

# ACCIDENTAL DWELLING

## FIRES IN WIRRAL

### HEALTH NEEDS ASSESSMENT

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Author: Dr Anna Donaldson, Specialty Registrar in Public  
Health, Wirral Council

Contributor: David Simpson, Merseyside Fire and Rescue  
Service

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## **Acknowledgements**

With thanks to Merseyside Fire and Rescue Service for providing the data and the insight for this health needs assessment.

## **Abbreviations**

ADF	Accidental Dwelling Fires
ESA	Employment and Support Allowance
FRS	Fire and Rescue Service
HFRC	Home Fire Risk Check
HFSC	Home Fire Safety Check
HSA	Home Safety Assessment
LSOA	Lower Super Output Area
MFRS	Merseyside Fire and Rescue Service

## **Glossary**

<b>Accidental fire</b>	A fire started without intent, including fires where the cause is not known or is unspecified.
<b>Cause of fire</b>	The defect, act or omission leading to ignition of the fire.
<b>Fire fatalities</b>	Deaths which are the direct or indirect result of injuries caused by a fire incident, even if death occurs weeks or months later.
<b>Non-fatal injury</b>	People who require first aid at the scene of the fire, people taken to hospital due to their injuries or people who were advised to see a doctor due to injury.
<b>Source of ignition</b>	The source of the flame, spark or heat that started the fire.

## **Executive Summary**

### **Background and rationale**

Accidental dwelling fires (ADFs) are fires that occur in buildings occupied by a household and that are started without intent. Dwelling fires can result in both physical and mental harms and the injuries sustained in fires can be fatal. In 2011-2012 there were 37,601 accidental dwelling fires nationally resulting in 244 fatalities and 7,729 non-fatal injuries. As well as the human costs of accidental fires, there is a significant economic burden associated with property damage and funding the emergency response to incidents. In 2004, fires in England and Wales were estimated to have cost a total of £7.03 billion, with each domestic fire alone estimated to cost the tax payer £24,900.

Prevention has been recognised as central to reducing the harms associated with accidental dwelling fires and promoting fire safety is a core function of the Fire and Rescue Service. However, with increasing financial restrictions there is a need to ensure that preventative interventions are both effective and appropriately targeted. The purpose of this health needs assessment is to improve the understanding of accidental dwelling fires in Wirral, their distribution and risk factors, and to identify evidence based interventions to reduce ADFs.

### **Aim**

To analyse and interpret information and intelligence on accidental dwelling fires to help inform effective preventative strategies and campaigns to reduce the incidence of accidental dwelling fires (ADF) in Wirral.

### **Methodology**

This health needs assessment utilised existing data sources and did not involve primary data collection. Data was obtained from Merseyside Fire and Rescue Service and routine data sources. A rapid literature review for evidence based interventions was conducted within Medline, Scopus and a general search engine.

## **Findings**

Between 2006 and 2012 there were 1576 accidental dwelling fires in Wirral. The annual number of ADFs in Wirral had not declined over this six year period, which differed from the general downward trend seen nationally. Approximately 75% of accidental dwelling fires occurred in the more deprived areas of the borough. In men, the highest numbers of non-fatal injuries were in those aged 50-59 years whilst in women, the number of injuries peaked in those aged 80-89 years. Data was not available to explore other individual risk factors such as disability, alcohol or smoking.

The primary intervention identified to address accidental dwelling fires was the Home Fire Safety Check (HFSC). Although implemented locally, a review of the literature suggested there may be alternate ways of delivering this intervention which may improve its effectiveness. Data sharing with health providers, such as General Practitioners, would allow this intervention to be more appropriately targeted towards those at greatest risk of ADFs. The importance of joint initiatives with other sectors was highlighted both in the literature and in case studies of other Fire and Rescue Services.

## **Conclusions and recommendations**

Accidental dwelling fires are an important and preventable cause of mortality and morbidity. Interventions exist which have been found to be effective at reducing the incidence of accidental dwelling fires. Whilst such interventions are currently in place within Wirral, the delivery model could be further developed to improve the effectiveness. Key to reducing ADFs is partnership working and where possible information sharing. This approach also allows resource sharing which is of significant benefit in the current financial climate. Robust data collection is needed to allow other risk factors for ADFs to be explored and to ensure that the effectiveness of local interventions is appropriately evaluated to inform future planning and commissioning.

## **1.0 Introduction and background**

### **1.1 Local context**

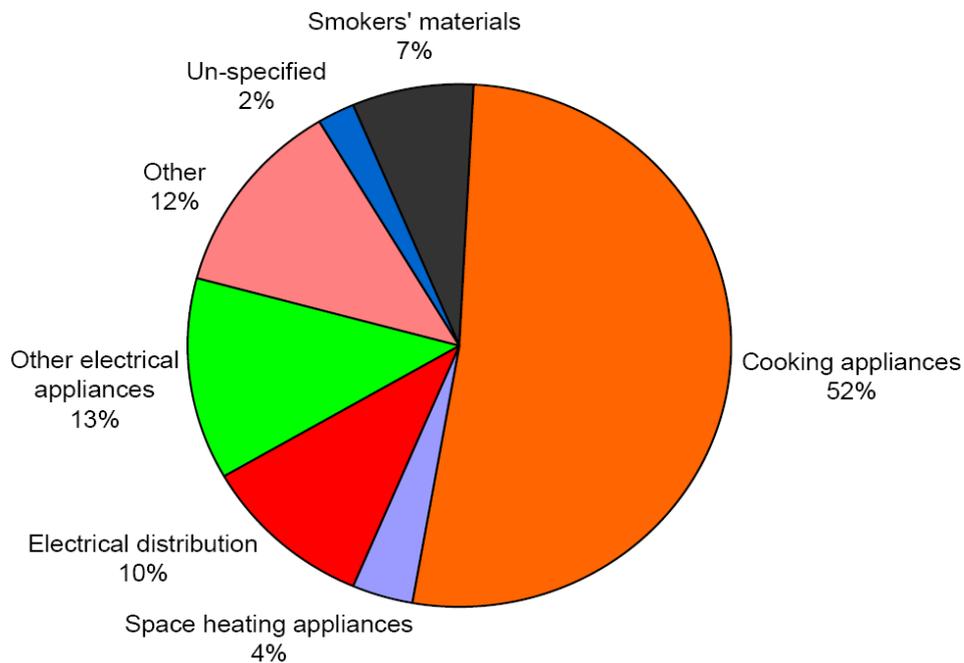
The Fire and Rescue Service (FRS) has responsibilities around both responding to acute incidents and promoting fire safety within communities. Since fire prevention was highlighted as a core function of the Fire and Rescue Service, targets have been developed for the local Fire and Rescue Service to achieve certain levels of fire safety activity. Merseyside Fire and Rescue Service have undertaken a range of projects locally with the aim of reducing the incidence and risk posed by fires. Partnership working has been central to many of these projects and work has been undertaken in collaboration with other sectors including schools and the police, among others.

This health needs assessment is the result of partnership work between Merseyside Fire and Rescue Service and the public health team of Wirral Council. The aim of this partnership was to identify strategies to further reduce the incidence of accidental dwelling fires within Wirral and by doing so reduce premature mortality within the local population. This work used data collected by the Fire and Rescue Service to explore trends in accidental dwelling fires at the Wirral population level. These trends were then mapped against current service provision in order to identify areas where further interventions may be beneficial. Evidence based recommendations were then developed in light of these findings.

