



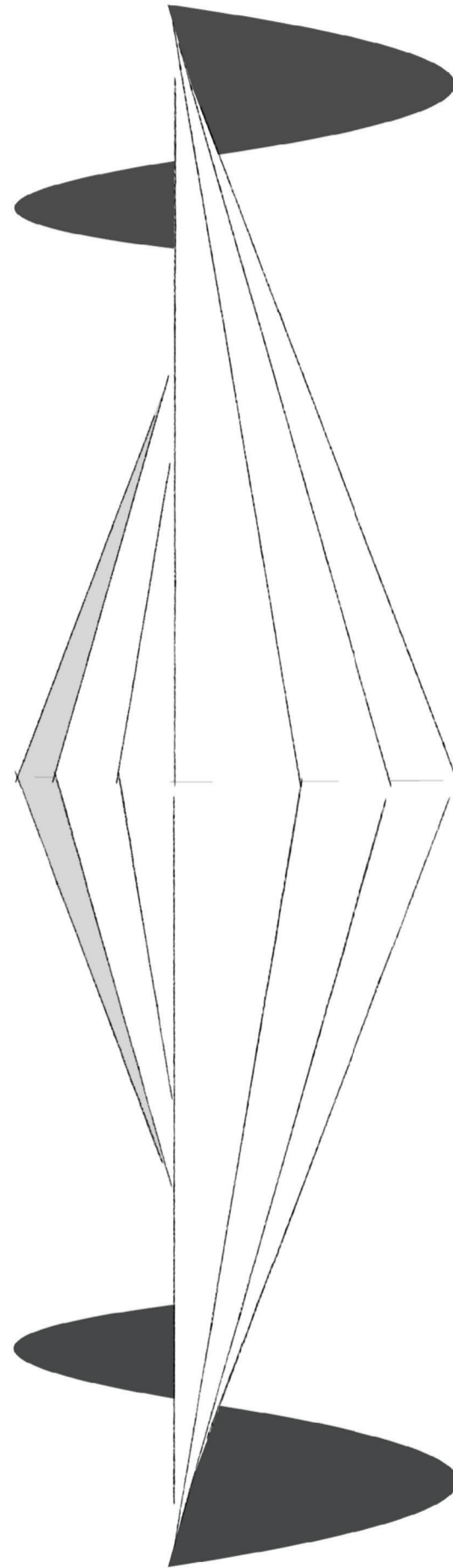
7. Design Discourse

7.1 Introduction

In this chapter, all the previous investigations, research and discoveries manifested in the form of a physical design that facilitates varied learning and teaching methods in the classroom.

The theory dealt with experiential learning. This can be achieved through educational methods, but also through the environment. The design catalyses experiences and displays the experiences of others.

Firstly, the design created spaces of visual exchange and social contact, to enrich the educational experience. Secondly, the design used space to intrigue students, allowing them to discover and experiment with MST. Thirdly, the design allows all four teachers to teach.



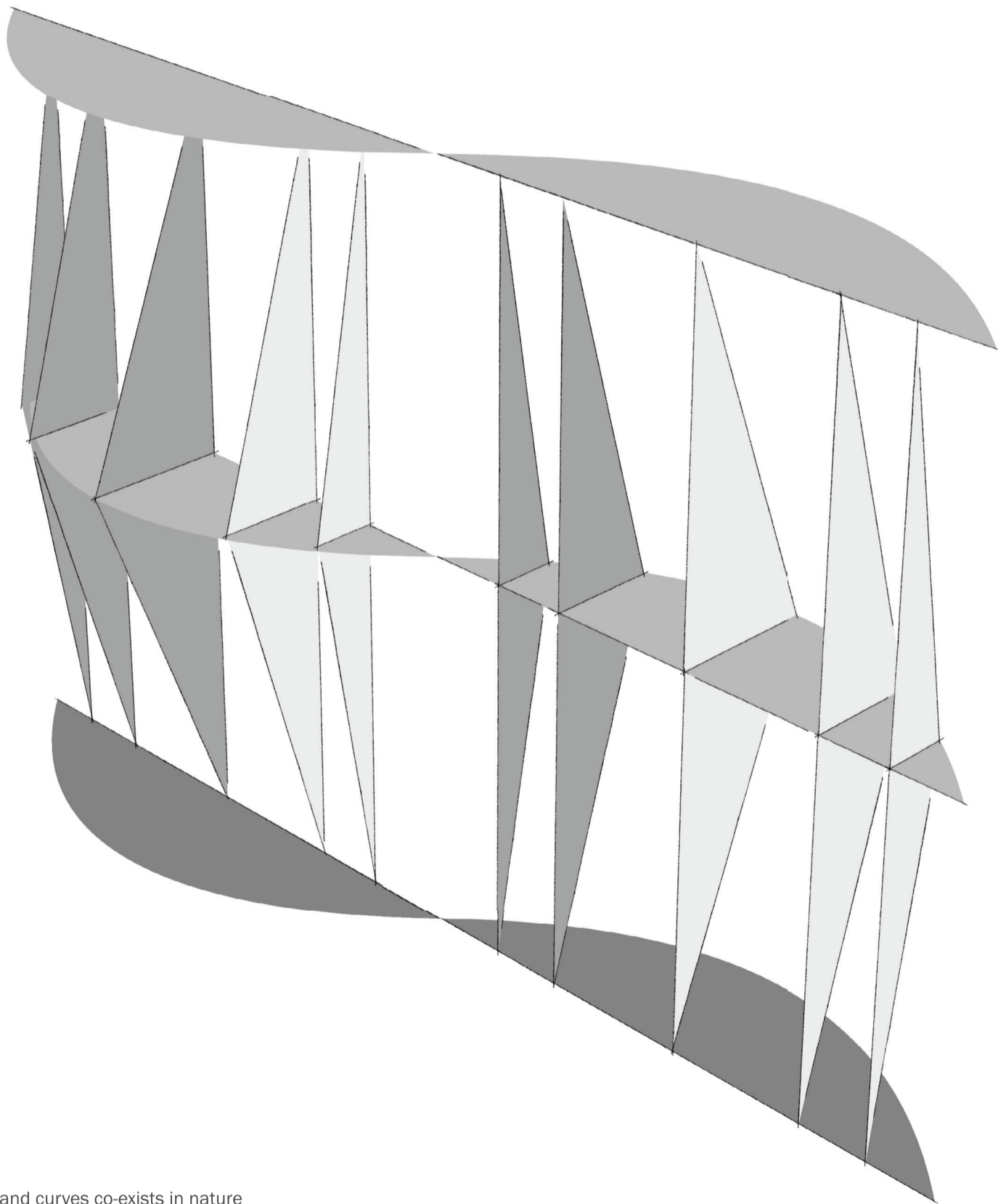


Figure 7.1 Triangles and curves co-exists in nature

By breaking curves up into triangles we can determine their characteristics. The spatial character of Shift College's interior manifest this close relationship between curves and angles.

Shape becomes an informative tool hinting at the method of learning students can expect in a space.

7.2. Plan Development

7.2.1 Ground Floor Plan

Figures 7.2 - 7.4 illustrate design development of the plan.

Figure 7.8 presents the final plan for the ground floor and is discussed in detail:

The ground floor plan deals with access and entrance. A new concrete ramp and steps have been provided, making the school wheelchair accessible. The ramp also enables students to park their bicycles in a secure bicycle parking area. In front of the building stepped seats provide a place for

students to wait for their transport after school. In the lobby a security desk is placed so that the guard may control access of the users coming in and out of the building. The entrance is welcoming and opens up to the bustling city sidewalk, whilst still maintaining a safe and secure entrance.

The rest of the ground floor plan remains as it is, as a parking lot. This space has the potential to be programmed in the future to function as a restaurant or a pop-up marketplace.

