

Chapter 1 Outline of the Survey

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1 - 1 Implementation of the Survey

In response to the request from the Government of the Republic of Indonesia to conduct mineral exploration, the Japanese Government sent a mission for Scope of Work Consultation to Indonesia in September 2001. And as a result of consultation with the Directorate General of Geology and Mineral Resources of Indonesia, an agreement was reached for cooperative mineral exploration of the East Java area and the Scope of Work was concluded by representative of both Governments in 19 September 2001. The objective of this project is to assess the mineral potential of the area through analysis of existing data, analysis of satellite images, geological survey, geochemical survey, geophysical exploration, and drilling during the three-year period from fiscal 2001 to 2003. The counterpart organization in accordance with this Scope of Work is the Directorate of Mineral Resources Inventory.

During the first year of the project, existing data and satellite images for the East Java area extending 19,000km² were analyzed. Also, regional geochemical surveys were carried out over an area of 5,000km².

During the second year of the project, regional geochemical and semi-detailed geochemical surveys and geological survey were carried out over an area of 3, 6000km², 800km² and 70 km², respectively.

During the third year of the project, geological survey was carried out over an area of 260km², comprised of four districts. As a result of the geological survey, Seweden and Tempursari districts were selected to conduct geophysical survey with the aim of delineating drilling targets, while drilling was carried out only in the Seweden District. On the other hand, targets for drilling in the Prambon district was selected without conducting geophysical survey.

This is the consolidated report for the three years surveys.

1 - 2 Objective of the Survey

The objective of this project is to assess the mineral potential of the area through analysis of

existing data, analysis of satellite images, geological survey, geochemical survey, geophysical exploration, and drilling during the three-year period from fiscal 2001 to 2003.

1 - 3 Existing Data

Existing geological information of the project area is shown in the list of references. Sites for geochemical sampling of stream sediments were determined by the analysis of existing data. In the area delineated for first-year survey mineral showings were concentrated particular within the total study area.

1-3-1 Outline and Concessions

Showings of gold, silver, copper, lead, zinc, and iron-manganese are known in the survey area. Forty mineral prospects are known in the survey area. Of these, 3 are gold prospects, 13 are copper, lead, zinc prospects, and 24 manganese and iron/titanium prospects. Gold mineralization is associated with quartz veins in dacite or andesite. Details regarding width and reserve are not known. On the other hand, a DMRI material (DMR, 2000) contains descriptions of 10 Au-(Cu) prospects and the Au potential of the survey area is deemed to be high. Those of Selogiri and Kebonsari are being developed and mined, although of small scale, and they warrant particular mention. The quartz veins of Selogiri are said to be 5-40cm wide, but are more than 500m long in the strike direction. The Au-Cu deposit of Kasihan is inferred to be Au-Cu porphyry copper type deposit, and 7 holes totaling 1000m in length were drilled by DMR together with Korea Mining Promotion Corporation during 1991 to 1994. Manganese deposits are all small and none are said to be mined presently. The manganese orebodies occur as lenses at the border between Tertiary tuff and limestone. The Fe/Ti deposits are placer and/or residual deposits.

The mining concessions of the survey as of the beginning of the first phase area are shown in Figure 1-2, and they are owned by enterprises such as; Kud. Selogiri, PT. Mega Budi Manganis, Kud Akur, PT. Sumber alam Peleng, PT. Keikan Perdana, PT. Triprasetya Pujiraharja, PT. Miracle, PT. Nomsantido, PT. Rotal Indotama, PT. Everlastika, PT. Timah Investasi Mineral. However, as of the end of Phase 3 survey, almost all of the above concessions was terminated.

(a) Kud Selogiri: Gold deposit associated with N-S trending pyrite-quartz veins (less than 10cm wide) in andesite. There are at least 2 veins and the strike length is said to be 2km, and the present working length is about 300m. The host rock is strongly disseminated by pyrite and is sericitized and chloritized. Presently the mining is carried out at 20~ 40m below surface by shaft

and adit. Individual bonanza extends along the dip and does not appear to extend in the strike direction. The vein-grade is said to be several tens to several hundreds g/t. The ores are ground by small mill after hand picking and the gold is recovered by amalgam method. According to DMR data, 5 holes with total extension of 820m were drilled, but the results are not shown. The reserves (gold content) are calculated to be 206kg.

(b) PT. Mega Manganis: A manganese deposit outside of the survey area at Tulunganga.

(c) Kud Akur: It is also called Kebonsari after the village name, and also Punung after the sub-district name. The main deposit is stockwork gold consisting veinlets of less than 1cm wide. The host rock is andesitic tuff breccia, but 10cm-wide quartz veins containing pyrite and chalcopyrite also occur in this deposit. Gold grade is low and that of the presently mined ores is less than 1g/t Au. Oxidized zone occurs to 10m depth and this zone is said to have several g/t Au. The ores are ground by small mill after hand picking and gold is recovered by amalgam method.

(d) PT. Sumber Alam Peleng: Quartz veinlets containing sphalerite are said to occur in andesite and dacitic porphyry. Gold grade is low and past exploration was not active.

(e) PT. Keikan Perdana: Skarn-type copper, lead, zinc deposits related to andesite lava and pyroclastic rocks and quartz porphyry intruded into limestone occur in the Kasihan district where this concession exist. Gold grade of the ores is generally low. Sphalerite and chalcopyrite-bearing quartz veins are the main ore in at least 2 outcrops. Drilling was conducted in 1994, it is not worked at present.

(f) T. Prasetya Pujiraharja: This is described to be in Gunung Mas district, this is a gold deposit accompanying quartz and pyrite in andesitic-basaltic lava and pyroclastic rocks. Nine holes with a total extension of 482m were drilled, and the reserves are 5.6 million tons at 1.89g/t (DMR data). It appears to have been worked in small scale up to around 1996. This area was not surveyed.

(g) Miracle: This is located to the east outside of the survey area. This consists of gold-bearing quartz veins in propylitized volcanic rocks. The maximum width of the veins is 35cm, maximum grade 2.9g/t Au, 87g/t Ag. Mining concession has expired.

(h) Nomsantindo: This is located to the east outside of the survey area. Gold mineralization is anticipated from quartz veins and silicified pebbles. But the gold content of the pebbles is low.

(i) Royal Indotama: This is located to the east outside of the survey area. Gold mineralization is observed in chalcedonic quartz-pyrite veins to stockwork within andesite, dacite and limestone. Maximum width and grade is 2m and 1.8g/t Au. Mining concession has expired.

(j) Everlastika Jaya: This is located to the east outside of the survey area. This is characterized by pyrite dissemination in rhyolite. Mining concession has expired.

(k) Timah Investasi Mineral (TIM): This covers a wide area outside of the survey area to the east. This is presently at the stage of regional survey.

Table 1-1 Major Mineralization Occurrences Based on DMRI Data

No.	Name	Commodity	Geology	Mineralization	Previous Work
1	Selogiri	Au	Andesitic tuff Microdiorite	Quartz vein: 3 main veins, 5-40cm wide, 500m long, cp, gn, sp	Shallow drilling Test pitting
2	Kebonsari	Au	Dacite-andesite breccia	Quartz stockwork, 25cm wide, cp, gn, sp	Test pitting Drilling (5 holes, 820m)
3	Petung-sinarang Burungkah	Au	Andesite-basalt	Quartz stockwork and veins, Silicification, sp, py, gn	Tunneling Drilling (9 holes, 492m)
4	Kasihani Kobasari	Cu, Pb, Zn	Andesite breccia	Cu, Pb-Zn skarn (Cu porphyry) Quartz vein, cp, sp	Drilling (Year 1991-94: 7 holes, 1,005m. (Year 1996-98: 5 holes, 499m)
5	G. Mas, Selogiri	Au	Andesite-basalt	Quartz stockwork and veins	Trenching
6	Pulung	Au	Andesite (lava, tuff)	Quartz vein and veinlets	-
7	Tegalombo	Au	Dacite Andesite, Andesite breccia	Vein along the andesite dyke	-
8	G. Domasan, Slahung	Cu, Zn	Andesite breccia	Quartz vein	
9	K. Gondang Panggul	Ag	Dacite	Quartz vein	-

Note: Py: pyrite, cp: chalcopyrite, sp: sphalerite, gn: galena

1-3-2 Survey by DMRI

DMR conducted reconnaissance during 1995 and 1997. Survey results are summarized below.

1-3-3 Surveu by Aneka Tambang

(1) Outline

The description of this chapter is based on the exiting data that are summarized the survey conducted by PT. Aneka Tambang in 1996 and 1997. The survey consists of geological survey, geochemical prospecting, Geophysical Survey by IP method and drilling. The survey area covers their concession (KP.DU597/JATIM) consisting of Block A and Block B. The areal extent of the concession is about 796km². The area is located in the central to the southeastern part of the phase 1 geological and geochemical survey area. In the concession there are mineral occurrences such as Gunung Mongi, Baosan Kidul, Candi-Pule, Tugu-Kali Duren, Dalangturu-Suruh-Gading, Munjungan.

(2) Geology

The geology of the area is comprised of Tertiary volcanics and volcanoclastics, sedimentary rocks and limestone of Oligocene to Miocene age, Pliocene sedimentary and limestone, and alluvium. The Oligocene to Lower Miocene rocks divided into Mandalika Formation, Arjosari, Watupatok Formation, Semilir formation, and Campurdarat Formation, and Middle to Upper Miocene to Jaten Formation, Wuni Formation, Nampol Formation, Oyo Formation and Wonosari Formation. The Pliocene is termed Kali Pucung Formation..

(3) Mineral Occurences

The concession KP.DU597of the area extent of 796km² is divided into Block A and Block B, covering areas of 394km² and 120km², respectively. In the Block A, mineral occurrences of Candi-Pule, Tugu-K.Duren, Dalangturu, Suruh-Gading, Sengunglung, Besuki-Kebonsari, Pringwulung-Pandeyan and Bangun-Prigi are located. In the Block B, mineral occurrences of Gunng Mongi, Kali Picis and Baosan Kidul are located.

