



# Building at the Interface

**BNHCRC Research Forum**

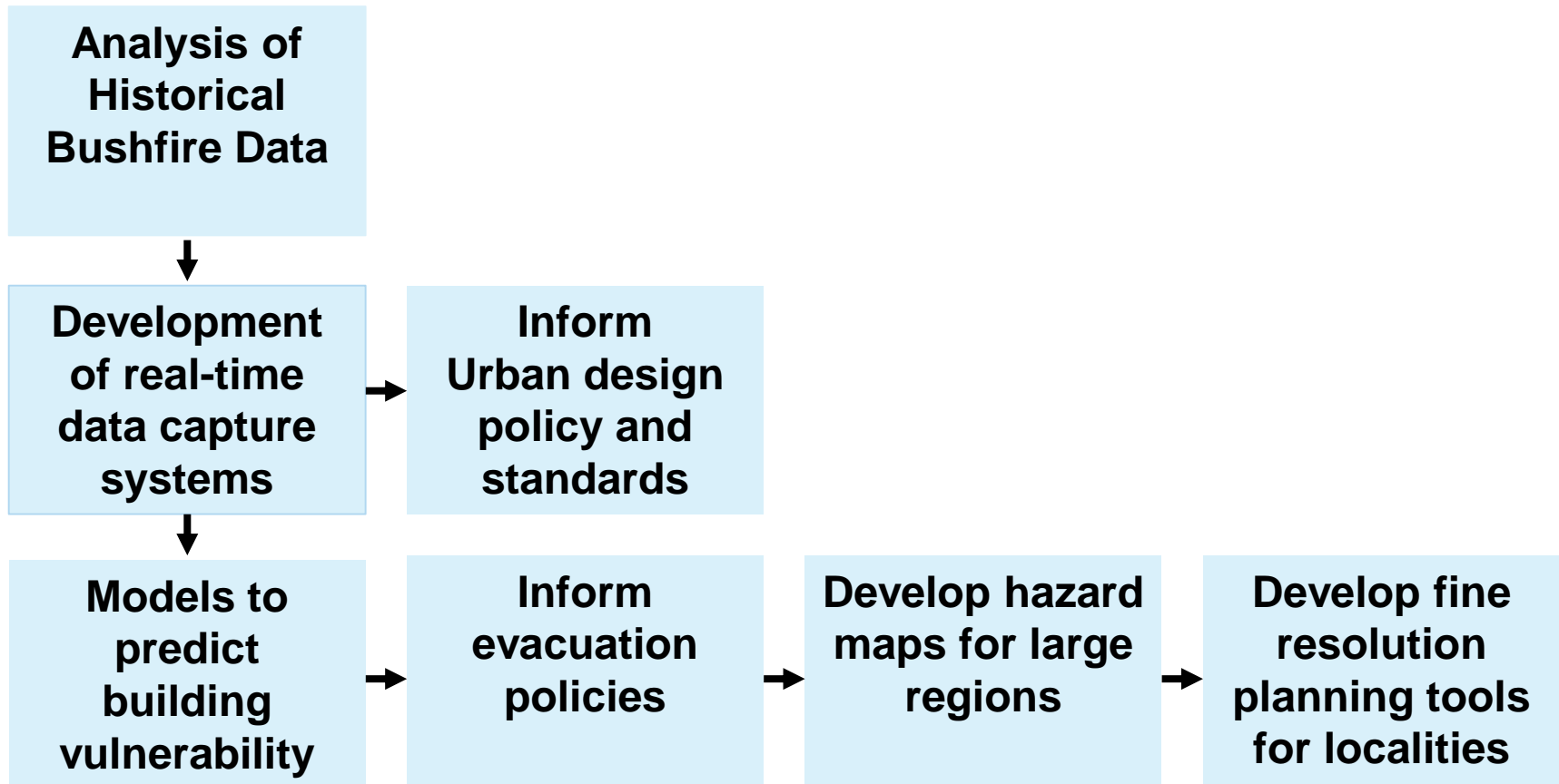
Justin Leonard | Research Leader – Bushfire Urban Design

7 August 2014

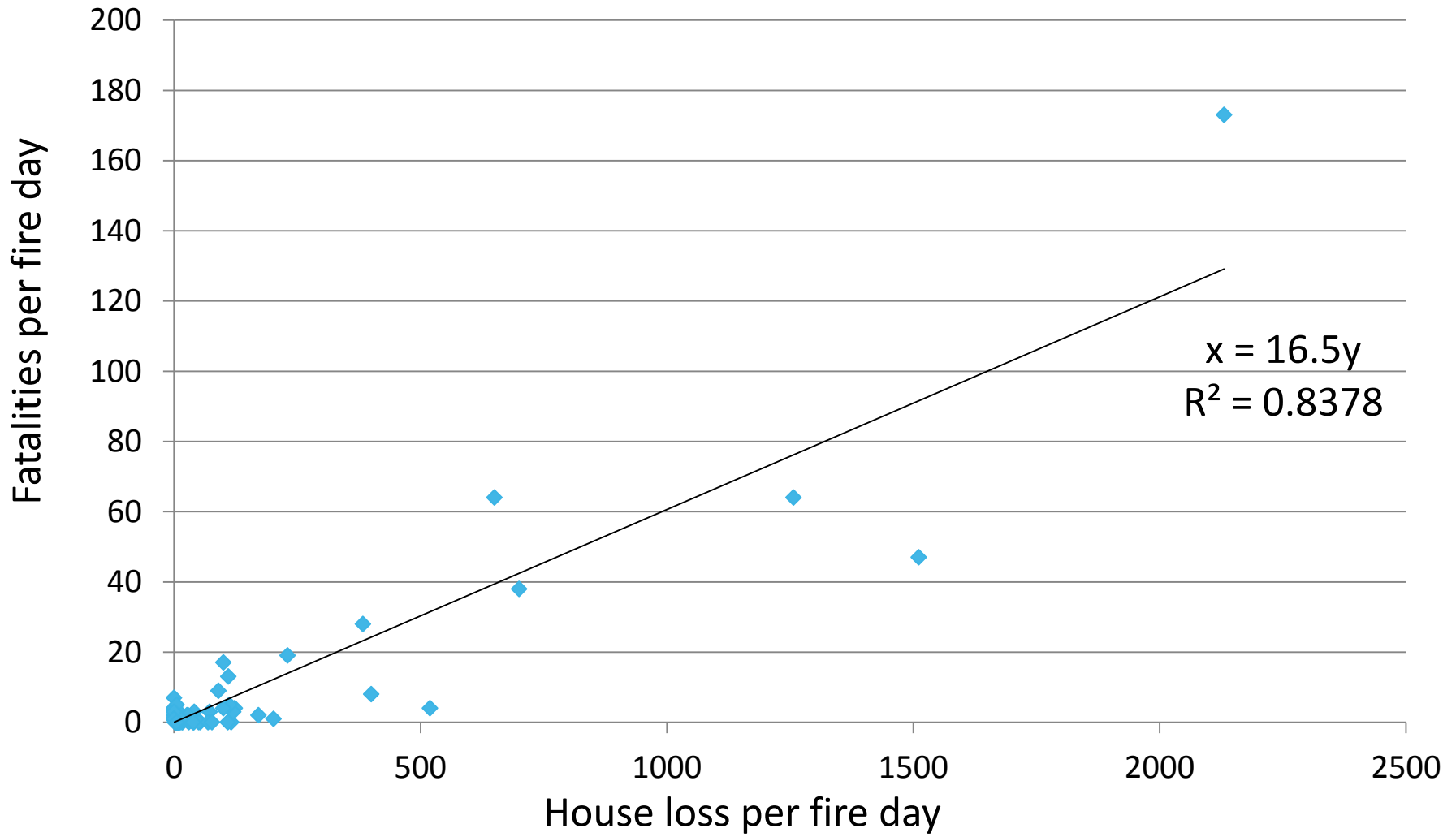
[www.csiro.au](http://www.csiro.au)



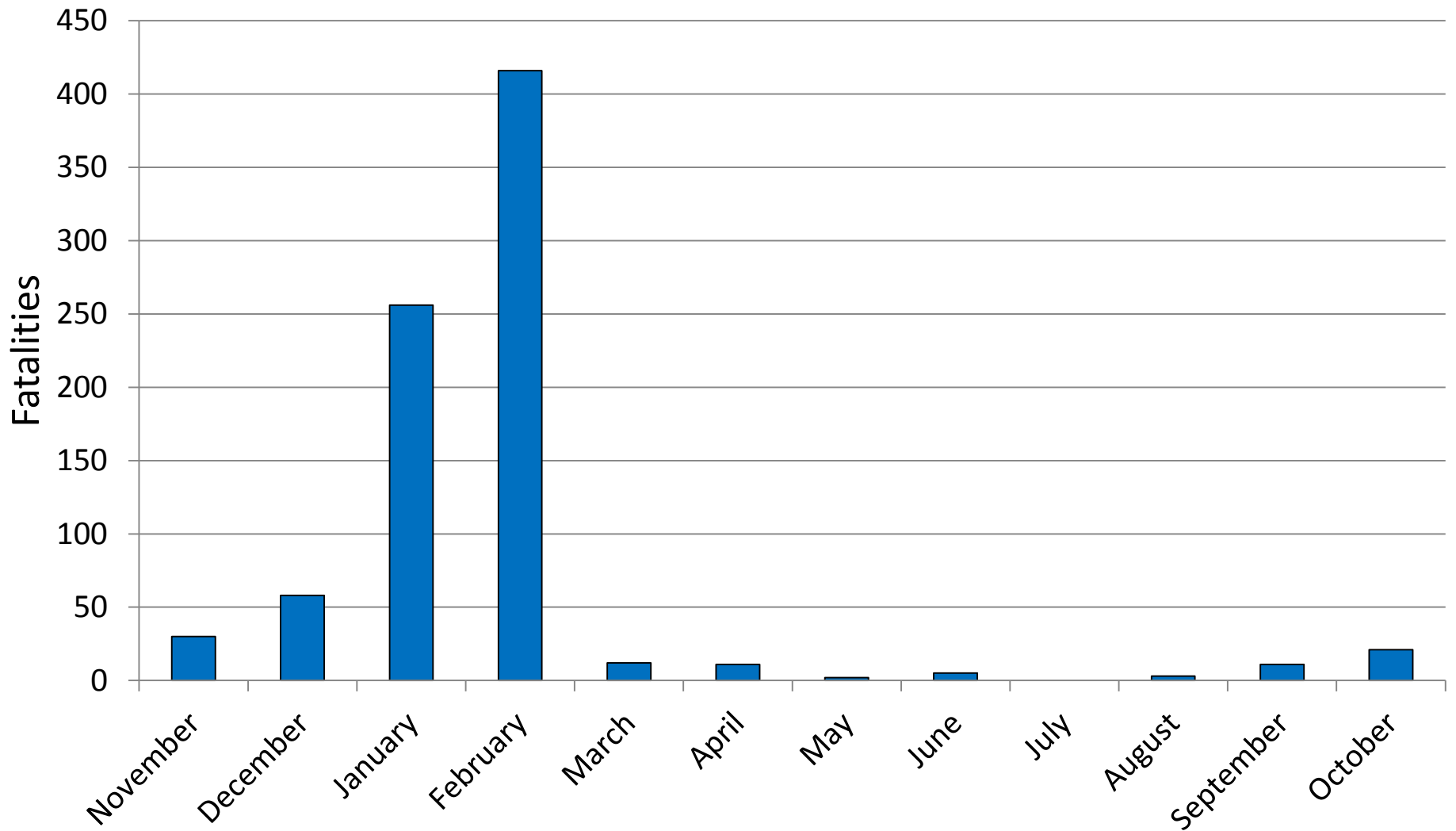
# What have we been up to?



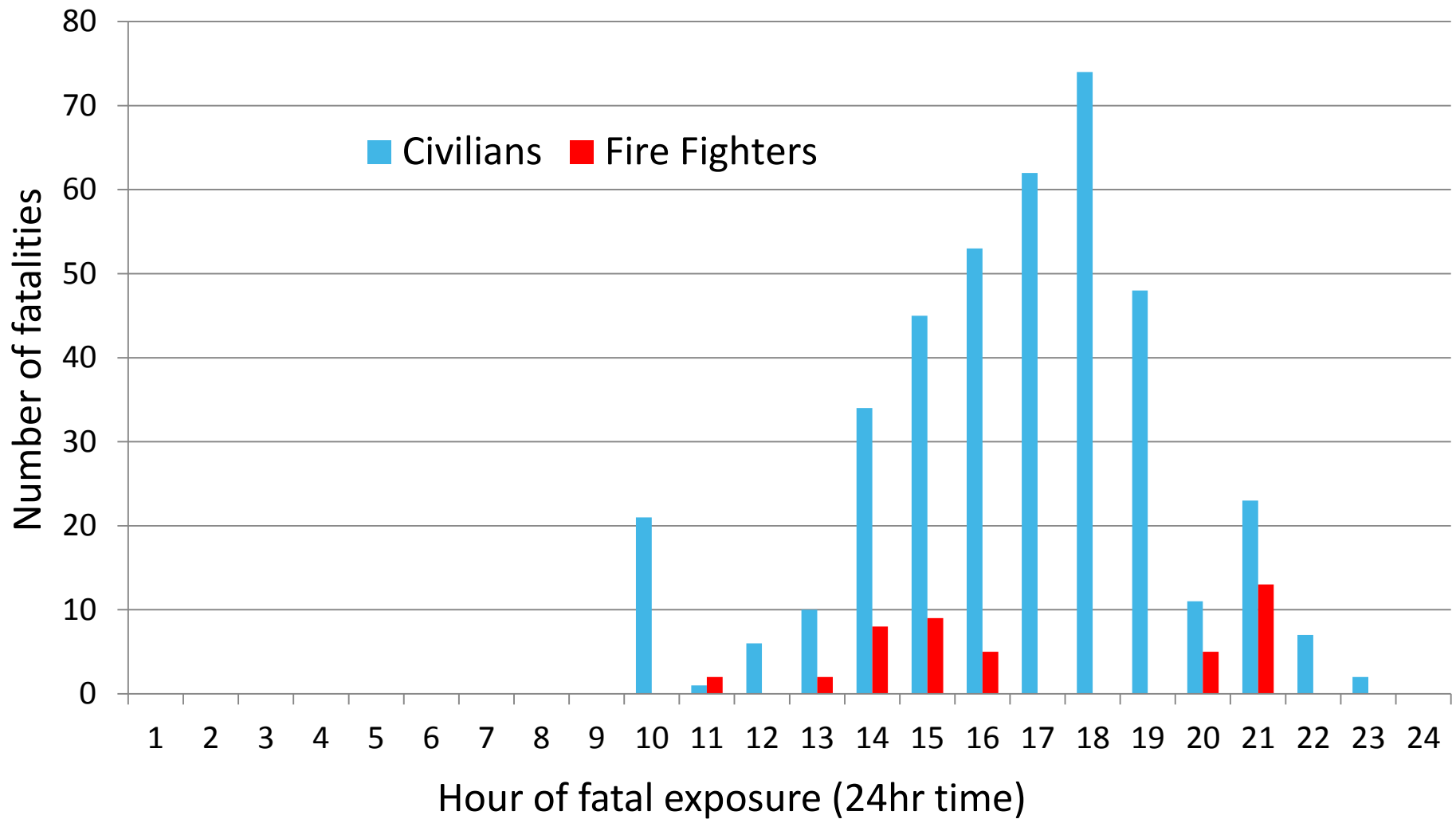
# Life Loss vs House Loss (1:17)



