

3. Context



Figure 3.1 Location of Gauteng in South Africa

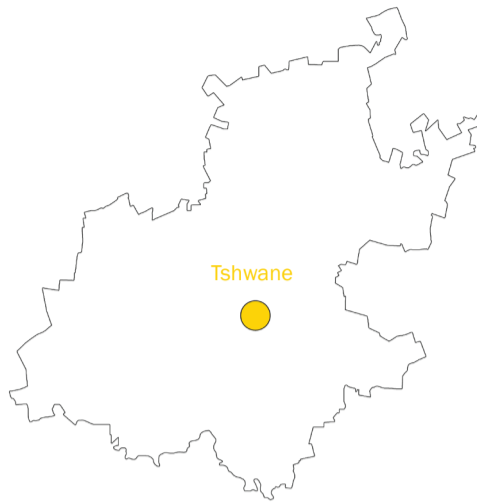


Figure 3.2 Location of Tshwane in the Gauteng Province



Figure 3.3 Location of site in Tshwane

3.1 Introduction

The selected site is located on the southern side of Jeff Masemola Street and the eastern side of Christina Avenue in Pretoria Central Business District (CBD). Originally the building was designed for Angel Investment (Pty) Ltd by Oscar Hurwitz and Murray Architects. The plans were signed off in 1955 and thus it can be concluded that the building is about 60 years old. In 2009 an independent secondary school moved into the top three storeys of the building. Both the ground and first floors were converted into parking lots.

3.2 Statement of Significance

The building recently became protected by the National Heritage Resources Act (No 25, 1999) Section 34, no. 1, which states that no building 60 years or older can be altered or demolished without a permit.

However, this building is not well-documented. The building is no longer fulfilling its original function and in order to avoid redundancy it urgently needs to be adapted to meet the current and future needs of the city.

The main features of the building are its strong horizontal lines on the northern and western facades. The northern stairwell with its glass facade is the most prominent feature of the building. The stairwell was designed in such a way that the interior movement on the stairs was meant to be visible from the street. Currently a steel mesh obscures this feature. The north-

western exterior corner of the building is another prominent feature. Located on the corner of two one-way streets, it is the first feature that vehicular traffic would notice. This corner currently has a brick wall stretching from the bottom to top with a pattern of bricks sticking out, making the most of the western sun. As the sun falls on the wall, the wall gets cast in an ever-changing pattern of shadows.

The building's structure consists of concrete slabs and concrete columns with drop panels. The walls are brick infill. On the street-facing northern and western facades the brickwork disguises the structure. On the southern and eastern facades the building has an honest and unrefined character. Here columns and slabs are easily distinguishable from the brick infill and fenestrations.

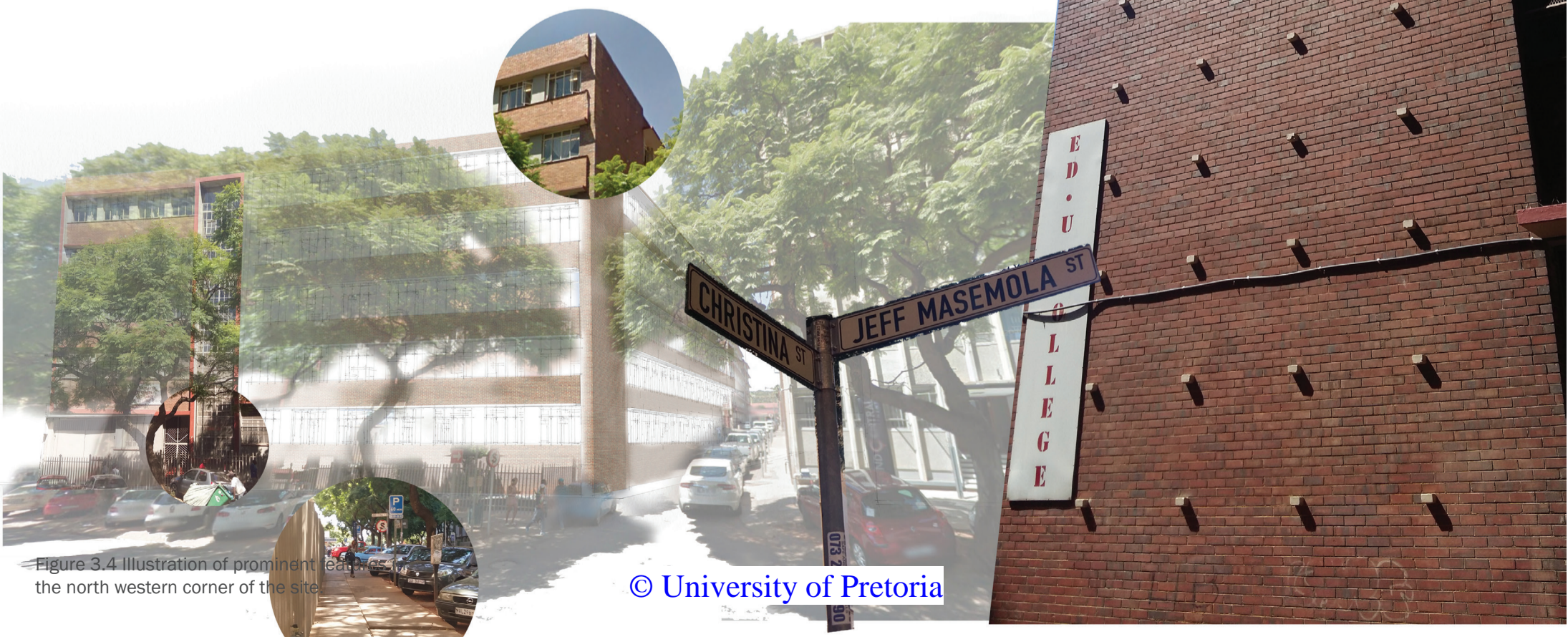


Figure 3.4 Illustration of prominent features at the north western corner of the site



Figure 3.5 Locality plan of site in Tshwane CBD



Figure 3.6 Short distance bus routes around site



Figure 3.7 Mapping of day time pedestrian movement

3.3. Site Selection

The site was selected according to the following criteria:

The author visited a number of existing educational facilities in Pretoria and the Eastern Cape. Schools with limited facilities were identified.

The existing schools should have access to a host building where alternative educational facilities can be investigated as an interior intervention.

The host building should be located so that it is easily accessible to middle and lower income communities. This ensures that the proposed new resources are distributed to communities that require these facilities and currently do not have access to such facilities.

