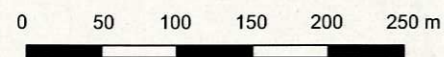


| AGE | GROUP | FORMATION | SYMBOL | ROCK TYPE | GEOLOGY |
|--------------|------------------------|-------------------------|------------------|---|--|
| Cenozoic | Recent Deposits | | Rd | Riverbed deposits | Sand and gravels with boulders |
| | | | Ts | Talus and/or Terrace | Talus deposits and terrace deposits. |
| Cenozoic | Siwalik Group | (Unconformity) | | | |
| | | | Sw | Conglomerate, Sandstone, Mudstone | Sandstone, mudstone, and small portions of conglomerates. Relatively soft and fractured near MBT. |
| | (Main Boundary Thrust) | | | | |
| | Upper Nawakot Group | Robang Formation | Phy (2) | Phyllite (2) | Blue green slatic phyllites, generally chloritic. Intercalation of calcaceous beds. Relatively compact in general. |
| | | | Qz | Quartzite | Quartzite. Intercalation of thin phyllite at some localities. Massive and compact in general. |
| | | | Phy (1) | Phyllite (1) | Blue green phyllites, generally chloritic. Relatively compact in general. |
| | | Malekhu Formation | Di | Siliceous Dolomite | Light-to-dark and greenish gray siliceous dolomites. Intercalation of thin crystalline limestone and calc-phyllites. Massive and relatively well bedded. |
| | Berihat Formation | Sl | Slate(Phyllitic) | Dark gray slates and phyllites together with black carbonaceous slate. Fractured and weathered near MBT. | |
| Pre-Cambrian | Bhimphedi Group | (Mahabharat Thrust) | | | |
| | | Kalitar Formation | Sq | Schist, Quartzite | Dark green to gray colored two mica and biotite schist with intercalation of quartzite and garnets. Strongly folded and fractured at places. |
| | | Bhaise Dobhan Formation | L/L Mb | Limestone | Coarse crystalline marble, limestone with intercalation of thin schist. Marble and limestone are massive and well bedded. |
| | Raduwa Formation | Sch | Schist | Coarse-crystalline, highly garnetiferous mica schist, gneissic schist. Some quartzites are also seen in this formation. | |

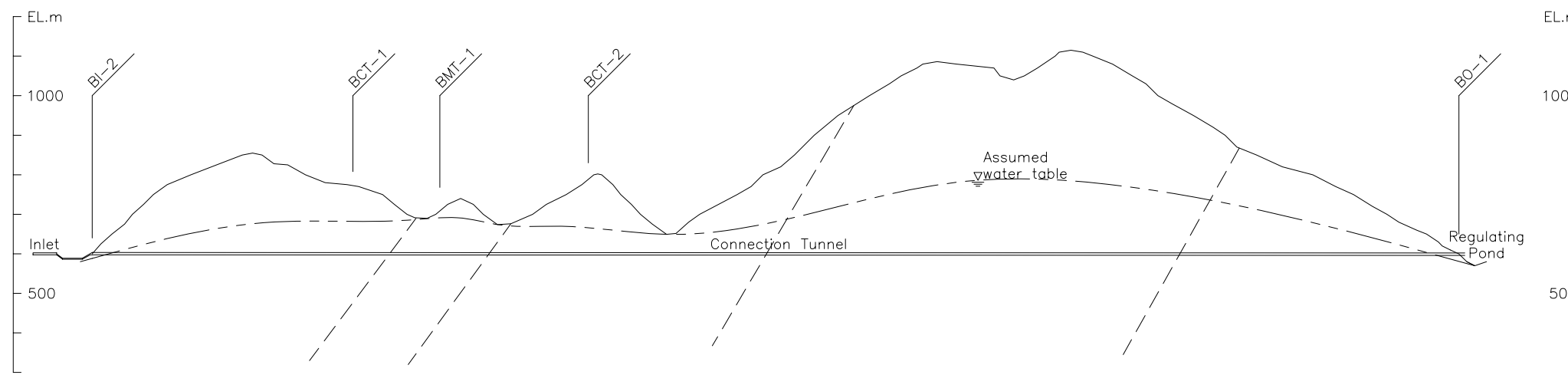
*** Main Boundary Thrust (MBT) :**

This thrust forms the boundary between Lower and Sub Himalayas. Siwalik sandstone of folded and faulted Tertiary sedimentary rock have been overthrust in the south of MBT.



