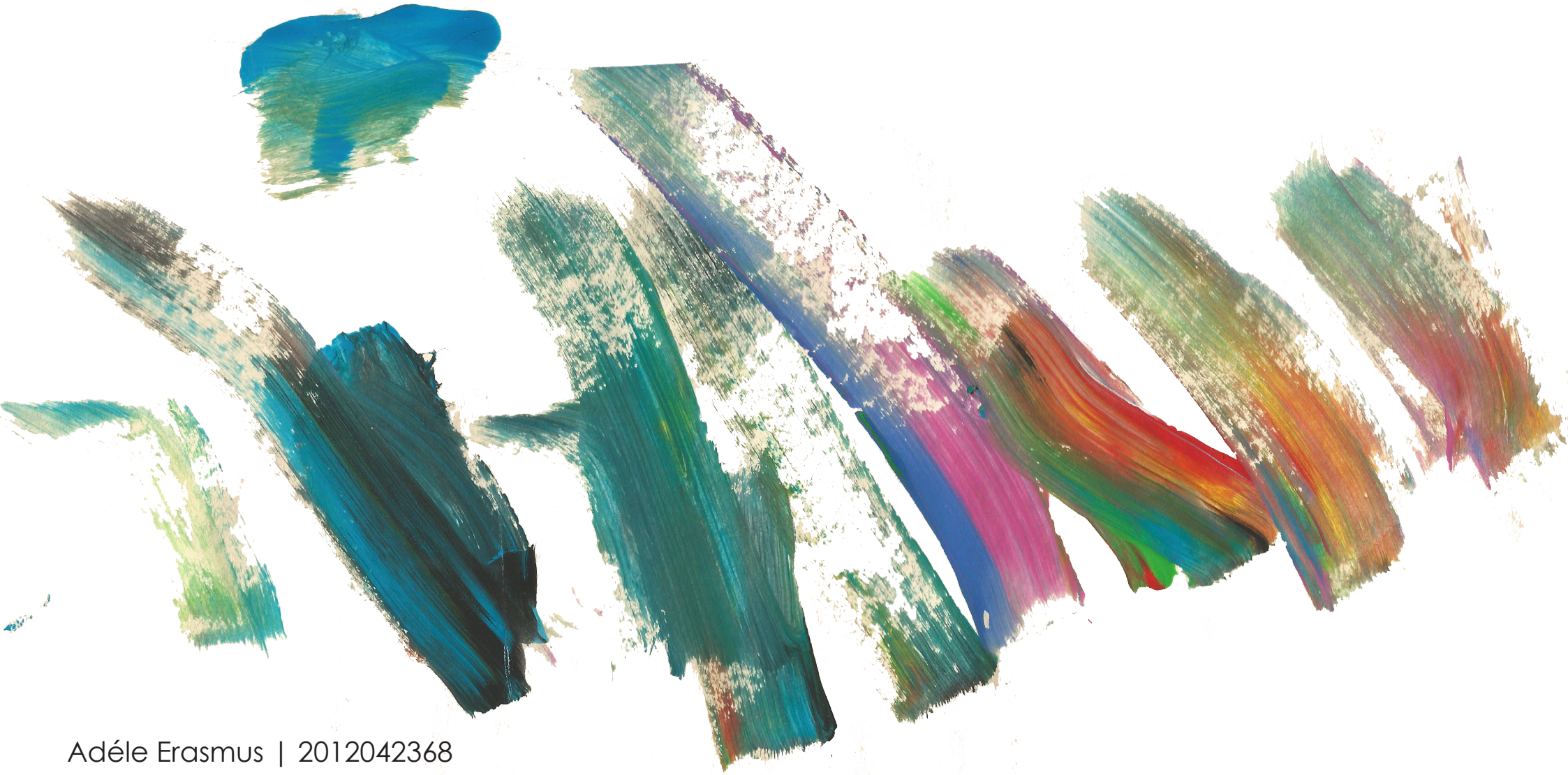
CREATIVE AND SELF-EXPLORATORY EDUCATION FOR CHILDREN IN BATHO



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CREATIVE AND SELF-EXPLORATORY EDUCATION FOR CHILDREN IN BATHO

This dissertation is submitted in partial fulfillment of the requirements for the degree M. Arch. (Prof) at the University of the Free State. All the work contained in this document is my own except where otherwise acknowledged.

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With a special thank you to my supervisors:
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Date of Submission:
8 October 2019

Declaration of original authorship:
The work contained in this dissertation has not been previously submitted to meet requirements for an award at this or any other institution of higher education. To the best of my knowledge, this dissertation contains no material previously published or written by another person except where due reference is made.

Acknowledegment of editorial and proof reading:
Verster, W

PREAMBLE

Figure 1. The Dutch children I cared for.

DEVELOPING A PERSONAL INTEREST

During 2017, I spent a year in the Netherlands as an Au pair to four children. Their ages varied from two to nine years old. Being a part of their daily lives and seeing how they developed within their educational environment, is what inspired me to research and investigate early childhood development for a M.arch (professional) dissertation. Because South Africa and the Netherlands are two completely different countries in terms of basic education and technology. My interest arose around the question of whether it would be possible to propose a project which addresses the same educational needs for South African children when the resources are so different to those in the Netherlands. Both countries are heading into the 21st century faced with the fourth industrial revolution and South Africa desperately needs to develop children that are able to take control of their future and shape the future of our country.

The aim of this dissertation is to investigate whether the way in which children are educated today especially with reference to the fourth industrial revolution (4IR) is still suitable for the skills needed in the 21st century and how schools can shift their focus toward a more sustainable education, regarding the skills children need to develop. Schools are designed around what adults decide children should learn to become competent adults. Schools, although we would like to think of them as such, are not designed around what benefits the child. They have become strict and ordered to assist the adult to keep control of the children.

The significance of education in the 21st century becomes more important as time moves on. The ever-changing world and the increase in the need for new and better technology, requires upcoming entrepreneurs who understand how different technologies can be combined to produce efficient and innovative ideas and products that accommodate a rapidly changing world.

This dissertation proposes to design a school that integrates and incorporates creative spaces, allowing for self-exploratory play as a means of education, outside and within scheduled classes. The purpose of the design is to create spaces that encourage children to develop skills and educate themselves without having to change the existing curriculum – spaces that are safe, actively used and stimulate each child's developing qualities.

Childhood education and development are important because with the right education from an early stage, young adults who have earned their Senior certificate (matric) will be better equipped for universities, the labour market and the 21st century.

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INTRODUCTION

The concept of school has claimed various meanings specific to historic eras. Schools have evolved from the gathering of people who share ideas to a place where people go to learn.

Schools play a crucial role in the early development of a child and therefore a crucial role in the development of a society. Here, the future leaders, innovators and entrepreneurs are educated and shaped. Children spend a huge amount of time in class, growing among peers and being evaluated by teachers. It is important that the all-inclusive development of children is properly approached in the school environment. When a child leaves school, they should be properly geared with the needed skills in order to thrive for the rest of their lives.

Reflecting back on one's own early developmental years in school, one quickly realises that without the rigid structure a school provides, one would not be able to cope in a rapidly changing society. One also sees that creativity goes beyond the physical design and creation of beautiful things. Creativity is how we approach and solve the problems with which we are confronted; be it in the hospital theatre, boardroom or social spaces.

To approach the project, in not only a creative but realistic way, one needs to understand the challenges of the 21st century and the fourth industrial revolution (4IR).

On 9 April 2019, President Cyril Ramaphosa reacted to the challenges and opportunities of the 4IR by appointing a commission. The 4IR will bring revolutionary advances in technology that will reshape the way people work and live.

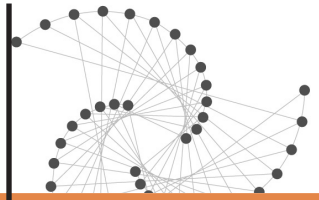
On *The Politics web* (9 April 2019) we read, "President Cyril Ramaphosa has appointed members of the Presidential Commission on the 4IR which will assist government in taking advantage of the opportunities presented by the digital industrial revolution. The task of the Commission, which will be chaired by the president, is to identify relevant policies, strategies and action plans that will position South Africa as a competitive global player." (Politicsweb.co.za, 2019: online).

In an article on News 24 ,7 March 2019, Johann Burger wrote that the spaces we design for children should be created for growth and this should start with the implementation of creative spaces in schools. The future is in need of people who will find innovative and sustainable solutions to the challenges they are facing. (Burger, 2019: online). Preparing for the 4IR does not mean that technology needs to be brought into schools; it means that the methods and means of educating children should complement the changing lifestyle and needs of the new generation.

Due to the complexity of schools and all the aspects that influence a school's basic function, architecture has to be implemented in a creative way to respond to the needs of children and their promising future.

The proposed project is situated in an existing but derelict building in Batho, Bloemfontein. The idea is to keep the project sustainable by re-appropriating an existing structure and reactivating the site by giving it a function that benefits the community. However, the most important reason for keeping the existing building, is to assist the community to take ownership of the project.

PROJECT RATIONALE



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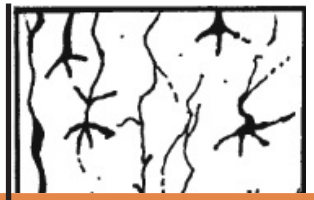
What are the learning and innovation skills needed in the 21st century?



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What is the importance of creative learning during early childhood development?

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What is creativity and why is it important to stimulate at a young age?

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What is creative learning and play?

p. 17

How does one build a space for a five to nine year old?

Education in South Africa has many influences that cannot be solved using architecture alone. Therefore, in order to design this proposed project in a rational and architectural way, a thorough investigation is done on the skills needed in the 21st century.

During the investigation into the Project Rationale, a series of questions presented themselves. Five of these questions were identified as important. The investigation into these questions helps one understand the architectural approach towards the project from a rational point of view. The identified questions become tools to finding solutions on how to design a school which fits the needs of a 21st century adult in South Africa.

Can architecture be used to encourage children to educate and develop themselves in schools?

WHAT ARE THE LEARNING AND INNOVATION SKILLS NEEDED IN THE 21ST CENTURY?

Klaus Schwab, the founder of the World Economic Forum wrote in an article, *The Fourth Industrial Revolution: what it means, how to respond*, that talent and creativity are becoming exponentially important factors when it comes to leading successful lives. Schwab speaks of the fourth industrial revolution and that humanity's response to it should be "integrated and comprehensive from the public and private sectors to academia and civil society".(Schwab, 2016: online).

The industrial and automated industries of the 20th century had high demand for workers who did not need to be highly educated. The only type of skills workers needed were; punctuality, following orders, tolerance for long hours, learning through repetition and being obedient. Some of these skills are still focused on today. (Schwab, 2016: online).

However, in the 21st century, the demand for highly skilled workers has increased. Learning and innovation skills, other than reading and writing, are important because of the speed at which technology is evolving. Technologies were once used separately, but are now integrated. Critical thinking, communication, collaboration and creativity (the 4 C's) are skills that professionals expect from people in order to be able to work and excel in multi-platform and multi-disciplinary environments.

Critical thinking, communication and collaboration are skills that are profoundly developed when one's creativity is allowed to prosper. Creativity therefore is the skill that determines whether people are successful critical thinkers, communicators and collaborators. (McNulty, 2018: online).

