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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Tabel 1. Jenis Disabilitas dan Sistem Peringatan Bencana   |  |  |  | | --- | --- | --- | | **Jenis Disabilitas** | **Kebutuhan** | **Sistem Peringatan Bencana** | | Kecacatan/ | • *Landmarks*/Petunjuk | • Sistem Sinyal Berbasis | | Gangguan Visual | • *Hand-rails* | Suara/*Alarm* | |  | • Dukungan personal | • Pengumuman lisan | |  | • Pencahayaan yang baik | • Poster yang ditulis dengan | |  | • Antrian terpisah | huruf yang besar dan warna yang mencolok | | Kecacatan/ | • Bantuan penglihatan | • Sistem Sinyal Berbasis | | Gangguan Pendengaran | • Komunikasi dengan | *Visual*: simbol, bendera | |  | gambar | merah, dll | |  | • Antrian terpisah | * Gambar * Sinyal kedip lampu | | Kecacatan/ | • Berbicara pelan | • Sinyal khusus: simbol, | | Gangguan Mental | • Bahasa yang sederhana | bendera merah, dll | |  | • Dukungan personal | • Pengumuman yang jelas dan | |  | • Antrian terpisah | lengkap oleh tenaga siaga bencana | | Kecacatan/ | • Baju hangat/selimut | • Sistem Sinyal berbasis | | Gangguan Fisik | • Kasur, tempat kering, | Suara/Alarm | |  | alat higienis • Dukungan personal   * Alat bantu * Sarana publik yang dimodifikasi ( pegangan tangan, jalan landai) • Antrian terpisah | • Pengumuman lisan |   Sumber: Handicap International, 2005  Tabel 1. Domain Perhitungan   |  |  |  |  | | --- | --- | --- | --- | | **Domain** | **Jarak Grid DX=DY (m)** | **Jumlah Grid** | **Batas Koordinat** | | A | 614.79 | 1948 x 1029 | 104.93o s/d 115.93o  BT  5.756o s/d 11.52o LS | | B | 204.93 | 571 x 286 | 110.52o s/d 111.59o BT  8.03o s/d 8.56o LS | | C | 68.31 | 1084 x 679 | 110.74o s/d 111.41o BT  8.09o s/d 8.51o LS | | D | 22.77 | 1780 x 1327 | 110.90o s/d 111.27o  BT  8.13o s/d 8.41o LS | | E | 7.59 | 2203 x 2014 | 111.02o s/d 111.16o BT 8.17o s/d 8.31o LS | | F | 2.54 | 2125 x 2236 | 111.06o s/d 111.12o BT 8.19o s/d 8.24o LS |   Tabel 2. Skenario Gempa dan Simulasi LimpasanTsunami Sampai ke Daratan   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Skenario** | **MW** | **Epicenter** | | **Depth** | **Stk** | **Dip** | **Slip** | **L** | **W** | **D** | |  |  |  |  |  |  |  |  |  | |  |  | **Lat** | **Lon** | **deg** | **deg** | **deg** | **km** | **km** | **km** | **m** | | 1 | 7.7 | -9.861 | 110.905 | 12 | 280 | 15 | 90 | 111 | 46 | 9 | | 2 | 8.0 | -9.861 | 110.905 | 12 | 280 | 15 | 90 | 165 | 15 | 15 | | 3 | 8.3 | -9.861 | 110.905 | 12 | 280 | 15 | 90 | 240 | 20 | 20 | |  |  |  |  |  |  |  |  |  |  |  | | 4 | 7.7 | -9.459 | 110.979 | 24 | 280 | 15 | 90 | 111 | 46 | 3 | | 5 | 8.0 | -9.459 | 110.979 | 24 | 280 | 15 | 90 | 165 | 60 | 5 | | 6 | 8.3 | -9.459 | 110.979 | 24 | 280 | 15 | 90 | 240 | 75 | 7 |   Tabel 3. Pencatatan Tinggi Tsunami dan Waktu Tempuhnya Skenario 1   |  |  |  |  | | --- | --- | --- | --- | | ***Point*** | **TTT** | **T*max*** | **Waktu** | |  | **(menit)** | **(m)** | **( menit )** | | 1 | 34.0 | 7.27 | 35.8 | | 2 | 34.3 | 9.16 | 35.4 | | 3 | 34.3 | 8.73 | 35.6 | | 4 | 34.3 | 7.15 | 35.5 |   Keterangan:  Point : titik-titik observasi  TTT: Tsunami *Travel Time* (waktu tempuh tsunami)  T *max* : ketinggian maksimum tsunami  *Time* : waktu terjadinya tinggi maksimum  Tabel 4. Pencatatan tinggi tsunami dan waktu   |  |  |  |  | | --- | --- | --- | --- | | **Point** | **TTT** | **Tmax** | **Waktu** | |  | **(menit)** | **(m)** | **( menit )** | | 1 | 33.7 | 13.62 | 34.9 | | 2 | 34.0 | 15.79 | 34.9 | | 3 | 33.9 | 14.13 | 35.2 | | 4 | 33.7 | 11.57 | 35.2 |   tempuhnya skenario 2    Dari hasil pacu model selama 1 jam  Tabel 5. Pencatatan tinggi tsunami dan waktu  tempuhnya skenario 3   |  |  |  |  | | --- | --- | --- | --- | | ***Point*** | **TTT** | **T*max*** | **Waktu** | |  | **(menit)** | **(m)** | **( menit )** | | 1 | 33.2 | 17.08 | 35.1 | | 2 | 33.6 | 20.68 | 34.8 | | 3 | 33.5 | 19.26 | 35.0 | | 4 | 33.3 | 15.08 | 35.2 |   Tabel 6. Pencatatan tinggi tsunami dan waktu tempuhnya skenario 4   |  |  |  |  | | --- | --- | --- | --- | | **Point** | **TTT** | **T*max*** | **Waktu** | |  | **(menit)** | **(m)** | **( menit )** | | 1 | 29.5 | 3.47 | 32.6 | | 2 | 30.0 | 4.28 | 32.1 | | 3 | 29.9 | 4.16 | 32.9 | | 4 | 30.1 | 3.78 | 32.7 |   Tabel 7. Pencatatan tinggi tsunami dan waktu  tempuhnya skenario 5   |  |  |  |  | | --- | --- | --- | --- | | ***Point*** | **TTT** | **T*max*** | **Waktu** | |  | **(menit)** | **(m)** | **( menit )** | | 1 | 29.2 | 6.22 | 31.9 | | 2 | 29.6 | 7.22 | 31.5 | | 3 | 29.5 | 7.01 | 31.9 | | 4 | 29.6 | 6.39 | 31.8 |   Tabel 8. Pencatatan tinggi tsunami dan waktu  tempuhnya skenario 6   |  |  |  |  | | --- | --- | --- | --- | | ***Point*** | **TTT** | **T*max*** | **Waktu** | |  | **(menit)** | **(m)** | **(menit)** | | 1 | 28.7 | 8.40 | 32.3 | | 2 | 29.1 | 8.46 | 30.9 | | 3 | 29.0 | 8.32 | 31.3 | | 4 | 29.0 | 7.85 | 32.1 |   Tabel 1. Kepadatan penduduk menurut  Kabupaten/Kota di Provinsi Maluku  UtaraPeringatan Bencana   |  |  |  |  | | --- | --- | --- | --- | |  |  |  | Kepadatan | |  | Luas | Jumlah | Penduduk | | Kabupaten/Kota | daratan | Penduduk | ( Jiwa/ | |  | (Km2) | (Jiwa) | Km2) | | Halmahera Barat | 2.612,24 | 97.971 | 38 | | Halmahera Tengah | 2.276,83 | 34.821 | 15 | | Halmahera Selatan | 8.779,32 | 192.312 | 22 | | Halmahera Utara | 5.447,30 | 194.778 | 36 | | Halmahera Timur | 6.506,20 | 69.912 | 11 | | Ternate | 250,85 | 172.604 | 688 | | Tidore Kep. | 9.564 | 82.302 | 9 | | Kep. Sula | 9.632,92 | 34.821 | 14 |   Sumber : BPS Provinsi Maluku Utara, 2010  Tabel 2. Jenis dan sumber data Penelitian dilaksanakan selama 6 bulan   |  |  | | --- | --- | | **Jenis data** | **Sumber data** | | Batas pulau Ternate      Lereng  Tekstur tanah    Penggunaan lahan      Bentuklahan  (*landform*)    Bangunan  Risiko longsor | Peta administrasi Kota  Ternate 1:50.000. Bappeda Kota  DEM SRTM 90 m  Pengamatan lapang, unit lahan 1:50.000  Peta tutupan lahan Kota  Ternate 1:50.000. Bappeda Kota Ternate  DEM SRTM 90 m,  *Hillshade*, Geo Eye pada  *Google Earth*  Bappeda Kota Ternate  Peta bahaya dan peta kerentanan |   Tabel 3. Kepadatan penduduk menurut  Kabupaten/Kota di Provinsi Maluku  UtaraPeringatan Bencana   |  |  |  | | --- | --- | --- | | **Parameter Skor**  **Lereng (%) 0,4**  0 - 8 1  8 - 15 2  15 - 30 3  30 - 45 4  >45 5 | |  | | **Bentuklahan 0,3** | |  | | • Kawah, dataran pantai anthropogenik, gisik, Maar | | 0 | | • Lereng kaki