



# Tall Buildings Network November 2013

## A discussion on Estimated Maximum Loss



## How Insurance Works

- Every Insurer has a maximum capacity (risk appetite)
- Capacity is the financial amount they are prepared to risk on one incident
- This capacity cannot be exceeded
- Where the value at risk is greater than capacity the Insurer has two choices
  - Take a part share in the insurance (write a percentage)
  - Take the whole risk and then reinsure the value above their capacity
- Capacity will be determined by financial strength of the Insurer, their risk appetite, and the type of occupancy (the level of hazard associated with an occupancy)
- An Insurer will always look to write to their capacity



## Full Value versus Estimated maximum Loss

- If capacity is applied to full value, the amount of risk that can be taken is limited (and so is the premium that can be earned)
- If capacity is applied to what Insurers believe is the worst case scenario (Estimated Maximum Loss) then a greater share of the risk (and hence more premium) can be taken
- The majority of Insurers write to Estimated Maximum Loss

## Example

- High rise building total value £500,000,000
- Insurer writes to FULL VALUE and has a £100,000,000 capacity
- Insurer can only accept 20% of the risk (and hence 20% of the premium)
- Insurer writes to EML
- EML has been estimated at 20%
- Insurer can write 100% of the risk (and hence take 100% of the premium)
- DILEMA (and it is a big dilemma).
- Take an optimistic view of potential loss and receive more premium income
- Take a pessimistic view of the potential loss and potentially suffer an EML bust
- An EML bust is extremely bad in the insurance world and has many unfavourable implications



## What is Estimated Maximum Loss (EML)

- An estimation of the maximum loss which could reasonably be sustained from the contingencies under consideration, as a result of a single incident considered to be within the realms of probability, taking into account all factors likely to increase or lessen the extent of the loss, but excluding such coincidences and catastrophes which may be possible but remain unlikely. In deciding the extent of the building(s) or area to be considered for the estimated maximum loss imperforate 4 hour fire walls can be credited. Sprinkler protection and other fixed extinguishing systems are assumed to be out of service but automatic fire detection systems, subject to effective response and maintenance, can be given credit. Fire Service attendance and fire fighting within reasonable expectations and adequate water supplies are also assumed.
- This is Mitsui's interpretation of EML. Other Insurers may have slightly or greatly different interpretations



## Other Phrases

- Normal Loss Expectancy
- Probable Maximum Loss
- Possible Maximum Loss
- Maximum Foreseeable Loss
- Amount Subject
- Impaired EML
- Non-impaired EML
  
- There are many others
  
- These will all have slightly different definitions.
  
- It is a minefield



## Variations (what Insurers do/do not take into account)

- Fire detection
  - Fire Service response
  - Fire walls
  - Fire doors work (or don't)
  - Fire load
  - Multiple seats of fire
  - Spatial separation between buildings (distances recognised can vary between 10 and 50 metres)
  - Natural surveillance / occupancy
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- One thing that is consistent is that most Insurers will assume sprinkler failure (N.B. some Insurers assume the failure of one riser, most the whole system)

If your sprinklers are turned off and a fire starts somewhere in your building, what is the likely outcome?



## What is the Insurers Approach

- Who knows?
- No consistency
- No agreed approach
- No science
  
- For office buildings the traditional approach was something like: “ a fire will destroy two floors and there will be smoke damage on the floor above and water damage below”
  
- There is no science to this whatever the size of the building and in any case it is totally unrealistic for very tall buildings
  
- As an example a very tall pointy building in London has an EML of anywhere between 20% and 70% depending on which Insurer you ask
  
- N.B. Post 9/11 many Insurers defaulted to 100% for high rise buildings: it appears that the Insurance industry has a very short memory.

## Second big question



If a fire spreads to multiple floors, will the structural frame remain intact and will the building actually be salvageable?

If the likely answer to this is “no” then what is the point of working out EMLs anyway?



There is already history



## Things to consider in the assessment

- The cladding provides no resistance to external fire spread
- The Fire Service may not be able to tackle a fire high up a building
- Do the Fire Service understand the complex fire strategy and systems?
- Are we confident that passive fire protections and fire stopping have been adequately installed (and also not compromised)?
- Does the fire load reflect the original Fire strategy (consider residential where there is no control)
- Effect of atria
- Effect of sloping walls on fire spread
- Wind-driven fire
- Complex and inter-reliant active systems
- Multiple occupancy
- Subsequent changes and abuses
- Sprinkler impairments / maintenance (a reason why an area might become unprotected)





## For Discussion

- If a fire starts on the 20<sup>th</sup> floor of a high rise building and manages to spread to the next floor above, is there any way to stop it spreading further?

YES or NO?

- If NO then is this potentially a fire involving the majority of the building and possibly a 100% EML?
- If YES then how far will it spread before it is controlled?
- The Author's viewpoint: A fire is either controlled on the floor of inception resulting in an EML of circa 5% OR the fire is not controlled on the floor of inception potentially resulting in a 100% EML (assuming the structural frame is unsalvageable)
- Why would it be 20%, 50%, 70% or any other figure?

**GOOD LUCK**