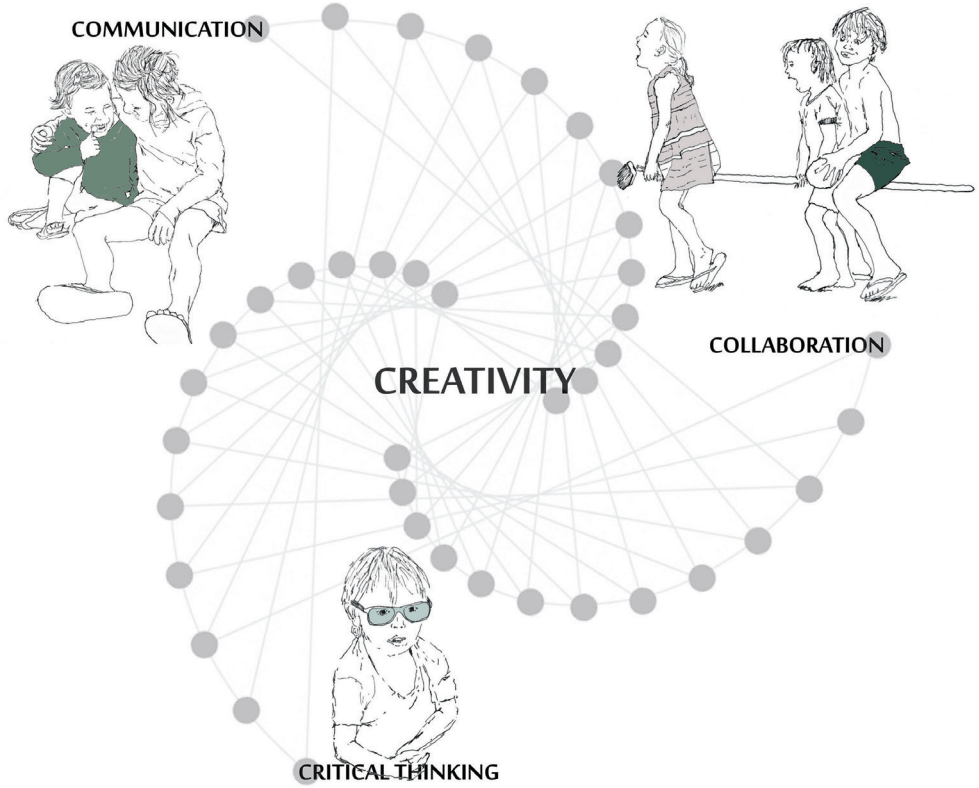


Fig. 2. The four skills deemed important in the 21st century

WHAT IS THE IMPORTANCE OF CREATIVE LEARNING DURING EARLY DEVELOPMENT?

Children learn from experience, self-directed play and exploration.

In the article, *The role of play in children's development: a review of the evidence*, there is substantial research arguing that children learn from their own experience, self-directed play and exploration. (Whitebread, et al., 2017: 5-31)

Bonawitz, et.al. (2011:120, 322-330) did a study on the quality of learning on toddlers. In the study, one group of children was left to learn how a toy works; a second group were shown how the toy works.

After the toy is explained, children restrict their imagination by only playing according to how they were instructed. The instructions help the child to play with it for its intended purposes but at the cost of the child's ability to discover what they could have done with it by themselves. Children without restriction engage in complex toys and games.

The experiences children undergo when they play, are crucial to early childhood learning and development. Studies have shown that children who develop "normally" do so because of the response their brain has to their environment. In other words, if they are left to explore and experiment in their environment, they have a better chance of developing "normally".

Children become competent adults when they are allowed to explore and learn subjects that interest them, beyond what they are taught in a classroom.

Fig. 3. An Image portraying an independent child

In the first years the brain rapidly develops its mapping and understanding system through different neurons and connections. (Refer to figure 4). When children learn, connections (known as synaptic connections) are formed. More connections at a younger age mean more overall development. As children grow older, the brain then develops upon itself and this helps them to move and speak in more complex ways.

Synapses is a term used to explain the point where a nervous impulse passes from one neuron to another. Synaptogenesis is an evolution of synapses that happens throughout one's life; this is what gives us the ability to learn new things. During early brain development, there is an explosion of synapses because of an overdrive of new information and the developing brain making sense of the world. (First Things First, n.d.: online).
Developing children who learn more, grow stronger developing brains. The synaptic connections in the brain is linked to the developing capability of a child and also linked to creative adults.

Synapses can be underutilised which results in their cutback, this often happens to adults who don't explore and learn as much as when they were children. What children experience during their developing years determines their later strengths, interests, health and personality as they grow older. (Refer to figure 5). (Dower, 2017: online)

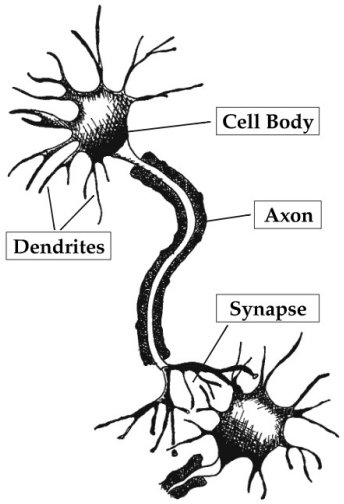
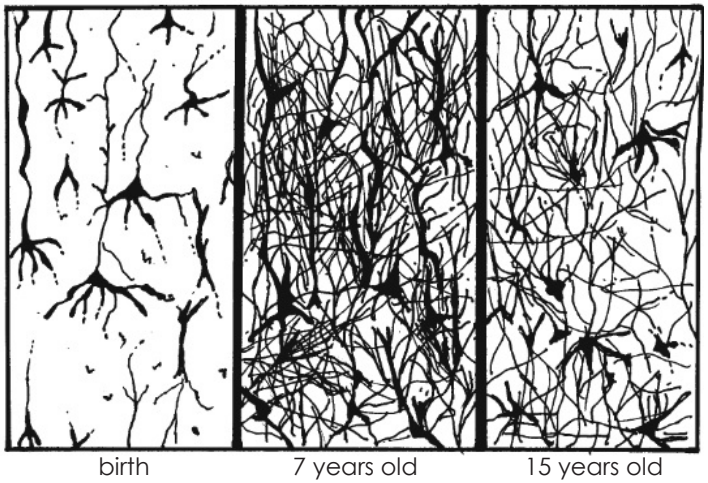


Fig. 4. Neurons and connections



(Brotherson, 2009: online)

Fig. 5. Synaptic density in the human brain during development.

According to the article *The role of play in children's development: a review of the evidence* (Whitebread, et al. 2017: 28) the authors analysed outcomes achieved through play required in children's educational development.

- **physical play** is linked to motor development, and some tentative evidence suggests that it is linked to **social development**;
- **block play** leads to improvements in **spatial processing/ mental rotation;**
- **construction play** relates to **language development**, and this relationship may be strongest in infancy,
- **word-play and word-games** relate to **language development;**
- **board games** (particularly those with numbers and linear number sequences) lead to improvements in **numeracy/mathematics ability**;
- **unstructured breaks from cognitive tasks** improve **learning and attention,** though it is unclear whether play leads to greater improvements in learning than simply taking a break and, for example, talking with friends;
- **pretend play** relates to **language development**, and particularly **narrative skills**;
- **pretend play** – and particularly fantasy-oriented pretence – may relate to l**earning-to-learn skills** such as executive function and self-regulation.
- **physical games** with rules help children **adapt to formal schooling**.

Fig. 6. Block Play

Fig. 7. Physical Play

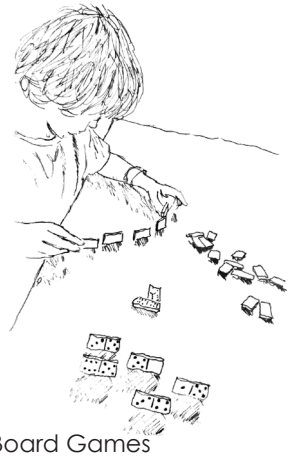


Fig. 8. Board Games

Fig. 9. Building Lego's

Fig. 10. Pretend Play

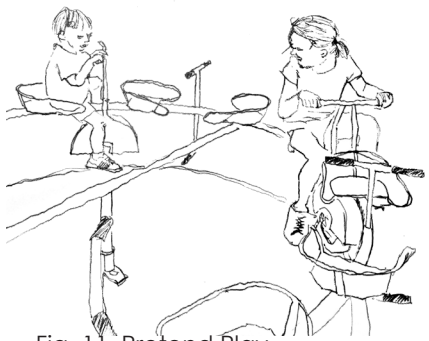


Fig. 11. Pretend Play

WHAT IS CREATIVITY AND WHY IS IT IMPORTANT TO STIMULATE AT A YOUNG AGE?

Creativity has nothing to do with artistic talents. It is a skill that allows a person to have an innovative approach towards a task. All children are born creative - this is what drives them to explore and experience their environment. (Kids Collective, 2016: online). If the space children find themselves in does not allow them to behave imaginatively, their ability to be creative becomes obstructed. The more varied creative experiences children have when they are younger, the better they develop as competent adults.

The four main fields that has an impact on childhood development and growth is through *physical, emotional, intellectual* and *social* stimulation.

Physical development

The refinement of fine and gross motor skills. The brain learns how to control the body through many different movements and activities.

Fig. 12. Children on a trampoline developing physically

Emotional development

Through various arts and craft activities children are able to express their feelings in a creative way.

Fig.13. A child painting

Intellectual development

Developing their skills in language, vocabulary, numeracy and reading. Through art, physical activities and games, children are able to learn different colours, numbers, names etc.

Fig. 14. A child playing a card game, developing intellectually

Social development

Being around other children is important for mental health and well-being. Children learn social skills, develop their communication, show sympathy and respect and learn how to function in a group.

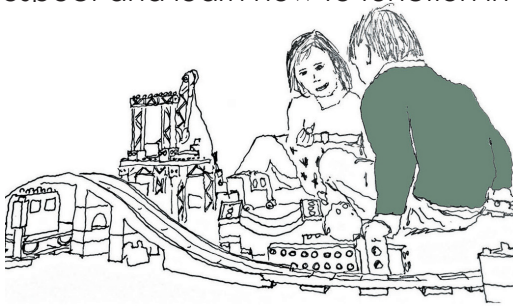


Fig. 15. Children building a train track, developing socially

Both self-exploratory and structured play help children to develop and improve their language, knowledge, creativity skills etc. It is important that there is a balance between both self-exploratory and structured play in a structured school programme to ensure that children are creatively stimulated in a safe environment.

Fig. 16. Self-exploratory play

Fig. 17. Structured play in a classroom

Self-exploratory play and its benefits

- Gain educational value from peers
- Create own themes and develop with each other as the game develops
- Decide for themselves what the rules of the games are,
- Choose own props and materials as well as environment and toys

Structured play and its benefits

- Offer educational value to the child
- Suggest play themes and help children to develop them
- Give certain challenges and outcomes are usually reached.
- Supply props and materials as well as environment and toys.

Both self-exploratory and structured play help educate children. The proposed project proposes to incorporate both into the building. Spaces and playgrounds where children learn through self-exploratory play - in addition to classrooms with a manipulable layout where children are educated by a teacher or teach themselves.