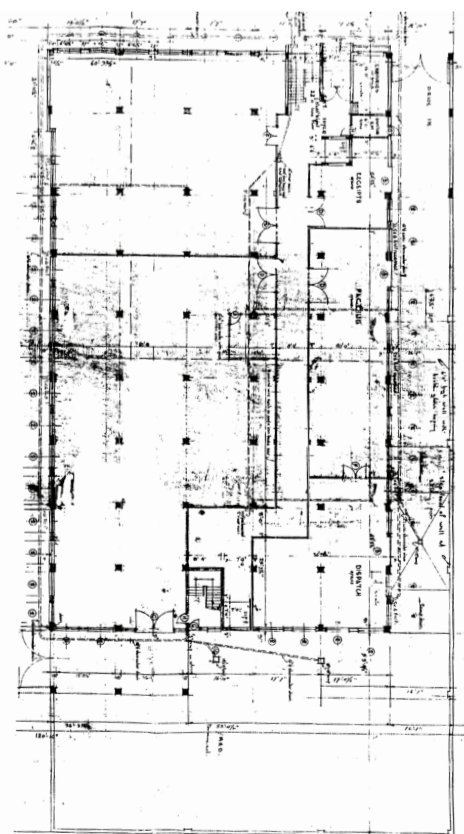


Figure 7.2 Original Ground Floor Plan, 1955

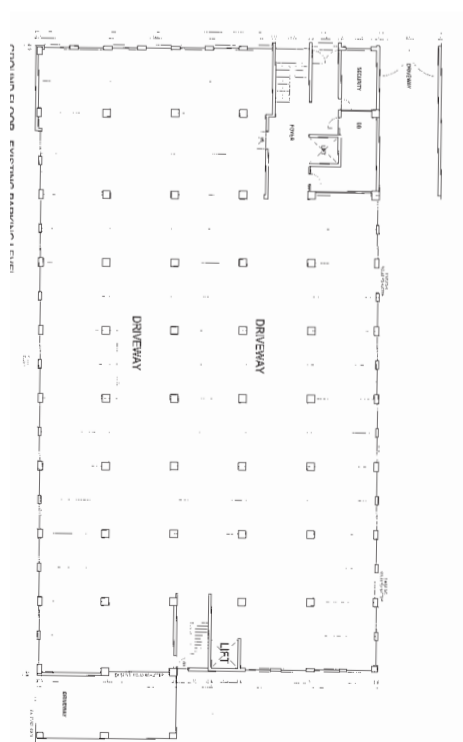


Figure 7.3

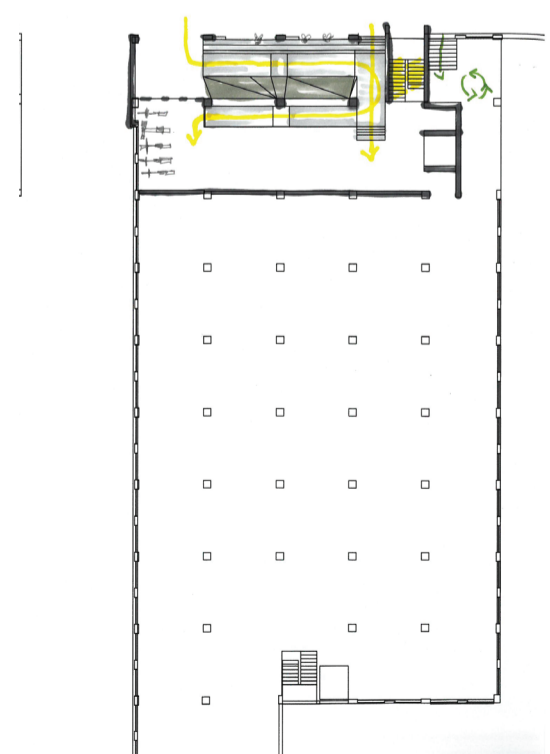
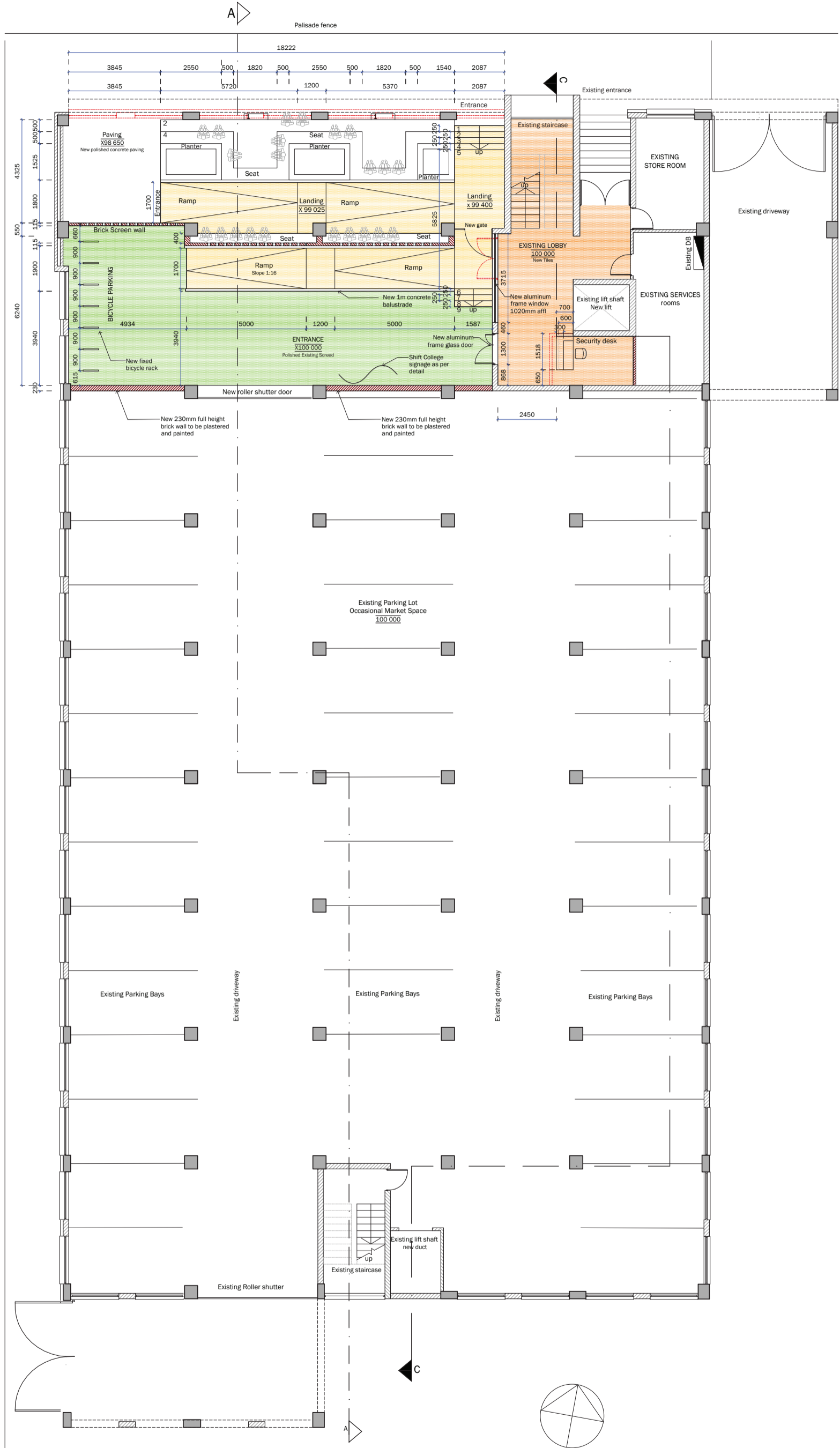


Figure 7.4 Conceptual Ground Floor Plan, June 2016



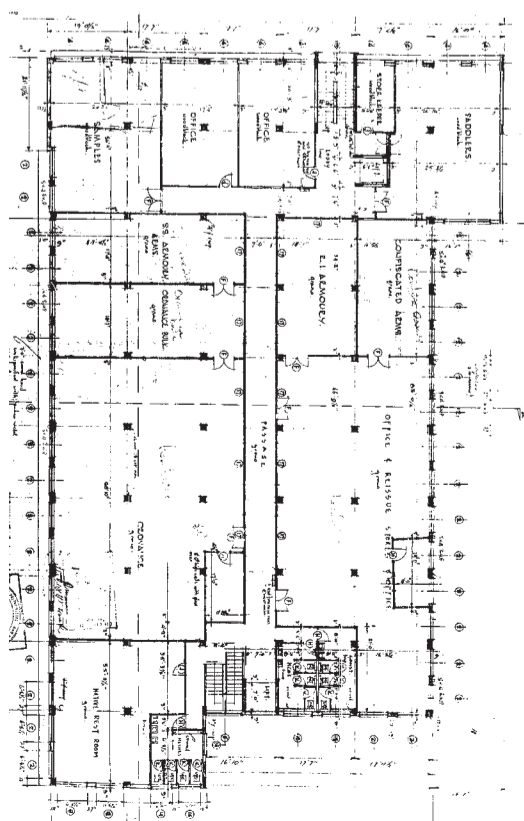
Ground Floor Plan
Spatial Planning - Entrance and Parking

Figure 7.5 Ground Floor Design Plan

7.2.2 First Floor Plan

Figures 7.5 - 7.7 illustrate design development of the plan.

Figure 7.9 presents the zoning plan for the first floor, a spatial planning exercise was performed. The northern side is dedicated to the administration department, staff facilities and sick room. The rest of the floor will remain staff parking.



