



## ABOVE OR BELOW – this is the QUESTION

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### Abstract

The subject of bridges and bridge design is amply covered in literature and research. It is less so as far as tunnels are concerned, and what is there is almost exclusively engineering biased, while a stigma of perception is attached to the idea of tunnels, especially non-vehicular ones. This paper sets out to offer a glimpse into situations where a decision had to be made as to whether a bridge or a tunnel was the most appropriate solution to a crossing. Cases presented relate to situations where the decision went in favour of a tunnel. These include the proposed Waitemata Harbour crossing, the Channel Tunnel, Fehmarn Belt Fixed Link, the proposed tunnel linking the Isle of Wight with the UK mainland. It also offers a provocative comparison between La Habana and Sydney, with a tunnel in La Habana port and a bridge in Sydney. The author's proposed garden tunnel between Canary Wharf and Rotherhithe in London served as the catalyst for this paper.

**Keywords:** Bridges, Tunnels, Engineering, Symbolism, Environment, Design, Innovation

### 1 Introduction

Having experienced first-hand the bridge versus tunnel dilemma, I am embarking on research with the subject covering bridges and tunnels, taking psychology, sociology, symbolism, design, economics, environmental and technical aspects. Among aimed-for outcomes is a tool which will help decision makers to rationally and holistically argue whether a bridge, or a tunnel, is the most appropriate means of crossing whatever they need to cross. Locations where such dilemmas were grappled with will be identified, and decision-making processes, and multifaceted outcomes of such decisions analysed. The research document will offer more than repeating exercises performed

by consultants on those projects, not least because it will be based on studying the outcomes, not only initial parameters.

Most of the examples in this paper involve large vehicular tunnels. Anti-tunnel lobbies frequently claim that a tunnel would be costlier in terms of capital cost and incur higher lifetime ownership cost than a bridge. This however is not always the case. When we look at non-vehicular tunnels, we have the psychological and image stigma attached to the idea of a tunnel. They are seen as dark, airless and less glamorous and evocative than a bridge.