



Record of Investigation into Death (With Inquest)

*Coroners Act 1995
Coroners Rules 2006
Rule 11*

(These findings have been de-identified in relation to the names of the deceased, family, friends and others by direction of the Coroner pursuant to section 57(1)(c) of the Coroners Act 1995)

I, Olivia McTaggart, Coroner, have investigated the deaths of six persons at the Tasman Bridge, Hobart in Tasmania with an inquest held in Hobart on 27, 28 and 29 June 2016.

These are the comments and recommendations made pursuant to section 28(2) and 28(3) of the *Coroners Act 1995* arising from the evidence at inquest. The formal individual findings in respect of each deceased pursuant to section 28(1) of the *Coroners Act 1995* are not published out of respect for the deceased, and to protect the privacy of their family and loved ones.

It is often preferable not to publish details of the means or location of a suicide death. However, in this finding I have decided that it is necessary to do so given the significance of the issue in the community and that, with the removal of such details, the contents of this document could not be properly understood.

Introduction

The Tasman Bridge (also referred to as “the bridge”) was constructed in 1964 and was fully opened to traffic on 23 December 1964. The span of the bridge is 1.4 kilometres in an east/west direction. The bridge connects the City of Hobart on the western shore with the eastern shore of the Derwent River. Five lanes are provided for motorised traffic. The present traffic volume is approximately 76,000 vehicles per day. Additionally, there are pedestrian footways (“the pathways”) on both northern and southern sides of the bridge. Pedestrians and cyclists share the pathways and are able to travel in each direction on both pathways. The bridge height at its apex is 50 metres. There are safety rails (“the fences”) on each outer side of the bridge along its full length adjacent to the pedestrian footway. The fences are 1.59 metres in height uniformly along its length. They are able to be scaled by some persons who wish to end their lives. Once the fence is scaled there is an unimpeded drop into the river. The drop is of such a height, particularly in the vicinity of the apex, that death will usually occur. When death occurs, it does so as a result of injuries from contact with the water or bridge piers, and/or drowning.

The pathways were initially constructed as maintenance walkways only and not public thoroughfares. The bulk carrier *Lake Illawarra* collided with the bridge on 5 January 1975 causing the collapse of a large section of the bridge deck and the death of 12 people. In the rebuilding, the bridge was widened from four traffic lanes to five traffic lanes. Part of that process involved moving the walkways so that they were cantilevered outside of the supporting structure underneath the bridge. It appears from the evidence that the pathways were opened to the public and have remained open since that time. In cantilevering the pathways, the engineers may have utilised a significant proportion of the available structural capacity of the bridge.

The Tasman Bridge has been the site of frequent suicides by persons intentionally jumping or falling into river after climbing the fence. There has long been considerable misinformation in the community regarding the number of deaths that occur there. There is a common misperception that at least one suicide death per week occurs at the bridge. In actual fact, the average death rate at the Tasman Bridge is approximately 2 persons per year. In 2015 there were 7 deaths at the site, being the highest annual number of deaths since the Coroners' Office began recording statistics. Five of those deaths were the subject of this inquest.

The Tasman Bridge has a remaining design life of 50 years. Therefore, if the death rate remains the same, there will be a further 100 deaths at the site.

The bridge is considered a suicide "hotspot"; the definition of that term being either a geographical area with a relatively high rate of suicide among its resident population; or a specific, usually public, site which is frequently used as a location for people to take their own lives and which provides either means or opportunity to do so. The term "suicide hotspot" is undesirable for several reasons. In this finding I elect instead to use the term "site of frequent suicides", except when quoting from passages.

The Tasmanian government Department of State Growth is charged with all aspects of the management and operation of the Tasman Bridge. These matters include functionality, capacity, condition, and maintenance and traffic management.

It is appropriate initially to observe that, in accordance with the evidence at inquest, the prevention of suicide deaths on the Tasman Bridge is not as simple as removing the existing fence and installing a higher barrier. The engineering solutions must take into account several inter-related matters.

Firstly, there is a question as to the structural capacity of the bridge for such work, without the necessity for significant reinforcement of the structure.

Secondly, inspection and maintenance operations for the bridge use the existing fence rail as an integral component of its operation. The structure used for the operations is called a "maintenance and inspection gantry" ("MIG"). A reaction roller, being a component of the MIG, runs along the top of the fence. This system provides mobility, stability and levelling of the MIG during operation. It also allows safe entry into the MIG of maintenance personnel from the pathways to the maintenance platform suspended under the bridge.

Thirdly, the pathways are very narrow, having only a clear width of 1.04 metres, well below the 3 metres required by contemporary standards. Further, some of the necessary bridge

infrastructure, including the MIGs, feature lighting gantries (“FLGs”) and electrical boxes encroach into the pathways. These encroachments provide footholds for those contemplating suicide. They also impede pedestrians and cyclists who are travelling at different speeds and in both directions on each, already narrow, pathway.

The evidence at inquest was not subject to challenge. These comments and recommendations are based upon an analysis and discussion of the evidence with regard to the defined issues. Ultimately, I accept that the solution to the issue of preventing suicide at the bridge is interconnected with other important issues relating to its infrastructure. In particular, there is required to be further capacity and design work regarding any proposed solution. There is also required to be further consultation with experts, relevant agencies and interested persons and organisations. My recommendations are therefore framed in a manner that would encourage those processes to occur, with a view to the implementation of an appropriate engineering solution.

Reasons for Inquest

I decided to hold an inquest for the following reasons:

- (a) To consider generally how suicide deaths at the Tasman Bridge might be prevented;
- (b) To address concerns in the community that the bridge, as state-owned infrastructure, is the location of regular suicides and suicide attempts;
- (c) To ascertain and present factually accurate information regarding the number of suicides and attempted suicides at the bridge;
- (d) To address a long-standing expectation in some sectors of the community, particularly among some mental health professionals, that an inquest was desirable to investigate and find solutions to reduce suicides from the bridge;
- (e) Whether any contagion effect arising from two social media campaigns in 2015, relating to suicide prevention at the Tasman Bridge, occurred in respect of any of the deaths;
- (f) Whether changes to the infrastructure of the Tasman Bridge would prevent deaths from the bridge;
- (g) If changes to the bridge infrastructure would prevent deaths from the bridge, whether there would be a corresponding reduction in suicide deaths in Tasmania.

It is a most regrettable situation that one of this state’s iconic public structures continues to be the site of frequent suicides. Therefore the issue is a significant one for the community and government alike.

The *Tasmanian Suicide Prevention Strategy 2016-2020* was released by the Tasmanian Department of Health and Human Services in March 2016, a short time prior to the holding of this inquest. In relation to suicide hotspots, the document states that the government will “*work to identify and reduce access to means of suicide in Tasmania, including safety measures implemented at known hotspots.*” It also states that the government will

“implement an evidence-based plan to reduce the number of attempts and deaths occurring from sites identified as a hotspot through data analysis in Tasmania”.

