

# Vulnerable Person Fixed System - Case Study

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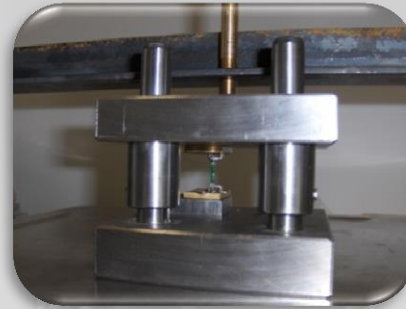


# Motivation for presentation.

- Successful fire testing.
- Successful component testing.
- Production facility approval.
- DIOM manual approval
- Available codes (NFPA 750 / CEN/TS 14972)

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**WM is a trustworthy & sound, reliable and robust technology!**



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**Kent Fire &  
Rescue Service**



**East Kent  
Housing**

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

The project was a collaboration between a Housing Association ( The Landlord) and the local Fire Authority (Kent Fire and Rescue Service)

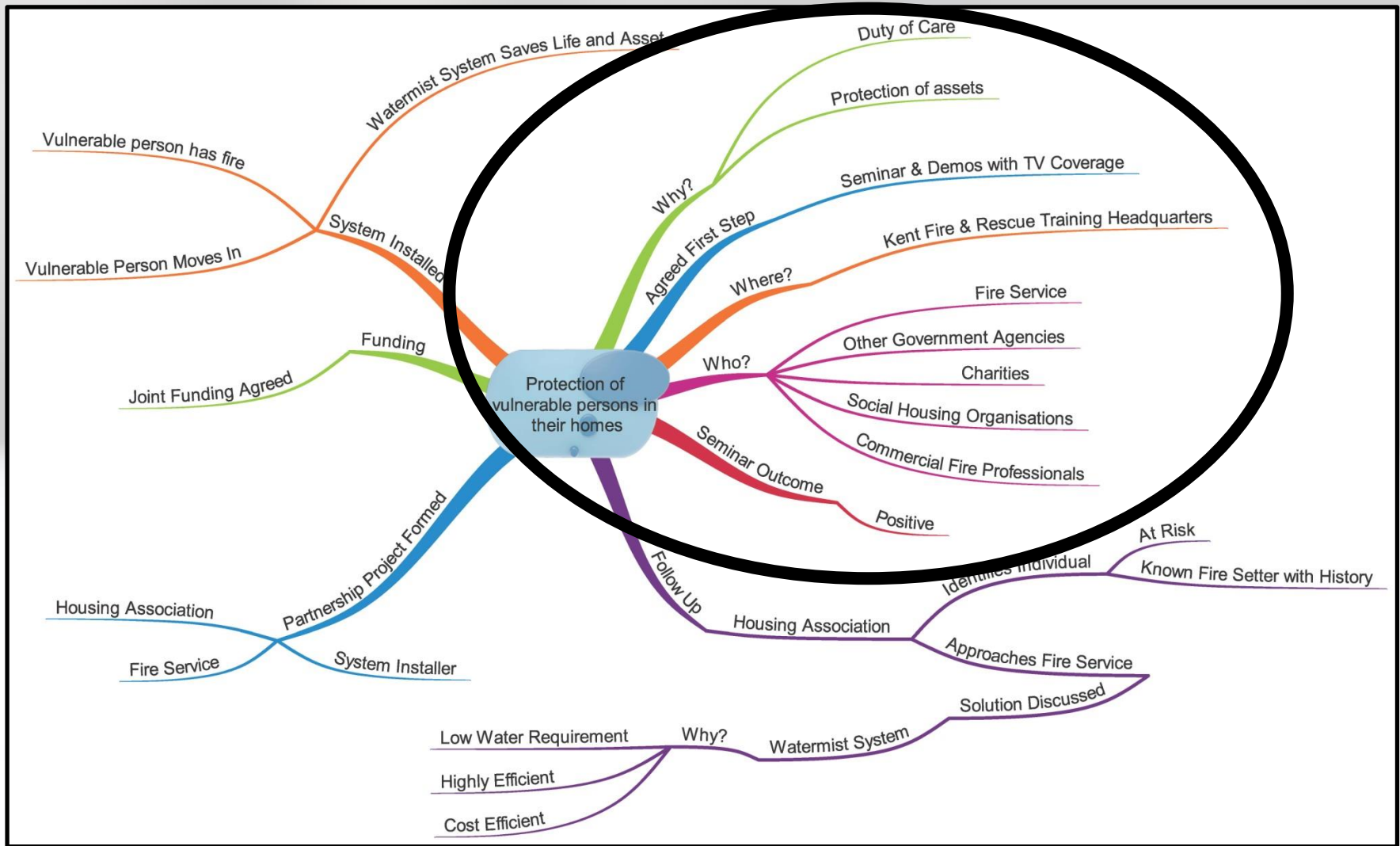
- The property within Clements Rd, Ramsgate, is a single bedroom second floor flat within in a block of 12 (four per floor). The flat involved was fitted with a grant funded Water mist installation from KFRS and East Kent Housing.

