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# Low Pressure Watermist UK Domestic Installation – Case study

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Presented by Dean Reeve – UK Operations

*Innovative Fire Protection Solutions*



# The Seed of the Project

## Fire Service education day on protecting vulnerable persons in the community 2011

Attendees to the education day included:

- Housing Associations
- Fire Service
- Local Authorities
- Building Control
- Exhibitors
- Other Interested Parties

The aim of the day was to promote fire safety information and give an insight into products and services available from fire and related industries and agencies to help protect the vulnerable in the community.



# Fire Service education day on protecting vulnerable persons in the community 2011

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Part of the education day included live demonstrations of low pressure watermist and sprinkler systems



For the watermist demonstration two identical compartments had been built by the fire service and furnished with as near as possible identical items.

It should be noted that these are not fire tests, but demonstrations using fire products that have official third party approvals.

# Fire Service education day on protecting vulnerable persons in the community 2011

The first demonstration took place with  
no fixed system



# Fire Service education day on protecting vulnerable persons in the community 2011

The second demonstration took place with a single low pressure watermist nozzle in a fixed system



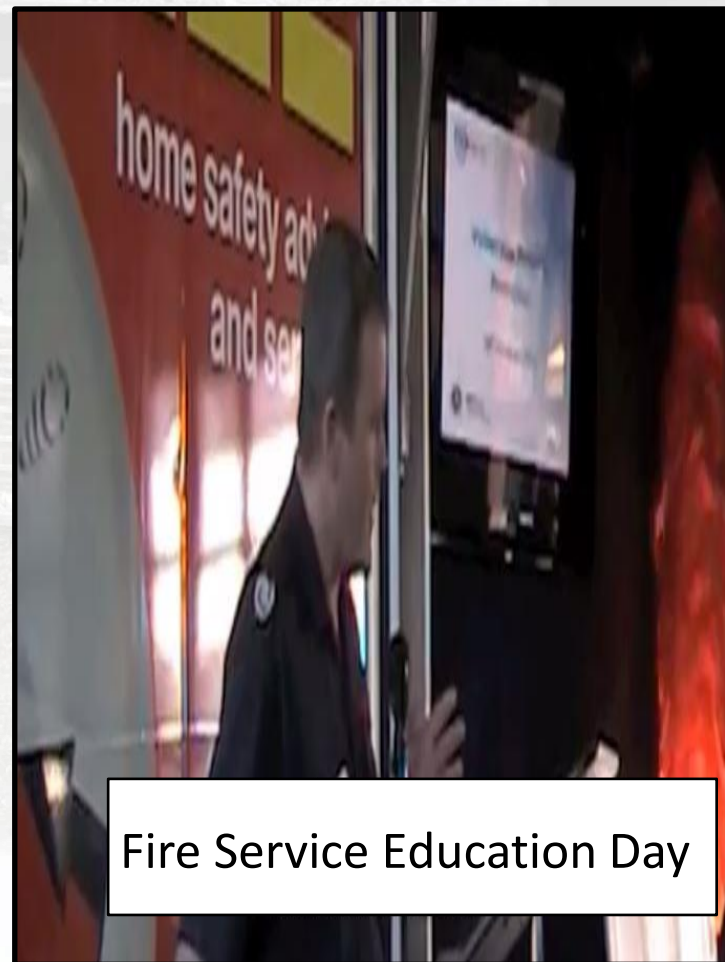
During suppression



After extinguishment

## The follow up from the education day

- A housing association approached the fire service through a local partnership arrangement to enquire whether a fixed system would be suitable for one of their tenants accommodation needs.
- The Fire and Rescue service undertook a comprehensive risk assessment of the premises and of the person involved.
- The conclusion was that a fixed system would be an appropriate measure.



# Vulnerable Person Fixed System - Case Study

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## **Project - Protection of a single occupancy flat within a block of 12 flats**