The decision to hold an inquest also coincided with two major reports. The commissioning of the reports accords with the government’s suicide prevention strategy which includes addressing the issue of prevention at the Tasman Bridge.

Firstly, a cross agency working group (“the cross agency working group”) was convened by the State Government to consider and report on the issue of mitigating the risk of suicide at the Tasman Bridge. The cross agency working group comprised representatives of the Departments of Health and Human Services, State Growth, Police and Emergency Management and Justice. The report of the cross agency working group was also prepared partly in response to pending coronial investigations that foreshadowed examining ways in which to reduce deaths at the bridge. As will be discussed, several initiatives recommended in the report have already been implemented.

The second report was prepared by engineering firm GHD Pty Ltd (“GHD”) to examine the engineering options for changes to the bridge infrastructure to prevent suicide. In this finding I rely significantly upon the contents of both reports.

The individual deaths

All six persons died as a result of deliberately falling or jumping from the Tasman Bridge. Although I have not published the individual findings, it must not be overlooked that the inquest concerned the potentially preventable deaths of six members of the community who, for different reasons, were sufficiently distressed to take action to end their lives. The widespread impact of their deaths upon their loved ones and many other members of the community must also be recognised. I therefore summarise the individual circumstances for the purpose of placing in context the issues arising at inquest.

- (a) In 2014 a young adult male intentionally ended his life in a fall from the bridge in the dark hours of the early morning. He was employed and had a supportive family and friends. He was a recreational user of alcohol and other drugs. He suffered depressed mood and suicidal ideation in the period before his death. He was diagnosed with depression and commenced prescribed anti-depressant medication. In the hours before his death, he went out with some of his friends to several night time establishments in the Hobart waterfront area. He consumed alcohol during the evening and a drug in tablet form. He walked home from a friend’s house on the Eastern shore over the bridge by himself. He was seen by members of the public on the bridge casting himself from the railing. He had significant levels of alcohol and amphetamine in his blood. There was no warning to family or friends of his intention at the time he took his life. The evidence indicates that he had appeared in reasonably good spirits before his death. It appeared that his existing depressed mood, combined with alcohol and drug intoxication, contributed to his tragic decision.
- (b) In 2015 a female in her forties intentionally ended her life in a fall from the bridge in dark hours of the early morning. She had children and was employed. It appeared that she had planned to end her life the day before her death. She had no diagnosed mental health issues. However, she suffered deep unhappiness regarding her current

relationship and could not deal with its breakdown. She had consumed alcohol before her actions. She sent a picture message of herself in that location to family members indicating her intention to end her life. She also telephoned police. Her fall from the bridge was witnessed by police officers who attempted to save her.

- (c) In 2015 a female in her fifties intentionally ended her life in a fall from the bridge. She was employed, lived alone and had adult children. She had a long history of alcohol abuse. She suffered depression and was under medical and psychological treatment. In recent times before her death she had driven to the Tasman Bridge contemplating ending her life. It appeared that work and relationship issues, as well as an impending court charge caused her significant distress in the lead up to her death. Prior to ending her life she did not communicate her intention to anyone. However, unsent messages on her phone indicated her intention to end her life. Toxicology testing indicated a very high level of alcohol in her blood. Whilst she had expressed the wish to live for her children, the evidence indicates that her decision was impulsive and responsive to high levels of distress whilst under the influence of alcohol.
- (d) In 2015 a female in her thirties intentionally ended her life in a fall from the bridge. She was single and suffered anxiety, depression and drug addiction. She was unemployed and in receipt of a disability pension due to her poor health. In the 12 months before her death her depressive condition became significantly worse. She was under regular medical care. She had a history of suicidal ideation and had made an attempt to end her life by drug overdose several years before her death. She expressed suicidal thinking to a friend two days before her death, including a desire to jump from the bridge. Her actions leading to her fall from the bridge were not witnessed. However, she left clear notes to her friends regarding her intention to end her life. Marine police conducted searches of the Derwent River in the area surrounding the Tasman Bridge but could not locate her. The search and rescue helicopter was also activated for the search. These searches were not successful. She was ultimately located by a witness in the water in another part of the river. She had injected methadone before ending her life. Other prescription drugs and cannabis were also detected in her blood. She felt unable to live with her worsening mental state.
- (e) In 2015 a male in his seventies intentionally ended his life in a fall from the bridge in the daylight hours of the morning. He was divorced and a retired aged pensioner with adult children. He suffered anxiety and depression. Shortly before his death he was admitted to a treatment facility as a result of a suicide attempt. His condition stabilised and he was released after approximately 3 weeks. About two weeks after his release, he contacted a family member and indicated by leaving a message that he was not able to “go on any more”. On that day, he was witnessed by members of the public falling from the Tasman Bridge. He left a note and documents at his home indicating his intention to end his life.
- (f) In 2015 a male in his fifties intentionally ended his life in a fall from the bridge. He was employed and had children from two relationships. His wife passed away the previous year and his father passed away in the months before his death. He resumed working after the loss of his wife and father, and appeared to cope well. Shortly before his death, his mental state declined considerably. The evidence suggested that his decline was due to his inability to cope with the combination of work stress, the loss of his wife and father in close succession, and a fear of the return of cancer. He expressed suicidal ideation.

His family encouraged him to be treated but he did not seek treatment. On the evening of his death he drove to the bridge, stopped his vehicle in the traffic lane with the engine running and lights on before ending his life. He left a note at his home indicating his intention to do so. Despite all efforts of his family and others to help him, he tragically ended his life following a severe decline in his mental state.

It is to be observed that the circumstances leading to the deaths of the six individuals are very different. Despite the differences in their circumstances and triggers for their distress, in each case the Tasman Bridge presented the means and opportunity by which they were, tragically, able to end their lives.

Evidence at Inquest

The documentary evidence at inquest was as follows:

- (a) A Tasmania Police paper entitled "*Options Paper – Tasman Bridge suicide prevention*" prepared on 30 July 2014 by Inspector Glenn Woolley (now retired and referred to as "Mr Woolley");
- (b) Report from the cross agency working group entitled "*Report to the Tasmanian Government – Mitigating the Risk of Suicide at the Tasman Bridge*" dated 11 November 2015;
- (c) A report prepared by psychiatrists Dr Milford McArthur, Professor Saxby Pridmore, and Dr Michael Davie entitled "*The Tasman Bridge – Erection of a bridge barrier to prevent suicide*";
- (d) A report by engineering firm GHD entitled "*Department of State Growth, Tasman Bridge – maintenance inspection facilities and pathway options investigation options report*" dated May 2016;
- (e) A report entitled "*LIFE - Preventing suicide at a suicide hotspots*" prepared by the Melbourne School of Population Health, University of Melbourne¹;
- (f) Research articles relating to prevention of suicide at suicide hotspots;
- (g) Photographs of relevant aspects of the Tasman Bridge;
- (h) Tasmanian suicide statistics 1979 – 2016;
- (i) Correspondence from Lifeline regarding usage of the Tasman Bridge telephones and signage;
- (j) Three Tasmanian coronial findings containing recommendations regarding camera surveillance on the Tasman Bridge;

¹ Centre for Health Policy, Programs and Economics, Melbourne School of Population Health, The University of Melbourne, *Preventing Suicide at Suicide hotspots*, Commonwealth of Australia, 2012, available at <http://www.livingisforeveryone.com.au/Uploads/docs/Hotspots%20Prevention.pdf>

- (k) Affidavit of Anna Flower, State Security and Emergency manager for Tasmanian Ports Corporation (“TasPorts”);
- (l) Two affidavits of Inspector Adrian Bodnar, Officer-in-Charge, Hobart Division.

