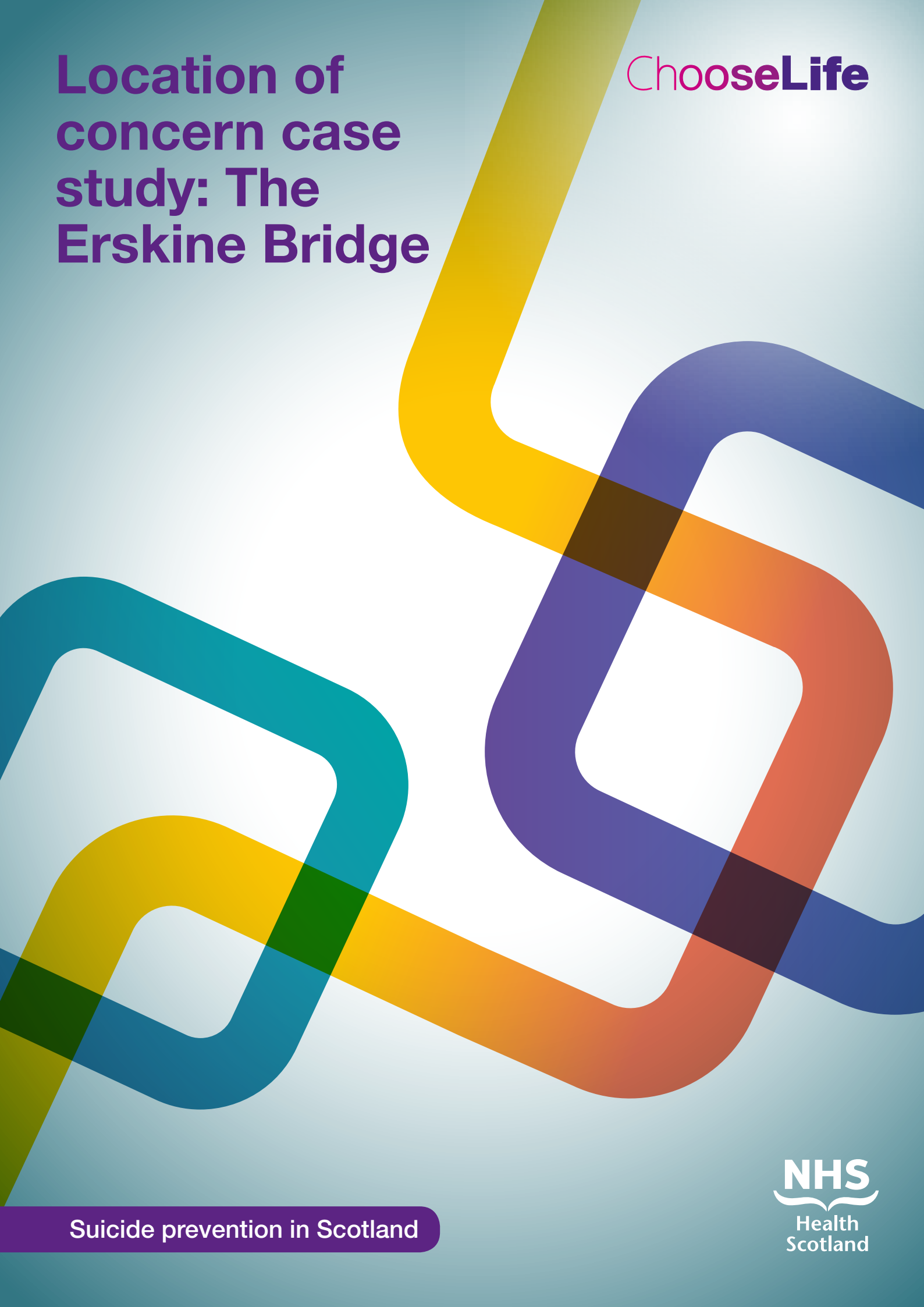


Location of concern case study: The Erskine Bridge

ChooseLife



Suicide prevention in Scotland

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1. Document overview

NHS Health Scotland has commissioned this case study of the Erskine Bridge regarding its previous identification as a location of concern for suicides.

What is meant by ‘location of concern’?

The term ‘location of concern’ means a specific – usually public – site which is frequently used as a location for suicide and which provides either means or opportunity for suicide (such as a particular bridge from which individuals frequently jump to their deaths). For more information see NHS Health Scotland’s publication [Guidance on action to reduce suicides at locations of concern](#).

