Sustainable cities are characterised by dynamic interactions between socio-economic, cultural, and biophysical forces. Current environmental parameters and tolerances set out in national and international guidelines and standards, as well as governmental sustainable development targets, play a critical role in shaping future cities. New, trends in urban development examine and interpret the underlying ecological factors that are conducive to innovation in cities. The aim of this paper is to investigate urban processes and how they interact with their immediate ecological contexts. It emphasizes, and brings to present discourse, a strong intellectual, interpretive and creative urban ecological agenda.

This paper develops a broad critical analysis of contemporary architecture, social, economic and ecological challenges that shape the built environment. It argues that contemporary sustainable cities can only be properly designed, planned and managed through a full understanding of the patterns and processes which emerge from the interdependencies of man-made and natural structures.

Building on ecological principles and processes, the paper considers strategies for forming new, or regenerating existing, urban forms and relationships using parametric/GIS modelling. The research outcome integrates architecture to biotic forms, urban patterns to ecological principles, and urban landscape to natural habitat.