



Department of Transport and Main Roads
Queensland Bus Driver Safety Review

20 April 2017

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Because of the inherent limitations of any internal control structure, it is possible that errors or irregularities may occur and not be detected. The matters raised in this report are only those which came to our attention during the course of performing our procedures and are not necessarily a comprehensive statement of all the weaknesses that exist or improvements that might be made.

Our work is performed on a sample basis; we cannot, in practice, examine every activity and procedure, nor can we be a substitute for management's responsibility to maintain adequate controls over all levels of operations and their responsibility to prevent and detect irregularities, including fraud.

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1 Executive Summary

1.1 Background

The Department of Transport and Main Roads (**DTMR**) through Translink (a division of DTMR) plans, manages and delivers Queensland's integrated transport environment for road, air and sea. In the FY16, DTMR provided around 180 million passenger trips (bus, rail, ferry and tram) across South East Queensland (**SEQ**) and 12.1 million passenger trips outside of SEQ (bus, rail and air). Each day around 490,000 passengers travel on the SEQ transport network.

Road (bus) transport, specifically the safety of bus drivers is the subject of this report. In Queensland (**QLD**), there are over 160 bus operators providing a range of DTMR contracted public and school bus services in urban and regional areas. Bus operators directly employ bus drivers, with approximately 2,341 drivers in SEQ and 252 in regional areas. Bus fleets are the property of bus operators with around 2,583 buses operating in SEQ and 237 buses regionally.

DTMR, bus operators and drivers provide an important service for the public facilitating a reliable and cost effective method of transport for the travelling public. The safety of bus drivers is an important element of service delivery.

In 2015/16 DTMR contracted bus operators reported 392 assault related incidents, these comprised of verbal and physical assaults as well as reports on incidences where objects were thrown at buses. In 2015/16 the TransLink contracted network facilitated around 125.6m passenger trips.

The QLD Bus Driver Safety Review (the review) was initiated in response to concerns about bus driver safety raised by key stakeholders at the DTMR Bus Safety Forum in early 2016¹. Subsequently the QLD Government committed to an independent review of QLD Bus Driver Safety through DTMR, the findings to be presented to the QLD State Government (QLD Government) for consideration.

Subsequently DTMR appointed Deloitte Risk Advisory Pty Ltd (**Deloitte**) to undertake an independent review² of Bus Driver Safety in QLD. The following report details our findings.

1.2 Purpose and scope of the review

The purpose of the review was to identify potential initiatives that may improve bus driver safety with respect to violence related risks inclusive of investigating costings and funding options to deliver on identified potential initiatives.

The scope of this work, was to:

- Consider previous studies and initiatives undertaken by government, industry, unions and the tertiary sector to gain insight and knowledge in relation to issues impacting driver safety.
- Examine and assess current safety systems, policies, infrastructure, procedures and training to determine their efficacy in managing driver safety.
- Assess initiatives currently underway across government to address driver and passenger safety and how these can complement current safety frameworks and systems.
- Conduct environmental scanning and research on driver safety systems and elements and examine their benefits and practical applicability.
- Collaborate with industry, unions, government agencies and key experts to identify potential initiatives that can be demonstrated to improve driver safety.

¹ Minister for Transport and the Commonwealth Games, The Honourable Stirling Hinchliffe, 2016

² The term "independent review" or "independent assessment" used in this document is not intended to convey the provision of assurance services in accordance with the standards issued by the Australian Auditing and Assurance Standards Board, and consequently no opinions of conclusions under these standards have been expressed.

- Conduct a bus driver survey to obtain direct feedback from QLD bus drivers and other related parties (e.g. management or administration) on violence encountered in their work and safety controls in geographically disperse locations.
- Investigate funding mechanisms for potential driver safety initiatives for the QLD Government's consideration.

The scope of this review was not designed to address particulars of specific incidents of violence towards bus drivers however through comprehensive stakeholder consultation perceived matters of significance in relation to relevant incidents of violence towards bus drivers were brought to our attention.

1.3 Our approach

The approach to undertaking this review was multi-faceted, requiring extensive research, consultation, cost modelling and analysis. Our approach is detailed in **Appendix E**, a graphical summary of our process is set out below.



1.4 Summary of our observations

1.4.1 Evidence driven insights on violence

Insights from research and stakeholder consultation were considered in developing findings on violence towards bus drivers, key triggers of violence and safety controls to address violence. The nature and extent of violence directed the potential initiatives selected.

There were limitations obtaining research and incident data on violence towards bus drivers. Precisely determining the nature, extent and patterns of violence in QLD was difficult to confirm conclusively. Therefore we also relied upon views and inputs from stakeholders to supplement our observations (refer to **Appendix E**).

1.4.1.1 Nature and extent of violence

A key finding of the review on evidence available confirmed bus drivers are exposed to various forms of violence during the conduct of their work (refer **Appendix A**).

Bus drivers may encounter the following violence related risks:

- verbal aggression;
 - higher frequency than other violence types;
- threatening behaviour;
 - varies in frequency but lower than verbal aggression;
- physical violence;
 - lower frequency than other violence types;
- objects or missiles thrown at buses;
 - varies in frequency and/or seasonal.

Verbal aggression is the major form of violence directed at bus drivers.

Results indicate patterns of violence are higher in the afternoons, nights, on Fridays and on specific routes and regions. Further research and reliable incident data would provide greater accuracy and insights into violence towards bus drivers and further validate results.

1.4.1.2 Key triggers of violence

Triggers contribute to our understanding of the causal factors of violence and informs selection of potential initiatives (refer to **Appendix A**).

Five key triggers or causal factors were identified contributing to violence towards bus drivers, namely;

1. fare conflict;
2. alcohol and drugs;
3. passenger attitude;
4. delays;
5. student attitude.

Student attitude was identified separately to general passenger attitude. Data deficiencies impact on forming conclusive views however age (school children) influences the nature of the interaction as does parental involvement rendering the situation challenging to manage and requires tailored solutions.

Multiple triggers of violence may join together leading to a violent incident.

Whilst other causal factors may also trigger violence, both research and stakeholder consultation indicated the 5 key causal factors are the most prominent triggers.

Evidence suggests bus drivers have a higher predisposition to violence due to risk factors in their work environment increasing vulnerability to violence (e.g. but not limited to direct interaction with the public and working alone).

1.4.1.3 Safety controls

A comprehensive list of 50 safety controls were identified to address violence (refer to **Appendix H**). The safety controls comprised a mixture of preventative and reactive solutions.

The 50 safety controls were explored further to examine their purpose and effectiveness to address violence in collaboration with stakeholders, bus drivers and research insights.

As a result the initial list of 50 safety controls was reduced to 20 potential initiatives utilising a robust selection process referred to in **Section 3.3.3 & Appendix E**.

The 20 potential initiatives formed the basis of recommendations to improve bus driver safety with the qualification of 8 of the costed initiatives requiring further piloting or analysis to determine the "reasonableness"³ of the initiatives in relation to risk (refer to **Section 5**).

Analysis of effectiveness or benefits of initiatives relative to risk, cost or other criteria has not been determined due to data and research limitations on which to draw a conclusive view.

Our recommendation (once risk is confirmed and potential initiatives selected) is to conduct further analysis and piloting of the 8 costed initiatives to understand their ability to eliminate or reduce violence risks including a cost benefit of the measure (refer **Section 5**).

1.4.2 Potential initiatives

There are 20 potential initiatives recommended to address the risk of violence to bus drivers with the qualification of 8 of the costed initiatives (identified by an * below) requiring further piloting or analysis to determine the "reasonableness" of the initiatives in relation to risk.

The potential initiatives are categorised into strategies including:

- promoting safety in the physical environment;
 - driver barriers*, anti-shatter film*, increased presence* (senior network officers and police), closed circuit television (CCTV)*, radio*, duress* and operations base;
- communication and education strategies;
 - bus driver training*, public awareness campaign* (signage, media campaign), school programs and customer service cards;
- policies and procedures;
 - contract terms, fare and ticketing policy, incident reporting, codes of conduct, high risk passenger management, scheduling to reduce delays and recruitment policies, state-wide incident data collection; and,
- technologies;
 - cashless systems of fare and ticketing and mobile reporting app.

The potential initiatives recommended are best placed (given the qualification above in relation to "reasonableness") to address the causal factors/key triggers, nature and extent of violence on evidence available and other selection criteria applied (refer to **Appendices A & E**).

We have anticipated a variety of initiatives to address violence risks and have provided guidance by grouping initiatives to address high, medium or low risks (refer to **Sections 1.4.3 & 4.6 & Appendix G**) in keeping with our risk based approach to this review.

In relation to stakeholder views or preferences for potential initiatives the following out of the 20 listed were consistently identified:

- CCTV, radio and duress, senior network officers/police;
- de-escalation training, public awareness campaigns, strategies for school children, fare collection policy, high risk passenger management and scheduling to reduce delays;
- cashless fare and ticketing strategies.

³ Reasonableness of the initiative may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact.

It is notable that driver barriers were not a consistent preference of stakeholders with many having differing views on their application. A brief summary is provided below. All potential initiatives are discussed in detail in **Appendix A**.

The review's risk approach to bus driver safety established driver barriers potentially provide the highest level of protection against physical violence although a "reasonableness" determination has not been undertaken as discussed in **Section 1.4.4**. Health and safety duties⁴ under the *Work Health and Safety Act 2011 (QLD)* necessitate the consideration of potential initiatives (safety controls) such as barriers and other initiatives (refer to **Section 2 & Appendix A**) which have the potential to eliminate or reduce risk.

The implementation of driver barriers in metro buses in Australia (and overseas) is a growing trend to address physical violence. In QLD consensus on the effectiveness of driver barriers has not been reached. Refer to **Appendix A** for further discussions. Where stakeholders were not in favour of barriers a consistent reason was the perceived adverse impact on the driver/passenger relationship. Our review also revealed bus drivers enjoy interacting with passengers and view the relationship as protective when the interaction is positive.

Additionally there are difficulties in conclusively confirming the actual risk of physical violence posed to drivers (highly dependent on reliable incident data of which deficiencies have been noted) necessary for determining the need for driver barriers and contributing to the inability to reach consensus on this measure.

It is therefore imperative where the need for barriers is identified that a considered approach is taken as set out in **Section 1.4.4**.

Also notable is consideration of the wider social context contributing to violence and in which bus services operate. Although we didn't investigate strategies which were not directly related to bus driver safety we acknowledge particularly with projectiles and violence triggered by mental health conditions holistic strategies and approaches are worthy of further consideration.

For example, in this review we suggested anti-shatter film as a potential initiative to combat risk of injury from projectiles. Potentially holistic strategies addressing youth engagement and the wider social context (wider than bus driver safety) maybe worthy of contemplation when considering the age and profile of offenders.

1.4.2.1 Amendments to Criminal Code 1899 (QLD)

Although not comprising our list of 20 potential initiatives Deloitte acknowledges amending the *Criminal Code 1899 (QLD)* recognising bus drivers as "Public Officers" demonstrates the value and significance of their role.

Reference is made to the discussion in **Appendix H** with respect to amendments to the *Criminal Code (QLD)*.

1.4.3 Costs, packages and funding

There are 8 potential initiatives recommended in **Section 4** which have been subject to costing analysis. They were selected for costing analysis due to the nature of the control and potential significance of the cost.

An estimate of potential costs of initiatives has been provided over a 10 year period inclusive of sensitivity analysis⁵ (refer to **Appendix I**).

In addition, a number of initiatives were grouped into "risk packages" according to a low, medium or high level of risk relative to violence related risks of bus operating environments (refer **Appendix G**) providing a total cost of each package of initiatives. The high risk package of initiatives contains the largest number of potential initiatives (refer **Section 4.6**).

⁴ Health and safety duties relating to the management of risk and primary duty of care under the *Work Health and Safety Act (QLD)*

⁵ Sensitivity analysis has been undertaken with each costed initiative, for example 10%, 25%, 50% & 100% of fleet or 25%, 50% or 100% increase in resources or based on low/medium or high levels to provide an understanding of differing cost outcomes based on maximum (100%) to partial (10%) implementation.

The costing analysis found the high risk package of potential initiatives the most expensive, at \$166.5 million⁶ over the ten year evaluation period, compared to \$134.1 million for medium risk and \$25.6 million for the low risk package. Increased presence (senior network officers and police) accounts for over 45% of the high risk and over 56% of the medium risk total costs, with the next biggest component being CCTV, accounting for 15% and 18% respectively.

Duress and radios is the largest cost component for the low risk package, accounting for 59% of total costs.

However, where potential initiatives are already implemented the actual cost presented in this report will reduce significantly and is discussed in **Section 4**. Confirming the extent of initiatives in use across QLD will facilitate the confirmation of future costs.

Depending on the level of risk and number of operators/ buses included in any initiative, implementing bus driver safety initiatives could cost in excess of \$100 million over a 10 year period. Under current contract arrangements, operators would likely seek to be reimbursed from DTMR for any additional costs associated with potential initiatives prescribed by DTMR.

A range of potential funding options for bus driver safety initiatives have been considered for this report, with the four most reasonable options for consideration set out below.

Of the four options, the first two would be considered as most suitable to allow DTMR to implement bus driver safety initiatives in the near future. The selection of a preferred option by DTMR will depend upon the priorities given to the different attributes of the two options. Benefits and drawbacks are discussed in **Section 4.7**.

Potential funding options include:

- Operator financed and reimbursed;
- Grant funded;
- Funded through other programmes; and,
- Outcomes based funding.

A detailed discussion on funding options is set out in **Section 4.7 & Appendix J**.

1.4.4 Next steps

Advancing recommendations to improve bus driver safety is an important step following this review. It is suggested the following items are considered when advancing potential initiatives (refer to **Section 5**).

- Undertake a performance stocktake on the entire QLD urban bus fleet to assess level of take-up of recommended potential initiatives to understand the current status. The findings from this stocktake would inform final costings for initiatives, based on actual levels of control adoption;
- Consider the process for conducting bus operator violence risk assessments to confirm risk of violence for bus drivers when delivering services and determine initiatives required;
- Select initiatives which best address risks and requirements;
- If selected, conduct further analysis/modelling and/or pilot studies or trials to evaluate 8 of the potential costed initiatives outlined in this report due to the scarcity of formal evaluative studies and data limitations. This will facilitate determination of the reasonableness of the initiatives in relation to risk.
 - Reasonableness of the initiative may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact. For example, while a driver barrier may decrease risk of physical assault an unintended consequence of implementing a driver barrier may include adversely affecting the driver/customer relationship and/or moving the risk to customers from drivers or introducing safety risks for drivers (e.g. reflection, heat etc.). All aspects require thorough exploration.
- Perform further analysis of funding models prior to any initiatives implemented;
- Consider the process required for initiative implementation.

Other considerations are set out in **Section 5**.

⁶ The high risk package assumes 70 additional SNOs under the increased presence scenario. If 80 police were deployed instead of SNOs, then the high risk package would cost \$182.9 million over the ten-year evaluation period, compared to \$150.5 million for medium with no change to low. Increased police presence would account for 50% of the total high risk costs and 61% of the medium costs.

1.4.4.1 Timetable for next steps

The “next steps” are important for advancing recommendations and it is suggested initially priority is given to the items below:

- Prioritising the bus operator violence risk assessments to gain further insights and confirmation of areas of higher risk in QLD and subsequently guide selection of potential initiatives.
- Directing initial pilots, trials and modelling of initiatives (in reference to the 8 costed initiatives) (refer **Appendix G**) in order to facilitate timely implementation of initiatives in high risk environments.

Refer to **Section 1.5.3** in relation to the timetable for recommendations.

1.5 Reporting recommendations

1.5.1 Recommendations for bus operators

Given the varied nature of violence risk across QLD and the inability to determine the specific requirements and risk profiles of each bus operator (refer to **Section 4.2**) a standard set of initiatives could not be recommended for all buses, operators or regions. As such, we suggest consideration is given to the 8 initiatives in Table 1 using a risk-based approach to select appropriate initiatives, as outlined in **Section 4.6** and **Appendix G**.

Prior to considering implementation, 5 of the costed initiatives (No. 1- 5 in Table 1) require further piloting or analysis to determine the reasonableness⁷ of the initiatives in relation to risk.

The following initiatives in Table 1 are recommended for the three risk levels.

Table 1 **Potential initiatives recommended for bus operators**

#	Initiatives	Low risk	Medium risk	High risk
1	Barriers ⁸			
2	Anti-shatter glass film ⁹			
3	CCTV			
4	Duress and radio			
5	Training			
6	Customer service cards			

⁷ Reasonableness of the initiative may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact.

⁸ Please note discussions in the Executive Summary and **Appendix A** on the lack of consensus on driver barriers and potentially adverse impacts on the driver/passenger relationship.

⁹ Strategies for projectiles is notable due to the wider social context and age of offenders. Anti-shatter film was considered effective in combating risk of injury from projectiles when considering the review’s risk based approach and stakeholder feedback, but was not raised by all stakeholders. The risk of projectiles was found to be specific to geographical regions, dependent on demographics and seasonal influences (e.g. school holidays). There are “hot spots” where the risk of projectiles were anecdotally found to be higher (e.g. Gold Coast and Cairns). It is essential to obtain greater clarity on the risk posed through improved incident data (as noted in this review) as this will direct the need for anti-shatter film.

#	Initiatives	Low risk	Medium risk	High risk
7	Incident procedures			
8	Recruitment			

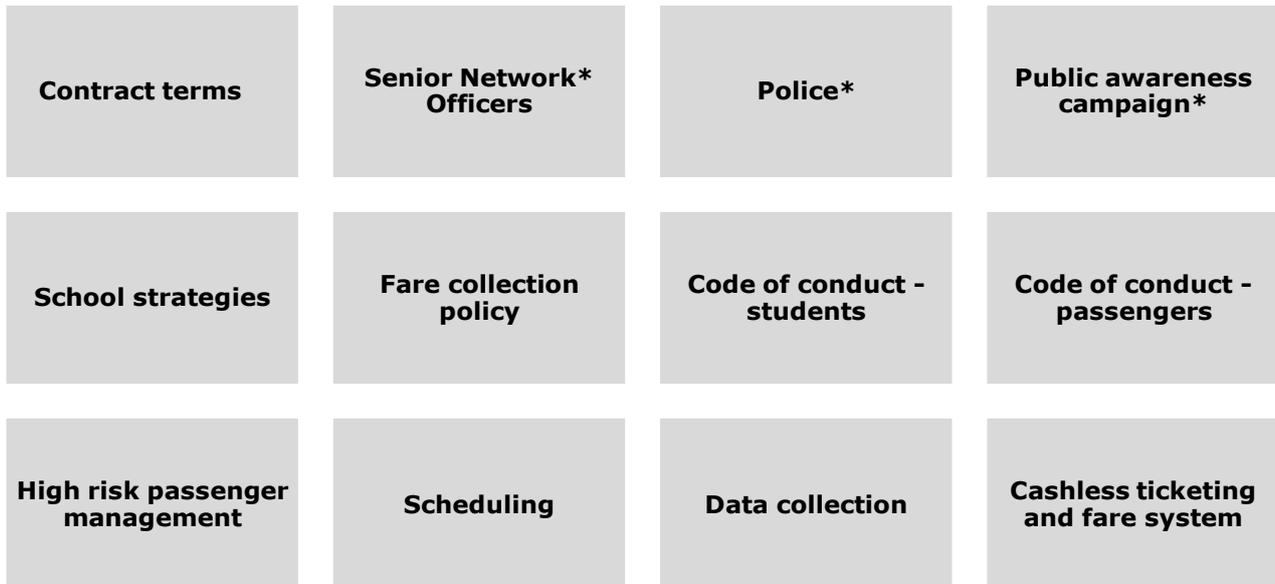
1.5.2 Recommendations for DTMR

An additional 12 potential initiatives are recommended for consideration by DTMR due to its position to influence, coordinate and oversight the potential initiatives in Diagram 1.

It is unlikely the potential initiatives in Diagram 1 could be implemented by bus operators alone, either because they do not have authority to do so, or because a consistent state-wide approach is required to implement the initiative.

Prior to considering implementation, 3 of the costed initiatives (senior network officers, police, and public awareness campaign) require further piloting or analysis to determine the reasonableness¹⁰ of the initiatives in relation to risk.

Diagram 1: **Potential initiatives recommended for DTMR**



* Note: Senior Network Officers, Police and Public Awareness Campaigns are included in the packages of initiatives set out in **Section 4.6**. Senior Network Officers and Police are allocated into the medium and high risk packages. Public Awareness is allocated into the low, medium and high risk packages.

Details of each recommended potential initiative are included in **Section 4** and **Appendix A**.

¹⁰ Reasonableness of the initiative may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact.

1.5.3 Timetable for recommendations

The timetable for advancing potential initiatives is dependent on factors identified in **Section 1.4.4** of the Executive Summary. While further piloting, analysis or modelling of initiatives and risk assessment is required prior to implementing the 8 costed initiatives there are also initiatives where action can be initiated immediately.

Potential initiatives eligible for immediate advancement including implementation plans to facilitate actions are listed below:

- Public Awareness Campaign¹¹;
- School strategies;
- Code of conduct for students;
- Code of conduct for passengers;
- High risk passenger management;
- Bus operator incident reporting procedures;
- DTMR data collection and analysis; and
- Customer service cards

In addition as noted in **Section 1.4.2.1** amendments to the *Criminal Code 1899 (QLD)* to recognise bus drivers as Public Officers can be initiated immediately or the process for legislative changes can be commenced.

¹¹ Although public awareness campaigns are a costed initiative it lends itself to a shorter analysis process and implementation timetable.

2 Authoritative principles

Authoritative principles were identified in the preparatory phase of the review as part of our methodology underpinning the risk based approach taken. The principles of risk enshrined in the documents listed below have been referred to during the course of the review, principles applied at all stages of our work.

The authoritative principles include:

- *Workplace Health and Safety (WHS) Act 2011(QLD)*;
- *WHS Regulation 2011(QLD)*;
- How to Manage WHS Risks Code of Practice 2011(QLD);
- Managing the Work Environment and Facilities Code of Practice 2011(QLD);
- WHS Consultation, Co-operation and Co-ordination Code of Practice 2011(QLD);
- WHSQ Guide Preventing and Responding to Work-Related Violence 2014;
- WHSQ Bus Driver Safety Guided Assessment Tool 2016.

Consistent with the risk based approach we recognised the importance of referring to a consistent definition of violence to guide our review and adopted the definition of “violence and client aggression” by Workplace Health and Safety Queensland (WHSQ).

Violence at work is defined by WHSQ as “any incident in which a person is abused, threatened or assaulted in circumstances relating to their work. This definition includes verbal or physical aggression (from customers or members of the public) directed at workers.....”¹²

¹² WHSQ, 2016

3 Consultation, survey & research insights

3.1 Process to explore bus driver safety and formulate insights

An evidence based process¹³ was undertaken to explore bus driver safety and develop insights into violence related risks and controls for bus drivers utilising the following procedures:

- Collaboration with stakeholders involving 39 separate consultations with QLD Government, industry, interstate government agencies, tertiary sector, and advocacy groups (refer to **Appendix B and Appendix E**). A common set of questions was utilised to ensure consistency of information collected. The aim of the consultation was to understand stakeholder's perspectives on the nature and risks of violence and identify potential initiatives that improve bus driver safety along with research, systems and initiatives set out below (refer to **Appendix A**).
- Surveyed bus drivers in QLD of which 522 bus drivers provided their opinions of violence related risks encountered in their work and safety controls to mitigate risk (refer to **Appendices A, C & D**).
- Conducted a review of the literature in Australia and internationally to identify research studies and understand the issues and industry views on this topic. There was over 100 items examined ranging from photos, videos of assaults, research studies, surveys, case studies, policies, procedures, documented safety systems, regulatory, statistics, media articles, campaigns and initiatives (refer to **References & Appendix A**). Due to the requirements under confidentiality agreements not all documents or sources were referenced in the report.
- Conducted environmental scanning on technological driver safety systems which improve bus driver safety to examine their benefits and practical applicability (refer to **Appendix A**).
- Examined existing safety systems and initiatives in place to address violence to determine what is currently available and their applicability and effectiveness to mitigate risk (**Appendices A & H**).
- Sourced costs of controls from stakeholders where available or permitted to support costing analysis and modelling for potential initiatives (refer **Appendices F & I**).

3.2 Evidence based and data driven insights

Our insights arising from consultation, the Deloitte Bus Driver Survey¹⁴ and research were categorised into three major areas providing context to the initiatives selected:

- Violence towards bus drivers;
- Findings on key triggers of violence; and
- Findings on safety controls addressing violence.

Insights are briefly summarised below with detailed discussion in **Appendix A**.

¹³ There were limitations with respect to availability of research and completeness of data, refer to **Appendix E** for further details on this topic.

¹⁴ Deloitte, 2016

3.2.1 Violence towards bus drivers

A summary of key points is presented below.

Overall the incident data obtained presented a variety of trends, some showing a decrease in incidents¹⁵ while in other data incidents remained constant¹⁶ during the reporting period. Anecdotal evidence from stakeholders indicated incidents of violence were increasing and bus drivers¹⁷ also felt frequency of violence had increased along with severity.

The review's stakeholders along with a research paper¹⁸ noted bus drivers also have positive experiences of driving.

- Although many articles and reports were examined with references to bus driver incidents of violence and we received anecdotal feedback from multiple stakeholders on incidents, a constraint encountered in this review was incomplete incident data on violence leading to difficulties precisely understanding the nature, extent and patterns of violence. In addition the limitations impacted on understanding the violence risk profile of bus operators in QLD, understanding effectiveness of safety controls and potential resource allocation (refer to **Appendix A & D**).
- Despite the limitations a key finding was that bus drivers are exposed to various forms of violence (listed below) during the conduct of their work, however the nature and extent is difficult to validate. The nature and extent of violence directs the potential initiatives selected (refer to **Appendix A**).

Bus drivers may encounter:

- verbal aggression;
 - higher frequency than other violence types;
- threatening behaviour;
 - varies in frequency but lower than verbal aggression;
- physical violence;
 - lower frequency than other violence types; and,
- objects or missiles thrown at buses;
 - varies in frequency and/or seasonal.

Bus drivers may encounter the 4 types of violence set out above however verbal aggression is the major form of violence directed at bus drivers.

- Table 2 provides a broad indication of the nature of violence and frequency of violence identified from available incident data and stakeholders. Caution should be applied when reviewing percentages of incidents or comparisons from sources in Table 2 due to a range of factors impacting on the data and explained in detail in **Appendix A**.
- In Table 2 the frequency of physical violence compared to verbal aggression is consistent with (not an exact match) frequency of violent incidents identified by the DTMR Bus Safety Committee¹⁹ and research conducted by Lincoln and Gregory²⁰ and Stanley²¹.
- While one off explosive incidents occur research²² has indicated there is a relationship between verbal and physical violence where most incidents of physical violence are preceded by verbal disputes and aggression. In addition there is a logical build- up of issues before physical violence

¹⁵ DTMR Translink Data – SEQ 2010 -2015

¹⁶ Industry source, 2014-2016

¹⁷ Deloitte Bus Driver Safety Survey, 2016

¹⁸ Lincoln & Gregory, 2014

¹⁹ Bus Safety Committee, 2011

²⁰ Lincoln & Gregory, 2014

²¹ Stanley, 2015

²² Gregory 2016

occurs. Although the results of this particular research cannot be generalised it relevant for preventive strategies such as de-escalation training for bus drivers.

- Evidence from the Deloitte Bus Driver Safety Survey²³ and the former DTMR Bus Safety Committee²⁴ suggests the majority of violence occurs in SEQ and most likely reflects population and volume of passenger services.
- However there are urban centres outside of SEQ²⁵, for example Townsville and Cairns where violence occurs and anecdotally Cairns was identified as a “hot spot” for violence (although not supported by the Deloitte Survey²⁶). A comprehensive state wide incident data set would enable a clearer understanding on geographical spread of violence.
- Objects or missiles thrown at buses are a category of violence that bus drivers face (refer to Table 2). It is understood through discussions with stakeholders that missiles or projectiles thrown at buses can be related to demographics, geographical regions (e.g. anecdotally Gold Coast region) and seasonal occurrences coinciding with school holidays.
- Patterns of violence²⁷ were identified revealing violence is higher in the afternoons, nights and Fridays. Additionally patterns included, specific routes, specific months (coinciding with school holidays), geographical regions and young people were identified as a problematic group. At the same time stakeholders have informed us that violence can occur at any time from unexpected individuals and there isn’t always a clear pattern to violence²⁸.
- Our stakeholders identified that particular geographical areas may have specific issues with violence not consistent with the overall trend such as rock throwing (e.g. Gold Coast region) or violence associated with theft (e.g. Cairns region).

Table 2 **Nature of violence (categories) and frequency of violence towards bus drivers**

Source	Physical Violence/ Assault	Threatening Behaviour	Verbal Aggression	Missiles
Deloitte Bus Driver Safety Survey ²⁹	1%	42%	51%	3% ³⁰
WHSQ Industry Focus Groups ³¹	Quarterly	Not available	Daily	Not available
DTMR TransLink Data – SEQ 2010 - 2015 ³²	14.8%	Not available	82.6%	2.62%
Industry Source 2012 - 2016	2.59%	7.73%	54%	27.6%
Industry Source 2014 - 2016	6.9%	11.5%	76.9%	Not available

²³ Deloitte 2016

²⁴ DTMR Bus Safety Committee, 2011

²⁵ Industry Source 2016

²⁶ Deloitte Bus Driver Safety Survey 2016

²⁷ WHSQ, 2015, Lincoln & Gregory, 2014, Industry Source

²⁸ Stanley, 2015

²⁹ Deloitte, 2016: Driver’s opinions on the frequency of incidents of physical violence, threatening behaviour, verbal aggression & missiles – refer to Appendix D

³⁰ may include missiles but also bus struck by person or object being carried

³¹ WHSQ, 2015

³² Translink, 2016

Source	Physical Violence/ Assault	Threatening Behaviour	Verbal Aggression	Missiles
Transperth WA security incidents 2012 - current ³³	4.47%	7.8%	18.8%	20.6%

3.2.2 Findings on key triggers of violence

- There is limited research in Australia and internationally investigating violence towards bus drivers. Therefore we have also relied on anecdotal and qualitative information from stakeholders, cases studies and reports to supplement views on triggers or causal factors leading to violence (refer to **Appendix A**).
- The lack of formal research studies in combination with incomplete and unreliable incident data on violence has adverse implications for understanding the potential causation of violence, the interplay of causal factors and the most effective solutions or controls available to eliminate or minimise and manage exposure to violence.
- Notwithstanding the deficiencies discussed above key triggers or causal factors have been identified. The triggers precede violence to bus drivers. The relevance of key triggers improves our understanding of why violence occurs and directs prevention measures.
- The five key triggers of violence include alcohol and drugs, fare conflict, attitude, delays and student's attitude. Table 3 provides a summary of triggers of violence towards bus drivers and frequency in initiating violence. There were a number of other triggers identified and they are discussed in detail in **Appendix A**.
- In addition, there are risk factors which uniquely predispose bus drivers to violence and create a higher baseline of risk. Risk factors include working in isolation, cash handling, and close proximity to passengers, low-levels of guardianship, overcrowding and delays in schedules³⁴. Other factors identified include a fixed sitting position of the driver³⁵, a mobile workplace³⁶, the low status of bus driving³⁷, unrestricted access³⁸, inadequate escape routes, and direct interaction with the public³⁹.
- A trigger may contribute solely to a violent incident or triggers may join together resulting in a violent incident. Triggers may be more prominent based on demographics or certain geographic areas, or at specific times of the day.

³³ Transperth, 2016

³⁴ Lincoln & Gregory, 2014

³⁵ Stanley, 2015

³⁶ Gregory, 2016; North America's Transit Union

³⁷ Gregory, 2016

³⁸ TWU

³⁹ TRACS, 2015

Table 3 **Key triggers of violence towards bus drivers and frequency in initiating violence towards bus drivers**

Source	Fare Conflict	Alcohol & Drugs	Attitude/ Behaviour	Delays	School Children – attitude
Deloitte Bus Driver Safety Survey ⁴⁰	19%	24%	11%	12%	9%
Bus Driver Safety Review Stakeholder views	74%	39%	39.1% ⁴¹	13% ⁴²	21.7%
WHSQ Industry Focus Groups ⁴³	✓	✓	✓	✓	✓
Industry Source ⁴⁴	30%	Not available	35% ⁴⁵	6.6% ⁴⁶	Not available
Lincoln & Gregory ⁴⁷ (driver survey)	19% ⁴⁸	Not available	11%	29%	Not available
Stanley ⁴⁹ (driver survey)	11.26% ⁵⁰	24.5%	20.8% ⁵¹	7.5%	Not available

3.2.3 Findings on safety controls addressing violence

There were a large number of safety controls (50) identified through research and stakeholder feedback set out in **Appendix A & Appendix H**. The findings were initially assembled into categories based on the type of control identified and considered if preventative or reactive, the current implementation status (if available), stakeholder views, cost (if available), technology considerations and learnings from research in Australia and overseas (if available). A comprehensive list of safety controls was compiled ensuring all possible items raised or identified through the review were considered to ensure our approach incorporated all stakeholder views and research findings (refer **Appendix H**).

3.2.3.1 Exploration of safety controls identified from insights

Each of the 50 controls identified was explored to examine their purpose and effectiveness in addressing violence in collaboration with key stakeholders, bus drivers and from research findings. We re-categorised the 50 safety controls during the process of selecting potential initiatives into categories addressing physical environment, communication and education strategies, policies and procedures and future technologies (refer Table 4).

⁴⁰ Deloitte, 2016

⁴¹ Includes attitude and aggression

⁴² The result tied with anti-social, mental health, theft & racial triggers

⁴³ WHSQ, 2015

⁴⁴ Industry source, 2014 - 2016

⁴⁵ Includes use of alcohol and drugs

⁴⁶ Includes service issues including delays

⁴⁷ Lincoln & Gregory, 2014 (a number of research methods were utilised, the driver safety survey results represents only one element of outcomes in the study)

⁴⁸ Fare cost

⁴⁹ Stanley, 2015 (% calculated on N=568)

⁵⁰ Includes wanting to ride free/fare evasion/price of fare/MYKI/ticket system

⁵¹ Includes passenger issues/attitude/aggression

Safety controls to manage violence are a combination of preventative (eliminating or reducing the risk of violence) and reactive (once violence occurs reducing exposure to violence or managing the outcomes of violence) strategies.

A summary of this work is provided in Table 4, detailed discussion in **Appendix A and Appendix H**.

Table 4 **A summary of potential initiatives based on identified safety controls (the "asterisk" identifies initiatives costed)**

Physical Environment
<ul style="list-style-type: none"> • Driver barriers / screens* to protect drivers from violence with the level of risk control based on design • Anti-shatter films* for bus windows to combat projectiles • Increased presence* to address fare and ticketing issues, anti-social behaviour, criminal behaviour and a deterrence to violence (e.g. Senior Network Officers and Police) • Communication, Monitoring and Response Driver Systems (closed circuit television "CCTV"*, radio*, duress* and operations centre/base)
Communication and Education Strategies
<ul style="list-style-type: none"> • Bus driver training* (e.g. de-escalation) to facilitate knowledge and skill development • Signage* raising awareness of requirements/consequences • Public awareness campaigns* to raise awareness of expected standards of behaviour and consequences • Programs to improve behaviour of school children • Customer service cards to inform and provide an avenue of complaint
Policies and Procedures
<ul style="list-style-type: none"> • Contract terms to set standards of safety with respect to violence risks • Fare and ticketing policies balancing fare collection with safety of drivers • Incident reporting procedures • Codes of conduct to set expected standards of acceptable behaviour and consequences • High risk passenger policies to identify and manage violent passengers/public • Scheduling of services reducing delays in service • Recruitment policies • State-wide incident data collection
Technologies
<ul style="list-style-type: none"> • Cashless systems of fares and ticketing • Mobile Reporting App

3.2.3.2 Justification of safety controls and selection of initiatives

Each safety control identified was subject to a robust assessment process utilising a selection criteria leading to the selection of potential initiatives (refer to Table 4 and **Appendix E**). The selection process involved examining the safety control against the following criteria:

- Views of stakeholders;
- Views of bus drivers;
- A preventative control verses a reactive control;
- State-wide verses local application of the control;
- Key triggers and risks based on insights from research, data and consultations;
- Technical feasibility of the control; and,
- Impact to drivers, bus operators, passengers & tax payer (cost).

Authoritative principles were also contemplated in reference to **Section 2**.

Out of this process 20 potential initiatives were selected as set out in Table 4 (also refer to **Section 4**). The 20 initiatives formed the basis of recommendations to improve bus driver safety with the

qualification of 8 of the costed initiatives requiring further piloting or analysis to determine the reasonableness of the initiatives in relation to risk (refer to **Section 5**).

Eight of the potential initiatives meeting the selection criteria were selected for costing due to the nature of the control and the potential significance of the cost.

A detailed explanation of the selected initiatives is included in **Appendix A** and a full listing of controls in **Appendix H**.

3.2.3.3 Potential initiatives allocated to risk groups

There were limitations in understanding the risk profiles of bus operators, therefore violence risk levels of bus operating environments were developed by Deloitte and aligned with potential initiatives in keeping with the risk based approach to the review (refer **Appendix G**). The recommendations referred to in **Section 4** are organised into the risk levels (where applicable) to guide selection of the potential initiatives most appropriate for the violence risk level of operating environments (refer **Appendix G**).

Section 4 provides recommendations capturing potential initiatives set out in Table 4 along with costings and packages of initiatives based on risk (refer **Section 4.6**).

4 Recommendations

4.1 Background

There were 50 safety controls identified in the course of the review (refer to **Appendix H**). The 50 safety controls were examined to understand their purpose and effectiveness in relation to addressing violence risks. In order to select potential initiatives from the 50 safety controls they were subjected to a robust assessment process utilising a selection criteria (refer to **Appendix E**).

As an outcome of the process, 20 potential initiatives were selected which rated favourably against the selection criteria in potentially preventing and/or mitigating violence related risks towards bus drivers. They formed the basis of the recommendations with the qualification of 8 of the costed initiatives requiring further piloting or analysis to determine the reasonableness which may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact of the initiatives in relation to risk (refer to **Section 5**).

