



Suicide in the North West

A review of non-residential and outdoor suicide locations

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<p>This summary is a redacted version of a report for key stakeholders engaged in suicide prevention efforts. In accordance with guidelines for safe and ethical reporting of suicide methods and locations the contents of the full report are too sensitive for general release.</p>
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Table of Contents

Introduction	4
Key messages and recommendations	5
Suicide locations with multiple events	7
Defining a location with two or more suicides	7
Identifying a suicide location that has been used more than once	7
Nature of suicide and significance of place	8
Suicide locations and mental illness.....	9
Cultural transmission of locations for suicide	9
Suicide tourism	9
Suicide prevention	10
Restricting access to suicide locations with multiple events	10
Training staff to prevent suicide attempts	10
Signs and telephone helplines	11
Restrictions on media reporting.....	11
A holistic approach to prevention	11
Methodology	13
Results and Discussion	14
Suicides and open verdicts	14
Recorded suicide attempts	14
Suicides and attempted suicides summary	14
High risk areas and features.....	15
Waterways	15
Railways.....	16
Roads	16
Urban centres	17
Parks and open spaces.....	17
Conclusions	19
Future research and development.....	19
References	21

Introduction

The consequence of someone choosing to take their own life leaves a devastating impact, not only on the friends and family of the individual, but also for the health and social services involved. The Government White Paper *Saving Lives: Our Healthier Nation* (Department of Health, 1999) set out a challenging target to reduce the death rate from suicide and undetermined injury by at least a fifth by the year 2010. The *National Suicide Prevention Strategy for England* (Department of Health, 2002) develops a broad strategic approach to suicide prevention requiring inter-agency collaboration to guide and coordinate efforts to achieve that target. Goal 3 of the National Strategy is to reduce the availability and lethality of suicide methods. This includes helping local services identify locations most frequently used for suicide and taking steps to improve safety at these sites.

In 2006, approximately 5,500 people aged over 15 years took their own life in the UK (ONS, 2008). Between 2003 and 2005, suicide rates were highest in the North East and North West regions (Wilkinson et al., 2007) and some North West localities continue to have the highest rates in the country. To help support an effective regional response to suicide locations the North West Public Health Observatory (NWPHO) were commissioned by the North West Care Services Improvement Partnership (CSIP NW) to complete an analysis of non-residential suicide locations in the North West. NWPHO have worked with a multi-partner network including CSIP NW, Greater Manchester Suicide

Prevention Group, Government Office North West, Samaritans, the Highways Agency and the Fire and Rescue Service, among others, to support this. The results of this analysis are confidential as the locations of suicides are identified. This review of non-residential and outdoor suicide locations in the North West discusses the findings of the wider study without mapping specific locations.

Although most suicides occur within the home, the location of death has implications for the kinds of suicide methods that are available. Deaths that occur outdoors are more likely to involve suicide by jumping from a height, jumping or lying in front of a vehicle, and drowning. These particular methods account for 6% of all suicides and open verdicts in England and Wales (ONS, 2005) and raise their own challenges for suicide prevention.

Analyses of such locations and the inter-agency collaborations that are required to implement recommendations have the following benefits;

- assisting in developing coordinated action plans to reduce the risk and opportunity for suicide at specific locations.
- informing decisions on resource allocation.
- better recognition of environmental risk by relevant frontline agencies.
- potentially contributing to a reduction in suicides across the region.

Key messages and recommendations

The effective management of non-residential and outdoor suicide locations requires local level coordinated partnerships that can implement action, monitor effectiveness and gauge public opinion. Collaboration is needed, however, with agencies covering sub-regional areas. A regional overview or infrastructure is one way of tracking progress towards reducing the number of suicides and any potential displacement.

This programme of work aimed to provide such an overview for the North West by plotting locations that were the site for more than one suicide between 2001 and 2006. Only sites which occurred outside and in non-residential, publicly accessible indoor places, that did not house high risk groups (i.e. prisons, youth detention centres and hospitals), were analysed. This was to ensure that no individuals were identifiable from the data.

- In total, 49 locations with two or more events were identified throughout the region, including 24 locations with two or more suicides and 23 locations with two or more attempted suicides. Two further sites were the locations for both a suicide and a suicide attempt.
- There had been no more than two events at the majority of these sites between 2001 and 2006. This suggests that there are few areas habitually used for suicide. However, any site used for the means or opportunity for suicide should continue to be monitored by local agencies. Local suicide partnerships should also consider what constitutes sufficient evidence for intervention.
- There were five or more suicides or attempted suicides at four locations across the North West. Decisions about what interventions may be effective at these sites should take into account methods used and the nature of geographical risk, as well as background characteristics of the deceased individuals, including whether they were known to each other.

