

FIGURE A-68 GEOPHYSICAL SURVEY LOCATION IN KISE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

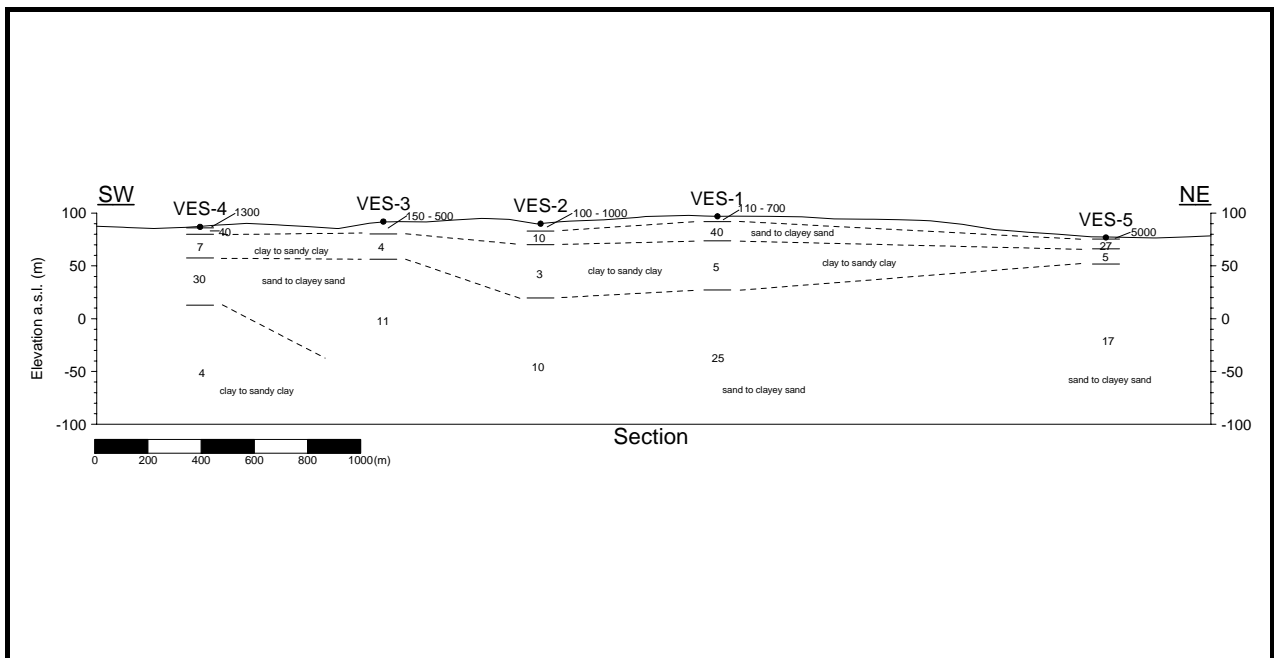


FIGURE A-69 INTERPRETED SECTION FOR VES SURVEY IN KISE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

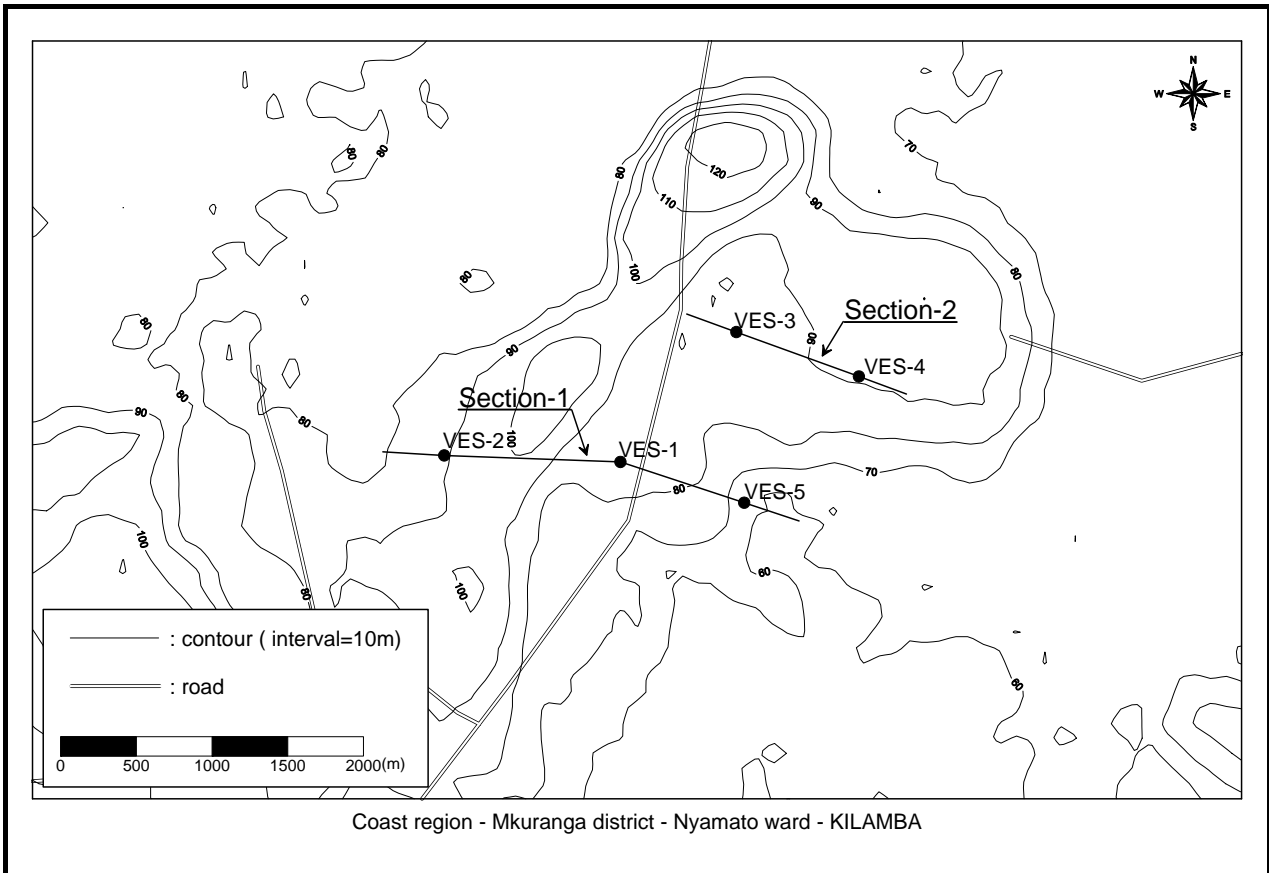


FIGURE A-70 GEOPHYSICAL SURVEY LOCATION IN KILAMBA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

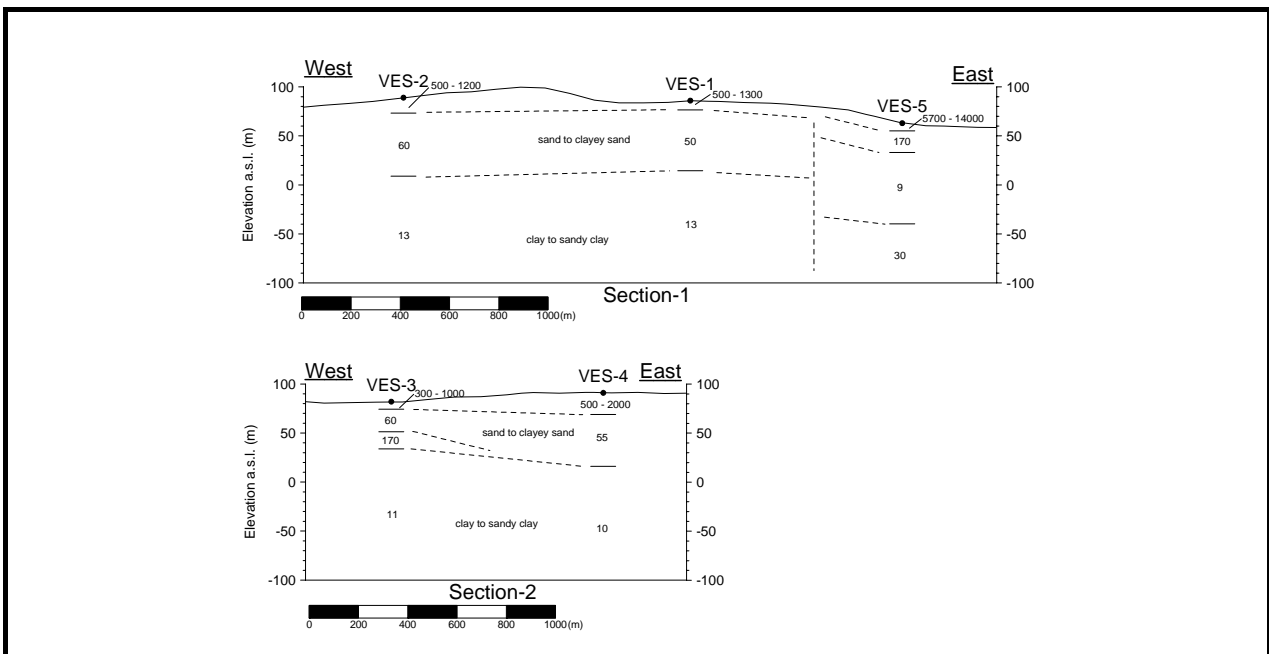


FIGURE A-71 INTERPRETED SECTION FOR VES SURVEY IN KILAMBA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

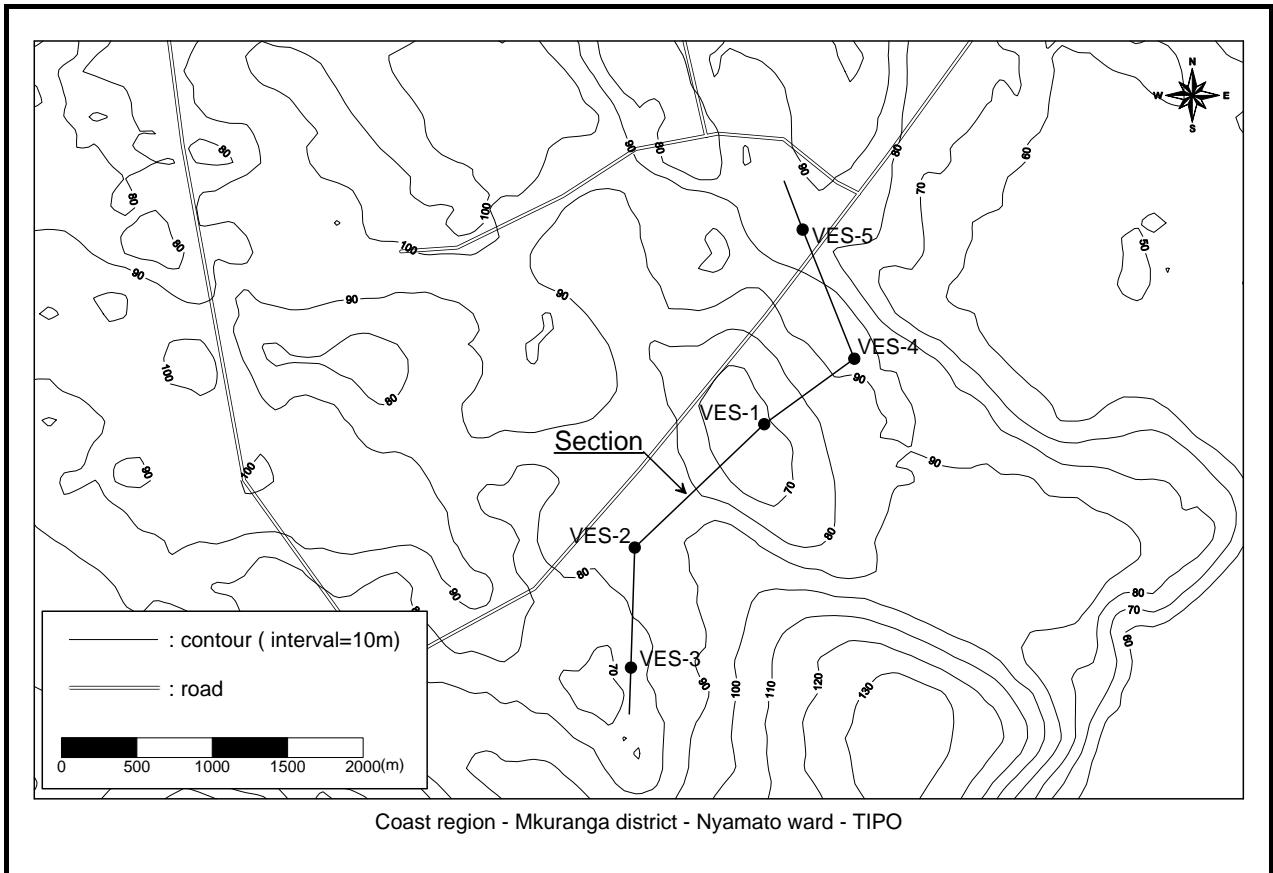


FIGURE A-72 GEOPHYSICAL SURVEY LOCATION IN TIPO

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

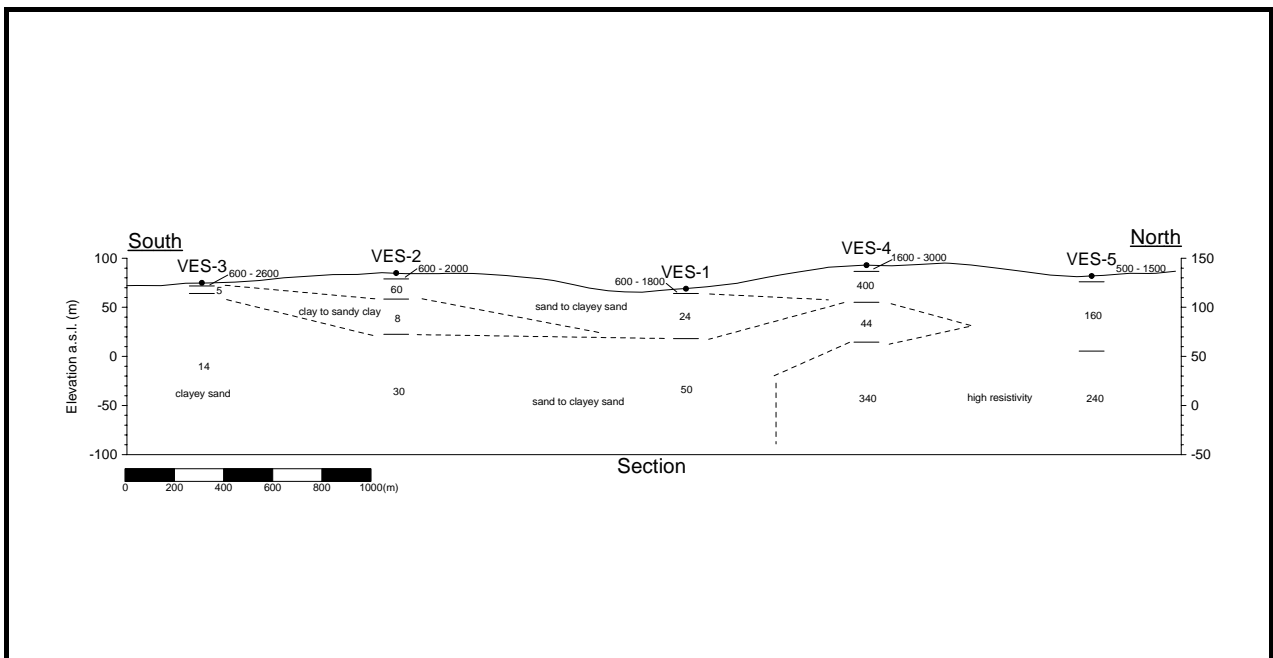


FIGURE A-73 INTERPRETED SECTION FOR VES SURVEY IN TIPO

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

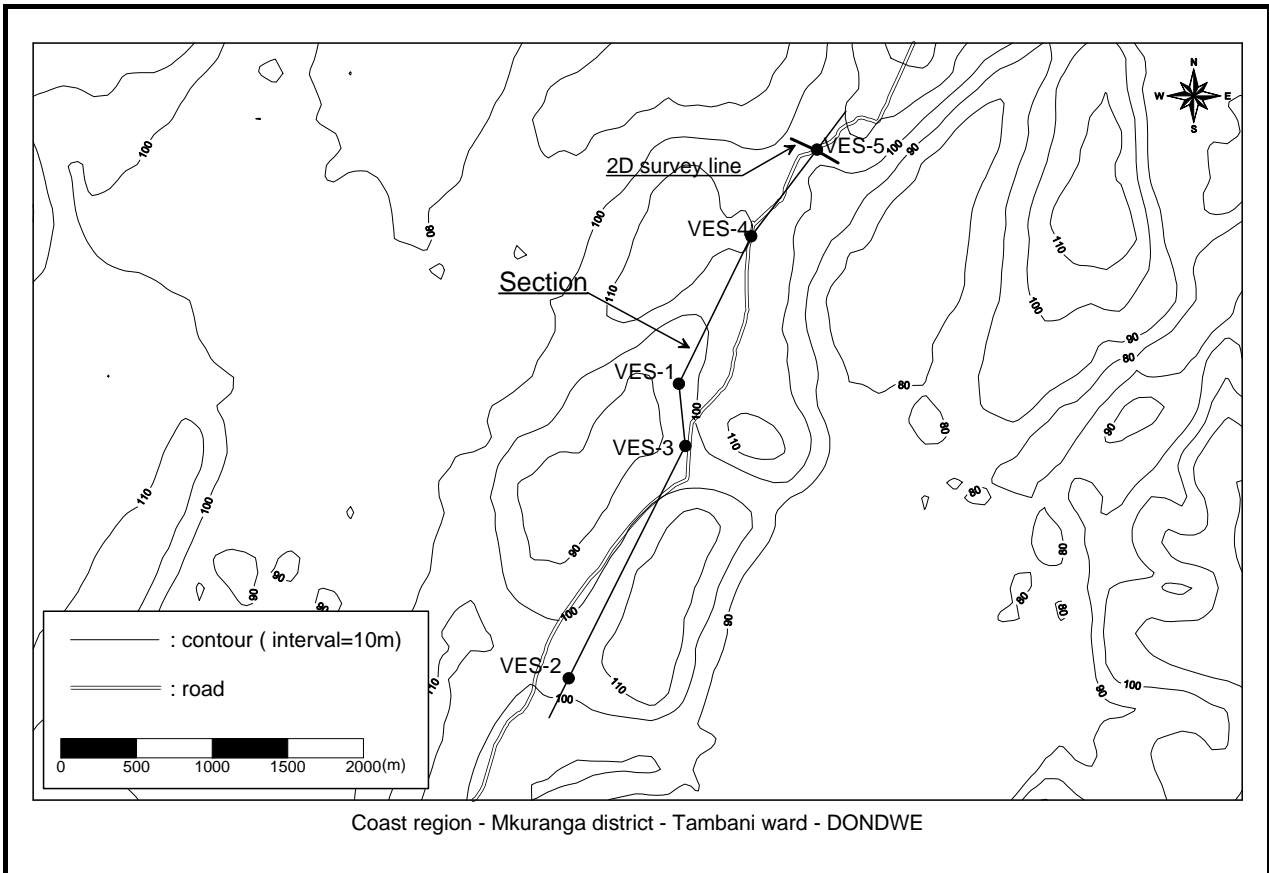


FIGURE A-74 GEOPHYSICAL SURVEY LOCATION IN DONDWE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

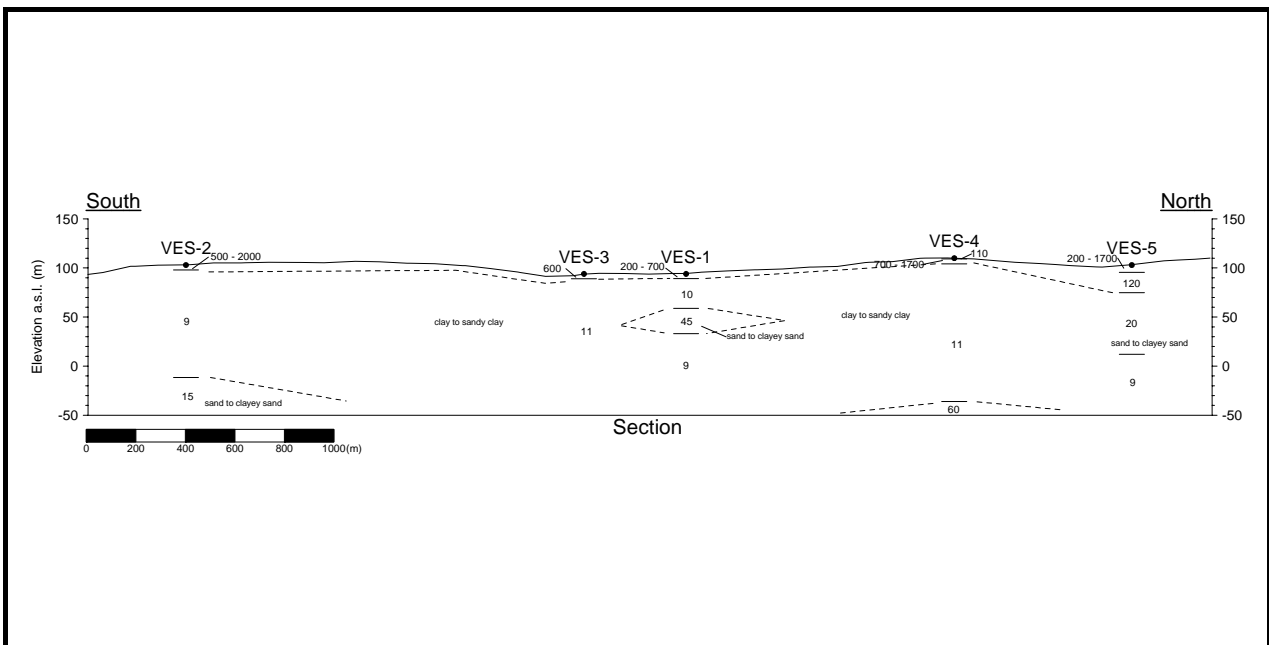


FIGURE A-75 INTERPRETED SECTION FOR VES SURVEY IN DONDWE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

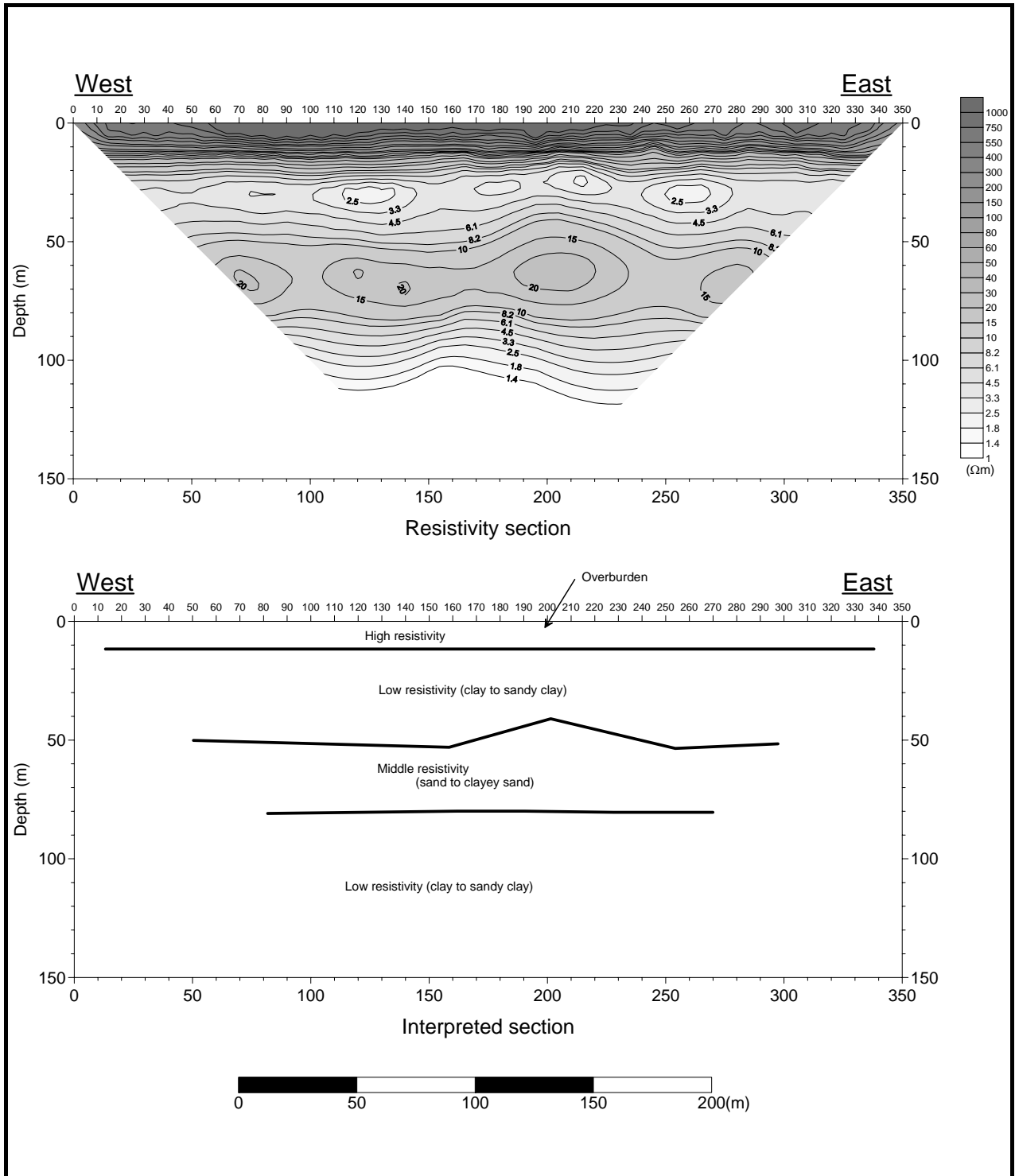


FIGURE A-76 INTERPRETED SECTION FOR 2D IMAGING IN DONDWE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