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Olifantsvlei Primary School

Studio 3 Architects
2006
Kliptown, Johannesburg

Fig. 18. View of Olifantsvlei Primary School

The purpose of the precedent study is to show that it is possible to integrate architecture into the daily lives of children and allow them to interact with the built environment. The structure of Olifantsvlei Primary School creates a fun educational space for children where children interact and play with the roof and walls among other designed spaces.

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Mzamba School

Studio Mzamba and Technical University of Munich
2014
Nomlacu, Eastern Cape

Fig. 19. A corridor in Mzamba School

The purpose of the precedent study is to investigate how different age-restricted accommodations are approached and resolved on a site.
Studio Mzamba is an ongoing project in the Eastern Cape, a region that has experienced only minor building improvements since 1994.

Olifantsvlei Primary School

Studio 3 Architects
2006
Kliptown, Johannesburg

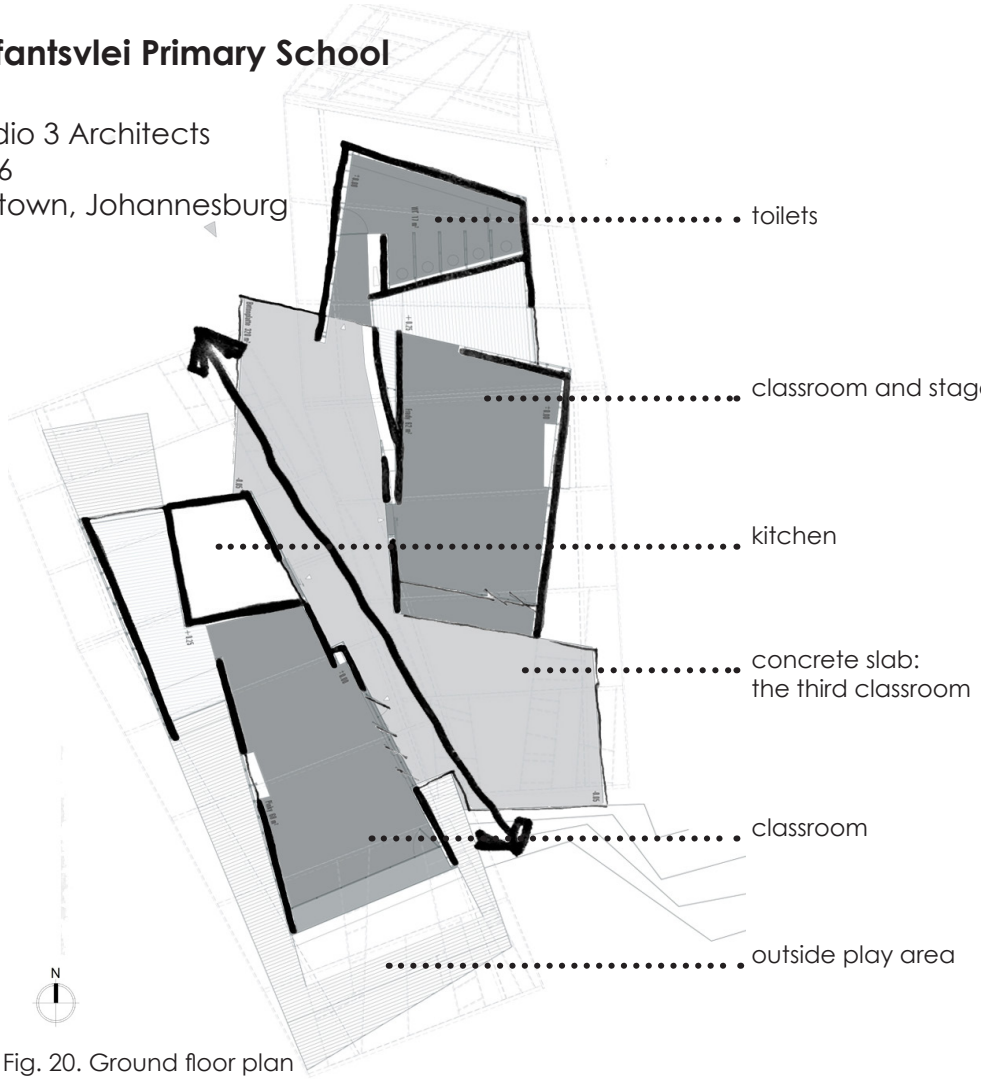


Fig. 20. Ground floor plan

The designers of Studio 3 and the teachers of Olifantsvlei Primary School worked together to realise new concepts of educational spaces through a child-centered design approach. The aim was also to provide more spaces where children could be active. The classes are designed to allow for centralised teaching. (Koigi, 2016: online)

Fig. 21. Perspective of the climbing wall

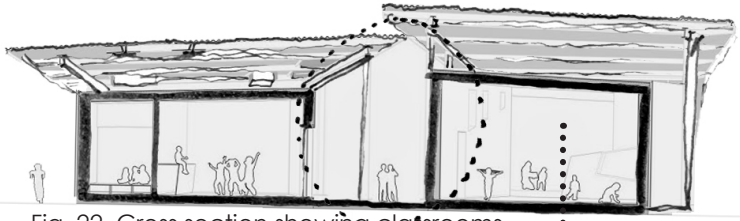


Fig. 22. Cross section showing classrooms

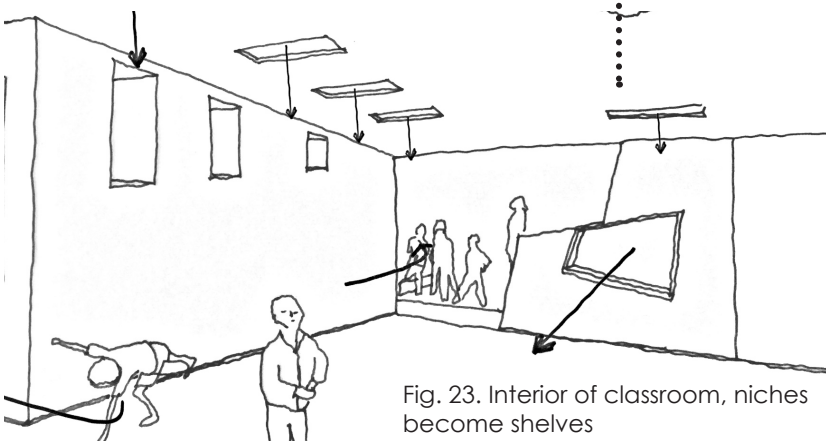


Fig. 23. Interior of classroom, niches become shelves

The school houses 80 children; it has two classrooms and an administrative area with an office, kitchen and restrooms. A corrugated iron roof slopes at a noticeable angle toward the ground and acts as a jungle gym for the children to play on.

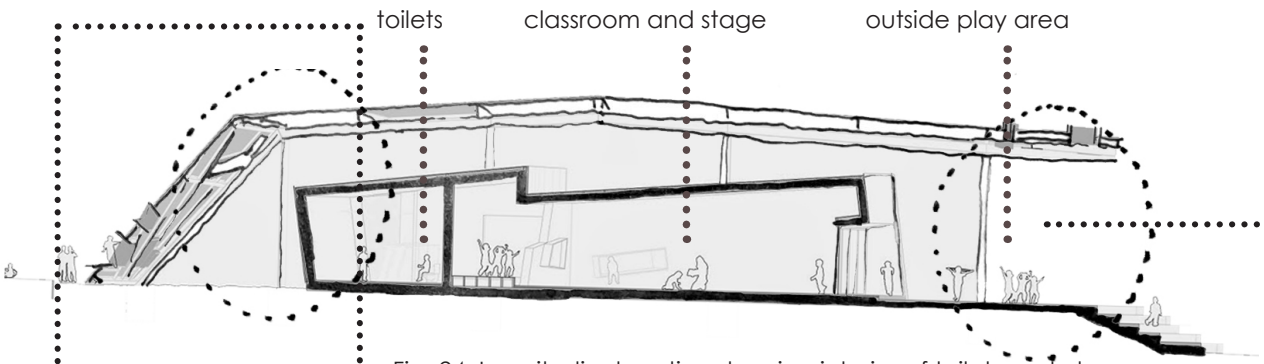


Fig. 24. Longitudinal section showing interior of toilets and classroom

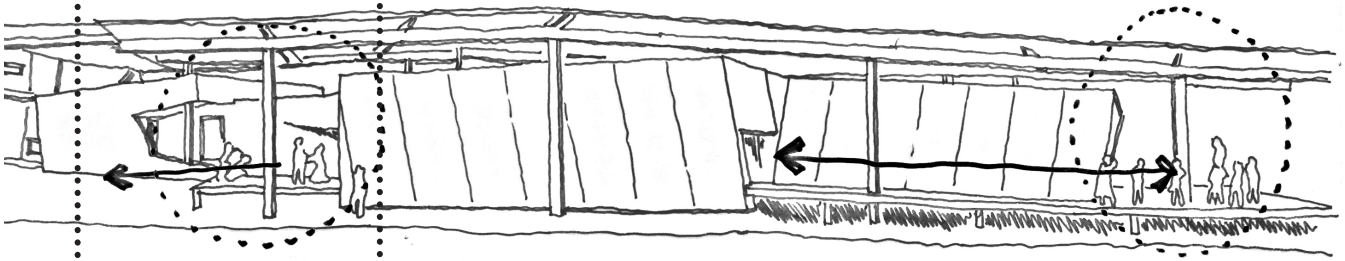


Fig. 25. Perspective showing circulation and spaces for interaction between student and building

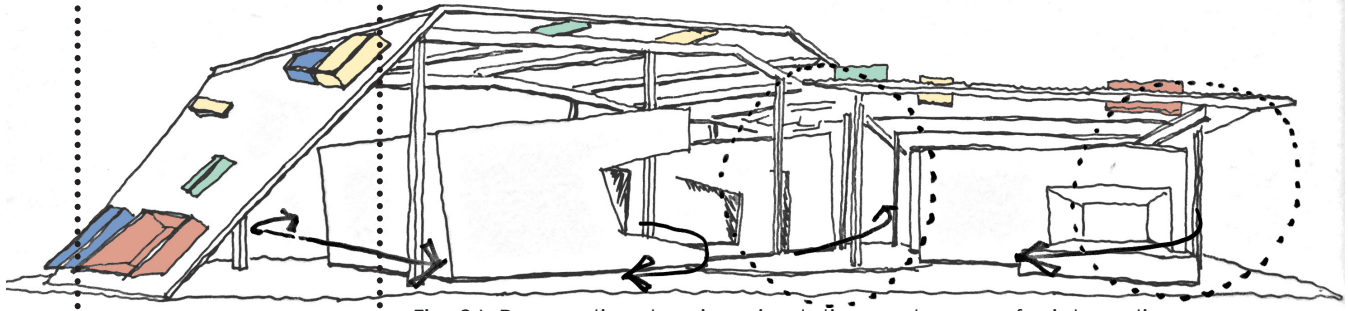


Fig. 26. Perspective showing circulation and spaces for interaction between student and building

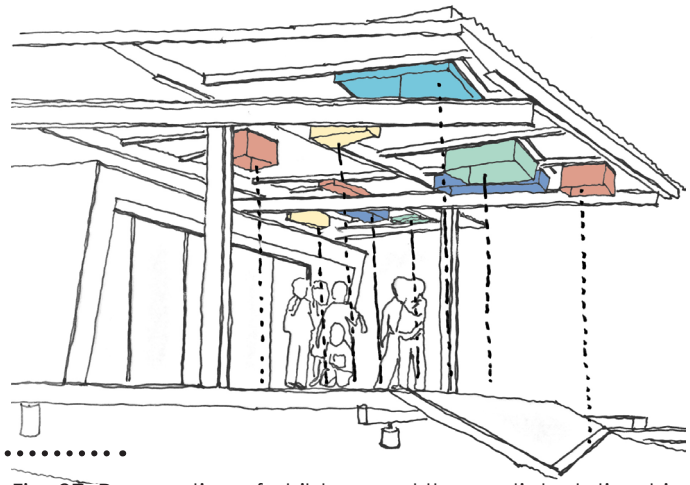


Fig. 27. Perspective of children and the spatial relationship in relation to the roof

The roof consists of a steel post-and-beam structure which is higher than the actual roof of the building; this reduces the high temperatures - creating a cooling effect during summer. The two separate roof structures unify and provide shading between the two classrooms. The shaded area indirectly acts as a third outdoor classroom. The openings in the roof add to the excitement and adventurous spirit in the children.