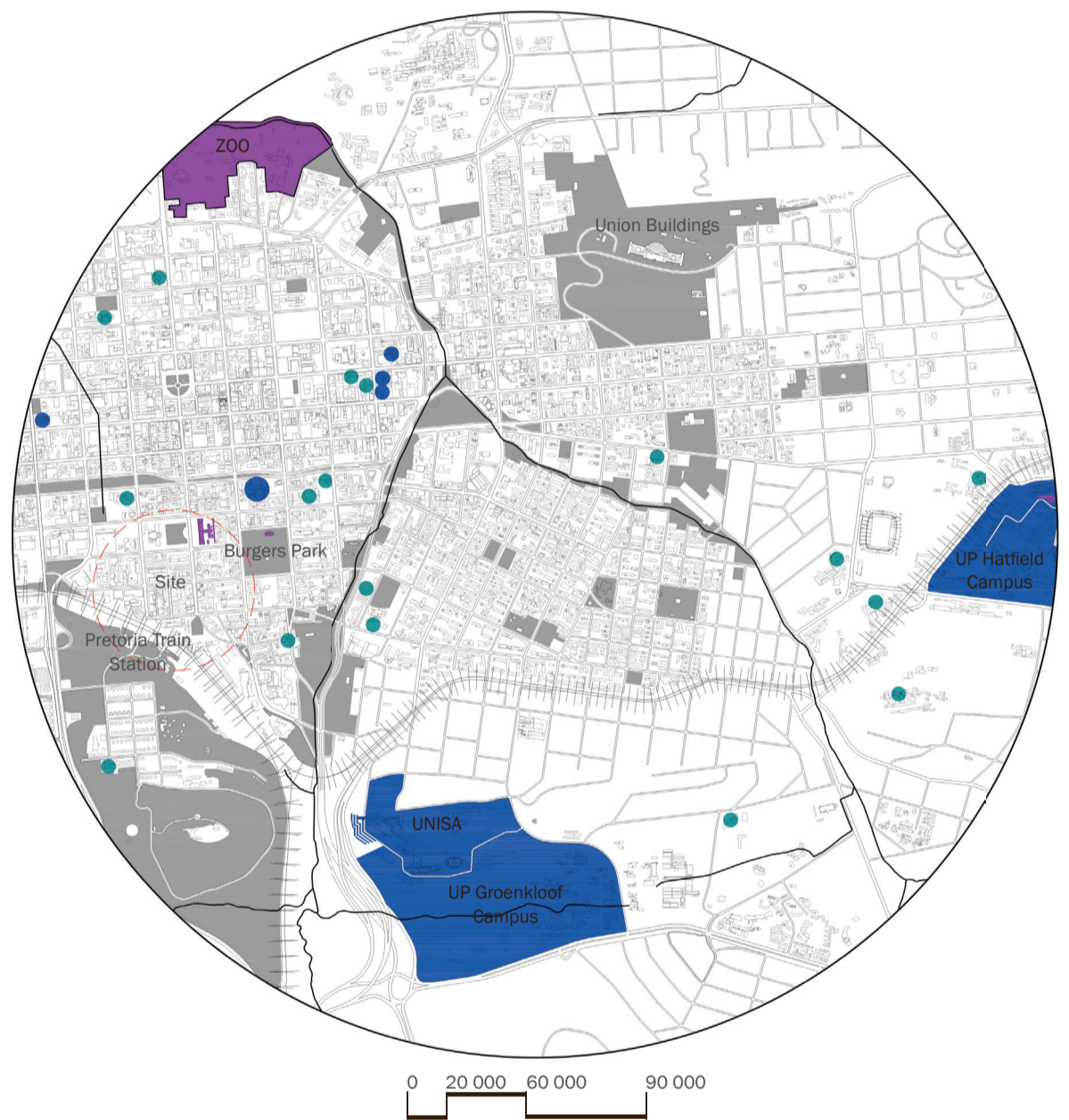


Figure 3.8 Map of learning

- Tertiary Education
- Secondary Schools
- Informal Science Institutions
- Informal Learning Institutions

3.4. Macro Context

At the UDISA, Re-Imagine Urbanism, conference in June 2016 Shaakira Karolia from the City of Tshwane presented the Sustainable and Inclusive Growth strategy for the city. She stated that the City of Tshwane will focus on education, agribusiness and tourism for the Tshwane 2055 vision. The city aims to drive access to education and to gain recognition as a global education, as well as a research and development hub. They want to expand the capacity in key skill gaps courses (Karolia, 2016). By increasing the capacity of these courses at

tertiary institutions the City of Tshwane will have to have strong candidates graduating from high school to achieve these goals. Thus the proposal to upgrade an inner city secondary school that aims to shift the perspective of MST education aligns it self with the Tshwane 2055 vision and growth strategy.

The school is walking distance from informal science institutions like the Ditsong Natural History Museum, Burgers Park's greenhouse and is travel distance by bus from the Pretoria Zoo.

The South African Agency for Science and Technology Advancement (SAASTA) is also walking distance from the site. SAASTA is responsible for managing all 35 educational Science centres in South Africa and also a few across the continent.

The site is well connected with public transport and located near middle to lower income communities. Thus students that do not have the necessary resources, space and exposure at home can enrol in the school.

3.5. Block Study



Figure 3.12 Station's Place consist out of 3 properties



Figure 3.9 Building's location in relation with land marks & traffic flow

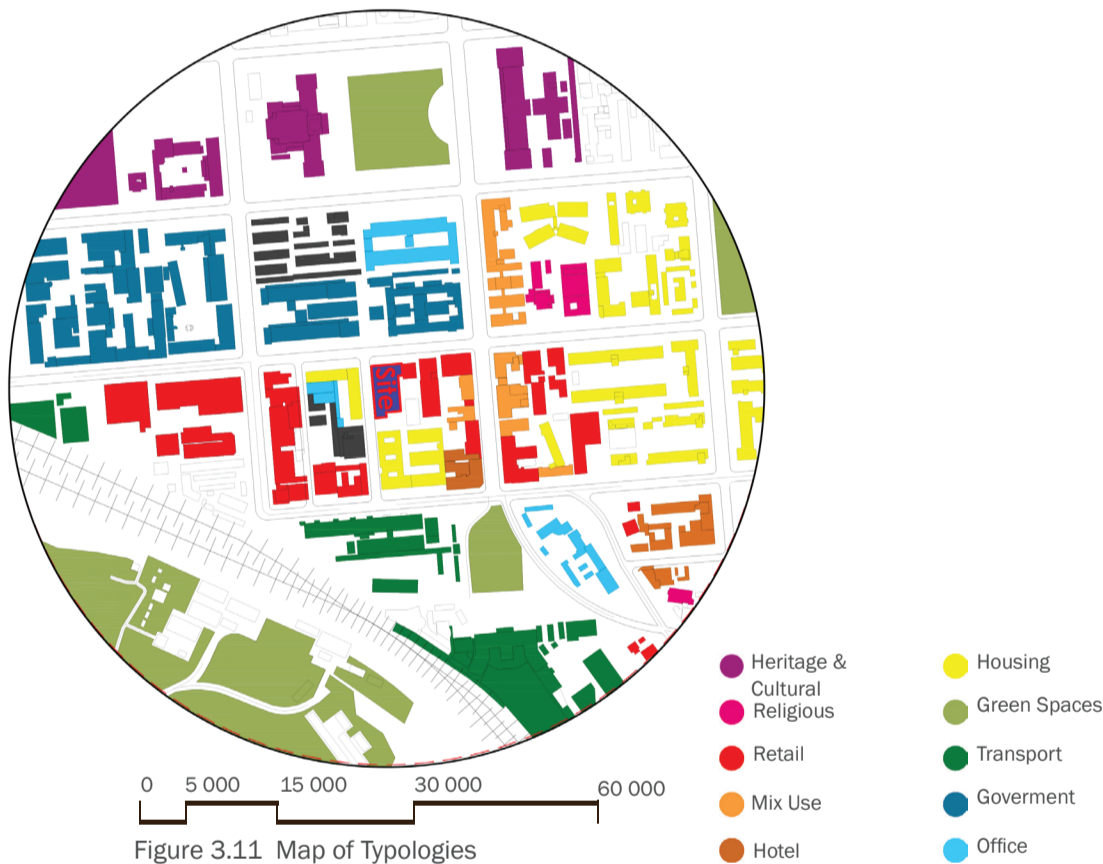


Figure 3.11 Map of Typologies

Currently the Jacob Mare Building belongs to City Property, it forms part of their block development known as Station's Place. They adapted the surrounding buildings' top floors into apartments and the ground floors into parking lots. Jacob Mare Building has two street-facing facades.

Christina Avenue is a narrow one-way street. No buildings face this street and its only used as side entrances to buildings or to reach bigger streets by car. Walls, fences, road signs and gates to side entrances are the characteristics of Christina Avenue and Hope Street (Le Roux and Botes, 1993: 43). Due to the narrow nature of this street the western windows of the school building has views into the apartments on the eastern edge of the street. It is not ideal that the semi-public classrooms look into their neighbours' private spaces.