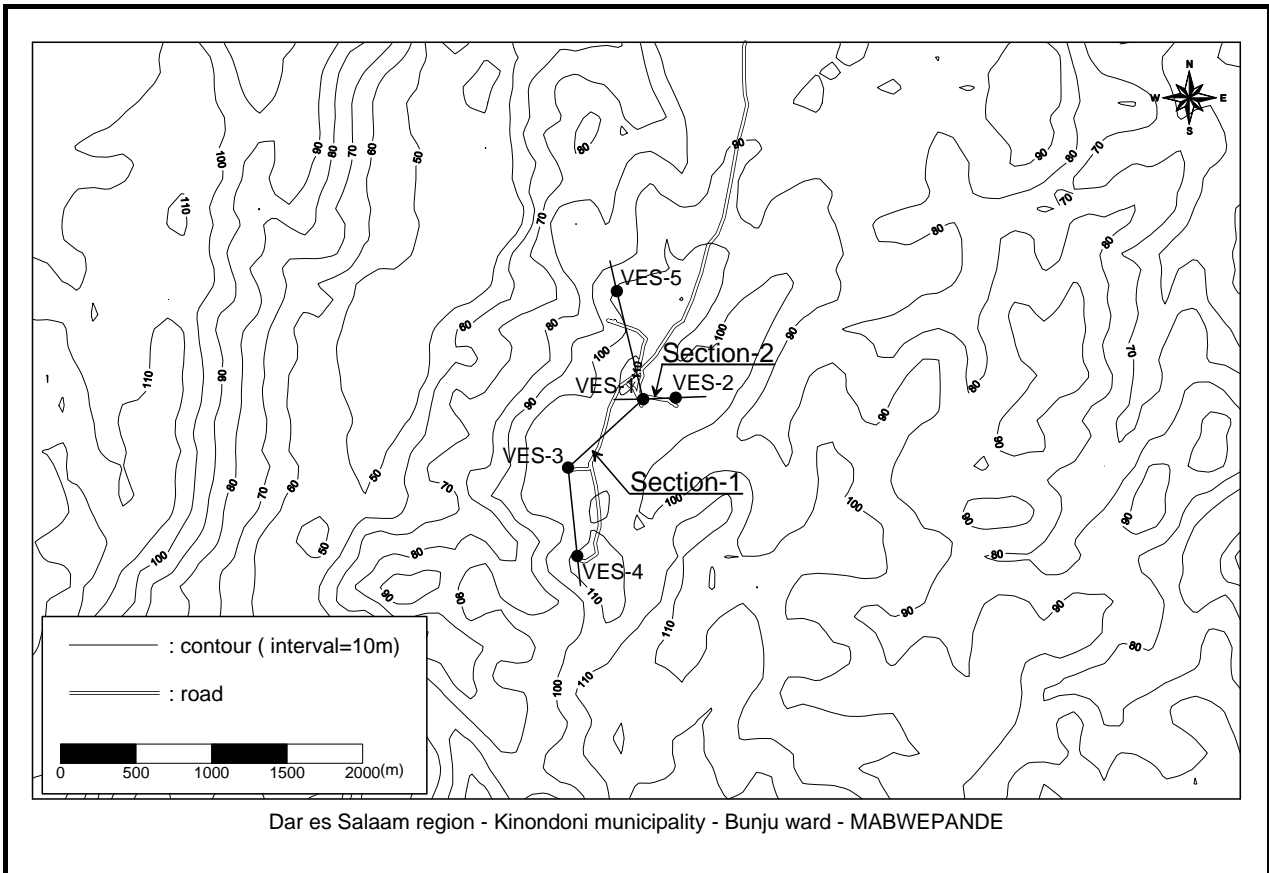


FIGURE A-77 GEOPHYSICAL SURVEY LOCATION IN MABWEPANDE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

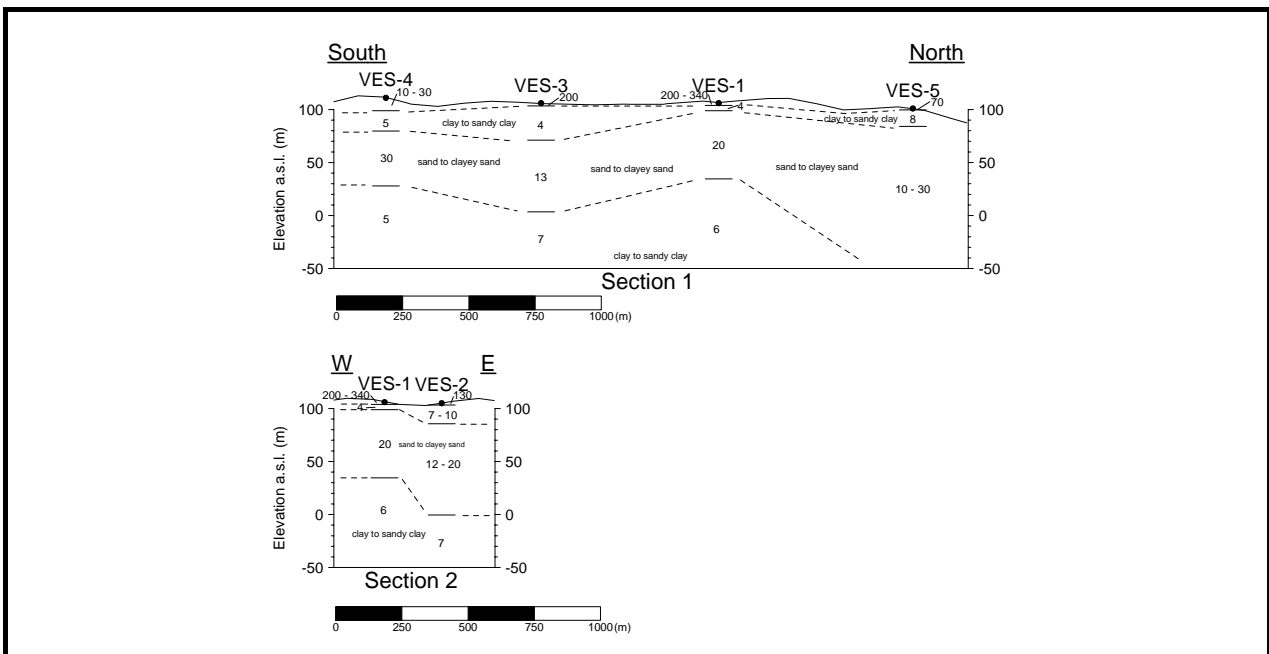


FIGURE A-78 INTERPRETED SECTION FOR VES SURVEY IN MABWEPANDE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

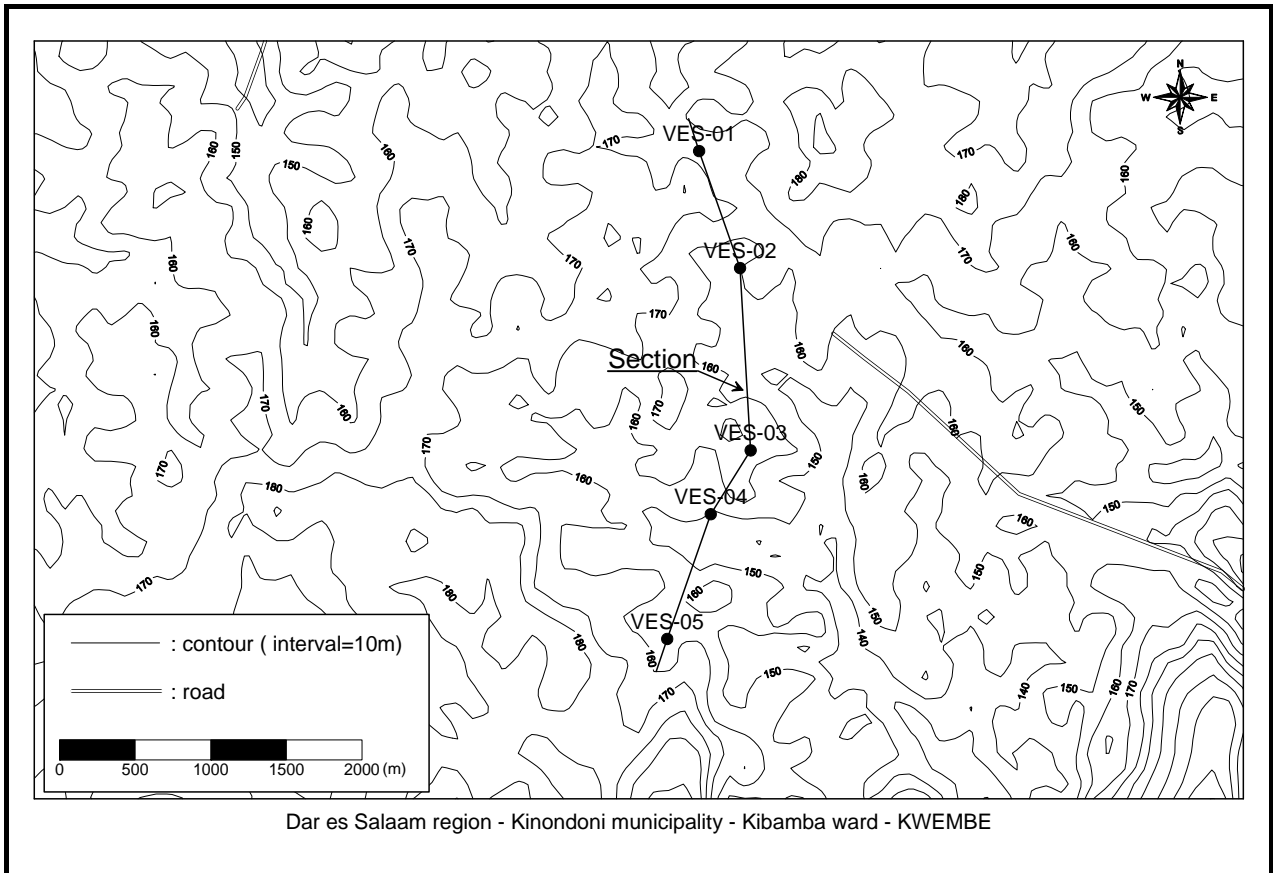


FIGURE A-79 GEOPHYSICAL SURVEY LOCATION IN KWEMBE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

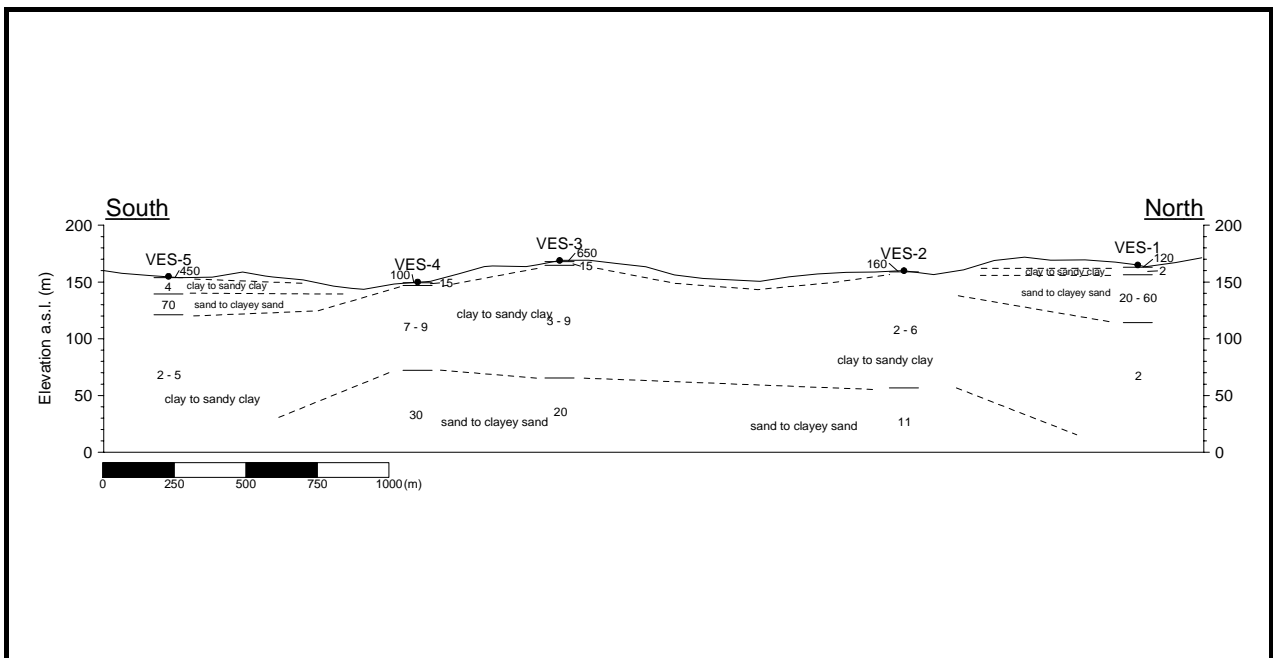


FIGURE A-80 INTERPRETED SECTION FOR VES SURVEY IN KWEMBE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

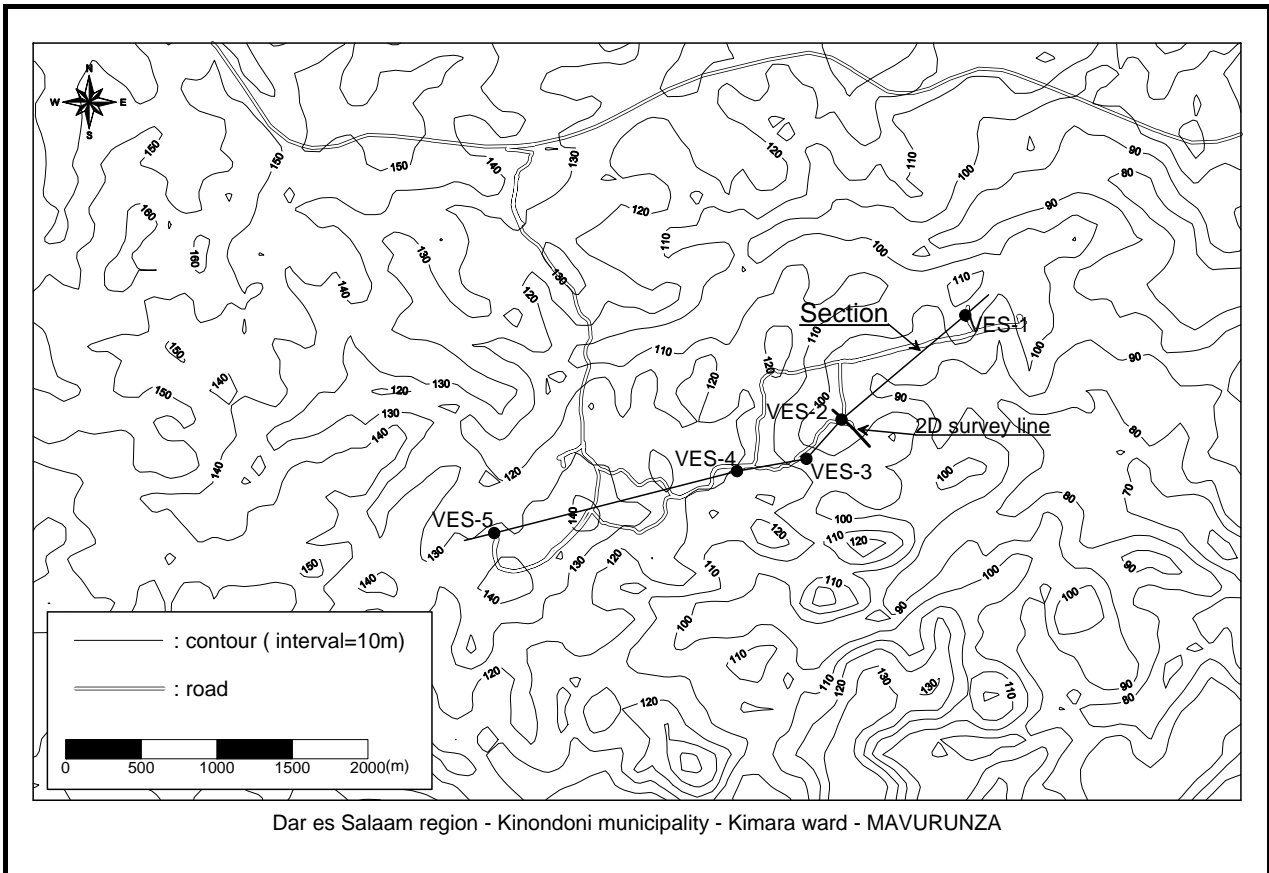


FIGURE A-81 GEOPHYSICAL SURVEY LOCATION IN MAVURUNZA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

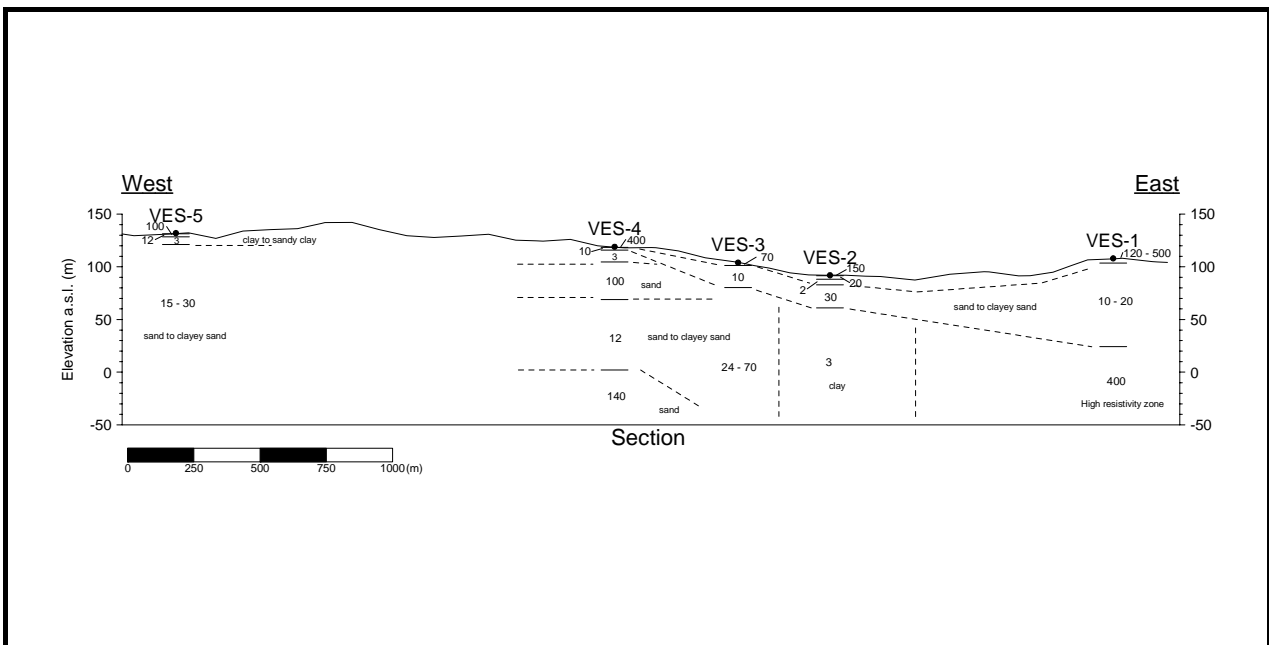


FIGURE A-82 INTERPRETED SECTION FOR VES SURVEY IN MAVURUNZA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

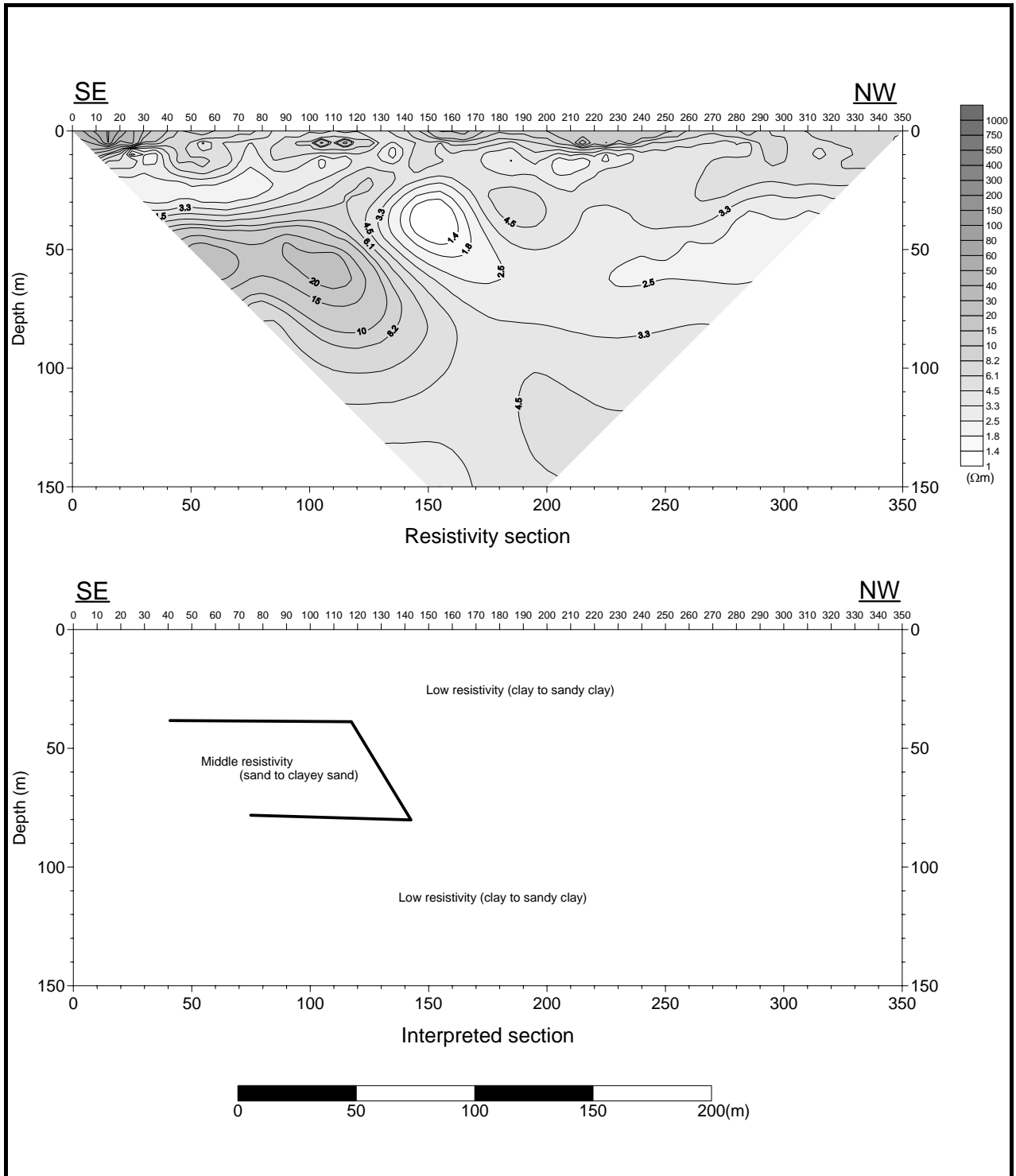


FIGURE A-83 INTERPRETED SECTION FOR 2D IMAGING IN MAVURUNZA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

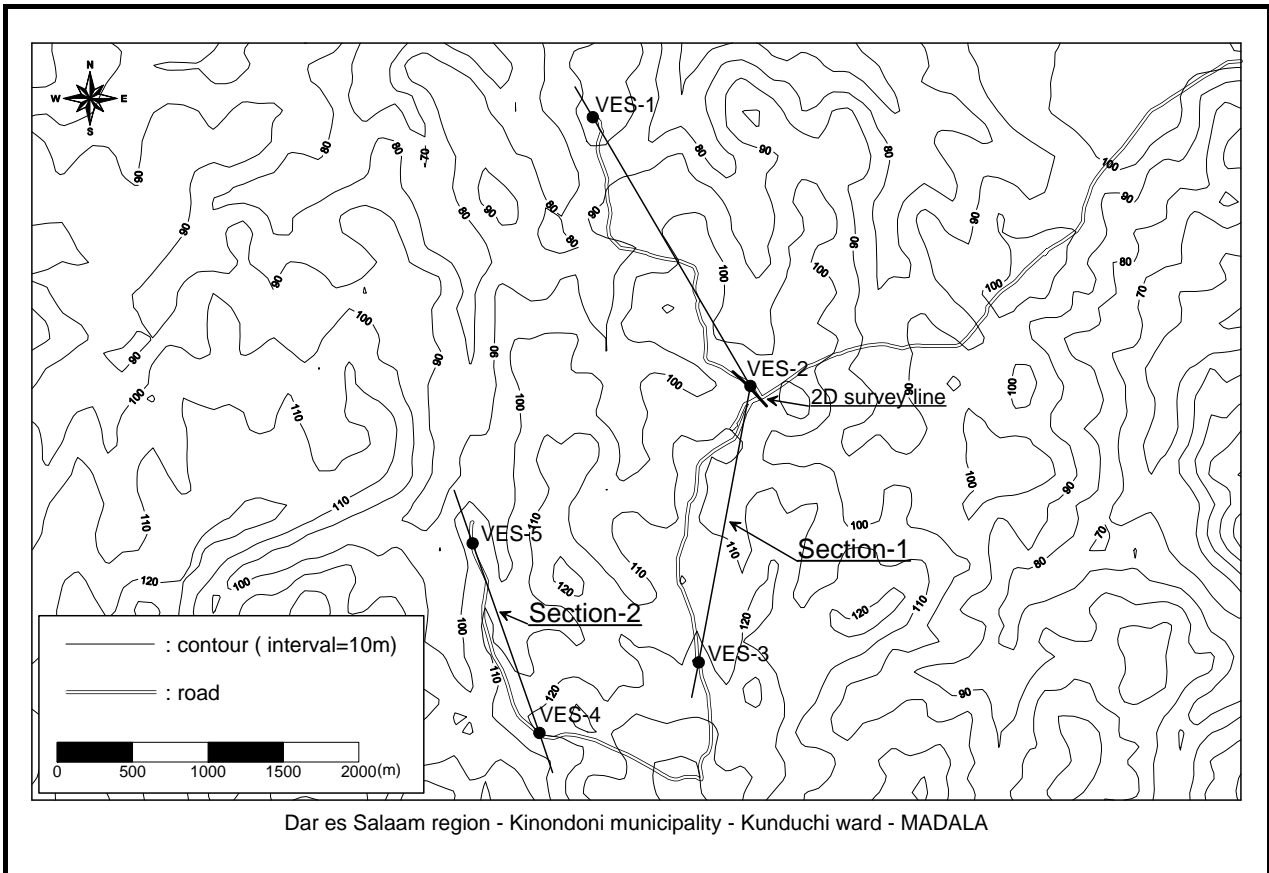


FIGURE A-84 GEOPHYSICAL SURVEY LOCATION IN MADALA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

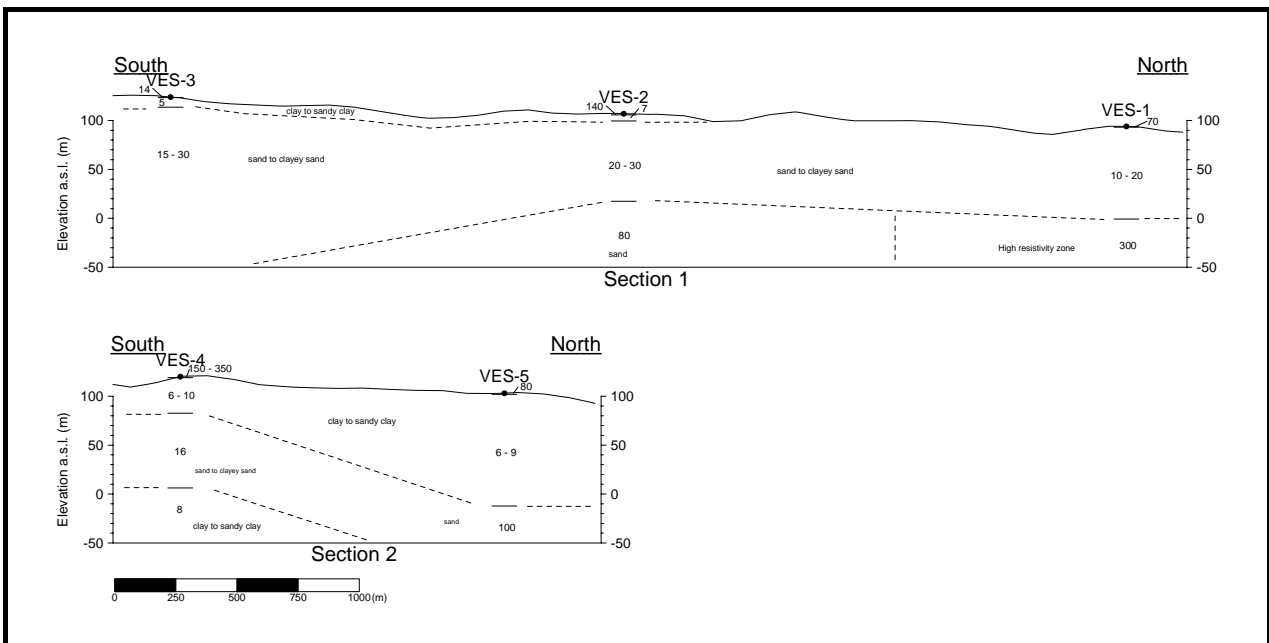


