





siteanalysis

People of the iron age enter from the North - mainly hunters & farmers

Early and middle stone age: Evidence found of tribes present in the area North of the Magaliesberg at Wonderboompoort



Ndebele and Tswana people

1832 Shaka expel Silkaats



1839 Gert Bronkhorst establishes himself on the farm Elandspoor, North of the Fountains valley

1838 Pioneers Gert & Lucas Bronkhorst arrive in Elandsfontein area



1855 Founding of Pretoria

1857 The land of Gert Bronkhorst is divided in 6 portions - Jan Francois Scutte owns the portion on which will contain the University campus

1875 James Edward Mears buys the property from Schutte

1894 Building of railway to Delgoa bay that now Crosses Lynnwood road

1908 Centre College Unive

1840

1860

1880

1900

1909 Establishment of Botany department at UP  
 Establishment of the Pretoria University of Science, (TUKS), later known as the University of Pretoria (UP) (1930)

1913 Architect Sir Herbert Baker leaves south africa

1920 Building of the Old Agricultural building at UP.

Only Cape-Dutch style building on campus.

After it's completion an Agricultural engineering hall and a Veterinary laboratory was added respectively before 1923.

In 1923 an extra wing was added on the eastern apt of the building and in 1929 the Dairy research institute was completed.

By 1940 the building was being occupied the department of Botany, Geography, Psychology and Home Economics.

In 1956 it was decided to build a new Agricultural building on the Experimental farm east of the first Male residences.

1931 - 1934 Planting of various plant species within the botanical garden under supervision of Prof. B. Elbrecht

1932 The discovery of the ancient civilization at Mapungubwe in the formerly Great Zimbabwe  
 This discovery deepened Gerhard Moerdyk's interest in ancient African culture (Fisher, S.a: 2)