Figure 3.10 Illustration of prominent features on the north eastern corner of the site.





Figure 3.14 Sun Study of block

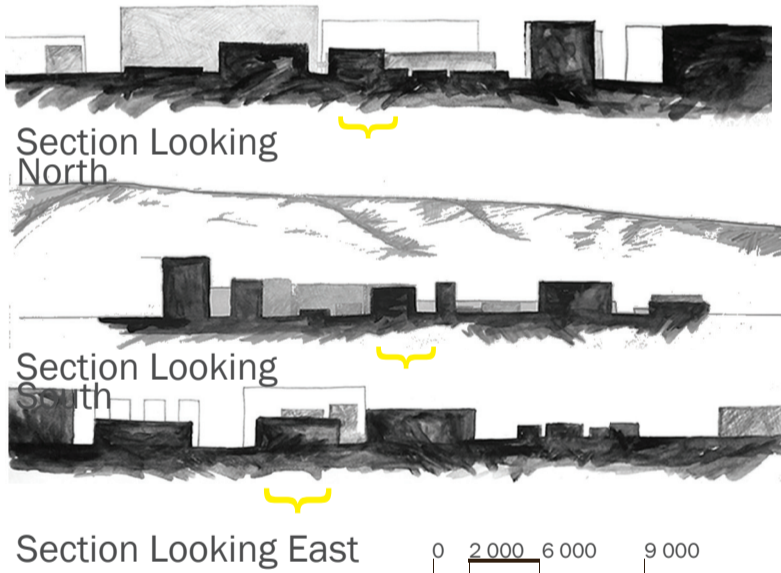


Figure 3.13 City Sections

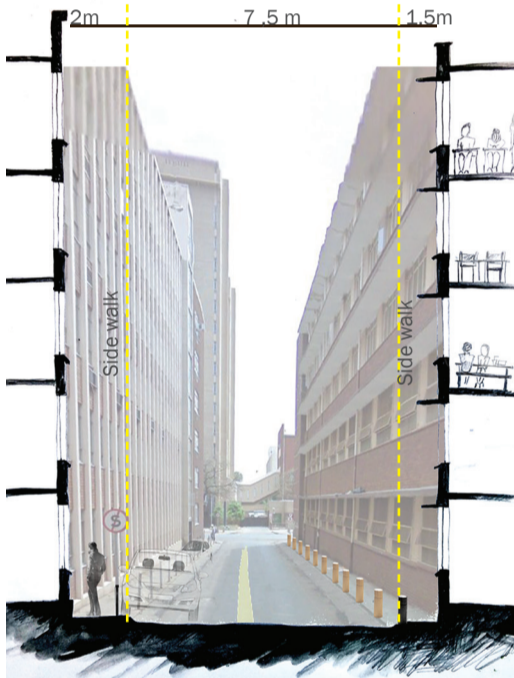


Figure 3.15 Sections through Christina Avenue

The western and north-western sides of the neighbouring buildings are either the same height or higher than the site. This influences the amount of direct sunlight the building receives in the late afternoon. The lower storeys on the western facade gets shaded by its neighbouring building which will help with solar glare and direct sunlight in the winter months, but it will also lessen the possibility for heat absorption through thermal massing. This side of the building will struggle with heat gain in summer and heat absorption in winter.



3.6. History

The building plans were approved in 1955. Designed by Oscar Hurwitz and Murray Architects who, together with Pokroy, designed the second Poynton Building on 138 WF Nkomo Street in Pretoria CBD.

The building was originally designed to accommodate offices and storage facilities. In 2009 alterations were made to subdivide the storage rooms into classrooms. The original interior layout governed most of the new layout decisions. Most of the then existing walls were kept, even though they were never meant to house a school. The different original functions existed detached from each other and this detachment between storeys and spaces is still evident in the current interior.

The largest part of the ground floor housed storage and packing facilities. The first floor had offices and saddlers on the northern side and armoury store rooms were located on the rest of the floor. The second floor on the north-eastern side was allocated to tailors and the rest of the floor consisted of clothing store rooms. The third and fourth floors were mostly offices with administrative functions. These floors had ablutions and kitchens.

The floor finishes were mostly a granolithic finish in the store rooms, a linoleum finish in the corridors and a parquet finish in the offices and administrative spaces. These are still the predominant floor finishes in the building.