The amount of work conducted is as follows.

Year	1996	1997	1998
Geologic Mapping Area (scale)	77.5km ² (1:5,000) 3km ² (1:2, 500)	92.5km ² (1:5,000) 46.12m ² (1:2, 500)	(162.66km ²)
Pits & Trenches	1, 500m ³	5, 170m ³	
Drilling		2holes(5holes?) 382.25m	(4holes, 633.65m)
Rock samples	171 pcs	2, 282 pcs	(107 pcs)
Soil samples		2, 908 pcs	-
Target mineral occurrences	Baosan Kidul Gunung Mongi	Baosan Kidul Gunung Mongi Darangturu and others	Buluroto Sentul

In 1998, follow-up survey of the 1996 and 1997 surveys was carried out. The survey consisted of drilling in Sentul district. But the results were not open as of this report writing. The concession (KP.DU597/Jatim) is owned by PT.Fajar Mineralalami International.

1-4 Outline of the Survey Area

1-4-1 Location of the Survey Area

Regional and semi-detailed geochemical surveys were carried out over an area of 3, 600km² and 800km², respectively. The eastern part of regional geochemical survey area is called the East area and western part of the regional geochemical survey area is called the West area. Geological survey was conducted in two districted that were delineated by the phase two geochemical surveys within the 19,000km² (project area): Ponorogo South district, and Prambon district.

Table 1-2 Coordinates of Project and Survey Areas

		Latitude(S)	Longitude(E)		Latitude(S)	Longitude(E)
Project Area	(a)	7° 43.5'	110° 30'	(b)	7° 45.0'	113° 15.00'
	(c)	8° 25.18'	110° 30'	(d)	8° 25.18'	113° 15.00'
Survey Area(E)	(a)	7° 43.50'	111° 38.57'	(b)	7° 45.0'	113° 15.00'
	(c)	8° 21.25'	111° 38.57'	(d)	8° 25.18'	113° 15.00'
Survey Area(W)	(a)	7° 43.5'	110° 30'	(b)	7° 43.5'	110° 52.79'

	(c)	8° 25.18′	110° 30′	(d)	8° 21.25′	110° 52.79′
Detailed	(a)	7° 43.5′	110° 30′	(b)	7° 43.5′	110° 52.79′
Geochemical Survey Area	(c)	8° 25.18′	110° 30′	(d)	8° 21.25′	110° 52.79′
Geological Survey Area (Ponorogo South)	(a)	7° 43.5′	110° 30′	(b)	7° 43.5′	110° 52.79′
	(c)	8° 25.18′	110° 30′	(d)	8° 21.25′	110° 52.79′
Geological Survey Area (Prambon district)	(a)	7° 43.5′	110° 30′	(b)	7° 43.5′	110° 52.79′
	(c)	8° 25.18′	110° 30′	(d)	8° 21.25′	110° 52.79′

Note: (a) to (d) show the corners of the project and survey areas

1-4-2 Access

Of the roads in the survey area, the major highways joining Wonogiri, Ponorogo, Pacitan, Tulungagung, Blitar, Malang and Lumajang are paved and relatively well maintained. Other roads within the area are narrow and bumpy, but are developed rather densely.

Regular airline was used for trips between Jakarta and Yogyakarta and Bandung from Surabaya. Survey equipment was sent for a distance of about 4,000 km from Bandung to Yogyakarta by vehicles taking 10 to 13 hours. Base camps were set up in the following towns or cities.

- (1) Regional geochemical survey base camps: Klaten, Wonogiri, Pacitan, Ponorogo, Tulungagung, Blitar, Malang and Lumajang.
- (2) Semi-detailed geochemical survey base camps: Ponorogo, Pacitan, Pakisbaru.
- (3) Geological survey base camp: Ponorogo, Tulungagung, Blitar Turen and Pronojiwo
- (4) Geophysical survey base camp: Blitar and Pronojiwo
- (3) Drilling base camp: Tulungagung and Blitar

1-4-3 Topography

Many volcanoes with elevation exceeding 2,000m occur in the east to west direction in somewhat southern part of Java Island, and Mt. Semeru in the eastern part of the project area towers 3,676m high. Relatively gently undulating hilly areas exist between these volcanoes. The survey area to

the south of this row of volcanoes consists of steep mountainous terrain, but the topography to the east and west of the survey area is relatively flat with gentle relief. The area to the east has limestone karst topography. The area to the north of the volcanic row generally has lower elevation compared to the south, and thus the drainage divide is located southward and the larger rivers drain northward. The major rivers are; Brantas River, Madiun River, and Solo River.

Details of the rivers in the survey area: The drainage of the survey area consists of Solo River system and Madiun River system both of which flow northward into the Java Sea, and many southward-flowing drainage systems.

The Tempursari and Purwoharjo districts are located at the southern flank of Mt. Semeru. The elevation of the northern ridges is more than 1,000 m and it decreases to the sea level at the southern part of the Tempursari district. That is the Tempursari district has the steepest mountains among the four districts. Major rivers in the Tempursari district are of K. Ngrawan and K. Gede and K. Lenkong:

In the Purwoharjo district, mountains are not so high as in the Tempursari district. But Valleys of big rivers such as K. Glidik and K. Coban are deep and have many waterfalls.

The elevation in the Seweden district is generally between 100m and 400m and the topography of the district shows gentle slopes. The mountain divide run the northern part of the district: rivers in the northern part pours to the Brantas river and many rivers in the southern part flow into the Indian Ocean.

The topography of the Prambon district is steep in the northern part and rather gentle in the southern part. The elevation exceeds 800 m in the northern part and less than 100m in the southern part. The most of the rivers in the district go down to south and then join to the Brantas River.

1-4-4 Climate

Eastern Java is located in the tropical rain forest climate zone, and it is divided into the dry (May – October) and wet (November – April) seasons. The average precipitation is 2,000 ~ 2,500mm and the average monthly temperature ranges between 23 to 32° C (Pacitan).

1-4-5 Administrative Districts

As mentioned earlier, the project area extends over 19, 000km² in the eastern part of Java Island, and administratively it spreads across East Java Province, Central Java Province, and Yogyakarta Special District. The eastern part of the area for the regional geochemical surveys belongs to the East Java Province, and the western part to the Central Java Province and the East Java Province. Kabupaten (Regency) Ponorogo, Kabupaten Trenggalek, Kabupaten Madiun, Kabupaten Magetan, Kabupaten Tulungagung, Kabupaten Blitar, Kabupaten Malang and Kabupaten Lumajang belong to the East Java Province and Kabupaten Klaten, Kabupaten Sukoharjo and Kabupaten Wonogiri are in the Central Java Province.

1-4-6 General Geology of East Java

The project area is located in an island arc related to the present subduction of the Australia-India Plate under the Eurasia Plate, and a row of volcanoes occurs in the east-west direction. This volcanic arc overlaps the Tertiary volcanic arc and largely controls the geology and geologic structure of the survey area. East Java is divided into 4 zones, namely from the north southward, Rembang Zone, Kendeng Zone, Central Volcanic Zone, and Southern Mountain Zone. The Rembang and Kendeng Zones consist mainly of post-Oligocene sandstone-mudstone and limestone with intercalation of volcanoclastic rocks. The Central Volcanic Zone is composed mainly of post-Pliocene volcanic rocks. In the Southern Mountain Zone, pre-Tertiary metamorphic rocks are exposed at some places, and these are overlain by widely occurring Eocene and Oligocene to Pliocene volcanic rocks and limestone units.

The project area spreads across the two southern zones, namely the Central Volcanic and Southern Mountain Zones.

1-4-7 Geology of the Survey Area

(a) Stratigraphy

The geology of survey area consists of Tertiary and Quaternary System with basement composed of pre-Tertiary metamorphic rocks mentioned above. The oldest exposed formation in this area is Oligocene volcanic and volcanoclastic rocks, and sedimentary rocks. They are called Mandalika

Formation Watupatok Formation, Panggang Formation and Arjosari Formation-Dayakan Formation respectively. Miocene to Pliocene Series occur widely and they are; Nglanggran Formation, Wuni and Semilir Formations consisting mainly of volcanic and volcanoclastic rocks, Campurdarat and Wonosari Formations composed mainly of limestone, and Nampol, Jaten, and Oyo Formations consisting mainly of sedimentary units. Also basalt, andesite, and diorite intrusive bodies are exposed. The Quaternary System occurs in the northern part of the area, and it consists of Pleistocene to Holocene volcanic, volcanoclastic rocks and unconsolidated sediments. NW-SE and NE-SW trending faults are predominant in this area.

(b) Geologic structure

The Tertiary System largely show E-W to ENE-WSW strike with less than 30° dip. Occurrence of gentle and short wavelength fold structure with axes extending in the E-W to ENE-WSW direction is inferred. On the other hand, lower formations appear to be distributed in the northeastern part and the upper units in the southwestern part, and further study is warranted.

Large-scale lateral faults with NE-SW trend are interpreted to run at the lower elevation areas near Wonogiri, Tulungagung and Malang. They appear to be young structures and control the geologic structure of the area. The older faults trend NE-SW and NW-SE directions. In the West Area, faults with the NW-SE trends often dislocate the faults of NE-SW trends. Also in the East Area, faults trend NE-SW and NW-SE directions occur. Many mineralized zones are associated with N-S to NW-SE trending short and small faults and fissures. For example, quartz veins with N-S strike occur in the Selogiri area. Also many smaller NE-SW and NW-SE fault systems occur in the area.