1940 Plantkunde/ Botany building

1947 Vetman building

1949 Bateman laboratory

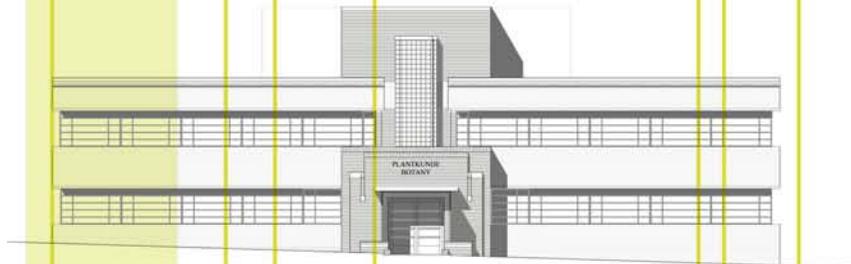
1953 Stoneman building

1966 Building of parking area south of Mathematics building

1967 Building of fishpond and expansion of Cycad garden in North west corner of the site

1970 Closing of Burnett street entrance amidst safety concerns

1989 Temperature controlled glasshouse for plant production



1920

1940

1960

1980





CIL labs

Old agricultural building

Mathematics

Botany

Glasshouse

Bateman

Vetman

Stoneman

parking

Natural sciences

AE du Toit hall

University road

3

2

1

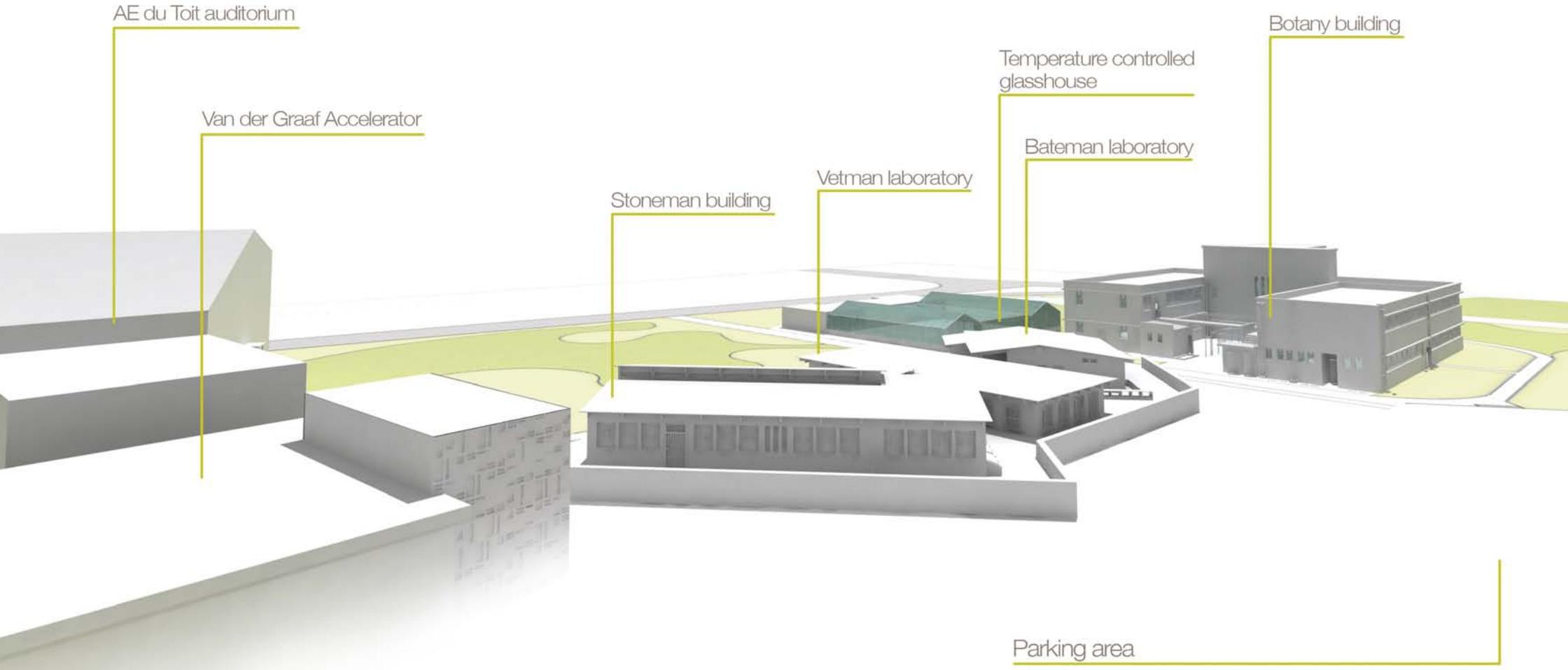


FIG 4.3 Birdseye view towards site from Southeast

Future gautrain boundary wall

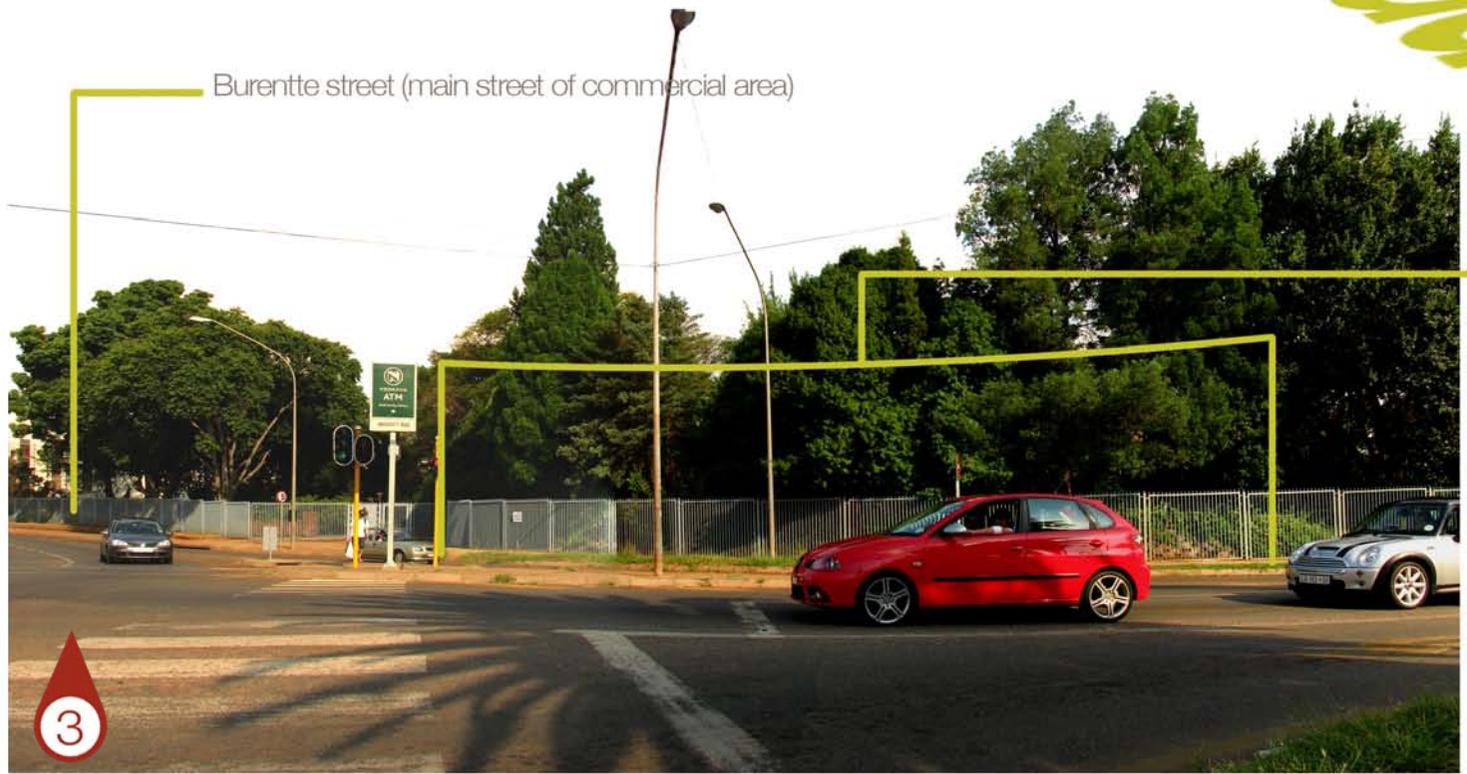


Existing glasshouse

FIG 4.4 View towards Western site boundary from University road

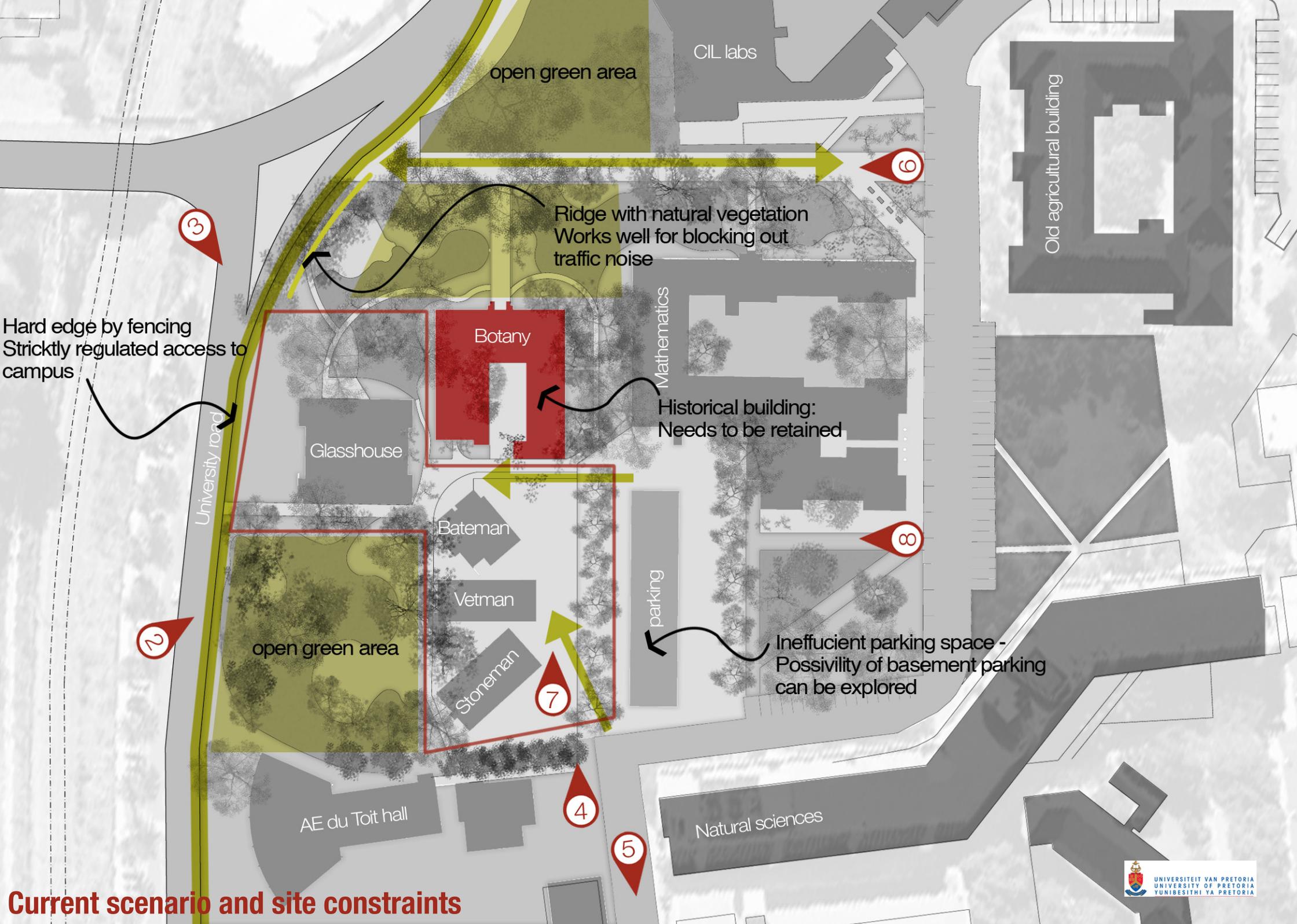
Delivery entrance

Burentte street (main street of commercial area)