There were 8 out of the 20 initiatives selected for costing analysis due to the nature of the control and potential significance of the cost. Our recommendation once risk is confirmed and potential initiatives selected is to conduct further analysis and piloting of the 8 costed initiatives to understand their ability to eliminate or reduce violence risks including a cost benefit of the measure (refer **Section 5**).

Analysis of effectiveness or benefits of initiatives relative to risk, cost or other criteria has not been determined due to data and research limitations on which to draw conclusions. Rather the focus on selection of potential initiatives is based on a selection criteria (refer **Appendix E**).

Each recommendation sets out a summary of key selection criteria identifying if the potential initiative is proactive or reactive, has state-wide application and the key triggers addressed by the recommendation.

4.2 Risk profiles of bus operators

There were limitations in understanding the risk profiles of bus operators relative to violence risks in the operating environment, therefore violence risk levels were developed by Deloitte for this purpose. A number of the recommendations are allocated to a defined risk level guiding selection of potential initiatives most appropriate for the violence risk level of operating environments (refer to **Section 4.6 & Appendix G**).

4.3 Costing analysis

Deloitte has undertaken costing analysis on 8 potential initiatives providing an estimate of potential costs (refer **Section 4**). Additionally a number of initiatives have been grouped into "risk packages" according to a low, medium or high risk level in order that a total cost of each package of initiatives can be understood (refer **Section 4.6**).

4.4 Bus operators: potential initiatives

Given the varied nature of violence risk across QLD and the inability to determine the specific requirements and risk profiles of each bus operator (refer to **Section 4.2**) a standard set of initiatives could not be recommended for all buses, operators or regions. As such, we suggest consideration is given to the 8 initiatives in Table 1 using a risk-based approach in order to select appropriate initiatives, as outlined in **Section 4.6** and **Appendix G**.

The risk based approach involves conducting a risk assessment of violence risks to determine a classification of a high, medium or low risk operating environment (refer to **Section 4.6 & Appendix G**). It is suggested that DTMR and bus operators consider the process of conducting the risk assessments (refer **Section 5**).

Prior to considering implementation, 5 of the costed initiatives (No. 1- 5 in Table 5) require further piloting or analysis to determine the reasonableness⁵² of the initiatives in relation to risk.

The following potential initiatives in Table 5 are recommended for the various risk levels applied to bus operators:

Table 5 **Potential initiatives recommended for bus operators**

#	Initiatives	Low risk	Medium risk	High risk
1	Barriers ⁵³	✗	✗	✓
2	Anti-shatter glass film	✗	✗	✓
3	CCTV	✗	✓	✓
4	Duress and radio	✓	✓	✓
5	Training	✓	✓	✓
6	Customer service cards	✗	✓	✓
7	Incident procedures	✓	✓	✓
8	Recruitment	✓	✓	✓

Refer to the following sections for further details about these potential initiatives.

⁵² Reasonableness of the initiative may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact.

⁵³ It is noted that barriers may refer to partial or full barriers (refer to Section 4 for further information). If full barriers are implemented and the driver is fully enclosed and segregated from passengers, it may not be necessary to implement other initiatives that are indicated for inclusion in the high risk category.

4.4.1 Driver Barriers

 Proactive	 Location-specific	 <ul style="list-style-type: none"> Fare disputes Alcohol / drugs Attitude Delays Student attitude
---	---	--

4.4.1.1 Description

It is recommended that various barrier designs are trialled through pilot studies, followed by implementation of the preferred barrier design to high risk routes within two years where physical violence has been confirmed as a risk and the “reasonableness” of the initiative relative to risk has been determined.

An assortment of barrier options exist, comprising different materials and designs, that can be custom designed to suit different bus configurations. Barriers may partially or fully enclose the driver, and can be stationary or moving, for example with a retractable screen or sliding door. Common barrier materials are mesh, plastic based (e.g. Perspex or polycarbonate), wire, metal bars, or a combination of these. Refer to **Appendix A** for a detailed discussion on barriers.

As outlined in **Appendix A**, research has not reached a consensus on the effectiveness of barriers, the best design and the preference of drivers on the topic.

4.4.1.2 Implementation by risk-level

The below table shows the minimum implementation required for each risk level to implement barriers:

Low		This initiative is not recommended as a minimum requirement for low risk levels.
Medium		This initiative is not recommended as a minimum requirement for medium risk levels.
High		At a minimum, all buses traveling on high risk routes must have barriers within two years.

4.4.1.3 Cost⁵⁴

Barriers were costed on a unit cost per bus basis, with the unit cost equal to the average of the values⁵⁵ provided by industry sources. All current buses in the high risk level (refer 4.4.1.2) are assumed to have barriers fitted within two years of the evaluation period, with replacement buses having barriers included during the initial fitout.

Image 1 shows that the estimated total cost of providing barriers to 100% of the QLD urban bus fleet, including replacement buses over a ten year period, is \$14.6 million (SEQ: \$13.2 million and regional: \$1.4 million). This cost decreases proportionally with the percentage of fleet fitted with barriers, so if only 10% of buses are fitted, then the cost reduces to \$1.5 million.

⁵⁴ Costings and analysis conducted by Deloitte

⁵⁵ Various barrier options are available: half, three-quarter and full screens, made of mesh, Perspex, metal or plastic. The most expensive barriers from the stakeholder research are approximately 20% higher than the average values used in the cost modelling.

Image 1 Barrier cost

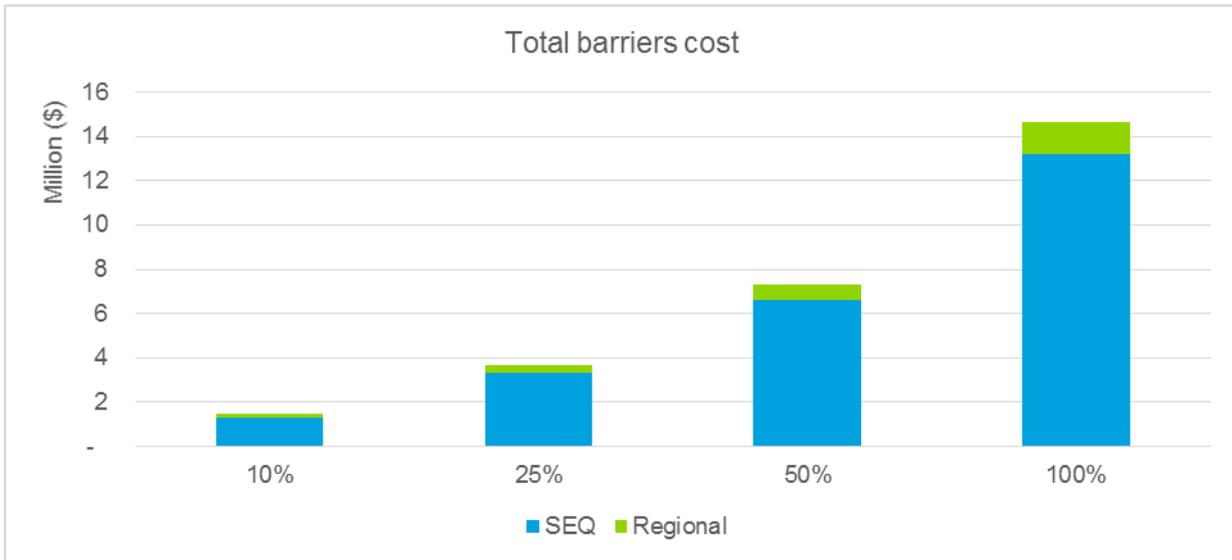


Image 1: Note: costs are nominal, undiscounted and include a 15% contingency.

The majority of the total cost of barriers occurs during the first two year implementation phase, as shown in Image 2, with the cost over the remaining years accounting for new replacement buses.

Image 2 Barrier cost over time

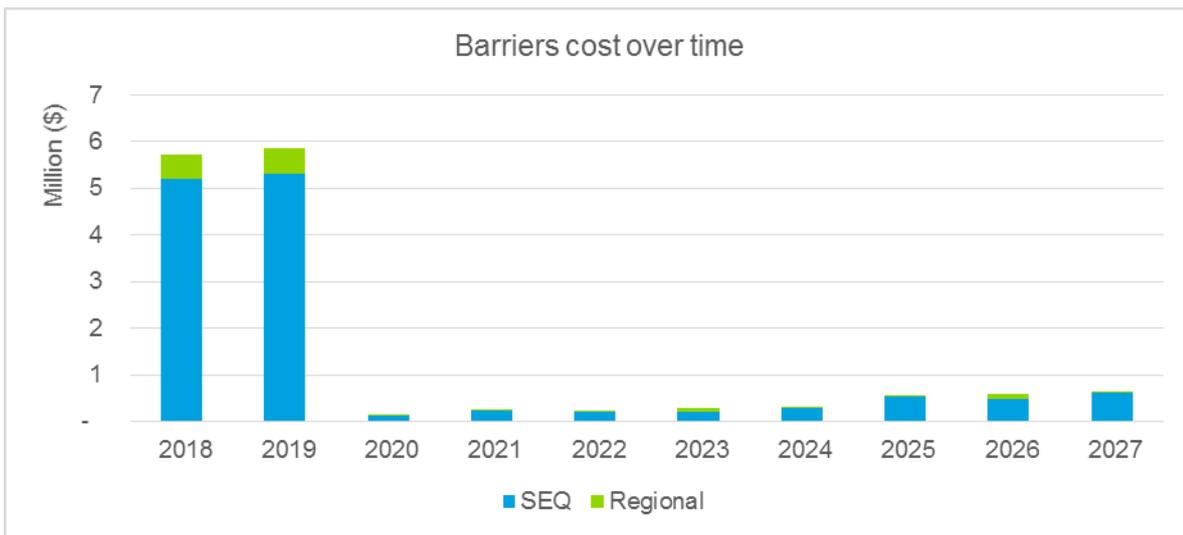


Image 2: Note: costs are nominal, undiscounted and include a 15% contingency.

From the stakeholder consultation, it is understood that some operators already have partial barriers on their fleet. If the buses that are known to already have barriers were excluded from the cost modelling, then the total cost (for 100% fleet fitout) would reduce by \$1.9 million. Tables showing the cost by operator for the different level of fleet coverage are provided in **Appendix I**.

4.4.2 Anti-shatter film

 <p>Proactive</p>	 <p>State-wide</p>	 <p>Attitude Student attitude</p>
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4.4.2.1 Description

It is recommended that anti-shatter film is implemented within two years on all buses that travel high risk routes where projectiles has been confirmed as a risk and the "reasonableness" of the initiative relative to risk has been determined.

Through stakeholder consultation, we understand that some QLD operators have already implemented anti-shatter film on the side windows of buses, excluding emergency exits, which must be left uncovered. Many buses have laminated safety glass on the front windscreen, and as such, anti-shatter film is not required on this panel. Refer to **Appendix A** for detailed discussions.

4.4.2.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement anti-shatter film:

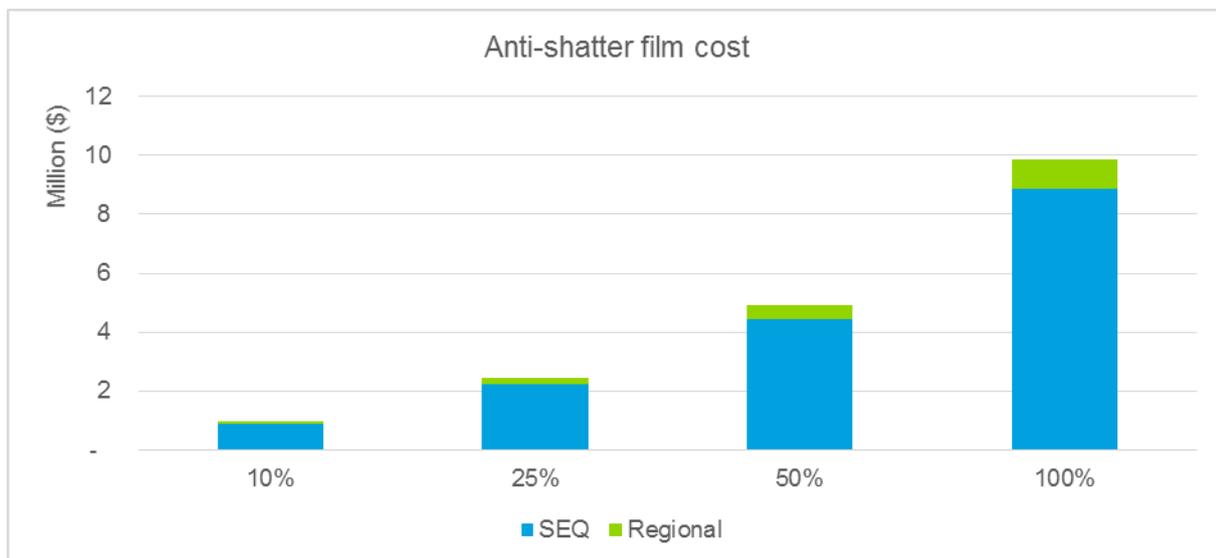
Low	✘	This initiative is not recommended as a minimum requirement for low risk levels.
Medium	✘	This initiative is not recommended as a minimum requirement for medium risk levels.
High	✔	At a minimum, all buses traveling on high risk routes must have anti-shatter film within two years.

4.4.2.3 Cost⁵⁶

Anti-shatter film is only assumed to be required under the high-risk package (refer to **Section 4.6**), for the entire QLD urban bus fleet, at a cost of \$2,300 per bus. Sensitivity analysis has also been undertaken for 50%, 25% and 10% coverage of the fleet (**Appendix I**).

Image 3 shows that the estimated total cost of providing new anti-shatter film to the entire fleet would be \$9.8 million (\$8.8 million for SEQ buses and \$1.0 million for regional buses). Any reduction in coverage has an equivalent reduction in costs. Removing bus operators identified during the stakeholder consultation process that already have safety glass/ anti-shatter film fitted on their fleet reduces costs by \$4.2 million.

Image 3 Anti-shatter film costs



⁵⁶ Costings and analysis conducted by Deloitte

Image 3: Note: costs are nominal, undiscounted and include a 15% contingency

Under the high risk package (refer to **Section 4.6**), the majority of the cost is incurred during the first two year implementation phase, as shown in Image 4, with the cost over the remaining years accounting for new replacement buses.

Image 4 Anti-shatter film costs over time (100% coverage)

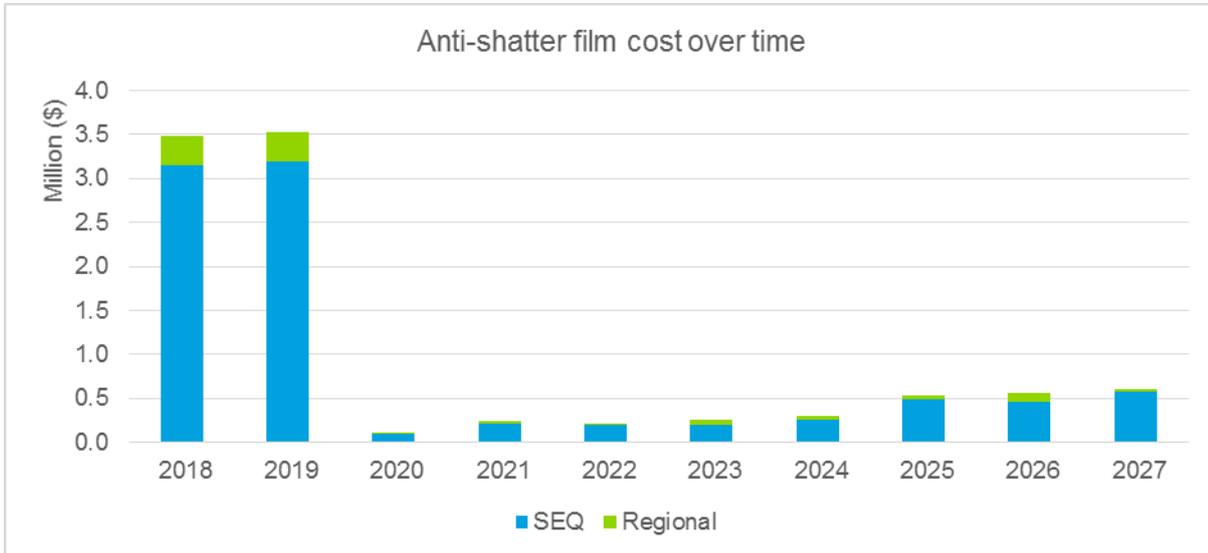


Image 4: Note: costs are nominal, undiscounted and include a 15% contingency.

Tables showing the cost by operator for the different coverage assumptions are provided in **Appendix I**.

4.4.3 Closed-circuit television (CCTV)

 Proactive & Reactive	 State-wide	Fare Dispute Alcohol & Drugs Attitude Student attitude
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4.4.3.1 Description

It is recommended that buses operating at medium and high risk levels (refer **Section 4.6 & Appendix G**) have closed-circuit television (CCTV) installed once the risk is confirmed and the “reasonableness” of the initiative relative to risk has been determined, including at least six cameras per bus with local video storage and ability to download wirelessly at depots.

A large number of buses in SEQ already have CCTV installed although this is not consistent outside of SEQ. Where CCTV is installed there are differences between operators in respect to number of cameras per bus and technical advancement, such as quality, downloading and storage of footage. Refer to **Appendix A** for detailed discussions.

4.4.3.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement CCTV:

Low		This initiative is not recommended as a minimum requirement for low risk levels.
Medium		At a minimum, all buses traveling on high risk routes must have CCTV within five years.
High		At a minimum, all buses traveling on high risk routes must have CCTV within three years.

4.4.3.3 Cost⁵⁷

CCTV is modelled on the assumption that these will be implemented on 100% of QLD urban bus fleet that does not already have CCTV⁵⁸ under the high and medium risk packages (refer **Section 4.6**), but not on any buses in the low risk package. The installation costs are assumed to be \$7,500 per bus and \$15,000 per depot⁵⁹, with ongoing maintenance and operating costs equal to 5% of capital costs per annum.

Image 5 shows that the estimated total cost of providing new CCTVs on the QLD urban bus fleet that does not already have CCTV installed is \$25.6 million over the evaluation period (\$21.1 million for SEQ and \$4.4 million for regional QLD).

Any reduction in fleet coverage results in a relatively larger reduction in costs, due to the fact that over 50% of SEQ fleet are already CCTV equipped. For example if only 10% of buses that do not already have CCTV installed are fitted with CCTV, then the cost reduces to only \$1.3 million.

Image 5 CCTV costs

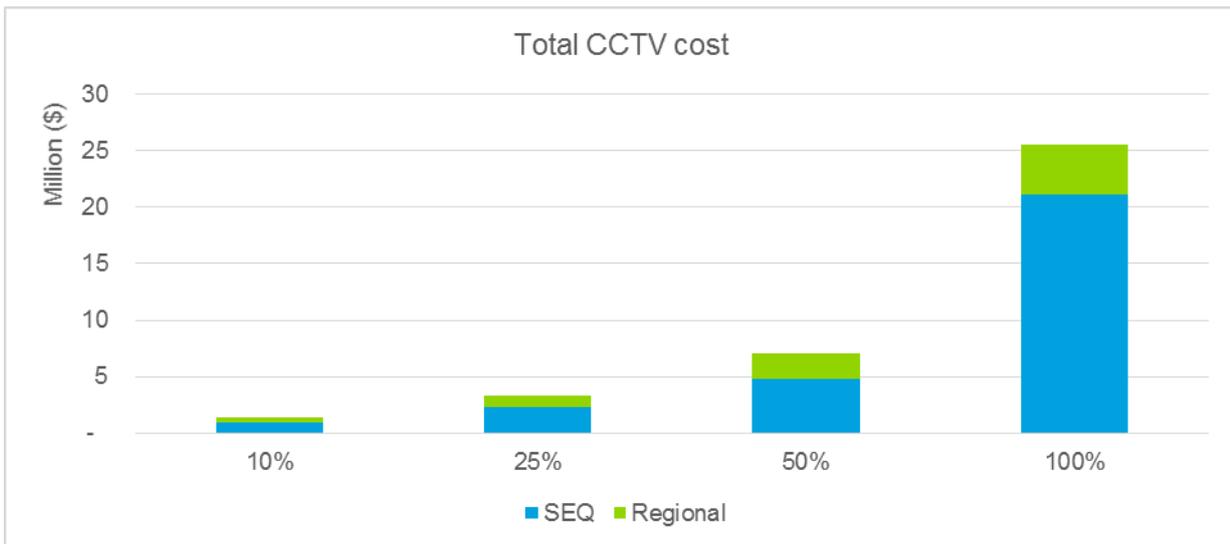


Image 5: Note: costs are nominal, undiscounted and include a 15% contingency.

Under the high risk package, the majority of the cost occurs during the first three year implementation phase (the implementation period is extended to 5 years under the medium risk package), as shown in Image 6, with the cost over the remaining years accounting for new replacement buses and ongoing maintenance/operating costs.

⁵⁷ Costings and analysis conducted by Deloitte

⁵⁸ Data provided by TMR included the number of vehicles already fitted with CCTV within the SEQ Translink network.

⁵⁹ There were no additional depot related installation costs for SEQ operators, as all operators already had CCTV systems in place.

Image 6 CCTV costs over time (High Risk Package)

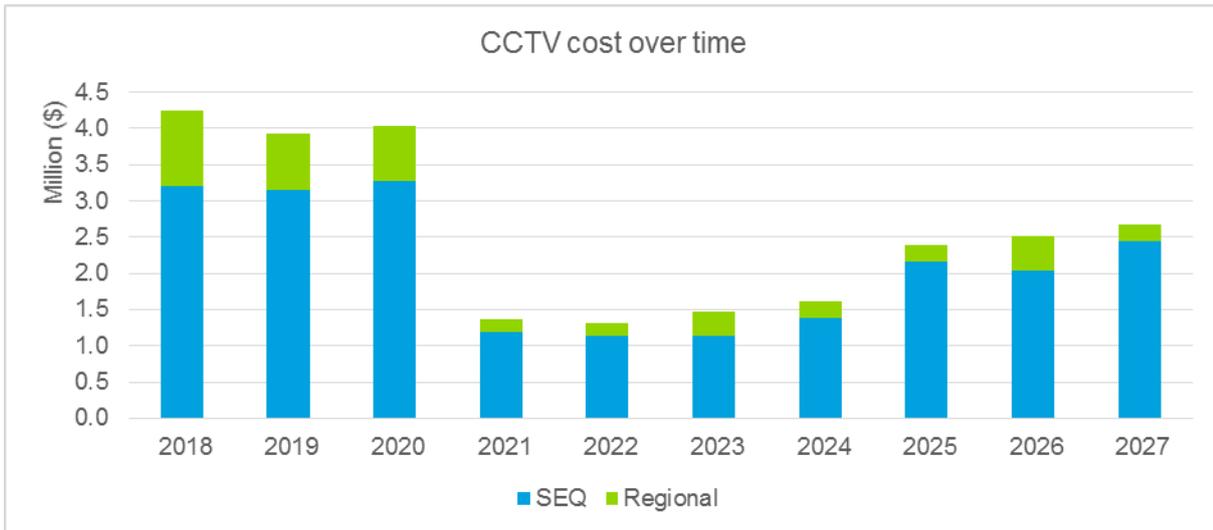


Image 6: Note: costs are nominal, undiscounted and include a 15% contingency.

Tables showing the cost by operator for the different risk levels and coverage assumptions are provided in **Appendix I**.

4.4.4 Duress and radio

 Reactive	 State-wide	 N/A (reactive control)
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4.4.4.1 Description

It is recommended that all (100%) of buses are fitted with radio and duress capability, and that operational centres are established and maintained by operators. Refer to **Appendix A** for detailed discussions

There are three aspects to this initiative:

Radio

- A digital two-way radio is recommended. This system will allow clear communication between both parties, whereas one-way radios allow bus drivers to contact an operational centre without the ability to hear any response from the receiver. Furthermore, analogue radios are not as clear as digital radios and may impact the communication between the driver and control centre.

Duress

- It is recommended that both covert (e.g. foot or knee activated) and overt (e.g. radio buttons) duress options are installed. Duress capability allows bus drivers to notify the operational centre of an issue to allow for a rapid response.

Operational centre

- Each operator requires a base or operational centre at an adequate level of sophistication to meet operational demands and comply with the technology installed on buses. Drivers must have the ability to contact someone at all times whilst operating a bus, and radios and duress must be actively monitored.

Whilst radio and duress technology can be implemented separately, research indicates that a combined system is most effective as this allows communication to be established between the bus driver and operational centre after the duress alert is raised.

Radios and duress alarms are currently implemented to varying degrees across QLD operators with SEQ having the highest number implemented. Some bus drivers must rely on radios requiring them to

manually call for help, which is not always possible or appropriate in an emergency situation as the announcement can be heard by all passengers on the bus. Other operators have digital radios and sophisticated duress systems, while some have no radios or duress at all. The results of the Deloitte Bus Driver Safety Survey supported the recommendation to improve the current systems.

4.4.4.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement duress and radio:

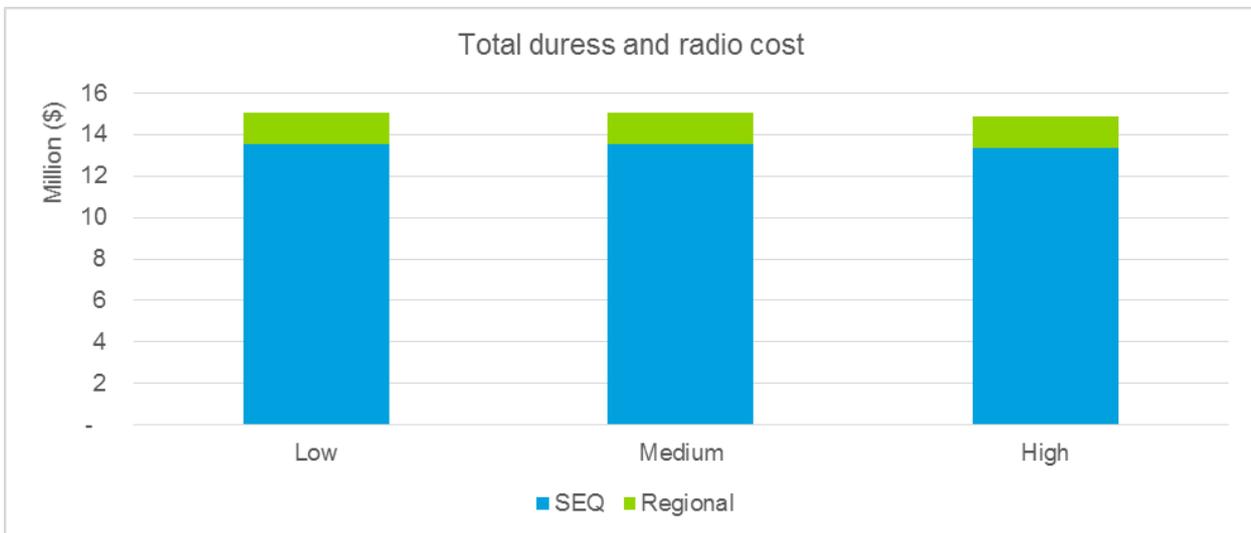
Low	✓	At a minimum, duress and radio must be available on all buses within two years.
Medium	✓	At a minimum, duress and radio must be available on all buses within two years.
High	✓	At a minimum, duress and radio must be available on all buses within a year.

4.4.4.3 Cost⁶⁰

Duress alarms and radios are modelled on the assumption that they will be installed on 100% of QLD urban bus fleet (refer to **Appendix I**) for each of the risk levels (refer **Section 4.6**). The cost estimate range for installation on a per bus basis ranges from \$2,000 (based on non-stakeholder sourced data) to \$16,000 based on a system previously used by an industry source). Further industry information indicated that the installation price per bus for a bus duress alarm and a two-way radio could be between \$2,500 and \$3,500. The charts shown below are based on a cost estimate of \$3,500 per bus, with sensitivity analysis provided in **Appendix I** showing total costs at the operator level for installation costs of \$2,000, \$5,000, \$10,000 and \$16,000.

Image 7 shows that the estimated total cost of providing new two-way radios and duress alarms on the entire QLD urban bus fleet is \$14.9 million over the evaluation period (\$13.4 million for SEQ and \$1.5 million for Regional QLD). The cost will be reduced by \$8.9 million if operators with existing two-way radios and/or duress alarms in their buses are excluded from the cost modelling.

Image 7 Duress and radio costs



⁶⁰ Costings and analysis conducted by Deloitte

Image 7: Note: costs are nominal, undiscounted and include a 15% contingency. The low and medium risk package costs are marginally greater than the high risk package due to the inflation impact on a two year rather than single year implementation period.

The majority of the cost occurs during the first year implementation phase (under the high risk package), as shown in two, with the cost over the remaining years accounting for new replacement buses.

Image 8 Duress and radio costs over time (High Risk Package)

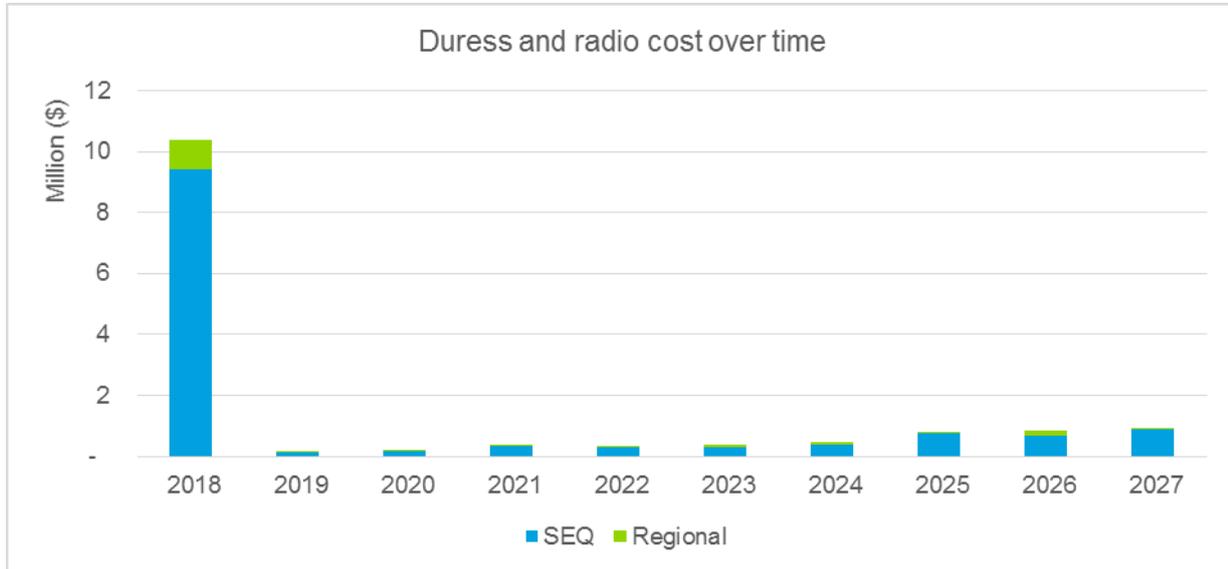


Image 8: Note: costs are nominal, undiscounted and include a 15% contingency.

Tables showing the cost by operator for the different cost assumptions described above are provided in **Appendix I**.

4.4.5 De-escalation training



4.4.5.1 Description

Drivers must be adequately skilled in interacting with passengers and the general public and where possible, de-escalating negative situations before they may become violent. It is recommended all drivers are competent in de-escalation techniques through regular training as a minimum requirement. The training should cover key topics such as:

- Effective verbal and physical communication skills;
- Identifying high risk situations;
- Preventing and avoiding conflict; and,
- Techniques to de-escalate potentially violent situations.

Refer to **Appendix A** for detailed discussions

4.4.5.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement de-escalation training once the risk is confirmed and the “reasonableness” of the initiative relative to risk has been determined:

Low	✓	At a minimum, all drivers must complete a full day of de-escalation training during induction and a half a day of de-escalation training every second year.
Medium	✓	At a minimum, all drivers must complete a full day of de-escalation training during induction, and half a day of de-escalation training every year thereafter.
High	✓	At a minimum, all drivers must complete a full day of de-escalation training during induction, and a full day of de-escalation training every year thereafter.

4.4.5.3 Cost⁶¹

De-escalation training costs were based on a training cost per driver. Costs per driver are calculated based on information received during the stakeholder consultation process. All current drivers are assumed to have completed their initial training within two years under the high and medium risk packages, and over three years in the low risk package (refer **Section 4.6**). A driver turnover of 5% was also included into the analysis to allow for initial training of new drivers over the evaluation period.

Image 8 shows that the estimated total cost of providing de-escalation training to all QLD urban bus drivers is \$24.0 million (SEQ: \$22.5 million and regional: \$1.5 million) under the high risk package. This drops to \$17.7 million under the medium package and \$9.0 million under the low package.

Image 9 Training cost

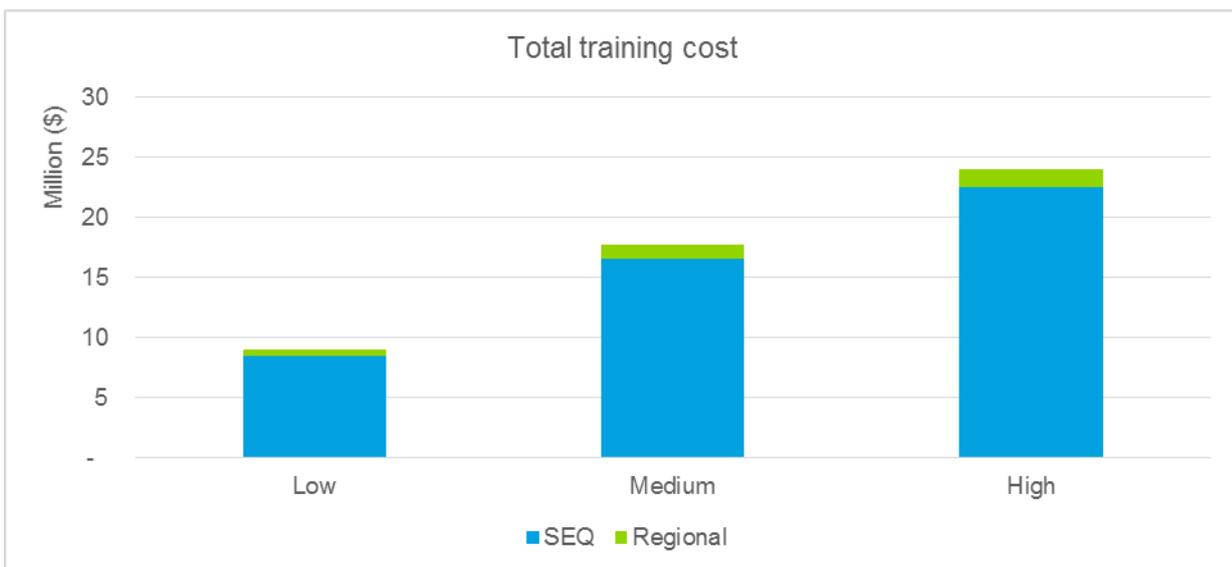


Image 9: Note: costs are nominal, undiscounted and include a 15% contingency.

In order to be effective, driver de-escalation training is an ongoing event and as shown in Image 10, costs are spread out over the entire evaluation period, with the lower first year to account for the two year implementation period.

⁶¹ Costings and analysis conducted by Deloitte

Image 10 Training cost over time (High Risk Package)



Image 10: Note: costs are nominal, undiscounted and include a 15% contingency.

Once the modelling was completed, further industry sources were made available that suggest training costs per driver could be approximately 25% of the cost estimates provided by other sources. However it is not clear whether other training is focussed on de-escalation specifically, but it does indicate there may be some price variability in the market for training courses, and the ability to negotiate for bulk-ordered courses.

From the stakeholder consultation, it is also understood that training is already in place for some operators. If these operators are excluded from the cost modelling, the total cost for the high risk package is reduced by \$13.2 million. Tables showing the cost by operator for the different risk levels are provided in **Appendix I**.

4.4.6 Customer service cards

 Proactive	 State-wide	 Fare Disputes Delays
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4.4.6.1 Description

It is recommended customer service cards are made available to all bus drivers to issue to customers in the event of fare disputes once the risk is confirmed and the “reasonableness” of the initiative relative to risk has been determined. The driver can utilise the card as one of their methods to defuse interactions around fares facilitating transfer of the issue from the driver to other responsible parties. Further, bus drivers should be trained to distribute the cards to passengers to quickly defuse common issues with minimal interaction.

The way in which the cards are distributed is highly important and therefore drivers should be provided examples of effective wording and communication techniques, such as explaining that the complaints process outlined on the card is the most effective way to resolve the issue at hand.

The cards should include contact information for DTMR and the operator, and make reference to issues frequently experienced by passengers that can lead to violence, such as delays, scheduling and fare disputes. An example is provided below.

Refer to **Appendix A** for detailed discussions.

Image 11 Example customer service card



4.4.6.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement customer service cards:

Low		This initiative is not recommended as a minimum requirement for low risk levels.
Medium		At a minimum, within two years operators must make customer service cards available and train bus drivers in their use.
High		At a minimum, within a year operators must make customer service cards available and train bus drivers in their use.

4.4.7 Incident procedures

Reactive	State-wide	N/A (reactive control)
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4.4.7.1 Description

Bus operators should direct efforts to improving reporting of violence by bus drivers, decrease efforts involved in reporting incidents and improving management actions post incidents. Refer to **Appendix A** for detailed discussions.

Bus operators should have relevant, practical and well-communicated incident procedures to support drivers in the case of an incident occurring. This is integral to ensuring that drivers’ exposure to violence is minimised through a timely response. It is recommended that:

- Bus operators encourage drivers to report incidents;
- Bus drivers clearly understand reporting expectations and procedures, including who will action incidents; and,
- There is an appropriate response and follow up by management in a timely manner.

