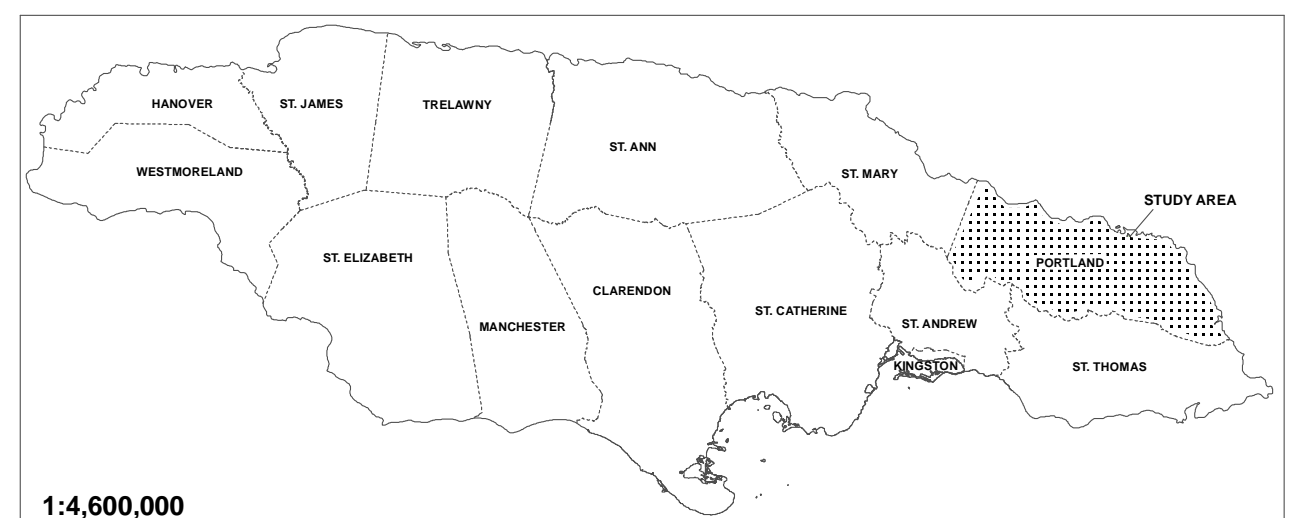
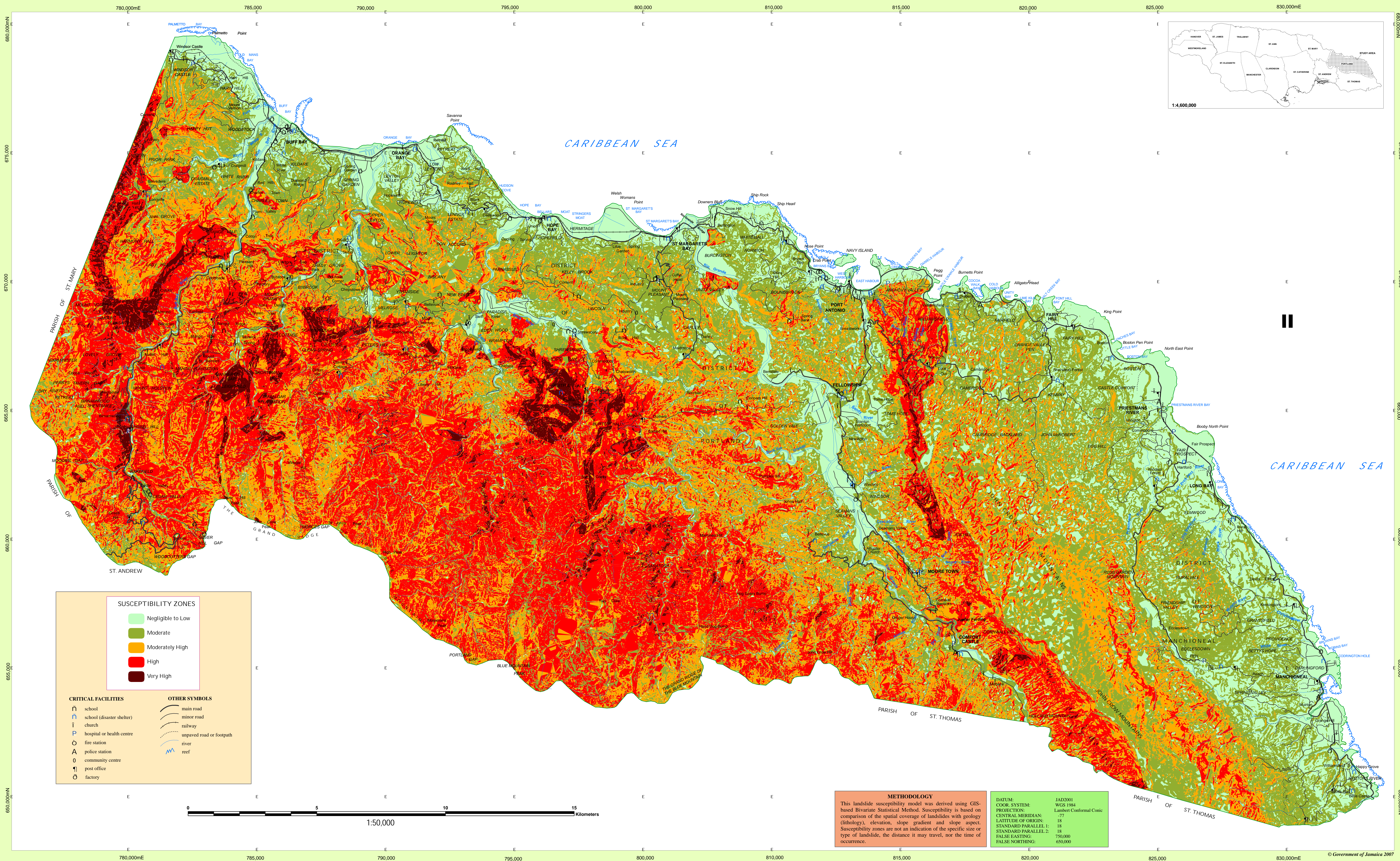


