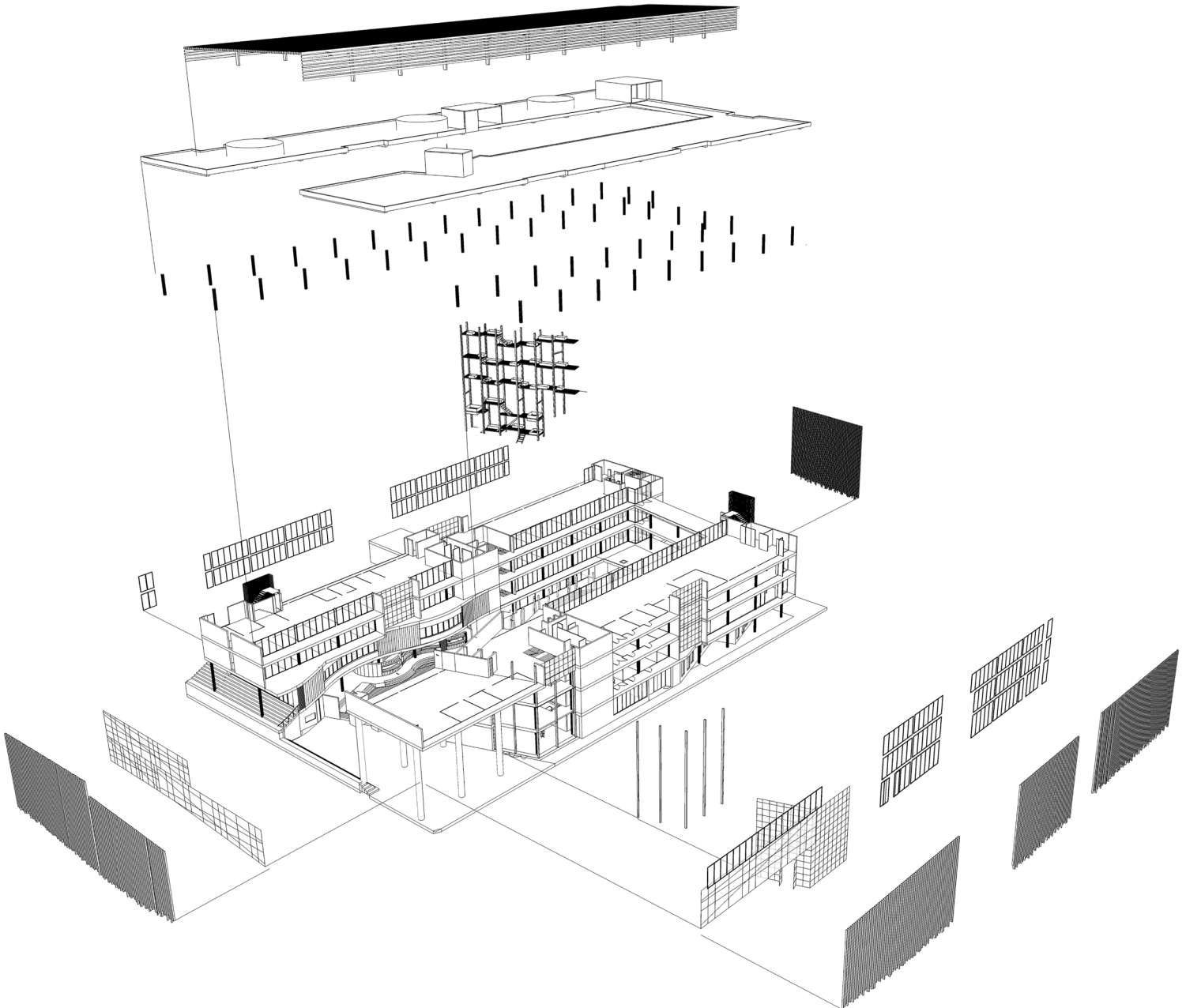


Chapter 8. Technical Development



1. Void

The central void consists of two main spaces. In order to increase the experience of these spaces, the foyer space has subdued lighting, achieved through a combination of a louvre and coloured glass system.

i. Vertical garden

The garden setting is strengthened by the creation of vertical green walls. Two systems are implemented.

The first system forms a light screen on the northern and southern faces of the void, in order to allow light into the surrounding office spaces. A cable and channel system forms the frame for vines and creepers, with distances and spans controlling the creation of open sections to allow an integration between the void and the surrounding office spaces.

The second system is a steel stair system, which forms a connection between the two wings of the building, whilst acting as a divide between the two main spaces of the void. The lower levels of the stair are separated from the upper circulation spaces and are accessible from the sanctuary floor in order to serve as viewing platform / gallery to the meeting space. Green elements are integrated into this system to complete the garden setting of the sanctuary.