1-4-8 Mines in the Adjacent Areas

The survey area lies over the subduction zone of the Australia-India Plate in the Sunda Trench, and the Sunda-Banda Islands continuing from Sumatra through Java, Sumbawa to the west are believed to be under similar geologic environment. The working mines of this region close to the survey area are Gunung Pongkor gold mine in West Java Province and Batu Hijau gold-porphyry copper mine in West Nusa Province.

The ore deposit of the Gunung Pongkor gold-silver mine is characterized by NW-SE to WNW-SES trending faults and E-W trending fold axes and the host rocks are Tertiary volcanic and pyroclastic

rocks. There are 4 major ore veins which are 300 to 1000m long in the strike direction, and less than 300m along the dip, and the average width is 2.5 to 8.0m. The gangue minerals are quartz and adularia, and native gold, argentite, are observed. Alteration is silicification and argillization (sericite, smectite) near the ore deposit. Ag/Au is 1.5~ 30 (average 9), and heavy metal and As contents are generally low, less than 100ppm. The mineralization is considered to have occurred in 8-9Ma.

The Batu Hijau porphyry gold-copper deposit is located in the southwestern part of the Sunbawa Island in the Sunda-Banda Islands. The host rocks of the ore deposit are Early Tertiary andesitic lava and pyroclastic rocks, and dacite and tonalite. Mineralization and alteration occurred in 3 stages, but the ore minerals are chalcopyrite and bornite in quartz veinlets, and observed alteration minerals are magnetite, sericite, albite, smectite, and kaolin. Mineralization and alteration occurred in a zone more than 1km in width, several kilometers in length and to a depth of 1,000m.

The above two ore deposits differ in type, but are both associated with Tertiary island arc activities, and the geologic environment of East Java such as NW-SE, ENE-WSW trending fault system, E-W fold structure, predominance of andesite – namely calc-alkali rock series, and the features are characteristic to the wider region.

Gold, silver, copper, lead, zinc, and iron-manganese prospects are known in the survey area. Gold deposits associated with quartz veins are widely distributed from Ponogoro to Pacitan. Seven holes with a total length of 1,005m were drilled jointly by DMR and the Korea Mining Promotion Corporation at Kasihan about 20km north of Pacitan in 1993, and weak copper, lead, zinc mineralization was identified. Their route maps show occurrence of hedenbergite and magnetite and lead and copper oxides and existence of skarn-type ore deposits is a possibility (Table 1-6).

1-4-9 Outline of the Mineral Showings in the Survey Area

Gold, silver, copper, lead, zinc mineralization is known in this area. Most of them are believed to be of hydrothermal origin, but the possibility of blind porphyry copper deposits should be considered. Also clay deposits associated with volcanic activities and limestone deposits are the main non-metallic deposits.

(1) Regional Geochemical Survey Area

Mineralization near the Selogiri gold deposits is the well known gold prospect. The Selogiri area was active and visited briefly during the Phase 1 Survey. Quartz veinlets occur in the area. The

width of each vein varies from 5 cm to 40 cm, and total length of the veining zones extends more than 500 m. A sample from the underground workings shows 2.0g/tAu. Wide area of the Penyelidikan area is investigated by DMR. Mercury mineralization is shown on the existing geologic map the Wonosari-Klaten area. Several manganese prospects are known in the survey area.

In the Eastern Area, there are several prospects conducted in Tulungagung, Blitar and Lumajang by Timah Investasi Mineral. Aneka Tambang holds concessions in the Sooko area east of Ponorogo. Precious metal mineralization area in silicified rocks to south of Trenggalek is hold by Fajar Minerals. Other precious mineralization area to south of Blitar is hold by Royal Indo Tama. Gold occurrences in the Kali Jinggring and Gunung Klitik areas are investigated by Timah Investasi Mineral. Hydrothermal alteration area near Tempursari is also investigated by the company.

(2) Semi-detailed Geochemical Area

Gold, silver, copper, lead, zinc, and iron-manganese prospects are known in the survey area. Gold deposits associated with quartz veins are widely distributed from Ponorogo to Pacitan. Several areas are investigated by this Phase I survey. Seven holes with a total length of 1, 005m were drilled jointly by DMR and the Korea Mining Promotion Corporation at Kasihan about 20km north of Pacitan in 1993, and weak copper, lead, zinc mineralization was identified. Their route maps show occurrence of hedenbergite and magnetite and lead and copper oxides and existence of skarn-type ore deposits is a possibility.