4.4.7.2 Implementation by risk level

The table below shows the minimum implementation required for each risk level to implement incident procedures:

Low		At a minimum, effective incident procedures must be in place as soon as possible but within 18 months.
Medium		At a minimum, effective incident procedures must be in place as soon as possible but within 12 months.
High		At a minimum, effective incident procedures must be in place as soon as possible but within 12 months.

4.4.8 Recruitment

 Proactive	 State-wide	 Attitude
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4.4.8.1 Description

As noted above, it is the intention that all drivers will be trained and competent in de-escalation techniques. In addition, it is recommended that operators review their recruitment strategy and selection criteria to actively seek drivers with the appropriate soft skills required for high levels of interaction with the public. This may result in preferring candidates with the right personal traits and character, as opposed to those with the right licences. Refer to **Appendix A** for detailed discussions.

4.4.8.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement recruitment policies:

Low		At a minimum, effective recruitment policies must be in place within five years.
Medium		At a minimum, effective recruitment policies must be in place within three years.
High		At a minimum, effective recruitment policies must be in place within two years.

4.5 DTMR: potential initiatives

An additional 12 potential initiatives are recommended for consideration by DTMR due to its position to influence, coordinate and oversee the potential initiatives in Diagram 1.

It is unlikely the potential initiatives in Diagram 2 could be implemented by bus operators alone, either because they do not have authority to do so, or because a consistent state-wide approach is required to implement the initiative.

Prior to considering implementation, 3 of the costed initiatives (senior network officers, police, and public awareness campaign) require further piloting or analysis to determine the reasonableness⁶² of the initiatives in relation to risk.

Diagram 2: Potential initiatives recommended for DTMR

Contract terms	Senior Network* Officers	Police*	Public awareness campaign*
School strategies	Fare collection policy	Code of conduct - students	Code of conduct - passengers
High risk passenger management	Scheduling	Data collection	Cashless ticketing and fare system

* Note: Senior Network Officers, Police and Public Awareness Campaigns are included in the packages of initiatives set out in **Section 4.6**. Senior Network Officers and Police are allocated into the medium and high risk packages. Public Awareness are allocated into the low, medium and high risk packages.

The following sections provide further details about these recommended potential initiatives for DTMR.

⁶² Reasonableness of the initiative may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact.

4.5.1 Contract terms

 Proactive & Reactive	 State-wide	 <ul style="list-style-type: none"> Alcohol / drugs Fare Disputes Attitude Delays Student attitude
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4.5.1.1 Description

At the time of this review, the service contracts between DTMR and individual bus operators in SEQ were in the process of being renewed. The service contracts set out requirements, standards, terms and conditions for bus services between the State of QLD acting through DTMR and the bus operator. Refer to **Appendix A** for items set out in the contract relating to safety.

It is suggested that contract terms as opposed to legislation and standards are enhanced to include more specific requirements for bus driver safety. This will ensure that other buses (such as tourist or personal buses, for example) are not required to implement initiatives that may not be necessary in other situations.

It is recommended that DTMR consider additional requirements in the service contracts of bus operators in QLD inclusive of, but not limited to, measures to improve bus driver safety in relation to violence risks:

- reporting a consistent comprehensive set of incident data on violent incidents to DTMR;
- describing the process of operator violence risk assessments referred to in **Sections 4.4 and 5**; and the,
- implementation of risk assessment outcomes and the potential initiatives identified within this report.

4.5.2. Senior Network Officers

 Proactive	 State-wide	 <ul style="list-style-type: none"> Fare disputes Alcohol / drugs Attitude Student attitude
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4.5.2.1 Description

It is recommended that an increased presence of Senior Network Officers (SNOs) is deployed across the bus network in QLD where it is warranted based on risk and the “reasonableness” of the initiative relative to risk has been determined. It is noted they currently only operate in SEQ. Their deployment should follow a risk-based approach, informed by operator and driver insights, fare evasion data, and police information. A separate study should be conducted to design the optimal operating model of SNOs, including how they will work with Police, operators and other government agencies, both within and outside of DTMR. Refer to **Appendix A** for detailed discussions.

4.5.2.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement SNOs:

Low		This initiative is not recommended as a minimum requirement for low risk levels.
Medium		At a minimum, within two years 70 additional SNOS are deployed for medium risk levels.
High		At a minimum, within two years 70 additional SNOS are deployed for high risk levels.

4.5.2.3 Cost⁶³

Additional SNOs are costed on a salary per officer basis, plus initial induction costs and with 10% annual turnover built in.

The cost estimate under the high and medium risk packages (refer **Section 4.6**) assumes the current officer presence levels on QLD public transport doubles (SNOs increase by 70), while the low risk package assumes no additional presence. Sensitivity analysis was also performed assuming a 50% and 25%⁶⁴ increase. Costs for increased presence are not divided into SEQ and regional as they are not region specific.

Image 12 shows that the estimated total cost of doubling the current number of SNOs on QLD urban public transport is \$75.8 million over the evaluation period. A 50% increase will cost \$37.9 million for SNOs, while a 25% increase will cost \$16.2 million.

Image 12 Increased presence costs

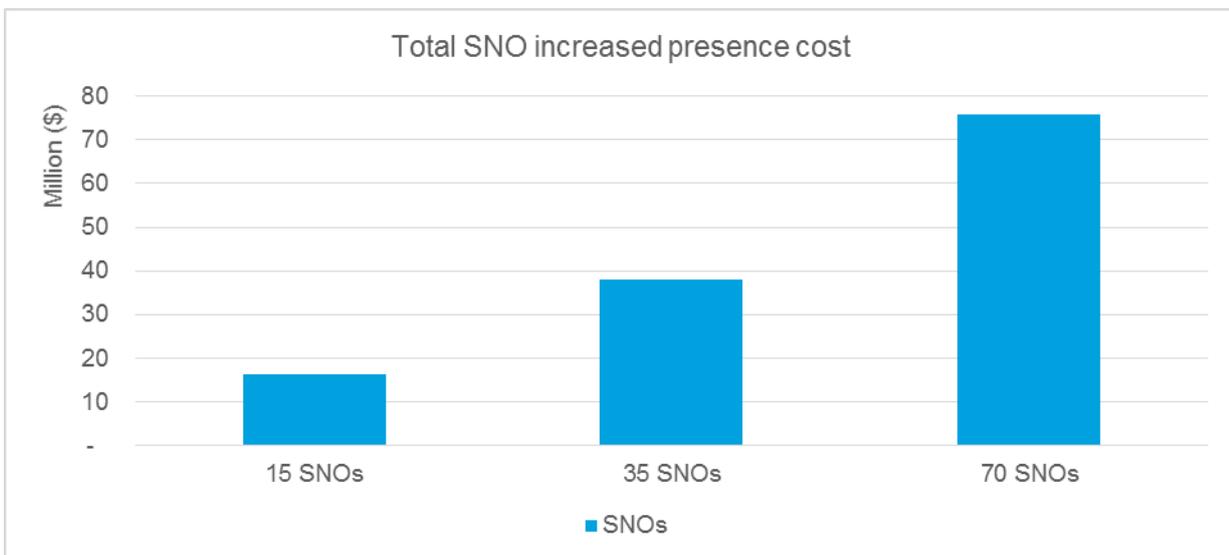


Image 12: Note: costs are nominal, undiscounted and include a 15% contingency.

Image 13 shows the cost over time for additional SNOs. The 2018 values are lower than the other years, allowing for an initial two year recruitment and training period. Costs remain steady after that, increasing only due to inflation.

⁶³ Costings and analysis conducted by Deloitte

⁶⁴ The 25% increase for SNOs was rounded down from 17.5 to 15 additional officers

Image 13 Increased SNO presence costs over time (High Risk Package)

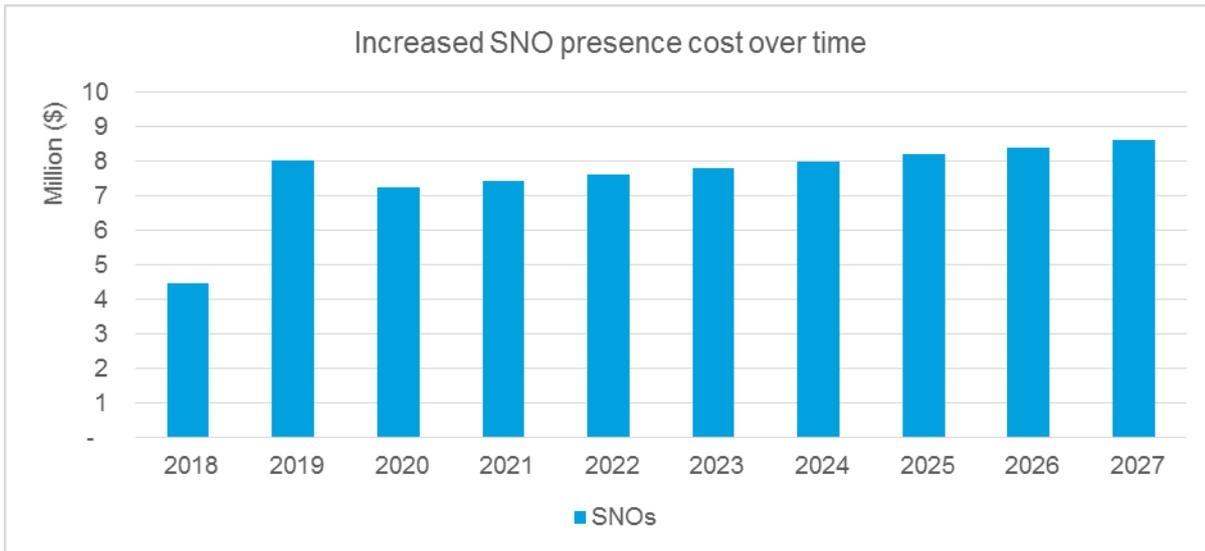


Image 13: Note: costs are nominal, undiscounted and include a 15% contingency.

Tables showing the cost by personnel type for the different risk levels are provided in **Appendix I**.

4.5.3 Police

 <p>Proactive & Reactive</p>	 <p>State-wide</p>	 <ul style="list-style-type: none"> Fare disputes Alcohol / drugs Attitude Student attitude
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4.5.3.1 Description

It is recommended that DTMR works with the Queensland Police Service (QPS) to continue to develop an effective police partnering relationship that deploys police across the bus network where it is warranted based on risk and the “reasonableness” of the initiative relative to risk has been determined.

A further piece of work is required to ascertain the best model for establishing this relationship. For example, the Rail Squad could be extended or mirrored to provide a dedicated squad for the bus network. Alternatively, another partnering relationship may be formed. Refer to **Appendix A** for detailed discussions.

4.5.3.2 Implementation by risk level

The below table shows the minimum implementation required for each risk level to implement police officers:

Low	✘	This initiative is not recommended as a minimum requirement for low risk levels.
Medium	✔	At a minimum, within two years 80 additional police officers are deployed for medium risk levels.
High	✔	At a minimum, within two years 80 additional police officers are deployed for high risk levels.

4.5.3.3 Cost⁶⁵

Additional police are costed on a salary per officer basis only, with no initial induction costs or annual turnover built in.

The cost estimate under the high and medium risk packages assumes the current police officer presence levels on QLD public transport doubles (police officers increase by 80), while the low risk package assumes no additional presence. Sensitivity analysis was also performed assuming a 50% and 25% increase. Costs for increased presence are not divided into SEQ and regional as they are not region specific.

Image 14 shows that the estimated total cost of doubling the current number of police on QLD urban public transport is \$92.2 million over the evaluation period. A 50% increase will cost \$46.1 million, while a 25% increase will cost \$23.0 million.

Image 14 Increased police presence costs

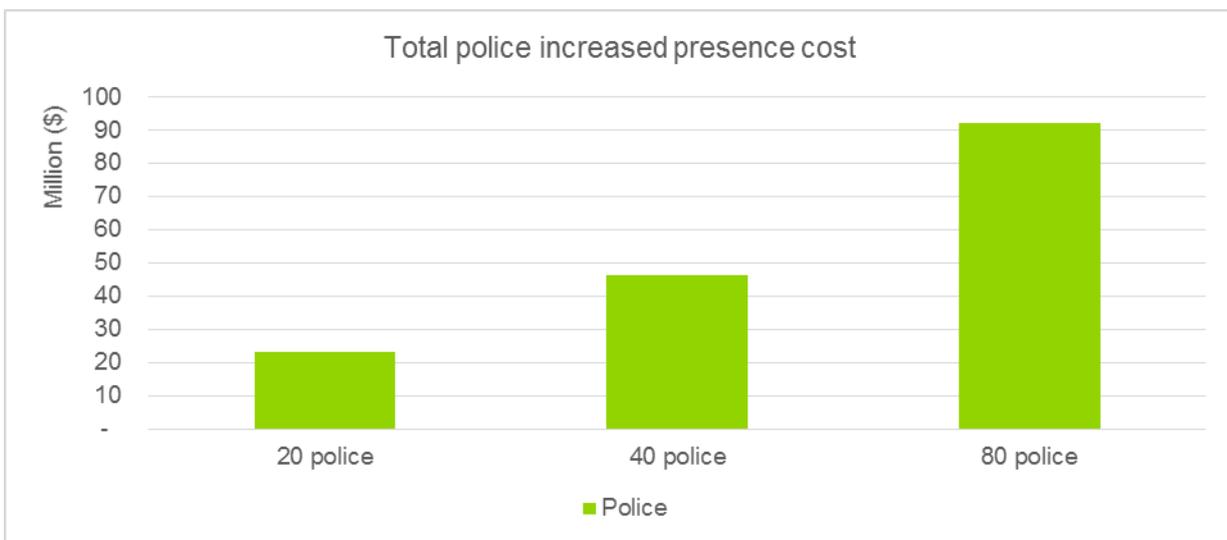
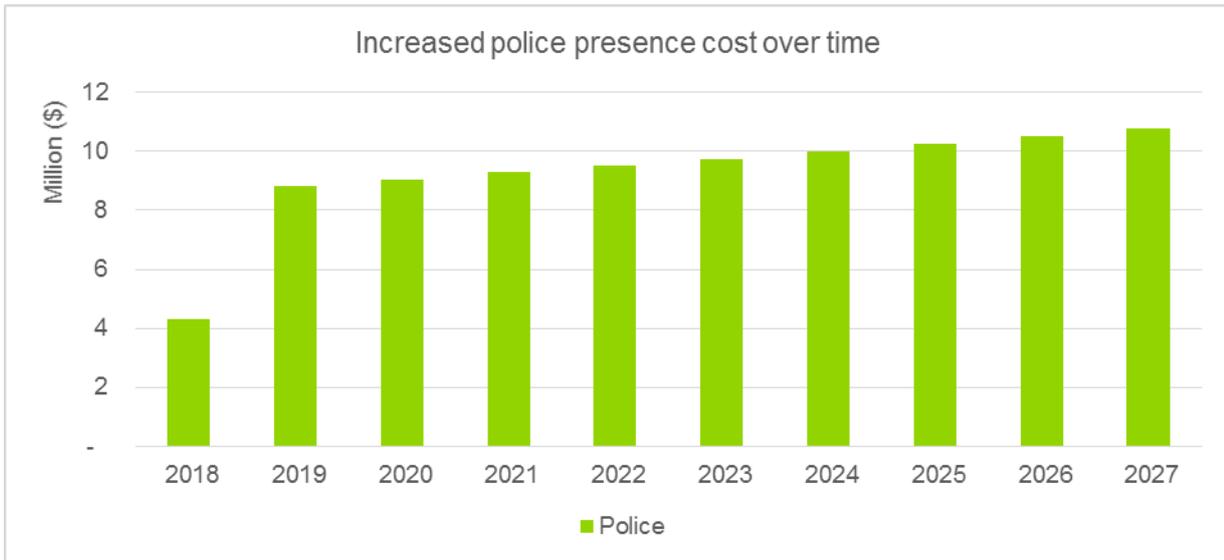


Image 15 shows the cost over time for additional police. The 2018 values are lower than the other years, allowing for an initial two year implementation period. Costs remain steady after that, increasing only due to inflation.

⁶⁵ Costings and analysis conducted by Deloitte

Image 15 Increased police presence costs over time (High Risk Package)



4.5.4 Public awareness campaign

 Proactive	 State-wide	 Attitude Fare disputes Student Attitude
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4.5.4.1 Description

It is recommended that DTMR develop and run a media campaign to raise general awareness of acceptable (and unacceptable) behaviour whilst traveling on public transport. The objective of the campaign is to increase respect for bus drivers (as well as other public transport operators) and the service bus drivers deliver for the public, to set standards of acceptable behaviour, and to highlight the consequences of not complying with expectations. The campaign should be aligned with the revision of the Code of Conduct for School Children Travelling on Buses (refer to 4.5.7) and the development of the Passenger Code of Conduct (see 4.5.8). Refer to **Appendix A** for detailed discussions.

DTMR may be wholly responsible for developing the campaign, or in partnership with QLD Bus Industry Council and bus operators or outsourced to an external agency. In developing the campaign, it may be found that certain channels are better suited than others, however aspects of the campaign may include:

- TV / screen advertising
- Out-of-home (OOH) advertising, such as billboards
- Digital display advertising
- Third party marketing / partnerships
- Social media (e.g. Snapchat, Facebook, Instagram).

4.5.4.2 Implementation by risk level

The below table shows the minimum implementation required to implement a public awareness campaign for each risk level:

Low		At a minimum, social media campaign implemented within one year.
Medium		At a minimum, social media campaign implemented within one year.
High		At a minimum, internal signs implemented on all buses and social media campaign within one year.

4.5.4.3 Cost⁶⁶

Advertising costs vary depending on the medium, scope, target audience and length of campaign.

For this project we have assumed a State-wide 4-6 month campaign that would be front weighted to ensure maximum budget impact. The following channels (and associated high-level cost estimates) have been used:

Channel	High-level cost estimate
Creative agency and production costs	\$80,000 to \$170,000
TV/Screen (First 4-6 weeks of the campaign)	\$1,000,000
Out of home (e.g. billboards, buses, street furniture) (First 8 weeks of the campaign)	\$150,000 to \$200,000
PR Agency	\$30,000
Digital display advertising – (for duration of the campaign)	\$20,000
Third party marketing / partnerships	\$30,000
Social media	\$10,000
Total (before contingency)	\$1,300,000

A nominal \$100 cost per bus for signage was also included. Stakeholder feedback indicated that signs could be placed in buses at little to no cost for some operators.

Under all risk packages, the advertising/social media campaign is recommended to occur within the first year of the implementation phase. The high risk package also includes internal signage on each bus within the first year.

Image 16 shows that the estimated total cost of an advertising campaign under the high risk package (social media and bus signage) is approximately \$1.8 million. This reduces to \$1.5 million for medium and low risk, as it excludes the signage costs.

⁶⁶ Costings and analysis conducted by Deloitte

Image 16 Advertising costs

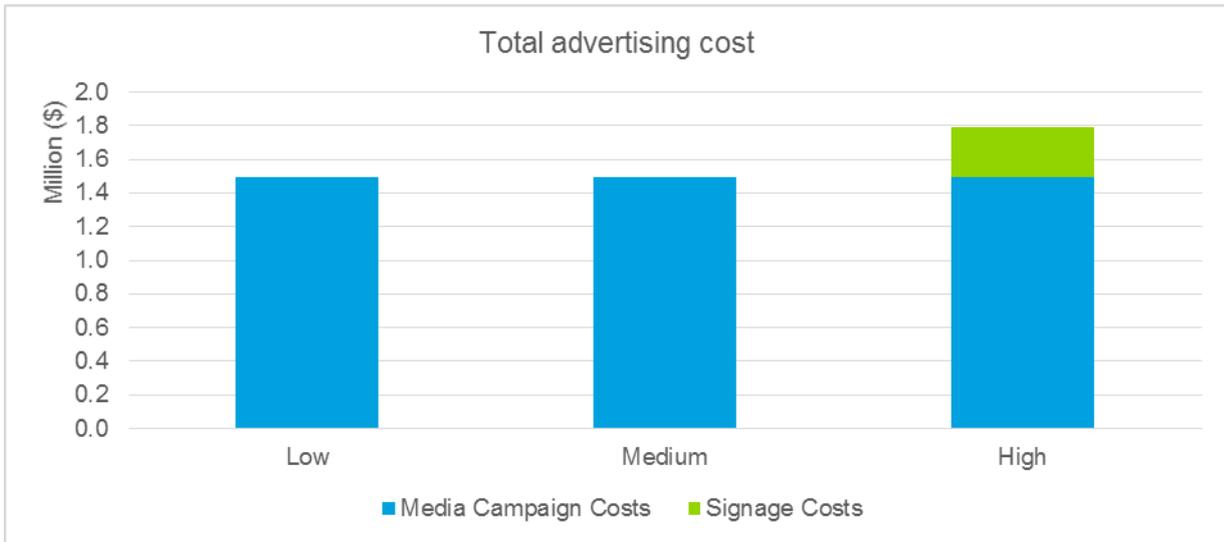
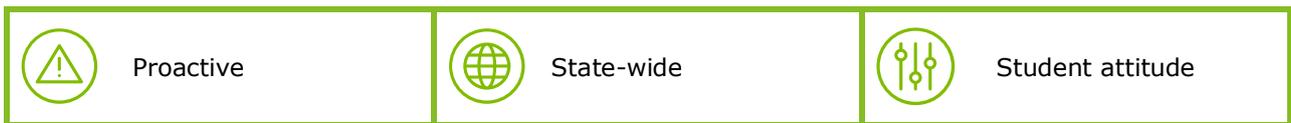


Image 16: Note: Costs are nominal, undiscounted and include a 15% contingency. Costs have not been assigned to SEQ or Regional areas.

Tables showing the cost by operator for the different risk levels are provided in **Appendix I**.

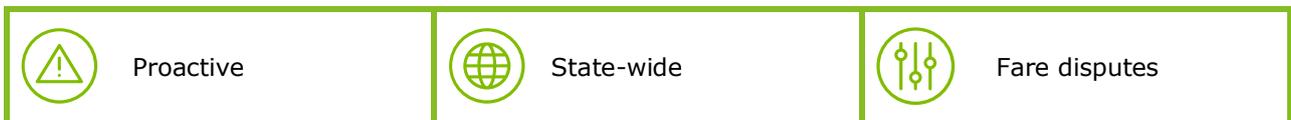
4.5.5 School strategies



4.5.5.1 Description

It is recommended that the current educational resources for schools regarding bus protocol and acceptable behaviours is reviewed and updated, where necessary. DTMR should confirm the current process in place to review school strategies. Programs, such as the safe travel programs implemented in 2014-15, should be revisited on a regular basis to ensure that a constant and consistent message is communicated to students. The review and implementation of school strategies require a multi-agency approach. Refer to **Appendix A** for detailed discussions.

4.5.6 Fare collection policy



4.5.6.1 Description

It is recommended that DTMR reviews its position on fare collection considering the role its current fare policy (refer Appendix A) potentially plays in triggering violence and effectively communicates this to all bus operators and drivers to achieve both objectives, collection of fares and safety of bus drivers. Based on evidence in this review fare conflict has been identified to be a key trigger for violence therefore the fare policy and its application is important in relation to addressing this key trigger.

Whilst it is clear that DTMR expects all passengers to travel with a valid fare, the policy should address the sometimes conflicting priorities of fare collection and potential for conflict. Refer to **Appendix A** for detailed discussions.

4.5.7 Code of conduct - students

 Proactive	 State-wide	 Student attitude
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4.5.7.1 Description

It is recommended DTMR review, revise and recommunicate the existing DTMR Code of Conduct for School Children Travelling on Buses dated 2014. The review should be conducted in a consultative manner, and with reference to the fact that student attitude was the fifth highest rated initiating or contributing trigger leading to violence towards bus drivers in the Deloitte Bus Driver Safety Survey. The reviewing of the Code of Conduct should also address the process for Code of Conduct reviews, current concerns, such as support in implementing the Code of Conduct, the issue of supervision, and consequences for non-compliance. Refer to **Appendix A** for detailed discussions.

4.5.8 Code of conduct - passengers

 Proactive	 State-wide	 Alcohol / drugs Fare Disputes Attitude
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4.5.8.1 Description

Expectations of passengers should be set in a code of conduct to clearly communicate and clarify for all parties involved. It is common practice to set expectations in this way and, similar to the Code of Conduct for School Children Travelling on Buses, it is recommended that a code of conduct for passengers is developed. Existing DTMR terms and conditions for passenger travel can be referred to where applicable when formulating a passenger code of conduct.

The process for developing the code of conduct should be consultative, including operators, drivers, passengers, SNOs, Police and other interested parties. This should also be in conjunction with other public transport services, including rail, ferry and tram. Refer to **Appendix A** for detailed discussions.

The code of conduct could be launched and aligned with the public awareness campaign (refer to 4.5.4) to achieve efficiency in communicating with passengers and the general public.

4.5.9 High risk passenger management

 Proactive	 State-wide	 Fare Disputes Alcohol & Drugs Attitude Student Attitude
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4.5.9.1 Description

It is recommended that DTMR develops, deploys and manages a formal process whereby high risk passengers are systematically identified and appropriately managed.

High risk passengers are usually aggressive/violent individuals and/or habitual non-payers, and/or display anti-social behaviour increasing the risk for drivers and are often known to drivers. A process whereby this information can be escalated to SNOs or Police and appropriate responses implemented will contribute towards reducing risks for drivers (and passengers). Consequences for continued high risk behaviour, such as refusal of service to passengers who consistently present a risk of violence to drivers and other passengers must be considered in the strategy. Refer to **Appendix A** for detailed discussions.

The high risk passenger management process should consider high risk behaviours, how to report high risk passengers, the range of responses and consequences right up to refusal of service and the procedure to implement consequences. SNOs and Police should be involved in identifying high risk passengers and in enforcing consequences.

4.5.10 Scheduling (reducing delays in bus services)

 Proactive	 State-wide	 Delays
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4.5.10.1 Description

It is recommended that the process of developing, revising and approving bus schedules is reviewed. The process should recognise that service delays which may arise due to scheduling (related to a variety of factors) are one of the key factors that contribute to violence towards bus drivers. As such, it may be appropriate to increase the frequency with which detailed reviews are conducted, and to review schedules periodically rather than on an as-required basis. The process should also include stakeholder contributions and requests, and how these can be appropriately acknowledged and incorporated into future schedules. Refer to **Appendix A** for detailed discussions.

4.5.11 Data collection

 Reactive	 State-wide	 Reactive Control
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4.5.11.1 Description

It is recommended that DTMR collect, analyse and interpret state-wide, detailed incident data on violence to allow for accurate risk-based decisions. This will also allow for allocation of resources, monitoring of the effectiveness of implemented initiatives, and assist in the verification of risk level selected by operators when conducting risk assessments. Refer to **Appendix A** for detailed discussions.

To facilitate accurate data collection and analysis, consistent definitions of violence must be developed and approved. This will ensure that operators are collecting comparable statistics. It is recommended that a consultative process be undertaken to develop and agree on the definitions to ensure data collection requirements by DTMR can be met by operators.

To assist with data collection, technologies such as a mobile reporting app could be developed for use by drivers or utilise radio technology suggested in 4.4.4 (there are operators currently using radio technology however they must consider how the process can be improved).

This would allow data to be reported in near real time by drivers, and may reduce some of the current barriers to reporting, such as lack of time and excessive paperwork requirements.

4.5.12 Cashless ticketing and fare system

 Proactive	 State-wide	 Fare disputes
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4.5.12.1 Description

It is recommended that safety considerations are taken into account when cashless ticketing and fare systems are evaluated or considered in the future. As fare disputes are identified as a key trigger for violence towards bus drivers, consideration should be given to systems that improve ticketing and fare processes as noted in **Appendix A**. There are potential safety benefits arising from a cashless ticketing and fare system. It is acknowledged that safety is one of many factors to consider when examining the implications and benefits of cashless and fare ticketing systems. Refer to **Appendix A** for detailed discussions.

4.6 Packages of initiatives⁶⁷

Three packages of initiatives were costed, one for each of the three risk levels set out in Table 5. The packages of potential initiatives are drawn from both the bus operator and DTMR recommendations in Section 4. It is recommended the risk levels guide selection of potential initiatives according to risk.

As discussed earlier there were limitations in understanding the risk profiles of bus operators relative to violence risks in the operating environment, therefore violence risk levels were developed by Deloitte for this purpose. A group of potential initiatives are allocated to a defined risk level in Table 5 creating the “packages of initiatives” guiding selection of potential initiatives most appropriate for the violence risk level of operating environments (refer to **Appendix G** for guidance on violence risk levels).

Table 5 Packages of initiatives grouped into risk levels (refer to Appendix G for risk level descriptions)

Initiative	High Risk	Medium Risk	Low Risk
Barriers	Implemented within 2 years on all buses on high risk routes	Not required	Not required
Training	Initial training: full day training provided to all drivers within 2 years Refresher training: full day training every year following the completion of initial training	Initial training: full day training provided to all drivers within 2 years Refresher training: half day training every year following the completion of initial training	Initial training: full day training provided to all drivers within 3 years Refresher training: half day training every second year following the completion of initial training
Increased SNO/police	70 additional SNOs or 80 police officers to be deployed within 2 years	70 additional SNOs or 80 police officers to be deployed within 2 years	Not required
Duress and radio	Implemented on all buses within 1 year	Implemented on all buses within 2 years	Implemented on all buses within 2 years
CCTV	Implemented on all buses within 3 years	Implemented on all buses within 5 years	Not required
Public Awareness Campaign/ Advertising	Internal signs implemented on all buses within 1 year Social media campaign implemented within 1 year	Social media campaign implemented within 1 year	Social media campaign implemented within 1 year
Anti-shatter film	Implemented on all buses within 2 years	Not required	Not required

As expected, the high risk package is the most expensive, at \$166.5 million⁶⁸ over the ten year evaluation period, compared to \$134.1 million for medium and \$25.6 million for low. Increased presence accounts for over 45% of the high risk and over 56% of the medium risk total costs, with the next biggest component being CCTV, accounting for 15% and 18% respectively.

Duress and radios is the largest cost component for the low risk package, accounting for 59% of total costs.

⁶⁷ Costings and analysis by Deloitte

⁶⁸ The High Risk package assumes 70 additional SNOs under the increased presence scenario. If 80 police were deployed instead of SNOs, then the High Risk package would cost \$182.9 million over the ten-year evaluation period, compared to \$150.5 million for Medium with no change to Low. Increased police presence would account for 50% of the total High Risk costs and 61% of the Medium costs.

Image 17 Total cost of packages – for all control initiatives according to risk levels

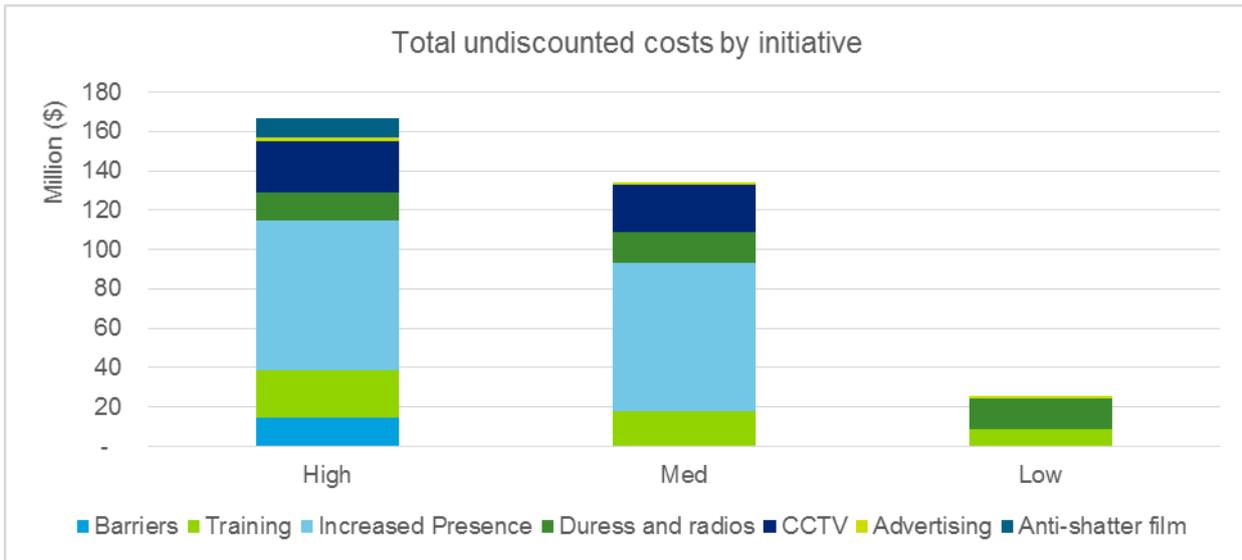


Image 17: Note: costings include base assumptions (i.e. 100% coverage, base costs). Actual costs for each package is likely to be significantly lower if operators with control initiatives already in place are excluded. For example, difference in providing CCTV to the entire QLD urban fleet reduces from \$42.5 million to \$25.6 million if those vehicles known⁶⁹ to already have CCTV installed are excluded.

Image 18 Total cost of packages – by control initiative over time (High Risk)

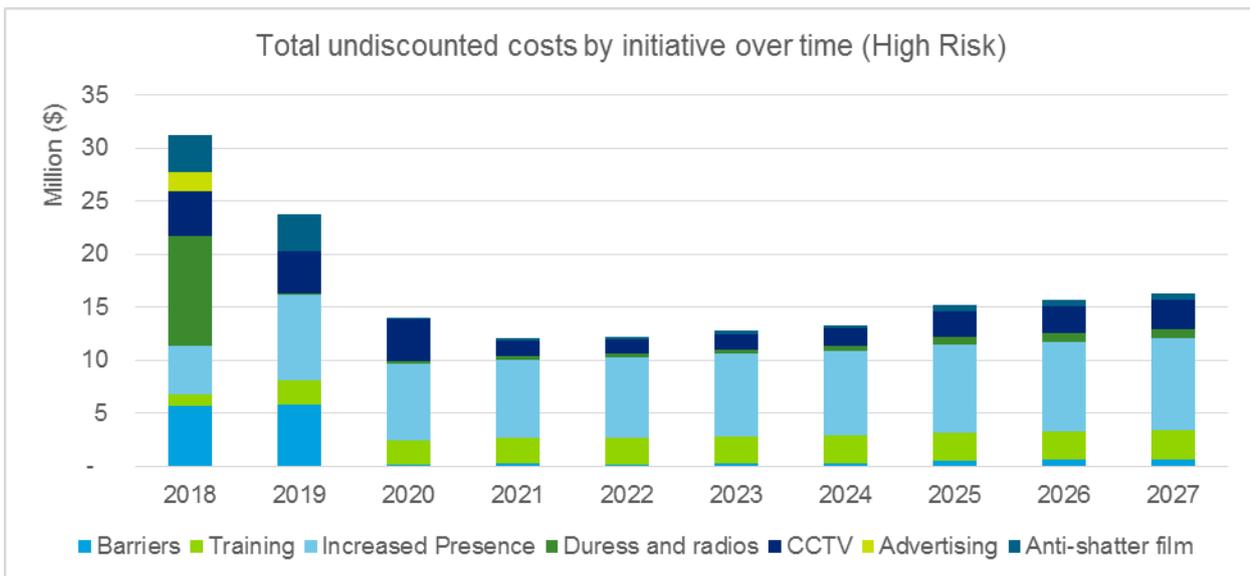


Image 18: Note: costings include base assumptions (i.e. 100% coverage, base costs). Actual costs for each package is likely to be significantly lower if operators with control initiatives already in place are excluded.

⁶⁹ The data provided included SEQ fleet only. No data was available on the number of vehicles in the Regional fleet that already have CCTV installed.

Image 19 Total cost of packages – by control initiative over time (Medium Risk)

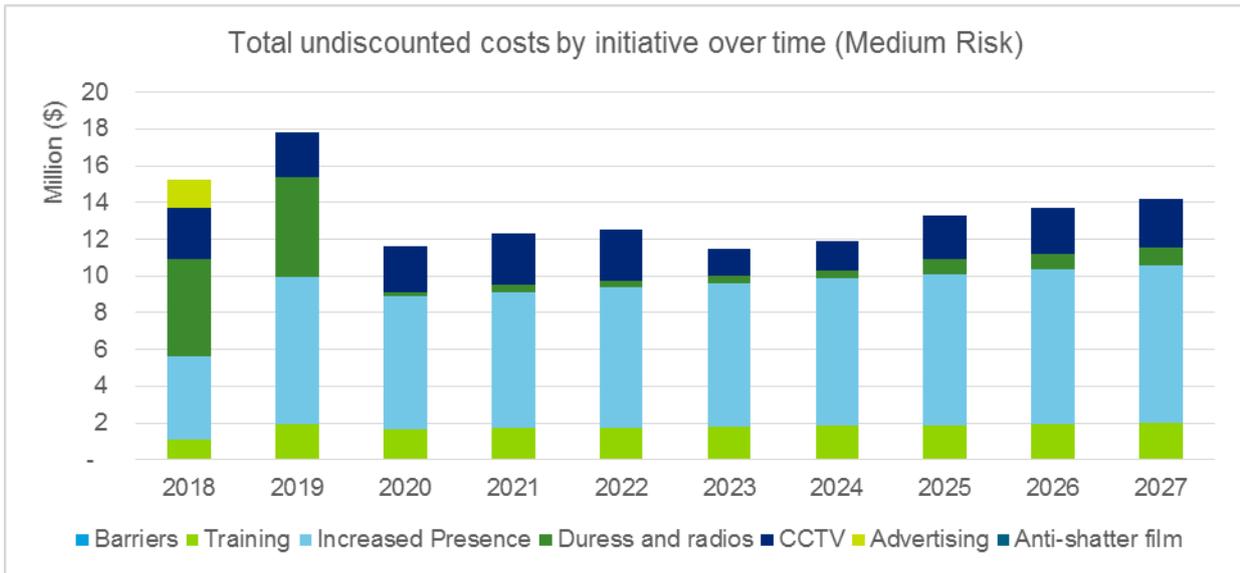


Image 19: Note: costings include base assumptions (i.e. 100% coverage, base costs). Actual costs for each package is likely to be significantly lower if operators with control initiatives already in place are excluded.