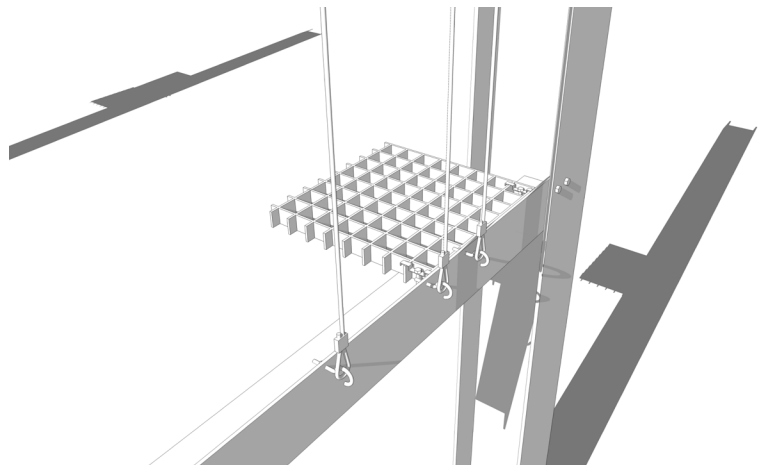
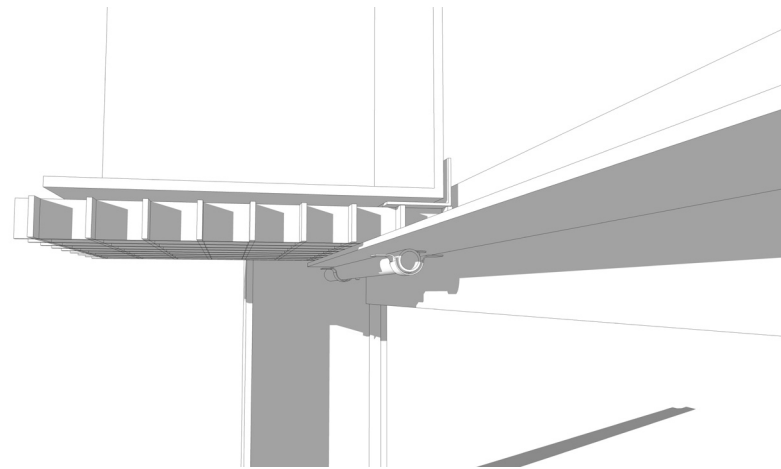
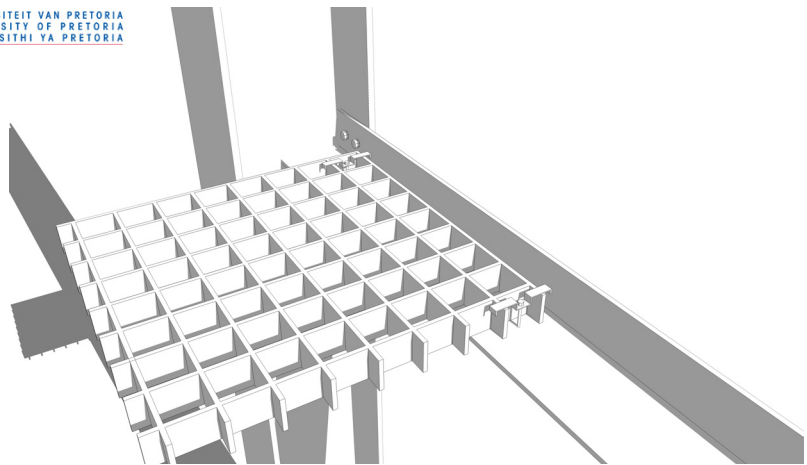


Figure 82: 'Green stair' details



Figure 83: green stair system

ii. Flooring

In order to create the garden setting, a multi-operational modular surface, a system designed as an outdoor flooring system, was chosen. The paving modules seem to flow into the planted beds in order to integrate the two surfaces into one complementary system.

The paving modules have open joints for drainage, with sub-surface drainage mats, and drainage pipes cast into the concrete structure.

The beds will be planted with indigenous long-grasses to create a veld setting.