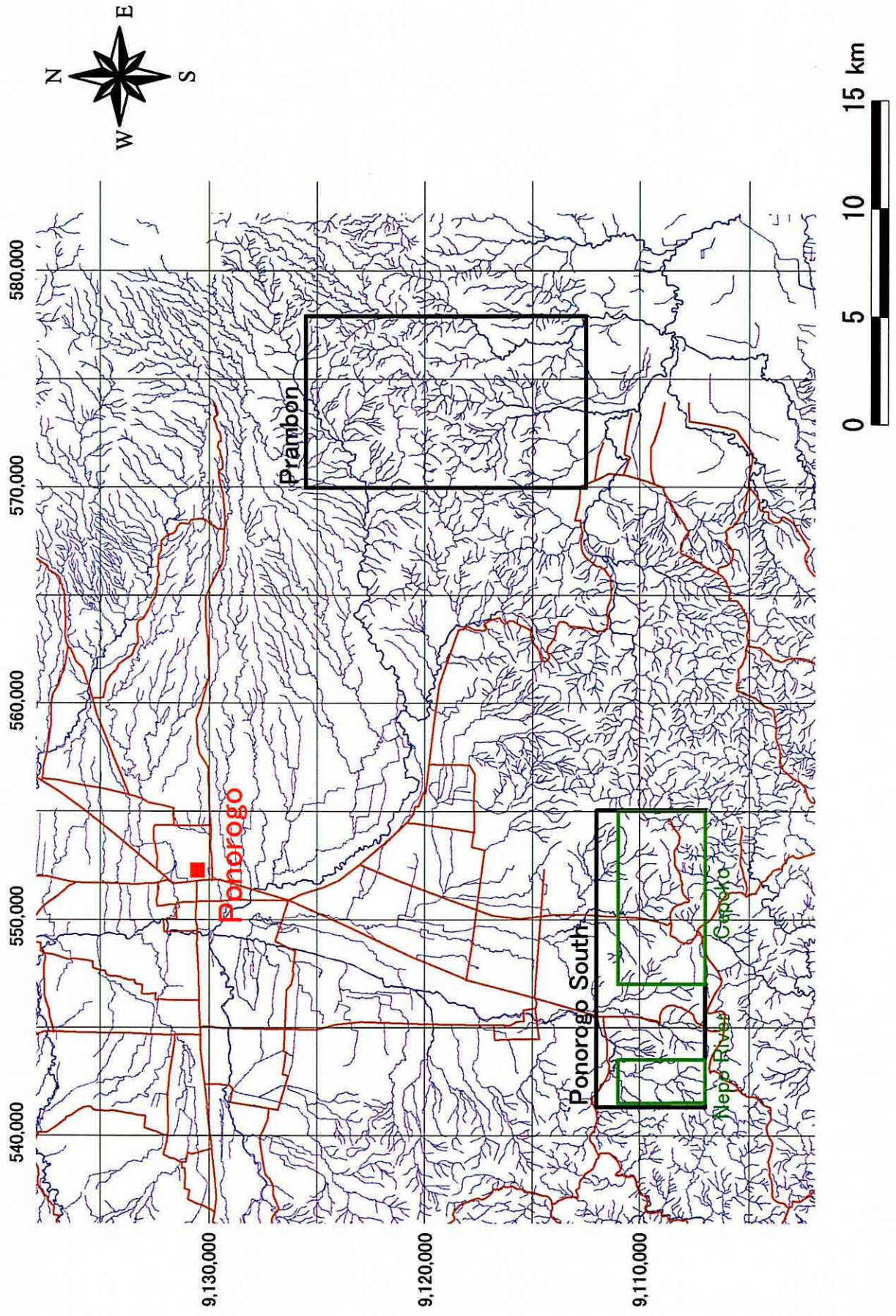


Fig. 1-2 Location Map of the Ponorogo South District

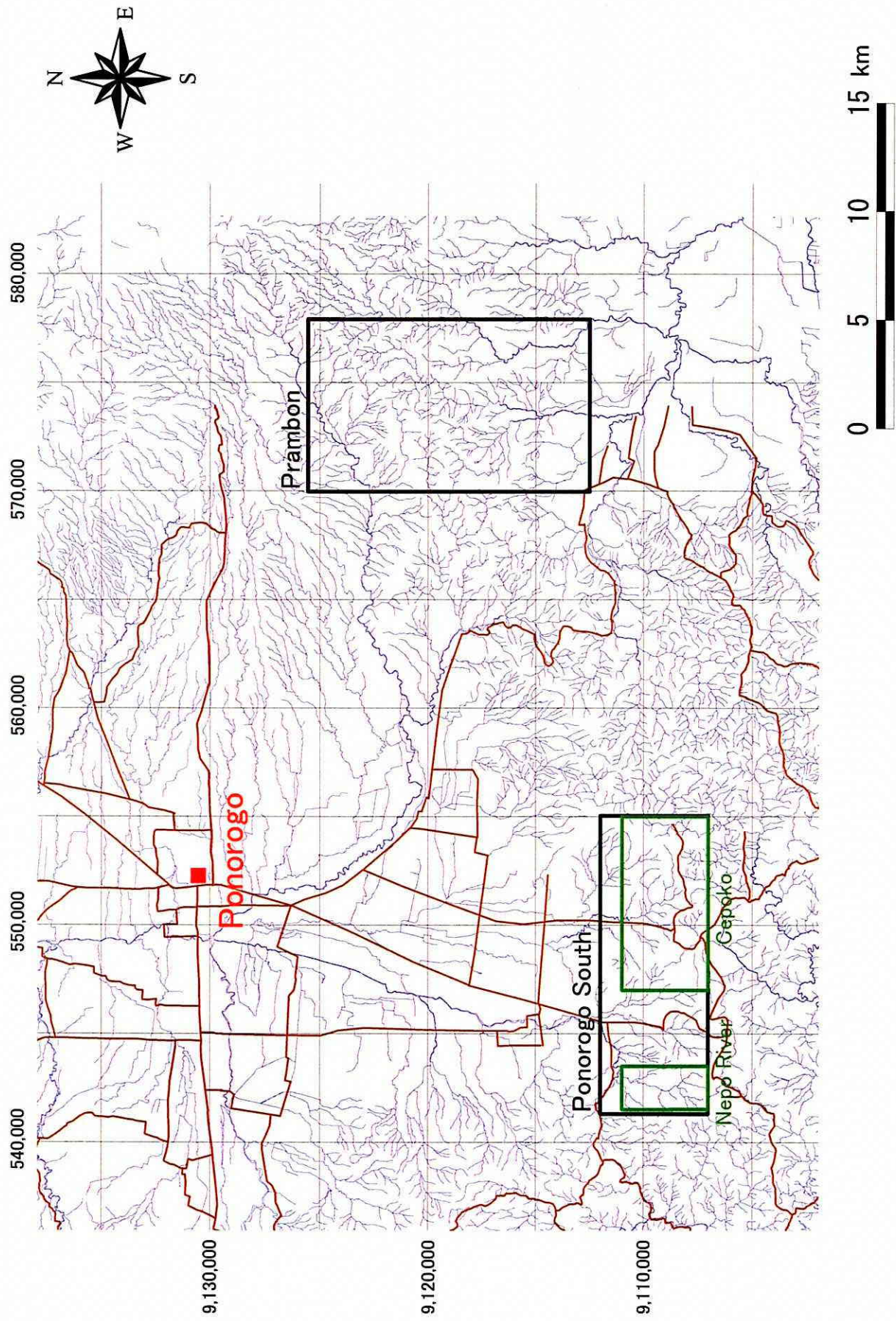


Fig. 1-3 Location Map of the Prambon District

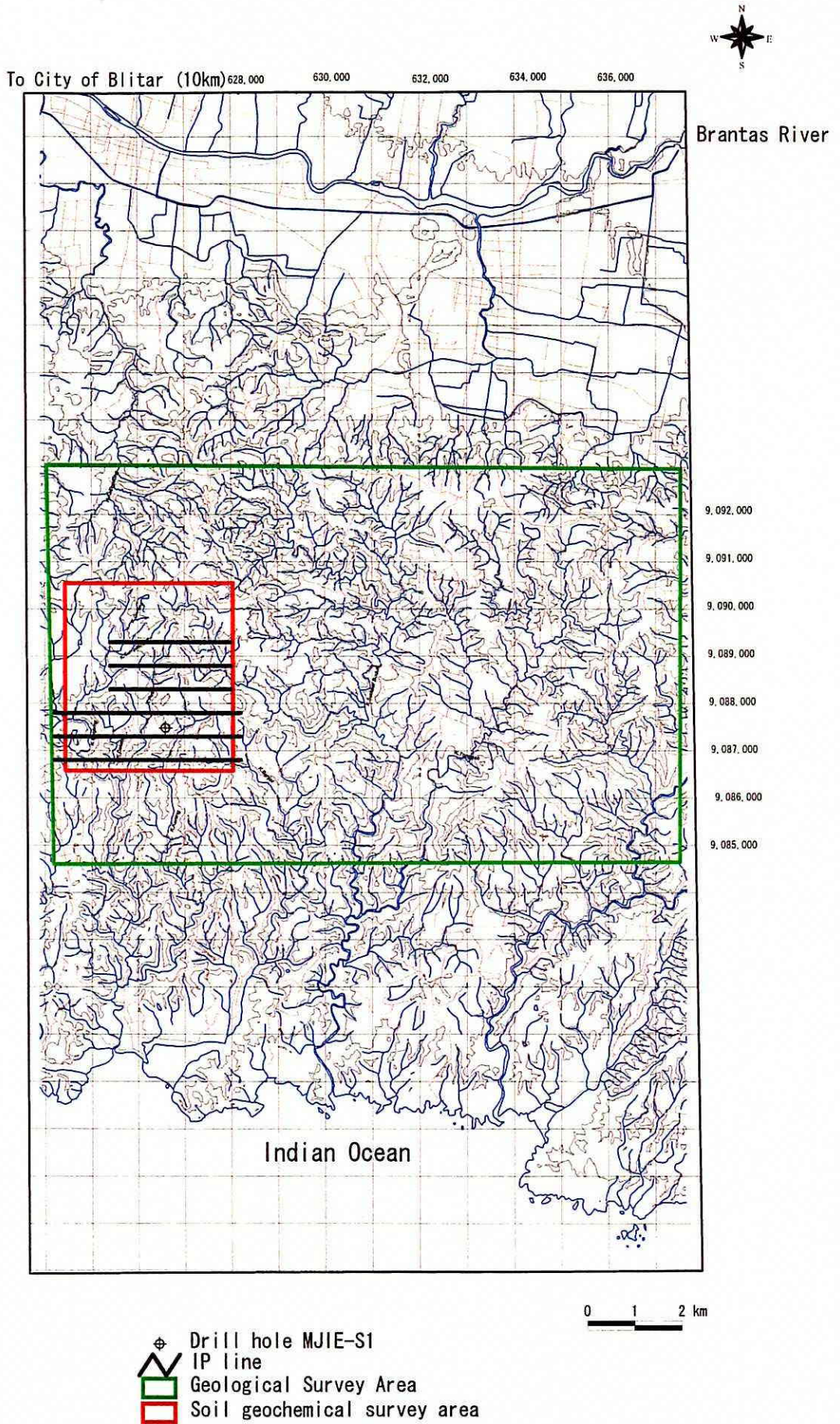


Fig.1-4 Location Map of the Seweden District