### **1.2 Accidental dwelling fires (ADF)**

Approximately two-thirds of all building fires are dwelling fires.<sup>1</sup> Dwellings can be defined as permanent or non-permanent buildings which are solely used for habitation and occupied by a household. The majority of dwelling fires are accidental, as oppose to deliberate, which includes fires where the cause is not known or unspecified.<sup>1</sup> In 2012, the major cause of accidental dwelling fires was the misuse of appliances, which accounted for approximately 40% of all accidental dwelling fires.<sup>1</sup> The most common source of ignition (the flame, spark or heat which ignites the fire) was cooking appliances (see Figure 1).

Figure 1: Sources of ignition in accidental dwelling fires, Great Britain, 2011/12



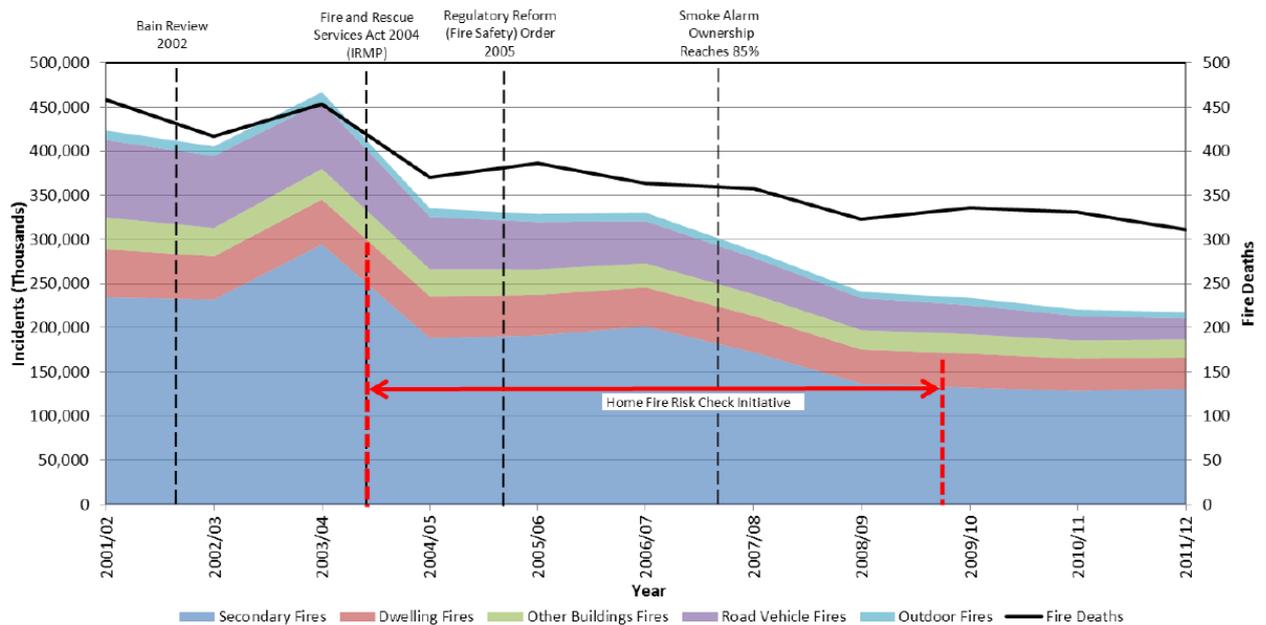
Source: Taken from the Department for Communities and Local Government (2012)<sup>1</sup>

For *fatal* accidental dwelling fires the most common cause and source of ignition are different. In 2012 the most common source in fatal ADFs was the careless handling of hot substances and the most common source of ignition were smokers' materials.<sup>1</sup> Whilst cooking appliances accounted for 14% of accidental dwelling fire fatalities, smokers' materials were responsible for over a third of all ADF deaths in 2011-2012.

### 1.3 The epidemiology of accidental dwelling fires

In 2011-2012 there were 37,601 accidental dwelling fires (ADF) nationally resulting in 244 fatalities and 7,729 non-fatal injuries.<sup>1</sup> Over the past decade the total number of fires has been declining and building fires have reduced by 39% (see Figure 2).<sup>2</sup> Fire fatalities have also been declining and by 2011/12 deaths from accidental dwelling fires were 60% lower than in the 1980s.

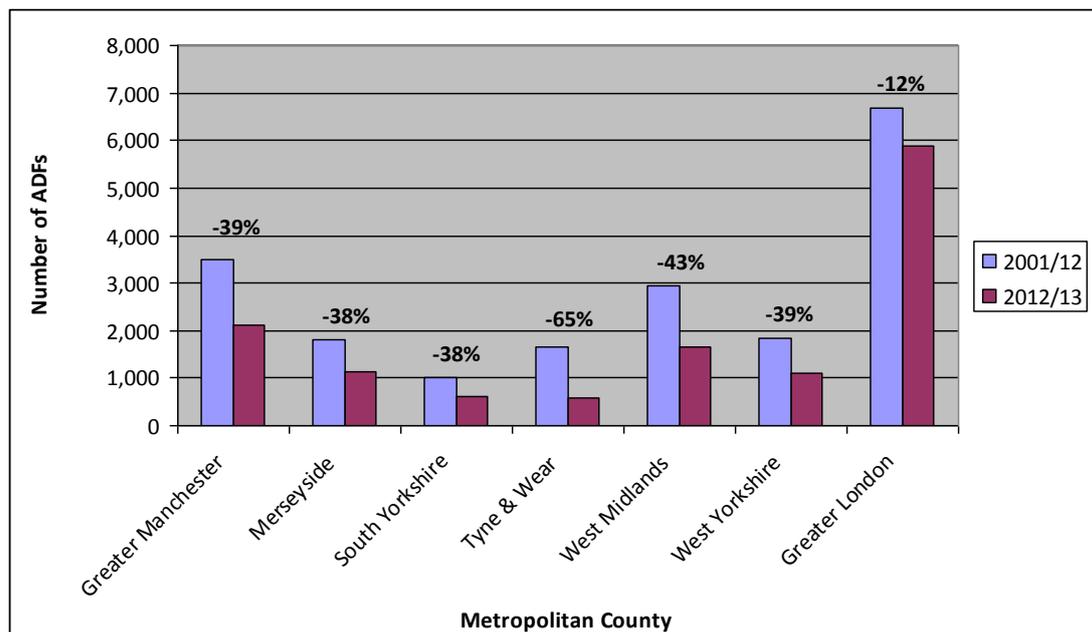
Figure 2: Change in fire incidents and fire fatalities over time, England, 2001/02 – 2011/12



Source: Taken from Facing the Future (2013)<sup>2</sup>

The national reduction in accidental dwelling fires has not been reflected equally across the country. The Fire and Rescue Service is divided into Metropolitan and non-Metropolitan areas. There are seven Metropolitan services, including Merseyside which covers Wirral. The number of accidental dwelling fires by Metropolitan County is shown below in Figure 3. In both 2001/02 and 2012/13 Greater London experienced the greatest number of accidental dwelling fires whilst Southern Yorkshire experienced the least.<sup>3</sup> All seven areas have shown a reduction in ADFs between 2001/02 and 2012/13 and the majority of Metropolitan Counties, including Merseyside, have shown an approximate decrease of 39% in line with the national average. Tyne and Wear however have shown an even greater reduction in ADFs with a 65% decrease in incidence. Greater London on the other hand has only reduced accidental dwelling fires by approximately 12% in the last decade.