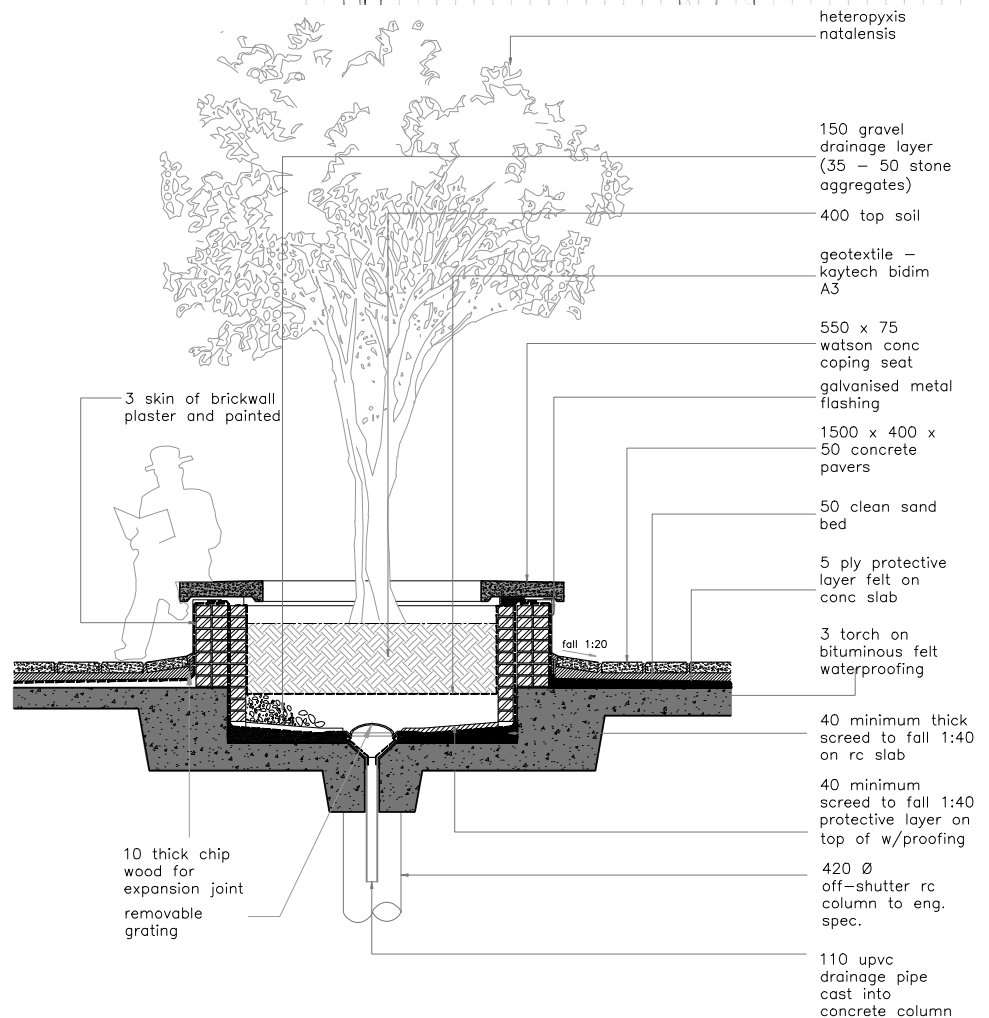
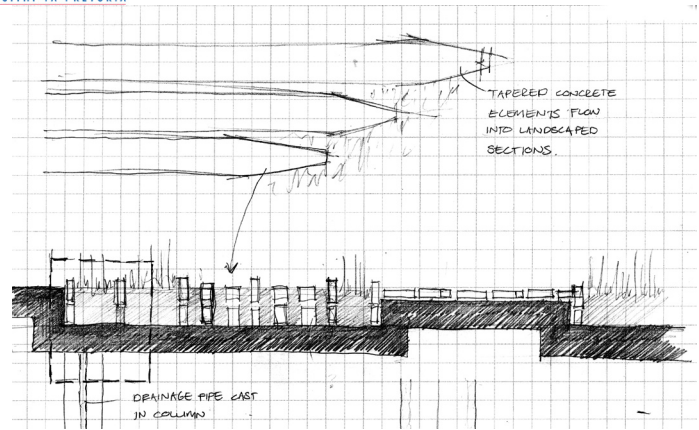


Figure 84: (above) entral void flooring system

Figure 85: (right) planter detail

iii. Roof system

The void space is covered by a mechanical aluminium louvre system, which will close into a watertight system in order to protect the void from all the elements.

The storm water run-off from this roof system is collected in a water storage tank, located on the concrete roof of the southern wing of the building. This water tank will feed the gravity irrigation system of the sanctuary.

Overflow of the storm water will be led to the city storm water system.