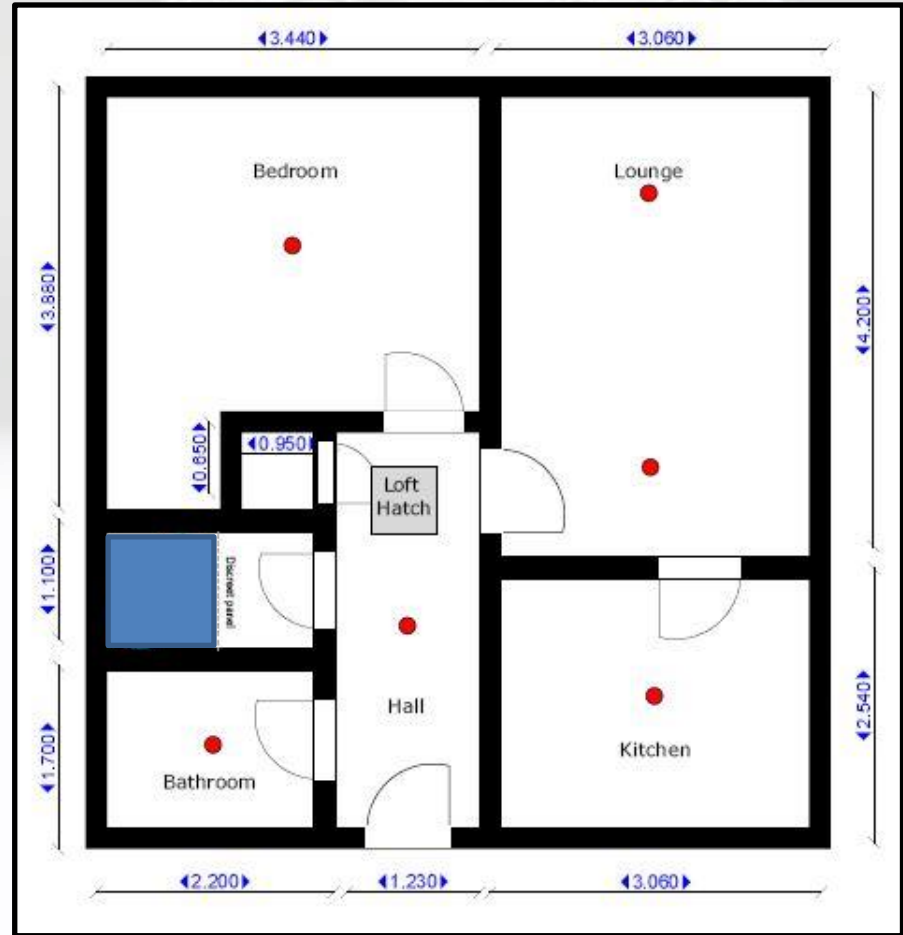
The project was a collaboration between a Housing Association, a Fire Authority and a Watermist installation company.



The property is a single bedroom second floor flat within in a block of 12 (four per floor). The flat involved, was fitted with a grant funded water mist installation in 2012.

# Specification- The Domestic Low Pressure Water Mist System

- Full watermist coverage is specified for the single occupancy.
- Tested and Reliable Watermist components.
- Potential for water damage to be a consideration.
- System to be tamper resistant.
- Smoke alarms are installed.
- The occupancy is visited by various agencies daily.





# The LPWM System Design

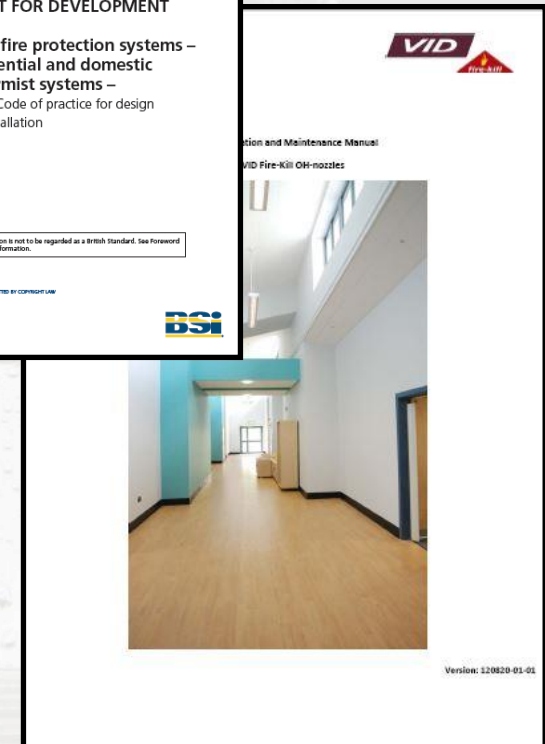
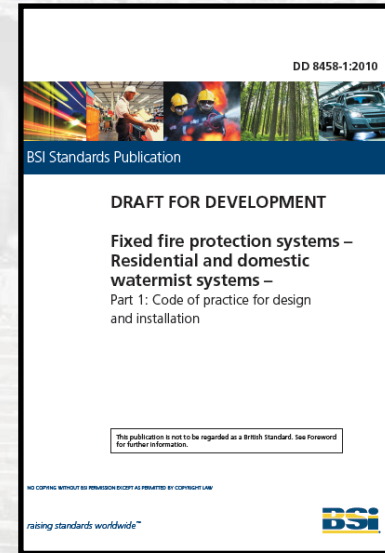
The system was designed as a Domestic System using the following Documents:

## *Draft Document* DD8458

Fixed Fire Protection Systems – Residential and Domestic Watermist Systems.