Ridge with vegetation that blocks out traffic noise to the site

FIG 4.5 View towards South Western site boundary from Park Street



CIL labs

open green area

Old agricultural buidling

Ridge with natural vegetation  
Works well for blocking out  
traffic noise

3

6

Hard edge by fencing  
Stricktly regulated access to  
campus

Botany

Mathematics

Historical building:  
Needs to be retained

Glasshouse

University road

8

Bateman

parking

Ineffucient parking space -  
Possivility of basement parking  
can be explored

2

open green area

Vetman

7

Stoneman

4

AE du Toit hall

5

Natural sciences

**Current scenario and site constraints**

◀ FIG 4.6 Analysis of current site and site constraints

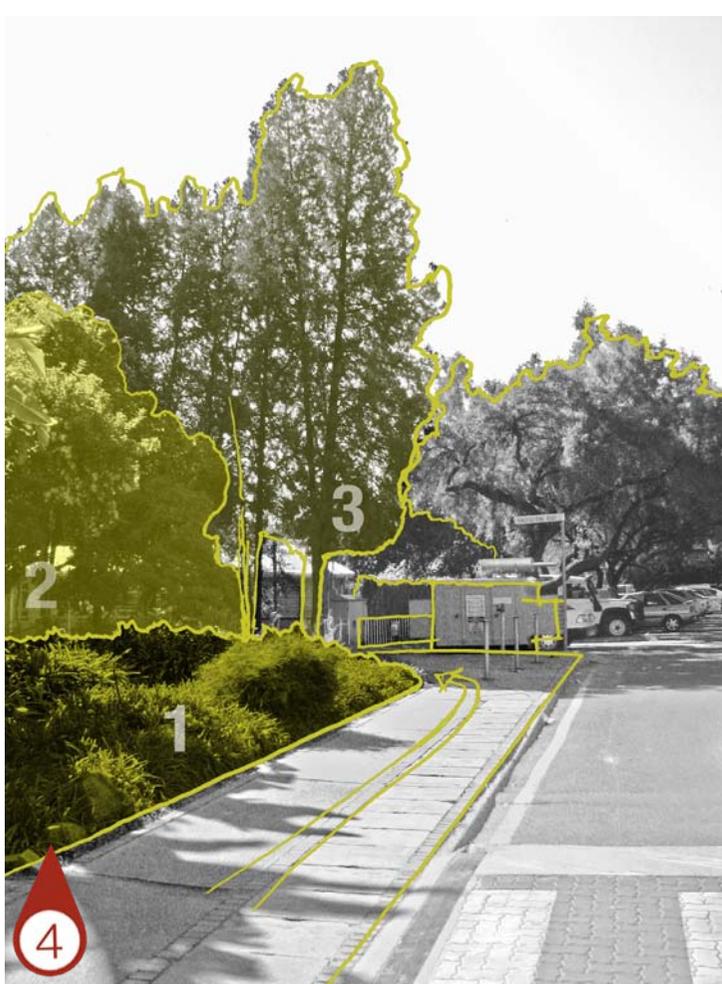


FIG 4.7-11 Access points to site with recession planes created by existing buildings or vegetation

FIG 4.7	FIG 4.8
FIG 4.11	FIG 4.9
	FIG 4.10



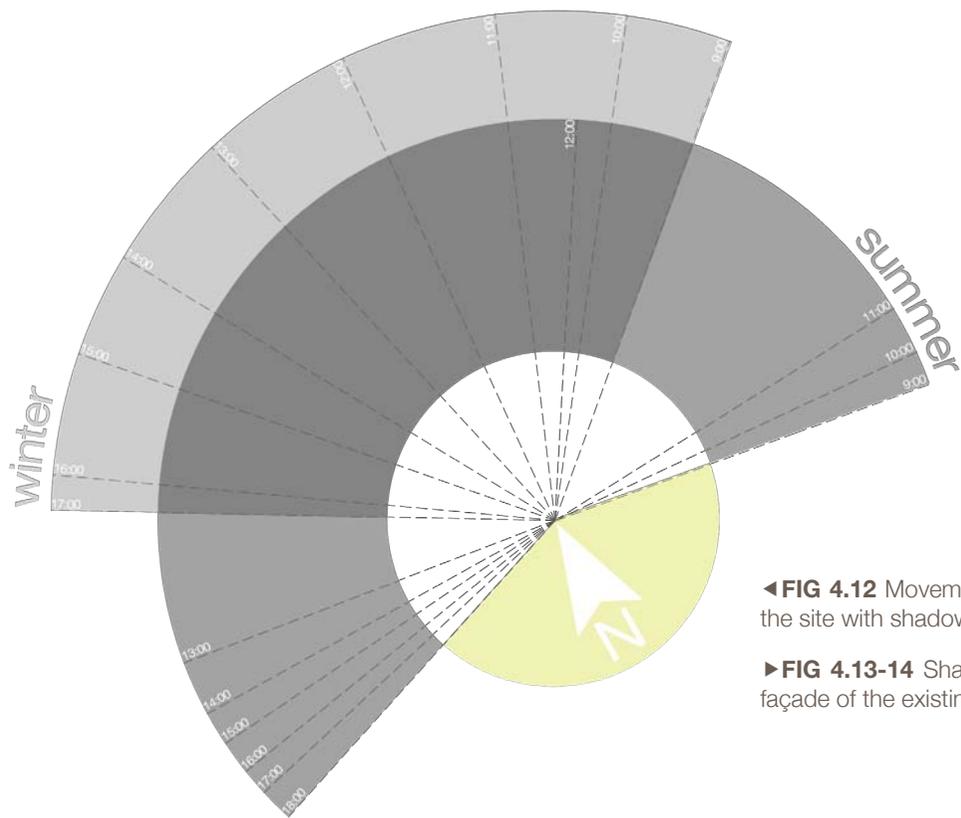
#### 4.1 The Botanical garden [1912]:

The development of the botanical garden at the University of Pretoria is very closely related to the personal research interests of people that were involved in the Department of Botany. When the botany building was completed in 1940, it was already surrounded by many plants. Many trees that were planted in the garden from 1934 to 1944 under the leadership of Prof. J. Bredenkamp still stand today. Although the garden was dramatically reduced in size due to the addition of many new buildings to the campus, the new head of the botany department, Prof. Schweickerdt *[ditto]*, an avid collector of indigenous species, planted these plants in a nursery that occupied most of the north-western part of the site, right up to the A.E. du Toit lecture hall.

Due to a shortage of personnel, and in accordance with instructions by Prof. H.F. van der Schijff, the garden was restricted to the western region of the campus. After the Burnett Street entrance in front of the botany building was closed, the fishpond was built in 1967 and the area around it was allocated for a cycad garden. The department now owns a complete collection of indigenous cycad species.

The garden currently consists of 350 indigenous plant specimens of which 250 are wooded plants. Specimens are also planted by request for student training purposes.

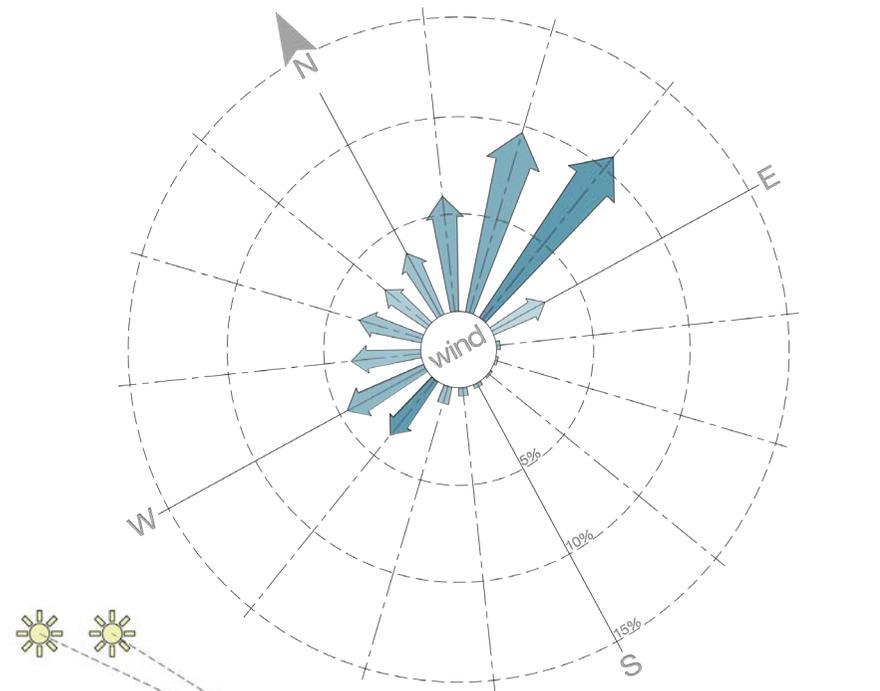
According to Prof. N. Grobbelaar, the need for such a botanical garden within a research facility is of paramount importance, since the natural habitats of plants are being destroyed at an astonishing rate. South Africa hosts the largest collection of Flora in the world, but many of these have not been studied yet. With an average of two plant species becoming extinct every day in the world, it means that too many plant species are destroyed without having been studied.