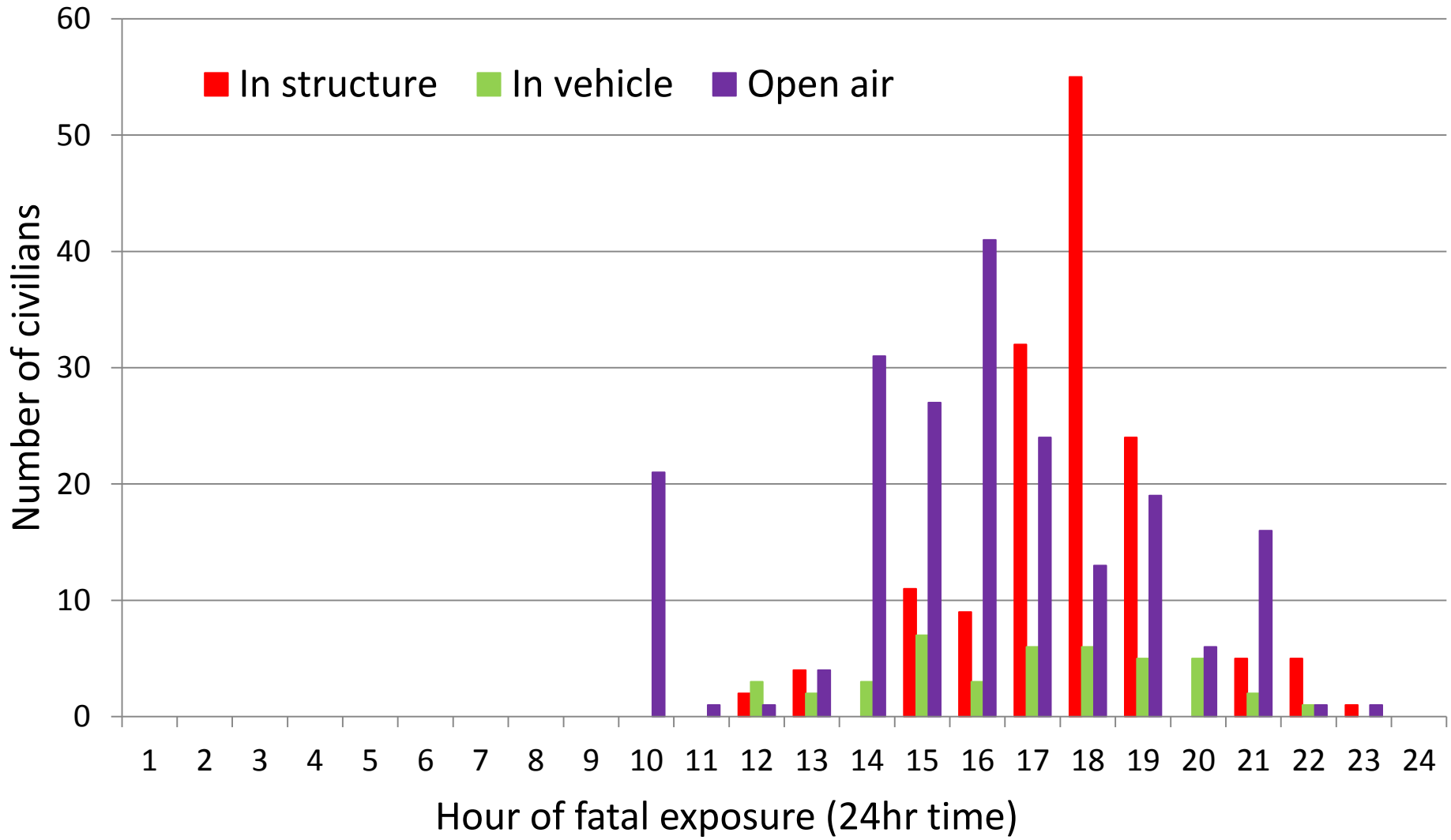
# Life Loss by Month



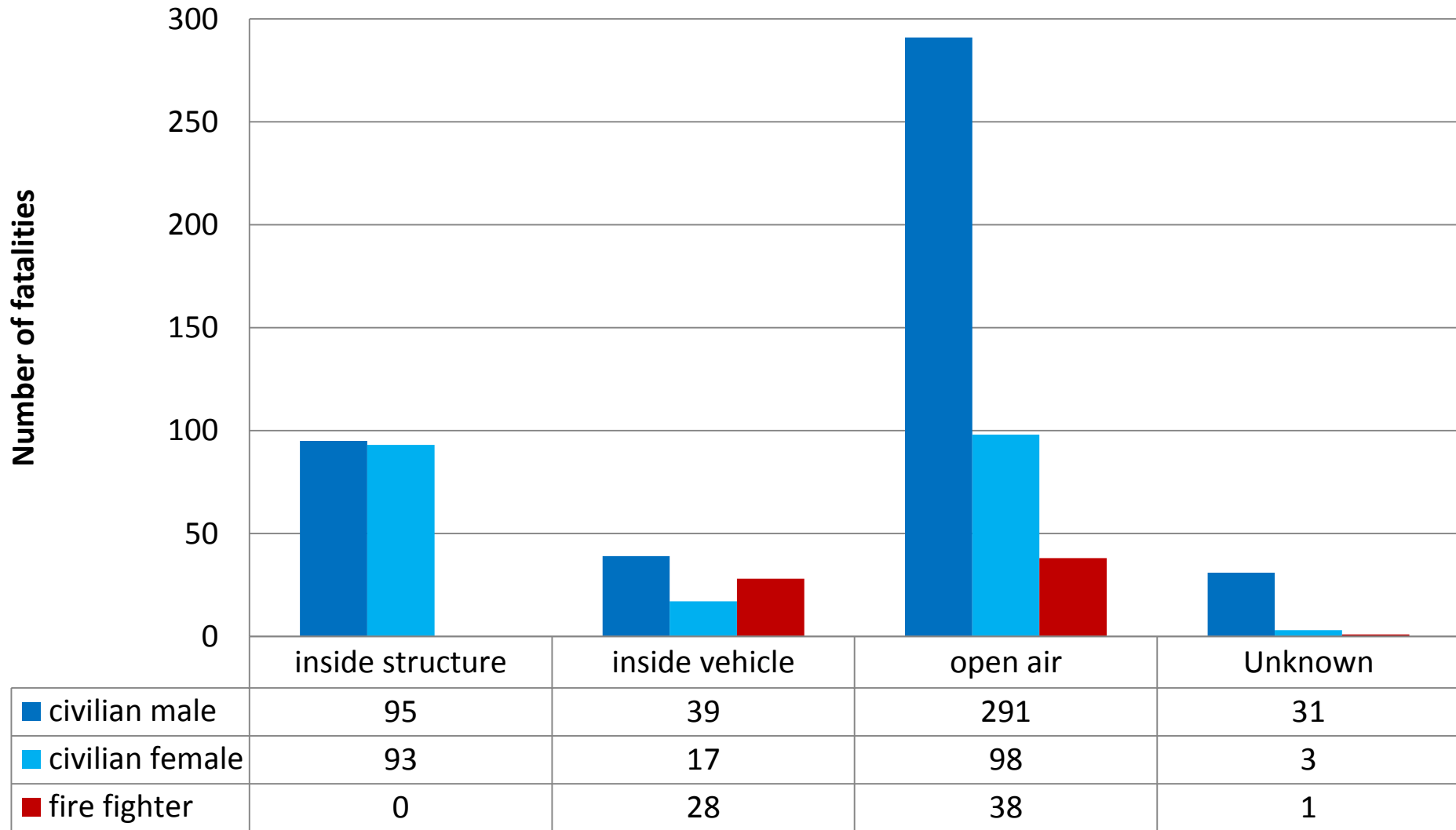
# Life Loss by hour



# Life Loss by hour



# Life Loss Situation



# Location of Fatality within Structures

Location	Number of fatalities	Percentage of known
Bathroom	36	29%
Kitchen	26	21%
Bedroom	17	14%
Study	10	8%
Under house enclosure	9	7%
Entrance	5	4%
Lounge	4	3%
Cool-room	3	2%
Laundry	3	2%
Outdoor spa	3	2%
Toilet block	3	2%
Bunker	2	2%
Shed	2	2%
Independent garage	1	1%
Shack	1	1%
<b>Total</b>	<b>125</b>	<b>100%</b>



# Location of Fatality within Homes

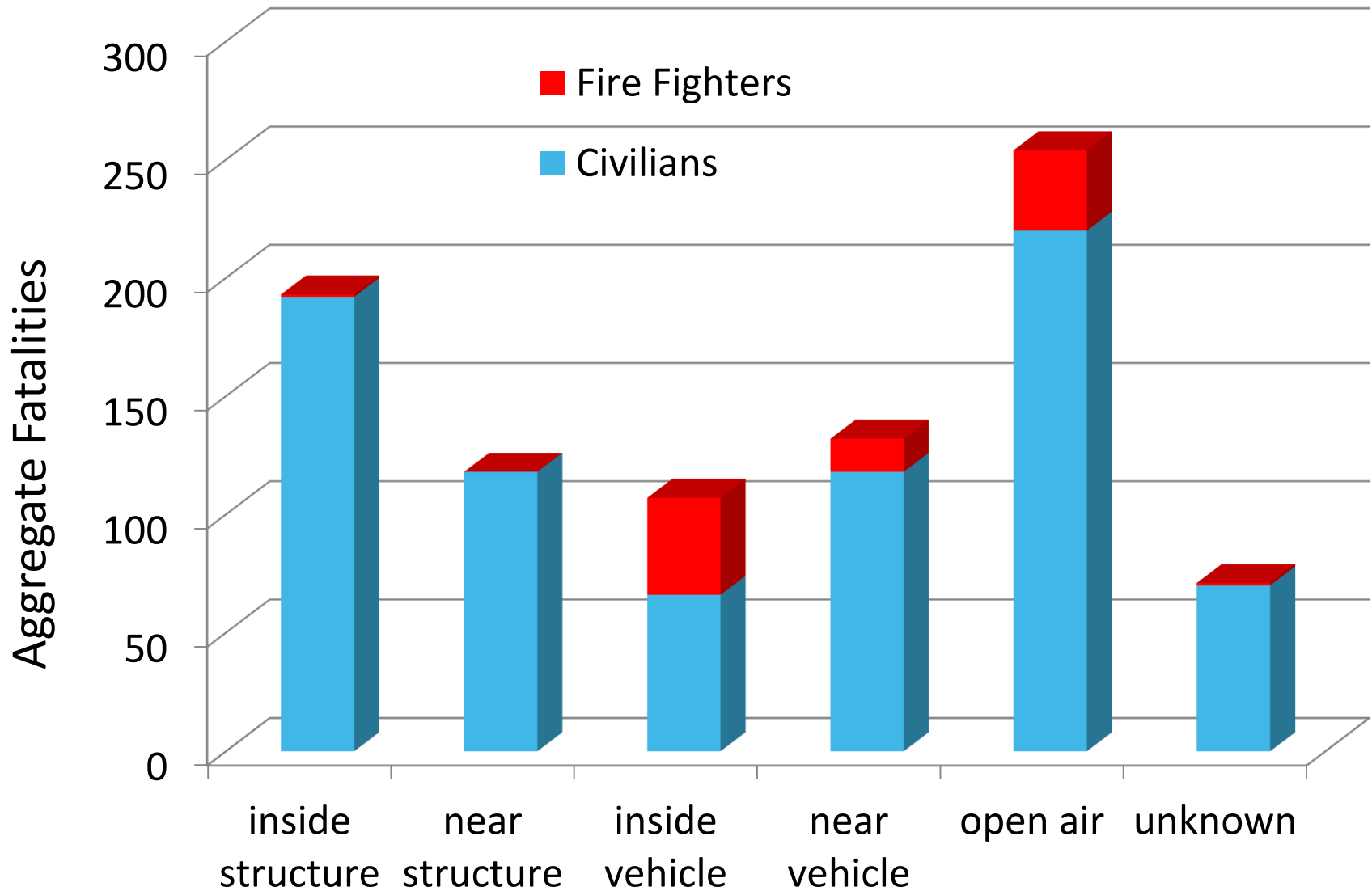
Location	Number of fatalities	Percentage of known
Bathroom	36	33%
Kitchen	26	24%
Bedroom	17	15%
Study	10	9%
Under house enclosure	9	8%
Entrance	5	4%
Lounge	4	4%
Laundry	3	3%
<b>Total</b>	<b>110</b>	<b>100%</b>

# Location of Fatality within Homes

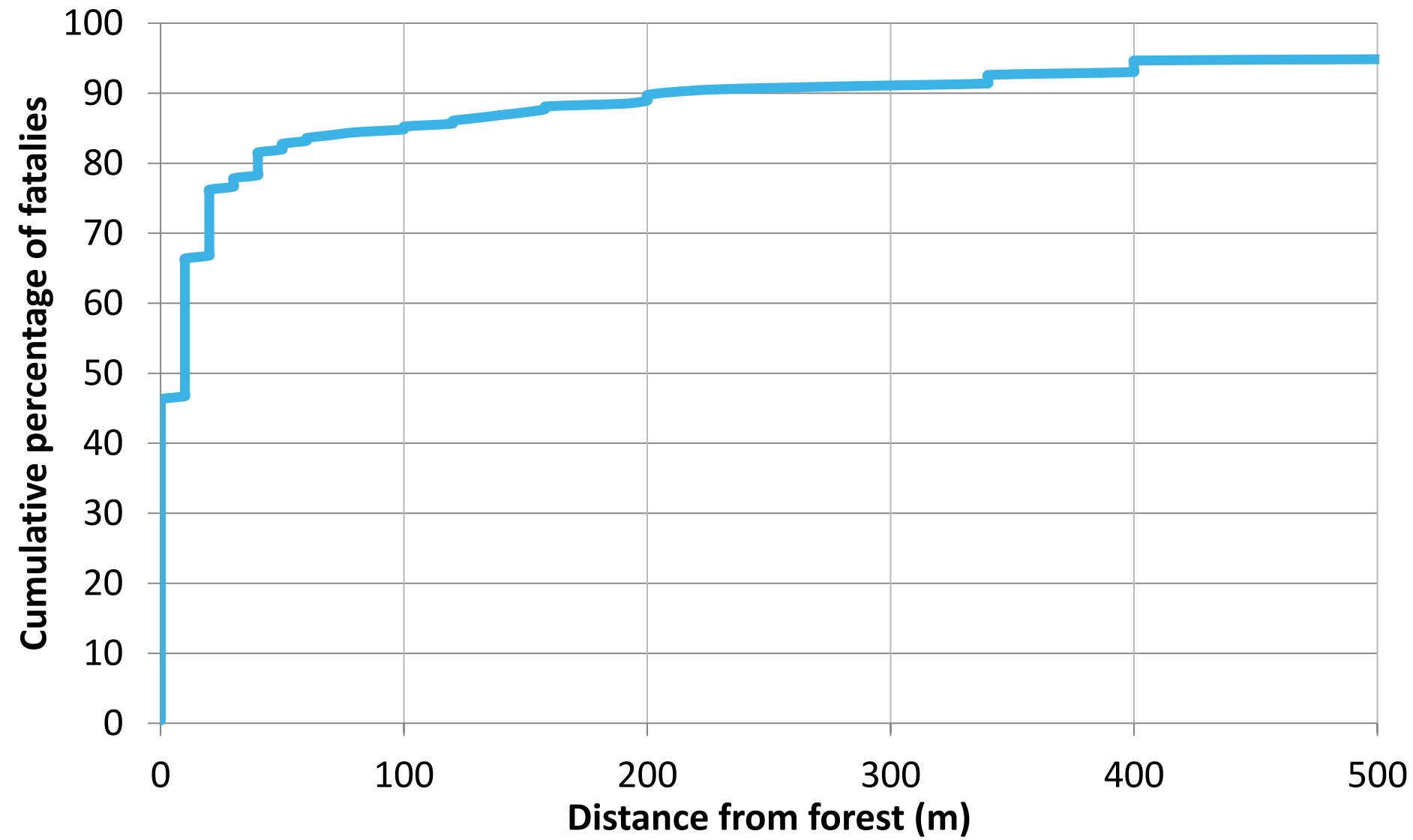
Location	Number of fatalities	Percentage of known
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Lounge	4	4%
Laundry	3	3%
<b>Total</b>	<b>110</b>	<b>100%</b>

