



Road Safety Authority

Evaluation of the Road Safety Strategy 2007-2012

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1 EXECUTIVE SUMMARY

RPS Consulting Engineers were appointed by the Road Safety Authority to undertake an evaluation of the Road Safety Strategy 2007-2012, and to inform the forthcoming strategy 2013-2020. This Report draws on the evaluation methodology prescribed in the Ex-post Evaluation of the European Road Safety Action Program 2001-2010.

This current Road Safety Strategy which covers the period between 2007 and 2012 is the third road safety strategy and has built on the success of the preceding two strategies. The implementation of successive Road Safety Strategies has contributed to the steady lowering of collision rates.

The Strategy states that the main aim of the Road Safety Authority (RSA) is to:

“save lives and prevent injuries by reducing the number and severity of collisions on the road”.

The two previous strategies cover the periods 1998 to 2002 and 2004 to 2006 and were instrumental in reducing road collisions on Irish roads during a period of economic growth which saw an increase in population and numbers of road vehicles. The highest recorded number of fatalities on Irish roads was 640 in 1972. Between 1998 and 2003 the reduction in the number of deaths in Ireland was among the best in Europe, when the number of road fatalities fell from 124 to 84 deaths per million population. There were 162 fatalities on Irish roads in 2012 as compared to 365 fatalities before the commencement of the Strategy in 2006.

1.1 ROAD SAFETY OBJECTIVES

The Strategy defines the following objectives which it seeks to achieve through the implementation of the six year Strategy between 2007-2012:

- A change in focus to prioritise prevention of a collision in addition to planning to contain the consequences and recovery / rehabilitation of the injured
- A change in focus where the policy accepts that road users will make mistakes. It seeks to compensate for those mistakes by designing and building a more forgiving road network. (A forgiving roadside is a road side which minimises the severity of the injury to a driver or passenger when the driver loses control and the vehicle leaves the road.)
- Better management and coordination of the actions among the stakeholders – particularly in managing the prioritising and sequencing of actions between Government Departments and Agencies
- Improvement of communication and consultation to ensure public support is achieved and sustained
- Provision of timely, accurate and meaningful information to all road users
- Accountability through detailed regular reporting on effectiveness, value for money and outcome measurement.

The Strategy sought to deliver major improvements in road safety by effectively mobilising internal resources and working in a collaborative manner with external stakeholders to maximise its influence and achieve stated objectives. The Strategy has allocated responsibility to individual stakeholders to facilitate a coherent and successful programme of action.

Whilst the RSA has an overall co-ordinating and monitoring role in the achievement of the reduction of loss of life, loss of quality of life, and material damage caused by road collisions, responsibility for the varied actions that can be taken by the State to minimise these losses is spread across a number of

State bodies. Under the Strategy, all of the stakeholders are collectively responsible for their respective actions.

The RSA has identified a number of key behaviours to be changed by the actions set out in this Strategy:

- Inappropriate speeding,
- Impaired driving through alcohol, drugs (prescription or non-prescription), or fatigue,
- Not using seat belts and child safety restraints,
- Unsafe behaviour towards / by vulnerable road users (pedestrians, motorcyclists, cyclists, young children and older people).

The **Critical Success Factors** were identified as:

- Political commitment,
- Leadership and road safety champions,
- Accountable stakeholders,
- Collaboration between stakeholders,
- Road safety planning (goals, strategy, action plans, funding),
- Data sharing information systems,
- Monitoring and evaluation,
- Trained and equipped staff, and
- Marketing, outreach and public information.

1.2 ROAD SAFETY TARGETS

The Strategy set 41 targets which it aims to achieve between 2007 and 2012. The 41 targets can be divided into the following nine road safety areas (shown in **Figure 1.1** as a percentage of overall targets set).

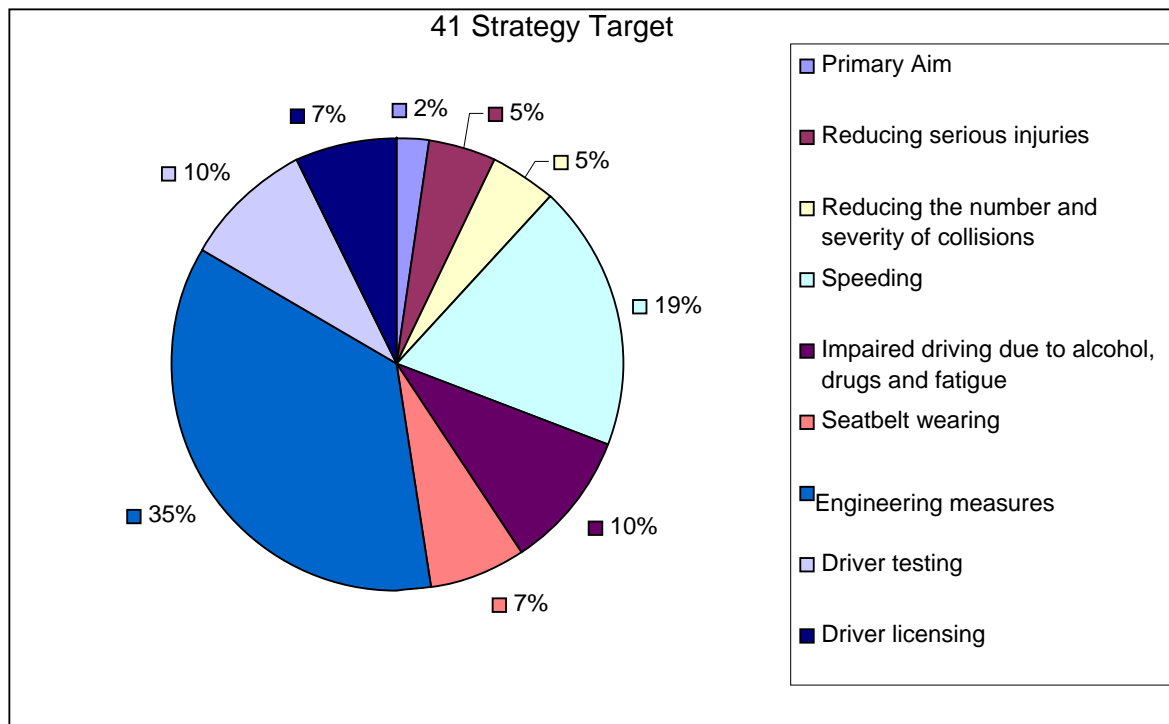


Figure 1.1 Strategy (2007-2012) Targets

The Strategy Primary Target:

1. **Reduce Fatalities**

Reduce fatalities to no greater than 60 fatalities per million by the end of 2012 and 50 or fewer in the following years with demonstrable downward reductions in each year of this Strategy.

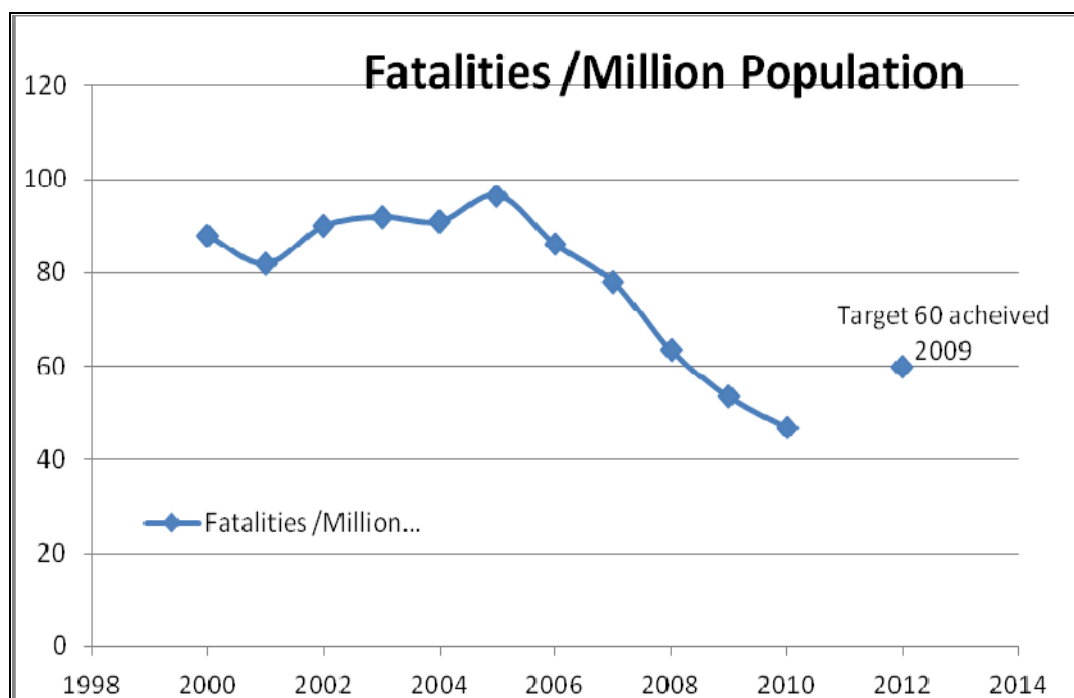


Figure 1.2 Fatalities per million population (Source: IRTAD 2011 ANNUAL REPORT –OECD/ITF 2012)

Figure 1.2 illustrates that the number of road deaths and fatal collisions have fallen over the Strategy period, with clear reductions in each year. The 2011 results indicated that there were 186 fatalities, and these demonstrate that year-on-year reductions have continued. The fatality rate in 2010 was 47 fatalities per million population¹, thus achieving ahead of schedule not only the 2012 sub-target but also the longer-term sub-target.

The Strategy's road safety target of achieving no more than 252 deaths per annum by the end of 2012 has been achieved three years ahead of schedule.

Evidence from OECD reports indicates that Ireland performed better than the EU average in the reduction of fatalities and serious injuries (-3.7% and -5.9% annual average percentage reduction respectively) since 2001². Ireland's road safety record has significantly improved during the years 2006 to 2011. In 2011 the European Transport Safety Council ranked Ireland as the fifth safest EU country.

Therefore despite the growth in population from 4.2million³ in 2006 to 4.6 Million⁴ in 2012, which would increase the exposure of risk of a collision, the fatalities decreased to 162 in 2012, representing 35 fatalities per million of population, which is substantially less than the 2012 target⁵.

As a result of the better than anticipated performance of the Strategy, Ireland has improved its European road safety ranking from 12th in 2006 and 9th in 2007 to 6th in 2012.

A further forty targets were set across eight road safety areas to achieve the overall Primary Aim of the Strategy as follows:

- Reducing serious injuries (2 target);
- Improving the measurement and reporting of collisions (1 targets);
- Speeding (8 targets);
- Impaired driving due to alcohol, drugs and fatigue (4 targets);
- Seatbelt wearing (3 targets);
- Engineering measures (15 targets);
- Driver testing (4 targets); and
- Driver licensing (3 targets).

Table 1.1 below sets out the evaluation system that was used to assess the level of target attainment. Each of the targets were grouped according to their road safety area and an overall result was determined by weighting the results of the individual target outcomes. An overall result for each road safety area was determined by applying the weighted individual target results across the road safety areas.

¹ IRTAD 2011 ANNUAL REPORT — OECD/ITF 2012

² IRTAD 2011 ANNUAL REPORT — OECD/ITF 2012

³ CSO.ie Population 2006

⁴ CSO.ie Population April 2012

⁵ Garda Annual Report 2011/2012

Description	Result	Weighting
The target was achieved between 2007-2012	Target Achieved	3
The target is over 50% achieved as at mid-2012	Target highly advanced.	2
The target is less than 50% achieved as at mid-2012	Target moderately advanced/may not be achieved fully	1
The target will clearly not be achieved by 2012.	Target not achieved.	0

Table 1.1 Evaluation Definitions

The **Primary Aim** is the first target –

Reduce fatalities to no greater than 60 deaths per million population by the end of 2012, and 50 or fewer in the following years, with demonstrable downward reductions in each year of the Strategy.

This was achieved and delivered three years ahead of the target implementation date. The overall result for the group was *Target Achieved*.

Serious Injuries- The targets to reduce the number and severity of serious injuries and produce a database of serious injuries were achieved. There were 472 reported serious injuries in 2011 compared with 561 reported serious injuries in 2010, a further reduction of 16%. The overall result for the group was *Target Highly Advanced*.

Improving the measurement and reporting of collisions - The collisions database was completed and is updated annually by the RSA. The overall result for the group is *Target Achieved*.

Speeding- There were eight targets set for the reduction of speeding on Irish roads. All eight targets saw improvement and a positive trend towards higher compliance with posted speed limits. Although all targets were not achieved there has been an overall increase in the level of speed compliance which is still significant. According to the ETSC's Road Safety PIN Report 2010 more than 2,200 road deaths could be prevented each year if average speeds dropped by 'only' 1km/h on all roads across the EU.⁶ Therefore while the targets were not fully attained the improvements that were achieved have contributed to reducing the number and severity of collisions on Irish roads. This target area has future scope to contribute to further improvements in road safety. It is likely that the transfer of traffic volumes onto the newly completed inter urban networks has resulted in higher operating speeds due to less congestion on the original networks. The overall result for the group was *Target Moderately Advanced*.

Impaired Driving- There were four targets set to reduce collisions due to impaired driving. Three of the four were achieved. The only target that was not achieved required actions from the Coroners Bill which is still under review. The overall result for the group was *Target Achieved*.

Seatbelt Wearing- The seatbelt wearing targets set all saw an improvement from the 2007 compliance levels according the RSA seat belt surveys carried out in 2008 and 2009. Subsequent survey in 2011, showed 93% of adults (drivers, front and rear passengers) were wearing seat belts – the highest rate recorded to date. 94% school children were also wearing seat belts, an improvement on 2009 wearing rates. The trend of increasing seat belts wearing is also evident from the Garda Annual Review reports 2009, 2010 and 2011 which all reported a decrease in the number of fixed charges for non-compliance. In 2010, there were 17,340 detections for seatbelt offences compared to 20,493 in 2009, a reduction of

⁶ ETSC (2010), 4th Road Safety PIN Report, Chapter 3: Tackling the three main killers on the roads, www.etsc.eu/documents/ETSC_PIN_Report_2010.pdf

15.4%⁷. In 2011 fixed charge notices issued for seatbelt offences were 15,606 compared with 17,332 for 2010. The number of fixed charge notices for seatbelt offences fell by 10% in 2011⁸. This is a positive indication that the target is likely to be highly advanced by 2012 and for this reason the result assigned in highly advanced. Due to the very high wearing rates observed during the 2011 Seatbelt Wearing survey carried out by the RSA the overall result for the group was *Target Highly Advanced*. Some categories were very close to *Target Achieved*.

Engineering- The majority of the engineering targets were achieved, although some might better be described as actions that were implemented. The most significant being the completion of the major inter urban motorways which greatly improves the safety of the road network. The overall result for the group was *Target Achieved*.

Driver Testing- Three of the four driver testing targets were achieved and the remaining target dealing with hazard perception is highly advanced and expected to be implemented in 2012. The overall result for the group was *Target Achieved*.

Driver Licensing- Three targets were set in the area of driver licensing, which included the introduction of plastic card licences. Their introduction will not take place in 2012 but Plastic Card Licences will be issued from Jan 2013 with phase-out of paper licences over a 10-year period. This target was therefore considered to be highly advanced. The overall result for the group was *Target Achieved*.

Target Road Safety Group	Overall Result
Primary Aim	3
Reducing serious injuries (1 target);	2
Improving the measurement and reporting of collisions (2 targets)	3
Speeding (8 targets);	1
Impaired driving due to alcohol, drugs and fatigue (4 targets);	3
Seatbelt wearing (3 targets);	2
Engineering measures (15 targets);	3
Driver testing (4 targets); and	3
Driver licensing (3 targets).	3

Table 1.2 Summary of Target Results

The **Table 1.2** above shows that eight out of the nine targeted areas of road safety were achieved or highly advanced within the timeframe of the Strategy.

1.3 EVALUATION OF ACTIONS

The Action Plan details 126 actions, the actions are designed with the achievement of the targets in mind. These 126 actions can be divided into the road safety areas (shown in **Figure 1.3** as a percentage of overall number of actions).

In order to evaluate the 126 actions each one was looked at individually under the following headings:

Implementation This provides a description of the state of progress of the action relative to the target completion date. Each action was assigned *high*, *medium* and *low* to describe the level of implementation completeness.

Effectiveness This is a qualitative assessment of how well the action achieved its intended objective in terms of the road safety. Three measures of effectiveness were assigned to describe each action *Low*-

⁷ Garda Síochána Annual Review 2010.

http://www.garda.ie/Documents/User/2Copy%20of%20Garda_English_2010_FL_LOWRES.pdf

⁸ The Royal Society for the Prevention of Accidents Rural Road Environment Policy Paper: August 2010

Slight contribution to improved road safety, *Medium*-Appreciable contribution to improved road safety and *High*-Significant contribution to improve of road safety.

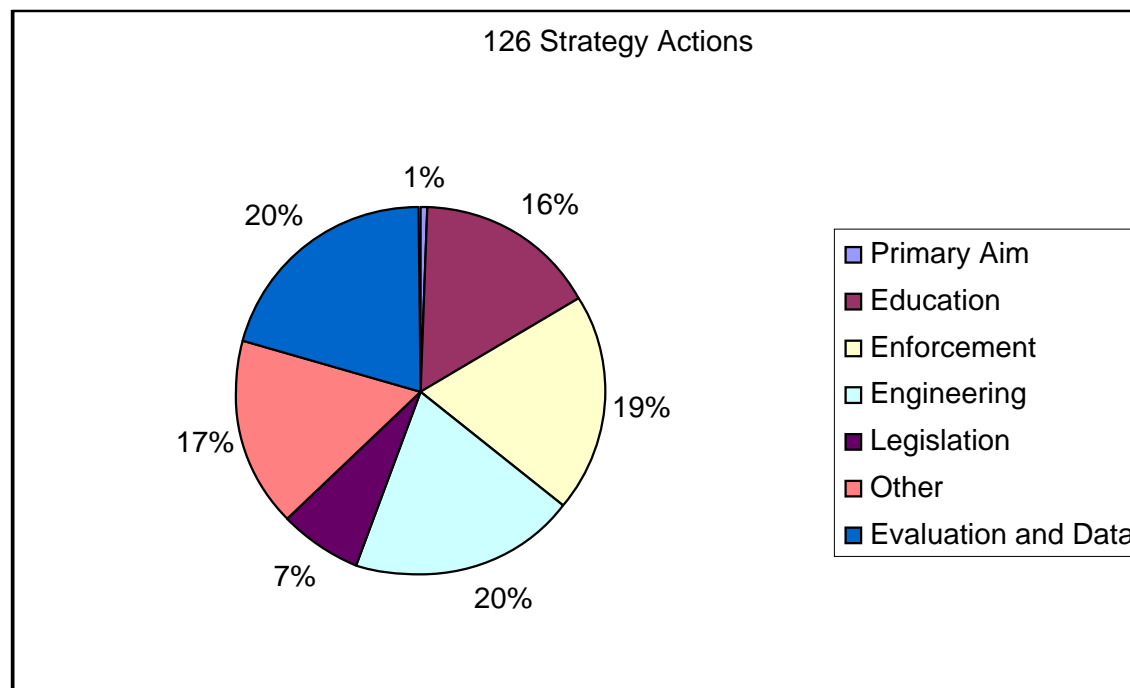


Figure 1.3 Strategy 126 Actions (2007-2012)

Continued Relevance This describes the sustainability of the measure into the future and can it continue to contribute in a positive meaningful way to road safety. Each action was assigned *high*, *medium* and *low* to describe the level of continued relevance.

The evaluation of the Strategy reviewed the actions under the following road safety themes:

- Speeding;
- Impaired Driving;
- Engineering Measures, and
- Seatbelt Wearing.

This approach has been adopted and an additional three road safety areas of individual focus have been grouped in a similar manner as follows:

- Vulnerable road users,
- Inappropriate behaviour
- Other

Each of the seven themes above have also been reviewed using programme logic models to map and illustrate the inter relationship between inputs, outputs and outcomes as detailed in the main report.

Figure 1.4 below illustrates the seven themes and the total number of actions assigned to each theme.

The *other* actions do not fall into one of the themes discussed above. They can be divided into the following types of actions:

- Legislation/Policy
- Driver Licensing and Testing
- Evaluation/Monitoring/Collision Research
- Governance
- Strategy Implementation/Administrative

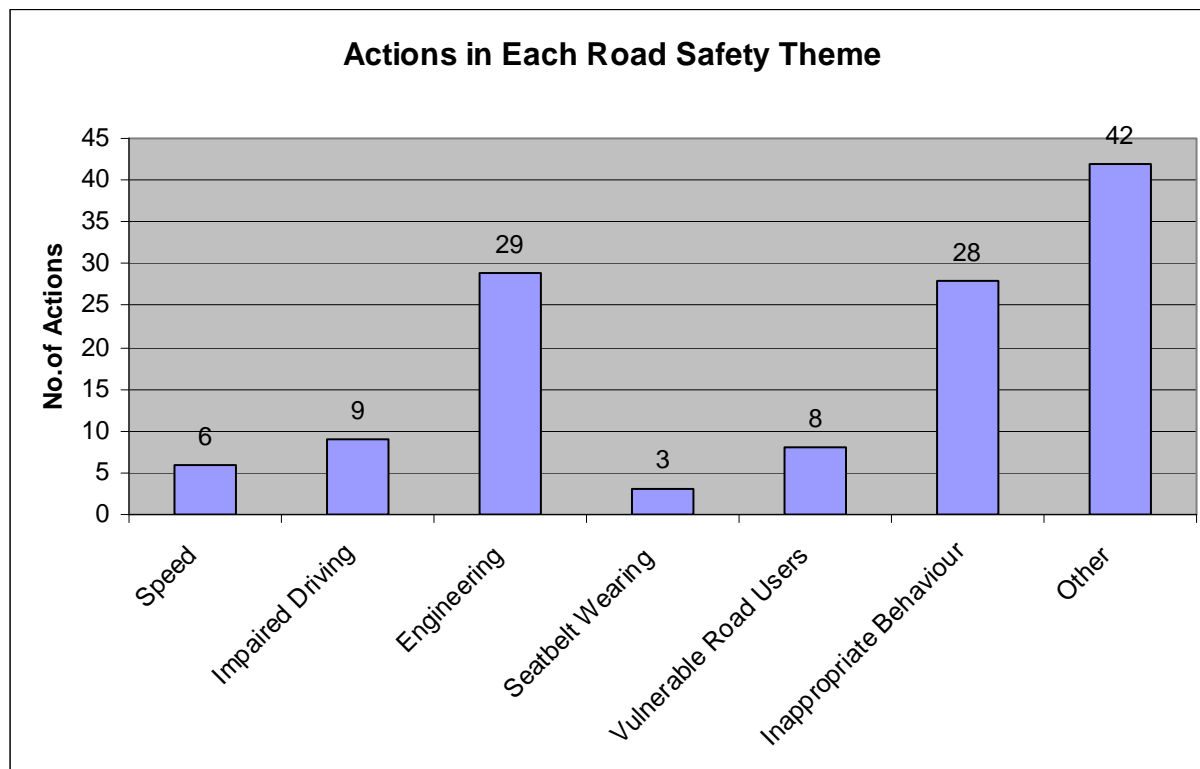


Figure 1.4

The 42 actions listed in the Table above as '**Other**' do not specifically target reducing the number or severity of road collisions, these actions are not specifically targeted at a particular roads safety theme. As such they could be dealt with differently in the forthcoming strategy. This would greatly reduce the number of road collision prevention actions in the next strategy and help to focus the link between target setting and corresponding road collision prevention actions. These '**Other**' actions could be categorised as facilitation actions.

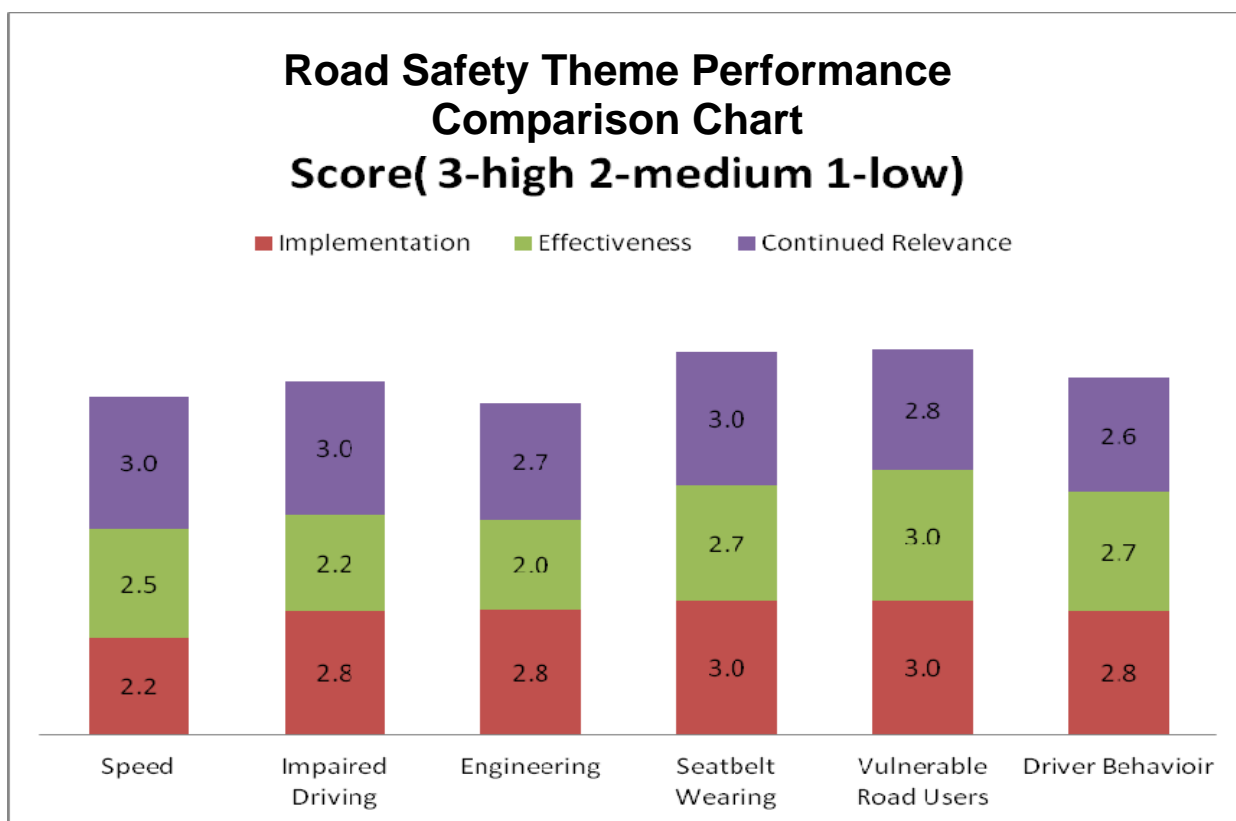
**Figure 1.5**

Figure 1.5 above illustrated the overall Implementation of the 126 Strategy Actions was high to medium, The Effectiveness of the Actions were similarly high to medium. The high to medium performance reflects the overall Strategy success and the early attainment of the Primary Aim/Action. The third performance aspect evaluated was Continued Relevance. Continued relevance describes the future need to implement each action in the next Strategy.

1.4 ECONOMIC EVALUATION

It was not possible to carry out a cost benefit analysis at individual target and action level. However an overview of the cost effectiveness of the Strategy as a whole was undertaken. The targets and actions were also evaluated qualitatively.

As identified in previous evaluation reports cost-benefit analysis is still challenging. The economic evaluation presented in this Report is a 'top down' approach.

From our analysis of the collision database, and HIPE data from hospital discharge records, it is evident that there is a very significant level of under-reporting of collisions. The HEATCO study estimated that the true rate of serious collisions in Ireland is around 50% higher than the reported figures, and the true rate of minor collisions is around three times the official figure.

For the purpose of cost-benefit analysis, in seeking to obtain an estimate of impact that is as robust and evidence-based as possible, we:

- Make no adjustment for under-reporting
- Assume that the without-Strategy case can be represented as a continuation of 2006 collision rates
- Assume that figures for 2012 will follow the trend from 2010 and 2011.

Table 1.3 below summarizes the numbers, based on the above analysis.

	Budget Cost (€m)	Cost allocated to Strategy (€m)	Benefit in Strategy Period (€m)	BCR
Measures for which individual BCRs have been calculated				
Motorway-building	3193	290	449	1.55
Safety Schemes	213	92	649	7.05
Other elements of the Strategy				
NRA - other costs	500	45	752	3.05
RSA	133	201		
An Garda Siochana	38			
Govt Departments	30			
	4039	628	1850	2.94

Table 1.3 – Summary of CBA results

In **Table 1.3** above the cost figures shown for An Garda Siochana are the net cumulative costs of implementing the Strategy, while taking account of baseline 2006 costs. The Government Department cost figure includes Department of Education and Transport costs. A conservative policy would require a cost benefit ratio of 1:1.5, which implies that the safety benefit outweighs the investment costs by 50%.

To put this ratio in context the economic evaluation⁹ of the Government Strategy for Road Safety 1998-2002 estimated a benefit to cost ratio for the strategy in the range 2.2:1 to 4.5:1. The Benefit to Cost Ratio (BCR) of the current strategy is comparable in terms of value for money such that the outcome benefits out weighs the overall investment by a factor of three. It should be noted that the BCR of 3.0 would be significantly higher if under reporting was addressed. As such the BCR ratio presented is conservative and the actual is likely to be significantly higher.

The above analysis has derived estimates of benefit-to-cost ratios for two types of measure for which relevant data could be obtained.

The BCR for motorway building is based on the NRA's own CBA. Safety benefits from this Action are large in absolute terms, but only a proportion of the overall benefits are safety-related and only some of the benefit occurs within the Strategy period. These schemes give a worthwhile return on investment, but are a relatively expensive way of increasing road safety.

Safety remedial schemes appear to offer a high return on investment. The estimate derived here is highly uncertain, but evidence elsewhere supports the view that such schemes offer a high level of value for money.

Time series analysis suggests that the present system of speed cameras, deployed on routes with a particular history of collisions, offer a significant safety benefit. It is suspected that this measure also offers a good level of return on expenditure, but the cost data to confirm this was not readily available. Also a major non quantifiable benefit of this measure has been the freeing-up of Garda resources from this duty to other duties.

⁹ Preliminary Cost Benefit Analysis of The Government Strategy for Road Safety 1998-2002 August 1999

All other measures form a residual category for which no measure-level CBA has been possible.

It should be noted here that partner agencies found it most difficult to report details of costs incurred by them in implementing the Strategy Actions. The availability of detailed and accurate information on resource inputs to implement Strategy Actions should be addressed in the forthcoming Strategy.

1.5 STAKEHOLDER CONSULTATION

The Strategy has been delivered by the RSA in conjunction with several primary stakeholders and supporting agencies. In order to assess the Strategy, feedback from these parties was sought through Stakeholder Consultation.

A selection of points raised by stakeholders on the Strategy is shown below:

- The stakeholders commented that enforcement was a very effective measure and key to prevention of road collisions and that the introduction of Mandatory Alcohol Testing and Speed Cameras was very effective.
- The stakeholders responded positively to the timeframe and structure of the strategy and in their opinion the five to seven year program was appropriate.
- The stakeholders expressed their opinion that each agency tends to have very good data but it may not end up being available in a useable format by others. For example, lack of access to Hospital Inpatient Enquiry (HIPE) data to examine impact of work related road collisions and incidents involving vehicles used for work.
- An example of very good data collection is the forensic collision investigation report at the scene of all fatal collisions. An Garda Síochána collect this information as part of the legal process, however this information (or a subset of this information) is not readily available and where it would be very useful to road safety engineers trying to ascertain the reasons behind collisions. The data is being collected at present but there is no mechanism where it can be shared or centrally accessed.
- The political commitment given to the strategy was the fundamental building block without which it would not have been successful.
- The stakeholders expressed their opinion that working together for common purpose has had major impact.
- The stakeholders expressed their opinion that individual good works carried out in various areas should be spotlighted to encourage others to follow suit. In this regard some case studies and information on resultant good projects should be highlighted.
- If the measure needed to be tweaked, or a new initiative came along which was not in the original strategy, then the strategy could be structured to allow certain degree of flexibility to allow this new idea to be included.

1.6 CONCLUSIONS

The conclusions ask the following four questions of the Strategy:

- **Were the desired aims achieved?**
- **How were the desired aims achieved?**
- **Was Value-For-Money achieved?**
- **Did the Strategy Implementation process work?**

WERE THE DESIRED AIMS ACHIEVED

- The number of fatal vehicle-on-vehicle collisions has more than halved over the period of the Strategy
- The number of other fatal collisions has reduced by around a third
- The reported rate of serious collisions in 2011 was less than half that at the start of the Strategy period.

ACHIEVING THE DESIRED AIMS

The vast majority of the Actions that were committed to as part of the Strategy were implemented in full. Measures that required cross-agency co-ordination proved more difficult to implement.

Our analysis would suggest that the impact of the Strategy equates to a saving over the period, 686 fatal collisions, 1312 serious injury collisions and 649 minor collisions. **This equates to a monetary saving of 1.85 billion.**

VALUE FOR MONEY

The overall benefit-to-cost ratio for the Strategy is estimated to be close to 3 to 1, which compares favourably with many investment options elsewhere in the economy.

STRATEGY IMPLEMENTATION PROCESS

The stakeholder partners who were part of the Strategy process were uniformly positive that working together for road safety is the right way forward, and that a 5/6/7-year Strategy is an appropriate timescale.

The key elements of the process were the setting of Targets, the identification of Actions, assigning actions to lead agencies with identified completion dates, and the annual review of progress. Also the

impact of the political commitment of the Minister and the Cabinet Subcommittee must not be underestimated.

2 INTRODUCTION

2.1 IRELAND'S ROAD SAFETY PERFORMANCE IN THE EU

Ireland road safety ranking prior to the implementation of the Strategy in 2006 was 12th out of the EU 25.

The European Transport Safety Council (ETSC)¹⁰ confirmed in 2011 that Ireland is the 5th Safest Country in Europe (27 EU Member states) and that road deaths halved in the last decade.

The report (5th Road Safety PIN Report) shows that since 2001, Ireland has seen a rapid improvement in road safety. A total of 411 people were killed on Irish roads in 2001 compared to 212 in 2010 which represents a 48% cut in road deaths.

The ETSC report also shows that road deaths in Ireland dropped by 11% between 2009 and 2010. The five countries with better track records than Ireland are Sweden, the UK, Malta, The Netherlands and Germany. Ireland's roads are now safer than roads in Australia (61) and the USA (107).

2.2 OVERVIEW

The Road Safety Authority was established in 2006 to take the lead role in the area of road safety in Ireland. The Authorities mission is stated as **'to make roads safer for everyone'**. Prior to 2006 the National Road Authority, Department of Transport and National Safety Council all had shared responsibility for road safety in Ireland.

The primary target of the Strategy was to reduce road deaths to 60 per million population by 2012 (and to 50 per million population thereafter). This primary target was further broken down into 41 targets set out across 9 areas.