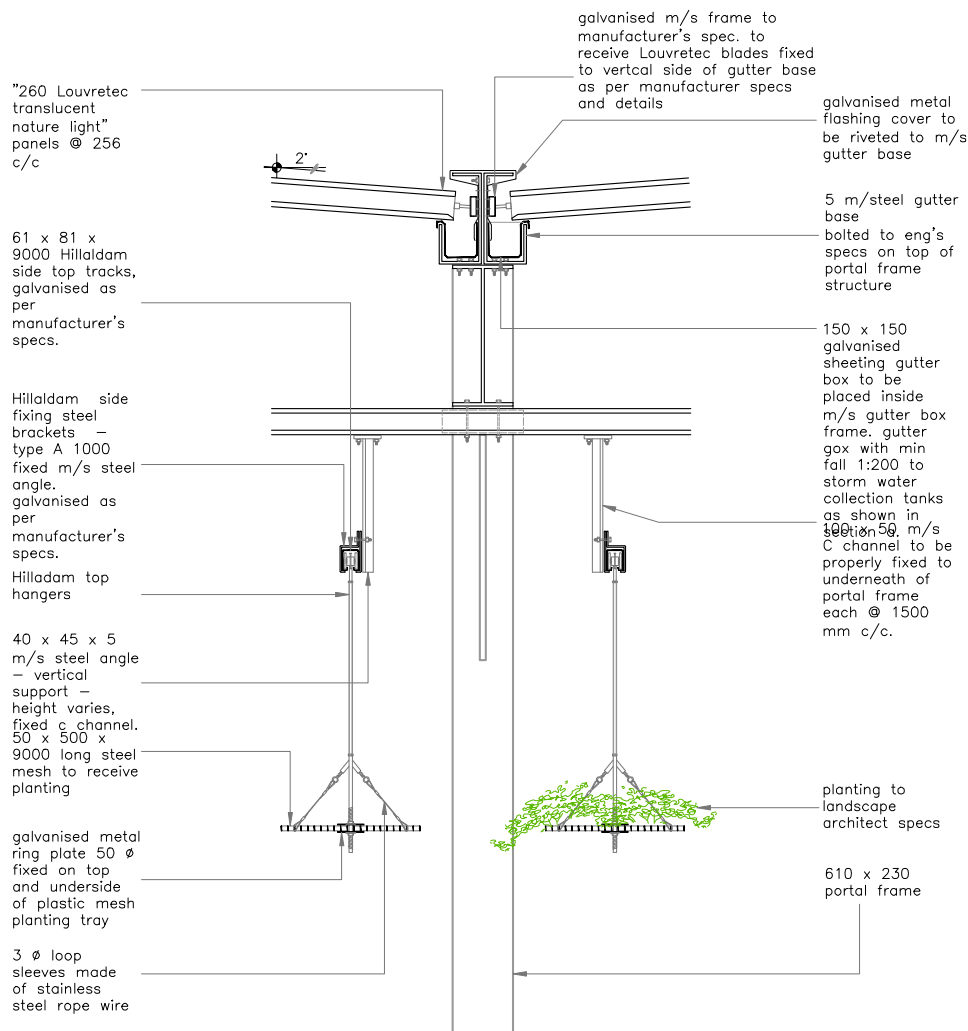


Figure 86: 'Green' roof detail

2. Structure

The building is based on a domino structure of concrete slabs and columns. This system is chosen for thermal massing.

Brick is included both as a massing element and as reference to the context. Two of the buildings on the campus are face-brick buildings, and Pretoria has

a history for the manufacturing of bricks, which are used as construction material throughout the city.

The concrete structure allows for the use of free-form elements for vertical definition of space. The public interface is defined by a timber 'ribbon' element that extends into the void space and retracts into the building space in order to strengthen the relation between the 'inside' and 'outside'. The materiality further contributes to the natural setting of the sanctuary.