Figure 3: Number of accidental dwelling fires by Metropolitan Fire and Rescue Service, and percentage reduction between 2001/02 and 2012/13



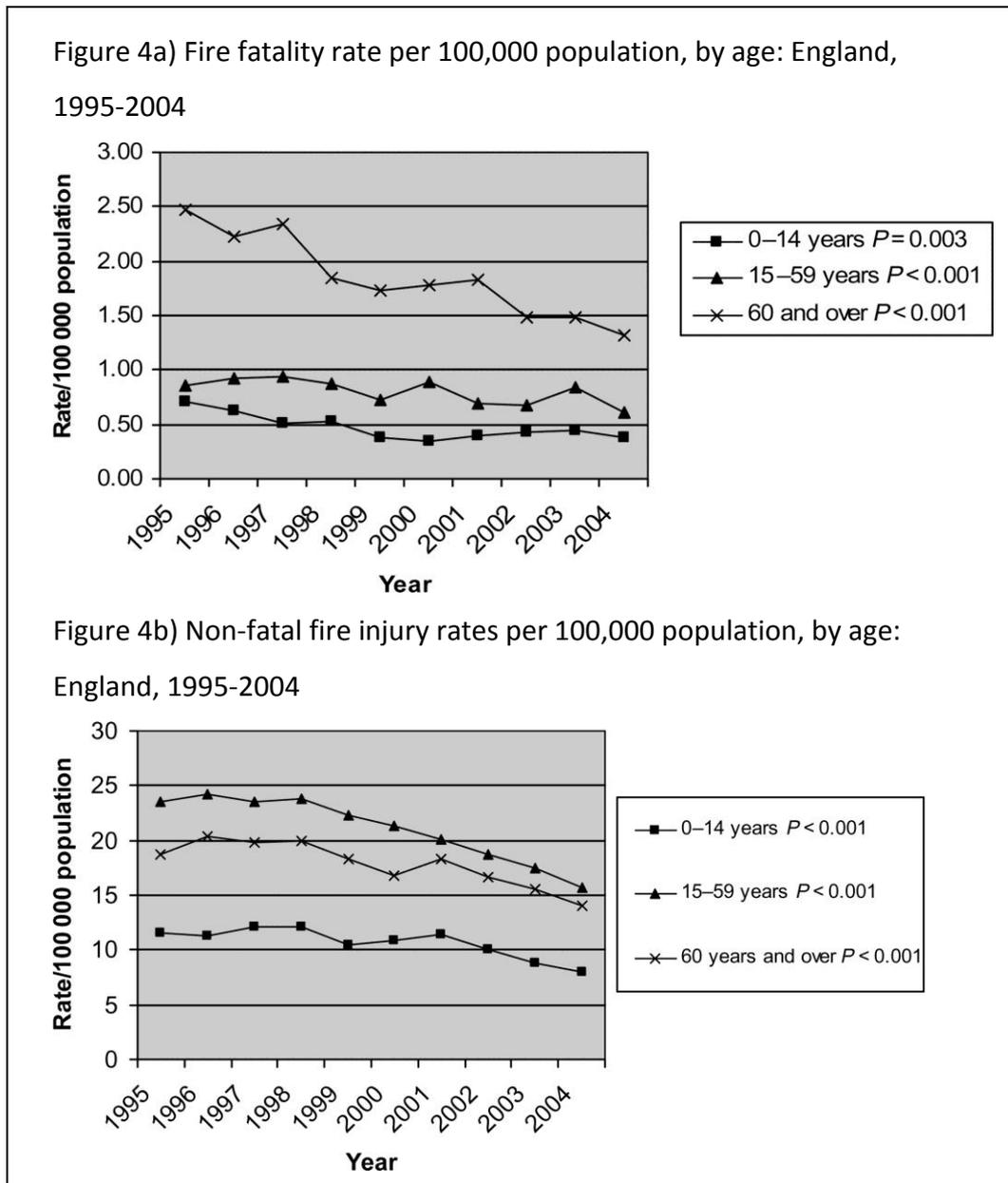
Source: Data from Fire Statistics Monitor (2013)<sup>3</sup>

At an individual level, the rate of fire fatalities varied depending on age and has been changing over time, as shown in Figure 4a:

- The highest rate of fire fatality occurred in those aged over 60 years
- The lowest rate of fire fatality was seen in children (0-14 year olds)
- Fire fatalities have been reducing in all age groups
- The greatest reduction in fire fatalities has been in the over 60 age group

In contrast *non*-fatal fire injuries were highest in those aged 15-59 years but again lowest in children (see Figure 4b). Non-fatal fire injuries have also declined across all age groups. Fire fatalities were not evenly distributed between the sexes, with approximately two thirds of all fire fatalities in the UK in 2011/12 being male, and just over one third being female.<sup>1</sup>

Figure 4: Fire fatalities and non-fatal injuries per 100,000 population, 1995-2004



Source: Taken from Mulvaney C et al (2009)<sup>4</sup>

#### 1.4 Risk factors for accidental dwelling fires

The risk factors associated with accidental dwelling fire fatalities are shown below in Box 1. As mentioned above, the elderly are at higher risk as are those with a disability or illness.<sup>5</sup> These risk factors can affect an individual's mobility and/or their cognitive or sensory abilities. Alcohol, particularly binge drinking, is also linked to ADF fatalities. Social deprivation is an important risk factor, which may be

confounded by the type and age of housing. Smoking, living alone and the absence of a working smoke alarm have also been highlighted as increasing the risk of fires.

Box 1: Risk factors for accidental dwelling fires

➤ <b>Smoking</b>	➤ <b>Illness</b>
➤ <b>Alcohol</b>	➤ <b>Living alone</b>
➤ <b>Old age</b>	➤ <b>Social deprivation</b>
➤ <b>Disability</b>	➤ <b>No working smoke alarm</b>

Source: Adapted from Holborn et al (2003)<sup>5</sup>

### **1.5 Health and economic burden**

Dwelling fires can result in injury most commonly as the result of burns, smoke inhalation and physical injuries sustained whilst escaping the fire.<sup>1</sup> In some cases these injuries can be fatal. In 2011-2012 there were 244 fatalities and 7,729 non-fatal casualties as the result of accidental dwelling fires.<sup>1</sup> These accounted for 87% of all non-fatal fire injuries. There are also negative impacts on the mental health of those who experience a fire in the home. The psychological effects of fires are though to persist for several years after the incident.<sup>6</sup> As well as the human costs of accidental fires, there is a significant economic burden associated with property damage and funding the emergency response to incidents. In 2004, fires in England and Wales were estimated to have cost a total of £7.03 billion.<sup>7</sup> Each domestic fire alone is estimated to cost the tax payer £24,900.

### **1.6 Policy context**

In 2004 the Fire and Rescue Services Act outlined fire safety as a core function of the Fire and Rescue Service.<sup>8</sup> Under the Act, each Fire and Rescue authority has a responsibility to promote fire safety and prevent the occurrence of fires by providing information and advice to members of the public (see Box 2).