2.3 TERMS OF REFERENCE

The terms of reference for this report are to evaluate the current Strategy and inform the development of the forthcoming Road Safety Strategy. The following objectives form the framework around which the evaluation is based. The evaluation objectives of the current Strategy are as follows:

- Identify, and where possible/appropriate, quantify the inputs, outputs, outcomes and impacts associated with the Strategy measures and assess their contribution to their achievement of the Strategy's objectives.
- Examine the extent to which the Strategy objectives have been achieved and the efficiency with which they have been delivered;
- Comment on the success of the measures and the realism and relevance of the targets set;
- Comment on the extent to which the Strategy objectives could have been achieved by applying different measures;
- Identify factors which have contributed to the success of measures, or otherwise;
- Comment on issues relating to governance structures; clarity regarding authority; responsibility and accountability of the various participants; inter-agency cooperation at varying levels; and the extent to which these have contributed to the effective and efficient delivery of the Strategy.
- Draw together all the above to provide an assessment of the overall costs and benefits of the Strategy.

¹⁰ 5th Road Safety PIN Report, European Transport Safety Council

This report will also inform the formulation of the next Road Safety Strategy as follows:

- Review the conceptual approach under-pinning the current Strategy and its continuing relevance;
- Review the strategy objectives for their continuing validity and relevance in light of progress made in Ireland, as well as international best practice; in reducing collisions
- Evaluate the scope for alternative policy or organisational approaches to achieving the Strategy objectives on a more effective basis;
- Suggest priority areas for the new Road Safety Strategy.
- Specify potential future performance indicators which might be useful to better monitor the performance of the forthcoming Road Safety Strategy; and
- Identify the research and data gathering exercises required to facilitate future evaluations as well as to comply with EU Directives, policies and recommendations.

The Strategy sought to deliver major improvements in road safety by effectively mobilising internal resources and working in a collaborative manner with external stakeholders to maximise its influence and achieve stated objectives. The Strategy has allocated responsibility to individual stakeholders to facilitate a coherent and successful programme of action, refer to Appendix D for a list of their respective roles.

Whilst the RSA has lead responsibility for reducing the loss of life, loss of quality of life, and material damage caused by road collisions, responsibility for the varied actions that can be taken by the State to minimise these losses is spread across a number of State bodies. Under the Strategy, all of the stakeholders are collectively responsible for their respective actions

The implementation of this Strategy requires the cooperation and collective responsibility of all stakeholders. The RSA monitors the implementation of the Strategy and facilitates co-operation between various stakeholders. This is a vitally important function because of the cross agency dependency for the delivery of actions, and the lead agency/support agency implementation framework. Progress in relation to implementation is reported annually. The Authority is dependent on, for example:

- **Gardaí and the Traffic Corps** for consistent and appropriate enforcement aimed at increasing compliance,
- **NRA and Local Authorities** for appropriate and consistent speed limits and road quality across the road network
- **MBRS** for approving, testing and supplying roadside analysis equipment and for analysing blood, breath and urine samples at a volume and quality to support the increased level of enforcement,
- **HSE** and other agencies for advice and evaluation of the population health impacts of road safety initiatives.

The RSA has identified a number of key behaviours to be changed by the actions set out in this Strategy:

- Inappropriate speeding,
- Impaired driving through alcohol, drugs (prescription or non-prescription), or fatigue,
- Not using seat belts and child safety restraints,
- Unsafe behaviour towards / by vulnerable road users (pedestrians, motorcyclists, cyclists, young children and older people).

2.4 STRUCTURE OF THE REPORT

The following sets out the structure of this Report:

- **Section 3**, provides an overview of the 2007 to 2012 Road Safety Strategy
- **Section 4**, describes Methodology and Approach.
- **Section 5**, Evaluation of the Strategy 41 targets
- **Section 6**, Evaluation of the Strategy 126 actions
- **Section 7**, Economic Evaluation
- **Section 8**, Stakeholder Consultation
- **Section 9**, Conclusions
- **Section 10**, Informing the 2013-2020 Road Safety Strategy

3 IRELAND'S THIRD ROAD SAFETY STRATEGY (2007 TO 2012)

The Strategy states that the main aim of the Road Safety Authority (RSA) is to:

“save lives and prevent injuries by reducing the number and severity of collisions on the road”.

Under the current Road Traffic Act the RSA has responsibility for providing the following functions:

- Driver Testing and Training
- Road Safety, Research and Driver Education, and
- Standards and Enforcement.

In Section 3 of the Strategy the Authority set out what it considered to be the **Critical Success Factors** which were based on internationally recognised¹¹ best practice. They are:

- Political commitment,
- Leadership and road safety champions,
- Accountable stakeholders,
- Collaboration between stakeholders,
- Road safety planning (goals, strategy, action plans, funding),
- Data sharing information systems,
- Monitoring and evaluation,
- Trained and equipped staff, and
- Marketing, outreach and public information.

3.1 ROAD SAFETY OBJECTIVES

Section 4 of the Strategy defines the following objectives which it seeks to achieve through the implementation of the six year Strategy between 2007-2012:

- A change in focus to prioritise prevention of a collision in addition to planning to contain the consequences and recovery / rehabilitation of the injured
- A change in focus where the policy accepts that road users will make mistakes. It seeks to compensate for those mistakes by designing and building a more forgiving road network. (A forgiving roadside is a road side which minimises the severity of the injury to a driver or passenger when the driver loses control and the vehicle leaves the road.)
- Better management and coordination of the actions among the stakeholders – particularly in managing the prioritising and sequencing of actions between Government Departments and Agencies
- Improvement of communication and consultation to ensure public support is achieved and sustained
- Provision of timely, accurate and meaningful information to all road users
- Accountability through detailed regular reporting on effectiveness, value for money and outcome measurement.

¹¹ Source: SWOV, the Institute for Road Safety Research in the Netherlands (Advancing Sustainable Safety 2005 – 2020)

3.2 ROAD SAFETY TARGETS

In **Section 5** of the Strategy the RSA has set targets around the primary causes of road collisions, deaths and injuries. The primary causes of road collisions identified in the Strategy are:

- Speed inappropriate for, or inconsistent with, the prevailing circumstances or driving conditions
- Impaired driving through alcohol, drugs (prescription or non-prescription), or fatigue
- Failure to use or properly use seatbelts and child safety restraints
- Unsafe behaviour towards / by vulnerable road users (pedestrians, motorcyclists, cyclists, young children and older people).

The Strategy set 41 targets which it aims to achieve between 2007 and 2012. The 41 targets can be divided into the following nine road safety areas (shown in **Figure 3.1** as a percentage of overall targets set).

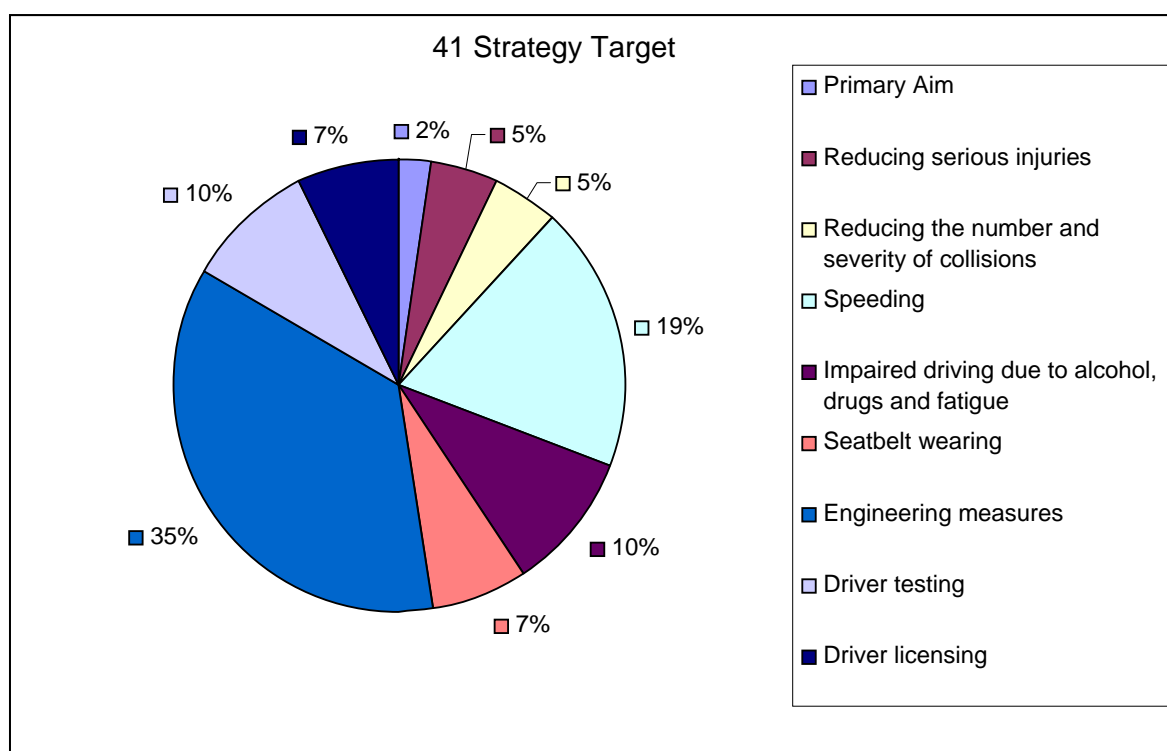


Figure 3.1 Strategy (2007-2012) Targets

The 2007-2012 Strategy, like many other government programmes, includes identified targets. These can be divided into:

- **“outcome targets”** – reductions in fatalities, serious injuries, number and severity of collisions – whose achievement is desirable for their own sake, and
- **“output targets”** – such as seat belt wearing or speed limit compliance – which are desired because it is believed that these will positively influence the outcomes of interest.

3.3 ROAD SAFETY ACTIONS

Section 6 of the Strategy details the action plan to ensure that targeted outcomes are achieved. The Action Plan details 126 actions, although not mapped directly to the targets as set out in the Strategy, the actions are designed with the achievement of the targets in mind. It should be noted that some of the actions are a direct reflection of the targets. In other cases, actions overlap with one another to contribute to the achievement of one or more targets.

These 126 actions can be divided into the road safety areas (shown in **Figure 3.2** as a percentage of overall number of actions).

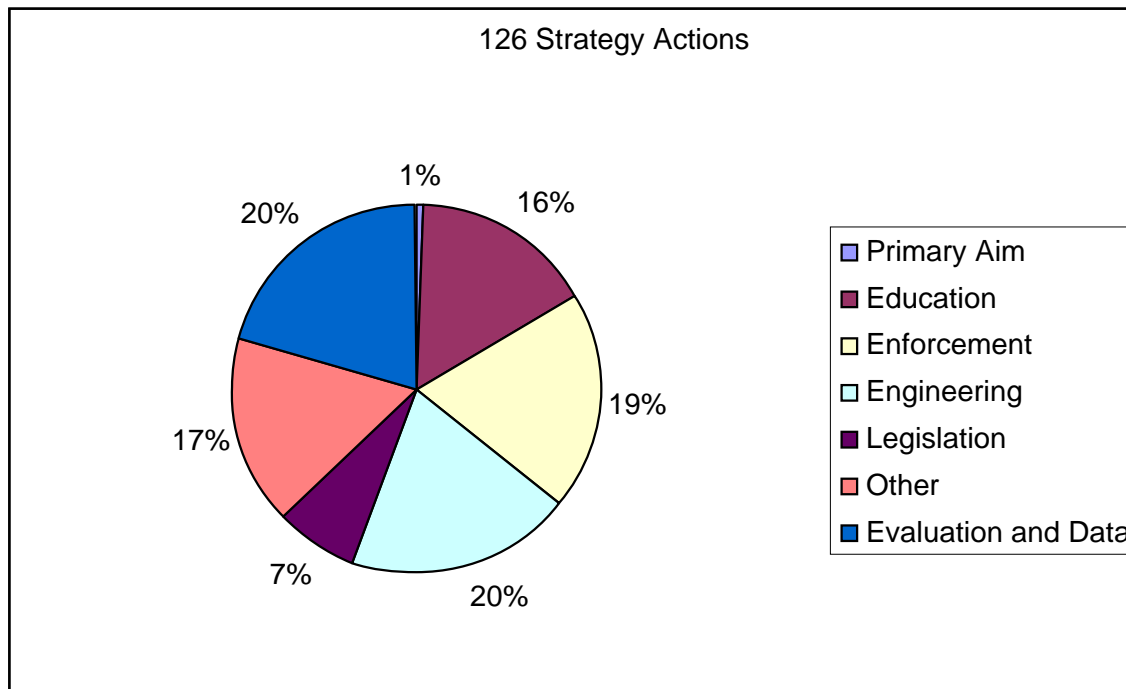


Figure 3.2 Strategy 126 Actions (2007-2012)

3.4 ROAD SAFETY POLICY FRAMEWORK

The four elements of the framework are Education, Enforcement, Engineering and Evaluation. The Authority has followed best practice and international consensus¹² by adopting this framework approach. The four E's and their objectives are as follows:

Education – raising awareness of road safety by imparting knowledge and developing an understanding of the risks with a view to changing attitudes and behaviour at individual, community and organisational levels.

Enforcement – visible and appropriate enforcement acting as a deterrent and increasing compliance with road traffic laws.

Engineering – making the road network safer and more forgiving of inevitable errors by road users. Vehicle engineering to improve occupant and pedestrian / cyclist safety and minimise harm.

Evaluation – ensuring sustainable reduction in road deaths and serious injury by constant research into the efficacy of actions undertaken. Evaluation is now included as part of the strategy for the first time.

¹² Development of Procedures for a Cost-Benefit Analysis of the Road Safety Strategy 2007-2012", Goodbody Economic Consultants, April 2010

Individual actions under these measures vary between countries in response to local conditions, culture, legislation, demographics and road infrastructure. In Ireland, the RSA will collaborate with stakeholders to implement a range of actions appropriate to local culture, laws, and infrastructure. Within the framework of evaluation the Authority seeks to achieve the following objectives:

- Improve the availability of accurate, relevant and timely data / information to support policy decisions
- Apply cost-benefit analysis and evaluation techniques in all decisions relating to the commitment of public funds in the prevention of and response to collisions, deaths and injuries and in follow up recovery and rehabilitation of the people injured in a collision.
- Engage in collaborative and partnership projects with the EU, international agencies and with all stakeholders.

3.5 ROAD SAFETY STRATEGY IMPLEMENTATION PROCESS

The Strategy relies on the following four implementation pillars described below.

Stakeholders

The Road Safety Authority takes overall responsibility for the implementation of the road safety strategy. In implementing the strategy the RSA relies on other departments and agencies. The performance of the lead and support agencies in implementing their particular actions is monitored continually by the RSA.

Policy Advisory Panel

A Policy Advisory Panel was established to support the work of the RSA in the implementation of the Strategy.

The Policy Advisory Panel is made up of a number of road safety experts that support the work of the RSA in the development, implementation and evaluation of integrated policy measures as follows:

- Continue the analysis of recommendations in the submissions received during the consultation period,
- Facilitate communication and consultation between the primary stakeholders, and
- Provide access to information and research

Annual Review

The RSA also undertake an annual review of the implementation process. The review report for any one year is published by June of the following year.

Cabinet Sub-Committee

In addition to the measures above a cabinet subcommittee chaired by the Minister for Transport meets every six months to review implementation progress. The Cabinet Sub-Committee on Road Safety includes the Minister for Justice Equality & Law Reform, Finance, Health & Children, Education & Science, Environment Heritage & Local Government and the Attorney General and is chaired by the Minister for Transport.

4 METHODOLOGY AND APPROACH

4.1 INTRODUCTION

This evaluation will assess the extent to which the Strategy objectives were achieved and targets attained. The recommendations provide comment on the relevance of the targets and actions, their impact and the level of implementation that contributed to the overall Strategy performance.

The evaluation approach draws on the recommendations contained in the Goodbody Report¹³ and follows the evaluation strategy methodology contained in the Ex-Post Evaluation of the European Road Safety Action Program 2001-2010¹⁴. This Report will also address and provide guidance to the development of the forthcoming Road Safety Strategy 2013 to 2020.

It was not possible to carry out a cost benefit analysis at individual target and action level. However an overview of the cost effectiveness of the Strategy as a whole was undertaken. As identified in previous evaluation reports¹⁵ cost-benefit analysis is still challenging. The economic evaluation presented in this Report is a 'top down' approach.

4.2 METHODOLOGY

4.2.1 Overall Approach

The evaluation has been carried out utilizing the following approaches to determine the effectiveness of the Strategy:

- A literature review of current best practice in road safety.
- An individual review of each of the 41 targets in the Strategy
- An individual review of each of the 126 actions in the Strategy
- Cost Benefit Analysis, based on analysis of the road collisions database to estimate the benefits from the Strategy, and stakeholder information on the costs of implementation
- Consultation with stakeholders to provide feedback to the Strategy evaluation process

Throughout the evaluation, the RSA provided updates and regular information exchanges that aided the evaluation process and informed this Report.

4.2.2 Data Collection

The first stage of the evaluation involved a literature review. The desk top study included the collection of data through direct contact, surveys and statistical data. We also reviewed relevant national and international literature and research including:

- National Road Safety Strategy 2007-2012,
- National Road Safety Strategies (1993-2000 & 2000-2007),
- RSA and An Garda Siochana Statistical Datasets,
- European Policy on Road safety,
- Development of Procedures for a Cost benefit Analysis of the Road Safety Strategy 2007-2012, Goodbody 2011,

¹³ Development of Procedures for a Cost-Benefit Analysis of the Road Safety Strategy 2007-2012" , Goodbody Economic Consultants, April 2010

¹⁴ FINAL REPORT - VOLUME 1 EX-POST EVALUATION OF THE RSAP SPECIFIC CONTRACT DG TREN A2/143-2007 Lot 2 Impact Assessments and Evaluations in the field of transport. The preparation of the European Road Safety Action Program 2011-2020, January 10th 2010.

¹⁵ Development of Procedures for a Cost-Benefit Analysis of the Road Safety Strategy 2007-2012" , Goodbody Economic Consultants, April 2010

- CSO and OECD Data,
- National Road Authority – National Secondary Roads Needs Study,
- Supreme Best Practice Road Safety Solutions,
- European Transport Safety Council – various papers,
- Recreation and Amenity Needs Study 2007,
- Towards Zero – Ambitious Road Safety Targets and the Safe System Approach (TRC 2008),
- Databases – CARE, European Injury, IRTAD, and
- Various UK, Dutch and Swedish, Road Safety Publications.

4.2.3 Overview of the Strategy Targets

The 41 targets set out in the Strategy were evaluated in terms of outcome and achievement.

4.2.4 Overview of the Strategy Actions

All of the strategy actions were qualitatively evaluated individually and also in aggregate by grouping them into seven distinct road safety themes that looked at the following criteria:

- Inputs – the resources committed to a particular activity,
- Activities – the quantity of ongoing actions which take place,
- Outputs – the direct results, and
- Outcomes – the impact in terms of what the programme is trying to achieve.

4.2.5 Programme Logic

- Inputs – the resources committed to a particular activity,
- Levels – the quantity of ongoing actions or implementation level which takes place,
- Outputs – the direct results, and
- Outcomes – the impact in terms of what the programme is trying to achieve.

4.2.6 Consultation on Strategy Process

The consultation process involved initial meetings with individual primary stakeholders, these meetings were chaired by the RSA. Following from this initial stage the primary stakeholders were issued with consultation questionnaires to provide feedback on the Strategy for evaluation purposes. The final stage of the consultation process involved issuing of a cost evaluation questionnaire to the primary stakeholders to inform the economic evaluation of the Strategy.

5 EVALUATION OF TARGETS

A **target** is distinct from an **aim or objective** in that it includes a particular level which it is desired that the relevant statistic should reach.

Unlike an **action**, a target is normally set in relation to a statistic that is influenceable but not under the direct control of the actor.

Targets provide the focus for the road safety strategy and the level of their ambition drive decisions about coordination needs, legislative needs, funding and resource allocation, promotion needs, monitoring and evaluation, as well as research, development and knowledge transfer.¹⁶

This section reports on the extent to which the targets set as part of the Strategy were achieved.

5.1 PRIMARY TARGET

The Strategy describes its aims and approach as follows:

This Strategy will save lives and prevent serious injuries by reducing the number and severity of collisions on the road. It will bring Ireland in line with best practice countries on road safety. It will reduce the number of fatalities to not greater than 60 fatalities per million (252 fatalities per annum or 21 fatalities per month) with a demonstrable reduction each year of the Strategy. It will require a collaborative approach across a range of Departments and Agencies.

This statement includes a target, which due to the prominence given to it, can be considered the primary target of the Strategy.

A slightly refined version is listed as number one in the list of Strategy targets:

2. Reduce Fatalities

Reduce fatalities to no greater than 60 fatalities per million by the end of 2012 and 50 or fewer in the following years with demonstrable downward reductions in each year of this Strategy.

Between 1970 and 2010, the number of fatalities on Irish roads dropped by 61%. In the same period, the number of vehicles on the roads quadrupled. After a peak in 1972, with 640 fatalities in one year, traffic casualties fell steadily. The rate of improvement rose significantly in the last decade (-49% between 2000 and 2010) and even more quickly -37% in the three years between 2007 and 2010.

Fatalities for all user groups have been improved over the period between 2001 and 2010. Total fatalities reduced by 48% in 2010 compared with 2001¹⁷. Substantial reductions have been recorded in all road user categories, with the highest reduction in motorcycle, goods vehicle and pedal-cycle casualties (66%, 62% and 58% reduction, respectively) between 2001 and 2010

The fatality rate in 2010 was 47 fatalities per million population¹⁸, thus achieving ahead of schedule not only the 2012 sub-target but also the longer-term sub-target.

Figures 5.1 to 5.3 illustrate that the number of road deaths and fatal collisions have fallen over the Strategy period, with clear reductions in each year. Provisional 2011 results are available, and these demonstrate that year-on-year reductions have continued.

¹⁶ European Road Safety Observatory (2006) Quantitative road safety targets, retrieved February 13, 2008 from www.erso.eu

¹⁷ IRTAD 2011 ANNUAL REPORT — OECD/ITF 2012

¹⁸ IRTAD 2011 ANNUAL REPORT — OECD/ITF 2012

The primary target set by the Strategy has been achieved and surpassed before the target year.

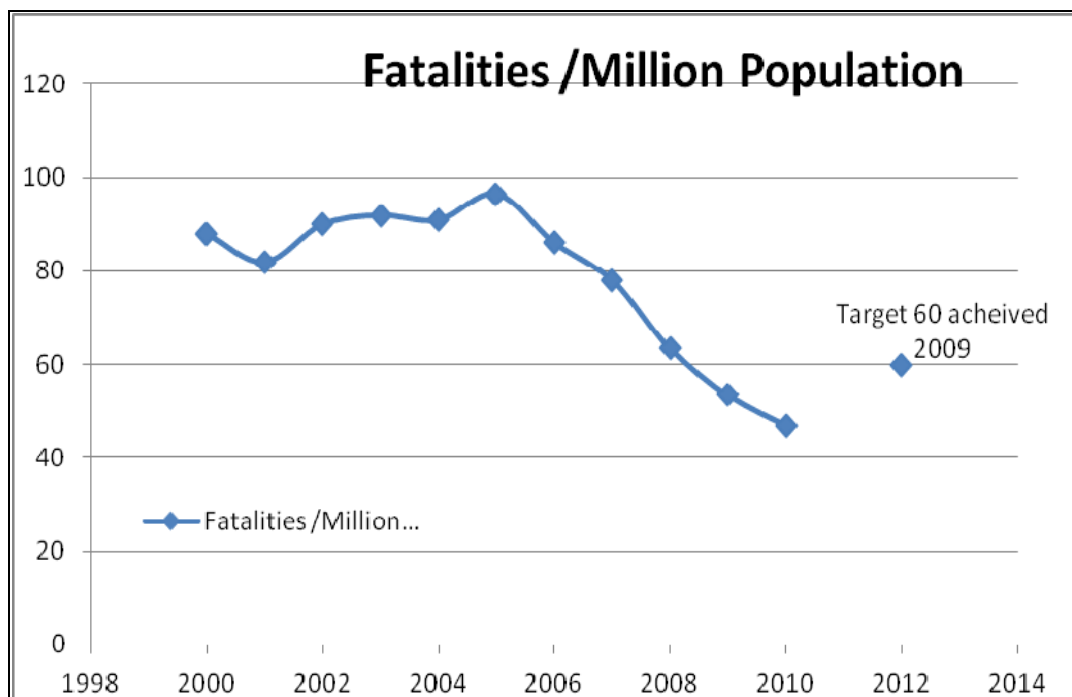


Figure 5.1 Fatalities per million population (Source: IRTAD 2011 ANNUAL REPORT –OECD/ITF 2012)

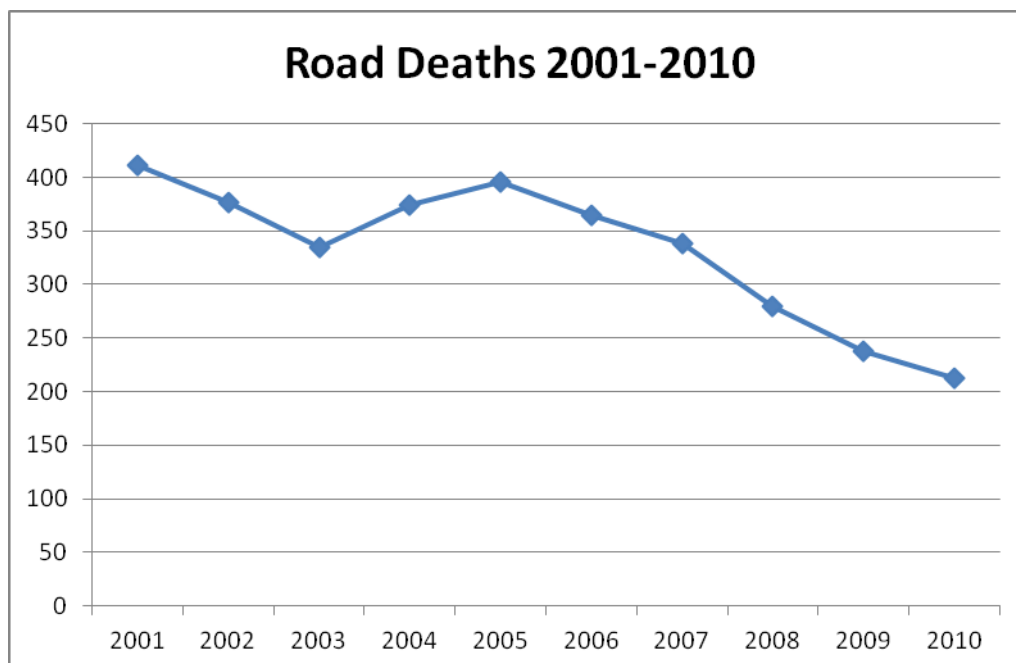


Figure 5.2 Deaths on Irish Roads 2001-2010 (Source: Road Collision Facts, RSA.)

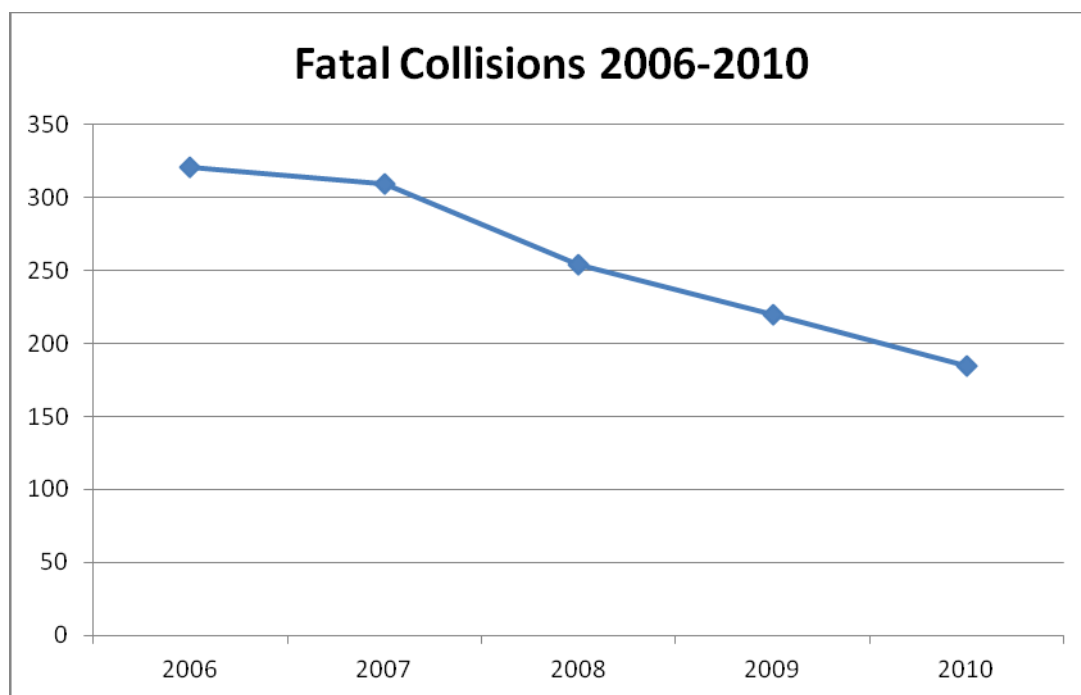


Figure 5.3 Fatal Collisions on Irish Roads 2006-2010 (Source: Road Collision Facts, RSA.)

Evidence from OECD reports indicates that Ireland performed better than the EU average in the reduction of fatalities and serious injuries (-3.7% and -5.9% per annum respectively) since 2001¹⁹. Ireland's road safety record has significantly improved in the years 2006 to 2011. In 2011 the European Transport Safety Council ranked Ireland as the fifth safest EU country.

Note that the population of Ireland, according to the results of preliminary survey carried out by Central Statistics Office in 2011, was 4,588,252, which represents an 8.2% increase compared to 2006.

Therefore despite the growth in population, which would increase the exposure of risk of a collision, the fatalities still decreased to 162 in 2012, representing 35 fatalities per million of population, which is substantially less than the projected 2012 target²⁰.

Conclusions:

- The Strategy's road safety target of achieving no more than 252 deaths per annum by the end of 2012 has been achieved three years ahead of schedule.
- Reductions have been achieved in each year of the Strategy.
- As a result of the better than anticipated performance of the Strategy, Ireland has improved its European road safety ranking from 12th in 2006 and 9th in 2007 to 5th in 2011.

¹⁹ IRTAD 2011 ANNUAL REPORT — OECD/ITF 2012

²⁰ Garda Annual Report 2011/2012

5.2 ADDITIONAL TARGETS

A further forty targets were set across eight road safety areas to achieve the overall Primary Aim of the Strategy as follows:

- Reducing serious injuries (2 target);
- Improving the measurement and reporting of collisions (1 targets);
- Speeding (8 targets);
- Impaired driving due to alcohol, drugs and fatigue (4 targets);
- Seatbelt wearing (3 targets);
- Engineering measures (15 targets);
- Driver testing (4 targets); and
- Driver licensing (3 targets).

Table 5.1 below sets out the evaluation system that was used to assess the level of target attainment. Each of the targets were grouped according to their road safety area and an overall result was determined by weighting the results of the individual target results. An overall result for each road safety area was determined by applying the weighted individual target results across the road safety areas.

Description	Result	Weighting
The target was achieved between 2007-2012	Target Achieved	3
The target is over 50% achieved as at mid-2012	Target highly advanced.	2
The target is less than 50% achieved as at mid-2012	Target moderately advanced/may not be achieved fully	1
The target will clearly not be achieved by 2012.	Target not achieved.	0

Table 5.1 Evaluation Definitions

A full breakdown of the individual target evaluation results for the 41 targets is provided in **Table 5.2** below.

No.	Specific Target	Data Sources	Documents	Outcome	Result
Primary Aim Target					
1	This Strategy will save lives and prevent serious injuries by reducing the number and severity of collisions on the road. It will bring Ireland in line with best practice countries on road safety. It will reduce fatalities to no greater than 60 fatalities per million (252 per annum or 21 fatalities per month) with a demonstrable reduction each year of the Strategy.	RSA	Collision Facts	In 2011 fatalities per million were 40 per million population.	Target Achieved
Reduce Serious Injuries Targets					
2	To complete the database for serious injuries by 4th Quarter 2008	RSA	Collision Facts/ HIPE data /HSE	Incomplete. Under reporting of serious injuries.	Target moderately advanced
3	To reduce serious injuries by 25%.	RSA/HSE	Collision Facts	38.8% Reduction	Target Achieved
Improving the measurement and reporting of collisions Target					
4	The database for collisions will be complete by 4th Quarter 2009, following which there will be a benchmark for measuring the reduction in the number and severity of collisions.	RSA	Collision Facts	Database completed	Target Achieved
Speed Related Targets					
5	To increase compliance with speed limits on urban national roads (at 50 km/h sign) from 18% to 60% or better by 2012.	Speed surveys/GS	2011 Survey of Free Speeds	Static at 18% 2011	Target moderately advanced
6	To increase speed limit compliance on urban arterial roads from 14% to 60% or better in 50 km/h zones and from 11% to 60% or better in 60 km/h zones by 2012.	Speed surveys/GS	2011 Survey of Free Speeds	50 km/h Violation increasing, 23% compliance in 2011, 32% compliance in 2009. 60km/h Violation increasing, 28% compliance in 2011, 33% compliance in 2009.	Target moderately advanced
7	To increase speed limit compliance on regional roads from 84% to 90% or better by 2012.	Speed surveys/GS	2011 Survey of Free Speeds	63% compliance in 2011	Target moderately advanced
8	To increase compliance on 2-lane national primary roads from 74% to 90% or better by 2012.	Speed surveys/GS	2011 Survey of Free Speeds	82% compliance 2011	Target moderately advanced

No.	Specific Target	Data Sources	Documents	Outcome	Result
9	To increase articulated vehicles' compliance with speed limits on urban national roads (at 50 km/h sign) from 33% to 70% or better by 2012 and to increase rigid vehicles' compliance on the same roads from 23% to 70% or better.	RSA/GS	2011 Survey of Free Speeds	Articulated: 36% Compliance 2011. Rigid 35% compliance 2011.	Target moderately advanced
10	To increase speed limit compliance by articulated vehicles on 2-lane national roads from 13% to 60% or better by 2012 and to increase compliance of rigid vehicles from 24% to 60% or better over the same time period.	RSA/GS	2011 Survey of Free Speeds	Articulated, 35% Compliance 2011, 33% 2009. Fall in violation. Large fall in 2007 but return to trend 2008. 17% up to 35%.	Target moderately advanced
11	To increase both rigid and articulated vehicles' compliance with speed limits on regional roads to 95% or better by 2012.	RSA/GS	2011 Survey of Free Speeds Figure 2.2c and Figure 3.2c	Rigid 94% compliance 2011. Articulated 92% compliance 2011.	Target highly advanced.
12	To increase the percentage of single deck buses complying with speed limits on 2-lane national roads to 85% or better by 2012.	RSA/GS	2011 Survey of Free Speeds App Table 4	54% National and 85% Secondary avg 70.5% compliance 2011.	Target moderately advanced
Impaired Driving Targets					
13	To determine the incidence of drink driving in Ireland using data collected at the point of enforcement of MAT.	GS/MBRS RSA	RSA.ie Ireland - Drink Driving Facts	18,851 drivers were arrested on suspicion of drink driving in 2007 and 18,053 in 2008. 92 lives were saved in the first 12 months following the introduction of MAT in July 2006.	Target Achieved
14	Establish drug impairment training programmes for Gardaí, Doctors and Nurses by 2009.	MBRS	5 YEAR CORPORATE STRATEGIC PLAN 2012 - 2016	Training delivered by MBRS	Target Achieved

No.	Specific Target	Data Sources	Documents	Outcome	Result
15	To publish an annual review of blood alcohol levels from coroners' data.	RSA	Road Safety Strategy 2008/2010 - Action No. 120	The "National Drug and Alcohol Related Deaths Index" implemented by the Health Research Board independently of the Coroners Bill	Target highly advanced.
16	To introduce a reduced BAC.	RSA	Reduction in Drink Driving Limits Q&A Road Safety, Driver Education & Research 2011	Lower limits reduced collisions, deaths and injuries on Irish roads by 30%.	Target Achieved
Seatbelt Wearing Targets					
17	Increase adult front seatbelt wearing rates from 86% to 95% or better and increase the adult rate in rear seats from 63% to 85% or better by 2012.	RSA	2009 Report Seat Belt Wearing 2008	90% Front, 79% Rear	Target highly advanced.
18	Increase primary school front seatbelt wearing rates from 76% to 95% or better and rear seat wearing rates from 64% to 95% or better by 2012.	RSA	2009 Report Seat Belt Wearing 2008	82% Front, 80% Rear	Target highly advanced.
19	Increase wearing rates for secondary school-goers in front seats from 88% to 95% or better and in rear seats from 76% to 95% or better by 2012.	RSA	2009 Report Seat Belt Wearing 2008	87% Front, 83% Rear	Target highly advanced.