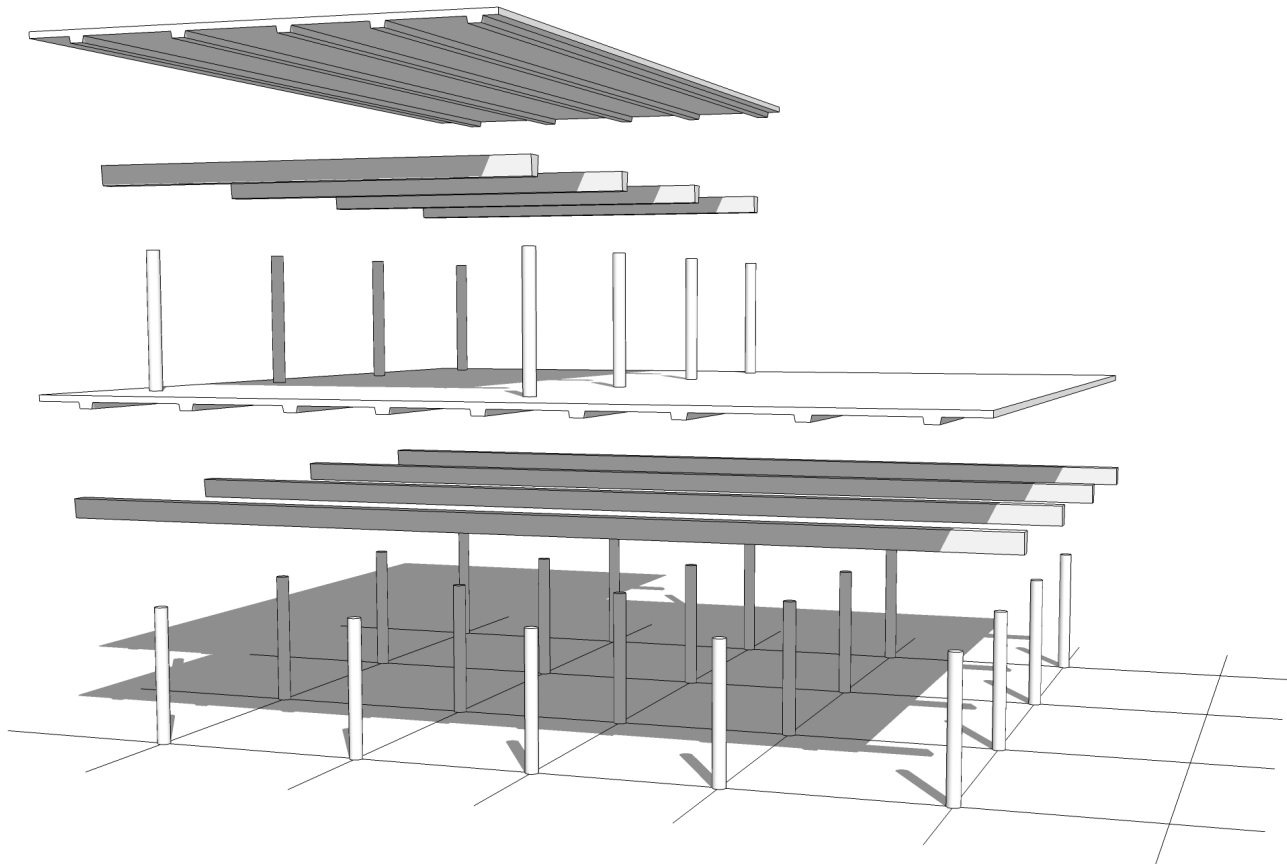
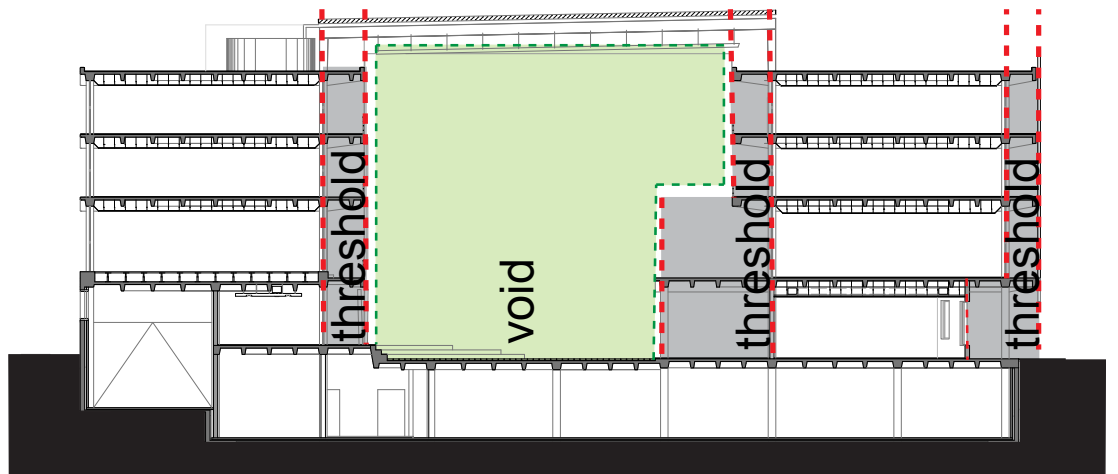
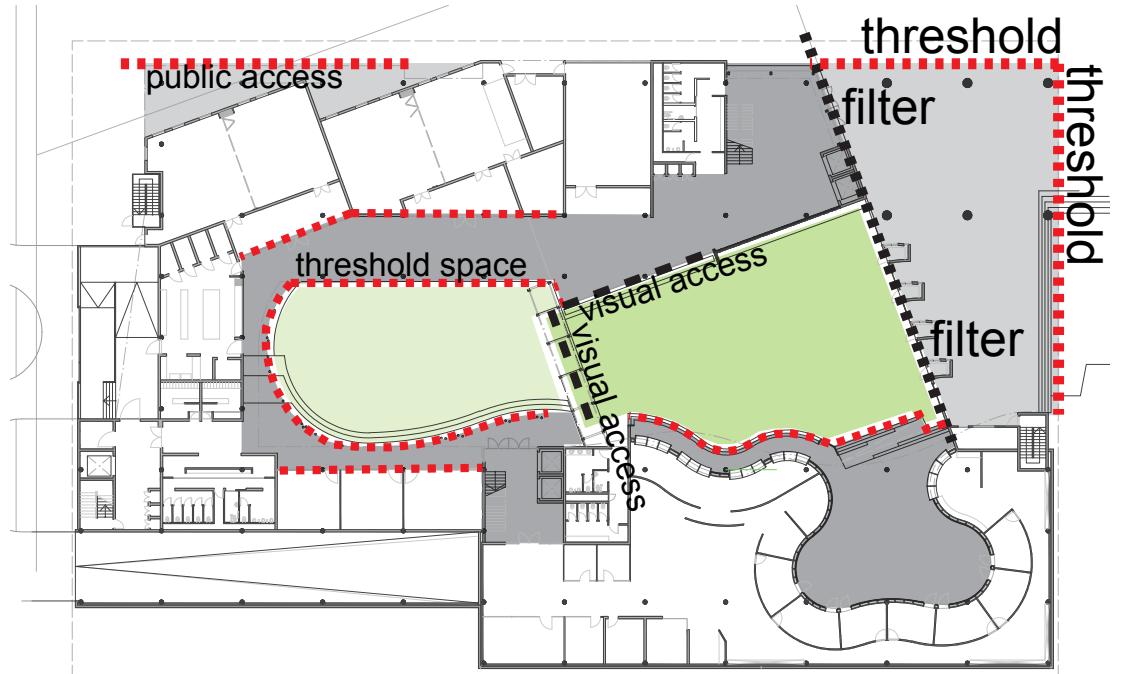