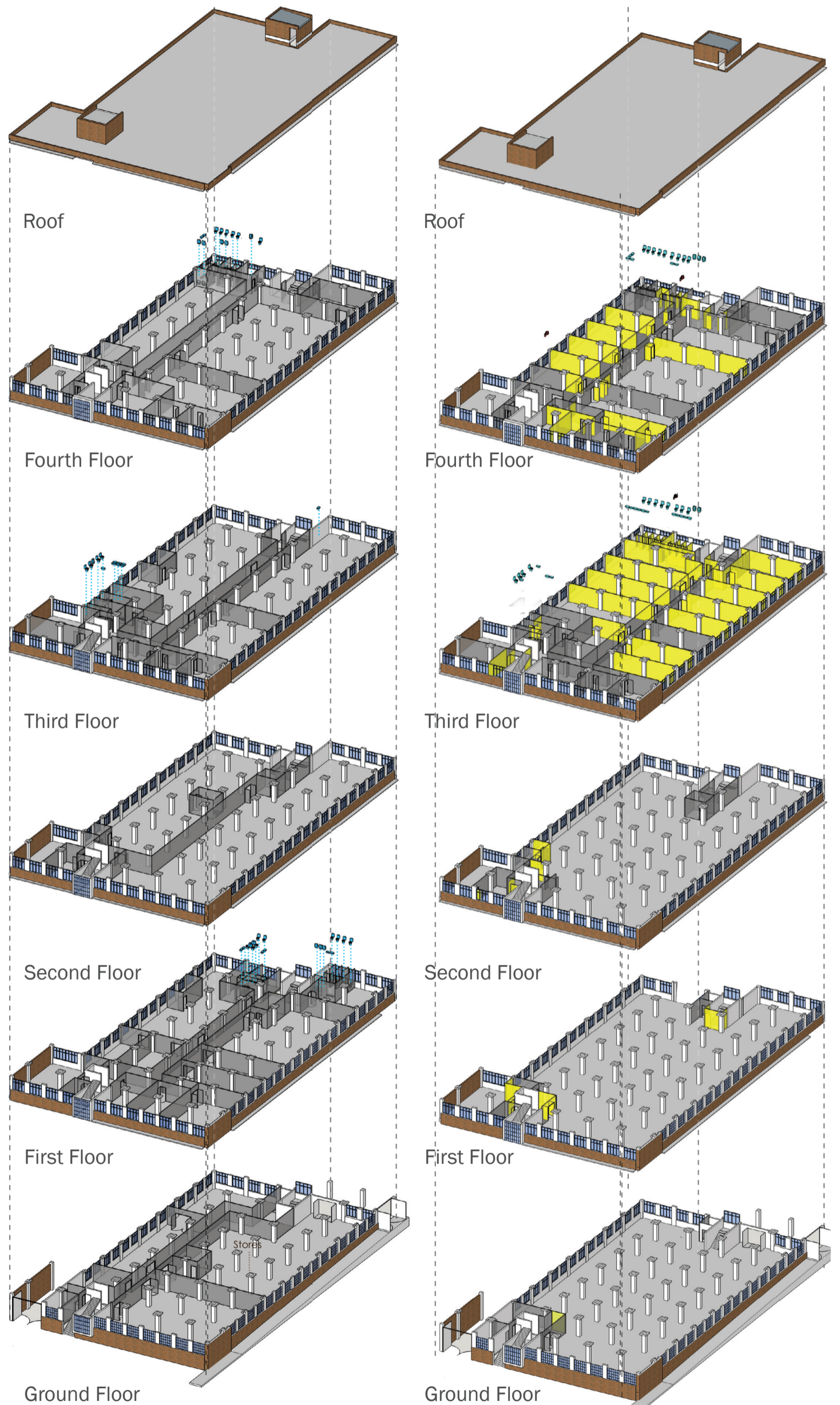


Figure 3.16 Axo of building appropriation over time

1955 Original Building

2009 Alterations in to School

3.7 Alterations

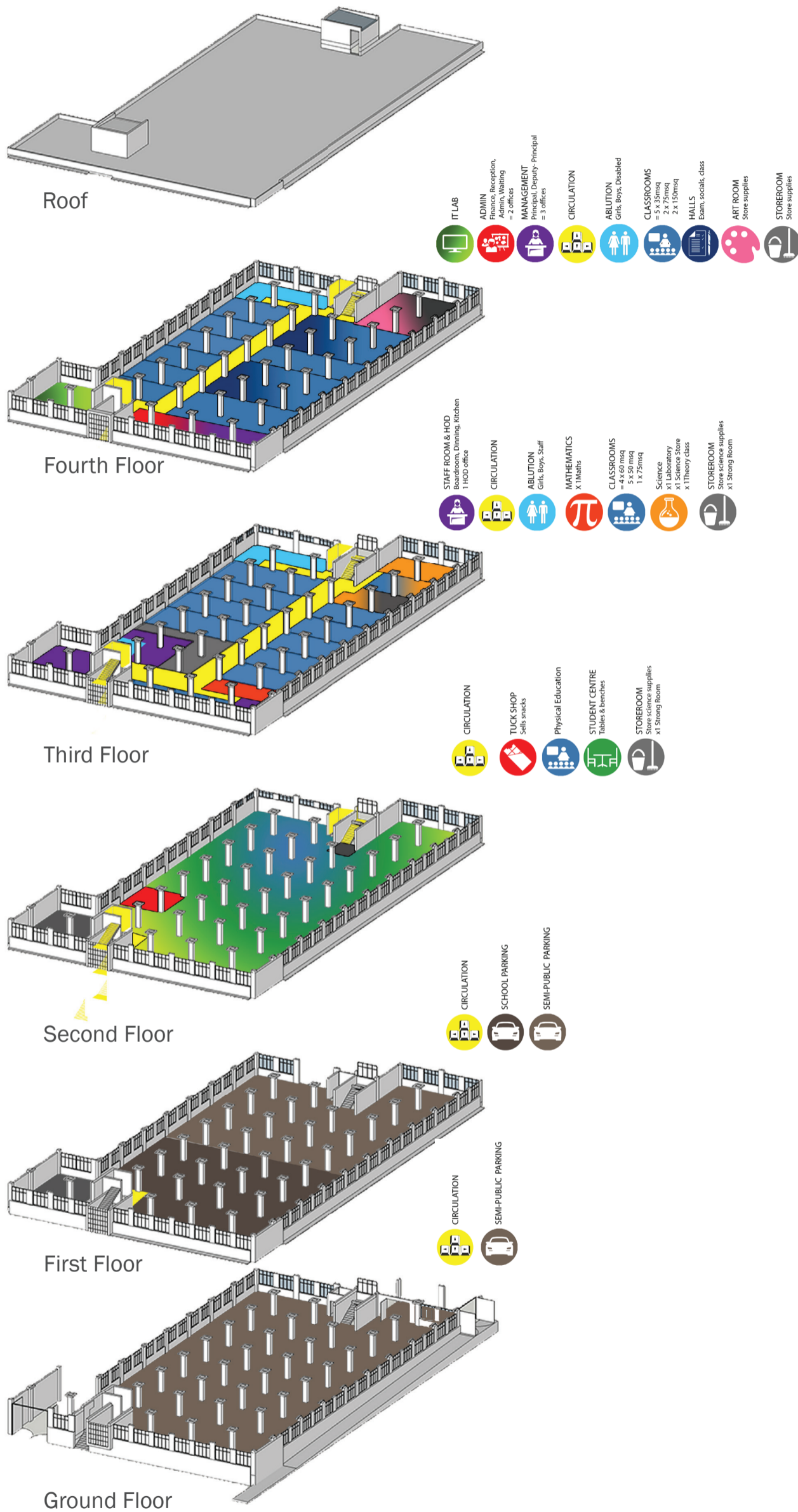
In 2009 City Property made alterations to the building to adapt it into a secondary school. From 2009 until now the interior had minimal alterations.

On the ground floor most of the interior walls were demolished. The two stairwells and lifts were maintained. Currently, the northern side of the ground floor houses a small foyer through which pedestrians may access the school. The rest of the floor is a parking lot rented out by City Property.

The first floor can be accessed by the northern stairwell or by a car ramp on the southern side. Most of this floor's interior walls were demolished to re-adapt it into a parking lot. The car ramp was added on the southern side.

On the second floor most of the original interior walls were also demolished with the intention that the floor may be rented out. Currently, the school uses this empty floor as their student centre and for physical education. After the 2009 alterations a tuck shop was added.

On the third and fourth floor most of the original interior was kept. The spaces were subdivided to form classrooms. The parquet finish was also kept.



2016 Current Use



3.8 Spatial qualities



Figure 3.17 Illustration of spacial qualities



3.8.1 Ground Floor

The school has no connection with the street and sidewalk. There is a sign on the northern facade with the school's name and this is the only indication that there is in fact a school inside the building. There is no place for pupils to wait in the mornings before school or for their transport after school. As a result, the building's appearance from the street is uninviting. The exterior of the building shows nothing of the school's identity.

The northern side of the ground floor is accessible from Jeff Masemola Street. Pupils and visitors enter the grounds from a bustling sidewalk through a palisade security gate. Behind the palisade fence there is a small garden with a planter and nine steps leading up to the foyer. These steps immediately exclude any children and teaching staff who may be in a wheelchair and makes it difficult and hazardous for users who have difficulties climbing stairs. The foyer leads to a security desk and from there the user has the option of using the stairs or the elevator to move up in the building to the school.

The elevator is out of date, with a large heavy wooden swing door that the user has to pull on to open. This limits the use of wheelchair bound users and/or those who experience difficulties traversing stairs.

Behind the security desk is a banner with the school's slogan and logo. The foyer is a dark space with hard finishes. The security guard informs visitors where to go and he usually escorts them, leaving no-one to man the security gate. The rest of the floor is a parking lot. On the southern side the elevator is completely closed off and the stairwell only acts as a fire escape for the floors above.

3.8.2 First Floor

The first floor is used as a parking lot and a lobby to the northern stairwell and elevator. The parking lot is accessible through a vehicle ramp on the southern side of the building. The teachers park on this level. Again a palisade security gate divides the teachers' parking from other parking which is rented out to the public.

3.8.3 Second Floor

The student centre and break-out space is located on the second floor. The interior is almost completely bare. The concrete floor slab, soffit and columns overpower the spatial qualities of the space. The finishes are harsh and they reflect sounds, making the space extremely noisy during break times. There are timber benches scattered throughout the interior. A4 Papers with printed basketball hoops are stuck on the columns and there are a few broken table tennis tables in the corner. The windows wrap around the space letting in a lot of natural light. However, the floor plate is deep and as a result the sunlight does not penetrate so deep. The effect is that most of the space is in relative darkness, while the exterior edge is lit by a bright strip of sunlight, which causes uncomfortable glare. The space is lit by fluorescent tube lights.