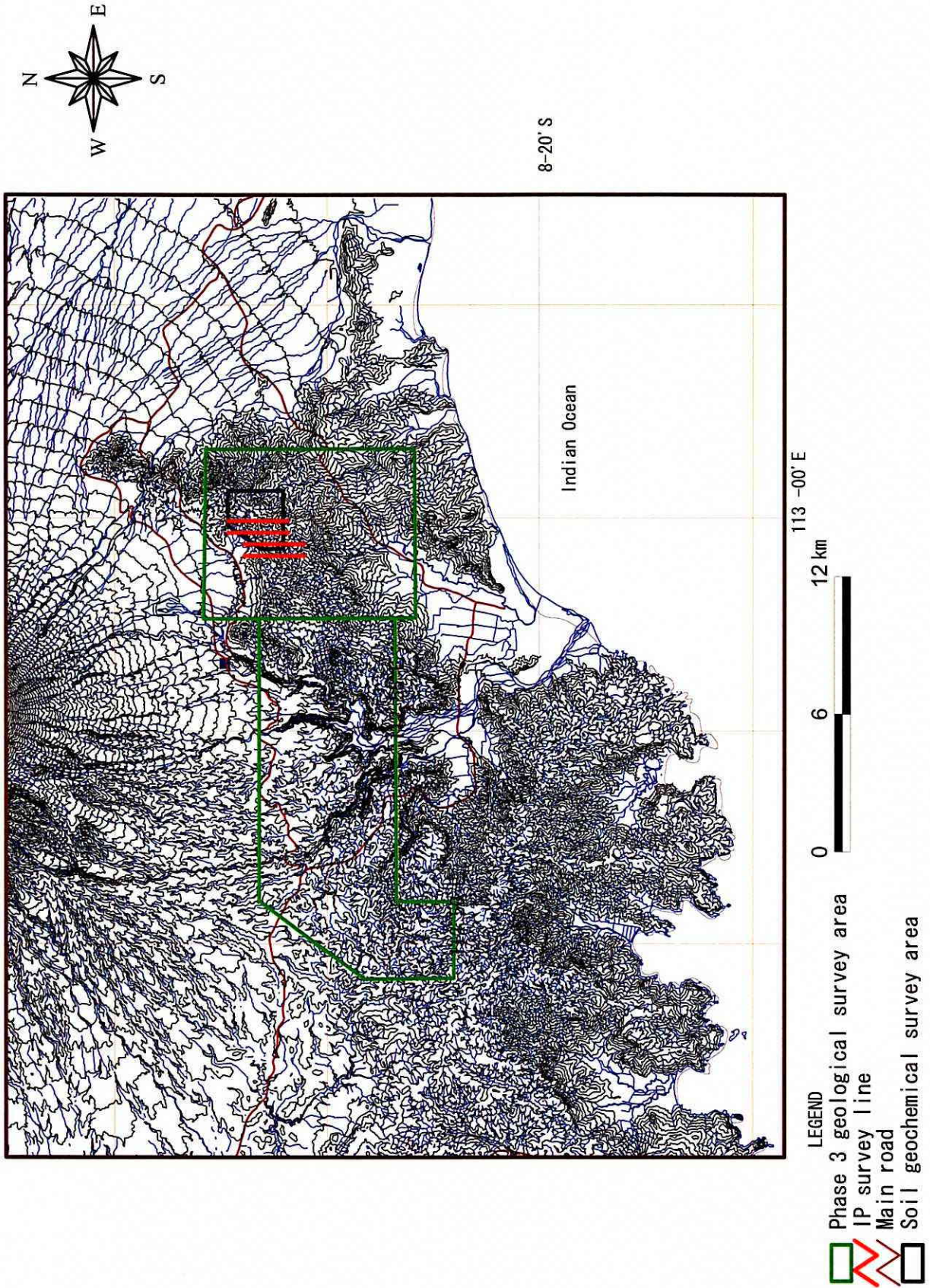


Fig. 1-5 Location Map of the Tempursari and Puwoharjo districts

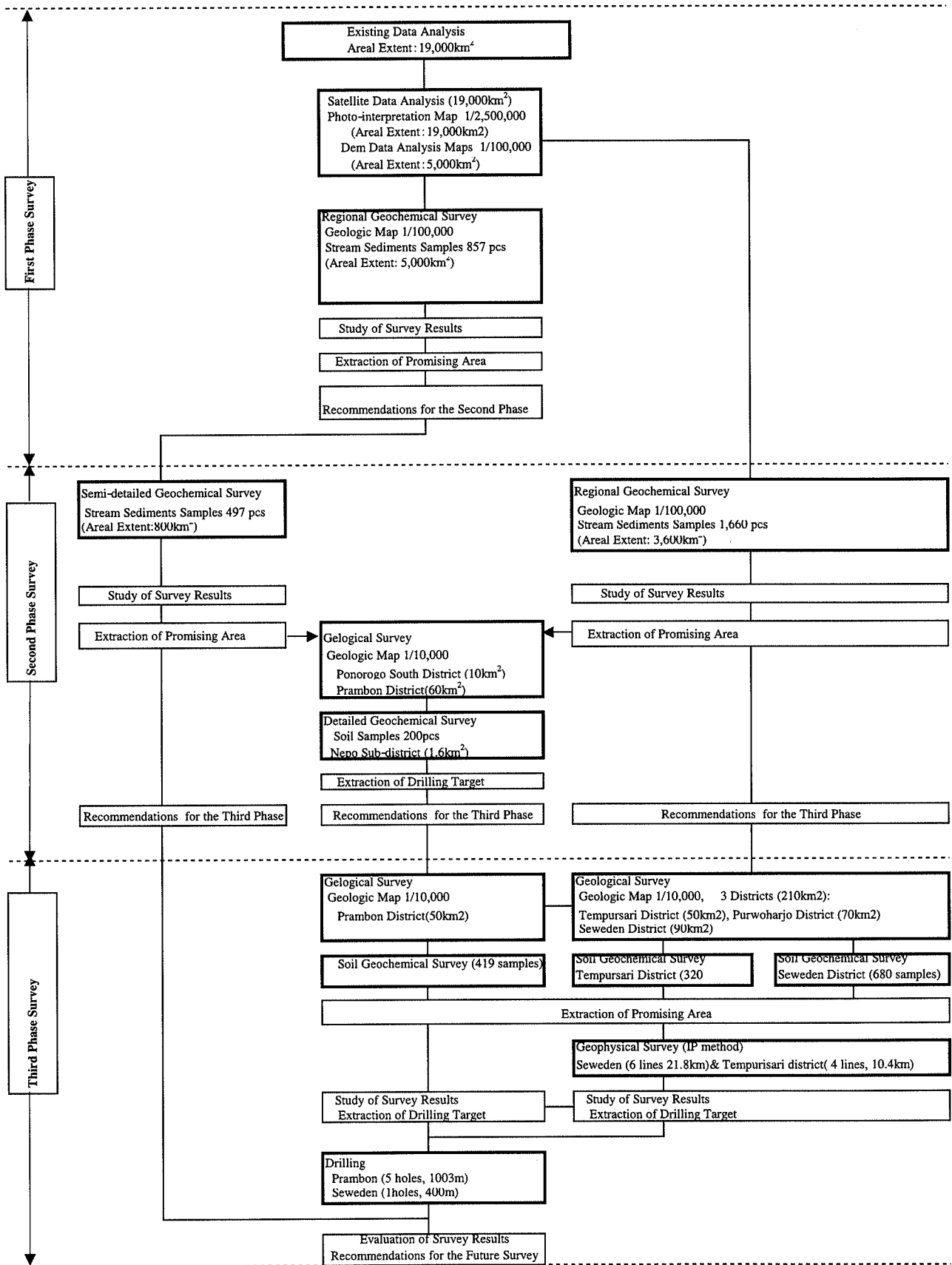


Fig. 1-6 Flowsheet of Survey

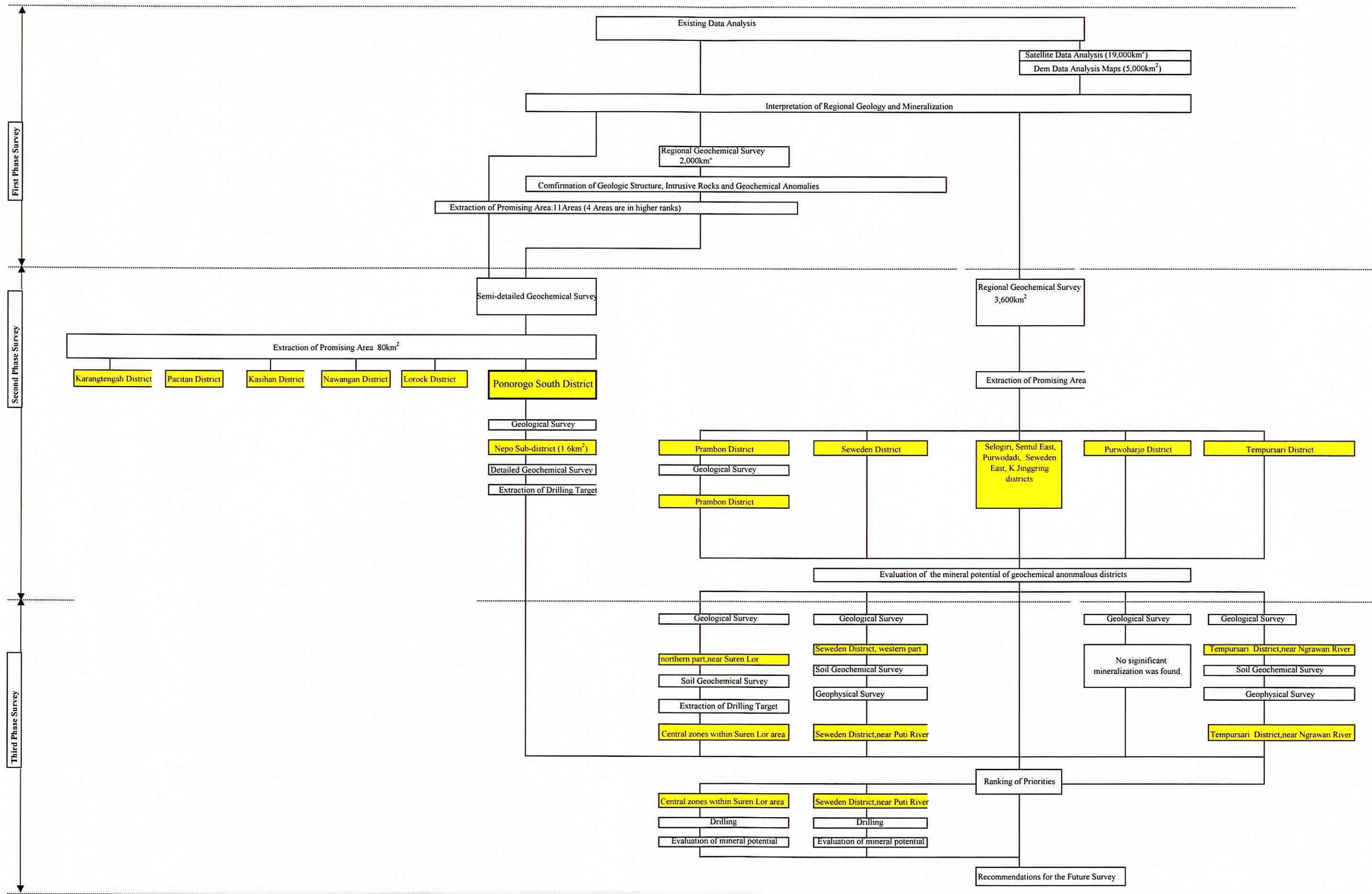


Fig. 1-7 Exploration Flowsheet