- A number of additional 'high risk' areas and features, including waterways, railways, motorways, urban centres, parks and open spaces have been identified across the region. These geographical features will continue to pose significant regional challenges since it is difficult to establish where and when an intervention would work best. Sub-regional and inter-agency collaboration is vital for the effective management of these areas.
- The numbers of locations with multiple suicides mapped for each local authority do not correlate with the overall suicide rate (2003 to 2005) for each local authority. For example, a local authority with a comparatively low suicide rate may have a large number of locations with two or more suicides.
- Urban areas were found to have a greater number of suicide or attempted suicide locations with two or more events than rural areas. The reasons for this are likely to relate to population density and levels of deprivation in these areas, a key impact and determinant of poor mental health.

A number of factors should be considered when deciding what type of intervention would be most effective at any given site. For example:

- Samaritans' signs with their contact number are the most cost-effective intervention that can be placed at locations irrespective of methods used for suicide at that site. These are currently in use at a number of sites across the North West and their continued use is recommended.
- Where agencies have responsibility for high risk areas that span local boundaries, dedicated suicide prevention hotlines or staff could prove successful and justifiable.
- Barriers and netting on bridges and high rise buildings are also effective in reducing suicide at sites used for jumping and should be useful to

consider at a few key sites across the North West.

Further work is needed to facilitate local partnerships across the North West and to

develop a clear system for monitoring and evaluating the effectiveness of local and regional action.

Suicide locations with multiple events

Defining a location with two or more suicides

Literature has defined a location used frequently for suicide as a suicide 'hotspot'. This term describes a specific site, usually in an easily accessible outdoor or public location, used frequently for suicide (Aitken et al., 2006; Reisch et al., 2007). A site with more than one suicide can be labelled a 'hotspot' as this shows that the site has appeal and offers the means or opportunity for suicide (NIMHE, 2006a).

Suicide 'hotspots' are not determined by size and can vary in size considerably. For example, if a single car park has a number of suicides it can be classed as a 'hotspot'. Alternatively, if a number of car parks on a public park all have one suicide, the area as

a whole would be treated as a 'hotspot'. It is the means and opportunity for suicide made available by a site that helps to determine its 'hotspot' status. For example, a short stretch of motorway may be classed as a 'hotspot' when separate events have occurred at different points (NIMHE, 2006a). This points towards the somewhat transient nature of suicide 'hotspots' on stretches of road, railway or coastline where the means and opportunity for suicide are provided along the landscape's physical geography.

A suicide pact, where a group have agreed to die together, should be treated as a single incident for the purposes of defining a location.

High risk locations with two or more suicides provide opportunities for suicide by (NIMHE, 2006a):

- jumping from a height;
- placing oneself in front of a moving vehicle;
- drowning; and
- other methods, particularly vehicle exhaust poisoning.

Identifying a suicide location that has been used more than once

The geographical landscape of an area gives rise to variation in suicide methods and suicide locations. Locations that are used on two or more occasions for suicide tend to centre around areas where there are structures to facilitate the suicide attempt. For example, the majority of the world's leading suicide 'hotspots' are jumping sites, such as the Golden Gate Bridge in San Francisco (Beautrais, 2007a). In the UK, there are many sites and structures in local areas that lend themselves more easily to suicide attempts, such as the Beachy Head cliffs in Sussex and the Humber Bridge near the city of Kingston upon Hull.

Suicides from jumping have been found to occur more often in cities with extensive high rise housing when compared with areas with low rise structures (Beautrais, 2007a). Further, suicides decreased after the Kobe earthquake in Japan, which may be partly attributable to the earthquake having destroyed so many high rise buildings (Shioiri, 1999). In a comparison of

five counties in New York, Marzuk et al. (1992) found increased suicides by jumping in counties with more tall buildings and increased suicides by vehicle exhaust in counties with more private garages. Giles and Canter (2007), who compared 262 suicides across City of Liverpool, Manchester (South District) and Humberside and East Riding of Yorkshire, found more suicides by jumping in Humberside and East Riding of Yorkshire than in the other two districts. This can largely be accounted for by the number of deaths that take place at the aforementioned Humber Bridge, a well-known location for suicides across the North East region.

Some sites offer the opportunity for suicide by providing peace and seclusion. For example, Kind and Frost (2005) and Pearson (1993) highlight the opportunity for suicide that is presented by secluded car parks or other isolated rural locations. Such locations are often associated with suicides

by motor vehicle exhaust. This highly lethal method of suicide is more often associated

with male rather than female deaths (Brock and Griffiths, 2003; Giles and Canter, 2007).

