Australian Government
Department of Infrastructure
and Regional Development

Departmental Guide to Incorporating Monitoring and Evaluation into Policy, Program and Regulatory Design

This booklet has been compiled by staff in the Department of Infrastructure and Regional Development with assistance from Courage Partners Pty Ltd.

For information about the Departmental Evaluation Strategy, email **evaluation@infrastructure.gov.au** or refer to the Evaluation site on ENTR.

Departmental

Guide to Incorporating Monitoring and Evaluation into Policy, Program and Regulatory Design

November 2013

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Introduction and context

Recent departmental priority evaluations have highlighted that the evaluation was often unable to answer key terms of reference because appropriate data was not available. Not only do evaluations need to be identified in advance but the data that will be needed to support them must be collected through a monitoring process from the time the program commences. This experience has reinforced the lesson that monitoring and evaluation planning is an integral component of policy development and upfront program and regulatory design.

Government also requires that new policy proposals (NPPs) indicate how agencies will measure, monitor and evaluate the program to ensure it is implemented and achieves proposed outcomes. Accordingly, evaluation plans must be in place for all new departmental policies and programs.

Purpose

This guide complements the Departmental Evaluation Strategy and supporting documents by briefly and clearly setting out how you should go about developing a monitoring and evaluation (M&E) framework – that is, the framework or strategy which describes how you are going to measure the success or otherwise of your program[1]. Many programs are quite complex and this overview cannot address all possibilities. However, the basic steps and thinking outlined will still provide the necessary guidance.

It is important to understand that there is flexibility here. The key message and requirement is not that a particular template or format is being followed but that the manager has a plan for gathering the required data throughout the life of the program and for evaluating at key points whether the program is on track to deliver planned outcomes.

Approach

There are two key concepts here. Performance **monitoring** is concerned with the routine (e.g. monthly, quarterly, annually) collection and reporting of data against performance indicators and measures. **Evaluations** are periodic, objective assessments of program performance using the data collected (and other data) to address aspects of efficiency, effectiveness and appropriateness with a focus on outcomes.

Developing a monitoring and evaluation framework is an integral part of program design. That is, when designing your program, you should also work out how you are going to know if it is working, or on track to be effective. These guidelines outline an approach to ensuring that monitoring and evaluation is embedded in the program design stage. Of course it is recognised that sometimes the M&E framework is not included at that early stage and needs to be retrofitted – the approach below can also be used in those instances.

[1] The term “program” has been used to refer to any program, policy or regulatory activity.

Key stages to developing a monitoring and evaluation framework

There are six key stages in developing a monitoring and evaluation framework:

1. Develop the program logic showing the logic link between activities, outputs and outcomes;
2. Identify success measures/indicators for each outcome and output;
3. Identify data to be collected and monitored to address those measures;
4. Determine the evaluations to be conducted over the life of the program, the likely questions that each evaluation will need to answer, and confirm the data that will need to be collected to answer those questions;
5. Identify the likely budget and resource implications to implement this framework; and
6. Incorporate monitoring and evaluation requirements into key program documents.

An overview of these stages is provided below.

1. Develop the program logic

Program logic identifies, and makes explicit, the logic of change that underpins the program's design. Program logic should ideally be developed at the program design stage, because it forces a critical analysis step into the planning process. It is a process of thinking that starts with the long term, medium term and short term outcomes you want to achieve and works through the connected outputs, activities and inputs, and the assumptions that link these steps. In this way the relationship between a program's activities and its outcomes should be clear. By way of clarification, an output is the tangible result of an activity, e.g. a bridge is built. An outcome however, is the result of objectives being achieved e.g. productivity is increased.

Often program logic is expressed as a diagram which is a useful communication tool to explain the program. An example of a departmental program logic is at Appendix 1. Note it is important that the detail of the program logic, for example the description of the outcomes, is addressed in a supporting narrative and explanations.

These descriptions are often expressed in a hierarchy of outcomes which shows the logic process from the ultimate outcome through to outputs and activities. This is the basis of the success measures and data collection table, which form the main template for the subsequent activities below.

Tip

In departmental programs recently chosen for priority evaluation it was necessary to retrofit program logic as one had not been developed at the program design stage. In doing this information came from existing program guidelines, ministerial statements and interviews with program staff. Inputs and activities were reasonably easy to identify, but outcomes and outputs presented more of a challenge. Based on available data, a working draft program logic was developed. It was then considered prudent to brainstorm this draft with key stakeholders. These included all program staff and relevant policy, BITRE, and departmental evaluation staff. This workshopping process allowed for a range of perspectives, for refining, for new input and importantly, for ownership by a broader cross section of the department.

Consultation with relevant jurisdictions was also undertaken – but not until a clear draft framework was developed as a basis for discussion.

2. Identify success measures

At this point a simple table should be developed with three main headings which can be populated with the information relevant to details outlined below. The headings are:

Outcomes/Outputs ***Success measures*** ***Data to be collected***

Having identified the outcomes it is now possible to pose a simple statement that identifies what success would look like if the outcome/s were achieved. For example, if the outcome from building a bridge was to increase productivity in a certain area through improving capacity for heavy vehicles, then success measures would go beyond just whether the bridge was built. They should address such matters as whether additional heavy vehicles are actually using the bridge, and whether productivity has improved – preferably against baseline data that may exist.

Success measures should be developed for each of the outcomes (long term, medium term and short term), and outputs identified in the program logic. The reason is that success measures will vary at different points in the program. For example, for a long term program involving culture change, shorter term outcomes and measures may be more around awareness and behaviour change – whereas longer term ones will be around the impact of a changed culture such as reduced accidents as a result of improved rest practice.

At this early stage of the M&E process, success measures are at a reasonably high level. In subsequent planning and detailed monitoring plans flowing from the M&E framework, these can be refined to more quantitative based key performance indicators.

3. Identify data to be collected and monitored

As any subsequent evaluation will primarily look at whether these outcomes are on track to be achieved or have been achieved – the process now requires that data sources be identified to answer or address the questions inherent in those measures.

These data sources could form part of a routine data collection to ensure the program can be monitored, and also to provide data for any planned evaluation whenever it occurs.

In addition they could also include data that is to be collected as part of the evaluation whenever conducted, such as case studies or higher level aggregate data.