The material for this case study is primarily drawn from interviews with six stakeholders identified by NHS Health Scotland as having an informed perspective on the decisions and developments in relation to this work. On the basis of these interviews and records of previous meetings and email correspondence that interviewees provided, this short paper:

- briefly summarises the historical process that led to the decision to install heightened barriers as the main suicide prevention measure, and provides an **objective account of the sequence of events**
- distils perspectives on strengths and weaknesses of the approach taken, thereby providing more **subjective views**, insights and reflections of the process.

To provide the context for these two sections, a short description of the Erskine Bridge is provided first.

2. Context: about the Erskine Bridge

The Erskine Bridge is a cable-stayed box girder bridge spanning the River Clyde in west central Scotland. This bridge spans and connects two local council areas, West Dunbartonshire and Renfrewshire. The bridge has been operational since 1971, and until 2006 Erskine Bridge was a toll bridge.

As part of a trunk road network, the bridge is the responsibility of Transport Scotland, an executive agency of the Scottish Government and the national transport agency for Scotland. Since 2001, Erskine Bridge has been managed by a multi-disciplinary company, known as an operating company, on behalf of Transport Scotland. The operating company acts on its behalf and operates, manages and maintains the bridge (and its trunk connecting roads) in accordance with national standards and best practice. From 2001 to 2013 that operating company was AMEY Highways Ltd; since 2013 it has been Scotland TranServ Ltd.

3. The historical process

Before the heightened barriers were built in 2011, the Erskine Bridge had a history as a suicide location. Despite the fact that jumping or falling from a high place (including but not restricted to bridges) was and is still a relatively uncommon method of suicide in Scotland ([accounting for approximately 6% of all cases in 2014](#)), the Erskine Bridge was known to be the location of a number of suicides.

Suicides at the Erskine Bridge prior to introduction of parapets

Between 1 January 2005 and 31 December 2009 there were 17 completed suicides from the Erskine Bridge. For the period 1 January to 20 September 2010, Strathclyde Police (as it was then) cited 120 incidents of suicide-related behaviour, with 4 completed suicides over that period (and one missing person / suspected suicide).

In 2007, the police force (Strathclyde Police as it was then) convened and hosted a meeting to discuss suicides at the Erskine Bridge with stakeholders from Transport Scotland, Amey, Choose Life, Samaritans, and local mental health and social care services. A number of recommended actions were detailed, including but not restricted to:

- improved signage for contacting Breathing Space and other helplines
- installing emergency phones to the Samaritans
- barrier alterations that would not compromise the structural safety of the bridge or undermine rescue efforts.

In October 2009, the profile of this matter was raised by press coverage of the suicides of two vulnerable young women, who were in care at a facility near the bridge. This high-profile tragedy led to increased calls for action from local communities, particularly the Old Kilpatrick Community Council (OKCC), the press, local councillors and MSPs. Following a decision by Scottish Ministers in November 2009, at a meeting convened by OKCC to address the issue of suicides from the Erskine Bridge, Transport Scotland agreed that it would begin testing the extension or replacement of the parapet across the bridge in 2010 – a complex process involving:

- reviewing best practice and designs from around the world
- study of options and tests to ensure effectiveness against being climbed

- wind tunnel testing and structural analysis of the bridge to determine any adverse effects on the bridge's aerodynamic and structural behaviour which would require the bridge to be strengthened. Structures such as the Erskine Bridge are extremely sensitive to wind loading.

A West Dunbartonshire council briefing paper (in September 2010) welcomed this development, describing barriers as an effective and evidence-based suicide prevention measure. This is consistent with Choose Life [Guidance on action to reduce suicides at locations of concern](#).

Extract from Choose Life *Guidance on action to reduce suicide at locations of concern*

The most effective form of prevention at jumping sites is a physical barrier. Safety nets serve a similar purpose but rescue from a net may be difficult should a jump occur. Many of the most popular jumping sites around the world have installed barriers of some sort and in every case the authorities claim that significant reductions in suicide rates have been achieved. These include the Bloor Street Viaduct in Toronto, the Jacques Cartier Bridge in Montreal, the Sydney Harbour Bridge, the Gateway Bridge in Brisbane, the Empire State Building in New York and the Eiffel Tower in Paris. After many years of contentious debate, agreement has been reached to provide safety netting on the Golden Gate Bridge in San Francisco.