No.	Specific Target	Data Sources	Documents	Outcome	Result
Engineering Targets					
20	To develop a new Interurban network of Motorways and Dual Carriageways from Dublin to Galway (N6), Limerick (N7), Cork (N8) and Waterford (N9) by 2010.	NRA	Road Scheme Activity/ NRA Annual Reports	complete	Target Achieved
21	Develop an operational Strategy for the management of the National Roads network following the completion of the Major Inter Urban network.	NRA	NRA Annual Reports	complete	Target Achieved
22	An annual expenditure of €125m (2007 figures) for the structural maintenance, strengthening and overlaying of existing road surfaces, based on the priorities established by NRA annual maintenance surveys.	NRA	NRA Annual Reports	complete	Target Achieved
23	An annual expenditure of €12m (2007 figures) for the inspection, rehabilitation and strengthening of bridges on the network, based on the priorities established by inspections and structural assessments.	NRA	NRA Annual Reports	complete	Target Achieved
24	The expenditure of €60m over the period 2007-2010 as part of the National Road Network Re-signing programme.	NRA	NRA Annual Reports	complete	Target Achieved
25	Develop pilot schemes to include the maintenance of safety barriers and other maintenance elements on new dual carriageway sections of the network.	NRA	NRA Annual Reports	Partially complete	Target moderately advanced
26	Local Authorities will continue maintenance of the network with annual expenditure of €54m. (2007 figures)	NRA	NRA Annual Reports	complete	Target Achieved
27	Develop a network of Service Areas / Rest Areas on major inter urban and dual carriageway routes over the life of the Strategy.	NRA	Road Scheme Activity MOTORWAY SERVICE AREAS Status Update – May, 2011/ NRA Annual Reports	Motorway Service Areas (Tranche 1) - Complete 2010 Motorway Service Areas (Tranche 2) – Tender. Suspended due to funding restrictions.	Target moderately advanced
28	Continue to provide local authorities with an allocation of €6m (2006 figures) for winter maintenance and the development of the Real Time Road Weather Information System.	NRA	NRA Annual Reports	IceNet	Target Achieved
29	Carry out approximately 160 road safety remedial schemes at identified accident clusters on national roads in 2007. The NRA aims to eliminate any backlog of schemes over the next three years. The number of annual schemes will be reduced to about 80 by 2012	NRA	NRA Annual Reports	Completed	Target highly advanced.

No.	Specific Target	Data Sources	Documents	Outcome	Result
30	Traffic calming measures will be implemented at 20 schemes per annum on national roads. It is proposed to complete the Traffic Calming Programme on National Roads during the lifetime of this Strategy.	NRA	NRA Annual Reports	Incomplete	Target highly advanced.
31	The NRA will continue the implementation and monitoring of road safety audits on all national road schemes.	NRA	NRA Annual Reports	NRA online Road Safety Audit Application System	Target Achieved
32	The NRA will continue to carry out six national secondary route treatment Pilot Studies each year and based on the results will implement Remedial Measures on these National Secondary routes.	NRA	NRA Annual Reports	Completed	Target Achieved
33	The NRA will continue its work with other stakeholders in developing a GIS interface for the Local Authorities in identifying collision prone zones. The NRA, in conjunction with An Garda Síochána and the Local Authorities, will pursue the 'Implementation of Reporting Mechanisms for Collisions' report, with the aim of further increasing the accuracy of collision information.	NRA	NRA Annual Reports	Completed	Target Achieved
34	The NRA will continue participation in EuroRAP - the European comparative Road Safety Performance project.	RSA	Road Safety Strategy 2008/2009/2010	The NRA are continuing to participate in EuroRAP on an annual basis	Target Achieved
Driver Testing Targets					
35	To bring waiting times to under a 10 week average across the country by end March 2008 and to maintain it at this level.	RSA	Driving Test/Waiting Times	100% accomplished. The national average is currently 8 weeks.	Target Achieved
36	The RSA will have all driving instructors registered by 4th Quarter 2008 with suitable ongoing monitoring mechanisms in place to maintain a high standard among driving instructors.	RSA	May 2009 Driving instruction regulations	There are 1860 approved driving instructors currently registered.	Target Achieved
37	100% of all new provisional licence holders in the motorcycle category should undertake the compulsory basic training by the end of 2008 and that this is maintained thereafter.	RSA	2007 Consultation Document on Compulsory Basic Training for motorcyclists in Ireland.	Complete	Target Achieved

No.	Specific Target	Data Sources	Documents	Outcome	Result
38	By the end of 2007 the RSA will have undertaken research to evaluate the best approach to apply hazard perception learning for novice drivers and will implement the necessary change by the end of 2008.	RSA	GDL rollout	RSA plans to begin implementing HPT amongst novice drivers in mid-2012.	Target highly advanced.
Driver Licensing Targets					
39	The RSA will implement a learner permit and a graduated driver licence system for all driver categories within three months of final agreement on the Irish GDL system.	RSA	GDL rollout & Graduated Driver Licensing System Consultation Paper 2008	New Learner Permit - instated GDL - complete	Target Achieved
40	Introduce plastic card licence within 24 months of an agreed standard being determined by the EU.	RSA	Changes to Driver Licensing System in Ireland Consultation Document October 2010	Plastic Cards to be issued from Jan 2013 and phase out of paper licenses over 10 year period due to current expiry dates	Target highly advanced.
41	The target for implementing the Convention on driving disqualifications is the 2nd Quarter 2008. A joint feasibility study is being conducted on the mutual recognition of penalty points.	RSA	Penalty Points, Strategy/Regulations	January 2010 Mutual recognition of Driving Disqualifications not based on the accumulation of penalty points. No mutual recognition of Penalty Points yet	Target Achieved

Table 5.2 Overview of the Strategy 41 Targets

The **Primary Aim** is the first target –

Reduce fatalities to no greater than 60 deaths per million population by the end of 2012, and 50 or fewer in the following years, with demonstrable downward reductions in each year of the Strategy.

This was achieved and delivered ahead of the target implementation date. The overall result for the group was *Target Achieved*.

Serious Injuries

The targets to reduce the number and severity of serious injuries and produce a database of serious injuries were achieved. There were 472 reported serious injuries in 2011 compared with 561 reported serious injuries in 2010, a further reduction of 16%. The overall result for the group was *Target Achieved*.

Improving the measurement and reporting of collisions

The collisions database was completed and is updated annually by the RSA. The overall result for the group is *Target Achieved*.

Speeding

There were eight targets set for the reduction of speeding on Irish roads. Although none of the targets were achieved. However, all eight targets saw improvement and a positive trend towards higher compliance with posted speed limits. The overall result for the group was *Target Moderately Advanced*.

Impaired Driving

There were four targets set to reduce collisions due to impaired driving. Three of the four were achieved. The only target that was not achieved required actions from the Coroners Bill which is still under review. While the Coroners Bill failed to be implemented a centralised national database called the National Drug and Alcohol Related Deaths Index was independently developed by the Health Research Board. For this reason the target was achieved. The overall result for the group was *Target Achieved*.

Seatbelt Wearing

The seatbelt wearing targets set all saw an improvement from the 2007 compliance levels according to the RSA seat belt surveys carried out in 2008 and 2009. Subsequent survey in 2011, showed 93% of adults (drivers, front and rear passengers) were wearing seat belts – the highest rate recorded to date. 94% of school children were also wearing seat belts, an improvement on 2009 wearing rates. The trend of increasing seat belt wearing is also evident from the Garda Annual Review reports 2009, 2010 and 2011 which all reported a decrease in the number of fixed charges for non-compliance. In 2010, there were 17,340 detections for seatbelt offences compared to 20,493 in 2009, a reduction of 15.4%²¹. In 2011 fixed charge notices issued for seatbelt offences were 15,606 compared with 17,332 for 2010. The number of fixed charge notices for seatbelt offences fell by 10% in 2011²². This is a positive indication that the target is likely to be highly advanced by 2012 and for this reason the result assigned is highly advanced. The overall result for the group was *Target Highly Advanced*.

Engineering

The majority of the engineering targets were achieved, although some might better be described as actions that were implemented. The most significant being the completion of the major inter urban motorways which greatly improves the safety of the road network. The overall result for the group was *Target Achieved*.

Driver Testing

Three of the four driver testing targets were achieved and the remaining target dealing with hazard perception is highly advanced and expected to be implemented in 2012. The overall result for the group was *Target Achieved*.

Driver Licensing

Three targets were set in the area of driver licensing, which included the introduction of plastic card licences. Their introduction will not take place in 2012 but Plastic Card Licences will be issued from Jan

²¹ Garda Síochána Annual Review 2010.
http://www.garda.ie/Documents/User/2Copy%20of%20Garda_English_2010_FL_LOWRES.pdf

²² The Royal Society for the Prevention of Accidents Rural Road Environment Policy Paper: August 2010

2013 with phase-out of paper licences over a 10-year period. This target was therefore considered to be highly advanced. The overall result for the group was *Target Achieved*.

A summary of the grouped targets and their overall weighted results is presented in **Table 5.3** below.

Target Road Safety Group	Overall Result
Primary Aim	3
Reducing serious injuries (1 target);	2
Improving the measurement and reporting of collisions (2 targets)	3
Speeding (8 targets);	1
Impaired driving due to alcohol, drugs and fatigue (4 targets);	3
Seatbelt wearing (3 targets);	2
Engineering measures (15 targets);	3
Driver testing (4 targets); and	3
Driver licensing (3 targets).	3

Table 5.3 Summary of Target Results

The table above shows that six out of the nine targeted areas of road safety were achieved or highly advanced within the timeframe of the Strategy.

In particular the Primary Target was achieved three years ahead of the target date.

The following three target areas were not fully achieved:

- Speeding
- Impaired driving, and
- Seatbelt wearing.

Speeding

The eight speeding targets were not fully achieved but they were all improved upon from the levels of speeding compliance evident prior to 2007. Although all targets were not achieved there has been an overall increase in the level of speed compliance which is still significant. The setting of the target has however led to better level of compliance with speed limits. Results published by An Garda Síochána shows a steady increase in compliance between 2007 and 2012. According to the ETSC's Road Safety PIN Report 2010 more than 2,200 road deaths could be prevented each year if average speeds dropped by 'only' 1km/h on all roads across the EU.²³ Therefore while the targets were not fully attained the improvements that were achieved have contributed to reducing the number and severity of collisions on Irish roads. This target area has future scope to contribute to further improvements in road safety. It is likely that the transfer of traffic volumes onto the newly completed inter urban networks has resulted in higher operating speeds due to less congestion on the original networks.

Impaired Driving

Three of the four impaired driving targets were achieved within the Strategy timeframe. Target No.15 "to publish an annual review of blood alcohol levels from coroners' data" was not achieved because the Coroners Bill was not enacted into law. The targets set for continuation of MAT and lowering of BAC have been highly successful in their contribution to the overall reduction in fatal and serious collisions on Irish roads. The Coroners Bill would have provided a centrally available database of fatalities resulting from drug and alcohol. While the Coroners Bill did not progress a database was developed during the Strategy time period. The Health Research Board completed a national database entitled "National Drug-Related Deaths

²³ ETSC (2010), 4th Road Safety PIN Report, Chapter 3: Tackling the three main killers on the roads, [www.etsc.eu/documents/ETSC PIN Report 2010.pdf](http://www.etsc.eu/documents/ETSC_PIN_Report_2010.pdf)

Index²⁴ (NDRDI). This document provides the information that the Strategy aimed to achieve. Therefore the continued relevance is *low* and the action in *Highly Advanced*.

Seatbelt Wearing

The three seatbelt wearing targets were not fully achieved, but they were all highly advanced. The available data from the 2011 RSA surveys indicates that the compliance has improved. The 2011 results from the Garda Annual Report indicated that this trend towards increased compliance is continuing. Therefore it is likely that the 2012 targets may be achieved or very close to target compliance.

²⁴ Health Research Board (2011) Drug-related deaths and deaths among drug users in Ireland: Revised 2009 figures from the National Drug-Related Deaths Index. Available at www.drugsandalcohol.ie/16365

6 EVALUATION OF ACTIONS

The following section describes the evaluation of the Strategy actions and presents conclusions and findings. The first action mirrors the first target. The first target has already been assessed in the previous section and therefore will not be repeated. This section will deal with the remaining actions listed in the Strategy i.e. numbers 2 to 126.

6.1 EVALUATION OF ACTIONS 2-126

In order to evaluate the 125 actions each one was looked at individually in terms of their implementation, time line, impact, effectiveness and continued relevance. The following describes the evaluation criteria in each case.

IMPLEMENTATION STATUS

Implementation This provides a description of the state of progress of the action relative to the target completion date. Each action was assigned *high, medium and low* to describe the level of implementation completeness.

Time Line This provided a measure of the time scale for which the expected impact for a particular action may be anticipated to take place. In general actions such as media campaigns, targeting drink driving awareness, would produce effects in the short term over a bank holiday for example. Other actions focus on long term gains such as road safety education at primary and secondary level would produce long term effects. For the purpose of this evaluation three time lines have been assigned, short term (0-2 years), medium term (2-5 years) and long term (over 5 years).

Type of Impact This describes how a particular action achieves its road safety impact. There are two types of impact, direct and indirect. An indirect action, such as education or awareness campaigns have an indirect overall affect on road safety. A direct action such as speed cameras or enforcement has a direct effect on road safety.

EVALUATION

Effectiveness This is a qualitative assessment of how well the action achieved its intended objective in terms of the road safety. Three measures of effectiveness were assigned to describe each action *Low-Slight* contribution to improved road safety, *Medium*-Appreciable contribution to improved road safety and *High*-Significant contribution to improve of road safety.

Efficiency This is a quantitative assessment of the ratio of cost to benefits. While a comprehensive quantitative evaluation at action level was not possible, a top-down cost benefit analysis was carried out on the Strategy as a whole and this analysis is covered in **Section 7** of this Report.

Continued Relevance This describes the sustainability of the measure into the future and can it continue to contribute in a positive meaningful way to road safety. Each action was assigned *high, medium and low* to describe the level of continued relevance.

This section reviews the Strategy actions under the following road safety themes:

- **Speed** inappropriate for, or inconsistent with, the prevailing circumstances or driving conditions.
- **Impaired driving** through alcohol, drugs (prescription or non-prescription), or fatigue.
- Failure to use or **properly use seatbelts** and child safety restraints.
- **Unsafe behaviour** towards / by vulnerable road users (pedestrians, motorcyclists, cyclists, young children and older people).
- **Engineering**

The 126 measures as set out in the Strategy document fall under the seven headings of:

- Primary Action (1 measure);
- Education (20 measures);
- Enforcement (24 measures);
- Engineering (25 measures);
- Legislation (9 measures);
- Other Road Safety Measures (21 measures); and,
- Evaluation, Road Safety Data and Research Programmes (26).

The Goodbody²⁵ report recommended that the actions should be grouped into four target areas of road safety as follows:

- Speeding;
- Impaired Driving;
- Engineering Measures, and
- Seatbelt Wearing.

This approach has been adopted and an additional three road safety areas of individual focus have been grouped in a similar manner as follows:

- Vulnerable road users,
- Inappropriate behaviour
- Other

The individual status sheets are presented in Appendix A and their summary is provided under each of the seven road safety category themes.

Each of the seven themes above have also been reviewed using programme logic models to map the inter relationship between inputs, outputs and outcomes.

²⁵ Development of Procedures for a Cost-Benefit Analysis of the Road Safety Strategy 2007-2012", Goodbody Economic Consultants, April 2010

6.2 SPEED ACTIONS

The Strategy set the following targets for speed reduction to reduce the deaths and injuries on Irish roads:

Cars and Motorcycles

- To increase compliance with speed limits on urban national roads (at 50 km/h sign) from 18% to 60% or better by 2012.
- To increase speed limit compliance on urban arterial roads from 14% to 60% or better in 50 km/h zones and from 11% to 60% or better in 60 km/h zones by 2012.
- To increase speed limit compliance on regional roads from 84% to 90% or better by 2012.
- To increase compliance on 2-lane national primary roads from 74% to 90% or better by 2012.

Heavy Goods Vehicles and Buses

- To increase articulated vehicles' compliance with speed limits on urban national roads (at 50 km/h sign) from 33% to 70% or better by 2012 and to increase rigid vehicles' compliance on the same roads from 23% to 70% or better.
- To increase speed limit compliance by articulated vehicles on 2-lane national roads from 13% to 60% or better by 2012 and to increase compliance of rigid vehicles from 24% to 60% or better over the same time period.
- To increase both rigid and articulated vehicles' compliance with speed limits on regional roads to 95% or better by 2012.
- To increase the percentage of single deck buses complying with speed limits on 2-lane national roads to 85% or better by 2012.

In the following section **Table 6.1** lists the six Strategy Actions that aim to achieve the above targets and **Table 6.2** illustrates the Programme Logic Model developed to describe the processes involved in the delivery of the Primary Aim through implementation of speed actions and targets.

Actions 24, 25 and 26 are not complete because they have not reached their target levels of compliance by target date set out in the Strategy. The implementation however is medium because the level of compliance with speed limits has risen and this is reflected in results published by An Garda Síochána which shows a steady increase in speed compliance between 2007 and 2012.

There were two enforcement actions, 34 and 35, listed below in **Table 6.1** under engineering actions. Both of the actions target a reform of the existing system for setting posted speed limits on all road classes. Motorists are more likely to adhere to a speed limit that they perceive as appropriate²⁶. These actions have been advanced but were not completed. Their effectiveness is rated as *medium*, because they were not implemented, and they are of *high* continued relevance. Investment in speed limits is low cost but has a high road safety effect²⁷.

Speed compliance improvements on 2-lane national primary roads from 74% to 85% were reported in the Free Speed Surveys 2011 carried out by the RSA. Similarly rigid and articulated vehicles' compliance with

²⁶ The Royal Society for the Prevention of Accidents Rural Road Environment Policy Paper: August 2010

²⁷ Best Practice for Cost-effective Road Safety Infrastructure Investments, Summary Report April 2008. http://www.cedr.fr/home/fileadmin/user_upload/Publications/2008/e_Road_Safety_Investments_Summary.pdf

speed limits on regional roads are very close to their 2012 target of 95% or better at 94% and 92% respectively²⁸.

The effectiveness is *high* because enforcement has been shown to be an effective deterrent to speed violation across Europe and internationally. The proportion of fatal and serious injury collisions that sight speeding as their primary cause is approximately 1 in 3. While the overall number and severity of fatalities and injuries has reduced, driver error as a contributory factor in road collisions has remained consistently high at approximately 90% in all recorded collisions. The prevalence of excessive speeding as the cause of fatal collisions has also remained high and appears to have slightly increased as shown in **Figure 6.2** below.

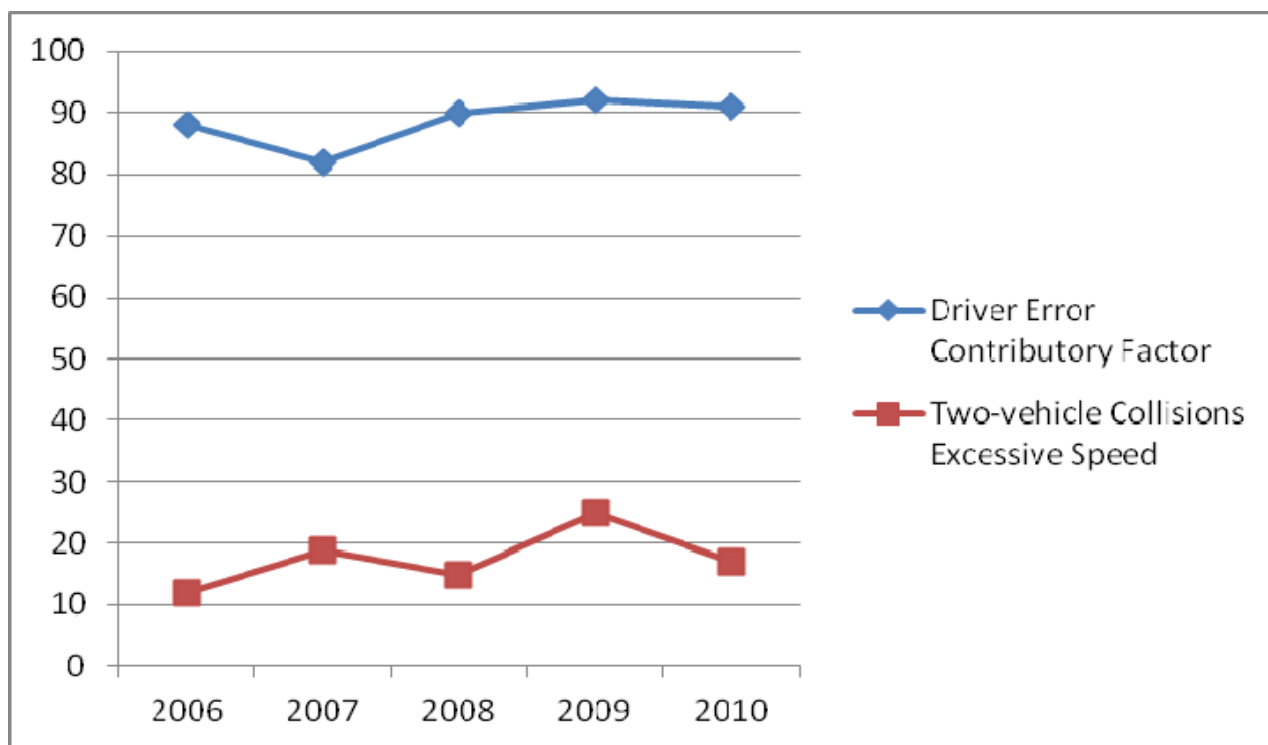


Figure 6.2 Driver Contributory Factor and Excessive Speed Contributory Factor (Source: Road Collision Facts 2006-2010)

Enforcement has a short to medium term impact and therefore must be maintained to ensure the current levels of compliance with speed limits continues. In particular the role out of the Speed Camera Network has been an extremely important tool in combating inappropriate speeding. Enforcement of speed is a key factor according to The European Transport Safety Council (ETSC) report 'Traffic Law Enforcement across the EU' published in May 2006 which concluded that, *"To control speed, automated speed enforcement systems must be used, and offences must be followed up by procedures able to manage with a large number of violations."* The successful reduction of speed related road casualties throughout the EU has been achieved by focusing on enforcement strategies. Therefore the continued relevance of speed enforcement actions is *high*.

The effectiveness of speed limit-related interventions has been shown to be largely dependent on enforcement²⁹.

Action 104 is an evaluation action that informs the progress of the actions discussed above. In this regard it is not effective in itself but provides necessary information to inform other actions. For this reason its effectiveness is *medium* and its continued relevance is *high*.

²⁸ Free Speed Surveys 2011, Road Safety Authority.

²⁹ CEDR Technical Group Road Safety <http://www.cedr.eu> Best Practice for Cost Effective Road Safety Infrastructure Investments, April 2008

Motorists are more likely to adhere to a speed limit that they perceive as appropriate³⁰.

The programme logic model in **Table 6.2** below illustrates that the setting of targets to address speed has had an overall impact in achieving the Primary Aim of the Strategy. It can also be seen that education and mass media campaigns play an important role in the overall behavioural change in the driving population. This will have a long term influence in combating inappropriate speeding. Enforcement in combination with media information campaigns is more effective than enforcement alone. Therefore the removal of enforcement actions would result in less effective change in behaviour and consequently less reduction in collisions. Enforcement has a short term impact and is effective so long as it is in place.

During the period 1997-2009, 1,150 lives were lost on Irish road due to excessive speed; this represents 24% of the total fatalities within the period 1997-2009. An additional 3,366 people were seriously injured over the same period. As a result, continued efforts to reduce speed have *high* continued relevance³¹.

Conclusions

- The overall qualitative evaluation shows that targets and actions to address speed have continued relevance.
- Research shows that enforcement is an effective deterrent particularly in conjunction with media campaigns and this strategy should continue.
- Education programmes should be continued to improve the long term attitudes to the dangers of speeding.
- Evaluation is required to continually assess compliance levels to inform decision makers.

³⁰ The Royal Society for the Prevention of Accidents Rural Road Environment Policy Paper: August 2010

³¹ ROAD SAFETY STRATEGY ANNUAL REVIEW 2008

No.	Speed Measures	Target Completion Date	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Relevance
24	Achieve a target levels of compliance with speed limits for cars and motor cycles by 2012:	Annually	Not complete	Enforcement	medium	Medium term	direct	high	high
25	Achieve a target level of compliance with speed limits for goods vehicles and single deck buses by 2012:	Annually	Not complete	Enforcement	medium	Medium term	direct	high	high
26	Implement a Safety Camera Network in the region of 6,000 hours enforcement per month.	2nd Qtr 2008	15th November 2010	Enforcement	medium	Short term	direct	high	high
34	Prepare and publish technical/engineering guidance for the setting of speed limits.	3rd Qtr 2008	2008-2010	Enforcement	high	medium term	indirect	medium	high
35	Audit and report on the appropriateness and consistency of speed limits, in accordance with the guidelines, across the road network every two years.	1 st Qtr of 2009	Incomplete	Enforcement	low	Medium term	indirect	medium	high
104	Review and expand the national speed and seat belt wearing survey on Irish roads and publish nationally on an annual basis.	3rd Qtr 2008/annually	Both published from 2008	Evaluation	high	Short term	indirect	medium	high

Table 6.1 Qualitative assessment of **Speed** actions

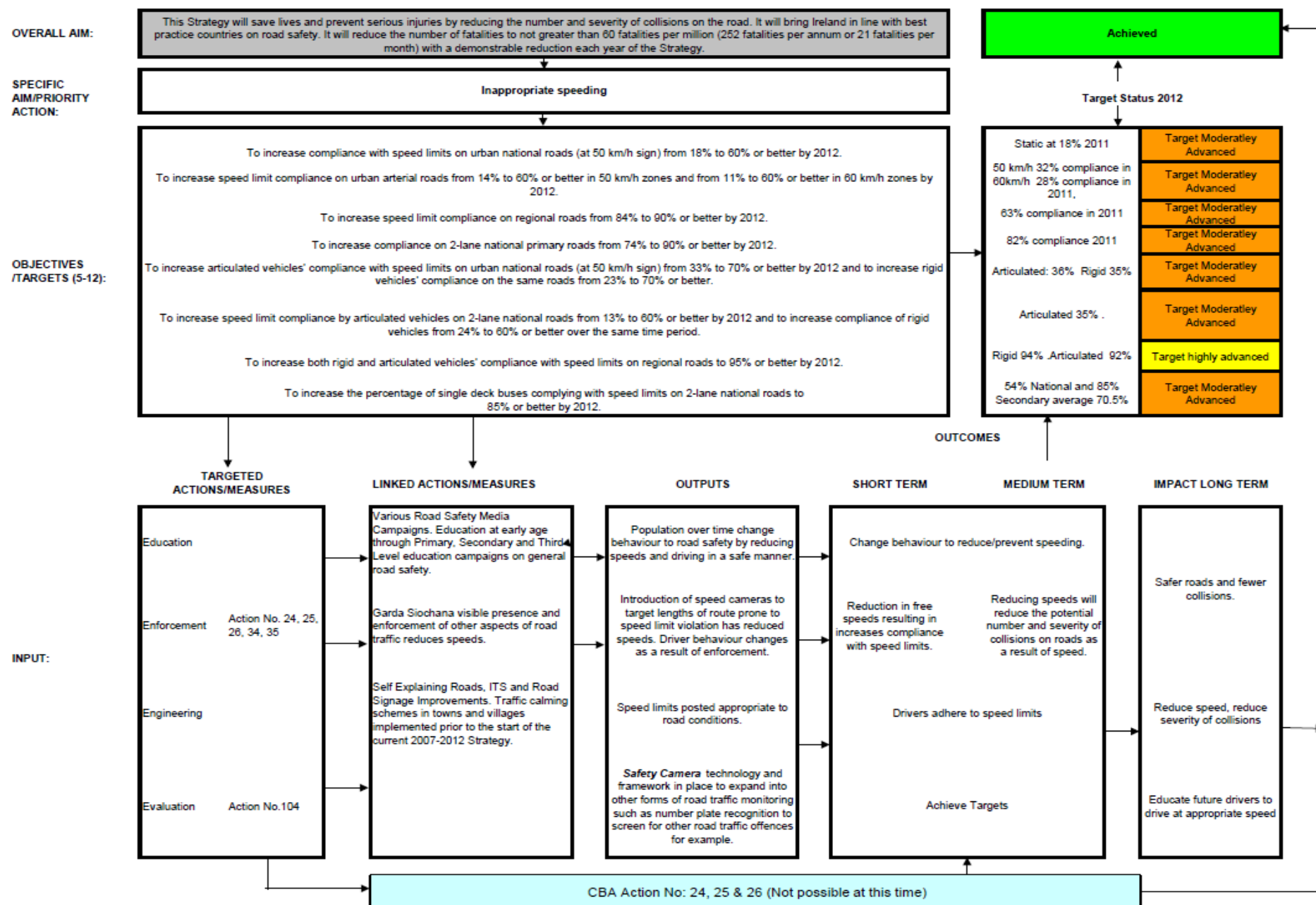


Table 6.2 Programme Logic Model- Speeding

6.3 IMPAIRED DRIVING

The Strategy set the following targets to address impaired driving to reduce the deaths and injuries on Irish roads:

- *To determine the incidence of drink driving in Ireland using data collected at the point of enforcement of MAT.*
- *Establish drug impairment training programmes for Gardaí, Doctors and Nurses by 2009.*
- *To publish an annual review of blood alcohol levels from coroners' data.*
- *To introduce a reduced BAC.*

In the following section **Table 6.3** lists the nine Strategy actions that aim to achieve the above targets and **Table 6.4** illustrates the Programme Logic Model developed to describe the processes involved in the delivery of the Primary Aim through implementation of impaired driving actions and targets.

Excessive alcohol consumption is a significant factor that results in death and injury on Irish roads. In 2003 Irish research indicated that 37% of fatal road crashes were related to alcohol³². During the Strategy the Blood Alcohol Concentration (BAC) reduced from 80mg to 50mg for all category B drivers and 20mg for commercial, learner and novice drivers. The lower limit reflects the research findings that a BAC of 0.04 (40milligrammes of alcohol per 100 millilitres of blood) impairs a driver's ability.³³

In 2010 11% of all road deaths were directly attributed to drink driving and the European Commission estimates that as many as 25% of all road deaths across the EU are alcohol related³⁴. Comparison of these figures and the figures in the Road Collision Facts suggests that alcohol is still a major factor in Irish road collisions and above the EU average.

Alcohol-related road accidents cost an estimated €530m in 2007. There has been a 34 %reduction in road traffic deaths over the three-year period since the introduction of (MAT) Mandatory Alcohol Testing in 2006³⁵.

In addition to alcohol and drug related impairment the use of mobile phones and fatigue also adversely affect driver performance, concentration, ability and awareness to carry out multi-task decision making processes. Road Safety Authority campaigns have specifically highlighted driver fatigue and mobile phone use as a collision contributory factor.

The 2011³⁶ seatbelt and phone use survey revealed that unbelted drivers are four times more likely to use a mobile phone than their belted counterparts.

Impairment due to fatigue estimates vary, however it has been shown that, sleep-related crashes may account for 15-20% of all road traffic accidents³⁷.

³² Source: Health Service Executive, Population Health Directorate, Bedford, N McKeown, A Vellinga, F Howell – *Alcohol in fatal road crashes in Ireland in 2003 – 2006*. Naas.

³³ Shiner, D. (2007) *Traffic Safety and Human Behavior*, Elsevier.

³⁴ ETSC's Newsletter on Transport Safety Policy Developments in the EU: Safety Monitor No 86 May 2012

³⁵ Steering Group Report On a National Substance Misuse Strategy February 2012 An Roinn Sláinte Department of Health

³⁶ Annual National Seatbelt and Mobile Phone Survey, Road Safety Authority, September 2011.

³⁷ National Programme Office for Traffic Medicine, Volume 1, March (Horne JA, Reyner LA. Sleep related vehicle accidents. *British Medical Journal* 1995: 310(6979): 565-567.)

The nine actions 27, 32, 33, 75, 76, 77, 78, 122 and 123 were completed within the time frame of the Strategy. Actions 27 and 123 were listed as *medium* because they have some outstanding issues relating to their full implementation. The overall level of implementation for this theme is *high* because the other seven actions have *high* implementation. New legislation and new testing methods features strongly and as such the effects of implementing these actions will be *long term*. The effectiveness varies across the actions. Seatbelt wearing media campaigns in conjunction with enforcement are more effective in combination³⁸.

The reduction in BAC and new penalty points are given a *high* level of effectiveness because research and evidence from other countries has shown that they reduce road collisions following their introduction. The majority of the actions, with the exception of action No. 122, are considered to have *high* continued relevance. Action No. 122 was given *low* continued relevance because these methodologies may not be applicable in the future.

The introduction of Preliminary Impairment Testing under the Road Traffic Act 2010 is the first step in the introduction of testing for drug induced impairment.