Nature of suicide and significance of place

Suicide is often a private and secretive affair that leaves few or no witnesses. An individual's choice of suicide method is determined by many factors such as cultural influences, method availability and level of intent of that individual. Some methods such as jumping from a height, in front of a train, or hanging may be chosen because survival is virtually impossible. Other methods such as drug or alcohol ingestion may be selected as they provide more opportunity for the individual to be found and rescued. Methods that involve conceivably more dangerous self-injury are often associated with high suicidal intent. However, this is not always the case. De Moore et al. (1994) conducted a study on individuals who were admitted to hospital after non-fatal self-inflicted gunshot injuries. They found that many of the cases seemed to have been highly impulsive and were regretted afterwards. Therefore, it is difficult to equate lethality of a method with intentionality as many other factors apply.

Clarke and Lester (1989) highlighted some of the key factors associated with method choice.

1. Availability
2. Opportunity
 - a. Familiarity with method
 - b. Technical skill and planning needed
3. Costs/deterrents
 - a. Anticipated pain
 - b. Consequences of failure
 - c. Disfigurement after death
 - d. Danger or inconvenience to others
 - e. Messiness or bloodiness
 - f. Who might discover the body
 - g. Scope for concealing suicide
4. Certainty of death
5. Time taken to die while conscious
6. Scope for second thoughts and chances of intervention

Given the private nature of suicide, it is not surprising that many people attempt suicide

in their own homes, while alone and when there is little opportunity for rescue. It is these features of individuals' final hours that are most often associated with a suicide verdict being returned by a coroner (Giles, 2008; Linsley et al., 2001) as there can often be little doubt as to the person's intentions, especially where a suicide note has been left. Deaths that occur outdoors, in front of witnesses, or when rescue is probable are more likely to be returned with an open verdict since there may exist a reasonable doubt as to whether the individual intended to take their own life or whether they died accidentally.

Edwin Shneidman, a leading suicidologist, argues that suicide is ultimately caused by psychological pain that originates from frustrated or distorted psychological needs 'vital' to that individual (Shneidman, 1996). Van Heeringen et al. (2000) describe the possible different 'pathways' to suicide and suggest that there is a continuum of self-harming behaviour that involves attempted suicide and then eventually completed suicide. This 'suicidal process' is defined as "the intra-individual process in reaction to a person's environment, starting with feelings of despair, then fleeting suicidal thoughts, and evolving through more concrete plans and suicide attempts, which are often recurrent and may show increasing levels of suicidal intent and lethality of methods used, to completed suicide" (Van Heeringen et al., 2000, p230). This recognised process could have implications for an analysis of suicide locations with multiple events if a relationship between method and lethality could be more firmly established, or if different preventative measures were appropriate to different stages of the suicide process. The latter was suggested by Radbo et al. (2008) in their recent review of preventative measures appropriate at railway stations. As yet, however, little research has been done in this area.

Suicide locations and mental illness

There is evidence to suggest that important sub-groups of suicides may choose particular methods. For example, in addition to documented gender differences (e.g. Kelly and Bunting, 1998), there is evidence to suggest that individuals with serious mental health problems may choose certain suicide methods. O'Donnell et al. (1996) found that 15 of the 20 individuals they interviewed who had survived a suicide attempt on the London underground had been receiving psychiatric treatment at the time of their attempt. The most common illness was schizophrenia, followed by depression. Copeland (1989) found that the majority of those who jumped from buildings in Miami were older men with a history of depression. In a similar review in Hong Kong, a quarter of those who attempted suicide by jumping had psychotic symptoms, and a quarter had depression at the time of the attempt (Ku et al., 2000). It is also noted that 'hotspot' sites are often located close to psychiatric

care facilities (Beautrais, 2007a). Therefore, easily available, violent and unusual methods (including hanging, jumping and falling) appear to be more popular among the seriously mentally ill (O'Donnell et al., 1996; Roy, 1982).

In the study by O'Donnell et al. (1996), an important factor reported by survivors was the perception that underground trains are easily accessible and the attempt would require little preparation. It was a common opinion that death would be quick and certain, therefore having a high level of perceived lethality. Another pertinent reason for choosing this method was that they did not need to be 'brave' as they did not actively kill themselves, they allowed the train to execute them. It would seem therefore that there are certain internal and cognitive processes that are important to consider when designing interventions appropriate for outdoor locations.