Parapet developments were discussed at the multi-agency Erskine Bridge Local Group (a group that started to meet regularly in 2010 and which had its origins in the 2007 meeting convened by the Police and a subsequent one in 2009).

In early 2010, a small working group looked at the possibility of erecting signs for both Samaritans and Breathing Space at the four slip roads connecting to (and from) the Erskine Bridge. Transport Scotland organised for the signs to be made and erected in February 2010.

In 2011, following a programme of trialling prototypes, the barriers at the Erskine Bridge were raised from 1.2m to 2.4m – a parapet with a backward curve with only vertical infill and no horizontal rails that might serve as footholds or handholds.

Since installing the new barriers (and associated developments including Samaritans and Breathing Space signage), there has been a dramatic reduction in suicides from the Erskine Bridge. Figures provided by Police Scotland indicate a reduction from 16 suicides in the two years prior to the placing of barriers in August 2011 to 3 suicides in the two years after installation.

Transport Scotland is aware that there have been a number of (unsuccessful) attempts to climb the parapets. On the single occasion when this was achieved, the person in question used a step ladder.

The impact of the new parapets on suicides across Scotland is unknown.

4. Views on the strengths and weaknesses of the approach taken at the Erskine Bridge

The remainder of this report is structured according to a framework that is described in NHS Health Scotland's **Guidance on action to reduce suicides at locations of concern**.

Managing a location of concern: a process outlined in NHS Health Scotland guidance

1. Inter-agency collaboration and management
2. Data collection and analysis
3. Review of the options
4. Develop and implement a plan
5. Monitoring and evaluating effectiveness

4.1 Inter-agency collaboration and management

The multi-agency group on the Erskine Bridge as a location of concern was highly valued.

4.1.1 Strengths

Factors that were identified as contributing to the positive nature and success of this forum were:

- a focus on 'solving' a specific problem at this location
- key agencies being represented, providing a breadth of knowledge and experience, as group members had very different professional backgrounds and areas of expertise
- involvement of people operating at a sufficiently senior level within their respective services or organisations who contributed to discussions in a candid manner to seek solutions and improvement
- coming together and using a shared language – more specifically, 'location of concern' was highlighted as a useful one that engendered and supported a focus on intentional self-harm and not just completed suicides on the Erskine Bridge

- having the data and intelligence (this is picked up in a later section)
- expert input from invited professionals
- gravitas and credibility of the meetings, with specific mention of these being strengthened through the involvement of the Police Force and meetings being held on their premises
- members being open to hearing what others had to say – in particular on issues that lay outside their respective areas of expertise such as:
 - incidence of suicides at the Erskine Bridge
 - the practicalities – including technical and funding considerations
 - feasibility
 - costs and evidence base of specific suicide prevention and mitigation measures
- members' commitment to the issue (and to the meetings through sustained attendance), their focus on finding effective solutions and for their willingness to collaborate (and not be proprietorial) in both the process for this and in implementation of a multi-agency solution
- support from MPs, MSPs and elected officials to expedite action
- staging of meetings close together with work being actioned between these meetings
- additional meetings of a specialist technical and logistics group that met separately from the main meeting.

The multi-agency process was credited with bringing about additional positive outcomes including:

- increasing members' knowledge and awareness on the roles and responsibilities of other agencies, and the insights that they had
- enabling a shared or common understanding of the incidence of Erskine Bridge suicides and non-fatal self-harming and suicidal incidents, and as a consequence bringing about increased consistency in communications – such as with the media and general public
- identification of opportunities for further cross-disciplinary collaboration on shared agendas such as suicide intervention training for Police Scotland officers and selected trunk road operating company incident support staff.

4.1.2 Reflections

In view of some of the challenges experienced, the following reflections and points of learning were identified:

- The need to get *all* relevant agencies round the table.
- Senior buy-in, in particular decision makers.
- The desirability of integrating the general public's perspective.
- Establishing and agreeing a group's terms of reference at the outset.
- Maintaining momentum: without this, progress can slow down or take a long time.
- Monitoring outcomes and their effectiveness (these are detailed later/below).
- Acknowledgement that it would have been beneficial to have:
 - identified appropriate champions within key agencies to maintain a focus on suicide prevention and for future / sustained inter-agency discussions, particularly in view of changing personnel
 - maintained the group – an issue that will be picked up in the section on 'monitoring and evaluating effectiveness'.

