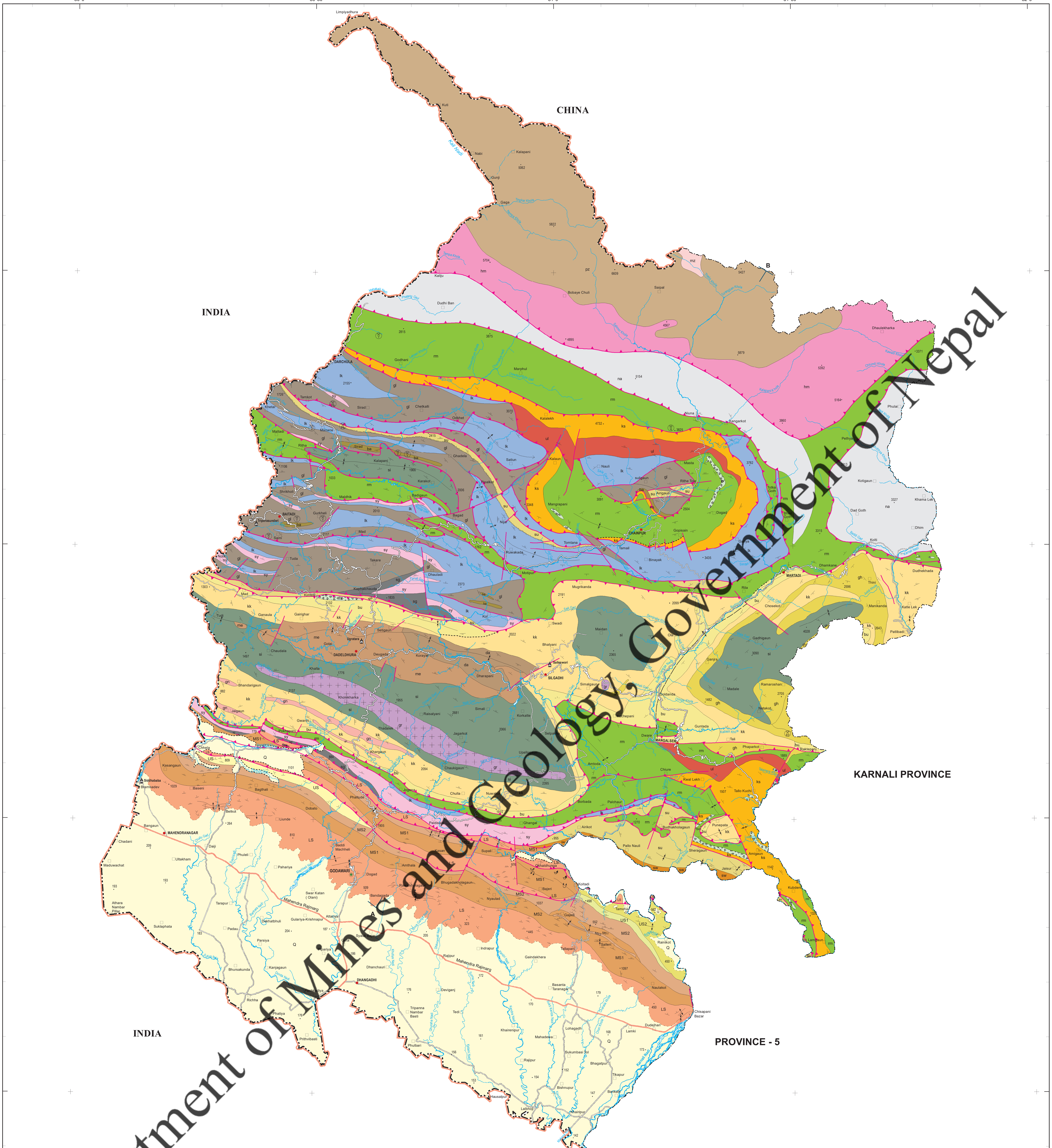
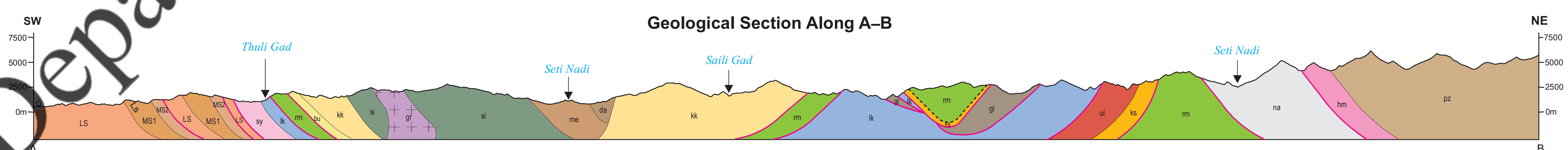
GEOLOGICAL MAP OF SUDURPASCHIM PROVINCE, NEPAL



SCALE: 1:350,000

10 5 0 10 20 30 40 50 Kms

Geological Section Along A–B



LEGEND

GEOLOGY

SURFICIAL DEPOSITS (Quaternary – Recent)

- Q — **Quaternary:** Alluvium, boulder, gravel, sand, silt and clay.