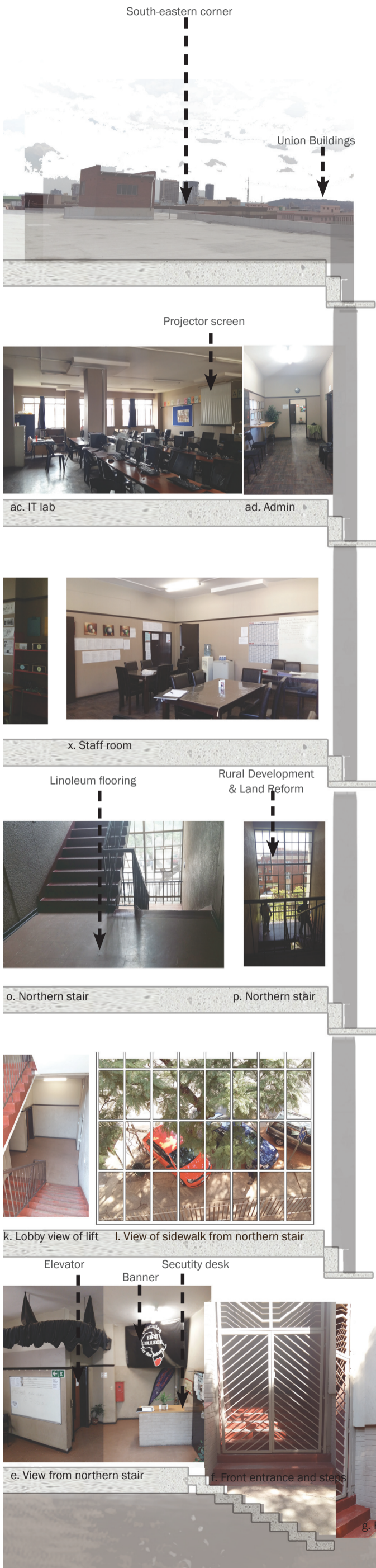
3.8.4 Third and Fourth Floors

The original layout still has a strong presence in the layout of these two floors. The corridors were kept intact, resulting in long, narrow and dark circulation spaces. There are windows high against the soffit between the corridor and classrooms. Each classroom has a door leading into the space. Thus, when the doors are closed there is no connection (physical and/or visual) between the different spaces, classes, age groups or subjects.

The larger classrooms are also used as exam halls and for social events but when teaching happens the columns restrict the use of the class a great deal, as the desks are arranged for a clear view of the teacher and board. The rest of the class becomes wasted space. The finishes in the classrooms are hard surfaces, thus sound is reflected and the rooms have an echo-quality that interferes with audibility. Audibility is one of the basic needs as identified in *The Third Teacher* (O'Donnell et al, 2010:8).

3.8.5 The Corridors

The classrooms are reached by long dark corridors with no articulation or places of pause. Aside from the staircase and elevator, there is no visual connection between levels, which leaves the individual storeys disconnected as well as visually and socially unstimulating. The same happens in the classroom spaces, they become disconnected from the corridors and adjacent classrooms, compartmentalising learning and restricting educational exchange.



3.9 Classrooms

The author spent a day in the school as an observer. The layout of the Science laboratory and the Science and Mathematics classrooms were sketched out. Furniture, chairs and equipment together with the students' and teachers' movements and interactions were mapped over layout sketches.

The first lesson was a science theory class. The teacher's desk was located at the back of the room and the white board at the front. The teacher stood in front of the class and used the white board to explain theory, concepts and the application thereof. He adapted two normal school desks as a desk in front of which he can stand. Students choose their own seats and some students moved desks during the theory class. Some students preferred to sit alone and others were more interactive with each other.

There was a lot of clutter at the back of the class. The shapes of the desks are not ideal as they do not allow the desks to be placed side by side. This leads to the space feeling disorganised and it also limited the possible interior layouts of the classroom.

The second lesson attended was a Science practical. The students were excited when they were told that they should go to the lab. In the lab there were a few Science objects displayed on a table. The lab desks are long timber tables that are 730mm high. These tables were fixed to the floor and the way that they were arranged made working in groups less effective. Also, their height meant that it would not be comfortable to stand while busy with a practical investigation.

The lab was located at the far end of the school, completely off-limits for pupils who did not take Science.

If pupils in younger grades were allowed to glimpse into their future, this could potentially trigger curiosity and interest.

The Science store was the most exciting and interesting space in the whole school, yet this space was locked and hidden away for exclusive use by the Science teacher. While the equipment and chemicals stored here spark a sense of endless possibilities and discoveries to be made.

The Mathematics classroom had a rigid layout. The desks were placed in neat rows and the students filed into the spaces from the front. The natural light was blocked out by a curtain and the teacher used a projector and screen to explain mathematical problems. Some pupils sat quietly, but one student became fidgety in this environment even though he was enthusiastic about participating.