Image 20 Total cost of packages – by control initiative over time (Low Risk)

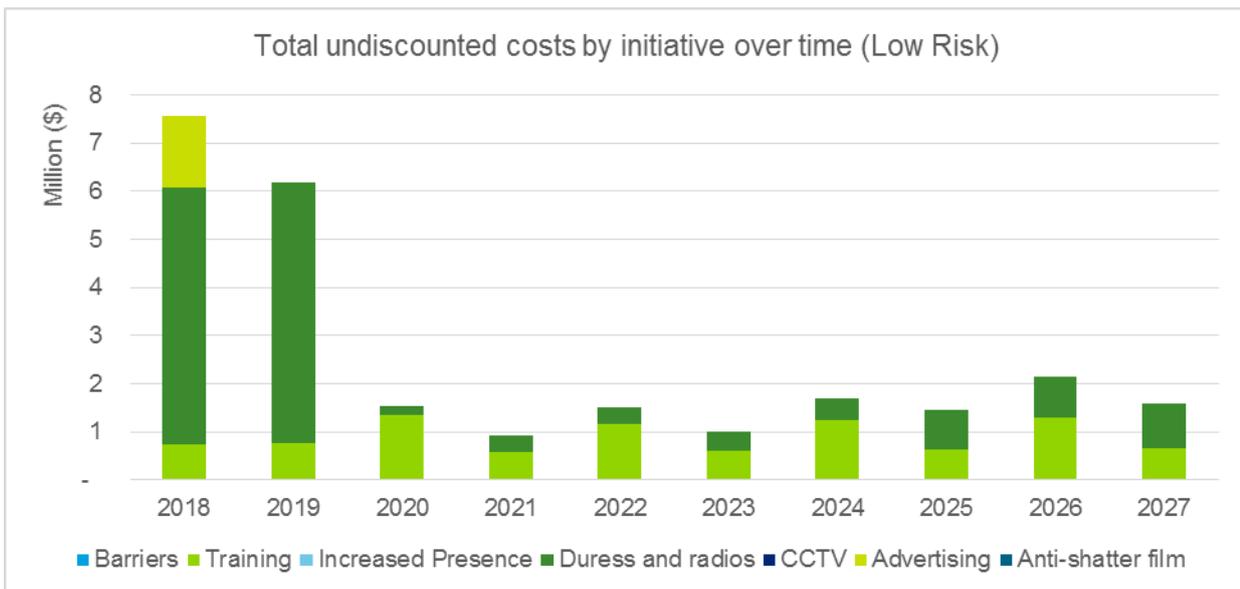


Image 20: Note: costings include base assumptions (i.e. 100% coverage, base costs). Actual costs for each package is likely to be significantly lower if operators with control initiatives already in place are excluded.

4.7 Funding models⁷⁰

As the previous section shows, depending on the level of risk and number of operators/ buses included in any initiative, implementing bus driver safety initiatives could cost in excess of \$100 million over a 10 year period. Under current contract arrangements, operators would likely seek to be reimbursed from DTMR for any additional costs associated with control initiatives prescribed by DTMR (even though some operators may have self-funded some of these initiatives in the past).

A range of potential funding options for bus driver safety initiatives have been considered for this report, with the four most reasonable options described below.

Of the four options, the first two would be considered as most suitable to allow DTMR to implement bus driver safety initiatives in the near future. The selection of a preferred option by DTMR will depend upon the priorities given to the different attributes of the two options.

Option A (operator financed and reimbursed) would be the simpler of the two to implement, as it can use existing contract mechanisms to allow reimbursement to operators and will be easier to gain industry acceptance as there is a full cost pass through. However, the administrative burden would be greater because of the need to negotiate and verify costs incurred by operators. There is also a greater element of budget uncertainty than Option B.

Option B (grant funded) would require some initial work on benchmarking costs to establish standard payment rates per unit for each form of control. This would necessitate consultation with Bus Operators, (possibly through the QLD Bus Industry Council), to ensure their buy-in with the program. Once the standard payment rates have been set, the administration task would be comparatively simple, with no need to assess quotes or verify invoices. Use of standard unit rates will help provide cost certainty for government.

4.7.1 Option A: Operator financed and reimbursed

4.7.1.1 Description

Under this option the operator funds upfront capital cost as well as the ongoing maintenance/ operating costs. Reimbursements from government of the actual costs could be amortised (including interest) and paid as an annuity (similar to fleet payments) over a set period of time.

Payment to the operators would be triggered through current contract mechanisms (non-service change events).

4.7.1.2 Pros and Cons

- ✓ No upfront cost for State;
- ✓ Administratively simple as uses existing contract mechanism to trigger payments;
- ✓ Fairly easy to obtain agreement with industry as there is no cost exposure;
- ✗ Full cost plus financing cost born by QLD Government;
- ✗ No budget certainty for Government.

4.7.1.3 Example of funding option in practice

In recent years, a bus operator in the Northern Territory installed digital radios in their fleet. Upon completion, annuity payments were set-up over the remainder of the contract period to cover the initial capital costs (plus interest). No adjustment was made to account for any operational/ maintenance costs.

4.7.2 Option B: Grant funded

4.7.2.1 Description

Funded by grant from government who pay a standard payment per unit to the operator.

⁷⁰ Funding models developed by Deloitte

4.7.2.2 Pros and Cons

- ✓ Budget certainty for QLD Government;
- ✓ Administratively less burdensome than option A, as standard payment per unit removes the need to negotiate and verify actual costs;
- ✗ All costs borne directly by QLD Government;
- ✗ Industry may contest standard costs and be concerned about any potential actual cost risk;
- ✗ State costs likely to be required upfront as a lump sum.

4.7.2.3 Example of funding option in practice

QLD Government funded the initial (trial) supply of cameras for the taxi security camera program in 2005. A taxi fare increase was then introduced to fund the program. Taxi operators are now responsible for installing and maintaining cameras themselves.

Western Australia provide a subsidy capped to 80% of the cost of taxi camera replacement costs

4.7.3 Option C: Funded through other programmes

4.7.3.1 Description

Look for other programmes that could potentially be used to 'piggy back' the driver safety initiatives.

4.7.3.2 Pros and Cons

- ✓ Potential for economies of scale if existing program exists;
- ✓ Possible for funding from outside of QLD if program is nationwide;
- ✗ Administratively more burdensome than option A, due to co-ordination with other programme provider and operators;
- ✗ Unsure whether such a programme exists that could be 'piggy backed';
- ✗ Potential for misalignment on objectives and pace of implementation.

4.7.3.3 Example of funding option in practice

Initial funding for Seatbelts on School Buses was provided through a Commonwealth programme. This funding has now been removed and both New South Wales (NSW) and Victoria (VIC) State governments fund programmes seatbelt programmes themselves.

4.7.4 Option D: Outcomes based funding

4.7.4.1 Description

Payment to operators reliant on achieving driver safety KPIs or thresholds. The operator receives success based payments. This allows and encourages operators to select solutions appropriate to their environment and leaves it to the market to implement best solutions.

4.7.4.2 Pros and Cons

- ✓ Cost risk moved away from QLD Government – payments only made if initiatives are successful (i.e. KPIs are met);
- ✓ Removes the need for the QLD Government to prescribe what controls are required – moves away from a one-size-fits-all approach;
- ✗ Selecting appropriate KPIs and levels of abatement or bonus payment will be difficult to define;
- ✗ Different operating environments may mean operator specific KPIs need to be developed;
- ✗ Harder to gain operator acceptance if there is financial risk to them;
- ✗ Will have higher admin/ policing costs;
- ✗ May have implementation issues, for example the operator fails to be proactive and does not install/implement any controls.

4.7.4.3 Example of funding option in practice

Most modern public transport service contracts, including the current next generation contract, have performance based payments. A similar payment mechanism could be created for driver safety performance.

Appendix J includes a table of the funding options for bus driver safety initiatives discussed above.

5 Next steps

Following this review, actions are recommended to implement the suggested initiatives considering “next steps” below.

Next steps



Performance stocktake

It is suggested a performance stocktake on the entire QLD urban bus fleet is undertaken to assess level of take-up of recommended potential initiatives to confirm current status. The findings from this stocktake would inform final costings for initiatives, based on actual levels of control adoption.



Risk assessment

Consideration given to the process (frequency, responsibility for, consistency of approach, verification & reporting) for conducting bus operator violence risk assessments in order to determine levels of risk and subsequently guide selection of initiatives (and possibly funding required). It is anticipated design of the process will be collaborative involving all key stakeholders. This process should be commenced as a priority action.

The risk assessment process will allow operators to be categorised as operating at a high, medium or low risk level, based on violence (frequency, nature and severity) and risk (environmental and situational) factors (refer to **Appendix G**).



Trials, modelling & analysis

In order to determine the reasonableness (may include review of the cost, time, resources, effectiveness and safety implications of the initiative in relation to risk along with understanding driver and customer opinions/perception and impact) of the 8 costed initiatives in relation to risk (effectiveness and benefits) the following is recommended prior to implementation in collaboration with stakeholders:

- Consideration given to pilot studies and trials of initiatives to identify the optimal solution(s) in relation to risk (level of risk reduction and effectiveness) and investment. For example, but not limited to the optimal design of barriers, duress, radio and CCTV. Also piloting de-escalation training programs to identify the optimal program. Pilot studies and trials should be directed in the first instance and commenced as a priority action.
- In addition, consideration given to further research, review and analysis where for example, an increase in resources is recommended. For example further modelling of an increased presence (police/SNOs) is suggested to define the best approach and understand risk reduction and effectiveness in relation to the investment. Also consideration should be given to the effectiveness of public awareness campaigns and elements which comprise a successful campaign.

In relation to potential funding options further analysis is suggested on chosen funding options prior to any of the potential initiatives being implemented.

Next steps

It is suggested bus operators, with the support of DTMR, implement initiatives according to their violence risk level (refer to **Section 4.6 & Appendix G**). The objective of implementing initiatives is to eliminate risk and/or reduce to as low as possible as required in the *WHS Act 2011(QLD)*.

Consideration should be given as to the process, support and monitoring required to facilitate bus operator compliance with agreed initiative implementation plans.

Initiatives which DTMR consider are within their sphere of responsibility, influence and control should also be implemented according to an agreed action plan.

The timetable for advancing potential initiatives is dependent on factors identified earlier in "trials, modelling and analysis".

While further piloting, analysis or modelling of initiatives and risk assessment is required prior to implementing the 8 costed initiatives there are also initiatives where action can be initiated immediately.

Potential initiatives eligible for immediate advancement including implementation plans to facilitate actions are listed below:

- Public Awareness Campaign;
- School strategies;
- Code of conduct for students;
- Code of conduct for passengers;
- High risk passenger management;
- Bus operator incident reporting procedures;
- DTMR data collection and analysis; and
- Customer service cards.

In addition amendments to the *Criminal Code Act 1899 (QLD)* recognising bus drivers as Public Officers (refer to **Executive Summary & Appendix H**) can be initiated immediately.



Initiative implementation



Ongoing review

The recommended initiatives have been selected as they are available and can be implemented in the next three years. Future technology should be considered in due course.

Similarly, risk assessments should be reviewed and updated by bus operators periodically to reflect changing violence and risk factors.

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Appendix A – Detailed findings

1. Violence towards bus drivers

Bus drivers are routinely exposed to work-related violence, however the nature and extent is problematic to conclusively validate. This is due to inadequacies in incident data (refer to **Section 1.3**). Bus drivers may encounter the following types of violence listed below of which verbal aggression is the major form of violence directed at bus drivers.

Bus drivers may encounter:

- verbal aggression;
 - higher frequency than other violence types;
- threatening behaviour;
 - varies in frequency but lower than verbal aggression;
- physical violence;
 - lower frequency than other violence types;
- objects or missiles thrown at buses;
 - varies in frequency and/or seasonal.

The findings on violence are important when considering preventative measures and the context to safety controls and initiatives recommended in this report. The difficulties in precisely understanding the nature, extent and patterns of violence has implications for understanding the risk profile of violence related risks across QLD bus operators, developing strategies to address violence and directing potential resources.

1.1 Nature and extent of violence

Table 6 sets out examples of incident data on violence obtained during the review. Although many articles and reports were examined with references to bus driver incidents of violence and receipt of anecdotal feedback from multiple stakeholders, Table 6 represents the most useful examples of data on incidents of violence from industry sources in QLD and Western Australia (for comparison).

The DTMR Bus Safety Committee identified in 2011⁷² approximately 99% of assaults occurred in SEQ with the remainder in urban centres across QLD. In the same period, the Committee also found there had been 4.55 million bus services operating in SEQ, with one assault reported for every 12,639 services. Results from the Deloitte Bus Driver Safety Survey⁷³ supports the assertion that potentially the majority of violence occurs in SEQ in comparison to the rest of the State. This may reflect differences in population and volume of passenger services in SEQ.

There are urban centres outside of SEQ where incidents of violence occur, for example Cairns and Townsville⁷⁴. Whether the frequency of incidents per number of services or drivers (or another applicable measure) is similar to SEQ cannot be confirmed currently. Anecdotally stakeholders identified Cairns as having an increased number of violent incidents (a “hot spot”) however our survey did not support the proposition. This may be attributed to the limited number of survey responses received from Cairns (refer **Appendix D**). However, results must be viewed cautiously in light of incident data inadequacies discussed in Section 1.3. A comprehensive incident data set would enable confirmation of violence across QLD.

⁷² Bus Safety Committee, 2011

⁷³ Deloitte, 2016

⁷⁴ Industry Source

Table 6 provides an indication as to the nature and extent of violence in QLD. Caution should be applied when reviewing percentages of incidents or comparisons from sources in Table 6 because of factors impacting on the data:

- Including access to a complete QLD wide data set;
- Under reporting of incidents;
- Inconsistency in the definition of violence;
- Differing reporting obligations;
- Differing reporting periods; and,
- Geographical locations (with varying locations and data is not representative of all locations).

The above factors highlight the difficulties in obtaining reliable data on violence to bus drivers and analysing the data to produce meaningful conclusions.

However, Table 6 provide insights into broad categories of violence and approximate proportions of incident types. Physical violence verses verbal aggression is consistent with (not an exact match) numbers of violent incidents identified by the DTMR Bus Safety Committee⁷⁵ and research conducted by Lincoln and Gregory⁷⁶ and Stanley⁷⁷. We understand through discussions with stakeholders that missiles or projectiles thrown at buses can be related to demographics, geographical areas and seasonal occurrences coinciding with school holidays.

Table 6 Nature and frequency of violence towards bus drivers

Source	Physical Violence/ Assault	Threatening Behaviour	Verbal Aggression	Missiles
Deloitte Bus Driver Safety Survey ⁷⁸	1%	42% ⁷⁹ Road Rage	51%	3% ⁸⁰
WHSQ Industry Focus Groups ⁸¹	Quarterly	Not available	Daily	Not available
DTMR TransLink Data – SEQ 2010 - 2015 ⁸²	14.8%	Not available	82.6%	2.62%
Industry Source 2012 - 2016	2.59%	7.73%	54%	27.6%
Industry Source 2014 - 2016	6.9%	11.5%	76.9%	Not available
Transperth WA security incidents 2012 - current ⁸³	4.47%	7.8% (dangerous behaviour)	18.8% (altercation)	20.6%

⁷⁵ Bus Safety Committee, 2011

⁷⁶ Lincoln & Gregory, 2014

⁷⁷ Stanley, 2015

⁷⁸ Deloitte, 2016

⁷⁹ Road rage (includes threatening behaviour but can include physical assault)

⁸⁰ This may include missiles but also bus struck by person or object being carried.

⁸¹ WHSQ, 2015

⁸² Translink, 2016

⁸³ Transperth, 2016

An important element noted is the relationship between verbal and physical violence. Gregory⁸⁴ undertook research analysing aggressive events on-board buses between drivers and passengers using CCTV footage. The study identified that:

- Verbal disputes and aggression often preceded most incidents of physical violence; and,
- There was a rational and logical build-up of issues before physical violence occurred.

Although the results of this study cannot be generalised it is significant in understanding the relationship between verbal and physical violence and preventative solutions such as de-escalation training.

However as noted by Gregory one off explosive incidents still occur (volatility was also found in earlier studies⁸⁵). Therefore until further research is conducted both scenarios of violence, including a logical build-up of violence and immediate confrontations require consideration when determining preventative measures.

When reviewing incident data provided by TransLink, we found a decrease in incidents over the reporting period. This is consistent with data received from another industry source whereby they experienced a similar decrease in incidents followed by an increase in incidents in 2016. This increase in incidents was attributed by the industry source to an improvement in the incident reporting processes. While another industry source experienced a relatively constant number of incidents in the reporting period.

In contrast, anecdotal evidence from stakeholders indicate incidents of violence are increasing not decreasing over the past few years. This was supported by bus drivers who completed the Deloitte Bus Driver Safety Survey⁸⁶ where 63% of drivers felt violence had increased in 2016 when compared with previous years along with an increase in severity of incidents (60% of drivers). The result may indicate a potential issue with under reporting.

Interestingly, the review's industry stakeholders indicated bus drivers also have positive experiences of driving. Bus drivers contributing to research conducted by Lincoln and Gregory⁸⁷ indicated most passengers are regulars and tend not to cause problems and drivers build friendly relationships with passengers despite violence occurring (the study focused on a specific bus service/geographical area in SEQ).

Conflicting accounts of bus driver experiences combined with limited research of violence to bus drivers underscores the need to have accurate and reliable data on the nature and extent of violence to fully understand the magnitude of the issue. Lack of available evidence is not just contained to Australia but is also an international problem⁸⁸.

1.2 Offenders and patterns of violence

There were patterns of violence identified by stakeholders and in our research suggesting night services, Fridays and afternoons as key periods of violence. Research found:

Research	Violence patterns
WHSQ ⁸⁹	<ul style="list-style-type: none"> • Mondays and Fridays as key days for violence • School routes
Lincoln & Gregory ⁹⁰	<ul style="list-style-type: none"> • Thursday, Friday and Saturdays were key days • October and November key months (coincides with school students visiting the area) • 3-4pm in the afternoon as a key period during the day • Youths or young people stood out as a problematic group.

One of our industry sources identified violence increases from its lowest point on Wednesdays, peaks on Fridays and declines throughout the week- end, with violence increasing during the afternoon with a peak time for violence between 3-4pm.

⁸⁴ Gregory, 2016

⁸⁵ Lincoln & Huntingdon, 2013

⁸⁶ Deloitte, 2016

⁸⁷ Lincoln & Gregory, 2014

⁸⁸ Newton, 2014; Lincoln & Gregory, 2015

⁸⁹ WHSQ, 2015

⁹⁰ Lincoln & Gregory, 2014

We were also informed by stakeholders that violence can occur at any time and from unexpected individuals. Stanley⁹¹ felt there wasn't a clear pattern to violence and required further investigation.

Our stakeholders also identified that particular geographical areas may have specific issues with violence not consistent with the overall trend, for example but not limited to rock throwing /projectiles (e.g. seasonal occurring on school holidays or in the Gold Coast region) or violence associated with theft (e.g. Cairns region). Particular routes may also have a higher risk of violence.

When considering patterns of violence in transport, criminological frameworks provide useful insights. Public transport has unique features for crime that being a unique setting as compared to other public spaces, they are dynamic and have different inputs and outputs throughout the journey. Of note, crime is not random and has distinctive patterns. There is evidence from the literature that with "en route" (journey) crimes there is a connection between particular sections of the journey and time of day. There is evidence that bus-related crime is related to the areas a bus transverses, a higher crime area has higher risk particularly if there is a higher number of stops within that area. Lack of supervision or guardianship has been found to be a factor contributing to crime in such examples.

A framework for analysing patterns of crime and disorder on public transport and which can be applied to the bus setting comprises identification of targets and victims (e.g. bus drivers, passengers, infrastructure), identification of capable guardians (e.g. police, senior network officers etc.), identification of offenders (e.g. age groups/gender) and the places/time where crime increases/decreases (e.g. bus routes, stops etc.)⁹². The framework can be applied when analysing risk, causes and preventative measures required to reduce violence to bus drivers.

1.3 Reliability of incident data

As indicated earlier the reliability of data is impacted on by a variety of factors some of which are discussed below.

1.3.1 Definitions of violence

A consistent definition of violence is not applied across the bus industry⁹³ and was evidenced by incident data examined during this review. This effects the type of data collected and the categories incidents are allocated to making it difficult to fully comprehend total numbers in each incident category and compare data between different sources.

1.3.2 Access to data and completeness of data

A state-wide incident data set is not available on bus driver's exposure to violence. We understand only bus operators in SEQ are required to report incidents to DTMR through Translink and there is no similar obligation for bus operators outside of SEQ.

There is a reliance on private bus operators to maintain incident data. The incident data held by all private bus operators is not publicly available and access to data by third parties requires permission. The incident data collected by TransLink on violence in SEQ is rudimentary with numbers of incidents collected only in relation to three categories of violence (physical, verbal and projectiles). It does not reveal causative factors behind the data set, nature of offenders, or other valuable information.

As evidenced by Table 6, data has been obtained from a variety of sources of which comprises different formats, definitions, reporting obligations, reporting periods, and geographical locations - none of which is complete or consistent. It highlights the difficulties encountered in accessing data, obtaining an understanding of data and comparing data sets, thereby limiting the understanding of prevalence and causation.

1.3.3 Under reporting of incidents

Our findings indicate the number of incidents of violence are under estimated because of under reporting by bus drivers. It has been suggested the number of recorded assaults may only represent 10% of assaults with even fewer verbal threats recorded⁹⁴.

⁹¹ Stanley 2015

⁹² Newton, 2014

⁹³ Stanley, 2015; Lincoln & Gregory 2015; WHSQ 2016

⁹⁴ Bishop et al referenced in Lincoln & Gregory, 2015

Bus drivers indicated in the Deloitte Bus Driver Safety Survey⁹⁵ that 80% did not report incidents. In the bus driver survey conducted by Lincoln & Gregory⁹⁶ only 54% of respondents indicated that they reported incidents. In Stanley's report⁹⁷, 33% of bus drivers were not reporting incidents.

In 2014, WHSQ identified there were very few incidents of client aggression and violence reported to the Regulator. When they reviewed Workers' Compensation data from 2009 – 2014 there were no claims by bus drivers for physical injury from client aggression or violence but there were 63 accepted psychological injury claims for bus drivers experiencing stress over the same period⁹⁸.

1.3.4 Obstacles to reporting

Bus drivers indicated there are obstacles to reporting incidents related to for example:

- Reporting systems;
- Negative responses from management;
- Perceptions of the seriousness of violence; and,
- Acceptance of violence as part of their job.

Further, in the Deloitte Bus Driver Safety Survey⁹⁹ bus drivers disclosed that:

- There is limited action taken after incidents occur;
- The incident is deemed not serious enough to report;
- There were concerns regarding being reprimanded/blamed for the incident;
- Paperwork is time consuming; and,
- They were not certain if the incident needed reporting.

Driver's opinions on obstacles to reporting in the Deloitte Bus Driver Safety Survey is consistent with themes reflected in other surveys or focus groups conducted. Lincoln and Gregory's research¹⁰⁰ found bus drivers were not reporting incidents because (for example) nothing would be done about it, they solved the problem on their own, the abuse was not serious enough and there were no consequences for perpetrators.

In Stanley's report¹⁰¹ bus drivers noted similar sentiments that:

- Nothing would be done if the incident is reported;
- The bus driver is seen as the main cause of the problem and the passenger is always right; and,
- The incident was not serious enough to report.

There were additional responses noted in Stanley's report and only the most frequent responses are noted above.

The WHSQ¹⁰² industry focus groups identified a number of obstacles to reporting with examples being (but not limited to) there was no feedback provided to drivers, time constraints, not knowing if there was a requirement to report and driver factors (examples include but not limited to; males may be less likely to report, inadequate support, peer pressure or see violence as part of job).

⁹⁵ Deloitte, 2016

⁹⁶ Lincoln & Gregory, 2014

⁹⁷ Stanley, 2015

⁹⁸ WHSQ, 2016

⁹⁹ Deloitte, 2016

¹⁰⁰ Lincoln & Gregory, 2014

¹⁰¹ Stanley, 2015

¹⁰² WHSQ, 2015

2. Findings on key triggers

There are limited research studies available on violence towards bus drivers in Australia and internationally. In Australia, the first research study on the nature and extent of violence and incivility among bus drivers was conducted in 2014¹⁰³. There are some insights to be gained from the broader transport industry on customer violence.

In this review while we have conducted a thorough and comprehensive literature review considering Australian and international studies and reports we also rely on anecdotal and qualitative information from stakeholders, cases studies and reports to form our views on this topic due to the limited formal research conducted.

The lack of information available in the area of violence to bus drivers has adverse implications for understanding causation of violence, the interplay of causative factors and the most effective solutions or controls available to eliminate or minimise and manage exposure to violence.

However despite the limitations we found there were key triggers which precede or cause violence to bus drivers. The key triggers are important to identify prevention measures. In addition, we also found there are risk factors in the bus environment, which uniquely predispose bus drivers to violence.

2.1 Occupational risk factors for violence

The research literature indicates that transport workers are at a higher risk of assault than other occupations and bus drivers are at a heightened risk because of factors in their work setting. Risk factors include working in isolation, cash handling, and close proximity to passengers, low-levels of guardianship, overcrowding and delays in schedules¹⁰⁴. Other factors have also been identified such as a fixed sitting position of the driver¹⁰⁵, a mobile workplace¹⁰⁶, the low status of bus driving¹⁰⁷, unrestricted access¹⁰⁸, inadequate escape routes, and direct interaction with the public¹⁰⁹. The risk factors mentioned create a higher baseline of risk for bus drivers and increase vulnerability to violence.

2.2 Key triggers for violence

In addition to risk factors inherent in the bus driver's work setting, there are key triggers or causal factors resulting in violence to bus drivers. The key triggers were identified through discussions with stakeholders, studies, reports, and surveys conducted.

Table 7 provides a guide to the typical key triggers of violence and where available the frequency (approximation) of those triggers. A trigger may contribute solely to a violent incident or join together resulting in a violent incident. Triggers are often inter-related. They may be more prominent in certain geographic areas, or at specific times of the day, however, the five key issues in Table 7 have been consistently raised or identified. Fare conflict and use of alcohol and drugs are the two highest causes of violence, followed by attitude, delays and school children -attitude.

¹⁰³ Lincoln and Gregory, 2014

¹⁰⁴ Lincoln and Gregory, 2014

¹⁰⁵ Stanley, 2015

¹⁰⁶ Gregory, 2016; North America's Transit Union

¹⁰⁷ Gregory, 2016

¹⁰⁸ TWU

¹⁰⁹ TRACS, 2015

Table 7 **Key triggers of violence towards bus drivers and frequency in initiating violence towards bus drivers**

Source	1. Fare Conflict	2. Alcohol & Drugs	3. Attitude/ Behaviour	4. Delays	5. School Children – attitude
Deloitte Bus Driver Safety Survey ¹¹⁰	19%	24%	11%	12%	9%
Bus Driver Safety Review Stakeholder Views	74%	39%	39.1% ¹¹¹	13% ¹¹²	21.7%
WHSQ Industry Focus Groups ¹¹³	✓	✓	✓	✓	✓
Industry Source 2014 - 2016	30%	Not available	35% ¹¹⁴	6.6% ¹¹⁵	Not available
Lincoln & Gregory ¹¹⁶ (driver survey)	19%	Not available	11%	29%	Not available
Stanley ¹¹⁷ (driver survey)	11.26% ¹¹⁸	24.5%	20.8% ¹¹⁹	7.5%	Not available

Each of the key triggers for violence are discussed below:

2.2.1 Fare conflict

Fare disputes or conflict may be initiated for a number of reasons including intentional fare evasion (e.g. stepping onto the bus without a fare/habitual non-payers), collection of fares and cost of fares. Other issues are passenger go cards without funds (intentionally or unintentionally), passenger go cards which are not working (intentionally or unintentionally), go card top ups, faulty go card technology, concessions and large notes that cannot be changed. Also refusal of service related to ticketing contributes to fare disputes as does driver's response to fare issues.

School children play a role in fare disputes stemming from the unintended consequences of the "no child left behind" policy whereby both students and parents take advantage of the policy. Passengers who are permitted to board without paying a fare also aggravate paying customers who feel it is the driver's responsibility to ensure fairness.

2.2.2 Alcohol and drugs

Passengers affected by alcohol and drugs contribute and increase the risk of verbal and physical interactions with the bus driver. The heightened risk is because of cognitive impairment impacting on behaviour in terms of control and judgement. There is a strong association between the consumption of alcohol and violence, in addition drugs such as crystal methamphetamine ("ice") can lead to aggressive and anti-social behaviour and social situations (social groups) can reinforce behaviour¹²⁰.

2.2.3 Passenger attitude

Stakeholders consistently raised that higher levels of community aggression may be a causal factor contributing to aggressive behaviour. When combined with a lack of respect for the driver and the service

¹¹⁰ Deloitte, 2016

¹¹¹ Attitude / Aggression

¹¹² Result tied with anti-social, mental health, theft & racial

¹¹³ WHSQ, 2015

¹¹⁴ Includes use of alcohol/drugs

¹¹⁵ Service issues including delays (1.73%)

¹¹⁶ Lincoln & Gregory, 2014 (a number of research methods were utilised, the driver survey results represents only one element of outcomes in the study)

¹¹⁷ Stanley, 2015 (% calculated on N=568)

¹¹⁸ Includes wanting to ride free/fare evasion/price of fare/MYKI/ticket system

¹¹⁹ Includes passenger issues/attitude/aggression

¹²⁰ Stanley, 2015

provided it creates a trigger for disputes, abuse and threats (e.g. swearing, insults, road rage and physical assault). This may be combined with other triggers including fare conflict or alcohol or drugs and possibly individuals suffering from mental health conditions (refer to "other triggers").

The philosophy that the customer is always right combined with frustration and dissatisfaction with the service can trigger violence particularly as drivers have direct interaction with the public¹²¹. Community attitudes towards bus drivers, for example perceiving the status of the bus driver as low, plays a part in offensive verbal remarks to the bus driver¹²². Similarly a passenger may simply be having a bad day and take it out on the bus driver. Bus drivers are an easy target for community aggression particularly as they represent the face of a government service and, due to occupational risk factors discussed earlier which predispose the bus driver to violence.

Lincoln and Gregory¹²³ noted there are two groups of perpetrators (who are also customers) who commit violence. The first are individuals with a history of violence (crime) or, for example, suffering from mental health conditions. Secondly, individuals who commit violence based on the situation, for example when frustrated or dissatisfied with a service.

2.2.4 Delays in scheduled service

Delays in scheduled service increase passenger frustration, which can be directed toward the driver and lead to both verbal and physical violence. Passengers become aggravated when services are late (or early, or do not arrive at all). Delays may be due to tight timetabling, traffic congestion or other factors but passengers will direct their anger towards bus drivers.

2.2.5 School student attitude

Multiple stakeholders raised school children as playing a role in violence towards bus drivers. Due to data deficiencies described above it is difficult to quantify the nature and extent of violence by school children. At the lower-level of behaviour, school children create emotional stress and distraction for drivers. In other cases, stakeholders indicated a portion of school children continue to create difficulties on buses because they do not pay the fare. This situation has arisen due to unintended consequences of the "no child left behind policy". We understand that some parents and children misuse the policy and has led to habitual non-payers or an excuse for not paying, which can trigger conflict between children (and parents) and bus drivers.

Bus drivers who completed the Deloitte Bus Driver Safety Survey¹²⁴ listed school student attitude the fifth highest trigger (9%) initiating or contributing to violence. We understand school children often behave in a disrespectful manner, there may be some verbal aggression (from students and parents) creating stress for the drivers and there are occasional episodes of violence from school students and parents/guardians (small numbers). This was also identified by the DTMR Bus Driver Committee in 2011. Depending on demographics school children may also be involved in throwing rocks or projectiles at buses. This is often seasonal coinciding with school holidays.

2.2.6 Other triggers

There are other key triggers of violence, for example theft may initiate violence although respondents to the Deloitte Bus Driver Survey rated it twelfth out of a possible 12 triggers. We understand there are geographical regions where the risk of theft as a trigger may be higher (e.g. Cairns). Other triggers identified include mental health conditions (refer to **Section 2.2.7**), road rage, environmental conditions and driver contribution (refer to **Section 2.2.8**).

2.2.7 Mental health conditions contributing to violence

Individuals suffering from mental health conditions were identified by a number of stakeholders as contributing to violence but did not factor as highly in responses from bus drivers in the Deloitte Driver Safety Survey (rated 6th as an initiating or contributing factor to violence (6%))¹²⁵. However, this may reflect mental health as a contributing factor to violence is integrated within other triggers such as alcohol, drugs or attitude and is difficult to separate mental health independently as a key trigger. Additionally bus drivers are not in a position to make a judgement on medical conditions.

¹²¹ Lincoln & Gregory 2015; Gregory 2016

¹²² Gregory, 2016

¹²³ Lincoln & Gregory, 2015

¹²⁴ Deloitte, 2016

¹²⁵ Deloitte, 2016

We understand there are geographical areas where individuals suffering from mental health conditions may be higher because of proximity of bus services to treatment centres and housing. Holistic solutions to address violence associated with mental health conditions extends beyond the scope of the review but are worthy of further consideration, however the policy of identifying high-risk passengers will contribute towards addressing higher risks in this area.

Comprehensive incident data would assist in confirming the magnitude of triggers such as those discussed here.

2.2.8 Bus driver contribution to violence

Bus driver contribution through initiating (driver response) and escalating incidents (e.g. enforcing the rules, arguing back etc.) is a factor in triggering violence. Although relatively low when compared to other triggers it is important as it places the driver at further risk of violence. Bus driver contribution to violent incidents occurs in 3% - 4% of incidents¹²⁶. It was also identified as a factor in the WHSQ¹²⁷ industry focus groups and Lincoln & Gregory's¹²⁸ study on violence towards urban bus drivers.

Gregory's¹²⁹ analysis of CCTV footage of on-board aggressive events between drivers and passengers found drivers were active in acts of customer (passenger) aggression some displaying tact and practical strategies, others using harsh tactics such as physical aggression, arguing back and goading the customer. The author felt this may be because of the consequence of isolation, competing demands of their role/environment and the extended nature of incidents without support. The results are important in understanding violent encounters between bus drivers and passengers but cannot be generalised across the occupation based on the sample selected. Gregory also noted staff who enforce rules are more likely to be victimised.

3. Findings on safety controls addressing violence

There are a range of safety controls identified and utilised in QLD to address the risk of violence to bus drivers. However, we found that safety controls have not been standardised across the sector in QLD with varying approaches undertaken. Safety controls to manage the risk to bus drivers are well-known. Many of the same safety controls discussed in this report were identified in 2011 in a report by the DTMR QLD Bus Safety Committee for the Minister of Transport. The report outlined strategies to reduce violence towards bus drivers in QLD but specifically SEQ.

It is likely SEQ has a greater number of safety controls implemented as compared to outside the region. This is an assumption we made from stakeholder information rather than by independent verification. We believe variations in safety controls implemented in QLD may be related to:

- the volume of bus services;
- nature of operations;
- region of operation;
- risk profile of bus operating environments;
- capability to implement controls; and,
- costs associated with controls.

Information of this nature is held and owned by private bus operators or government, is not publicly available and permission is required to obtain information particularly in relation to risk and financial costs. In addition while there is information in the literature on safety controls based on the findings there are no formal studies reviewing the effectiveness of safety controls. We have relied on stakeholder views and qualitative information where available to understand effectiveness of safety controls.

¹²⁶ Deloitte, 2016; Industry Source, 2016; Stanley, 2015

¹²⁷ WHSQ, 2015

¹²⁸ Lincoln & Gregory, 2014

¹²⁹ Gregory, 2016

3.1 List of safety controls

There was a large number of safety controls identified through research and stakeholder feedback, set out in **Appendix H**. The findings were initially assembled into categories based on the type of safety control identified and considered if preventative or reactive, current implementation status (if available), stakeholder views, cost (if available), technology considerations and learnings from research in Australia and overseas (if available). We developed a comprehensive list of controls ensuring all possible items raised or identified through the review were included in order that our approach incorporated all stakeholder views and literature findings.

Each safety control identified was explored to examine its purpose and effectiveness in addressing violence in collaboration with stakeholders, bus drivers and literature findings. We re-categorised the safety control list discussed above during the process of selecting initiatives into categories addressing physical environment, communication and education strategies, policies and procedures and future technologies (refer to Table 8 below).

A complete list of safety controls identified and examined during this review is set out in **Appendix H**. Not all safety controls identified will be discussed in this section.

Safety controls to manage violence are a combination of preventative (eliminating or reducing the risk of violence) and reactive (once violence occurs reducing exposure to violence or managing the outcomes of violence) strategies (Refer to Table 8).

Table 8 **A summary of potential initiatives based on identified safety controls**

Physical Environment
<ul style="list-style-type: none">• Driver barriers / screens to protect drivers from violence with the level of risk control based on design• Anti-shatter films for bus windows to combat projectiles• Increased presence to address fare and ticketing issues, anti-social behaviour, criminal behaviour and a deterrence to violence (e.g. Senior Network Officers and Police)• Communication, Monitoring and Response Driver Systems (closed circuit television "CCTV", radio, duress and operations centre/base)
Communication and Education Strategies
<ul style="list-style-type: none">• Bus driver training (e.g. de-escalation) to facilitate knowledge and skill development• Signage raising awareness of requirements/consequences• Public awareness campaigns to raise awareness of expected standards of behaviour and consequences• Programs to improve behaviour of school children• Customer service cards to inform and provide an avenue of complaint
Policies and Procedures
<ul style="list-style-type: none">• Contract terms to set standards of safety with respect to violence risks• Fare and ticketing policies balancing fare collection with safety of drivers• Incident reporting procedures• Codes of conduct to set expected standards of acceptable behaviour and consequences• High risk passenger policies to identify and manage violent passengers/public• Scheduling of services reducing delays in service• Recruitment policies• State-wide incident data collection
Technologies
<ul style="list-style-type: none">• Cashless systems of fares and ticketing• Mobile Reporting App

3.2 Standards

Discussion on safety controls for violence must be considered with reference to legislative requirements. The legislative responsibility to identify and manage WHS risk is set out in the *WHS Act 2011 (QLD)* and *WHS Regulation 2011 (QLD)* and associated codes of practice. When selecting controls the legislative framework, referred to as the "hierarchy of controls" must be applied. The WHS hierarchy of controls is based on the principle that elimination of risk is considered first (where practicable) followed by consideration of strategies to minimise risk to as low as reasonably practicable if elimination is not possible. It is an important hierarchy to consider when considering safety controls for violence.