Materials include exposed steel frame and plywood boards, serving as tapered walls. These walls provide seating and niches for hiding, for children. The design stimulates children's sense of adventure and lets them interact with architecture. (Koigi, 2016: online)

Olifantsvlei Primary School shows that it is possible for architecture and play to merge into a functional but fun space. The walls, floors and roofs are composed in a way that allows for a school building to become a space that children enjoy.

Mzamba School

Studio Mzamba and Technical
University of Munich
2014
Nomlacu, Eastern Cape

Mzamba school accommodates children from the ages five to eleven. The administration building is situated next to parking for security. The pre-school is separated from the primary school and each has its own playground for. The art room is situated close to the primary school and it is often used as a classroom. (Dbxchange.eu, 2014: online)

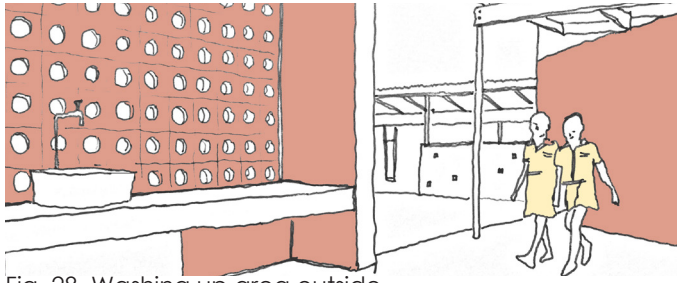


Fig. 28. Washing up area outside

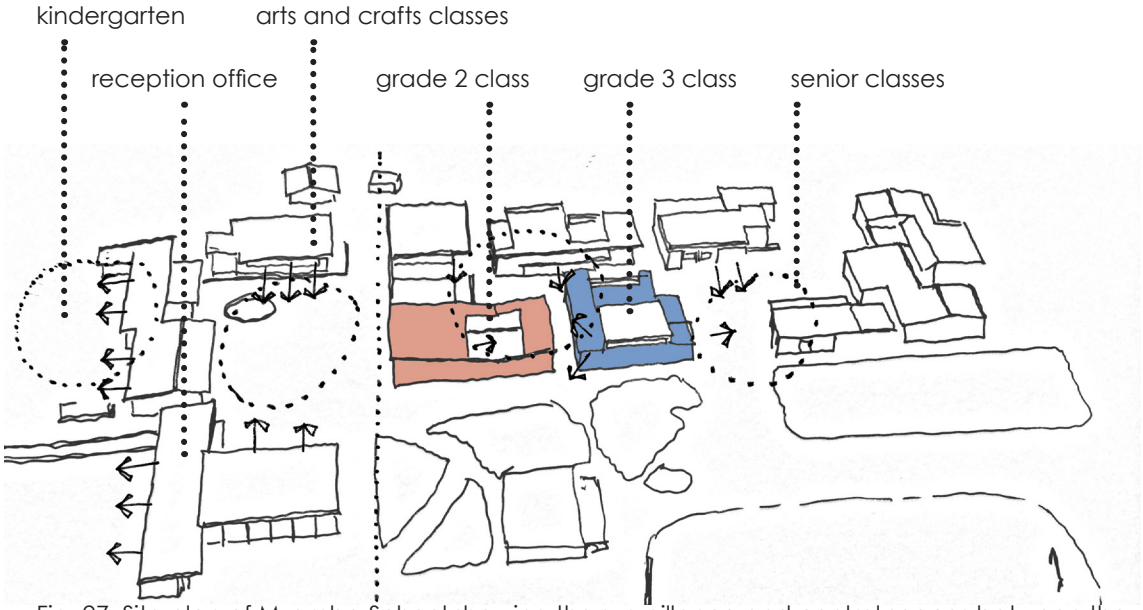


Fig. 27. Site plan of Mzamba School showing the surveillance and central spaces between the classes.

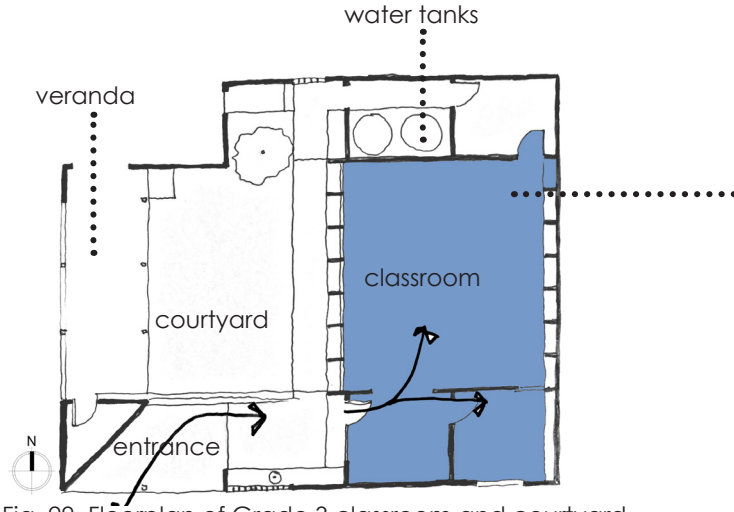


Fig. 29. Floorplan of Grade 3 classroom and courtyard

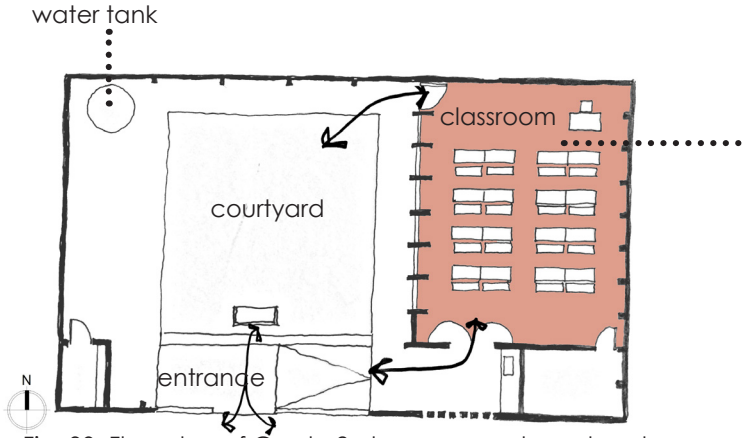


Fig. 30. Floorplan of Grade 2 classroom and courtyard

Each class consists of concrete masonry walls on a single slab foundation. The walls are plastered with local made earth plaster that seal and insulate the classes. The roof structure consists of steel columns and timber frames covered by corrugated metal sheets. The layout of the roof and orientation of the buildings are constructed to ensure cross ventilation. Some of the classes have courtyards next to them that complement their outdoor spaces. (Hudson, 2013: online)

The pre-school is placed closer to the main entrance. The grade one to grade four classes form a cluster which creates a shaded communal playground.

The different classes are orientated according to the spatial and climatic needs of the school. Strong winds are reduced and the courtyards are shaded. (Architectureindevelopment.org, 2013: online)