SIWALIK GROUP (Middle Miocene-Lower Pleistocene)

- US_2 — **Upper Upper Siwalik:** Boulder, cobble, conglomerates with minor yellow, grey mud and silt, sand bands and lenses in the conglomerates.
- US_1 — **Lower Upper Siwalik:** Pebbly conglomerates, yellow and grey mud with minor grey sands.
- US — **Upper Siwalik:** Undifferentiated.
- MS_2 — **Upper Middle Siwalik:** Medium to coarse-grained sandstones, pebbly sandstones with siltstones and mudstones with relict of hard sandstones. Turtle limb is present in the sandstones.
- MS_1 — **Lower Middle Siwalik:** Medium, Fine to medium grained sandstones with interbeds of siltstones and mudstones.Coaly materials and plant fossils are present.
- LS — **Lower Siwalik:** Fine grained sandstones with interbeds of purple or red colored mudstones, shales,siltstones and occasional marl.

PRE-SIWALIK GROUP (Oligocence ?)

- psw — **Pre-Siwalik:** Light grey to grey fine grained sandstones and purple shales with calcareous nodules.

SURKHET GROUP (Cretaceous-Oligocene)

- su — **Suntar Formation:** Fine to medium grained, greenish grey sandstones and purple shales with intercalations of green splintery shales.
- sw — **Swat Formation:** Grey to dark grey carbonaceous crampled shales with bands and lenses of fine grained fossiliferous limestones (Nummulites sp., Assilina sp., etc) and ferruginous quartzites at the base.

MIDLAND GROUP (Upper Precambrian-Late Paleozoic)

- lk (du, rb) — **Lakharpata Formation:** Fine grained, grey limestones and dolomites with thin intercalations of black to grey shales. At Places white pink dolomitic limestones, purple and green shales at the top. Algal structure with stromatolites are present.
- sy — **Syangja Formation:** White to milky white, pale orange, pinkish or purplish calcareous quartzites and dolomitic limestones with dark grey and purple shales and pale green shales at base.
- sg — **Sangram Formation:** Black, dark grey to greenish grey splintery pencil structured shales with thin intercalation of limestones and white fine grained cross-bedded quartzites at base.
- gl (ba) — **Galyang Formation:** Dark grey slates finely intercalated with thin grey calcareous slates and sandstones. Dark grey to bluish grey fine grained limestones and dolomitic limestones of various sizes within the slates are common. **Baitadi Carbonates**: grey siliceous dolomites.
- rm — **Ranimatta Formation :** Grey to greenish grey, gritty chlorite phyllites and phyllitic quartzites metasandstones and conglomerate beds with white massive quartzites in the upper and lower parts. Basic intrusions are frequent.
- ks — **Kushma Formation:** White to grey, fine to medium grained, massive at places ripple marked quartzites intercalated with green chlorite phyllites.
- ul — **Ulleri Formation:** Augen gneisses and feldspathic schists.

DADELDHURA GROUP (Precambrian)

- da — **Damagad Formation:** Grey to greenish grey calcareous quartzites and crystalline limestones.
- me — **Melmura Formation:** Grey to dark grey phyllites and phyllitic schists.
- si — **Sallyani Gad Formation:** Aplites granite gneisses, augen gneisses and biotite gneisses.
- kk (gh, bu) — **Kalikot Formation:** Garnetiferous biotite-schists and micaceous quartzites with gneisses **Ghatte Gad Carbonates:** Bluish Crystalline limestones, calcareous schists and quartz-biotite-schists **Budhi Ganga Gneiss:** Augen gneisses, granitic gneisses and feldspathic schists.

NAWAKOT GROUP

- na — **Precambrian to Lower Paleozoic:** Mainly shallow marine sediments; lower part dominantly clastic (Phyllites, sandstones, quartzites and calcareous sandstones). Stromatolitic limestones and black slates occur in the upper part. Basic sills and dykes are present.