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# The Seminar and Demonstration Day

*Sprinkler Demonstration at Kent Fire & Rescue Headquarters 2011 as part of a Fire Service Education day on protecting Vulnerable persons in the community.*

Attendees to the Seminar  
Included:

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

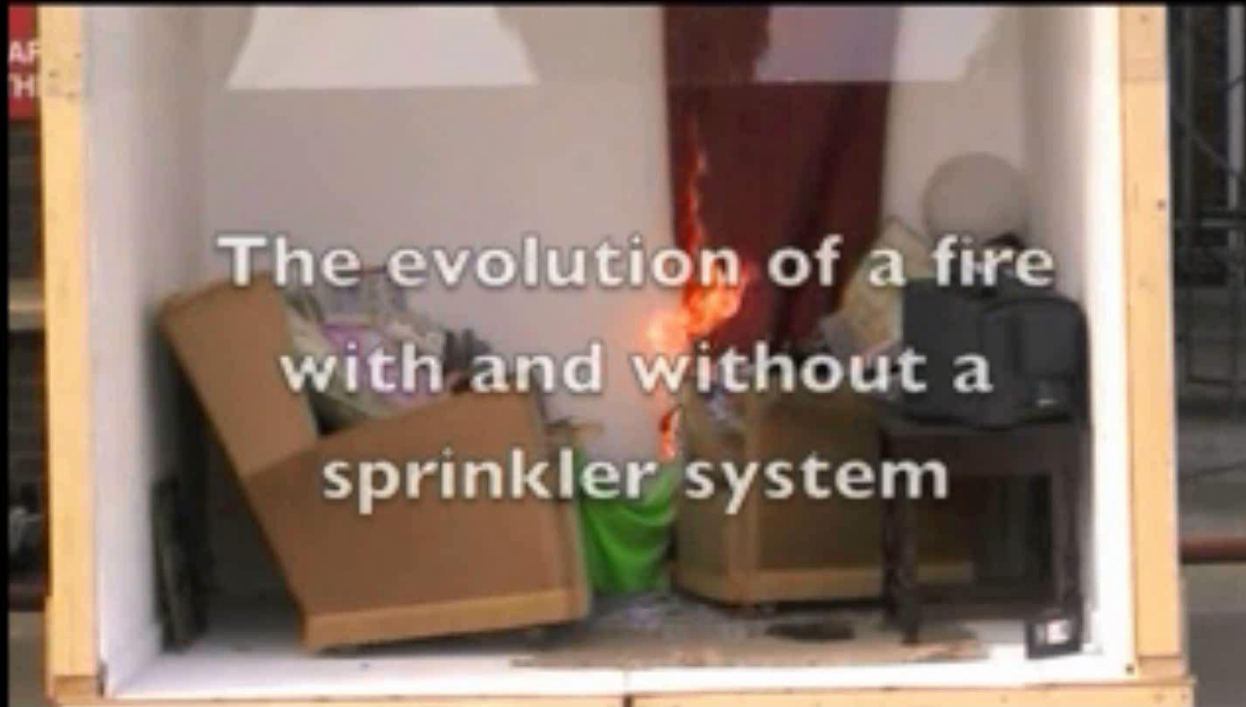


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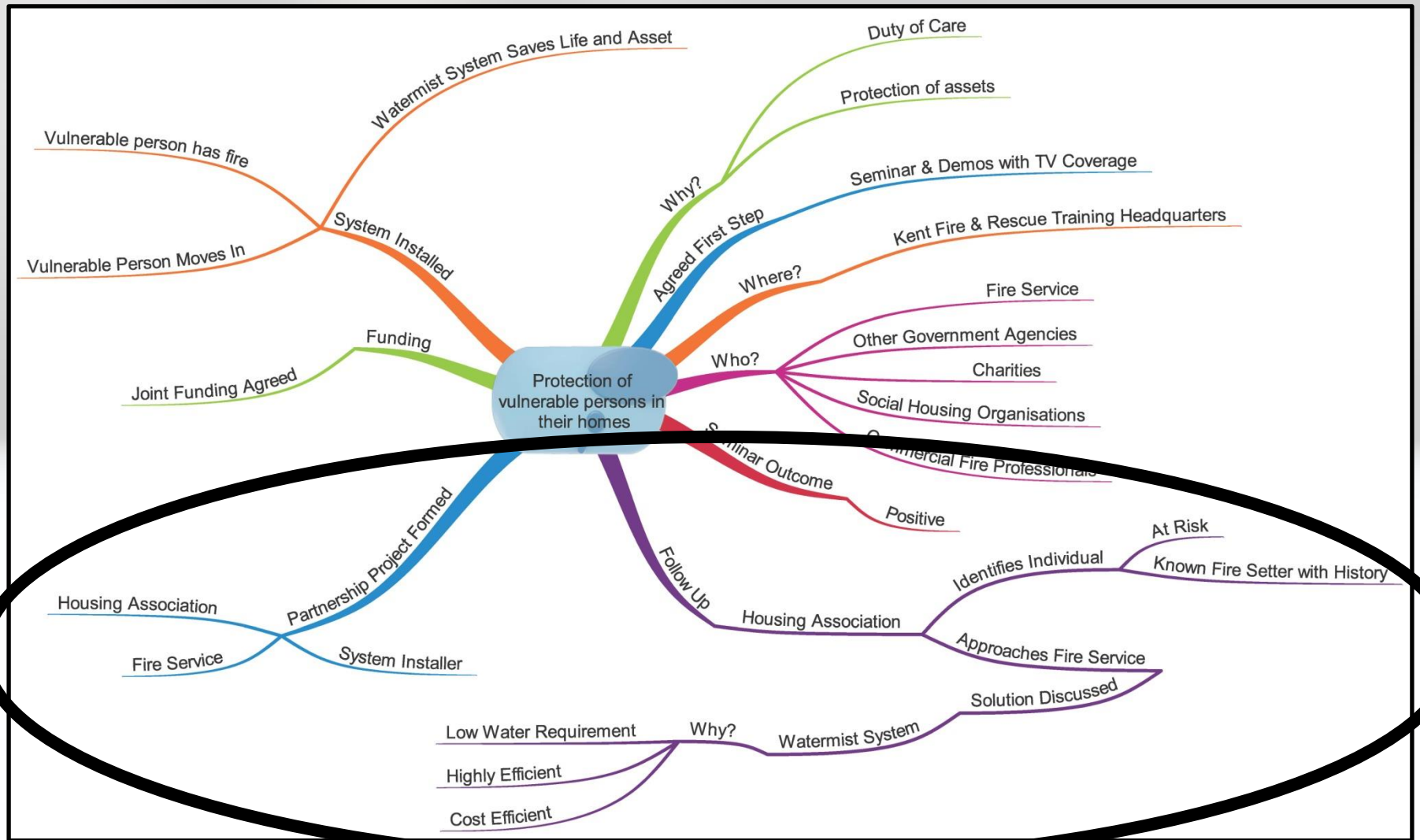
## The Seminar and Demonstration Day