The Program Logic Model below shows that in addition to the seven enforcement actions and two evaluation actions, mass media and education play an important role in the reduction of collisions in conjunction with enforcement. While the actions have long term effects they are less effective without complimentary media campaigns. The model also highlights that the provision of motorway rest areas helps provide safe rest areas for inter-urban drivers who may be fatigued. In addition to rest areas the RSA has also implemented a number of media campaigns to target Driver Fatigue. Surveys world-wide (Australia, France, Ireland, Netherlands, USA) show that over 50% of long-haul drivers have at some time almost fallen asleep at the wheel³⁹. Based on American data, over one-third of the adult population has impaired functioning due to sleep loss during one or more days each month⁴⁰.

Conclusions

- The continued support of MAT in conjunction with complimentary media campaigns has high continued relevance.
- The testing for and legislation to deal with alcohol related driving impairment is well established, drug related impairment is still relatively under developed. It is our view that a significant road safety benefit can be achieved by addressing this aspect of impairment.
- Targets should be set to address collisions attributed to mobile phone use involving a combination of enforcement and continue mass media campaigns.
- Targets should be set to address collisions attributed to driver fatigue and mass media and awareness campaigns continued.

³⁸ Campaigns and Awareness-raising Strategies in Traffic Safety (CAST) A theoretical approach to assess road safety campaigns - Evidence from seven European countries Belgian Road Safety Institute September, 2009.

³⁹ European Road Safety Observatory (2006) Fatigue, retrieved May 9, 2008 from www.erso.eu

⁴⁰ European Road Safety Observatory (2006) Fatigue, retrieved May 9, 2008 from www.erso.eu

No.	Impaired Driving Measures	Target Completion Date	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
27	Continue the operation of MAT, determine the incidence of drink driving in Ireland and achieve a target level of compliance with drink driving law. (See action number 122, 123)	Annually	Partial	Enforcement	medium	Medium term	direct	high	high
32	Expand forensic analysis programme for driving under the influence of drugs.	1st Qtr 2009	Complete 2009	Enforcement	high	Long term	indirect	low	high
33	Establish drug impairment education programmes for An Garda Síochána, Doctors and Nurses.	4th Qtr 2008	Complete 2010	Enforcement	high	Long term	indirect	low	high
75	Review current legislation for impaired driving, identify best practice internationally and ensure appropriate legislation and protocols to address the testing of road users involved in collisions.	2nd Qtr 2008	Complete 2010	Enforcement	High	Long term	indirect	medium	high
76	Legislate for and introduce a reduction in the legal Blood Alcohol Concentration (BAC) for drivers.	2nd Qtr 2009	Complete 2009	Enforcement	high	Long term	indirect	high	high
77	Introduce the administrative disqualification system for appropriate drink driving cases.	2nd Qtr 2008	Complete October 2011	Enforcement	high	long	indirect	high	high
78	Review legislation on the issue of driving under the influence of drugs and consider appropriate enforcement options.	1st Qtr 2009	Complete 2009	Enforcement	high	Long term	indirect	high	high
122	Develop and implement an integrated research methodology to provide data on the incidence of drink-driving in Ireland.	1st Qtr 2008	Complete 2008	Evaluation	high	long	indirect	medium	low
123	Develop the testing of impaired drivers based on the incidence of drink/drug driving, record data and plan future interventions to achieve deterrence and better compliance.	4th Qtr 2008	Partially complete	Evaluation	medium	long	indirect	medium	high

Table 6.3 Qualitative assessment of Impaired Driving actions.

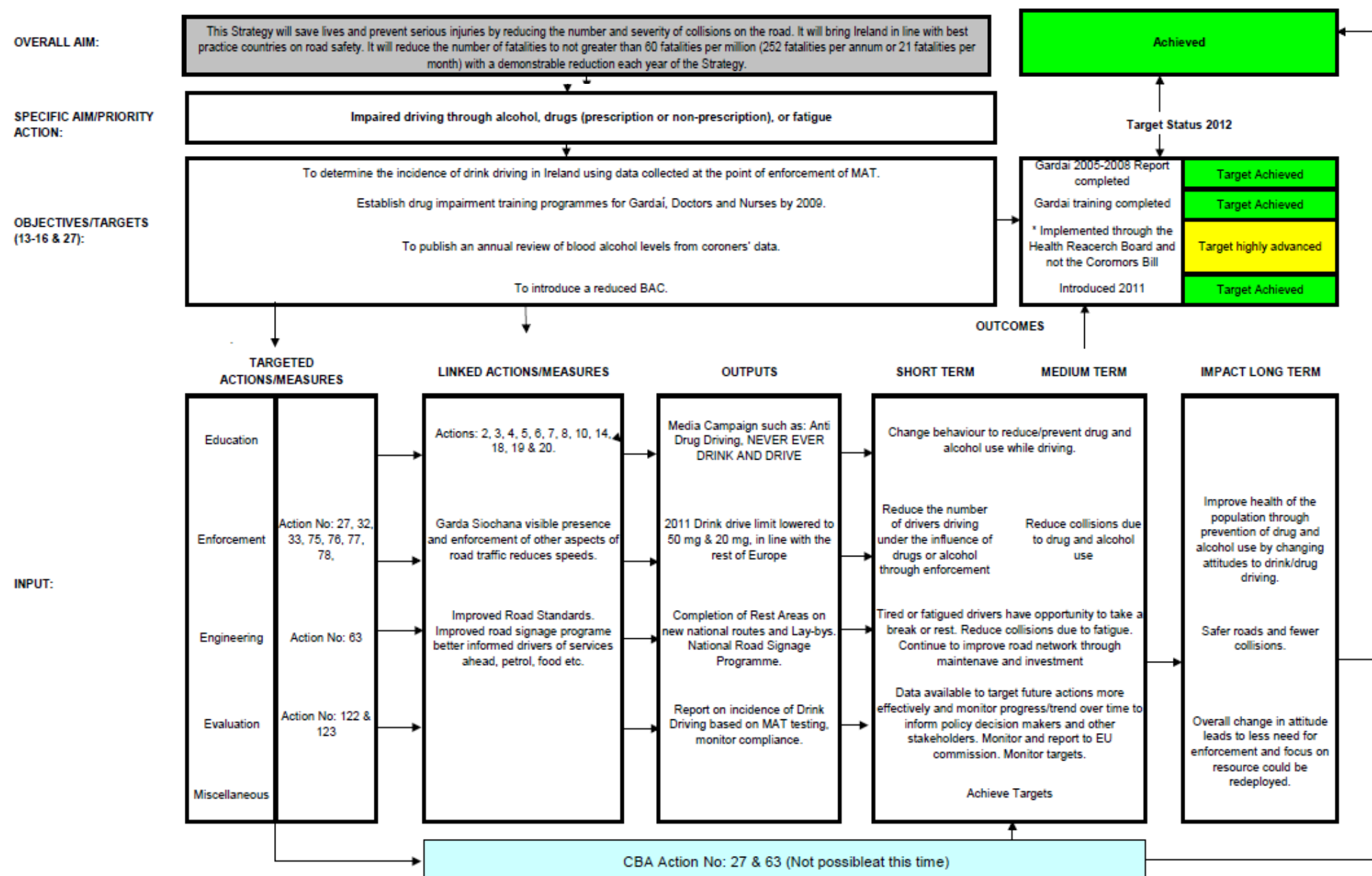


Table 6.4 Programme Logic Model- Impaired Driving

6.4 ENGINEERING MEASURES

Building new roads and improving the existing network measurably reduces collisions, deaths and serious injuries. This work is carried out by the NRA and 34 Local Authorities. The NRA has capital funding to allocate expenditure for infrastructural projects identified in the Strategy. There were 15 engineering targets grouped under the following headings:

- Major interurban projects
- Network maintenance and management
- Road safety engineering measures
- Research and evaluation

The Strategy set out the following engineering and infrastructure program targets to improve road safety:

- *To develop a new Interurban network of Motorways and Dual Carriageways from Dublin to Galway (N6), Limerick (N7), Cork (N8) and Waterford (N9) by 2010*
- *Network Management -Develop an operational Strategy for the management of the National Roads network following the completion of the Major Inter Urban network.*
- *Structural Maintenance and Minor Works (National Roads) -An annual expenditure of €125m (2007 figures) for the structural maintenance, strengthening and overlaying of existing road surfaces, based on the priorities established by NRA annual maintenance surveys.*
- *Bridge Rehabilitation and Strengthening - An annual expenditure of €12m (2007 figures) for the inspection, rehabilitation and strengthening of bridges on the network, based on the priorities established by inspections and structural assessments.*
- *Signing and Lining Maintenance -The expenditure of €60m over the period 2007-2010 as part of the National Road Network Re-signing programme.*
- *Future Maintenance Needs- Develop pilot schemes to include the maintenance of safety barriers and other maintenance elements on new dual carriageway sections of the network.*
- *Network Routine Maintenance – (Regional and Local Roads) Local Authorities will continue maintenance of the network with annual expenditure of €54m. (2007 figures)*
- *Service Areas- Develop a network of Service Areas / Rest Areas on major inter urban and dual carriageway routes over the life of the Strategy*
- *Winter Maintenance- Continue to provide local authorities with an allocation of €6m (2006 figures) for winter maintenance and the development of the Real Time Road Weather Information System.*
- *Road Safety Remedial Measures- Carry out approximately 160 road safety remedial schemes at identified accident clusters on national roads in 2007. The NRA aims to eliminate any backlog of schemes over the next three years. The number of annual schemes will be reduced to about 80 by 2012.*
- *Traffic Calming -Traffic calming measures will be implemented at 20 schemes per annum on national roads. It is proposed to complete the Traffic Calming Programme on National Roads during the lifetime of this Strategy.*
- *Road Safety Audits - The NRA will continue the implementation and monitoring of road safety audits on all national road schemes.*
- *Pilot Studies and National Secondary Routes- The NRA will continue to carry out six national secondary route treatment Pilot Studies each year and based on the results will implement Remedial Measures on these National Secondary routes.*
- *Working with Gardaí and Local Authorities- The NRA will continue its work with other stakeholders in developing a GIS interface for the Local Authorities in identifying collision prone zones. The NRA, in conjunction with An Garda Síochána and the Local Authorities, will pursue the 'Implementation of Reporting Mechanisms for Collisions' report, with the aim of further increasing the accuracy of collision information.*
- *EURORAP - The NRA will continue participation in EuroRAP - the European comparative Road Safety Performance project.*

In the following section **Table 6.5** lists the 32 Strategy actions that aim to achieve the above targets and **Table 6.6** illustrates the Programme Logic Model developed to describe the processes involved in the delivery of the Primary Aim through implementation of engineering actions and targets.

It is estimated that Motorways are 7 to 9 times safer than unimproved single carriageways⁴¹.

In order to improve the road safety of the existing single carriageway network a variety of remedial, improvement and maintenance programmes were implemented during the Strategy period.

2010 saw the completion of the Motorway Inter-Urban network, with 738km of dual carriageway connecting Dublin with the major cities of Belfast (from the Border), Cork, Limerick, Galway and Waterford. The M50 upgrade was also completed, making the junctions free flow, and expanding the carriageways from two to four lanes. The M50 carries in excess of 100,000 vehicles a day, and its efficient operation is of vital importance for transportation in the Dublin area. In addition, construction of the M3 was also completed in 2010. This new road links Meath and the north east to Dublin, and includes significant link roads. Over 100km of new dual and single carriageway were constructed. Other completions in 2010 included the M17 Gort to Crusheen, the N21 Castleisland Bypass, the N59 Derrylea realignment, the N10 Kilkenny Link Road and the N78 Athy Link Road.

The NRA estimated that new roads, constructed to best practice standards, help to reduce road accidents and fatalities. In particular, motorways and dual carriageways are safer because the possibility of head-on collisions is almost eliminated. It is estimated that approximately 50 lives per year have been saved as a result of the 900km of motorways/dual carriageways listed in the National Development Plan were completed⁴². Majors Roads Programme alone will save 25-50 lives / year (NRA).

The fatal collision rate on an average rural national single carriageway is twice that of a dual carriageway with at-grade junctions, and 6 times that of a motorway. Approximately 2% of fatal collisions occur on motorways, 7% on at-grade dual carriageways and 91% occur on single carriageways⁴³. The completion of the major-inter urban motorways has transferred large volumes of traffic from single carriageways on to dual carriageways and motorways.

There were 29 engineering actions implemented to improve the road environment through building new high quality inter-urban networks and improving the existing network. The majority of the 29 actions were fully implemented receiving a *high* rating. The exceptions were safety barrier maintenance programme, service areas and development of guidance on forgiving road-sides.

Investment in infrastructure to improve road safety is effective. Investment in motorways is a high cost investment but it returns a high safety effect⁴⁴ and therefore it has *high* effectiveness. Similarly investments in e-Safety such as VMS and weather information are a high cost investment but it returns a high safety effect⁴⁵.

The majority of the engineering actions have a *long term* positive impact on improving road safety. The large investment will continue to deliver sustained road safety benefits long after this Strategy term. Similarly their continued relevance is mainly *high*. This reflects the need to protect this investment in road safety through maintenance and monitoring of road safety performance in the future.

There were seven evaluation actions listed in **Table 6.7** below as engineering actions. Their overall implementation was mainly *high*, reflecting the level of completion on time in accordance with the Strategy target dates. By their nature, evaluation actions have a *short to medium term* impact reflecting the fact that they are based on data that is constantly changing. In this regard they are not effective by themselves but provide necessary information to inform other actions. For this reason their effectiveness is *medium* and their continued relevance is *high*.

⁴¹ Interurban Accident Rates By Road Type And Geometric Elements, Dr. D. O'Cinneide, University College Cork, Ireland, 2004

⁴² The National Roads Authority – *Going Places* Road Safety
<http://www.nra.ie/Publications/DownloadableDocumentation/GeneralPublications/file,3507,en.PDF>

⁴³ From Arctic to Mediterranean First Pan-European Progress Report

⁴⁴ Best Practice for Cost-effective Road Safety Infrastructure Investments, Summary Report April 2008.
http://www.cedr.fr/home/fileadmin/user_upload/Publications/2008/e_Road_Safety_Investments_Summary.pdf

⁴⁵ Best Practice for Cost-effective Road Safety Infrastructure Investments, Summary Report April 2008.
http://www.cedr.fr/home/fileadmin/user_upload/Publications/2008/e_Road_Safety_Investments_Summary.pdf

The Program Logic Model below illustrates the fact that investment in the road network has contributed to achieving the Primary Aim. Higher quality roads have a higher road safety rating because they employ road engineering measures that reduce the impact of a driver's mistake or error. The outcome is less fatal collisions and reduced injury severity. The impacts are long term and will continue to benefit road safety in the future.

Conclusions

- The investment in roads has improved overall road safety and the evaluation and auditing has provided a better understanding of road safety issues.
- Maintenance and protection of the road network is vital to ensure continued high road safety performance from the roads network.
- Large scale investment in the coming years on the scale implemented under the Strategy is not likely to be repeated. However investment in maintaining, upgrading and monitoring the network must be implemented.

No.	Engineering Measures	Target Completion Date	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
47	Complete the development of major inter-urban routes from Dublin to Galway (N6), Limerick (N7), Cork (N8), Waterford (N9).	4th Qtr 2010	2010	Engineering	high	Long term	direct	high	high
48	Continue network maintenance and improvement works on National Primary and National Secondary roads.	4th Qtr 2010	2010(However they need to be annual)	Engineering	high	Medium term	direct	medium	high
49	Develop and implement an annual Safety Barrier Maintenance contract on the Major Inter-Urban network.	4th Qtr 2012	incomplete	Engineering	low	Long term	direct	low	high
50	Implement a bridge management programme for the inspection and strengthening of national road bridges.	4th Qtr 2012	2010	Engineering	high	medium term	direct	low	high
51	Continue development and funding of the IceCast Road Weather Information System.	4th Qtr 2012	2009, 2011 on-going	Engineering	high	Short term	indirect	high	high
52	Implement 80 road safety remedial schemes per annum and eliminate backlogs by 2012.	4th Qtr 2012	On-going	Engineering	high	Long term	direct	high	high
53	Put in place remedial schemes at identified collision locations on non-national roads- 180 schemes per annum.	4th Qtr 2012	On-going	Engineering	high	Long term	direct	high	high
54	Implement traffic calming measures at designated locations on national roads and continue the annual traffic calming maintenance programme.	4th Qtr 2012	incomplete	Engineering	low	Long term	direct	medium	medium
55	Continue to monitor and develop road types, for example divided roads, ensuring best safety standards are incorporated into road design.	Annually	Annually	Engineering	high	Long term	indirect	medium	medium

No.	Engineering Measures	Target Completion Date	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
56	Analyse six National Secondary routes per annum and apply a remedial measures programme based on the findings.	4th Qtr 2012	2011	Engineering	high	Long term	direct	medium	high
57	Review and develop new design standards for National Secondary roads.	4th Qtr 2012	2011	Engineering	high	Long term	indirect	medium	medium
58	Examine and make available grant schemes for road safety audits and road user audits on non-national roads.	Annually	Annually	Engineering	high	Short term	indirect	medium	medium
59	Provide resources for low-cost safety schemes and expand the medium cost schemes on non-national roads.	Annually	Annually	Engineering	high	Medium term	direct	high	medium
60	Develop design guidelines for forgiving road sides. (A forgiving road side is a road side which minimises the severity of the injury to a driver or passenger when the driver loses control and the vehicle leaves the road.)	2nd Qtr 2012	On-going	Engineering	low	Long term	indirect	medium	high
61	Increase the number of minor realignment schemes over the lifetime of the Strategy.	Annually	Annually	Engineering	high	Medium term	direct	medium	medium
62	Continue the Signing and Lining programmes on National roads.	Annually	Annually	Engineering	high	Short/Medium term	direct	medium	high
63	Continue to develop a network of rest / service / vehicle inspection and enforcement areas on dual carriageways and major inter-urban routes.	4th Qtr 2011	Incomplete.	Engineering	medium	Long term	indirect	medium	medium
64	Develop stronger rules on planning, maximising the road safety dividend and ensuring that road safety is a consideration in the granting of planning permission.	4th Qtr 2012	January 2012	Engineering	high	Long term	indirect	medium	high

No.	Engineering Measures	Target Completion Date	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
65	Establish best practice and roll out a system of motorway-variable messaging systems to alert motorists of hazards and diversions.	2nd Qtr 2011	2009 and 2010, On-going	Engineering	high	Long term	indirect	medium	high
66	Publish a code of practice for the management of roadwork sites from a road worker / road user protection perspective.	4th Qtr 2008	2008 and 2010 revision	Engineering	high	Long term	indirect	medium	medium
67	Engage with the motor industry to maximise the provision of approved vehicle safety devices.	2nd Qtr 2008	2008	Engineering	high	Medium term	indirect	low	high
69	Each local authority to publish a prioritised plan on road building, design, construction and maintenance.	Annually	Annually	Engineering	high	Medium term	indirect	low	medium
100	Research the potential for use of bus lanes by motorcyclists and complete a comprehensive safety analysis to determine future policy.	2nd Qtr 2008	2008	Evaluation	high	Short term	indirect	low	medium
106	Research emerging 'in road' and 'in vehicle' road safety technologies and make recommendations on their use/introduction.	Annually	Annually	Evaluation	high	Long term	indirect	medium	high
110	Review and research the outputs from collision analysis, including pre-crash behaviour of those involved in fatal and serious injury collisions.	2nd Qtr 2010	2011	Evaluation	high	Medium term	indirect	medium	high
111	Review and research the outputs from collision analysis to ensure road related factors receive remedial attention as soon as possible.	1st Qtr 2008	2008	Evaluation	high	Short term	indirect	low	high
113	Research and update the mapping of collision-prone zones and include analysis by volume and type of vehicles on the road network with special emphasis on regional and local roads.	Annually	Annually	Evaluation	high	Medium term	indirect	high	high

No.	Engineering Measures	Target Completion Date	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
114	<p>NRA Road Safety Research Programme: Evaluate the Collision Remedial Measures Programmes Evaluate the Traffic Calming Programmes Continue participation in (Conference of European Directors of Roads) Road Safety Sub-Committee Continue research into safety issues at junctions on rural roads.</p> <p>Continue participation in EuroRAP. Publish new Risk Map in 2007/08/2010/11.</p>	Annually	Annually	Evaluation	medium	Medium term	indirect	medium	high
115	Conduct Road Safety Audit of all new national road schemes and review the standards on an annual basis.	Annually	Annually	Evaluation	high	Short term	indirect	high	high

Table 6.5 Qualitative assessment of inappropriate **Engineering** measures

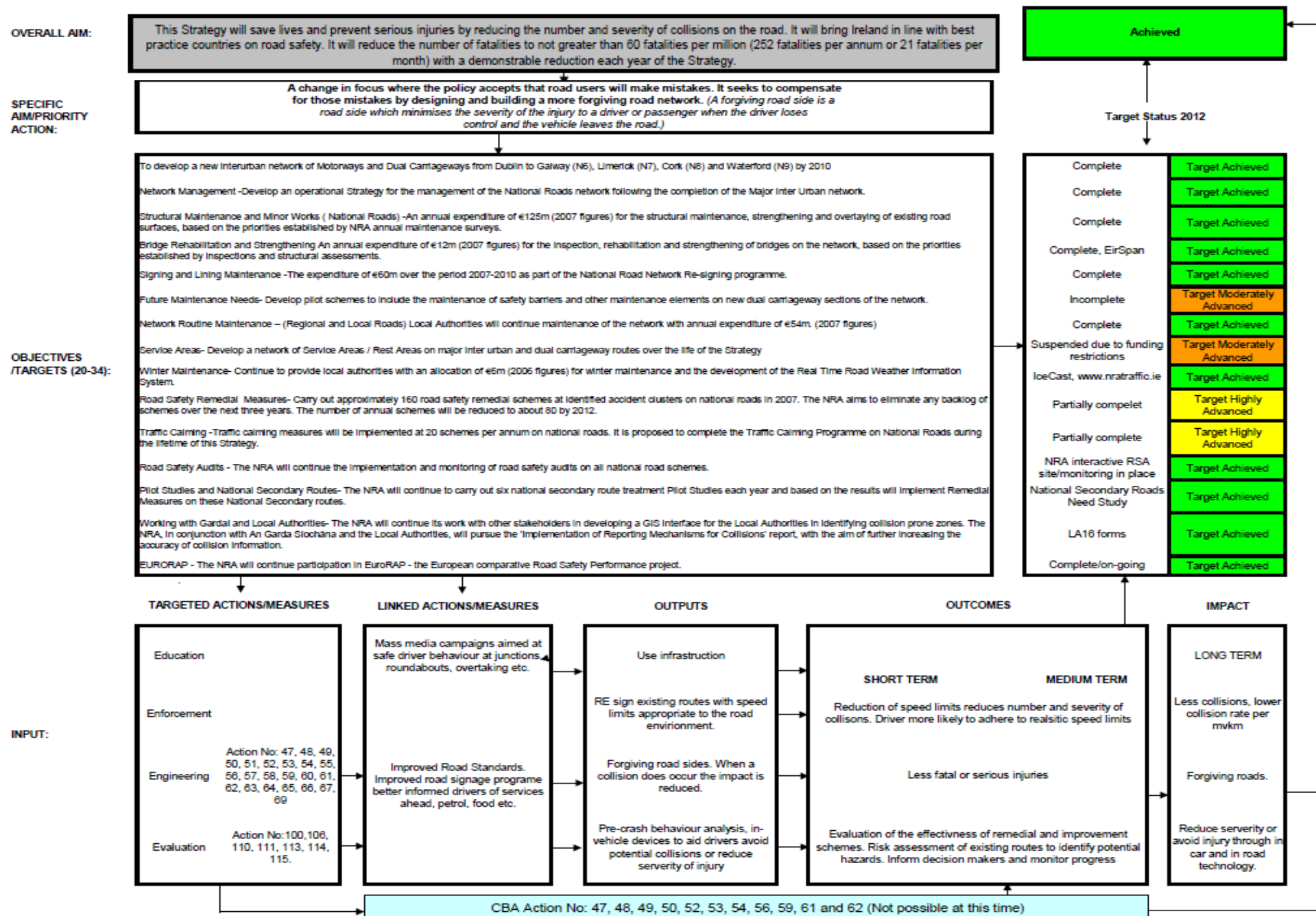


Table 6.6 Programme Logic Model- Engineering

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6.5 SEATBELT WEARING

The Strategy set the following seatbelt wearing targets to reduce the deaths and injuries on Irish roads:

- *Increase adult front seatbelt wearing rates from 86% to 95% or better and increase the adult rate in rear seats from 63% to 85% or better by 2012.*
- *Increase primary school front seatbelt wearing rates from 76% to 95% or better and rear seat wearing rates from 64% to 95% or better by 2012.*
- *Increase wearing rates for secondary school-goers in front seats from 88% to 95% or better and in rear seats from 76% to 95% or better by 2012.*

Increasing seatbelt wearing rates reduces fatalities and the severity of injuries. The Strategy targeted seatbelt compliance through education, high visibility enforcement campaigns and various media campaigns. The ultimate aim of the RSA is to achieve 100% compliance.

The 2011⁴⁶ seatbelt survey carried out by the RSA reported very high level of compliance against the targets set in the Strategy as follows Adult: 94% Front, 90% Rear, Primary school goers: 95% Front, 94% Rear and secondary school goers: 93% Front, 93% Rear.

Collision prevention is an important part of road safety however collisions are inevitable and as a result it is also important to ensure that measures are employed to reduce the impact and severity of the collision on occupants. The use and installation of seatbelts are “passive” collision protection devices. Wearing a seat belt reduces the risk of a fatality in a serious collision by approximately 50%⁴⁷.

In the Netherlands, research demonstrated that an extra ten lives were saved over 2004 and 2005 through increased seat belt use. In those two years, the observed seat belt use was 3-4% higher than expected from the previous years’ trend. The study also showed that police enforcement continued to increase and that various awareness campaigns were run at the same time⁴⁸.

Ensuring a child is properly restrained in a child car seat can reduce injuries by a factor of 90-95% for rear-facing seats and 60% for forward-facing seats.⁴⁹

Since 2007, it has been a requirement in Ireland that buses participating in the School Transport Scheme be inspected to verify that the safety belts and their fitment meets the UK visual inspection standard (which is a visual inspection developed to ensure a retrofitted safety belt installation corresponds to the EC type-approval standard)⁵⁰. In addition in October 2011 approved or certified safety belt installations became a mandatory requirement on all buses used for the organised transport of children⁵¹.

According to the Garda Síochána Annual Reports 2010 and 2011 there was increased compliance with seatbelt wearing among road users. In 2010 and 2011 there was a reduction in the number of detected offences by 15.4% and 10% respectively⁵².

In the following section **Table 6.5** lists the three Strategy actions that aim to achieve the above targets and **Table 6.6** illustrates the Programme Logic Model developed to describe the processes involved in the delivery of the Primary Aim through implementation of seatbelt wearing actions and targets.

⁴⁶ Annual National Seatbelt and Mobile Phone Survey, Road Safety Authority, September 2011.

⁴⁷ Road Safety PIN Flash 4 Increasing seat belt use ETSC 2007 www.etsc.be

⁴⁸ Stipdonk, H.L., Aarts L.T., Schoon C.C., Wesemann P. De essentie van de daling in het aantal verkeersdoden. SWOV, 2006

⁴⁹ Road Safety Authority Annual Report 2007, page 31.

⁵⁰ RSA.ie Safety belts on buses – Proposals to verify the standard of fitment and to introduce new requirements in relation to the organised transport of children

⁵¹ RSA.ie Safety belts on buses – Proposals to verify the standard of fitment and to introduce new requirements in relation to the organised transport of children

⁵² Garda Annual Reports 2010, 2011

The three actions 28, 46 and 104 were implemented within the time frame of the Strategy. Actions 28 reflected the Strategy Targets set for seat belt wearing compliance. Action 104 informs the progress of seat belt wearing compliance, the most recent seatbelt survey was conducted in 2011 which showed that the levels of seat belt compliance is improving. Action 46 sought to introduce mandatory seatbelt provision of seatbelts on school buses. The level of implementation of seat belt wearing actions is therefore *high*. The effectiveness of Action 28 and 46 are *high* because seatbelts have a proven impact on the reduction and severity of collision outcomes and their continued relevance is also *high*.

Action 104 is an evaluation action that informs the progress of the actions discussed above. In this regard it is not effective in itself but provides necessary information to inform other actions. For this reason its effectiveness is *medium* and its continued relevance is *high*.

No.	Seat Belt Wearing Measures	Target Completion Date	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
28	Achieve a target level of compliance by 2012, through covert and high visibility enforcement, on seat belt wearing and child safety restraint use as follows: _ Increase adult front seatbelt wearing rates from 86% to 95% or better and increase the adult wearing rate in rear seats from 63% to 95% or better _ Increase primary school front seatbelt wearing rates from 76% to 95% or better and rear seat wearing rates from 64% to 95% or better _ Increase wearing rates for secondary school-goers in front seats from 88% to 95% or better and in rear seats from 76% to 95% or better.	Annually	Ongoing	Enforcement	high	Medium term	indirect	high	high
46	Ensure all school buses operating under the DoE&S school transport scheme are fitted with appropriate safety belts.	1st Qtr 2007	January 2007	Engineering	High	Long term	direct	high	high
104	Review and expand the national speed and seat belt wearing survey on Irish roads and publish nationally on an annual basis.	3rd Qtr 2008/annually	2008	Evaluation	high	medium term	indirect	medium	high

Table 6.7 Qualitative assessment of **Seatbelt Wearing** actions

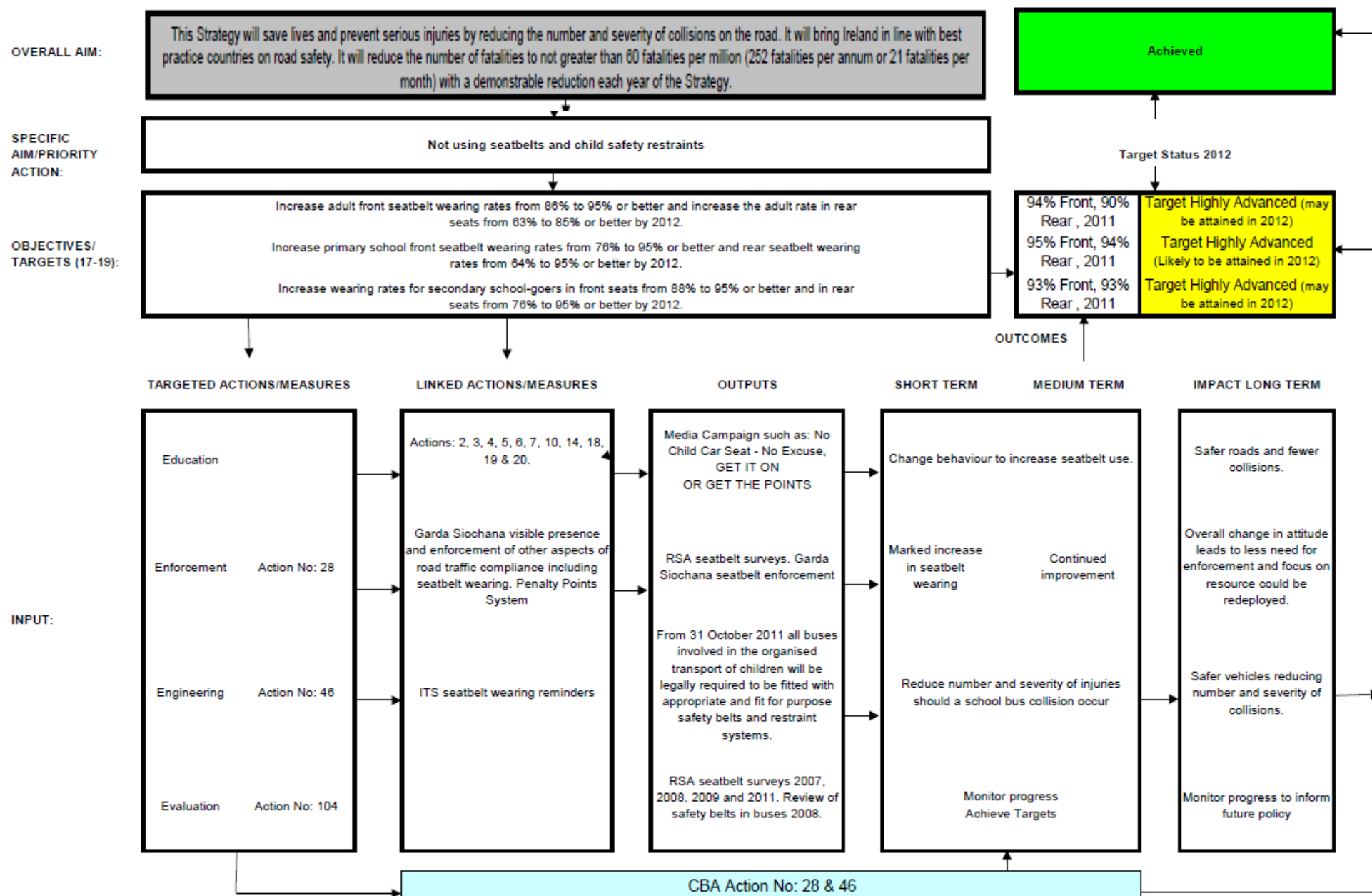


Table 6.8 Programme Logic Model- Seatbelt Wearing

The Program Logic Model above shows that in addition to the three actions listed above, Education, Enforcement and Engineering measures would also have played a role in the improved seatbelt wearing observed due to improved awareness and risk of non-compliance detection. In terms of enforcement, new penalty points came into effect in October 2011 and August 2012 for non compliance with seat belt wearing law which is reflected in the improved compliance observed by An Garda Síochána.

Conclusions

- The continued support enforcement and complimentary media campaigns have high continued relevance.
- The targets set have continued relevance as they are in line with high compliance countries such as France and Germany.
- The level of compliance observed in the 2011 survey is very high which reflects the success of the Strategy actions. This approach should be continued through enforcement, education and media campaigns to maintain and improve the current levels. The challenge will be to maintain this level and seek to complement it through in-car technology measures to move towards 100% seatbelt wearing.

6.6 VULNERABLE ROAD USERS

The Strategy set the following targets for motorcyclists to reduce the deaths and injuries on Irish roads.

Motorcycles

- *100% of all new provisional licence holders in the motorcycle category should undertake the compulsory basic training by the end of 2008 and that this is maintained thereafter.*

Fatalities among vulnerable road users have been decreasing at a lower rate than for vehicle occupants. The Across Europe fatalities among pedestrians and cyclists decreased by 34% between 2001 and 2009 and those among motorcyclists by only 18%, compared with 39 % for car drivers⁵³.

The Strategy does not contain specific targets for vulnerable road users other than motorcyclists. However there has been an overall effect resulting from the Primary Aim that has reduced fatal and serious injuries across all road user categories. Substantial reductions have been made, in particular the highest reduction was achieved in the number of motorcycle collisions with a 66% reduction between 2001-2010 followed by a 58% reduction in pedal-cyclists casualties between 2001 and 2010⁵⁴.