fluvio vulkanik, aliran lava |  | 1 | | • Lereng bawah kerucut vulkanik |  | 2 | | • Lereng atas kerucut vulkanik |  | 3 | | • Lereng tengah dan lereng puncak kerucut vulkanik |  | 4 | | **Tekstur** | **0 , 2** |  | | • Pasir (*Sand*) |  | 1 | | • Lempung berpasir (*Sandy loam*) |  | 2 | | • Lempung (*Loam*) |  | 3 | | • Lempung berliat (*clay loam*),  Lempung berdebu (*Silt loam*) ,  Liat berpasir (*sandy clay*) |  | 4 | | • Liat (*Clay*) |  | 5 | | **Penggunaan lahan** | **0 , 1** |  | | • Danau, bakau dan hutan |  | 0 | | • Pemukiman, perkebunan tahunan dan bandara |  | 1 | | • Semak belukar |  | 2 | | • Penambangan pasir dan penambangan batu vulkan |  | 3 | | • Lahan terbuka |  | 4 |   Tabel 4. Bentuk lahan di Pulau Ternate   |  |  |  | | --- | --- | --- | | **Jenis landform** | **Luas** | **Persentase** | |  | **(ha)** | **( % )** | | Kawah | 1,9 | 0,019 | | Lereng puncak kerucut | 146 | 1 , 4 | | Lereng atas kerucut | 899 | 8 , 9 | | Lereng tengah kerucut | 2.690 | 26 , 5 | | Lereng bawah kerucut | 3.160 | 31 , 2 | | Lereng kaki fluvio | 2.650 | 26 , 1 | | Aliran lava | 271 | 2 , 7 | | Maar laguna | 16,6 | 0 , 16 | | Maar Tolire besar | 24,3 | 0 , 24 | | Maar Tolire kecil | 2,1 | 0 , 02 | | Gisik pantai (*beach*) | 253 | 2 , 5 | | Daratan pantai *anthropogenik* | 25,1 | 0 , 25 |   Sumber : Hasil analisis, 2012  Tabel 5. Nilai interval kelas bahaya longsor di Pulau Ternate   |  |  |  |  | | --- | --- | --- | --- | | **Kelas**  **Bahaya**  **Longsor** | **Nilai**  **Interval** | **Luasan**  **(Ha)** | **Persentase**  **(%)** | | Aman  Rendah  Sedang  Tinggi | 0,6 – 1,5  1,6 – 2,4  2,5 – 3,2  3,3 – 4,1 | 1.835 2.420 3.015  2.860 | 18 , 1  23 , 8  29 , 7  28 , 2 |   Sumber : Hasil analisis, 2012  Tabel 6. Nilai interval kelas bahaya longsor di  Pulau Ternate   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Kelas** |  | **Jumlah** | **% jumlah** |  | | **Bahaya** | **Persentase** | **titik** | **titik** | **FR** | | **Longsor** | **luasan (%)** | **longsor** | **longsor** |  | | Aman | 18,1 | 0 | 0 | 0 | | Rendah | 23,8 | 12 | 60 | 2 , 5 | | Sedang | 29,7 | 7 | 35 | 1 , 1 | | Tinggi | 28,2 | 1 | 5 | 0 , 1 |   Sumber : Hasil analisis, 2012  Tabel 7. Nilai kerentanan bangunan terhadap longsor  **Kelas Jumlah bangunan (unit)**   |  |  |  |  | | --- | --- | --- | --- | | **bahaya** | **Rumah** | **Non** | **Jumlah** | | **longsor** |  | **rumah** | **Total** | |  |  |  |  | | Aman | 18.662 | 509 | 19.171 | | Rendah | 7.306 | 163 | 7.469 | | Sedang | 470 | 7 | 487 | | Tinggi | 3 | 1 | 4 | | **Jumlah** | **26.441** | **691** | **27.131** |   Sumber : Hasil analisis, 2012  Tabel 8. Nilai risiko bangunan terhadap longsor   |  |  |  |  | | --- | --- | --- | --- | | **bangunan Bobot** | **Rendah**  0,17 | **Sedang**  0,33 | **Tinggi**  0 , 50 | | Rumah 0,7  Non rumah 0,3 | 0,119  0,051 | 0,231  0,099 | 0 , 35  0 , 15 |   Sumber : Hasil analisis, 2012  Tabel 9. Nilai kerentanan bangunan terhadap longsor  **Kelas Nilai Tipe bangunan (unit) risiko interval Rumah Non**  **penduduk rumah**   |  |  |  | | --- | --- | --- | | Rendah | 0,15 – 0,91 6.996 | 165 | | Sedang | 0,92 – 1,68 455 | 0 | | Tinggi | 1,69 – 2,45 3 | 0 |   Sumber : Hasil analisis, 2012 |