There are a wide range of possible data sources, including existing departmental/BITRE reports, national level reports (e.g. Australian Bureau of Statistics), data already collected by jurisdictions, and new data that may be required. The data source needs to be relevant to the success measure. For example, if the measure is about the behaviour of drivers or operators, a qualitative survey may be the most appropriate means to answer whether that measure has been achieved. If attribution is required, case studies may be essential.

If such data collection involves other stakeholders beyond the program or the Department, such as the jurisdictions/ States, ideally the relevant stakeholders will be engaged before the framework is finalised to ensure the collection of required data is feasible and its intended use understood.

Tip

In developing the HVSPP M&E framework, this consultation process was conducted by means of a working group consisting of representatives of all relevant State and Territory road authorities. Its establishment was requested and authorised by the Department but managed by an external provider.

Most sessions were by phone, collectively and individually, with some face to face sessions used. All members of the working group were first briefed on the proposed framework and then their input sought especially on measures they thought relevant, how they could help, and what they considered feasible and cost effective.

An example of a Measures and Data table completed for HVSPP is attached in Appendix 1.

4. Determine evaluations to be conducted over the life of the program (and possible questions that could be addressed)

In deciding what evaluations to conduct throughout the life of the program there are some main areas to consider, noting that it is a process of compromise and fine tuning and no one area will necessarily provide the simple answer. These considerations include:

- The timings/phases. It may be useful to evaluate progress and achievements close to the end of one phase, before moving to the next phase.
- The program logic. The program logic may indicate some key links such as critical outputs that are leading to certain outcomes – where it is important this link be confirmed by evaluation.
- Key success measures. In particular for long term programs, say over ten years and involving culture change – there may be key points where success measures, involving possibly, behaviour of drivers, are expected to be identified.
- Likely terms of reference. Evaluation is about identifying and answering key questions about the performance of a program. When looking at the overall outcomes at a macro level – possible terms of reference or questions that the evaluation should answer will be evident. These possible evaluation questions should be identified and then considered as to whether they are best answered early or later in the program's life. Once grouped they provide the possible evaluations for the program.

The frequency and number of evaluations required should be considered in the context of the duration, funding quantum and risks associated with the particular program. A typical five – ten year program may have, for example, three evaluations over its life, as follows:

- Evaluation 1 (a formative evaluation) early in the life of the program which might look at whether key enablers are in place and test assumptions;
- Evaluation 2 (a mid-term review or 'on track' evaluation) to see if the program is likely to achieve its objectives, if certain key outputs are being achieved and likely to result in outcomes and scope for improvement; and
- Evaluation 3 (an impact evaluation) at the program's conclusion to measure the actual impact of the program, identify benefits and key lessons learned.

Having identified the evaluations required and the purpose of each evaluation, it is possible to firm up the likely terms of reference/evaluation questions which might apply to each of the respective evaluations.

From this process it is possible to ensure the data identified in Section 3 will answer these evaluation questions. If further data collection is required, it should be added to the table referred to in Sections 2 and 3.

Tip

A useful approach at this point – separate from the M&E framework and using the normal planning process for the program (e.g. Gantt Charts) may be to develop a data collection plan identifying what is to be collected, when and by whom. This plan can be developed from the completed table referred to in Section 3 above and in light of the decisions made around likely timings and purpose of evaluations.

5. Identify the budget and resource implications to implement this strategy

While the key focus throughout this process should be on developing a plan to monitor and evaluate the program to ensure its effectiveness, practical realities, budget and resource implications must also be a consideration. This includes for both the monitoring component and the evaluation.

Where data collection and evaluation is already undertaken at jurisdiction level or in other programs, these should be utilised where feasible and relevant.

The M&E framework should contain some identification of such resource implications, or at least key factors that will need to be considered in the context of department budgetary and bidding processes, these may include:

- The level of consultation required to implement the M&E framework;
- The costs and logistics of data collection and analysis including time and travel required; and
- Personnel and skills required – in particular whether external resources such as consultants or experts are needed.

Tip

Where delivery or management of the activity/program is outsourced by the Department, it is important that the data collection function is specifically included in the contract; alternatively in other cases, the data collection function should be included in the funding agreement.

The cost or budgeting implications of this need to be considered and incorporated into budget planning.

An effective intervention, but not necessarily the most efficient option

6. Incorporate monitoring and evaluation requirements into key program documents

Having broadly developed the draft M&E framework for the program during the program design stage, it is now important to close the loop by making sure that key policy documents and supporting program guidelines (that are also developed at the program design stage) reflect the monitoring and evaluation requirements. This ensures the mechanisms are in place for the future evaluation needs of the program to be met.

Some examples of this may include:

- Incorporating when likely evaluations are to occur in program timetables.
- Including the M&E framework document itself into program documents or identifying where it is located.
- Some reference to ensuring:
  - Commonwealth/State and Territory agreements or funding contracts stipulate the data collection responsibilities of the jurisdictions and funding recipients;
  - reporting templates reflect and collect the required data; and
  - program managers have the authority/support to request that such information be provided.
- Consider the value of establishing a program working group or relevant cross-jurisdiction body to monitor data and evaluation matters where it is a national program delivered through the States/Territories.

References/Example

An example framework, including program logic, for the Heavy Vehicle Safety and Productivity Program (HVSPP) is at Appendix 1.

Other relevant departmental evaluation references, examples and resources can be found at the Evaluation page on ENTR.

Appendix 1

Example: Monitoring and Evaluation Framework for the Heavy Vehicle Safety and Productivity Program (HVSPP)

Section 1: A Program Logic for the HVSPP

The HVSPP program logic

A program logic (sometimes called an outcomes hierarchy) aims to make explicit how inputs and activities lead to short and medium term outcomes, that in turn lead to long term outcomes. The achievements at one level provide a foundation for the next level. Program logic, often accompanied by a diagram, also helps to clarify how the success of a program might be measured.

This section outlines the program logic for the HVSPP. It consists of:

- the program logic diagram (Figure 1); and
- the notes which explain the outcomes and the links between them and the HVSPP projects and outputs.

Specifically, the program logic diagram for the HVSPP shows:

- the activities (for example, the design and construction of projects, use of technology to assist with driver safety);
- the outputs (for example, well sited rest areas, identification of constraints that restrict productivity) that the activities deliver;
- the medium and short term outcomes and how they support the achievement of the long term outcome; and
- the HVSPP long term outcome and how it contributes to the Infrastructure Investment Program.

