The Arup Fugro Joint Venture (AFJV) was commissioned by the Hong Kong Government to undertake a natural terrain hazard study of the area most affected by the storm (approximately 18.5 km²). The AFJV was supported by GeoRisk Solutions. The study involved developing a methodology for prioritization and selection of the three natural landslide catchments for detailed assessment. Given the size area and the short timeline (6 months), the approach adopted was engineering geomorphological mapping based on aerial photograph interpretation (API) at a scale of 1:2,500.

The individual components of the map, which formed a key output of the study, were developed sequentially. These comprise morphological mapping, superficial geological mapping, and drainage line map. These maps were then used to interpret landslide and study terrain units. Emphasis was placed on the identification of fans and areas of high landslide activity (distressed terrain). Based on the mapping, conceptual models were developed to assist with hazard identification. These various components were then combined to generate the final engineering geomorphological map.

A severe rainstorm occurred in Hong Kong on 7 June 2008. The storm was centred over western Lantau Island and had a peak hourly rainfall of 322 mm. The rolling 4-hour rainfall exceeded a return period of 500-1000 years. The storm triggered over 2,400 landslides on Lantau Island. In particular, large (up to 10,000 m³) and long runout (up to 1 km) channelized debris flows were generated. The landslides resulted in numerous road links being severed and many homes being temporarily evacuated.

The key hazard in the area is channelized debris flows, particularly given the fact that many coastal settlements have been located on fans and debris fans. Consequently, the methodology utilized mapped fans as surrogates for areas potentially affected by relatively high magnitude, low-frequency channelized debris flows. Such hazards are considered under-represented in the existing landslide datasets in Hong Kong. A combination of landslide susceptibility based on existing landslide database and terrain units, combined with fan activity, was used as a basis for the derivation of a hazard matrix and a hazard map. This was subsequently combined with facilities to allow catchment risk ranking for detailed assessment, and where appropriate, mitigation measures.