There are eight actions identified to reduce the number and severity of collisions for vulnerable road users. Three were education actions, No.6, 19 and 21, and the remaining five, No. 80, 81, 82, 91 and 92, were evaluation actions. The education actions 6 and 19 were implemented in line with the target date. Their implementation is *high* and their effectiveness and continued relevance is *high*. Action 21 had implementation that was *medium* and effectiveness *medium*. Action 80, 81 and 82 were completed in 2010. A strategy for Pedestrian and Motorcycle safety was produced and the production of the cycling safety strategy was subsumed to the DoT who produced Ireland's First National Cycle Policy Framework in 2010. The Pedestrian and Motorcycle safety strategy set out targets for the reduction in fatalities and injuries in their respective vulnerable road users. All the actions above received high implementation because they were completed.

The use of hi-vis clothing by vulnerable road users has been promoted throughout the Strategy through media campaigns and free hi-vis distribution. An observational survey carried out by the RSA in 2011 shows that 42% of cyclists currently wear hi-vis. The survey of Drivers, Motorcyclists, Cyclists and Pedestrian experiences of sharing the road in Ireland commissioned by the RSA found that approximately 90% of cyclists would wear both high visibility gear and helmets if required to do so by law⁵⁵.

The implementation and effectiveness of 91 and 92 is *high*. The continued relevance of 92 is *high* because training should be monitored and updated in line with evolving best practice.

Figure 6.4 illustrated the overall drop in the number of deaths involving a pedestrian, cyclist or motorcyclist between 2006 and 2010. This drop mirrors the overall reduction in fatalities and serious injuries during this period. However, when the percentage of deaths and casualties are examined their proportion, with the exception of motorcyclists, has stayed relatively static or become slightly higher.

The trend illustrated in **Figure 6.5** indicates that there has been a slight increase in the proportion of collisions involving pedestrians and cyclists and that there has been a drop in the proportion of collisions involving motorcyclists.

When the 2011⁵⁶ and 2006 CSO means of travel to work are compared there is no major shift in the means of travel in the population (see **Table 6.9A**). There is a slight increase in the numbers travelling to work by bicycle, and motorcycle use has dropped slightly.

⁵³ PIN Flash 19 Unprotected road users – a key concern of road safety

⁵⁴ IRTAD 2011 ANNUAL REPORT — OECD/ITF 2012

⁵⁵ RSA Annual Report 2011

⁵⁶ CENSUS OF POPULATION 2011 PRELIMINARY RESULTS.

<http://www.cso.ie/en/media/csoie/census/documents/Prelim%20complete.pdf>

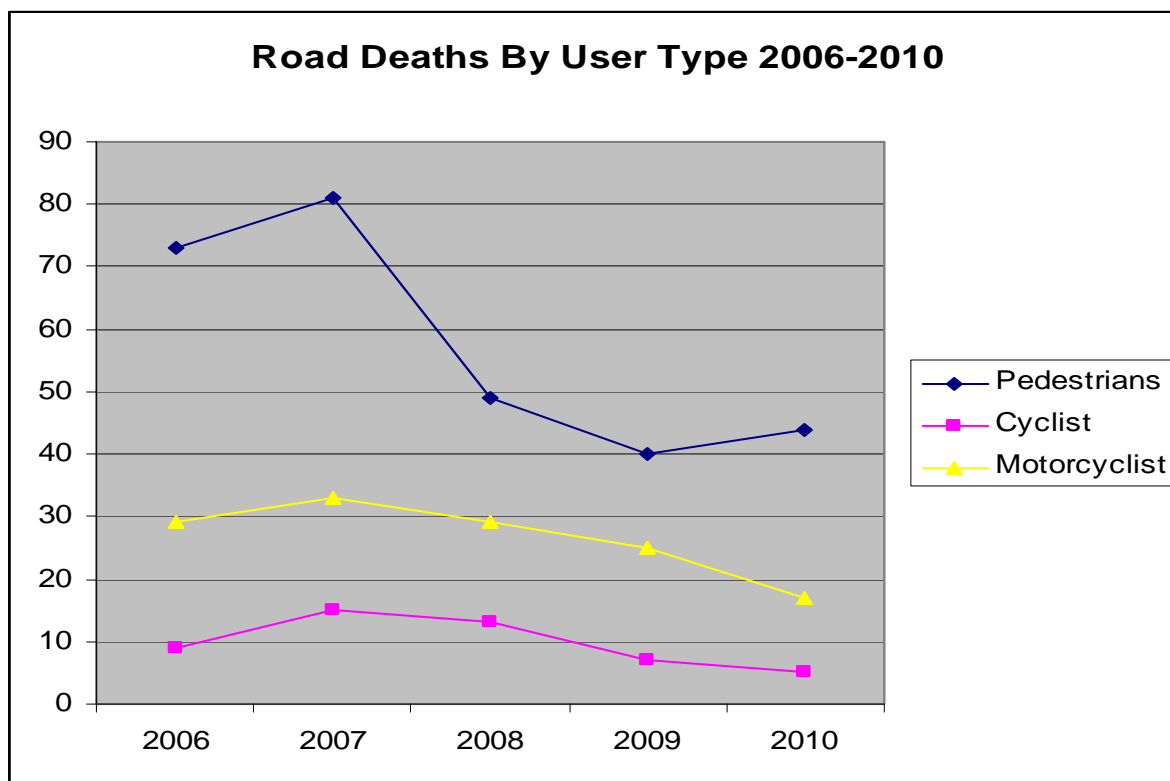


Figure 6.4 Road Deaths By Road User Type 2006-2010: (Source: Road Collisions Facts 2010 Figure A4.)

Travel to Work	2011	%	2006	%
On foot	170,510	10.06	205688	10.87
Bicycle	39,803	2.35	36306	1.92
Motorcycle or scooter	8,443	0.50	13049	0.69
Other means of travel	1,476,318	87.09	1,637,744	86.53
All means of travel	1,695,074	100	1892787	100

Table 6.9A 2011 and 2006 CSO Means of Travel to Work for the population aged 15 years and over at work (Source: CSO.ie)

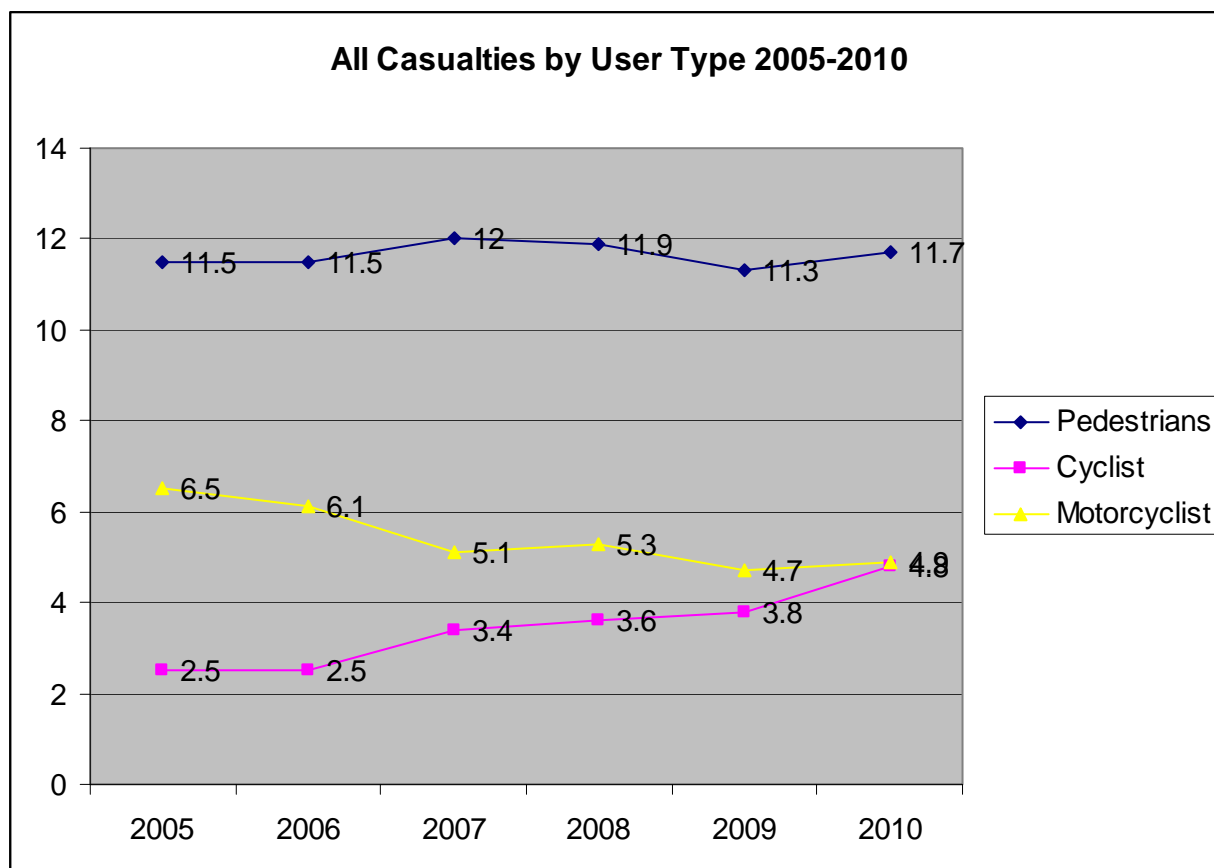


Figure 6.5 All Casualties Classified by Road User Type 2005-2010. Source: Road Collisions Facts Table 18.

Figure 6.5 above illustrates the reduction in the number of motorcycle casualties between 2005-2010. There has been an increase in percentage of cyclist casualties over the same period with pedestrians remaining between 11-12%. Pedestrians still represent 20-25% of primary fatal collision types as illustrated in **Figure 6.6** below.

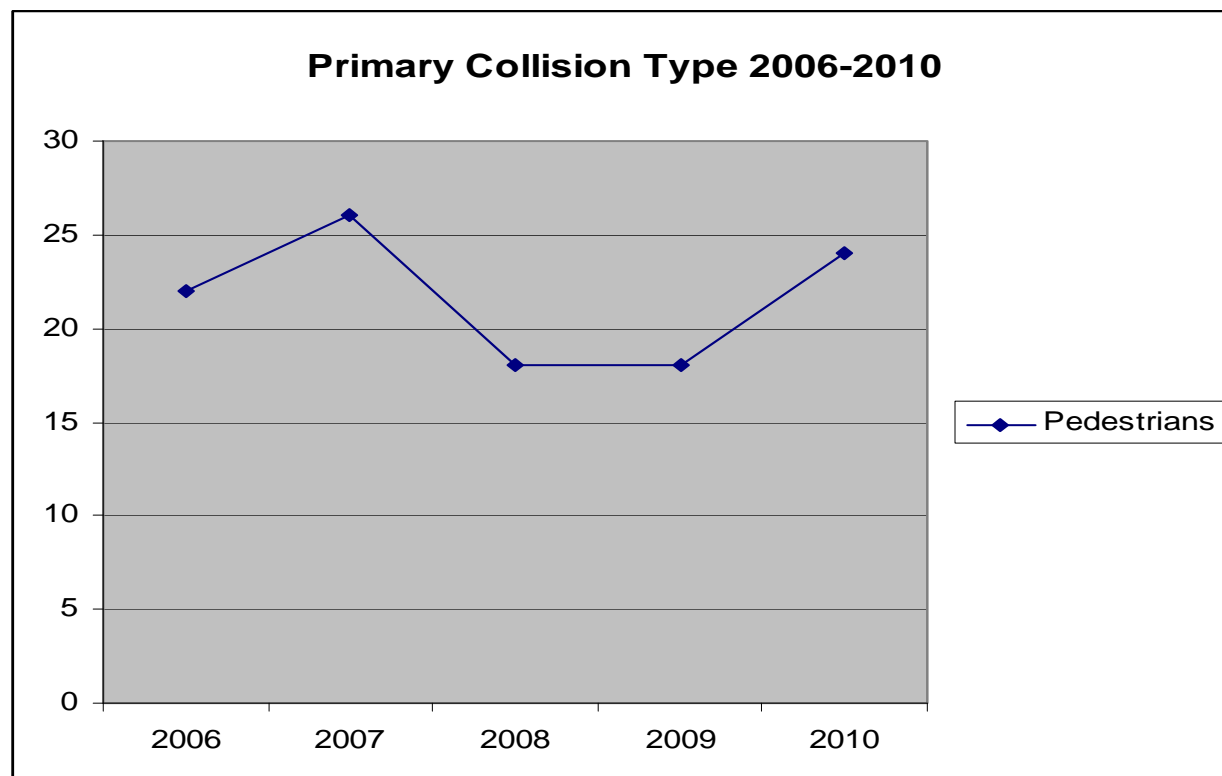


Figure 6.6 Primary Fatal Collision (Pedestrians) 2006-2010. Source: Road Collisions Facts Figure A7.

The inclusion of the target in the Strategy has focused on motorcyclists which has resulted in the marked improvement. Specific targets for pedestrians, cyclists and other vulnerable road users should be set in the forthcoming road safety strategy.

Increasing trips by bike is part of national policy. The National Cycle Policy Framework has set a target increase from 2% to 10% of all trips to work being made by bike by 2020. This will mean an extra 125,000 people commuting to work by bike⁵⁷. If this target is achieved there will be an increase in the number of cyclists using Irish roads particularly in urban areas.

The Program Logic Model, **Table 6.10**, illustrates the fact that investment in the road network has contributed to achieving the Primary Aim. Higher quality roads have a higher road safety rating because they employ road engineering measures that reduce the impact of a driver's mistake or error. The outcome is less fatal collisions and reduced injury severity. The impacts are long term and will continue to benefit road safety in the future. The road improvements implemented during this Strategy, inter-urban routes, safety remedial schemes and traffic calming in urban areas, while not specifically aimed at vulnerable road users, have improved the overall safety of the road environment by slowing traffic, reducing the risk of driver error and segregating traffic. Specific engineering remedial schemes to provide improved vulnerable road user facilities such as crossing facilities and provision of footways and cycle ways should be focused on in the forthcoming strategy.

Conclusions

- The 2010 Safety Target Outcome: *100,000 fewer deaths since 2001* 5th Road Safety PIN Report states that initiatives targeted at improving the safety of vulnerable road users will be crucial in reaching the new EU 2020 Road Safety Target. Therefore targets should be set for cyclists, pedestrians, older pedestrians and children in addition to motorcyclists. It is noted that targets have been set in ancillary documents such as the National Pedestrian Safety Action Plan 2010 – 2014; however they should be stated in the overall strategy for road safety.
- National government policies are increasingly involved in promoting cycling and walking, which will require more attention to road safety issues as perceptions of safety may be a perceived obstacle in encouraging these policies. Actions to reduce fatalities and serious injuries involving pedestrians, mobility impaired persons and cyclists should be implemented to compliment other government policies that seek to encourage walking and cycling, improved national health and the environment.
- While the Road Collision Facts can differentiate by age and type of vulnerable road users, there is very limited information available for collisions involving other vulnerable categories such as mobility impaired persons. Older people and persons with disabilities are particularly vulnerable and specific measures should be targeted at these groups.
- The use of hi-vis clothing for all vulnerable road users should be promoted or made compulsory to make this vulnerable group more visible to drivers.
- Engineering actions should be focused on improved facilities for vulnerable road users.

⁵⁷ Ireland's First National Cycle Policy Framework, Department of Transport.

No.	126 Measures	COMPLETE DATE	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
6	Lead the implementation of a comprehensive integrated road safety education programme in Pre-school, Primary, Post-Primary, Third Level and in the Community.	Pre-Primary (2nd Qtr 2008) Primary (2 nd Qtr 2007) Transition Year (1st Qtr 2008) Third Level (3rd Qtr 2008) Community (2nd Qtr 2008)	2007, 2008, ongoing	Education	high	Medium/long	indirect	high	high
19	Implement specific educational measures aimed at vulnerable road users. In particular: _ Use of high visibility material for pedestrians, cyclists and motorcyclists _ Awareness of intoxicated pedestrians _ Use of Personal Protection Equipment for cyclists and motorcyclists _ Awareness of blind spots on HGVs _ Care for young and older people	Annually	Annually	Education	high	Short term	indirect	High	high
21	Implement measures to educate retailers, parents and guardians on the legal and safety requirements of using mini motorbikes, go-peds, quad bikes and similar off-road vehicles.	4th Qtr 2007	Completed	Education	medium	Short term	indirect	medium	high
80	Research, develop and publish a national pedestrian safety strategy incorporating best practice engineering, education and enforcement issues.	3 rd Qtr 2008	Complete 2010	Evaluation	high	Medium term	indirect	high	high
81	Research, develop and publish a national motorcycling safety strategy incorporating best practice engineering, education and enforcement issues.	1st Qtr 2009	Complete 2010	Evaluation	high	Medium term	indirect	high	high
82	Research, develop and publish a national cycling safety strategy incorporating best practice engineering, education and enforcement issues.	2nd Qtr 2008	Complete 2010	Evaluation	high	Medium term	indirect	high	high
91	Publish a consultation document on Compulsory Training for motorcyclists.	2nd Qtr 2007	2007	Evaluation	high	Long term	indirect	high	low
92	Ensure that 100% of all new provisional licence holders in the motorcycle licence category undertake compulsory basic training by the end of 2008.	Driver Testing 4th Qtr 2008	December 2010	Evaluation	high	Long term	indirect	high	high

Table 6.9 Qualitative assessment of inappropriate Vulnerable Road User measures

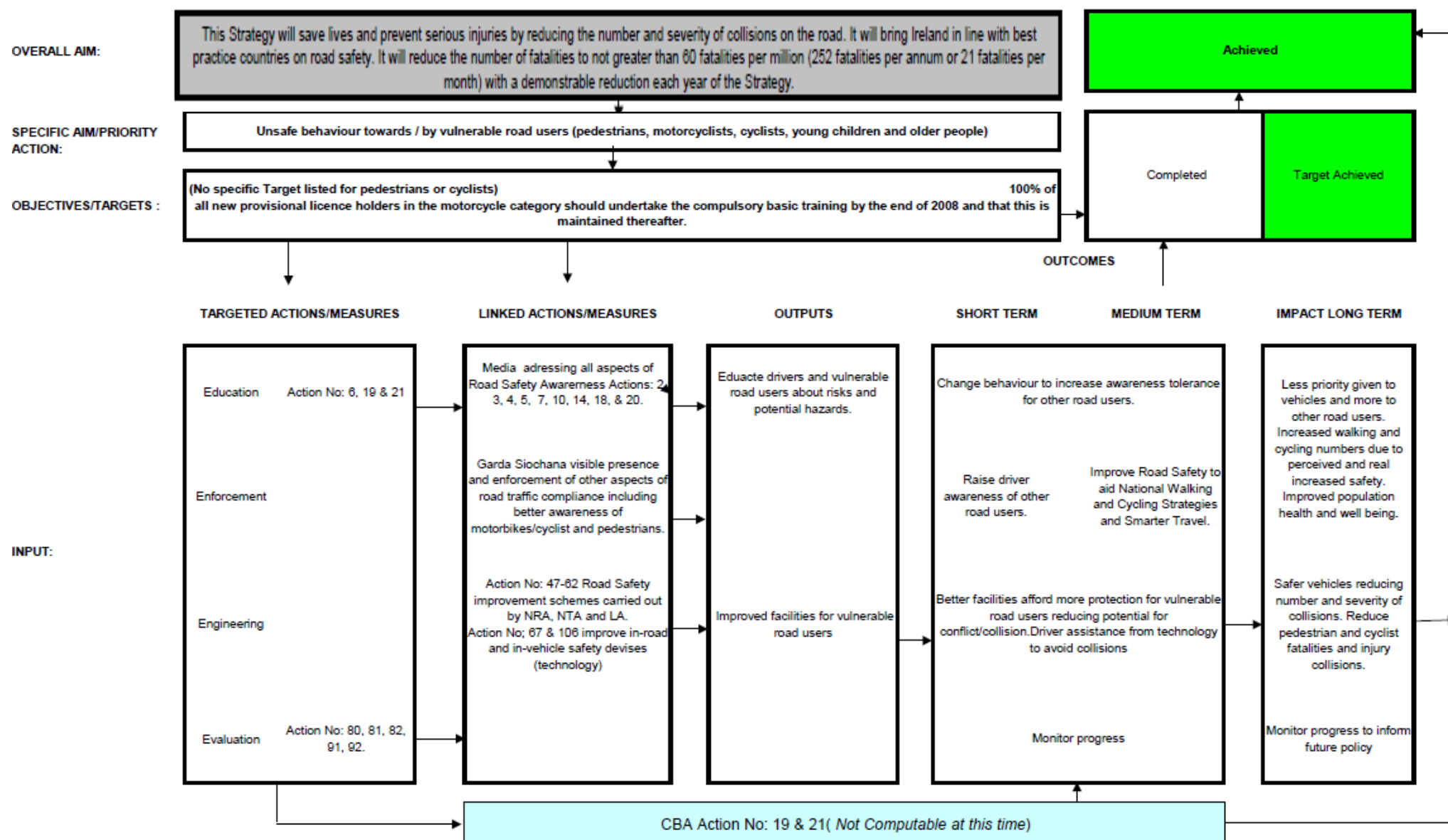


Table 6.10 Programme Logic Model- Vulnerable Road Users

6.7 INAPPROPRIATE BEHAVIOUR

The Strategy does not have specific targets to reduce the deaths and injuries on Irish roads as a result of inappropriate behaviour, however this theme has an impact on all the road safety themes described previously. The measures below have had an overall effect which has resulted in the achievement of the Primary Aim that has reduced fatalities and severity of injuries across all road user categories. Targeting behavioural change has had an important role in this achievement. It strengthens and supports other actions and targets within the Strategy and is therefore an integral element in the delivery of the Strategy.

An example of how effective the RSA media and information campaigns have been:

Ireland's entry to the European CARE Awards, presented in the European Parliament on 16th April 2009., "*The Longer Term Effects of Seatbelts Advertising 2001-2008*", is based on case study evidence proving that the Irish campaign changed behaviour, saved lives and resulted in a huge economic payback of €492 million, identifying an advertising payback of €15.75 for every €1 invested in the campaign.

In the following section **Table 6.11** lists the 28 Strategy actions that aimed at changing inappropriate behaviour to achieve the Primary Target.

Actions 2, 3, 4, 5, 7, 8, 43 and 90 targeted better driver and road user behaviour through provision of education, information campaigns, awareness campaigns and publications to inform and provide knowledge to their target audiences. The RSA used mass media methods to deliver road safety information. This information is highly consistent with enforcement and legislation measures carried out by the Strategy. The RSA had produced a vast and comprehensive suite of publications, mass media campaigns and educational programmes to improve road safety during the Strategy. Media campaigns and education are highly effective⁵⁸ measures that change driver behaviour. All these measures had *high* implementation, effectiveness and continued relevance.

The three actions 72, 73 and 74 targeted learner and novice drivers to improve the standard of driving in Ireland through better training, testing, experience and knowledge by introducing the graduated licensing system. This is a proven method of improving the overall road safety in countries where it has been introduced such as Sweden and Switzerland⁵⁹.

The remaining nine Actions 30, 37, 38, 39, 40, 41, 79, 89 and 119 target inappropriate behaviour through enforcement such that the driver is aware of the increased risk of being detected and prosecuted if they fail to comply with road traffic law and regulations in place⁶⁰.

Conclusions

- Collisions will inevitably occur on Irish roads that to some extent may be due to inappropriate driver behaviour, either due to lack of education or knowledge or violation of the road traffic legislation. Behaviours that increase the risk of a collision have been targeted in the Strategy to mitigate collisions due to driver error, lapses in judgement and violation of our road traffic regulations and laws. This is a highly effective road safety tool.

⁵⁸ CAST (Campaigns and Awareness- Raising Strategies in Traffic Safety) A theoretical approach to assess road safety campaigns Evidence from seven European countries, Belgian Road Safety Institute, September 2009.

⁵⁹ ROSEBUD - Road Safety and Environmental Benefit-Cost and Cost-Effectiveness Analysis for Use in Decision-Making Examples of assessed road safety measures, *a short handbook*. July 2006

⁶⁰ ROSEBUD - Road Safety and Environmental Benefit-Cost and Cost-Effectiveness Analysis for Use in Decision-Making Examples of assessed road safety measures, *a short handbook*. July 2006

No.	126 Measures	COMPLETE DATE	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
2	Implement mass media campaigns which target the main causal factors for collisions, deaths and serious injuries for all road users but in particular the high risk groups.	Annually	Annually	Education	high	short	indirect	high	high
3	Integrate mass media campaigns with the policing plans of An Garda Síochána and other enforcement agencies.	Annually	Annually	Education	high	short	indirect	high	high
4	Apply new media techniques/ initiatives to road safety awareness / education which are interactive and age-appropriate.	2nd Qtr 2008	Annually	Education	high	short	indirect	high	high
5	Continue to promote joint North/South cooperation on road safety awareness campaigns.	Annually	Annually	Evaluation	high	short	indirect	high	high
7	Develop and implement education interventions aimed at the high risk 17 to 24 year age group.	Annually	Annually	Evaluation	high	short	indirect	high	high
8	Produce a suite of publications on the collision-causing factors (speed, impaired driving, seat belt wearing, and vulnerable road users) aimed at all road-user categories, to complement the Rules of the Road and the Driver Theory Test.	2nd Qtr 2008	2nd Qtr 2008	Evaluation	high	short	indirect	high	high
9	Adopt a population health approach to road safety throughout the HSE in the planning and delivery of services.	2nd Qtr 2009	2009	Evaluation	high	medium	indirect	medium	high

No.	126 Measures	COMPLETE DATE	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
10	Develop a template for employers on employee road safety education which can be rolled out nationally.	3rd Qtr 2008	September 2008	Education	high	medium	direct	high	high
11	Develop education policies and actions aimed at ethnic minority groups.	1st Qtr 2009	June 2008	Education	high	short	indirect	high	high
12	DoE&S, through Bus Éireann, will review and update the training programme for all school bus drivers operating under the DoE&S school transport scheme taking into account best practice standards.	2nd Qtr 2008	2008	Education	high	medium	indirect	medium	high
14	Integrate international road safety awareness events such as UN Global Road Safety Awareness Week, EU Road Safety Day and World Day of Remembrance for Road Traffic Victims into road safety plans.	2007 / Annually	Annually	Education	high	short	indirect	high	high
15	Every school that undertakes the RSA transition year unit programme will ensure that each pupil will have the opportunity to undertake the driver theory test before completion of the Leaving Certificate.	1st Qtr 2009	2009	Education	high	short	indirect	medium	high
20	Produce guidelines to assist advertisers depict positive images and behaviour and to help them to avoid showing unsafe road behaviour in advertising.	1st Qtr 2007	Annually	Education	-	-	indirect	-	-
29	Promote An Garda Síochána Traffic Watch scheme to enable community support for road traffic law enforcement.	Annually	Annually	Enforcement	high	short	indirect	high	high

No.	126 Measures	COMPLETE DATE	Actual Completion date	Policy Framework for Delivery (4x E's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
30	Expand the range of road safety related offences covered by way of penalty points and administrative fines.	1st Qtr 2009	2009 and up to 2012	Enforcement	high	medium	indirect	high	high
37	Develop and ensure effective sanctions for all vehicles and drivers on Irish roads including out-of-state operators who breach relevant transport legislation while operating within the state.	2nd Qtr 2009	Ongoing	Enforcement	medium	short	indirect	medium	high
38	Increase enforcement of driver hours and checking of operators' licences. Check at least 1% of days worked by drivers of Goods Vehicles and Buses and increase this threshold to 3% from 2010, to comply with EU Directive EC 2000 / 30.	3rd Qtr 2007 4th Qtr 2010	ongoing	Enforcement	high	short	indirect	high	high
39	Participate with other EU member states in a campaign of coordinated Checkpoints.	Annually	Annually	Enforcement	high	short	indirect	high	high
40	Establish a system to ensure current insurance details for all drivers can be accessed in real time by the Gardaí to facilitate enforcement.	4th Qtr 2009	2009	Enforcement	high	short	indirect	high	high
41	Implement a random roadside mechanical checking programme for goods vehicles and buses.	2nd Qtr 2008	2008	Enforcement	high	short	indirect	high	high
43	Produce comprehensive information guides for the road transport sector concerning drivers' hours and other legislation.	4th Qtr 2007	2008	Enforcement	high	short	indirect	medium	High

No.	126 Measures	COMPLETE DATE	Actual Completion date	Policy Framework for Delivery (4xE's)	Implementation	Timing of Effects	Type of impact	Evaluation Summary	
								Effectiveness	Continued Relevance
72	Legislate for graduated driver licensing.	3rd Qtr 2008	2008	Enforcement	high	Long term	indirect	high	high
73	Implement a driver permit and related measures for a graduated driver licence scheme.	4th Qtr 2008	2008-ongoing	Enforcement	high	Long term	indirect	high	high
74	Roll out the post driver test measures of the graduated driver licence scheme.	1st Qtr 2009	On-going	Enforcement	low	Medium	indirect	high	high
79	Explore the potential for giving RSA Transport Officers and Vehicle Inspectors the power to stop and examine vehicles for compliance with road safety standards as outlined in traffic regulations.	4th Qtr 2008	complete	Enforcement	low	short	indirect	low	high
89	Participate in a joint feasibility study with the UK on the mutual recognition of penalty points.	4th Qtr 2008	2008	Evaluation	high	medium	indirect	high	low
90	Produce revised and updated Rules of the Road, with relevant regular updates on the website.	2nd Qtr 2007	2007 - ongoing	Evaluation	high	medium	indirect	high	high
119	Research and evaluate the effectiveness of alternative correction/rehabilitation programmes for a range of road traffic offences with a particular emphasis on high risk re-offenders.	2nd Qtr 2009	On going	Evaluation	medium	medium	indirect	medium	high

Table 6.11

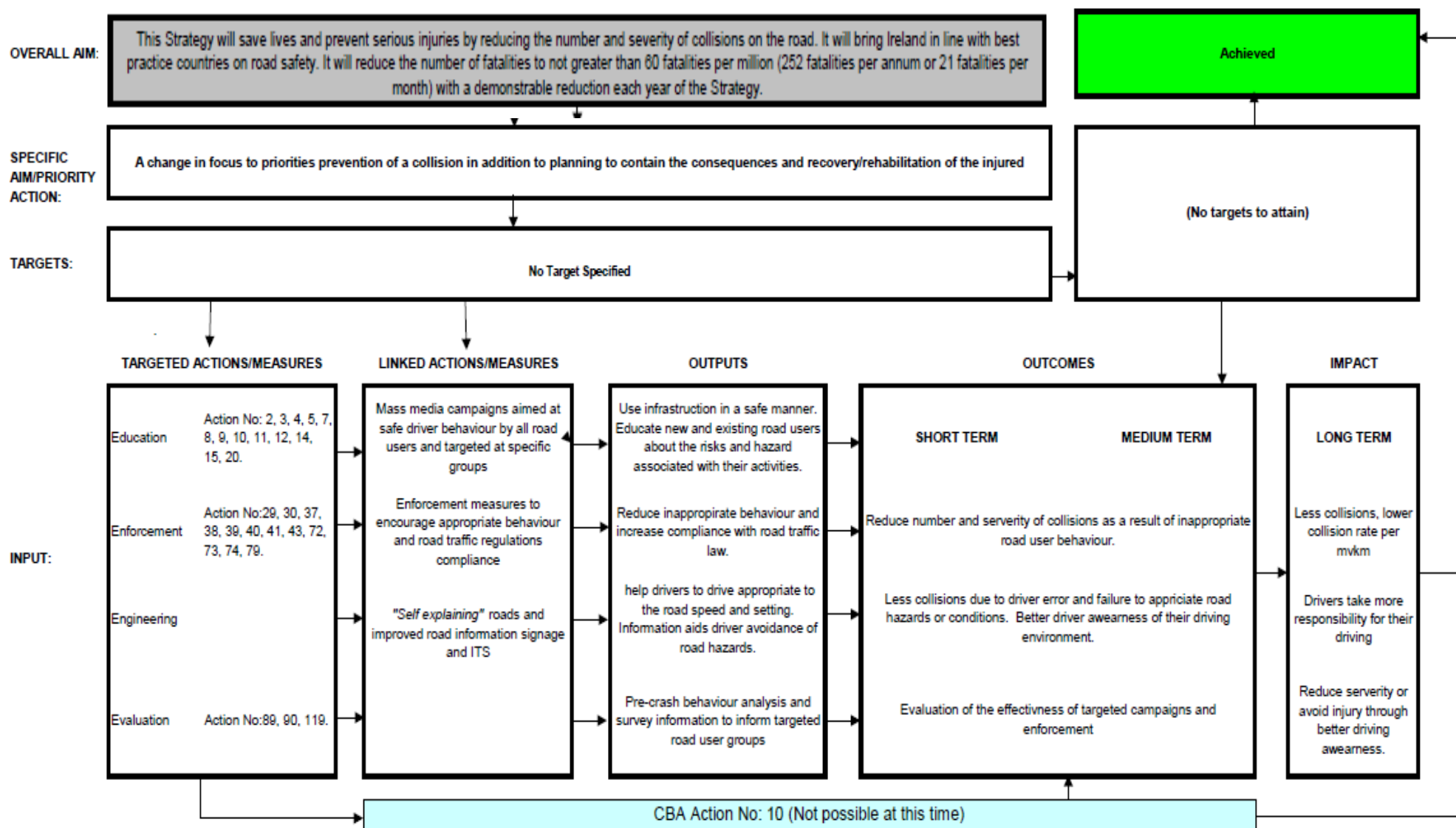


Table 6.12 Programme Logic Model- Inappropriate Behaviour

OTHER ACTIONS

The following section describes other road safety actions that do not fall into one of the themes discussed above. They can be divided into the following types of actions:

- Legislation/Policy: Action No. 22, 71, 85, 87, 88, 116, 120 and 121.
- Driver Licensing and Testing: Action No. 93, 94, 95, 96, 118 and 125.
- Evaluation/Monitoring/Collision Research: Action No.18, 83, 84, 101, 102, 103, 105, 107, 108, 109, 112 and 117
- Governance: Action No.86
- Strategy Implementation/Administrative: Action No.13, 16, 17, 23, 31, 36, 44, 45, 68, 70, 97, 98, 99, 124 and 126.

The 42 actions listed above do not specifically target reducing the number or severity of road collisions.

Table 6.12 below does not address *continued relevance* or *effectiveness* to reflect the fact that the actions are not specifically targeted at a particular roads safety theme. The actions have been assessed according to the five areas above and their level of implementation during over the Strategy period.

Conclusions

- The 42 Actions listed as '**Other**' do not specifically target reducing the number or severity of road collisions, these Actions are not specifically targeted at a particular road safety theme. As such they could be dealt with differently in the forthcoming strategy. This would greatly reduce the number of road collision prevention actions in the next strategy and help to focus the link between target setting and corresponding road collision prevention actions. These '**Other**' actions could be categorised as facilitation actions.