Assumptions and contextual factors

The HVSPP program logic is underpinned by a number of assumptions and contextual factors, i.e., those factors that are outside the control of the program but have to be in place for the HVSPP to achieve its outcomes. This includes (but is not limited to) the following:

- a clear Federal and State framework, that regulates and guides the heavy vehicle industry, is being applied;
- the National Heavy Vehicle Regulator is functioning effectively;
- Department of Infrastructure and Regional Development (hereafter Infrastructure) involvement/liaison with regulators is in place;
- access to local government roads by higher productivity vehicles is being actively pursued;
- Infrastructure project guidelines and requirements are being applied by project funding recipients; and
- the HVSPP will continue beyond the 2012–13 financial year for a further seven years.

The Infrastructure Investment Program is supported by the HVSPP

The Infrastructure Investment Program supports the prosperity of the Australian economy through the continued improvement of Australian road transport and rail infrastructure.

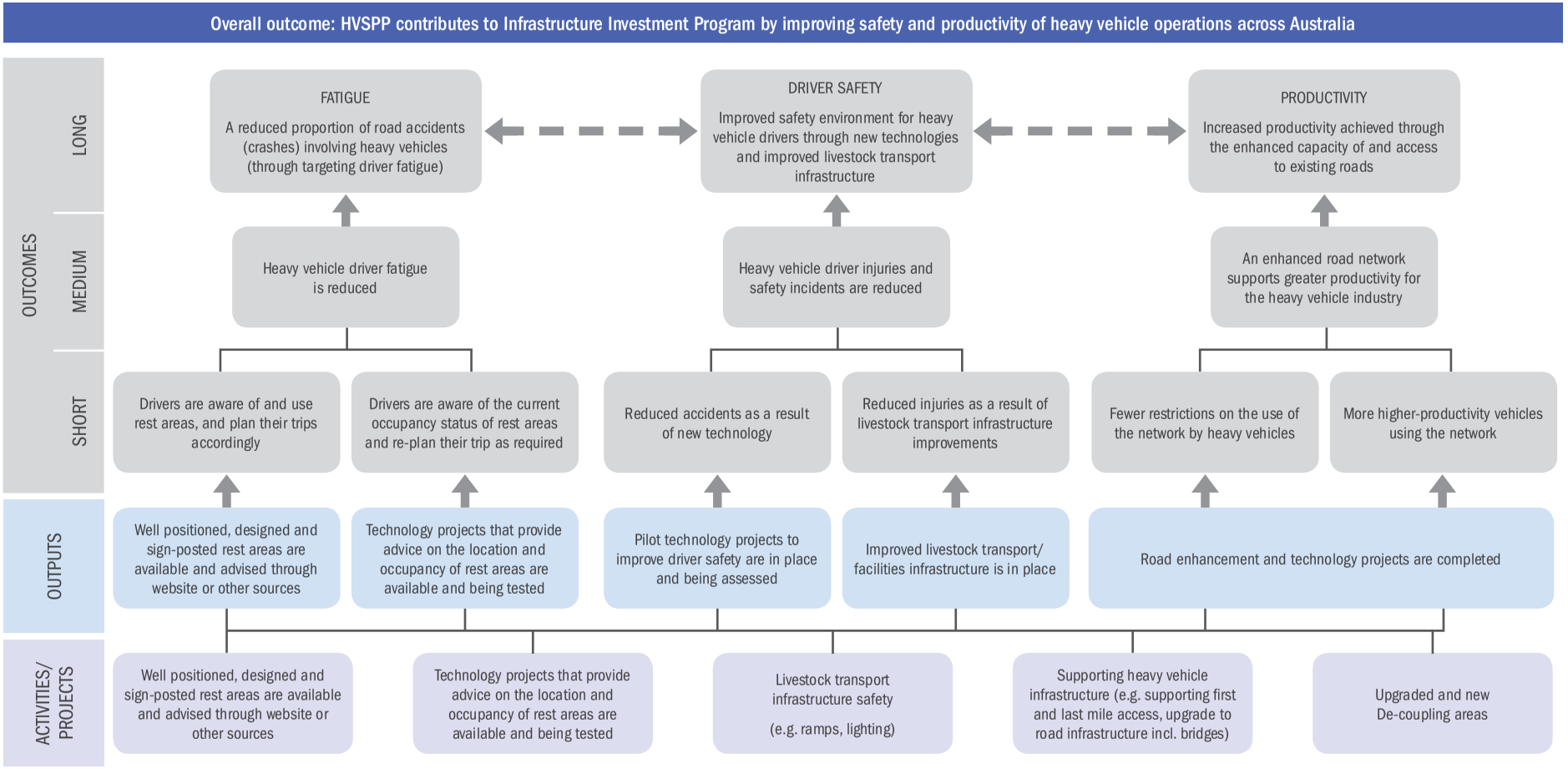
The HVSPP's purpose is to contribute to the Infrastructure Investment Program to improve the safety and productivity of heavy vehicle operations across Australia through three long term outcomes[2]:

- a reduced proportion of road accidents (crashes) involving heavy vehicles (through targeting heavy vehicle driver fatigue);
- an improved safety environment for heavy vehicle drivers through new technologies and improved livestock transport infrastructure; and
- increased productivity achieved through the enhanced capacity of existing roads.

The long, medium and short term outcomes with their supporting outputs, are shown in the program logic diagram in Figure 1.

[2] Please note that there is inter-connectivity between the three outcomes – for example, increased productivity through a larger number of higher-productivity vehicles (such as B doubles and triples) on the road network will mean that there are less vehicles on the road which in turn can assist with a reduction in the number of casualty crashes. However, for the purpose of the measurement framework they are treated as separate outcomes.

Figure 1: The HVSPP Program Logic Diagram



Contextual factors/assumptions

1. A clear Federal and State framework that regulates and guides the heavy vehicle industry (e.g. rest requirements and load limits) is being applied.
2. The National Heavy Vehicle Regulator is functioning effectively.
3. Appropriate Infrastructure involvement/liaison with regulator is in place.
4. Access to local government roads by higher productivity vehicles is being actively pursued.
5. Infrastructure project guidelines and requirements are being applied by project funding recipients.
6. The HVSPP will continue beyond 2012–13 financial year for a further seven years.

The program logic diagram illustrates that there are essentially three streams in the outcome hierarchy: a fatigue outcome hierarchy; a driver safety outcome hierarchy; and a productivity outcome hierarchy. The following explanatory notes are structured accordingly, with descriptions of long, medium and short term outcomes. (Please note that signs of success for each are detailed in the Reporting, Performance Measures and Data Sources Table in Section 3.)