TIBETAN SEDIMENTARY ZONE

- mz — **Mesozoic**: Triassic to Lower Cretaceous. Mainly shallow continental plateform sediments with local pro-delta faces in the Early Cretaceous. Sandstones, slates, shales with glauconite. Mainly ammonites and belemnites in Jurassic Limestone.
- pz — **Paleozoic**: Cambrian to Permian. Lower part mainly calcareous, middle part pelagic and upper part is rich in detrial sediments. Limestones, sandstones and shales. Early Permian tilloid beds with plant fossils and focal spilitic lava flows.

HIGHER HIMALAYAN CRYSTALLINES

- hm — Precambrian high grade metamorphic rocks comprising gneisses, quartzites and marbles. Migmatites and granite geneisses present predominantly in the upper part.

SYMBOLS

- gr — granites.
- gn — Augen gneisses banded gneisses.
- br — Basic rocks

MINES

- Kyanite
- Lead
- Quartz
- Talc

PHYSIOGRAPHIC FEATURES

- District Headquarter
- Province Headquarter
- (8,848) Peaks with Height in Meter
- Province Boundary
- International Boundary
- Highway, Feeder Road, Other Road
- Stream , River
- · 143 Spot Height in Meter
- Temple,Town,Village

STRUCTURE

- Geological Contact
- Alluvium Boundary
- MBT Thrust
- Fault
- Inferred Contact
- Unconformity
- Anticlinal Axis
- Synclinal Axis
- Overturned
- Overturned Anticline
- Overturned Syncline

ATTITUDE OF BEDDING

- 0°
- 1°-19°
- 20°-39°
- 40°-69°
- 70°-89°
- 90°

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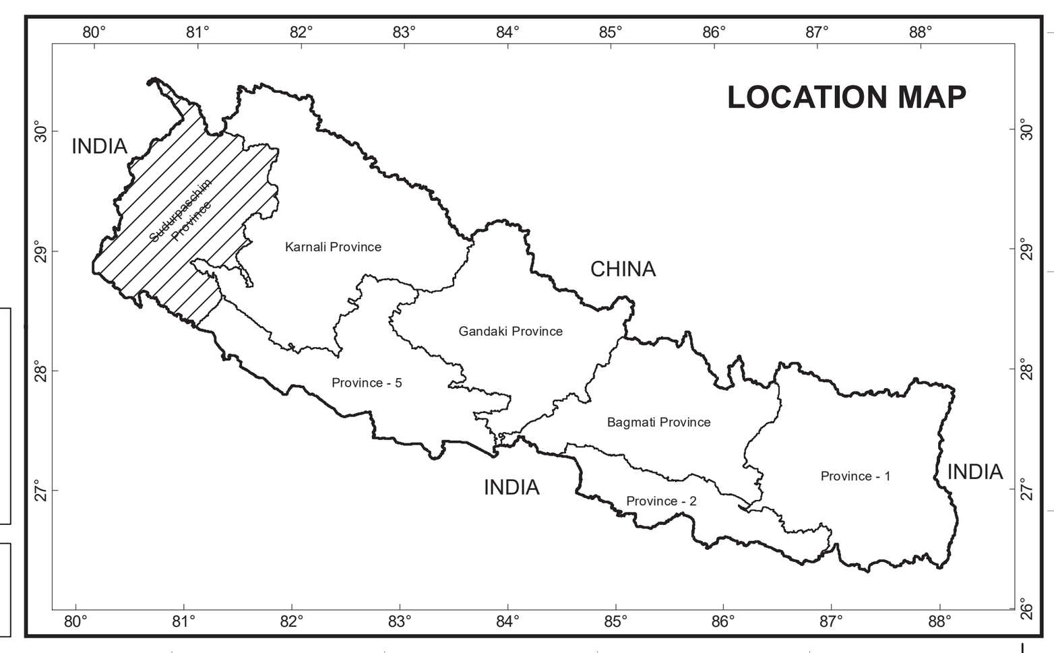
Horizontal Datum

Spheroid: .... Everest 1830
Projection : ..... Modified Universal Transverse Mercator
Origin:................ Longitude 81° East, Latitude 0° North
False co-ordinates of origin: .... 500 000m Easting
0m Northing
Scale factor at Central Meridian: 0.9999

Data Sources:
This map is compiled from the published "Geological map of Nepal (1:1,000,000)", "Geological Map of Mid Western & Far Western Region of Nepal (1:250,000)" by Department of Mines & Geology (DMG) and "Geological Map of Petroleum Exploration Block no.1 and 2 (1:250,000)" by Petroleum Exploration Promotion Project (PEPP), Nepal.

Topographical Base:
1:25,000 & 1:50,000 Map of GoN, Survey Department, Kathmandu, Nepal

LOCATION MAP



80°0' 80°30' 81°0' 81°30' 82°0'