93% in a location with no direct exit

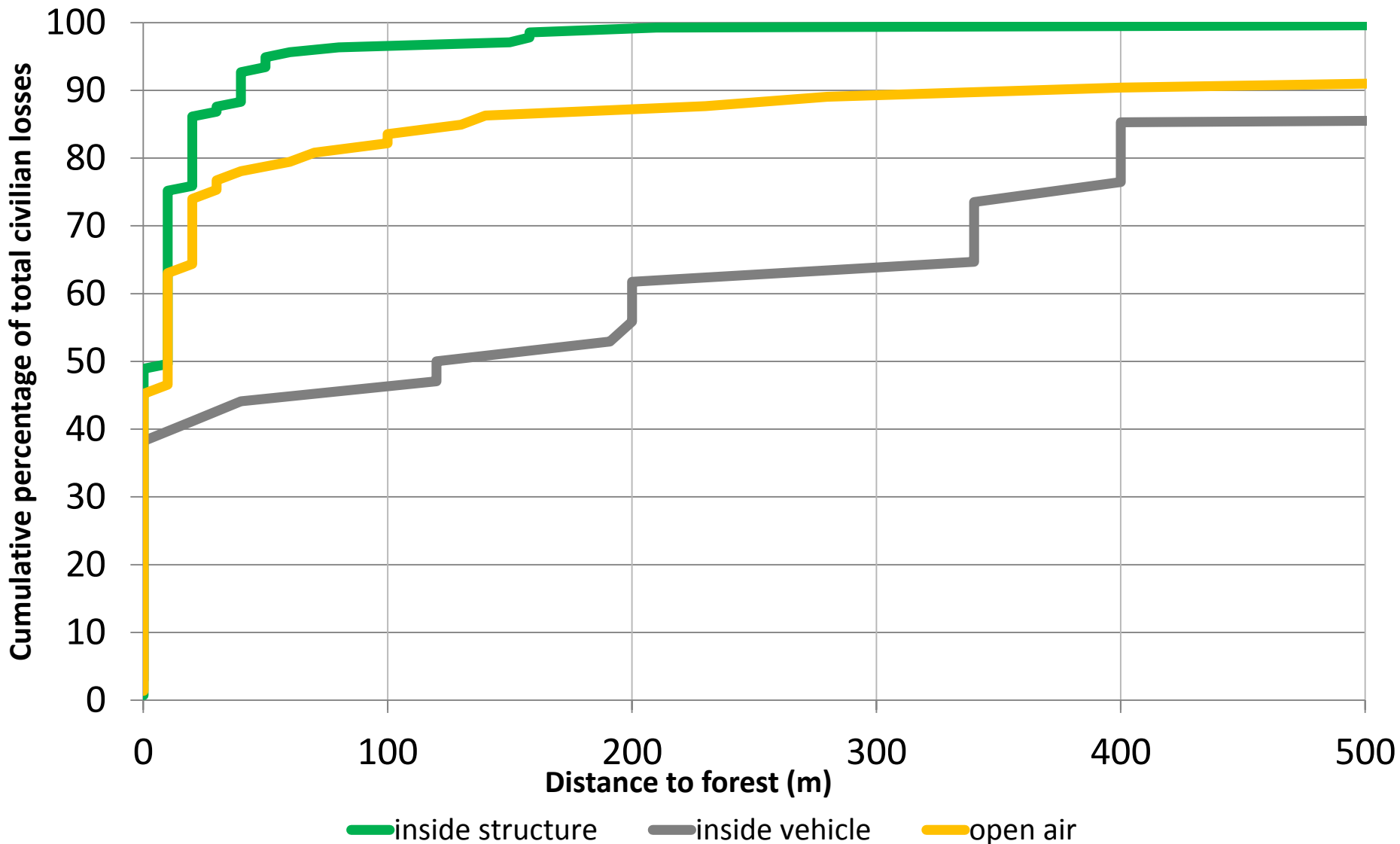
# Situation Location of fatalities



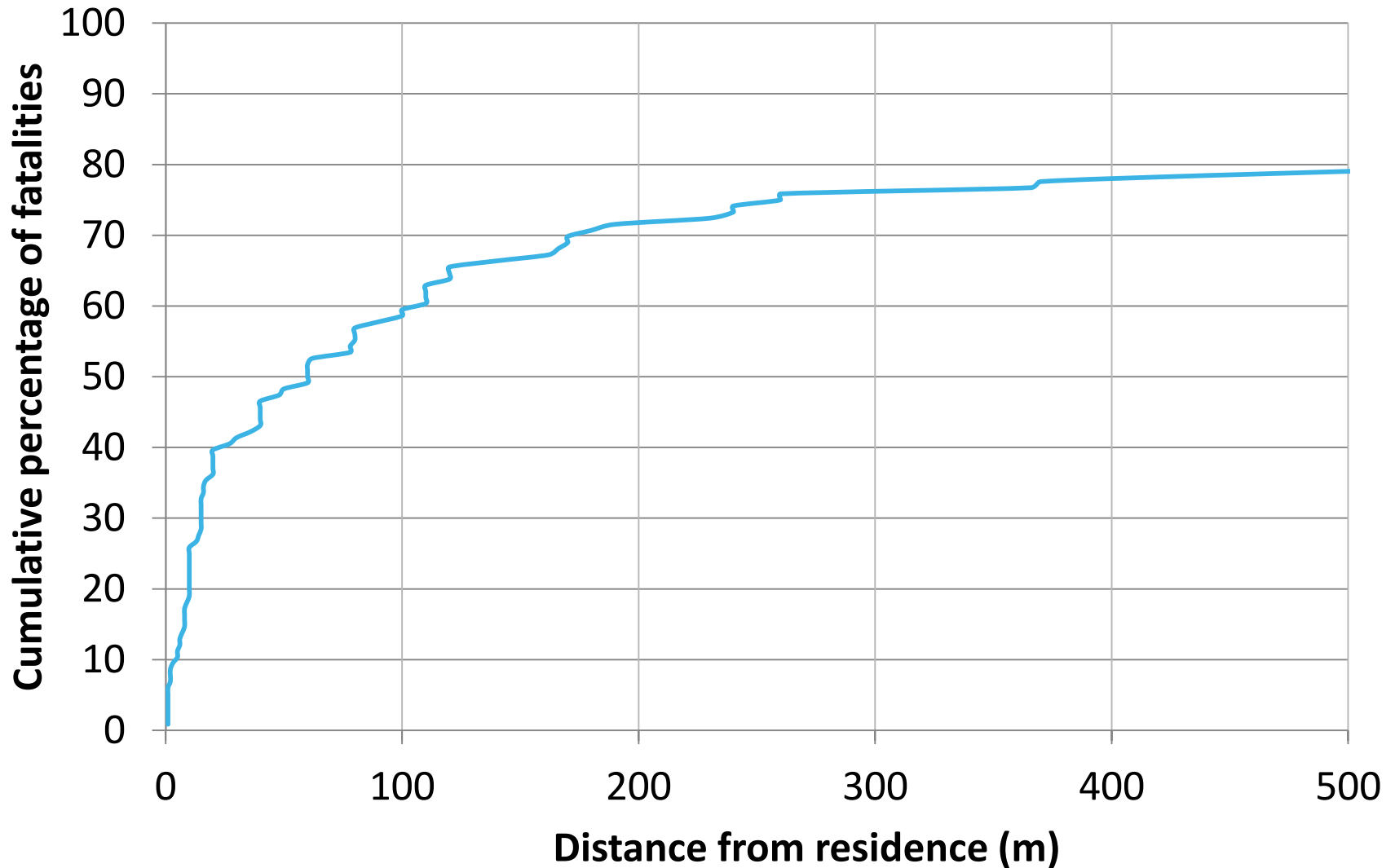
# Life loss and distance to forest



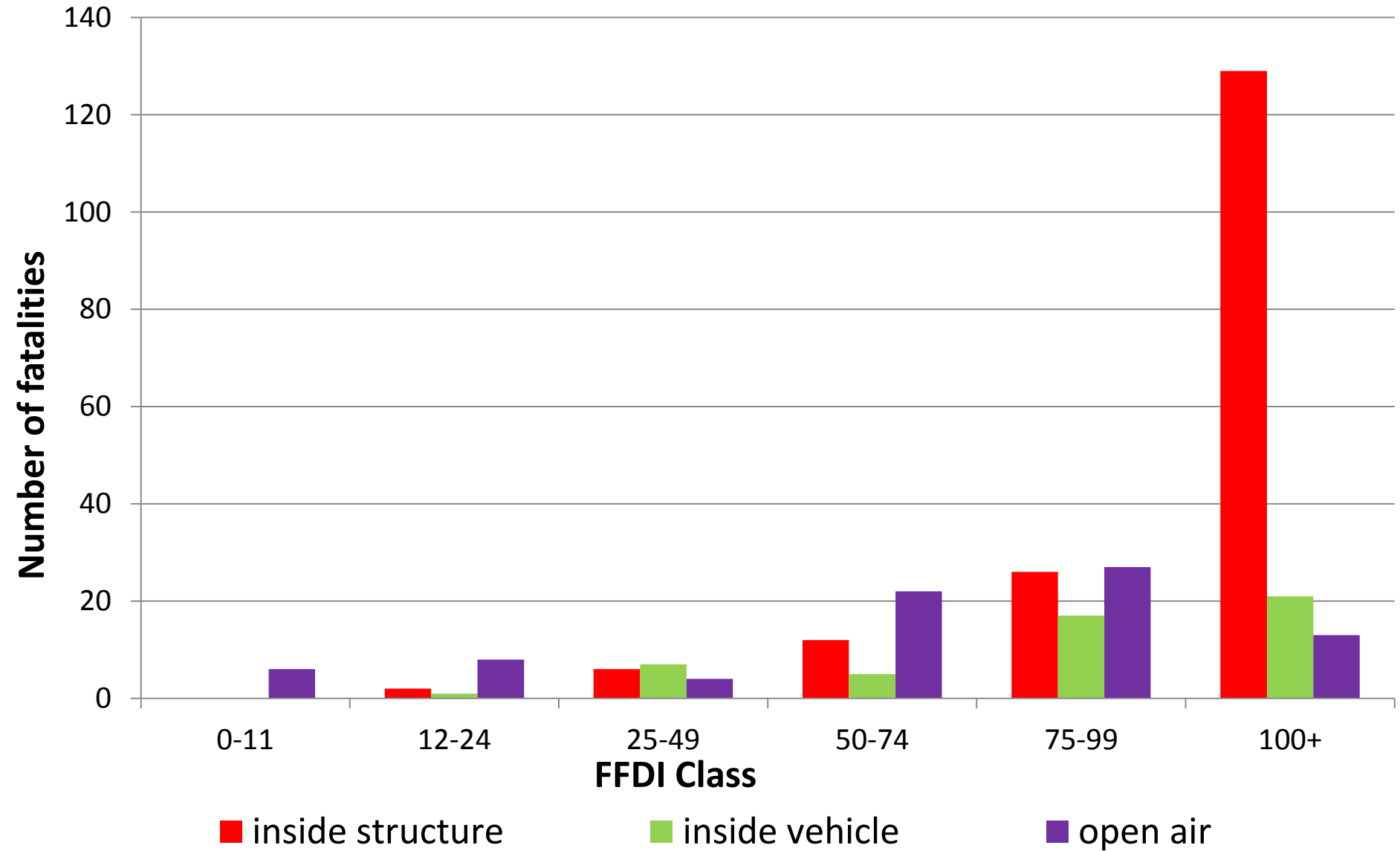
# Life Loss vs Distance to Forest



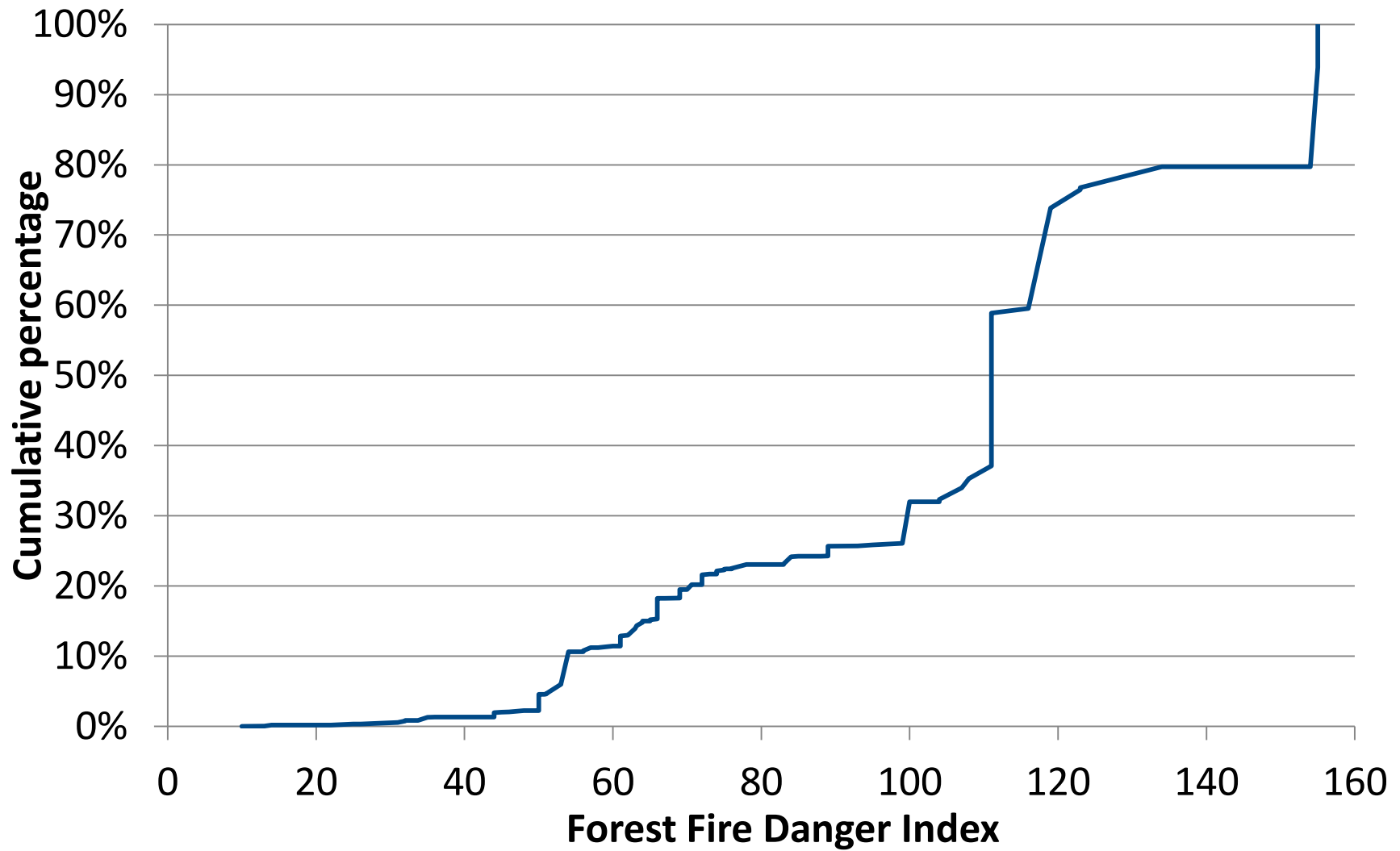
# Distance from Fatality to Residential address