The Fatigue Outcome Hierarchy

Long term outcome: A reduced proportion of road accidents (crashes) involving heavy vehicles (through targeting heavy vehicle driver fatigue).

Heavy vehicles are involved in many serious accidents across Australia annually[3] and there is significant evidence that links heavy vehicle driver fatigue with heavy vehicle accidents[4]. Logically, therefore, heavy vehicle driver fatigue should be addressed if the number of vehicle accidents is to be reduced.

The first signs of success for this long term outcome will be a reduced proportion of crashes that involve heavy vehicles. While this will not be clearly attributable to HVSPP, it is a higher level proxy measure that indicates the outcome's overall success. More specific fatigue related issues are measured in the medium term outcomes.

Medium term outcome: Heavy vehicle driver fatigue is reduced.

For there to be a reduction in heavy vehicle accidents caused by heavy vehicle driver fatigue, logic, supported by research, suggests that drivers must be less fatigued.

Short term outcome: Drivers are aware of, and use, rest areas, and plan their trips accordingly.

For heavy vehicle drivers to manage fatigue[5], they must be provided with the opportunity to rest when required by fatigue management legislation and as they feel they need to.

This means they must know the location of the rest areas so that they can plan their journeys accordingly. In turn, for the rest areas to be relevant to managing fatigue, they must be available when required by the driver and provide opportunities for good quality sleep by being well-positioned and well-sited.[6]

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[3] Heavy trucks and buses make up only 3% of registered vehicles but account for about 8% of the vehicle kilometres travelled on Australian roads and for 18% of the proportion of total deaths (about 250), National Road Safety Strategy 2011–2020 p 26.

[4] Driver fatigue is a significant cause of crashes, estimated to contribute to 20–30% of fatal crashes (Australian Transport Council 2011) as reported in the Austroads Report 'A Proposed Heavy Vehicle Rest Area Needs and Prioritisation Methodology' – May 2012; and National Road Safety Strategy 2001–2020 p 25.

[5] As heavy vehicle drivers must conform with fatigue management legislation, there must be suitable rest areas available.

[6] Rest areas need to be well placed on key freight routes, provide opportunities for sleep, have sufficient parking spaces to meet demand and be able to provide for future demand, meet the different needs of light and heavy vehicle drivers and be attractive enough to encourage drivers to stop for a break to rest or sleep. VicRoads Aug 2010. Victorian Rest Area Strategy, p 5.

Short term outcome: Drivers are aware of the current occupancy status of rest areas and re-plan their trips as required.

Although heavy vehicle drivers may have pre-planned where to stop, they may be forced to drive further because the rest area they selected is full. This will result in either the heavy vehicle driver driving beyond the requirements of the fatigue management legislation, or driving when fatigued, or stopping on the side of the road (which results in poor rest, and/or can be the cause of an accident in itself).

A heavy vehicle driver's awareness of the current occupancy status of rest areas along the route provides them with the flexibility to re-plan their trips if necessary.

Driver Safety Outcome Hierarchy

The driver safety outcome hierarchy is described differently to the fatigue outcome hierarchy because of the nature of the interventions and the rolling nature of the projects. As a result the outcomes are listed below with one overall explanation and common signs of success.

Outcomes

The outcomes are:

- **Long term outcome:** An improved safety environment for heavy vehicle drivers through new technologies and livestock transport infrastructure improvements.
- **Medium term outcome:** Heavy vehicle driver injuries and safety incidents are reduced.
- **Short term outcome:** Reduced number of heavy vehicle driver accidents as a result of new technology.
- **Short term outcome:** Reduced number of driver injuries as a result of improved livestock transport infrastructure improvements.

Explanation of outcomes

Although there are many ways to improve heavy vehicle drivers' safety environment, HVSPP focuses on providing an improved safety environment for heavy vehicle drivers through the piloting of technology projects and livestock transport infrastructure improvements as follows:

- Technology projects. Round 3 of the HVSPP is piloting three technology projects. An example of one such project is the Cooperative Intelligent Transport System in NSW, a system designed to improve the quality and reliability of information for drivers about their immediate environment, other vehicles and road users. This has the potential to improve road safety and improve network efficiency.
- Livestock transport improvement projects. The focus of the livestock transport infrastructure improvement projects in HVSPP Round 3 is on the safety of the heavy vehicle drivers when they load and unload livestock. The 48 projects, which are designed to improve the out-dated livestock transport loading facilities, consist of a combination of loading and unloading ramps, and lighting and wash-down facilities in the majority of states and territories.

As mentioned earlier, the signs of success are detailed in the Reporting, Performance Measures and Data Sources Table in Section 3. Due to the generally lower value of livestock transport infrastructure improvement projects and the small number of new technology projects at this stage, and the difficulty in sourcing suitable data that can be attributed to HVSPP, the signs of success are the same for all outcomes.

The signs of success are therefore based on output measures, which is essentially the successful completion of the project.

Productivity Outcome Hierarchy

Long term outcome: Increased productivity achieved through enhanced capacity of and access to existing roads.

The pressure on Australia's transport system has never been greater with the overall freight task set to double by 2030. The transport industry is important to Australia's productivity by moving goods efficiently across the country. Improved productivity will reduce the effect of the growing freight task on road safety and benefit other road users by reducing the number of vehicles on our roads.

The HVSPP Round 3 supports greater productivity for the heavy vehicle industry by helping to reduce restrictions on the use of the road network by heavy vehicles. It also facilitates the use of the network by more higher-productivity vehicles including access by B triples to areas currently restricted to B doubles.

Medium term outcome: An enhanced road network supports greater productivity for the heavy vehicle industry.

A key to greater productivity of the road transport industry is the enhancement of the existing road network to allow more vehicles and higher productivity vehicles to move the freight efficiently across the country. At the moment, productivity is hindered by constraints on vehicles being able to travel on certain roads and by limitations in the capacity of existing roads.

The HVSPP will address these constraints and support heavy vehicle infrastructure by upgrading roads and de-coupling areas.

Short term outcome: Fewer restrictions on the use of the network by heavy vehicles.

Limitations on the capacity of roads (such as bridges) along the network to take heavy vehicles have impacted adversely on productivity. For example, heavy vehicles have to transfer their loads to smaller vehicles so that they can use an upcoming existing stretch of road, or operators are compelled to use smaller vehicles along the whole route because there are limitations along part of the network. HVSPP will focus on enhancing the road network to reduce some of these restrictions.