There are also legislative responsibilities and requirements in the *Transport Operations (Passenger Transport) Act 1994*, which impact on safety and also frame the discussion.

Consideration must also be given to safety standards set out in the service contracts between the QLD Government (through DTMR) and bus operators. The standards are discussed below in **Section 3.3**.

3.3 Findings on controls in Queensland

Through discussions with stakeholders we found that not all bus operators have implemented a standard set of controls. WHSQ¹³⁰ made similar findings as a result of the bus driver safety assessments (directed toward violence) discovering there was wide variability in WHS systems in QLD. Results included:

- lack of on board security and CCTV capability for high risk routes;
- poor cash handling practices;
- poor communications for remote and isolated work; and,
- lack of higher order controls (in reference to the WHS hierarchy of controls) such as CCTV and driver barriers.

The decision to implement safety controls to address identified violence risks is a decision taken by each individual bus operator with consideration of contract requirements with DTMR, risk and operations and relevant legislation. Currently detailed safety standards are not contained within contracts between DTMR and bus operators. Safety standards comprise compliance with relevant local and state legislation, incident management planning and incident reporting to DTMR, if operating in SEQ.

Not all safety controls identified in this report apply to all bus operators as they would need to consider their risk profile and operations. However, information on the risk profiles of bus operators is not publicly or readily available. Therefore our certainty around the need for differing safety controls associated with individual bus operators was not determined. We understand, based on the bus driver safety assessments completed by WHSQ¹³¹, there is variability in capacity of bus operators to manage violence.

Anecdotally we found the effectiveness of controls if implemented by bus operators varied based on:

- design and specifications of the control (e.g. but not limited to types and sophistication of radio/duress, visual and audio capabilities of CCTV, number and positioning of CCTV); and,
- operating effectiveness (e.g. but not limited to whether implemented across the entire fleet or for all drivers (e.g. training), maintenance of CCTV, ability to review and download CCTV, radios operating effectively, and base operations are attended).

3.4 Findings on individual controls

When examining potential controls identified in this review we found fully enclosed drivers screens or barriers were the only control to potentially eliminate the risk of violence. Other controls identified in this review (including barriers without full enclosure) potentially reduce not eliminate the risk to bus drivers but remain important prevention and response strategies. The degree of risk reduction dependent on further pilots or analysis referred to in **Section 5** due to the scarcity of research studies and data on effectiveness of safety controls.

Responses from the Deloitte Bus Driver Safety Survey¹³² indicated that with the exception of the safety control "reduction in cash handling" being an effective measure in preventing or minimising incidents

¹³⁰ WHSQ, 2016

¹³¹ WHSQ, 2016

¹³² Deloitte, 2016

towards bus drivers the remaining controls were rated by drivers as very poor to fair in managing violence (the only other exception being "barriers" due to a lack of consensus not effectiveness).

In relation to driver barriers, responses by bus drivers were only slightly higher on the ineffective scale than effective with no definite position reflecting similar sentiments from stakeholders throughout this review.

The other controls rated very poor to fair in the survey included CCTV, duress alarms, radio communication, policy or procedures, training, visibility of senior network officers (SNOs), police and private security, community awareness strategies and consequences for offenders. The low ratings given to safety controls by bus drivers reflect the issues discussed above in relation to the lack of effectiveness of controls and whether the control is implemented in the work setting. For example there is limited implementation of driver screens across QLD making it difficult to assess effectiveness. Another example relates to the current situation where there is a limited presence of SNOs, police and security across bus networks therefore making sense of low rating responses by bus drivers on these controls.

3.4.1 Physical environment controls

3.4.1.1 Driver barriers

The effectiveness of driver screens / barriers in preventing violence towards drivers is highly dependent on the design of the barrier. Fully enclosed driver barriers (fully segregated) potentially eliminate the risk of violence towards bus drivers and if so, provide the highest level of risk control. The assessment of potential risk reduction is made in isolation to understanding risks introduced by full enclosures such as access to the driver in an emergency, impact on the driver's tasks and experiences of the driver. The actual risk posed by violence to bus drivers also requires consideration when contemplating driver screens/barriers as a control measure.

There are no formal evaluative studies or evaluative information on fully enclosed driver screens. Where implemented this information will be held by private bus operators.

We have received feedback from stakeholders that the option to use partial or full mesh barriers instead of a fully segregated barrier (full driver enclosure) is to balance driver safety and passenger interaction. We understand bus drivers view the driver /passenger relationship as protective and enjoy the interaction.

Retractable driver barriers which can be raised in an emergency or in anticipation of escalation of violence may also potentially eliminate the risk of violence for the driver. They are used in Europe but there is scant information in the literature on retractable screens. A stakeholder¹³³ (safety specialist) from the Amalgamated Transit Union in Maryland, United States of America provided credible detail on retractable screens and their potential to reduce risk of violence to drivers while balancing passenger interaction (and perceptions of security). They also appear promising from a cost perspective.

Retractable barriers require piloting to ensure the design does not introduce risks such as, but not limited to reflection. There are features of the retractable screens which facilitate access to the driver in an emergency. It is a design which is worthy of further investigation should barriers be a potential initiative considered by DTMR.

Full mesh screens, partial and ¾ screens reduce the ease with which a driver may be reached but doesn't eliminate the risk entirely based on feedback from interstate transport agencies in Western Australia, South Australia, New South Wales and Victoria. Drivers are still subject to spitting and other projectiles, kicking and verbal abuse however partial screens reduce the risk of random punches and render other forms of violence (kicking, spitting, and projectiles) more difficult. Overseas for example, in Canada in 2013, 17 reported assaults involved culprits reaching around the barrier and ten of these incidents resulted in physical contact¹³⁴. Similarly in London, early studies found that the installation of screens resulted in a 30% decrease in assaults¹³⁵ but did not remove assaults all together.

Furthermore, there are a number of other physical and mental health factors to be considered. These include the ability to access the driver in the case of a medical emergency (of note Western Australia has considered emergency access for full mesh barriers, it is available and consideration has to be given to

¹³³ Sherlock, 2016

¹³⁴ CUTA 2014

¹³⁵ Easteal & Wilson, 1991

balance security of the driver with ease of unlocking driver barriers from the outside), the swiftness with which a driver can exit the bus in an emergency, reflection, heat, ventilation, noise and isolation.

In addition, other job factors need to be considered, such as if and how drivers can continue to assist passengers boarding and exiting the bus following the installation of barriers, as some passengers, such as elderly people or those with prams, rely on the driver's assistance. Additionally, barriers may adversely affect the driver/ passenger relationship and create a perception of danger amongst passengers, which may impact public transport uptake.

From our literature review it is apparent a consensus on the effectiveness of barriers has not been reached, along with the best design and the preference of drivers on the topic¹³⁶. Consistent with other research, the Deloitte Bus Driver Survey also returned mixed results. A similar number of bus driver survey respondents indicated that barriers are very poor (13%) and very good (17%) at preventing or minimising incidents towards bus drivers.

There is currently limited use of barriers on buses in QLD, with 45% of bus driver survey respondents¹³⁷ indicating that they do not have access to barriers. We are aware of only one industry source in QLD who has implemented barriers. However, nationally and internationally there is a trend towards installing barriers on metro buses. Within Australia, Transport for New South Wales, Transperth (Western Australia) and Department of Infrastructure, Planning, Transport & Infrastructure (South Australia) have implemented barriers on all or majority of their metro fleets.

Public Transport Victoria is also working towards having barriers on all metro buses by 2021. Furthermore, certain regions in the UK and USA have also implemented barriers.

Formal reviews of effectiveness of the barrier implementation are not widely available if conducted.

3.4.1.2 Anti-shatter films on bus windows

Anti-shatter films reduces the risk of injury to drivers and passengers from projectiles thrown at buses. It is a simple solution to address a high risk with potentially serious consequences to drivers and passengers. The frequency of the risk of projectiles is dependent on demographics, specific geographical regions and seasonal influences coinciding with school holidays. Therefore specific geographical regions and months may have a higher frequency when compared across the State. There are "hot spots" where the risk of projectiles were anecdotally found to be higher (e.g. Gold Coast and Cairns). It is essential to obtain greater clarity on the risk posed through improved incident data (as noted in this review) to determine the need for anti-shatter film.

We understand anti shatter film has been applied to a large number of buses in SEQ and feedback indicates it is effective¹³⁸.

Glass windows are fragile and potentially dangerous. When broken, one square meter of glass can produce up to two thousand sharp shards which may cause serious physical damage¹³⁹.

Anti-shatter film is a clear and colourless multi-layered polyester based laminate that addresses these hazards¹⁴⁰. When bonded to the inside of windows, the anti-shatter film binds glass shards together to prevent them from entering the vehicle, forming a barrier to the occupants inside. Depending on the type of film, its thickness, structure and the way of application, it may withstand attacks from numerous implements including hammers, bricks, baseball bats and even the percussion of a bomb blast¹⁴¹. As such, anti-shatter film mitigates the risk of injury to drivers and passengers from projectiles thrown at buses

In addition to mitigating safety hazards regarding broken glass, anti-shatter film can also provide additional benefits, such as energy efficiency, UV protection, reducing heat gain or loss, improved privacy, and stylish designs. It is also scratch resistant and easy to keep clean¹⁴².

Strategies for projectiles may need to consider the wider social context and age of offenders. Potentially holistic strategies addressing youth engagement may be an alternative or additional measure to

¹³⁶ Stanley, 2015; Lincoln and Gregory, 2014; TRACS, 2014; Transit Operator Security Barrier Designs; Transportation Research Board, 2011

¹³⁷ Deloitte, 2016

¹³⁸ Industry Source, 2016

¹³⁹ Tinting Chicago, 2017

¹⁴⁰ Advanced Glass Technology, 2017

¹⁴¹ Tinting Chicago, 2017

¹⁴² Tinting Chicago, 2017

contemplate when considering the age and profile of offenders. The strategy is beyond the scope of this review but is worthy of consideration.

3.4.1.3 Increased presence to address fare and ticketing issues, anti-social, criminal behaviour and deter violence

3.4.1.3.1 Senior network officers

There are currently 70 Senior Network Officers (SNOs) employed across all the SEQ transport networks. Their role¹⁴³ is to ensure the safety and security of passengers while travelling on the network, high quality customer assistance with ticketing strategies, ticketing enforcement and compliance regarding revenue protection.

There is a higher deployment to rail due to higher fare evasion and crime¹⁴⁴. There are insufficient SNOs on the bus network addressing ticketing enforcement and compliance. An increase in the SNOs presence across the bus network particularly on high risk routes will deter fare evasion and violence.

We have received feedback from stakeholders that the presence of SNOs reduces potential violence. Research studies/reports indicates guardians deter violence or in other studies/reports they recommend increasing the presence of guardians for the same reason¹⁴⁵. SNOs also provide a supportive presence for drivers (potentially reduce fare conflict discussions) and increase passenger's expectations regarding payment of fares and consequences.

Transport for NSW employ Transport Officers for fare compliance with a customer service approach. They also have discretionary powers in relation to fare evasion which has proven successful. The Transport Officers lock down buses and check tickets and conduct random inspections. Transport for NSW have found the strategy very effective for addressing fare evasion. It also supports bus operators in meeting incentives for fare evasion in their contracts.

3.4.1.3.2 Police

There is no dedicated team of police on the bus network in QLD similar to the police railway squad, and generally there is a low presence of police on the bus network although when required conduct local responses with bus operators and work with problem geographical areas, for example where school children are active (e.g. rock throwing). It is suggested in the literature that a higher visibility would address criminal and anti-social behaviour thereby reducing violence towards bus drivers and passengers¹⁴⁶.

In the United Kingdom crime in London has reduced dramatically on the tube and bus networks due to a high emphasis on policing, with data available showing evidence of that reduction¹⁴⁷.

Transport for NSW also advised strategies with police are very effective in driving down crime (e.g. rock throwing) as they respond quickly and address the issue once identified. Transport for NSW have a police transport command group of 610 police officers which focus on security and safety of passengers, fare evasion and compliance across the transport networks, however there is greater focus on rail. Police are deployed based on risk and evidence shows they are agile and can act quickly.

¹⁴³ DTMR, 2016 "Role description for Senior Network Officer"

¹⁴⁴ DTMR, 2016

¹⁴⁵ TRACS, 2015; Lincoln & Gregory, 2014; WHSQ, 2015; Stanley, 2015; RTBU, 2016; Newton, 2014; Bus Safety Committee, 2011

¹⁴⁶ TRACS, 2015; Bus and Coach Association New Zealand, 2012

¹⁴⁷ Mayor of London, 2015

3.4.1.4 Communication, monitoring and response driver systems

3.4.1.4.1 Closed-Circuit televisions (CCTV)

We understand from stakeholders and the literature¹⁴⁸ that CCTV may be useful as a deterrent to violence (although Gregory found this was not the case in her study in 2016), have value as an investigative tool and to assist with prosecution after an incident occurs. Ensuring perpetrators face consequences is important for deterrence and compliance to standards of acceptable behaviour.

It is worth consideration that bus drivers have reservations about CCTV as noted in the Lincoln and Gregory¹⁴⁹ study due to being a reactive strategy. Drivers may also not wish to be monitored and privacy should also be considered.

A large number of buses in SEQ have CCTV installed¹⁵⁰ although not consistently implemented across the State. CCTV is a common control outside of QLD and is implemented on many buses in New South Wales and Victoria. In New Zealand, CCTV is used to deter criminal and anti-social activity, and is used along with smartcard data to apprehend and prosecute offenders¹⁵¹. Further, a survey of USA and Canadian companies identified the five most effective security measures, and CCTV was cited in 19% of studies.

3.4.1.4.2 Radio and duress systems

Radio and duress systems are an essential communication and response strategy to mitigate the severity of a violent incident and support bus drivers particularly due to the nature of bus driving whereby drivers work alone (isolated) and /or remote. Providing emergency response and communication when working remotely or when isolated is a requirement within the *WHS Regulation 2011 (QLD)*¹⁵².

Our enquiries found variability in the sophistication of radios and duress systems and not all bus operators in QLD have implemented duress systems. Also if implemented, there is variability in the operating effectiveness of systems implemented. Duress was identified by industry focus groups conducted by WHSQ¹⁵³ as a desirable control and Stanley¹⁵⁴ identified both controls are required but commented on the ineffectiveness of response practices to duress /radio. The DTMR Bus Safety Committee¹⁵⁵ recommended duress as a beneficial safety control and back to base radio as a mandatory safety control. TRACS¹⁵⁶ rated duress as having a positive benefit for response processes, while bus drivers in the Lincoln & Gregory¹⁵⁷ study had reservations about duress due to it being a reactive strategy.

There was a significant difference between the proportion of bus driver survey¹⁵⁸ respondents who indicated that the current duress systems were poor to fair (52%) and those who indicated they were good or very good (34%) at preventing or minimising incidents.

Many respondents indicated they have access to radio, although this was not supported by stakeholder consultation and may reflect the geographical location of the survey respondents. However the bus driver survey found 43% of respondents indicated that the current radio communication is poor or very poor at preventing or minimising incidents. Similarly, the use of operational centres varies greatly from very advanced and technologically capable, to non-existent, where driver's calls may go unanswered as the office has closed.

3.4.1.4.3 Operational base or centre

In conjunction with communication systems (radio) and duress, a base or operational centre is required in order to receive communication from the driver and provide a response to a threat or issue the driver might be experiencing. A timely response reduces the length of exposure to violence when it occurs.

¹⁴⁸ Stanley, 2015; TRACS, 2015; WHSQ Bus Driver Assessment Tool; Bus and Coach Association New Zealand, 2012; QLD Bus Safety Committee, 2010; ATU; HSE Executive, 2016; Huntingdon, 2012

¹⁴⁹ Lincoln & Gregory 2014

¹⁵⁰ Industry Sources, 2016

¹⁵¹ CUTA ACTU, 2014

¹⁵² QLD WHS Regulation 2011 (Part 3.2, Divisions 4&6)

¹⁵³ WHSQ, 2015

¹⁵⁴ Stanley, 2015

¹⁵⁵ Bus Safety Committee, 2011

¹⁵⁶ TRACS, 2015

¹⁵⁷ Lincoln & Gregory, 2014

¹⁵⁸ Deloitte, 2016

Emergency response and providing effective communication to remote or isolated workers is a requirement within the QLD WHS Regulation¹⁵⁹ and incident management plans are a requirement in bus operator's contracts with DTMR.

In QLD sophistication of operational centres or bases vary depending on the operational demands and location of bus operator services. We understand while bus operators have a "base" of some sort, personnel are not always available to respond to communications from bus drivers.

Transport for NSW mandates in its contracts that bus operators must have an operational command centre due to its importance in assisting drivers to respond to violence and feel secure.

3.4.2 Communication and education strategies

3.4.2.1 Bus driver de-escalation training

The skill and experience of bus drivers is critical for managing violence particularly as most incidents of violence are verbal and there is some evidence that physical violence often develops from verbal interactions¹⁶⁰. There are exit points in violent interactions where de-escalation can be applied to defuse situations¹⁶¹, which is relevant for driver's contribution to violent incidents and prevention, previously discussed.

In QLD, there is no standardised training approach for bus drivers in relation to developing skills to manage violence, and bus driver training is a significant cost to bus operators due to the wage component. A number of studies and reports have identified training for bus drivers is important in managing conflict and de-escalating violence and has recommended the strategy¹⁶². Currently in QLD a number of bus operators offer conflict management or de-escalation training for drivers however this is not consistent across QLD. The choice of training course and content is a decision of the bus operator.

Effectiveness of de-escalation training conducted for bus drivers is not the subject of formal research however anecdotally drivers feel more confident, recognise the warning signs of violence, benefit from increased awareness and feel able to defuse a situation. After an industry source (anonymous) introduced conflict resolution training for their drivers they noted a reduction in total assaults and injuries, due to drivers applying learnings from training.

Other industries, for example the health sector in QLD implemented de-escalation training a number of years ago in recognition of its value in addressing violence. Transport for London¹⁶³ believe there is benefit training front line staff in conflict resolution skills, it forms part of the initial training and there are plans to enhance the training going forward. Also bus drivers are required to achieve a professional qualification within their first year of service which includes a section on conflict avoidance¹⁶⁴

3.4.2.2 Public awareness campaigns and signage

A media campaign strategy and signage has been raised by multiple stakeholders and recommended in research articles/literature/reports¹⁶⁵ to raise awareness of expectations of acceptable behaviour while travelling on buses and potential consequences of unacceptable behaviour. Objectives of such a strategy include increasing respect for bus drivers and the service bus drivers deliver for the public, setting standards of acceptable behaviour and consequences thereby educating the travelling public on their responsibilities.

There is evidence that large scale public attitude campaigns in the United Kingdom were effective in targeting or shifting attitudes and perceptions regarding anti-social behaviour in the transit setting¹⁶⁶ and TRACS¹⁶⁷ rates public awareness campaigns as having a high benefit in supporting transit workers (transport workers).

¹⁵⁹ QLD WHS Regulation, 2011 (Part 3.2, Divisions 4 &6)

¹⁶⁰ Lincoln & Gregory, 2014; Gregory, 2016

¹⁶¹ Gregory, 2016

¹⁶² Bus and Coach Association New Zealand, 2012; TRACS, 2015; Bus Safety Committee, 2011; Gregory, 2016; Lincoln and Gregory, 2014; Stanley, 2015; Huntingdon, 2012

¹⁶³ Transport for London, 2015

¹⁶⁴ TCR – Network email 2017 – Transport for London

¹⁶⁵ Lincoln & Gregory, 2014; Stanley, 2015; Bus Safety Committee, 2011; TRACS, 2015; RTBU, 2016; Gregory, 2016; ATU; WHSQ, 2015

¹⁶⁶ Gregory, 2016

¹⁶⁷ TRACS, 2015

3.4.2.3 Programs to improve behaviour of school children

Safe travel programs were implemented in selected QLD schools 2014/2015 to improve the behaviour of school children travelling on buses (e.g. step up program) and were implemented locally through police, schools and bus operators working together to improve identified issues. Previously there has been multi agency strategies implemented setting up local committees in 2007 & 2008 in specific locations such as Gold Coast, Jimboomba and Victoria Point to address student misbehaviour. The Gold Coast Committee was reported as extremely successful according to the DTMR QLD Bus Safety Committee¹⁶⁸.

Although we understand safe travel programs which educate students about travelling on buses are still available we considered their ongoing effectiveness as we found multiple stakeholders raised the attitude and behaviour of school children. The attitude of school children was rated fifth by bus drivers¹⁶⁹ as initiating or contributing to violence and young people were identified as a problematic group in the Lincoln and Gregory study¹⁷⁰.

3.4.2.4 Customer service cards

Customer service cards reduce driver passenger interaction and remove issues from the driver. They are currently implemented by an industry source in QLD and by Transport for NSW. Based on feedback they appear to be an effective initiative for the purposes outlined above.

Where implemented, customer service cards are provided to passengers to inform of ticketing changes or details to lodge a complaint. Many passenger complaints, such as those relating to schedules and go cards, are best handled by a DTMR personnel with the authority, time and resources to resolve the issue, as opposed to the bus driver who is responsible for driving the bus safely and keeping to schedule.

3.4.3 Policies and procedures

3.4.3.1 Service Contracts

The current service contracts between DTMR and individual bus operators in SEQ were in the process of being renewed at the time of this review. The service contracts set out requirements for bus services between the State of QLD acting through DTMR and the bus operator.

Currently detailed safety standards are not contained within contracts between DTMR and bus operators. Safety standards set out in current contracts comprise compliance with relevant local and state legislation, incident management planning and incident reporting to DTMR, if operating in SEQ. Based on findings in this review there are noted deficiencies with incident reporting requirements.

It is suggested that contract terms as opposed to legislation and standards are enhanced to include more specific requirements for bus driver safety based on initiatives identified in this review.

Utilising contracts to set out safety standards will ensure that other buses (such as tourist or personal buses, for example) are not required to implement initiatives that may not be necessary in other situations.

3.4.3.2 Fare and ticketing policies

With fare related conflict being a major contributor or trigger of violence towards bus drivers it has been identified that DTMR's fare and ticketing policy and the application of fare policy by bus operators requires balancing to protect the interests of DTMR and the driver.

Passengers are expected to travel with a valid fare¹⁷¹ and DTMR expects bus operators to ensure passengers have the correct fare, monitor valid tickets and direct passengers to purchase tickets¹⁷². Under legislation bus drivers have authority to confirm a passenger has a valid fare by asking them to produce a ticket/concession etc. considering any duty of care requirements.¹⁷³

¹⁶⁸ Bus Safety Committee, 2011

¹⁶⁹ Deloitte, 2016

¹⁷⁰ Lincoln & Gregory, 2014

¹⁷¹ TransLink, 2016

¹⁷² TransLink, 2016

¹⁷³ QLD Transport Operations (Passenger Transport Act) 1994; Industry Source

We understand from stakeholders that the driver's role in applying fare policy varies at times due to the bus operator's direction or individual driver's application of the policy. This may occur due to safety concerns the driver may have regarding potential violence. Drivers are often balancing fare policy with security concerns.

Transport for NSW supports bus operators with fare collection through the deployment of transport officers (equivalent to SNOs) and a dedicated police transport command. Public Transport Victoria are committed to a review of how bus operators interpret the requirements of fare policy (valid tickets, transport entitlements) in order to ensure there are best endeavours to check entitlements are valid and consistency of approach. They acknowledge assaults are triggered by fares and understand this creates difficulties in applying policy.

3.4.3.3 Incident reporting procedures

Reporting incidents of violence and the collection of reliable and comprehensive data is important to understand the nature, extent and severity of violence, to direct resources and understand effectiveness of controls (refer to earlier discussions). We have highlighted the unreliability and incompleteness of data related to multiple factors and the obstacles to reporting. Improving reporting processes at bus operator and government levels has been raised by multiple stakeholders and identified in research studies, reports and other literature on this area.

Based on findings in this review and deficiencies noted, efforts improving reporting of violence by bus drivers, reducing the effort to report and improving management actions post incidents by bus operators would be beneficial. Supporting bus drivers to report incidents requires positive responses by management and processes to increase the ease of reporting whether this is achieved by technological solutions (e.g. mobile reporting app or use of other technology such as radios) and/or time provided on shift to complete reports and/or reduction in paperwork when reporting is important to consider.

It should be noted currently there are bus operators in QLD who utilise the radios to report incidents. We understand an industry source has commenced improvements in this process by following up each incident called in by radio. Otherwise for other operators it may be an area for improvement based on results in this review.

Due to data deficiencies identified in this review consideration should be given to defining a consistent definition of violence in consultation with stakeholders and applied State wide. In addition collecting and analysing a complete and comprehensive incident data set from all bus operators in QLD.

Public Transport Victoria has improved its reporting processes through an increased focus on reporting processes and the next step is sourcing a single platform for reporting across the state.

Department of Planning, Transport & Infrastructure (South Australia) has improved its reporting through use of an incident hotline to report incidents.

3.4.3.4 Codes of conduct

3.4.3.4.1 DTMR code of conduct for school children travelling on buses

The DTMR Code of Conduct for School Children Travelling on Buses ("Code") was updated in 2014 to address concerns regarding inappropriate and dangerous behaviour of school children travelling on buses.

The feedback from the QLD School Bus Alliance (stakeholder) is that the Code is not working well and bus operators are finding it difficult to apply (and to get action) and there isn't adequate support from DTMR to implement the Code. The feedback from Parents and Citizen's QLD (stakeholder) is that supervision of children travelling on buses is a key issue which has not been addressed sufficiently in the Code. The feedback from the WHSQ¹⁷⁴ driver focus groups identified the parents and guardians were not taking responsibility for children's behaviour on buses, there were no consequences for parents behaving inappropriately, passengers were taking advantage of no the child left behind policy and drivers had no confidence in the Code of Conduct process. Many items were consistent with feedback from key stakeholders during this review.

¹⁷⁴ WHSQ, 2015

3.4.3.4.2 Passenger code of conduct for travelling on buses

The development of a passenger code of conduct has been suggested by Anti-Discrimination Board QLD to raise awareness and set expectations for passenger behaviour in relation to drivers and other passengers. TRACS (2015) identified passenger codes of conduct are useful as enforcement tools. Codes of Conducts require proper signage to inform passengers of expectations and consequences and can deter potential assaults through communication of the code. DTMR currently has terms and conditions of travelling and is a reference point for future development of a passenger code of conduct.

3.4.3.5 High risk passenger policies

We understand from stakeholders this strategy will identify high risk passengers including habitual non payers, aggressive/violent individuals and anti-social behaviour (which can be a precursor to committing crime) with a view to implementing consequences and refusal of service. Bus drivers are aware of high risk passengers however currently there is no formal policy or strategies to address high risk passengers in a consistent or effective manner. This control would tie closely with the work of SNOs and Police.

3.4.3.6 Scheduling of services to reduce delays in services

The review of bus timetables and scheduling has been identified by stakeholders as an important strategy to ensure realistic timetabling. This reduces passenger anger and frustration due to service delays or timetabling issues. DTMR undertakes reviews of bus schedules when required and in response to service change proposals. An entire network review was conducted in 2012/2013. Stakeholders have indicated although they are consulted on this matter, their views are not always taken into consideration and scheduling can be unrealistic.

3.4.3.7 Recruitment policies

Stakeholders recognising the importance of good communication and customer skills are implementing recruitment policies whereby they are taking into consideration customer focused applicants as part of their selection criteria for bus drivers. The strategy facilitates the selection of bus drivers with a greater customer service approach or experience than previously considered. Bus drivers provide a service for customers of which requires good communication skills to manage the daily interactions. This approach may reduce potential disputes with customers in combination with teaching bus drivers how to de-escalate difficult interactions with passengers.

3.4.4 Technologies

3.4.4.1 Cashless fare and ticketing systems

There are safety benefits arising as a result of implementing cashless fare and ticketing systems. The DTMR Bus Safety Committee discussed cashless systems in the context of go card uptake in 2011. Through stakeholder discussions we understand cashless fare and ticketing systems will reduce the risk of violence but does not entirely eliminate the issue of fare conflict (e.g. but not limited to go card not topped up, not enough money, and attitudes to paying fares). The feedback is based on current fare and ticketing systems. Future fare and ticketing systems may utilise technology that may reduce or eliminate the draw backs listed.

Based on discussions with Transport for NSW, cashless fare and ticketing systems significantly reduces/eliminates fare disputes related to concessions (which are a substantial cause of dispute), misuse, overriding and tops up (not provided on board). There is evidence from Transport for NSW that moving to a largely cashless system (majority of CBD cashless/limited tickets available) has significantly reduced driver and passenger interactions, reduced protracted discussions and removes the issue from the driver.

3.4.4.2 Mobile reporting app

Mobile reporting apps for drivers are not currently in use in QLD and could facilitate improvements in reporting.

The technology is available, examples include:

- A mobile electronic reporting system was developed (GPS Bus Incident Reporting System) and utilised to record incidents for Robyn and Gregory's¹⁷⁵ study into violence towards urban bus drivers in SEQ.
- London Transport¹⁷⁶ were piloting a mobile recording app in 2015 for frontline staff to record incidents directly using an iPad/tablet. The app was due for implementation in 2016.

Refer to Incident Reporting discussed in this Appendix (**Section 3.4.3.3**).

¹⁷⁵ Robyn & Gregory, 2014

¹⁷⁶ London Transport, 2015

Appendix B – Stakeholder consultation list

Name	Position	Organisation
Government		
Anant Bellary	Principal Engineer, Vehicle Standards	Department of Transport and Main Roads
Bolle Borkowsky	Project Director	Department of Transport and Main Roads - TransLink
Christina Heffner	Executive Director, Legislation and Standards	Department of Transport and Main Roads
Clive Lowe	Regional Director SEQ South	Department of Transport and Main Roads - Customer Service Branches
Gordon Buchanan	Executive Director, Operations	Department of Transport and Main Roads - TransLink
Jasmine Green	Acting Executive Director, Service Policy	Department of Transport and Main Roads - TransLink
Jessica Riddell	Acting Executive Director, PT Contracts and Services	Department of Transport and Main Roads - TransLink
Nigel Ellis	Director, Industry Accreditation and Authorisation	Department of Transport and Main Roads - Transport Regulation Branch, Customer Services, Safety and Regulation Division
Peter Milward	General Manager, Passenger Transport Integration	Department of Transport and Main Roads - TransLink
Scott Notley	Manager, Operator Accreditation and Authorisation	Department of Transport and Main Roads - Transport Regulation Branch, Customer Service, Safety and Regulation Division
Suzanne Rose	Acting General Manager, Passenger Transport Integration	Department of Transport and Main Roads - TransLink, Service Policy
Becky Walsh	Director, Education Queensland	Department of Education, Training and Employment
Craig Smith	Senior Sergeant - Officer In Charge	Police Railway Squad, Specialist Services Group, Operations Support Command Queensland Police Service
Drew Brock	Head of Security (Rail)	Queensland Rail
Shane Stockill	Principal Advisor, Manufacturing, Transport & Logistics Team	Workplace Health and Safety Queensland, Office of Industrial Relations
Suzanne Johnson	Acting Director, Strategy & Programs	Workplace Health and Safety Queensland, Compliance & Business Engagement, Office of Industrial Relations
Steve Griffiths	Councillor	Moorooka Ward, Brisbane
Industry		
Brian Sherlock	Safety Specialist	Amalgamated Transit Union International, Silver Spring, Maryland, America

Name	Position	Organisation
David Tape	Executive Director / Association Secretary	QLD Bus Industry Council
Graham Davis	CEO	Clarks Logan City Bus Service
John Calabro	Chief Operations Officer	Transit Australia Group
Lorraine Douglas - Smith	CEO	QLD School Bus Alliance
Matt Anderson	Manager, Bus Operations	Brisbane Transport, Brisbane City Council
Matthew Campbell	General Manager Safety and Risk	Transit Australia Group
Michael McGee	CEO	Transit Australia Group
Peter Biagini	Queensland Branch Secretary	Transport Workers Union
Sarah Mawhinney	Campaign, Communication and Political Coordinator	Transport Workers Union
Tom Brown	Assistant State Secretary and Secretary, Tram and Bus Division	Rail, Tram, Bus Union
Tertiary		
Mark Hickman	TAP Chair and Professor of Transport Engineering	The University of QLD
Matthew Burke	Associate Professor, Cities Research Institute	Griffith University
Robyn Lincoln	Assistant Professor, Criminology	Bond University
Simon Washington	Professor and Strategic Transport Research Chair Civil Engineering and Built Environment	Science and Engineering Faculty, Centre for Accident Research and Road Safety (CARRS-Q), Health Faculty, Queensland University of Technology
Advocacy		
Cathie McMillian	Member	Parents and Citizens' QLD
Julie Ball	Principal Lawyer	Anti-Discrimination Commission Queensland
Ken Searles	Operations Manager	Daniel Morcombe Foundation
Neroli Holmes	Deputy Commissioner	Anti-Discrimination Commission Queensland
Tracey McAsey	National Strategy and Events Manager	Daniel Morcombe Foundation
Interstate Agencies		
Alan Castree	Manager, Fleet and Depot	Department of Planning, Transport and Infrastructure (South Australia)
Geoffroy Denis	Executive Director, Operations and Performance, Franchise Operator Management	Public Transport Victoria
John Karaboulis	Executive Director, Service Delivery and Performance Infrastructure & Services	Transport for New South Wales
Karl Mortimer	Manager Public Transport, Operations and Planning	Department of Planning, Transport and Infrastructure (South Australia)
Martin White	Executive Director, Transperth System, Regional Town & School Bus Services	Public Transport Authority of Western Australia

Appendix C - Survey questions

Included below are the questions and text provided in the Deloitte Bus Driver Safety Survey, as it appeared on the online survey.

Thank you for taking part in this important survey to identify the current causes of violence related bus driver incidents in Queensland and the effectiveness of measures to prevent or minimise violence against bus drivers. This survey will help identify measures to prevent violence against bus drivers and will only take 5-10 minutes to complete. Be assured that all answers you provide will be kept in the strictest confidence.

General Questions

Christian name and surname (please note your name will be solely used for response cross checking purposes)

What is your age?

- 18-24 years old
- 24-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65 years or older

How long have you been a bus driver in Queensland?

- Less than 1 year
- 1 to 4 years
- 5 to 9 years
- 10 to 14 years
- 15 to 19 years
- 20+ years

What is your current role? (select all that apply)

- A public bus driver
- A school bus driver
- Management
- Admin
- Other (please specify) _____

What is your principal route? (please specify number / name)

In what Region do you operate / work?

- Brisbane region including Ferny Hills and Eatons Hill
- Northern region including Bribie Island, Redcliffe and Caboolture
- Southern region including Beenleigh, Loganholme, Loganlea, Browns Plains, Logan Central, Slacks Creek, Woodridge and Springwood
- Eastern region including Capalaba, Cleveland, Redland Bay and Victoria Point
- Western region including Goodna, Springfield, Ripley, Ipswich, Rosewood and Helidon
- Sunshine Coast including Caloundra, Maroochydore, Noosa, Landsborough, Nambour and Cooroy

- Gold Coast stretching south to Coolangatta, west to Nerang, and north to the developing areas of Coomera and Ormeau
- Cairns
- Townsville
- Rest of Queensland

Bus driver safety questions

During 2016 have you experienced any of the following incidents whilst operating a bus and, if so, estimate the number of times you have experienced the incidents (please complete for all that apply):

	Number
Aggression, intimidation or verbal abuse (e.g. glaring or staring, name calling, personal insult or sworn at, gestures or pointing, threat of physical harm)	
Antisocial behaviour (e.g. loud or unruly behaviour, drug or alcohol induced behaviour, passengers disturbed or antagonised, fare evasion)	
Physical assault (e.g. pushed or shoved, punched, kicked, object thrown at or sprayed with substance, spat at, weapon produced, weapon used, robbed of cash or other item)	
Damage to bus (e.g. item thrown at bus, bus struck by person or object held by person)	
Road Rage (including vehicle drivers & cyclists) (e.g. name calling, personal insult or sworn at, gestures or pointing, threat of physical harm, physical assault, damage to bus)	
Other (Specify)	

Did you report all these incidents?

- Yes
- No

If 'No', what was the reason(s) for not reporting the incidents? (select all that apply)

- Not serious enough
- Not sure it needed to be reported
- No time & / or too much paperwork
- Nothing would be done about it
- Might be blamed for it (fear of reprisal)
- Other - please specify _____

Compared to earlier years, has the frequency of incidents in 2016?

- Increased
- Decreased
- Remained the same

Compared to earlier years, has the severity of incidents in 2016?

- Increased
- Decreased
- Remained the same

In 2016, list the 5 most significant factors initiating or contributing to violent incidents against bus drivers. You may consider the following examples but should not feel limited to them:

Fare evasion or conflict over fare Drug affected passenger Alcohol affected passenger Mentally ill

passenger Attitude of school children, adolescents or other class of persons Conflict between passengers
 Late running or schedule delays, poor timetables or similar Bus conditions: overcrowding, A/C not
 working, ticketing machine not working, mechanical problems with bus or similar Cash handling Approach
 of bus driver (frustration, poor communication, aggressive or similar) Environmental conditions: working
 alone or in isolation, darkness, particular suburbs (or similar) Poor bus driving skills

- 1.
- 2.
- 3.
- 4.
- 5.

What proportion of violent incidents against bus drivers in 2016 involve persons that are affected by drugs and / or alcohol?