Box 2: Fire safety as a core function within the Fire and Rescue Services Act (2004)

- (1) A fire and rescue authority must make provision for the purpose of promoting fire safety in its area.
- (2) In making provision under subsection (1) a fire and rescue authority must in particular, to the extent that it considers it reasonable to do so, make arrangements for—
- (a) The provision of information, publicity and encouragement in respect of the steps to be taken to prevent fires and death or injury by fire;
  - (b) The giving of advice, on request, about—
    - (i) How to prevent fires and restrict their spread in buildings and other property;
    - (ii) The means of escape from buildings and other property in case of fire.

Source: Taken from the Fire and Rescue Services Act (2004)<sup>8</sup>

These priorities are also reflected in the National Framework for Fire and Rescue Services (2012)<sup>9</sup> which puts a focus on working in partnership with local communities to identify risks and to prevent fires from occurring. One method through which this has been achieved is the Home Fire Risk Check (HFRC), also called the Home Fire Safety Check (HFSC). This national scheme was initially funded through the Home Fire Risk Check grant, but funding ended in 2008.<sup>2</sup> Furthermore the 2010 Spending Review saw additional funding reductions for the Fire and Rescue Service.<sup>2</sup> The resulting decrease in available resources has increased the need to ensure efficient delivery of preventative services.

Preventing accidental dwelling fires will have a positive impact on the health and wellbeing of the local population. The Public Health Outcomes Framework<sup>10</sup> outlines the key indicators for understanding and measuring the public's health. Reducing accidental dwelling fires will contribute to the two overarching indicators; improving healthy life expectancy and reducing differences in life expectancy and healthy life expectancy between communities. It will also contribute directly to outcome 4.03 'mortality rate from causes considered preventable' and indirectly to other public

health indicators through addressing factors such as smoking, alcohol and healthy ageing. Furthermore, underlying determinants of accidental dwelling fires, such as the quality of housing stock, are also wider determinants of health. The Marmot Review (2010)<sup>11</sup> emphasised the importance of tackling these wider determinants of health in order to reduce health inequalities.

## **1.7 Rationale for a health needs assessment**

Accidental dwelling fires continue to be a significant source of health and economic cost. Investing in prevention could reduce the burden of accidental dwelling fires. However, with increasing financial restrictions there is a need to ensure that interventions are both effective and appropriately targeted. The purpose of this health needs assessment is to improve the understanding of accidental dwelling fires locally, their distribution and risk factors, and to identify evidence based interventions to reduce ADFs.

## **1.8 Aims and objectives**

### **1.8.1 Aim**

The aim of this health needs assessment is to analyse and interpret information and intelligence on accidental dwelling fires to help inform effective preventative strategies and campaigns to reduce the incidence of accidental dwelling fires (ADF) in Wirral.

### **1.8.2 Objectives**

1. Report on the epidemiology of accidental dwelling fires in Wirral using local data collected by Merseyside Fire and Rescue Service.
2. Report on the current service provision within Wirral.
3. Conduct a literature review to identify effective strategies and initiatives to reduce the incidence of accidental dwelling fires.
4. Conduct a gap analysis between current service provision and the effective interventions identified in the literature review.
5. Make recommendations for local action based on the above intelligence.

## **2.0 Methodology**

This health needs assessment utilised existing data sources and did not involve primary data collection. The epidemiology of accidental dwelling fires was based on local data provided by Merseyside Fire and Rescue Service. National prevalence figures were obtained through routinely available data sources. The rapid literature review was conducted within Medline, Scopus and a general search engine and included both literature and policy documents. The recommendations were developed in partnership with representatives from Merseyside Fire and Rescue Service.

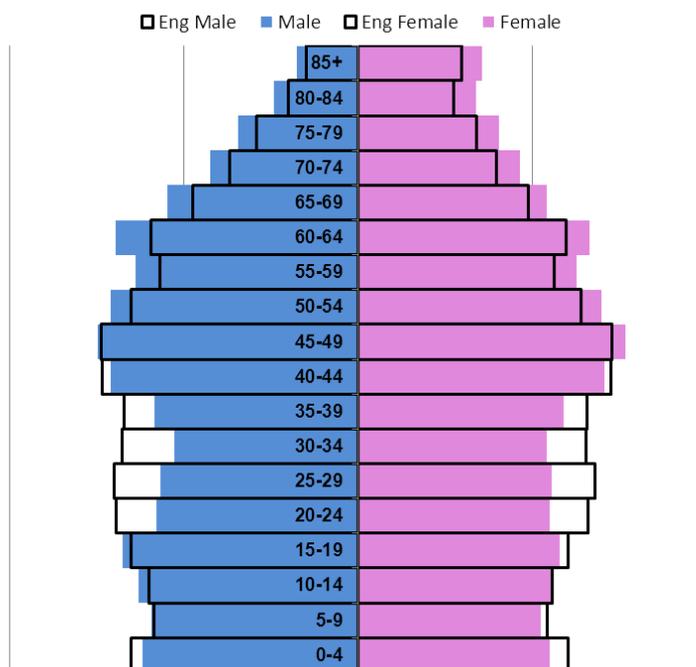
### 3.0 Accidental dwelling fires in Wirral

#### 3.1 Description of the setting

##### 3.1.1 The demographics of Wirral

There were approximately 319,783 people living in Wirral in the 2011 census, all of whom will be served by Merseyside Fire and Rescue Service.<sup>12</sup> Wirral has a relatively high older population compared to England and Wales as a whole with almost 20% of the population aged over 65 years (see Figure 5). This proportion is set to increase over the next decade.<sup>12</sup>

Figure 5: Age and sex distribution of Wirral population based on mid-year population estimates



Source: Taken from Wirral JSNA<sup>12</sup>

Wirral is the 60<sup>th</sup> most deprived district in the country, placing it in the bottom 20% nationally for deprivation.<sup>12</sup> Within the borough there is a significant geographical variation in deprivation between the east and the west, with the west of the peninsula containing some of the most affluent areas in England. In contrast, the east of Wirral has 30 Lower Super Output Areas (LSOAs) falling in the 5% most deprived in the country. Wirral has an aging housing stock with the poorer quality

houses generally clustered in the east.<sup>13</sup> Approximately one third of all houses are occupied by one person living alone.<sup>14</sup> For older people (those aged over 65 years) this proportion is even greater, with 63% living on their own.

Just under a quarter of those who live in the east of the borough report a limiting long term illness compared to 21% of those in the west of Wirral.<sup>15</sup> The rates of Incapacity Benefit (now called Employment and Support Allowance, ESA) follow a similar pattern with on average 100 per 1,000 people claiming ESA locally. This is significantly higher than both regional and national averages. Approximately 92% of the Wirral population report drinking alcohol and over 20% of those aged over 16 years demonstrate binge drinking behaviour.<sup>16</sup> Around 23% of people are thought to be harmful drinkers and 6% are dependent drinkers. These figures are in line with regional and national averages. Just over a fifth of Wirral residents report smoking (21.8%) which again is similar to both regional and national estimates.<sup>17</sup>

### **3.1.2 Current service provision**

Wirral is served by Merseyside Fire and Rescue Service (MFRS), which is one of seven metropolitan fire services in the UK. The Merseyside Fire and Rescue Service cover five districts, including Wirral. Within Wirral there are six community fire stations housing six fire appliances and one aerial appliance. In 2011-2012 the local Fire and Rescue Service responded to 4001 incidents in Wirral and accidental dwelling fires accounted for 254 of these.<sup>a</sup>