# Life Loss location & FFDI

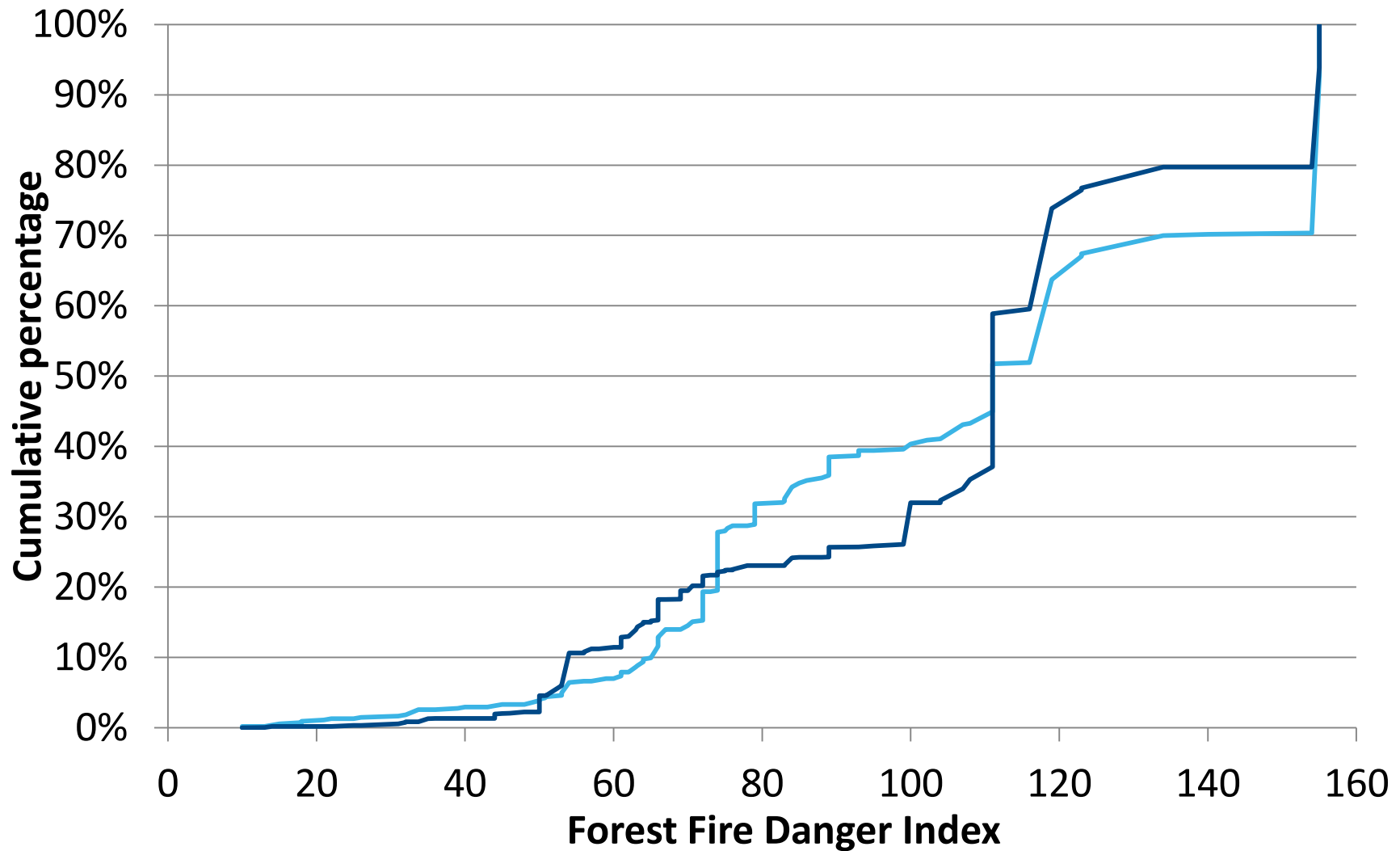


# House Loss & Fire Weather





# House Loss, Life Loss & Fire Weather














Cancel Editing

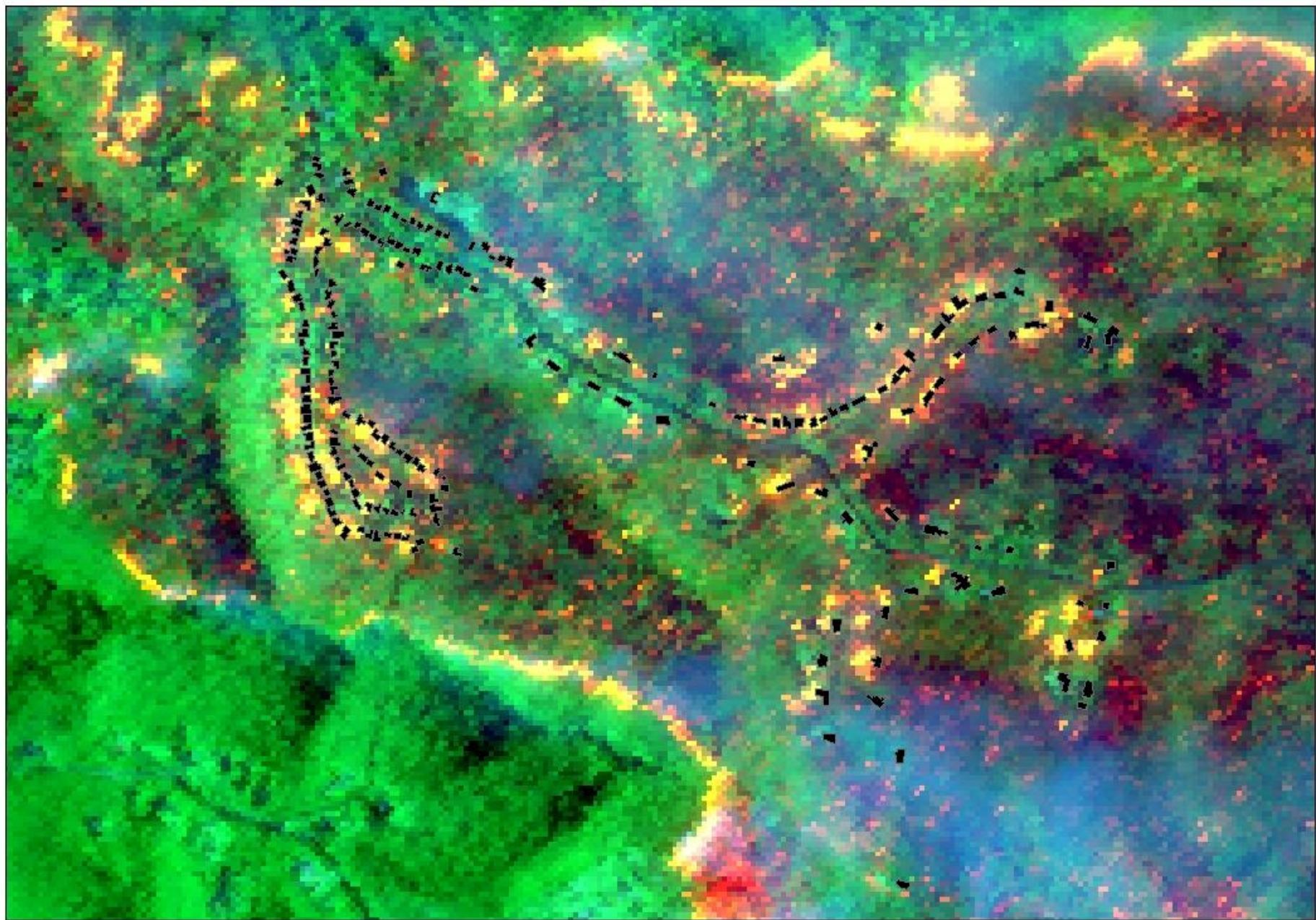
Refresh Feature Layers

Sync Now





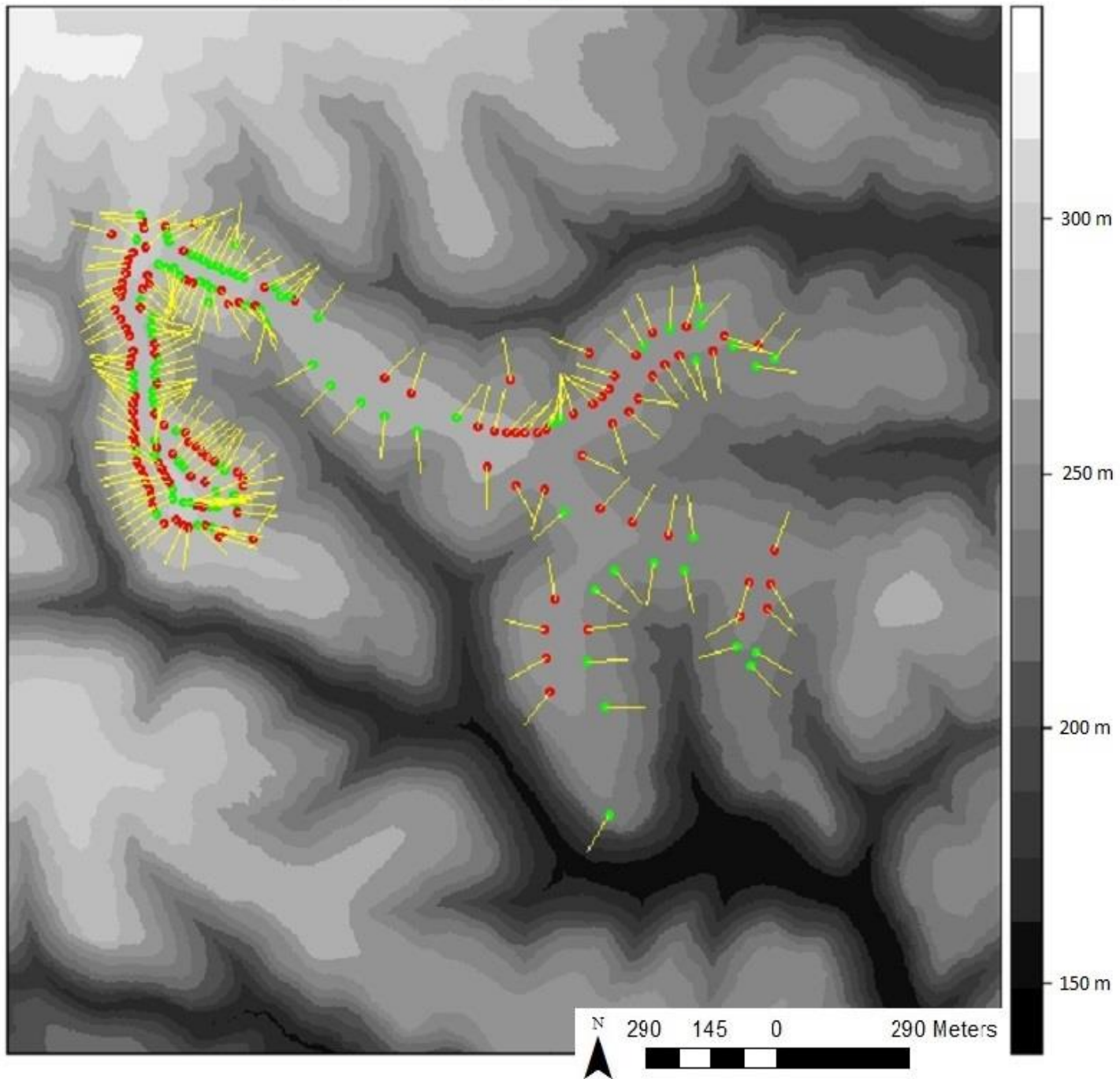




390 195 0 390 Meters



# Springwood Topography and Fire Directions



# Overhanging trees – A strong loss driver

	No Tree	Minor Overhanging	Many Overhanging
Destroyed	33	46	102
Heavy Damage	1	1	5
Medium Damage	2	1	9
Light Damage	11	15	19
Superficial	20	8	26
Untouched	91	53	120

































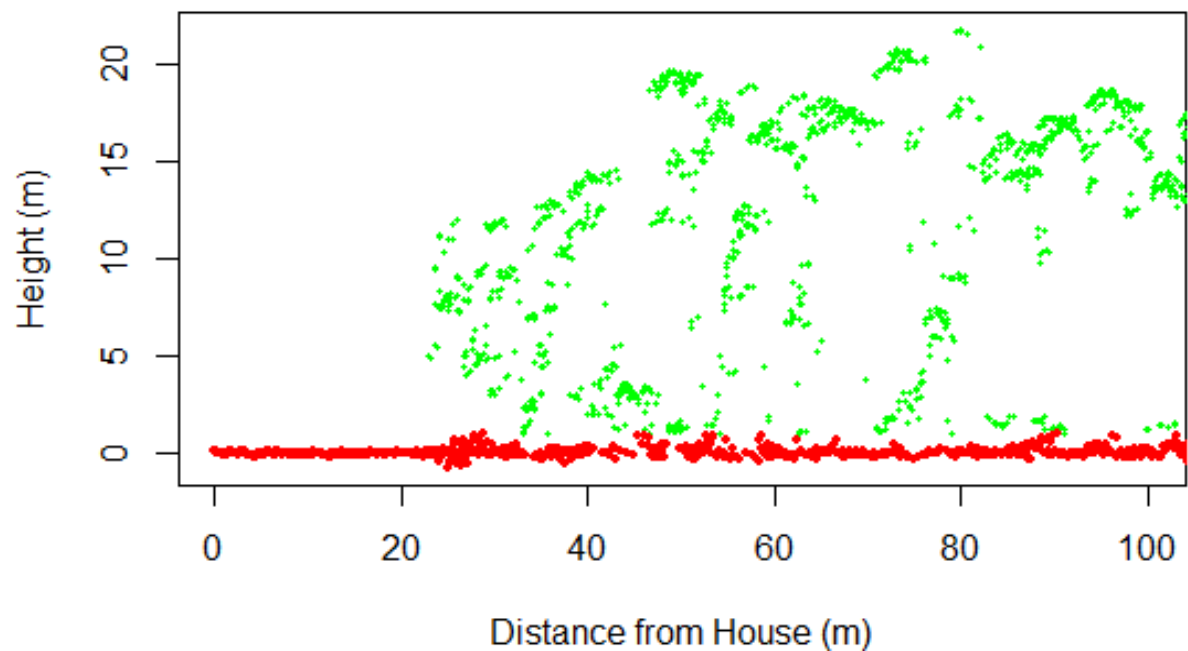
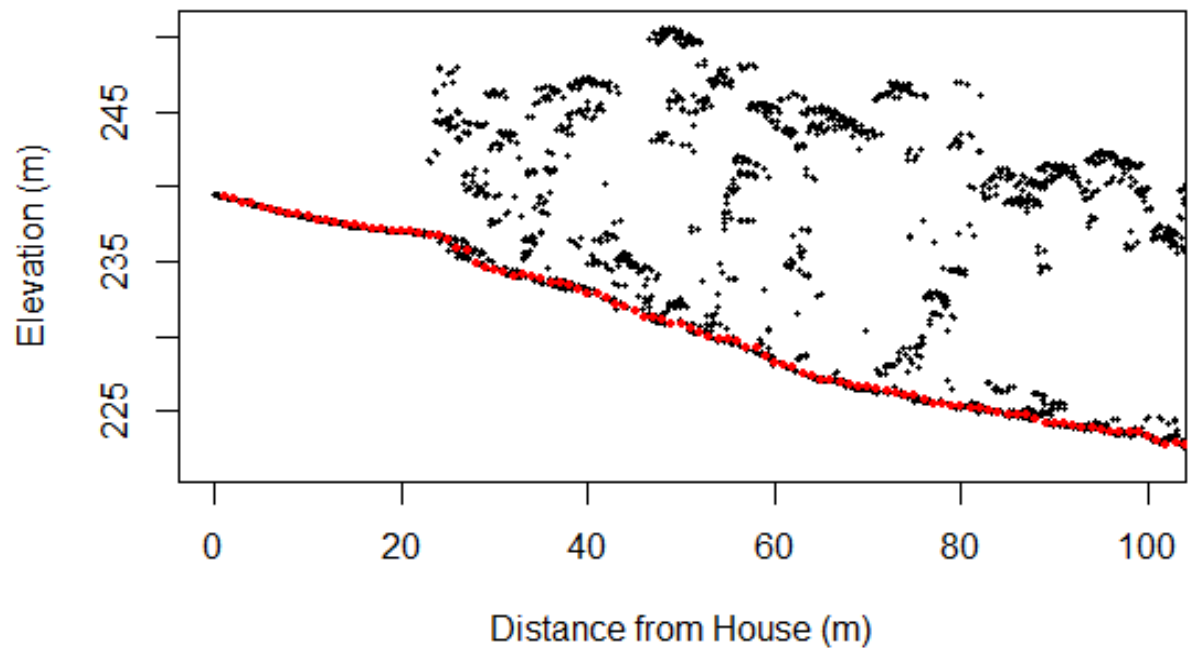