The oral evidence at inquest came from the following persons:

- (a) A close relative of one of the deceased regarding her loss and the traumatic and far reaching consequences of suicide and, in particular, from the Tasman Bridge;
- (b) Chief Forensic Psychiatrist, Dr Len Lambeth, regarding causes of suicide and suicide prevention issues relating to the Tasman Bridge;
- (c) Inspector Adrian Bodnar, regarding police response and oversight in incidents involving persons jumping or intending to jump from the Tasman Bridge, police access to footage of persons on the bridge, missing persons procedures and search and rescue operations;
- (d) Anna Flower, regarding the availability of TasPorts cameras for surveillance of the bridge;
- (e) Glenn Woolley, author of the Tasmania Police paper referred to above, regarding statistics for deaths on the bridge, persons in crisis on the bridge and ways to prevent these incidents;
- (f) Milford McArthur and Michael Davie, psychiatrists of the Royal Australian and New Zealand College of Psychiatrists, regarding the benefits of the erection of barriers on the bridge.

Statistics regarding suicide deaths and attempts at the Tasman Bridge

The statistics held by the Coronial Division between the years 1979 and 2016 indicate that on average, there is an average of 70 deaths by suicide every year.

Tasmania has the second highest suicide rate in Australia, being 14.2 persons per 100,000. This is significantly higher than the national average of 11.5 persons per 100,000.

From 1995 onwards, coronial records are available to enable calculation of the number of suicide deaths from the Tasman Bridge. Accurate recording methods for this category of deaths were not available before that date. The statistics indicate that from 2000 (when a greater confidence in the accuracy of the data can be assumed) until the commencement of this inquest there were 30 suicide deaths on the Tasman Bridge. During this period there are five years where no deaths occurred at the bridge. In the remaining years, with the exception of 2015, there were either one, two, three or four deaths for every complete year. For 2015, there were seven suicide deaths from the Tasman Bridge. The annual suicide rate in respect of the Tasman Bridge is 2 persons.

Intelligence holdings maintained by Tasmania Police indicate that between 20 January 2004 and 31 May 2014 (the time period for interrogation of police data bases by Mr Woolley for the purposes of his report), there were 266 reports of people who either attempted to end

their lives or were found by police officers at or near the Tasman Bridge with the intention of ending their lives. This represents an annual average of 25.7 such incidents for the 10 year period until the end of 2013.

I understand from Mr Woolley's evidence that police officers attending an incident of actual, attempted or contemplated suicide at the bridge are required to record specific details of the incident, including linking the report to an operation name, on the police data base. In compiling his report, Mr Woolley formed the view that not all incidents in this category have been recorded by police, or alternatively, recorded so as to be easily able to be retrieved for data analysis purposes. He therefore stated that the figures provided in his report were very conservative.

Mr Woolley also examined the total number of "concern for welfare" reports (including reports of mental health cases and suicide attempts) received by police on a state-wide basis from 2010 to April 2014. He calculated that 1.36% of all such reports during this period related to incidents which occurred at or near the Tasman Bridge.

It appears from Mr Woolley's evidence that there may be scope to further improve the accuracy of police reporting onto the information system of incidents of suicide or contemplated suicide on the Tasman Bridge. However, this matter was not fully explored in evidence at inquest. Further evidence from Tasmania Police would be required to determine whether reporting improvements could be made, so as to provide more accurate data to inform prevention strategies.

Police responses and resources regarding persons in crisis on the bridge

On behalf of Tasmania Police, Inspector Adrian Bodnar gave evidence regarding police oversight of incidents relating to persons jumping or intending to jump from the Tasman Bridge. He stated that, in accordance with procedures under the Police Manual, when persons voice an intention to "*jump off the bridge*" any available police unit is directed to the vicinity of the bridge to actively patrol the bridge and check the surrounding area. Simultaneously, a "keep a lookout for" communication is transmitted across all local police radio channels detailing the person's identity and relevant information regarding the report. He stated that police radio dispatch services are pivotal in coordinating available resources to respond to such incidents.

Inspector Bodnar gave evidence that if a person in crisis is located on the bridge, attending police officers would engage them in discussions to dissuade them from their intended course of action. The attending police officers would then convey them to the Royal Hobart Hospital (Department of Emergency Medicine) for the purpose of a mental health assessment. Police intervention would cease at that stage.

Inspector Bodnar stated that in those circumstances where a person jumps from the bridge, a police Marine Division vessel would be tasked to commence a search for and retrieval of the person. If the person becomes submerged, the on-water search would continue as long as is reasonably necessary. There may be a requirement for a callout of police divers. If the person is not located then further consideration of a search and rescue operation and media release occurs. In all cases, Inspector Bodnar stated that efforts to locate the person will

continue until they are found. In most cases the persons are deceased when located, in which case the investigating police officer submits a report of death to the Coroner.

Deaths in 2015

As discussed, the seven deaths at the bridge occurring in 2015 represents a significantly higher number than in previous years.

I have investigated the possibility that there may have been a contagion effect stemming from two apparently well-subscribed online petitions advocating for interventions to prevent suicide at the Tasman Bridge. It appears that such petitions were unprecedented in the context of public discussion surrounding suicides from the Tasman Bridge.

There is strong evidence that inappropriate media reporting of suicide can lead to “copycat” acts. There are also reasonable grounds to assume that the contagion effect can occur through inappropriate reporting of suicide on social media – see *Youth Suicide 2015 TASCD 298,299,300,301,302,303*.²

The authors of the Mitigating Risk report stated, in discussing the petitions, that *“it would be remiss not to note the challenges posed by the relatively unregulated sphere of social media. A situation can escalate quickly if an inexperienced and untrained individual (potentially trying to improve the situation), uses social media to advocate for change but in doing so, shares information that may be inaccurate and which may potentially cause harm. Regulation of this area is difficult but requires attention.”*

I was not able to obtain detailed information about the nature of these petitions, the exact time period when they were active or how the use of language in those petitions may have caused an association with deaths at the bridge. Further, there is no evidence that any of the deceased were aware of or were influenced by the petitions, or that the timing of them coincided with any of the deaths. It is, of course, always difficult to determine the factors that play into a decision of a person to end their life, possibly many factors remaining unknown.

I cannot make a finding, therefore, that the two social media campaigns advocating for improvements to the safety of the bridge were associated with any of the 2015 deaths the subject of this inquest.