Cultural transmission of locations for suicide

The location of death may be further influenced by familiarity with a method and notoriety of a suicide location. This knowledge may be transmitted through the press, the internet, or by knowing someone in the area that had successfully tried the method. In the study by O'Donnell et al. (1996), a significant proportion of the sample (45%) claimed the reason they chose the particular, and uncommon, method of jumping in front of a London Underground train was due to having personal knowledge of someone who had used the method previously. Cultural

transmission of this knowledge can lead to 'copycat' behaviour in vulnerable people, adding to the 'hotspot' status of an area (Beautrais, 2007b). Any site at which a suicide has occurred can achieve notoriety and quickly become a 'hotspot', particularly if the death is reported extensively in the news media: "It is well known that media reporting of suicides can result in copycat behaviour, and suicidal acts carried out in public places are more likely to attract media attention than those carried out in private homes" (NIMHE, 2006a, p6).

Suicide tourism

Suicide tourism is a phenomenon where people travel to a location with the intention of taking their own life there. Some individuals may be attracted to the anonymity of a place away from home. For example, between 1990 and 2004, one in ten suicides was a result of suicide tourism in Manhattan, New York City (Gross et al., 2007). A comparison of suicide tourists with residents showed that suicide tourists tended to be younger and were more often

White or Asian, and less often Black or Hispanic. Male victims accounted for nearly 80% of non-resident suicides in Manhattan compared with 70% of suicides among residents. Of the non-resident suicides, 60% were committed inside hotels and other non-residential interiors compared with 75% of resident suicides (Gross et al., 2007). This study illustrates that certain individuals may seek the opportunity for suicide outside their proximal environment

and often in well-known places (Gross et al. 2007).

To our knowledge, there have been no published studies on suicide tourism within the UK. However, it is important to recognise that the seaside area of Torbay, for example, regularly has one of the

highest suicide rates in the country along with other similar locations such as Brighton and Blackpool. This suggests that people may travel to these holiday locations to take their own life. For young men, Torbay's suicide rate is currently more than three times the national average (NIMHE, 2006a).

Suicide prevention

Suicide is a major public health issue, and has been recognised as a key national priority with the publication of the *National*

Suicide Prevention Strategy (Department of Health, 2002).

The national guidance on suicide 'hotspots' includes suggestions on how to prevent suicide attempts (NIMHE, 2006a).

- Erecting barriers at well-known 'jump points'.
- Establishing dedicated 'suicide patrols' of volunteers or paid counsellors to patrol 'hotspot' areas.
- Training non-health staff to recognise people and situations of possible risk.
- Placing signs at hotspots urging people to contact Samaritans or installing telephone helplines.
- Working more closely with the media on the reporting of suicides, as evidence suggests that media coverage can increase the use of a 'hotspot'.

Restricting access to suicide locations with multiple events

Restricting access to methods that might be used for suicidal acts is a key element in national suicide prevention strategies (Department of Health, 2002). Evidence suggests that by removing a method of suicide, rates go down. For example, following legislation which introduced catalytic converters, there has been a fall in suicide by vehicle exhaust asphyxiation in all age and gender groups. The overall population suicide rate also decreased (Amos et al., 2001). Further evidence is seen in the dramatic reduction in suicides following the withdrawal of toxic coal gas from British homes in the 1960s (Kreitman, 1976).

When barriers or nets are put up on bridges (e.g. Clifton Suspension Bridge in 1998),

suicide rates have been seen to go down (Bennewith et al., 2007; O'Carroll and Silverman, 1994; Reisch et al., 2007). Further, there is evidence to show that the number of suicides do not increase at other sites in the area (Bennewith, 2007; Gunnell et al., 2000). This suggests that suicidal impulses are often brief, lasting in some individuals for just a few minutes or hours. In others they may last days, but rarely longer (Hawton, 2007; Sakinofsky, 2000). Although physical barriers are likely to be the most costly of the prevention strategies (Kerkhof, 2003), the evidence supports the proposal that barriers should be included in the design of new structures and buildings (Bennewith, 2007; Radbo et al., 2008).

Training staff to prevent suicide attempts

Locating suicide patrols at the location of multiple suicides is a proactive but costly approach to suicide prevention. Suicide patrols, both paid employees and volunteers, require training. Depending on the size of the site, CCTV cameras may also

be needed to identify distressed individuals (NIMHE, 2006a). As yet there have been no published studies on the effectiveness of this intervention.

In organisations where staff are already present at the site, suicide awareness training can be provided (NIMHE, 2006a). A study in Montreal found that 25% of suicide incidents on the Metro system involved those who have attempted to take their life more than once (Mishara, 2008). Those who tried to take their life but survived typically waited at the end of the platform

until two or more trains had passed before attempting. As a result, Metro staff were trained to report suspicious behaviour. In the UK, Samaritans have worked with railway staff to develop their confidence and competence in dealing with people in distress, increasing the likelihood of intervention (Ferns et al., 2007). Again, this initiative has not yet been evaluated.