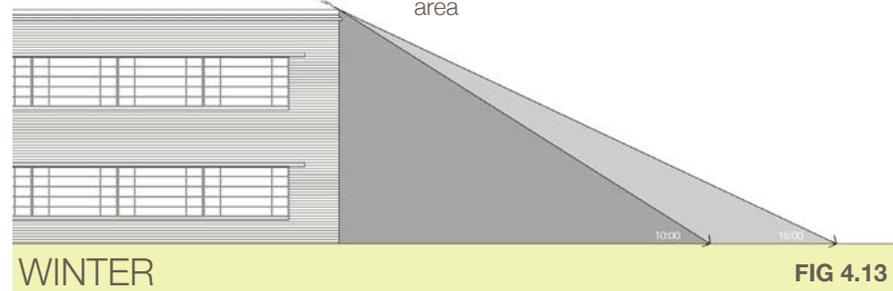
◀ FIG 4.12 Movement of sunlight rays across the site with shadow castings

▶ FIG 4.13-14 Shadows casting by southern façade of the existing Botany building

▶▶ FIG 4.16-21 Botany building key design features and stages of development

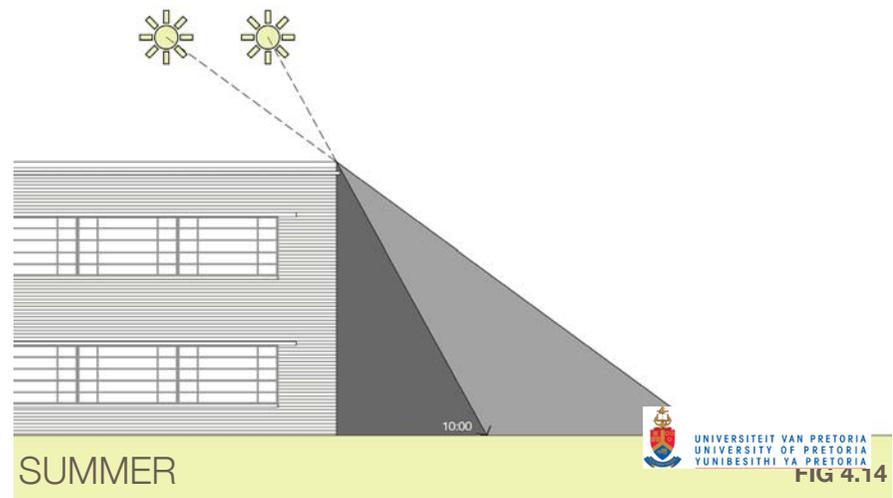


▲ FIG 4.15 Prevailing wind directions of the area



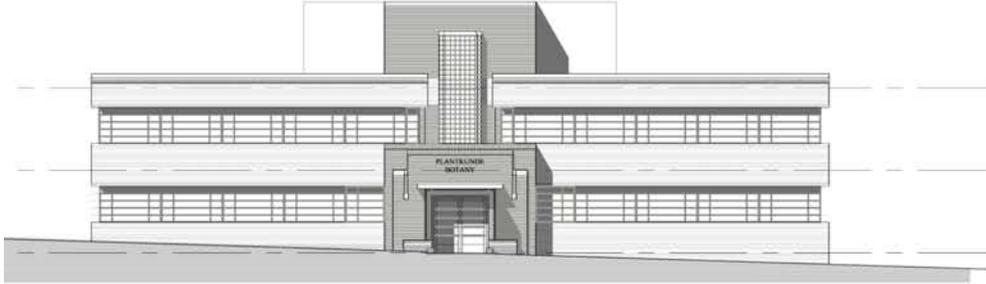
WINTER

FIG 4.13

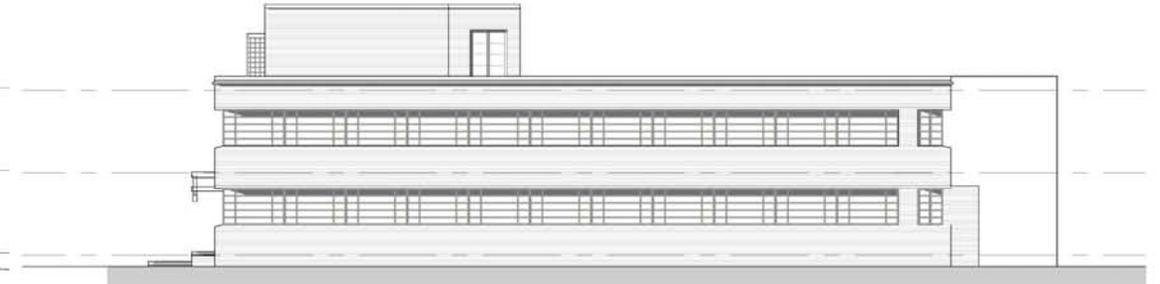


SUMMER

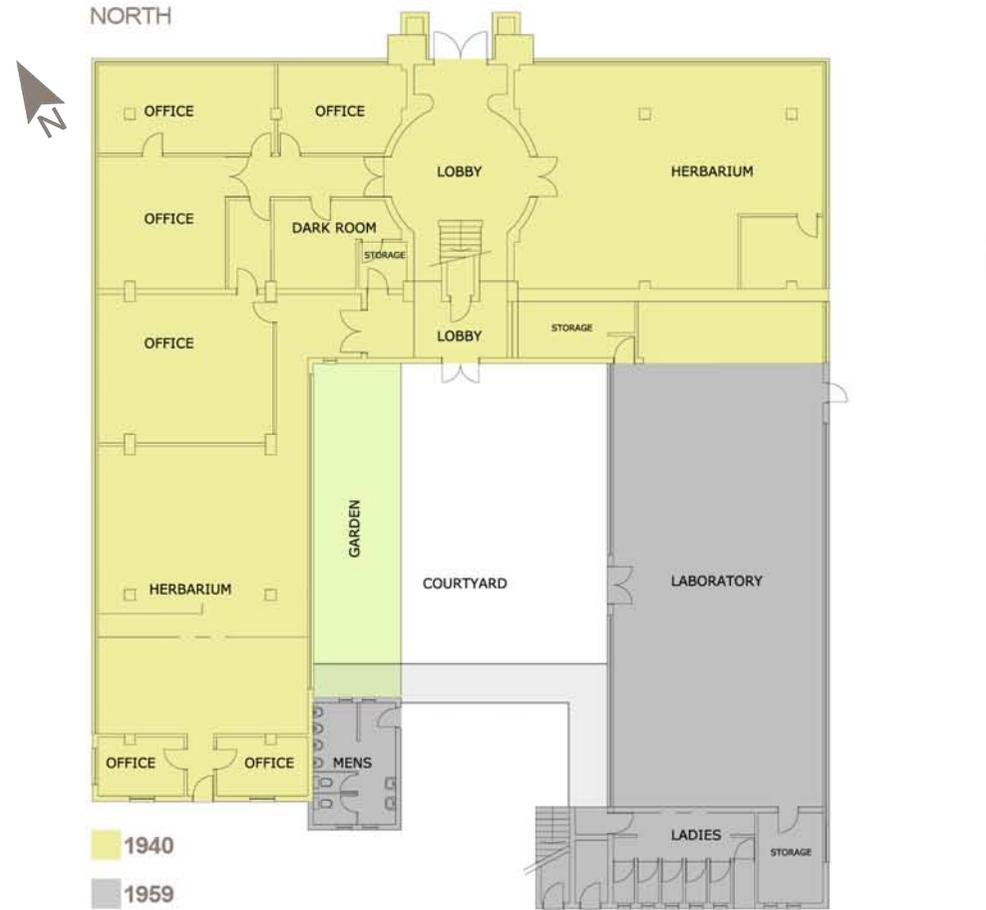
## 4.2 Botany building [1939]: Moerdyk and Watson