In a previous inquest (*Youth Suicide 2015 TASCD 298,299,300,301,302,303*) expert evidence was given to the effect that recognised suicide reporting guidelines should be used for social media reporting of suicide to prevent a contagion effect. In that finding I recommended that an appropriate body conduct research into the effect of social media (including memorial pages or online campaigns) on suicide contagion and prevention, with a view to promulgating advice on suicide reporting to those considering online memorial pages or campaigns and users of social media generally. I am not aware of any developments in this area since that time and it is beyond the scope of this inquest to make recommendations upon this issue. However, it would be desirable that the government, in its implementation

²http://www.magistratescourt.tas.gov.au/__data/assets/pdf_file/0010/328384/Youth_Suicide_2015_TASCD_298,299,300,301,302,303.pdf

of its current suicide strategy, monitors and consider any national guidelines that may be promulgated for the purpose of preventing the contagion through social media.

Dr Michael Davie, consultant psychiatrist, speculated that the high number of deaths in 2015 may be associated with a reduction of beds at the Royal Hobart Hospital for acutely disturbed psychiatric patients. He further predicted an increase in the number of deaths at the bridge unless the bed numbers are increased. He gave evidence that he did not believe that there was a reasonable number of such beds per head of the Tasmanian population, particularly when compared to other States. He stated that the major "*first port of call*" for persons who are impulsively distressed is the Accident and Emergency Department of the Royal Hobart Hospital. He stated that if there are no available overnight beds to accommodate them in the first 24 hours of acute distress and impulsivity they may take steps to end their lives during that period. He gave evidence that the bridge "*is perfect*" for the person who is impulsively distressed, the reasons being that no elaborate plan is required except a short walk to the location.

The question of premature discharge from the Royal Hobart Hospital of persons in crisis did not arise as an issue in respect of any of the individual deaths the subject of this inquest. Therefore, further exploration of that issue was beyond the scope of this inquest.

Coronial data indicates that in 2016 until the date of this finding there have been two deaths from the bridge. It may be that no particular reason can be attributed to the number of deaths in 2015, other than it being within the high end of the statistical range for similar deaths.

Recognised prevention methods at sites of frequent suicides

There was comprehensive evidence at inquest as to methods by which suicide may be prevented at sites of frequent suicides. The issue has been the subject of numerous studies and papers, which have been analysed in the documentary and oral evidence given at inquest. The analysis of the studies and research indicates that a number of options, preferably in conjunction with each other where appropriate, should be considered. The LIFE document, for example, sets out a number of options that should be implemented to prevent suicide at such sites, based upon the research. These are as follows:

- Construction of physical barriers.
- Restriction of access to the site.
- Surveillance measures.
- Signs and telephone hotlines.
- Training of staff working at or near the site.
- Improved response and rescue efforts.
- Managing media reporting of suicides at hotspots.
- Suicide risk management in building codes.

Efficacy and desirability of barriers

The focus of the inquest was primarily whether erection of barriers on the bridge would successfully prevent suicide deaths on the bridge and reduce the suicide rate in the wider

community. Other prevention measures, being surveillance, signs, telephones, and police response, are also dealt with in this finding.

Prior to commencing the inquest, it was evident from the research material and documentary evidence that erecting effective barriers would prevent suicide at the bridge. In the Mitigating Risk report the authors examined a systematic review by Cox et al. in 2013 of interventions at sites of frequent suicides.³ The authors stated:

“The review considered nine studies that examined the effectiveness of restricting access to lethal means by installing physical barriers at sites that are used for jumping from a height or jumping in front of the train. The studies all suggest that suicides reduce once means restriction measures were put in place or rise when removed. No further suicides were observed after barriers were installed on the Memorial Ridge in Augusta, Maine (United States, Muenster Terrace in Bern (Switzerland), and the Bloor Street Viaduct in Toronto (Canada). The same “reduction to 0” finding was reported when access was blocked to Beachy Head in Sussex (United Kingdom) and Lawyers Head Cliff in Dunedin (New Zealand) (Cox, 2013, p.4)

Substantial decreases were reported in the number of suicides following the erection of the railing on the Clifton Suspension Bridge in Bristol (United Kingdom). In this case, the railing was accompanied by an expansion of the role of bridge staff to include monitoring of incidents and the installation of CCTV cameras (Cox et al. 2013 p.4).

Eight of the nine studies investigated whether there were any increases in suicide at alternative sites in the given city. Seven of these studies noted that the rates for other sites remained the same or decreased for the total population or for males. In Toronto however, no reduction was found in the overall numbers of suicides suggesting that some substitution may have occurred (Cox et al. 2013, p.9)”

The authors of the Mitigating Risk report conclude that the research shows relatively strong evidence that reducing access to means can avert suicides at hotspots without substitution effects. They state that *“physical barriers are effective in mitigating the risk of suicide. The theory underpinning this intervention is that it may “buy time” for a person to reconsider their actions, especially where these actions are associated with impulsivity or ambivalence (Cox et al. 2013)”*

Similarly, Dr Lambeth’s evidence on this point is that the studies indicate the likelihood that, if effective barriers were installed, this would lead to a decrease in the rate of suicide in the area; the rationale being that the inability to complete the act of suicide due to barriers provides additional opportunities to “think things through” and to increase the opportunity for intervention by others. At the inquest he stated that *“the evidence tells me that you save people’s lives by putting barriers up”*. His evidence was that barriers would reduce the suicide rate as reducing access to means is an extremely important factor in suicide prevention. He conceded, however, that any decline would be very difficult to measure with any degree of accuracy due to the small numbers involved.

³ Cox, G, Owens, C, Robinson, J, Nicholas, A, Lockley, A, Williamson, M, Cheung, DTY, Pirkis, J, 2013, *Interventions to reduce suicides at suicide hotspots: a systematic review*, BMC Public Health 2013.

Mr Woolley's evidence on this issue arose from the research encapsulated in his report. As an experienced police officer he stated that he had developed a passion for trying to find strategies for prevention of deaths from the bridge. He also reviewed the studies around the world and gave evidence that, in his view, effective barriers prevented suicides from those bridges. He stated that barriers have been erected on other major Australian bridges - for example, the Sydney Harbour Bridge, the Mooney Bridge, and Central Coast Bridges in New South Wales, and the West Gate Bridge. He stated that on almost every occasion he examined the barriers were initiated as a result of a coronial inquest.

Dr Milford McArthur and Dr Michael Davie, psychiatrists, gave evidence together at the inquest. They were co-authors, together with Dr Saxby Pridmore, of the report entitled "*The Tasman Bridge – Erection of a bridge barrier to prevent suicide*". The report was formally endorsed by the Royal Australian and New Zealand College of Psychiatrists. Dr McArthur is the Chair of the Tasmanian Branch of RANZCP. Dr McArthur is a very experienced psychiatrist with lengthy experience in hospital presentations for attempted suicides. Dr Davie has been a consultant psychiatrist for 23 years and is the Clinical Director of the Hobart Clinic.