- ✓ Part 1 - Code of Practice for Design and Installation  
**Domestic**
- ✓ Individual Houses, Flats, Maisonettes

The Manufacturer's Design, Installation, Operations and Maintenance Manual (DIOM)



# The Low Pressure Water Mist System installed 2012

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- The system was designed using low pressure nozzles with a system run time of 10 minutes on 2 nozzles operating as required by the (Draft Standard) DD8458.
- The system was designed using pressurised cylinders with a constant outlet pressure for 10 minutes dictated by the hydraulic requirements of the system.
- The cylinders were concealed behind a false wall in the cupboard to prevent tampering.
- The tenant had no idea there was a fire system installed.



Nozzles are tamper resistant with a low installation profile.

# The Incident

In February 2014 a fire occurred within the kitchen of the flat. The vulnerable occupant was in the premises at the time yet was unaware of the fire starting. The cause as reported from the fire investigation appears to have been related to a misused or malfunctioning toaster.



**The position of the toaster is pictured above.**



**The Single Nozzle that activated is pictured above.**

# Observations on the Incident

- The fire started under a cupboard providing a shield against direct water impingement.
- There was potential for the fire to penetrate through the bottom of the cupboard and gain access to more fire fuel.
- The outer veneer coating of the cupboard allows for a quick spread of flame.
- The Kitchen door was open. There is an extractor in the wall and vents in the windows allowing plenty of through draft and oxygen to be present.
- No major smoke damage outside of the room of origin.



# Summary of the Incident

- The water mist system operated as intended and swiftly brought the fire under control and then fully extinguished it.
- No additional firefighting action was required.
- There was an amount of water damage in the flat of origin and a small amount in the flat below.
- The damage was limited to scorching of an over-worktop cupboard and a small area of painted surfaces in the immediate vicinity. There was very little smoke damage and that was limited to the area of origin.
- A joint inspection of the property was completed on 17<sup>th</sup> February, by a Fire investigator and sprinkler technical officer from the Fire and Rescue Service and from the Housing Association.