82 Figure 7.6 Original First Floor Plan, 1955

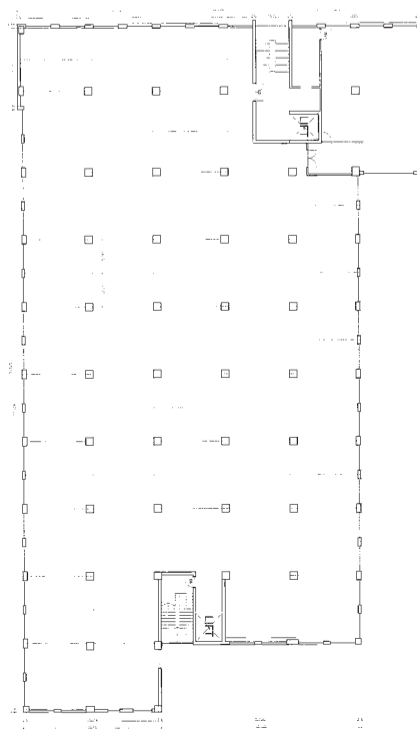


Figure 7.7 © University of Pretoria

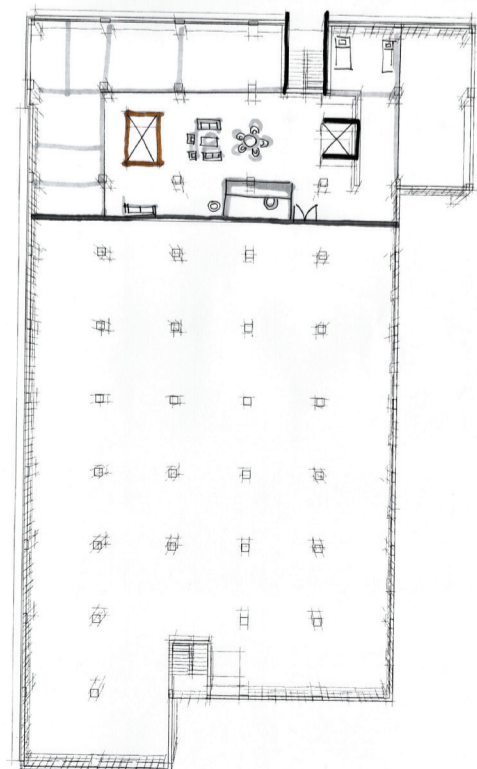
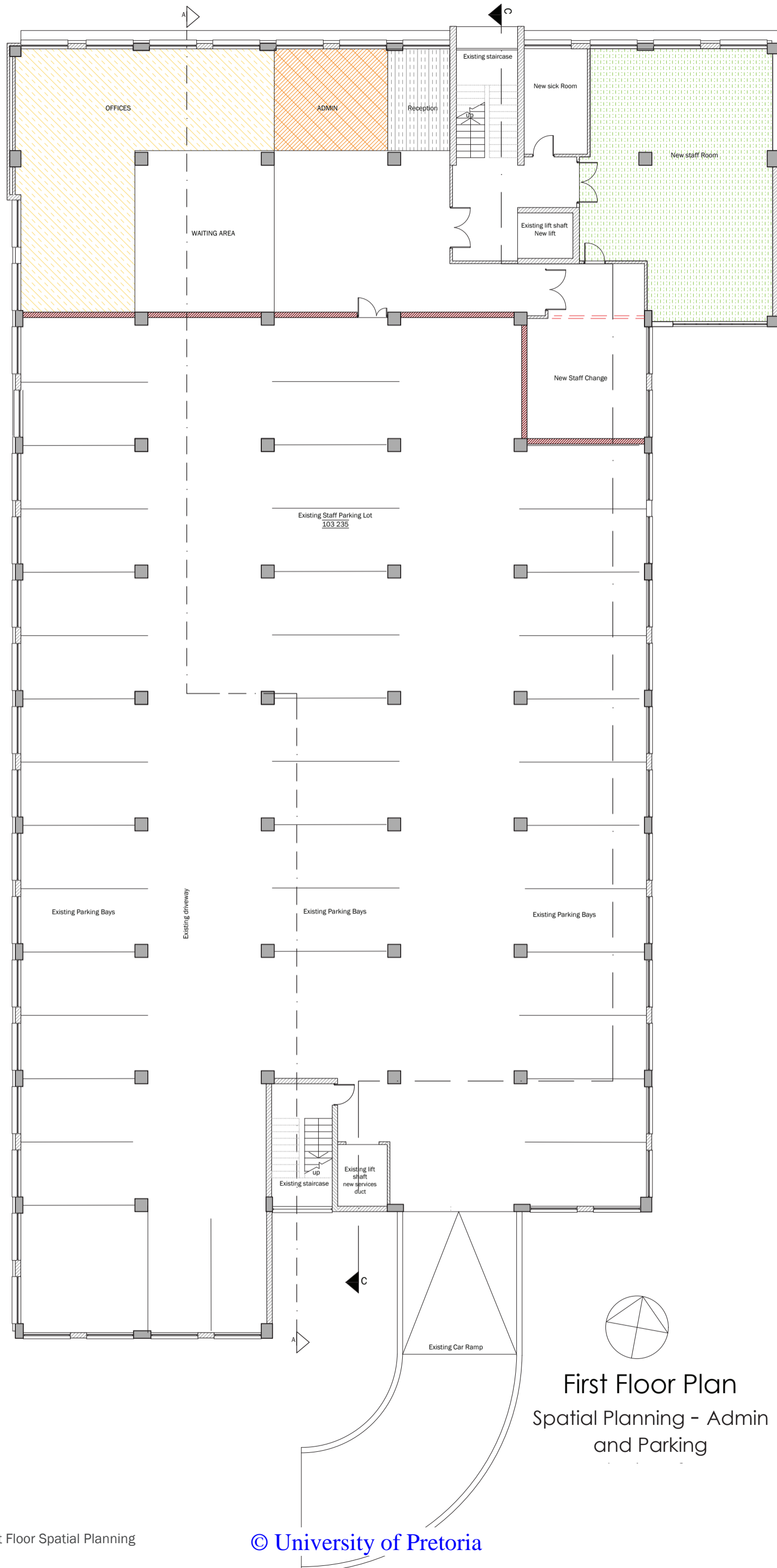


Figure 7.8 Conceptual First Floor Plan, June 2016

First Floor Plan - Spatial planning



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First Floor Plan
Spatial Planning - Admin
and Parking

Figure 7.9 First Floor Spatial Planning

7.2.3 Second Floor Plan

Figures 7.10 - 7.13 illustrate design development of the second floor plan.

Figure 7.14 presents the final plan for the second floor and is discussed in detail:

On the second floor the educational facilities start. The library is located on the north-western side.

As one enters the third floor from the main circulation core, an atrium space opens up in front of the student. The atrium space serves as an open theatre space, where passersby can stop and view activities. When not used for demonstrations, the atrium will act as a public square which becomes a place where social learning takes place.

Group work spaces are located next to the atrium. Here students can work in a semi-private space on a group project, meet with people from industry or have a meeting with a teacher or counsellor.

The back half of the building contains the theory classrooms. The humanities and language subjects are housed on the second floor.

The passage is wide and allows learning to spill into the central space of the school. Paths of light enter the space through the atrium and windows in the classroom walls.

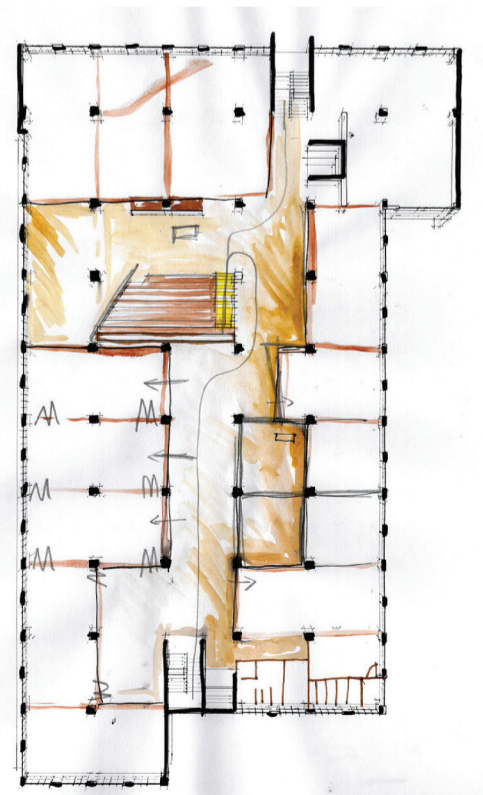
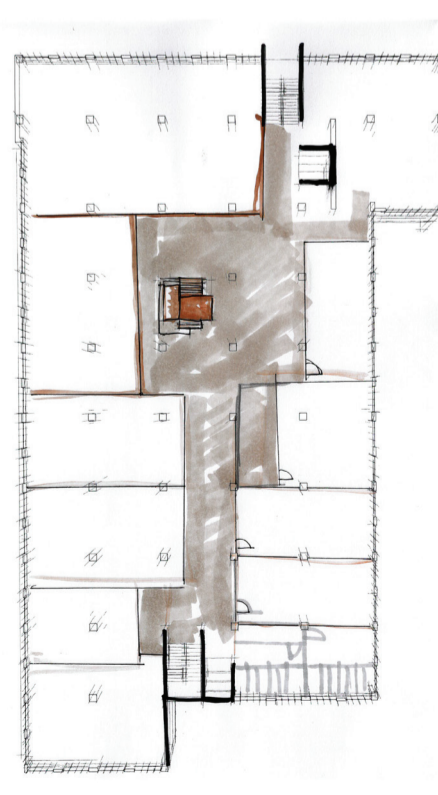
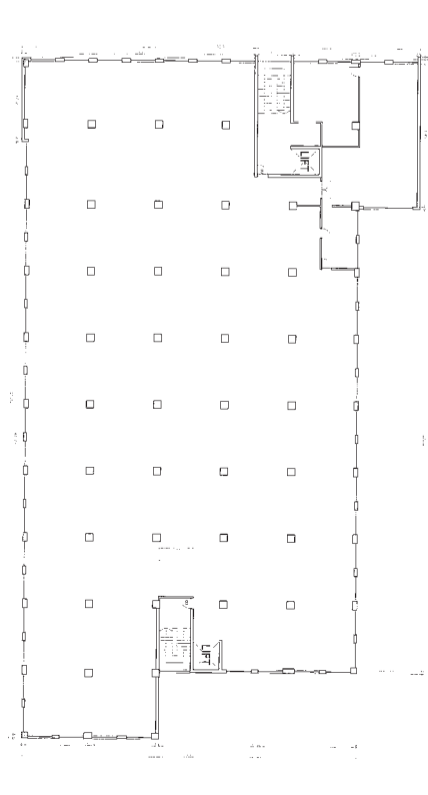
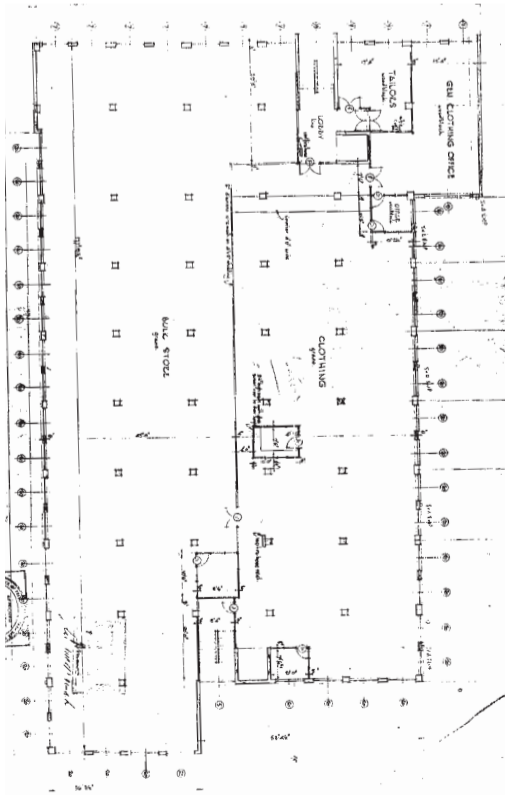
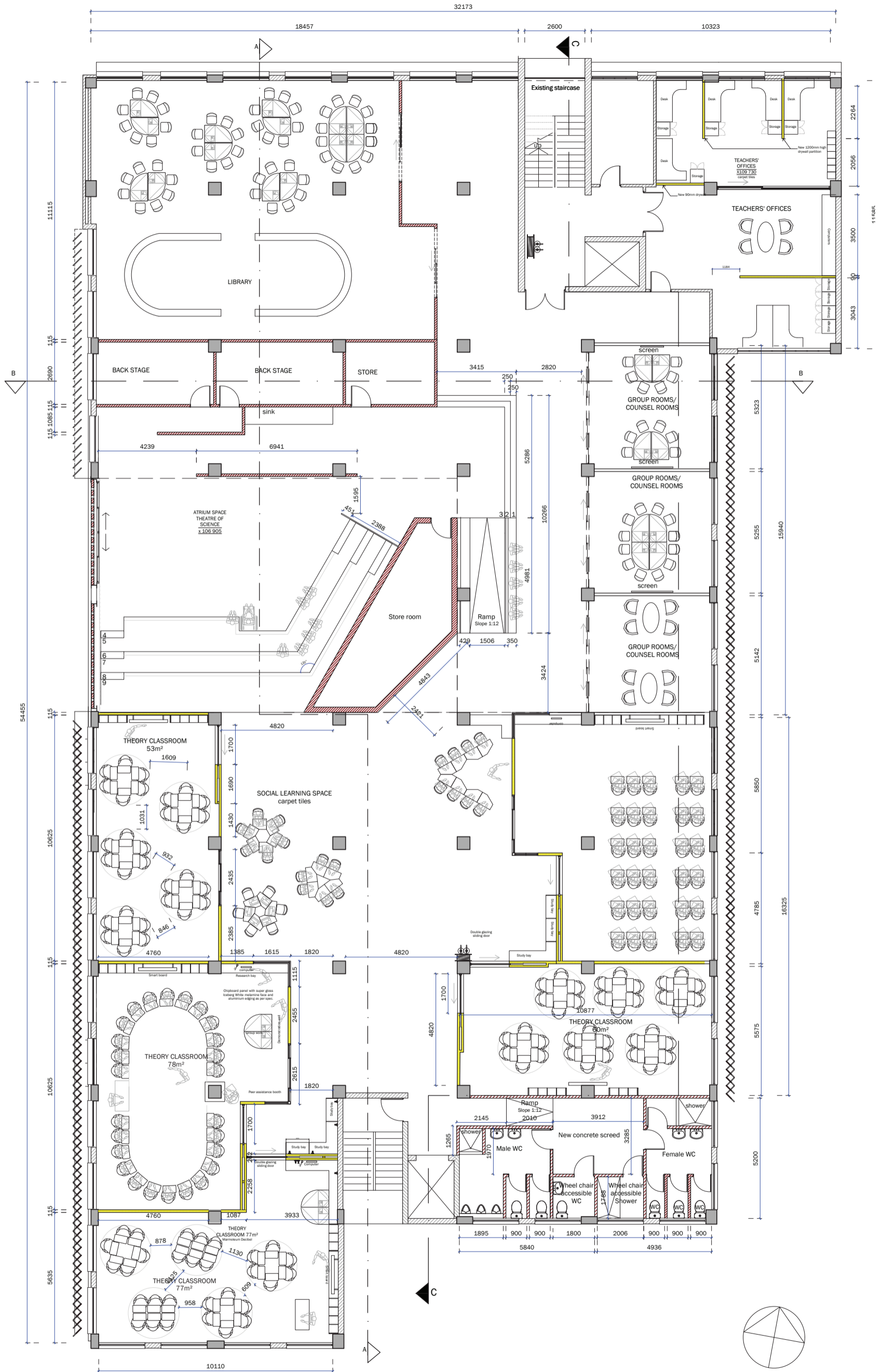