Figure 3.18 Mathematics class



Figure 3.19 Science store



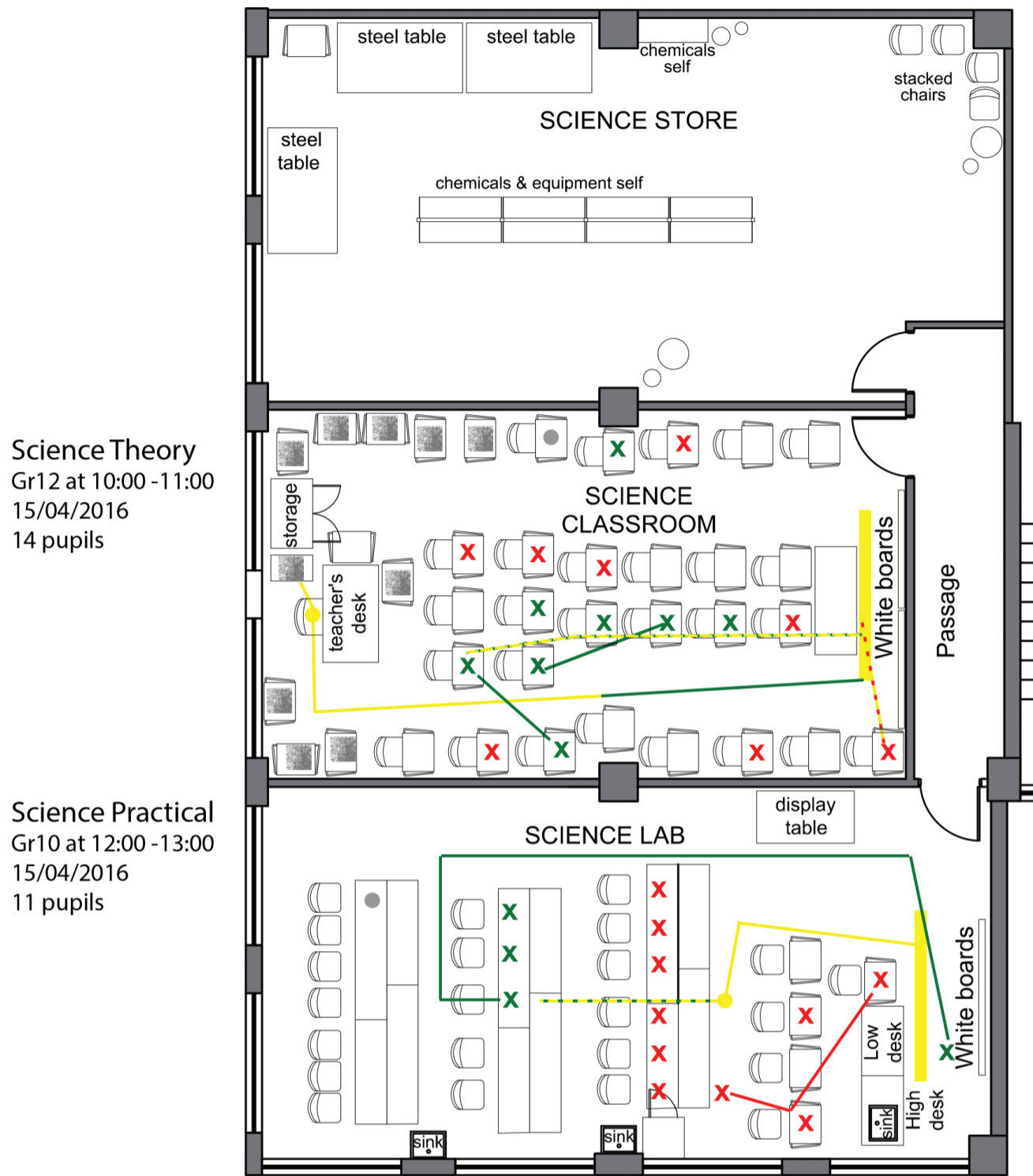
Figure 3.20 Science laboratory



Figure 3.21 Science theory class



Figure 3.22 Science theory class

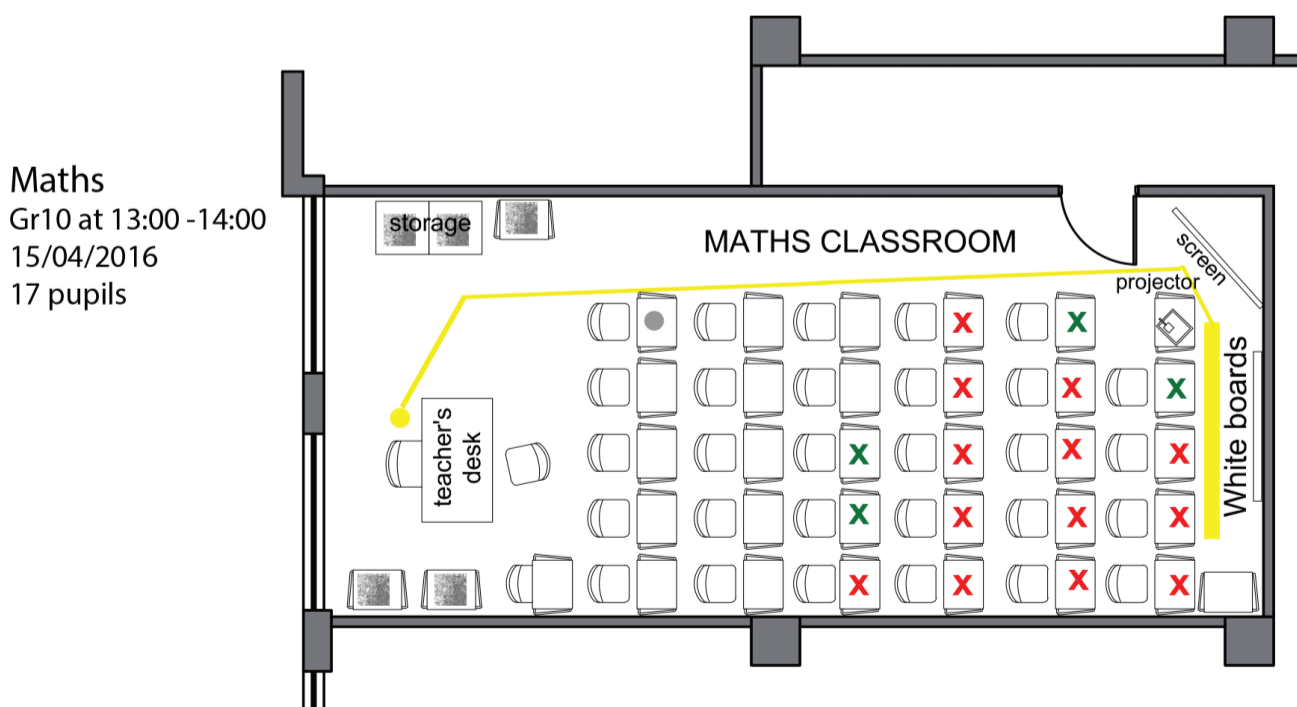


Science Theory
Gr12 at 10:00 -11:00
15/04/2016
14 pupils

Science Practical
Gr10 at 12:00 -13:00
15/04/2016
11 pupils

Science Class

Figure 3.23 Plan diagram of user interaction



Maths
Gr10 at 13:00 -14:00
15/04/2016
17 pupils

Mathematics Class

Figure 3.24 Plan diagram of user interaction

3.10 Interior Climate

3.10.1 Lighting

Most of the daylight in the interior penetrates from the eastern and western facades. The school day currently runs from 07:50 until 14:00, thus the classrooms on the eastern side of the building receive direct sunlight for most of the school day. The occupants block out the direct sunlight through additions like curtains and blinds. In the process most of the daylight is blocked out and the occupants depend on artificial fluorescent tube lights to provide them with the appropriate lux levels. A solution is needed where the direct sunlight is prevented, to be able to penetrate into the interior spaces and still allow the occupants to make the most of the natural, free and healthy sunlight available to them.

The building has a deep footprint, thus it becomes essential that the fenestration design and material specifications allow the daylight to be reflected into interior spaces as deep as possible. Currently the ceilings are painted white which aids with the reflection but the floor finishes in the classrooms are dark with a low light reflection factor. There are no light shelves, thus the floor becomes an important element which should reflect the daylight.

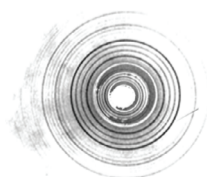
The classroom wall also does not allow sunlight into the corridors, thus the corridor spaces are lit artificially.

3.10.2 Interior Acoustics

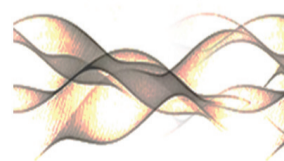
The building interior consists of many hard, sound-reflecting surfaces. The classroom acoustics are not appropriate for teacher-fronted lessons even though that is the main method of instruction.

Also, the hard surfaces lead to the generation of impact sounds. These sounds travel through the concrete slabs affecting the classrooms underneath and around. Thus, each person in the building generates unnecessary sounds when they walk or pull out a chair.

Many of the acoustic problems in the school can be solved by providing appropriate surface finishes to the building.



Impact noises travelling through slab



Parallel surfaces causing a lack of sound dissipation



Representation of sound reflection off hard surfaces

3.10.3 Ventilation

The school currently makes use of passive cross-ventilation. The building has a deep footprint which is not ideal for passive cross-ventilation. The classroom walls adjacent to the corridor contains high set louvre windows which should allow the air to ventilate into the corridors. Unfortunately the corridors are not ventilated, thus the air movement between the classrooms and corridors are too slow to properly remove stale air from the building. Also, due to acoustic reasons some teachers prefer to close the louvres to the corridor preventing cross-ventilation.