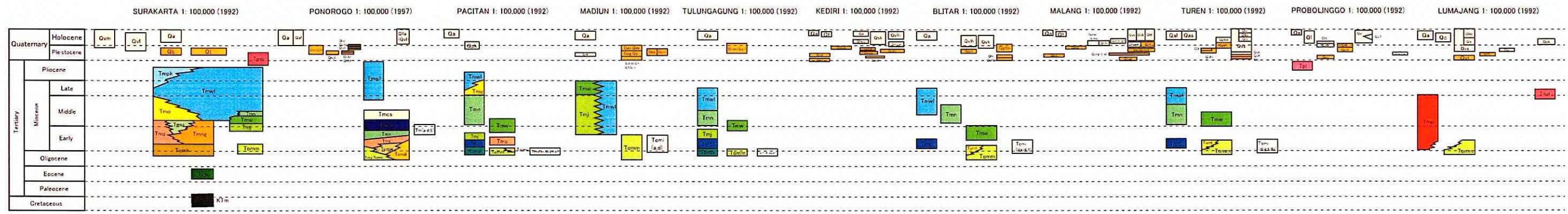


Fig. 1-8 Geologic Correlation of the Survey Area

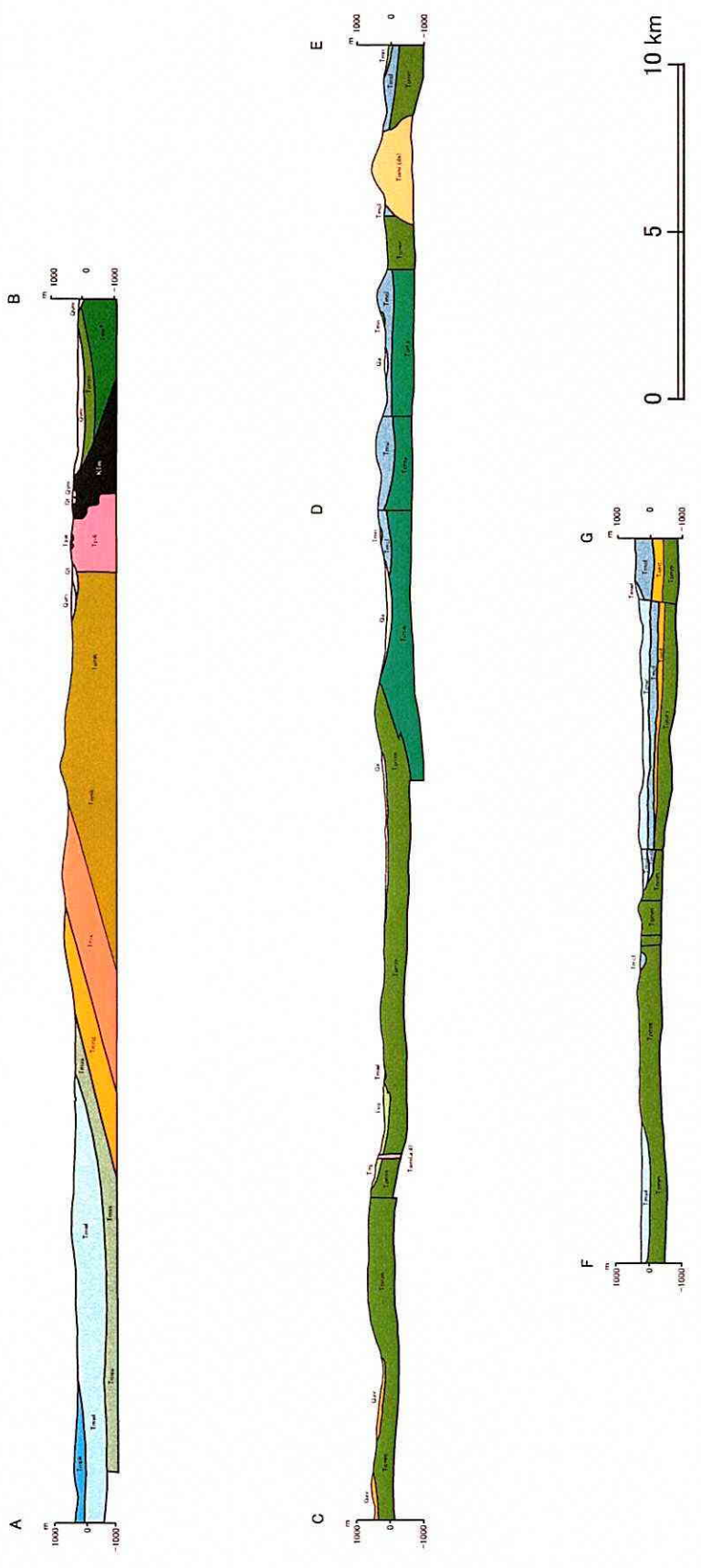


Fig. 1-9(2) Geologic Profiles (at a scale of 1: 100,000)

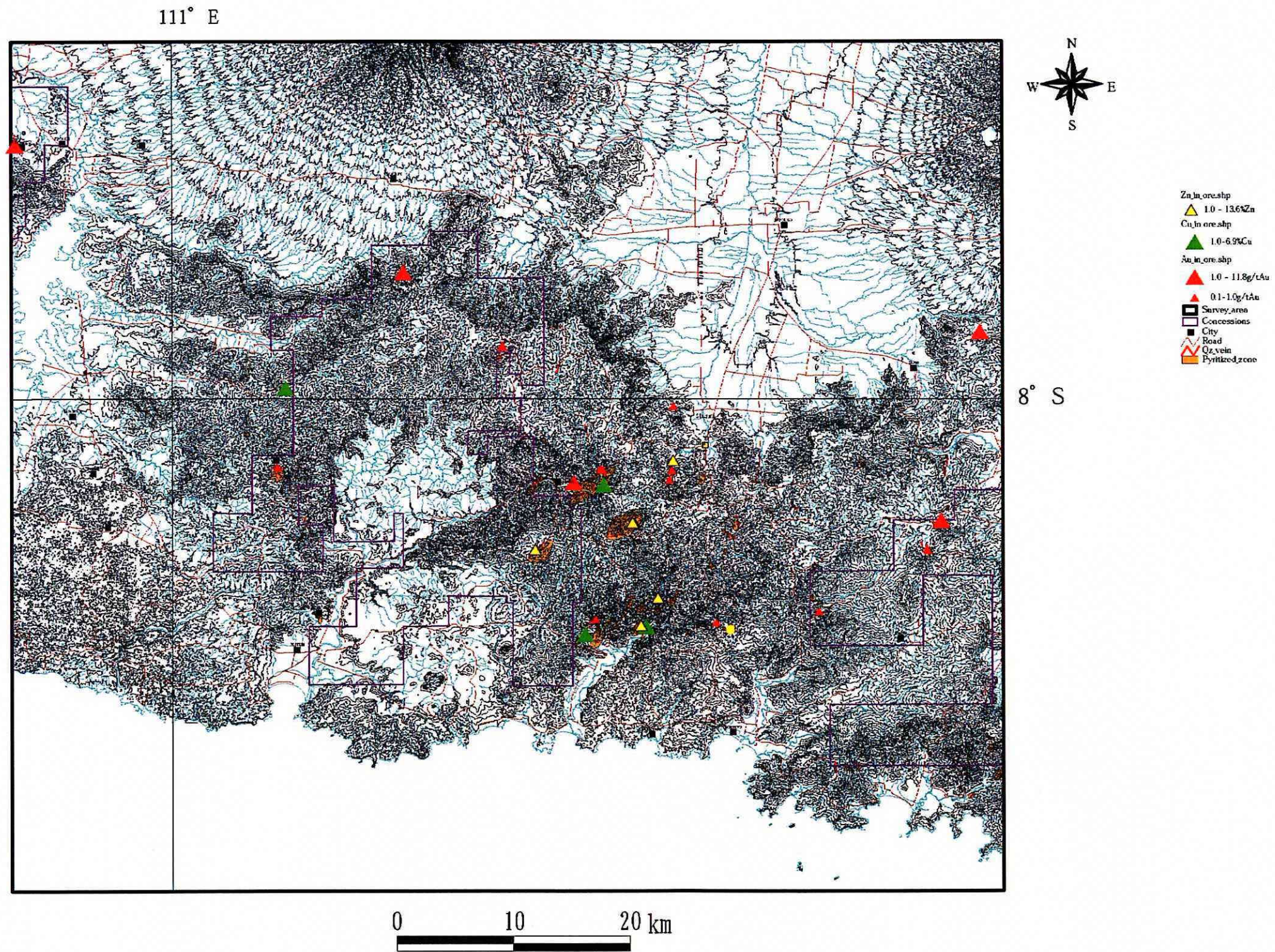
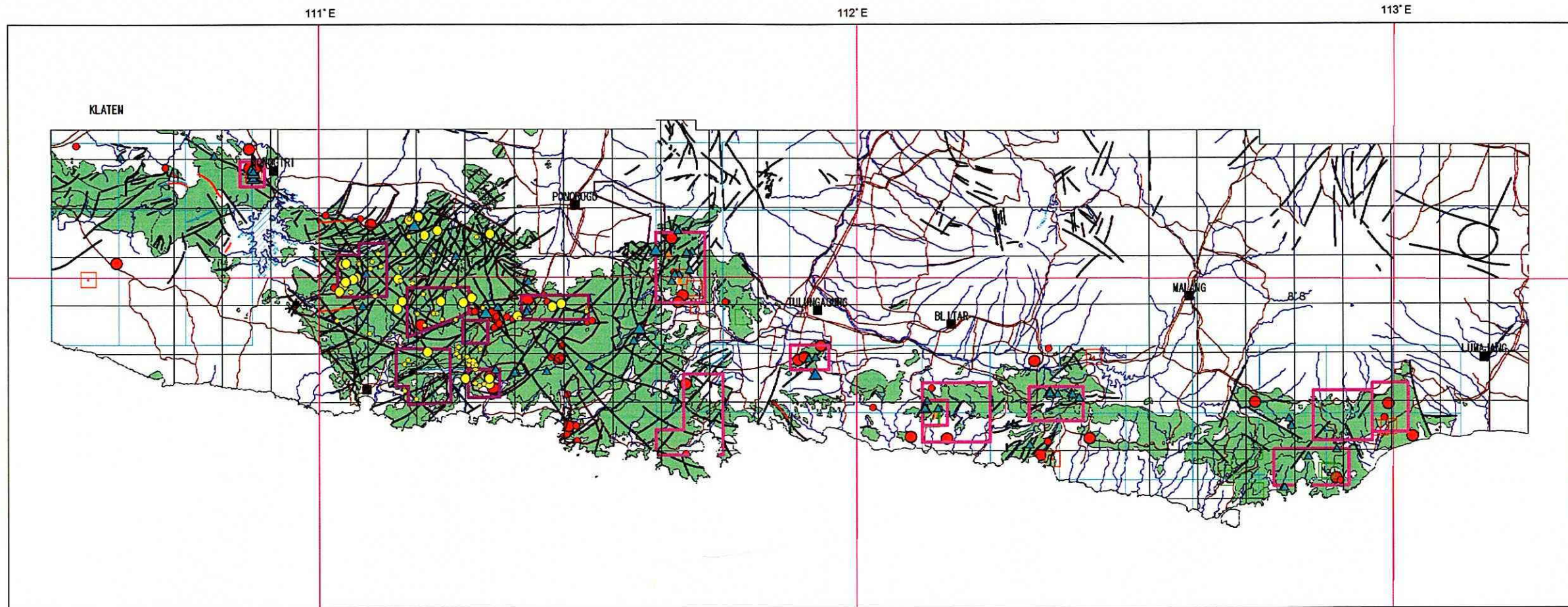


