

30th Report of the Scientific Advisory Committee on Montserrat Volcanic Activity

Meeting held 24-27 November 2025. Issued March 2026
at the Montserrat Volcano Observatory, Montserrat

Summary Report: Soufrière Hills Volcano current status, Hazard and risk assessment and implications for governance

The activity at the Soufrière Hills Volcano remains low and is broadly consistent with levels of unrest observed since 2019. Most indicators of volcanic activity continue to slowly decrease in intensity or rate, while earthquake activity still remains on the higher end of what has been recorded since 2012.

Our collective interpretation is that:

- There is still evidence that the deep magmatic system at Soufrière Hills Volcano remains active, meaning that **a future resumption of eruptive activity in the coming years cannot be excluded.**
- There is **no evidence that a resumption of eruptive activity is impending. Detectable precursory activity would be expected before any restart.** We consider it most likely that any restart in volcanic activity, such as magmatic explosion or lava extrusion, would present precursory signals that would be identified as such by the MVO and would allow effective risk mitigation actions such as the closing of Zone V.
- At the current broad level of volcanic activity, we identify **two main potential scenarios for generating 'out-of-the-blue' eruptions that could affect areas of Zone V:**

(1) **Lava dome collapses** can occur years, decades, or millennia after volcanic activity is over, sometimes triggered by intense rainfall, shaking by regional earthquakes, and/or weakening by hydrothermal activity. We estimate the **probability of such an event in the next year to be 0.05% (or a 1 in 2000)** chance. This is considered a very conservative value and uncertainties on this low probability scenario are high, spanning approximately two orders of magnitude. In a general sense, dome collapse events would tend to be directed towards the NE, i.e., towards the Tar River valley (probability of 42%), followed by the North (35%), followed by the SW towards Plymouth (9%).

(2) **Phreatic explosions** are gas-driven explosions sourced from shallow levels within the volcanic system and do not involve new magma. They can form from upward

migration of volcanic fluids into a hydrothermal system or shallow aquifer and they commonly occur with few, if any, precursors. Such explosions remain possible at SHV, even without a resumption of a significant eruptive period. However, the impact of such sudden explosions is usually limited to areas within 1 to 2 km from the source vents.

Taken together, the probability of an ‘out-of-the-blue’ event large enough to impact people in Zone V (i.e., lower or mid reaches of the Belham valley, Plymouth or St George's Hill) without recognised precursory activity at least three hours beforehand is extremely low. We estimate it is 1 in a million for any 24-hour period, to 1 in 3 million for a given 8-hour work day, bearing in mind the large uncertainty on these values. For comparison, this risk of fatality for a given individual due to such an event is **broadly comparable to that from other natural hazards faced by Montserrat, such as hurricanes or regional earthquakes.** Risk levels of this order are deemed to represent “negligible risk” based on UK CMO risk scale.

Scenarios for the coming year and overall trend

In spite of the continued low-level unrest, the most likely scenario over the next year is that no significant surface activity occurs (probability of 84%). Less likely scenarios for the first significant event in the next year include explosive activity, lava dome collapse, or quiet resumption of lava extrusion (each less than 5% chance).

As the time since the last eruptive activity has extended, there has been increased confidence in the volcano remaining quiet (albeit still in a state of unrest), with some levelling off of this trend seen since 2018. The other three scenarios (resumption of lava extrusion, dome collapse and explosive eruption), have been perceived to become less likely through time.

Implications for Zone V and Development

There is no sign that volcanic activity at the surface will reactivate soon. Thus, there is the possibility of considering the short to medium term use of, and access to, some areas in Zone V where the hazard level is considered very low.

Areas like the Tar River Valley and the immediate surroundings of the dome, remain clearly high risk and should continue to be treated as such. **However, over short- and medium-term planning horizons, some areas within Zone V present volcanic risk levels comparable to other accepted natural hazard risks in the Caribbean region.** A zoning framework distinguishing broad low-hazard areas from higher hazard areas, as well as identifying locations requiring site-specific assessment would enable transparency and consistency in decision-making and reduce reliance on ad hoc access determinations.

The MVO currently provides operational monitoring support for access to Zone V by alerting partners of any short-term changes in volcanic activity. This service contributes to providing safety advice, to the extent possible, to workers and visitors in Zone V.

‘Out-of-the-blue’ eruption scenarios that cannot be mitigated by the MVO operational support for access to zone V are *highly unlikely, but remain plausible*. As such, ‘out-of-the-blue’ eruptions should be considered amongst the volcanic hazard scenarios that are discussed and planned for on Montserrat. Any decision-making about **access to Zone V hinges on the capacity to respond to, and the mitigation measures in place relating to, ‘out-of-the-blue’ events** and their potential areas of impact.

The re-opening of St. George's Hill for tourism, represents a significant change in terms of access and oversight support needed from the MVO. Proposed tourism developments at St George’s Hill do not conflict with current volcanic conditions. However, expanded access increases human exposure and reinforces the need for structured workplace safety assessments and close operational engagement with MVO during all stages of planning and execution of developments.

Recommendations:

R1. MVO to prioritise the completion of an integrated hazard map that indicates zones of highest or least hazard which would allow identification of the high and low risk areas or activities (as suggested above), and support planning decisions based on broad areas, rather than on a request-by-request basis.

R2. GoM to determine whether an area-based hazard zoning (micro-zonation map) within Zone V would be useful.

R3. GoM to consider the implementation of mandatory workplace volcanic risk assessments for Zone V access. This would help systematise the evaluation procedure by the Government of Montserrat for access Zone V, it gives structure to the thinking around the hazards and effective mitigation or control measures, and it could help the Government of Montserrat carry out due diligence in overseeing access permissions.

R3. GoM to continue to engage MVO early in further tourism and development planning in areas requiring access to Zone V, and maintain emergency preparedness capacity for low-probability but sudden-onset events

MVO Institutional and Strategic Risk

The current MVO contract runs from 2024-2029 extendable for two further years. We remain concerned about the absence of a long-term funding structure for the MVO that avoids the problems experienced in recent years which impacted staff contracts. **The existing tender process has real and tangible negative impacts on the operation of the MVO** (documented in SAC 28 and SAC 29), an entity made up of an experienced team of highly specialised staff, whose functionality is dependent on continuity. The uncertainty that renewal and short contracts have on the securing specialised staff is a major issue. For four years, it was not possible to recruit staff on long-term contracts, having a knock-on effect that impacted the roles of the Seismologist and Hazard and Risk Officer positions - positions that are key to the operation of the MVO. The current

MVO contract structure works against continuity of high-level professionals working at the MVO and must be avoided in the future. **It undermines MVO's capacity not only to respond in a crisis, but also to contribute to the risk assessments and operational support necessary for the development of activities in zone V and other parts of the island.**

Overall, the current UK Government approach to the management of MVO creates institutional vulnerability that increases systemic risk. The UK Government needs to consider the liability and risks associated with making MVO staffing and processes precarious through regular tender procedures, even with the current 5 year +2 year model.

Recommendation:

R3. FCDO to establish long-term funding and governance stability for MVO which is needed for stability. Given the fundamental and long-term need to assess and mitigate volcanic risk on Montserrat there should be a legal requirement that the UK properly supports a long-term, effective volcano observatory. SAC reiterates the offer to work with the FCDO in London to investigate alternative models and prepare an evidence-based case for changing the current management model going forward.

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