Both Dr McArthur and Dr Davie stated the general proposition that restriction of access to means reduces the total rate of suicide. They gave evidence that the difficulty in Tasmania is obtaining a statistically significant reduction due to the fact that the number of persons ending their lives from the bridge represents only a small percentage of total suicide deaths. Therefore it is difficult to determine whether or not there is substitution. Even if it could be determined, the small numbers mean it may take four or five years for results to be clarified.

They indicated that 85% of those that jump from the bridge will die. Those that do not die usually suffer catastrophic injuries. They also emphasised that suicidal actions may be impulsive and short lasting. They stated that unfortunately the bridge is close to places where persons in crisis may be located, such as the Hobart CBD, including the Royal Hobart Hospital. Both maintained that if a sufficient barrier was erected on the bridge it would prevent suicides from the bridge, and the substitution rate would remain low. They believed that the substitution rate could be low also for those suffering bipolar disorder and schizophrenia. Those suffering such disorders may also exhibit impulsivity, especially when consuming alcohol or when not taking prescribed medication. If they are able to resume their medication they become stable. Dr Davie also noted that consumption of alcohol can increase impulsivity and that, to his knowledge, about 50% of persons taking their lives from the bridge have consumed alcohol. This evidence accords with the evidence at inquest. Three of the six deceased had consumed alcohol before their deaths.

Both Dr McArthur and Dr Davie gave evidence that since the 1990s Tasmanian psychiatrists have been advocating for barriers on the bridge.

The first passage of their report summarises their views:

"A review of the scientific literature regarding bridge barriers as public health measures confirms that the use of barriers reduces or stops suicides from that structure, without a significant increase in "substituted" methods.

Preventing suicide from the Tasman Bridge would have a series of significant benefits for society including saving individual lives, avoiding pain and distress for families and

friends, avoiding distress for any witnesses to the event, avoiding the significant number of calls to emergency services (both before and after the event) and avoiding the need of expensive medical resources to treat those people who survive the jump. Avoiding disability in survivors would also be significant.

In view of the scientific evidence now widely available, not erecting a barrier could be construed as a lack of concern by the community for those experiencing mental illness and distress.”

Similarly, the authors of the Mitigating Risk report do not consider that it is appropriate to do nothing. In their report, they stated;

“It is commonplace to nominate maintaining the status quo as an option. This report does not take this approach as the working group is unanimous in its view that the current situation is unacceptable as the opportunity for suicide at the Tasman Bridge remains”.

The LIFE document notes that arguments against physical barriers are that they are likely to be costly, considered aesthetically unappealing, encounter engineering challenges and public opposition on the basis of cost, perceived futility and appearance. However, it states that the evidence of effectiveness of barriers is good.

I accept the evidence that by the erection of sufficient barriers at the bridge there are three ways in which suicide will be reduced.

- (a) By increasing the difficulty of obtaining the means to end life. This may give individuals greater opportunity to think through their options and reduce the likelihood that they will follow through with the suicidal act. Some people who take their own life are impulsive. This is particularly the case with people suffering from some temporary and immediate crisis and after having consumed alcohol or drugs.
- (b) In postponing the act by making it harder to obtain the necessary means there may be a greater opportunity for other preventive interventions, such as by mental health services, to take place.
- (c) Restricting the means available may result in individuals choosing less lethal means, and therefore result in fewer deaths.

Surveillance

The efficacy of camera surveillance in preventing suicide has not been well evaluated. However, it is reasonable to assume that its efficacy as a prevention measure depends upon the ability to monitor the cameras in ‘real time’, to recognise individuals in crisis from the footage and to act quickly to intervene in the suicide attempt.

The issue of camera surveillance on the Tasman Bridge has been the subject of previous coronial recommendations.

In 2007, Coroner Chris Webster recommended that investigations be undertaken regarding the feasibility of pedestrian cameras to monitor pedestrian movements on the bridge. Similarly, Coroner Stephen Carey in two findings in 2012, recommended that consideration

be given to camera monitoring of pedestrian traffic on the bridge that provides a 24 hour recording capability held for a reasonable period for investigation purposes; and to consider 24 hour seven day a week monitoring of the 'real time' camera transmission to allow an ability for a timely intervention.

Surveillance cameras have recently been installed by the Department of State Growth on the Tasman Bridge pathways at four locations, one for each approach. The cameras have been positioned to enable identification of individuals, with images being retained at the bridge control room for a period of 31 days on a continuous loop to assist with investigations. Live images from the cameras are displayed to Tasmania Police Radio Room, although the images are not constantly monitored.

Inspector Bodnar gave evidence that the officers in the police radio room have access at all times to the footage from the four cameras. These cameras face east and west, both upwards and downwards. He confirmed that the cameras are not constantly monitored and are accessed by actively scrolling through about 30 different surveillance cameras available to police from other prominent Hobart locations. The footage from all such cameras is only accessed where police radio dispatch receives information. The camera is then accessed by officers to confirm or negate the information in the report.

Inspector Bodnar stated that the bridge footage is not effective at night for identification purposes. He said that during the day identification of a person leaving the bridge and entering one shore would be very difficult unless one knew the person or they were wearing distinctive clothing. Other limitations are the lack of footage at the top (middle section) of the bridge where suicide attempts were more likely to occur, and the lack of recording of the footage in the radio room. Inspector Bodnar stated that continual monitoring of footage was beyond the resources of Tasmania Police and would not likely prevent a person from ending their lives.

Inspector Bodnar gave evidence that, from an investigative point of view, enhanced and more complete camera surveillance would be beneficial. In this regard, Mr Woolley noted in evidence that high quality cameras have been installed on the Sydney Harbour Bridge to track all pedestrian movements. In my view, the benefit of such certainty for investigators and families is apparent.

The evidence allows me to conclude that the quality of the Department of State Growth cameras could be improved to allow for positive identification of individuals on the bridge and complete vision of the pathways. It is possible in some cases that this may assist in prevention of suicide, but is more likely to be important for investigation purposes and in providing accurate facts to families and loved ones of those that may be missing or deceased.

Anna Flower, State Security and Emergency Manager for TasPorts, provided evidence to the inquest that TasPorts uses cameras for marine and security operations to meet a variety of maritime regulatory compliance requirements.

She stated that Ports operate cameras at the port of Hobart that are trained towards the Tasman Bridge. One set of cameras capture bridge piers and water leading up to the Port side of the bridge. A second set of four cameras mounted on the top of the bridge capture the waterway and focus away from the bridge. She stated that both sets of cameras are

capable of remote directional and zoom control. The cameras on top of the bridge have the ability to pan from water to the bridge itself and can capture the pathways and vehicle lanes on the bridge. She stated that should a person jump or fall from the bridge into the water, the event may be captured on the camera that focuses towards the bridge (from Hobart Port's location) assuming that it is directed at the bridge and not being used to track of a vessel at the time. Should TasPorts receive notification that a fall or jump has occurred or may occur, then it may be possible for TasPorts to move the camera to capture the location on the bridge. She stated that previous instances of someone jumping from the bridge have been captured on the cameras, particularly at the point of entry into the water. However, the vision will be affected by the location of the occurrence, aspect of bridge and pier location proximate to the incident. Ms Flower stated that recordings from the TasPorts cameras are retained for 28 days. If a request is made within this period such footage would be supplied to police for an investigation.