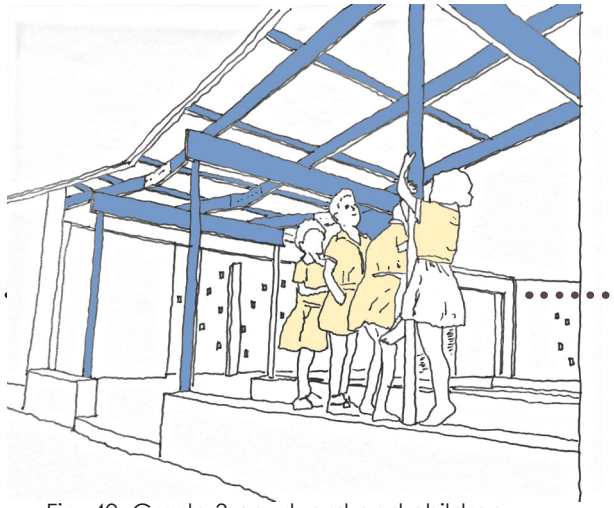


Fig. 40. Grade 3 courtyard and children interacting with the building

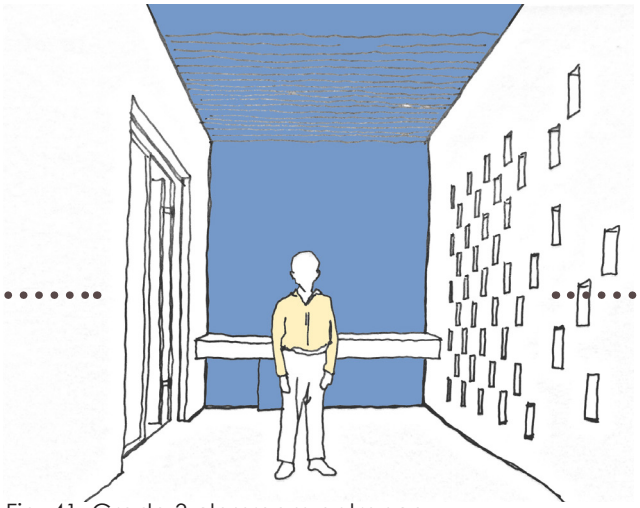


Fig. 41. Grade 3 classroom entrance

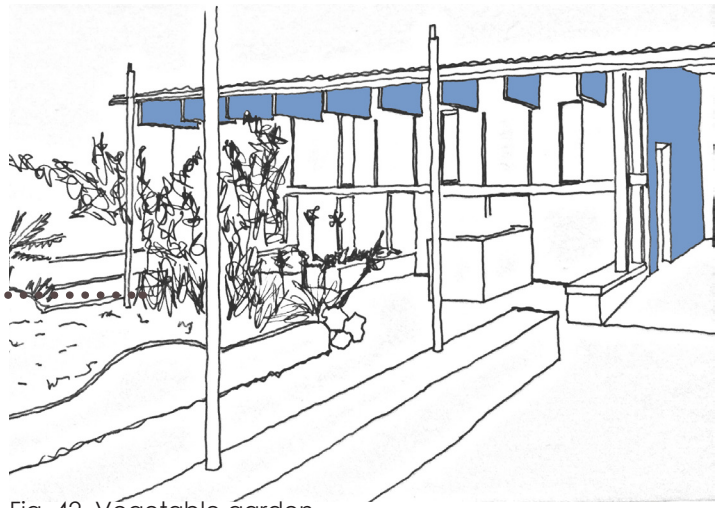


Fig. 42. Vegetable garden

Fig. 43. Grade 2 courtyard

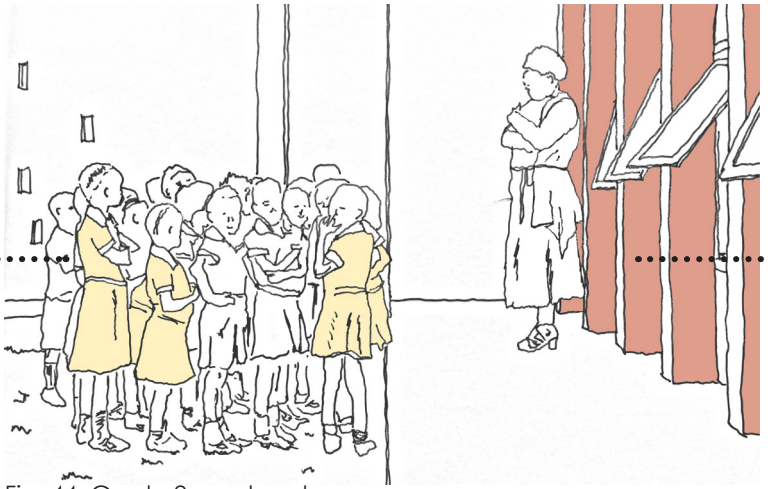


Fig. 44. Grade 2 courtyard

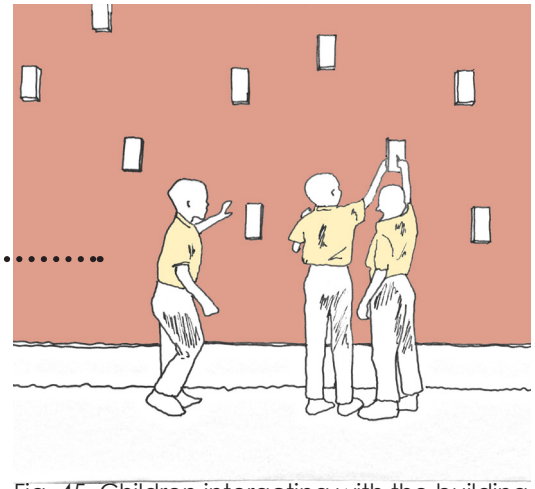


Fig. 45. Children interacting with the building

HOW DOES ONE BUILD A SPACE FOR A FIVE TO NINE YEAR OLD?
Case study

Montessori School

Herman Hertzberger, Manfred Kausen, Roos Eichhorn
1960 - 1966
Delft, The Netherlands

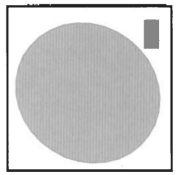


Fig. 46. Basic classroom

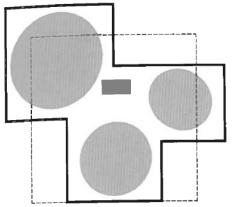


Fig. 47. Articulated classroom

The spatial conditions of a school are very important for childhood development and creativity. The spaces, in the Montesorri Schools by Herman Herzberger, are designed to fit the private and educational needs of children. They accommodate children in the same class who are busy with different activities. An articulated classroom (figure 47 above) prevents children from distracting each other whilst busy with separate activates. It also serves to accommodate different functions in one "space". The threshold between class and corridor and the corridor itself exceeds its original function and aims to be more than just that – these spaces become extended learning spaces for students. (Hertzberger, 2008: 24)

In an articulated classroom children can focus on the subject they are working on without being distracted by others. The classroom also serves to be more manipulable to accommodate specific activities the children are doing in class that day.

The articulated classrooms allow children and teachers to manage what happens in the spaces throughout a school day. This can lead to creative solutions on something even as small as a class layout.

Threshold between classroom and corridor

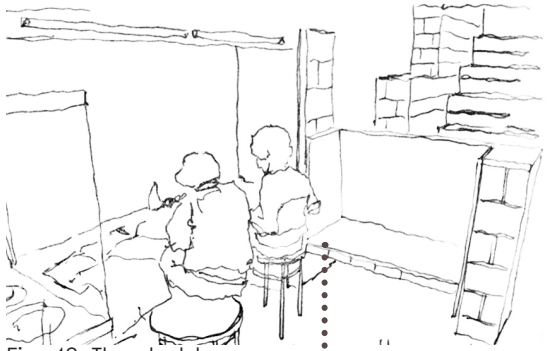


Fig. 48. Threshold between class and corridor

Creating a threshold between the classroom and the corridor allows for a used function in a space that is nomally seen as a "dead space".

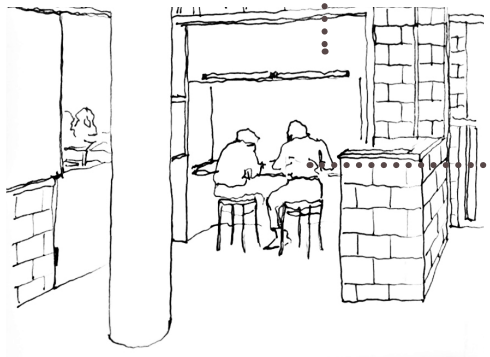


Fig. 49. Threshold between classroom and corridor where children are working

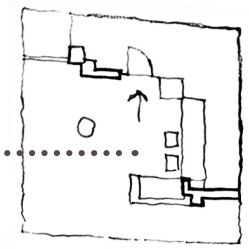


Fig. 50. As part of a plan

This is the space directly outside the class, a transition from corridor to class. Children sit directly outside the classroom a space which is more secluded than the corridor but still private. Here they can concentrate and work on tasks (different to what is happening in class) without being disturbed by others. In the threshold they are still part of the classroom and visible to the teacher. (Hertzberger, 2008: 48-51)

Classroom as a home base

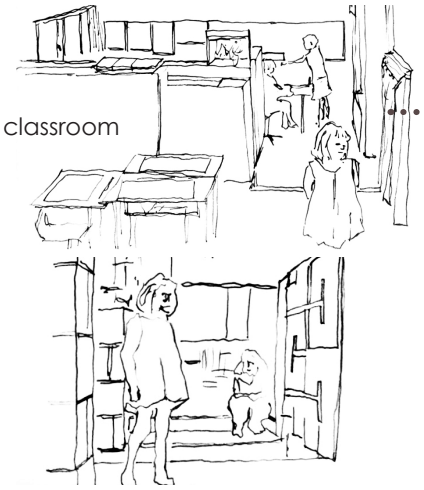
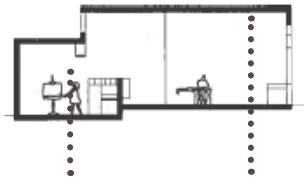


Fig. 51-52. The quiet space; children can work a bit more secluded

Fig. 53. Rough shell layout of articulated classroom



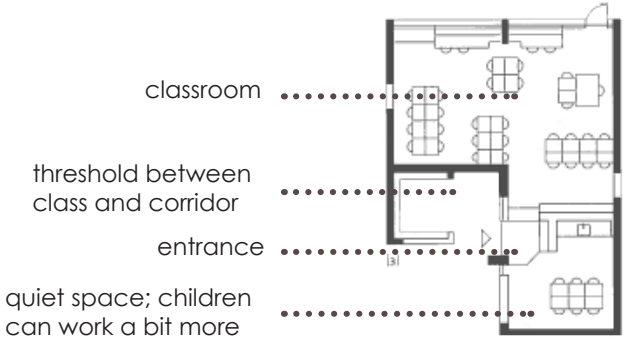


Fig. 54-55. Section and plan

The classroom becomes a home base. Traditionally classrooms belong to teachers and pupils are visitors. Herzberger argues that the class should be somewhere a child can return to.
A child who has a place to call his/her own and identifies with is a place where the child can learn and experiment. (Hertzberger, 2008: 32-48)

The floor plan works like a shell starting out with a public entrance. As one moves into the classroom, it becomes private and comfortable. Classes have display cases for children's work and therefor give each class a personal touch. Once the children are familiar with and proud of the space they become inhabitants of that space and care about what happens in there.

A classroom where children feel safe is a space where they may develop the courage to explore new subjects. In typical classrooms today, children may not always feel comfortable to explore new things because the classroom does not portray itself as a home base. Creating comfortable classrooms with elements like furniture and warm colour finshies create a welcoming and comforting environment for the child.

Corridor as a learning street

Fig. 56-57. Corridor occupied by children

The success of learning environments are dependent on the spaces children occupy. Sometimes classrooms are considered too small, and halls wasted. Corridors in schools are necessary but unproductive. In order to be more sustainable, corridors in the Montessori School in Delft are designed as streets for learning doubling as work zones. The information taught in classroomsgradually spreads to the rest of the school. (Hertzberger, 2008: 40-48)

Architecture is about experiencing the world – this happens with interactive situations that are stimulated by the physical environment.

In the ongoing design, element of Herzbers's Delft Montessori will be carried forward. The aim is to design a school that not only accommodates the needs of the children but creates spaces throughout the site that can be used by them.