- Less than 25%
- 26% to 50%
- 51% to 75%
- More than 75%

How do you rate the effectiveness of the following measures in preventing or minimising incidents against bus drivers? (please rate all measures)

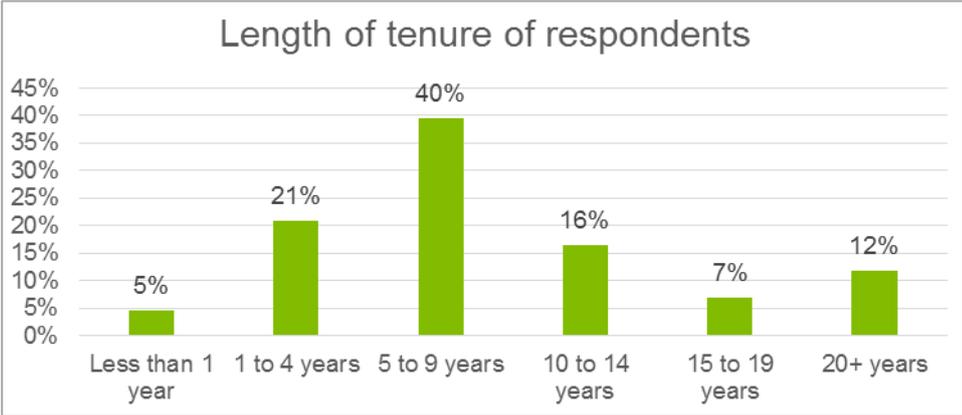
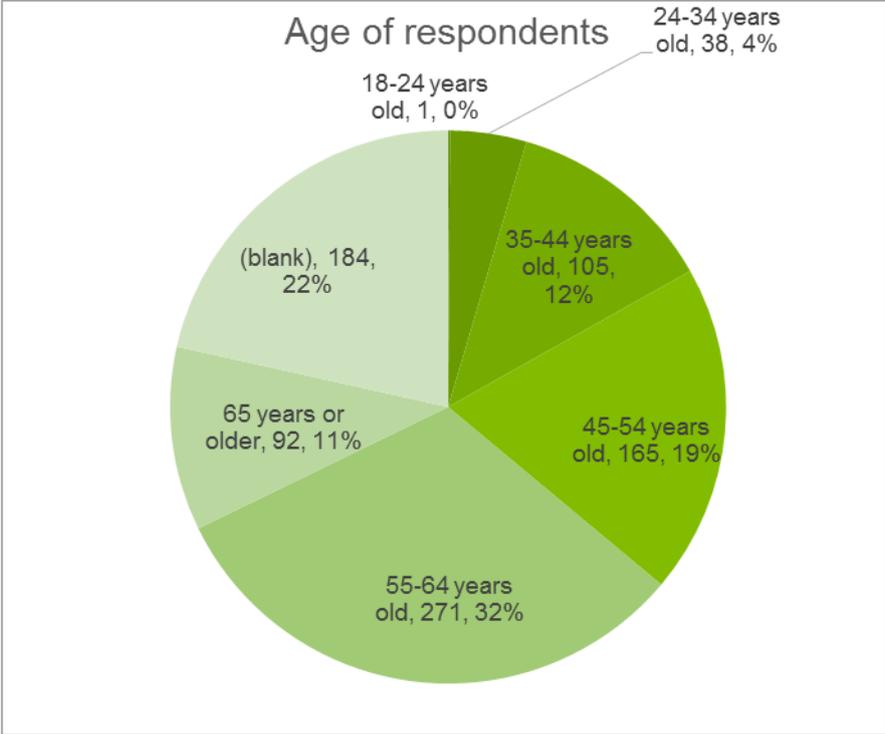
	Not available	Very Poor	Poor	Fair	Good	Very Good
Driver barriers or screens						
CCTV						
Duress alarms						
Radio Communication						
Reduction in cash handling (electronic ticketing)						
Policy or procedure (Managing fare evasion, managing inappropriate behaviour, refusal of service, emergency response etc.)						
Training (Communication, conflict resolution, de-escalation etc.)						
Visibility of Senior Network Officers						
Visibility of QLD Police						
Visibility of Private Security						
Community awareness of bus drivers role and standards of behaviour						
Consequences for offenders						

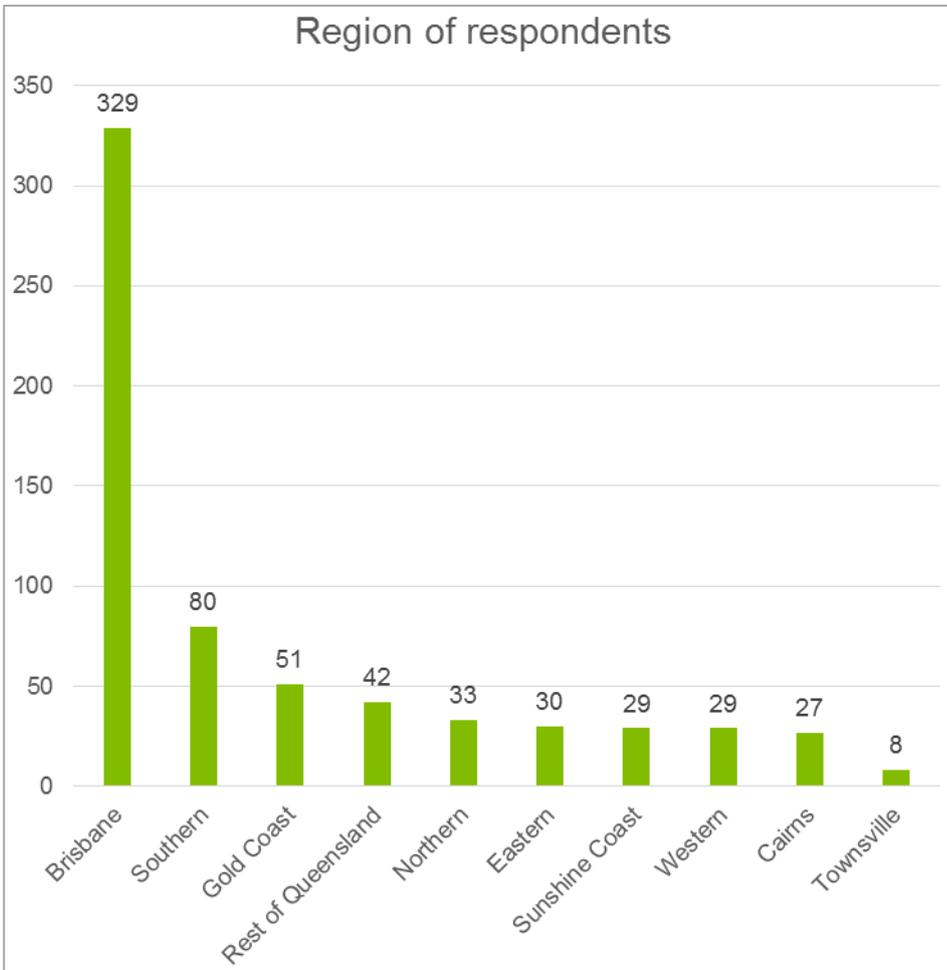
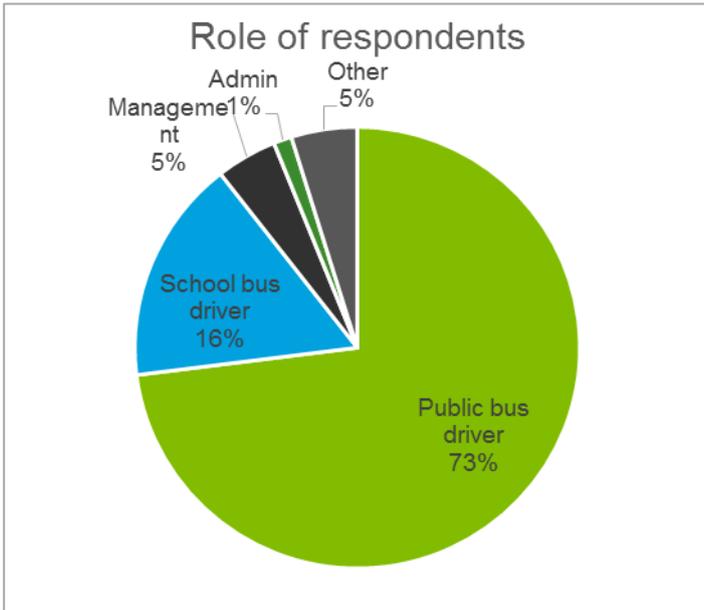
Are there other measures not listed above that could further prevent or minimise incidents against bus drivers? (If no, answer 'None')

- 1.
- 2.
- 3.

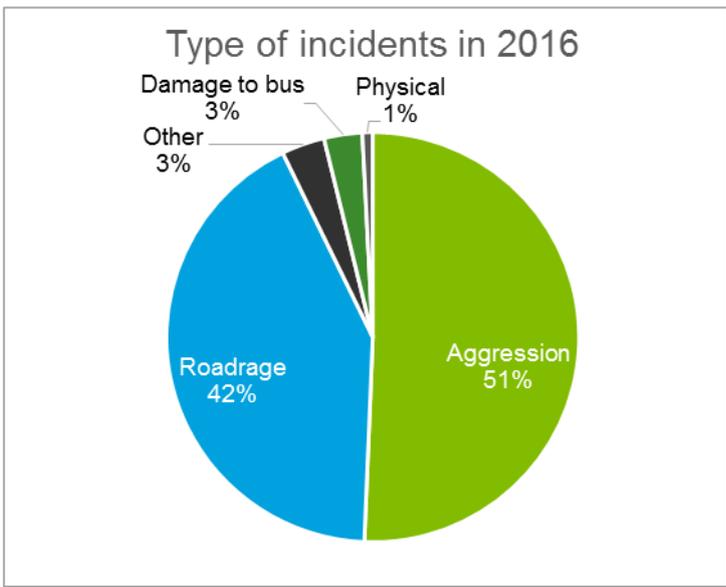
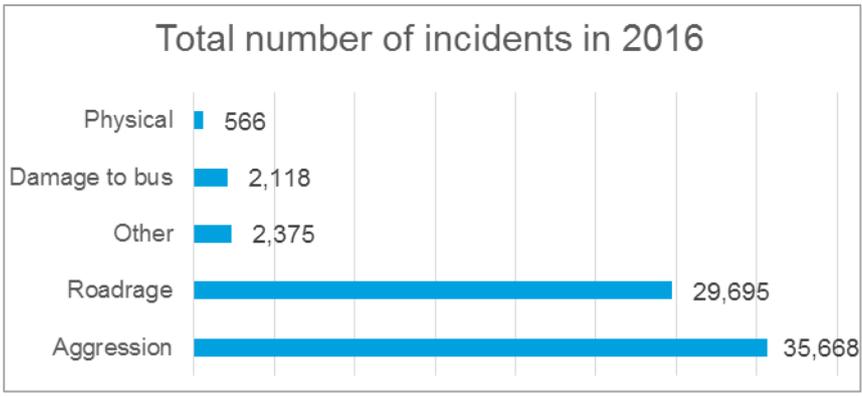
Appendix D - Survey results

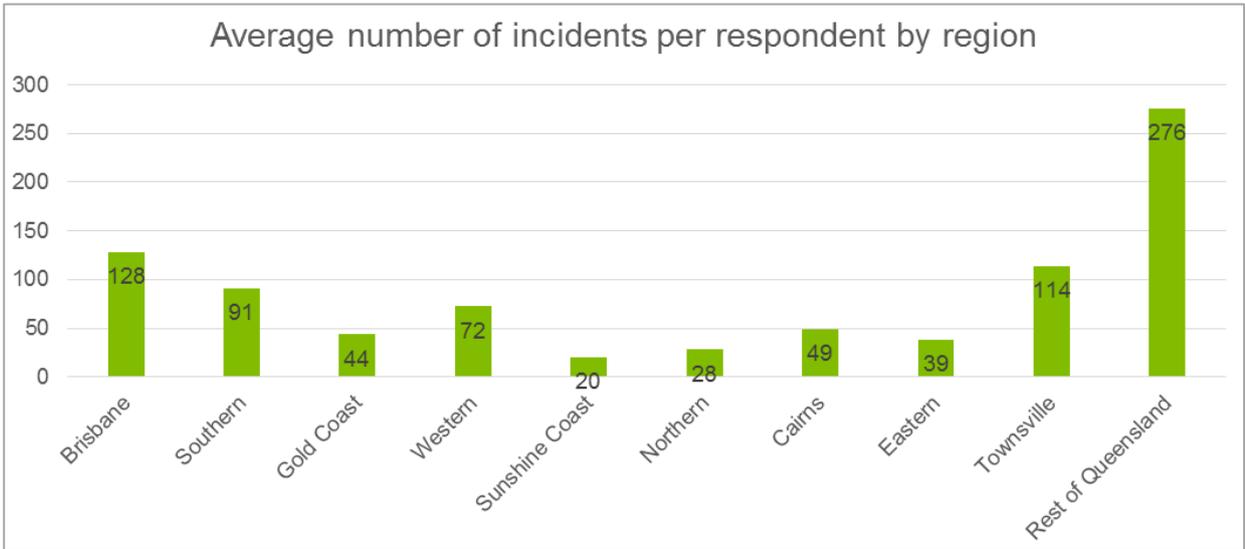
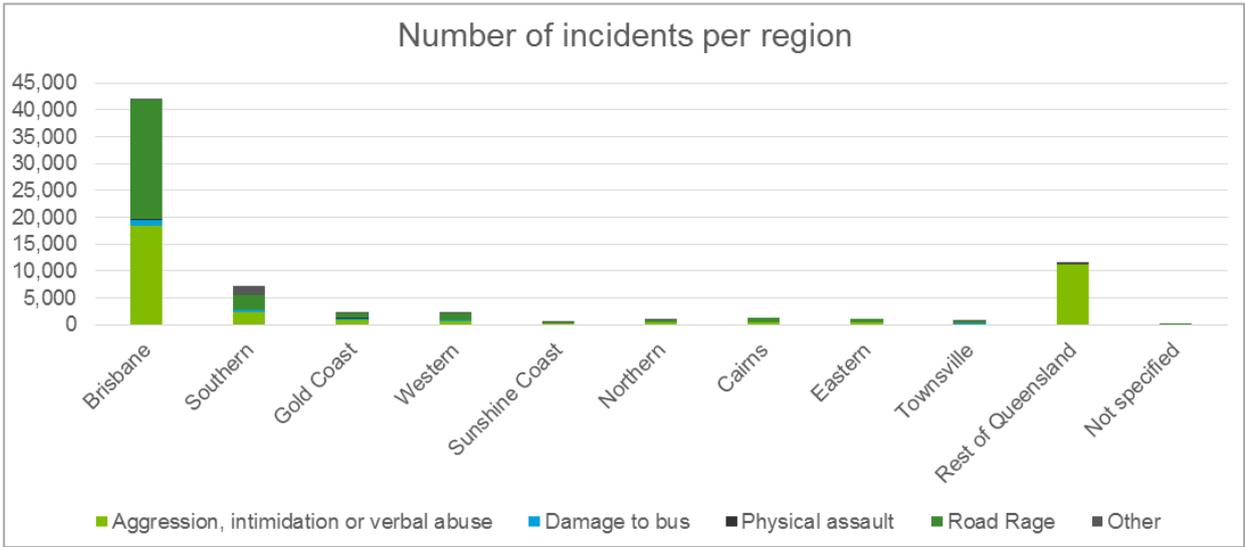
General questions



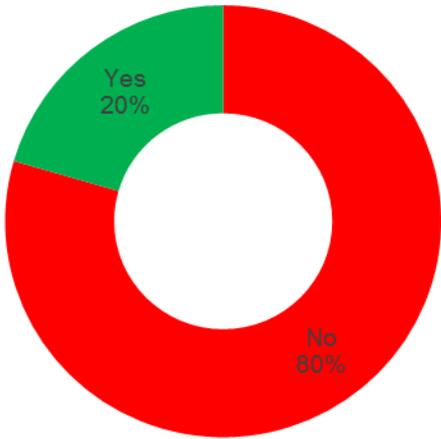


Safety questions

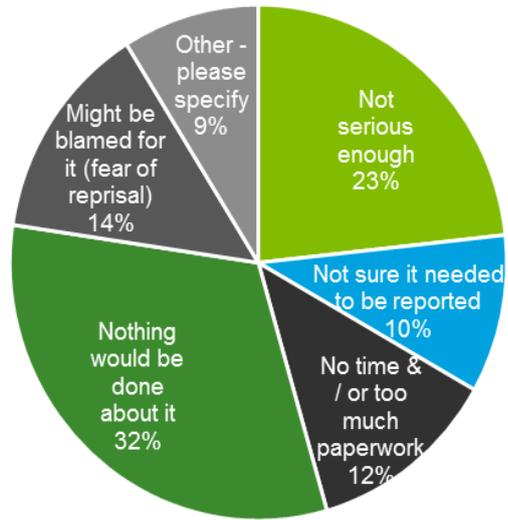




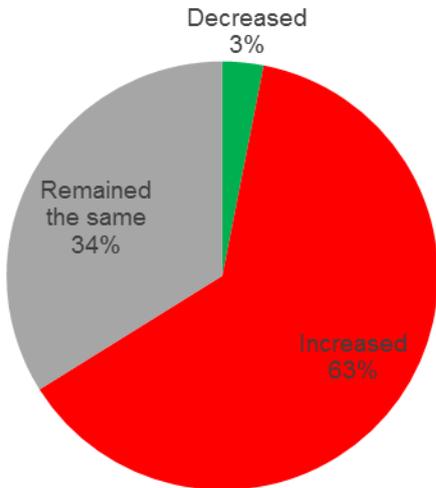
Did you report all of these incidents?



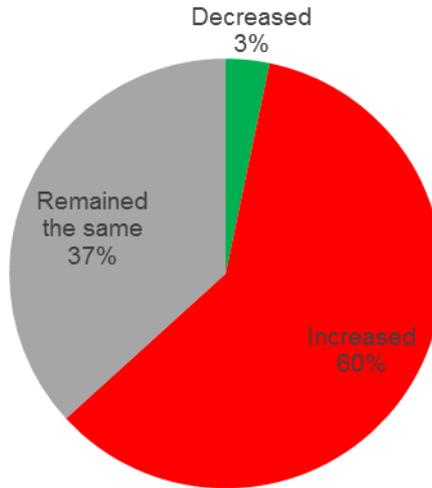
Reason for not reporting

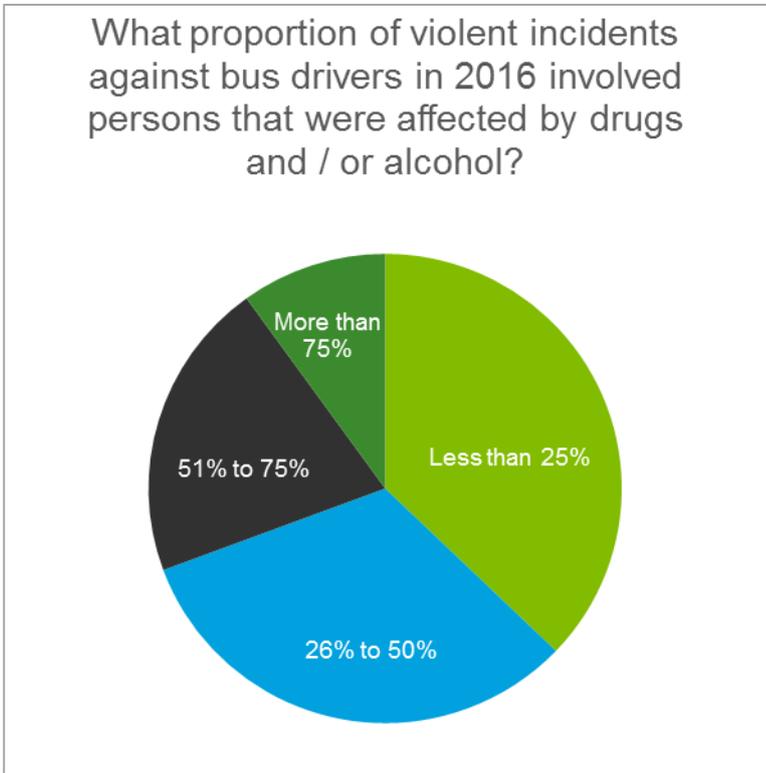
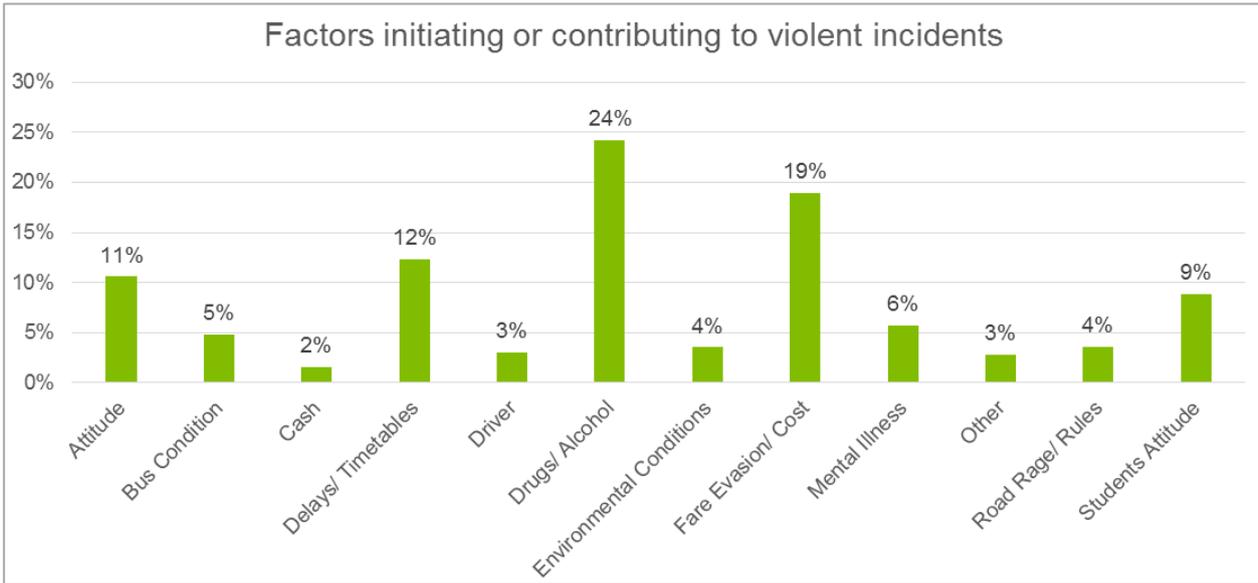


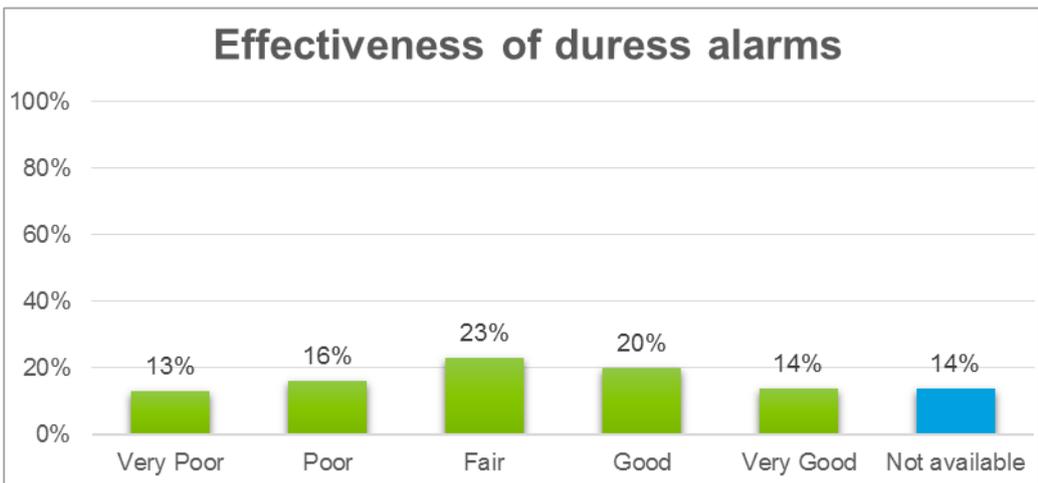
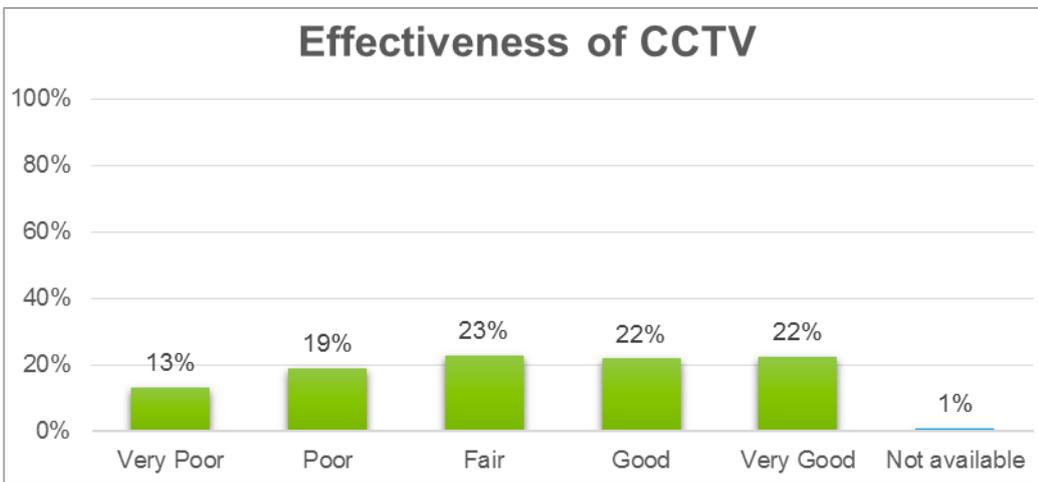
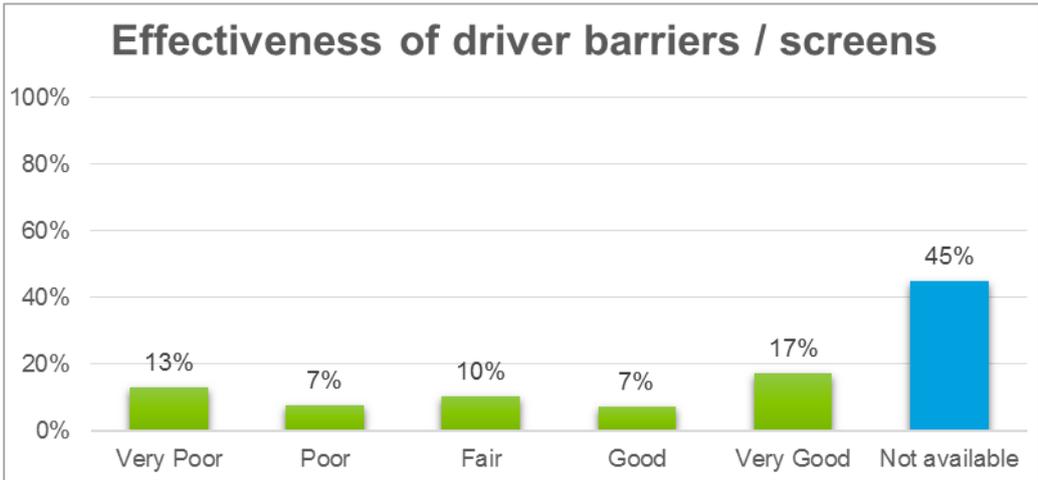
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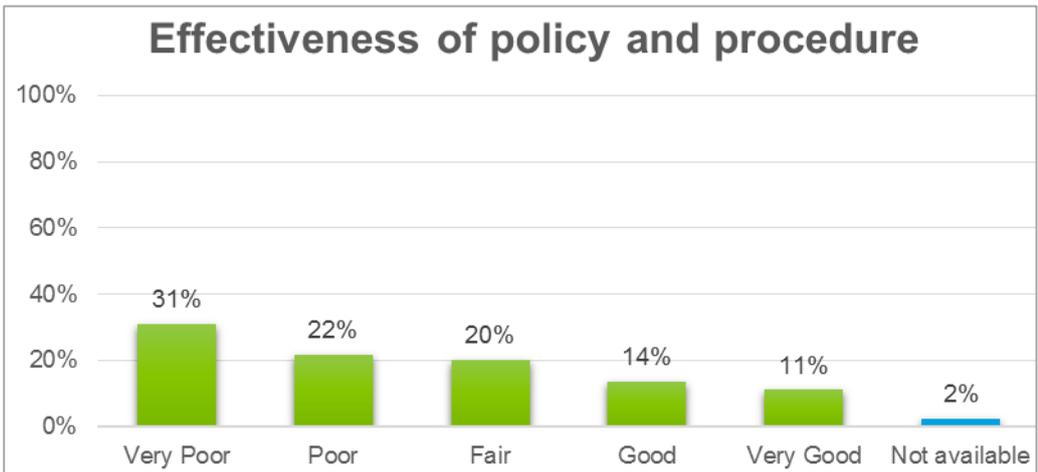
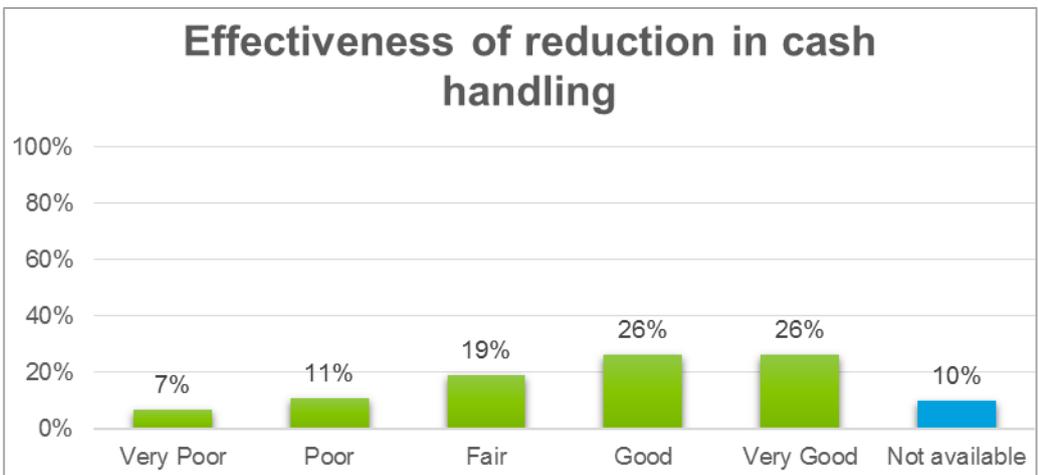
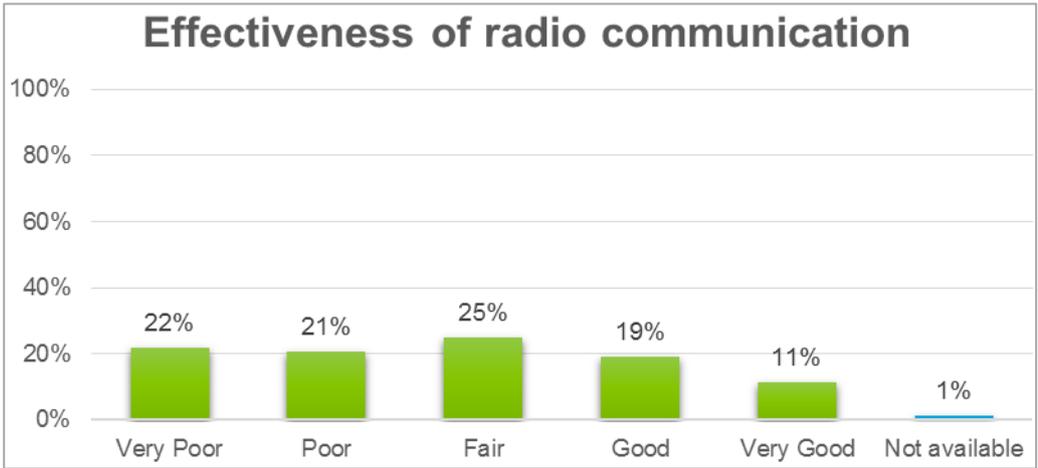


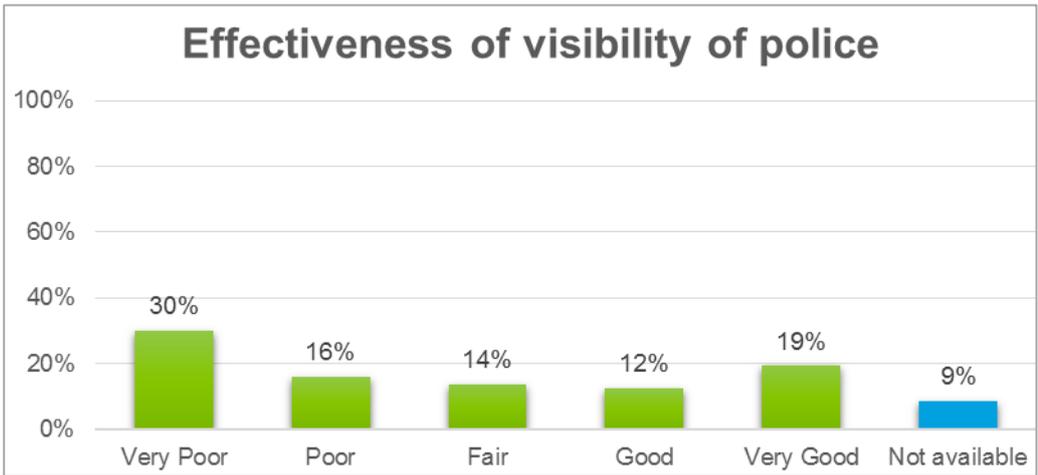
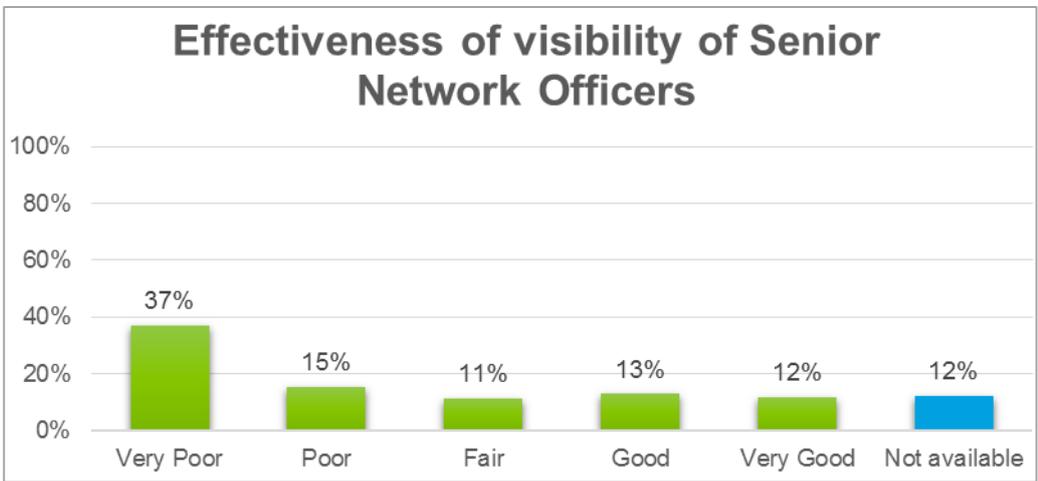
Compared to earlier years, the severity of incidents in 2016 has...

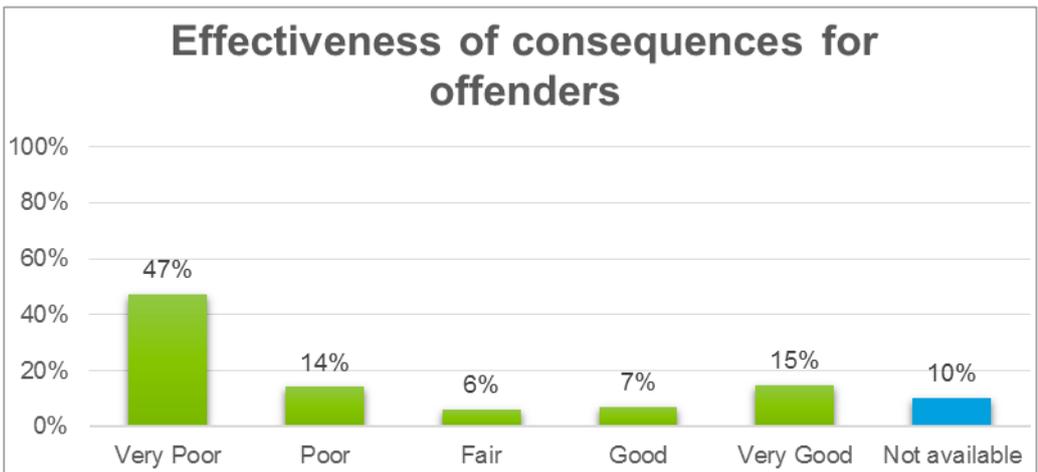
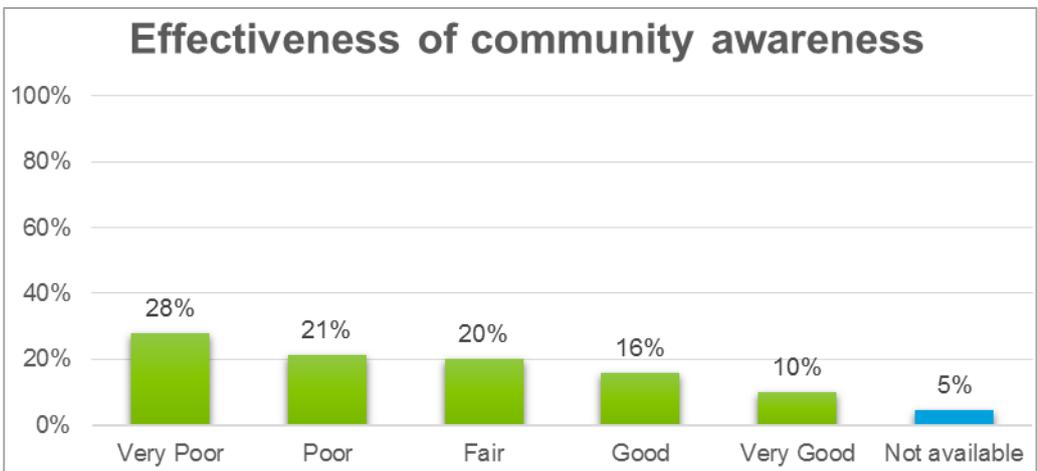
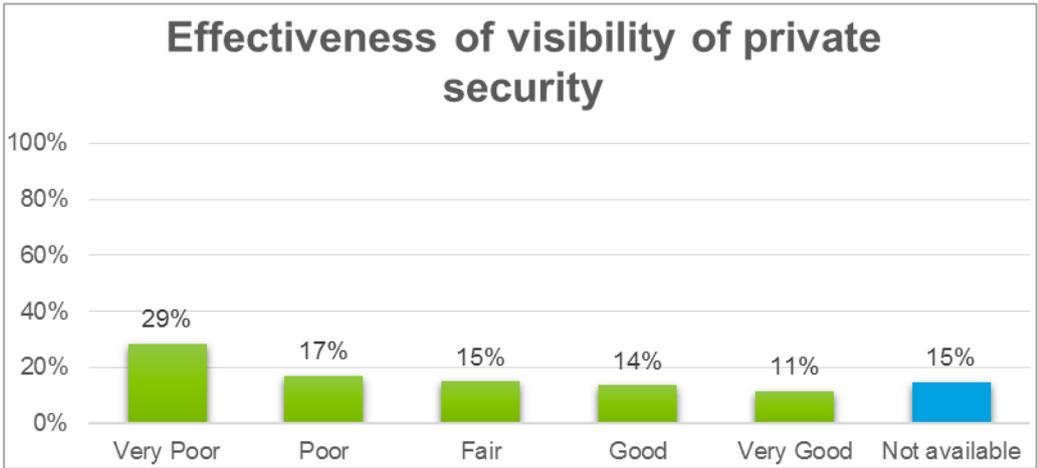












Appendix E – Our detailed approach

To deliver on the scope, an approach (refer **Section 1**) was developed and followed, as outlined below:

1. Our approach

The approach to undertaking this review was multi-faceted, requiring extensive research, consultation, cost modelling and analysis.