FIGURE A-85 INTERPRETED SECTION FOR VES SURVEY IN MADALA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

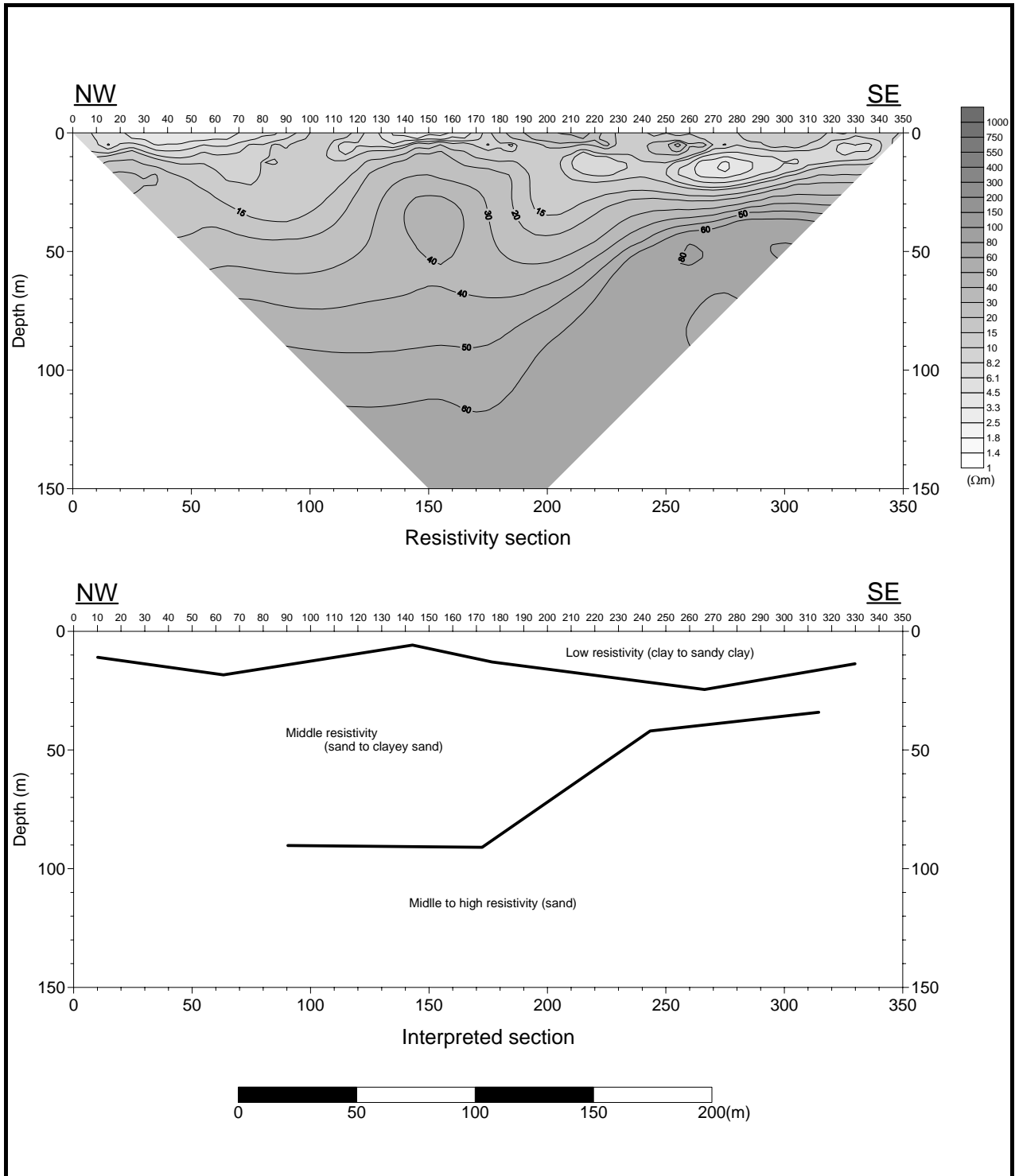


FIGURE A-86 INTERPRETED SECTION FOR 2D IMAGING IN MADALA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

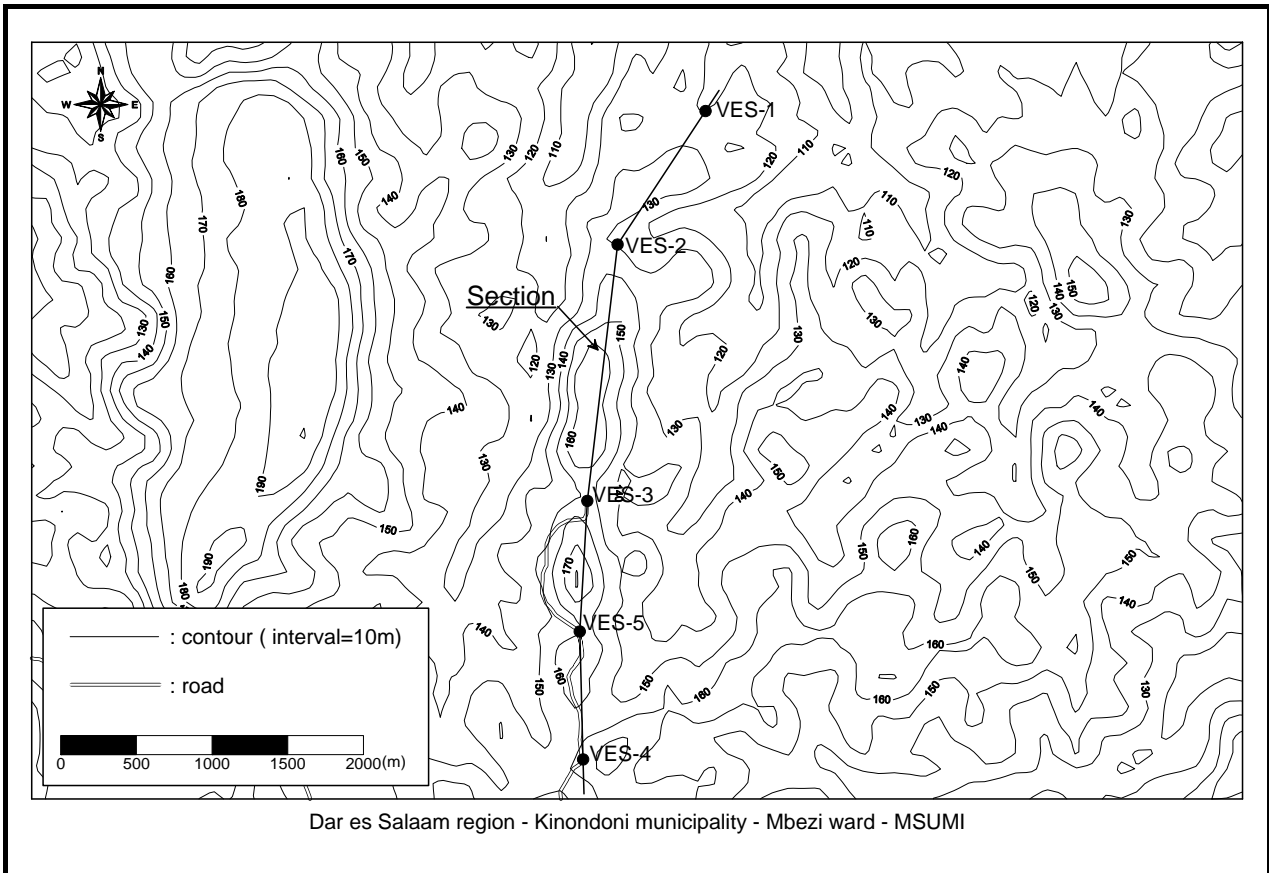


FIGURE A-87 GEOPHYSICAL SURVEY LOCATION IN MSUMI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

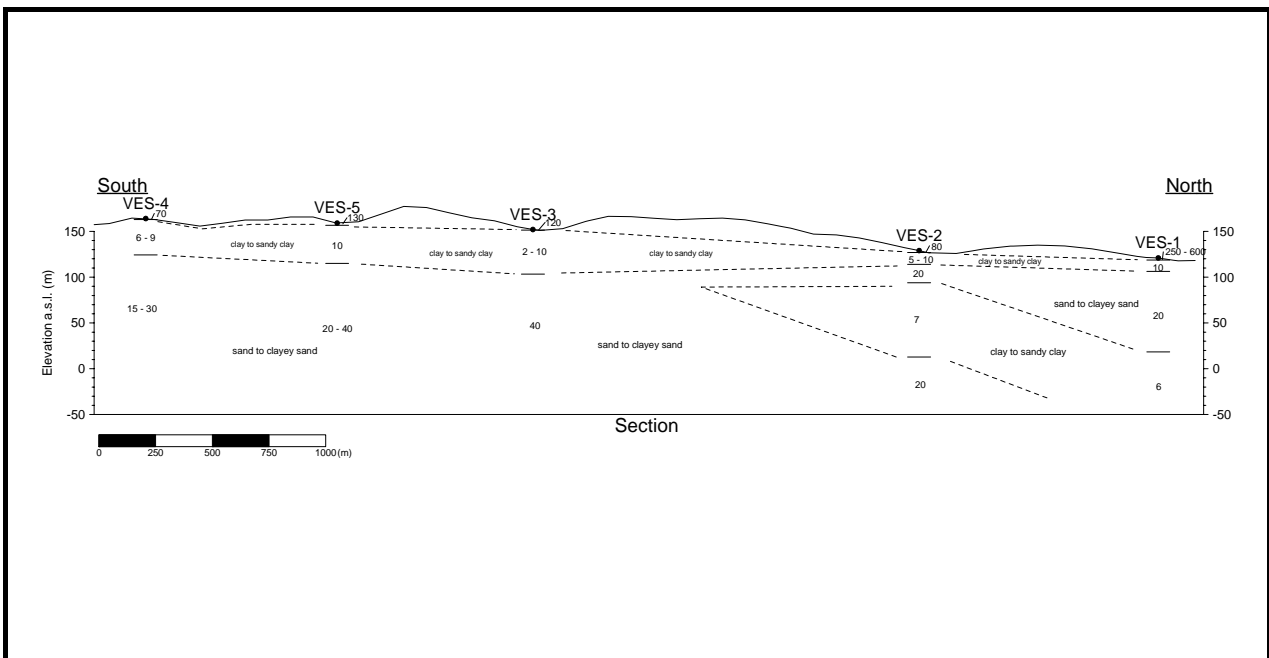


FIGURE A-88 INTERPRETED SECTION FOR VES SURVEY IN MSUMI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

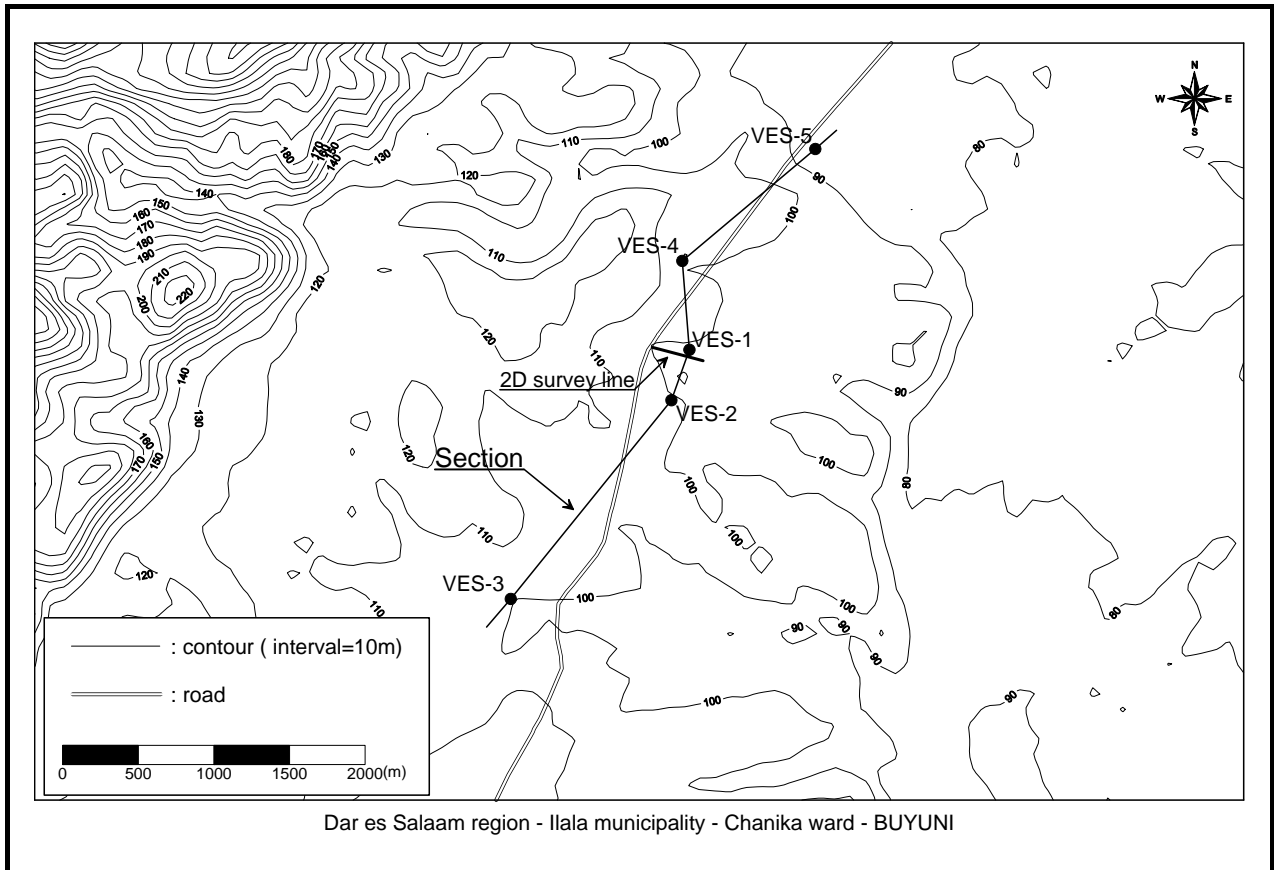


FIGURE A-89 GEOPHYSICAL SURVEY LOCATION IN BUYUNI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

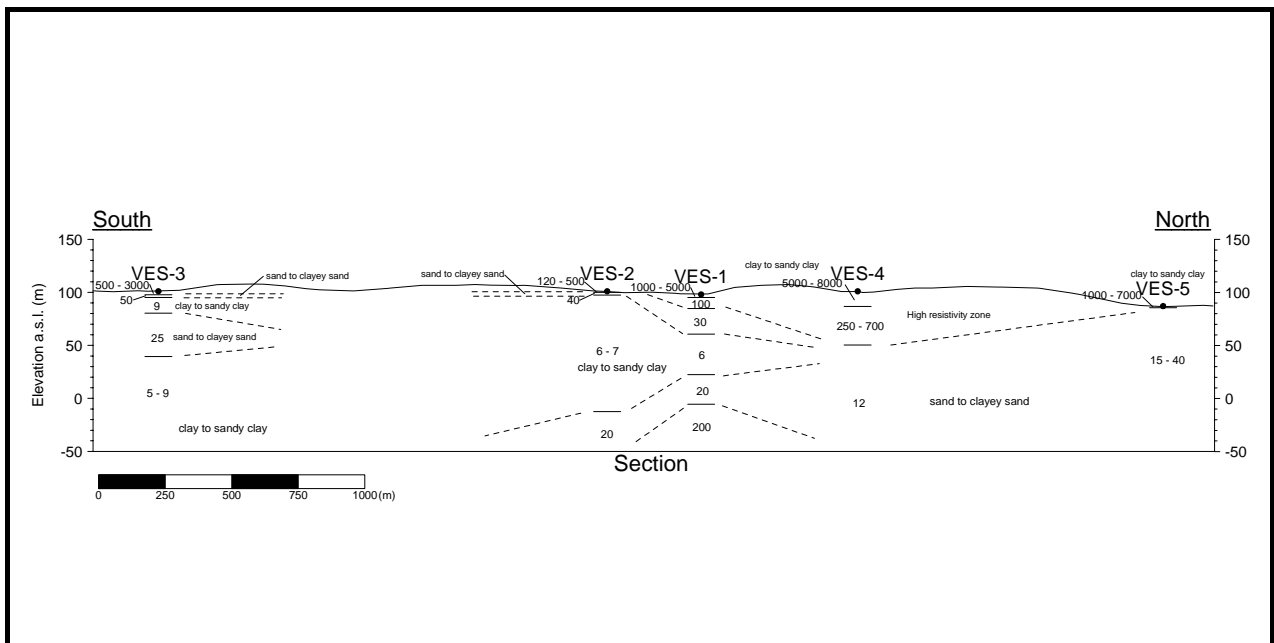


FIGURE A-90 INTERPRETED SECTION FOR VES SURVEY IN BUYUNI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

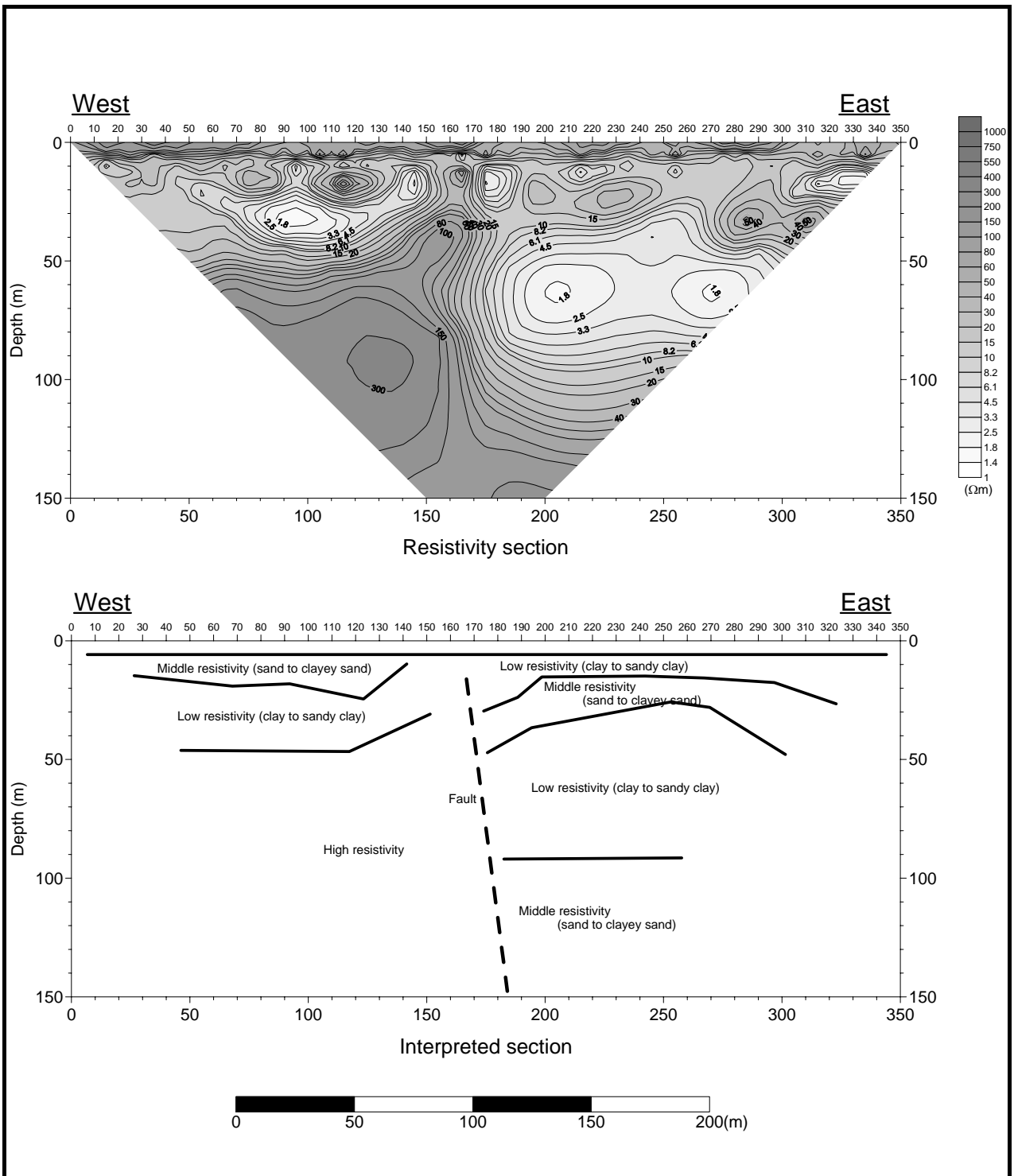


FIGURE A-91 INTERPRETED SECTION FOR 2D IMAGING IN BUYUNI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

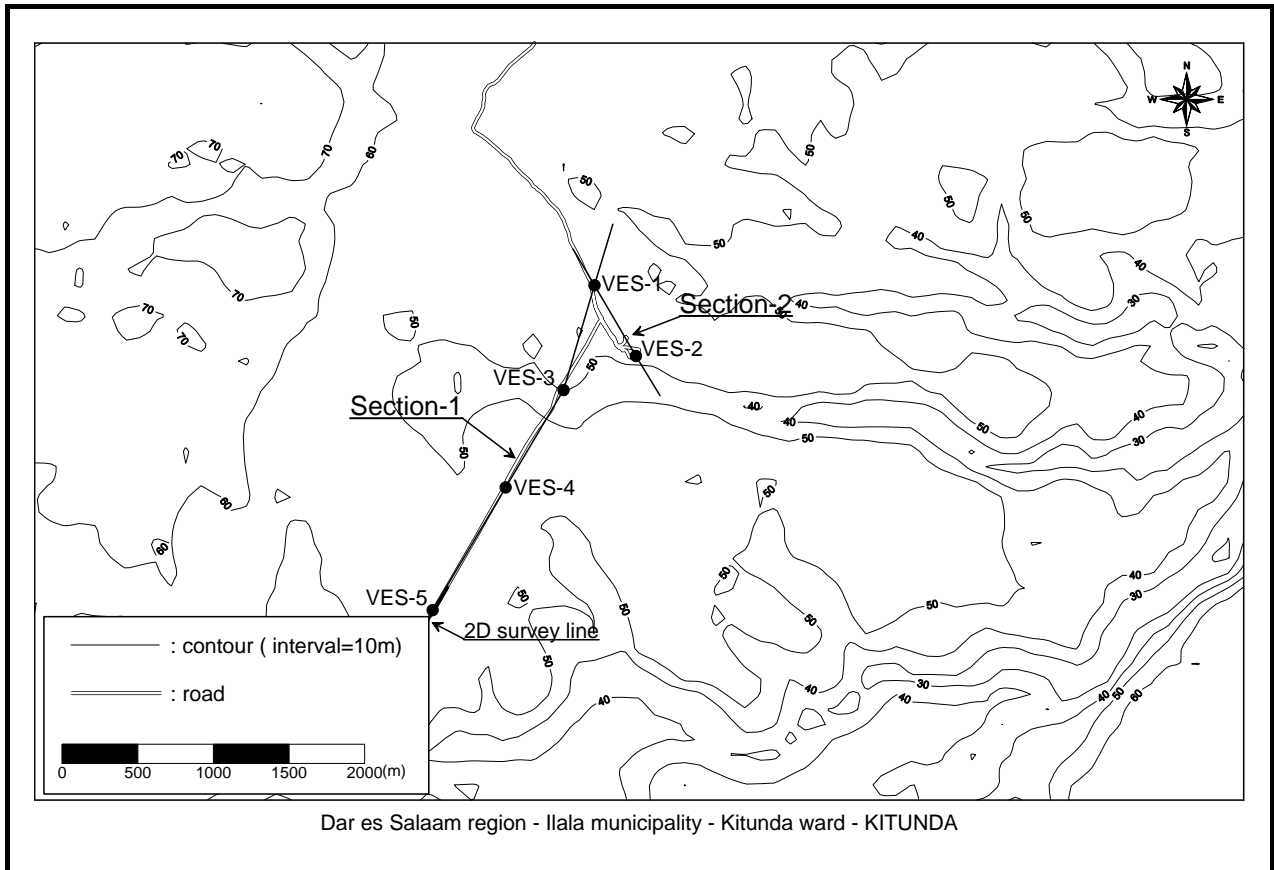


FIGURE A-92 GEOPHYSICAL SURVEY LOCATION IN KITUNDA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

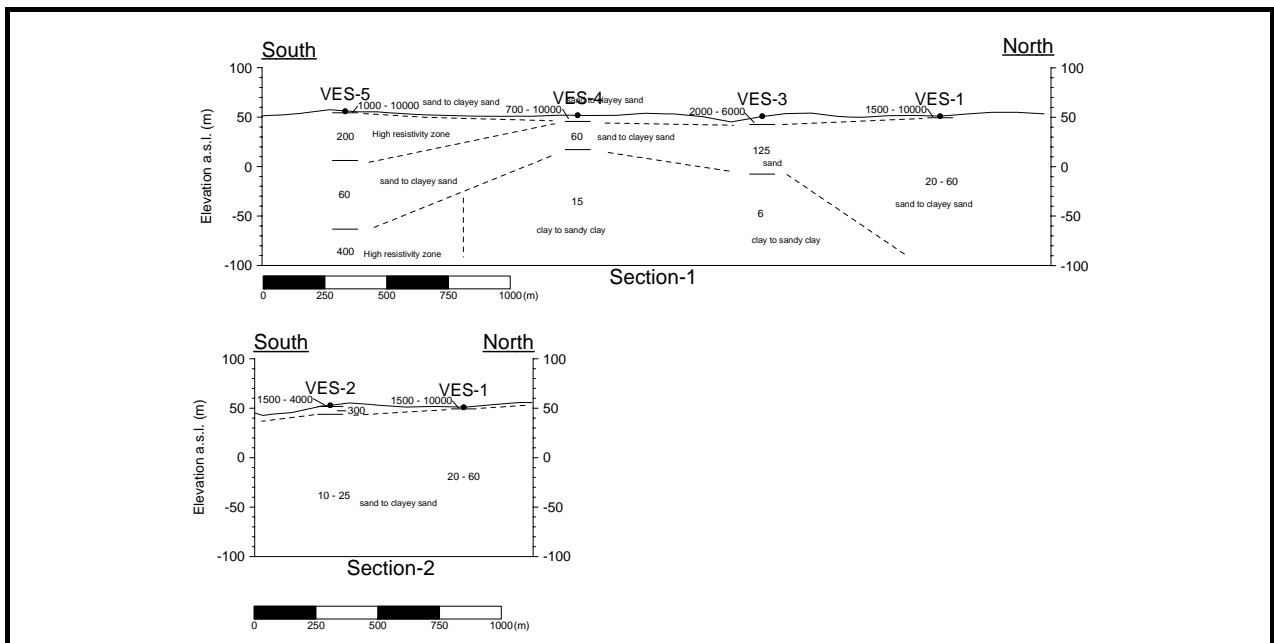


FIGURE A-93 INTERPRETED SECTION FOR VES SURVEY IN KITUNDA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