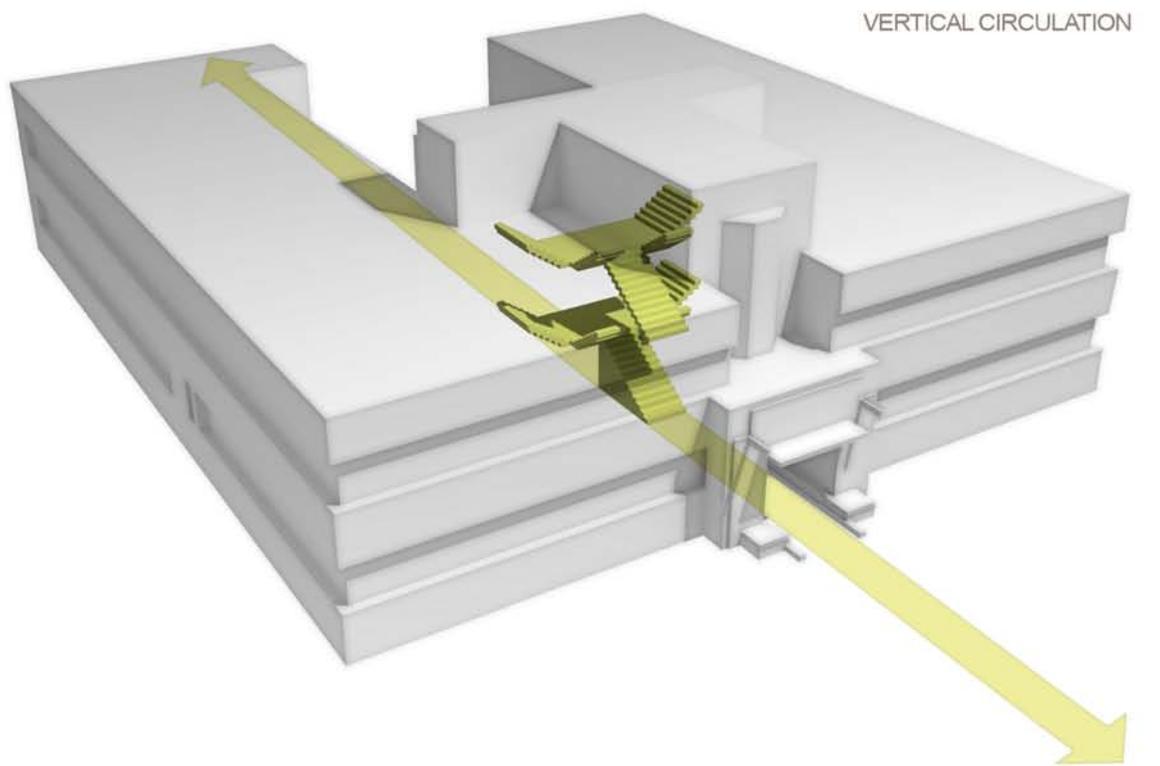
NORTH



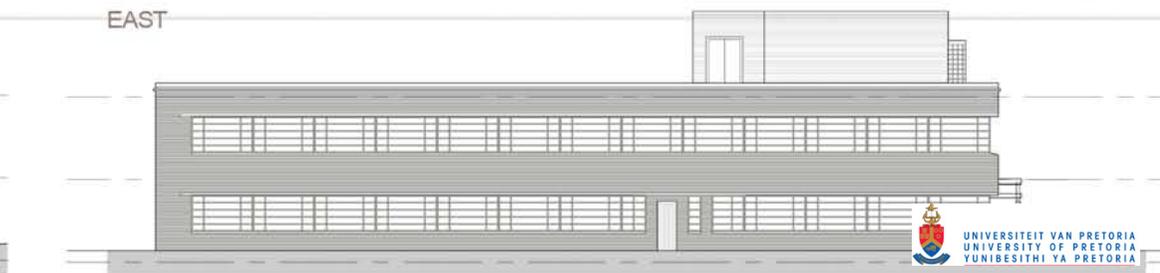
WEST



SOUTH



EAST



#### 4.2.1 History

Since the establishment of the Department of Botany in 1908, the department had to make do with the old gymnasium building in Proes Street to carry out its functions.

Despite the difficulties presented by the depression years in South Africa, Prof. Barend Engelbrecht became determined in 1932 to find a new residence for the botany department, and in 1939 a commission to design the building was handed to Moerdyk and Watson.

The cornerstone was laid on 10 April 1939 and the building was put into service later that year.

**1939:** Double story L-shaped wing on the western side of the site

**1959:** Increased student numbers forced the department to, under the proposed plan of architect J. Mazureik, built a second wing on the eastern side of the building.

#### 4.2.2 Heritage act:

With regard to the South African government gazette heritage Act of 1999 Article 34:1:

“No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.”

#### 4.2.3 Architectural influences

The building, which appears to be a fairly utilitarian semi-industrial building designed to expand with the capacity of the university and to enhance its research capabilities, is also a true statement of the changing architectural paradigms of its time. The building is a culmination of an array of European influences and the regionalist architecture of Pretoria.



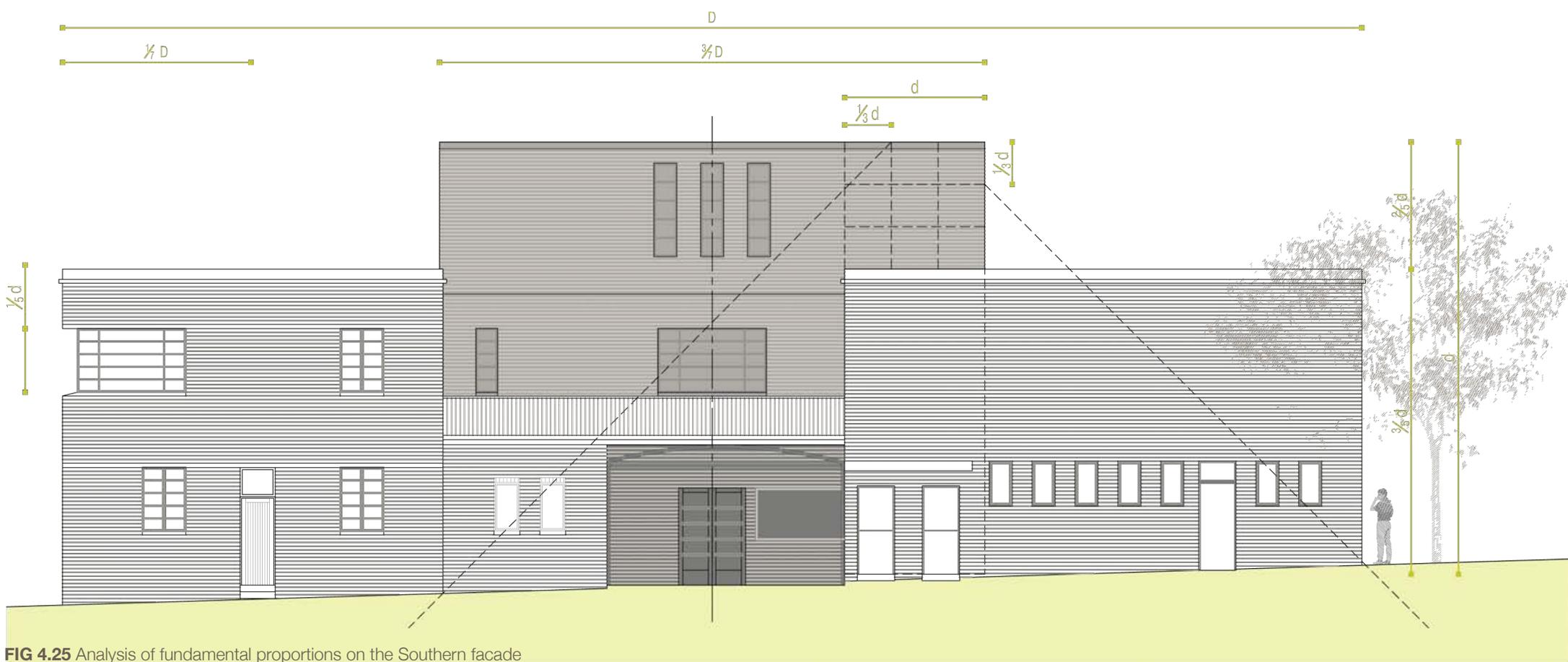
**FIG 4.24** Merensky library designed by Gerhard Moerdyk (1936)



