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A fragmented habitat transformed through contextually responsive measures into an environmentally connected research lab adjoining Wits west campus

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2020
https://hdl.handle.net/10539/31322

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Figure 1.1 *Site Collage* Cooke, D. (2019). Site Collage. [Photography & Photoshop editing] Johannesburg.

01 Abstract

Urban development is affecting earth's natural habitats, urban sprawl and densification are major players in the clearing and redesigning of habitats, especially those close to the urban centers, and these changes have catastrophic impacts on the natural environments. At all levels globally and locally, efforts are being made to move toward sustainable development of buildings with a lower carbon footprint, which is assisting with load on the grid systems but this has done little to deal with the inherent permanence of architecture and urbanity as well as the emissions as a result of development. Changed habitats are forever changed and therefore applying tactics of sustainable development does not necessarily assist in reversing the effects of urban sprawl on natural ecological systems.

The building industry accounts for almost one third of the carbon emissions on earth, but it is also the sector with the most potential to reduce. This highlights the responsibility we have as architects to begin to influence this by extending our knowledge base around principles of passive and renewable design and applying it to all projects.

The objectives of this report are to explore passive design & sustainability from all angles of the design and construction process, from early design decisions and master-plan intentions through to materiality selection and detailing, with understanding and consideration of the embodied and life-cycle energy.