Fig. 1-10 Mineralization Map of the Survey Area



- Au (ppb) in stream sediments of Oligocene - Miocene volcanics
 - 0.070 -
 - 0.026 - 0.070
- Au (ppm) in stream sediments of Miocene volcanics
 - 0.031 -
 - 0.007 - 0.031
- Au (ppm) in stream sediments of Oligocene - Miocene sedimentary rocks Semi-detailed Survey Area
 - 0.107 -
 - 0.027 - 0.107
- Au (ppm) in stream sediments of Miocene sedimentary rocks
 - 0.013 -
 - 0.005 - 0.013
- Au (ppb) in rock samples (Phase 1)
 - ▲ 1000 - 11805
 - ▲ 100 - 1000
- Au (ppb) in rock samples (Phase 2)
 - ▲ 1000 - 21086
 - ▲ 100 - 1000
- ▭ Proposed area for follow-up survey (by Phase 2 regional survey)
- ▭ Proposed area for follow-up survey (by Semi-detailed survey)
- ▭ High potential area (by Phase 1 regional survey)
- Chalcopyrite in pan concentration
 -
- Gold occurrence in pan concentration
 -
- Au (ppm) in stream sediments (Phase 2 regional)
 - 0.141 - 0.691 (> 3 Std. Dev.)
 - 0.098 - 0.141 (2 - 3 Std. Dev.)
- Au (ppm) in stream sediments (Phase 1 Regional)
 - 38 - 219
 - 15 - 38
- Topographic map boundary
- Quartz Vein
- Foldings
 - ↗ anticline
 - ↘ syncline
 - ↘ Fault
- Geology
 - Tertiary (Pliocene-Eocene)
 - Lake



Fig.1-11 Integrated Map of the Survey Area

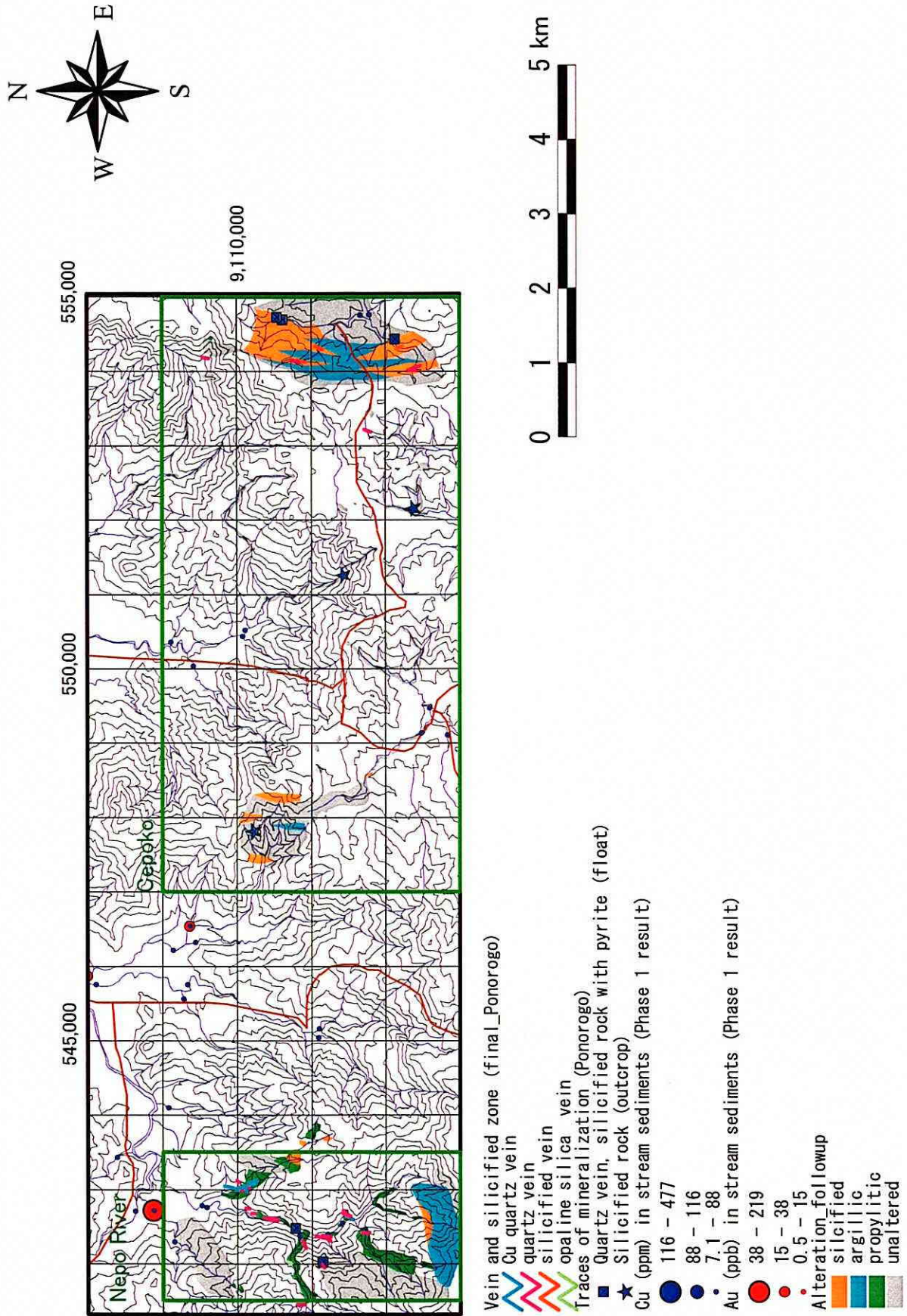
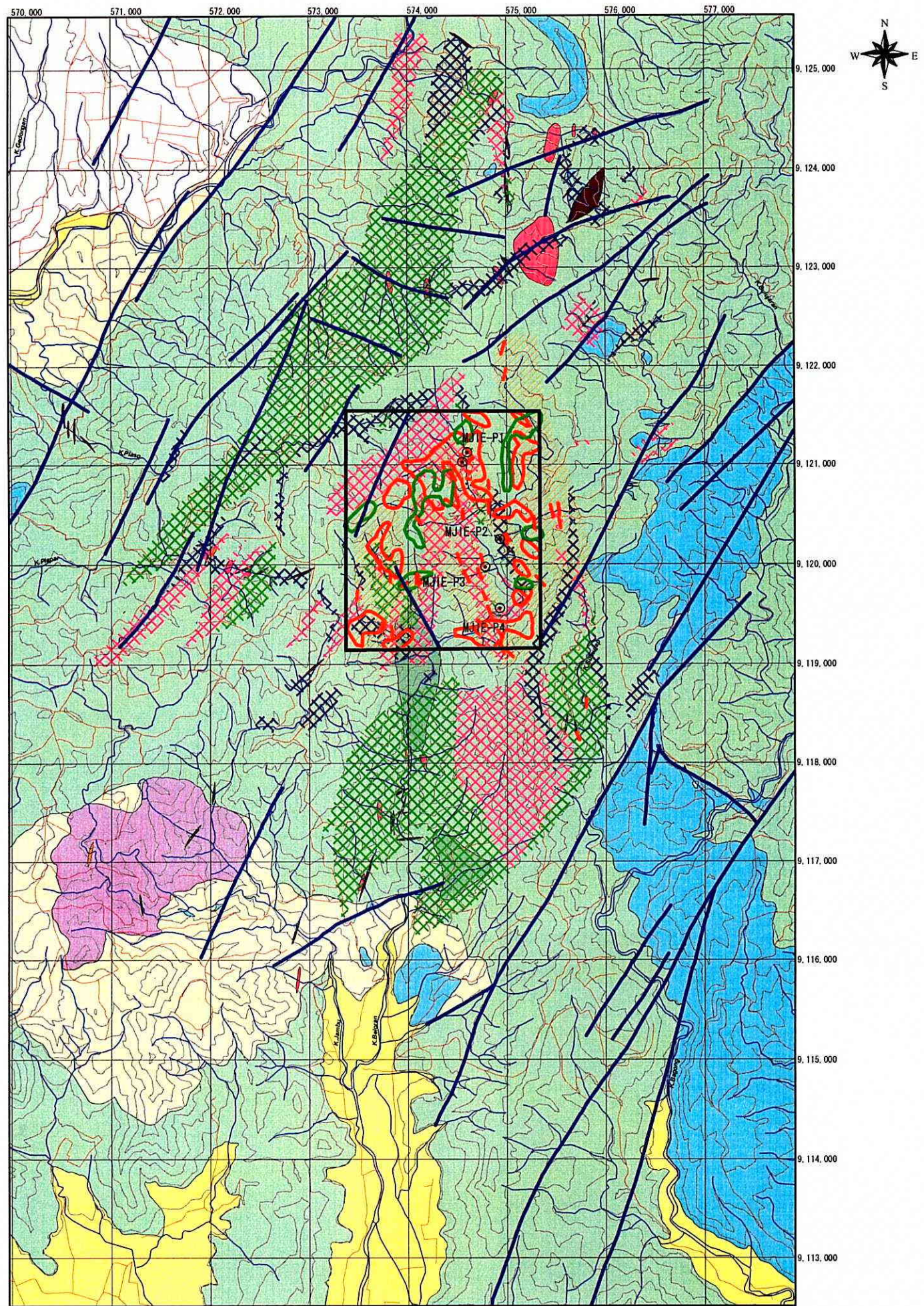