Merseyside Fire and Rescue Service currently conduct Home Fire Safety Checks (HFSC) on households within the area with the aim of promoting fire safety within the home and reducing the incidence of ADFs. These visits are conducted by operational fire fighters and often include the fitting of smoke alarms and the development of a fire plan.<sup>18</sup> Those who are identified as 'at risk' are referred to the Community Fire Prevention team who conduct a more extensive risk assessment. Following the risk assessment, further interventions may be put in place and

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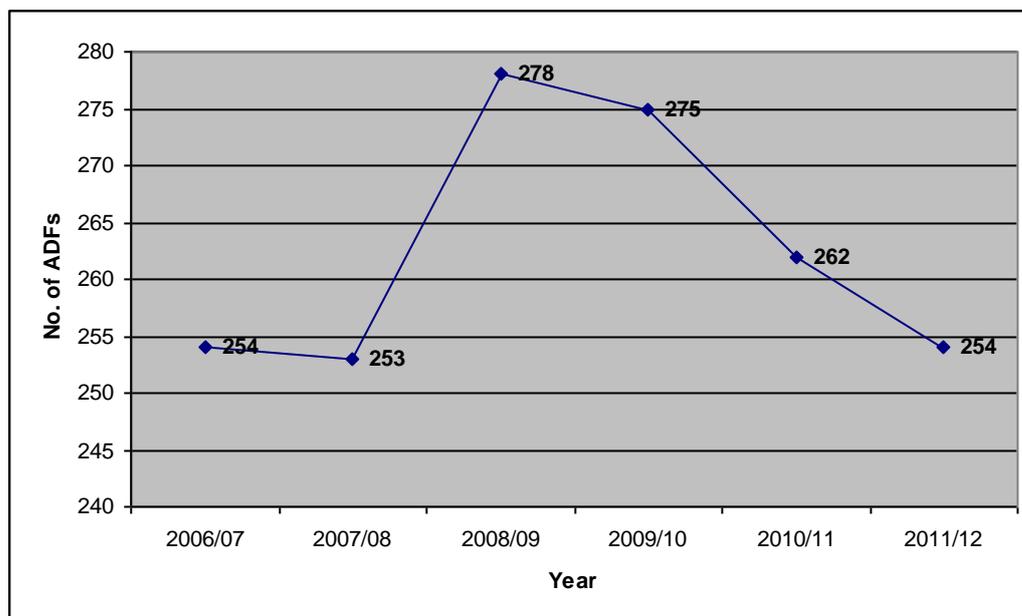
<sup>a</sup> Data from the Merseyside Fire and Rescue Service, correct as of December 2012

individuals can be signposted or referred to a wide range of other services. The tool used for the HFSC is shown in Appendix One. Over the past 12 months approximately 14,750 HFSCs were conducted in Wirral.<sup>b</sup> Until recently, homes were identified as ‘at risk’ using an integrated information system which identified risk based on characteristics of individual premises, such as age of residence and previous fires within the local area. This system is now being replaced by the Vulnerable Person Index which uses individual-level, anonymised data from partner agencies including Social Services and Revenues and Benefits to identify potentially ‘high risk’ residences.

### 3.2 The epidemiology of accidental dwelling fires in Wirral

Between 2006 and 2012 there were 1576 accidental dwelling fires in Wirral, with just over 250 ADFs occurring each year. In line with national data, the most common source of ignition was cooking appliances which accounted for approximately 46% of cases. Figure 6 below shows how the incidence of accidental dwelling fires in Wirral has changed over recent years.

Figure 6: Accidental dwelling fires in Wirral, 2006-2012



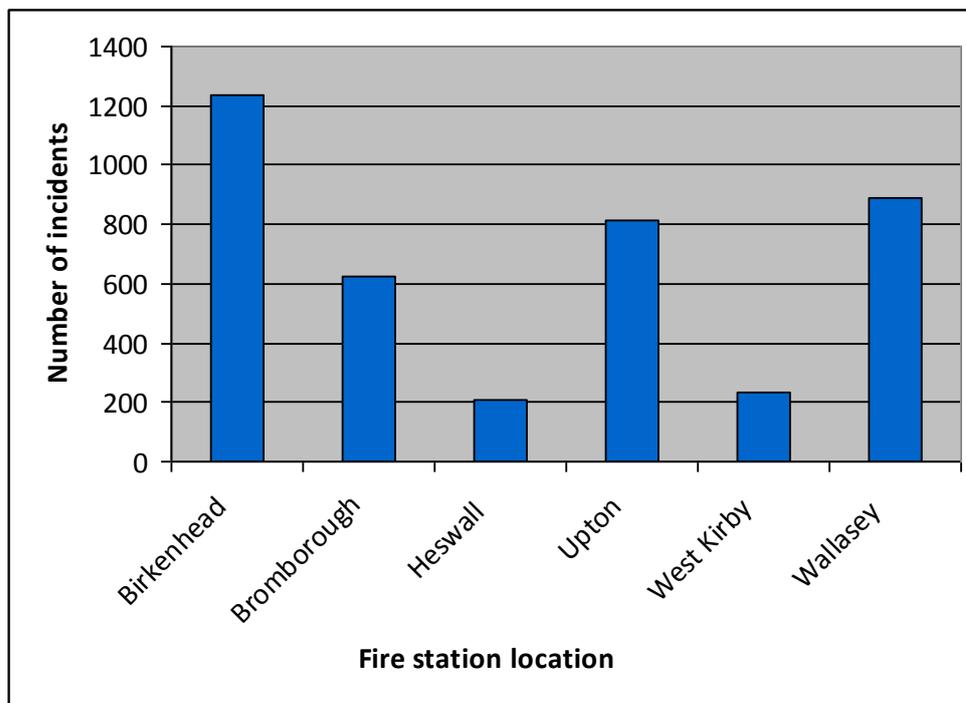
Source: Data from the Merseyside Fire and Rescue Service

<sup>b</sup> Data from the Merseyside Fire and Rescue Service, correct as of February 2014

From 254 incidents in 2006/07 there was a rise in the number of cases, peaking at 278 in 2008/09. The incidence of ADFs subsequently started falling again but has not yet fallen below the 2006 baseline. This does not reflect the general downward trend seen nationally. There was a seasonal variation in the incidence of accidental dwelling fires, with the highest rates occurring in December and January.

Within Wirral there were significant variations in the incidence of accidental dwelling fires between wards. The highest incidences were recorded in Birkenhead, Tranmere and Seacombe all of which are clustered in the east of Wirral and are associated with greater levels of deprivation. The wards with the lowest incidence of accidental dwelling fires were Clatterbridge and Heswall both of which have low levels of deprivation. This trend was reflected in the number of incidents dealt with by each of the six fire stations within Wirral, with the most active stations based in the more deprived areas of the borough (see Figure 7 below). In the past four years there have been a total of 1,067 accidental dwelling fires in Wirral, 800 of which (75%) have occurred within the east of the borough (data not shown).

