

ABSTRAK

PENDUGAAN BATUAN DASAR SITUS LIYANGAN MENGUNAKAN METODE RESISTIVITAS PADA DAERAH DUSUN LIYANGAN, DESA PURBASARI, NGADIREJO, TEMANGGUNG, JAWA TENGAH

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Situs Liyangan berada pada lereng bawah Gunung Sindoro yang secara administratif berada di Desa Purbasari, Kecamatan Ngadirejo, Kabupaten Temanggung, Jawa Tengah. Secara geologis, Situs Liyangan berada pada Fasies Medial Sindoro didominasi oleh endapan klastika gunungapi seperti endapan aliran piroklastik dan endapan jatuhnya piroklastik sehingga aktivitas vulkanik sangat mempengaruhi perubahan bentuk hingga terkuburnya situs seperti saat ini. Oleh karena itu, dilakukan analisis dengan metode geolistrik untuk menggambarkan kondisi bawah permukaan sebagai upaya pemeliharaan bangunan bersejarah yang erat kaitannya dengan masa Mataram Hindu.

Penelitian ini menggunakan 9 lintasan geolistrik *mapping* konfigurasi dipole-dipole yang terdiri atas 4 lintasan berarah timur laut – barat daya dan 5 lintasan berarah tenggara – barat laut dengan panjang lintasan bervariasi 100 m, 120 m, 200 m, 240 m dengan spasi elektroda 10 m dan beberapa di antaranya 5 m. Waktu pengambilan data dilakukan selama 3 hari pada tanggal 16 - 18 Juni 2022 dengan instrumen *Ambrogeo Mangusta System Multichannel*. Pendugaan batuan dasar Situs Liyangan ini dilakukan berdasarkan analisis sebaran nilai resistivitas melalui interpretasi penampang 2D, korelasi seluruh lintasan, dan pemodelan 3D resistivitas terhadap kedalaman.

Hasil penelitian menunjukkan nilai resistivitas berkisar antara 93,9 $\Omega.m$ - 12.019 $\Omega.m$ yang secara umum terdiri atas material vulkanik G. Sindoro yang diinterpretasikan ke dalam 3 lapisan yakni pasir, breksi laharik pada nilai resistivitas 93,9 $\Omega.m$ – 751 $\Omega.m$ di kedalaman 0,8 – 8,5 m, lapisan litologi breksi vulkanik pada nilai resistivitas 751 $\Omega.m$ – 3.005 $\Omega.m$ di kedalaman 4,3 – 13,5 m, dan lava andesit pada nilai resistivitas 3.005 $\Omega.m$ – 12.019 $\Omega.m$ di kedalaman 8,5 – 19,6 m. Adapun dugaan batuan dasar situs berada pada kedalaman 0,8 hingga 8,5 m dengan rentang nilai resistivitas 3.005 $\Omega.m$ – 6.010 $\Omega.m$ yang diduga merupakan batuan andesit yang erat kaitannya dengan sistem pemujaan dan pertanian sebagai pondasi talud dan teras lahan.

Kata Kunci: dipole-dipole, resistivitas, Gunung Sindoro, Situs Liyangan

ABSTRACT

ESTIMATION OF BEDROCK OF LIYANGAN SITE USING RESISTIVITY METHOD IN THE AREA OF LIYANGAN, PURBASARI VILLAGE, NGADIREJO, TEMANGGUNG, CENTRAL JAVA

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The Liyangan site is located on the lower slopes of Mount Sindoro which is administratively located in Purbasari Village, Ngadirejo District, Temanggung Regency, Central Java. Geologically, the Liyangan Site is in the Sindoro Medial Facies dominated by volcanic clastic deposits such as pyroclastic flow deposits and pyroclastic fall deposits so that volcanic activity greatly affects the shape change until the site is buried as it is today. Therefore, geoelectric analysis was conducted to describe the subsurface conditions as an effort to maintain historical buildings that are closely related to the Hindu Mataram period.

This study used 9 geoelectric mapping with dipole-dipole configuration consisting of 4 in northeast - southwest direction and 5 in southeast - northwest direction with varying line lengths of 100 m, 120 m, 200 m, 240 m with electrode spacing of 10 m and some of them are 5 m. Data collection time was carried out for 3 days on June 16-18, 2022 with the Ambrogeo Mangusta System Multichannel instrument. The estimation of the *bedrock* of the Liyangan Site was carried out based on the analysis of distribution of resistivity values through 2D cross-section interpretation, correlation of all lines, and 3D modeling of resistivity to depth.

The results showed resistivity values ranging from 93.9 Ω .m - 12,019 Ω .m which generally consists of volcanic material of Mount Sindoro which is interpreted into 3 layers namely sand, laharic breccia at a resistivity value of 93.9 Ohm. m - 751 Ω .m at a depth of 0.8 - 8.5 m, volcanic breccia lithology layer at a resistivity value of 751 Ω .m - 3,005 Ω .m at a depth of 4.3 - 13.5 m, and andesite lava at a resistivity value of 3,005 Ω .m - 12,019 Ω .m at a depth of 8.5 - 19.6m. The suspected *bedrock* of the site is at a depth of 0.8 to 8.5 m with a resistivity value range of 3,005 Ω .m - 6,010 Ω .m which is thought to be an andesite rock that is closely related to the cult and agricultural system as the base of the talud and terrace *land*.

Keywords: dipole-dipole, resistivity, Mount Sindoro, Liyangan Site