4.2 Data collection and analysis

NHS Health Scotland guidance on locations of concern suggests that data on suicidal acts at particular sites is useful to make a case for actions at the site, and for establishing a baseline against which success can be assessed.

4.2.1 Strengths

Members of the multi-agency group valued a number of elements of the data collection and analysis.

- Annual suicide data derived from the National Records for Scotland and shared by Choose Life provided a context for suicides at the Erskine Bridge. The data underscored the relative low incidence of jumping from a high place as a means of suicide across Scotland, but highlighted that the bridge was one such location of concern.
- Local intelligence provided by Police Scotland for details on the number of Erskine Bridge suicides and of other non-fatal incidents on the bridge – most

notably people who were deemed to be feeling suicidal. More specifically, this information was deemed useful because:

- it was up to date and comprehensive
- such data is not routinely available (due to Data Protection) and, without this information, stakeholders did not have a good understanding of the frequency of completed and attempted suicides or the profile of people involved
- it provided accurate evidence for countering misconceptions that many more suicides occurred at the Erskine Bridge than was the case – an issue that was important to prevent copycat suicides and public distress
- it highlighted that there were many cases of ‘acute mental health distress’ on the bridge, although not necessarily with suicidal intent or high risk of suicide
- it indicated a dramatic reduction in suicides at the Erskine Bridge following the erection of the parapets
- it tied in with evidence that iconic and/or large and well-known bridges around the world are attractive to people considering suicide
- it identified that high-profile media coverage leads to copycat incidents.

4.2.2 Reflections

Information on whether or not a suicide has occurred does not routinely get fed to Transport Scotland, its operating company or other stakeholders from Police Scotland. However:

- Transport Scotland is informed of a suicide if Police Scotland decide to shut the road to deal with an incident (although, as the pavements are separated from the carriageway, the bridge is not always closed to traffic following a suicide)
- when tolls were in force at the bridge, Police Scotland would have informed staff at the manned stations if there had been an incident. Police Scotland now inform the operating company and Traffic Scotland if they need any road or footway closures.

There is no agreed process or mechanism in place for Police Scotland to meet with and periodically advise Transport Scotland, other roads authorities and strategic stakeholders in health or the local authorities of completed suicides and other suicide-related incidents. Such a forum would be beneficial.

4.3 Review of the options for action

Options for the Erskine Bridge were discussed over a prolonged period before the double suicide of two young women from the nearby care home. While introducing a heightened parapet was considered to be an effective action, other options and mitigation measures were discussed as either interim or additional measures including:

- the use of CCTV
- trained staff patrolling the bridge – either paid or volunteers
- signage for both Samaritans and Breathing Space.

The decision to erect the parapets was expedited by the double suicide of two vulnerable young women, which attracted strong reactions from the media, politicians and the general public. As a consequence there was a high level of political involvement, including a directive from the First Minister at the time.

There are no specific anti-climb parapet designs approved in the UK. The decision to trial the backwards recurve style with vertical infill was influenced by lessons learned from overseas work and both the Humber Bridge and Erskine Bridge trials. The parapet design selected was the most difficult to climb, by all but the most physically able. It could be installed on the bridge as a replacement for the original, but did result in the need to strengthen and modify the footway cantilever. This design was considered to be the most aesthetically pleasing option.

4.3.1 Strengths

While the decision to erect parapets was primarily a political decision, at a local level there had previously been a considered and measured approach to assessing the options. Options were considered on the basis of:

- **effectiveness** – with judgements informed by [Guidance on action to be taken at suicide hotspots \(2006\)](#) and ‘experiences from elsewhere (such as the Humber Bridge and Clifton Suspension Bridge in the UK, the Golden Gate Bridge in the USA and the West Gate Bridge in Australia).
- **implementation issues** such as:

- sensitivity to distinguish between people at risk of suicide and others – for example when using CCTV
- the potential to intervene in good time – how quickly emergency services or other trained personnel could be mobilised to intervene, and consideration on whether this would be faster than is the case with the police
- risk to Police Scotland and other trained personnel who intervene
- ownership and regulation – for example in the case of CCTV
- feasibility – in the case of providing 24/7 cover from volunteers
- monitoring – whether the local authorities and/or Police Scotland would have the capacity to monitor activity on CCTV. (The council would be responsible for monitoring CCTV)
- maintenance – for example ensuring that telephone booths are working 24/7
- long-term sustainability where an option involves recurring costs
- minimisation of negative unintended consequences – such as causing distress to those failing to intervene successfully
- problem displacement – such as safety nets making rescue efforts more challenging
- **proportionality** – in terms of finding a workable compromise between aesthetics and safety.