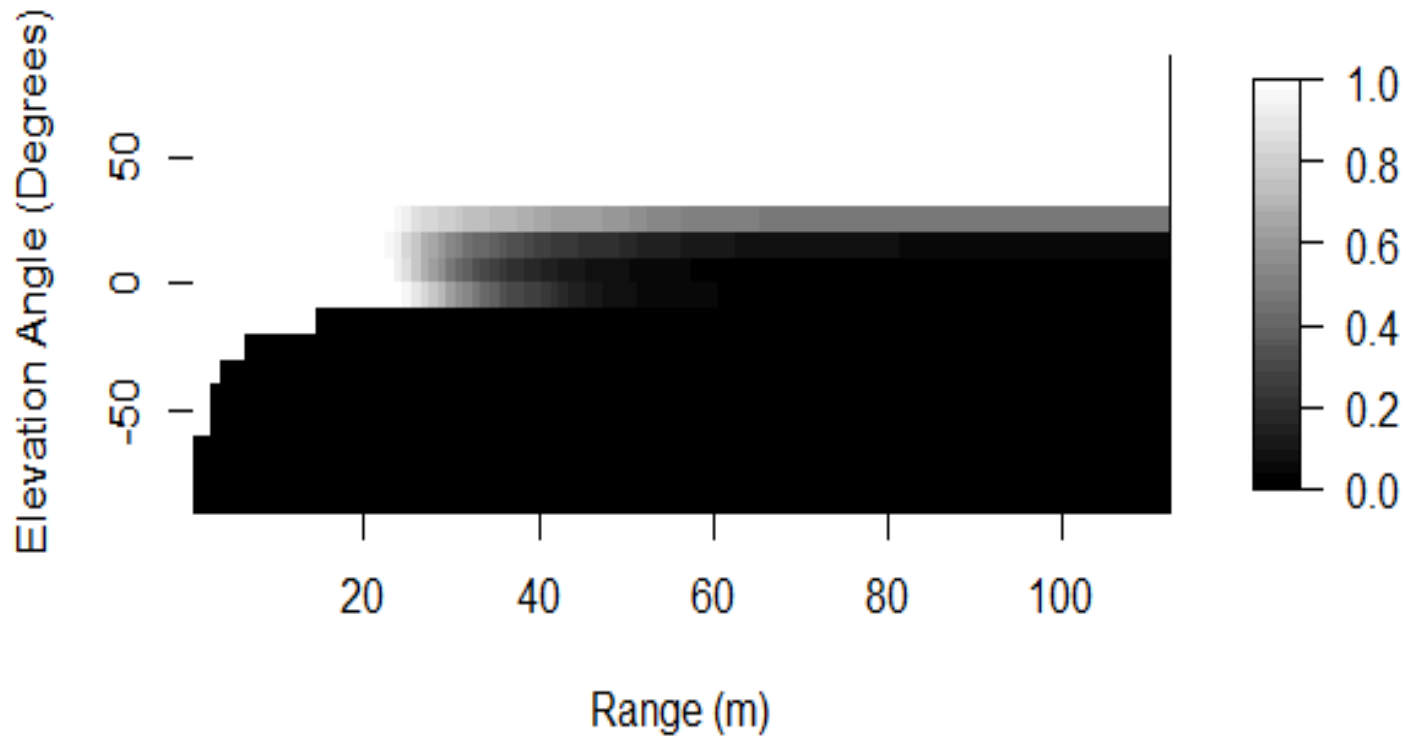
# Individual house exposure analysis



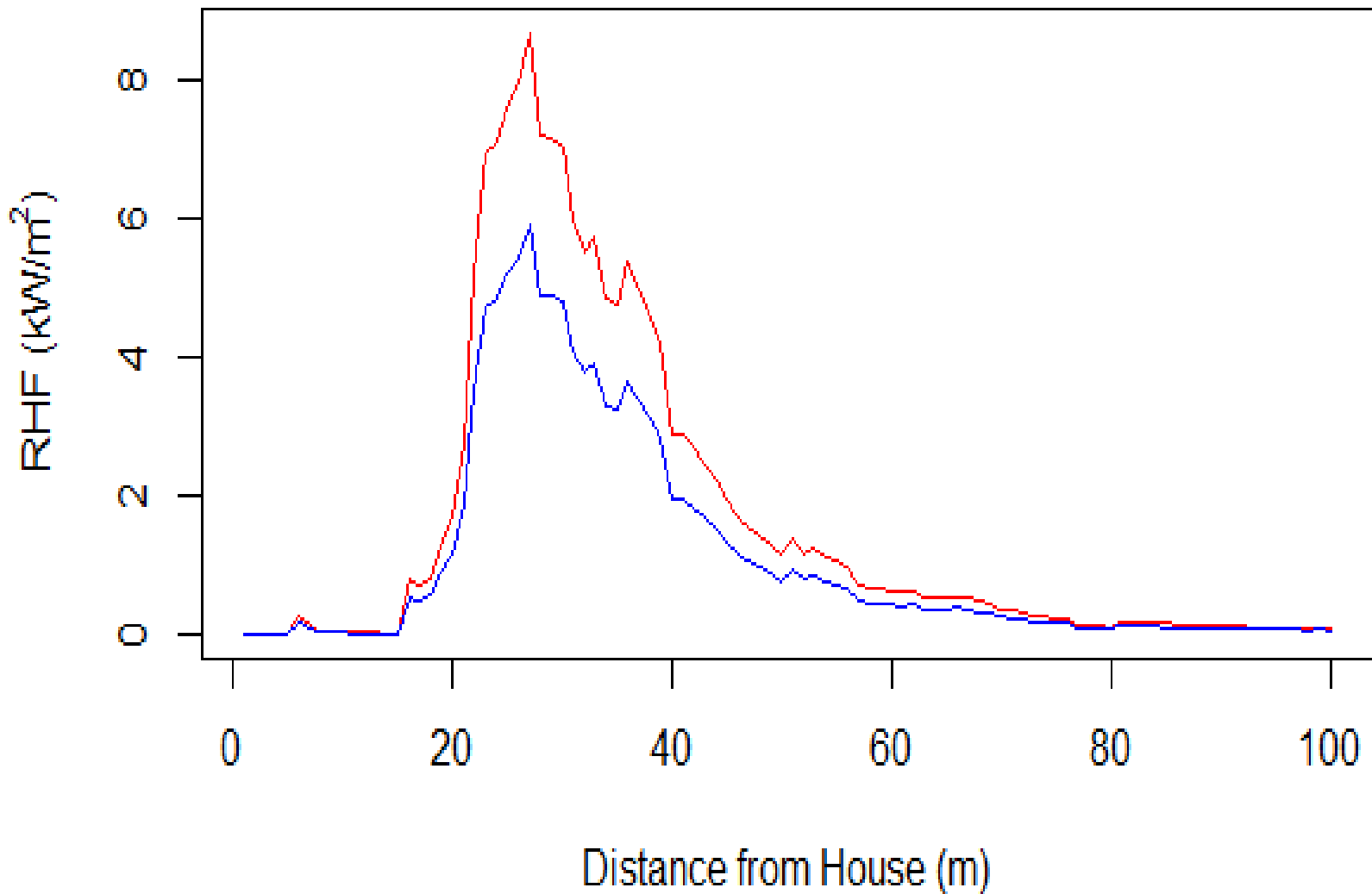


**b)**

## Line of Sight Transmittance



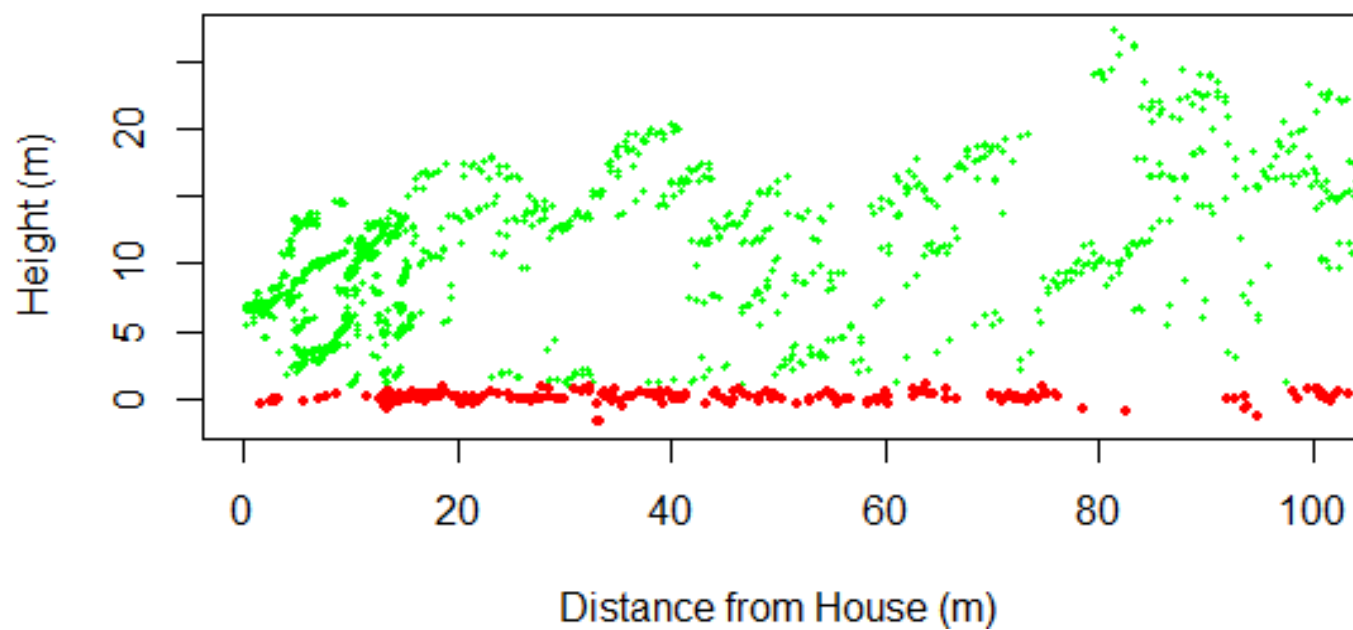
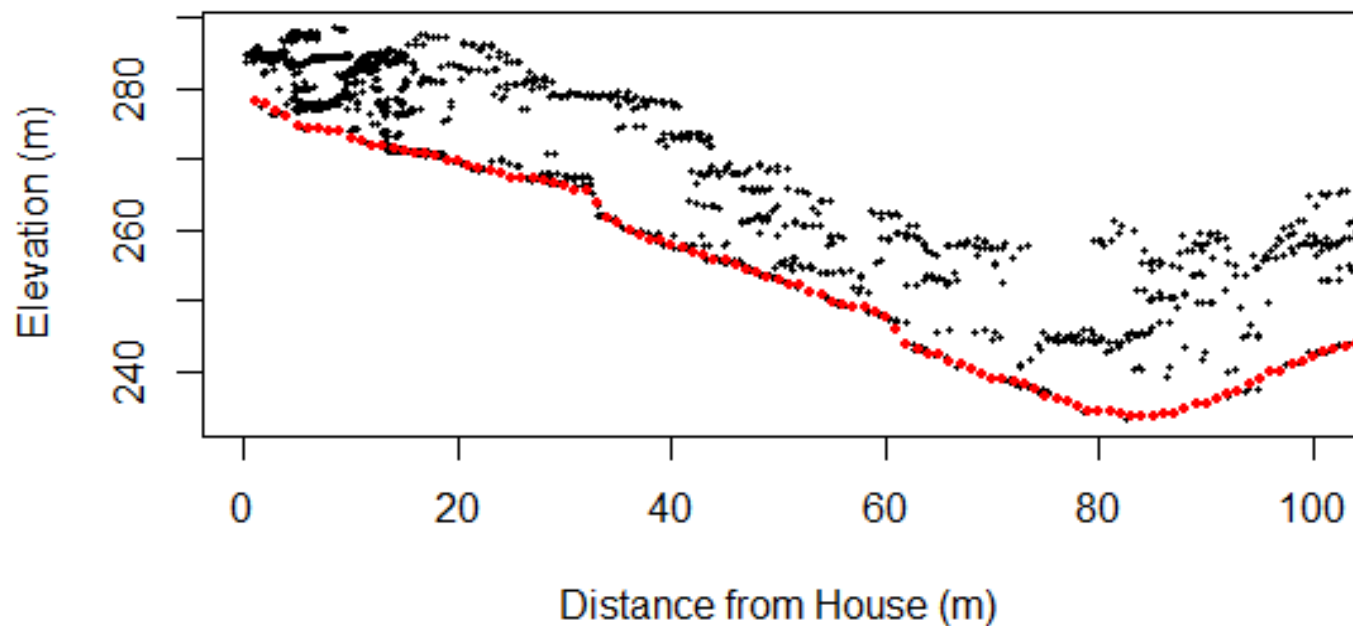
# Individual house exposure analysis