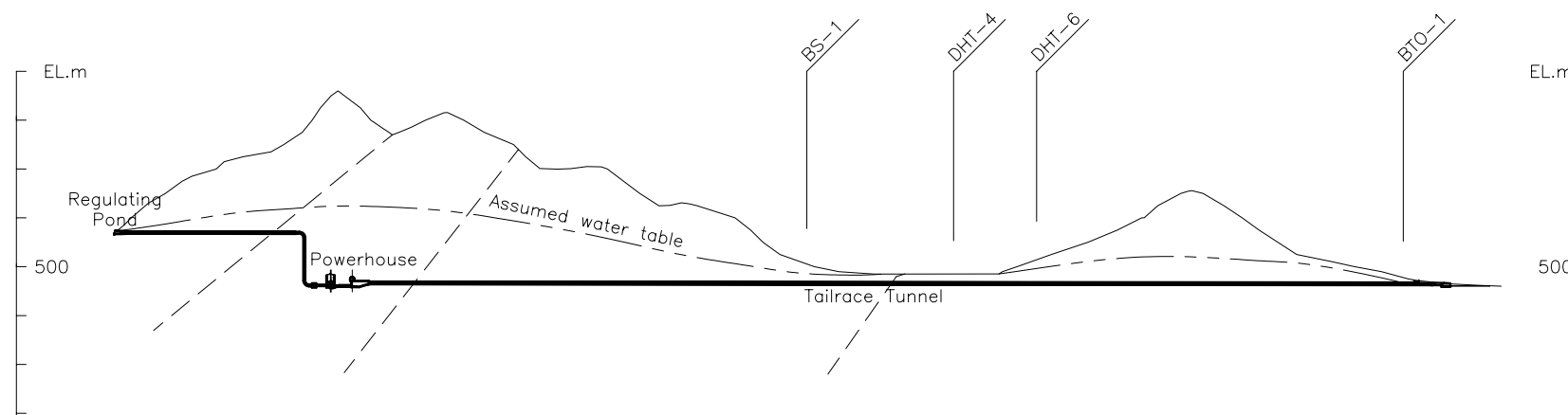
THE UPGRADING FEASIBILITY STUDY ON THE DEVELOPMENT OF THE KULEKHANI III HYDROPOWER PROJECT IN THE KINGDOM OF NEPAL
JAPAN INTERNATIONAL COOPERATION AGENCY

図3. 3. 22
放水路トンネルの地質



| | | | | | | | | | | | | |
|-------------------------|----------|--|---------|----------|-------------------------------|----------|----------------|---------|-----------|--|----------|----------|
| Additional Distance (m) | 500 | | 1000 | | 1500 | | 2000 | | 2500 | | 3000 | |
| Rock Grade (interval) | Q2 (685) | | Q4 (60) | Q3 (205) | Q5 (75) | Q3 (590) | | Q4 (80) | Q2 (1000) | | Q4 (80) | Q3 (700) |
| Geology | Marble | | Schist | | Phyllite/ Quartzitic Phyllite | | Quartzite | | Phyllite | | Phyllite | |
| Groundwater | Medium | | Large | | Large - Medium | | Large - Medium | | Medium | | Medium | |

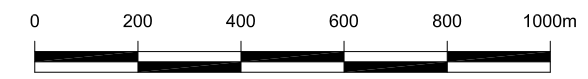
(Inlet To Regulating Pond)



| | | | | | | | | | | |
|-------------------------|----------|----------|----------|---------|----------|----------|-----------|----------|-----------|---------|
| Additional Distance (m) | 500 | | 1000 | | 1500 | | 2000 | | 2500 | |
| Rock Grade (interval) | Q3 (315) | Q4 (20) | Q2 (265) | Q5 (25) | Q4 (425) | Q3 (320) | Q5 (280) | Q4 (100) | Q3 (820) | Q4 (50) |
| Geology | Phyllite | Dolomite | Slate | | Slate | | Sandstone | | Sandstone | |
| Groundwater | Medium | Large | | Large | | Large | | Medium | | Medium |