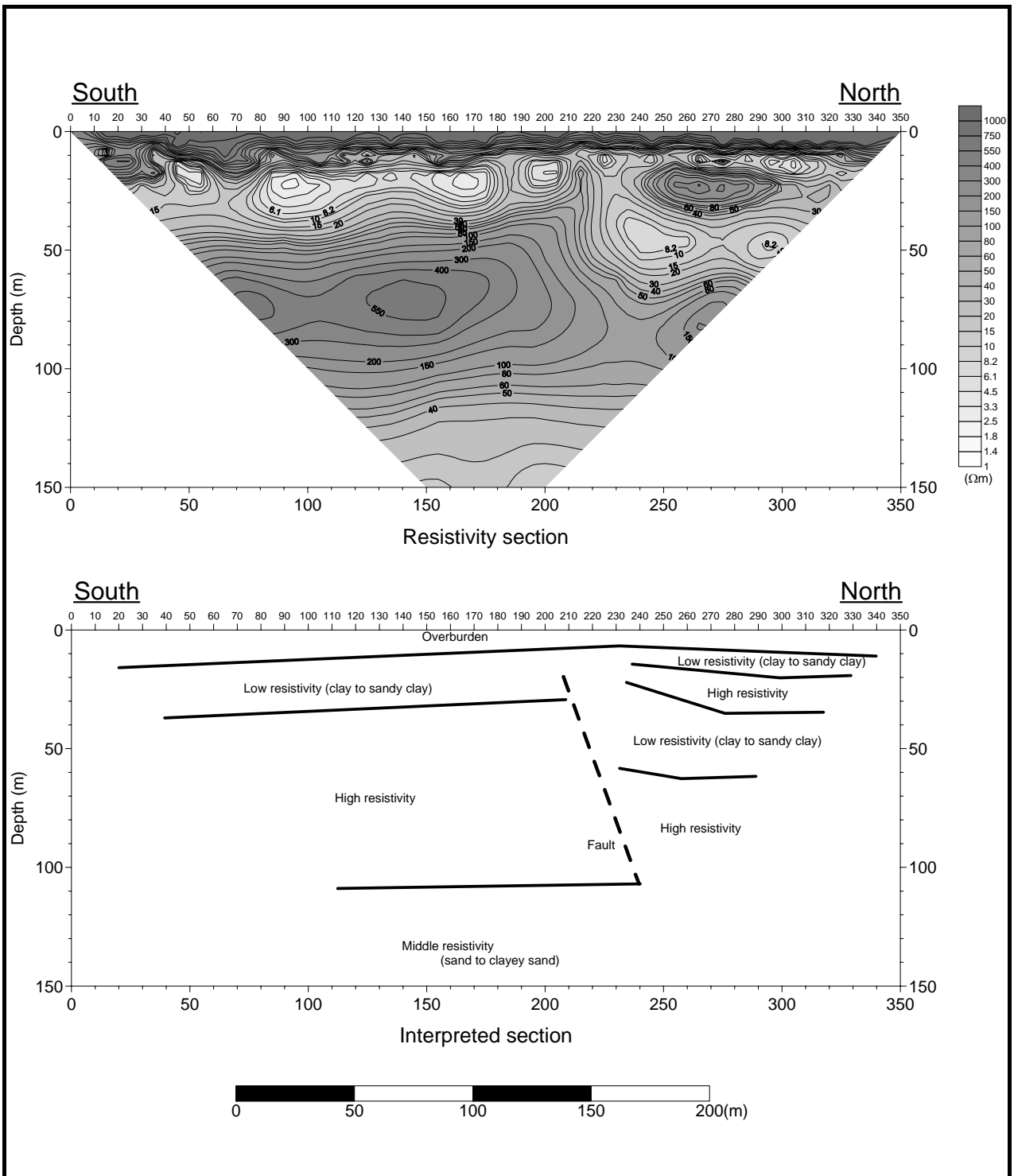


FIGURE A-94 INTERPRETED SECTION FOR 2D IMAGING IN KITUNDA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

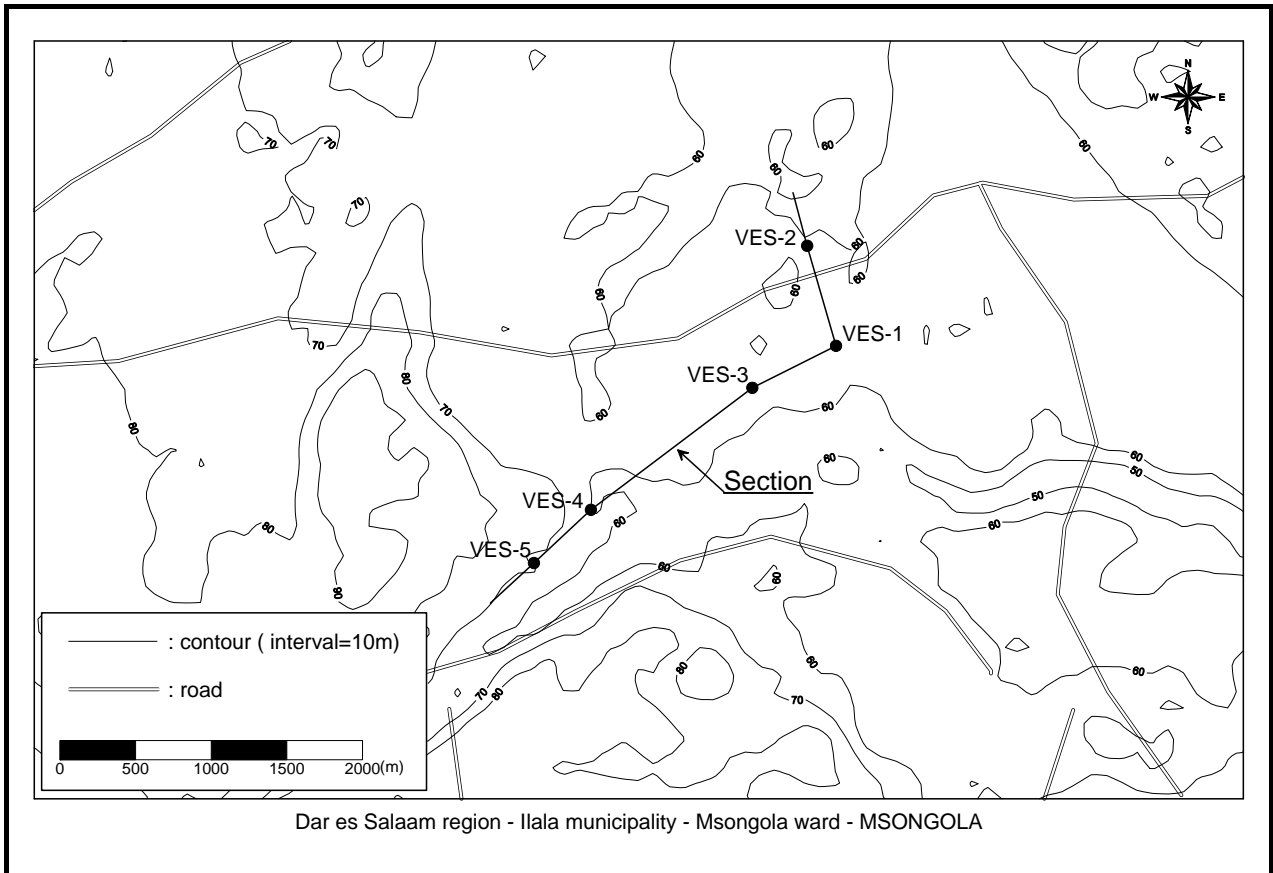


FIGURE A-95 GEOPHYSICAL SURVEY LOCATION IN MSONGOLA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

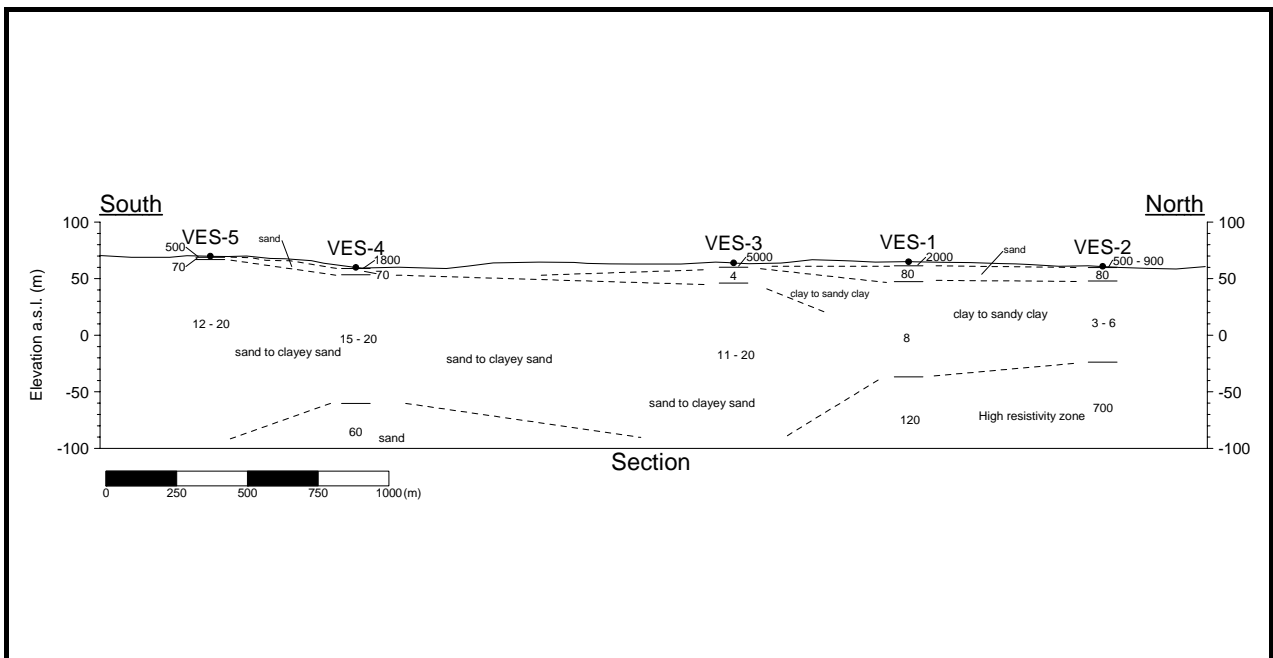


FIGURE A-96 INTERPRETED SECTION FOR VES SURVEY IN MSONGOLA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

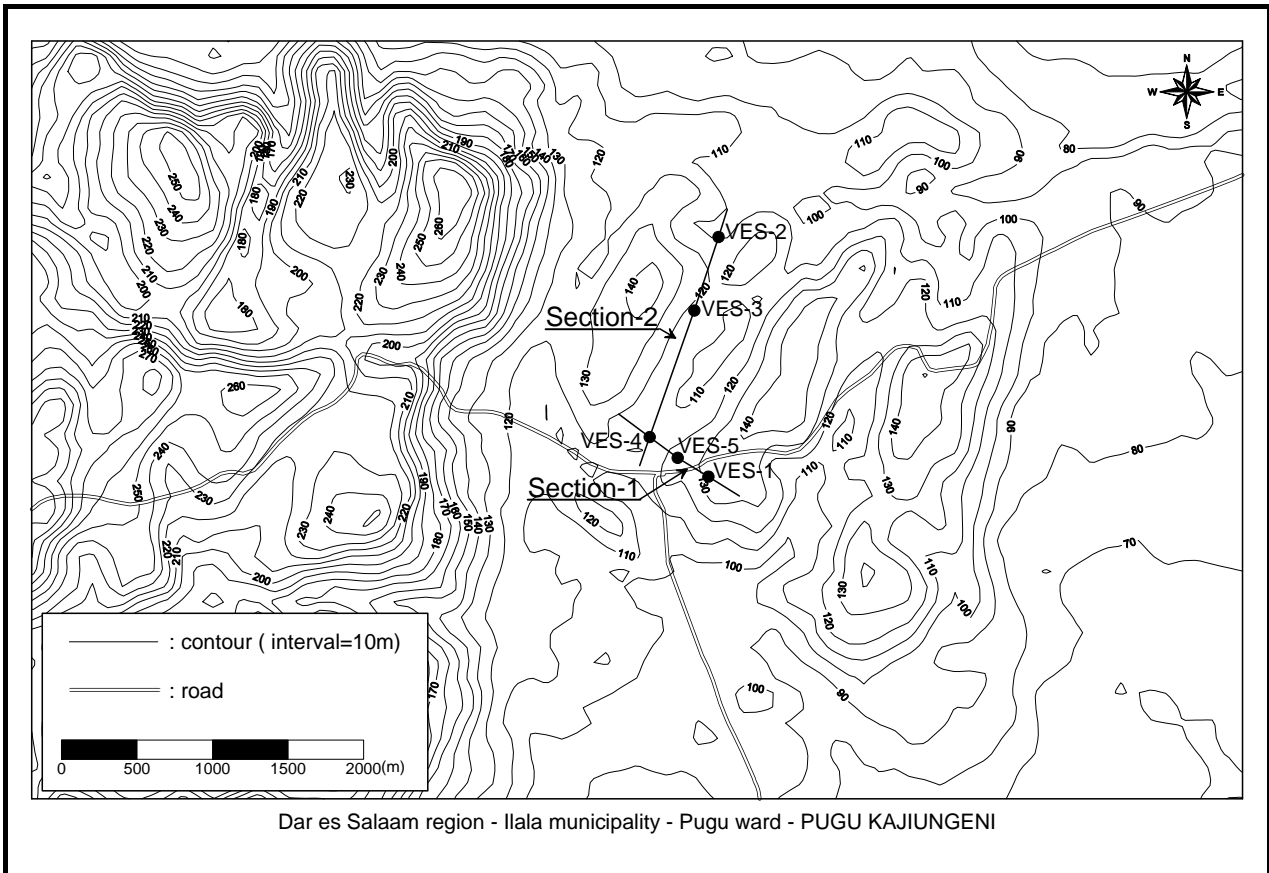


FIGURE A-97 GEOPHYSICAL SURVEY LOCATION IN PUGU KAJIUNGANI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

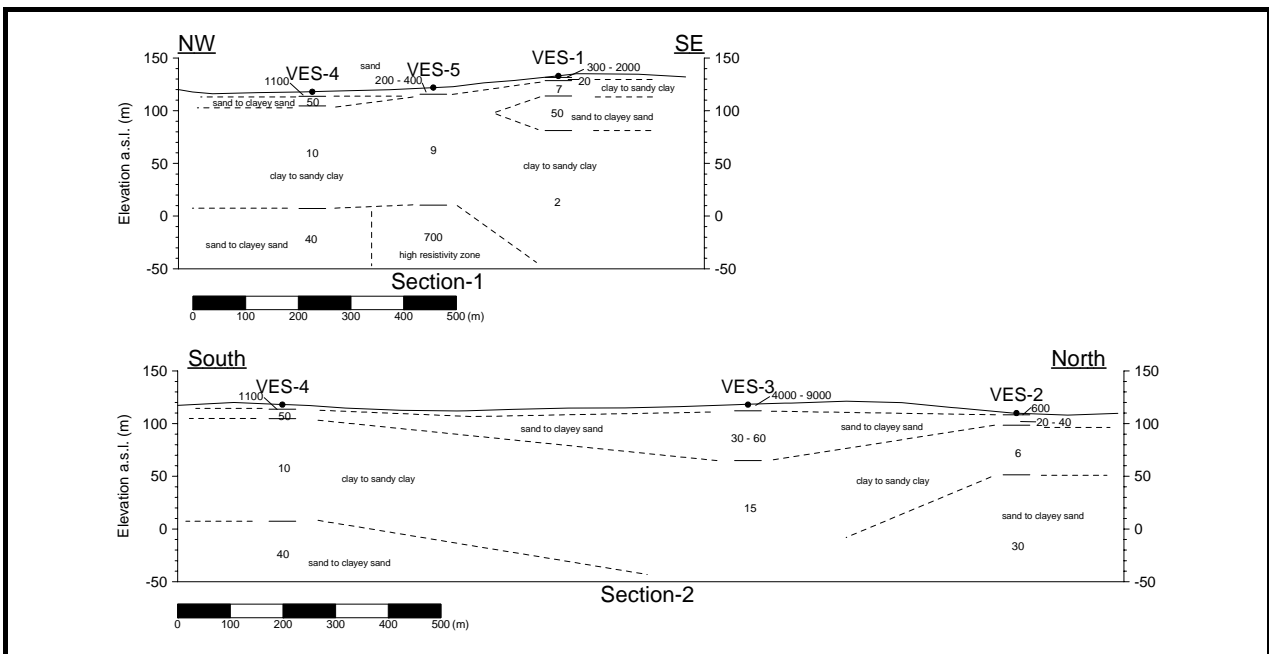


FIGURE A-98 INTERPRETED SECTION FOR VES SURVEY IN PUGU KAJIUNGANI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

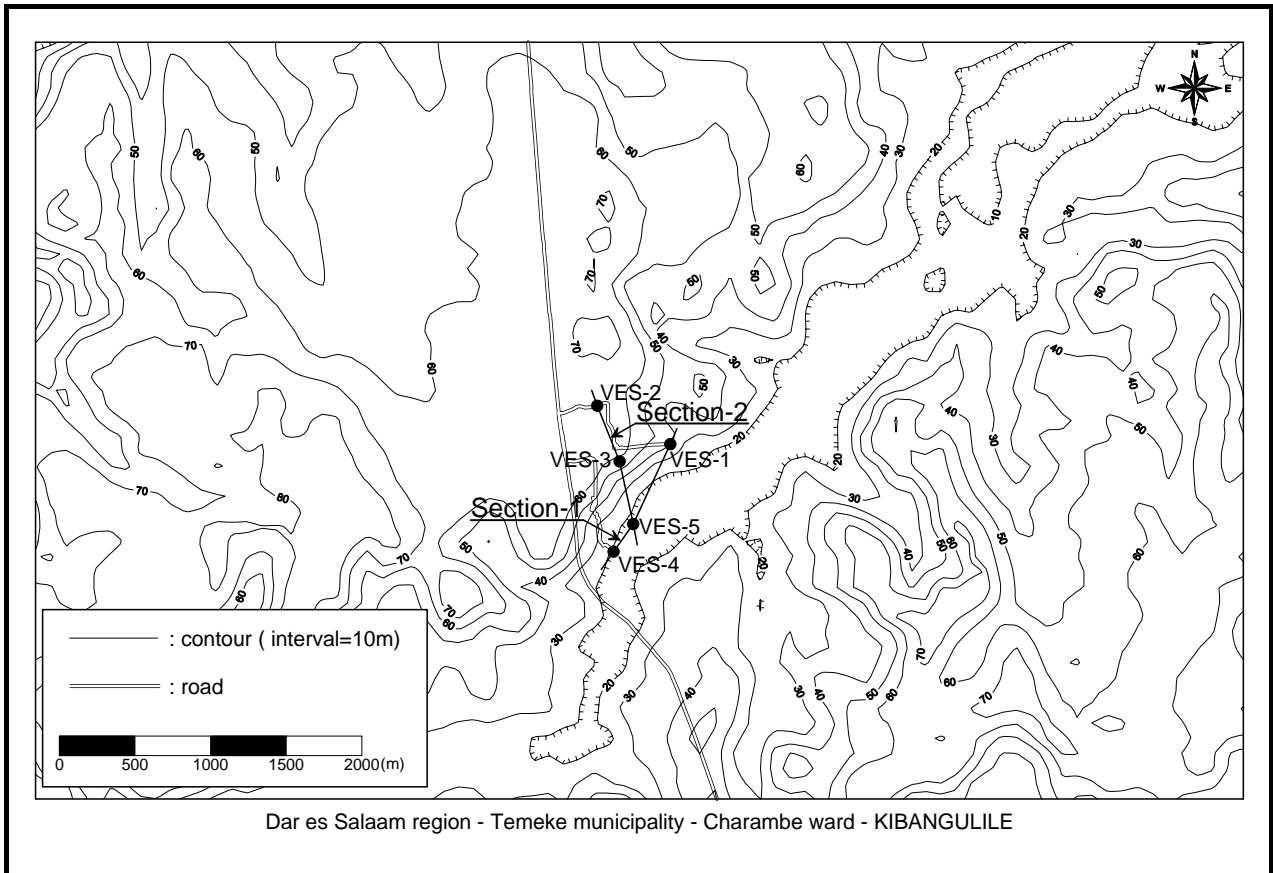


FIGURE A-99 GEOPHYSICAL SURVEY LOCATION IN KIBANGULILE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

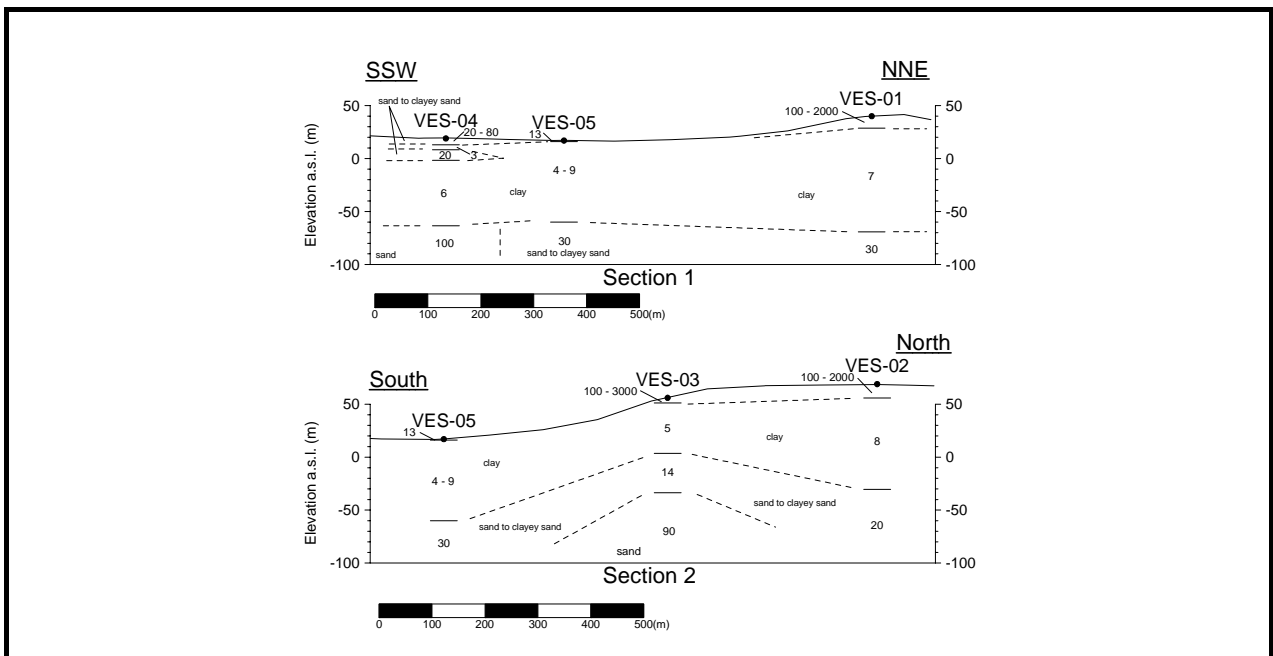


FIGURE A-100 INTERPRETED SECTION FOR VES SURVEY IN KIBANGULILE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

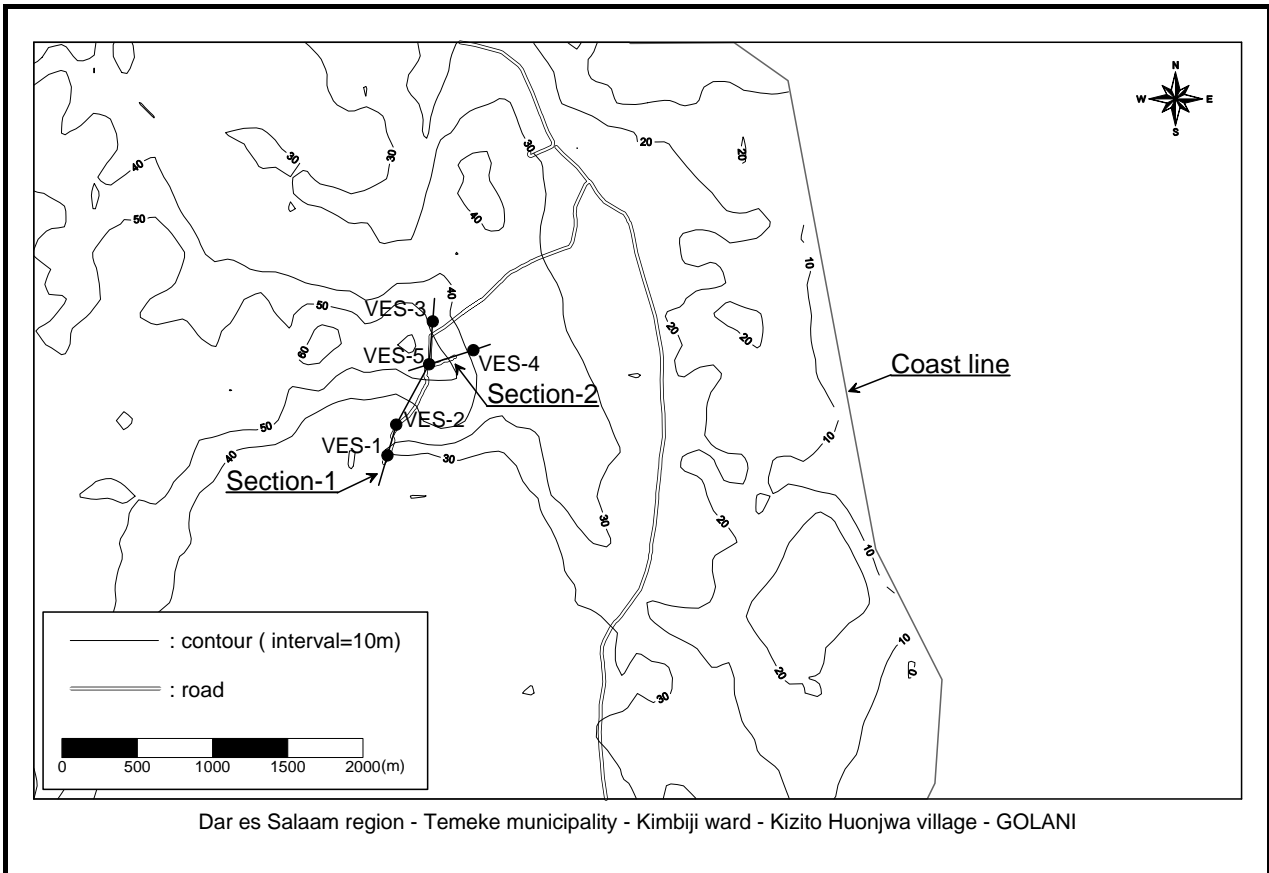


FIGURE A-101 GEOPHYSICAL SURVEY LOCATION IN GOLANI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

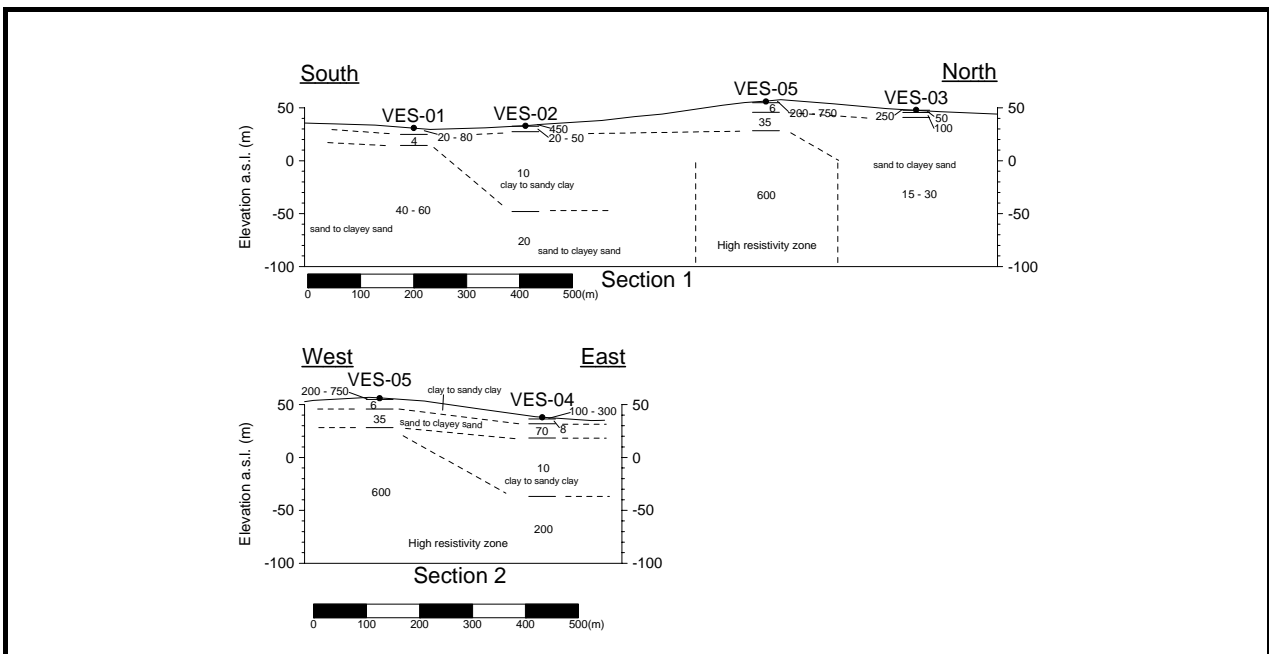