DOCUMENT FRAMEWORK

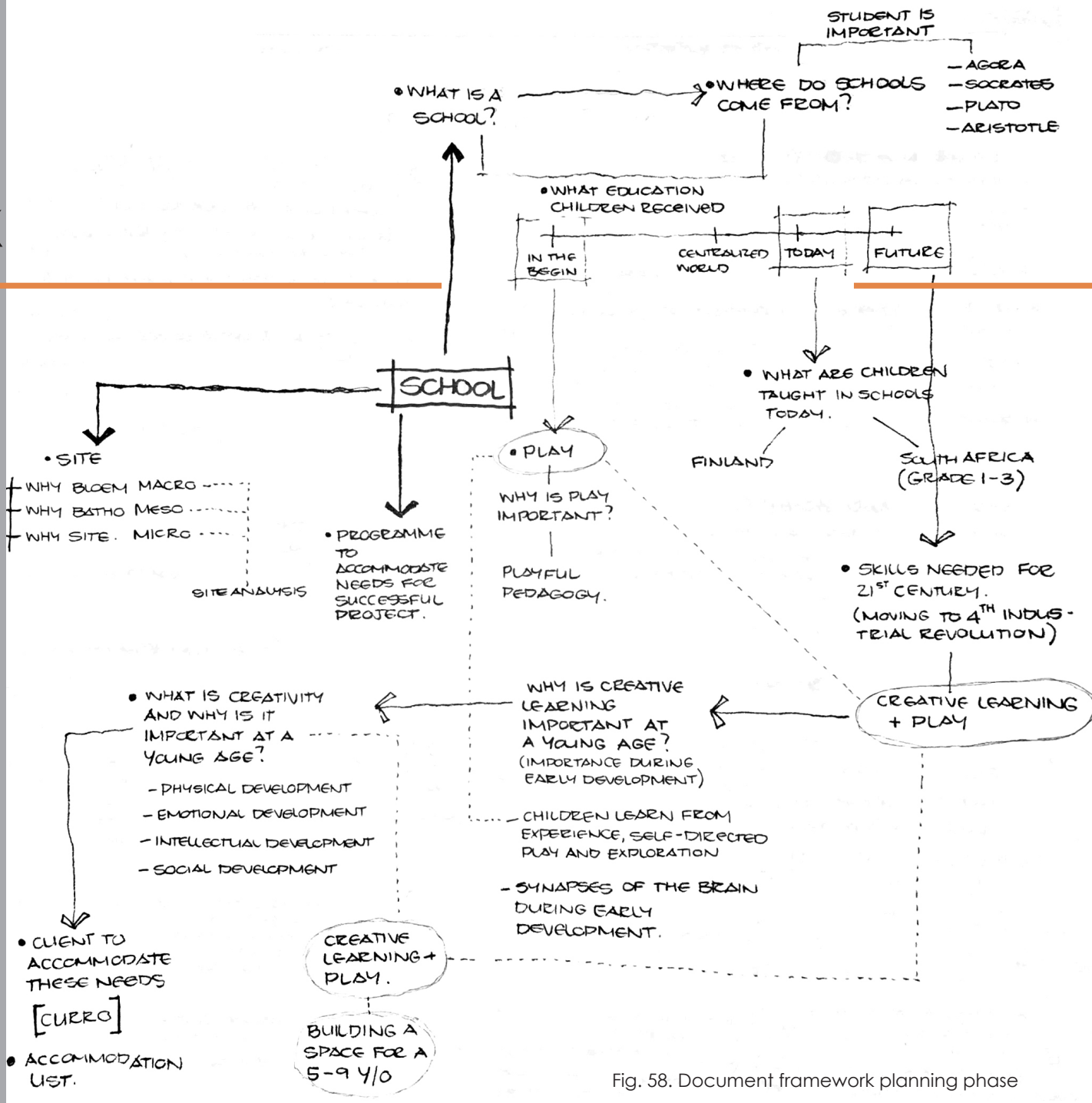


Fig. 58. Document framework planning phase

This project aims to investigate the role schools play in the early development of children to prepare them for their future. It focuses on the ability of architecture and design to create a new platform to develop children. The research and implementation is based on the idea that children can learn by interacting with their surrounded environment. Similar precedent and case studies which identify how children experience existing buildings and spaces, support the investigation.

Part 1 introduces one to the initial brief, the client and also familiarises one with the proposed site. Part 1 is divided into the architectural elements of typology, topology, morphology and tectonics. Part 2 discusses and investigates how the project is explored and grounded to develop from a conceptual idea into an architectural idea. Part 3 gives the proposed project a theoretical discourse. The data and theories that are investigated, help justify and strengthen the architectural approach concerning the conceptual idea. Part 4 shows the process and refined design. Part 5 the construction process with reference to architectural and structural solutions. Part 6 concludes the project and reflects on the year and the process.

Fig. 59. Children sitting on a bench at school

PART 1

1 INTRODUCING THE PROJECT

TYPOLOGY

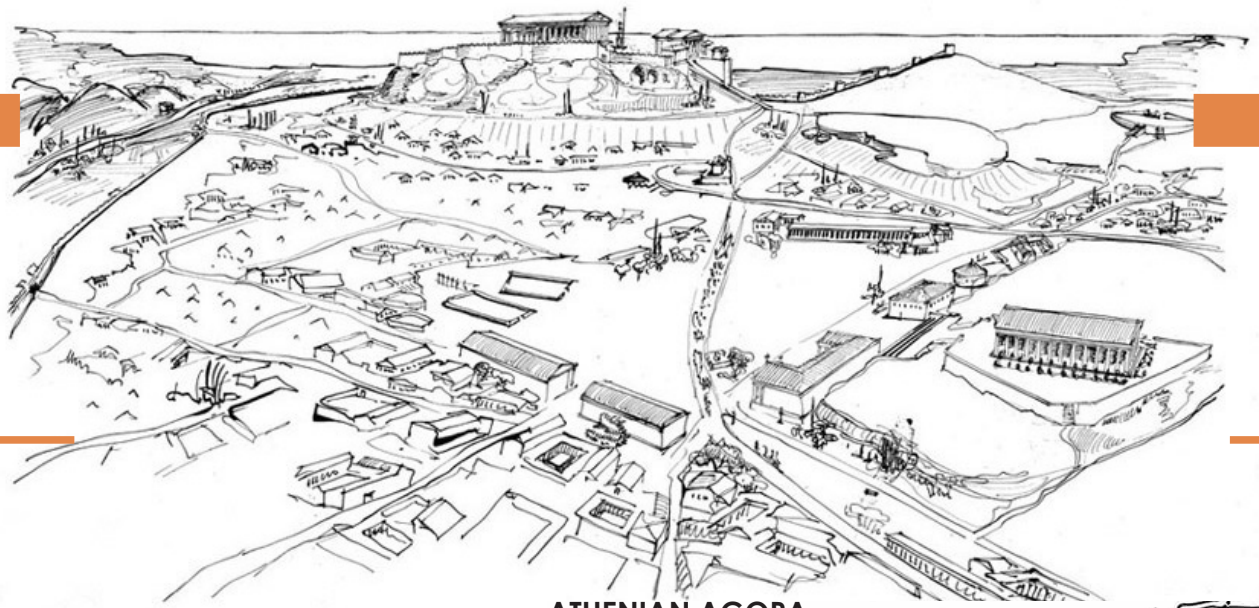
Typology is a classification into the identity of a concept or idea that already exists and lets the user identify and relate with the function, genre or style used. Typologies are able to change as new ideas and notions develop but a typology should always be relatable.
The typology of the proposed project is educational but through investigations, the general everyday educational typology has changed as the ideas around childhood education have changed.

Typological challenges:
There are two identified typological challenges that are addressed:

1. The typology of the **school itself**.
The project proposes to solve an educational precedent which has not been properly addressed in Batho, Bloemfontein yet.

2. The typology of the **existing building** on the proposed site, Batho.
The project aims to resolve the existing building from an industrial typology to an educational one whilst addressing the typology of the surrounding context. (The latter is explained in Topology)

THE ORIGIN OF *SCHOOL*



ATHENIAN AGORA

History of Typology of schools:
Research into the history of the typology of schools leads to an investigation into the physical archetype of the school. It provided guidance on where schools come from and where they are headed.

The ancient Greek Agora was one the first forms of centralized learning of which records exist. Evidence suggests that great minds gathered in a public space and shared ideas among each other. This form of education inspired philosophers like Socrates, Plato and Aristotle to keep on creating spaces where people could gather and share ideas, keeping centralized learning the norm. (Agathe.gr, n.d.: online)

In this model of education or learning, the student is just as important as the teacher and both are in dialogue with each other.

Knowledge was shared and not taught everyone was a student at some time. There was still a master who facilitated what was taught but it was mere guidance and not a demand, therefor the student was involved in what they would learn next. (Science, 2008: online)

Fig. 60. Sketch of the Greek Agora as a central space for gathering among citizens and philosophers in ancient Greece. As was the case in Athens circa 450 BCE.

In the next part Socrates, Plato and Aristotle and their influence on the development of education is discussed as a means of understanding where the first acknowledged ideas around education and school were captured in general western history.

SOCRATES

Fig. 61. Sketch of Socrates

Socrates disrupted the status quo when he questioned the norm of the Greek society of his time.

His views on knowledge and truth have influenced the way many people view learning.

- Preferred teaching through conversation.
- Believed in the concept of self-education and inner reflection.

On the topic of self-education Socrates believed:

Admitting ignorance

"I know that I am intelligent, because I know that I know nothing"

By admitting his ignorance, Socrates freed himself to question the status quo and the so-called common sense beliefs of his fellow Athenians.

Virtue of Self-knowledge

"The only good is knowledge and the only evil is ignorance."

Unless they examined their lives and gained wisdom, people would continue to make mistakes in ignorance.

Truth through questioning

To gain true knowledge the issue must be broken into smaller questions.

One recognizes contradictions and distills the truth.
(Selfmadescholar, 2010: online)

PLATO

STUDENT IS IMPORTANT

Each student has the opportunity to become the next leader in the group.
Plato facilitated learning did not necessarily lead it

Fig. 61. Sketch of Plato's Academy

Plato's Academy:

- The first institution of higher learning in the western world.
- Knowledge is not purely based on inner reflection but gained through the sharing of one's knowledge with others.
- Based on the belief that people can also be educated through observation of others (Thoughtco, 2018: online)

ARISTOTLE

STUDENT IS IMPORTANT

The school was also student run. The students elected a new student administrator to work with the school leadership every ten days, allowing all the students to become involved in turn.

Aristotle taught regularly in a public space (a gymnasium) and later founded the school called the The Lyceum. (Amadio, A., Kenny, A, (2019): online)

Fig. 62. Sketch of Aristotle's Lyceum

The Lyceum:

- Open to the public and the students who attended were Peripatetic.
- Aristotle walked around as he taught and believed in cooperative research.
- As part of their studies, his students were assigned historic and scientific projects that contributed to Aristotle's library. So in effect contributing to the base of knowledge, expanding the knowledge base for the future.

Fig. 63. Banksy graffiti art of children playing

A HISTORY OF THE SCHOOL

HOW EDUCATION FOR CHILDREN HAS CHANGED

According to research children have a strong instinct to explore and play. Historically, children were free to explore their surroundings and learn through play. Children learnt the lessons that adults found important through experience rather than repetition. Children learned what they needed to know when they were ready to know it.

With the rise of the agricultural and industrial revolutions, children were educated to be good laborers.

As people evolved and the world became centralized, children's free pursuit of their own interests became less important and the will of adults and what they believed children needed to know more dominant. Children needed to help raise baby siblings, do labour on the farm. Finding and capturing food was not a fun activity anymore, planting and plowing became a work. Playing was done in their own time.

The adult no longer remembered how he learned through play. His world became economic and survival was no longer based on finding food growing in proximity but rather producing it in order to exchange with others.

Play is unimportant once one becomes an adult, therefore adults do not deem play as important as they once did.

A HISTORY OF THE SCHOOL

HOW EDUCATION FOR CHILDREN HAS CHANGED - A TIME LINE

Information on *How education for children has changed - a time line*, derived from *Psychology Today*.(Gray, P, 2008: online)

Historically

Education:
Strong need to play and explore Instinct served as education

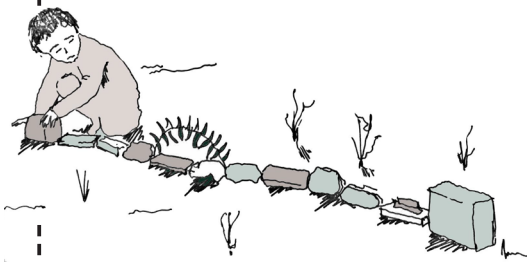


Fig. 64. Sketch of self-directed play and exploration

Children learnt through self-directed play and exploration.
Natural way of learning was through freedom

Hunter-Gatherer

Education:
Craft weapons, tracking animals, knowledge of plants and animals
Creative ways of finding and capturing food

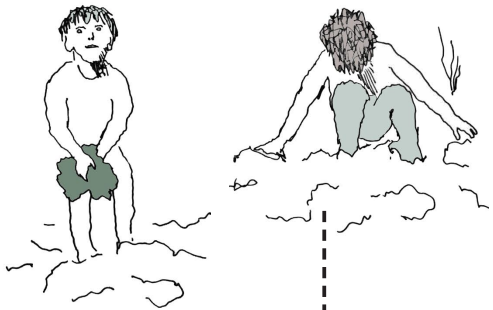


Fig. 65-66. Sketches of hunter-gatherer child, gathering leaves

Life of hunter-gatherer:
Skill-intensive
Knowledge-intensive
Not labour intensive

Rise in Agriculture

Education:
Changed from self-directed play and the pursuit of their own interests to serving and helping the family.