(Regulating Pond To Tailrace)

| Rock Grade | Modulus of Deformation (MPa) | Shear Strength (MPa) | Friction Degree (degree) | Q value by Q system | CRIEPI classification (Reference) |
|------------|------------------------------|----------------------|--------------------------|---------------------|-----------------------------------|
| Q1 | > 3,000 | > 2.5 | > 50 | > 40 | B |
| Q2 | 3,000 | 2.5 | 50 | 10 to 40 | CH |
| Q3 | 1,000 | 1.2 | 45 | 4 to 10 | CM |
| Q4 | 500 | 0.6 | 40 | 1 to 4 | CL |
| Q5 | 250 | 0.1 | 35 | 1 > | D |



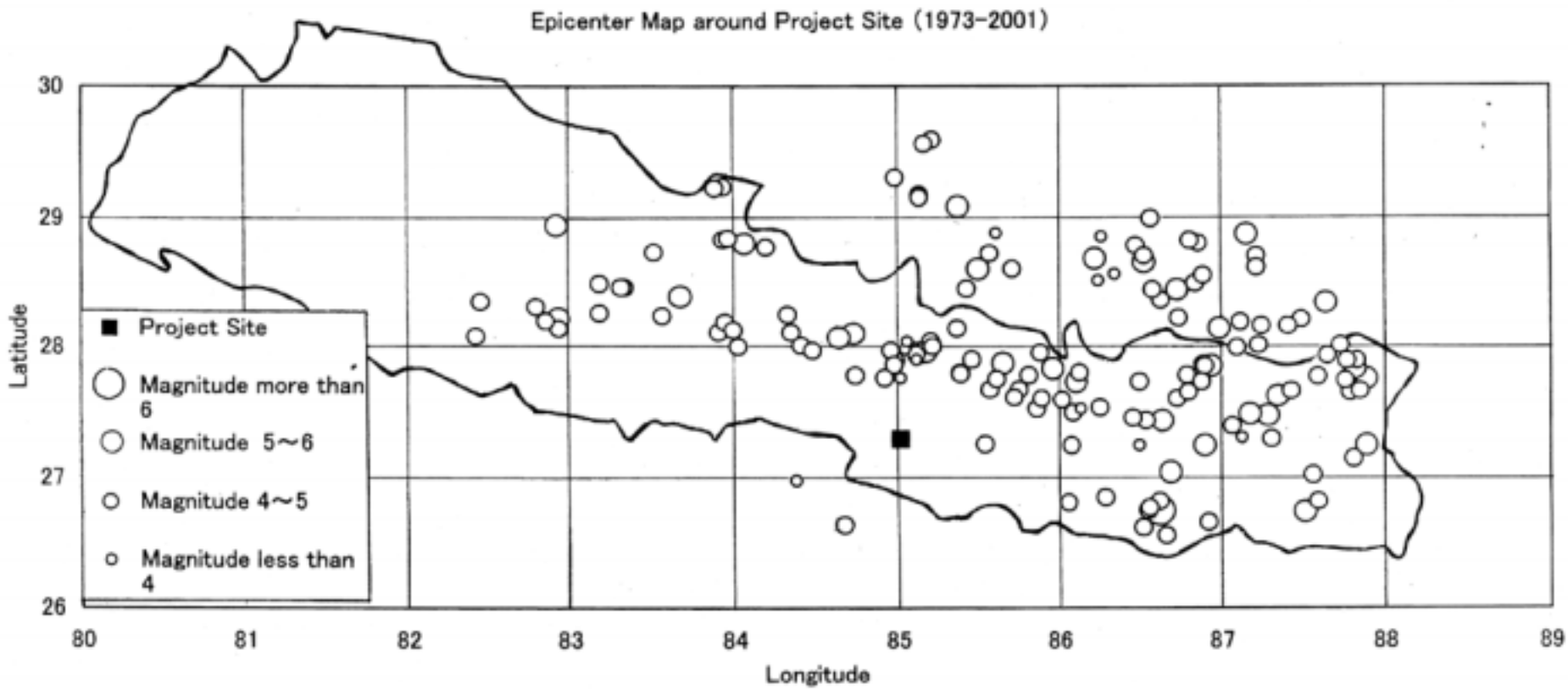


図3.3.24
地震震央の分布 (1973-2001)

FREQUENCY-INTENSITY RELATION OF EARTHQUAKE(By Cornell)