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## *Follow up to the Successful Seminar*

- **East Kent Housing approached Kent Fire and Rescue Service** through local partnership arrangements to enquire whether a sprinkler system would be suitable for one of their tenants accommodation needs.
- **KFRS Vulnerable Person team and a technical expert from Fire Safety** undertook a comprehensive risk assessment of the premises and the person's vulnerability to fire. Due to their habits and traits it was considered that an automatic water suppression system would enhance personal safety in this particular case.
- **The vulnerable person had a history of two severe fires** in previous high rise accommodation which had resulted in a personal injury. The move to a low rise property was part of the overall measures to limit risk to the person and others around them.

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## ***Moving the Project forward***

- **East Kent Housing approached KFRS for grant funding** to assist in the installation by their chosen supplier. Through a legal bidding and granting process a 50% match funding was offered and accepted.
- **The whole process and installation was undertaken in response to the urgent need for fire safe accommodation;** with assessment to commissioning of the project occurring within a two week period.
- **Due to the Building layout, construction, water flow and pressure results and space restrictions a Low Pressure water Mist system** was decided to be the best option for the project.

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# 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

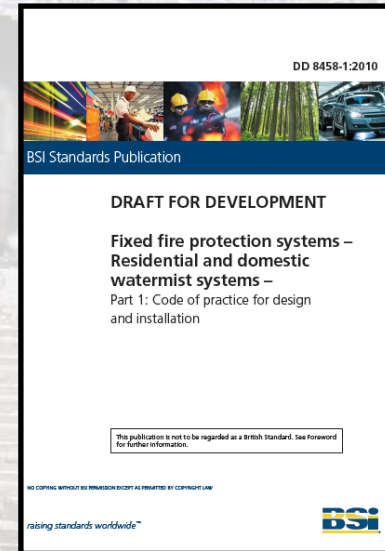
### ***Domestic***

- ✓ Individual Houses, Flats, Maisonettes

### ***Residential***

- ✓ Apartments, Residential Homes, HMO's, Flats, Boarding Houses, Care Facilities, Dormitories