Signs and telephone helplines

Samaritans' signs with their contact number have been placed in locations where two or more suicides have been recorded, such as railways and car parks. By advertising their support they hope to reduce suicides. The New Forest suicide prevention initiative displayed signs with Samaritans' telephone number in 26 of their car parks, in which 50% of car park suicides had occurred (King and Frost, 2005). These car parks were monitored for three years, and those with signs saw a significant reduction in suicides. The annual total of suicides in the New Forest district also decreased. Those car parks without signs did not see any significant changes (King and Frost, 2005). Signs are low cost and take advantage of existing services such as Samaritans and NHS Direct. Unlike barriers, they are not method specific and so may speak to a wider number of people contemplating suicide (NIMHE, 2006a). There have been some objections to Samaritans' signs on the grounds that they may promote a

location for suicide, although there is no evidence to support this (NIMHE, 2006a).

Dedicated suicide prevention hotlines have also proven to be successful at preventing suicide attempts. For example, a hotline linked directly to a 24 hour psychiatric emergency service was installed on the Mid-Hudson Bridge in the US in 1985 (Glatt, 1987). A two-year evaluation of the scheme showed that out of 39 possible suicides, 30 used the phone to call for help. Of those who called the hotline, only one went on to jump, while five of those who did not use the phone took their own life (Glatt, 1987). Suicide hotlines are also installed on the Golden Gate Bridge and many other sites around the world.

Signs and telephone hotlines are limited in that they rely on an individual being ambivalent enough about suicide to make the call. They may impact differently on individuals at different stages of the suicidal process.

Restrictions on media reporting

News reports of suicides are associated with subsequent increases in suicide and imitation of suicide methods (Sonneck et al., 1994). Negotiating with the media to limit reporting is therefore an important part of managing suicide 'hotspots', and Samaritans have published *Media*

guidelines for reporting on suicide and self harm (2008) to support this. It is also advised that the media does not report on preventative measures implemented at specific sites as this may advertise both suicide and the site (King and Frost, 2005).

A holistic approach to prevention

Suicide is linked to mental health, physical health, social issues and personal relationships (NIMHE, 2006a; Canter et al., 2004). It is therefore acknowledged that there is no single approach to reducing suicides and that a broad strategic inter-

agency approach is required. The *National Suicide Prevention Strategy for England* (Department of Health, 2002) is intended to be an evolving strategy which will develop in light of progress made and emerging evidence.

Guidance on action to be taken at suicide hotspots (NIMHE, 2006a) has been disseminated nationwide to a wide range of statutory and voluntary sector agencies, including NHS trusts, county councils, transport agencies, Samaritans' branches and other relevant bodies. The guidance defines 'hotspots' to include railway bridges, cliffs, and high buildings, and provides straightforward advice on the measures that can be taken to reduce the likelihood of suicides occurring at these locations.

There are many factors that need to be taken into account when deciding what type of intervention would be most effective at any given site, such as the number and nature of suicidal acts, the frequency with which they occur and the fatality/serious injury rate, as well as on site-specific factors (NIMHE, 2006a) and characteristics of those involved. Inter-agency collaboration is vital to support this as evidence suggests that lives can be saved when local agencies work together to deter suicide in high risk locations (NIMHE, 2006a).

Methodology

The location of suicides and recorded suicide attempts from 2001 to 2006 across the North West were mapped. Data to inform the analysis were taken from the Public Health Mortality Files (PHMF; ONS, 2007). The 2006 suicide audit (NIMHE, 2006b), which was completed by primary care trusts (PCTs) in the North West, added further detail. Contacts for agencies across Greater Manchester and the North West were sought from the Greater Manchester Suicide Prevention Group in order to gain

attempted suicide data. The data were used to identify the location of sites with two or more events across the North West. Only sites which occurred outside and in non-residential, publicly accessible indoor places, that did not house high risk groups (i.e. prisons, youth detention centres and hospitals), were mapped. This rationale aimed to ensure that no individuals can be identified. The nature of these locations was examined and recommendations for intervention suggested.

Definitions

- **Location with two or more events:** when there are two or more suicides or attempted suicides at one location (i.e. they share the same coordinates or they are within 200 metres of each other [NIMHE, 2006a]).
- **High risk area or feature:** when two or more suicides or attempted suicides have occurred across a specific geographical area or feature. This includes coastlines, waterways, railways, tramlines, urban centres, parks, roads and motorways.

Results and Discussion

Suicides and open verdicts

Please note that this study uses the term 'location with two or more suicides' when referring to sites that the previously cited literature has labelled a suicide 'hotspot'.