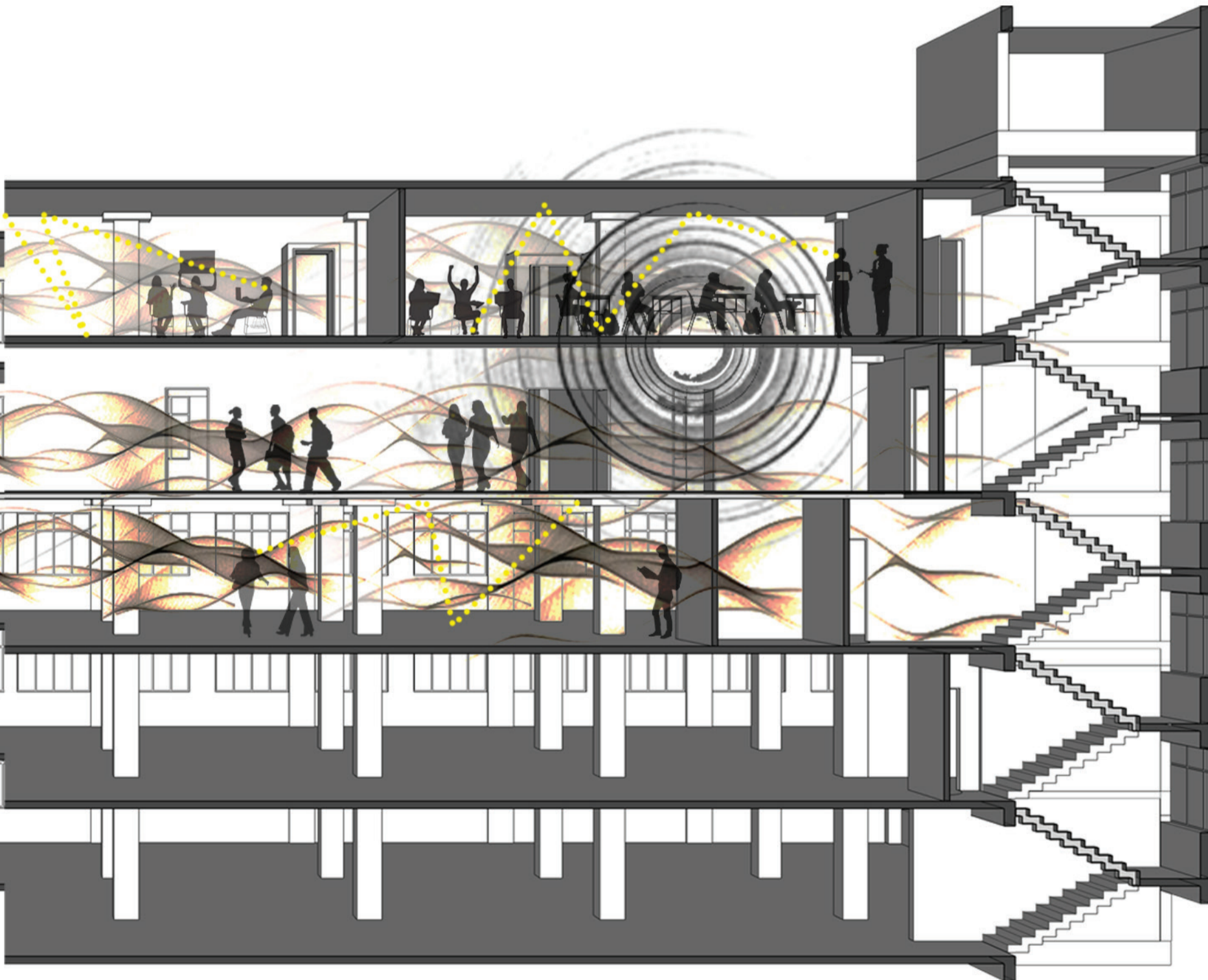
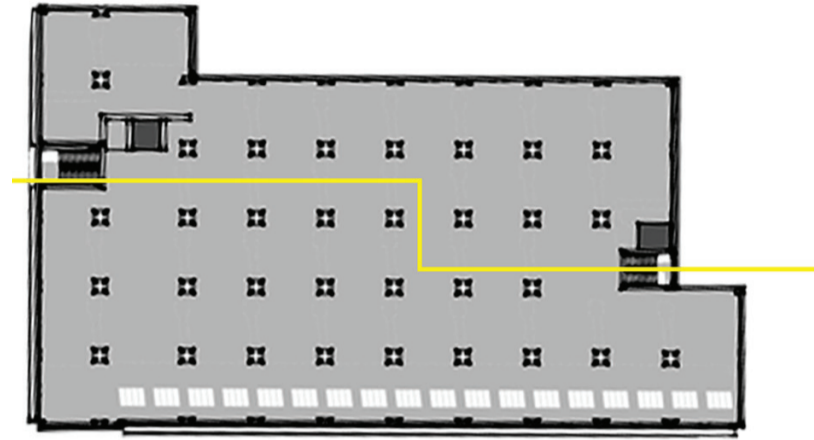
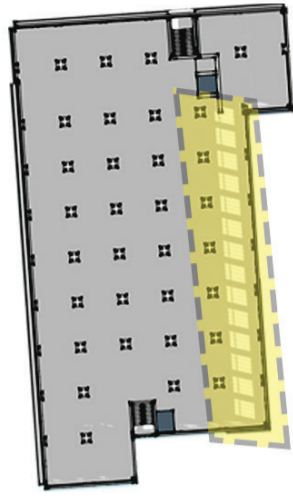
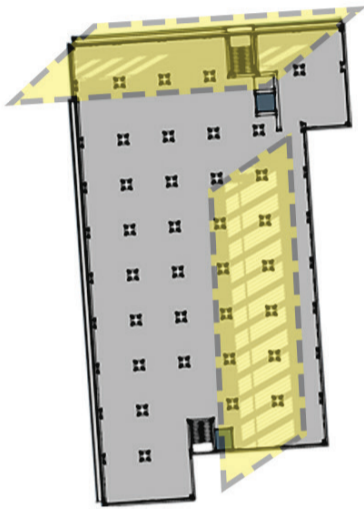
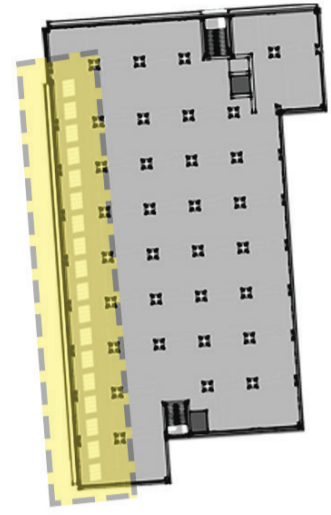
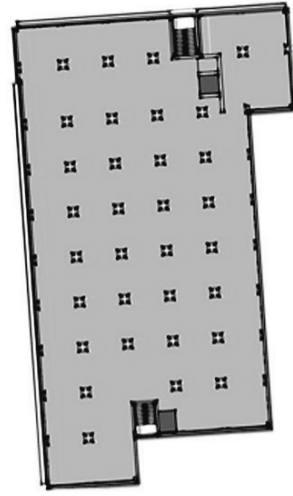
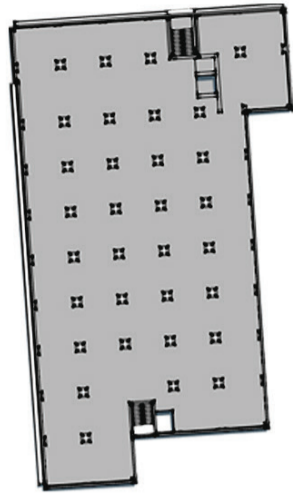
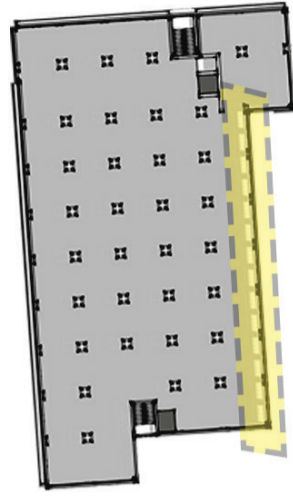