There were a number of factors to consider in terms of the parapet design.

- The key factors in preventing people scaling barriers are height, shape and a reduction in footholds and handholds.
- There was a significant degree of prototype testing to assess the scalability of different barrier options, with these prototypes based on lessons learned from parapet design elsewhere.
- There were practical and feasibility considerations that required technical tests.

Parapet trials involved considerations, judgements and assessments of:

- different materials – such as steel or aluminium or wire
- brand new parapets or extensions to the existing parapets – such as Clifton Suspension Bridge in the UK
- an acceptable height that would be sufficiently difficult to climb over (and would act as a deterrent)

- additional loading due to wind and weight – involving wind tunnel testing and structural analysis of the bridge
- dynamic sensitivity to wind-induced vibration caused by the new parapets (via wind tunnel testing and computer modelling).

4.3.2 Reflections

- Suicide is a highly sensitive issue and associated discussions around options and mitigation measures can be coloured by emotion and conviction.
- The focus must be on evidence-led considerations on what can be done and what is affordable, so that all parties can find common ground and agree a way forward.
- There can be a conflict of priorities around designing, constructing, operating and maintaining bridges to be structurally safe and used by people in good mental health, and deployment of limited maintenance budgets to address the unintended consequences and issues surrounding suicides and self-harm.
- Preventing and/or controlling pedestrian access to some larger and well-known bridges may be a cost-effective approach and should be considered among the range of options, particularly in those circumstances where a route would not normally have pedestrian or cycle access (such as a motorway).
- While the erection of heightened barriers was considered to be an effective deterrent, concerns were raised about the possibility of suicide translocation. In some cases, preventing individuals jumping from one bridge could result in them jumping from a different bridge or using some other method of suicide. See, for example, this [case study from Bloor Street Viaduct in Toronto](#).
- Published guidance indicating that road authorities should retrofit and/or erect heightened barriers at locations of concern might result in the authorities becoming vulnerable to litigation where suicides occur at bridges without such parapets.

Nevertheless:

- It was acknowledged and accepted that heightened barriers on pedestrian walkways are an effective solution and have helped reduce suicide incidents at the Erskine Bridge.

- There is evidence of suicide and self-harming incidents from overbridges on the Glasgow motorway network. There is no way to link this with the Erskine Bridge.
- The key issues raised were:
 - when these would be erected
 - how much they would cost
 - feasibility
 - from which Scottish Government budget the works should be funded.

4.4 Development and implementation

The Erskine Bridge required detailed wind tunnel modelling and testing to assess the dynamic sensitivity to wind-induced vibration caused by the new parapets. It also needed detailed structural analysis and strengthening to the footway cantilevers in order to take the additional loads created by the new parapets.

There is now Samaritans and Breathing Space signage on the footpaths that lead onto the bridge. Information on both of these helplines has also been displayed in the telephone boxes located at each end of the bridge.

The parapet works on the Erskine Bridge were phased into a decade-long programme of structural upgrading and improvements. The total scheme costs were over £4 million, paid by Transport Scotland from the trunk road maintenance budget.

4.4.1 Strengths

Implementation was staged such that:

- interim measures were put in place while decisions were made on parapet design
- parapet construction began quickly after plans were approved, and were in place in 2011.
- the parapets were constructed with a view to longevity, with an increased thickness of galvanising on the steel to ensure maximum durability.

While there have been instances of vandalism and other forms of damage to the signs and to the phones, Amey has addressed these issues quickly.

4.4.2 Reflections

The high level of media interest was seen on the one hand as helping to galvanise action and ensure ongoing progress and public accountability. On the other hand it led to a number of copycat incidents.

It was acknowledged that there would have been advantages to the multi-agency group continuing to meet on a regular basis after the actions were approved. Continuation of the group would have provided opportunities for:

- ongoing information sharing and clarity on the number of suicides, and increased knowledge of the particular characteristics of people scaling the parapets – i.e. height, gender, fitness
- across-organisational learning that might be applied to other locations of concern
- routine review of developments – including, for example, the condition of the signage in order to ensure timely and appropriate remedial action. This would, for example, ensure that replacement signs use Samaritans' and Breathing Space's up-to-date branding and core messages.