FIGURE A-102 INTERPRETED SECTION FOR VES SURVEY IN GOLANI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

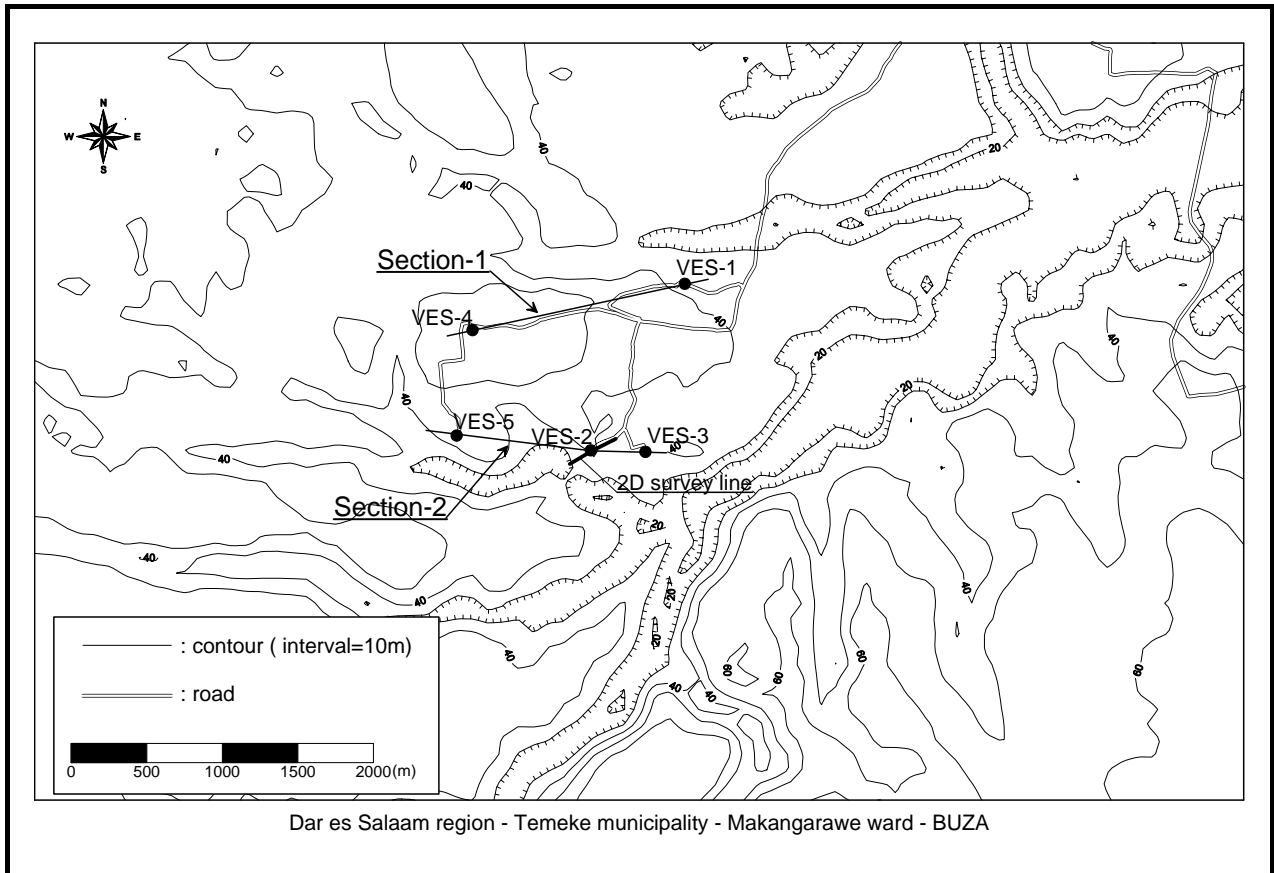


FIGURE A-103 GEOPHYSICAL SURVEY LOCATION IN BUZA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

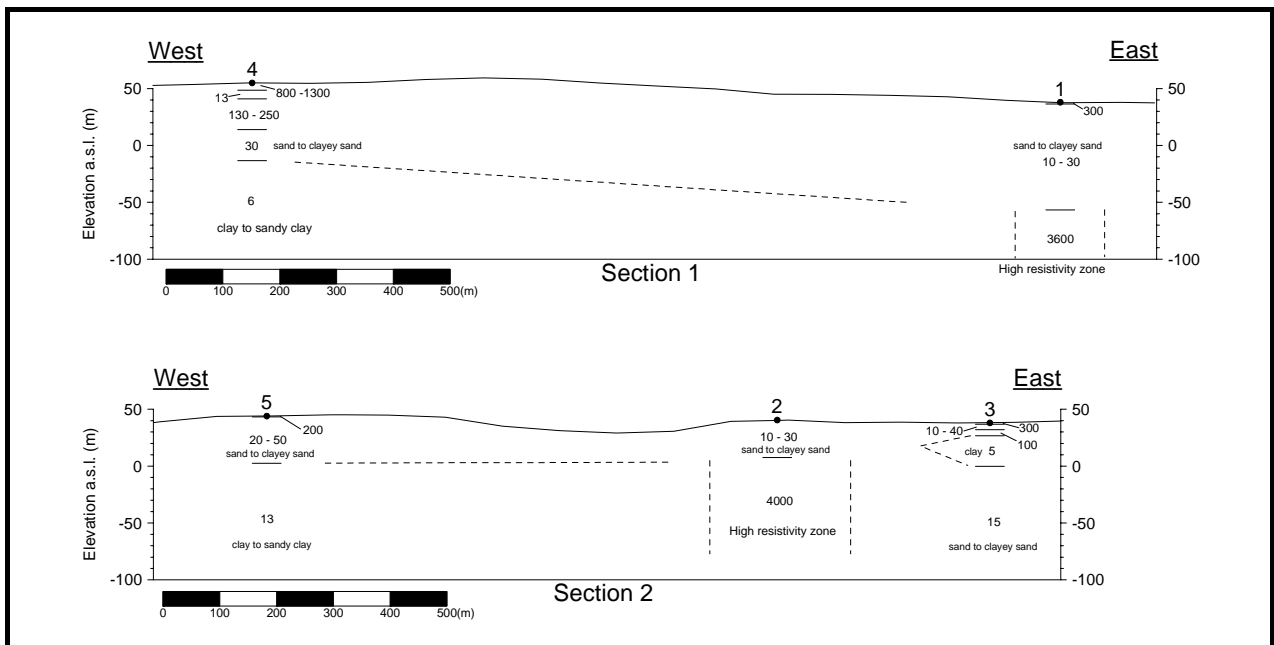


FIGURE A-104 INTERPRETED SECTION FOR VES SURVEY IN BUZA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

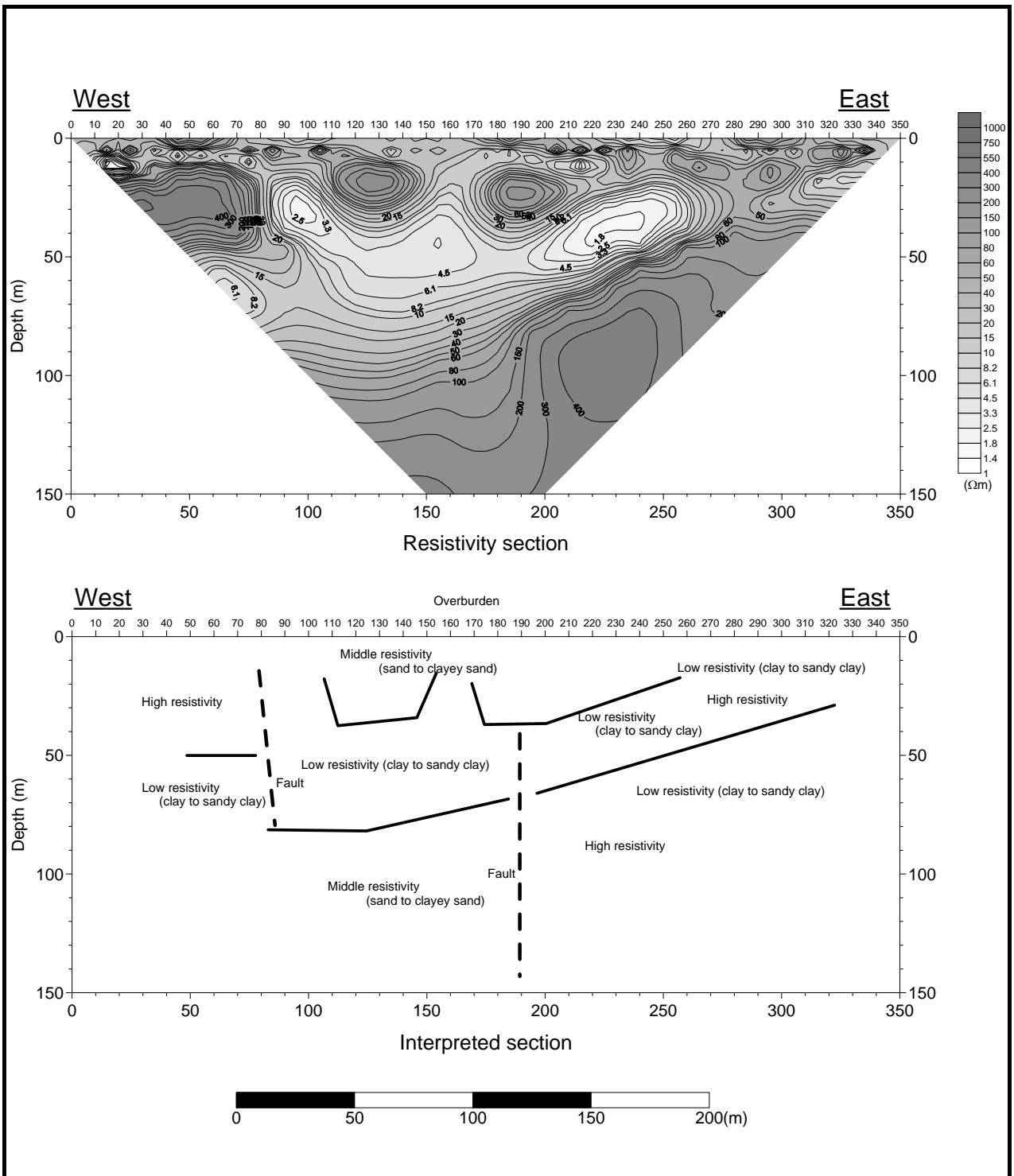


FIGURE A-105 INTERPRETED SECTION FOR 2D IMAGING IN BUZA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

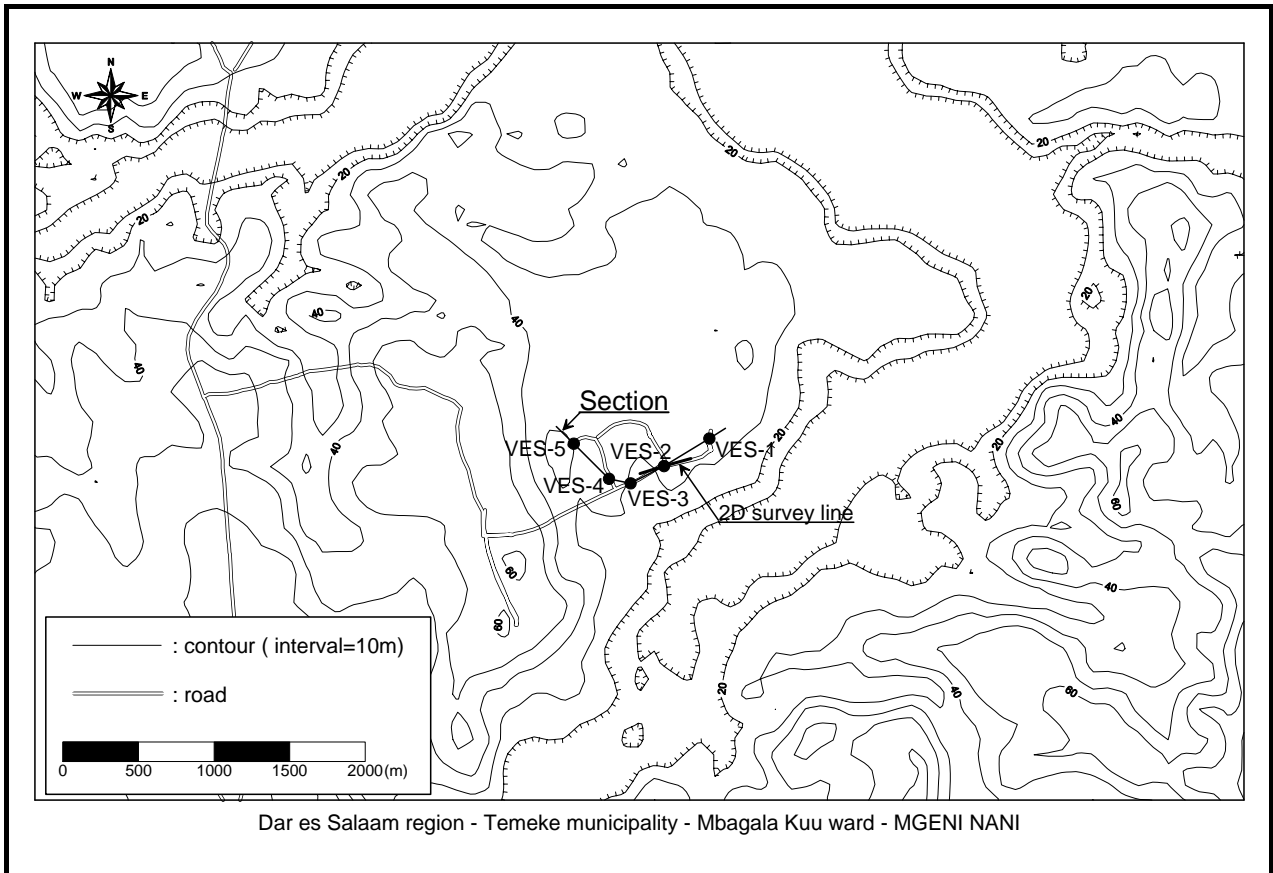


FIGURE A-106 GEOPHYSICAL SURVEY LOCATION IN MGENI NANI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

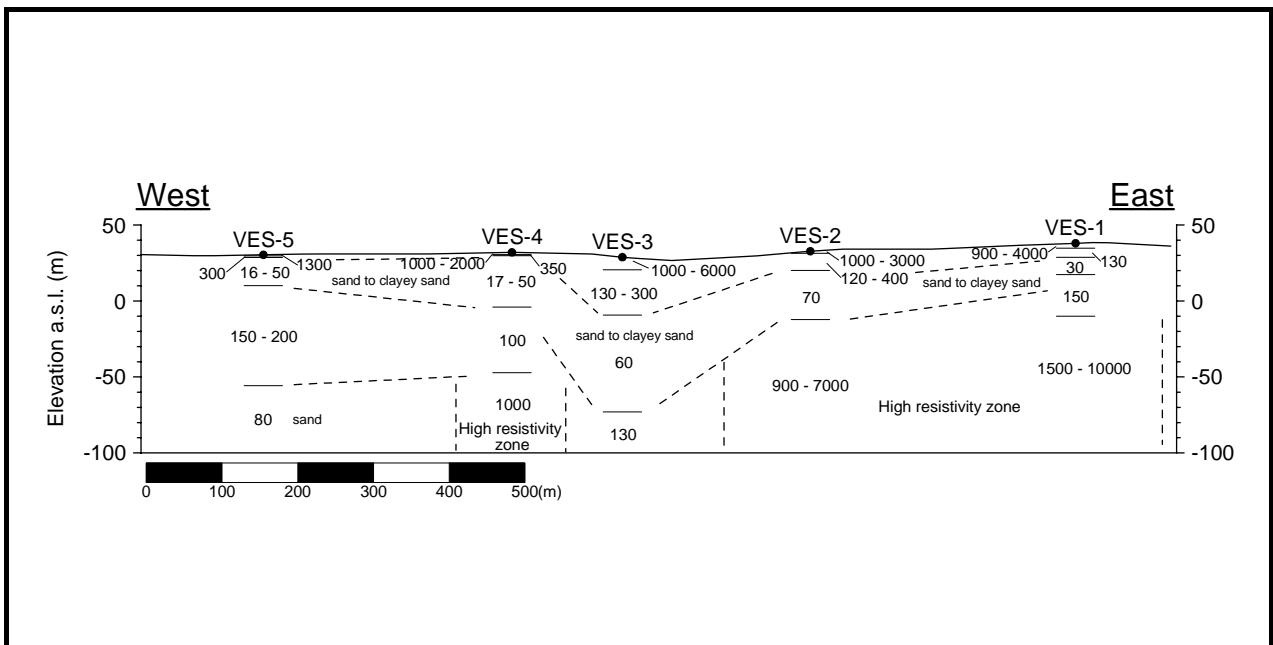


FIGURE A-107 INTERPRETED SECTION FOR VES SURVEY IN MGENI NANI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

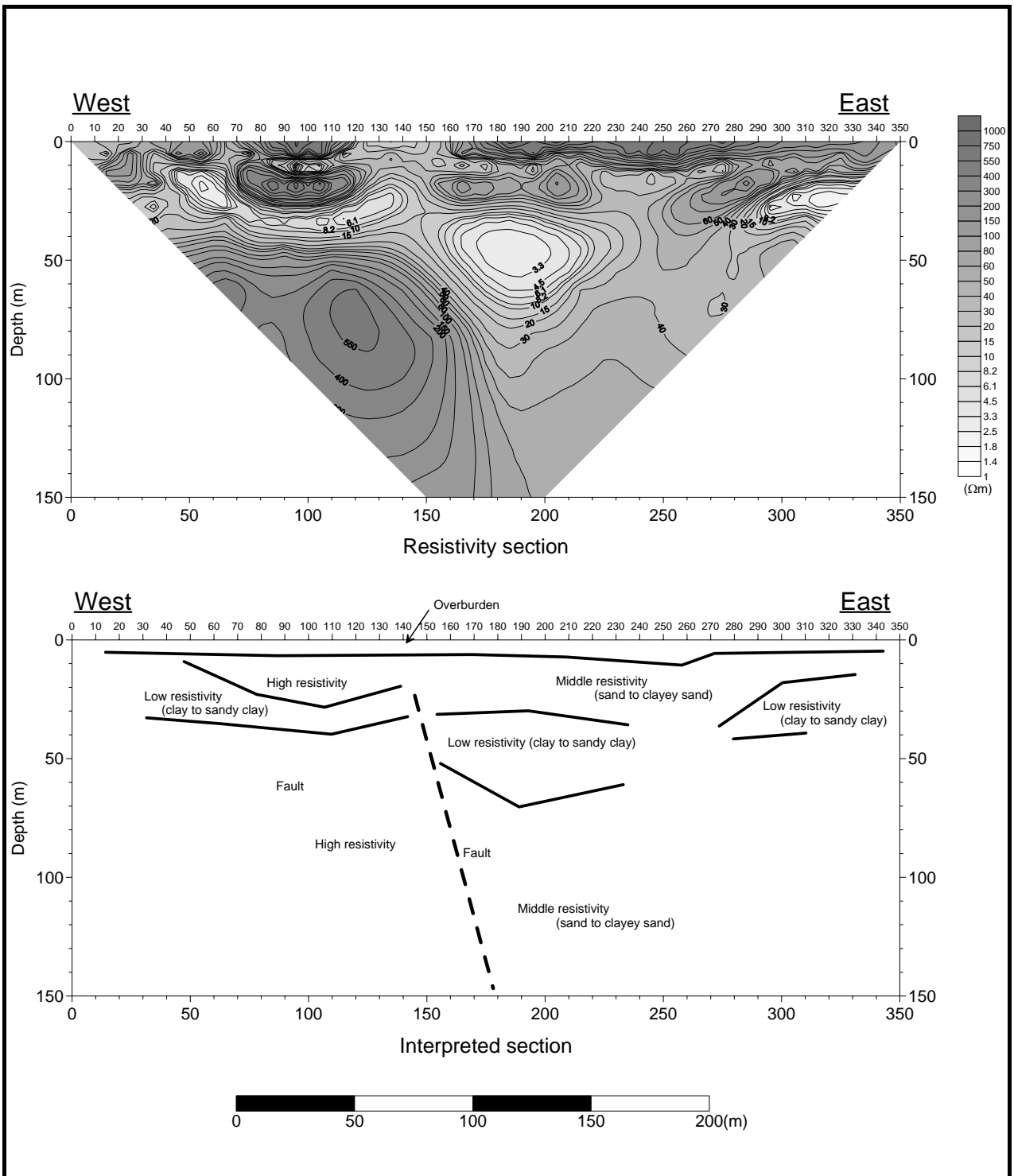


FIGURE A-108 INTERPRETED SECTION FOR 2D IMAGING IN MGENI NANI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

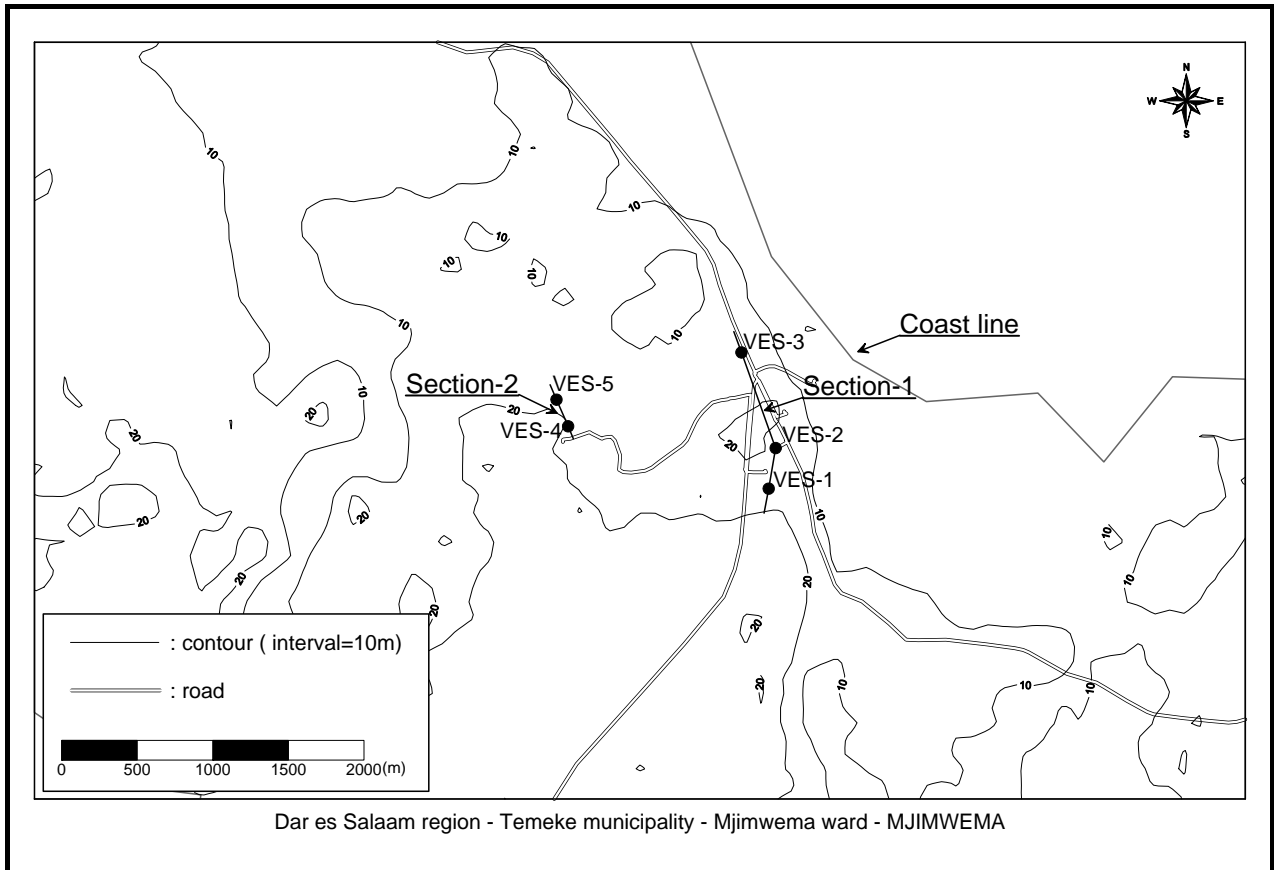


FIGURE A-109 GEOPHYSICAL SURVEY LOCATION IN MJIMWEMA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

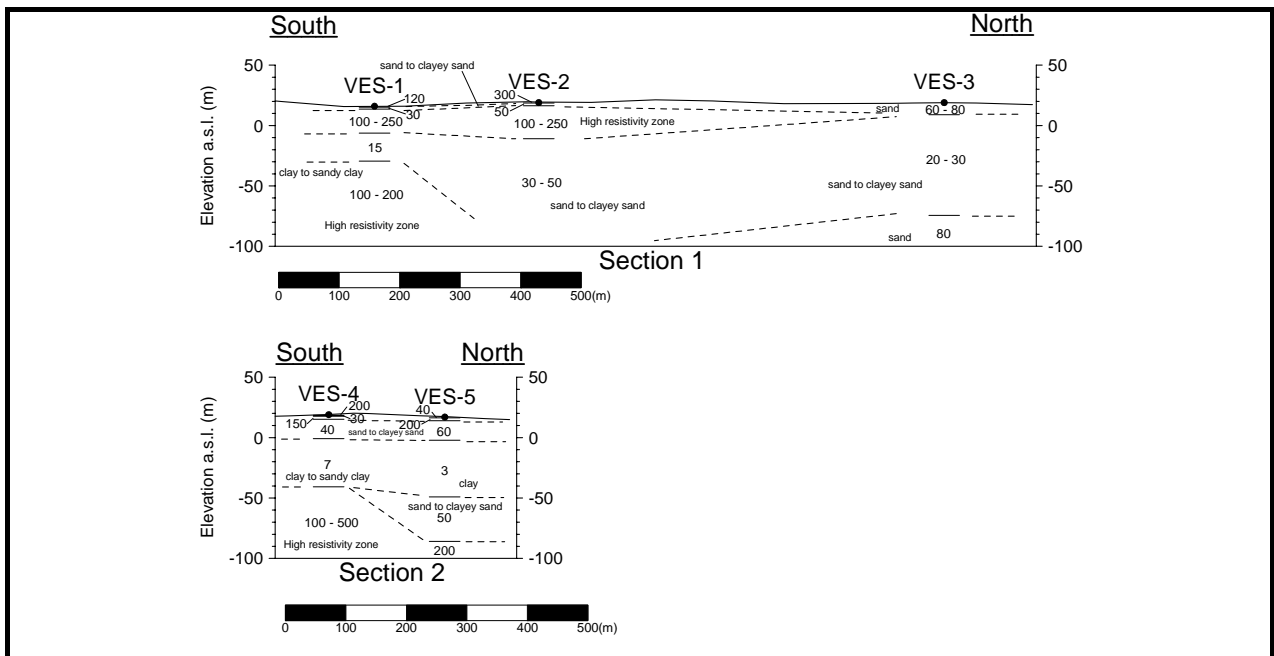


FIGURE A-110 INTERPRETED SECTION FOR VES SURVEY IN MJIMWEMA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