Fig. 67. Sketch of child watering plants

Permanent dwellings
Produced more food. Had more children.
Labour intensive
Unskilled and repetitive labour – done by children.
Education after rise in Agriculture:
Harvest, plant, plow, cultivate, tend flocks
Grow and gather food

Growth in Agriculture

Education:
Obedience
Appreciation of masters
Suppression of will

Fig. 68. Sketch of child planting seeds

Rise in agriculture - ownership of land (status differences)
Poor people and children were bound to the wealthy.
Rebellious spirit is punishable

Industrial Rise

Education:
Punctuality and following orders
Tolerance of long hours
Minimal need for skills such as reading and writing

Fig. 69. Sketch of child hitting wood as if in the Industrial Rise

Children are "moved" from fields to dark, crowded, dirty factories.
(in 19th century England; laws passed limiting child labour)

Automated Industries

Education:
Inculcation - teaching through repetition.
Read and understand scripture because it was necessary for salvation.

People realized that childhood should be a time for learning – schools are places for learning.
Many had their own ideas of what lessons children should learn to become competent adults.
Reformers saw school as a place for protecting children
Taught children moral and intellectual lessons and discipline needed for development
Turned children into Puritans.

Centralised World

Education:
Glories and achievements of fatherland
Moral virtues of nations' founders and leaders
Defend nation from evil forces. Like the rise of nationalism in South Africa.

Fig. 70. Image portraying children and patriotism. Photo of a photo taken by the author in France, Normandy

National leaders saw schooling as means of creating good patriots
Educating children became a means of implanting truths and ways of thinking into minds through forced repetition and testing of memory. The brute forces previously used on the farms and in the factories were brought into schools to make children learn.
Play had become the enemy for learning. Breaks during classes were to give children the expected time to blow off steam and then to sit still in class.
So much time has passed that adults forgot that children had their own will and the ones who showed willfulness, had it beaten out of them – it had no value anymore.
Nobody believed that children, left to their own intrigue, would learn the lessons that adults deemed to be important.

Today

Specific lessons and educational methods are still determined by professional educators. Education is still a form of inculcation and testing of memory..

Fig. 71. Sketch of child sitting outside a school

WHAT ARE SCHOOLS TODAY

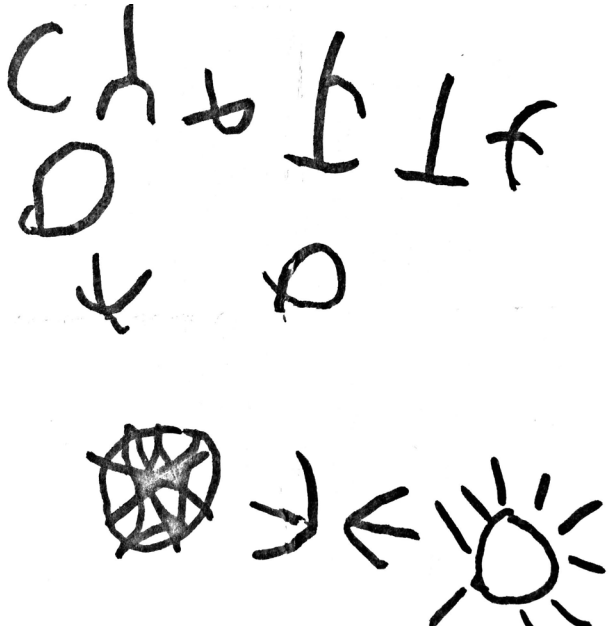
Information on what children are taught today, derived from *Very well family* (Lee, 2019: online)

WHAT ARE CHILDREN TAUGHT TODAY

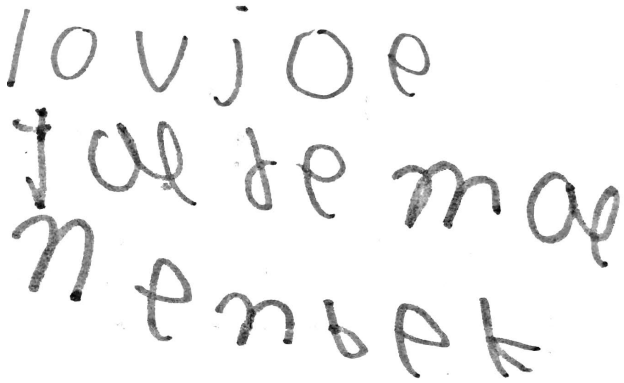
KINDERGARTEN
GRADE RR

GENERAL	LANGUAGE	MATHS
Children learn about the world - through play. - by learning to socialise with other children - through texture and sizes - by becoming familiar with letters shapes and clours - by building a relationship with the concept of learning.	-All activities done in class help to develop thoughts and communication skills. -Books expose children to new vocabulary – this allows them to talk about what they read. -Children start to write their own names and understand shapes -Creativity is encouraged. -Children start to understand that every scribble or printed word carries a message.	Use numbers every day - teachers make children comfortable familiar with counting and numbers. - Count objects or their friends around a table. -Work with geometric shapes through art projects. - Compare sizes of hands and feet. - Group objects; how many children wear mittens and how many wear gloves?

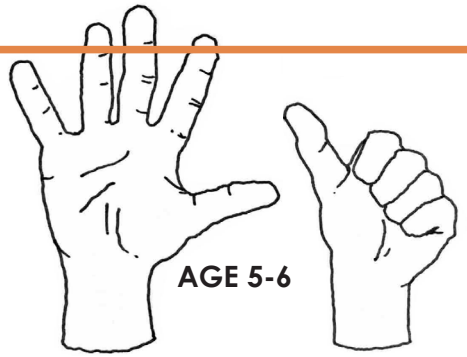
Skills in subjects that children learn in Grade RR:



"Children start to write their own names"
Fig. 71. A post-it note from a 5 year old trying to write her own name (Charlotte).



"understand what letters mean - start reading words"
Fig. 72. A post-it note from a 7 year old Dutch boy trying to write a message in English (Love you to the moon and back).



KINDERGARTEN
GRADE R

Skills in subjects that children learn in Grade R:

GENERAL

By this time, children have a deeper interest in understanding how the world works.
Do projects that encourage them to investigate and feed this interest

- Make life-size tracings of themselves when they learn about the body.
- Study their favourite pets.

More formal than pre-school but still stimulates child's curiosity.
Children become comfortable with working in a classroom setting.

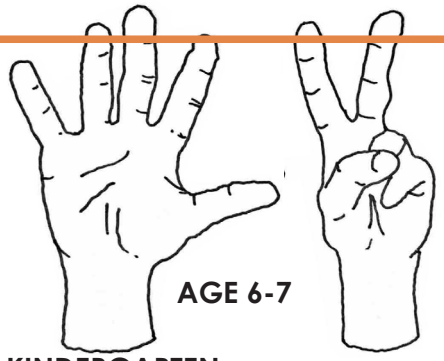
LANGUAGE

- Children notice that words are everywhere
- Create their own words and rhymes.
- Learn that letters and sounds go together to form words – identify alphabet letters.

Fig. 73. Sketch of child interpreting a story from a book

MATHS

- Work with larger sets of numbers
- Use physical items to solve adding and subtraction.
- Learn about the concept of time with clocks and calendars – don't
- Children do not read time yet but understand that the one measures longer amounts of time.



KINDERGARTEN
GRADE 1

Skills in subjects that children learn in Grade 1:

GENERAL

Children can now progress to the "big" school.

- Children play outside without supervision of own teacher.
- Use social skills in more mature ways.
- Start to understand what letters and numbers mean – start reading words.

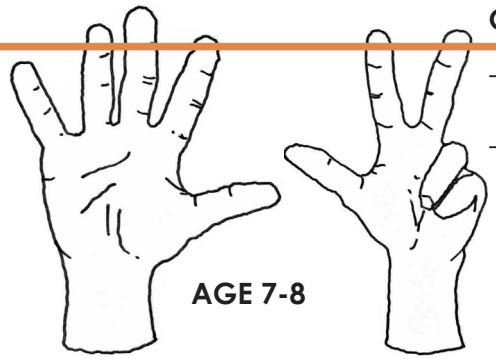
LANGUAGE

- Learn to read words and sentences
- Listen to sounds in words and discover parts of written language; hat, cat, sat

Start to write sentences of their own.

MATHS

- Are introduced to time and money and numbers larger than they can count.
- Learn to count in other ways using groupings 2's, 5's, 10's.
- Work with three-dimensional geometric shapes.



KINDERGARTEN
GRADE 2

Skills in subjects that children learn in Grade 2:

GENERAL

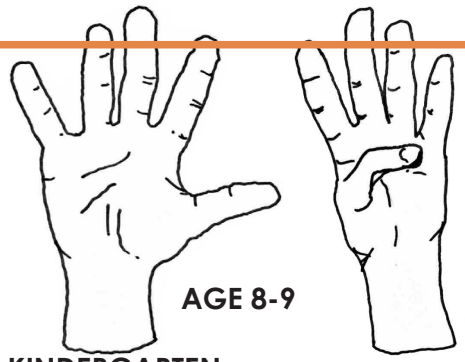
- Apply the knowledge and skills they learned in earlier years.
- Develop their analytical abilities further.

LANGUAGE

- Read and write on a basic level.
- Read more to improve skills and become more fluent.
- Write more sentences, may use more punctuation and the correct spelling of words they frequently use or read.

MATHS

- Order group numbers.
- Add and subtract two-digit numbers.
- Times table up to number five.



KINDERGARTEN
GRADE 3

Skills in subjects that children learn in Grade 3:

GENERAL

- Take on more complicated assignments.
- Work more independently.

LANGUAGE

- Know to look for clues in books when they don't understand something.
- Are introduced to different genres of reading e.g. newspapers or magazines or books.
- Learn organisational methods for complex writing assignments.

MATHS

- Start with multiplication and division.
- Do more maths work on paper rather than in their heads.
- Look at odd and even numbers and their patterns.

TYPOLOGY OF THE EXISTING BUILDING

This section investigates only the typology of the existing building, this is not a site analysis (refer to page 41 for the site analysis). The typology is investigated for the purpose of understanding, within a theoretical context, how the typology of the building may influence future decisions regarding accommodation, design and the type of spaces the building will have. The building is situated in Batho, Bloemfontein.