Figure 87: Section f1 - free form at lower levels

3. Building envelope



4. Passive systems

i. Shading

The slabs are extended on portions of the northern facade of the building for shading and will be used as balcony spaces, creating concrete box structures. Additional shading is provided in the form of vertical louvres that will also serve as glare control. These vertical screens form a continuation of vertical facade elements on the NZASM building.

ii. Natural ventilation

The depth of both wings of the building is less than 15m in order to allow for natural ventilation. This ventilation is encouraged through the installation of full length vertical pivot operable windows and the installation of chiller beams, cast into the slabs.

By these measures mechanical ventilation is restricted to the conference and meeting facilities as well as the deep-structure area of the branch office.

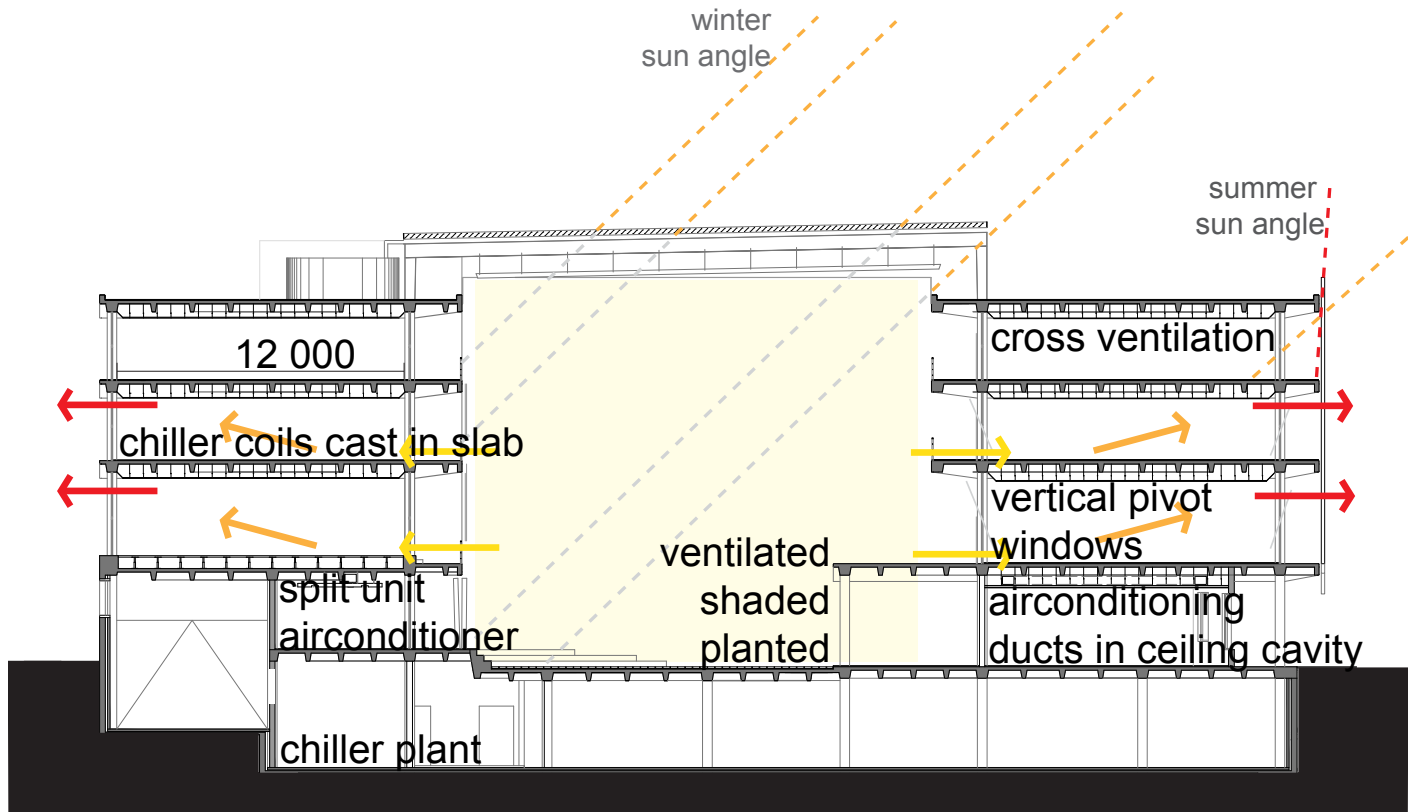
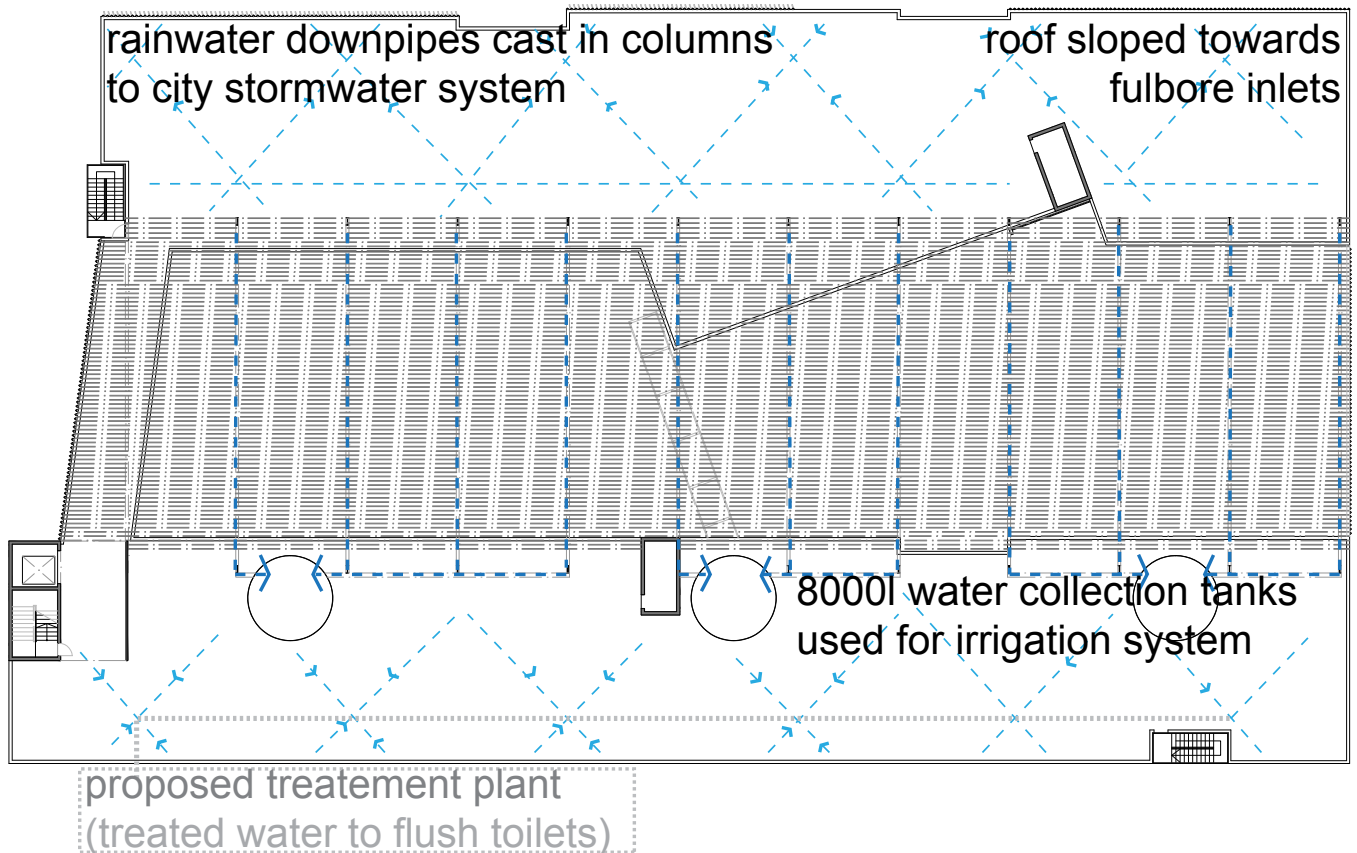


Figure 88: Section f4 - slab overhangs, vertical louvres and full length pivot windows to aid passive climate control

iii. Storm water



iv. SBAT

Results for the assessment of the building show low percentages for water, capital costs and materials and components.

The results for water is low due to the fact that the building includes a basement and encloses a central open space. Both of these elements leads to a system where ground water infiltration is not possible on site. With regard to the larger campus, use of permeable surface materials are employed and as such the results for the campus would read more favourably.