1.1 Principles of our approach

- A risk management approach underpinned the review at all stages inclusive of defining risk environments for bus operators and grouping initiatives into packages that were defined by those risk levels.
- Our work was focused on understanding bus driver's exposure to violence and controls to manage the risk.
- An evidence based and data driven approach was pursued (where available) shaping insights, observations and directions.
- Processes were implemented to achieve consistency of approach with stakeholder engagement and review of research.
- A rigorous process was applied to select potential initiatives involving a selection criteria.
- A set of potential initiatives were aligned to cost, risk of violence and grouped into "packages" aligning with the violence risk of operating environments of bus operators.
- Detailed costings were undertaken performing extensive cost modelling over an evaluation period of ten years for selected potential initiatives for each bus operator inclusive of sensitivity analysis.
- To achieve realistic outcomes cost assumptions were developed based on industry consultation, as well as an examination of previous studies and initiatives undertaken by the QLD and interstate governments, industry, unions and the tertiary sector in relation to the issue.
- Funding mechanisms were investigated for potential initiatives with reference to practical examples in the bus or transport industry for the QLD Government's consideration.

1.2 Our approach to meet the scope

To achieve the scope of the review, we:

- a) Prepared for the review by identifying authoritative principles to guide our work, defining violence (refer to **Section 2**) and developing a common set of interview questions to ensure consistency of approach for stakeholder engagement.
- b) Examined previous studies in Australia and overseas. Examined initiatives undertaken by QLD and interstate governments, industry, unions, and the tertiary sector to gain insight and knowledge in relation to issues impacting bus driver safety. We also researched bus driver safety systems (e.g. technological systems) and examined their benefits and practical application to improve bus driver safety (refer to **Appendix A**).
- c) Examined current safety systems, policies, infrastructure, procedures, and training to determine their ability to manage bus driver safety (refer to **Appendix A**).
- d) Assessed initiatives currently underway across QLD and interstate governments to address bus driver and passenger safety, and how these can complement current safety frameworks and systems (refer to **Appendix A**).

- e) Consulted extensively with interested stakeholders including members of industry, QLD government, interstate government agencies, tertiary sector and advocacy groups (refer to **Appendix B**). The aim of the consultation was to understand stakeholder's perspectives on the nature and risks of violence and identify potential initiatives that can improve bus driver safety along with research, systems and initiatives set out above (refer to **Appendix A**).
- f) Conducted an online, anonymous bus driver safety survey to obtain direct feedback from QLD bus drivers and associated staff (e.g. management and administration). The survey focused on two factors (1) violence encountered in the course of performing bus driver duties and (2) safety controls in the context of geographically dispersed locations. Refer to **Appendix C** for the survey questions and **Appendix D** for survey results.
- g) Investigated funding mechanisms for potential driver safety initiatives for the QLD Government's consideration (refer **Section 4.7**).

2. Research

Comprehensive research on issues related to violence to bus drivers impacting bus driver safety was conducted to gain insight and knowledge from previous Australian and international studies and initiatives. Furthermore, environmental scanning was conducted to assist in forming a view on the benefits and practical application of driver safety systems. Research from the government, industry, unions and the tertiary sector were reviewed.

3. Stakeholder consultation

An extensive process of stakeholder consultation was undertaken, with members of industry, government, interstate agencies, advocacy groups and tertiary were consulted. The stakeholders were identified by DTMR, through stakeholder referral and Deloitte's interstate contacts.

The engagement period with stakeholders extended from 21st November 2016 to 1st February 2017, with the majority of consultations occurring from 21st November 2016 to the 22nd December 2016. Individual meetings were held with each stakeholder (refer below **Section 3.2**, Consultation Summary).

The aim of the consultation was to understand stakeholder's perspectives on the nature and risks of violence and identify potential initiatives that improve bus driver safety along with research, systems, training and initiatives relevant to the scope of this review.

Collaboration with stakeholders involved 39 separate consultations with QLD Government, industry (including 1 overseas contact), interstate government agencies, the tertiary sector, and advocacy groups (refer to **Section 3.2** below, Consultation Summary and **Appendix B**) inclusive of workshops with the Transport Workers Union (TWU) and Rail, Tram and Bus Union (RTBU) where 15 delegates and 8 delegates respectively represented their members views on violence risks and safety controls; refer to below and **Appendix B** for a full list of stakeholders.

Additionally bus drivers were given the opportunity to directly contribute to the review through the Deloitte Bus Driver Survey. Subsequently the survey responses of 522 bus drivers contributed to the review (refer to **Section 3.1** below and **Appendix C and D**). Stakeholder interview questions were developed and used consistently throughout consultations. This ensured that a consistent approach was followed and that stakeholders were given an equitable opportunity to contribute. All feedback and comments were taken into account when developing the recommendations.

Stakeholder consultation was a key element of this review as it provided an understanding of current systems and measures to manage driver safety, and their efficacy. Furthermore, it uncovered initiatives currently underway across government, both locally and nationally, that may complement proposed driver safety initiatives.

There was an excellent response and contribution from stakeholders contacted to participate in the review. DTMR were appraised of the consultation process through weekly meetings and progress reports.

3.1 Survey

A component of stakeholder consultation was to conduct a bus driver safety survey to capture the feedback of bus drivers directly and anonymously.

Deloitte drafted the survey questions through consultation with key DTMR personnel. The survey comprised of eight multi-part questions regarding bus driver safety in relation to violence encountered and safety controls to address violence, and six general demographic questions which allowed analysis to be conducted on location-specific issues, and assisted in establishing that each participant completed one survey only. Refer to **Appendix C** for the final list of survey questions.

The survey was distributed via the QLD Bus Industry Council (QBIC) to their member organisations and via the RTBU and TWU to their members. Survey participants were provided a URL and completed the survey online, using either a web browser or mobile device. The survey was open for more than a week, from Friday 2nd December until Monday 12th December 2016. Refer to **Appendix D** for survey results.

One of the questions asked participants to provide an estimated number of times they had experienced various incidents in 2016 whilst operating a bus. To maximise insights from the survey, no limits were placed on the quantitative responses for this question. All responses were considered when forming our views about safety issues and the extent of violence. For the purpose of identifying high risk geographies and to provide meaningful data insights, statistically significant outliers were removed as they skewed the data.

3.2 Consultation Summary

- 36 key stakeholders contacted including workshops held with both TWU and RTBU delegates comprising of 15 TWU and 8 RTBU delegates;
- 39 stakeholder meetings completed during the review;
 - 31 initial meetings completed;
 - 7 second meetings completed (TWU, RTBU, Brisbane Transport, Operations DTMR, Transit Australia Group, WHSQ, Bond University);
 - 1 third meeting completed (Brisbane Transport);
- 1 stakeholder meeting identified but not conducted (Commercial Transactions DTMR); and,
- 522 bus drivers completed the Deloitte Bus Driver Safety Survey.

Breakdown of Key Stakeholder Groups

Government Departments	Industry	Tertiary	Interstate Agencies	Advocacy	Bus Drivers
14	7	4	4	3	522

Government (14)	Industry (7)	Tertiary (4)	Interstate Agencies (4)	Advocacy (3)	Bus Drivers
<ul style="list-style-type: none"> • Passenger Transport Integration, Translink • Service Policy Translink • PT Contracts & Services Translink • SEQ South Regional Branches DTMR • Operations DTMR • Legislation & Standards DTMR • Industry Accreditation & Authorisation, Transport Regulation Branch, DTMR • Vehicle Standards DTMR • Strategy & Programs WHSQ • Manufacturing, Transport, Logistics WHSQ • Brisbane Transport • Department of Education, Training & Employment • Queensland Police Service • Moorooka Ward 	<ul style="list-style-type: none"> • Transport Workers Union • Rail Tram Bus Union • Clarks Logan Bus Service • Transit Australia Group • QLD Bus Industry Council (Bus Industry Confederation) • QLD School Bus Alliance • Amalgamated Transit Union/USA 	<ul style="list-style-type: none"> • Cities Research Centre, Griffith University • CARRS, QUT • Criminology, Bond University • Transport Engineering, UQ 	<ul style="list-style-type: none"> • Transport Authority of WA • Department of Premier and Cabinet SA • Public Transport Victoria • State Transit Authority of NSW 	<ul style="list-style-type: none"> • Daniel Morcombe Foundation • Anti – Discrimination Commission QLD • Parents and Citizens' QLD 	<ul style="list-style-type: none"> • 522 QLD bus drivers

Key Stakeholders Consulted and Meetings Conducted

Key Stakeholder	Position	1 st Meeting	2 nd Meeting	3 rd Meeting
Peter Milward (Suzanne Rose as A/GM)	General Manager (Passenger Transport Integration) TransLink Division DTMR	✓		
Suzanne Rose (Jasmine Green as A/ED)	Executive Director (Service Policy) TransLink Division DTMR	✓		
Danny Foster (Jessica Riddell as A/ED)	Executive Director, (PT Contracts and Services) TransLink Division DTMR	✓		
Becky Walsh	Director, Education Queensland Department of Education, Training and Employment (DETE)	✓		
Suzanne Johnston	A/Director Strategy & Programs WHSQ Office of Industrial Relations	✓	✓	
Shane Stockill	Principal Advisor, Manufacturing, Transport, Logistics Team WHSQ Office of Industrial Relations	✓	✓	
Gordon Buchanan	Executive Director (Operations), DTMR	✓	✓	
Matt Anderson	Branch Manager Operations Brisbane Transport	✓	✓	✓
Tom Brown	Assistant State Secretary Rail Tram and Bus Union (RTBU)	✓	✓	
Peter Biagini	QLD Branch Secretary Transport Workers Union (TWU)	✓	✓	
Lorraine Douglas-Smith	CEO Queensland School Bus Alliance	✓		
Tracey McAsey	National Strategy and Events Manager Daniel Morcombe Foundation	✓		
Ken Searles	Operations Manager Daniel Morcombe Foundation	✓		
Christina Heffner	Executive Director (Legislation and Standards) DTMR	✓		
Neroli Holmes	Deputy Commissioner Anti-Discrimination Commission Queensland	✓		
Julie Ball	Principal Lawyer Anti-Discrimination Commission Queensland	✓		
A/Professor Matthew Burke	Cities Research Institute Griffith University	✓		
Clive Lowe	Regional Director, DTMR	✓		
Professor Simon Washington	Professor and Strategic Transport Research Chair Civil Engineering and Build Environment, Science & Engineering Faculty Centre for Accident Research and Road Safety, Health Faculty Queensland University of Technology	✓		

Key Stakeholder	Position	1 st Meeting	2 nd Meeting	3 rd Meeting
Graham Davis	CEO Clarks Logan Bus Operator (private)	✓		
David Tape	Executive Director/Association Secretary Queensland Bus Industry Council (QBIC)	✓		
Michael McGee	CEO Transit Australia Group (bus operator)	✓		
John Calabro	COO Transit Australia Group (bus operator)	✓	✓	
Matthew Campbell	GM Safety and Risk Transit Australia Group (bus operator)	✓		
Anant Bellary	Principal Engineer (Vehicle Standards), DTMR	✓		
A/Professor Robyn Lincoln	A/P Criminology Bond University	✓	✓	
Nigel Ellis	Director (Industry Accreditation & Authorisation) DTMR	✓		
Scott Notley	Manager (Industry Accreditation & Authorisation) DTMR	✓		
Professor Mark Hickman	TAP Chair and Professor of Transport Engineering The University of Queensland	✓		
Martin White	ED Transperth System, Regional Town & School Bus Services Public Transport Authority of WA	✓		
Karl Mortimer	Manager Public Transport, Operations and Planning Department of Planning, Transport & Infrastructure (SA)	✓		
Alan Castree	Manager Fleet and Depot Department of Planning, Transport & Infrastructure (SA)	✓		
Cathie McMillan	Parents and Citizens' Queensland	✓		
Matthew McCahon	ED Commercial Transactions Translink /DTMR	Not conducted		
Bolle Borkowsky	Project Director Translink, DTMR	Not conducted		
Senior Sgt Craig Smith	Officer in Charge Police Railway Squad, Operations Support Command, QPS	✓		
Drew Brock	Head of Security (Rail)	✓		
Geoffroy Denis	ED Operations and Performance Franchise Operator Management Public Transport Victoria	✓		
John Karaboulis	ED Service Delivery and Performance Infrastructure and Services	✓		

Key Stakeholder	Position	1 st Meeting	2 nd Meeting	3 rd Meeting
Brian Sherlock	Transport for NSW Safety Specialist	✓		
Steve Griffiths	Amalgamated Transit Union International, Maryland. America Councillor Moorooka Ward	✓		

Additional Notes:

Please note Michael Apps, Executive Director from Bus Industry Confederation referred Deloitte to David Tape from QLD Bus Industry Council in relation to consultation for this review. The QLD Bus Industry Council is a member of the Bus Industry Confederation Council.

Please note Senior Sergeant Craig Smith was sourced as the alternative QPS contact in place of Mark Yabsley (Senior Sergeant, Traffic Adjudication, Road Policing Command).

Please note the bus driver of the year was extended an invitation to contribute to the review as per the QLD Minister of Transport's request. Brisbane Transport was contacted to extend the invitation and subsequently Deloitte followed up the invitation. We were subsequently not contacted by the bus driver of the year.

Please note the Minister extended an invitation for Paulina Calderon to contribute to the review. Subsequently a submission was received by Deloitte in March 2017, of which we were able to reference in the April amendment to this report. We had previously been provided by the RTBU with minutes of a meeting held between Paulina Calderon and the Minister regarding bus driver safety.

4. Costing model

The associated cost estimates of the following recommended initiatives were modelled over the evaluation period of ten years, starting from financial year (FY) 2018 to FY 2027.

Cost assumptions were developed based on industry consultations, as well as review of previous studies and initiatives undertaken by the government, industry, unions and the tertiary sector in relation to issues. A more detailed review of the assumptions underlying cost estimates for each of the identified recommended initiatives is provided in **Appendix I**.

5. Funding models

To provide a shortlist of funding options we engaged in a two stage process.

1. Stage 1: Identify a list of feasible funding mechanisms for the initiatives.
2. Stage 2: Investigate current or recent funding methods used for safety or other types of initiatives in the public transport space within Australia.

A shortlist of four funding options is provided in **Section 4.7**.

6. Initiative analysis and selection

Initiatives identified through research and stakeholder consultation were assessed against the following assessment criteria to assist with identifying recommendations.

Initiatives that were proactive, state-wide and addressed one or more of the key triggers were preferred over those that did not. The key triggers were identified as the five most influential factors that lead to violence through research and stakeholder consultation, including the survey.

All initiatives selected were identified by multiple stakeholders and are technically feasible. In addition, they all address the risk in terms of the nature and extent of violence, and the key triggers.

The impact to drivers, bus operators, passengers and the tax payer (cost) was also considered.

Each recommendation contains a table as set out below to provide a summary of key selection criteria that contributed to the selection of the potential initiative.

 Proactive Reactive	 State-wide Location-specific	 Fare disputes Alcohol / drugs Attitude Delays Student attitude
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Refer to **Appendix H** for a complete list of controls considered through this review.

7. Limitations of our work

We acknowledge the individual views and inputs provided by the stakeholders who contributed to the review were a valuable source of information that supplements the research information and data analysed as part of our review. However, in relation to other information sources pertaining to violence to bus drivers, there were limitations with access to complete and reliable data and documented information as part of performing our procedures. This was mainly due to a lack of publicly available information and limited research conducted on this topic and the confidentiality concerns raised by some stakeholders in providing the data or information required for our review.

Documented information pertaining to risks of violence associated with bus drivers, incidents of violence and safety controls utilised in the bus industry are the property of private bus operators. Permission is required to access and review data of this nature as it is not publicly available. This is not contained to QLD as we found across Australia and internationally this was often the case. The Bus Driver Safety Review was commissioned by the QLD government and not by private bus operators or industry where no obligation exists to release information of this nature. Concerns were raised by some stakeholders in relation to providing Deloitte with information that are considered commercially sensitive or confidential in nature. The difficulties in obtaining relevant data and information impacted the timeliness, nature and volume of documentation that was made available to Deloitte to confirm stakeholder discussions and literature reviewed.

In particular there were difficulties accessing and obtaining reliable and complete incident data on violence to bus drivers QLD wide. We also found there was limited research studies and information on violence to bus drivers and associated controls available in Australia and internationally. Subsequently there was some reliance on anecdotal and qualitative information from stakeholders, cases studies and reports to form our views on this topic.

The limitations highlighted above in accessing relevant and reliable documented information created constraints in forming our views on risk, understanding the magnitude of violence to bus drivers and identifying potential initiatives and the effectiveness of those initiatives for bus driver safety during our review.

Appendix F - Costing model assumptions

1. General assumptions

The following general assumptions were adopted for the cost estimates:

Table 9 **Key general assumptions**

Assumptions	Value	Source
Base year	FY 2018	Deloitte assumption ¹⁷⁷
Evaluation period	10 years	Deloitte assumption
Discount rate	4.0%	Deloitte assumption
Escalation rate	2.5%	Queensland Treasury 2016-17 Budget outlook
Contingency (to account for project management, procurement and margin)	15% applied to all cost estimates	Deloitte assumption

The assumptions with regards to the number of DTMR buses, drivers and depots within the network are presented in the **Appendix F**. We have assumed no growth in fleet size and driver numbers.

A number of the control initiatives will require buses to be taken out of operation for installation of the control infrastructure. We have assumed operators have sufficient spare buses to allow for the installation program without affecting service provision and have not allowed for any additional cost of short term bus hire.

2. Cost model data limitations

While efforts were made to source reliable estimates of costs for each potential initiative, there is a risk that the actual cost for some initiatives will be different from those provided. This is due to:

- The data provided by stakeholders being out-dated or based on different scale and timing assumptions;
- A range of costs were provided by stakeholders without a clear indication on which would be the most suitable;
- Reliance on high-level estimates employed from other sources where specific data was unavailable; and,
- The cost data available was not segregated (as it was not possible to clearly separate the cost related to just the single initiative).

¹⁷⁷ Deloitte, Queensland Treasury Budget and Strategy Outlook 2016-17

The following Table (10) provides a summary of the data related limitations of the model, and how they have been moderated.

Table 10 **Data limitations and moderations**

Control initiative	Data limitations	Moderation
Barriers	Range of costs for different barrier types provided	Use an average of costs provided.
De-escalation training	Range of costs for different lengths of training workshops	Use workshop length currently employed by stakeholder. Allow sensitivity testing between different risk scenarios
Increased presence	No indication of actual average cost of police officers used in Queensland's public transport system	Assume police officers to be similar rank as current rail squad (senior constables). Use average of senior constable pay scale (allowing for on-costs and penalty payments)
Duress and radio	Cost provided from stakeholder consultation not segregated – includes CCTV and audio. Cost is also very high	Use data from other sources – providing a range of costs. Include sensitivity analysis of cost range
CCTV	Cost data provided during stakeholder consultation is dated (2011). No maintenance costs provided.	Use 2011 figures (unindexed as technological costs often decrease over time), but provide indicative costs using other sources. Assume maintenance/operating costs are 5% of capital costs per annum
Public Awareness Campaign/Advertising campaign	No costs provided	Use high-level estimates from other sources for similar campaigns
Anti-shatter glass	No data supplied through stakeholder consultation	Use estimate provided through direct discussion with auto-glazier supplier

As well as the cost data limitations, the study has limited insight into the current status of operators in regard to the recommended control initiatives. For example, it is not known how many buses in SEQ or regional QLD already have barriers or duress buttons, or anti-shatter glass installed.

Where those operators included in the stakeholder consultations have identified when they already have a control in place, this report also provides an estimate of the reduction in the cost of implementing that control, when the operator identified is excluded from the cost modelling.

3. Physical barriers initiative cost assumptions

Physical barriers are assumed to be implemented on all buses within the first two years of the evaluation period only in the High Risk scenario. The installation of barriers on new replacement buses has also been modelled over the forecast period.

The unit cost of retrofitting the existing buses with the barriers is assumed to be approximately \$3,800 per bus, while the unit cost for the barriers installed on the new buses¹⁷⁸ is assumed to be significantly lower, at \$2,450 per bus. It was further assumed that the barrier installation would be a one-off cost, with no additional maintenance costs required.

These unit cost estimates are based on the consultations with various state government agencies and represent the average cost for the installation of a mesh full barrier, a Perspex half barrier and a mesh three-quarter barrier, since the exact barrier design and specifications are yet to be decided on.

¹⁷⁸ A number of buses each year are assumed to be replaced due to expiry of their useful lives. A detailed bus replacement profile for each operator is provided in the **Appendix F**

Additional sensitivity tests for the total cost of the barriers initiative were conducted, with fleet coverage reduced to 50%, 25% and 10%, with the results presented in **Appendix I**.

4. Training initiative cost assumptions

It was assumed that the standardised training curriculum would include the two main components:

- **Initial full day training** - provided to all bus drivers as part of the initiative
- **Regular refresher training** - provided to the bus drivers on an ongoing basis.

Based on the industry consultations, the cost of a full-day training is assumed to be close to \$250 per driver, while the cost of a half-day training is assumed to be just over \$200 per driver. The duration of the full-day training is assumed to be 8 hours, while the duration of the half-day training is assumed to be 4.5 drivers.

It was further assumed, based on the industry analysis, that the annual turnover rate for the bus drivers would be 5.0% per annum and all new drivers would be required to undertake the initial training.

Based on the abovementioned assumptions, the following initial and refresher training profiles were assumed for high, medium and low risk packages.

Table 11 **Initial and refresher training profiles (% of drivers required to undertake the training)**

Initial training (% of drivers)¹⁷⁹	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
High Risk	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%
Medium Risk	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%
Low Risk	33%	33%	33%	0%	0%	0%	0%	0%	0%	0%

Refresher¹⁸⁰ training (% of drivers)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
High Risk	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%
Medium Risk	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%
Low Risk	0%	0%	33%	33%	67%	33%	67%	33%	67%	33%

Furthermore, it was assumed that additional driver shift coverage would be required for drivers in training, resulting in additional cost that was calculated, based on the average hourly wage rate for drivers of \$35/hour (inclusive of the superannuation contribution).

5. Increased SNO/police presence initiative cost assumptions

Deployment of 70 additional SNOs or 80 police officers was assumed for high and medium risk packages, with additional sensitivity test conducted for 35 and 15 additional SNOs or 40 and 20 additional police officers.

Cost estimates for SNOs are assumed to comprise the following two elements:

- **Initial costs** - including initial uniform and equipment issue, initial medical costs, induction training, and initial first aid and cardiopulmonary resuscitation (CPR) training
- **Annual cost** - comprising annual salary, training and uniform issue.

¹⁷⁹ Number of new drivers requiring initial training due to turnover is not accounted for as part of this profile and is calculated separately as 5% of the number of drivers requiring refresher training in each year of the evaluation period.

¹⁸⁰ Deloitte calculations

Based on a discussion with DTMR, initial costs were assumed to be just over \$28,500 per SNO, while annual costs are assumed to amount to over \$82,800 per SNO.

Based on the information received during the industry consultations, SNOs have a relatively high turnover rate. It was therefore assumed that 10% of the total number of SNOs would require initial training every year following the implementation of the initiative due to turnover.

Police officers are assumed to only incur the annual salary cost of \$93,600 (average of salary range for senior constables, plus 15% to allow for on-costs and penalty rates).

6. Duress and radio alarms initiative cost assumptions

It is assumed that a combined duress and radio alarm system would be installed on all buses. Stakeholder data included a unit installation cost of \$16,000 per bus (Innit system). However as this Innit system included CCTV and audio, and data from other sources suggested a much lower figure, a cost of \$3,500 was used as the installation cost per bus.

The results of the additional sensitivity analysis assessing the cost of the duress and radio alarms initiative when the unit installation cost is assumed to be \$16,000 / \$10,000 / \$5,000 / \$2,000 per bus are presented in **Appendix I**.

Due to the lack of information with regards to the annual maintenance cost for the duress and radio alarms system, it was not accounted for as part of the cost estimates for the duress and radio alarms initiative. Limited operator feedback also suggests that radio maintenance costs are absorbed within general maintenance costs for larger operators.

7. CCTV initiative cost assumptions

CCTV initiative costs are assumed to comprise the following two key elements:

- **Depot-based hardware and software fixed costs** – assumed to be one-off cost amounting to \$15,000 per depot based on DTMR Bus Safety Report¹⁸¹
- **Fixed camera installation cost** – with assumed unit cost of \$7,500 per bus, in line with DTMR Bus Safety Report¹⁸².

While in the baseline results it is assumed that CCTV cameras will be installed on all buses that do not already have CCTV cameras in high and medium risk packages, additional sensitivity tests for CCTV cameras installed on only 50%, 25% and 10% of the bus fleet that does not already has CCTV installed were conducted, with results presented in the **Appendix I**.

CCTV annual maintenance costs were assumed to be 5% of capital costs per annum.

8. Public awareness campaign initiative cost assumptions

Two elements of the advertising initiative were considered as part of the analysis, namely:

- **Implementation of signage on buses** – assumed to have a unit cost of \$100 per bus, based on the industry analysis
- **Social media campaign** – with assumed total cost of \$1,300,000 for the whole bus network.

9. Anti-shatter film

It is assumed that the unit cost for the installation of anti-shatter film is \$2,300 per bus, and no annual maintenance cost would be required.

While in the baseline results 100% of the bus fleet is assumed to have the anti-shatter film installed, additional sensitivity tests for when only 50%, 25% and 10% of the bus fleet are covered were conducted, with results presented in the **Appendix I**.

¹⁸¹ Bus Safety Committee, 2011

¹⁸² Bus Safety Committee, 2011

10. Specific assumptions

Table 12 Model assumptions

Assumption	Value	Source	Comment
General assumptions			
Model start date	01-Jul-17	Deloitte	
Evaluation period	10 years	Deloitte	
Discount rate	4.0%	Deloitte	
Escalation rate	2.5%	Queensland Budget Strategy and Outlook (Budget Paper 2) 2016-17	Out-year inflation projections
Contingency	15%	Deloitte assumption	Applied to all costs
Barriers initiative assumptions			
Length of initiative implementation	Implemented within 2 years on all buses in high risk package	Deloitte assumption	
Retrofitted barrier unit cost	\$3,833		Average of provided costs
New barrier unit cost	\$2,450	Deloitte analysis of industry data	Average of provided costs
Training initiative assumptions			
Type of initial training	-Full day training provided to all drivers within 2 years in high and medium risk packages -Full day training provided to all drivers within 3 years in low risk package	Deloitte analysis of industry data	
Type of refresher training	- Full day training every year in high risk package - Half day training every year in medium risk package - Half day training every second year in low risk package	Deloitte analysis of industry data	
Annual driver turnover	5.0%	Deloitte assumption	
Full day training cost per driver	\$2,950	Deloitte analysis of industry data	
Half day training cost per driver	\$2,500	Deloitte analysis of industry data	
Full day training duration	8 hours	Deloitte assumption	
Half day training duration	4.5 hours	Deloitte analysis of industry data	
Average hourly rate for drivers (including super)	\$35.0	Deloitte analysis of industry data	
Increased SNOs/police presence initiative assumptions			

Assumption	Value	Source	Comment
Length of initiative implementation	Implemented within 2 years only in high and medium risk packages	Deloitte analysis of industry data	
Number of additional SNOs	70	Deloitte analysis of industry data	
Number of additional police officers	80	Deloitte analysis of industry data	
Annual SNO turnover	10.0%	DTMR	
Initial cost per SNO	\$28,528	DTMR	Includes: - Initial uniform and equipment issue costs - Initial medical costs - Initial induction training costs - Initial first aid and CPR training costs
Annual cost per SNO	\$82,820	DTMR	Includes: - Annual salary - Annual training - Annual uniform issue
Annual police officer salary	\$93,600	Deloitte analysis of QPS salary data	
Duress and radio initiative assumptions			
Length of initiative implementation	- Duress and radio on all buses implemented within 1 year in high risk package - Duress and radio on all buses implemented within 2 years in medium and low risk packages	Deloitte assumption	
Duress and radio combined system unit cost	\$3,500	Deloitte analysis of industry	Analysis of a range of costs provided by stakeholders and other sources
Annual maintenance cost per bus	\$375	Deloitte analysis of industry	No maintenance cost was obtainable from industry. Assumed maintenance/operating costs are 5% of capital costs per annum
CCTV initiative assumptions			
Length of initiative implementation	- Implemented within 3 years on all buses in high risk package - Implemented within 5 years on all buses in medium risk package	Deloitte analysis of industry	
Hardware and software installation costs per depot	\$15,000	DTMR Bus Safety Report 2011	

Assumption	Value	Source	Comment
CCTV installation cost per bus	\$7,500	DTMR Bus Safety Report 2011	
Annual CCTV maintenance cost	5% of capital costs	Deloitte analysis of industry	No maintenance cost was obtainable from industry. Assume 5% cost of capital maintenance cost per annum.
Public Awareness Campaign / Advertising initiative assumptions			
Length of signage initiative implementation	- Internal signs on all buses within 12 months in high risk package	Deloitte assumption	
Length of social media campaign initiative implementation	12 months	Deloitte assumption	
Sign unit cost per bus	\$100	Deloitte assumption	Marginal signage cost per bus applied - industry feedback suggested signs can be placed on buses at minimal cost
Social media campaign cost	\$1,300,000	Deloitte assumption	High level cost estimate obtained from Deloitte media and communication team
Anti-shatter glass/screens initiative assumptions			
Length of initiative implementation	- Implemented within 2 years on all buses in high risk package	Deloitte assumption	
Anti-shatter glass/screens installation cost per bus	\$2,284	Deloitte analysis of industry	Based on discussions with auto-glazier

Table 13 **Operating data assumptions**

Operator	Number of buses*	Number of drivers**	Number of depots^
SEQ			
Bribie Island Coaches	28	28	1
Brisbane Transport	1,134	2,039	8
Brisbane Bus Lines	1	1	1
Buslink Qld	119	56	2
Caboolture Bus Lines	39	30	1
Clarks Logan City Bus Service	126	141	1
Hornibrook Bus Lines	61	79	2
Kangaroo Bus Lines	73	51	1
Mt Gravatt Bus Service	34	16	2
Park Ridge Transit	78	63	2
Westside Bus Company	84	114	1

Operator	Number of buses*	Number of drivers**	Number of depots^
Sunshine Coast Sunbus	93	195	2
Surfside Bus Lines	316	485	3
Thompson Bus Services	42	39	1
Transdev Qld	109	126	2
Bus Qld (Lockyer Valley) Railbus	4	8	1
Regional			
Cairns	50	75	1
Townsville	51	58	2
Yeppoon	15	13	1
Wide Bay	16	15	1
Toowoomba	31	22	1
Rockhampton	17	12	1
Mackay	16	10	1
Bundaberg	12	7	1
Whitsunday	7	7	1
Stradbroke	3	5	1
Gladstone	9	5	1
Gympie	3	2	1
Maleny	2	1	1
Woodford	3	1	1
Elliott Hd	1	1	1
Innisfail	1	1	1
Bowen	1	1	1
Warwick	4	1	1

Table 14 **Bus replacement profile by operator**

Operator	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SEQ										
Bribie Island Coaches	0	1	2	0	2	2	1	2	2	0
Brisbane Transport	0	0	2	52	25	36	47	49	70	94
Brisbane Bus Lines	0	0	1	0	0	0	0	0	0	0
Buslink Qld	2	2	4	2	0	0	0	0	0	0
Caboolture Bus Lines	4	0	2	1	1	4	4	2	0	2
Clarks Logan City Bus Service	5	3	4	2	1	7	9	17	17	16
Hornibrook Bus Lines	5	0	2	2	0	0	2	5	8	2
Kangaroo Bus Lines	5	5	2	2	4	2	6	2	0	1
Mt Gravatt Bus Service	7	1	0	1	3	1	1	5	0	1
Park Ridge Transit	3	1	4	0	3	0	3	4	6	1
Westside Bus Company	1	2	1	0	0	0	1	5	4	7
Sunshine Coast Sunbus	0	0	0	0	1	0	1	16	10	14
Surfside Bus Lines	20	10	10	9	16	9	12	38	17	23
Thompson Bus Services	0	0	0	0	0	5	0	2	0	1
Transdev Qld	9	3	3	6	12	0	0	12	7	13
Bus Qld (Lockyer Valley) Railbus	0	0	0	0	0	0	0	0	1	1
Regional										
Cairns	0	5	0	0	0	5	0	0	15	0
Townsville	0	0	6	2	3	10	2	0	5	1
Yeppoon	1	0	0	0	2	1	1	1	3	2
Wide Bay	0	1	0	3	0	1	0	2	0	1
Toowoomba	0	2	0	0	2	0	2	0	0	0
Rockhampton	0	0	0	0	0	2	2	0	2	0
Mackay	0	3	0	0	0	2	0	2	3	0
Bundaberg	1	0	0	0	0	0	2	3	2	0
Whitsunday	0	0	0	0	0	0	2	0	1	1
Stradbroke	0	0	0	0	0	0	0	0	0	2
Gladstone	1	0	0	2	0	0	0	0	0	0
Gympie	1	1	0	0	0	0	0	0	0	1
Maleny	0	0	0	0	0	0	0	2	0	0
Woodford	0	0	0	0	0	0	0	0	1	0
Elliott Hd	0	0	0	0	0	1	0	0	0	0
Innisfail	0	0	0	0	0	0	0	0	1	0
Bowen	0	0	0	0	0	0	0	0	0	0
Warwick	0	0	0	0	0	0	0	1	0	0

Appendix G - Risk levels

Further analysis of risk levels of bus operating environments in QLD require confirmation utilising a risk assessment process set out in Section 5, "Next Steps". The following table provides a guide as to a high, medium and low risk environment relevant to violence related risks.

Risk level	Violence factors: frequency, nature & severity	Risk factors: environmental & situational
High Risk Environment for Violence	<p>Serious physical assaults occur or there is potential for serious violence due to a high number of risk factors, potentially resulting in:</p> <ul style="list-style-type: none"> • Hospitalisation • Requiring treatment from a medical practitioner • Serious injury • Exposure to a substance • Acquiring an infection. <p>Serious verbal threats / abuse, threatening behaviour or throwing objects occur or there is potential for serious violence due to a high number of risk factors, potentially resulting in an incident that requires either:</p> <ul style="list-style-type: none"> • A police report and involvement • Treatment from a medical practitioner, including psychological treatment. <p>Based on feedback from stakeholders and available incident data, also considering volume of bus drivers and services, bus operators in SEQ may fall into this category as may bus operators in Cairns and Townsville (Refer Appendix A). Please note the data limitations set out in Appendix E limit the ability to form conclusive views on the nature and frequency of violence in QLD.</p>	<ul style="list-style-type: none"> • Widespread high risk routes, due to single factors or a combination of factors (e.g. isolation, remoteness, identified crime regions, lower socioeconomic regions, night services, client population, etc.) • Frequent exposure to a high volume of potentially difficult and challenging passengers with propensity for physical violence (e.g. passengers using drugs and/or alcohol, mental health conditions, anti-social behaviour, lower socio economic demographics, impersonal service) • Significant exposure to frequent higher levels of passenger or public frustration due to fare related issues and / or service delays • Significant exposure to frequent higher levels of public frustration due to high traffic volumes/congestion in shared urban roadways (bus, cars, motorcycles, bicycles, trucks, pedestrians etc.) • High value of cash held on the bus and / or not secured (e.g. in a safe or locked cash box).

Risk level	Violence factors: frequency, nature & severity	Risk factors: environmental & situational
Medium Risk Environment for Violence	<p>Does not include the serious nature of violence encountered in high risk environments.</p> <p>Verbal aggression may occur regularly to frequently (e.g. daily to weekly).</p> <p>May result in:</p> <ul style="list-style-type: none"> • Requiring treatment from a medical practitioner • Worker’s compensation claims <p>Please note the data limitations set out in Appendix E limit the ability to form conclusive views on the nature and frequency of violence in QLD and prevent an example being provided at the medium risk level.</p>	<ul style="list-style-type: none"> • High risk routes are uncommon and known • Drivers are exposed to potentially difficult / challenging passengers (e.g. drugs / alcohol, mental health conditions, school children / youth, lower socio-economic demographics, unknown passengers, etc.) • Some passenger or public frustration due to fare related issues and / or service delays • Some public frustration due to shared urban roadways (i.e. bus, cars, motorcycles, bicycles, trucks, pedestrians etc.)
Low Risk Environment for Violence	<p>Verbal aggression may occur infrequently / rarely (e.g. monthly or less). It does not result in injury or illness to bus drivers.</p> <p>Based on feedback from stakeholders a low risk environment may comprise a regional school bus service or a service where the bus driver and passengers are well acquainted.</p>	<ul style="list-style-type: none"> • Known passenger population i.e. bus driver and passengers are known to each other, and passengers are regular users of the service • Lower levels or negligible passenger or public frustration due to fare related issues, service delays and / or shared roadways • No high risk routes.