**FIG 4.22** View of Botany building from Northwest



**FIG 4.23** View of Botany building from Southeast



**FIG 4.25** Analysis of fundamental proportions on the Southern facade

Sir Herbert Baker (1862-1946) had a remarkable influence on South African architecture during his twenty-one year stay. He renewed worldwide interest in various interpretations of classical architecture, attention to craftsmanship, detail and the traditional use of materials. After his departure in 1913, he left a long-lasting imprint of an architectural approach on the country that endured for nearly thirty years. As the first winner of the Herbert Baker Scholarship, Gordon Leith (1886-1965) became one of Herbert Baker's protégée, but remarkable buildings such as Downing Mansions (1931-2) single him out as a pioneer who took further steps towards modernism (Fisher et al, 1998:79-82).

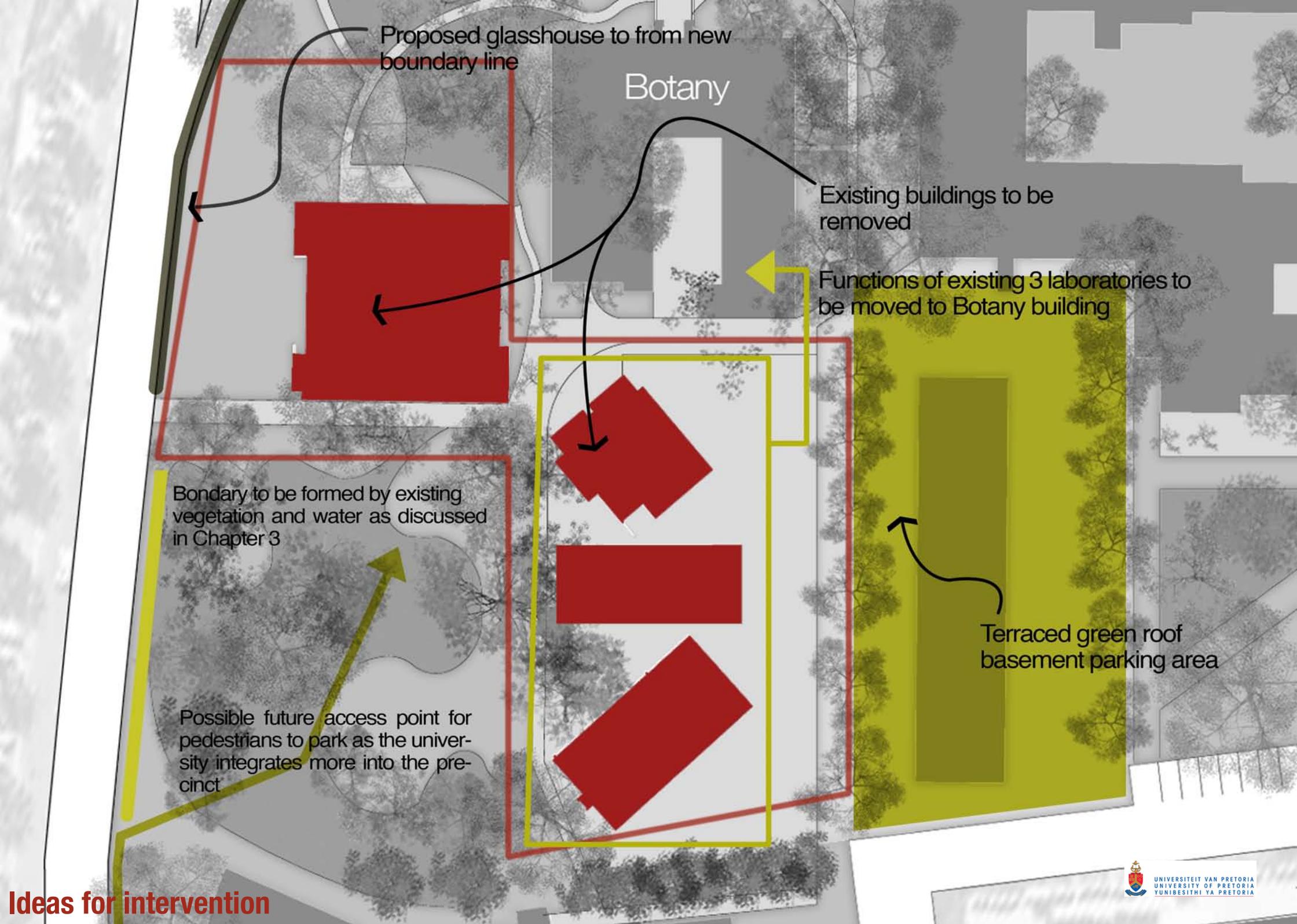
Bearing the above-mentioned in mind, Leith collaborated from 1926 to 1932 with Gerard Moerdyk (1819-1958) and David McCubbin (1870-1948) on the Johannesburg Railway Station, which bears a slight resemblance to Baker's Pretoria Railway Station. Close to this time, in 1933, Rex Martienssen, Gordon McIntosh and Norman Hanson released a manifesto called *Zero Hour* that clearly earmarked the ambition of this so-called "Transvaal Group" to bring local architecture on a par with that of European modernist masters such as Mies van der Rohe, Le Corbusier and Walter Gropius (Herbert, 1972:19). These aspirations were attained through the strong characteristics of Pretoria regionalism, an architecture responsive to climatic constraints such as harsh sun conditions that resulted in recessed sun-shy windows, sensitivity to landscape and land features, and low-pitched iron roofs (Fisher et al, 1998:123-25). The flat roofs characteristic of the International Style proved to be problematic with regards to drainage because of the torrential Pretoria thunderstorms.

Working during these changing tides of architectural styles and interpretations, Gerard Moerdyk was a member of the Architectural Association, and also served on the Council of the University of Pretoria. After the discovery of ancient artifacts at Mapungubwe in 1932, Moerdyk developed a deeper interest in African culture. This interest is apparent in his 1936 design for the Merensky Library at the University of Pretoria. He acknowledged the Baker influence in architecture at the time, but didn't adhere to it. He had a deep desire to establish an "Afrikaner style". These ideologies led him to the study of Cape Dutch buildings. In 1928 Moerdyk also visited America.



**FIG 4.26** Hilversum Town Hall designed by Marinus Dudok in 1931 (Baker-johnson 2003:614)





Proposed glasshouse to form new boundary line

Botany

Existing buildings to be removed

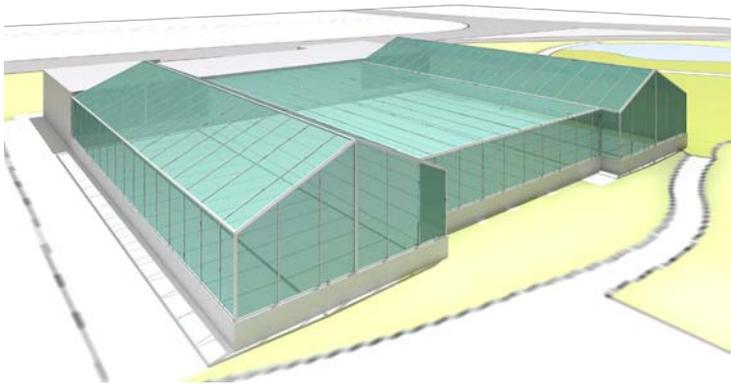
Functions of existing 3 laboratories to be moved to Botany building

Bondary to be formed by existing vegetation and water as discussed in Chapter 3

Possible future access point for pedestrians to park as the university integrates more into the precinct

Terraced green roof basement parking area

**FIG 4.27-28** Existing temperature controlled glasshouse



**FIG 4.28**

Early works by the Public Works Department, the importation of Dutch architects by Paul Kruger, and the establishment of the Kirkness brick factory on the south side of Muckleneuk Hill in 1887 contributed to the establishment of a brick aesthetic in Pretoria (Fisher et al, 1998:129).