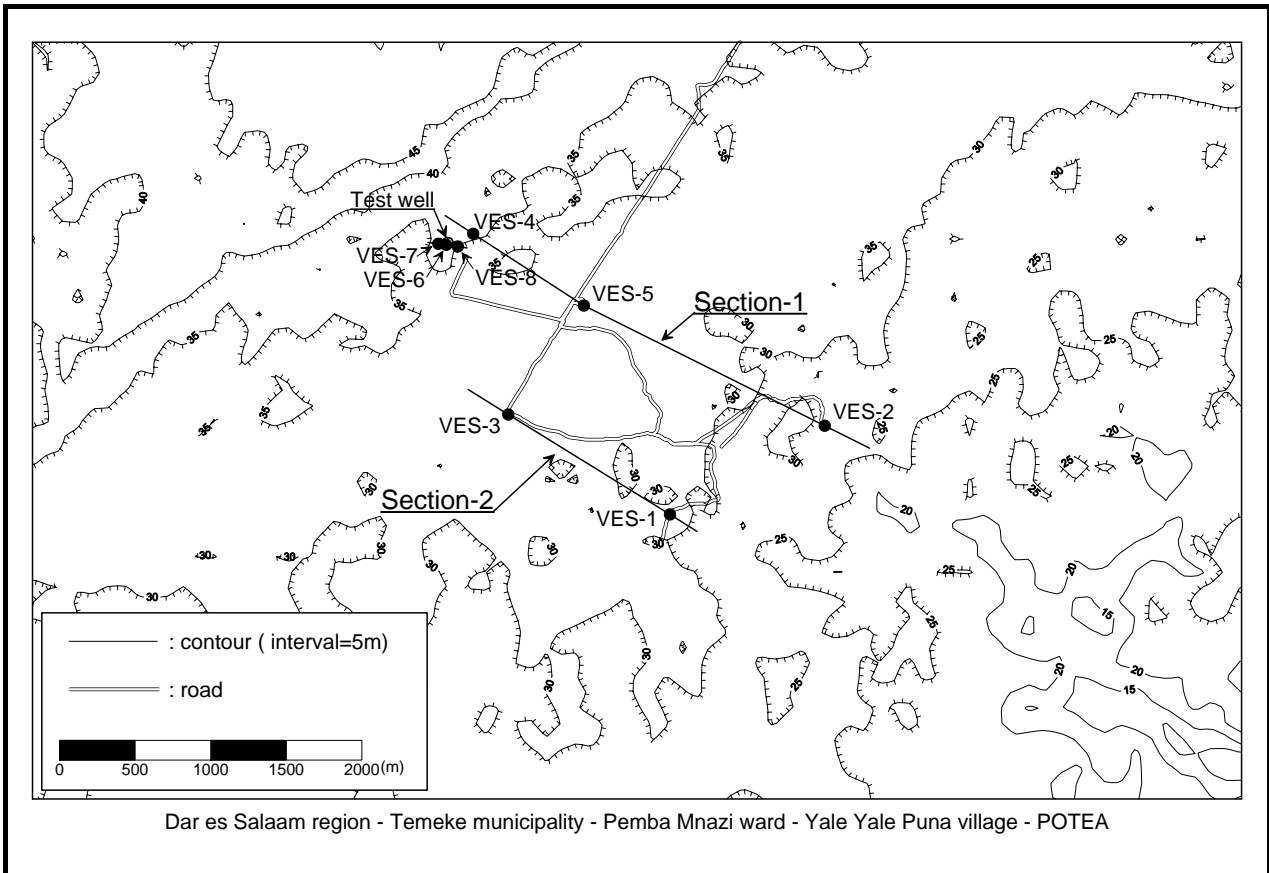


FIGURE A-111 GEOPHYSICAL SURVEY LOCATION IN POTEA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

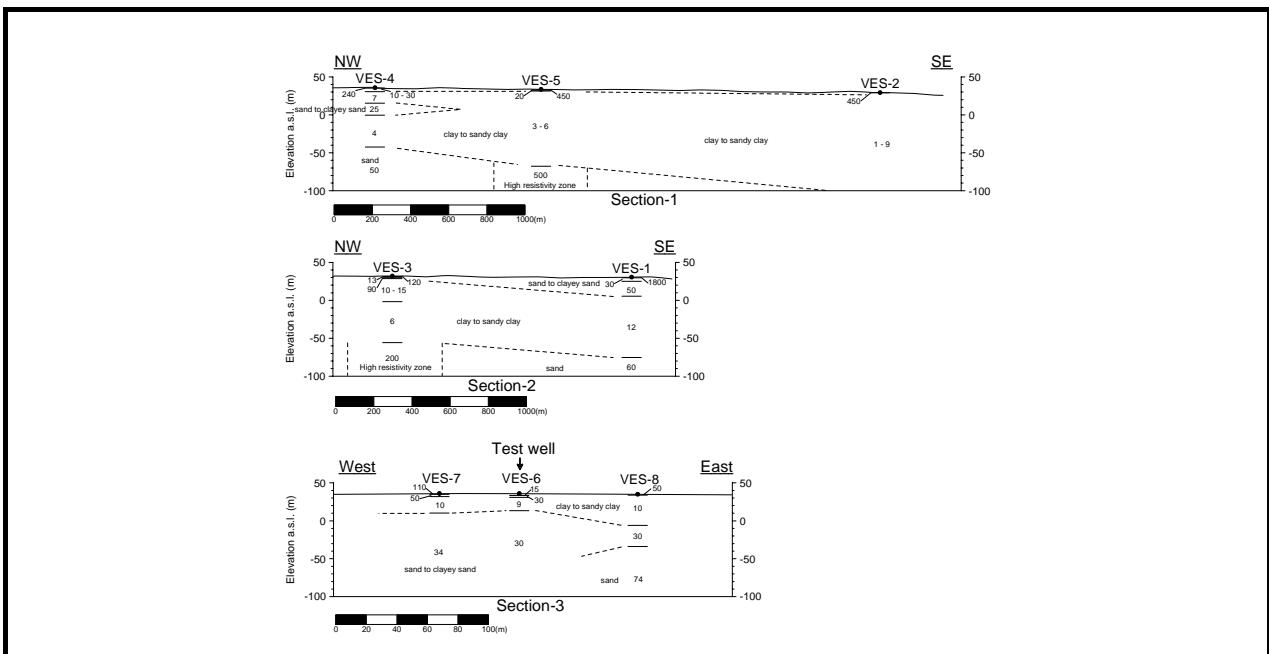


FIGURE A-112 INTERPRETED SECTION FOR VES SURVEY IN POTEA

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

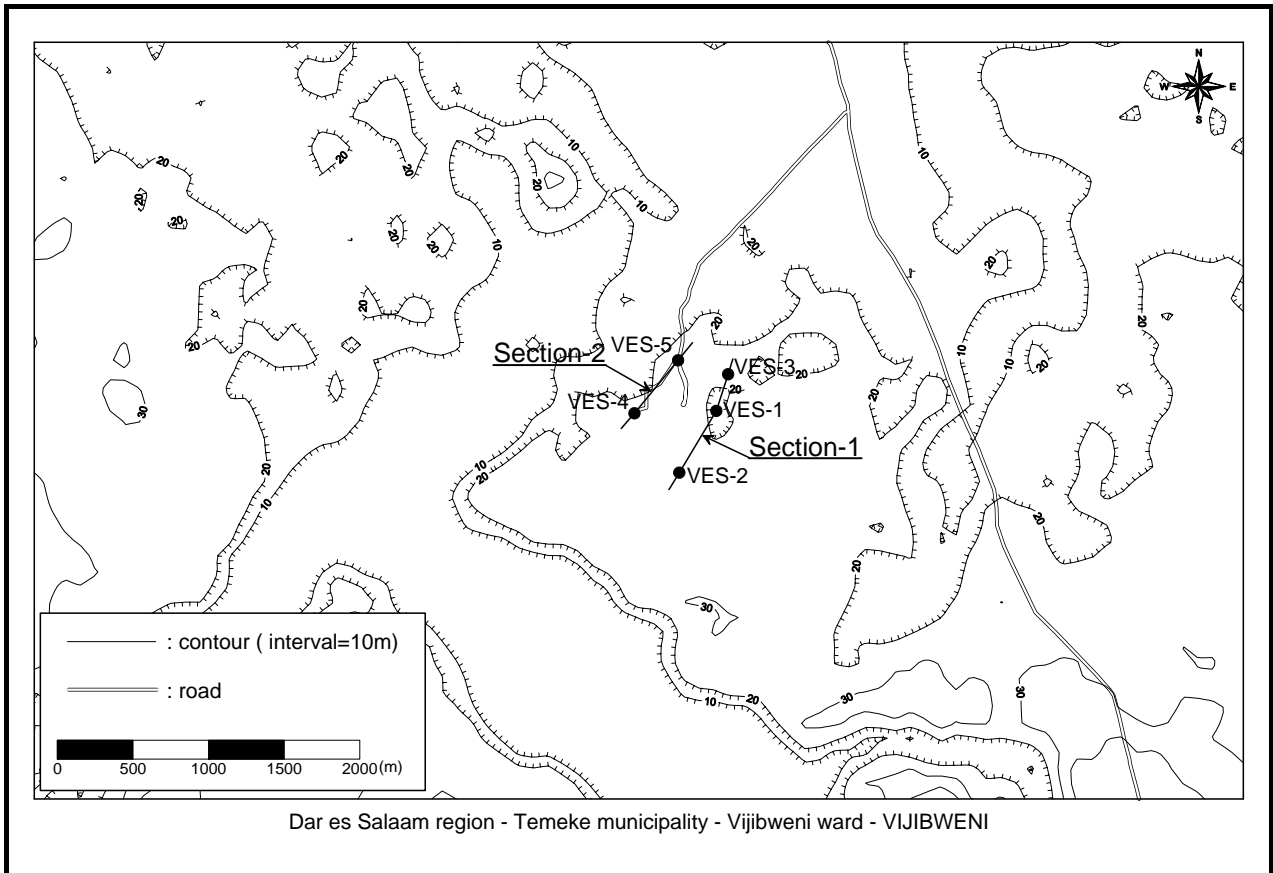


FIGURE A-113 GEOPHYSICAL SURVEY LOCATION IN VIJIBWENI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

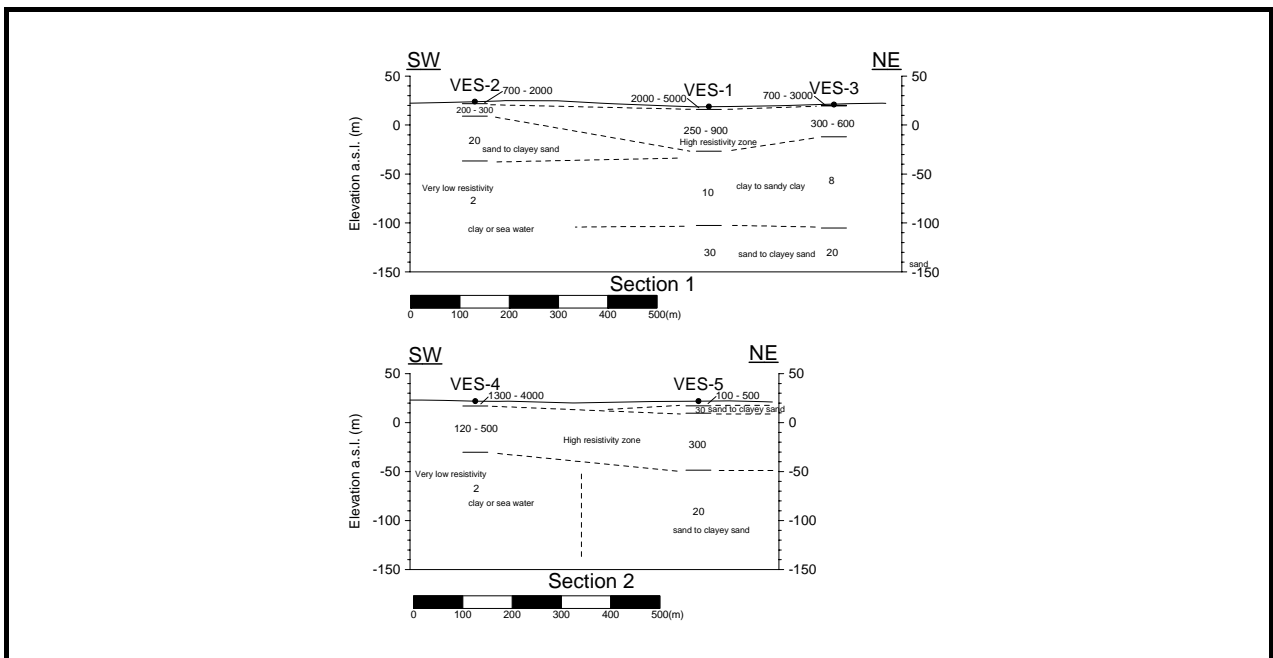


FIGURE A-114 INTERPRETED SECTION FOR VES SURVEY IN VIJIBWENI

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

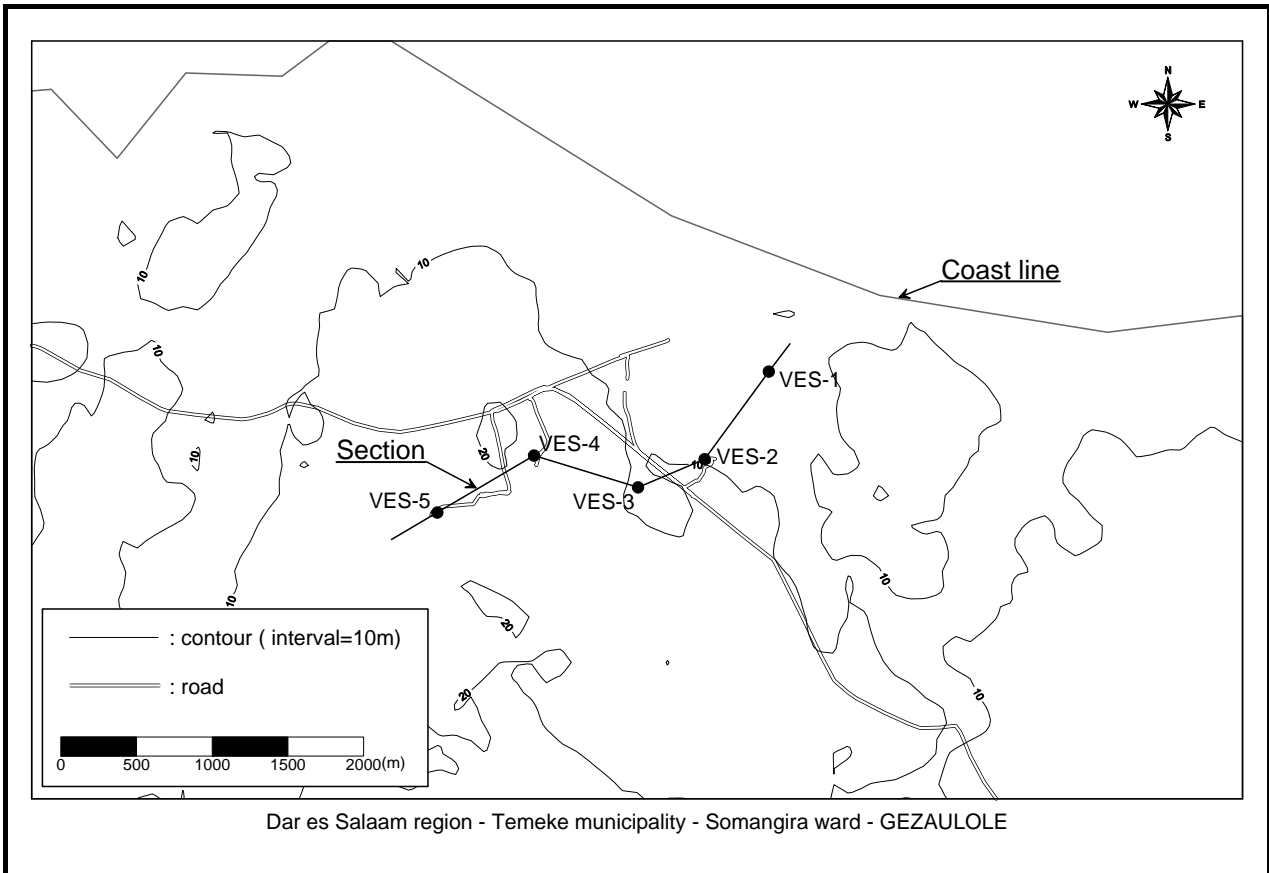


FIGURE A-115 GEOPHYSICAL SURVEY LOCATION IN GEZAULOLE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA

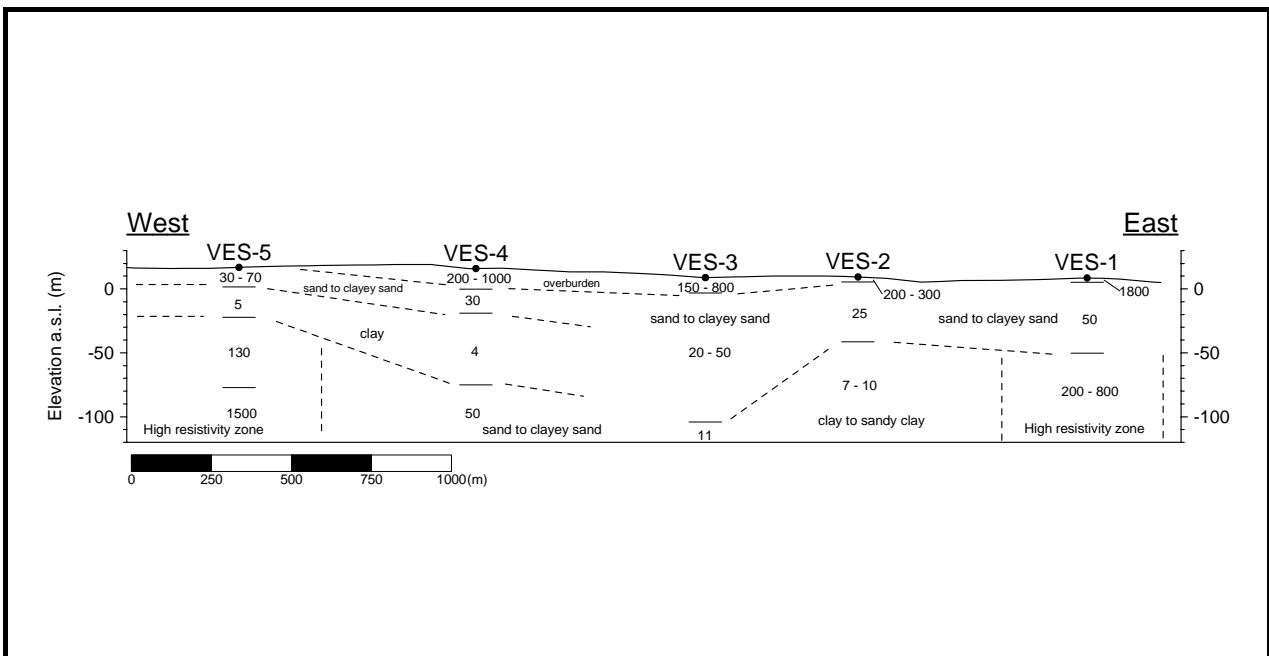
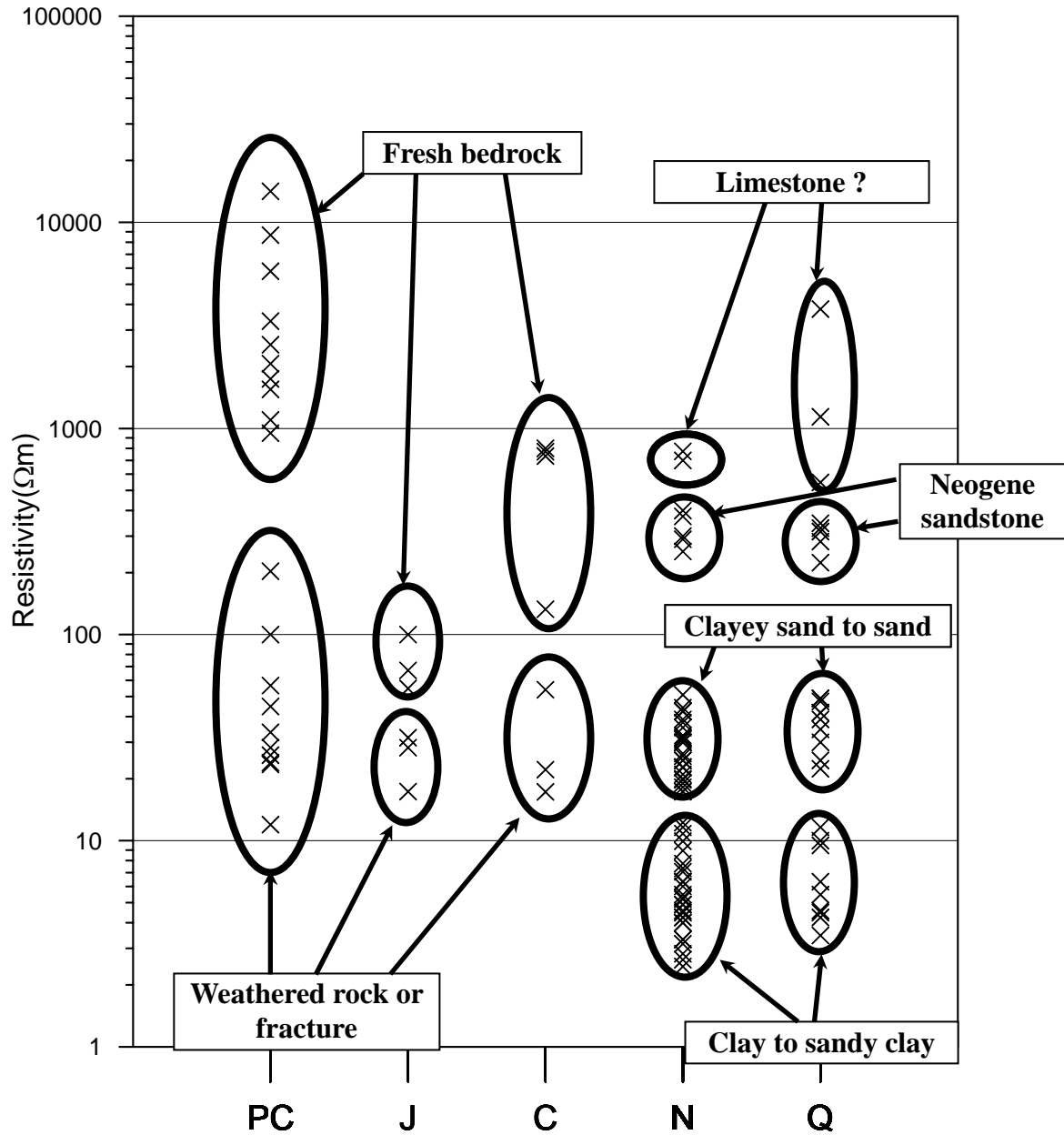


FIGURE A-116 INTERPRETED SECTION FOR VES SURVEY IN GEZAULOLE

THE STUDY ON WATER SUPPLY IMPROVEMENT IN COAST & DAR ES SALAAM

JICA



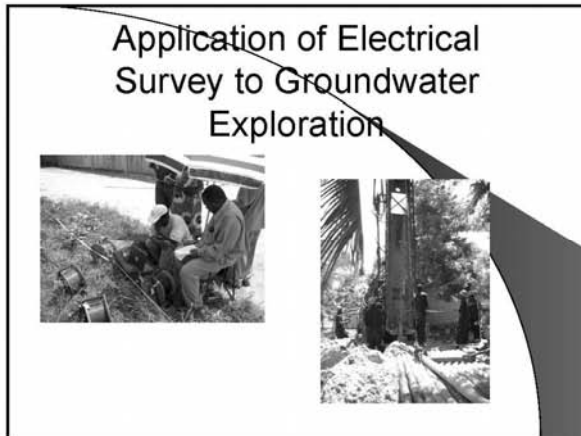
PC : Precambrian
 J : Jurassic
 C : Cretaceous
 N : Neogene
 Q : Quaternary

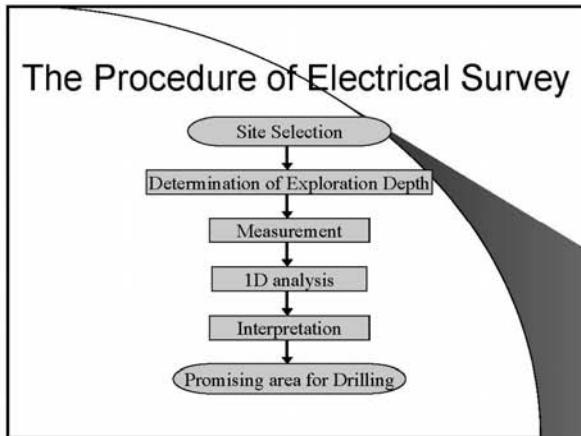
Resistivity values are derived from the results of 1D analysis.

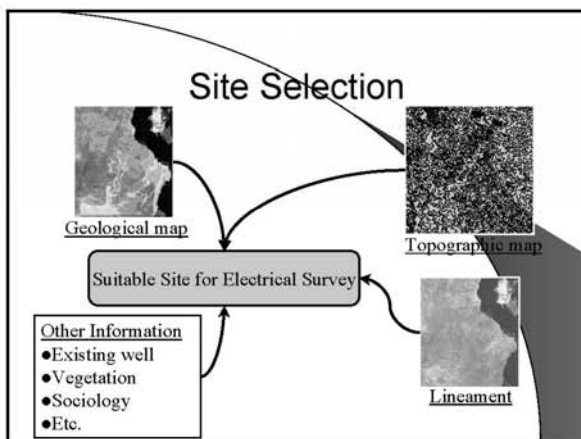
FIGURE A-117 CLASSIFICATION OF RESISTIVITY FOR EACH FORMATION