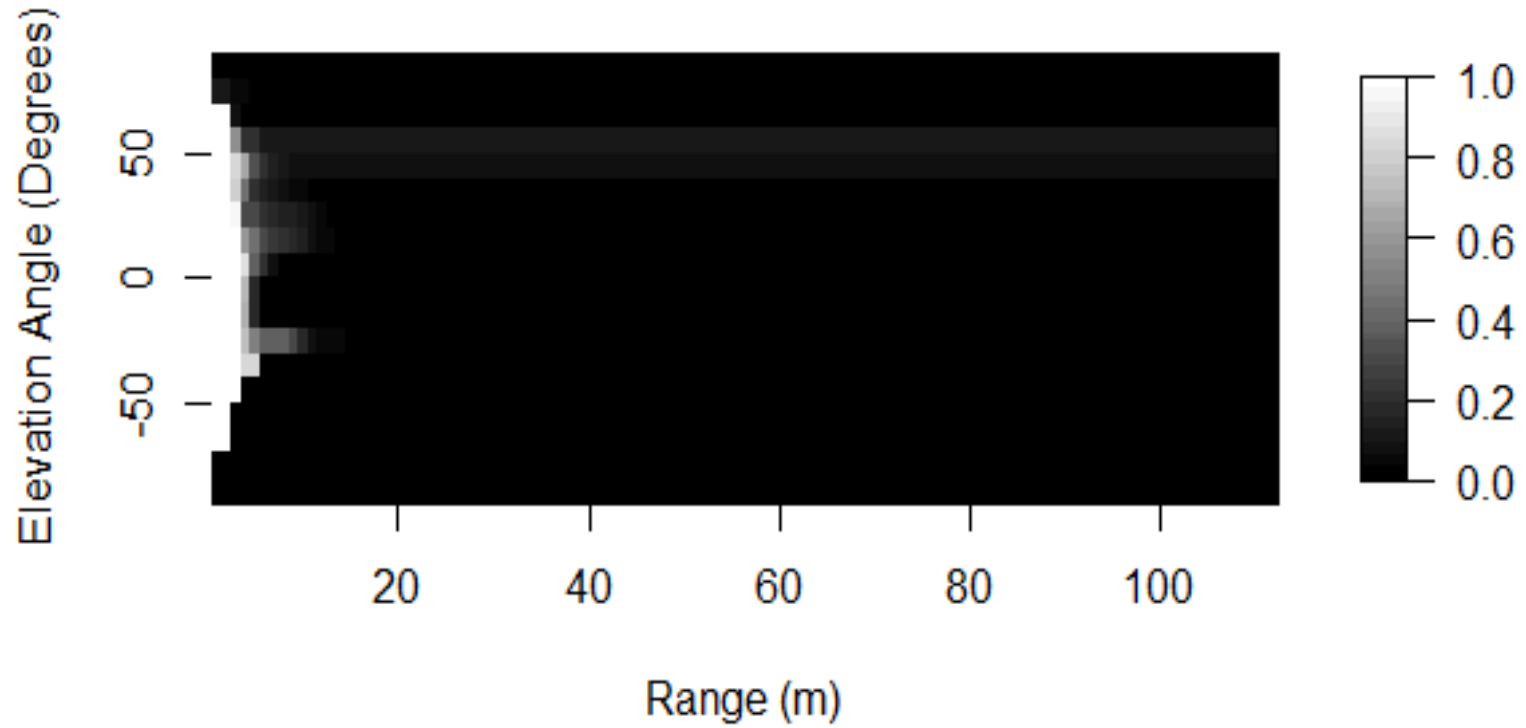
# Individual house exposure analysis



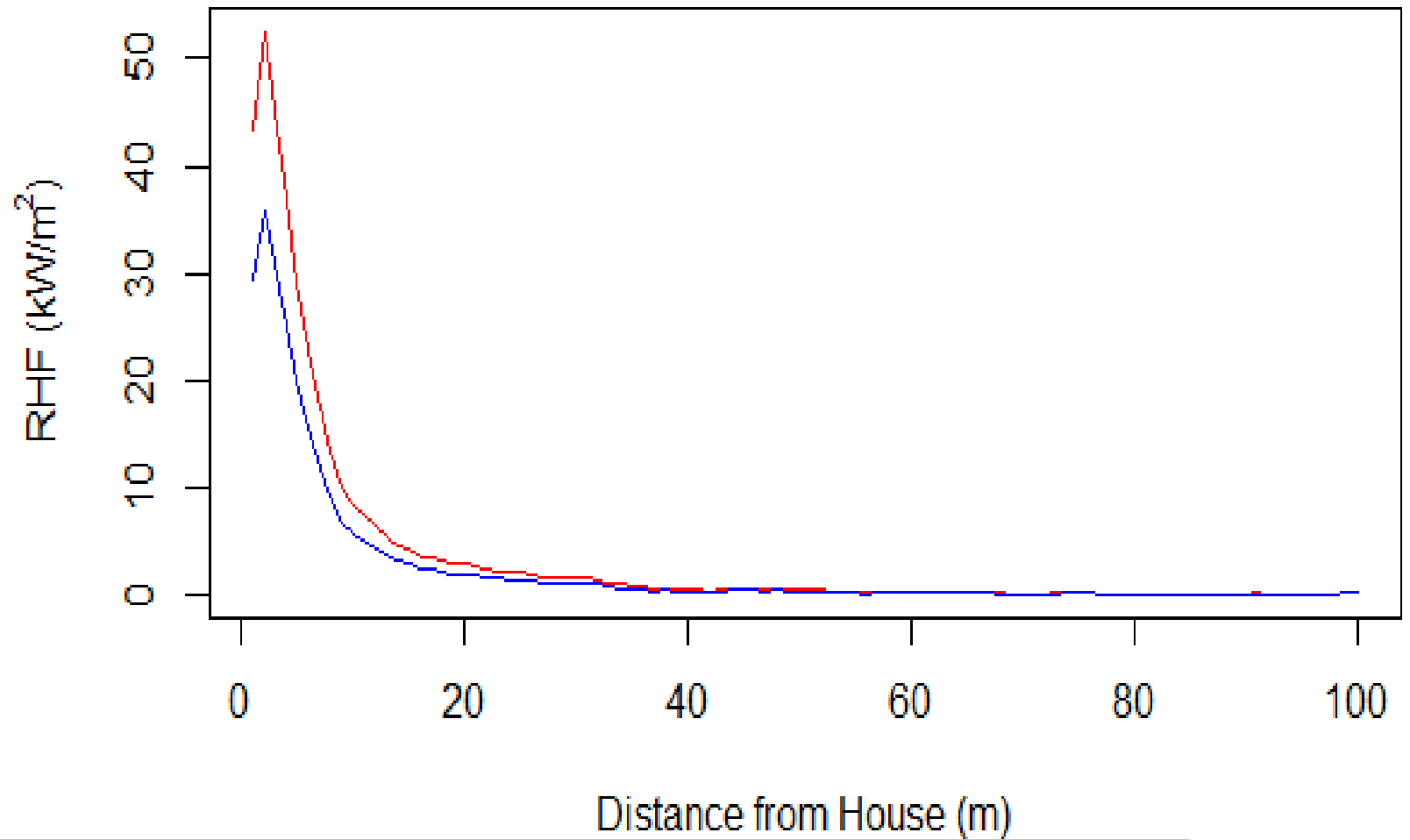


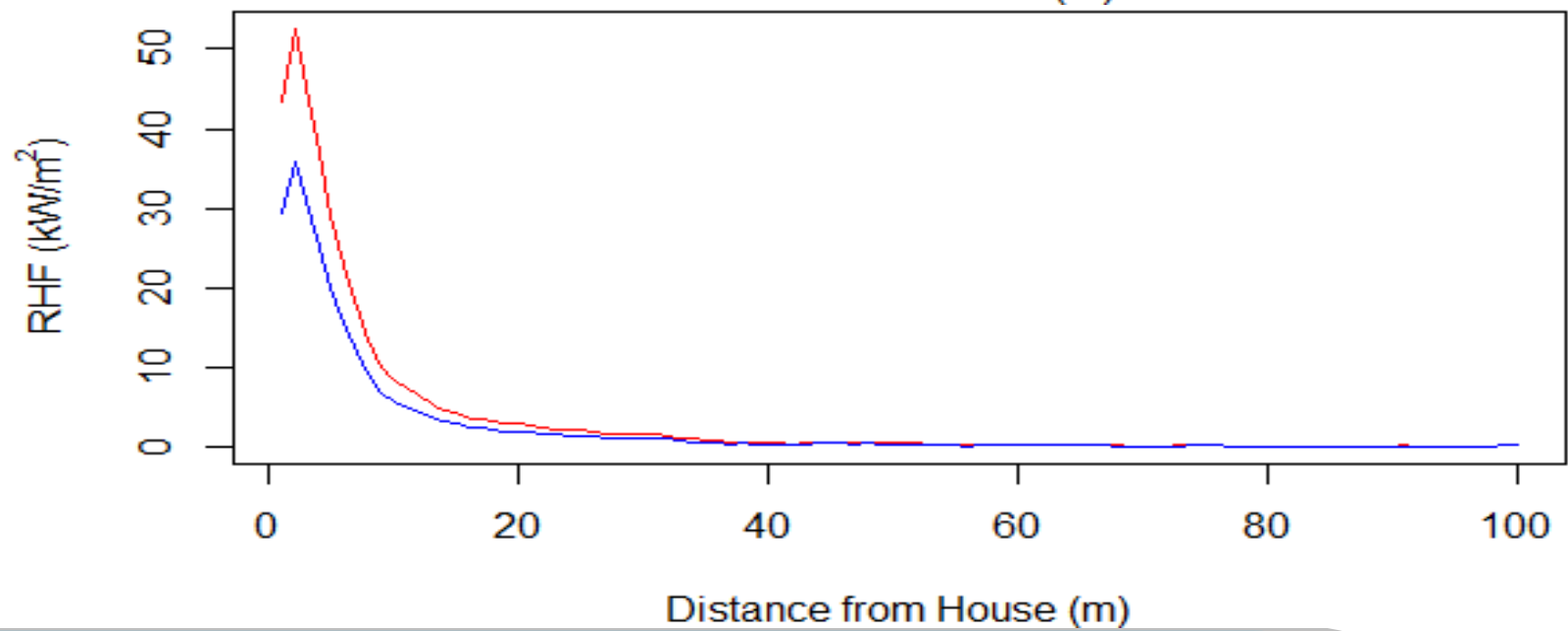
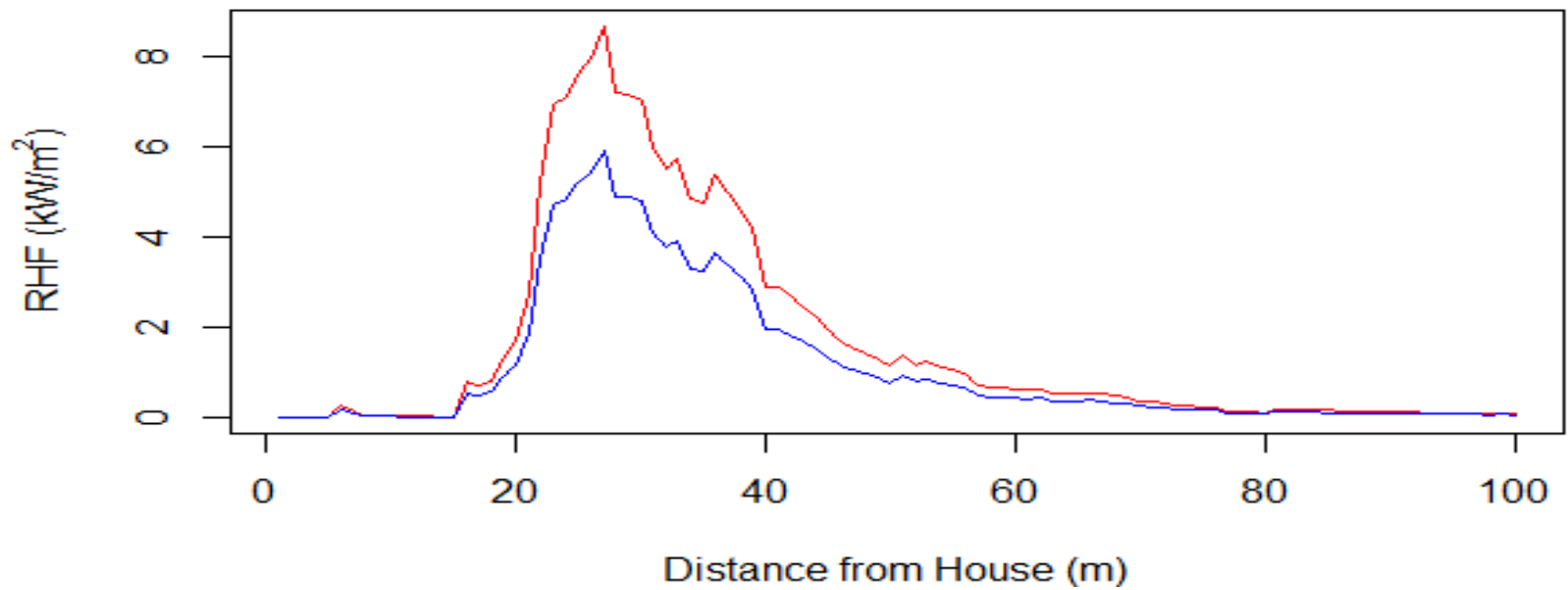
**b)**