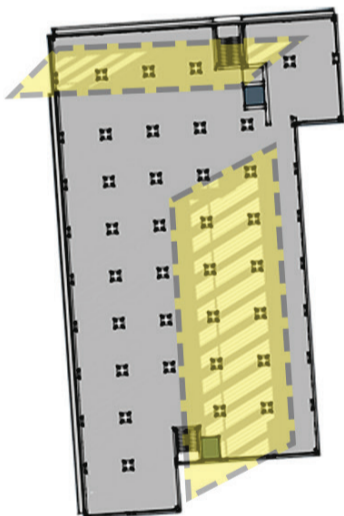
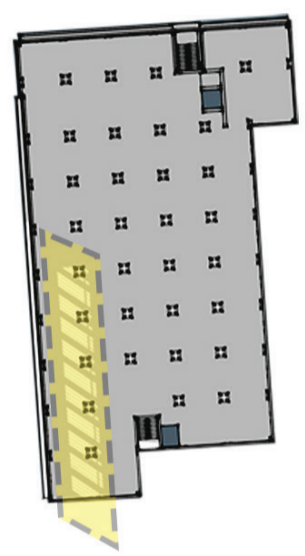
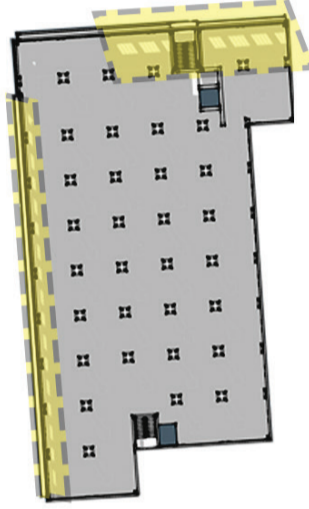
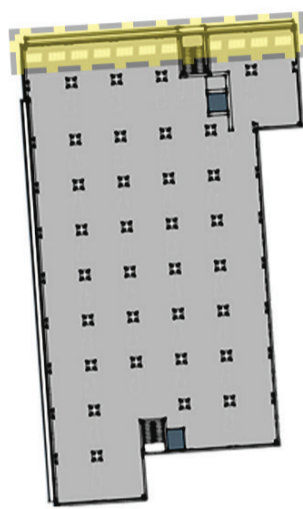
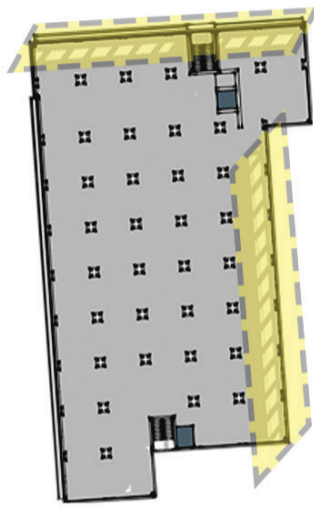
Figure 3.25 Illustration of acoustic qualities



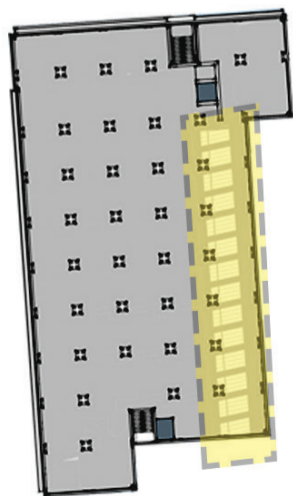
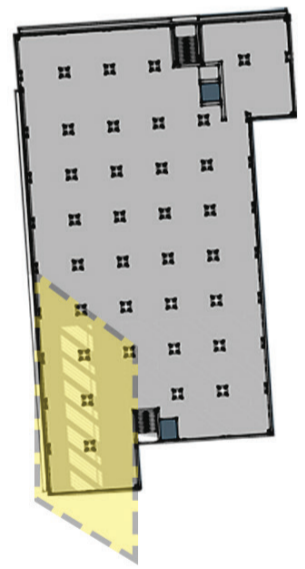
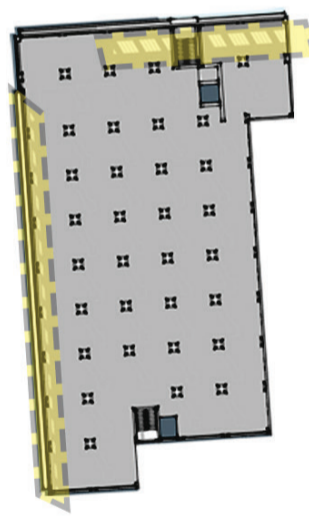
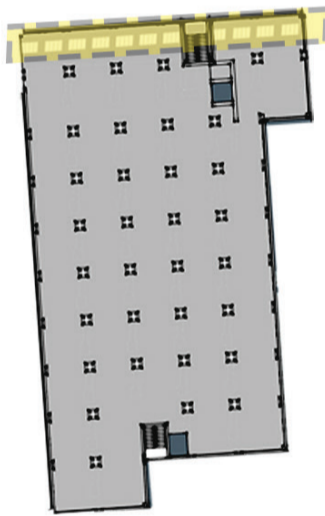
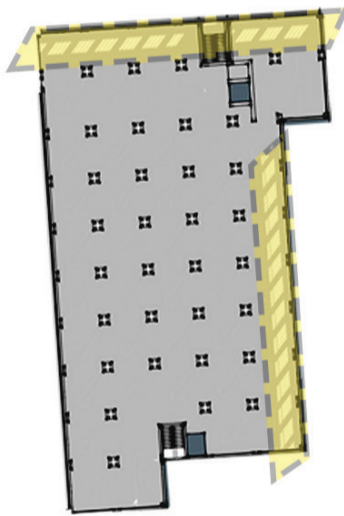
December



March



June



September

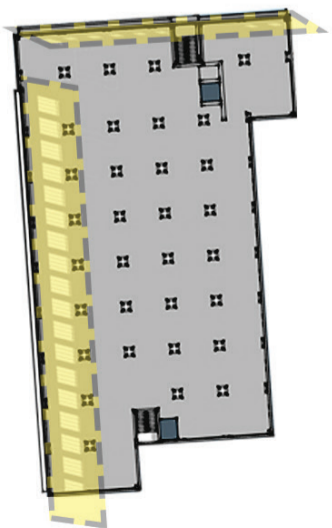
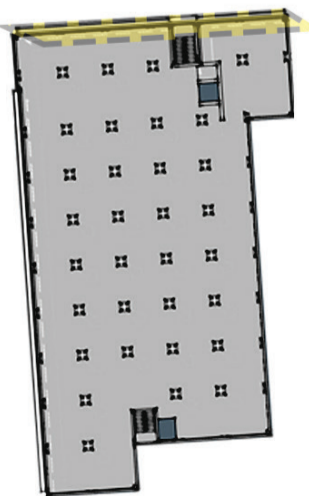
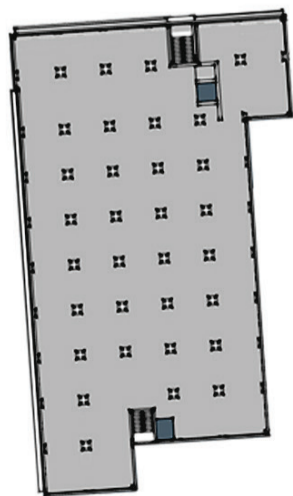
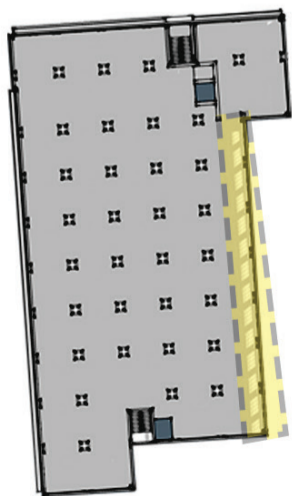


Figure 3.26 Interior sun study



3.11 Conclusion

The school's current layout is the result of the adaptive reuse of a building originally intended for industrial use and storage. The current interior does nothing special to enhance learning except to provide a number of autonomous classrooms arranged along a long, dark, narrow corridor.

There are potential educational and stimulating elements, but these have been locked away in the storerooms. There is potential for the building itself to activate interest and excitement about learning, but this has been left untapped, locked away in the building's structure and facade.

The different levels of the school, the classrooms on those levels, as well as the school against the backdrop of a city, exist disconnected from each other.