Appendix B

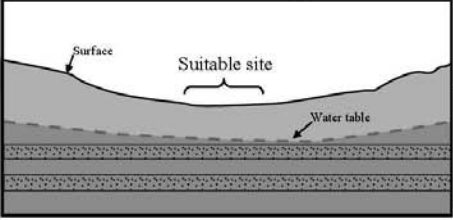
Handout used for Workshop in WRI







Suitable Site for Alluvial Aquifer



Surface

Suitable site

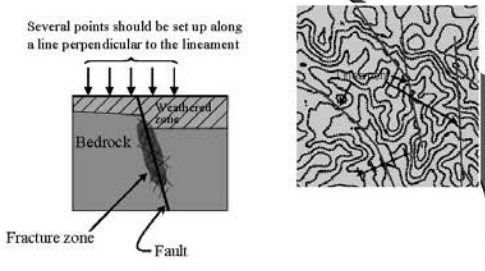
Water table

Geomorphologically low place

If the level of water table is almost horizontal, the depth to the water table is shallower at the lower place.

Suitable Site for Fracture Zone

Several points should be set up along a line perpendicular to the lineament



Weathered zone

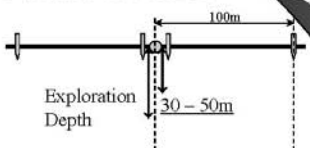
Bedrock

Fracture zone

Fault

Exploration Depth

The exploration depth of Schlumberger method is equal to about 30 - 50% of AB/2



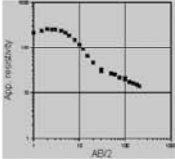
100m

Exploration Depth 30 - 50m

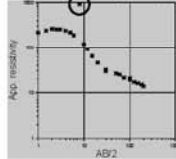
AB/2 should be set up at 2 to 3 times of the expected exploration depth

Measurement

During the measurement, plot data on a double logarithmic diagram in order to check the data quality



The curve connected each plotting point should be smooth

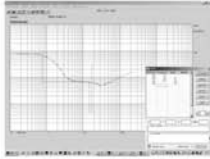




Bad data

If the data changes remarkably compared with the last data, check the electrodes and wires, and measure again

Analysis

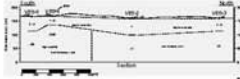