Figure 7.10 Original Second Floor Plan, 1955

Figure 7.11 City Property Second Floor Plan, 2009

Figure 7.12 Conceptual Second Floor Plan, June 2016

Figure 7.13 Conceptual Second Floor Plan, August 2016



Second Floor Plan
Spatial Planning - Atrium, Library, Languages
and Humanities

Figure 7.14 Second Floor Space Planning Plan

7.2.4 Third Floor Plan

Figures 7.15 - 7.20 illustrate design development of the plan.

Figures 7.21 presents the final plan for the third floor and is discussed in detail:

The third floor is the MST level. The low-tech makerspace and Art classroom are located in the north-western corner. These two spaces walk out onto a patio on the northern facade. Activities that happen in the low-tech makerspace are visible from different viewpoints in the school. This corner also becomes the main exterior feature. Here the author broke the structure and added a clip-on intervention. The intervention has honest construction details, revealing how it is put together. Through visual links and exposed details the space invites inspection, inciting further investigation, thereby facilitating self-learning.

The atrium is located next to the makerspace. Here raked seating helps to visually connect activities happening throughout the school. The atrium's clerestory windows together with the angled suspended ceiling allows light to penetrate into the building, lighting up the circulation spaces. The correlating large glazed section of the western facade allows diffused light in while still blocking direct sunlight.

The Science labs are located on the eastern side next to the major circulation artery. The eastern part of the school will be exposed to bright morning light for most of the school day, thus the labs will be naturally lit and will aid in achieving the recommended lux levels for intricate lab work and lowering the need for artificial lighting. These labs are meant for experience-based learning, thus digital technology will be used minimally. Science theory will be taught in the darker theory classrooms.

The Science store becomes the main interior feature on this floor. The equipment, chemicals and prep work are displayed in a tinted glass box. The store resembles a real laboratory and students get a glimpse into the actual physical environment that a scientist works in.

The western side is allocated to theory-based education. The space between the theory classrooms and laboratory spaces is a social learning environment. Passages that widen at places and become narrower at other places facilitate circulation while at the same time accommodating place for students to gather in small groups or to work individually. Here students will have a view of all the activities happening around them. The perforated vinyl decal on windows will allow views into the lighter classroom, but views from the classrooms into the darker social learning space will become obscure.