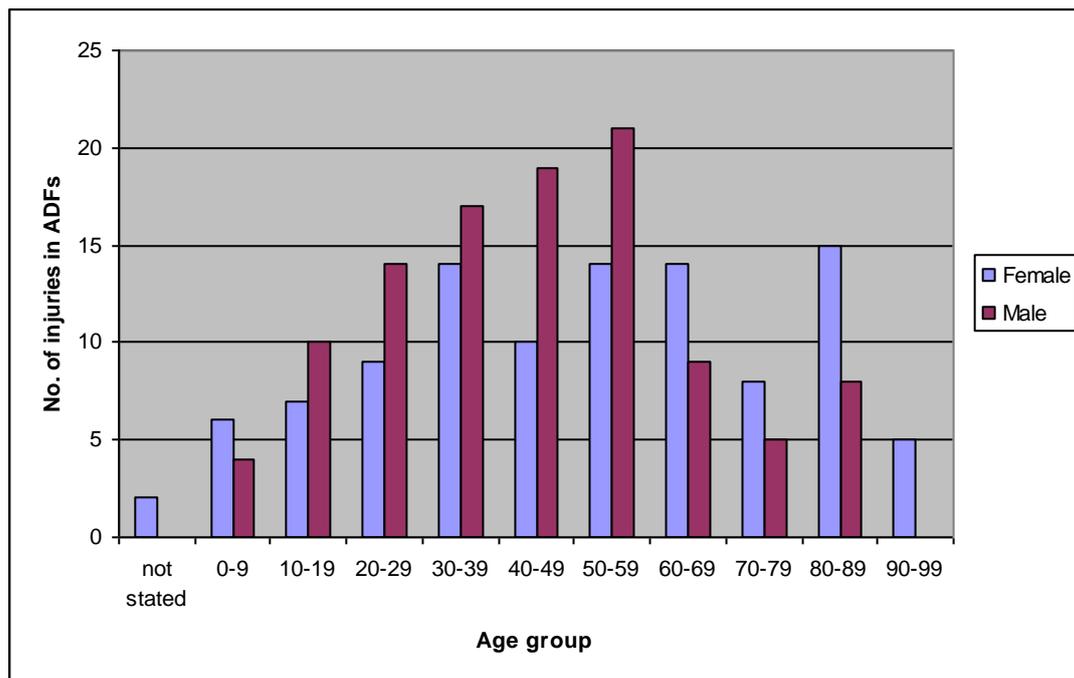
Figure 7: Number of incidents in Wirral, by station; 2011/12



Source: Data from the Merseyside Fire and Rescue Service

Between 2006 and 2012 there were 211 recorded injuries as the result of accidental dwelling fires in Wirral. Unlike national figures, there were only marginally more injuries in men than in women (107 and 104 respectively). In men the number of ADF injuries was highest in those aged 20-59 years, peaking at ages 50-59 (see Figure 8). This pattern was similar to that seen nationally. In women, however, the number of injuries was relatively constant throughout adulthood and into the older age groups, with the highest number of injuries occurring in those aged 80-89. It should be noted that these data represent absolute numbers and not the *rate* of injury and therefore direct comparisons cannot be drawn with UK data. Individual level data was not available for the other risk factors of ADFs such as disability, alcohol, smoking or deprivation.

Figure 8: Injuries in accidental dwelling fires by age and gender (2006-2012)



Source: Data from the Merseyside Fire and Rescue Service

Between 2004/05 and 2012/13 there were 22 fatalities from accidental dwelling fires in Wirral, with approximately 2-3 fire deaths occurring each year.<sup>c</sup> Taking account of the population size, Wirral had a higher fire fatality rate than the other 4 districts

<sup>c</sup> Data from the Merseyside Fire and Rescue Service, 2013

covered by the Merseyside Fire and Rescue Service. Fire fatalities followed a seasonal trend, with the highest number of fatalities occurring in the winter months, peaking in January. In contrast to non-fatal ADFs, fire fatalities were not closely correlated with deprivation and were spread across the deprivation quintiles. Smokers' materials were the most common source of ignition in fatal ADFs, followed by the careless use of heating appliances. In the majority of cases involving smokers' materials, alcohol was also implicated. There was no difference in the number of fatalities between men and women. The age range varied from early 30s to over 85 years of age. The number of fire fatalities peaked in two age groups; 40-49 year olds and 75-84 year olds.

## **4.0 Evidence review of effective interventions for reducing ADFs**

### **4.1 Literature review**

The primary intervention which has been utilised by the Fire and Rescue Service to prevent accidental dwelling fires (ADFs) has been the Home Fire Safety Check (HFSC), also called the Home Safety Assessment (HSA). Community safety education was introduced as a statutory duty of the Fire and Rescue Services in 2004 under the Fire and Rescue Services Act<sup>8</sup> following which Home Fire Safety Checks were supported by a Government grant up until 2008.<sup>2</sup> An evaluation of the HFSC initiative over this time period concluded that it was responsible for a 57% reduction in ADF fatalities and prevented over 13,600 fires.<sup>2</sup>

However the degree to which the Home Fire Safety Check was implemented varied across the country.<sup>19</sup> Arch and Thurston (2013)<sup>19</sup> analysed the impact of Cheshire's Home Safety Assessment (HSA) model on fires and fire related injury in Cheshire. Cheshire Fire and Rescue Service introduced a low level HSA intervention in 2002, initially undertaking approximately 3,700 HSAs each year. From 2006 onwards this was stepped up to a higher level with over 62,700 HSAs undertaken annually. At this time the basic HSA model was also expanded to include a "multifaceted fire risk and needs assessment"<sup>19(p201)</sup>. This included a room by room inspection of homes to identify potential hazards. Specific advice and action was then given regarding each hazard. This was in addition to the more standard approach of checking for and installing smoke alarms and providing generic fire safety advice.

Arch and Thurston (2013)<sup>19</sup> examined the annual incidence of fires and fire related injury from 2001/02 up until 2010/11. The results for Cheshire were compared to all other English non-metropolitan Fire and Rescue Services. For both study groups there was a downward trend in accidental dwelling fires and associated injuries over the study period. This decline was significantly greater in Cheshire than in the control group areas. Injury rates in Cheshire showed a significant decline approximately one year after the implementation of the higher level intervention. The incidence of ADFs reduced dramatically two years after the higher level intervention was introduced.

Prior to 2006, Cheshire had above average rates of accidental dwelling fires and associated injuries, but by 2008/09 it was significantly below the national average.

These results are encouraging as to the effectiveness of Home Fire Safety Checks (HFSC). However, HFSCs were also being delivered in the control group areas and these results, therefore, would suggest that differences in the HFSC model may be important in determining its effectiveness. Arch and Thurston (2013)<sup>19</sup> made reference to three possible differences in the Home Safety Assessment implemented in Cheshire, as compared to other areas. Firstly, the significant reduction in ADFs only occurred after a higher level of intervention was put in place (that was >60,000 assessments each year). Secondly the nature of the Home Safety Assessment itself was altered to include a more thorough room by room inspection and tailored fire safety advice. Finally, Home Safety Assessments were targeted using data from a variety of sources, such as GPs, Age Concern and Social Care services, to ensure that those most at risk received the intervention. This arrangement is not in place for all Fire and Rescue Services, many of whom use an integrated information system which identifies risk based on characteristics of individual premises as oppose to the people who occupy them.<sup>20</sup> It is difficult to disentangle the importance of each of these elements of the intervention in achieving the reduction in ADFs and yet this has significant implications on how resources are best directed to support Home Fire Safety Checks in Wirral.