- A total of 577 non-residential suicides and open verdicts that occurred between 2001 and 2006 were mapped in the North West.
- Twenty-four sites with two or more suicides were identified across the North West with a further two sites having been the location of a suicide and a suicide attempt.
- Suicide locations with two or more suicides were spread across the three sub-regions, with four in Greater

Manchester, eight in Cheshire and Merseyside, and fourteen in the Cumbria and Lancashire sub-regions.

- The majority of sites with multiple events had two suicides between 2001 and 2006. However, there were three sites with five deaths located in Blackpool, Liverpool and Salford. This indicates that there are few areas that are habitually used for suicide.
- Blackpool and Liverpool have the most suicide sites with two or more suicides across the region (four each).

Recorded suicide attempts

- A total of 223 attempted suicides that occurred between 2001 and 2006 were mapped in the North West.
- Twenty-three locations with two or more attempted suicides were found.
- Manchester had more agencies reporting their recorded suicide attempts than any other local authority in the North West. Therefore, it is not surprising that Manchester had the largest number of attempted suicides

(46) and attempted suicide locations with two or more events (seven).

- Salford also has a high number of attempted suicide locations with two or more events, at five.
- There were two to three attempts at the majority of these sites. The most regularly used location is in Manchester where there were six attempts in 2006 alone.

Suicides and attempted suicides summary

- A total of 49 locations with two or more events were identified in the North West.
- Only two locations across the North West contained both suicide and attempted suicide. These were located in Salford and Stockport.
- Twenty-two of the region's 43 local authorities had locations with multiple events.
- Manchester and Salford had the largest number of locations with two or more events (seven each). However, it is

important to recognise that Greater Manchester had the greatest number of agencies contributing to its dataset.

- Between 2001 and 2006 there were between two and three events at the majority of the sites. There were five or more events at four sites in the region: in Blackpool, Liverpool, Manchester and Salford.

High risk areas and features

This study found that high risk areas for suicide in the North West were located across waterways, railways, roads, urban centres and parks and open spaces. These geographical features include coastlines, canals, rivers, lakes, reservoirs, railway tracks and stations, motorways and major roads, small roads in urban and rural locations, bridges, car parks, urban centres, forested areas, remote rural locations, a golf course and country parks. A rural/urban divide is apparent for some features. For example, deaths on motorways and train stations appear more often in urban centres whereas deaths in lakes, reservoirs and on train tracks appear more often in more rural locations. Further inference is limited here without more data and detailed geographical comparisons.

Blackpool, Liverpool, Manchester and Salford – all large urban areas – had the greatest number of these high risk locations for suicide. Blackpool also has the highest suicide rate (2003 to 2005) at 11.42 per 100,000 population while it is likely that individuals travel into the area to take their own lives, more local research would be needed to explore this theory.

Waterways

Waterways were identified as a high risk feature for 58% of local authorities in the North West. High risk features include coastlines, canals, rivers, lakes, an estuary and reservoirs. Blackburn, Blackpool, Fylde and Liverpool each had sites with two or more events located in waterways between 2001 and 2006. In total, 4% of the suicide attempts analysed in this study occurred in waterways in the North West compared with 23% of suicides.

Sixty per cent of local authorities in the North West with a coastline had between one and six suicides on the coast. Blackpool and Liverpool had the largest number of suicides on the coastline (at six each). Seven canals, including the Leeds and Liverpool Canal and the Lancashire Canal, were identified as high risk features

Rural areas have fewer sites with two or more events. For example, Copeland, Eden, Macclesfield, Ribble Valley and West Lancashire have no sites with two or more suicides. Events in Burnley, Carlisle, Chester, Lancaster and Preston are also clustered within the urban centres. However, there are some exceptions as rural areas within Allerdale, South Lakeland and Wyre are the location for sites with two events between 2001 and 2006.

Between 2001 and 2006, Hyndburn, Pendle, Rossendale and St Helens had no high risk features despite these local authority areas containing both urban and rural landscapes. Pendle also has the fourth highest suicide rate in the North West at 8.79 per 100,000 population. This shows that the suicide rate of an area is not directly related to the number of high risk areas within a local authority and that an urban/rural divide is too simplistic.

The following summary describes trends in the characteristics of geographical features chosen by those who attempted to take their own life in the North West between 2001 and 2006. Suitable methods for suicide prevention across each theme are discussed.

in this study, while thirteen rivers were classed as high risk features, including the River Eden and the River Mersey.

Each waterway may be chosen for its remote, private location or simply due to convenience if the individual chose drowning as their preferred method and a waterway was near by. Roads and lay-bys next to rivers, canals or lakes were also high risk areas. These locations may offer the seclusion required by those who may choose methods such as carbon monoxide poisoning in their vehicle. Finally, some bridges over canals were also classified as a high risk feature.