Short term outcome: More higher-productivity vehicles using the network.

Productivity on Australian roads would be improved if there were fewer vehicles transporting the same amount of freight. Industry estimates that certain types of B triples take between 13 and 15 trips per 1000 tonnes compared with B doubles that take between 23 and 26 trips per 1000 tonnes.

However, industry take up of the higher productivity vehicles has been hindered by inconsistencies in state and territory policies on vehicle specifications and where they can operate.

Section 2: Context – A Reporting Overview

Introduction

This section provides an overview of the nature of proposed reporting for the HVSPP.

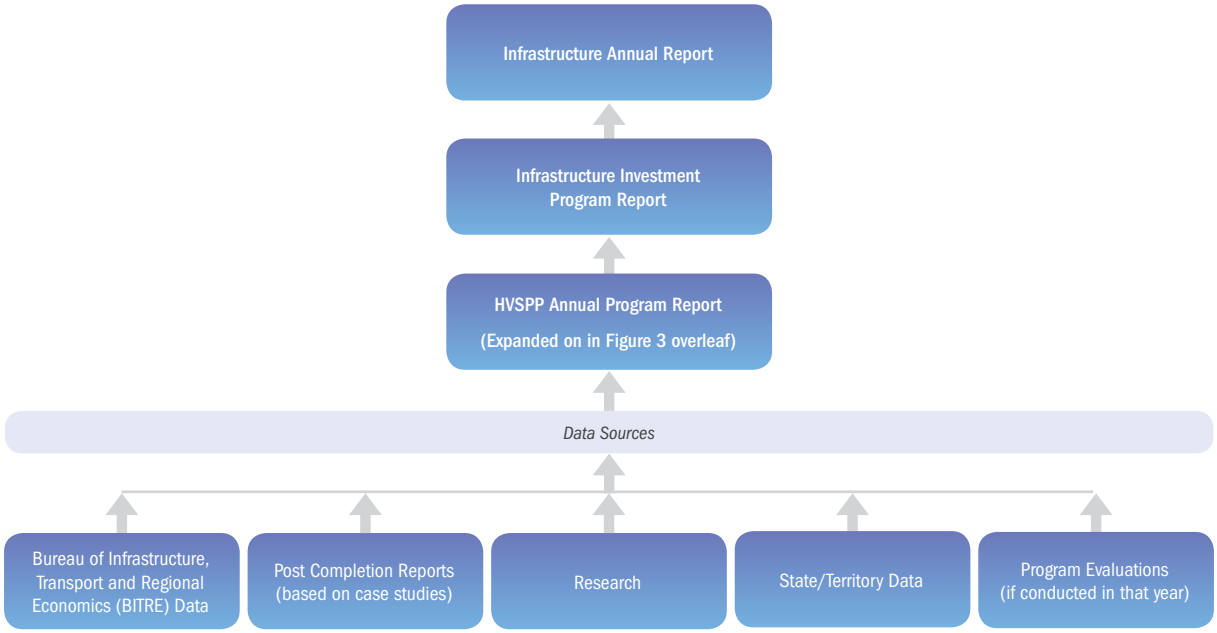
To place it in context, there are a number of key elements to the HVSPP Monitoring and Evaluation Framework:

1. An Outcome, Measures and Data Sources Table which shows the success measures that need to be reported against, and relevant data sources, to demonstrate achievement of outcomes and outputs (this is provided in Section 3).
2. The annual reporting used by Infrastructure to support Annual Reports, Portfolio Budget Statements and departmental or other internal reporting (see Figure 2).
3. Periodic evaluations, conducted in accordance with the Evaluation Strategy (provided in Section 4).

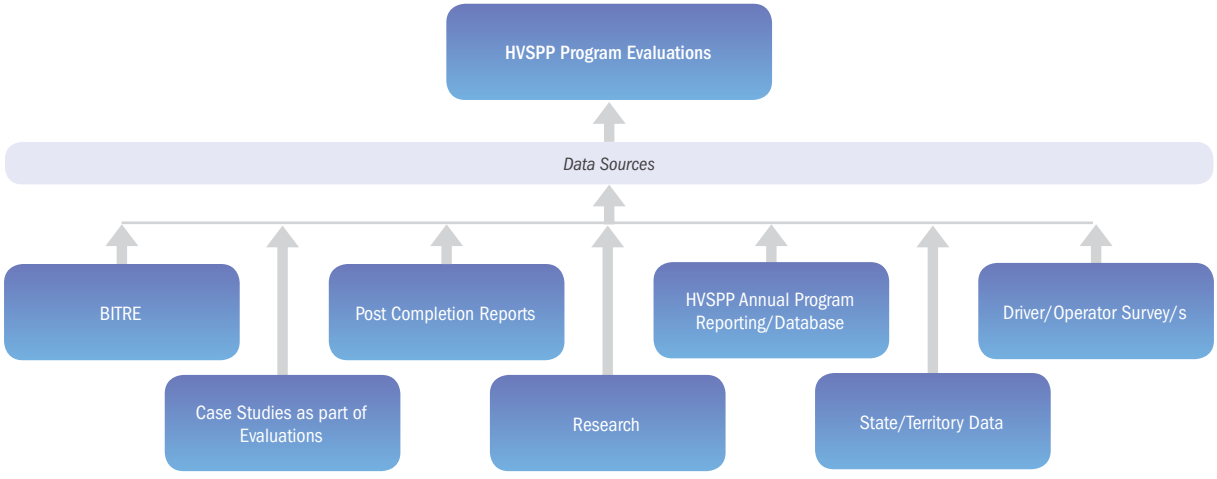
An overview of Program Reporting is illustrated in Figure 2.

Figure 2: Diagram showing an overview of HVSPP Reporting

1. Reporting



2. Program evaluations



Possible HVSPP Annual Reporting

The following is an overview of the reporting envisaged by the HVSPP to the Infrastructure Investment Program. The input and output reporting essentially occurs now, and this report does not envisage any significant change, except to provide an emphasis on reporting of **outcomes**, which will be a relatively new addition and will develop over time as it becomes a more integral part of the HVSPP. To allow for 'attribution' to specific HVSPP projects, a case study approach has also been suggested.