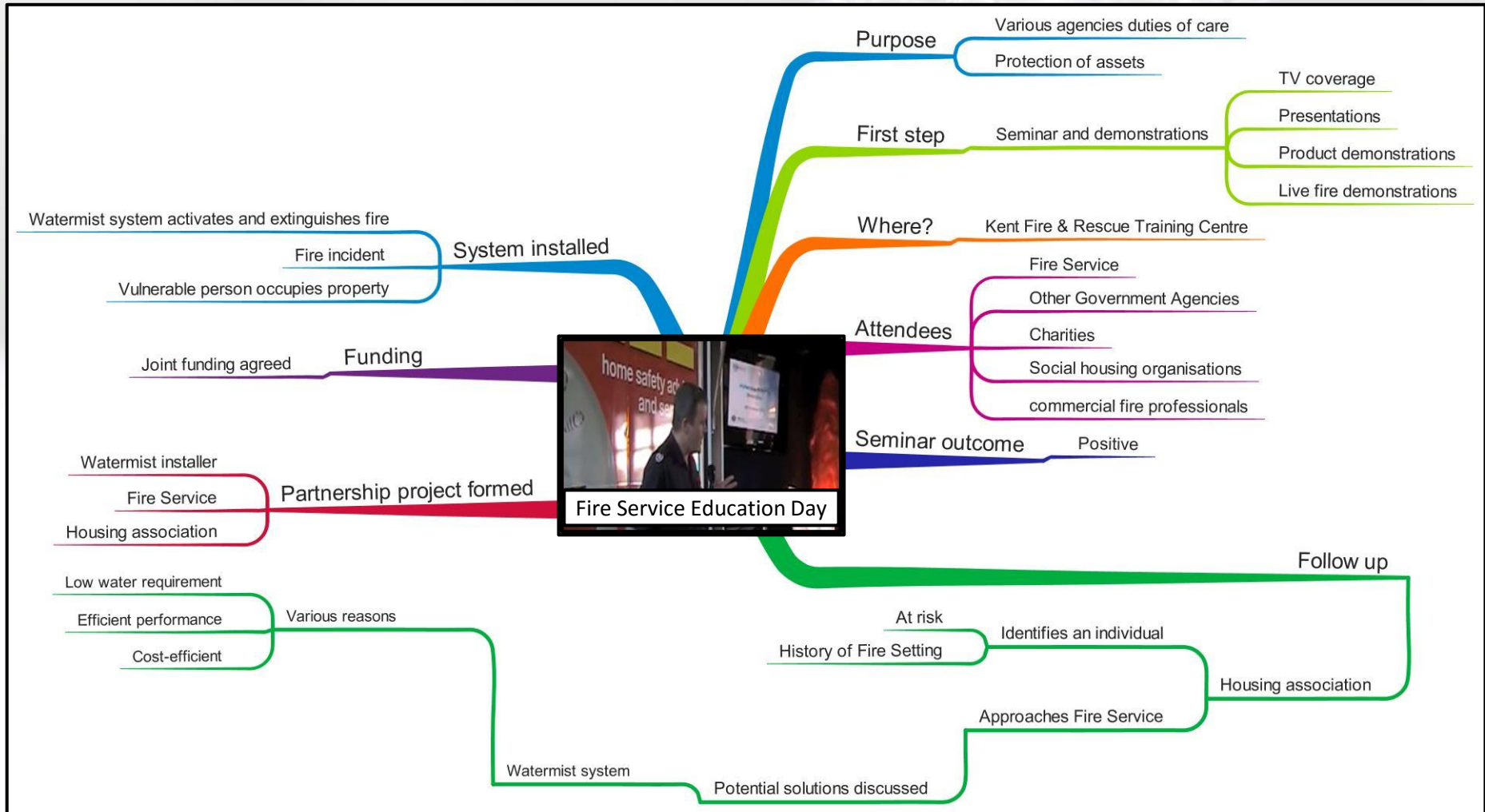


# The conclusion

- It was agreed by all parties that the water mist system had achieved its main objective of protecting a vulnerable person plus protecting the asset.
- The conclusion was that without the water mist system the fire would have developed and potentially spread to the pitched roof space and would have caused extensive damage to the entire building with a high potential for casualties.

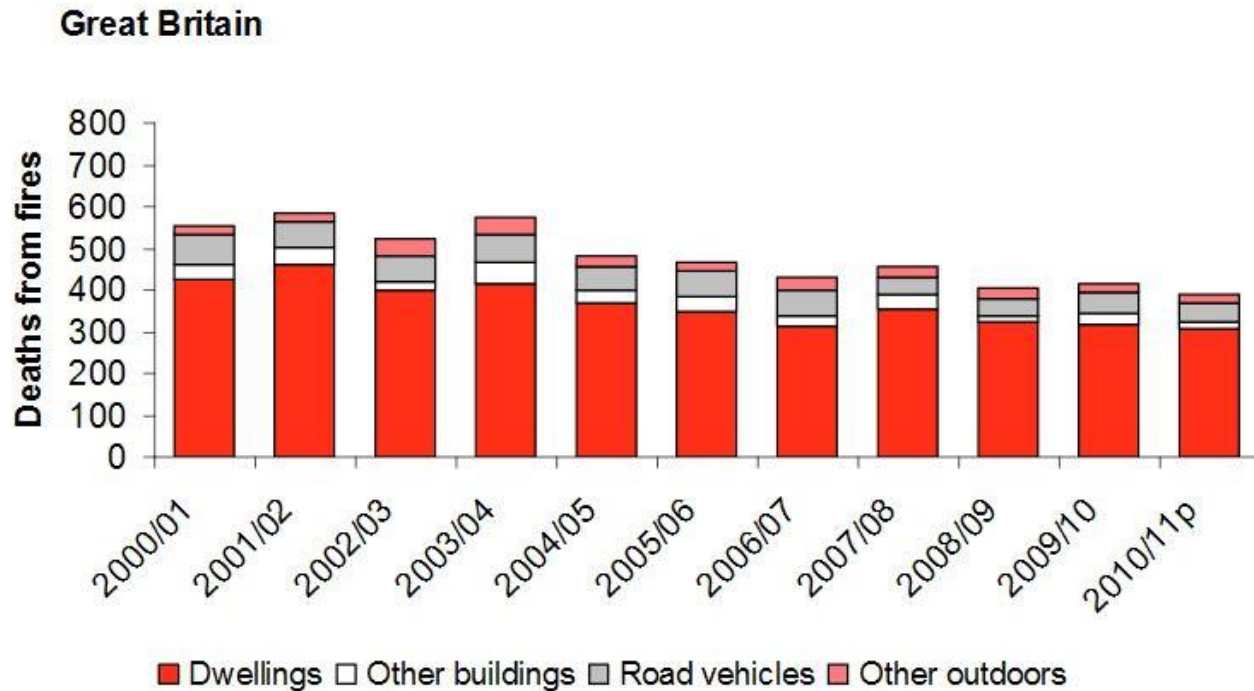


# Overview of the project



# Why are such initiatives on the agenda?

Figure 1.4: Deaths from fires by location group, 2000/01 – 2010/11





## Financially - This collaboration has potentially saved



Some interesting figures

Cost of the system approximately £3234



We can say that

If the System saved a single fire death estimated at £1.65 million\*.

Then it follows that the system installation was **.196% of the cost of a single fire death.**

Or you can say that taking the Installation Costs of approximately  
£3234

the system saved a potential rise in costs of approximately 50,920%

\* Source: *The economic cost of fire: estimates for 2008*

*Fire research report 3/2011 – Research commissioned by the government of the time.*



**Thank you for your attention**

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