Summary

The construction of Brasília and the transfer of Brazil’s capital city from Rio de Janeiro aimed at steering progress and economic growth towards the centre-west and northern parts of the country. However, what deeply characterized and later validated Brasília as a national and international cultural heritage landmark was its symbolic significance. Nonetheless, almost six decades after its inauguration, the city’s reality is vastly different from the one imagined in the late 1950s. Massive demographic growth and urban sprawl have led to decreased soil permeability and increased demands on the region’s water resources.

This work surfaced as a reflection on the current hydrological crisis in the city of Brasília and was set up as a means to provide an alternative approach to water management inside the Pilot Plan area; as well as to open up potential urban strategies that may help to alleviate bottlenecks in the existing water-management system of the city. From both analytical and design perspectives, this study had its foundations in the Green-Infrastructure [GI] and urban water-sensitivity approaches, with particular emphasis on the environmental dimension of urban sustainability. However, implementing water-sensitive urban strategies in Brasília implied a paradoxical quest, for the principles that shaped the city of Brasília are extremely antagonistic to the ones necessary as premise to the implementation of GI strategies in urban environments. The question was then, how can water-sensitive solutions be implemented in a city designed upon principles of segregation, mono-functionality, heavy grey infrastructural solutions and zoning without compromising its existing urbanistic heritage?

Due to Brasília’s spatial singularity, a need for alternative design methods to implement a Green-Infrastructure network in the city was identified. Through literature and data review and a research by design approach, this study took the first steps in demonstrating the potential role of urban spatial patterns as a basis for the implementation of transdisciplinary solutions focused at improving water flows, water quality and water management within the urban landscape of Brasilia. Through the design of a green-infrastructure network in Brasília, this study evaluated the transferability of Green-Infrastructure theory principles to both modernist cityscapes and cityscapes restricted by heritage protection legislation and policies. By doing so, this research proposed a set of methods, which assisted in the analysis of the urban landscape and in the design of water-sensitive strategies that respected site specificity and preserved the original urban landscape character. This study proposes these methods as the stepping-stone in translating Green-Infrastructure principles to the practice of urban design and planning, in the specific case of modernist and heritage protected cities. The research was carried out through a multi-scale approach, focusing on the hierarchy of ecological systems in the city, how they work simultaneously and how the implementation of a GI network could both enhance the performance of these systems and synergize them with environmental, social and economic cross benefits. Additionally, a multi-temporal approach was used in order to confer adaptability to the network. Possible design adaptations through a project phasing timeline were explored to afford the system flexibility for unpredictable demands.