



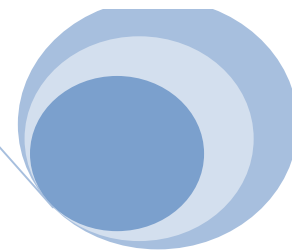
Ministry of Planning & The Economy



UWI



SEISMIC RESEARCH CENTRE



TRINIDAD AND TOBAGO SEISMIC MICROZONATION STUDIES PROJECT

PROJECT BRIEF

OVERVIEW

Both Trinidad and Tobago are susceptible to earthquakes, the impact of which can be intense and widespread. Implementing mitigation measures and reducing vulnerability are proven mechanisms for reducing the potentially devastating impact of future strong and major earthquakes. The application of building codes and appropriate land use policies are most effective when applied at the planning and design stages of projects. However before such mitigation measures can be applied, the seismic hazard has to be quantified at the national and local scale. **The Trinidad & Tobago Seismic Microzonation Studies Project**, which seeks to establish and maintain a seismic microzonation database in Trinidad and Tobago, is crucial to the implementation of effective disaster risk reduction measures for earthquakes in Trinidad and Tobago. It caters for the production of maps that detail the different levels of a specified geotechnical hazard that may be triggered by an earthquake.

PROJECT TERMS

A 10-year project implemented by the UWI Seismic Research Centre (SRC). Funded by the Ministry of Planning and the Economy through the Town and Country Planning Division, the project is estimated to cost TT\$11 Million dollars.

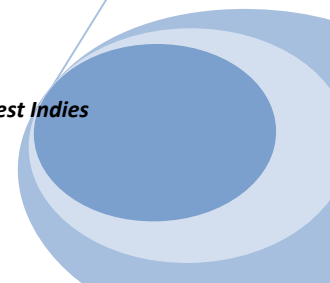
PROJECT OBJECTIVES

To perform microtremors measurements and seismic refraction tests in select areas in Trinidad and Tobago, for use in technical microzonation studies.

MAJOR RESULTS

1. Microzonation maps that provide values on the fundamental periods or basic response of soil layers to vibration and/or the variation of such response i.e. amplification for a certain frequency range of motion due to earthquake shaking at the local scale for ten cities/towns in Trinidad and Tobago.
2. A foundation database of building and site response characteristics.
3. Creation of a catalogue of microtremors and seismic refraction surveys in Trinidad and Tobago.

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FREQUENTLY ASKED QUESTIONS

WHAT IS SEISMIC MICROZONATION?

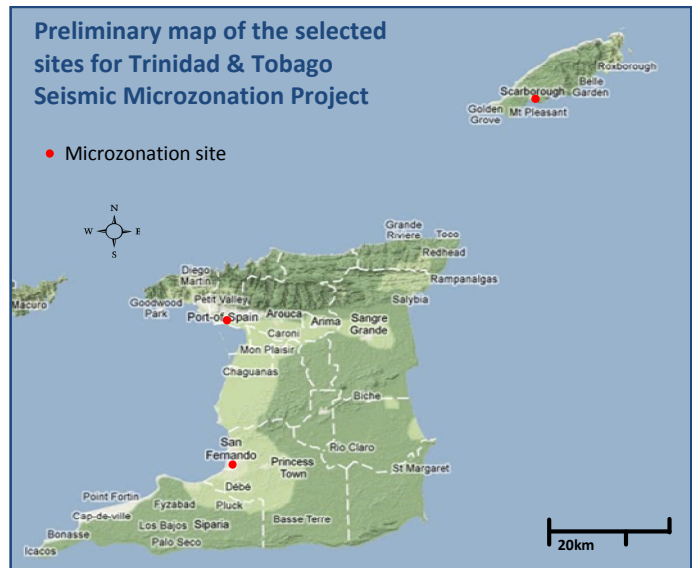
Seismic microzonation is the process of generating detailed earthquake hazard maps for a small area such as a city or town as opposed to a whole country. Sites are subdivided into zones based upon the identification of seismic hazards such as ground shaking, liquefaction susceptibility, landslide and rock fall hazard.

HOW WILL THIS PROJECT WORK IN TRINIDAD & TOBAGO?

Seismic microzonation studies will be conducted in ten different cities/towns throughout Trinidad and Tobago resulting in detailed earthquake hazard maps for each city/town. This information will be useful for disaster managers, insurance companies and land use planners.

WHY IS SEISMIC MICROZONATION NECESSARY?

Local geology and soil composition play an important role in determining how the ground may respond during an earthquake. For example, buildings that have been constructed on sites with soft soils such as clay deposits or reclaimed land generally experience stronger effects during an earthquake than those built on bedrock. The site response to the ground motion caused by an earthquake may therefore vary in different locations within the same city depending on the local geology. For this reason, a regional seismic hazard map showing the overall value for individual countries may not provide sufficient detailed seismic hazard analysis for a specific site within a city or town. This information is important for countries which are vulnerable to earthquakes such as Trinidad and Tobago.



WHAT ARE THE BENEFITS OF THIS STUDY?

The general benefits include a better understanding of the potential for and spatial distribution of seismic hazards, and a rational basis for planning and policy making regarding mitigation of those effects. For example, a seismic microzonation hazard map can be used as a preliminary screening tool for choosing sites for essential facilities such as hospitals and fire stations. These maps can also be used to help predict effects on existing facilities, to allow ranking of priority areas or structures such as schools and lifeline facilities (power generation plants, reservoirs etc.) in terms of seismic vulnerability, thus providing a rational basis for distribution of funds for upgrading, retrofitting and other remediation efforts. In addition, seismic microzonation information could be incorporated into building codes to improve seismic design of new structures in terms of local site effects.¹

¹ Klohn-Crippen Consultants Ltd. for the Earth Sciences Task Force, Resources Inventory Committee. *Preliminary Seismic Microzonation Assessment for British Columbia*. (1994)