Ms Flower also described the existence of two other TasPorts cameras of analogue (poorer) quality on the Domain slipway, which have the capability to be panned out to look at the bridge if required. Other similar cameras at Selfs Point at the location of the fuel refineries are available, if required, to track onto the bridge.

Ms Flower gave evidence that none of the TasPorts cameras on the bridge are available for real time monitoring by police, but TasPorts are willing to train the cameras to the area of concern upon request by police and to supply footage. She stated that unless someone was actively manoeuvring the cameras to an area of concern, it is unlikely that the cameras in their status quo position would capture a person positioned on the top of the bridge.

Inspector Bodnar gave evidence that police officers are aware of the ability to request footage from TasPorts within the time it remains available. I would encourage both Tasmania Police and TasPorts to continue to review their arrangements regarding the use of TasPorts cameras such as to maximise the benefit of the cameras in suicide prevention and investigation concerning the Tasman Bridge.

I accept the evidence of Inspector Bodnar that 24-hour monitoring of the available real time footage in the police radio room is unlikely to be effective to prevent deaths on the bridge. Monitoring of the footage by police officers may be a very difficult task, and may not result in accurate detection of those persons requiring intervention. Further, the monitoring of the footage remotely from the police radio room in Hobart raises the issue of the ability of police to provide timely intervention. It is apparent that these difficulties would exist even if the footage was of high quality and more comprehensive.

In making these comments, I note that there are no personnel stationed on the bridge itself (for any purpose), nor are there regular "patrols" of personnel on the bridge. It was not recommended by the cross agency working group that consideration should be given to the stationing of personnel on the bridge for suicide prevention purposes, nor was it suggested in any other evidence that such a measure alone would be effective. I have therefore not considered this issue in the inquest. However, this may be a matter that arises in ongoing consideration of suicide prevention measures at the bridge.

Lifeline telephones and Signage

The studies regarding the efficacy of installing signs and telephones at sites of frequent suicides indicate that these measures can be successful in reducing suicide at those sites. The Mitigating Risk report sets out those studies. There is no need to further detail the evidence. In February 2016 six push button Lifeline telephones were installed, together with signage promoting help seeking and encouraging vulnerable individuals to use the telephones to contact Lifeline. The installation of these measures was in accordance with the recommendation of the cross agency working group. These initiatives were undertaken by Department of State Growth and the Department of Health and Human Services.

Lifeline reported that, for the first three months of operation of the telephones, there was a significantly increased rate of calls in respect of individuals in crisis at the bridge. These calls emanated from the bridge phones and also mobile phones. It is, however, premature to assess the efficacy of these measures.

Structural modifications to the Tasman Bridge

Development of possible solutions to suicide prevention and other issues

The Department of State Growth engaged engineering firm, GHD, to investigate several long-standing issues relating to the Tasman Bridge and to develop potential solutions. In particular the report responded to a recommendation of the cross agency working group to the government to commission a consultancy to investigate and prepare engineering options for restriction of access to means of suicide by installation of public safety barriers.

The three issues investigated by GHD were suicide mitigation, pathway improvements, and maintenance and inspection improvements. In May 2016 GHD produced a detailed report, the contents of which deal in detail with the possible solutions to the three issues.

As stated in the report, *“all three issues are interrelated and changes to one item may necessitate changes to the other items. It is therefore important to consider the resolution of all three issues concurrently”*. Having considered the evidence regarding the extent of the interconnection between the three issues, I accept that this multifaceted approach must be taken when considering a structural solution to prevent suicide on the bridge. I will therefore set out the nature and possible solutions to the other issues as provided by GHD. However, due to the complexity of the issues and the clear requirement for further design work and consultation, my recommendations ultimately stop short of recommending that one particular solution be adopted for suicide prevention purposes.

The following discussion is based upon the contents of the report and the helpful evidence given at inquest by Mr Gregory McGuire. Mr McGuire is a qualified civil engineer and works as a project manager with GHD. GHD is a large Australian engineering consulting firm.

Mr McGuire was responsible for the management of the process of preparing the report. In conceiving solutions to the issues, he sought input from a team of its engineers from GHD offices around Australia. The team members were selected based upon various types of specialist knowledge - including bridges, industrial structures, materials handling, mechanical systems and electronic monitoring technologies.

Initially, each team member in the project was asked to work individually to identify possible solutions to the three issues. Once the team of engineers had identified possible options a meeting was held between State Growth and GHD to discuss all identified options. The positives and negatives of each option were discussed as well as how well they met 11 main objectives. These objectives included ease of operation (for inspection and maintenance changes), required maintenance of any new structure, operator health and safety, navigation clearance, cost, traffic impact, structural capacity, likely public response and staging of options.

Summary of the three issues

The primary issue concerning this inquest is the ease of suicide from the bridge. It is situated centrally and allows pedestrians to use the pathways at all times. The current fence is 1.59 metres in height, is relatively easy to scale and provides a direct drop into the river at a height that will usually cause death. Because the MIGs and FLGs are attached to the fence railing, they provide an opportunity for footholds for persons contemplating suicide. Other footholds include electrical connection boxes installed at regular intervals along the inside of the fence for the full length of the Bridge. The inner fence adjacent to the roadway, at a height of 900mm, is also a foothold.

As previously noted, each pathway has a clear width of 1.04 metres, well below the recommended 3 metres applicable for a two-way shared path according to the relevant Australian Standard. It is challenging to cycle within such a narrow pathway, particularly when pedestrians are travelling at a slower speed and in both directions. Oncoming cyclists may also be encountered. The pathways are also hazardous due to the encroachments.

The inner fence between the pathways and the traffic lanes is at a height well below the Australian Standard. Due to the elevated nature of the pathway, and the fact that the pathway directly abuts the traffic lane, it can be conceived that a cyclist or pedestrian might fall or be propelled over the low railing onto the roadway in a mishap. The wind conditions encountered on the bridge and potential for collisions on the narrow pathways are also considerations in respect of the level of risk of an incident. Further, the spacing between vertical railings on the inner fence is wider than current standards. Mr McGuire stated that a young child could fall through the large gaps between the railings and onto the roadway into the path of oncoming traffic. Mr McGuire stated that whilst he was not aware of any injuries suffered by the users of the pathways by virtue of the inadequacy of the inner fence, he was aware of "quite a lot of near misses". It may well only be a matter of time before the occurrence of a serious incident.