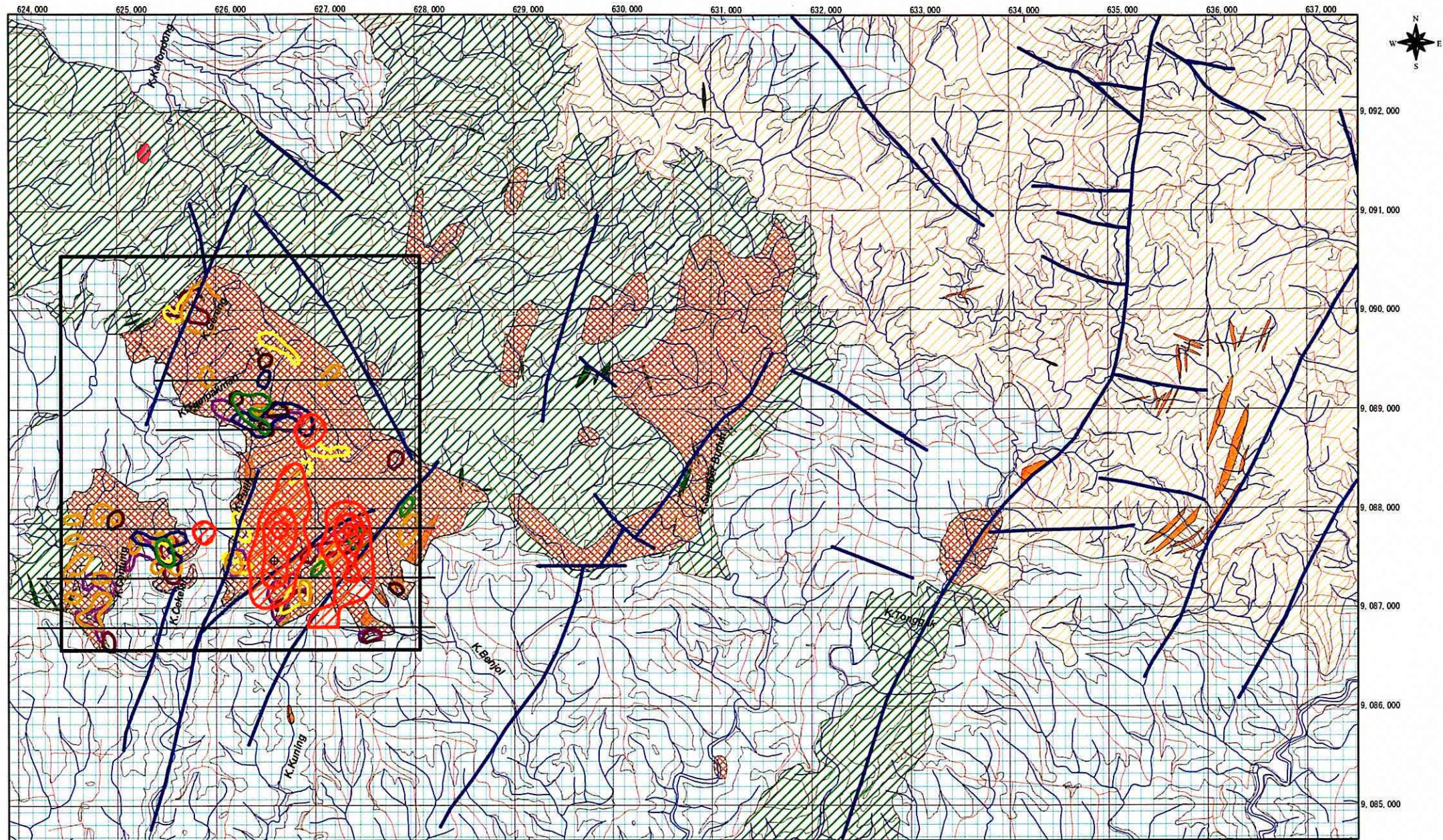
Fig. 1-12 Integrated Map of the South District



- Prambon_drill_collar.shp
- Soil geochemical survey area
- Fault
- Quartz vein line
- Soil Cu anomaly (Cu>0.01%)
- Soil Au anomaly (Au>0.1ppm)
- Quartz vein area
- Alteration Zone
 - Argillic Zone
 - Propylitic Zone
 - Silicified Zone
- Geologic units
 - Qv: Alluvium
 - Qv: Quaternary volcanics
 - Wol: Monosari Formation (limestone)
 - Tajb: Jaten Formation (basalt lava)
 - Taja: Jaten Formation (andesitic tuff breccia, sedimentary rocks)
 - Tomsa: Mandalika Formation (Andesitic lava, volcanoclastics)
 - Tomi (da): Intrusive (dacite)
 - Tomi (an): Intrusive (andesite)
 - Tomi (pa): Intrusive (porphyritic andesite)
 - Tomi (di): Intrusive (diorite)
 - Tomi (ba): Intrusive (basalt)

0 1 2 km

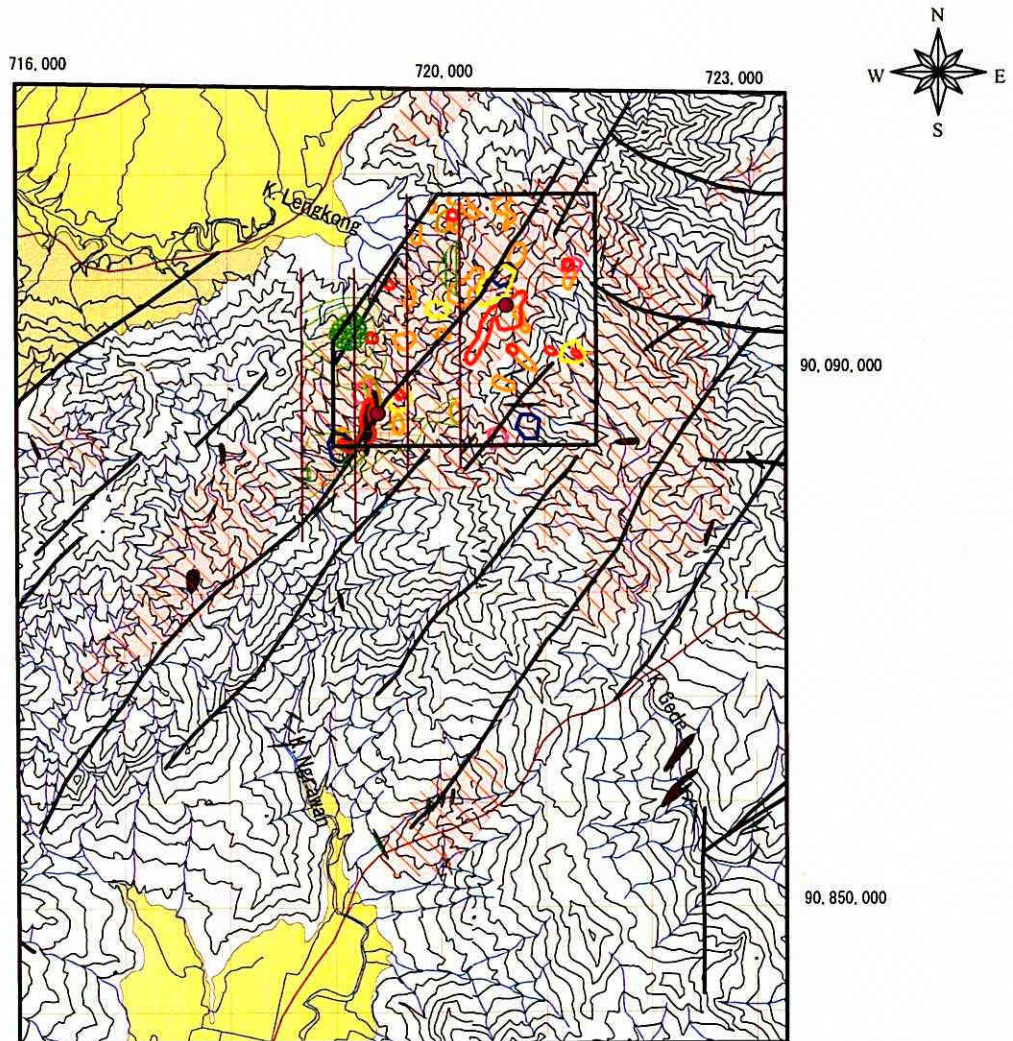
Fig.1-13 Integrated Map of the Prambon District



- ◆ Drill hole MJIE-S1
- Chargeability (mV/V)
- 50-
- 40-50
- 30-40
- IP line
- Soil geochemical survey area
- Fault
- Soil Cu anomaly (Cu>100ppm)
- Soil Pb anomaly (Pb>50ppm)
- Soil Zn anomaly (Zn>200ppm)
- Soil As anomaly (As>30ppm)
- Soil Ag anomaly (Ag>0.1ppm)
- Soil Au anomaly (Au>0.01ppm)
- Soil Mo anomaly (Mo>2ppm)
- Alteration Zone
- Limestone cover
- Sericite-kaoline-pyrite zone
- Propylitic zone
- Unaltered -diagenetic alteration zone
- Geologic unit
- Tomi (da): Intrusive (dacite)
- Tomi (an): Intrusive (andesite)
- Tomi (di): Intrusive (diorite)



Fig.1-14 Integrated Map of the Seweden District



LEGEND

- Soil geochemical survey area
- IP survey line
- Soil geochemistry anomaly, ppm (%)
 - 15-20
 - 20-40
 - 40-60
- Soil anomaly
 - As > 2 ppm
- Fault
 - Au anomaly in soil (10-20 ppm)
 - Ag anomaly in soil (10-20 ppm)
 - Pb anomaly in soil (100ppm)
 - Cu anomaly in soil (100ppm)
 - As anomaly in soil (100ppm)
 - Pb anomaly in soil (200 ppm)
- Water stream/river
 - Moderate
 - Intense
- Phase 3 geological survey dpt
 - Main road
 - Geologic unit
 - Quaternary
 - New Bunt Formation (andesitic-basaltic lava and volcanoclastics)
 - Tam (G1) Intrusive (dacite)
 - Tam (G2) Intrusive (andesite)
 - Tam (G3) Intrusive (diorite)
- Alteration
 - Sericite-kapaline dominant zone
 - Chlorite dominant zone



Fig. 1-16 Integrated Map of the Tempursari District