Ground Truth - Alpine Fault

Brief overview:

Visible from space, the Alpine Fault is the world's longest terrestrial straight line. It dominates New Zealand's South Island, and is one of the most consistent major fault lines on the planet. It is also overdue.

The AF produces a M8 rupture every 300 years, nearly to the dot, a remarkable feature for a fault line. The last rupture was - without a doubt - in 1717. The event is expected to produce up to 8 meters of horizontal movement and 1.5m vertical, along with several minutes of intense shaking. It will upend New Zealand's society, economy and geography.

The capital city, Wellington, is expected to be hit hard during this event, but this essay focuses instead on the West Coast of the South Island. This is where the fault runs, and this is also the country's tourism breadbasket. During an earthquake, international visitors will be confronted with a cataclysm that their tourism operators have (often deliberately) avoided discussing.

Someone will have to be found liable, and the clock is ticking.

NZ's disaster context:

The country is still reeling from the 2011 Christchurch earthquake, which produced the strongest ground shaking ever attributed to an earthquake. It is at the front of the national psyche.

More recently, an eruption at Whakaari/White Island killed several tourists, and the legal fallout saw a state-run science organisation face charges. The organisation is in charge of monitoring volcanic activity, and had increased the risk rating before the eruption.

Tourism operators still took visitors to the island. This has set the precedent that in the event of a major earthquake, both the companies involved and the scientists who study the hazard could face charges, which is something that disaster responders will have to contend with.

Social context:

New Zealand is especially sensitive when discussing quakes. Many Christchurch locals blamed scientists for not warning them of the 2011 risk, even though the fault that ruptured was previously unmapped. This has created an air of mistrust, and in the wake of an AF rupture, communications teams will have to tread very carefully.

The West Coast of the South Island is of particular note, as it is a notoriously wild area of the country. A single highway - SH6 - runs the length of the coast, and a total of three mountain passes connect it to the rest of the country. All of these passes are expected to be cut off during an earthquake, and many sections of SH6 are expected to fail. This area is also one of the

country's biggest tourism draws, with over a million people passing through the glacier town of Franz Josef (pop. just 500) every year.

While the West Coast locals are resilient and well-prepared, many of these tourists have no idea of the risky nature of the area, and locals on the coast are financially incentivized to downplay the risk to avoid losing tourism dollars.

Economic concerns:

The West Coast is a microcosm of the entire country, being reliant on both the tourism and dairy industries. Raw material extraction is also paramount. Because tourism is so important on the coast, locals are incentivized to attract as many people as possible to this hazardscape: one dominated by shaking, flooding and slope failure.

Locals cannot afford to lose any tourists, as the pandemic lockdown already forced many businesses to close. However, in the fallout of an earthquake, who is going to pay to rebuild townships that deliberately voted to avoid taking risk-mitigation strategies? Where will central government allocate their funds: to the capital city, or to the remote, minute towns of the West Coast?

Political:

New Zealand's Parliament runs on three-year terms, meaning that there is very little time for a sitting party to enact long-term policy. This is especially true when planning for a future disaster: a topic that is both socially unpopular and costly. As it stands, there is no official plan for what to do in the event of an earthquake.

Groups like Civil Defence and AF8 have their own plans and educational initiatives, but this topic has never been one of national debate in a political sense. That being said, when this earthquake occurs, someone will be Prime Minister, and they will have to contend with the buck-passing of PMs prior. The fallout will almost decidedly be catastrophic, meaning that whichever party happens to be in charge during the event could see a slide in the polls for years to come, even though a lack of planning may in no way be their fault (pun intended).

Finally, some background on Franz Josef, the setting of our story:

Franz Josef is located directly on the surface trace of the fault, and is home to around 500 residents. It is a major stop on the West Coast tourist pilgrimage, and swells to a few thousand people during peak season. The locals are well-prepared and resilient, but their guests are ignorant of the risk and unprepared.

The town is also flanked by an oversteepend hill, with enough sediment on the calving face to bury the entire town in an instant. The Waiho River has been steadily filling with sediment and gnawing away at the township, costing millions in repairs over the years. The SH6 bridge over

the river has been washed out several times in floods, severing the only arterial connection on the coast.

An earthquake is expected to form landslide dams in many west coast river gullies, including the Callery Gorge, a tributary of the Waiho. If this dam forms and fails, the resulting flood could devastate the township. Finally, the town's only petrol station is located directly on the fault line, offering a risk of conflagration.

It is a township in the crosshairs of disaster, and it is brimming with blissfully ignorant international visitors.

There is a near-guarantee that something quite similar to what you're about to read will happen in our lifetimes.