# LANDSLIDE SUSCEPTIBILITY OF PORTLAND, JAMAICA



- CRITICAL FACILITIES**
- school
  - school (disaster shelter)
  - church
  - hospital or health centre
  - fire station
  - police station
  - community centre
  - post office
  - factory
- OTHER SYMBOLS**
- main road
  - minor road
  - railway
  - ungraded road or footpath
  - river
  - reef

**METHODOLOGY**  
This landslide susceptibility model was derived using GIS-based Bivariate Statistical Method. Susceptibility is based on comparison of the spatial coverage of landslides with geology (lithology), elevation, slope gradient and slope aspect. Susceptibility zones are not an indication of the specific size or type of landslide, the distance it may travel, nor the time of occurrence.

**DATUM** IAD2001  
**COORD. SYSTEM** WGS 1984  
**PROJECTION** Lambert Conformal Conic  
**CENTRAL MERIDIAN** 77  
**LATITUDE OF ORIGIN** 18  
**STANDARD PARALLEL 1** 18  
**STANDARD PARALLEL 2** 18  
**FALSE EASTING** 750000  
**FALSE NORTING** 680000

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## LANDSLIDE SUSCEPTIBILITY ZONES - GUIDELINES

<p><b>NEGLECTIBLE TO LOW LANDSLIDE SUSCEPTIBILITY</b></p> <p>Fifteen percent (15%) of the parish is classified in this zone. It encompasses those areas showing the lowest influence of the predisposing factors for landslides. The alluvial deposits on the flood plains of river valleys and those along the southern coastline are in this zone. The steep slope of the John Crow Mountains and the eastern coastal terraces also show this level of landslide susceptibility. Landslides are almost absent in this zone except for rare river bank failure along steep-sided channels in alluvial deposits.</p> <p>Where this zone is adjacent to zones of higher landslide susceptibility, the direct influence of landslides may be experienced. Landslide material originating from sources within the relatively higher zones may be deposited within this zone of negligible to low landslide susceptibility e.g. debris flow deposit coming to rest on a flood plain. Secondary effects of landslides may also be experienced in this zone. For example, flooding could occur behind a barrier created by landslide deposit that has choked a fluvial channel (landslide dam) or partially blocked the flow causing a diversion of the stream.</p> <p>Considering the landslide susceptibility, development should be encouraged in this zone. As pertaining to slope instability, detailed geotechnical assessment is generally not required. However, human influence can generate slope failures. Development should still proceed according to the applicable planning guidelines established for these areas.</p>	<p><b>MODERATE LANDSLIDE SUSCEPTIBILITY</b></p> <p>Twenty-eight percent (28%) of the parish is classified in this zone. The predisposing factors for landslides should proceed according to geological and geotechnical advice. This is important, especially if these large-scale developments are sensitive developments. All development should consider drainage control measures (e.g. control of roof runoff from buildings and drainage ditches in fields) and simple slope stabilization measures (properly supported cuts in slopes, contour farming on slopes, etc.).</p> <p>Large- and small-scale developments can be promoted within this zone. However, large-scale development should proceed according to geological and geotechnical advice. This is important, especially if these large-scale developments are sensitive developments. All development should consider drainage control measures (e.g. control of roof runoff from buildings and drainage ditches in fields) and simple slope stabilization measures (properly supported cuts in slopes, contour farming on slopes, etc.).</p> <p>Both small- and large-scale development can be facilitated in this zone but is dependent on site-specific engineering geological studies which are highly recommended. The recommendations of the same should be strictly adhered to. Sensitive developments should include a critical analysis, which includes a slope stability analysis. Suitable drainage and slope stabilization measures are highly recommended. Drainage control includes the capture, control and proper disposal of roof runoff from buildings on slopes. Proper and adequate road drainage should be installed during road construction. Agricultural activity, especially on clay-rich soils banking moderate to steep slopes should consider a network of drainage ditches. Slope stabilization and protection in agriculture includes contour farming practices, and the use of trees with highly dense root systems to encourage soil support. For structures, deep cuts in slopes should be retained and foundations depth should be commensurate to penetrate sound and stable substrate.