The literature review did not reveal any other studies investigating the effectiveness of Home Fire Safety Checks. However, others have proposed potential models to improve the delivery of such interventions. Lowton et al (2010)<sup>21</sup> proposed integrating fire safety checks with falls assessments and visa versa. The rationale being that both interventions target the same vulnerable group. A study has been established to explore the feasibility and effectiveness of such an initiative but the results of the trial are not yet available. Davis (2007)<sup>22</sup> highlighted the importance of collaborative work with the housing sector as again they have contact with many of the groups who are vulnerable to dwelling fires. This would provide an opportunity to share not only information but also resources. Alternatively, Perdell (2006)<sup>23</sup>

advocated improving the standard alarm systems by increasing the coverage throughout the house and ensuring interconnection between alarms. Perdell argued that early warning would give residents the opportunity to either extinguish the fire or to escape without injury.<sup>23</sup>

Several studies have highlighted the importance and challenges of targeting fire safety interventions towards older people, particularly those aged over 80 years.<sup>24,25</sup> Elder et al (1996)<sup>24</sup> explored the characteristics of elderly people who died in accidental dwelling fires in the UK. Whilst older people were significantly less likely to drink or smoke compared to younger fatalities, fires were significantly more likely to result from faulty electrical items such as electric blankets. This finding was echoed in a later government report which explored the attitudes of older people towards fire safety.<sup>25</sup> Whilst many older people owned electric blankets, far fewer were aware that it was a fire hazard and fewer still knew how to check for electrical faults. These papers suggest that checking for electrical faults may play an important role in Home Fire Safety Checks for older people and supports the approach of the Cheshire Fire and Rescue Service in conducting room by room inspections for hazards.

## **4.2 Case studies**

Following the introduction of the Home Fire Safety Check grant, the Department of Communities and Local Government released case studies of how the money was being used by local Fire and Rescue Services.<sup>26</sup> These case studies present ideas and possibilities for future areas of work around accidental dwelling fires. However, it should be noted that an evaluation of the cost-effectiveness of such interventions was not included. Therefore careful consideration would be required before similar interventions were replicated within Wirral and clear plans would need to be in place for their subsequent evaluation.

Three case studies (Greater Manchester, Kent and Nottinghamshire) will be outlined below. The multi-agency work undertaken by Cheshire was included by the

Department of Communities and Local Government, but as it has already been considered in the above section it will not be discussed further here.

### ***Greater Manchester***

The Greater Manchester Fire and Rescue Service have had a strong focus on partnership working. They obtained a place on the Local Strategic Partnership (LSP) and promoted the role of the fire service in meeting wider community objectives as well as the potential role of other sectors in preventing fires. They targeted their work in four key areas:

1. Children and Young People
2. Healthier Communities and Older People
3. Economic Development and Enterprise
4. Safer Stronger Communities

Initiatives were developed with the housing association, neighbourhood renewal fund, sensory disability team, local authority, police and the youth offending team. Many of the interventions were jointly funded. Within two years dwelling fires had fallen from 310 to 180. However, this figure does not distinguish accidental from deliberate fires and does not consider the role of individual interventions in achieving this.

### ***Kent***

Kent Fire and Rescue Service have targeted funding towards the installation of sprinklers into domestic dwellings. In 2007 they developed a Sprinkler Working Group (SWG) which launched a campaign to promote the use of domestic sprinklers.

The vulnerable groups targeted included:

- Older people
- Children and young people
- Ethnic minorities or faith groups
- People with learning or physical disabilities
- People suffering long term illness
- People with mental illness, alcohol or drug abuse problems

- People in temporary accommodation and deprived households

Vulnerable people were identified through Home Fire Safety Checks or referred from partner organisations. The funding was a mix of fully funded and match funded installations. No data was included within this case study as to the outcomes achieved by this intervention and no reference was made to the cost-effectiveness of domestic sprinklers.

### ***Nottinghamshire***

The Nottingham Fire and Rescue Service have made use of advocates to help identify and tackle risks within local communities. They employed nine geographically based advocates who undertook local risk profiling within a defined district. Their role was not to engage with a single 'at risk' group, but rather to identify those most at risk within their area and to develop strategies to deliver appropriate interventions. The advantage of this approach was to provide continuity and a familiar presence within local communities. Within a relatively short space of time benefits were seen in terms of reducing false alarm calls from problem residences. However it was not clear to what extent this approach contributed to the overall prevalence of accidental dwelling fires within Nottinghamshire.

## **5.0 Gap Analysis**

Within Wirral the rate of accidental dwelling fires has not fallen within the last six years. Whilst Home Fire Safety Checks (HFSC) has been implemented locally, a review of the literature suggests there may be alternate ways of delivering this intervention which may improve its effectiveness. Staffing resources may limit the number of Home Fire Safety Checks which can be conducted annually but both the nature of the HFSC and the means by which these interventions are targeted could be altered to improve its effectiveness. The current HFSC does not include a room by room inspection or the delivery of specific, targeted fire safety advice for the hazards identified. This may prevent certain hazards, such as electric blankets, being recognised and subsequent risks minimised. A more tailored, individual approach may lead to a greater reduction in risk. Additionally, discussing factors such as electrical maintenance may be an important feature of HFSC for the older age group.

‘At risk’ homes were previously identified by the social characteristics of the local area and did not take into account individual risk factors, such as age and disability. This model was replaced in April 2013 with the Vulnerable Person Index, which uses anonymised data from partner agencies including Social Services and Revenues and Benefits to identify and target residences which are home to ‘high risk’ individuals. Close collaboration and data agreements with General Practices, as well as Social Care services, could further improve the targeting of limited resources to those most at need within Wirral. Whilst there are issues of confidentiality surrounding the sharing of patient information, the Cheshire model indicates what can be achieved with effective partnership working with health providers.

The importance of partnership working has been already been demonstrated by Merseyside Fire and Rescue Service, as well as other Fire and Rescue Services, which have worked closely with other sectors to deliver fire prevention interventions to ‘at risk’ groups. The lack of individual level data for Wirral prevents the identification of the key risk factors for ADFs locally. However, within Wirral there are a high number of older people, people on Employment and Support Allowance (Incapacity Benefit) and people living in deprivation as well a significant proportion of people who smoke

or drink excessive levels of alcohol. These groups all represent key areas for fire prevention to be targeted towards. The local Fire and Rescue Service has been developing links with services around smoking cessation, drugs and alcohol, mental health and dementia, among others. Such partnerships could be further developed and extended to other sectors who work alongside high risk groups. Additionally, the aging housing stock is a significant issue for Wirral and there may be opportunities for the Fire and Rescue Service to work collaboratively with the housing sector. However, the role of the Fire and Rescue Service in meeting the objectives and outcomes of these sectors also needs to be recognised and considered further.

An opportunity for further partnership working may emerge from the proposed Council reforms, which outline plans for local constituency-level public service boards (see Appendix Two). These may give the Fire and Rescue Service an opportunity for increased collaborative work to reduce ADFs by identifying and addressing risks within local communities.

## 6.0 Conclusion and recommendations

Accidental dwelling fires are an important and preventable cause of mortality and morbidity. Interventions exist which have been found to be effective at reducing the incidence of accidental dwelling fires. Whilst such interventions are currently in place within Wirral, the delivery model could be further developed to improve the effectiveness. Key to reducing ADFs is partnership working and where possible information sharing. This approach also allows resource sharing which is of significant benefit in the current financial climate.