The existing MIG and FLGs are inefficient in their functioning. I did not hear detailed evidence about the operations of the FLGs, but I assume that their operation may be similar to the MIGs. The MIGs extend up and over the pathway on each side of the bridge to allow maintenance personnel to safely climb up and over the fence and down into the maintenance platform suspended under the bridge between piers. In order to move it from one span to another, it is required to be lowered to water level, disconnected, placed on a barge and floated around the piers. Both the MIG and FLGs are physically intensive to move, requiring chains to be manually laid out and power cables to be manually plugged in. The two MIGs remain attached to a portion of the outer bridge rail at all times. The external sides of the MIG on each side of the bridge are driven by a motor along the fence rail.

However, when the MIG requires relocation to another span, it must necessarily be reattached to a different part of the railing. However, this system of entry is necessary for safe access into the MIG by personnel. The height of the existing railing cannot simply be increased without significantly altering the MIG and the access mechanism into the MIG. The MIG currently intrudes 350mm into the already narrow pathway.

GHD formulated “primary” and “secondary” options. The primary options included all options that would mitigate one of the three main issues. The secondary options included the options that do not directly solve any of the three main issues but could be undertaken in conjunction with the primary options to provide benefit to the project. Mr McGuire stated that once the practicality of all of the submitted options was examined some options were disregarded as, from an engineering or operational perspective; it would not be practical in the local context to proceed with them. I will discuss those disregarded options shortly.

GHD determined that, from the viable primary and secondary options, there were seven potential packages of work that could be implemented. Mr McGuire noted in the report that each package would solve or alleviate the three main issues, albeit with differing effectiveness.

In arriving at the packages of works, the team initially looked at mitigating each of the issues in isolation and how to resolve those issues individually. Once options were considered for resolution of those issues, then the implications of one upon the other were considered in order to find solutions that would be practical packages to address all three issues.

The GHD report is a clear and thorough document detailing the possible options. It necessarily contains technical information in respect of the design of the feasible solutions. Mr McGuire was questioned at length about the options. It is not my intention, in light of my recommendations, to describe other than in general terms the detail of the solutions proposed.

Solutions to the issues

1. Solutions for suicide mitigation

The two options identified by GHD for effective suicide mitigation were:

- Installation of a higher fence. An appropriate height for effective suicide prevention would be at least 3 metres, ideally sloping back towards the pathway to make climbing difficult.
- Construction of a new shared path that is fully enclosed with walls and a roof, eliminating the possibility of users climbing out.

2. Solutions for maintenance and inspection improvements

If higher fences were erected, the fences could incorporate security gates into the structure itself. This would mean removal of the area of the gantry that protrudes over the fence and into the pathway at present. In this scenario, the top of the MIG tower is not attached to the railing but attached to the outside of the new fence. Mr McGuire stated that this option has

been assessed as feasible. The disadvantage in this option is that the MIG would operate identically as at the current time, it being necessary to use the barge between the spans. Therefore this inconvenient and time-consuming process would remain necessary.

The second option is an Under Bridge Inspection Unit (UBIU) which is effectively a truck-mounted access gantry. Mr McGuire stated that it serves the same purpose and operates in the same way as the current system in that the operators climb into a structure that allows them to perform maintenance under the bridge. The difference is that this unit is truck mounted, retractable and could be removed from the structure between uses. This could also be taken to other locations for use. One negative aspect of the use of such a unit would be the need for the closure of a lane whilst maintenance operations were in progress. It would be envisaged therefore that the operations would take place at night. Mr McGuire estimated that every span of the bridge requires maintenance on one occasion every 12 months. However he was not sure of the time taken for each of those inspections. Mr McGuire added that electronic inspection and monitoring techniques could assist in reducing the frequency of visual inspections using the MIG such that its deployment would only typically be the carrying out maintenance or targeted inspection. He stated that there is a broad range of sensing techniques to monitor the structural health of the bridge remotely. These technologies allow defects to be identified, as the view of the structure is equivalent to that of a close-up photo. The report stated that such techniques may be capable of inspecting multiple bridge spans during a day, something that isn't possible with the current MIG arrangement. Mr McGuire noted in evidence that electronic monitoring techniques would be relatively inexpensive and would significantly reduce the impact of the use of the MIG.

3. Solutions for pathway improvement

There were various options identified by GHD to improve the pathways. It is appropriate to set out these possible options only for the purpose of understanding how these solutions intersect with the suicide prevention measures identified above and the nature of the issues to be considered. The progression of solutions to the problem of the inadequate pathways was not in itself an issue in the inquest, and is a matter that will require further extensive design work and consultation.

The identified options are as follows:

- (a) Increase the width of the shared pathways at shoulder height only. For this option, the actual width of the pathways would remain the same but there would be additional room at shoulder height that would assist pedestrians and cyclists passing each other on the pathway. This additional space would arise from the rebuilding of the fences to angle outwards at around shoulder height but then return inwards at the top. In this way, the fences still of a height and design that would prevent persons climbing over them. Although this option would increase the amenity of the pathway users, it would not increase the pathway width to that required by the contemporary standard, and the difficulties relating to the narrow pathway is would remain. It is possible, in conjunction with this option, to widen the pathways locally at the area of the piers. This intermittent widening would allow sheltering and overtaking by pathway users. Separation of cyclists from pedestrians in the pathway used was also considered as a further method of

improving use of the pathways. Mr McGuire stated that this would assist “a little” but not significantly. There would still be the issue of people travelling in different directions on a very narrow path with the cycle pathway being insufficient in terms of space. Similarly if the two pathways were separated on the basis of direction of travel, there would still be pedestrians travelling at a much slower rate than cyclists, with cyclists therefore attempting to pass pedestrians from behind a narrow path. A shuttle bus service for cyclists would prevent cyclists from using the paths. However, Mr McGuire stated that there were questions about administrative requirements and whether this would be acceptable to the community.

- (b) A second option for the pathways would be to widen one or both sides of the bridge pathway to the appropriate 3 metre width. This could be achieved by support from either the existing bridge piers, or braced back to the outer girder of the bridge deck. In both of these options, further detailed analysis would be required to determine whether the additional loads are within acceptable limits.
- (c) An enclosed shared path as referred to above. This would be able to be built to contemporary standards for pedestrians and cyclists, and would prevent persons accessing any outer area of the bridge.

4. Discounted options

The construction of nets below deck level on each side of the bridge were considered and discounted as an option. They would need to run the full length of the bridge on both sides, requiring a net length of 2.8 kilometres. The intent of the nets is to act as a deterrent to potential jumpers rather than to safely catch them. The report notes that a similar net arrangement has been installed on the Golden Gate Bridge in San Francisco. The report stated that nets are typically placed approximately 6 m below the level of the pedestrian walkway. A fall into the nets from this height is typically enough to cause serious injury but not death. The injury coupled with the sagging of the net makes it very difficult to climb out. A rescue plan would need to be developed to safely recover anyone that falls into the nets. Additionally the MIG and FLG's would need to be modified to suit the arrangement of the safety nets. Whilst nets have proven to act as a deterrent to jumpers, there are several difficulties with this option. These difficulties include, but are not limited to, a reduction in the clearance of the main navigation span, modification required of the existing MIG and FLGs, the requirement for retrieval plans and maintenance of the nets.