Samaritans' signs with their contact number can be placed in locations with two or more suicides around high risk waterways to aid

suicide prevention. Signs are low cost and take advantage of existing services such as Samaritans and NHS Direct. The cost of dedicated suicide prevention hotlines and barriers or netting over bridges should be considered in light of the number and nature of events and the fatality and/or serious injury rate as well as on site-specific

factors. For example, does a particular structure assist suicide attempts or are individuals entering the water at a number of different points? A hotline or barrier may be suitable in the first case. Effective intervention would be more problematic in the second case.

Railways

Railways were a high risk feature for suicide and recorded suicide attempts across the North West. Sites with two or more events have been found on the tracks, train stations, bridges over the tracks and viaducts. Three per cent of suicide attempts analysed in this study occurred on railway tracks in the North West compared with 14% of suicides.

Train stations were a high risk feature for 42% of the local authorities in this analysis. Sites with two or more events have also been found on bridges crossing railways in Wyre, Chorley and Manchester. Further high risk areas include a viaduct crossing the railway line in Carlisle and an attempted suicide on the track over an estuary at Lancaster.

Railway tracks were identified as a high risk feature for 51% of local authorities in this study. Carlisle, Crewe and Nantwich, Eden, Fylde, Lancaster, Preston, Salford and Vale Royal all had sites with two or more events located on railway tracks between 2001 and 2006. Salford had the greatest number of events with three suicides and five attempts mapped along the railways. Stockport also had a high number of events with a total of seven suicides. Tracks were also a high risk feature for rural areas. For example, Chorley had a total of five suicides on railway tracks making this a high risk feature in the area. However, remote areas such as Allerdale and Copeland had no suicides or suicide attempts on railway tracks.

Methods that are currently used in suicide prevention on railways include Samaritans' signs at high risk locations. These signs are often located at train stations and level crossings. In the UK, Samaritans have trained railway staff to deal with people in distress, increasing the likelihood of intervention. It would seem beneficial to continue in this practice across the North West, although evidence of effectiveness is needed. Dedicated suicide prevention hotlines can also be introduced to locations with multiple events and barriers or netting can prevent suicide attempts from bridges crossing the tracks. Again, decisions to implement these interventions should offset likely effectiveness in reducing suicide against the cost involved.

Roads

Roads were identified as a high risk feature for suicide and recorded suicide attempts in the North West. Motorways, motorway junctions, major roads, bridges over roads and small roads in both urban and rural areas have been the site for two or more events between 2001 and 2006. Thirty-two per cent of suicide attempts in this study occurred on a motorway in the North West compared with only 3% of suicides. These figures could suggest that motorways were a popular location for those who attempt or threaten suicide. This may be a function of data coding or relate to other aspects such

as the public nature of a motorway which means that suspicious behaviour may be more likely to be reported. These individuals may therefore be more likely to have their attempt interrupted by passers by or be talked down by negotiators than those who chose less public locations. More research is needed here to examine this.

Motorways were identified as a high risk feature for 26% of local authorities in this analysis. Liverpool, Manchester, Salford and Stockport all have sites with two or more events located on the motorways between

2001 and 2006. These high risk areas were concentrated in urban areas on major roads on the outskirts of town and city centres. Bolton had the greatest number of events, with eight recorded suicide attempts on the M61. Bury also had a high number of events with three suicides and two attempted suicides on the M60 and M66. Junctions were a high risk feature on the M60, M61 and the M66. For example, there were two suicides and a recorded suicide attempt between three junctions of the M66. Five local authorities also had two or more events on bridges that cross motorways.

Methods for suicide on motorways include jumping in front of vehicles from the side of the road, jumping from bridges or deliberately crashing a vehicle. Preventative measures around motorways could include Samaritans' signs and phone lines on bridges and the construction of barriers on these bridges. It may be more difficult to

reach individuals who are in their vehicles or who may walk onto the motorway at varying points.

Major roads were high risk features in 29% of local authorities in the North West. For example, Salford had a total of seven recorded suicide attempts on major roads in the urban centre, while Stockport had three suicides and four attempted suicides on major roads. Small roads in urban areas must also be considered as high risk features. Blackpool and Bolton had a total of nine events in the urban centre making this a high risk area. These events are often a result of carbon monoxide poisoning in vehicles at the side of the road, and are often in private side roads. As there was only one location with two or more suicides, it is difficult to implement preventative measures as the locations are often transient in nature. This is also true of small or isolated roads in rural locations.