**VID Firekill Design, Installation, Operations and Maintenance Manual (DIOM)**

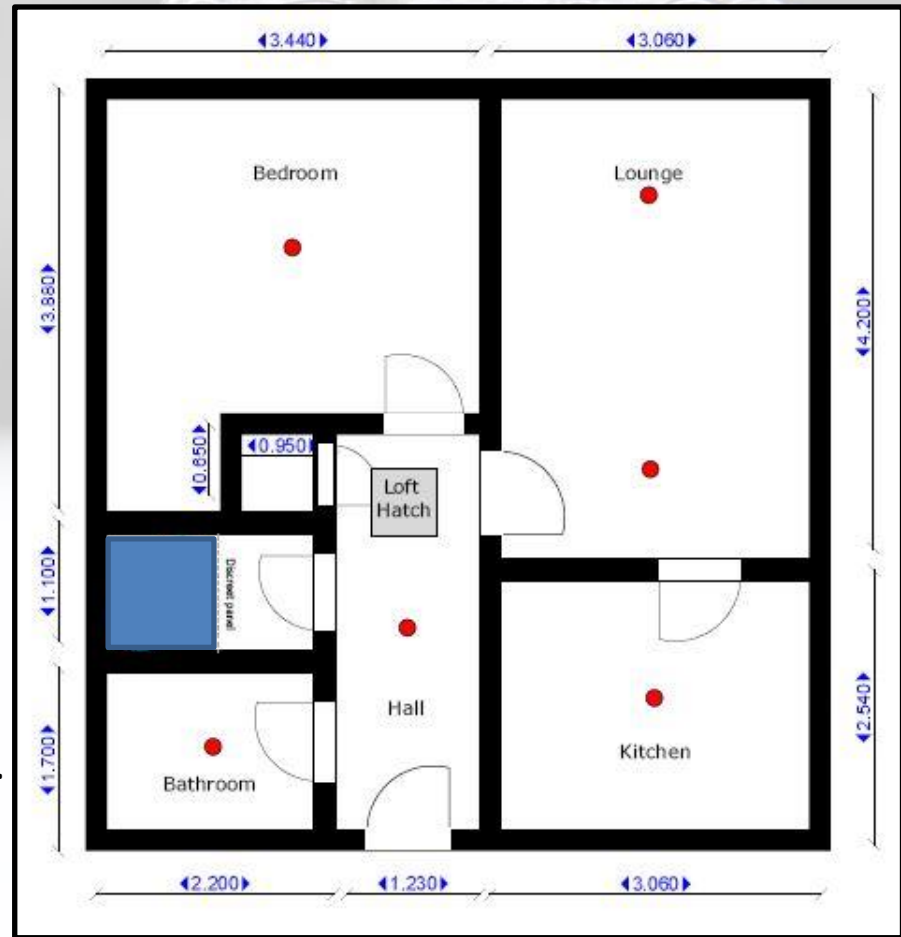


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# The Domestic Low Pressure Water Mist System

- 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.
- System not required to have activation alarm due to potential for panic behaviour of the occupant.
- The occupancy is visited by various agencies daily.