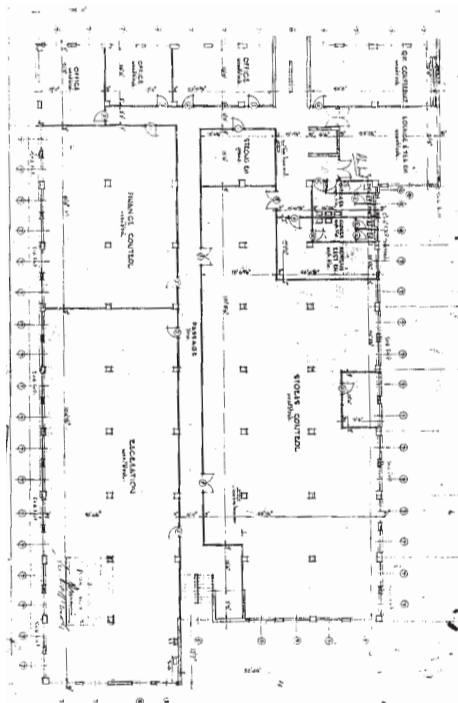


Figure 7.15 Original Third Floor Plan, 1955

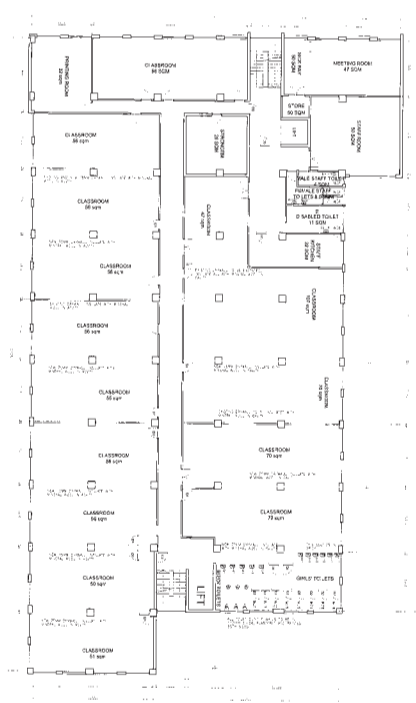


Figure 7.16 City Property Third Floor Plan, 2009



Figure 7.17 Conceptual Third Floor Plan, June 2016

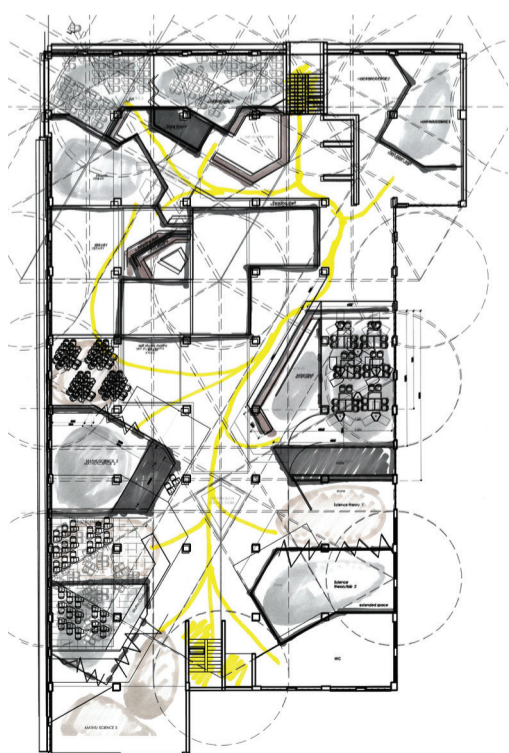


Figure 7.18 Conceptual Third Floor Plan, June 2016



Figure 7.19 Conceptual Third Floor Plan, August 2016

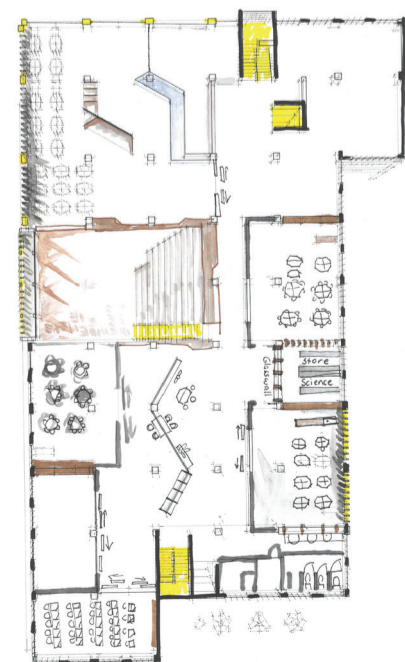
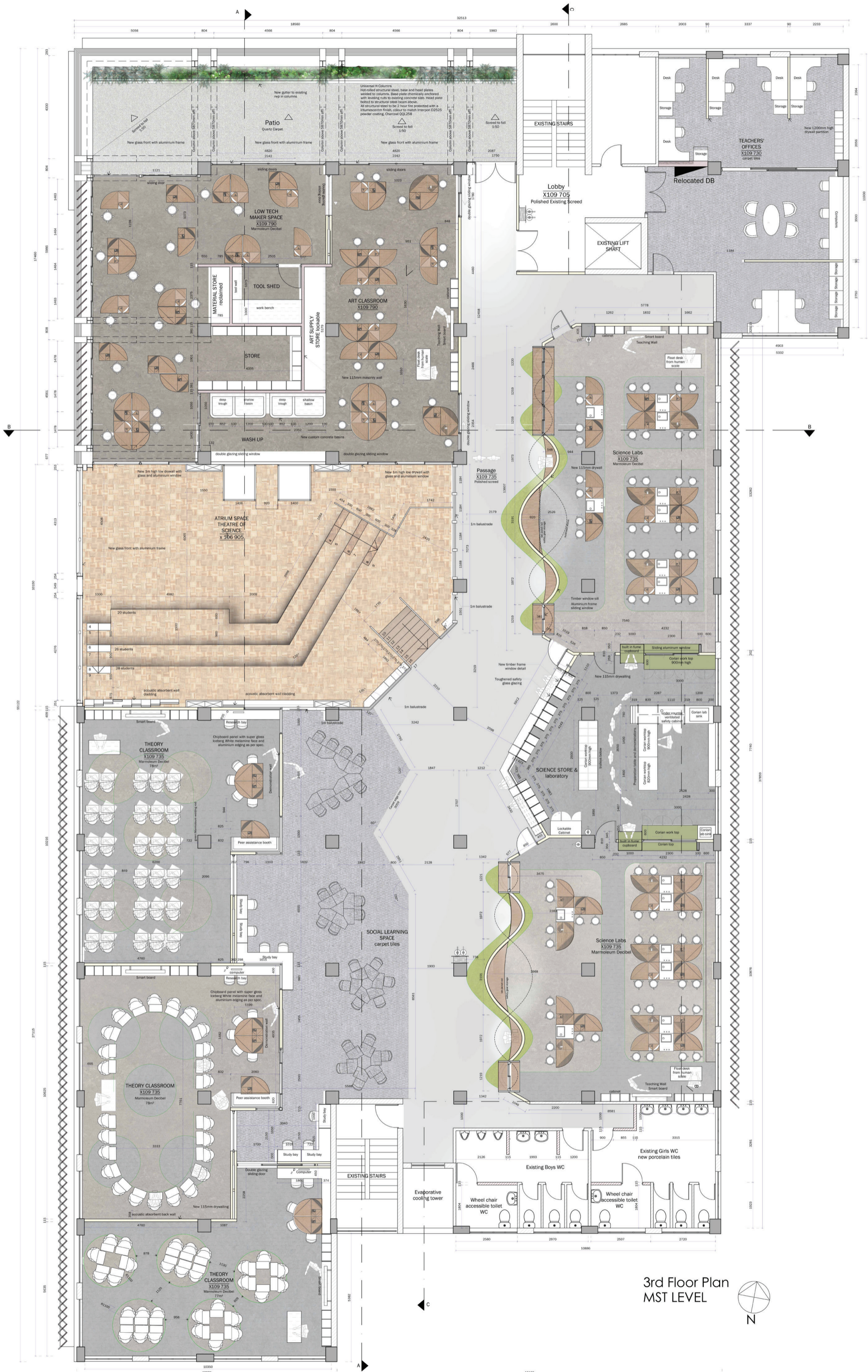


Figure 7.20 Conceptual Third Floor Plan, August 2016

Third Floor Plans - Design Focus



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3rd Floor Plan
MST LEVEL



Figure 7.21 Third Floor Design Plan

7.2.5 Fourth Floor Plan

Figures 7.22 - 7.24 illustrate design development of the plan.

The fourth floor forms part of the MST facilities. The high-tech IT lab is located in the north-western corner.

This space looks down onto the low-tech makerspace, again encouraging cross-pollination of uses and experiences. The clip-on intervention connects to the existing structure on this corner. The angled steel columns draw the eye to the spaces below. The intervention emphasises the role

it plays in supporting the existing concrete roof. The canteen, with a tuck-shop, and kitchen is located on the eastern side.

Two large classrooms are located on the western side. Dedicated to Biology and Geography these classrooms look out onto a courtyard with an aquaponics system that serves as a real life food chain.

7.2.6 The Roof Plan

Figures 7.25 - 7.28 illustrate design development of the plan.

The roof has been appropriated as a breakout space. A half-size basketball court is located in the north-western corner. The lift shaft has been extended to allow the lift to have access to the roof. On the roof a vegetable garden is created and shaded seating. Students will spend break times here where they can enjoy views out over the city.

