	25	23	25	0.62
A449	21.15	5	14	8	8	5	0.38
A458	54.54	58	47	38	42	50	0.86
A465	96.21	95	92	80	79	73	0.87
A466	1.71	15	9	8	1	5	4.44
A470	278.6	202	204	181	194	222	0.72
A477	35.57	32	30	23	29	23	0.77
A479	22.41	10	16	8	9	13	0.50
A48	28.34	49	36	46	70	57	1.82
A48 (M)	4	0	1	1	0	0	0.10
A483	173.3	145	140	129	164	121	0.81
A487	199.06	171	160	163	128	145	0.77
A489	17.51	20	19	16	10	17	0.94
A494	93.78	81	75	52	52	47	0.65
A5	96.8	88	53	37	55	68	0.62
A55	130.26	121	124	94	97	104	0.83
A550	0.6	0	0	3	2	4	3.00
M4	115.56	263	257	258	268	267	2.27
M48	11.62	5	2	2	0	3	0.21
Total	1683.15	1636	1566	1387	1460	1507	0.90

Collisions along 3 Lane Section of route							
Trunk Road	3 Lane Length Km	2003	2004	2005	2006	2007	Average Annual rate per km
A40	6.29	5	4	1	3	5	0.57
A4042							
A4060	0.62	1	0	0	0	0	0.32
A4076							
A4232							
A44							
A449							
A458							
A465	26.72 (32.12)	35	42	25	27	29	0.64
A466	1.68	3	4	2	1	1	1.31
A470	0.52	1	0	0	0	0	0.38
A477	4.13	3	3	0	3	5	0.68
A479	0.94	n/a	n/a	n/a	n/a	0	n/a
A48							
A48 (M)							
A483	1.34	1	0	0	0	3	0.60
A487	5.27	2	3	1	2	1	0.34
A489							
A494	2.27	2	1	0	1	0	0.35
A5	3.44	0	4	1	0	1	0.35
A55							
A550							
M4							
M48							
Total	57.73 (63.13)	53	61	30	37	45	0.72

Includes 3 lane length and collisions from A465 prior to A465 Stage 1 dualling scheme