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Cleaning up urban areas after tephra fall: considerations for modelling and contingency planning

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Volcanic eruptions impact urban communities by disrupting transport systems, contaminating and damaging buildings and infrastructures, and are potentially hazardous to human health. Coordinated clean-up operations have demonstratively reduced the impacts that urban communities can experience. Therefore, prompt and effective clean-up measures are an essential component of an urban community's response and recovery to volcanic eruptions. However, clean-up operations are seldom considered within volcanic response or contingency plans. In order to provide a starting point for communities exposed to tephra fall to begin planning for clean-up, we present the key considerations for planning clean-up operations based on a global review of clean-up operations. These considerations cover a wide range of contexts (e.g. eruption size, duration, urban fabric, and infrastructure dependencies) so that communities can adapt advice for their specific local setting. We then use this information to develop a model to assess the volume of tephra to remove during clean-up operations, as well as the potential cost and duration of eruptions within the Auckland Volcanic Field. Finally, we suggest that our approach can be undertaken to assess the potential clean-up requirements in other cities around the world exposed to tephra fall.