Other options that were disregarded by GHD were; reducing the bridge to four traffic lanes to accommodate and construct wider pathways (unacceptable due to traffic volume); a “swing arm” or “boom lift” MIG system (too expensive and too unsafe respectively). Constructing a new path below the bridge deck was also discounted primarily due to impact on navigation clearance and inaccessibility.

I also note that GHD discounted the option of closing the walkways to pedestrian and cyclist traffic, either fully or during evening hours. Mr McGuire stated that he did not consider that it would be politically popular and that it would encourage the transfer of cycling traffic into the traffic lanes and cause a further traffic and safety concern regarding cyclists mingling with high speed traffic on the bridge itself. He also stated that closing the bridge at night would be

likely to encourage people to consider walking or riding within the walkway when they are in a vulnerable state. This option was therefore discounted on safety grounds.

Whilst the above options were not considered feasible by GHD, it may be that, in the process of selecting the appropriate option, further consideration is given to one or more of the “discounted options”.

The options packages and estimated costs

From the GHD report, I summarise the packages of viable options presented in evidence and the approximate costs provided in the report.

Package 1: New higher safety fences and segregated paths; \$8.3 million with MIG and FLG modifications (or \$11 million with purchase of an UBIU).

Package 2: New higher safety fences, artificially widen shared path; \$8.3 million with MIG and FLG modifications (or \$11 million with UBIU).

Package 3: New enclosed shared path supported by piers on the southern side of the bridge; \$73 million with MIG and FLG modification (or \$76 million with purchase of UBIU).

Package 4: New enclosed shared path supported by bridge girders on the southern side of the bridge; \$61 million with MIG and FLG modifications (or \$63 million with purchase of UBIU).

Package 5: New higher safety fences, widened shared parts locally at piers; \$8.8 million with MIG and FLG modifications (or \$11 million with UBIU).

Package 6: New higher safety fences, shuttle bus for shared path users; \$8.7 million with MIG and FLG modifications (or \$11 million with UBIU).

Package 7: New higher safety fences, artificially widened shared paths, widened shared paths locally at piers; \$8.8 million with MIG and FLG modifications (or \$11 million with UBIU).

I note that the costing of the higher fences is about \$7.5 million with the possibility of an additional 25% above that amount for contingencies. Mr McGuire gave evidence of the structural capacity of the bridge. He stated that there has not been any analysis of the capability of the substructure to cope with additional loading. He said in this regard “*I wouldn’t like to put a confidence level on it until that analysis was done. I suppose it’s fair to say that when the additional lane was put in, the expectation is that it would not have been overdesigned, so the additional capacity is probably not a great deal to take that additional loading*”. He stated that a structural analysis of the existing bridge would be required for the revised loading of whichever option may be considered. This would involve a retrospective analysis based upon the known engineering design of the bridge and knowledge of its current condition. He noted that this was a “fairly routine” process. He noted that it would be the next logical step in the process if any particular options were sought to be progressed.

Mr McGuire stated that the biggest risk structurally was that the cantilevered sections are most likely designed to just cater for the design load. He noted that GHD have performed an assessment of the key elements associated with the cantilevered pathways and to some

degree it verified the expectation that the structure would be virtually at its limit with additional fence height. He stated in evidence *“it does have capacity for the high fences but it would be right on its capacity”*.

Mr McGuire stated that at present that he would have a *“reasonably high degree of confidence”* that constructing higher fences would be able to occur without structural reinforcement. However he agreed that he would need to look at the detail more closely before he was ultimately confident of being able to use the existing fixing mechanisms and support structure underneath. He stated that *“it is conceivable”* that no design solution might be achievable from an engineering perspective without there being further works to strengthen the structure.

Mr McGuire stated that for any option selected for further consideration, there would need to be the firstly a higher level of assessment, requiring enough design work to prove its feasibility and confidently estimate its cost. Mr McGuire said in evidence that *“we would then seek further approval to progress that to a full design, potentially a tender or construction package, for implementation. So, I’d see that there’s probably two stages.”* Mr McGuire noted the cost of about \$50,000 to undertake the first stage of further assessment and about \$100,000-\$200,000 for progression to a full design for implementation.

In making the following recommendations I accept that further investigative and analytical work on the structural and engineering modifications of the bridge will need to take place, as well as further consultation with a wide variety experts and interested parties. As I noted earlier, my recommendations are therefore framed in a manner that would encourage such processes to occur.

Recommendations

1. I **recommend** that the government formulates a plan for the implementation of structural modifications to the Tasman Bridge, such structural modifications having a key aim of eliminating the Tasman Bridge as a method of suicide.
2. I **recommend** that the Department of State Growth install additional and enhanced camera surveillance on the Tasman Bridge to provide improved quality footage and complete coverage of all pedestrian areas.
3. I **recommend** that Tasmania Police continues the operation with respect to the reporting of incidents involving suicide, attempted suicide or persons in crisis on the Tasman Bridge, and further, Tasmania Police review the accuracy of the current reporting and implement any necessary measures to reinforce to police officers the requirement for complete and accurate reporting of such incidents.
4. I **recommend** that the government continue its commitment as expressed in the *Tasmanian Suicide Prevention Strategy* to pursue the development of a Tasmania Suicide Register, so as to accurately inform suicide prevention strategies, including strategies for suicide prevention at the Tasman Bridge.
5. I **recommend** that the Department of Health and Human Services implement a system for the ongoing monitoring of the use of the telephones and signage on the

Tasman Bridge, assess the efficacy of those telephones and that signage at regular intervals and report results to the relevant ministers and the cross agency working group.

6. I **recommend** that the cross agency working group continues to operate in accordance with its terms of reference as a principle source of advice to government regarding suicide prevention at the Tasman Bridge.
7. I **recommend** that the cross agency working group considers these findings, comments and recommendations in executing its functions in accordance with its terms of reference.

The Tasmanian Government is to be commended for its express commitment in recent times to consider and take appropriate action to prevent deaths at the Tasman Bridge. This commitment is manifested in the current suicide strategy, the convening of the cross agency working group and the commissioning of the GHD report. These measures have allowed me to significantly reduce the hearing time for the inquest, to receive concise and relevant evidence concerning the issues, and guidance regarding appropriate recommendations. The government's commitment has been further demonstrated by the completion of five recommendations made by the cross agency working group relating to installation of telephones and cameras, the erection of signage and the commissioning of the engineering report.

I express my appreciation to counsel assisting Mr Jack Shapiro, coroner's associate Sergeant Justin Lawson, and counsel for the Department State Growth and the Department of Health and Human Services, Mr Paul Turner, for their assistance. I also thank the six investigating officers who have provided me high quality investigation evidence and reports relating to the circumstances of each death.

Dated: 28 November 2016

Olivia McTaggart
Coroner