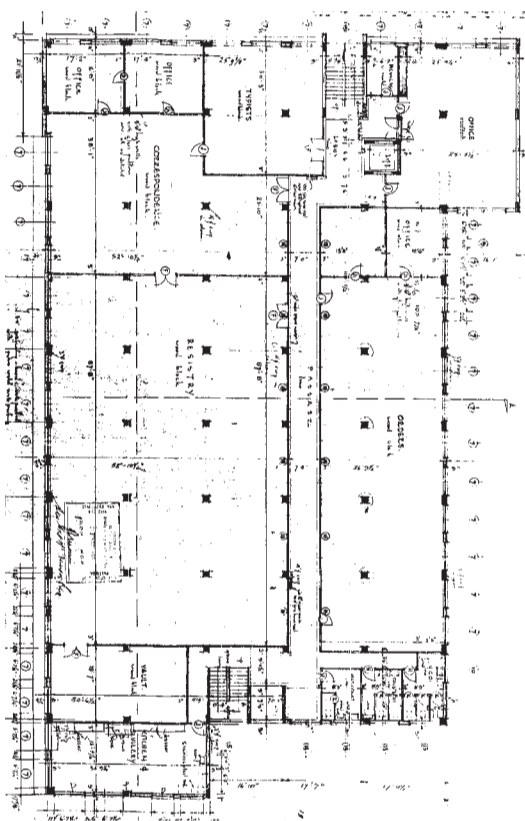


Figure 7.22 Original Fourth Floor Plan, 1955

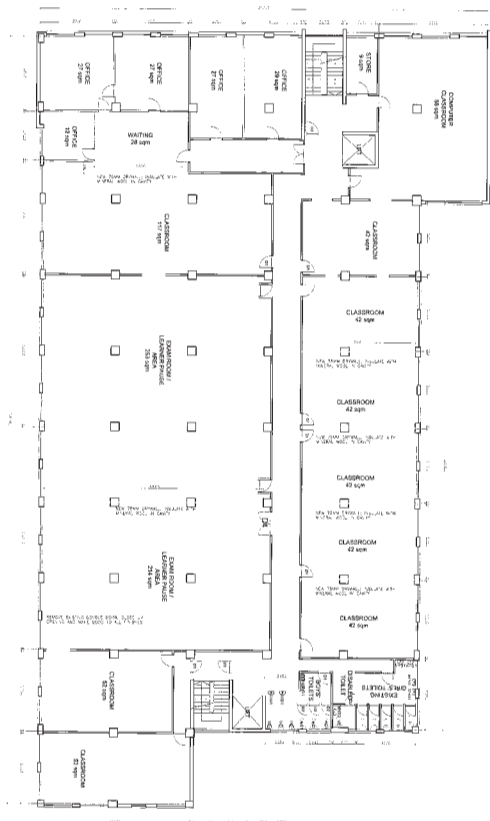


Figure 7.23 City Property Fourth Floor Plan, 2009

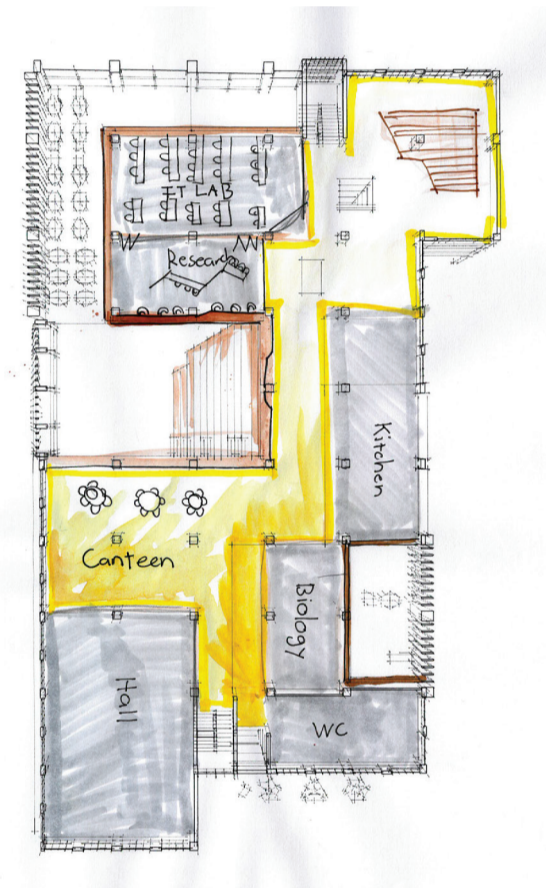


Figure 7.24 Conceptual Fourth Floor Plan, August 2016

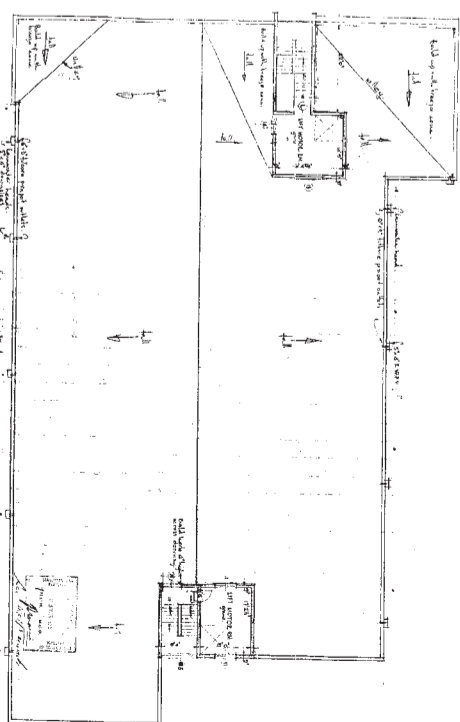


Figure 7.25 Original Roof Plan, 1955



Figure 7.26 Conceptual plan, May 2016



Figure 7.27 Conceptual Roof Plan, June 2016

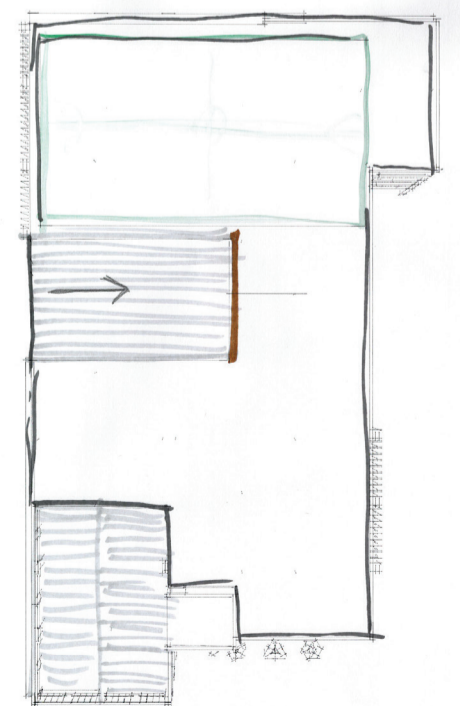


Figure 7.28 Conceptual Roof Plan, August 2016

7.2.7 North-Western Corner

Figures 7.29 - 7.32 illustrate design development of the North-Western corner of the existing building.

On its northern facade, the building is cut back to make way for the new ramped entrance on the ground floor. The dead edge of the building is now transformed into a welcoming shaded space where students can gather before and after school. The existing brick work details are repeated in the screen walls leading to the secured

lobby space. The school's signage on the corner suggests movement and shift, graphically reinforcing the name of the school. The top storey on the corner is cut away. The new steel clip-on intervention draws the eye to the corner, exposing the building as an inner city school to passersby.

Again, these shapes suggest movement. The existing concrete roof seems to float and onlookers become aware of gravity and how modern Science and Technology can defy it.

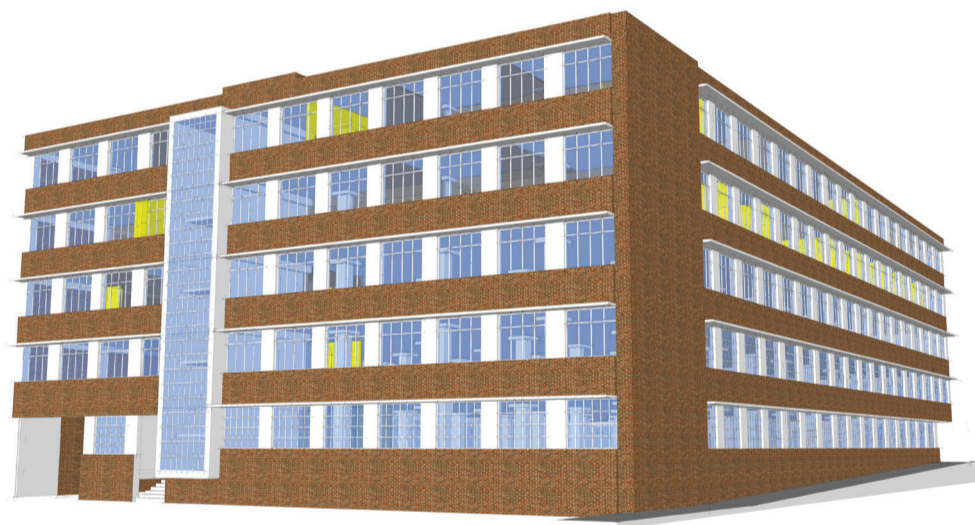


Figure 7.29 Existing Exterior



Figure 7.30 Conceptual Exterior Intervention, June 2016



Figure 7.31 Conceptual Exterior Intervention, August 2016



Figure 7.32 Conceptual Exterior Intervention, September 2016

7.2.8 Elevations

The intervention repeats the existing brick bands around the building. By reusing the demolished bricks and laying them brick on edge and against an angle the new becomes distinguishable from the original.

The sun louvres and brick screens on the western facade blocks out the warm afternoon sun and still allows in light.

Elevations

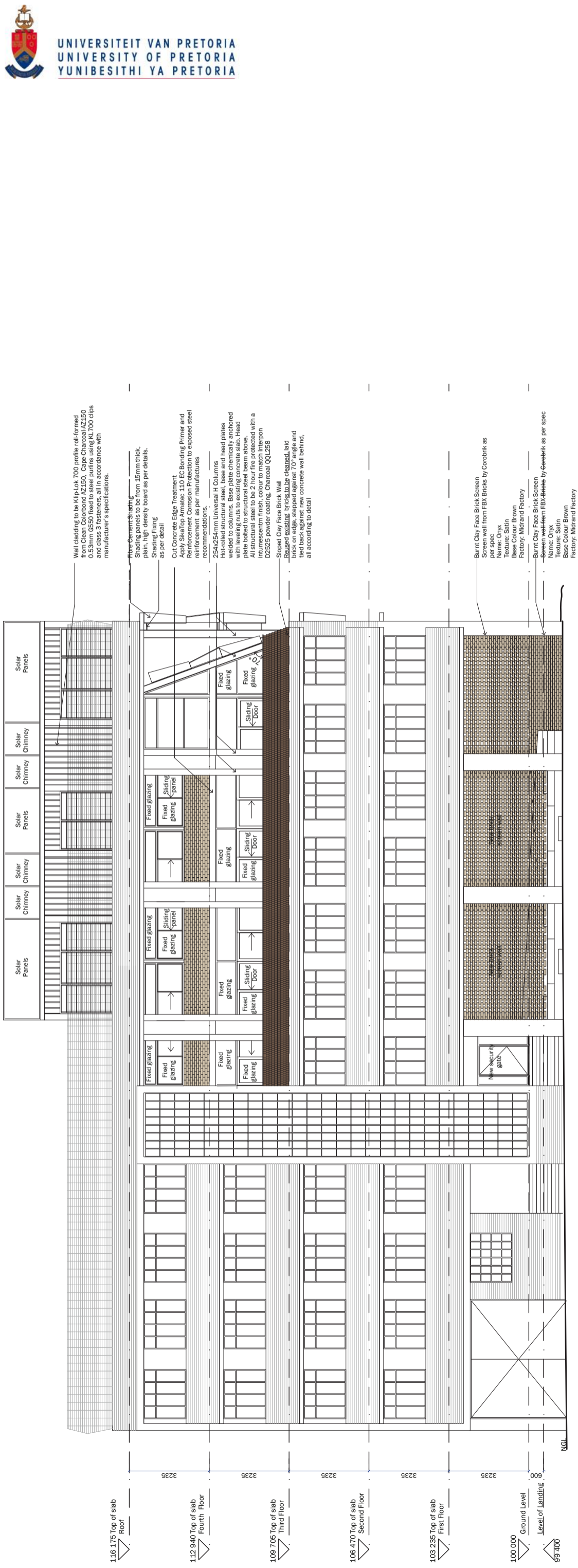


Figure 7.33 Northern Elevation

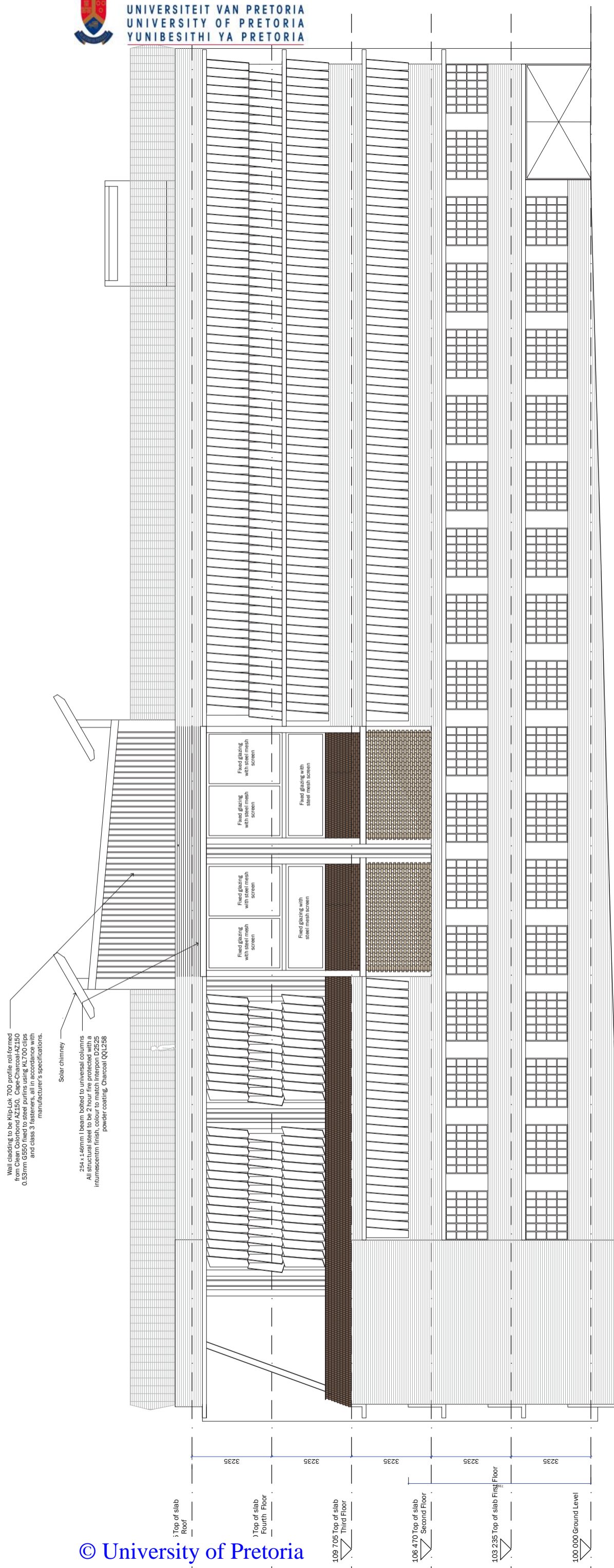


Figure 7.34 Western Elevation

Figure 7.36 illustrates how varied learning methods become exposed through visual links between spaces.