Figure 3: An overview of possible HVSPP Annual Reporting

HVSPP Annual Reporting	
1. Input Reporting	· Funds allocated to the program and projects. · Projects approved by category.
2. Output Reporting	· Funds spent overall, and by project. · Projects completed by category, and breakdown of the number of project 'types'. E.g., numbers of bridges, rest areas, decoupling bays built, number of kilometres of road improved, number of new infrastructure projects completed, and technology and livestock projects completed.
3. Outcome Reporting	**Fatigue/Heavy Vehicle Crashes/Safety Outcomes** · BITRE National Crash Database – proportion of crashes that involve heavy vehicles (whether trends showing reduction on an annual basis). · % of fatigue/crash reduction projects completed – where outcomes were achieved. (This reporting would be via case studies contained in the Post Completion Reports.) For example, new rest area projects reporting that the rest areas are routinely being used after completion (e.g. average number of heavy vehicles per month for each new rest area). **Productivity Outcomes** · Infrastructure/BITRE/ABS national vehicle and freight productivity data. · % bridge projects being used and contributing to productivity demonstrated by project case studies in Post Completion Reports. For example (the report should contain some examples of case studies where outcomes were achieved). · % road enhancement projects being used and contributing to productivity through improved access to commercial and heavy vehicles demonstrated through project case studies in Post Completion Reports. For example (the report should contain some examples of case studies where outcomes were achieved). · % de-coupling bay projects being used and contributing to productivity demonstrated by project case studies in Post Completion Reports. For example (the report should contain some examples of case studies where outcomes were achieved).

Section 3: Reporting, Performance Measures and Data Sources Table

Introduction

Table 1 overleaf describes program outcomes and outputs with associated success measures/indicators and data sources for those measures.

These measures and data sources are designed to provide realistic and practical data for routine monitoring and reporting and to ensure data is available for periodic evaluations. The table is not intended to be a reference list of all research material on the various subjects.

The table is based on significant work and research within Infrastructure and with all jurisdictions. Where consultation or research has shown that it is impractical, or not viable or cost effective to consistently measure the success of that outcome, it will be shown with an appropriate note. For example, driver fatigue is accepted as a reality and as a reasonable logic step for the program to address in the program logic. But, there are no clear nationally consistent measures of fatigue routinely collected, although there is periodic research undertaken by research organisations[7] and a range of different data collected by state and territory police. Similarly, Coroners' report information can be accessed from time to time although it is expensive and needs to be viewed over extensive periods of time to ascertain trends. Such research reports should be used as proxy measures when they become available, or to support periodic evaluations.

So, 'fatigue' cannot be readily measured – especially by a relatively modest program such as the HVSPP. But proxy measures such as reduction in crashes involving heavy vehicles, proven use of rest areas, published research when available and occasional sampling of individual jurisdictions' figures based on police accident reports, can be used in the routine monitoring and evaluation framework, and also during evaluations.

General approach to measures and data sources

The main source of data proposed in the table is through a more comprehensive use of the existing project reporting system.

We note that applications for project funds (project proposals) generally contain a robust business case supported by baseline data. However, reports on completion of the projects currently focus on outputs (e.g. numbers of bridges and rest areas built) rather than on the outcomes posed in the original business case (e.g. bridges and rest areas are actually being used).

The intention underpinning this framework is that Post Completion Reports referred to in this table will report directly against the outcomes proposed in their business case – which should provide outcome data as well as output data. To allow for a reasonable measure of outcomes being achieved, Post Completion Reports should be submitted one year after project completion.

[7] For example, Austroads Report: *A Proposed Heavy Vehicle Rest Area Needs and Prioritisation Methodology* May 2012.

Table 1: Reporting, Performance Measures and Data Sources Table

(Note, this table corresponds to the Outcome streams shown in the Program Logic i.e. Fatigue, Safety and Productivity Outcomes Hierarchies)

Fatigue outcome hierarchy		
Outcomes	**Measures of success**	**Data issues**
Long term outcome **A reduced proportion of road accidents (crashes) involving heavy vehicles** *Through targeting heavy vehicle driver fatigue*	**Measure 1:** Reduced proportion of crashes that involve heavy vehicles (based on baseline data at the start of the program in 2008–09): taking into account: · Estimated changes in heavy vehicle traffic volume over the period; and · Estimated changes in heavy vehicle kilometres travelled over the period. *A higher level proxy measure only – fatigue addressed in Measure 2 below.*	**Data Source:** · BITRE National Crash Database. · BITRE database/s/WIM data. **How often collected:** · Collected/reviewed/annually by BITRE and the HVSPP as required. · For program evaluations. **How often reported:** · Annually by BITRE. · When program evaluations are conducted.
Medium term outcome **Heavy vehicle driver fatigue is reduced**	**Measure 2:** Reduction in heavy vehicle crashes where heavy vehicle driver fatigue is a significant contributing factor *Note: there are issues around collection and reporting of 'fatigue' data, as addressed earlier.*	**Possible Data Sources:** (Depending on availability at time of program evaluation and to be coordinated by the evaluation team.) · BITRE National Crash Database. · State/territory crash databases. · National Transport Insurers. · Independent research. · Coroner reports (including possible funded research using the National Coronial Information System (NCIS) e.g. looking at trends in fatigue related crashes.) **How often collected/How often reported:** · When program evaluations are conducted. · When independent research is published.
	Measure 3: Drivers and operators consider that the rest areas contribute to reducing the level of heavy vehicle driver fatigue. *Note: Construction of rest areas is both a Federal and State responsibility, and thus attribution to HVSPP projects is not possible. However, the measure should still be considered as it may be a useful proxy that indicates that rest areas generally are contributing to reducing fatigue.*	**Data source:** Driver and Operator surveys (a national survey done as part of periodic formal evaluations). **How often collected:** As program evaluations are conducted. **How often reported:** When program evaluations are conducted.