The materials and components result is influenced by the lack of use of recycled building materials. The current use of the site is ground level parking, thus leaving no structures to be demolished, apart from a small brick building in the corner of the site. Agreements could potentially be made with other construction sites for the re-use of materials.

The unfavourable result with regard to capital cost is due to lack of reuse of existing buildings. As stated above the site is currently vacant, apart from a small brick building which is unsuitable to the proposed use. The campus consolidation does make use of the existing buildings on the city blocks, thus ensuring more favourable results for the larger development.

5. Materiality

The materiality of the building relates mainly to context and climate. Brick, which is viewed as a local resource due to the history of brick manufacturing in the area, as well as a contextual material relating to the existing built fabric of the city. Additionally it has a high capacity for thermal storage which suits the climate.

Concrete is used both for its thermal storage and structural capacity.

Extensive use of glass is made in the design. This material allows in natural light, which provides a healthier environment for employees, but at the same time allows heat transfer. For this reason the design aims to ensure that all curtain walling sections are protected from direct, full sun exposure.

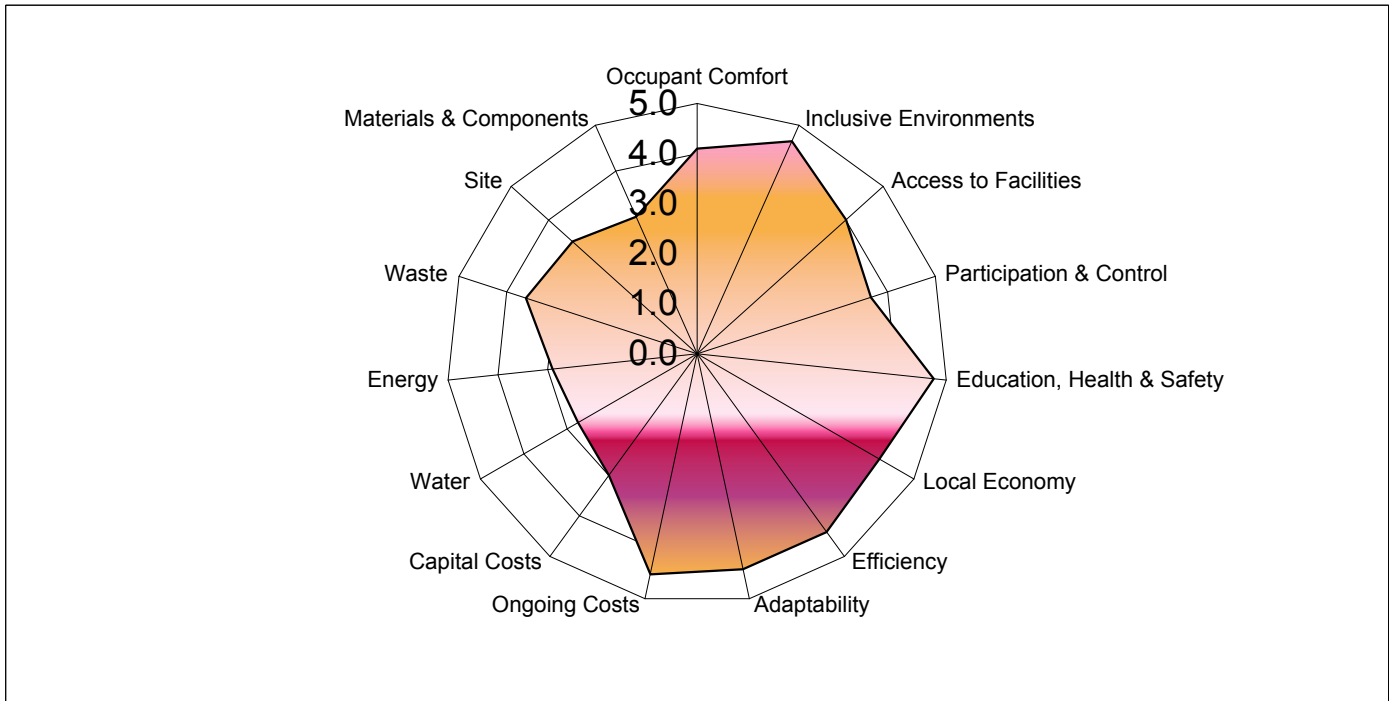
Glass is further linked to the concept of democracy, embodying the concept of transparent government and accessibility.

Timber and planting is used throughout the interior collective spaces, creating a more natural setting in which people can related to a broader context as discussed in the literature study.

The flooring of receptions and publicly accessible spaces is a rust chemstain screed finish, providing a natural earthy colour and further relating back to traditional building and flooring methods.

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	Sanctuary	Date:	2010.10.28
Location:	Pretoria	Undertaken by:	Louise de Villiers
Building type:	Offices	Company / organisation:	UP
Internal area (m2):	21 861		



Social	4.2	Economic	4.1	Environmental	3.1
Overall	3.8	Classification			