</p>	<p><b>MODERATELY HIGH LANDSLIDE SUSCEPTIBILITY</b></p> <p>Twenty-six percent (26%) of the parish is classified in this zone. This zone is distributed all over the parish, but concentration occurs in western valleys, the western side of the Rio Grande Valley and on the extreme upper slopes of the Blue Mountain. Small landslides are dominant in this zone, but a high frequency of large landslides can be expected, correlating with prolonged or intense rainfall or moderate to large earthquake events.</p> <p>Both small- and large-scale development can be facilitated in this zone but is dependent on site-specific engineering geological studies which are highly recommended. The recommendations of the same should be strictly adhered to. Sensitive developments should include a critical analysis, which includes a slope stability analysis. Suitable drainage and slope stabilization measures are highly recommended. Drainage control includes the capture, control and proper disposal of roof runoff from buildings on slopes. Proper and adequate road drainage should be installed during road construction. Agricultural activity, especially on clay-rich soils banking moderate to steep slopes should consider a network of drainage ditches. Slope stabilization and protection in agriculture includes contour farming practices, and the use of trees with highly dense root systems to encourage soil support. For structures, deep cuts in slopes should be retained and foundations depth should be commensurate to penetrate sound and stable substrate.</p>	<p><b>HIGH LANDSLIDE SUSCEPTIBILITY</b></p> <p>Twenty-eight percent (28%) of the parish is classified in this zone. The upper slopes of the Blue Mountain and the eastern side of the Rio Grande Valley fall within this zone. Both small and large landslides are dominant in this zone and may occur frequently, correlating with prolonged or intense rainfall and moderate to large earthquake events.</p> <p>Large-scale development and major infrastructure works should be avoided. Installation of protective or stabilization works may prove uneconomical making projects unfeasible. Developments within this zone will require occasional intervention and it may prove economical to relocate when possible.</p>	<p><b>VERY HIGH LANDSLIDE SUSCEPTIBILITY</b></p> <p>Three percent (3%) of the parish falls in this classification. These areas show the strongest influence of the predisposing factors of landslides. Spatially, the zone occurs in patches, mainly concentrated in the middle of the parish and along the eastern side of the Rio Grande Valley. Catastrophic landslides are possible at all times. Development is strongly discouraged and where communities exist, they should be encouraged to relocate.</p>
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## GENERAL NOTES

**\*Sensitive Development**  
Developments on which strong dependence is placed for the social and economic survival of the parish. If these become inoperable or inaccessibility over a period of time, there can be a negative impact of the depending sectors. These developments include electrical power plants, electrical and cellular communication transmission towers, major arterial roads connecting large population centres, water supply mains and pump stations, etc.

**DISCLAIMER**  
The landslide susceptibility map should be used as a guide, providing the user with an understanding of the potential for landslide occurrence. It does not indicate a time component or the specific size and type. It should not be used for site specific purposes. However, it is recommended that site-specific engineering geological advice should be sought in the Moderate to Very High susceptibility classes.

**RECOMMENDED CITATION**  
Mines and Geology Division, 2007. Landslide Susceptibility of Portland, Jamaica. Ministry of Agriculture and Lands, Jamaica, scale 1:50,000.

**Further information on the production of this model:**  
Bhalal, S., 2007. Landslide Susceptibility Assessment and Zonation, Portland, Jamaica. Unpubl. Report, Mines and Geology Division, Ministry of Agriculture and Lands, Jamaica, 50 pp.

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