Urban centres

This study identified urban centres as high risk areas in Carlisle, Liverpool, Manchester, Rochdale, Salford, Stockport and Tameside. Manchester had the greatest number of sites with two or more events in its urban centre between 2001 and 2006. Urban centres offer opportunities for suicide in the form of jumping from high buildings and multi-storey car parks. For example, a total of six attempts were recorded on one multi-storey car park alone in Manchester in 2006. Buildings that have been identified as high risk locations can be fitted with barriers to prevent individuals from jumping. CCTV cameras can also detect suspicious behaviour and offer an opportunity for a

trained security officer to intervene or call the police.

Locations with two or more suicides were also found to be located near prisons, youth detention centres and mental health inpatient units in urban centres in the North West. Samaritans' signs can be located on sites with two or more events around these high risk features to encourage suicidal individuals to seek help. Suicides on major roads, railway tracks and stations, canals and rivers may also occur in urban centres where there is a concentration of these features.

Parks and open spaces

Parks and open spaces have been identified as high risk areas in Blackburn, Eden, Oldham, Salford, South Lakeland and Stockport between 2001 and 2006. These areas also had sites with two or more events. High risk features within parks and open spaces included forested areas, car parks in secluded areas, remote rural locations, a remote holiday village, a golf course and country parks. These locations

may have been chosen for their seclusion and privacy or for the features within these areas such as lakes and trees which can facilitate methods such as drowning and hanging. As many of these locations cover vast areas it can be difficult to implement effective prevention strategies. For example, employing patrollers would not be a cost-effective option. Samaritans' signs and phone lines can be placed in car parks and

other remote locations where multiple suicides have occurred, but it may be difficult to know where best to place these

signs. Commitments to continue monitoring at these sites would be beneficial.

Conclusions

This analysis identified 49 sites for suicide and attempted suicide with two or more events across the North West between 2001 and 2006. This report also identified high risk features that are used for suicide across the North West. These include waterways, railways, motorways and roads, urban centres, parks and open spaces.

There were limitations that must be considered when interpreting the results of this non-residential suicide analysis. For example, it is important to note that not all PCTs were able to provide full datasets for the Public Health Mortality Files (2001 to 2006) and the 2006 suicide audit. Further, the agencies contacted to provide suicide attempt data were not in a position to provide data for all local authorities. Most agency contacts were gained via the Greater Manchester Suicide Prevention Group leading to a more complete picture for this sub-region. A full set of agency data (for 2001 to 2006) would be required to make any conclusions when comparing the

location of death for suicides and attempted suicides.

The limitations of the data mean that the study is by no means exhaustive of all suicide and attempted suicide locations in the North West. However, the data that were collected has enabled valuable analysis and an evidence base for those areas with the most complete records. The evidence from this non-residential suicide location analysis can be used to start to identify recommendations for action for each local authority. Erecting barriers, training staff, establishing suicide patrols and using signs (NIMHE, 2006a) should be considered at both suicide and attempted suicide locations. When considering what action to take at a location with two or more events the economic cost and the environmental impact of interventions need to be considered. In order to achieve this, partners must work together with local community groups to identify and manage suicide hotspots (NIMHE, 2006a) and inform regional suicide prevention strategy.

Future research and development

Future research is required to provide a more accurate view on the likely interplay between the individual (the person and their background) and environmental characteristics (the place and method chosen for self-harm). For example, there were incomplete data on cause of death or suicide method in this analysis and so it was not possible to gain full details about the features of an area that facilitated suicide. If a number of different methods are used in a cluster, this may suggest that the area attracts individuals due to other factors, such as the isolation and privacy it provides. It would also be beneficial to examine the psychological correlates of particular suicide methods. For example, carbon monoxide poisoning by a vehicle exhaust is a suicide method chosen by more males than females. It would therefore be useful to examine whether gender-specific preventative measures would be useful to consider.

The *National Suicide Prevention Strategy* (Department of Health, 2002) made it a priority to reduce the number of patients that go missing from mental health in-patient units. It would therefore be useful to look at the typical geographical location chosen by high risk individuals who take their own lives following release from institutions such as prisons and hospitals. For example, are the areas that house established prisons and detention centres also high risk areas for former prisoners?

The concept of suicide tourism can also be examined to provide valuable insight. Analysis to see whether the home address correlates with the local authority where the suicide occurred would reveal whether these individuals travel to specific locations to take their own life. This may have important implications for the regional allocation of resources.

Next steps include continued effort to

facilitate coordinated partnership working to clarify responsibilities at each level of monitoring. For example, if local partnerships decide to use a Samaritans' sign, who will go out and check the sign is still there, record and monitor incidents, disseminate evidence of effectiveness, and so on? It is in these practical steps that

sub-regions would benefit from improved coordination, information and support. Further work is also needed to facilitate local partnerships across the North West and to develop a clear system for monitoring and evaluating the effectiveness of local and regional action.

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