No.	126 Measures	LEAD DEPART OR AGENCY	SUPPORT DEPART OR AGENCY	DELIVERY BY	Target Date	Completion Date	Implemented Yes/No
13	Include a road safety protocol in the Health and Safety section of each school plan.	DoE&S	Garda Síochána/HSE/ School Boards/National/Parents Councils/Local Authority/RSTWG/D TO	DoE&S – Principal Officer	3rd Qtr 2008	Not complete	No
16	Each Local Authority will appoint a full time Road Safety Officer to promote road safety.	LA's	RSA / DoT	County Manager	2nd Qtr 2009	Not complete	Partially
17	The Road Safety Authority will provide a template from which each Local Authority will draft and implement its own road safety plan.	LA's	RSA / DoT	County Manager	1st Qtr 2009	Complete	Yes
18	Host an annual international conference on road safety to update and review best practice developments.	RSA	All Stakeholders	RSA Director – Road Safety, Research and Driver Education	2008 and Annually thereafter	Annually	Yes
22	Publish an Annual Garda Road Safety Policing Plan.	Garda Síochána	RSA / DoJELR	Garda Commissioner	Annually	Annually	Yes
23	Rollout of Garda Traffic Corps across all Divisions to planned manning level and with all necessary equipment, technology and administrative support. 1,200 Traffic Corps personnel by 2008.	Garda Síochána	MBRS /DoJELR /DoT	Garda Commissioner	4th Qtr 2008 / annually	2009	Yes
31	Draw up protocols to provide for the sharing of information between the Coroners Service, An Garda Síochána, RSA and any other statutory body in accordance with the Coroners Bill when enacted.	Coroners Service / Garda Síochána	Coroners Society of Ireland / RSA	Coroners Service, CEO	1st Qtr 2009	Not complete	No
36	Establish a risk-rating register to facilitate a more effective enforcement effort for heavy goods vehicles, drivers and operators.	RSA	Garda Síochána / HAS	RSA Director – Standards and Enforcement	2nd Qtr 2009	2009	Yes
44	Integrate RSA enforcement activity with An Garda Síochána, Customs and the HSA.	RSA	Garda Síochána / HSA / LA's / Revenue Commissioner	RSA Director – Standards and Enforcement / Garda Commissioner	3rd Qtr 2007	2008. Ongoing	Yes

No.	126 Measures	LEAD DEPART OR AGENCY	SUPPORT DEPART OR AGENCY	DELIVERY BY	Target Date	Completion Date	Implemented Yes/No
45	Review procedures for medical certification of fitness to drive in consultation with the MBRS and medical experts.	RSA / MBRS	ICGP / DoH&C	CEO RSA	2nd Qtr 2008	Partially Complete	Partially
68	Implement a joint reporting collision procedure between the Gardaí, local authorities and the NRA.	Garda Síochána	NRA/LA's	Garda Commissioner	3rd Qtr 2008	2008	Yes
70	Establish a protocol with the County and City Enterprise Boards to assist and advice individuals who wish to bring new innovative road safety products to the market.	RSA	County and City Enterprise Boards	RSA Director Standards and Enforcement	2nd Qtr 2008	2008	Yes
71	Review all Road Traffic legislation with a view to consolidation into a new Road Traffic Act.	DoT	DoJELR / MBRS/ RSA / Garda Síochána / Courts Service	DoT - Principal Officer	3rd Qtr 2012	Ongoing	Yes
83	Review / monitor implementation of the Road Safety strategy and produce an annual report to the Minister for Transport by the end of the second quarter of the following year. This will emphasise road safety outcomes achieved, cost-benefit analysis and value-for-money.	RSA	All relevant Departments and Agencies	RSA CEO	Annually	Annually	Yes
84	Update the cost-benefit analysis research to take into account current costs and benefits associated with road safety measures in this Strategy.	RSA	DoT / HSE	RSA Director - Road Safety, Research and Driver Education	3rd Qtr 2009	April 2010	Yes
85	Establish a specialist Policy Advisory Panel to advise the RSA Board on policy implementation and evaluation.	RSA	DoT	RSA CEO	2nd Qtr 2007	2008	Yes
86	Maintain the Cabinet Level Committee on Road Safety to monitor progress, assess priorities and identify difficulties in the implementation of the Road Safety Strategy.	DoT	Department of an Taoiseach / DoH&C / DoEHLG / DoJELR / DoE&S / Office of the Attorney General	DoT - Principal Officer	Annually	Annually	Yes
87	Implement all relevant EU Directives and participate actively in the development of future policy at EU level.	RSA / DoT	-	RSA CEO / DoT - Principal Officer	Annually	Annually	Yes
88	Enter a bilateral arrangement with the UK to implement the Convention on Driving Disqualifications.	RSA	DoT / DoE NI	RSA Director - Driver Testing	2nd Qtr 2008	2010	Yes
93	Publish a consultation document on driver vocational training and introduce regulations / procedures for the implementation of this EU Directive (EC / 2003 / 59).	RSA	DoT / DoE NI	RSA Director - Road Safety, Research, Driver Education	3rd Qtr 2007	2008	Yes

No.	126 Measures	LEAD DEPART OR AGENCY	SUPPORT DEPART OR AGENCY	DELIVERY BY	Target Date	Completion Date	Implemented Yes/No
94	Maintain and update the Driver Theory Test in line with international best practice and re-tender the service.	RSA	DoT	RSA Director - Driver Testing	3rd Qtr 2007	July 2008	Yes
95	Register all existing driving instructors on the ADI Register and put in place a suitable monitoring mechanism to maintain a high standard.	RSA	Representatives of driver instructors / Garda Síochána	RSA Director – Standards and Enforcement	4th Qtr 2008	May 2009	Yes
96	Introduce a plastic card licence once agreed by the EU.	RSA	DoT / Garda Síochána / LA's	RSA Director - Driver Testing	1st Qtr 2012	Ongoing, due in 2013	No
97	Reduce the waiting time for a driving test to a 10 week national average and maintain this service level.	RSA	-	RSA Director - Driver Testing	2nd Qtr 2008	2008	Yes
98	Commence a programme of review and modernisation of existing driver test centres and develop new test centres to meet the driving testing requirements of all vehicles.	RSA	OPW / DoT	RSA Director - Corporate Services	Annually and complete 4th Qtr 2012	Annually	Yes
99	Undertake a study to identify the potential of using driving simulator technology and related hazard perception technology in the training and assessment of inexperienced drivers.	RSA	Research Institutions	RSA Director - Driver Testing / RSA Director - Road Safety, Research and Driver Education	3rd Qtr 2009	Ongoing 2010	No
101	Develop a research capability for the RSA.	RSA	Stakeholders /Academic Institutions / Coroners Society of Ireland / HSE / HSA	RSA Director - Road Safety, Research and Driver Education	3rd Qtr 2008	Annually	Yes
102	Review and update the annual publication of road collision facts and the collection of data to support this analysis.	RSA	Garda Síochána / Coroners Society of Ireland /HSE / IIF	RSA Director - Road Safety, Research and Driver Education	Annually	Annually	Yes
103	Use existing data sources on injuries from road collisions and improve the content, quality and access where appropriate.	HSE	RSA / NRA / Garda Síochána / LA's	HSE CEO	4th Qtr 2008	2008	Yes

No.	126 Measures	LEAD DEPART OR AGENCY	SUPPORT DEPART OR AGENCY	DELIVERY BY	Target Date	Completion Date	Implemented Yes/No
105	Participate in European and International road safety research programmes: FERSI (Forum of European Road Safety Research Institutes) SARTRE (Societal Attitudes to Road Traffic Risk in Europe) SAFETYNET(An EU project designed as a precursor to an EU road safety observatory)IRTAD (International Road Traffic and Accident Database) CARE (An EU Road Accident Traffic Database) ETSC (European Transport Safety Council) CORDIS (Community Research and Development Information Service 2007 – 2013)	RSA	International Stakeholders / NRA	RSA Director - Road Safety, Research and Driver Education	Annually	Annually	Yes
107	Enhance the collection and availability of data from enforcement activity to support the analysis and review of the Road Safety Strategy by the advisory panel.	RSA	Advisory Panel / Garda Síochána / MBRS	RSA CEO	1st Qtr 2008	2008	Yes
108	Exploit the potential of the (HSE) Health Atlas Ireland to develop a specialist module allowing restricted web access to health related road collision data and geo-spatial analysis; develop a dedicated module allowing access by the general public to useful and practical health-related road collision information.	HSE	RSA / NRA / An Garda Síochána / LA's	HSE CEO	4th Qtr 2008	2008	Yes
109	Review (HSE) emergency response to road collisions in light of available evidence on best practice and value for- money. Commence implementation on the recommendations to improve the survival, treatment and recovery of those involved in road collisions.	HSE	-	HSE CEO	2nd Qtr 2009	2009	Yes
112	Research and update training and development programmes for the Garda Traffic Corps based on experience in Ireland and best practice from other comparable jurisdictions.	Garda Síochána /RSA	NRA	Garda Commissioner / RSA, Director - Road Safety, Research and Driver Education	Annually	Annually	Yes
116	Prepare a comprehensive freight transport strategy that maximises road safety.	DoT	RSA / NRA / LA's / DoEHLG / DTO	DoT - Principal Officer	4th Qtr 2008	Ongoing DoT	No
117	Conduct a public consultation process in relation to the use of Agricultural Vehicles on Public Roads and introduce policy proposals to regulate the use of these vehicles.	RSA	NRA / An Garda Síochána / LA's / Road Haulage Association / IFA	RSA Director - Standards and Enforcement	2nd Qtr 2008	Complete	Yes
118	Work with the insurance sector, SIMI, An Garda Síochána and DoEHLG to ensure that all vehicles which have been written off and cannot be safely repaired are permanently removed from the vehicle fleet.	RSA	Garda Síochána/ IIF/ NCT / SIMI/ DoEHLG	RSA Director - Standards and Enforcement	2nd Qtr 2009	Complete 2009	Yes

No.	126 Measures	LEAD DEPART OR AGENCY	SUPPORT DEPART OR AGENCY	DELIVERY BY	Target Date	Completion Date	Implemented Yes/No
120	Implement the recommendations of the Coroners Review Group, December 2000, on the setting up of a National Coroners' database.	DoJELR	Coroners Society of Ireland	DoJELR - Principal Officer	4th Qtr 2008	Awaiting Bill	No
121	Prepare the legal framework for the enactment of the Coroners Bill 2006.	DoJELR	Coroners Society of Ireland / Garda Síochána / RSA	DoJELR - Principal Officer	4th Qtr 2008	Delivered by Health Research Board. Ahead of Bill	Partially
124	Research existing sources of collision data and put in place a reliable and consistent database for collisions.	RSA	Garda Síochána / IIF/ HSE / LA's/ NRA	RSA Director - Road Safety, Research and Driver Education,	4th Qtr 2009	2009	Yes
125	Introduce a centralised permit system for the movement of wide and long loads on the National Road Network.	RSA	NRA / DoEHLG / Garda Síochána	RSA Director - Standards and Enforcement	1st Qtr 2008	May 2009	Yes
126	Undertake a review of the current NCT contract reflecting best international practice and re-tender the service	RSA	-	RSA - Director of Standards and Enforcement	4th Qtr 2007	2008-2010	Yes

Table 6.12

7 ECONOMIC EVALUATION OF THE STRATEGY

Section 2 of the Strategy includes a commitment:

The RSA will continually monitor, audit and report on the effectiveness and cost of these actions against plans, outcomes and alternatives.

This commitment represents a significant step forward towards rational decision-making in the field of road safety.

In any complex system, it is wise to spend a small proportion of the cost of an expenditure programme on analysis of how the resources can best be deployed.

The process is conceptually straightforward:

- analysis of the costs of different measures,
- a clear identification of the likely impacts,
- a quantified estimate of the scale of those impacts,
- leading to an assessment of the value of the likely outcomes,
- which can be compared against the costs,
- to identify the value obtained from different ways of spending the money.

Cost-benefit analysis is commonplace in other fields of transport spending, but its use in road safety is not without difficulty, as the following sections demonstrate.

7.1 COSTS

In estimating the costs of the Strategy, there are a number of principles of cost-benefit analysis that should be followed.

Costs should include not only the amount of money that the relevant Agency spends directly (e.g. by letting contracts), but also the payroll costs and overhead costs of employing the staff to manage the activity.

- It is important that costs should be assessed relative to a clearly-defined Do-Minimum or Do-Nothing or “baseline” case.
- The analysis should capture the benefits and costs over the full lifetime of the asset

As part of this study, questionnaires were sent to the various organisations with lead responsibility for carrying out the agreed Actions in the Strategy – the RSA, the NRA, An Garda Síochána, and the Departments of Transport and Education. Each organisation was asked, for each of the Actions for which it had responsibility:

- How much they had spent on carrying out the Action in each year
- Whether they had any data on the costs of administering each Action
- As a next-best alternative, for an estimate of the total man-years of work involved.

The thinking was that an appropriate method of estimating administrative costs would be to multiply a number of man-years of effort by an average man-year cost (derived as the ratio of total budget for the organisation to total staff numbers).

None of the organisations had cost-related data available at this level of detail, although some provided helpful information on levels of activity with regard to each Action, or contributed other data to the study.

The following estimates of costs are therefore very broad, based on the information obtained. A consultation questionnaire was issued to the primary stakeholders. A copy of the consultation questionnaire is presented in **Appendix B**.

7.1.1 Costs – Road Safety Authority

The RSA provided data as to their total budget over the Strategy Period.

Table 7.1 RSA costs

Year	Budget €m
2007	€43.3m
2008	€63.3m
2009	€37.8m
2010	€39.6m
2011	€38.4m
2012	€43.8m

Total expenditure comes to €266.2m. However, the RSA has a number of functions, some of which are of long standing. Had the Strategy not been implemented, the RSA (or some alternative body) would still have carried out licensing of vehicles and drivers, continuing the systems in place in 2006.

In order to estimate the RSA costs associated with implementing the Strategy, it was necessary to make a rough estimate of the proportion of RSA activity associated with different functions, and the proportion of each functional activity that relates to agreed actions under the Strategy.

In the absence of better information, the initial draft estimate was that around 50% of the RSA budget was likely to be devoted to Strategy initiatives. Table 7.2 illustrates the logic.

We therefore take the RSA costs of the Strategy as €133m

7.1.2 Costs – Dept of Education & Skills

The Department estimated a total cost of €15m over six years, for carrying out the Actions for which they have lead responsibility.

7.1.3 Costs – Dept of Transport, Tourism & Sport

No response was received. In the absence of any information we assume that the costs will be similar to the €15m estimated by the DES.

RSA responsibility (taken from RSA website)	[A] Estimated proportion of all RSA resource	Key Strategy Actions	[B] Estimated proportion of resource devoted to Strategy Actions	Estimated Strategy share of RSA budget = [A] x [B]
Road Safety Awareness and road safety education	7.5%	Implement mass media campaigns which target the main causal factors for collisions, deaths and serious injuries for all road users but in particular the high risk groups.	100%	7.5%
Analysis of collisions, deaths and serious injuries	2.5%	Review and update the annual publication of road collision facts and the collection of data to support this analysis.	50%	1.3%
Road safety research	2.5%	Produce a suite of publications on the collision-causing factors aimed at all road-user categories	100%	2.5%
Advising on road safety policy formation	2.5%	None - Baseline activity	0%	0.0%
Driver testing and licensing	12.5%	Implement a driver permit and related measures for a graduated driver licence scheme. Reduce the waiting time for a driving test to a 10 week national average and maintain this service level.	25%	3.1%
Driver theory testing	2.5%	Maintain and update the Driver Theory Test in line with international best practice and re-tender the service.	90%	2.3%
Publishing the Rules of the Road	2.5%	Produce revised and updated Rules of the Road, with relevant regular updates	100%	2.5%
Vehicle standards	12.5%	None - Baseline activity	0%	0.0%
Road haulage enforcement – drivers hours, tachographs, Road Transport Working Time Directive and operator licensing requirements	12.5%	Increase enforcement of driver hours and checking of operators' licences.	50%	6.3%
Issuing of digital tachograph cards	7.5%	Baseline activity	0%	0.0%
Oversight of National Car Test	7.5%	Undertake a review of the current NCT contract and re-tender the service.	50%	3.8%
Oversight of Commercial Vehicle Roadworthiness including testing standards and roadside checks	12.5%	Conduct a review of commercial vehicle roadworthiness testing and prepare a plan for reform.	25%	3.1%
Licensing of ADR Vehicle TestCentres	2.5%	Commence a programme of review and modernisation of existing driver test centres and develop new test centres	90%	2.3%
Registration of driving instructors (Approved Driving Instructors - ADI)	2.5%	Register all existing driving instructors on the ADI Register and put in place a suitable monitoring mechanism	100%	2.5%
Driver Certificate of Professional Competence –(Driver CPC)	2.5%	Publish a consultation document on driver vocational training and introduce regulations	100%	2.5%
Road Safety Educational programmes	5.0%	Lead the implementation of a comprehensive integrated road safety education programme in Pre-school, Primary, Post-Primary, Third Level and in the Community.	100%	5.0%
Co-ordinate and monitor the Road Safety Strategy 2007 - 2012	2.5%	(implicit)	100%	2.5%
TOTAL	100%		TOTAL	47.0%

Table 7.2 Example of cost estimation calculation

7.1.4 Costs – National Roads Authority

The NRA provided the study team with an overall table, and two additional datasets with useful information. The overall table is summarized below as Table 7.3.

Measure	Out-Turn Cost (€m)						
	2007	2008	2009	2010	2011	2012	TOTAL
Complete the development of major inter urban routes from Dublin to Galway (N6), Limerick (N7), Cork (N8), Waterford (N9).	753	943	829	444	145	79	3,193
Network maintenance and improvement works incl. minor realignments and "signing & lining" schemes	118	73	33	109	168	23	524
Implement a bridge management programme for the inspection and strengthening of national road bridges.	12	12	9	12	20	12	77
Traffic calming & remedial schemes	20	14	6	15	20	20	95
TOTAL							3,889

Table 7.3 NRA response to cost questionnaire

One set of data related to the cost-benefit analysis of motorway schemes, and is discussed in section 7.4.1 below.

The other related to expenditure on various types of safety schemes, and is summarized here.

Capital spend (€m)	"Signing & Lining" schemes	Traffic Calming Schemes	Safety Scheme Grant to Councils	Other safety-related capital spend	Safety Total	NRA total capital spend (for reference)
2007	17.6	3.3	17.3	0.1	38.3	1712.3
2008	20.5	1.4	12.3	0.2	34.4	1663.3
2009	11.1	1	4.6	0.1	16.8	1573.6
2010	19	1.2	13.5	0.2	33.9	1219.4
2011	19.8	1	19.5	0.3	40.6	743.3
2012	4.8	0.3	1	0.1	6.2	242.2
6-Year Total	92.8	8.2	68.2	1	170.2	7154.1

Table 7.3a NRA Capital spend on Safety Schemes

Total cost of these comes to €170.2m over the 6-year Strategy period. Some of this money is paid to local authorities; some is administered directly by the NRA. In either case, there are associated administrative costs.

Based on cost data for a small sample of minor road improvements, it appears that something of the order of 20% of the total costs are related to scheme preparation and administration, with around 80% (four-fifths) being the capital spend on construction, supervision and specialist services.

Thus we estimate that capital costs should be factored up by 1.25 (five-fourths) to reflect the total cost of these actions, giving an estimate of around €213m as the total cost of this type of measure.

NRA expenditure on other measures is taken as:

	3889.0	(NRA total cost provided)
<i>Less the following costs:</i>	- 3193.0	(motorway costs)
	- 68.2	(grant to local authorities)
	- 102.0	(capital expenditure on other safety schemes)
	- <u>25.5</u>	(estimated admin cost of other safety schemes)
	€500M	= (Approximately)

7.1.5 Costs – An Garda Siochana

Gardai provided the following cost information, which is understood to include some or all of the costs of the speed camera programme.

Year	Costs €m
2006	76.693
2007	80.211
2008	81.896
2009	79.674
2010	78.264
2011	88.911

Table 7.4 - Garda costs supplied

Estimated outturn for 2012 is taken to be the same as for 2011.

There is an argument that the baseline should be taken to be a continuation of 2006 activity levels and resource commitment (corresponding to an assumption on the benefits side that the baseline is a continuation of 2006 collision rates). Under such an assumption, the Garda costs associated with the Strategy would be €38m, as shown in **Table 7.5**.

Year	Total Costs €m	Baseline Costs	Strategy Costs
2006	76.69	76.69	0.00
2007	80.21	76.69	3.52
2008	81.90	76.69	5.20
2009	79.67	76.69	2.98
2010	78.26	76.69	1.57
2011	88.91	76.69	12.22
2012	88.91	76.69	12.22
2007-2012 TOTAL	574.56	536.85	37.71

Table 7.5 - Garda costs relative to baseline

7.1.6 Costs – Conclusion

Different organisations have different management systems in place; it is much harder for some organisations than others to come up with realistic estimates of the costs of participation in the Strategy.

Some actions may genuinely be costless, where the commitment is to a different way of doing activities that would be undertaken anyway.

We believe that it is important to make and publish an estimate of costs, however approximate, to inform future decision-making. It is hoped that having such estimates in the public domain will provide a spur for stakeholders to identify these costs more precisely.

The resulting initial estimate of the cost of the Strategy is as follows:

Lead Stakeholder	Estimated Actual Cost of Strategy Actions (€m over 6 years)
RSA	133
Dept of Education & Skills	15
Dept of Transport, Tourism & Sport	15
NRA - motorways	3193
NRA - safety schemes (all types)	213
NRA – bridges, maintenance, minor improvements	500
An Garda Síochána	38
TOTAL	4039

Table 7.6 Estimate of Total Costs

It is clear from this that the scale of investment in motorways greatly outweighs the cost of all the other components of the Strategy.

7.2 QUANTIFYING THE IMPACTS OF THE 2007 - 2011 STRATEGY

Collisions resulting in personal injury have by law to be reported to An Garda Síochána, who record relevant information on a national database. Collating and analysing the data from this database is the responsibility of the RSA research unit. A substantial amount of information is recorded about each collision, although for some data fields the completion rates are less than 100%.

This database provides a rich source of information. This section presents some time-series analysis of this data, to identify trends, and compare with Strategy outcomes with an appropriate baseline.

Table 7.7 shows total numbers of reported collisions in each year. Provisional figures for 2011 show that collisions are around 9% down on the levels in 2006, the last year before the Strategy started to come into effect.

YEAR	Reported road collisions (source: RSA database)	National motorised road traffic in million vehicle-kilometres (source: CSO series to 2010, extrapolated to include 2011)	Collisions per MVK
2000	7757	30798	0.252
2001	6909	32647	0.212
2002	6625	33920	0.195
2003	5985	36015	0.166
2004	5781	38597	0.150
2005	6533	40228	0.162
2006	6018	41809	0.144
2007	5467	43838	0.125
2008	6736	44857	0.150
2009	6615	44116	0.150
2010	5780	43010	0.134
2011	5249	41904	0.125

Table 7.7 Overall Collision Trend (The above analysis does not include material damage only collisions)

7.2.1 Changes in Traffic Levels

However, the table also shows that traffic levels in Ireland grew substantially over the early part of the decade, but have declined from mid-2008 onwards. In looking at trends in numbers of road collisions, it is important to take account of this – other things being equal one would expect each 1% change in vehicle-kilometres to result in a corresponding 1% change in numbers of collisions.

Reported collisions in 2011 were two-thirds of the number reported in 2000. But taking account of the increase in traffic over that period, the improvement in road safety is a factor of two – each kilometre driven was only 50% as likely to result in a reported collision in 2011 as in 2000. Where traffic is growing, reductions in collisions are harder to achieve, so any given improvement in collision numbers is more significant than it initially appears.

Conversely, from 2008 to 2011, traffic was declining, so that the 22% drop in reported collisions is composed of a 16.5% drop in collision risk multiplied by a 6.5% reduction in traffic levels. Safety gains over this period are less significant than they initially appear.

For this reason, much of the analysis that follows is carried out in terms of collisions per million-vehicle kilometres.

On the assumption that reporting rates remain constant over time, the trend in collisions is as shown in **Figure 7.1**.

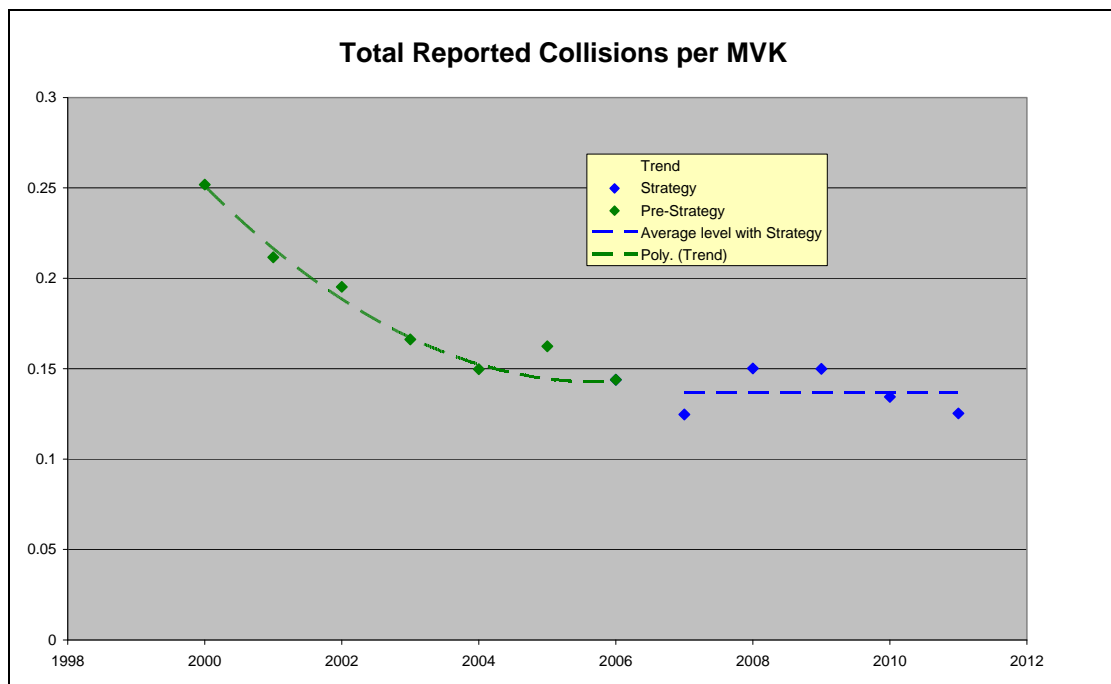


Figure 7.1 Total Reporting Collisions per Million Vehicle Kilometres

A declining trend in collision rates over the first half of the decade appears to have more or less levelled out by 2006, so that a continuation of 2006 rates can reasonably be taken as a baseline against which the impact of the Strategy can be measured.

Over the period of the Strategy, collision rates were above 2006 levels in two years and lower than 2006 levels in three years. This is consistent with an interpretation that collision rates have been broadly constant over time, with substantial year-on-year variation due to the essentially random nature of such events. Over the whole period of the Strategy, average collision rates have been no more than 5% below baseline - not statistically significant.

However, looking beneath the surface, a different picture emerges.

7.2.2 Impact of Reporting Rates

Whilst there is a legal requirement to report collisions involving personal injury, it is known that this doesn't always happen in practice. The HEATCO study⁶¹ estimated that the true rate of serious collisions in Ireland is around 50% higher than the reported figures, and the true rate of minor collisions is around 3 times the official figure.

A report from the Public Health Dept of the HSE⁶² suggests that not only is the under-estimate even larger than this, but also that it is increasing over time.

Numbers of Serious injuries			
Year	RSA data - from collisions database	HIPE data – from hospital discharge records	Ratio
2005	1,021	3,080	3.02
2006	907	3,118	3.44
2007	860	2,964	3.45
2008	835	2,862	3.43
2009	640	2,837	4.43
Total	4,263	14,861	3.49

Table 7.8 – Reported Serious Injuries – comparison of figures from different sources

Note that the RSA's definition of serious injury is

“an injury for which the person is detained in hospital as an inpatient, or any of the following injuries whether or not detained in hospital: fractures, concussion, internal injuries, crushings, severe cuts and lacerations, or severe general shock requiring medical treatment”.

There may be merit in amending this definition, but there are a number of considerations, including:

- consistency with practice elsewhere in Europe
- “fit” to other sources of data that can and should be used to give a more accurate estimate of collision numbers
- accuracy of immediate identification at the scene of a collision whether or not it is “serious”

A major use of the statistics is in tracking changes over time, so if any change in definition is contemplated, figures for at least one year should be calculated on both bases, to ensure transparency.

Given that there is evidence of changing reporting rates over time, an alternative interpretation of the data is given in **Figure 7.2**. This shows the same data as in **Figure 7.1**, but interpreted in terms of runs of years where there is a clear trend, and discontinuities. This figure suggests that there was a substantial increase in reporting rates between 2004 and 2005, and again between 2007 and 2008. This occurs against a background of a continuing (but slowing) decline in real collision rates.

From **Figure 7.2**, these step-changes have been estimated at 23% and 19% respectively. Following the logic to see where it leads, an adjusted data series has been produced, based on the assumption the reported rates from 2008 onwards are accurate, and the early rates are under-reported by these percentages.

⁶¹ Harmonised European Approaches for Transport Costing and Project Assessment, EU SIXTH FRAMEWORK PROGRAMME 2002 – 2006

⁶² ADMISSION TO ACUTE HOSPITALS FOR INJURIES AS A RESULT OF ROAD TRAFFIC COLLISIONS IN IRELAND, 2005-2009

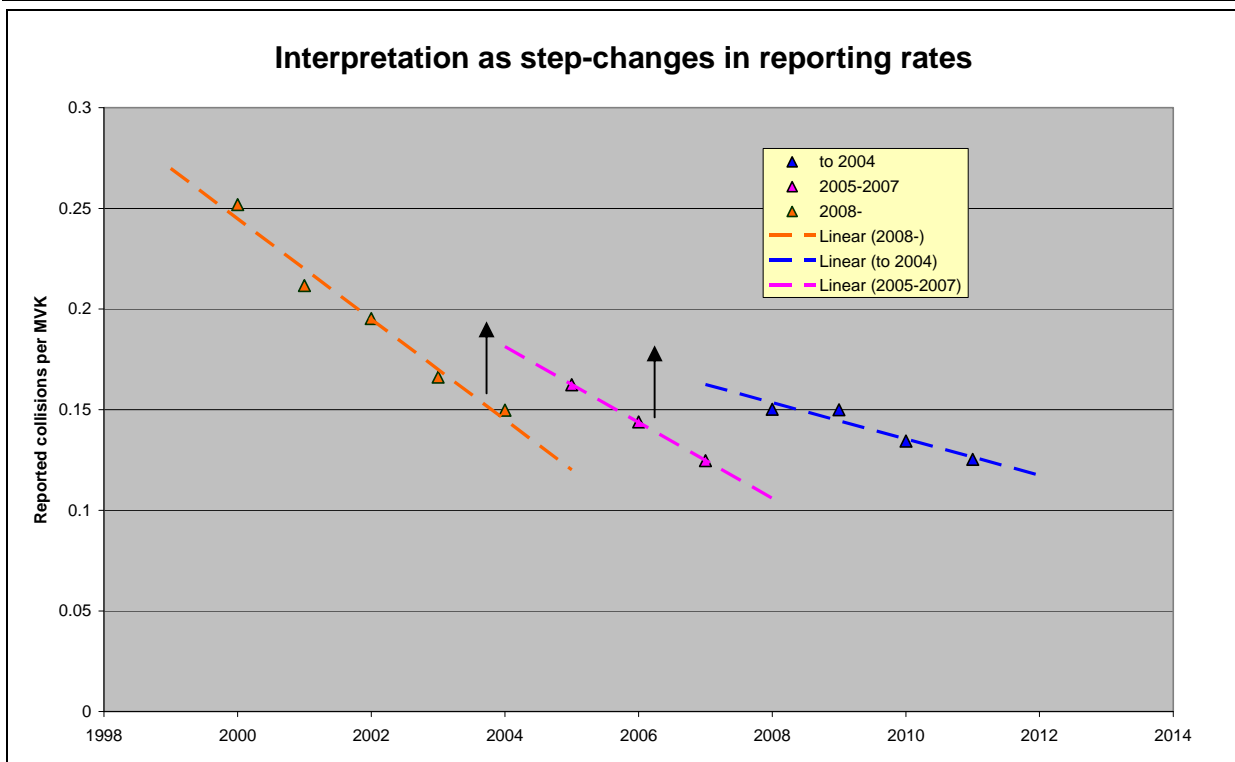


Figure 7.2 Interpretation as step-changes in reporting rates

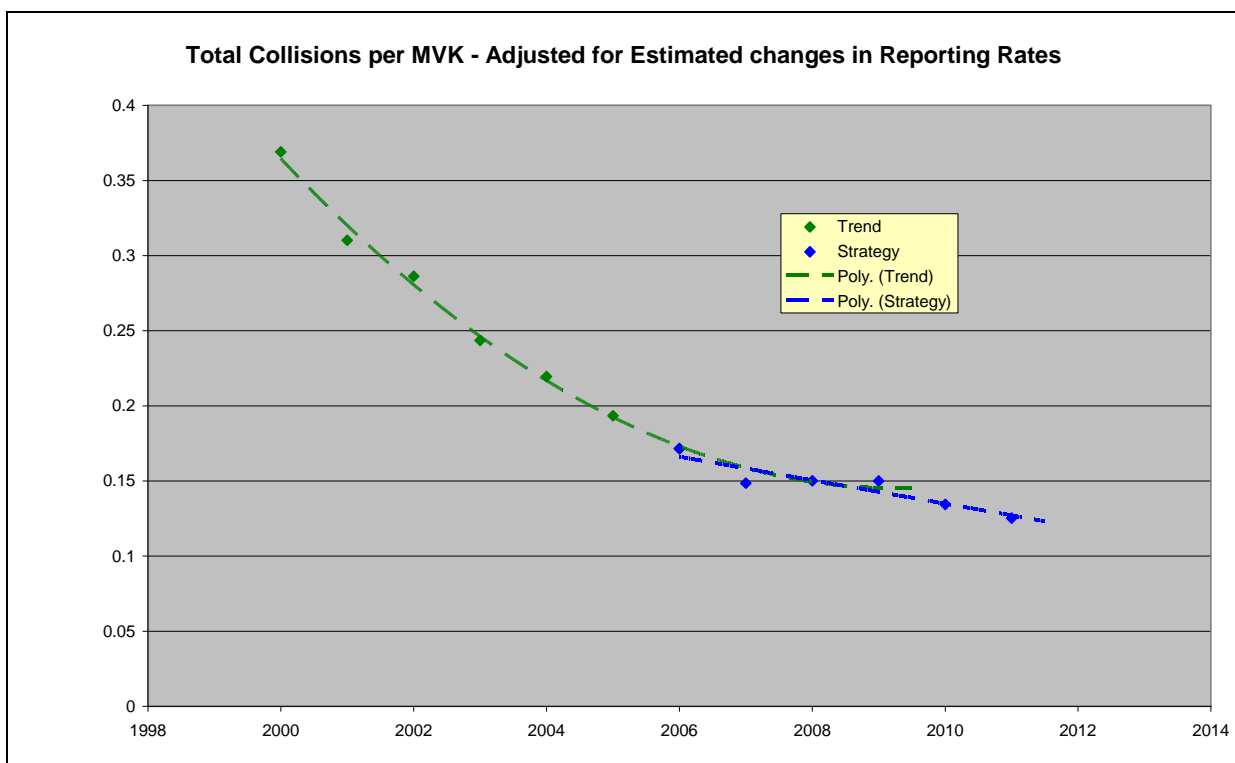


Figure 7.3 Total Collisions per MVK – Adjusted for Estimated changes in Reporting Rates

This assumption leads to **Figure 7.3**. On this basis, it is estimated that without the Strategy, collision rates would have stabilised at 0.145 per MVK around 2009. On this basis, the 2007 to 2009 results are little different from the baseline, suggesting that the Strategy had little impact over the first half of the period 2007-2009. Significant reductions were achieved in 2010 and 2011, suggesting that the Strategy will lead to a 2012 value of around 0.12 collisions per MVK, an 18% reduction.