Section B-B



Figure 7.36 Section B-B
Not to scale

7.2.10 Circulation Spaces

Circulation has been used to enrich the school experience and was developed conceptually in Figures 7.36 - 7.39 and Figures 7.43-7.44.

The resolution of circulation through the building is illustrated in Figures 7.40 - 7.42; 7.45.

The entrance on the ground floor becomes a permeable threshold, a space where the bustling city life is still present. A student using the ramp will weave into the front porch space where a brick screen starts to filter out into the city. Once the student has made his way through the access-controlled front doors he will use the existing northern stairs to travel to the top three floors. The staircase looks out on the street, allowing glimpses of the city into the school. From the second floor the student can travel past the open theatre and into a wide social learning space which is surrounded by classrooms allowing views into them.

Another student might use the open theatre's raked seating to travel to the third floor. When travelling on this route the student will be surrounded with experiential learning activities. The student will see into the Science laboratory, the art classroom and the makerspaces. He would arrive in the central social learning space where glimpses into the Science store and theory classes will reveal to him what he can expect from his school career.

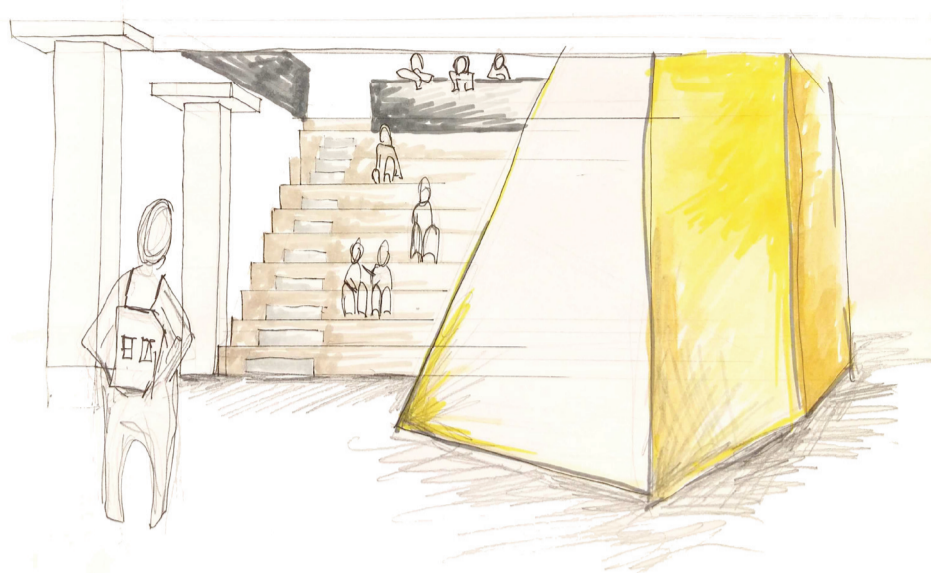


Figure 7.37 Conceptual Circulation Narrative, June 2016



Figure 7.38 Atrium as social learning space, October 2016

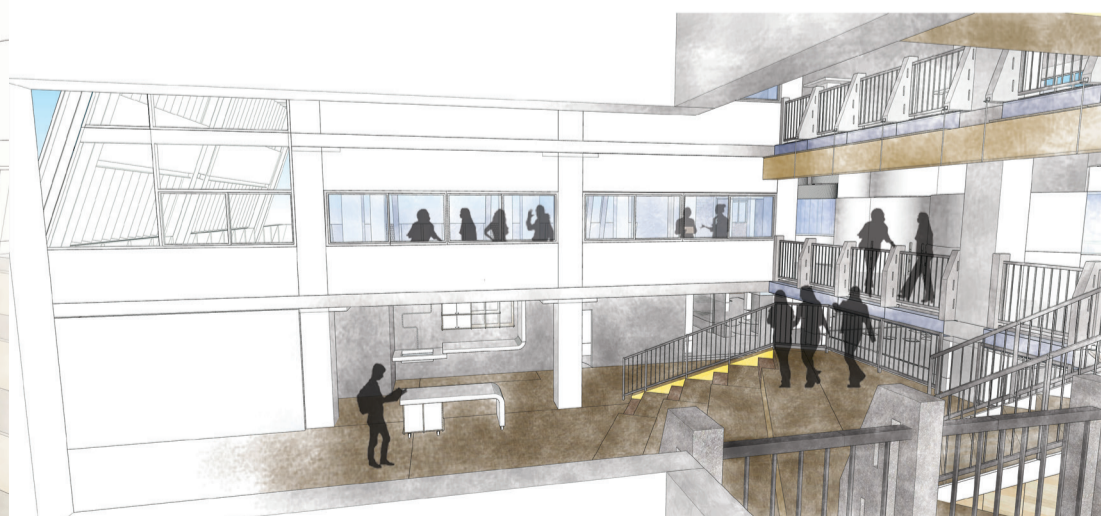


Figure 7.39 Atrium as a circulation node, October 2016

Perspectives



Figure 7.40 Atrium as social learning space, November 2016



Figure 7.41 Atrium as a circulation node, November 2016

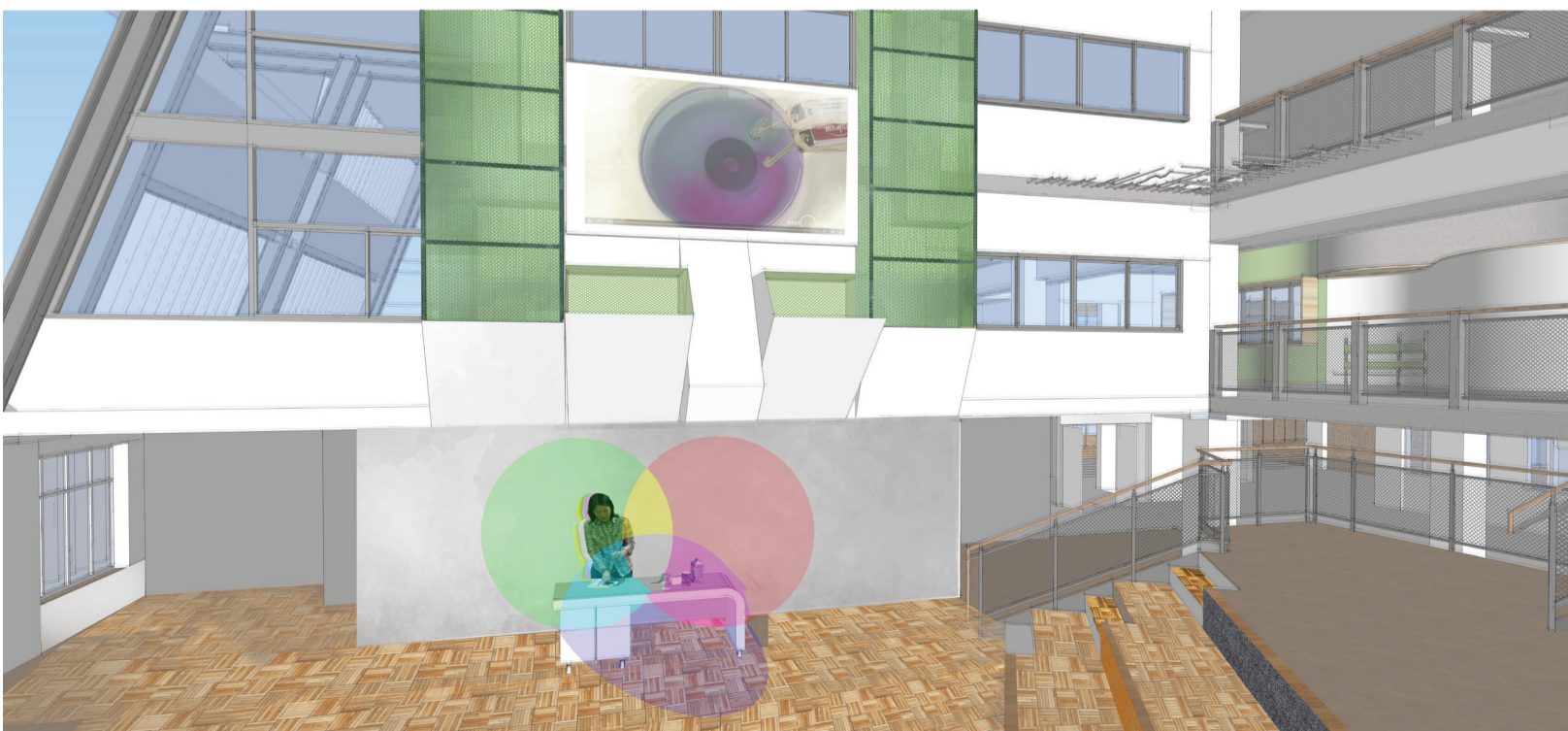


Figure 7.42 Theatre of science, November 2016

Perspectives

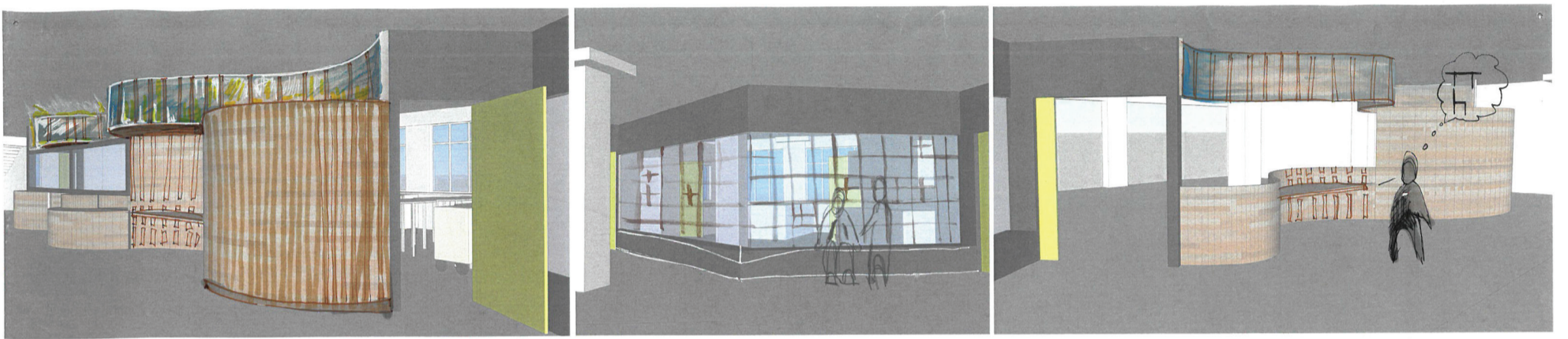


Figure 7.43 Conceptual Circulation Narrative, September 2016



Figure 7.44 Curved wall becoming spatial gradient between lab and passage, October 2016