4.5 Monitoring and evaluating effectiveness

Police-held intelligence indicated a dramatic reduction in suicides at the Erskine Bridge following the erection of the parapets.

In West Dunbartonshire, there is no evidence to indicate that the parapets have been associated with or led to increased instances of people jumping from one of the local railway bridges.

While Transport Scotland is recording suicidal incidents of which it is made aware, there has been no known (co-ordinated / scientific / epidemiological) attempt to assess the impact of the developments at the Erskine Bridge on suicides at a local or Scotland-wide population level.

While Transport Scotland has evidence of suicide and self-harming incidents from overbridges on the Glasgow motorway network, there is no way to link this to the parapet upgrading on the Erskine Bridge.

4.5.1 Reflections

No budget was secured or set aside for monitoring and evaluation.

Stakeholders identified a number of key implications arising from the absence of a robust evaluation of effectiveness on suicides across Scotland.

- Stakeholders do not know or cannot ascertain from the available data whether there has been any significant substitution of methods and/or location of suicide (for example jumping from motorway bridges instead). It is therefore difficult to gauge the likely impact on suicides overall.
- There is no strong evidence to justify the spend on new higher parapets and/or opportunities to make the case for parapet extensions on other bridges, where existing parapets are in satisfactory condition.
- There is no strong evidence regarding suicide risk reduction resulting from prohibition of pedestrians from bridge footpaths and cycleways.
- Learning may not be captured and shared across the full range of stakeholders – although the topic is now on the agendas and discussed by the UK Bridges Board, the Bridge Owners Forum and the SCOTS Bridges Group, and experience, information and best practice is being shared.

5 Conclusions

There had already been inter-agency discussions about the Erskine Bridge as a location of concern for suicide. However, the highly emotive responses of the media and the general public following the double suicide of the two vulnerable young women, coupled with ministerial involvement, expedited the decision to install new higher parapets on the Erskine Bridge.

Discussions on suicide prevention can become coloured by emotion. Working across boundaries with local authorities, road and rail authorities, bridge professionals and health professionals is recommended.

Decisions on suicide prevention options need to be based on evidence of effectiveness, looking at all mitigation measures as a package, in addition to feasibility. It is important to avoid any assumptions that higher parapets can be retrofitted onto existing bridges: this is not always the case, and fitting new parapets is not the straightforward solution that the general public may consider it to be.

The use of public money, affordability and agreement on who pays for what can make for challenging discussions, and it is imperative to agree on these at an early stage. It cannot be assumed that the trunk roads maintenance budget will be available for this kind of project.

As with all public budgets, funds are limited and subject to ongoing pressures. This money is subject to governance and scrutiny on how and what it is spent on.

In some cases it is sensible to implement a phased approach involving the introduction of soft mitigation measures first, and evaluating the effect these might offer.

Information on completed suicides and other incidents involving a degree of suicidal intent is not routinely available to all key stakeholder groups and agencies, in part due to data protection and Police Scotland rules. Earlier identification of a location of concern, and coordinated and effective action require ongoing mechanisms and a forum for sharing best available information in a timely manner across the range of professionals involved would be beneficial.

There is an absence of robust and ongoing monitoring and evaluation. This limits both opportunities to establish the effectiveness of interventions and also cross-agency learning on implications for further action and improvements as required.

When upgrading or refurbishing a bridge that is identified and agreed as a location of concern, consideration should be given to suicide mitigating measures – both ‘soft’ (such as installing helpline signage and CCTV) and ‘hard’ (including bridge structure, parapets and access prohibition).

For new bridges that could become locations of concern (being iconic, high profile or with a long span) and where there is evidence that suicide and self-harm could become an issue, stakeholders, asset owners, maintainers and clients should ensure the designer considers the prevention of suicide and self-harm, by jumping, at the design stage. This will involve early stakeholder liaison with Health Boards and local authorities. Options might include prevention of pedestrian access and/or installing parapets designed to make them difficult to scale, or which include wind barriers that have the same effect. Inclusion of this at an early stage in project development is unlikely to have a significant effect on the economic or technical viability of a project.

Notwithstanding the issues outlined above, and although the impact may be difficult to measure in statistical terms, the developments at the Erskine Bridge, and other interventions at locations of concern, may be of immeasurable benefit in human terms.