It seems clear that the scale of the under-reporting issue is such that different assumptions on this point can lead to very different answers as to what the Strategy has achieved in aggregate. Further research to resolve this issue should therefore be a high priority for the RSA.

7.2.3 Trends by Severity

Given that under-reporting will vary significantly with severity of injuries, it is worthwhile to look at trends for fatal, serious and minor collisions separately.

Figure 7.4 shows the trend in numbers of fatal collisions. It seems reasonable to assume that all fatal collisions are reported.

The pre-2007 data suggests a previous declining trend that has flattened out by around 2007 at a rate of around 0.008 fatal collisions per MVK. From 2007 onwards there is a significant further decline, such that by 2012, the rate of fatal collisions is likely to be less than half of the baseline level.

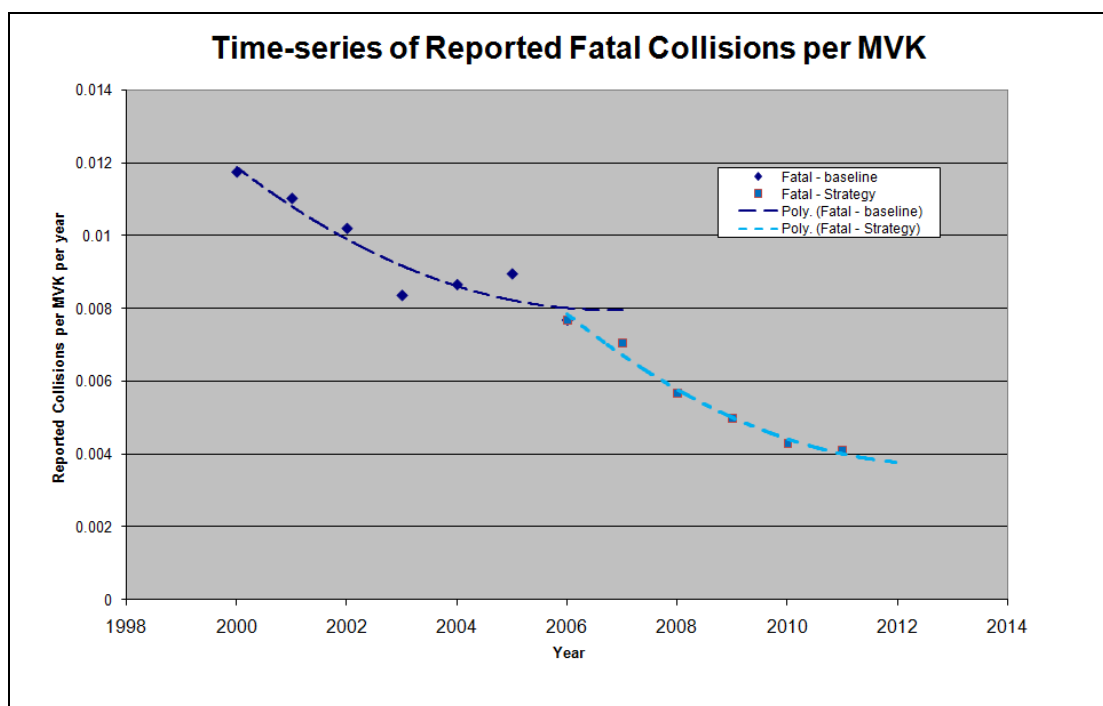


Figure 7.4

The following table shows a corresponding estimate of savings in numbers of fatal collisions.

Year	Estimated baseline rate	Observed / Forecast with-Strategy rate	Implied Saving (collisions /MVK)	MVK	Estimated collision numbers saved
2007	0.00804	0.00705	0.00099	43838	43
2008	0.00804	0.00566	0.00238	44857	107
2009	0.00804	0.00499	0.00305	44116	135
2010	0.00804	0.00430	0.00374	43010	161
2011	0.00804	0.00410	0.00394	41904	165
2012	0.00804	0.00389	0.00415	40798	170
TOTAL					780

Table 7.9 Estimate of Savings in Fatal Collisions

Based on extrapolation to 2012, the total number of fatal collisions saved is estimated to be of the order of 700.

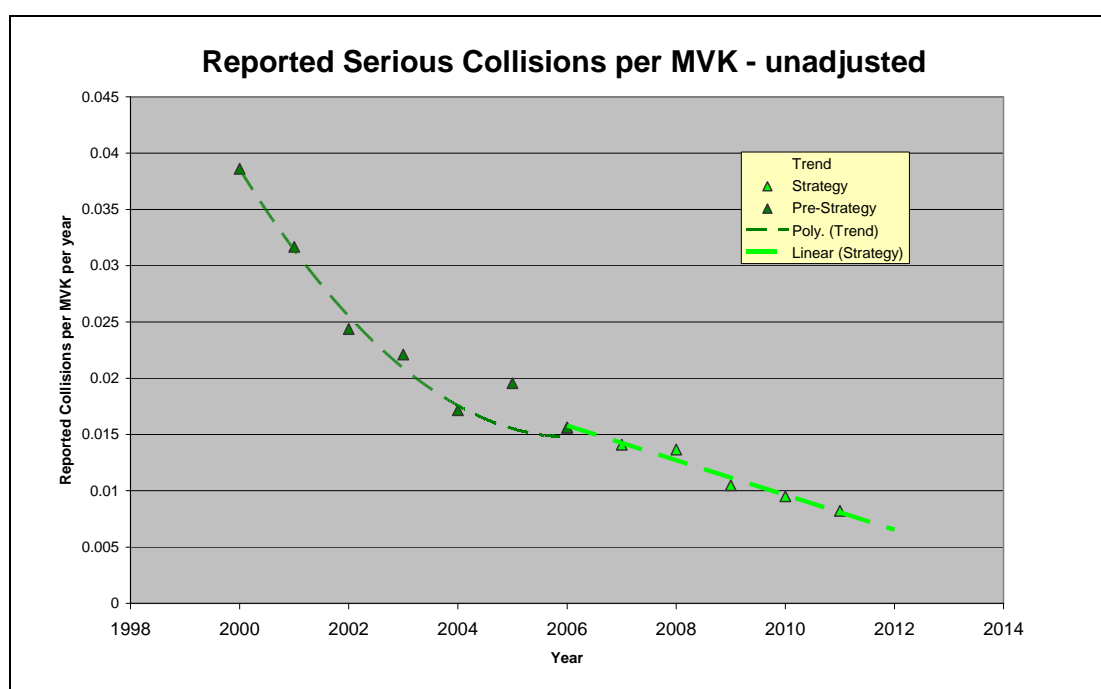


Figure 7.5

Figure 7.5 shows the trend in reported numbers of serious collisions, on an unadjusted basis. On this interpretation, the earlier trend had flattened out around 2006 at a rate of around 0.015 serious collisions per MVK. Based on recent data, the projected 2012 value is 0.0065 serious collisions per MVK, less than half of the baseline value.

Year	Estimated baseline rate	Observed / Forecast with-Strategy rate	Implied Saving (collisions /MVK)	MVK	Estimated collision numbers saved
2007	0.01487	0.01410	0.00077	43838	34
2008	0.01487	0.01367	0.00120	44857	54
2009	0.01487	0.01050	0.00438	44116	193
2010	0.01487	0.00951	0.00536	43010	231
2011	0.01487	0.00821	0.00666	41904	279
2012	0.01487	0.00653	0.00834	40798	340
TOTAL					1131

Table 7.10 Estimate of Savings in Serious Collisions

However, note that depending on the level of adjustment applied in order to allow for suspected changes in reporting rates, it is conceivable that the previous trend may account for much of the saving – one possible interpretation is shown in **Figure 7.6**.

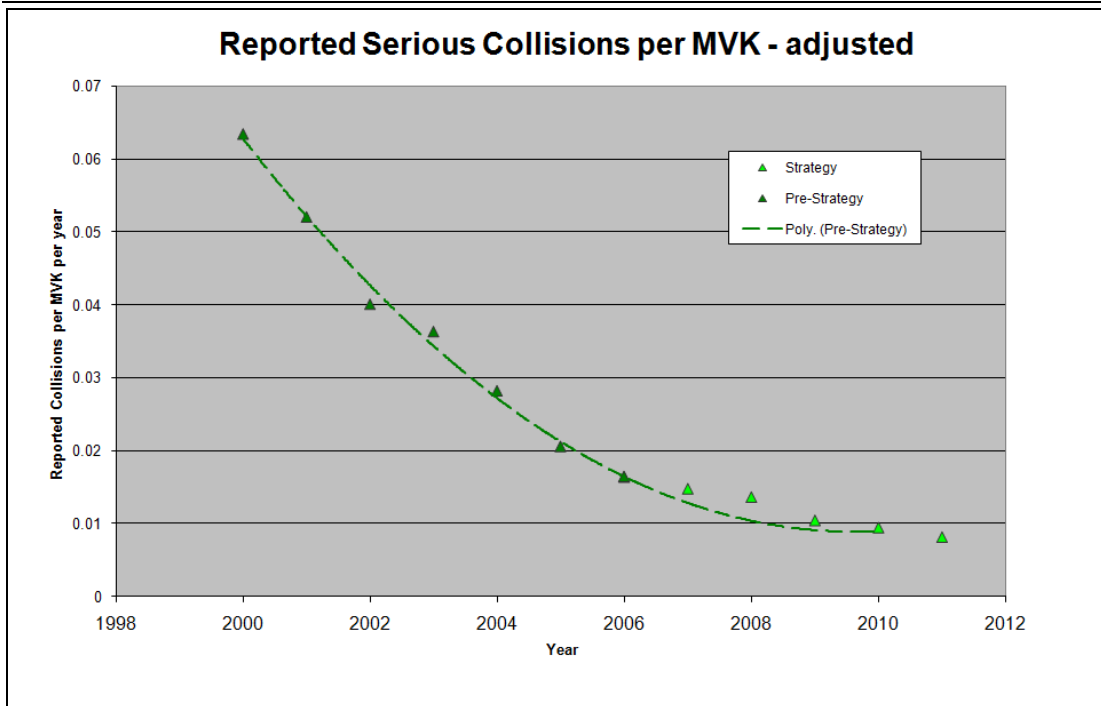


Figure 7.6

For minor collisions, where the issue of possible changes to reporting rates is greatest, the position appears reversed. **Figure 7.7** shows the unadjusted trends for minor collisions. On this basis, the Strategy appears to have had no impact on rates of minor collisions, with the average rate over the Strategy period being fully consistent with the level at which the pre-Strategy trend flattens out.

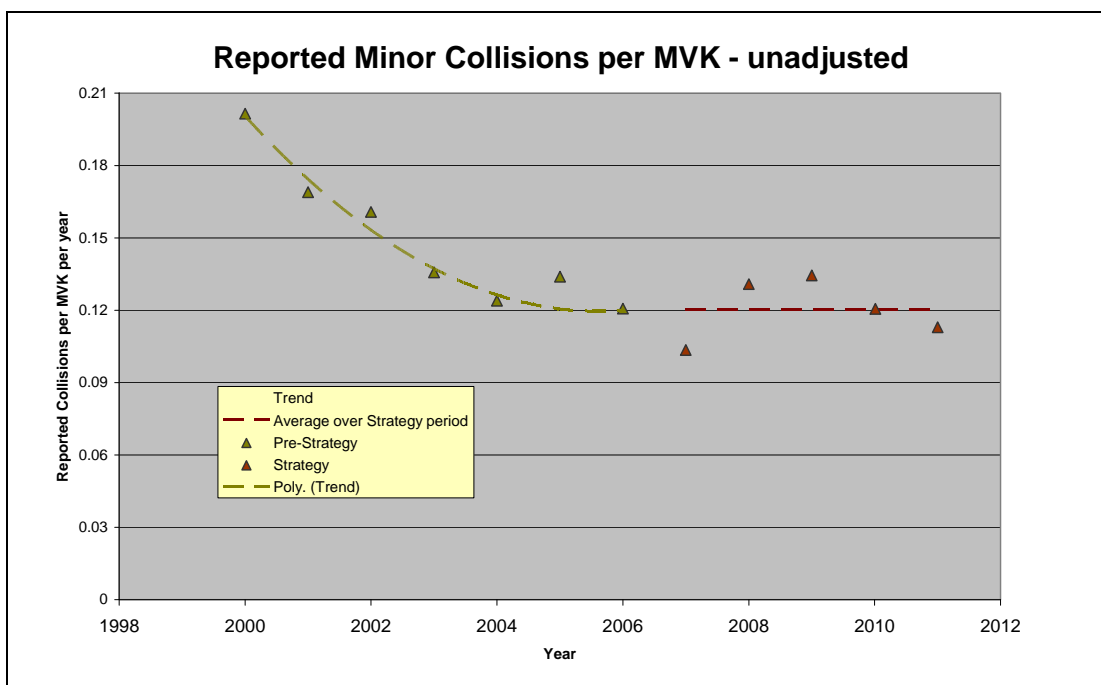


Figure 7.7

Figure 7.8 shows the minor collision data adjusted for an increase in reporting rates between 2004 and 2005, and again between 2007 and 2008, to create a smooth data series. On this assumption, over the period of the Strategy the rate of minor collisions has reduced by around 27% from where the earlier trend flattens out.

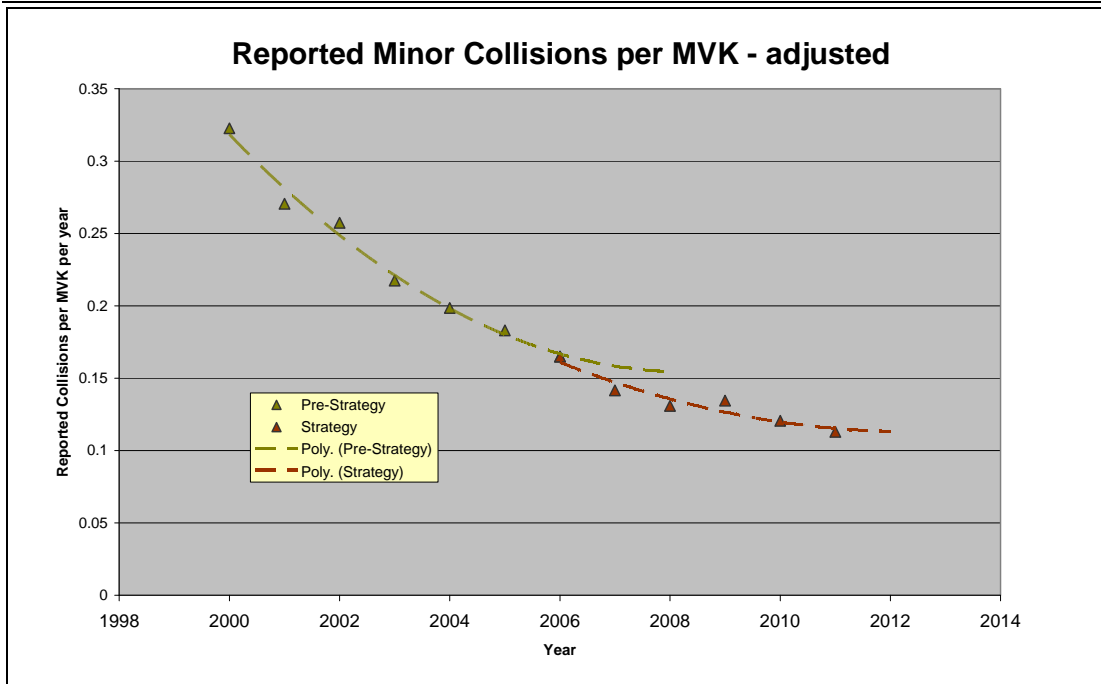


Figure 7.8

Note that in this sort of exercise the results are sensitive to the interpretation of the data, particularly the estimation of the pre-Strategy trend.

7.2.4 Conclusion – Aggregate Impact

The conclusions from this phase of the analysis are that:

- Numbers of fatal collisions have reduced dramatically over the period of the Strategy. If the interpretation in **Figure 7.4** is valid – i.e. if there is no remaining trend in the without-Strategy baseline case – then the benefits of the Strategy over the period 2007-2012 are of the order of 780 fatal collisions saved.
- For non-fatal collisions, it is questionable whether reporting rates and classification rates of slight and serious injury have been sufficiently constant over time to draw firm conclusions.
- Resolving this uncertainty should be a high priority for the RSA.

For the purpose of cost-benefit analysis, in seeking to obtain an estimate of impact that is as robust and evidence-based as possible, we:

- Make no adjustment for under-reporting
- Assume that the without-Strategy case can be represented as a continuation of 2006 collision rates
- Assume that figures for 2012 will follow the trend from 2010 and 2011.

This leads to an estimate as follows:

YEAR	Reported road collisions (source:RSA)			National motorised road traffic in million vehicle-kilometres	Baseline - 2006 rate continues		
	Fatal	Serious	Minor		Fatal	Serious	Minor
2006	321	653	5044	41809	321	653	5044
2007	309	618	4540	43838	336.6	684.7	5288.8
2008	254	613	5869	44857	344.4	700.6	5411.7
2009	220	463	5932	44116	338.7	689.0	5322.3
2010	185	409	5186	43010	330.2	671.8	5188.9
2011	172	344	4733	41904	321.7	654.5	5055.5
2012 (extrapolated)	159	279	4280	40798	313.2	637.2	4922.0
TOTAL 2007-2012	1299	2726	30540		1985	4038	31189

Table 7.11 Estimate of Savings as used for Cost-Benefit Analysis

On this basis, the impact of the Strategy is a saving over the period of 686 fatal collisions, 1312 serious injury collisions, and 649 minor injury collisions.

The **Appendix E** to this chapter considers how far these savings can be attributed to the impact of particular measures within the Strategy.

7.3 MONETARY VALUATION OF IMPACTS

To those experiencing the consequences of a fatal or serious collision - perhaps the loss of a loved one, or the prospect of living permanently with a disability caused by serious injury – the idea that a money value can be placed on their suffering may appear both naïve and insensitive.

But the government of the State faces decisions in various fields (such as specialist units in hospitals, or air-sea rescue services) where expensive investments can be made that will save lives. And those decisions have to be taken in a context of limited budgets, reflecting limited public willingness to pay for services that they may never need (because they relate to risks of low-probability events) .

In order to take those decisions in a way that is rational, to try to invest efficiently to obtain maximum value from limited resources, it is common practice to apply notional monetary values to the statistical rates of death and injury. These rates are updated every so often to reflect latest research findings regarding both the costs incurred by the State in dealing with injuries and deaths, and people's willingness to pay to reduce risks of injury and death.

The National Roads Authority publishes values to be used for the cost-benefit analysis of safety benefits from road improvement schemes, and these are reproduced in **Table 7.12** below.

Cost Per Casualty, €

Fatality		2,060,099					
Serious Injury		231,473					
Minor Injury		17,850					
Cost Per Accident, €							
Type	Insurance/ Administration	Damage to Property			Gardai Costs		
		Urban	Rural	M'way	Urban	Rural	M'way
Fatal	378	2,885	4,982	6,223	550	552	763
Serious	234	1,093	1,577	3,754	39	110	103
Minor	144	682	1,106	2,010	18	18	18
Damage Only	72	605	903	868	2	2	1

Table 7.12 (source: NRA Project Appraisal Guidance)

Collision Type	Killed	Serious Injury	Minor Injury
Fatal	1.035	0.240	0.324
Serious	0	1.033	0.365
Slight	0	0	1.171

Table 7.13 – Casualties per accident type (source: 2011 collision database, including correction for unknown injuries)

Collision Type	Urban (60kph limit or lower)	Rural (80 or 100kph limit)	Mway (120kph limit)
Fatal	27.5%	69.5%	3.0%
Serious	42.6%	55.7%	1.8%
Slight	59.8%	37.9%	2.3%

Table 7.14 – Breakdown by location (source: 2011 collision database, based on reported speed limit, excluding records where speed limit not recorded)

This guidance is consistent with the Department of Transport's Common Appraisal Framework⁶³. Although it should be noted that the previously-referenced HSE report suggests that costs should be higher.

Applying the costs in **Table 7.12** to the summary data in **Tables 7.13** and **Table 7.14**, we get the following figures for costs of collisions;

Collision Type	Casualty cost	Non-casualty cost	Total cost
Fatal	€2,193,295	€5,377	€2,198,672

Serious	€245,710	€1,724	€247,433
Slight	€20,897	€1,035	€21,932

Table 7.15 – Resulting estimate of cost per collision

Applying these costs to the total savings identified above, the estimated impact of the Strategy has a monetary value of €1850m. Of which €1500m comes from the reduction in fatal collisions.

7.4 COMPARING COSTS AND BENEFITS

This section compares costs and benefits for those measures where estimates of cost data are available. These results will then be used to compile an estimate of value for money for the Strategy as a whole.

7.4.1 Costs and Benefits of Motorway-Building

The NRA has well-developed methods of cost-benefit analysis for highway construction and improvement schemes, and has kindly provided details of the Cost-Benefit Analyses (CBA) undertaken prior to construction, for a sample of motorway schemes. (NRA procedures also include for estimation of out-turn economic performance based on post-opening surveys, but these results were not available within the timeframe for the study).

Scheme	M6 Galway-Ballinasloe	M6 Ballinasloe-Athlone	M8 Cullahill-Cashel	M7 Castletown-Nenagh	(all figures in 2002 prices)
Length (km)	63	19.5	40	36	
Data extracted from Business Cases prepared by consultants for NRA					
Accident savings (€m Low growth)	128.5	60.8	58.9	40.4	
Net Present Value (€m Low Growth)	-46.1	43.7	27.9	66.4	
Scheme Cost (€m)	448.5	140.6	284.9	228.7	
Derived data					
Total Benefit (€m)	402.4	184.3	312.8	295.1	Average
Cost per km (€m)	7.1	7.2	7.1	6.4	7.0
Proportion of benefits from Safety improvements	31.9%	33.0%	18.8%	13.7%	24.4%
Overall BCR	0.90	1.31	1.10	1.29	1.15

Table 7.16 – CBA results from motorway schemes

The concern here is not to second-guess decisions on individual schemes, which are a matter for the NRA, but to draw conclusions about the value for money of motorway-building in Ireland considered as a road safety measure.

The results suggest that:

- Motorway projects typically have a total cost of around €7m per kilometre
- Safety benefits make up around 25% of the total benefit (typically the remainder would be mostly time savings, partly offset by increased fuel use and other vehicle operating costs from longer journeys)
- The total benefits exceed the costs, but only by around 15% - not a large margin.

There are reasons why this may be either an under- or over-estimate of the value for money of such schemes. For example, CBA is normally undertaken for Low and High growth scenarios; given what has happened to the economy since 2007, the analysis here uses the Low growth results. But this is considered to give a reasonable indication of the scale of the costs and benefits involved.

The Strategy action “Complete the development of major inter-urban routes from Dublin to Galway (N6), Limerick (N7), Cork (N8), Waterford (N9)” involved the construction of around 440 route-km of motorway. Based on the above averages, the cost of this is estimated at broadly €3billion.

Allocating this cost between safety and non-safety objectives in the same proportion as the estimated benefits, the initial estimate of the cost of these safety gains is approximately €750m, and these safety gains are valued at around €860m. These figures were taken forward to **Section 7.5.6**.

7.4.2 Costs and Benefits of Safety Grant Schemes

Table 7.3 included figures for NRA grants to County Councils for Safety Schemes on National Routes. The information provided included the route number on which each scheme was to be implemented. **Figure 7.9** relates expenditure on these schemes to the estimated reduction in collisions on each National Route.

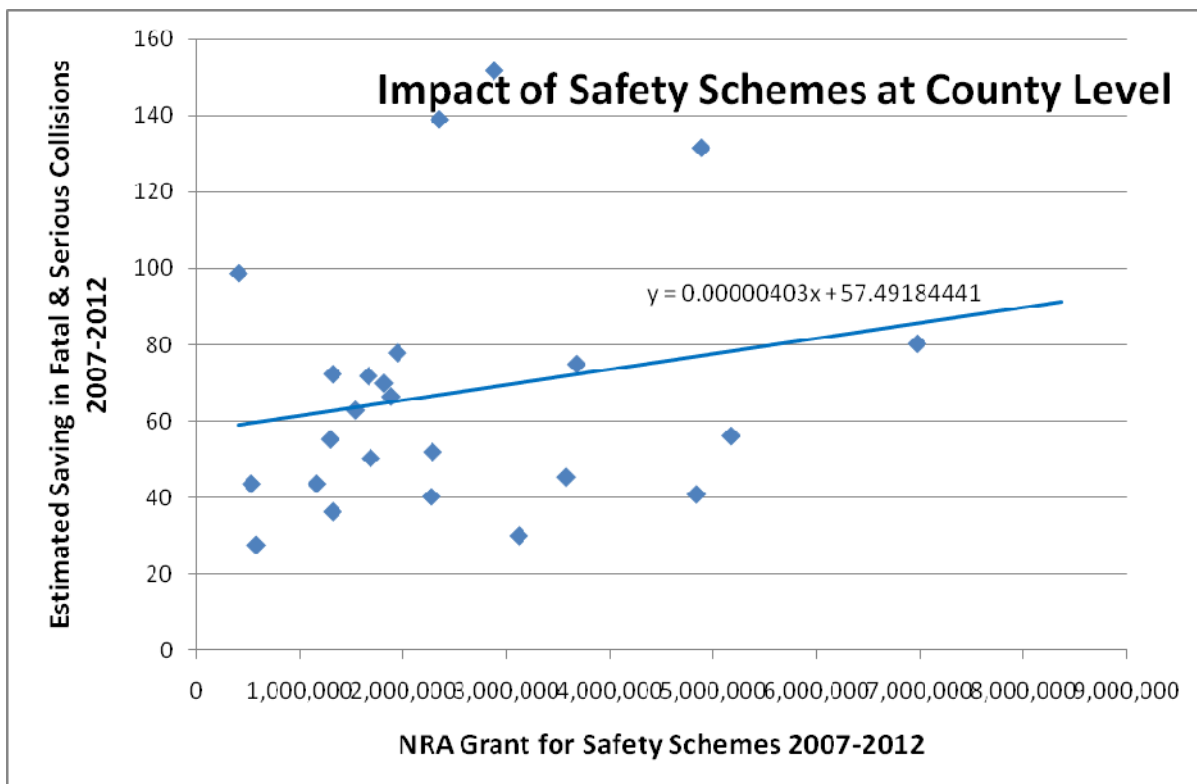


Figure 7.9 Impact of Safety Schemes at County Level

Each data point represents a National Route Number (from N1/M1 to N87). On the horizontal axis is the value of the safety schemes implemented on that route, according to the NRA capital expenditure database. On the vertical axis is the reduction in fatal and serious collisions, against a baseline where 2006 rates (estimated as the average of 2005-2007) continue to apply.

The total expenditure in this programme is €68m, only around 5% of the total cost of the Strategy. Other factors may be more significant – for example some routes will have benefited more than others from motorway building. So it is unsurprising that there are large amounts of variation.

Nevertheless, the slope of the graph suggests that each million euro of capital spend on this sort of scheme corresponds to a saving of 4.03 fatal and serious collisions over the Strategy period.

Fatal collisions make up 36% of the estimated reduction in fatal and serious collisions. So using the values from section 7.3 above, each reduction of 1 in the statistic of fatal and serious collisions has an average value around €0.95m.

Allowing for 25% administrative overheads, each €1m of capital expenditure returns a benefit-to-cost ratio of $4.03 \times \text{€}0.95\text{m} / 1.25 = 3.06$, suggesting that such measures offer good value for money.

7.4.3 Costs and Benefits of Other Safety Schemes

NRA research⁶⁴ suggests that a programme of road safety remedial measures on national roads gave benefits of €45m per annum from an investment of €11.4m.

The life expectancy of such measures varies substantially with the particular type of measure employed. Traffic islands and road signs may last many years; road markings degrade more rapidly and have to be re-implemented when the road is resurfaced.

Supposing a lifetime of 10 years, and applying a standard discount rate of 4%, this would give a BCR of around 33 for such measures – a very high figure.

The fact that the NRA have been steadily implementing such schemes since at least 1998 is a clear indication that in a more carefully-defined Strategy, the continuing implementing of such measures (at similar rates) would be included in the baseline rather than forming a significant plank of the Strategy.

7.5 ENSURING COMPARABILITY

The value of total benefits of €1850m from section 7.3 is lower than the value of total costs of over €4bn from **Section 7.1**.

However, these figures are **not comparable** - they refer to different quantities over different time periods in different units. Whilst it is important to know what the Strategy has cost overall, the cost figure that is comparable with the estimate of benefits may be substantially different.

This section looks at disentangling the various aspects of this, so as to bring all the figures to a common base so as to derive a robust estimate of the value for money from the Strategy.

7.5.1 Comparability Issues

For the purpose of Strategy evaluation, it is convenient to relate expenditure over the six-year Strategy period – considered as present time so that no discounting is required - to benefits over the same period.

Some of the measures in the Strategy (such as radio advertisements warning of particular hazards) are short-term in nature, and need to be repeated every year if they are to have a continuing effect. For these measures, simple addition of costs and benefits over the Strategy period, followed by comparison of the two figures, will give a reasonable estimate of value for money.

However, in order not to under-value the sort of measures which have continuing impact into the future, for such measures it is appropriate to estimate a **residual value** at the end of the period.

Secondly, the evaluation combines two sorts of data – analysis of statistics from the Strategy period (which are treated as present-day) and results from previous Cost-Benefit Analyses which have a present value year of 2002. For consistency it is necessary to bring both sorts of data to a **common base** year.

⁶⁴ RS 473 Road Safety Remedial Measures Programme - Evaluation of Programmes 3 to 8 (1998-2003)

Thirdly, in order to weigh up the importance of each measure over the Strategy period, for longer-term measures it is appropriate to **allocate** an appropriate proportion of the costs and benefits to the six years for which the Strategy applies.

7.5.2 Motorway schemes

The CBA results for motorway schemes, considered in **Section 7.4.1**, use a standard 30-year appraisal period and a discount rate of 4%, and are quoted in 2002 prices discounted to 2002.

Three sets of adjustments are needed to bring these results to comparability with the other figures used in the evaluation process.

Firstly, for comparison purposes, we increase both the cost and benefit results for motorways by 17.5% to bring them to 2009 prices. And then increase by a further 31.6% to bring them to a present value year of 2009 (within the Strategy period, and the present value year used in current appraisals, for consistency with the valuation of benefits). Note that the Benefit to Cost Ratio (BCR) from this measure is unaffected; this is about ensuring that the difference between working off a 2002 base year and a 2009 base year doesn't distort the relative amounts of expenditure on different types of measure.

Secondly, current NRA methodology for CBA allows for a residual value for major scheme investments at the end of the standard 30-year appraisal period. This was not included in the figures quoted in **Section 7.5.2**. Experience from a small sample of scheme evaluations suggests that – using current default traffic forecast growth profiles (from release 13 of the COBA software) this adds around 35% to the benefits of such schemes, reflecting the significant value of the asset at the end of 30 years.

This increases the BCR of this measure from 1.15 to 1.55.

Finally, it is necessary to consider how much of the costs and benefits of motorway-building should be allocated to the Strategy period. The view was taken that, just as the safety benefits are part of the Strategy and the non-safety benefits are not, so the benefits within the Strategy period are part of the Strategy and the subsequent benefits are not.

The COBA software allows for:

- Downward trend in collision rates over time
- Increasing collision numbers with traffic volumes
- Increasing values/costs of collisions as income increases over time
- Discounting of results

Based on spreadsheet analysis to disentangle these effects, and assuming a scheme opening year of 2009, we estimate that undiscounted benefits over the life of the Strategy amount to around 25% of the discounted benefits of the scheme as a whole.

Thus the proportion of the total benefits of this measure that are allocated to the Strategy are taken to be the 25% that is safety-related multiplied by the 25% that occurs in the Strategy period, giving one-sixteenth of the total benefits. The same share of the total costs is allocated to the Strategy. The resulting figures are shown in **Table 7.17**.

(€m)	Costs	Benefits
Initial estimate	3000	3450
Proportion that is safety-related	750	860
Brought to 2009 base	1160	1330
Including residual value to reflect longer-term impacts	1160	1795

Proportion allocated to Strategy	290	449
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Table 7.17 Impact of motorway-building measure

7.5.3 Safety Schemes

Section 7.4.2 estimated a BCR of 3.06 for safety schemes financed by NRA grant to Local Authorities. This estimate uses total costs of €85m (including admin costs), implying benefits of €260m over the period of the Strategy.

However, the benefits will continue into the future, beyond the end of the Strategy period. On the assumption of a 10-year life from an average implementation date of 2009, the benefits from the remaining 6 years, discounted back to the end of the Strategy period, have a benefit equal to 1.31 times the benefit during the Strategy period. This brings the total BCR for such schemes to around 7, representing excellent value for money.

However, as with the motorways, having established an overall BCR, there is then a question of how much of the costs and benefits are allocated to the Strategy period. Allocating the costs in proportion to the benefits, the share of benefits and costs within the Strategy period can be taken to be €260m and €37m respectively.

Other NRA safety schemes were considered in **Section 7.4.3**; previous research suggests that these may have a BCR as high as 33. This figure is based on data from 1998-2003. Traffic growth since then will have increased the benefits, although falling background trends in collision rates will have reduced them; **Table 7.17** quantifies this.

However, some form of diminishing returns would be expected to apply. The earliest schemes will have targeted the most obvious collision “black spots”; if each year’s programme tackles the next-best candidates for this type of improvement, performance of the programme will tend to decline as time goes on.

Also, some of these schemes explicitly derive their effect by slowing down traffic at dangerous locations. Additional delay to traffic should thus be included in the CBA as a disbenefit of the schemes, although being very localised this would not be expected to be a large impact in absolute terms.

In the light of these uncertainties, the assumption made is that the effectiveness of these schemes is similar to those implemented by grant aid to Local Authorities. Thus of the total cost (including admin costs) of €213m for all NRA safety projects, €92m is allocated to the Strategy period, leading to €649m of benefits within that period.

7.6 COST-BENEFIT CONCLUSIONS

7.6.1 Results

Table 7.18 below summarizes the numbers, based on the above analysis.