Appendix H – Safety controls considered

Through research and stakeholder consultation, 50 potential safety controls were identified and 20 potential initiatives selected. As described in **Appendix E**, a selection criteria was used to determine which initiatives would be recommended and which were rejected. The below table shows all safety controls considered throughout this review.

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
Recommended						
	Barriers	Proactive	Location-specific	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Anti-shatter film	Proactive	State-wide	Attitude Student Attitude	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Closed-circuit television (CCTV)	Proactive/Reactive	State-wide	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Duress and radios	Reactive	State-wide	N/A – reactive control	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Control Centre	Reactive	State-wide	N/A – reactive control	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	De-escalation training	Proactive	State-wide	All/Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Customer service cards	Proactive	State-wide	Fare disputes	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Incident Procedures	Reactive	State-wide	N/A – reactive control	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Recruitment	Proactive	State-wide	Attitude	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Contract terms	Proactive/Reactive	Location specific	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Senior Network Officers (SNO)	Proactive/Reactive	State-wide	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Police	Proactive / Reactive	State-wide	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Public awareness campaign	Proactive	State-wide	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	School strategies	Proactive/Reactive	Location-specific	Student's Attitude	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Fare collection policy	Proactive	State-wide	Fare disputes	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Code of Conduct - students	Proactive/Reactive	State-wide	Attitude, Student's Attitude, Fare Dispute	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Code of Conduct passenger	Proactive/Reactive	State-wide	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Identifying high risk passengers	Proactive	State-wide	All / Multiple	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Scheduling to reduce delays	Proactive	State-wide	Attitude	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Mobile reporting app	Reactive	State-wide	N/A –reactive control	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
	Cashless Ticketing & Fare Systems	Proactive	State-wide	Fare disputes	Yes	Refer to Appendix A for detailed discussion & Section 4 for detailed recommendation.
Not recommended						

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Legislation	Proactive & Reactive	State-wide	All / Multiple	No	<p>Legislation includes WHS Act 2011, WHS Regulation 2011, Risk Management COP, and Transport Operations (Passenger Transport) Act 1994.</p> <p>Based on stakeholder feedback and literature review there is no basis on which to suggest an amendment to the legislation is required. The legislation guides obligations and the level of control according to risk level and is utilised on that basis for this Review.</p>
	Vehicle Standards / Australian Design Rules	Proactive	State-wide	All / Multiple	No	<p>This review recommends that physical initiatives to be implemented on buses (such as barriers) are captured in contracts between DTMR and Bus Operators, and based on a risk assessment. In the future, if implemented widely, these such measures may be considered in Australian Design Rules. However this is not deemed appropriate at this time, as a requirement in an Australian Design Rule applies to all bus operators and does not consider various risk levels.</p>

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Cash Handling -limited cash floats/cash safes	Proactive	State-wide	theft	No	<p>The implementation of safe cash handling practices is supported to reduce the risk of theft and violence associated with theft where there is a risk to drivers.</p> <p>WHSQ¹⁸³ identified during their bus driver safety assessments conducted as part of the bus driver safety campaign that cash handling procedures required improvement inclusive of securing cash using safes etc. We found in this review that although opportunistic theft does occur as an aftermath of violence it is not a key trigger instigating violence across QLD. Through stakeholder discussions we understand there are geographical regions where this risk might be higher (e.g. Cairns). Bus drivers listed cash as the 12th cause of violence (1.60% of responses) based on the Bus Driver Safety Survey¹⁸⁴.</p> <p>There are other controls in the initiatives recommended in this report which also address this risk (for e.g. barriers, SNOs, Police).</p>
	Free student travel	Proactive	State-wide	Fare disputes Student attitude	No	<p>Free student travel would remove disputes over student fares which has become an issue due to the "no child left behind policy". We understand from many stakeholders the policy referred to has had unintended consequences and creates much grief for bus drivers. Drivers have discretion to allow students to travel on the bus without a fare and it is also a requirement in the Transport Operations (Passenger Transport) Act 1994. However this review is considering alternative strategies in relation to fare dispute and school children.</p>

¹⁸³ WHSQ, 2016

¹⁸⁴ Deloitte, 2016

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Driver seats	Proactive & Reactive	Location-specific	Attitude. Student attitude.	No	The older bus design had a raised seat which we understand enabled the driver to sit higher than passengers. This created a level of protection as compared to the current position of drivers sitting lower than passengers enabling passengers to stand over them. Raising the driver seat would require a re-design of the current buses and still may not protect the driver from violence arising from fare disputes or items spat or thrown at the driver. Other solutions put forward such as barriers, driver training and SNOs will address the key violence triggers for bus drivers.
	Mirrors on buses	Proactive	Location-specific	Attitude. Student attitude.	No	Mirrors were suggested as a deterrent to anti-social behaviour. However increased SNO / police presence and CCTV is being recommended, instead of mirrors.
	Seat belts (i.e. drivers not required to wear seat belts)	Reactive	State-wide	N/A (reactive control).	No	Stakeholders have highlighted the issue of drivers trapped in their seats by their seatbelts during violent incidents and on that basis the requirement to wear seatbelts should be removed. However the additional risks in the event of an accident posed by this proposition does not justify the benefits.
	Driver doors	Reactive	Location-specific	N/A (reactive control).	No	The issue raised here is in relation to the latch being difficult to open on the bus driver door and they may become trapped. In relation to a driver barrier the design of the latch on the door should be considered as part of that design specification and trialled by users. It is not an individual recommendation on its own.

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Fire extinguishers	Reactive	State-wide	N/A (reactive control).	No	Stakeholders have raised the need for fire extinguishers to be within reach of the bus driver. We support the need for bus operators to implement effective incident management procedures inclusive of the positioning of emergency equipment. This item does not address a key trigger for violence identified by stakeholders or from the Bus Driver Safety Survey ¹⁸⁵ .
	Resilience training	Proactive	State-wide	None.	No	Resilience training is offered to bus drivers to develop strategies to cope and manage stressors in their work environments thereby maintaining healthy levels of stress and recovering quickly from challenging situations. This training initiative is positive as it helps develop coping skills which can be applied during work inclusive of pre/post violent incidents but it is not directly addressing the skills required to address the key triggers of violence encountered by bus drivers (fare dispute/passengers using drugs or alcohol/passenger frustration due to delays, attitude, and school children attitude).
	Mental health first aid training	Proactive & Reactive	State-wide	None.	No	Mental health training increases knowledge of how to provide initial support to adults who are developing a mental illness or experiencing a mental health crisis. This training initiative is positive as it promotes support for employees who may be experiencing mental health issues inclusive of exposure to violence. However while it may be of benefit to drivers from an early intervention/post incident perspective it doesn't address the key triggers for violence for bus drivers identified in this review.

¹⁸⁵ Deloitte, 2016

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Anti-terrorism training	Proactive & Reactive	Location - specific	None.	No	Anti - terrorism training is not within the scope of this review. Terrorism has not been identified as a key trigger for violence towards bus drivers in this review.
	Fire evacuation training	Reactive	State-wide	N/A (reactive control).	No	We support the need for bus operators to conduct fire evacuation training however is not within the scope of this review. In this review fire evacuation training as a control measure or fire as a risk has not been identified as key trigger for violence against bus drivers.
	Self-defence training	Reactive	State-wide	N/A (reactive control).	No	A number of stakeholders were not supportive of self-defence training for drivers and believed other solutions to protect drivers should be considered first. Self-defence training can also lead to unintended consequences whereby drivers attempt to defend themselves and the situation deteriorates or reasonable force is not applied.
	Certificate III Customer-Facing Transport and Distribution	Proactive & Reactive	State-wide	None.	No	The Certificate 111 (Customer Facing for Transport and Distribution) applies to the transport and distribution industry generally although contains modules on areas such as customer service however it is not specific for bus driver exposure to violence. This review will be recommending bus driver undertake de-escalation training programs to address the key triggers for violence.
	Mobile operators	Reactive	Location – specific	N/A (reactive control).	No	Mobile operators are deployed to provide assistance after an incident. It is specific to Brisbane metro operations, but each bus operator would need to assess and determine the need for mobile operators as part of their response procedures. It will not be recommended as a specific initiative.

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Chase vehicles	Reactive	Location – specific	N/A (reactive control).	No	Chase vehicles are usually manned by security contractors employed by a bus operator to address a specific security issue providing support and response to issues such as rock throwing and security on high risk routes. These service are used in Brisbane, Gold Coast and Cairns. It is understood anecdotally that they are effective in reducing/eliminating security issues however also difficult to contact in an emergency. The use of security is not being recommended as part of the suggested initiatives in this review. The Police have a greater capacity to address crime and anti-social behaviour than security officers.
	Security	Proactive & Reactive	Location-specific	All/multiple	No	A number of the bus operators in SEQ and also in WA utilise security services on night services at known high risk days/times and also on high risk routes. Although at the same time many bus operators do not have security and rely on local metro police services ¹⁸⁶ . The feedback from stakeholders is that it is an effective strategy and reduces if not eliminates violence. However, an increase in SNOs more effectively target fare disputes (through strategies to address fare evasion) a major trigger for violence .Use of police is being recommended, instead of security due to their ability to deal with anti-social behaviour and crime in an effective manner due to greater powers under the law.
	School Inspectors	Proactive	Location – specific	Student attitude.	No	Refer to the comments in the "DTMR Code of Conduct for School Children Travelling on Buses" in relation to supervision of children and the recommendation to increase SNOS in this section.

¹⁸⁶ WHSQ, 2016

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	DNA / Spit kits	Reactive	State-wide	N/A (reactive control).	No	CCTV is being recommended as a way to identify offenders, as opposed to DNA / Spit kits and will not form part of the initiatives arising from this review.
	Environmental Design & maintained buses	Proactive	State-wide	Attitude. Student attitude.	No	<p>Environmental design (lighting, clear line of sight etc.) and management of bus stops and interchanges have been identified as important for security of passengers (and drivers) as does a clean and maintained bus increases the perception of safety and becomes less attractive to offenders¹⁸⁷. Our stakeholders confirmed majority of buses are clean and in good condition and was also noted in the study by Lincoln & Gregory¹⁸⁸. Security related to bus stops or interchanges was not raised widely in this review.</p> <p>The initiatives recommended in this report to increase the presence of SNOs and Police contribute to safety of buses, stops and interchanges.</p>

¹⁸⁷ Bus and Coach Association New Zealand, 2012; Newton, 2014

¹⁸⁸ Lincoln & Gregory, 2014

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	GPS / automatic vehicle location / telematics	Reactive	State-wide	N/A (reactive control).	No	We support the use of GPS /automatic vehicle location systems/telematics to pinpoint bus location as part of emergency response processes. In QLD there is the capacity to manually track bus location through timetabling and bus number and also through communication with the bus driver (although noted this may not be possible during an emergency) if GPS is not available. SEQ has access to a GPS system through TransLink's ticketing system called "Nextbus". There were initial concerns by bus drivers with respect to being monitored or contacted while driving as passengers can overhear conversations which are often related to timetabling. Regional centres such as Cairns also have access to GPS. TRACS ¹⁸⁹ rated GPS systems as having a medium benefit by increasing the timeliness of response.

¹⁸⁹ TRACS, 2015

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
	Audio messaging	Proactive	State-wide	All/multiple.	No	<p>Audio announcements would reduce passenger-driver interactions, and the potential for escalation to aggression.</p> <p>Potential benefits of an audio announcement system include:</p> <ul style="list-style-type: none"> - it removes the requirement for the bus driver to ask for fares directly - it can inform passengers of upcoming stops / expected delays, to reduce passenger uncertainty (passengers can currently download an app from TransLink which will provide this information in real time) - it can be informative, e.g. explaining that CCTV operates on buses - it can thank passengers for traveling on the bus, to create a positive environment in which people will act more sociably and appropriately. <p>It was not raised widely in the review and other controls more directly address the protection of bus drivers.</p>
	Customer Service Officers	Proactive & Reactive	State-wide	Delays. Fare disputes.	No	An increased number of SNOS are being recommended to address assistance with fare and ticketing with passengers rather than customer service officers.
	Employee Assistance Program	Proactive & Reactive	State-wide	None.	No	The strategy while important is not directly related to the objective of this review to improve bus driver safety and will not be proposed as a key initiative.
	Stress leave	Proactive & Reactive	Location-specific	None.	No	The strategy is not directly related to the objective of this review to improve bus driver safety and will not be proposed as a key initiative.
	Ongoing mental health monitoring	Proactive & Reactive	Location-specific	None.	No	The strategy while important is not directly related to the objective of this review to improve bus driver safety and will not be proposed as a key initiative.

Penalties

Reactive

State-wide

N/A (reactive control).

No

An amendment to the *Criminal Code 1899 (QLD)* was raised by a portion of stakeholders in order to recognise bus drivers as “public officers”. Effectively it means higher penalties for those convicted of assault or abuse of public transport workers and the classification of “serious assault” like other public service workers.

However there has also been discussion by stakeholders on the effectiveness of this strategy to prevent assault and whether it is likely offenders would consider higher consequences and subsequently change behaviour.

The QLD Bus Safety Committee identified this issue in their report in 2010 as a longer term consideration. In 2010 the Bus Safety Committee noted the QLD Government had twice rejected amendments aimed at specifying particular job types under assault in the *Criminal Code Act 1899 (QLD)* and also imposing a minimum sentence for serious assaults against police and other persons.

In South Australia changes have been made to the *Criminal Law Consolidated Act 1935* extending the aggravation of an offence against public transport workers as it already applies to police, health and emergency services workers. Effectively it will increase penalties for acts of violence against public transport workers.¹⁹⁰. At this stage the effectiveness of this measure in preventing violence towards bus drivers is not available.

Although jurisdictions such as South Australia have implemented a change in the approach to penalties for bus drivers and is being considered by Victoria, there appears to be sufficient penalties under current legislation in QLD.

Notwithstanding Deloitte acknowledges amending the *Criminal Code 1899 (QLD)* recognising bus drivers as “Public Officers” demonstrates the value and significance of their role.

However while amendments to the *Criminal Code 1899 (QLD)* may prove to be effective in the

#	Initiative	Type	Spread	Key triggers addressed	Recommended?	Justification for recommendations
						longer term in deterring violence, evidence is not available to confirm the strategy currently. Additionally amendments to the <i>Criminal Code 1899 (QLD)</i> does not directly address the key triggers of violence identified in this review and when subject to the review's selection criteria there were other potential initiatives which rated more favourably. Other initiatives identified in this review potentially lead to an immediate improvement in bus driver safety (preventative measures) and reduction in risks to drivers.
	Autonomous vehicles	Proactive	State-wide	All / Multiple	No	The technology for autonomous vehicles is currently under development. However, it is unlikely to be implemented in the next 5 years. As such, it is not recommended through this review, and should be reconsidered at a later stage in the future when technology is more advanced.

¹⁹⁰ Mullighan, 2016

Appendix I – Costing results

The tables provided below provide the cost modelling results for each control initiative, including sensitivities.

1. Barriers

SEQ operators - total barriers cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Bribie Island Coaches	160,952	80,476	40,238	16,095
Brisbane Transport	6,306,473	3,153,237	1,576,618	630,647
Brisbane Bus Lines	7,424	3,712	1,856	742
Buslink Qld	551,542	275,771	137,885	55,154
Caboolture Bus Lines	228,148	114,074	57,037	22,815
Clarks Logan City Bus Service	811,678	405,839	202,920	81,168
Hornibrook Bus Lines	345,106	172,553	86,276	34,511
Kangaroo Bus Lines	392,666	196,333	98,167	39,267
Mt Gravatt Bus Service	195,762	97,881	48,941	19,576
Park Ridge Transit	419,102	209,551	104,775	41,910
Westside Bus Company	438,135	219,067	109,534	43,813
Sunshine Coast Sunbus	558,653	279,326	139,663	55,865
Surfside Bus Lines	1,870,122	935,061	467,530	187,012
Thompson Bus Services	213,620	106,810	53,405	21,362
Transdev Qld	668,288	334,144	167,072	66,829
Bus Qld (Lockyer Valley) Railbus	24,805	12,403	6,201	2,481
Total SEQ barriers cost	13,192,476	6,596,238	3,298,119	1,319,248

Regional operators - total barriers cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Cairns	293,747	146,873	73,437	29,375
Townsville	319,890	159,945	79,972	31,989
Yeppoon	100,925	50,463	25,231	10,093
Wide Bay	94,551	47,275	23,638	9,455
Toowoomba	152,379	76,189	38,095	15,238
Rockhampton	95,654	47,827	23,914	9,565
Mackay	96,673	48,337	24,168	9,667
Bundaberg	77,623	38,811	19,406	7,762
Whitsunday	44,730	22,365	11,183	4,473
Stradbroke	20,428	10,214	5,107	2,043

Regional operators - total barriers cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Gladstone	46,853	23,426	11,713	4,685
Gympie	18,151	9,075	4,538	1,815
Maleny	15,625	7,813	3,906	1,563
Woodford	16,823	8,412	4,206	1,682
Elliott Hd	7,651	3,826	1,913	765
Innisfail	7,896	3,948	1,974	790
Bowen	4,463	2,232	1,116	446
Warwick	21,203	10,601	5,301	2,120
Total Regional barriers cost	1,435,265	717,632	358,816	143,526

2. Training

SEQ operators - total training cost (nominal, undiscounted, with contingency)	High risk	Medium risk	Low risk
Bribie Island Coaches	181,682	134,132	68,329
Brisbane Transport	13,194,433	9,741,179	4,962,280
Brisbane Bus Lines	4,746	3,504	1,785
Buslink Qld	363,006	268,000	136,523
Caboolture Bus Lines	192,405	142,049	72,361
Clarks Logan City Bus Service	914,368	675,060	343,884
Hornibrook Bus Lines	510,748	377,075	192,087
Kangaroo Bus Lines	330,813	244,232	124,415
Mt Gravatt Bus Service	106,221	78,421	39,948
Park Ridge Transit	406,489	300,103	152,876
Westside Bus Company	738,859	545,484	277,877
Sunshine Coast Sunbus	1,264,337	933,434	475,503
Surfside Bus Lines	3,138,664	2,317,211	1,180,417
Thompson Bus Services	255,029	188,283	95,914
Transdev Qld	817,378	603,454	307,407
Bus Qld (Lockyer Valley) Railbus	53,980	39,852	20,301
Total SEQ training cost	22,473,159	16,591,472	8,451,906

Regional operators - total training cost (incl. due to turnover) (nominal, undiscounted, with contingency)	High risk	Medium risk	Low risk
Cairns	484,757	357,886	182,312
Townsville	376,934	278,282	141,761
Yeppoon	81,023	59,818	30,472
Wide Bay	97,699	72,129	36,743
Toowoomba	139,626	103,083	52,512

Regional operators - total training cost (incl. due to turnover) (nominal, undiscounted, with contingency)	High risk	Medium risk	Low risk
Rockhampton	76,107	56,188	28,623
Mackay	66,277	48,931	24,926
Bundaberg	46,886	34,615	17,633
Whitsunday	43,450	32,078	16,341
Stradbroke	35,228	26,008	13,249
Gladstone	32,487	23,984	12,218
Gympie	12,630	9,325	4,750
Maleny	9,528	7,035	3,584
Woodford	5,889	4,348	2,215
Elliott Hd	4,573	3,376	1,720
Innisfail	4,330	3,197	1,629
Bowen	5,034	3,717	1,893
Warwick	5,103	3,768	1,919
Total Regional training cost	1,527,561	1,127,767	574,499

3. Increased presence

Total increased presence cost, high and medium risk packages (nominal, undiscounted, with contingency)	100% increase	50% increase	25% increase
SEQ	75,792,583	37,896,291	16,241,268
Regional	92,176,243	46,088,122	23,044,061
Total	167,968,826	83,984,413	39,285,329

4. Duress and radio

SEQ operators - total duress and radio cost (nominal, undiscounted, with contingency)	\$16,000 unit cost	\$10,000 unit cost	\$5,000 unit cost	\$2,000 unit cost
Bribie Island Coaches	764,898	478,061	239,031	95,612
Brisbane Transport	28,995,789	18,122,368	9,061,184	3,624,474
Brisbane Bus Lines	37,732	23,582	11,791	4,716
Buslink Qld	2,344,276	1,465,172	732,586	293,034
Caboolture Bus Lines	1,054,715	659,197	329,598	131,839
Clarks Logan City Bus Service	3,970,619	2,481,637	1,240,818	496,327
Hornibrook Bus Lines	1,578,035	986,272	493,136	197,254
Kangaroo Bus Lines	1,833,422	1,145,889	572,944	229,178
Mt Gravatt Bus Service	899,700	562,312	281,156	112,462
Park Ridge Transit	1,901,310	1,188,318	594,159	237,664
Westside Bus Company	1,983,877	1,239,923	619,962	247,985
Sunshine Coast Sunbus	2,648,691	1,655,432	827,716	331,086

SEQ operators - total duress and radio cost (nominal, undiscounted, with contingency)	\$16,000 unit cost	\$10,000 unit cost	\$5,000 unit cost	\$2,000 unit cost
Surfside Bus Lines	8,883,796	5,552,373	2,776,186	1,110,475
Thompson Bus Services	943,612	589,758	294,879	117,952
Transdev Qld	3,200,905	2,000,566	1,000,283	400,113
Bus Qld (Lockyer Valley) Railbus	118,998	74,374	37,187	14,875
Total SEQ duress and radio cost	61,160,374	38,225,234	19,112,617	7,645,047

Regional operators - total duress and radio cost (nominal, undiscounted, with contingency)	\$16,000 unit cost	\$10,000 unit cost	\$5,000 unit cost	\$2,000 unit cost
Cairns	1,454,669	909,168	454,584	181,834
Townsville	1,540,877	963,048	481,524	192,610
Yeppoon	493,862	308,664	154,332	61,733
Wide Bay	460,245	287,653	143,827	57,531
Toowoomba	691,417	432,136	216,068	86,427
Rockhampton	441,950	276,219	138,109	55,244
Mackay	503,615	314,760	157,380	62,952
Bundaberg	373,929	233,706	116,853	46,741
Whitsunday	216,874	135,547	67,773	27,109
Stradbroke	101,158	63,224	31,612	12,645
Gladstone	205,230	128,268	64,134	25,654
Gympie	97,039	60,649	30,325	12,130
Maleny	80,544	50,340	25,170	10,068
Woodford	77,619	48,512	24,256	9,702
Elliott Hd	39,218	24,511	12,256	4,902
Innisfail	40,819	25,512	12,756	5,102
Bowen	18,400	11,500	5,750	2,300
Warwick	95,472	59,670	29,835	11,934
Total Regional duress and radio cost	6,932,936	4,333,085	2,166,543	866,617

5. CCTV

SEQ operators - total CCTV cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Bribie Island Coaches	311,848	74,734	29,262	11,705
Brisbane Transport	8,836,512	1,905,513	952,757	381,103
Brisbane Bus Lines	9,062	4,531	2,265	906
Buslink Qld	884,313	90,182	22,439	8,975
Caboolture Bus Lines	411,753	98,352	48,131	19,252
Clarks Logan City Bus Service	1,392,413	408,801	204,401	81,760

SEQ operators - total CCTV cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Hornibrook Bus Lines	520,644	128,352	64,176	25,670
Kangaroo Bus Lines	621,604	136,458	68,229	27,292
Mt Gravatt Bus Service	422,593	117,878	47,215	18,886
Park Ridge Transit	726,999	139,009	61,091	24,436
Westside Bus Company	782,266	139,489	53,517	21,407
Sunshine Coast Sunbus	929,291	219,724	109,862	43,945
Surfside Bus Lines	3,677,868	936,933	402,820	161,128
Thompson Bus Services	261,914	40,034	20,017	8,007
Transdev Qld	1,296,131	341,675	159,481	63,792
Bus Qld (Lockyer Valley) Railbus	37,744	10,640	5,320	2,128
Total SEQ CCTV cost	21,122,953	4,792,307	2,250,981	900,393

Regional operators - total CCTV cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Cairns	870,517	435,259	217,629	87,052
Townsville	928,511	464,256	232,128	92,851
Yeppoon	310,336	155,168	77,584	31,034
Wide Bay	289,603	144,802	72,401	28,960
Toowoomba	450,856	225,428	112,714	45,086
Rockhampton	287,697	143,848	71,924	28,770
Mackay	304,039	152,020	76,010	30,404
Bundaberg	242,950	121,475	60,737	24,295
Whitsunday	144,967	72,484	36,242	14,497
Stradbroke	75,835	37,918	18,959	7,584
Gladstone	152,704	76,352	38,176	15,270
Gympie	76,708	38,354	19,177	7,671
Maleny	62,450	31,225	15,612	6,245
Woodford	64,801	32,401	16,200	6,480
Elliott Hd	39,356	19,678	9,839	3,936
Innisfail	40,106	20,053	10,027	4,011
Bowen	29,598	14,799	7,399	2,960
Warwick	76,892	38,446	19,223	7,689
Total Regional CCTV cost	4,447,927	2,223,964	1,111,982	444,793

SEQ operators - total CCTV cost, medium risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Bribie Island Coaches	287,966	71,505	29,262	11,705
Brisbane Transport	8,285,741	1,905,513	952,757	381,103
Brisbane Bus Lines	9,062	4,531	2,265	906
Buslink Qld	825,358	86,006	22,439	8,975
Caboolture Bus Lines	387,874	97,988	48,131	19,252
Clarks Logan City Bus Service	1,345,523	408,801	204,401	81,760
Hornibrook Bus Lines	496,906	128,352	64,176	25,670
Kangaroo Bus Lines	573,894	136,458	68,229	27,292
Mt Gravatt Bus Service	381,137	109,542	47,215	18,886
Park Ridge Transit	681,349	136,695	61,091	24,436
Westside Bus Company	748,169	137,470	53,517	21,407
Sunshine Coast Sunbus	896,838	219,724	109,862	43,945
Surfside Bus Lines	3,408,898	908,284	402,820	161,128
Thompson Bus Services	251,373	40,034	20,017	8,007
Transdev Qld	1,161,740	332,911	159,481	63,792
Bus Qld (Lockyer Valley) Railbus	36,789	10,640	5,320	2,128
Total SEQ CCTV cost	19,778,618	4,734,456	2,250,981	900,393

Regional operators - total CCTV cost, medium risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Cairns	840,627	420,314	210,157	84,063
Townsville	889,833	444,917	222,458	88,983
Yeppoon	296,942	148,471	74,236	29,694
Wide Bay	273,758	136,879	68,440	27,376
Toowoomba	427,219	213,610	106,805	42,722
Rockhampton	275,530	137,765	68,883	27,553
Mackay	296,125	148,062	74,031	29,612
Bundaberg	235,511	117,756	58,878	23,551
Whitsunday	139,958	69,979	34,989	13,996
Stradbroke	73,688	36,844	18,422	7,369
Gladstone	143,698	71,849	35,924	14,370
Gympie	76,889	38,445	19,222	7,689
Maleny	61,018	30,509	15,255	6,102
Woodford	62,654	31,327	15,664	6,265
Elliott Hd	38,640	19,320	9,660	3,864
Innisfail	39,391	19,695	9,848	3,939
Bowen	28,882	14,441	7,220	2,888

Regional operators - total CCTV cost, medium risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Warwick	74,030	37,015	18,507	7,403
Total Regional CCTV cost	4,274,394	2,137,197	1,068,599	427,439

6. Public awareness campaign

Total advertising cost (nominal, undiscounted, with contingency)	High risk	Medium risk	Low risk
Advertising media campaign costs	1,495,000	1,495,000	1,495,000
SEQ (bus signage cost)	269,215	0	0
Regional (bus signage cost)	27,830	0	0
Total	1,792,045	1,495,000	1,495,000

7. Anti-shatter glass

SEQ operators - total anti-shatter glass/screen cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Bribie Island Coaches	108,762	54,381	27,191	10,876
Brisbane Transport	4,176,381	2,088,190	1,044,095	417,638
Brisbane Bus Lines	5,419	2,710	1,355	542
Buslink Qld	338,487	169,243	84,622	33,849
Caboolture Bus Lines	157,094	78,547	39,274	15,709
Clarks Logan City Bus Service	573,471	286,735	143,368	57,347
Hornibrook Bus Lines	233,834	116,917	58,458	23,383
Kangaroo Bus Lines	263,954	131,977	65,988	26,395
Mt Gravatt Bus Service	137,395	68,698	34,349	13,740
Park Ridge Transit	276,567	138,283	69,142	27,657
Westside Bus Company	284,577	142,289	71,144	28,458
Sunshine Coast Sunbus	381,154	190,577	95,289	38,115
Surfside Bus Lines	1,291,342	645,671	322,835	129,134
Thompson Bus Services	136,080	68,040	34,020	13,608
Transdev Qld	468,289	234,145	117,072	46,829
Bus Qld (Lockyer Valley) Railbus	17,118	8,559	4,280	1,712
Total SEQ anti-shatter glass/screen cost	8,849,924	4,424,962	2,212,481	884,992

Regional operators - total anti-shatter glass/screen cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Cairns	202,565	101,282	50,641	20,256
Townsville	221,635	110,817	55,409	22,163
Yeppoon	72,305	36,152	18,076	7,230

Regional operators - total anti-shatter glass/screen cost, high risk package (nominal, undiscounted, with contingency)	100% of fleet	50% of fleet	25% of fleet	10% of fleet
Wide Bay	64,879	32,440	16,220	6,488
Toowoomba	97,025	48,513	24,256	9,703
Rockhampton	63,646	31,823	15,912	6,365
Mackay	68,378	34,189	17,095	6,838
Bundaberg	55,086	27,543	13,771	5,509
Whitsunday	31,189	15,594	7,797	3,119
Stradbroke	14,539	7,269	3,635	1,454
Gladstone	30,905	15,453	7,726	3,091
Gympie	13,918	6,959	3,479	1,392
Maleny	11,563	5,782	2,891	1,156
Woodford	11,179	5,589	2,795	1,118
Elliott Hd	5,631	2,816	1,408	563
Innisfail	5,860	2,930	1,465	586
Bowen	2,659	1,330	665	266
Warwick	13,760	6,880	3,440	1,376
Total Regional anti-shatter glass/screen cost	986,722	493,361	246,680	98,672

Appendix J - Funding model options

Funding Option	Description	Pros/Cons	Examples
A. Operator Funded	Operator funds upfront capital cost. Repayment is amortised and paid as an annuity (similar to fleet payments) over a set period of time. Payment triggered through current contract mechanisms (change events)	<ul style="list-style-type: none"> No upfront cost for QLD Government Administratively simple as uses existing contract mechanisms to trigger payment Fairly easy to get agreement with industry as they are not out of pocket Full cost plus financing cost born by QLD Government No budget certainty for Government 	<ul style="list-style-type: none"> Northern Territory – bus operator installed digital radios in their fleet, with annuity payments made to cover the capital over the remainder of the contract
B. Grant funded	Funded by grant from QLD Government who pay a standard payment per unit to the operator	<ul style="list-style-type: none"> Budget certainty for QLD Government Less burdensome than Option A Easiest method to gain industry acceptance as no cost/ no risk to them All costs borne directly by QLD Government (if no Commonwealth funding) Industry may contest standard costs and be concerned about any potential actual cost risks QLD Government’s costs likely to be required upfront as a lump sum 	<ul style="list-style-type: none"> QLD Government funded the initial (trial) supply of cameras for the Taxi security camera program in 2005. A taxi fare increase was introduced to fund the program. Taxi operators are now responsible for installing and maintaining cameras WA provide a subsidy capped to 80% of the cost of taxi camera replacement costs
C. Funded through other programmes	Look for other programmes that could be used to ‘piggy back’ the driver safety initiatives	<ul style="list-style-type: none"> Potential for economies of scale if existing program exists Possible for funding from outside of QLD if program is nationwide Administratively more burdensome than Option A Unsure whether such a programme exists that could be piggy backed Potential for misalignment on objectives and pace of implementation 	<ul style="list-style-type: none"> Initial funding for Seatbelts on School Buses provided through Commonwealth programme (now NSW and Vic governments fund programmes)

Funding Option	Description	Pros/Cons	Examples
D. Outcomes based funding	<p>Payment to operators reliant on achieving KPIs or thresholds. Success based payments</p> <p>Allows operators to select solutions appropriate to their environment. Leaves it to the market to implement best solutions.</p>	<ul style="list-style-type: none"> • Cost moved away from QLD Government • Removes needs for QLD Government to prescribe controls • Selecting appropriate KPIs and levels of abatement or bonus payment will be difficult to define • Different operating environments may mean operator specific KPIs need to be developed • Harder to gain operator acceptance if there is financial risk to them • Will have higher administration/ policing costs • May have implementation issues, for example if the operator fails to be proactive 	<ul style="list-style-type: none"> • Current next generation contract has performance based payments. A similar payment mechanism could be created for driver safety performance



Department of Transport and Main Roads
Addendum to the Queensland Bus Driver Safety
Review Report dated 20 April 2017

Bus Driver Safety Forum – Potential Initiatives Validation
Workshop

24 July 2017



Inherent Limitations

The Services provided are advisory in nature and have not been conducted in accordance with the standards issued by the Australian Auditing and Assurance Standards Board and consequently no opinions or conclusions under these standards are expressed.

Because of the inherent limitations of any internal control structure, it is possible that errors or irregularities may occur and not be detected. The matters raised in this report are only those which came to our attention during the course of performing our procedures and are not necessarily a comprehensive statement of all the weaknesses that exist or improvements that might be made.

Our work is performed on a sample basis; we cannot, in practice, examine every activity and procedure, nor can we be a substitute for management's responsibility to maintain adequate controls over all levels of operations and their responsibility to prevent and detect irregularities, including fraud.

Any projection of the evaluation of the control procedures to future periods is subject to the risk that the systems may become inadequate because of changes in conditions, or that the degree of compliance with them may deteriorate.

Recommendations and suggestions for improvement should be assessed by management for their full commercial impact before they are implemented.

We believe that the statements made in this report are accurate, but no warranty of completeness, accuracy, or reliability is given in relation to the statements and representations made by, and the information and documentation provided by Department of Transport and Main Roads personnel. We have not attempted to verify these sources independently unless otherwise noted within the report.

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DTMR Queensland Bus Safety Forum Workshop

Summary of Results

Validation of potential initiatives

Subsequent to the completion of the Department of Transport and Main Roads (DTMR) Queensland Bus Driver Safety Review and issuance of the final report to DTMR in April 2017, members of the DTMR Bus Safety Forum were consulted in May 2017 to communicate the results of the review and ascertain their views on the 24¹ potential initiatives identified in the final report.

This Addendum provides a summary of the results from the workshop held with the DTMS Bus Safety Forum and should be read in conjunction with the detailed DTMR – Queensland Bus Driver Safety Review report issued on 20 April 2017.

Overall there was strong support for the proposed initiatives (refer to Table 1). A number of DTMR Bus Safety Forum members supported a measured approach to the potential initiatives indicating the need for further investigation in relation to some of the initiatives (for example but not limited to, driver barriers, senior network officers and public awareness campaigns), some indicated a risk based approach is warranted (one size will not fit all) and that a variety of measures are required to address violence. The feedback was consistent with the outcomes of the review.

The Bus Safety Forum member organisations who were represented at the May 2017 Forum included:

- Brisbane Transport
- RTBU
- TWU
- A representative Bus Driver
- QLD Bus Industry Council
- WHSQ
- QLD School Bus Alliance
- The University of QLD
- Griffith University
- DTMR
- QPS

Please note the list above does not represent the entire membership of the DTMR Bus Safety Forum.

Bus Safety Forum members provided feedback directly at the meeting in May 2017 and/or utilised the Bus Safety Forum Member Survey² to express their views on 24 of the potential initiatives (if they chose to). Members who completed the Bus Safety Forum Member Survey rated each initiative (utilising a scale- strongly agree, agree, undecided, disagree and strongly disagree) and were able to provide comment on each of the 24 potential initiatives set out below.

¹ The 24 potential initiatives comprise the 20 recommended initiatives set out in the **Executive Summary of the full report issued on 20 April 2017** (some are separated out individually increasing the total number) and in addition includes the potential initiative involving amendments to the criminal code.

² The Bus Safety Forum Member Survey was provided to the DTMR Queensland Bus Safety Forum Members in May 2017 to canvass their views on 24 of the potential initiatives. It is an entirely separate survey to the Bus Driver Safety Survey administered to bus drivers in December 2016 during the execution of the QLD Bus Driver Safety Review.

Overall the DTMR Bus Safety Forum indicated strong support for the initiatives (refer to Table 1). Participants identified the need for further information relating to a number of initiatives particularly those with a 55% - 60% of support bracket in Table 1.

Table 1 **Views of the DTMR Bus Safety Forum on potential initiatives (May 2017)**

Potential Initiative	% of Support
1. Bus driver training (de-escalation)	100%
2. CCTV	
3. Cashless fare & ticketing strategies	
4. State wide incident data collection	
5. School programs/strategies	90%
6. Customer service cards	
7. Senior network officers	80%
8. Police	
9. Public awareness campaign	
10. Anti-shatter film	
11. Driver barriers	
12. Code of conduct for school children	
13. Duress systems	
14. Recruitment policies	
15. Mobile reporting app	77%
16. Radio systems	
17. Fare collection policies	70%
18. Bus operator incident reporting	
19. Scheduling to reduce delays	60%
20. Passenger code of conduct	
21. DTMR contract terms	
22. Operations base	
23. High risk passenger management	55%
24. Amendments to the criminal code	