## Line of Sight Transmittance

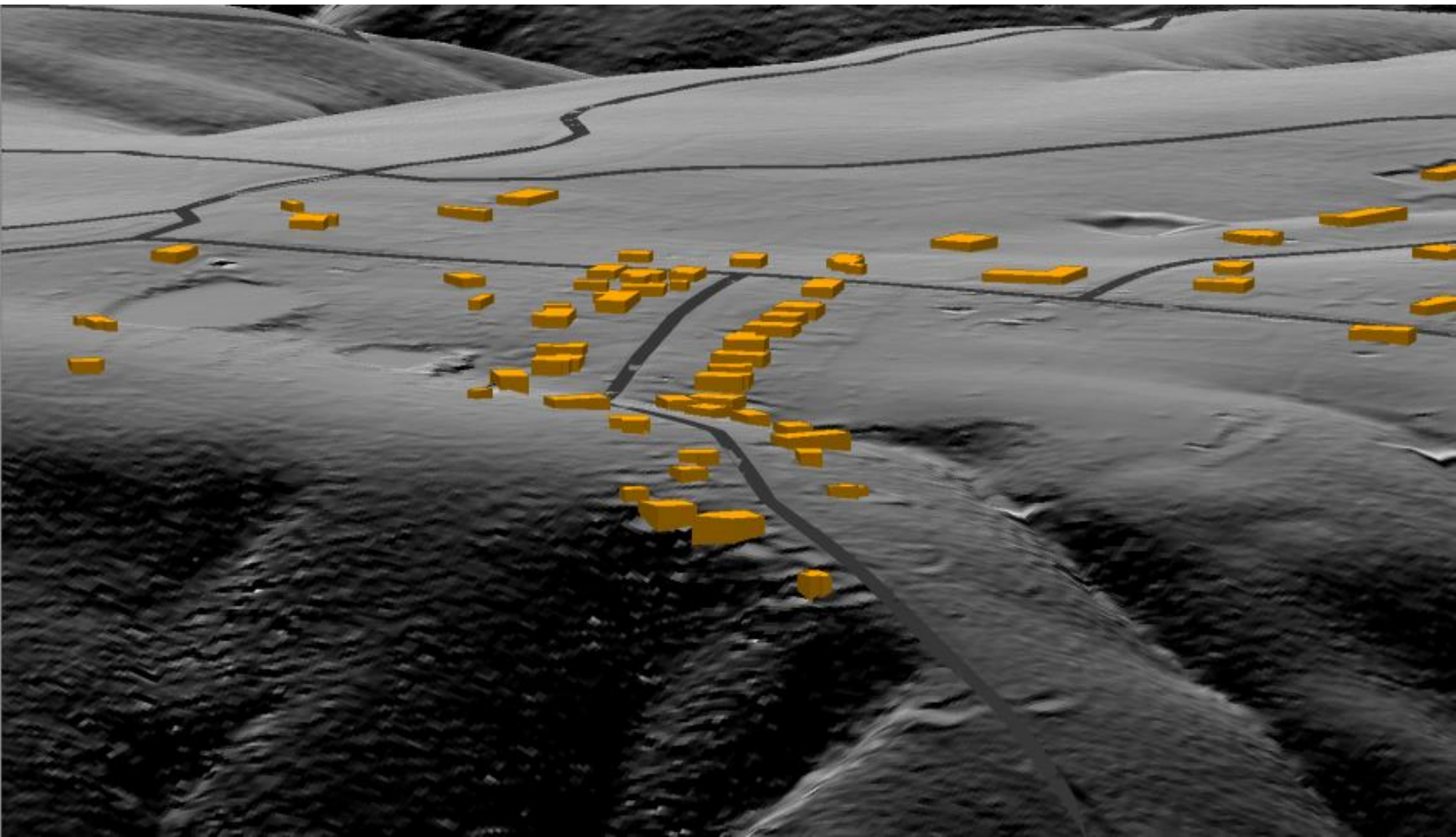




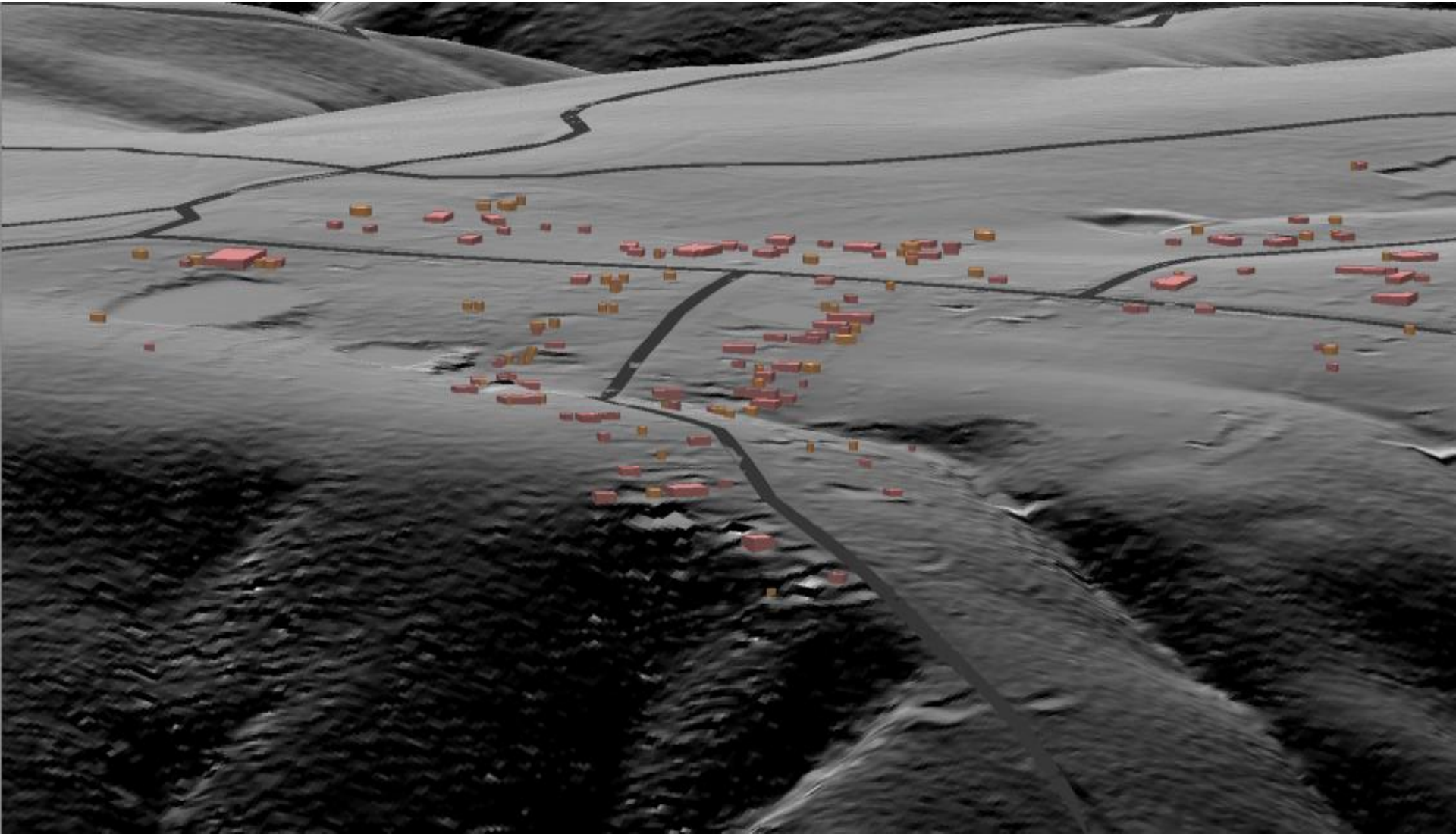




# Residential Buildings

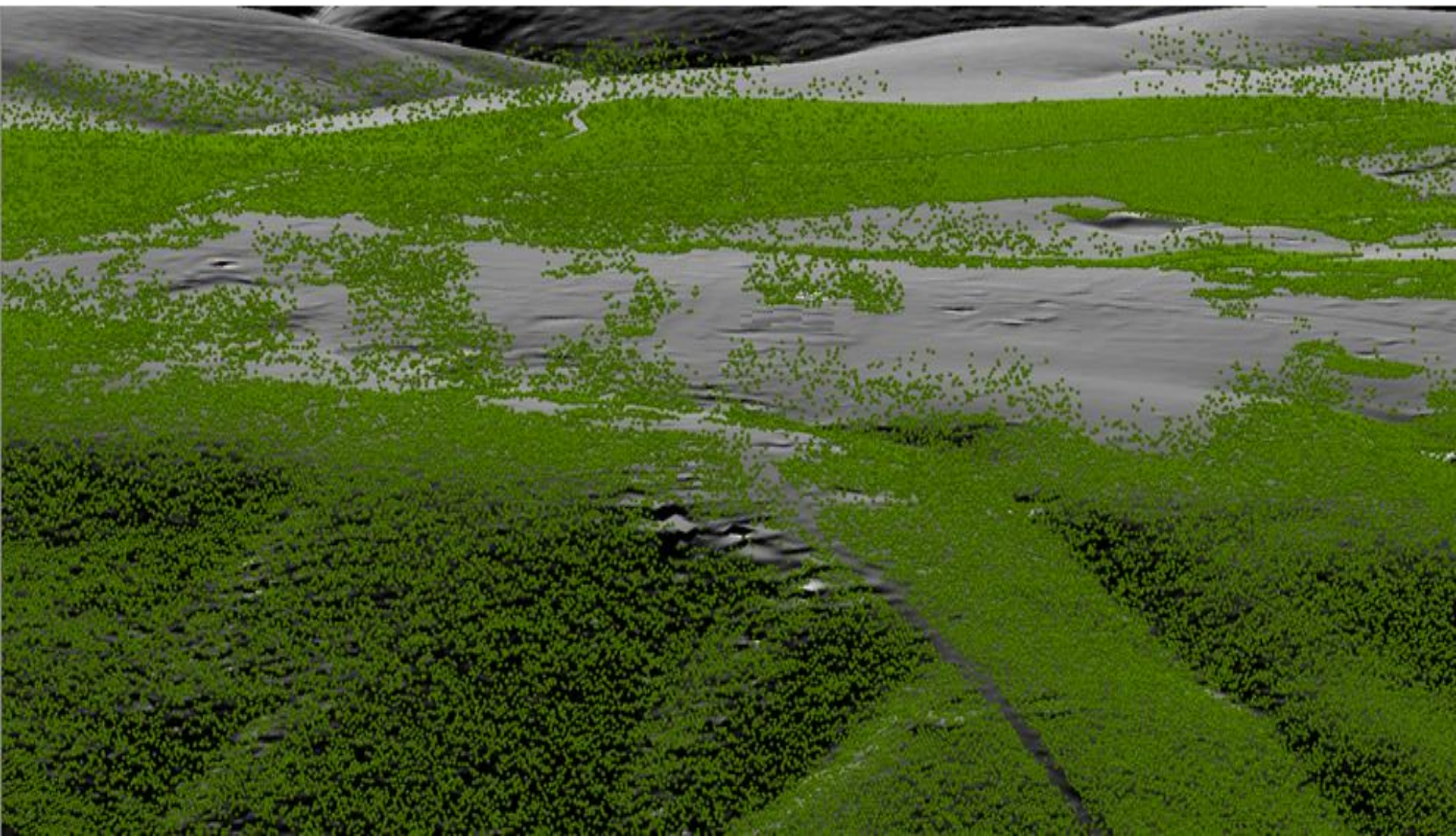


# Out-buildings and water tanks



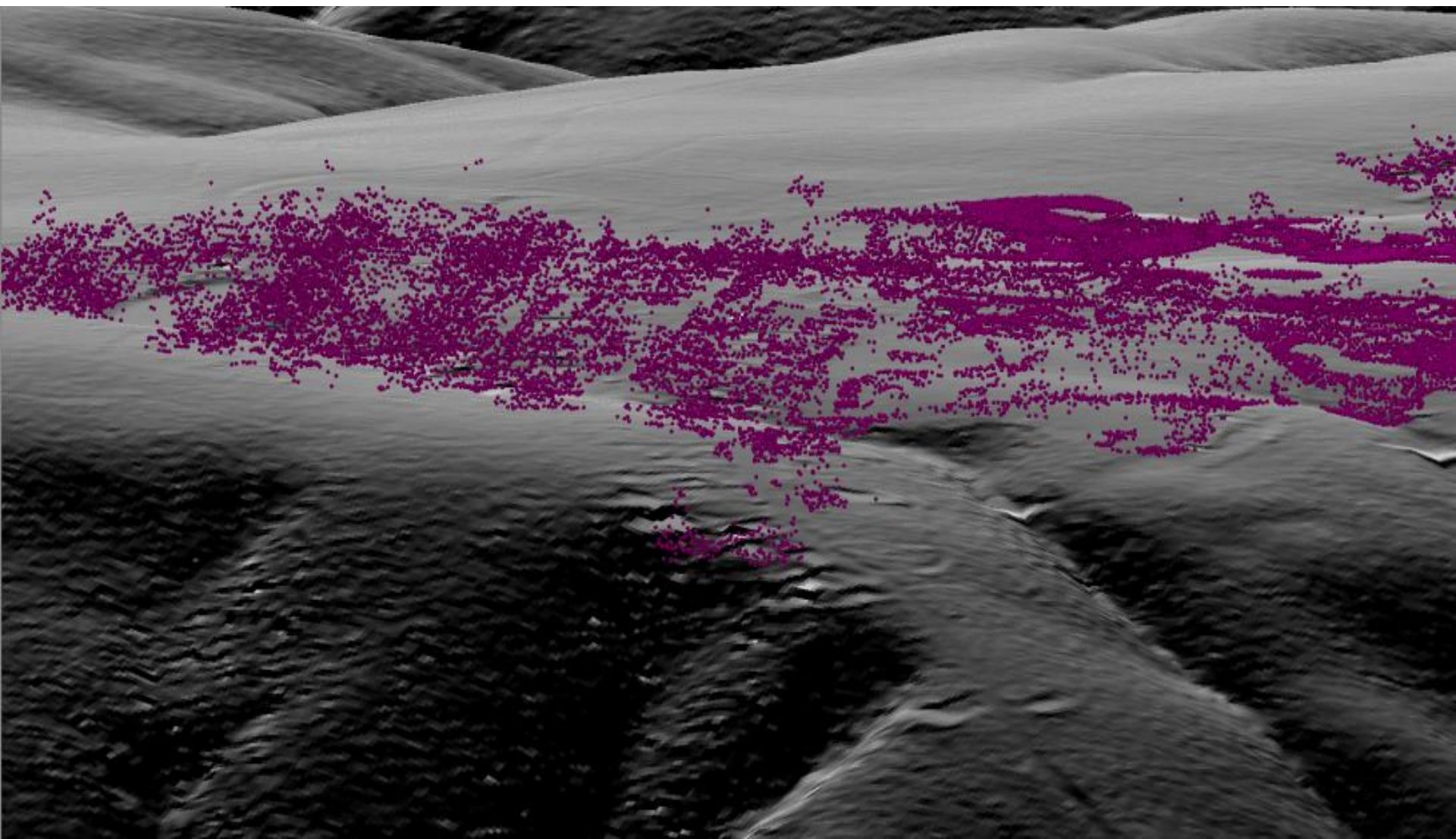


# Unmanaged Vegetation



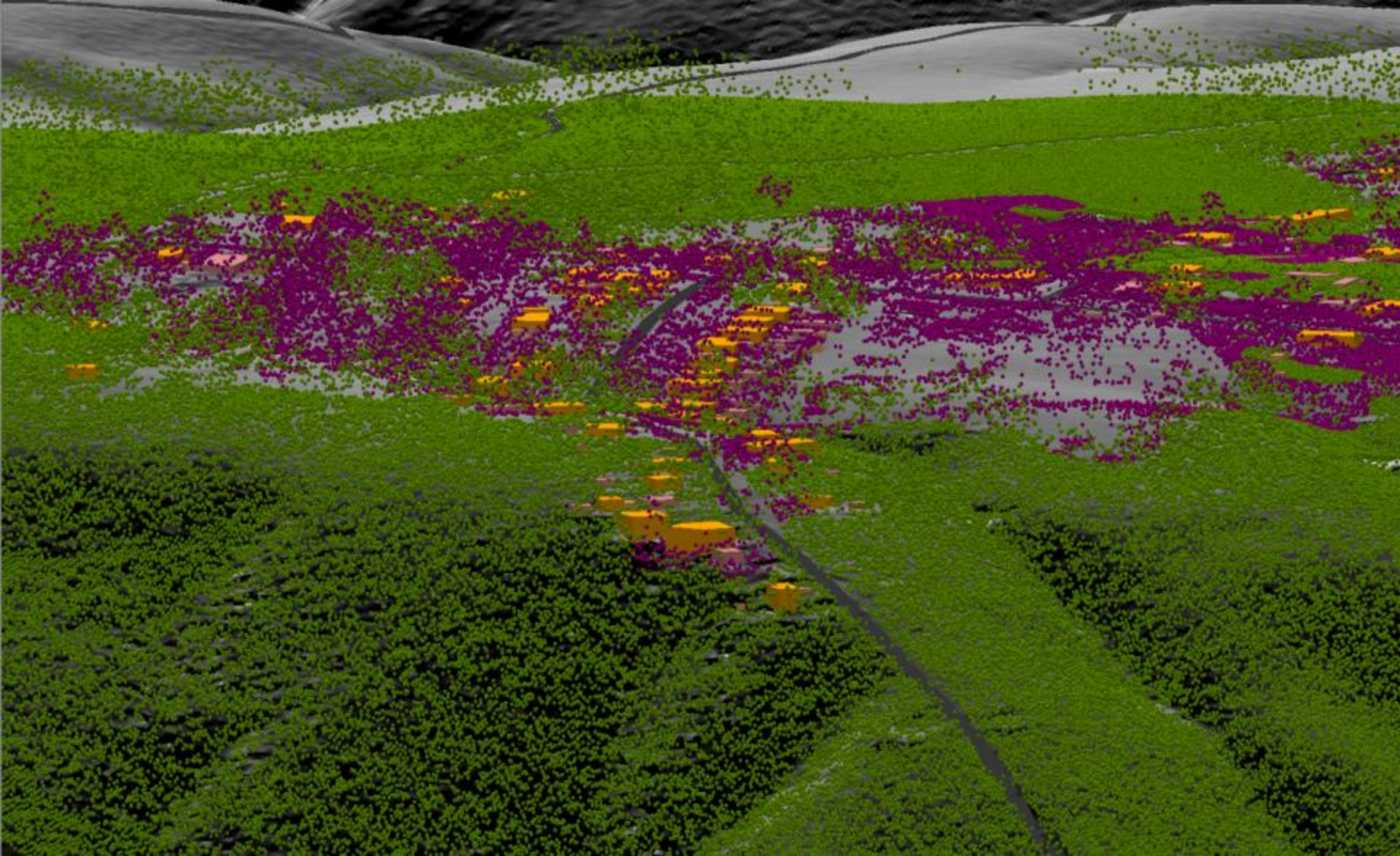


# Managed Vegetation



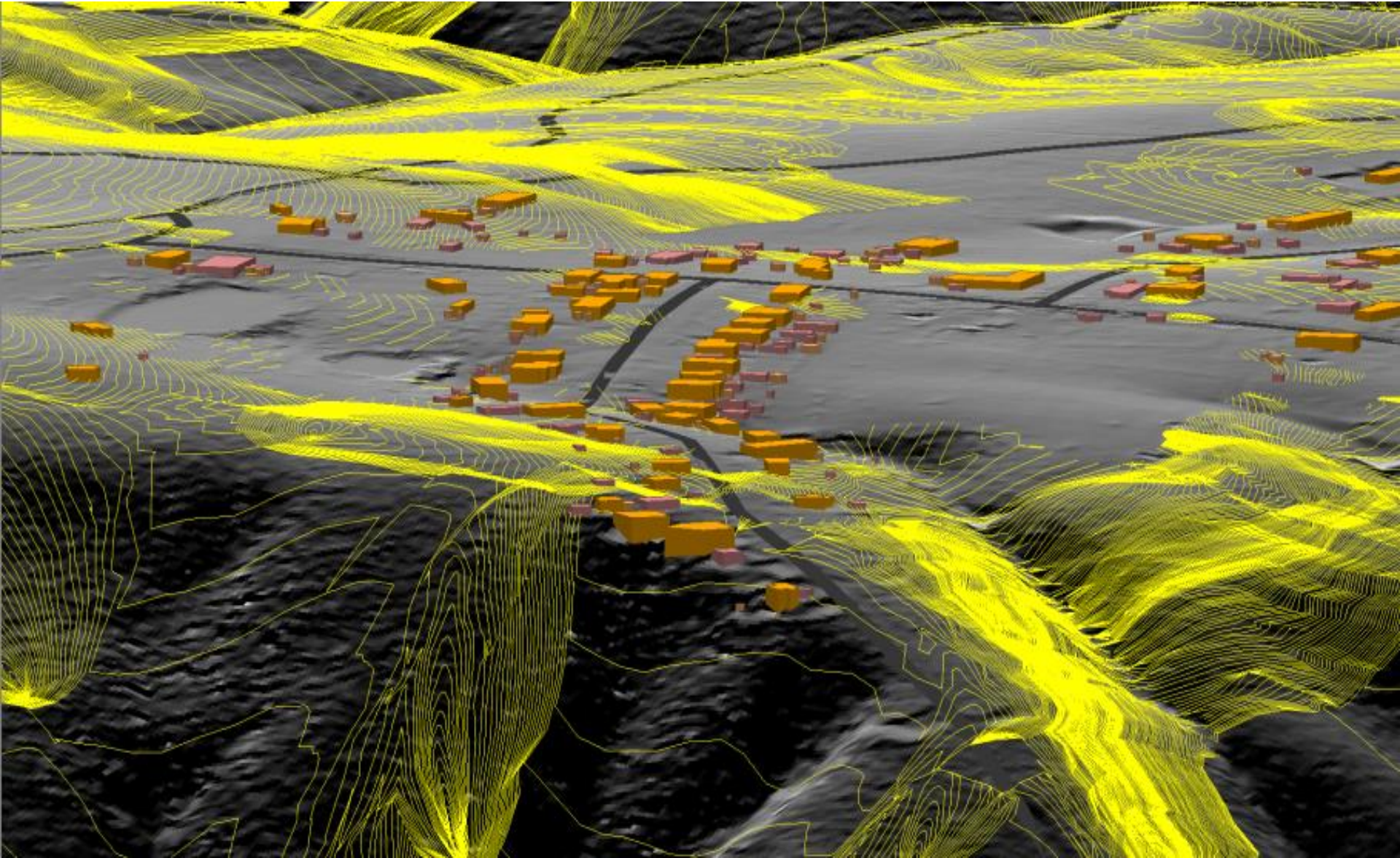


# Aggregated Scene





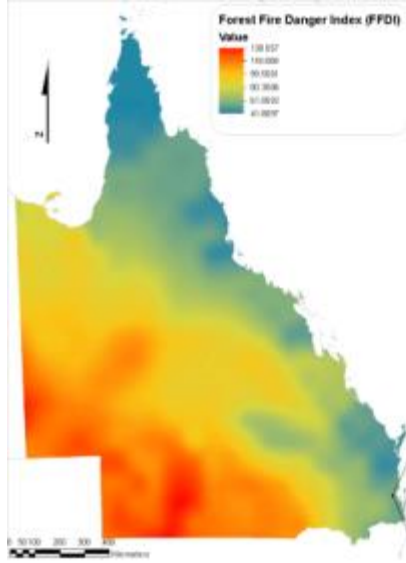
# Fire Arrival & Impact



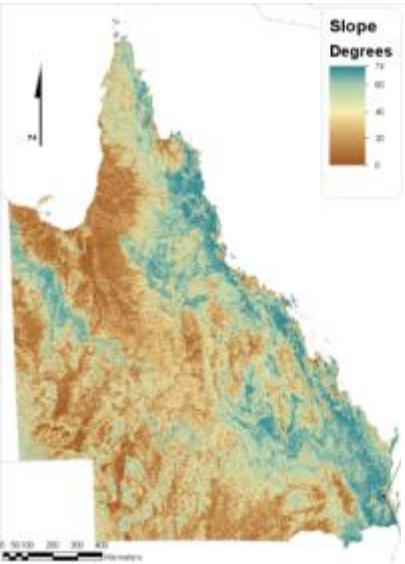


# State Planning Policy Bushfire Hazard Mapping

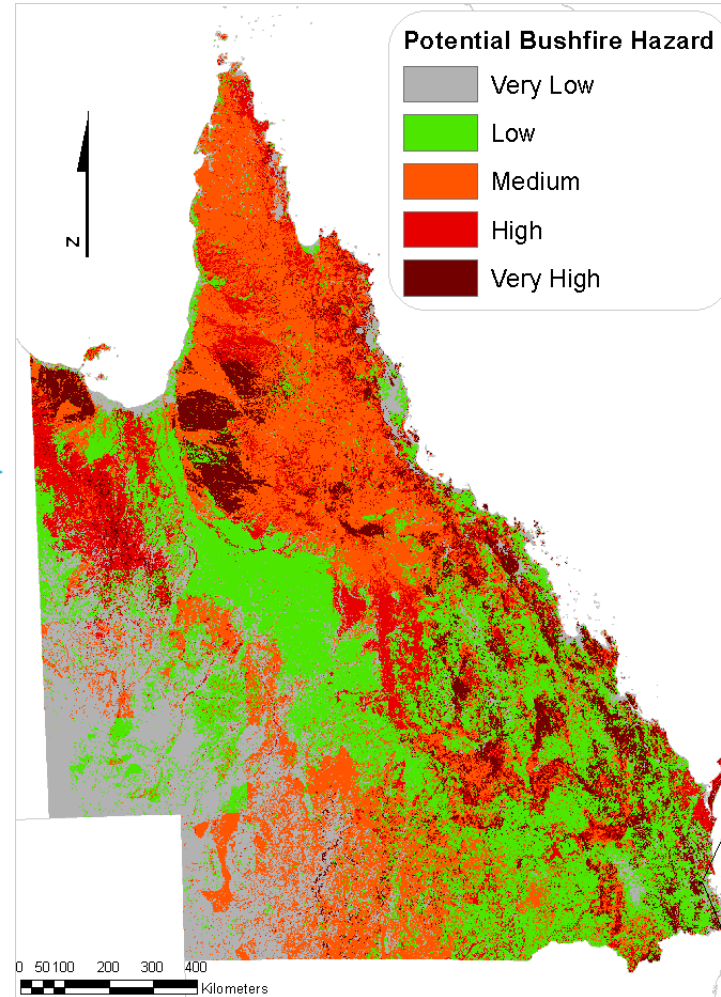