	Budget Cost (€m)	Cost allocated to Strategy (€m)	Benefit in Strategy Period (€m)	BCR
Measures for which individual BCRs have been calculated				
Motorway- building	3193	290	449	1.55
Safety Schemes	213	92	649	7.05
Other elements of the Strategy				
NRA - other costs	500	45	752	3.05
RSA	133	201		
An Garda Siochana	38			
Govt Departments	30			
	4039	628	1850	2.94

Table 7.18 – Summary of CBA results

The above analysis has derived estimates of benefit-to-cost ratios for two types of measure for which relevant data could be obtained.

The BCR for motorway building is based on the NRA's own CBA. Safety benefits from this Action are large in absolute terms, but only a proportion of the overall benefits are safety-related and only some of the benefit occurs within the Strategy period. These schemes give a worthwhile return on investment, but are a relatively expensive way of increasing road safety.

Safety remedial schemes appear to offer a high return on investment. The estimate derived here is highly uncertain, but evidence elsewhere supports the view that such schemes offer a high level of value for money.

Time series analysis suggests that the present system of speed cameras, deployed on routes with a particular history of collisions, offer a significant safety benefit. It is suspected that this measure also offers a good level of return on expenditure, but the cost data to confirm this has not been provided.

All other measures form a residual category for which no measure-level CBA has been possible.

Note that "other NRA" expenditure is dominated by minor road improvement schemes, which have the same issues of long lifetime and non-safety benefits as for motorway schemes; the proportion of allocated costs is taken to be the same as for motorways.

Measures implemented by other lead stakeholders are assumed to be more transient in their effects such that the full costs and benefits are taken to accrue to the Strategy.

As a group, these other measures appear to be good value for money, offering a return of around three times the cost.

However, it should be noted that:

- The benefits here are a residual difference between two estimates, and thus proportionately more uncertain
- the mix may include actions that have a high return on investment, and actions that offer little benefit
- some actions may offer no benefit in the Strategy period because they are preparatory measures for longer-term initiatives, which may be extremely valuable contributions to the aims of the Strategy.
- These residual actions have been assumed to have no longer-term benefits that would justify allocating a proportion of costs outside the Strategy period; this may not be true in every case.

7.6.2 Issues

A number of difficulties and issues with the process of cost-benefit analysis for this type of Strategy have been highlighted by the above.

a) Availability of cost data

Whilst the NRA has a long history of cost-benefit analysis, and well-developed procedures, other players in the road safety field have much less experience, and find it hard to identify the costs of the actions they undertake, and how those actions relate to what they would have done had the Strategy not been implemented.

b) Cost allocation

Some actions such as infrastructure improvements have safety and non-safety benefits, and the two are inextricable. The only valid approach appears to be to allocate the costs in proportion to the quantified benefits. If the Strategy “owns” the safety benefits then it “owns” an appropriate share of the costs, and there is no way to achieve a BCR for the part that is different from the BCR for the whole – the project offers whatever it offers. But this allocation process means that the safety costs are influenced by how well the project attains the non-safety benefits.

c) Short-term and long-term actions

The Strategy includes actions where none, some, most or all of the benefit is longer-term. The above analysis aims to account for benefits beyond the Strategy horizon in a simple but integrated way. But for many of the measures involved, the knowledge and data of the effective life of the measure is not available.

d) Clear Baseline

It should be possible from time-series data to identify relevant ongoing trends from which to construct a sound baseline, against which to measure the impact of the Strategy. It appears that changes in the level of under-reporting are large enough to undermine that process. As a result, estimates of benefit are more uncertain than they should be – establishing a clear baseline is an issue for benefits as well as costs.

8 STAKEHOLDER CONSULTATION

The Strategy has been delivered by the RSA in conjunction with several primary stakeholders and supporting agencies. In order to assess the Strategy, feedback from these parties was sought through Stakeholder Consultation. A consultation questionnaire was issued to the primary stakeholders. A copy of the consultation questionnaire, a list of stakeholders contacted and a list of the stakeholder consultation meetings held are presented in **Appendix C**.

The following section presents a summary of the main findings from the returned questionnaires. A total of seven questionnaires were returned. The most relevant and general comments are presented below.

Main points raised by stakeholders on the Strategy measures:

- The stakeholders highlighted that many of the measures will produce results in the long term outside the time frame of the Strategy and as a result tangible benefits in terms of collision reduction in the present can not be reliably identified.
- The stakeholders indicated that measure implementation was high, but that measuring the effectiveness is difficult to assess because the effects of the work carried out will not be realised within the time frame of the current strategy.
- Stakeholders expressed an opinion that data availability and transfer, particularly between agencies was a barrier and that common terminologies and methods of recording data was not homogeneous.
- All stakeholders expressed their opinion that the Strategy had a positive impact on the reduction of road collisions.
- Stakeholders commented that the success of the strategy was not based on any one individual action, rather the sum of many individual actions and interactions.
- The stakeholders commented that enforcement was a very effective measure and key to prevention of road collisions and that the introduction of Mandatory Alcohol Testing and Speed Cameras was very effective.
- Stakeholders commented that more work and research into strategies for emergency response to road collisions should be developed to improve outcomes.
- Measures that delivered major road improvements have greatly improved road safety.

Main points raised by stakeholders on the Strategy framework, timeframe and implementation process:

- The stakeholders responded positively to the timeframe and structure of the strategy and in their opinion the five to seven year program was appropriate.
- In the main, stakeholders' attitude to a shared responsibility approach was clear and their commitment to supporting the next strategy was evident.
- It is the stakeholders' view that the Strategy could have provided more guidance on the structures that needed to be put in place to support cross working/multi agency tasks to ensure that actions can be completed, with realistic timeframes.
- The stakeholders expressed their opinion that they would have benefited from more definition of each of the stakeholders role and the necessary interactions to facilitate measures.

- In the stakeholders opinion the annual review was a worthwhile and necessary tool to ensure momentum and delivery and should be continued.

Main points raised by stakeholders on the appropriateness of Strategy measures and targets during the timeframe of the Strategy:

- In the stakeholders opinion an opportunity to tweak or refine some of the measures would have been beneficial.
- In the stakeholders opinion a ranking system to identify the most important measures would have been beneficial.

Main points raised by stakeholders on communication and data sharing:

- The stakeholders expressed their opinion that data availability has been improved during the Strategy but that there is still much work and improvements that need to be addressed.
- The stakeholders expressed their view that a model for cooperation and joint working needs to be implemented.
- The stakeholders expressed their view that a greater use of the web could help facilitate cross agency data sharing, as there is a great deal of data available.
- The stakeholders expressed their opinion that more work needs to be done on standardising information format and terminology across stakeholder websites, introduce more cross-links to enhance accessibility and simplify for end users.
- The stakeholders expressed their opinion that communication between the RSA and respective agencies was very good.
- The stakeholders expressed their opinion that each agency tends to have very good data but it may not end up being available in a useable format by others. For example, lack of access to Hospital Inpatient Enquiry (HIPE) data to examine impact of work related road collisions and incidents involving vehicles used for work.
- The stakeholders expressed their opinion that there was a difficulty collecting, sharing and communicating information with a large number of people who rarely meet.
- An example of very good data collection is the forensic collision investigation report at the scene of all fatal collisions. An Garda Síochána collect this information as part of the legal process, however this information (or a subset of this information) is not readily available and where it would be very useful to road safety engineers trying to ascertain the reasons behind collisions. The data is being collected at present but there is no mechanism where it can be shared or centrally accessed.
- There are a number of instances when data sharing has worked extremely well – for example the collaboration between the NRA and Garda National Traffic Bureau (GNTB) regarding the go-safe signs for the speed/safety camera project.

Main points raised by stakeholders on delivery of the Strategy:

- There have been improvements in the structure, planning and monitoring throughout the Strategy

which has made it possible to see and decide what needs to be done. This has improved from 2007 to 2012,

- The stakeholders appreciated the work of the RSA in elevating the profile of road safety issues.
- The political commitment given to the strategy was the fundamental building block without which it would not have been successful.

Main points raised by stakeholders on lessons learned:

- The stakeholders expressed their opinion that working together for common purpose has had major impact.
- The stakeholders expressed their opinion that the collaborative approach, information sharing and shared responsibility is key because it has removed the view that safety was someone else's responsibility.
- The stakeholders expressed their opinion that individual good works carried out in various areas should be spotlighted to encourage others to follow suit. In this regard some case studies and information on resultant good projects should be highlighted.
- If the measure needed to be tweaked, or a new initiative came along which was not in the original strategy, then the strategy could be structured to allow certain degree of flexibility to allow this new idea to be included.

9 CONCLUSIONS

The conclusions ask the following four questions of the Strategy:

- **Were the desired aims achieved?**
- **How were the desired aims achieved?**
- **Was Value-For-Money achieved?**
- **Did the Strategy Implementation process work?**

Each of the above is addressed below based on the evaluation analysis carried out.

9.1 WERE THE DESIRED AIMS ACHIEVED

The third Road Safety Strategy 2007-2012 states:

“Ireland’s third Road Safety Strategy seeks to build on the progress and understanding provided by the first two strategies (1998-2002 and 2004-2006), with the objective of radically - and sustainably - improving safety on Irish roads”

and elsewhere,

“The primary aim of this Strategy is to reduce collisions, deaths and injuries on Irish roads.”

It is clear that during the life of this Strategy, road safety has been radically improved, with sustained major reductions in numbers of deaths and serious injuries on Irish roads.

For example,

- **The number of fatal vehicle-on-vehicle collisions has more than halved over the period of the Strategy**
- **The number of other fatal collisions has reduced by around a third**
- **The reported rate of serious collisions in 2011 was less than half that at the start of the Strategy period.**

Total numbers of reported collisions are forecast to be lower at the end of the Strategy period than at the beginning, although the improvement here has been less radical.

Thus the headline result is that the desired outcome was achieved, and a very great amount of pain and suffering by road users and their families and friends was avoided.

The extent to which these gains are sustainable – that is the relationship between maintaining and improving road safety and continuing levels of expenditure going forward – is a more complex question.

It is evident from the evaluation that enforcement and mass media played a vital role in changing road user behaviour and as a result these actions and targets must be sustained going forward.

9.2 ACHEIVEING THE DESIRED AIMS

The Strategy set out to achieve its aims by:

- **Setting a primary outcome target “*To reduce fatalities to no greater than 60 fatalities per million population by the end of 2012*” which was achieved three years ahead of schedule.**
- **Setting additional targets, relating to outcomes for variables which are believed to influence road safety. Over half the targets were fully achieved and substantial progress made on the remainder.**
- **Committing to the implementation of 126 Actions/Measures to achieve these targets.**
- **Establishing clear lines of responsibility with timelines for the implementation of actions/measures.**
- **Adopting an approach characterised by six “process objectives” – see section 10.3 below and page 24 of the Strategy.**

Actions

The majority of the Actions that were committed to as part of the Strategy were implemented in full. Measures that required cross-agency co-ordination proved more difficult to implement.

Quantified analysis has demonstrated the effectiveness of a number of these measures, particularly the impact of developing the motorway network, safety remedial schemes, and the implementation of mobile speed cameras on roads with a history of collisions. Data was not available to prove effectiveness levels for the whole range of actions, but qualitative analysis suggests that the case for many of the actions adopted is well-founded.

Whilst some of the achievement may be due to background trends (such as the spread of airbags through the vehicle fleet, benefits from previous road safety actions), the data tends to suggest that in many cases previous trends had largely worked themselves out by 2006, so that the majority of the gains over the Strategy period are genuinely attributable to the Strategy.

Many of the Actions had only indirect effect, being necessary steps towards tackling some particular aspect of safety that will not bear fruit until subsequent actions are taken. For example, research leads to understanding leading to identification of effective actions to take in future.

A very large number of targets and actions were adopted. Some of the stated targets might be better described as actions, and vice versa, but the process of target/action adoption was effective in obtaining commitment from stakeholders and focusing implementation and completion.

A significant proportion of the items listed as Actions did not directly or indirectly target road safety themes such as reducing speed, seat belts wearing and impairment. These Actions included road testing and licensing, administrative and governance function that are necessary but that are not strictly speaking Actions that would ultimately achieve targets. This differentiation should be made in the next strategy to reduce and streamline the target-action linkage. Where other actions are required they could be included but implemented in another way within the strategy.

Targets

Targets are a vital part of the strategy. Research and experience indicate that long term goals and interim targets lead to:

- Increased political will and stakeholder accountability for road safety
- Closer management of strategies and programmes, better safety programmes and better safety performance, especially when targets are ambitious
- Better use of public resource
- Increased motivation of stakeholders

The fact that the primary outcome target was so strongly achieved without full achievement of the additional targets suggests that the case for having these particular additional targets was weaker than it may have seemed at the start of the Strategy.

Where objectives are set, a more solidly evidence-based approach to the establishment of target levels of achievement of these objectives would be beneficial for the future.

Targets that are transparently related to the actions and their likely effectiveness provide motivation for stakeholders to deliver actions and they provide performance indicators against which implementation progress of the strategy can be measured, monitored and evaluated.

9.3 VALUE FOR MONEY

A number of difficulties and issues with the process of cost-benefit analysis for this type of Strategy have been identified in the preceding chapters. The results in terms of value for money are therefore more tentative than they would have been had some of the “process objectives” of the Strategy been more fully realised.

The overall benefit-to-cost ratio for the Strategy is estimated to be close to 3 to 1, which compares favourably with many investment options elsewhere in the economy.

One of the main factors in the safety gains that have been achieved by the Strategy has been the completion of the major-inter-urban road network, now largely designated as motorways. This has been effective, but is a very expensive way of achieving safety gains.

Rates of return from safety schemes – small, infrastructure improvements targeted at locations with a history of multiple collisions – appear to be very high. Even allowing for diminishing returns, a change in the mix of measures adopted that involved increased funding for these sort of measures could substantially increase the overall value for money of any future Strategy.

Collisions are rare events. The rate of reported collisions in 2011 was one for each 8 million vehicle-kilometres. For someone who drives 20,000 km per year, that's one collision every 400 years, it seems likely that only measures that are targeted at people or places or situations where there is a substantially above-average risk are likely to offer value for money.

9.4 STRATEGY IMPELEMNATION PROCESS

The stakeholder partners who were part of the Strategy process were uniformly positive that working together for road safety is the right way forward and that a 5/6/7-year Strategy is an appropriate timescale.

The key elements of the process were the setting of Targets, the identification of Actions, assigning actions to lead agencies with identified completion dates, and the annual review of progress. Also the impact of the political commitment of the Minister and the Cabinet Subcommittee must not be underestimated.

The critical role of the Executive of the Road Safety Authority in monitoring and steering all the various agencies, and the support of the Policy Advisory Committee must be acknowledged. The commitment of all the partner stakeholders and the support of the public for the various initiatives, all contributed greatly to the success of the Strategy.

There was strong support during the consultation process for having a mid-term review of the Strategy. It was argued that the Target and Action lists should not be cast in stone, and should at all times be relevant and achievable. This is a view that we would support. It is our view that any mid-term proposed amendments to the Strategy should be discussed with the Policy Advisory Panel and if agreed, be proposed to the Cabinet sub-committee.

Suggestions for improvement related particularly to:

- more frequent interactions to review progress and share research conclusions over the course of the Strategy period,
- facilitating and streamlining the exchange of data. The collisions database is a hugely valuable resource for understanding and quantifying road collisions. But there are significant issues to do with under-reporting bias, that can only be addressed by bringing together different data sources to derive less-biased estimates, and
- more clarity in relation to strategy input costs – the process objective of regular reporting on value for money cannot be met without a much greater commitment from stakeholders to monitoring the costs of road safety actions.

10 INFORMING THE 2013-2020 ROAD SAFETY STRATEGY

In the light of the outcomes from the 2007-2012 Strategy, this section considers how much of this Strategy format and process should be carried forward to the next Road Safety Strategy.

10.5 REVIEW OF CONTEXT

The context for the 2013-2020 Strategy differs from that of the current Strategy in a number of ways.

With the success of the current Strategy, there are diminishing returns to safety expenditure. The rate of fatal collisions has been halved; it follows that an enforcement or education measure which prevents 1% of such collisions is only half as valuable now as it would have been in 2006.

There may be a sense in which the easy things to do have already been done.

Funding for any programme is likely to be much more difficult to obtain.

The completion of the radial motorway network has transformed the character of longer-distance journeys to and from the capital city. This offers major safety benefits – collision rates on motorways are much lower than on other road types. But this has implications for driver behaviour when leaving the motorway and rejoining the all-purpose road network. Expectations of speed of progress, and driver perceptions of actual speed and of safe speed, may have been subtly altered.

Whilst data protection is rightly still an issue, the technology and culture of the internet makes it more possible to share information, and to reduce the time taken from collection to publication.

There has been a shift in the balance of transport policy – the next few years will see greater emphasis on public transport and slow modes, funded through the NTA, rather than roads investment funded through the NRA.

The 2013-2020 Strategy will need to reflect these changes in context.

10.6 REVIEW OF CONCEPTUAL APPROACH

Primary Aim

“The primary aim of this Strategy is to reduce collisions, deaths and injuries on Irish roads... ...with a demonstrable reduction each year of the Strategy.”

The under-pinning conceptual approach is that the causes and impacts of road collisions, deaths and injuries are addressed by the implementation of an agreed set of measures, by the relevant bodies acting together in a collaborative framework. This continues to be a relevant aim and an appropriate approach.

The Strategy articulated a consensus that the main causes of road collisions are:

Speed inappropriate for, or inconsistent with, the prevailing circumstances or driving conditions.

Impaired driving through alcohol, drugs (prescription or non-prescription), or fatigue.

Failure to use or **properly use seatbelts** and child safety restraints.

Unsafe behaviour towards / by vulnerable road users (pedestrians, motorcyclists, cyclists, young children and older people).

A stronger statistical case for the importance of these factors could be made as part of the next Strategy, making use of the enhanced collisions database.

The strategy frames a methodology to address these and other causes, using the four themes of Education Enforcement Engineering and Evaluation and by establishing a collaborative approach with relevant Departments and Agencies.

The collaborative approach, while difficult to manage, has the advantage of engaging a significant number of agencies in the achievement of the aims of the strategy. This is an extremely important aspect of the success of the strategy. The Authority has developed and fostered important collaborative relationships with decision-makers and stakeholders, with clear lines of communication within the respective organisations. This approach promotes positive goal-orientated ‘buy-in’ to successful implementation of the strategy and road safety in Ireland.

This approach is in line with recognised international best practice - no single body is solely responsible for road safety, as it is considered a shared responsibility. This is a ‘Holistic’ approach which should be continued.

In seeking to address the above behaviours, the strategy identifies 41 targets to be achieved, and 126 actions to be implemented. Specific targets were set for reductions in speed and increased seat belt wearing by all vehicle occupants.

The role of targets within the process is worthy of careful consideration. In management theory, targets have a number of roles:

- One role is as part of a monitoring and management process – if an organisation is not on course to achieve the target, it comes under pressure to apply more resources or use resources more efficiently in order to achieve more; conversely if it is already comfortably over target, it can cut back on resources for that area.
- One is in terms of identifying optimal outcomes. Most areas of activity are subject to diminishing returns. For example, a given level of spend on radio advertisements may reach 60% of all drivers, but doubling the spend may only reach 70%. An organisation that understands the market can set a target that represents a considered and appropriate balance between achieved coverage and cost-effectiveness.

On that basis, targets can be considered useful if they are well-informed and serve to guide a monitoring and management process. Conversely, a target may serve very little function if it is based on “wish fulfilment”, or isn’t “owned” by any group of people who are responsible for achieving it, or refers to something outside the control of that group of people, or is accompanied by a fixed and agreed set of actions which cannot be changed in response to monitoring information.

The range of measures in the current Strategy is very wide. Given likely funding constraints, it may be important that the next Strategy focuses more clearly on those measures that are self-financing and those that have been proven to offer the largest safety improvement per unit of State funding.

This implies a culture change in the operation of the stakeholder group – a greater willingness to challenge the value for money offered by the measures proposed by others.

In conclusion, having reviewed the approach taken in the current Strategy, one cannot but be impressed by the pace and timing at which the primary aim was achieved. The strategy has set the framework for very significant and important progress on road safety in Ireland.

The challenge now is to embed the progress gained over the past few years, and identify where further progress can efficiently be made, given the economic situation, and the transient nature of road collision contributory factors, such as changes in population, travel patterns, car worthiness and road standards etc.

In relation to the continuing relevance of this overall approach, it would be our view that the approach adapted in the current strategy should be continued, but with a stronger foundation of research and analysis. In the current economic climate, where resources are scarce, the approach of sharing resources and information must be considered the most effective. Combined with a commitment to using all the data and intelligence available to target resources to where they will have the greatest impact on the safety issues that remain.

10.7 REVIEW OF PROCESS OBJECTIVES

The 2007-2012 Strategy contained a set of “Strategy Objectives” that relate to the process of how road safety should be managed rather than relating to particular desirable outcomes.

- *A change in focus to prioritise prevention of a collision in addition to planning to contain the consequences and recovery / rehabilitation of the injured*
- *A change in focus where the policy accepts that road users will make mistakes. It seeks to compensate for those mistakes by designing and building a more forgiving road network. (A forgiving road side is a road side which minimises the severity of the injury to a driver or passenger when the driver loses control and the vehicle leaves the road.)*
- *Better management and coordination of the actions among the stakeholders – particularly in managing the prioritising and sequencing of actions between Government Departments and Agencies*
- *Improvement of communication and consultation to ensure public support is achieved and sustained*
- *Provision of timely, accurate and meaningful information to all road users*
- *Accountability through detailed regular reporting on effectiveness, value for money and outcome measurement.*

These are considered in turn:

- **A change of focus to prioritise prevention of a collision in addition to planning to contain the consequences and recovery /rehabilitation of the injured.**

It is our view that this objective is still valid and relevant and in accordance with international best practice. Since 2006, the proportional reduction in fatal and serious collisions has been much greater than the proportional reduction in reported total collisions, suggesting that mitigating the consequences has been more successful than collision prevention.

- **A change in focus where the policy accepts that road users will make mistakes. It seeks to compensate for those mistakes by designing and building a more forgiving road network.**

It is our view that this policy is still valid and relevant and in accordance with international best practice. However, there may be some tension with the preceding objective. The road network should be both “forgiving” of errors and “self-explaining” to reduce errors, just as safer vehicles are those that both protect the occupants should a collision occur, and include in-vehicle measures to assist drivers and prevent errors in judgement and lapses in concentration. Human error remains a major contributory factor in road collisions. Policies that promote the reduction of driver distraction due to in car devices should be pursued further.

- **Better management and coordination of the actions among the stakeholders, particularly in managing the prioritising and sequencing of actions between Government Departments and Agencies.**

It is our view that this objective is still valid and relevant and in accordance with International best practice. However it would be our view that the managing and reporting of resources used by partner agencies in their road safety functions needs to have a formal streamlined feedback facility and should be accounted for both in terms of actions and expenditure. This should be an annual reporting mechanism.

- **Improvement of communications and consultation to ensure public support is achieved and sustained**

Given the success of the current strategy and the current difficult economic climate it is now more important than ever to ensure public support for road safety initiatives. Therefore it is our view that this objective is valid and relevant.

- **Provision of timely, accurate and meaningful information to all road users.**

It is our view that this objective is still valid and relevant. Timely, balanced and comprehensible information will reduce confusion, and lead to a driver population that is more aware of risks. Continuation of media campaigns aimed at particular collision contributory factors should be maintained.

- **Accountability through detailed regular reporting on effectiveness, value for money and outcome measurement.**

It is our view that this objective is more relevant than ever before. Organisations that are very efficient at delivery can sometimes be less capable at collecting, collating and disseminating the information on how much they are achieving and how efficiently they are doing it. The collaborative process needs to aim to bring about a culture change, so that the information to guide the strategic thinking and to maintain public support is delivered in a streamlined way, without detracting from operational performance.

10.8 REVIEW OF SCOPE FOR ALTERNATIVE APPROACHES

As above, if there are to be targets, then the framework of the forthcoming strategy should be somewhat more flexible, evolving with the progress of the Strategy as the Steering Group take actions in response to monitoring information.

In the last strategy there were a number of the 126 actions that could not be progressed due to outside issues that could not be overcome. In circumstances such as this, then the issue needs to be reported in the Annual Review. So that when the Strategy is evaluated, the reasons for not proceeding with the agreed action are reported to the public. Ideally there will be alternative actions that can be funded and progressed to achieve set targets, and these will be reported also.

The stakeholder consultation revealed that any items contained within the strategy were very likely to be implemented and conversely that anything not included within the strategy would definitely not be implemented or receive funding. Thus the Steering Group will be under pressure from stakeholders to include in the Strategy items which have only a tenuous connection with road safety. Clearly it is desirable for the Strategy to be focussed and coherent, rather than a grab-bag of whatever the stakeholders would individually like to accomplish.

A number of the agreed actions in the current Strategy involve administrative tasks such as issuing a policy document. Such actions have of themselves no impact on road safety, but they may be necessary precursors of subsequent actions (such as a change in the law) which do. Over a 7-year period, it would seem reasonable to expect any such initiatives to progress as far as measures that will have a significant impact.

We therefore propose that actions should be grouped into “themes” (such as “motorcyclists” or “young drivers” or “professional drivers” or “safe vehicles”). Many themes are likely to cut across the “four E’s”. Each group of theme-related actions should include:

- A specific sub-objective that concerns a measurable direct impact, such as “reduce collisions involving motorcyclists”, the success of which will be assessed relative to any overall reduction in collision rates
- Any measures necessary to ensure that membership of the target group or category is accurately recorded in the collisions database
- Any measures necessary to establish an accurate measure of collision risk exposure (e.g. year-on-year estimates of total mileage driven by motorcycles)

This is so that each theme is aimed at reducing the values of a specific set of collision statistics by the end of the Strategy period. The theme should exclude any unrelated actions – inclusion of these adds to the cost without a corresponding benefit. Stakeholders should commit to reporting the spend and administration costs of agreed actions at theme level.

The evaluation process identified that over forty of the Actions listed in the Strategy were not directly linked to targets or specific road safety themes. As such they could be dealt with differently in the forthcoming strategy. This would greatly reduce the number of actions in the next strategy and help to focus the link between target setting and corresponding actions.

10.9 PRIORITY AREAS FOR THE NEW STRATEGY

The selection of themes for the new strategy should be based on evidence that certain groups or types or categories of collision are unduly high (relative to experience in other categories). Whilst the 2011 collisions database is still provisional, this release holds a wider selection of variables than for earlier years; once it is fully populated there is scope for much cross-sectional analysis which should inform the selection of themes for the new Strategy.

Our recommendation is that priority areas should emerge from an evidence-based approach, rather than being based on pre-conceived ideas that the review team or anyone else puts forward.

Nevertheless, it seems worthwhile to list here a number of areas for consideration in development of the new strategy, based on discussions during the course of this review.

The four priority areas from the current Strategy are likely to still be relevant:

- **Speed** *inappropriate for, or inconsistent with, the prevailing circumstances or driving conditions.*
 - **Impaired driving** *through alcohol, drugs (prescription or non-prescription), or fatigue.*
 - *Failure to use or properly use seatbelts and child safety restraints.*
 - **Unsafe behaviour** *towards / by vulnerable road users (pedestrians, motorcyclists, cyclists, young children and older people).*
-
- Engineering measures – encouraging the improvement of road infrastructure to promote forgiving roadsides and continue to monitor the network performance. Many of the collision prone zones have been identified through previous strategy initiatives and route problems or potential collision sites should be monitored/eliminated.
 - Change/improve road user behaviour - through a combination of education and information campaigns, law-enforcement and training. As driver behaviour is the single largest contributing factor to road collisions the forthcoming strategy should continue to strongly support this.
 - Vehicle improvements, through developments in technology.
 - Agreeing with key stakeholders an appropriate definition of a serious injury/collision.
 - Work with employers in order to improve work related road safety. (Two aspects here, persons providing transport services and persons driving during the course of their work)
 - Increase focus on the protection of vulnerable road users.
 - Investigate the opportunity to introduce alco-locks for certain driver groups.
 - Develop testing regime to monitor drug usage by drivers.
 - Develop appropriate penalties for repeat road traffic offenders.
 - Articulate the case for linking road safety to health and well being.
 - Develop effective methodologies to restrict multiple learner driver permits.
 - Develop and implement clear guidance to Road Authorities on a uniform countrywide approach to the imposition of speed limits.
 - Investigate zone specific targeting of road safety measures to address counties that do not perform as well as others.

- Might develop awareness of driving for work as a H&S issue that employers are responsible for – this would be tied to collecting and making available data for work-related collisions on public roads and work-related mileage on public roads.
- Education initiatives might target specific sub-groups within collision populations to effect change as opposed to the whole population.
- Regional Road Safety Officers might develop protocols with Road Authorities and Gardai in order to ensure a joint inspection of all collision sites involving fatalities within 36 hours of the accident.
- Supervision of Commercial Vehicle Roadworthiness Testing Centres might be carried out by a single organisation reporting to the RSA. (currently undertaken by LAs, may be also a case for reducing the number of test centres)

10.10 REVIEW POTENTIAL FUTURE PERFORMANCE INDICATORS

A target ratio of cost to benefits should be agreed with the Department of Finance. If over the course of the Strategy it becomes clear that expenditure on any of these themes is not meeting this target ratio, then a change of emphasis and resources between the different themes may be appropriate.

Within the EU context, it is clear that Ireland wishes to perform as well as the best-performing states. Given the urban-rural differences, differences in quality of roads etc, the RSA should collaborate with EuroStat to look at trans-national differences in more detail, rather than relying only on top-level statistics as a benchmark.

Safety performance indicators are used to monitor progress of the whole road safety process over the life of the Strategy. The following seven Performance Indicators are central to road safety in Europe⁶⁵ as follows:

- Alcohol and Drugs
- Speeds
- Protective systems
- Daytime running lights
- Passive vehicle safety
- Roads
- Trauma management

The forthcoming strategy should set out performance indicators to benchmark progress nationally and for comparison with other European countries.

⁶⁵ Hakkert, A.S, Gitelman, V. and Vis, M.A. (Eds.) (2007) *Road Safety Performance Indicators: Theory*. Deliverable D3.6 of the EU FP6 project SafetyNet.

10.11 REVIEW RESEARCH & DATA-GATHERING NEEDS

General

The HSE⁶⁶ report suggests that serious injuries are being under-reported by a factor of 3 or 4, with significant variations over time. If this is the case, it has major implications for the cost-benefit analysis of safety measures and for the validity of any time-series analysis of collision rates. The top priority research need is therefore for an exercise to bring together different sources of data, to estimate true levels of collisions and collision-related injury.

We propose that lead stakeholders be required to return details of all Road Safety Expenditure to the Road Safety Authority on a yearly basis, submitting data for the preceding year by the end of April. These costs can then be incorporated in the annual review report. A proforma for the data required should be developed and appended to the new Strategy, and expenditure reported in the annual report.

There is scope for revising the CT68 forms and input methods so that the data is linked/transferred in real time to the RSA. This would greatly streamline the collision data collection procedure. We understand that there is currently no linkage between the Garda Pulse system and the RSA data logging system - data is still logged manually.

To complement this, data checking procedures should be improved and streamlined to reduce the time lag in reporting/publishing collision data, so as to provide timely feedback to inform the Annual Review of the Strategy.

It would be advisable to benchmark fatalities and serious injuries resulting from road collisions against other sources such as industrial accidents, construction accidents etc, as a way of mobilising resources in the field of public health and safety to contribute to improving the safety of the road system.

In order to interpret trends in collisions involving pedestrians, cyclists, goods vehicles, public service vehicles (buses and coaches), it is necessary to know the mileage walked/ridden/driven by each group. Otherwise, reductions in collisions involving pedestrians (for example) might be misinterpreted as safety gains when the real explanation is reduction in the amount of walking (there is anecdotal evidence for this related to public health concerns about obesity).

⁶⁶ ADMISSION TO ACUTE HOSPITALS FOR INJURIES AS A RESULT OF ROAD TRAFFIC COLLISIONS IN IRELAND, 2005-2009 Department of Public Health, Navan, Health Service Executive Dublin North East February 2011

Thematic

Many of the data collection needs will relate to the selection of themes in the new Strategy.

For example, if “vehicle safety” is a particular theme of the next Strategy, then a measure may be needed of the roadworthiness and quality of safety features in vehicles of different ages within the national vehicle fleet. This would need to be accompanied by estimates of mileage driven by age of vehicle, so as avoid bias in exposure risk. Measures to ensure adequate recording of age of vehicle in the collisions database would also be required.

It is likely that there will be a continuing emphasis on improving safety through better engineering of roads. Consideration should be given to development of a shared national roads database, covering National, Regional and Local public roads (rural and urban), and documenting the quality of various features of each link that are relevant to road safety. This would aid in identifying locations suitable for treatment. It may even become possible to improve a road before the accident happens rather than afterward...

If collisions while driving for work purposes form a particular theme, data on this would need to be collected. Driver trip purpose is already collected via the CT68 form, but this is recorded as:

- 1 To/from work
- 2 To/from school
- 3 To/from shopping
- 4 To/from match
- 5 To/from home
- 6 To/from pub/hotel
- 7 Other leisure
- 8 Not known

This means of recording does not distinguish between trips in course of work and trips to and from work. Standard transport modelling of trip purposes is in terms of a “to-purpose” and a “from-purpose”, e.g. a commuting trip is from home to usual workplace or vice versa, a business trip is from home or usual workplace to non-usual workplace or vice versa, etc. But this may be excessive detail – a simpler approach would be to ask whether the driver is being paid to make a particular journey.

Another possible theme involves repeat traffic violators, who might be tracked through the use of licence data in the Courts Service. This information would help target enforcement and behavioural change measures to tackle the specific group.

10.12 WAY FORWARD

There is much that can be learnt from the outcomes of the 2007-2012 Strategy, that should inform the development of the next Road Safety Strategy. The key conclusions are:

- The collaborative approach is the right one; the need is to move forward to closer working relationships, data-sharing, openness about costs, and a willingness to challenge orthodoxy that is not evidence-based.
- The approach of published commitment to Targets and Actions is the right one; the need is to reduce the number of these, distinguish Targets from Actions, ensure Target levels are well-founded, and put in place management mechanisms to allow change of tack mid-Strategy in response to monitoring information.
- The annual review of the status of the implementation process should be continued. The review should include details of resources applied by partner agencies to each theme of the Strategy.
- The organisational structures are broadly appropriate. In order to maintain momentum, the policy Advisory Panel should meet every three months and the Cabinet sub-committee perhaps every six months.
- The commitment to assessing value for money is an important plank of the Strategy, for building and maintaining support across Government and with the wider public. Value for money can and should be enhanced by focussing on a smaller number of measures, grouped into clear themes, with proven rates of return on investment, and clear targeting of people, places or situations with substantially above average collision risk
- This will require a considerable broadening of the research and data needs of the Strategy to encompass measures of frequency or extent of activities when collisions do not occur, so as to deliver sound estimates of risk, and understanding of the duration of benefit from each type of measure proposed.