

## Mumbai - After The Deluge

*Ian Watt of Concordia Consultancy explores the background and consequences of the Mumbai floods in July 2005 and shares his thoughts on some of the lessons to be learned from Concordia's involvement in losses arising from the catastrophe.*

With the comfort of hindsight the floods that hit Mumbai and much of the state of Maharashtra on Monday 25<sup>th</sup> July 2005 were perhaps a disaster waiting to happen, especially viewed against the backdrop of increasingly unpredictable global weather patterns.

Following on from record rainfall for the sub-continent in May 2004, and coming just a month after similar destruction in the state of Gujarat to the north, the Maharashtra floods may since have been overshadowed by Hurricane Katrina in terms of media coverage and economic scale. The human toll and extent of devastation were nevertheless immense; the cost to the insurance industry significant.

Maharashtra occupies a sizeable chunk of western India, its principal city of Mumbai sprawled across the mouth of the Mithi River on the Arabian Sea. Landward of Mumbai are the flood plains of the Western Ghats, a hill range running parallel to the coastline approximately 30 miles inland, and rising to an altitude of some 1,200 metres.

On Tuesday 26<sup>th</sup> July alone a record 944 mm of rain fell on Mumbai, continuing intermittently throughout the following days. The downpours intensified again on Sunday 31<sup>st</sup> July before eventually relenting the next day.

Many coastal towns and villages were washed away as floodwaters swept down from the hills and rivers breached their banks. More than a thousand perished in the deluge.



In Mumbai itself, the Mithi River swelled and overflowed. An antiquated drainage system, dating back nearly a century, proved hopelessly inadequate, its capacity of 25mm of water per hour dwarfed by the combination of torrential rainfall and inundation from the flood plains. The absence of non-return gates on coastal outfalls simply exacerbated an already critical problem at high tide when drains backed up with seawater.

The depth of flooding varied widely, from two metres to as much as five metres in certain low-lying areas. It is estimated that nearly half of the city was submerged at one point, bringing it to a standstill. With telecommunications interrupted, public transport shut down and airports closed, Mumbai was effectively cut off for several days. All commercial and industrial activity came to a halt. Thousands of workers and schoolchildren found themselves stranded. On the metropolitan rail system alone some 150,000 people were estimated to have been affected.

The Indian Government swiftly pronounced the floods a National Disaster and the state of Maharashtra declared public holidays on 27<sup>th</sup> and 28<sup>th</sup> July. The populace in the affected regions was advised to stay at home while schools and colleges were closed until 3<sup>rd</sup> August.



Concordia has been involved in an advisory adjustment role involving global multi-national covers and we commenced local investigations amid the devastation as soon as access to the city had been restored.

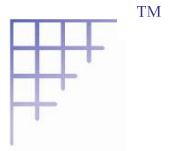
Further flooding occurred within days of our arrival, however, as a high springtide caused the already overloaded drainage system to back up yet again.



Public dissatisfaction with the Government's perceived inactivity manifested itself in civilian demonstrations across the city, no fewer than 16 being staged in a single day. Many criticised the radio and television stations for the lack of public service information. The media blamed the failure of the meteorological agencies to issue warnings and updates, while they in turn pointed the finger at poor resources and a lack of sophisticated equipment.

The truth is that a number of factors have conspired over many years to leave Mumbai increasingly exposed to the risk of catastrophic flooding. These factors include:

- Large scale development and expansion of the metropolitan district which has severely reduced natural drainage in the area
- Failure to implement strategic infrastructure planning
- The absence of effective building controls

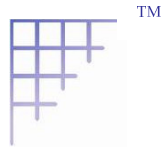


- The loss or obstruction, through development, of natural streams and tributaries of the Mithi River
- The spread of slums across storm drains
- Antiquated drainage systems
- The absence of drainage outfall protection against ingress at high tide
- The construction of housing and industrial developments on known flood plains
- Reclamation and destruction of coastal mangrove swamps

There can be little doubt that the Maharashtra floods have focused government and public attention on the urgent need for wholesale improvements to Mumbai's flood defenses. Unfortunately, there are no short or medium term remedies for the legacy of many years' uncontrolled development which has seen no corresponding enhancement of the city's drainage system. The solution lies in long term strategic planning and development of Mumbai's infrastructure, and the determination of successive governments to see the measures through.

Until then, what lessons can be drawn from the experience?

Insurers and reinsurers must contemplate the likelihood of further serious flooding in a region where substantial metropolitan areas are already vulnerable and construction on flood plains continues, fuelled by the demand for urban development. Such issues are already addressed in the UK through research and selective underwriting measures.



As for claims professionals, and loss adjusters in particular, we can make an important contribution to the risk control and assessment processes through our close involvement in the site investigations and reinstatement. It is the adjusters who are on the scene after an event and who are therefore suitably placed to:

- identify unsatisfactory aspects of the risk,
- provide our Principals with detailed information on the risk through comprehensive reporting, and
- recommend and encourage solutions and/or measures to alleviate adverse risk features.

Seen in the above light, the Maharashtra floods provide an opportunity for insurers, reinsurers, policyholders, and everyone else involved in the risk transfer process, to take stock and to ensure that they are better prepared against future events.

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