(continued)

Fatigue outcome hierarchy		
Outcomes	**Measures of success**	**Data issues**
Short term outcome **Drivers are aware of and use rest areas, and plan their trip accordingly**	**Measure 4:** The extent to which drivers and operators are aware of rest area locations and plan trips taking the location of rest areas into account to manage fatigue. *Note: Recognising again that attribution to HVSPP here may be an issue.*	**Data source:** Driver and operator (a national survey done as part of periodic formal evaluations). State surveys where available. **How often collected:** As evaluations are conducted. **How often reported:** When program evaluations are conducted.
	Measure 5: Rest areas are used. *This usage/measure/data could act as a proxy for drivers 'planning' to use rest areas to manage fatigue when survey data is not being collected, as their proven use implies an element of planning.*	**Data source 1/Measure 5:** Post Completion Reports which show usage data of rest areas from a simple case study approach, to ensure attribution to the specific HVSPP project. Usage data should be based on a one week sample of use of rest areas by heavy vehicles for each new rest area built – about one year after completion. Figure should indicate total number of heavy vehicles using the rest area in that one week period. **How often collected:** When Post Completion Reports are submitted. **How often reported:** Usage data from Post Completion Reports will be collated annually and used in HVSPP Annual Reports (see general notes on Reporting above).
		Data source 2/Measure 5: Separate case studies, as part of periodic formal evaluations. The usage/case study data will focus on a sample of the HVSPP rest areas. **How often collected:** As required by the program evaluation strategy. **How often reported:** In accordance with the evaluation strategy.
		Data source 3/Measure 5: Driver and Operator surveys (a national survey done as part of periodic formal evaluations). **How often collected:** As program evaluations are conducted. **How often reported:** When program evaluations are conducted.

(continued)

Fatigue outcome hierarchy		
Outcomes	**Measures of success**	**Data issues**
		Data Source 4/Measure 5: Proposed audit of rest areas (A previous audit was conducted in 2008[8]). **How often Collected/reported** When/if audit approved/conducted.
Short term outcome **Drivers are aware of the current occupancy status of rest areas and re-plan their trips as required**	**Measure 6:** The extent to which drivers are aware of the current occupancy of rest areas and replan their trips as required. *Notes: This measure can only apply to those areas that have been subject to an HVSPP technology project that provides up-to-date information about the occupancy status of rest areas.* *Proxy measures for this outcome may also be found from the Output measures below concerning new technologies.*	**Data source 1/Measure 6:** Driver and Operator surveys (a national survey done as part of periodic formal evaluations). **How often collected:** As program evaluations are conducted. **How often reported:** When program evaluations are conducted.
		Data source 2/Measure 6: New Technology Post Completion Reports. **How often collected:** As per the Post Completion Report. **How often reported:** · Annually as part of Infrastructure/HVSPP Annual Report. · When evaluations are conducted.

[8] An audit report on rest areas against National Guidelines was published in March 2008. The audit assessed rest areas along the 127,000 kilometres of the freight routes. A proposed further audit would supplement the information from the previous audit and provide an up-to-date assessment of rest areas against the National Guidelines.

Safety outcome hierarchy		
Outcomes	**Measures of success**	**Data issues**
Long term outcome **An improved safety environment for heavy vehicle drivers through new technologies and improved livestock transport infrastructure**	**Measure 7:** The successful completion of the new technology projects and individual livestock transport infrastructure improvement projects. *Notes:* · *Due to the generally lower value and small number of new technology and livestock transport infrastructure improvement projects, and difficulty in sourcing suitable data that can be attributed to HVSPP, the major measure for the outcomes will be the relevant output measures – namely, successful completion of projects and the results of the new technology projects.* · *Measure above applies to all safety outcomes.*	*The data issues below apply to all safety outcomes.* **Data Source 1/Measure 7:** Post Completion Reports. **How often collected:** Submission of Post Completion Reports. **How often reported:** · Results in Infrastructure annual reporting process. · When program evaluations are conducted.
Medium term outcome **Incidents of heavy vehicle driver injuries and safety incidents are reduced**		
Short term outcome **Reduced accidents as a result of new technology trials**		
Short term outcome **Reduced injuries as a result of livestock transport infrastructure improvements**		**Data Source 2/Measure 7:** Livestock Infrastructure Post Completion Reports. **How often collected:** As per approved project plan. **How often reported:** · Results in Infrastructure annual reporting process. · When program evaluations are conducted or other times as required.

Productivity outcome hierarchy		
Outcomes	**Measures of success**	**Data issues**
Long term outcome **Increased productivity achieved through the enhanced capacity and access of existing roads**	**Measure 8:** Increasing national vehicle and freight productivity. *This will be a high level proxy measure only. It does not provide attribution data for HVSPP projects.*	**Data Sources:** · ABS data (including Survey Motor Vehicle Use and Freight Movement Studies) as extracted by BITRE/Infrastructure. · BITRE/Infrastructure productivity data. **How often collected:** As required for program evaluations. **How often reported:** As part of program evaluations.
Medium term outcome **An enhanced road network supports greater productivity of the heavy vehicle driver industry**	**Measure 9:** The extent to which the HVSPP road enhancement projects have contributed to increased productivity	**Data source 1/Measure 9:** Post Completion Reports. Relevant productivity data using a simple case study approach by States/Territories to ensure attribution to the specific HVSPP project. (Examples of data could include an increase of heavy vehicle traffic using a new bridge.) Usage data should be based on a one week sample of productivity improvement (ideally including classification counts of higher productivity vehicles, e.g. B-triples, BAB-quads etc.) collected about one year after completion, and directly related to the business case in the Project Proposal. **How often collected:** When Post Completion Reports are submitted. **How often reported:** Usage data from Post Completion Reports will be collated annually and used in HVSPP Annual Report (see general notes on Reporting above).
		Data source 2/Measure 9: Case studies as part of period formal evaluations. **How often collected:** As part of the program evaluation process. **How often reported:** When evaluations are conducted.
		Data Source 3/Measure 9: Operator survey to seek business feedback on the impact of the enhanced capacity of roads on productivity (national survey done as part of periodic formal evaluations). **How often collected:** In accordance with the program evaluation strategy. **How often reported:** In accordance with the program evaluation strategy.

(continued)

Productivity outcome hierarchy		
Outcomes	**Measures of success**	**Data issues**
Short term outcome **Fewer restrictions on the use of the network by heavy vehicles** **Short term outcome** **More higher-productivity vehicles are using the network**	**Measure 10:** Increase in use of network by heavy vehicles as a result of successful completion of HVSPP Projects that address productivity issues.	**Data Source:** Post Completion Reports. Relevant productivity outcome data using a simple case study approach by States/ Territories to ensure attribution to the specific HVSPP project. (For example, increase of heavy vehicle traffic using a new bridge). Usage data should be based on a one week sample of productivity improvement (ideally including classification counts of higher productivity vehicles, e.g. B-triples, BAB-quads etc.) collected about one year after completion, and directly related to the business case in the original Project Proposal. **How often collected:** When Post Completion Reports are submitted. **How often reported:** Usage data from Post Completion Reports will be collated annually and used in the HVSPP Annual Report (see general notes on Reporting above). Data will also be reflected in Program evaluation reports.

