

Project Name	Tottenham House Picture Gallery
Project Number	3894
Document Title	GSHP Borehole Array – Description for Planning
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1.0 Introduction

This briefing note has been generated to provide an outline description of the proposed borehole array required for the Ground Sourced Heat Pump (GSHP) system which will be connected to the approved Picture Gallery at Tottenham House.

The briefing note does not provide a full technical description or scope of the borehole array, but rather a brief overview for the purpose of informing the planning application.

The detailed design of the borehole array has been completed by Rendesco and is appended to this briefing note [*3894-REN-DRW-ME-00501-P01 - Borehole Trench Layout*].

2.0 Purpose and Description of the Borehole Array

Much research has previously been carried out to establish the most suitable low carbon technology for the site. GSHPs were selected and are incorporated into the design of the energy infrastructure that will provide heating and cooling to the Picture Gallery.

The GSHP units are key to being able to offer an energy efficient and sustainable solution to the energy demand of the building and require a 'ground coupling' in order that they can extract geothermal energy.

This application is for the ground coupling to take the form of a vertical 'borehole array' comprising of a closed system which circulates water (and glycol mix) through pipework installed in vertical boreholes. Since the pipework is a closed loop no water is extracted from or discharged into the ground or the watercourse.

This system, when connected to the GSHPs located in the Picture Gallery, extracts geothermal energy from the ground via the contact between the ground and the pipework.

The borehole array will comprise 18no. 126m boreholes each with a U-bend of Ø40mm pipework. Horizontal 'header' pipework will connect the pipework within each borehole to an underground manifold and 'flow and return' pipework will connect the manifold to the plant room within the basement of the Picture Gallery for the connection to the GSHP units. All horizontal pipework will be buried 1m below ground level.

All pipework associated with GSHP ground array will take the form of MDPE (plastic) pipework which has an expected service life of 50yrs+.