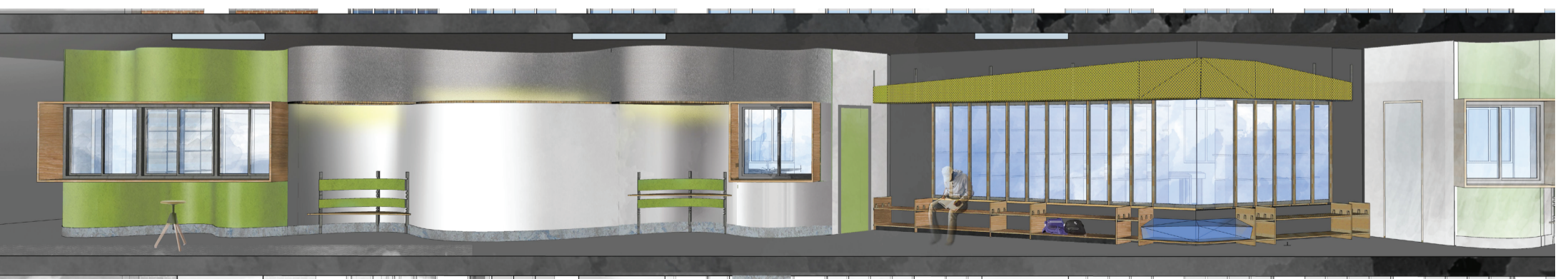


Figure 7.45 Curved wall with framed views into laboratories, November 2016

7.2.11 Makerspace

Perspectives

Experiential learning has been exposed throughout the school. The low-tech makerspace is visible from the atrium, encouraging students to make use of the space.

The makerspace is illustrated in Figures 7.46 - 7.47.



Figure 7.46 The makerspace, November 2016



Figure 7.47 View of the makerspace from computer lab, November 2016

7.2.12 Science labs

The Science laboratories are located next to the main circulation artery. Thus, views of experiential learning are maximised. The walls separating the laboratory from the circulation visually resemble a Mathematical 'sine' function, sound waves or light waves. This curved wall suggests movement and forms niches for students to meet, peer through or adapt as a workspace. The dynamic shape indicates a transition from theory-based spaces to a space of active experiential learning.

There are two dedicated Science laboratories with a shared Science store between them. Unlike the theory spaces, the laboratories do not have front and back sides. The Science store is a small laboratory that can be used for demonstrations. The store has a fume box and sliding windows in both walls adjacent to the laboratories.

The curves of the wall are scaled according to the golden ratio, resembling naturally occurring proportions.



Figure 7.48 Conceptual Science classrooms, June 2016

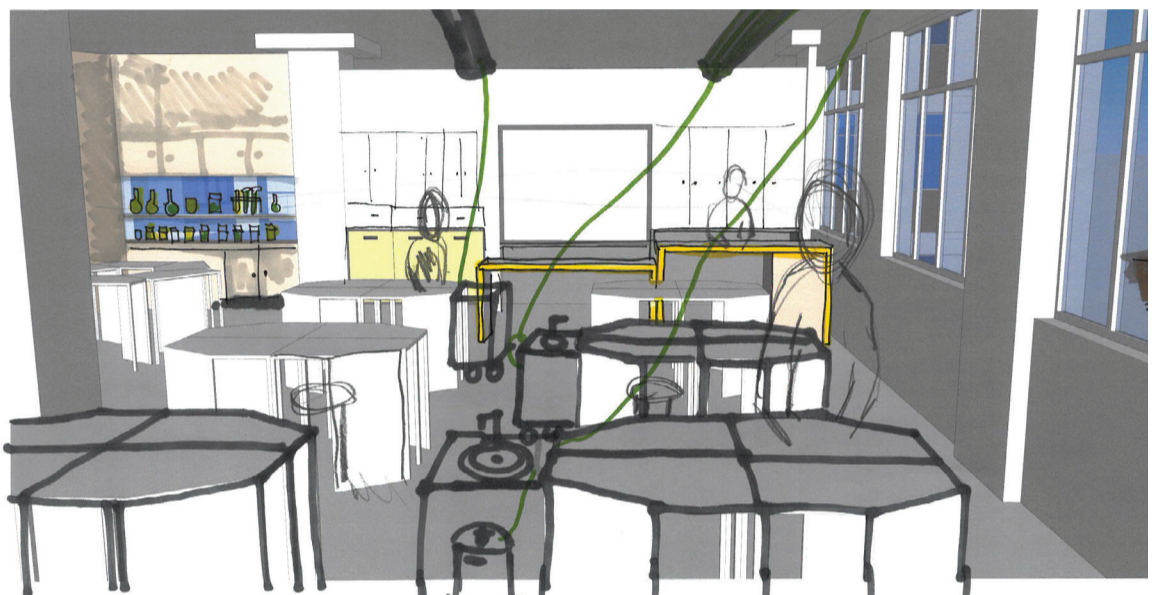


Figure 7.49 Conceptual Science classrooms, June 2016

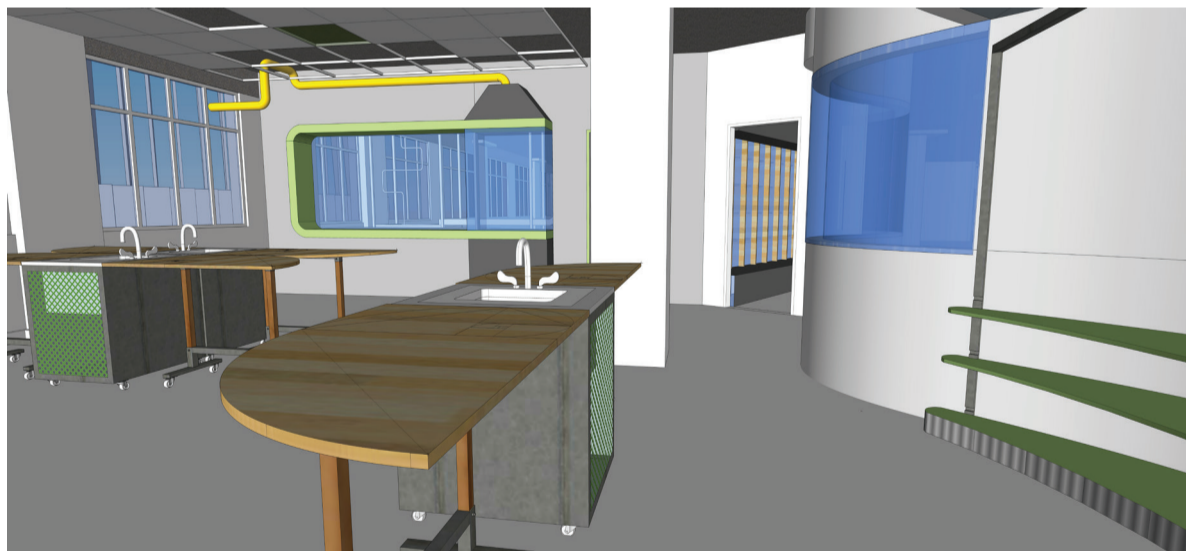


Figure 7.50 Student's view of Science store when in laboratory, October 2016



Figure 7.51 Student's view of teaching wall, October 2016

Section C-C

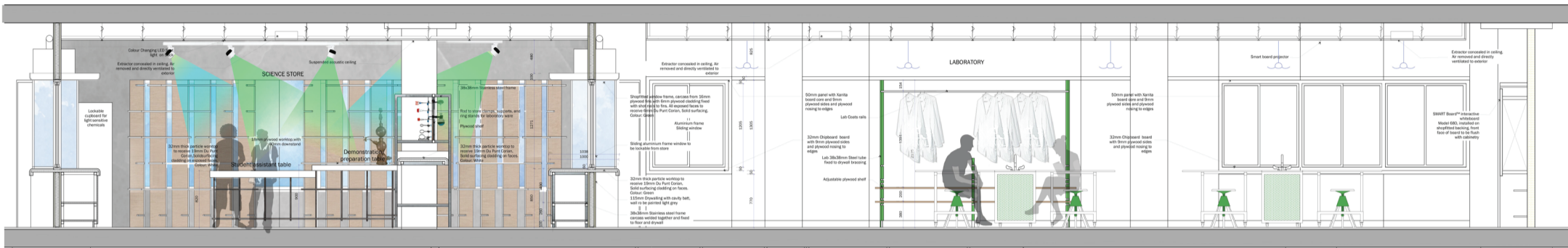


Figure 7.52 Section C-C
Not to scale

Perspectives



Figure 7.53 Student's view of Science store when in laboratory, November 2016



Figure 7.54 Student's view of teaching wall, November 2016



Figure 7.55 Science store, November 2016



Figure 7.56 Science store, November 2016



7.3 Conclusion

The spaces in the school are distinctively different from each other. Each designed to achieve a different educational experience. The spaces encourage students to adapt them to their needs. Teachers are no longer the only educator. The spaces are designed to entice students to become active learners. References to natural scientific phenomena have been used to enrich educational spaces and encouraging students to notice these phenomena in their everyday life.