The following recommendations are proposed for consideration:

- Improved data collection on risk factors for accidental dwelling fires to allow the identification of the key factors underlying ADFs locally.
- Review of the Home Fire Safety Check tool with consideration to providing a more extensive risk assessment and individually tailored fire safety advice.
- Liaise with the Caldicott Guardian locally to explore the possibilities of data sharing between GP practices and the Fire and Rescue Service to improve targeting of Home Fire Safety Checks to the most vulnerable groups.
- Further explore partnership working with community services that have contact with 'at risk' groups, with the view to developing joint initiatives.
- Explore the possibilities of training other sectors, such as health care professionals, to deliver fire safety advice along with training fire officers to deliver brief interventions. This has advantages in terms of resources but careful consideration needs to be given to the expertise held by the different professions and whether or not interventions could be adequately delivered by other sectors.
- Robust data collection should be in place to allow adequate evaluation of the effectiveness of the above recommendations to inform future planning and commissioning.
- There is a lack of robust evidence nationally with regards to interventions to address accidental dwelling fires. Local partners should advocate the need for further research in this area.

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## Appendix

### Appendix One – Home Fire Safety Check Tool, Merseyside Fire and Rescue Service

<b>Amended 06/07</b>	 <p style="font-size: small;">*An Excellent Authority*</p>	Community Safety Department Fire Safety Headquarters Bridle Road Bootle Merseyside L30 4YD									
Refusal <input type="checkbox"/> PLEASE COMPLETE IN BLOCK CAPITALS											
<b>HOME FIRE SAFETY CHECK</b>											
<b>Occupier</b>	dd    mm    yy	<b>Date</b>									
Name: <small>Mr/Mrs/Miss Initial Surname</small>	<input style="width: 100%;" type="text"/>										
Address: <small>No Road</small>	<input style="width: 100%;" type="text"/>										
Town:	<input style="width: 100%;" type="text"/>										
Postcode: <input style="width: 20px;" type="text"/>	Tel: <input style="width: 20px;" type="text"/>	<b>Station Ground</b>									
<b>Occupancy</b>	<b>Visiting Officer</b>										
Property Code: <input type="checkbox"/>	Name: <input style="width: 100%;" type="text"/>										
No. of Occupants: <input type="checkbox"/>	Role: <input style="width: 40%;" type="text"/> Number: <input style="width: 60%;" type="text"/>										
No. under 5 years: <input type="checkbox"/>	Watch: <input style="width: 40%;" type="text"/> Home Str: <input style="width: 60%;" type="text"/>										
No. over 65 years: <input type="checkbox"/>	<b>Ethnic Origin</b>										
Disability: <input type="checkbox"/>	<b>White:</b> British <input type="checkbox"/> Irish <input type="checkbox"/>										
No. of smokers: <input type="checkbox"/>	Other White <input type="checkbox"/>										
Uses a chip pan: <b>Yes / No</b>	<b>Mixed:</b> White & Black <input type="checkbox"/> White & Black <input type="checkbox"/>										
Electric blanket: <b>Yes / No</b>	Caribbean <input type="checkbox"/> African <input type="checkbox"/>										
<b>Smoke Alarms</b>	White & Asian <input type="checkbox"/> Other Mixed <input type="checkbox"/>										
Existing smoke alarm fitted?: <b>Yes/No</b>	<b>Asian or Asian British:</b> Indian <input type="checkbox"/> Pakistani <input type="checkbox"/>										
Battery operated / satisfactory: <b>Yes/No</b>	Bangladeshi <input type="checkbox"/> Other Asian <input type="checkbox"/>										
Battery missing / discharged: <b>Yes/No</b>	<b>Black or Black British:</b> Caribbean <input type="checkbox"/> African <input type="checkbox"/>										
Mains operated / satisfactory: <b>Yes/No</b>	Other Black <input type="checkbox"/>										
Mains operated / defective: <b>Yes/No</b>	<b>Chinese or Other Ethnic Group:</b> Chinese <input type="checkbox"/> Other <input type="checkbox"/>										
<b>Service Provided</b>	<b>Not Stated</b> <input type="checkbox"/>										
Advice on smoke alarm: <b>Yes / No</b>	<b>Religious Belief</b>										
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"></td> <td style="text-align: center;"><b>Alarms</b></td> <td style="text-align: center;"><b>Batts</b></td> </tr> <tr> <td>No. of new units fitted:</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>No. of units replaced:</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>		<b>Alarms</b>	<b>Batts</b>	No. of new units fitted:	<input type="checkbox"/>	<input type="checkbox"/>	No. of units replaced:	<input type="checkbox"/>	<input type="checkbox"/>	<b>Declined</b> <input type="checkbox"/>	
	<b>Alarms</b>	<b>Batts</b>									
No. of new units fitted:	<input type="checkbox"/>	<input type="checkbox"/>									
No. of units replaced:	<input type="checkbox"/>	<input type="checkbox"/>									
<p>Merseyside Fire &amp; Rescue Service (MF&amp;RS) will process the information you supply for the purposes of reducing the risk of fire and possible injury. MF&amp;RS will record this information on paper form and our electronic database system for HFSC's. The information will be stored securely for five years, in line with current retention schedules. Please sign below if you agree with this.</p> <p>Signed.....</p> <p>MF&amp;RS will share this information securely with other agencies for the reason above. Please tick the box below if you wish to decline this. You are entitled to see your personal data held by MF&amp;RS. If you wish to see your personal data please contact Corporate Information Sharing Officer: Tel No 0151 296 4416. I decline to share this information <input type="checkbox"/></p> <p style="text-align: right; font-size: x-small;">Version 4.3</p>											

Section 1: Occupancy	
1	Are any occupants dependant upon assistance in the event of a fire?
2	Elderly occupant(s) or lone parent family.
3	3 or more children under 10 years, or 6 or more occupants.
4	None of the above.

Tick appropriate score
8
7
7
6

Section 2: Circumstances	
1	History of fires in the home. Children currently playing with fire.
2	Is there anything that would affect the occupants awareness of fire, or impair their reaction to a fire situation?
3	Evidence of careless use of smoking materials or inappropriate cooking methods.
4	Inappropriate use of electrics.
5	Excessive fire loading.
6	Smokers live in household, or use of candles.
7	None of the above.
<b>Risk Rating = Section 1 x Section 2</b>	

Tick appropriate score
7
8
7
5
4
3
2

Section 3: Smoke Alarms		Before	After
1	None.	0	0
2	Yes - but inadequate or inappropriately sited.	2	2
3	Yes - satisfactory.	6	6

Section 4: Fire Safety Advice		Before	After
1	No apparent fire safety awareness	0	0
2	Limited fire safety awareness	2	2
3	Good fire safety awareness	6	6
<b>Safety Rating = Section3 + Section 4</b>			

<b>Final Points Rating = Risk Rating - Safety Rating</b>	
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Has F.A.C.E. card been issued at this address? Yes  No

Section 5: Final Points Rating		Tick appropriate score
Over 48	Identify sources of risk to occupier and ways to minimise that risk. Inform occupier of their referral to CFS and it's purpose. Install smoke detectors on each floor level.	<b>Refer to CFS</b>
30 to 48	Concentrate fire safety advice on areas of concern. Install smoke detectors on each floor level	<b>2 yrs</b>
0 to 29	Confirm knowledge of 'Fire Safety in the Home'. Emphasise importance of smoke alarm maintenance.	<b>5 yrs</b>

Further Information	High Risk: <input type="checkbox"/> OIC Sig:..... Print name:..... Service Num:.....
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Appendix Two – Vision Chart for Wirral Council

# VISION FOR THE COUNCIL

