The image series shows the generation of building mass through the use of pedestrian routes and contextual response, followed by the definition of the building mass, and finally, incisions made in the building mass during different times of the year in response to the spaces needing solar access. Progress.

Building Information Modeling made this approach possible. The necessity of accurate modeling of the combination of building mass and sunlight - both direct and diffuse light - made this tool indispensable.

Architects have architectural responsibility to design high quality spaces with vernacular sustainability principles embedded in the design. This raises the question - what tools can we use to create sustainable buildings while respecting architectural intent and engineering needs?

Building Information Modeling (BIM) has been in use for a number of years but has been adopted as a tool that aligns with conventional design practices and the application in reinforcing sustainable design is constantly evolving. The question is how BIM can be used in the South African context to assist in the design of the building mass.

The Site

Pedestrian movement routes connect old existing mixed use zones with existing nodes. These nodes create existing public transport nodes with green mixed use nodes. Proficiency.

Solid form and void space is defined - solid building mass to activate hard public space. Void - allow a high degree of solar access to select areas. The fourth incision is also made during the winter solstice to afford higher levels of solar access to the neighboring buildings during the most extreme time of the year.

The third incision is also made during the winter solstice but in this incision to allow a high degree of sunlight to the newly created soft public space. The fourth incision is also made during the winter solstice to afford higher levels of solar access to the neighboring buildings during the most extreme time of the year.

Bearing in mind that the solar incisions are parabolic in shape, the form had to be simplified and rationalised in order to make both structure and planning a possibility. The development of the structural system was very important and BIM made the efficient communication possible between the architect and the engineer. This made the development of an extremely efficient structural system possible. The engineer forms proportionately small cantilevers tied back to the circulation cores. These cantilevers also counterbalance each other and steel hangers then suspend the structure and in doing so massively reduces the embodied energy of the structure in tension and therefore the structure is lightened substantially - this has a knock on effect on the whole building in terms of material usage

Finally, precast floors are suspended from the steel hangers.