The observed apparent resistivity is analyzed using the 1D inversion software, WinSev, and a layered model is estimated



ρ_1	T ₁
ρ_2	T ₂
ρ_3	

Layered model

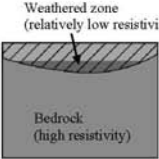


Resistivity section

Interpretation

Precambrian, Jurassic and Cretaceous formation area

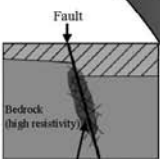
1) Weathered zone



Weathered zone (relatively low resistivity)

Bedrock (high resistivity)

2) Fracture zone



Fault

Bedrock (high resistivity)

Fracture zone

Interpretation

Neogene and Quaternary formation area

Clay : low resistivity
Sand : relatively high

The resistivity of sand layer saturated with water is not less than that of groundwater

Example 1 – POTEA –

VES results

Test Well
Good aquifer below 30m

Depth: 10 to 30m
low resistivity (<10Ωm) = clay to sandy clay

Depth: below 30m
Relatively high resistivity (30 – 35Ωm) = sand to clayey sand

Example 2 – KUWAMDUMA –

VES results

2D result

Weathered zone (100 – 300Ωm)
Thickness = 20 – 30m

Fresh Precambrian bedrock
(800 - 6000Ωm)

Recommendation

Difficulty of measurements

Extremely low resistivity in Neogene and Quaternary formation
Sometimes showing several Ωm

↓

Resulting in very low potential difference, and noisy data

Increasing Current Value is only one solution

McOHM EL	: 120mA maximum
McOHM EL + Power Booster	: 800mA maximum