#### 4.2.4 Building design

Early works of the Public Works Department, the import of Dutch architects by Paul Kruger and the establishment of the Kirkness brick factory on the southern side of Muckleneuk Hill in 1887 contributed to the establishment of a brick aesthetic tradition in Pretoria (Fisher et al, 1998:129). After the Second World War Moerdyk employed many Dutch draughtsmen. His work was subsequently influenced by the work of Dutch architects such as Marinus Dudok (1884-1974) Hilversum Town Hall building in the Netherlands (Fisher S.a:4). Please see Fig. 4.26. Dudok's work on the other hand is also greatly reminiscent of the great American architect at the time, Frank Lloyd Wright (1867-1959).

In the façade of the building we can see both the influence of the modernist movement at the time in the Transvaal as well as a good example of regionalist architecture at the time. The strip windows and steel framework reminds of a typical industrial building, but the use of brick softens the façade in an attempt to blend in with its immediate surroundings of the garden. Moerdyk initially only designed the western wing of the building, but the symmetrical Northern façade design allows for easy addition of another wing on the eastern side and the possibility of incorporating a courtyard. The use of the stoep (verandah) or courtyard responds well to the hot Pretoria climate in an attempt to provide for an outside dwelling space protected from the sun's heat.

The way the building responds to the site and allowing for movement through the middle axis of the building indicates that Moerdyk has decided to disregard the thinking of Modernist ideologies of the time. The Northern façade acknowledges the previous entry axis created by the Old agricultural building.

#### 4.3 Buildings that are to be demolished:

##### 4.3.1 Bateman, Stoneman and Vetman buildings [1947, 1949, 1953]

The first in a series of three small unobtrusive buildings behind the Botany building, the Vetman building (the name is in reference to war veterans), was built during directorship of Prof. Margaretha Mes in 1947 and although first intended as a hostel for war veterans it was instead used as a physiological plant laboratory. The laboratory for climate studies, the Bateman building, was built in 1949 housing one of the worlds first Fitotrons. The Stoneman building that serves as a laboratory for biochemical plant research was completed in 1953.

##### 4.3.2. Temperature controlled glasshouse [1989]

Being the first of its kind in South Africa at the time, the facility that was completed in 1989 for sophisticated research purposes consist of the following:

- Three temperature controlled rooms
- Preparation room



**FIG 4.29** View of Bateman, Vetman and Stoneman buildings from the Northeast



**FIG 4.30** View of Bateman, Vetman and Stoneman buildings from the Southeast



**FIG 4.31** Bateman building interior

- Incubation room
- Storage and machine room
- Three environmentally controlled glass houses

At the time the facility was very sophisticated and attracted a lot of attention from local and overseas researchers. The facility consists of a computer that monitors relative humidity, air-/ soil temperature and airflow. A lot of the research for constructing the facility was conducted abroad and therefore the glasshouse is mainly constructed on European standards.

Since the facility was taken into use in 1989 technology has developed in various regards on how greenhouses function. Aero-/ Hydroponic technology has advanced a remarkably the last ten years and having access to such a facility can open a wide array of research potential, especially on cultivating seedlings for low cost food production in dense urban areas.

#### 4.4 Ideas for intervention

##### 4.4.1 Ecumenical urban park

The Botanical garden consists of the same potential that Paley Park (Fig. 4.32-34) in New York City embodies. Paley Park is a small vest pocket just off the busy 5th avenue and 53rd street. The waterfall forms a focal point within the space and drowns out much of the city noise. People interviewed like the park because it always provide a shelter from the summer sun with the dappled light coming from the trees.

Paley Park entices people who walk past to enter the area. It seems mysterious in a sense from the outside and once people step into it they experience a radically different atmosphere from

FIG 4.32 Plan of Paley park on 53rd street. New York City, New York

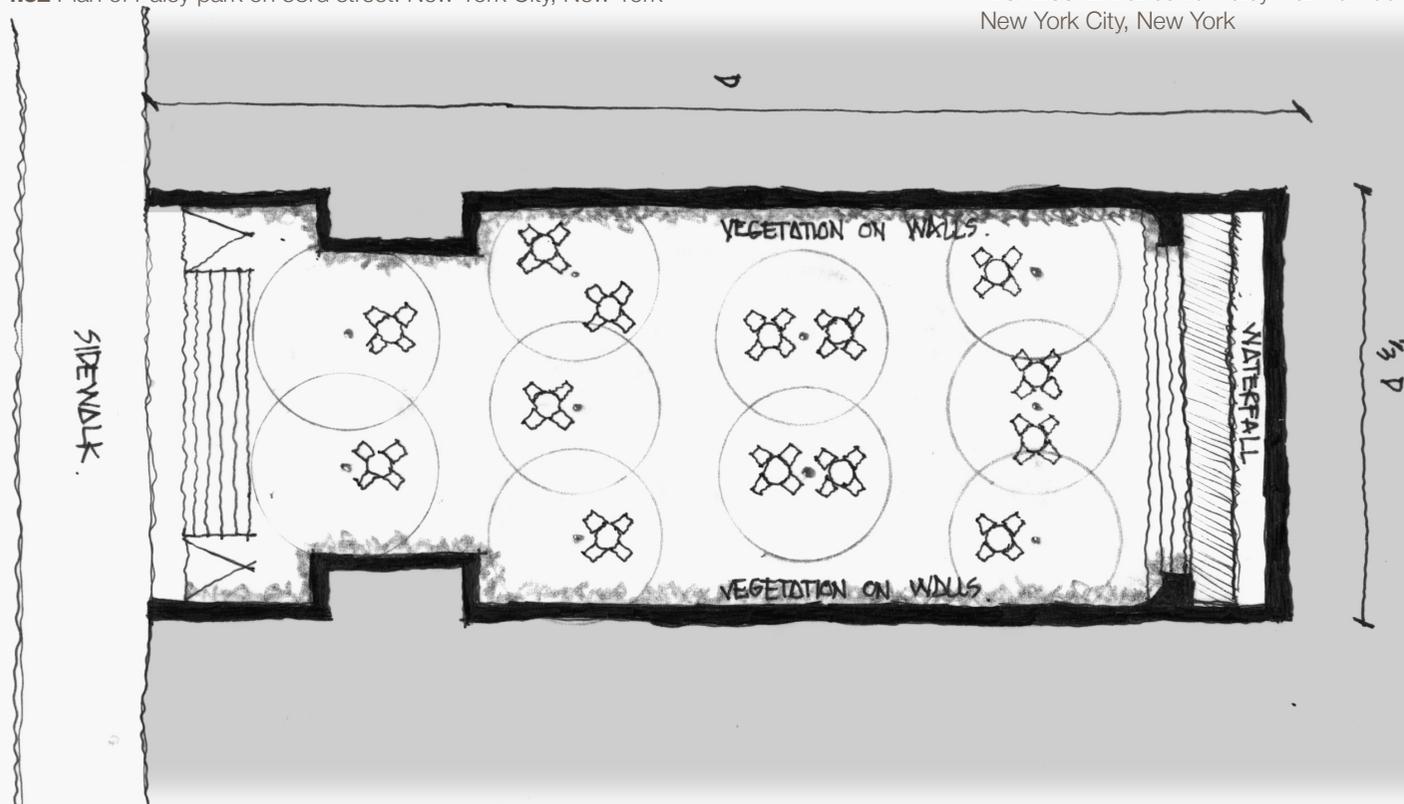


FIG 4.33 Entrance to Paley Park on 53rd street. New York City, New York



FIG 4.34 View towards street inside Paley Park on 53rd street. New York City, New York

what is on the street. The Botanical garden within the greater context of the Hatfield precinct and University campus also forms a vest pocket created by existing trees and vegetation. It offers the possibility for people to escape the daily routine and fabric of the commercial area into a space that offers tranquility and rejuvenation for the spirit.