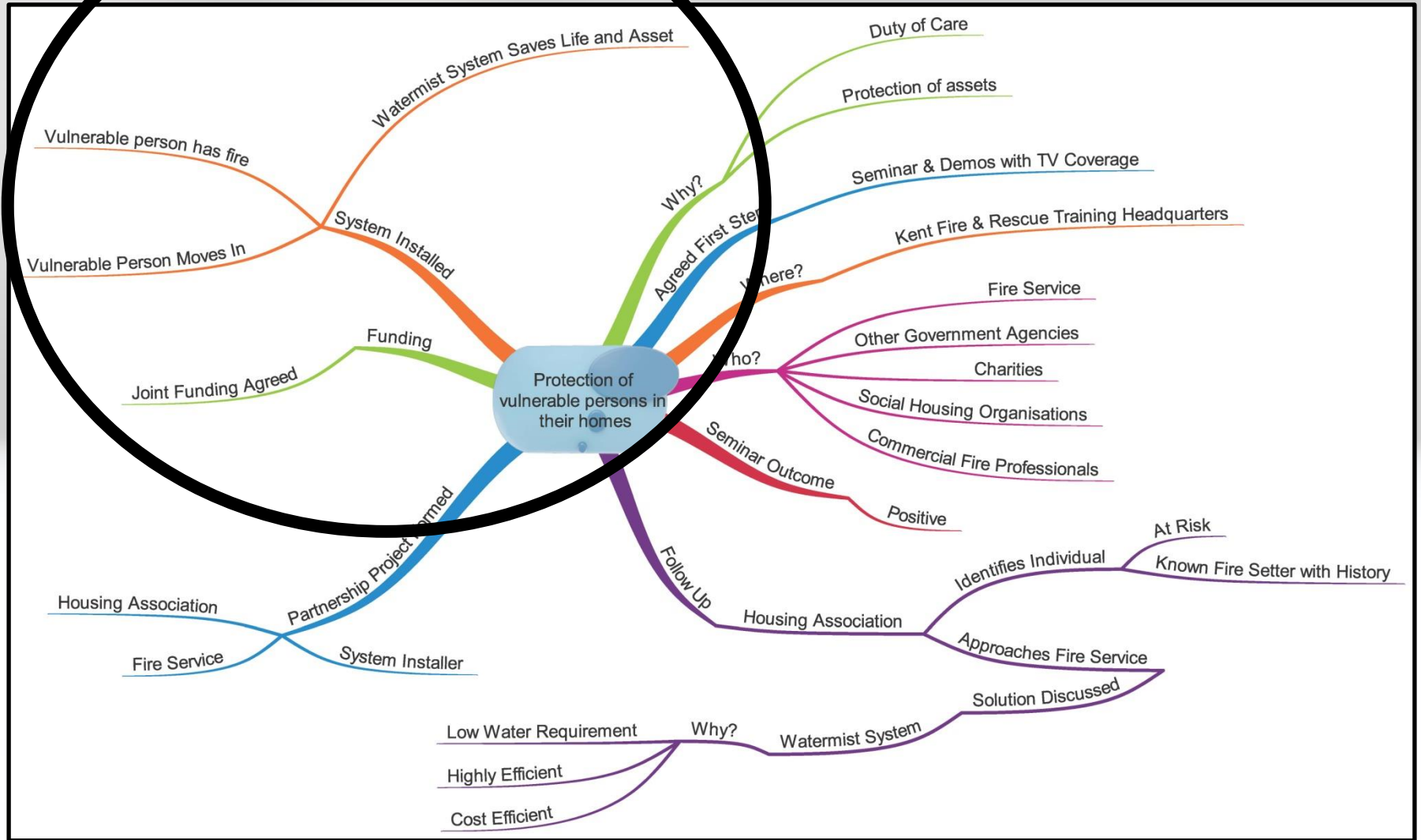


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# The Low Pressure Water Mist System installed 2012

- The System was designed using VID Firekill Model OH- Nozzles with a system run time of 10 minutes on 2 nozzles operating as required by the (Draft Standard) DD8458 which is also the same run time as specified in BS9251 (the standard for Domestic and Residential Sprinklers).
  - The model OH Nozzles have a high level of Fire and Component testing.
  - The model OH Nozzles are tamper resistant with a low installation profile.
- 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.



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## The Incident

■ On the 8<sup>th</sup> 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 was called to duty is pictured above.

## The Incident

- The water mist system operated as intended and swiftly brought the fire under control and then fully extinguished it. There was only a small amount of fire damage and virtually no smoke damage at all. No additional firefighting action was required.
- A joint inspection of the property was completed on 17<sup>th</sup> February, by a Fire Investigator and sprinkler technical officer from KFRS, also in attendance were representatives from the system installer and from East Kent Housing.
- It was agreed by all parties that the water mist system had achieved its main objective of protecting a vulnerable person with poor awareness and understanding of fire and its consequences.
- 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 originating flat and others accommodation. 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 small area of origin.

## Observations on the Incident

- The fire starts under a cupboard providing a shield against direct water impingement.
- There is potential for the fire to penetrate through the bottom of the cupboard and gain access to more fire fuel and build if not dealt with quickly and efficiently.
- 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 smoke damage outside of the room of origin.



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# The Costs of a Domestic Fire

## **FIRE related costs –**

The Office of the Deputy Prime Minister report, (Economic Cost of Fire: Estimates for 2004), estimates the costs to the UK economy that can be associated to a fatal fire totals £1.4 million. **Source:** Adult Social Care Select Committee 18 May 2012 ,Fatal Fire Deaths in Surrey.

Fire Brigade attendance, Other emergency services attendance and investigations.

Hospital treatment. Serious burns require medical treatment that can last a lifetime.  
Human Cost.

Inquest, Funeral expenses, legal costs.

Water authority , Gas, electricity call out.

Insurance company input, payouts, investigations.

Temporary housing, business interruption (flats over business premises).

Salvage, rebuild, decoration, temporary housing including neighbours and their property.

Loss of Irreplaceable items.

Loss of tax payer and worker output to the economy. Possibly to a state dependant.

# This collaboration has potentially saved

## *The Installation Details*

Installation date July 2012.

Grant Funded on 50/50 basis.

6 head system offering full protection to all rooms and circulation areas.

Twin Pressure tank water supply located within frost free cupboard.

Total installed cost £3234

We can say that

If the System saved a single fire death estimated at £1.4 million.

Then it follows that the system installation is .23% of the cost of a single fire death.

Or you can say that taking the Installation + system costs of approx £3234

the Low Pressure Watermist System saved a rise in costs of approx 43,190%

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## The case shows:

Successful fire testing.  
Successful component testing.  
Production facility approval.  
DIOM manual approval.  
Available codes (NFPA 750 / CEN/TS 14972)

+

Installation QC good  
Maintenance QC good

=

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robust technology!**



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