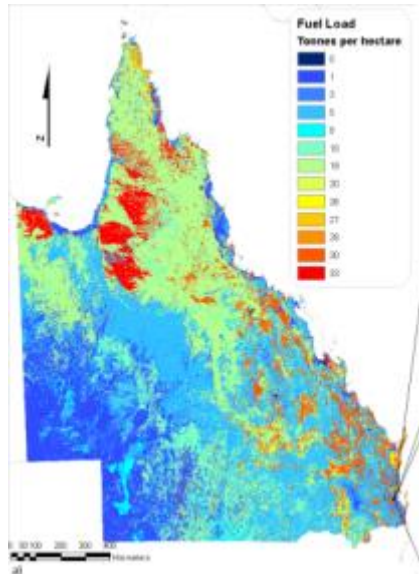
Weather  
Potential

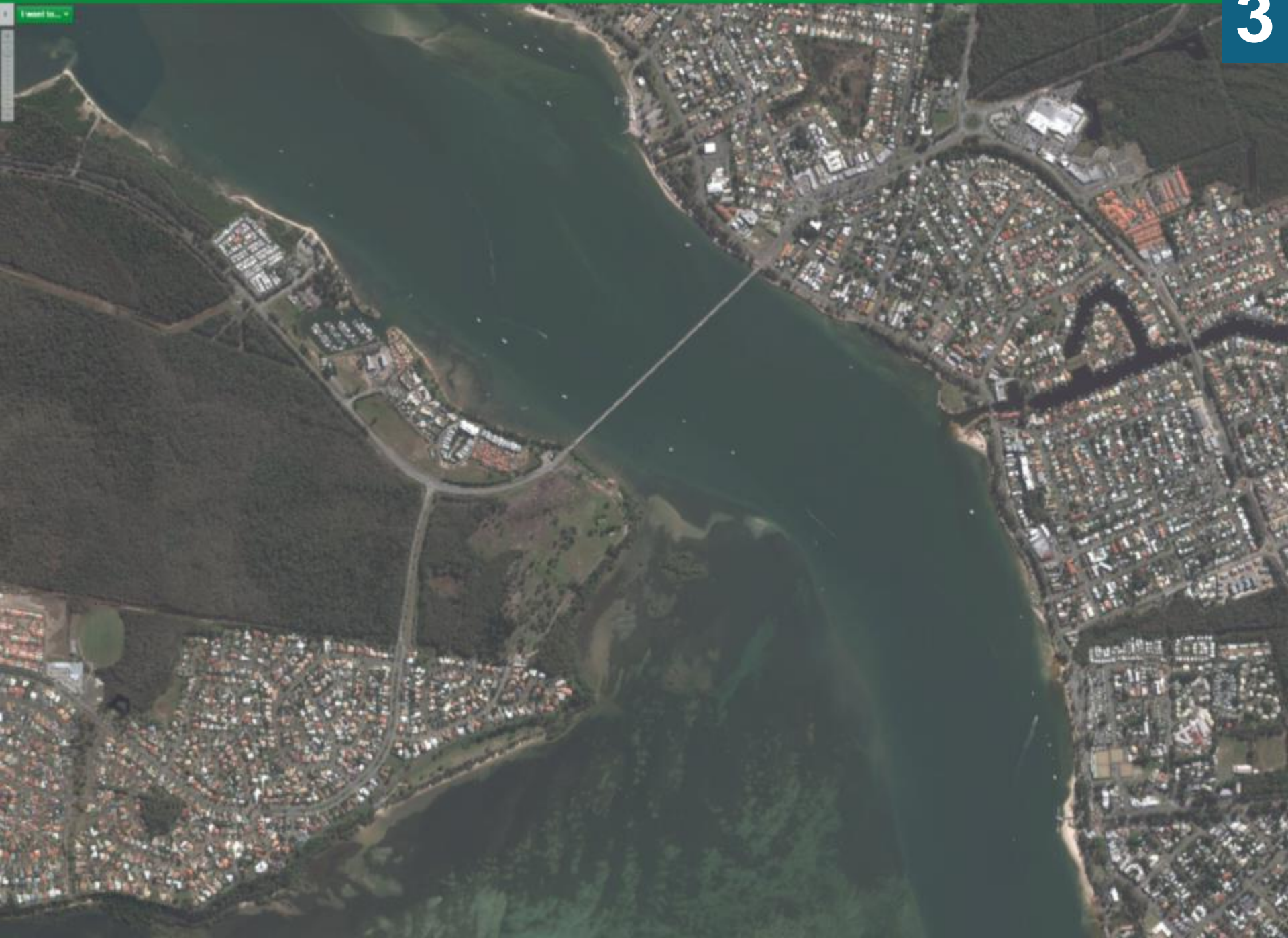


Slope

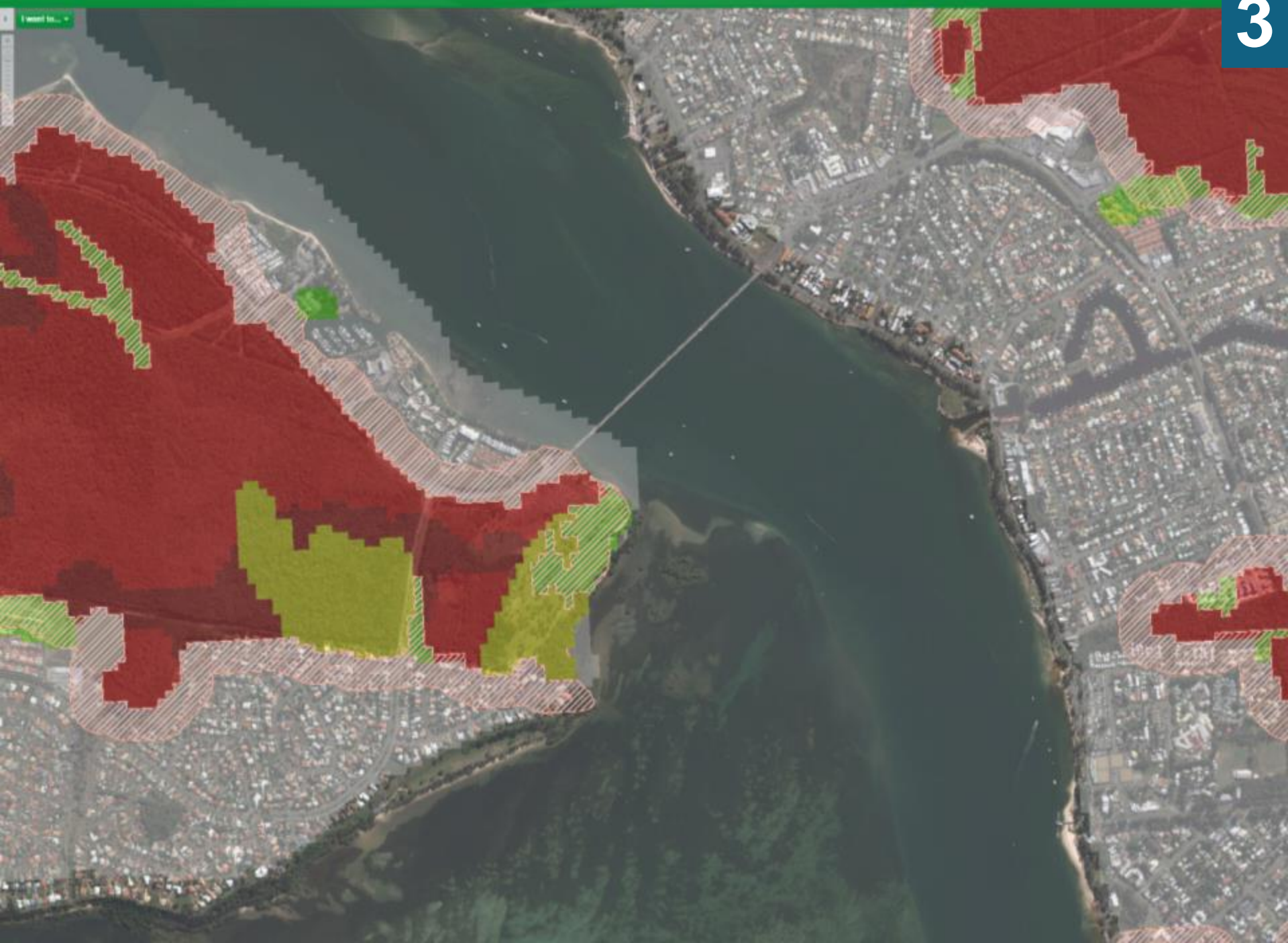


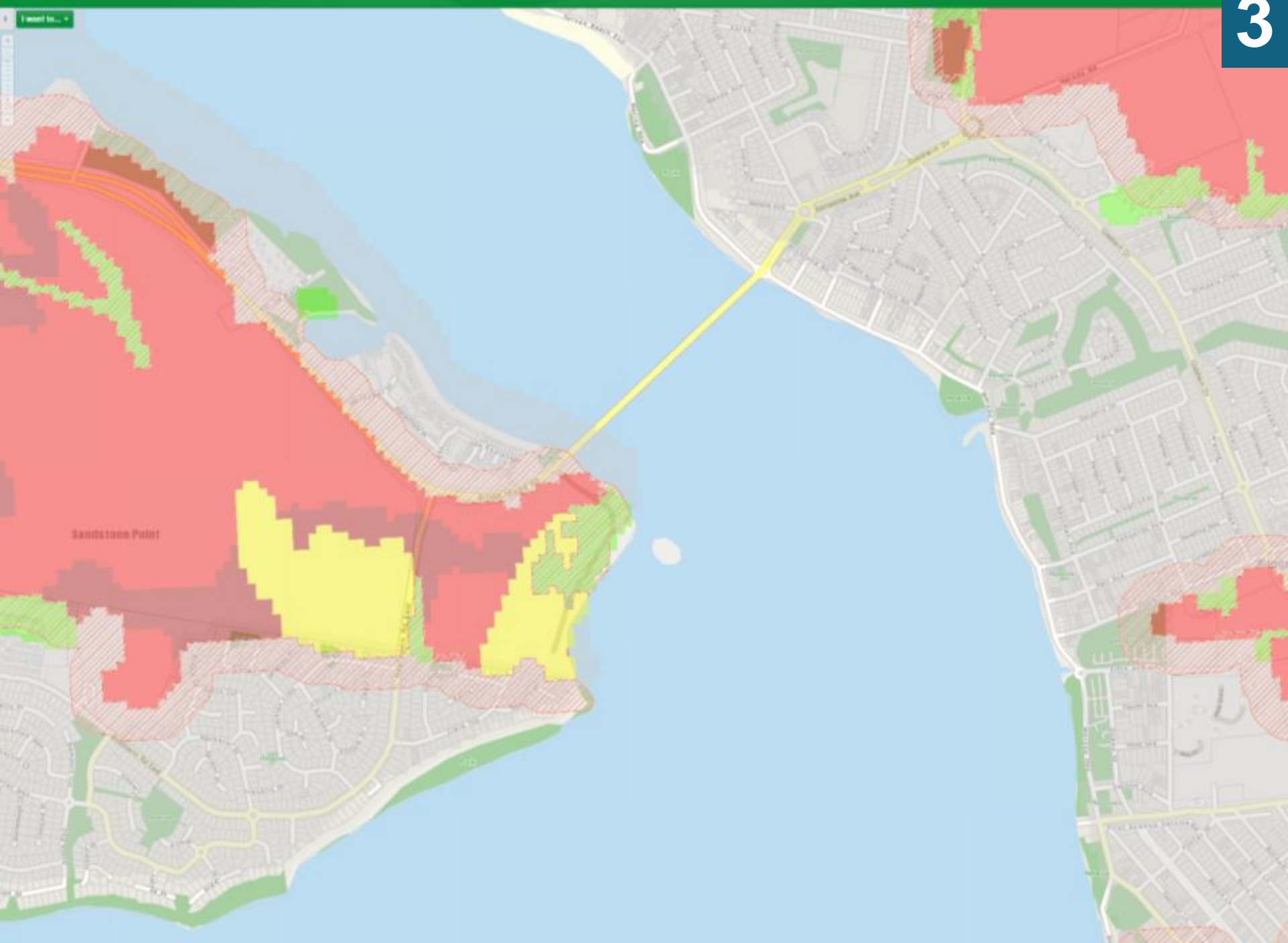
Fuel  
Loads











# Thank you

**Acknowledgement: Some background research was developed in collaboration with the Bushfire CRC, more details on this database can be found on**

<http://www.bushfirecrc.com/resources/research-report/life-and-house-loss-database-description-and-analysis>

## **CSIRO**

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