#### 4.4.2 Adjacent parking area

The University of Pretoria is notorious among students for its lack of adequate parking on campus. Many parking spaces, as the one adjacent to the site, make ineffective use of providing enough parking bays in the area that is provided. An alternative for this specific area is to provide basement-parking bays with a 2 level-ramped entry that leads to the lower basement. This approach has the following benefits

- The ramps can provide for parking spaces as well, but make the parking garage less obtrusive from the outside.
- Vegetation can be planted on the roof terraces to serve as an extension to the garden.
- The area can be used in a capacity of five times more than is currently provided

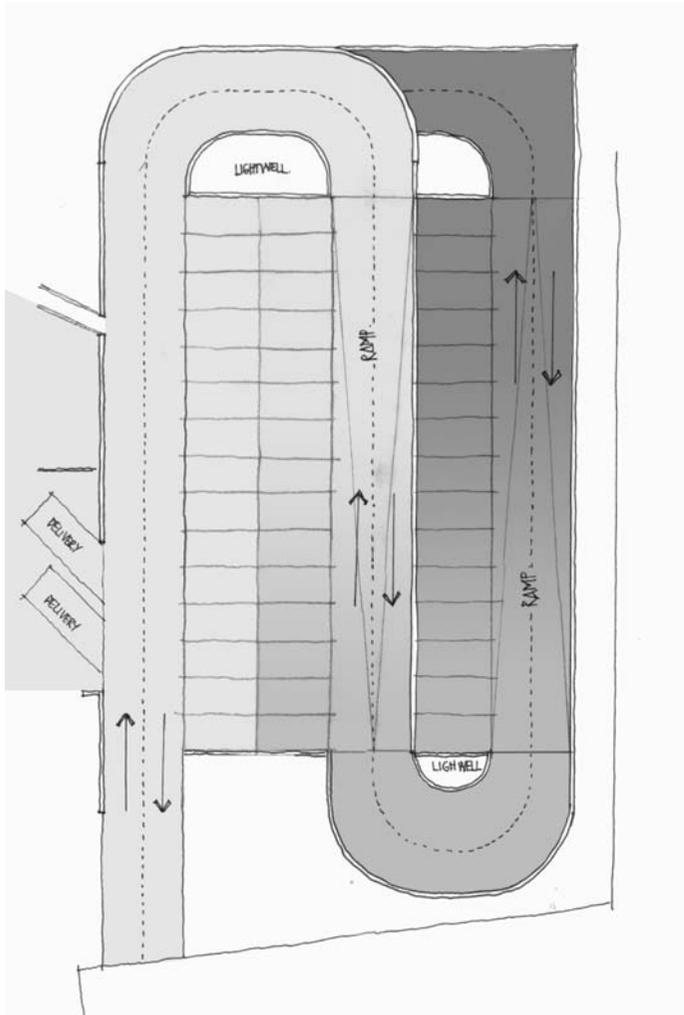


FIG 4.35 Idea for new ramp- and terraced basement parking garage



FIG 4.37 Parkhaus am Bollwerksturm, Heilbronn (Henley 2007:180)



FIG 4.38 Office and residential building at Wimbergergasse, Vienna. Designed by Delugan Meissl associated architects (2001)

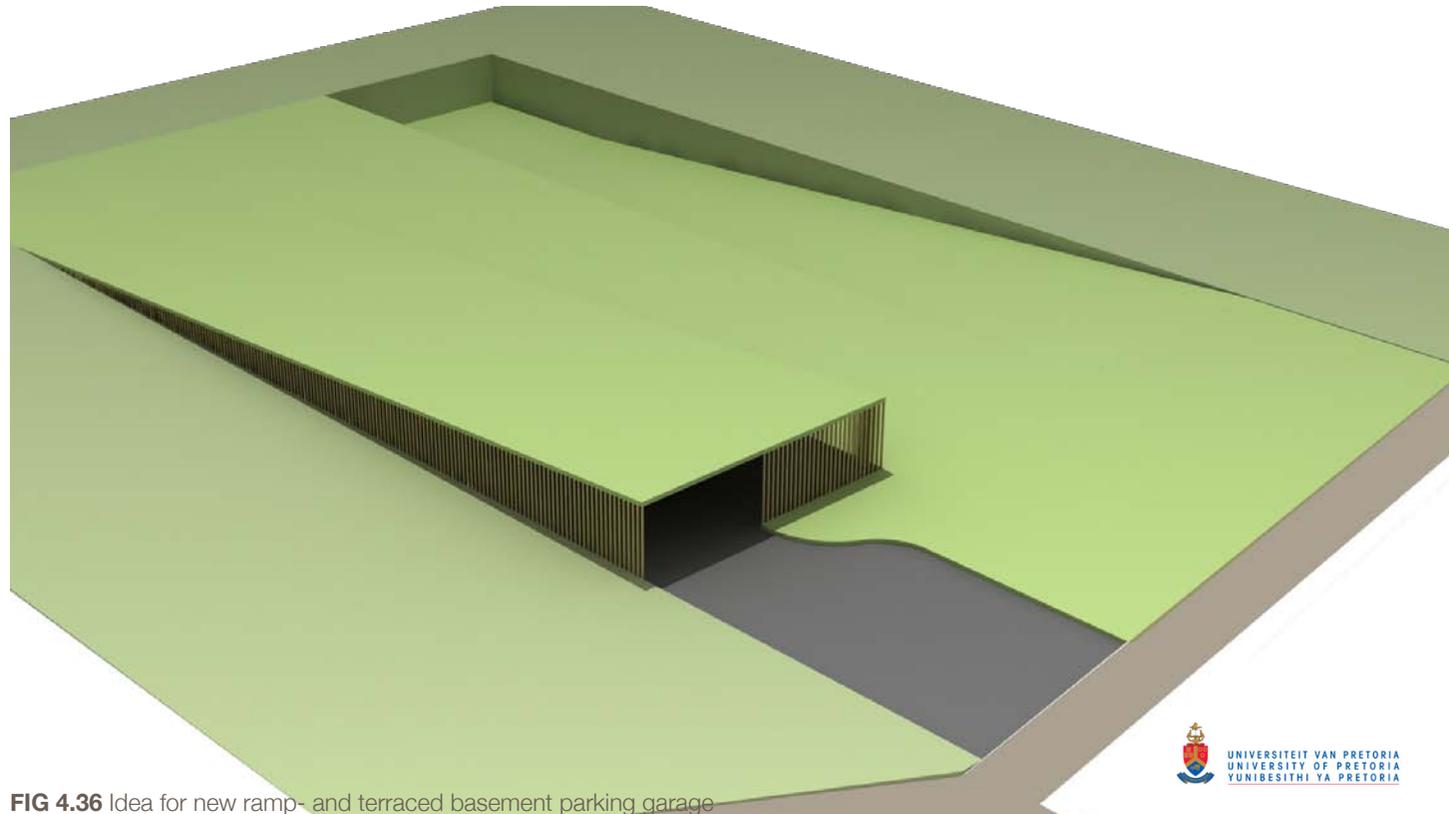


FIG 4.36 Idea for new ramp- and terraced basement parking garage