OUTPUTS		
Outputs	**Measures of success**	**Data issues**
Well positioned, designed and sign-posted rest areas are available and advised through website or other sources	Rest areas are sited and built in accordance with the HVSPP Project Proposals.	**Data sources:** Post Completion Reports. **How often collected:** As per project reporting requirement. **How often reported:** Annually, or when evaluations are conducted.
		Data Source: Proposed audit of rest areas (A previous audit was conducted in 2008[9]). (See data source 4, Measure 5 for details.)
Technology projects that provide advice on the location and occupancy of rest areas are available and being tested	Technology projects are in place as planned and being tested in accordance with the Project Proposal.	**Data Source:** Post Completion Reports. **How often collected:** As required as part of the project monitoring requirements. **How often reported:** Annually as part of HVSPP annual reporting, and in program evaluations.
Pilot enhanced technology projects to improve driver safety and reduce crashes are in place and being assessed	Technology projects to improve driver safety and reduce crashes are in place and being assessed.	
Improved livestock transport/ facilities infrastructure is in place	Livestock transport infrastructure projects are built in accordance with the Round 3 Project Plan.	
Road enhancement and technology projects are completed	Road enhancement productivity projects are built in accordance with the project plan.	**Data Source:** Post Completion Reports. **How often collected:** As per project reporting requirement. **How often reported:** Annually in HVSPP annual reports and in program evaluations.

[9] An audit report on rest areas against National Guidelines was published in March 2008. The audit assessed rest areas along the 127,000 kilometres of the freight routes. A proposed further audit would supplement the information from the previous audit and provide an up-to-date assessment of rest areas against the National Guidelines.

Section 4: HVSPP outline evaluation strategy

Evaluation strategy overview

The outline strategy proposed for the HVSPP includes two evaluations:

- **Evaluation 1 – An 'on-track'/effectiveness evaluation** to be conducted in about 2015–2016 to confirm that projects are being completed as planned and progress is on track to achieve outcomes. The evaluation's main emphasis would be on the short and medium term outcomes and identifying any barriers to successful implementation.
- **Evaluation 2 – an impact evaluation** at the end of the program in 2019 that assesses the impact of the program and considers lessons learned that could assist with future program design.

(These two evaluations have been suggested based on an understanding that the Program will run until 2019. Should the Program run beyond that, a longer term approach could be considered, of say, an evaluation in Year 4 of a 5 year program.)

Suggested Purpose and Terms of Reference/possible questions

The suggested Purpose and Terms of Reference/possible questions for each proposed evaluation are outlined further in the following.

Data used to inform these evaluations are addressed in the Table and explanation provided with this Monitoring and Evaluation Strategy (see Section 3).

Evaluation 1: On-Track/Effectiveness evaluation (2015–2016)

Purpose: To assess whether the program is on track to meet its outcomes and to determine whether adjustments to the program are required.

Possible Terms of Reference/questions to consider

- To what extent are HVSPP projects being completed as planned?
- The extent to which the HVSPP projects have assisted heavy vehicle drivers to manage their fatigue:
  - Has there been a reduction in the proportion of crashes involving heavy vehicles?
  - To what extent are new and upgraded rest areas being used?
  - Have the rest areas been well positioned, sign posted and advised through websites and other resources?
  - Have heavy vehicle drivers been able to use technology to plan their trips to help manage fatigue and been able to re-plan their trips as a result of knowing the occupancy state of rest areas?
- Have all livestock transport improvement projects been completed successfully and in accordance with the HVSPP project schedule?
- Have HVSPP new technology projects been completed?
- Have HVSPP new technology projects been assessed and resulted in improvements that can be applied to improve productivity, safety or reduced heavy vehicle crashes?

- The extent to which the enhanced road network projects are supporting greater productivity for the heavy vehicle industry.
  - From nationally available figures, to what extent has overall productivity of the Australian road network improved?
  - From case studies, are more heavy vehicles able to use more of the network as a result of enhanced capacity of existing roads?
  - Do drivers and transport operators consider that the HVSPP road enhancement projects have increased their productivity?
- Identify any constraints or possible improvements to the HVSPP that would assist with achieving the HVSPP objectives.
- Do the program measures and monitoring strategy remain appropriate to allow for performance to be assessed, and are there any suggested improvements?

Timeframe and budget – It is anticipated to be about a $200,000 evaluation taking 6–9 months. Timeframe and costs will depend on such factors as:

- the level of consultation required;
- the scope of the proposed national survey of operators/drivers;
- travel requirements;
- new research to be undertaken as part of the evaluation; and
- the number of case studies selected.

Possible data sources – to include a combination of:

- information from BITRE/ABS;
- evaluation case studies to be conducted as part of the evaluation;
- Post Completion Reports;
- new research available at the time of the evaluation – especially around fatigue, or commissioned research as part of the evaluation;
- HVSPP Annual Reports;
- state/territory data; and
- driver/operator national survey (conducted for the evaluation).

Evaluation 2: Impact evaluation (2019)

Purpose: To assess the impact and benefits of the program and consider the lessons learned that could assist with future program design.

Possible terms of reference/possible questions to consider:

- The extent to which there has been a reduced proportion of road accidents (crashes) involving heavy vehicles.
- The extent to which HVSPP projects that targeted heavy vehicle driver fatigue may have made a contribution to a reduction in heavy vehicle crashes.
- Have new technology and livestock projects been completed as planned?
- The extent to which the HVSPP projects have contributed to productivity through the enhanced capacity of existing roads.
- Identify constraints/possible improvements to the HVSPP that would assist with future program design.

Timeframe and budget – It is anticipated to be about a $200,000 evaluation taking 6–9 months. Timeframe and costs will depend on such factors as:

- the level of consultation required;
- the scope of the proposed national survey of operators/drivers;
- travel requirements;
- new research to be undertaken as part of the evaluation; and
- the number of case studies selected.

Possible data sources – to include a combination of:

- information from BITRE/ABS;
- evaluation case studies to be conducted as part of the evaluation;
- Post Completion Reports;
- new research available at the time of the evaluation – especially around fatigue, or commissioned research as part of the evaluation;
- HVSPP Annual Reports;
- state/territory data available; and
- driver/operator national survey (conducted for the evaluation).

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