Fig. 74-76. General diagram om the location of the site. (A proper site analysis is done on page 41)

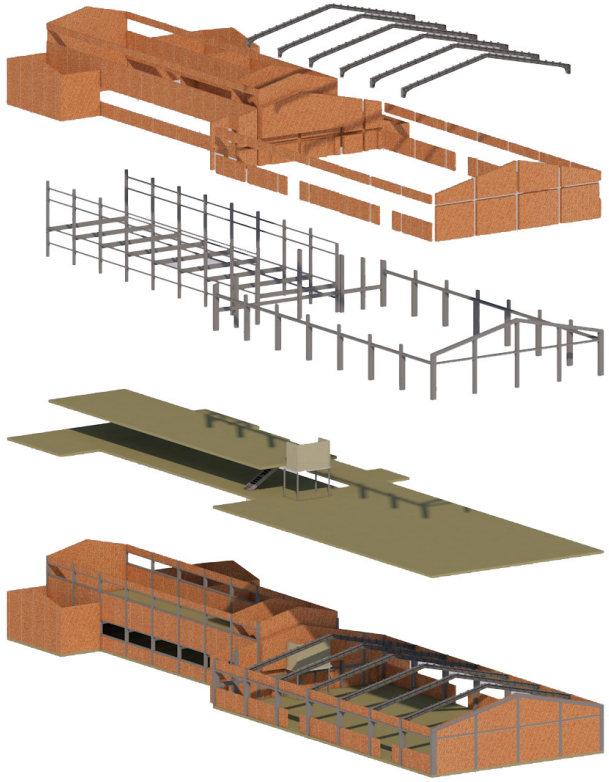


Fig. 77. Extrapolation of existing building (South view)

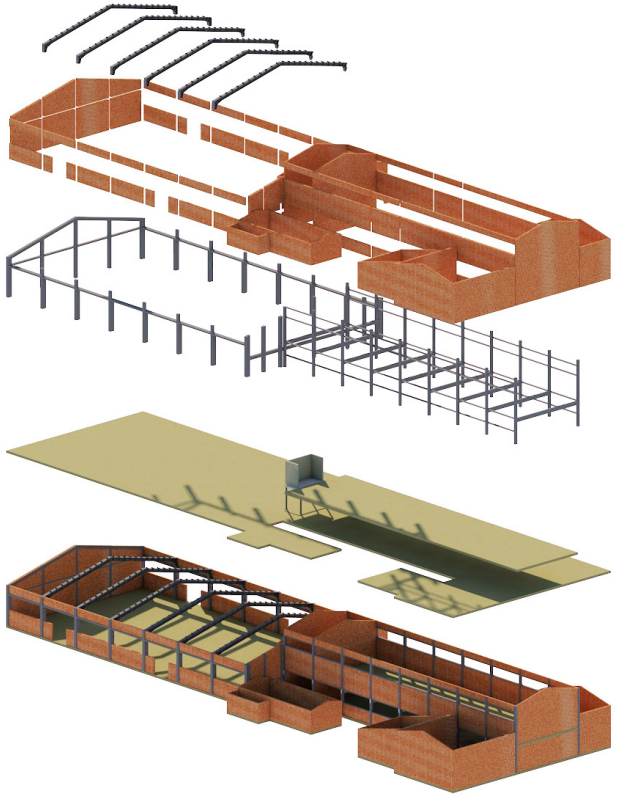


Fig. 78. Extrapolation of existing building (North view)

TYPOLOGY OF THE EXISTING BUILDING

Fig. 79. View of Proposed site (Google Earth, 2019: online)

The proposed building on the site has the look and feel of an industrial building. Industrial buildings usually need space for large-scale equipment and therefore need wide-open internal spaces and a roof that span larger distances.

Using the large open spaces in the existing industrial building gives more flexibility for design. The existing building suites the spatial requirements for the proposed accommodation and becomes helpful to the design needs. This is why I propose this site and specific building

The typology of the building does not relate to the existing typology of Batho in both scale and material values.

Batho mostly consists of small scale houses in close proximity to each other. The existing building is a large empty industrial building.


Fig. 80. View of Batho houses as seen from site.


Fig. 81. Existing roof structure.

The prefabricated steel structure for the roof of the portal frame building is connected to large concrete columns; this allows for the large open internal open space. Brick infill walls form the envelope of the building.

Fig. 82. Brick infill

Fig. 83-85. Portal frames

Fig. 86. Elevation of existing building.

The second building, connected to the portal frame building, shares no structural connections. This building also consists of large concrete columns reaching up to 10m high - brick infill forms the envelope. The second floor of this building has no longer has a roof structure. originally it possible supported asteel pitched roof.

Fig 87. Second floor with no existing roof or roof structure.

Fig. 88. Brick infill and concrete columns.

CLIENT

Curro is an independent school provider in Southern Africa, which develops children from the ages of three months up to Grade 12. It applies the necessary 21st century educational methodologies in classrooms and therefor proposes a balanced educational space for children. Curro, being an independent school, follows the written curriculum given by the state, but each specific school has the opportunity to offer children something that will add to their long-term education – e.g. Windhoek Gymnasium (Curro) started teaching in German from 2018.

Other than focussing on children's intellectual well-being, Curro also focusses on developing children's physical, emotional and social well-being. The pre-schools provide a framework of education that contains both self-exploratory and adult-facilitated learning in order to lay down the foundation before children go to primary school.

CURRO Academy

The proposed Curro school model used in this project is the *Curro Academy School*.
CURRO ACADEMY SCHOOLS accommodate learners from age five years (Grade RR) to Grade 12 and some Academy Schools include a Curro Castle and can accommodate pre-schoolers. With a maximum class size of 35 learners, Academy Schools are co-ed, single-medium (English) and write the National Senior Certificate (NSC) examination at the end of Grade 12. This cost-sensitive model ensures the lowest possible school fees without compromising academic standards and the excellent Curro curriculum. Focussed sports and cultural activities are offered.

Only the foundation phase (Grade R – Grade 3) will be used in this project.
The children from the adjacent crèche (next to the existing building) can graduate to this school as well as any other child in Batho who requires education. After grade 3, there are a number of orimary schools in the area that cab provide further education.

USERS

The primary users of the proposed project are:
- Children between the ages of 5 and 9 years old (Grade RR – Grade 3) who are fit to go to school.
- The teachers who educate the children.
- Cleaning staff, librarians, groundskeepers, security, office administrators, therapists, receptionists

The secondary users of the proposed project are the public and residents of Batho.

The project aims to be sustainable towards the public by moving away from the notion that schools are exclusive.
This will help the community to engage with the project. It will also contribute to its upkeep and protection amongst its users because ownership is crucial to ensure longevity of a building project.

SCHOOL
(PRIMARY USERS)

Children Classrooms and Play spaces

Teachers

Private Library (Child)

Private Soccer Field

THERAPY
(PRIMARY USERS)

Therapy (Child)

PUBLIC
(SECONDARY USERS)

Additional weekend Public Market after school hours

Public Picnic Areas after school hours

Public Library (Adult)

same space

Public Library (Child) after school hours

same space

Public Soccer Field after school hours

Fig 89-99Different users of the building.

TOPOLOGY

INTRODUCTION TO THE SITE

AN ANALYSIS OF THE MACRO, MESO AND MICRO CONTEXT

This chapter explores the proposed site's location and surrounding context. It is important to do a thorough investigation of the topology in order to understand and sensitively respond to the context and users.

The topology of the proposed site is that of an informal settlement, yet due to its age has formal elements. Batho is Bloemfontein's oldest township (see fig. 126). It has a structured layout with three main roads running through the area (see fig. 122.). The well looked-after red brick houses (built according to architectural plans) are still visible today. This British inspired residences lends Batho a unique identity one that has helped the Batho residents to develop a sense of pride in their community. This pride is also visible in the gardens that many of the residents have laid out in their erven.

The topological challenge is for the proposed project to relate to its surrounding context by engaging with the context the design can in turn be a space for the users to relate to. An investigation into the topology of Batho is done in order to understand how the site and building should be addressed. The language of the proposed project has to be familiar to the context in order to strengthen its identity with Batho and its residents.

Through the collection of qualitative and quantitative information showed, in the next part of the document, relating to the site and area, it became possible to describe the site in more depth and engage with the character and experiential qualities.

Bloemfontein | Batho | Proposed Site

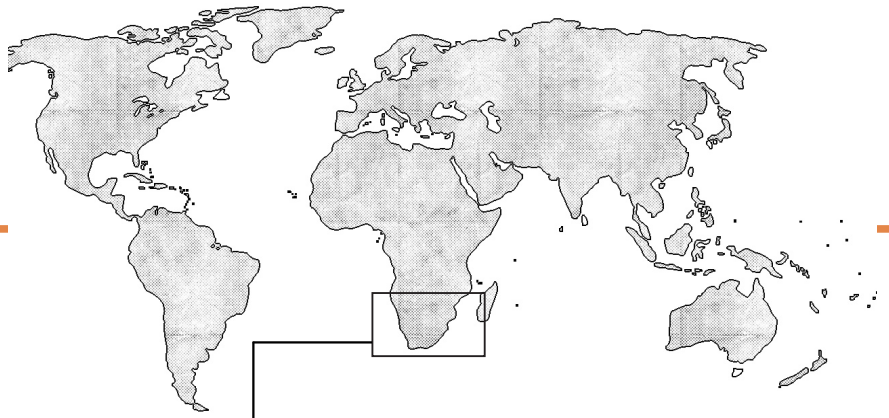


Image South Africa indicating Free State

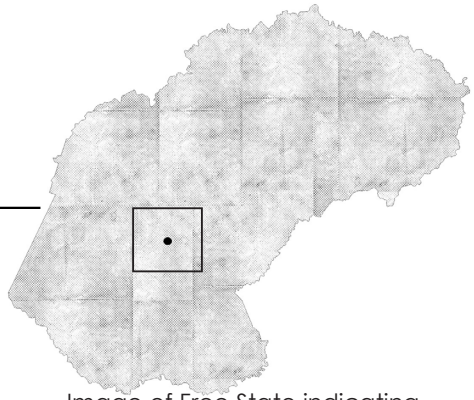


Image of Free State indicating Bloemfontein

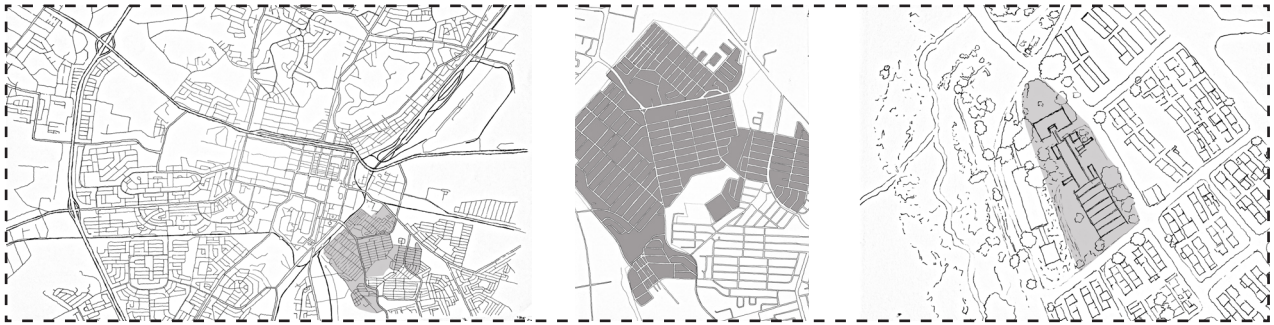


Fig. 100-102. Site location in relation to Free State and South Africa.

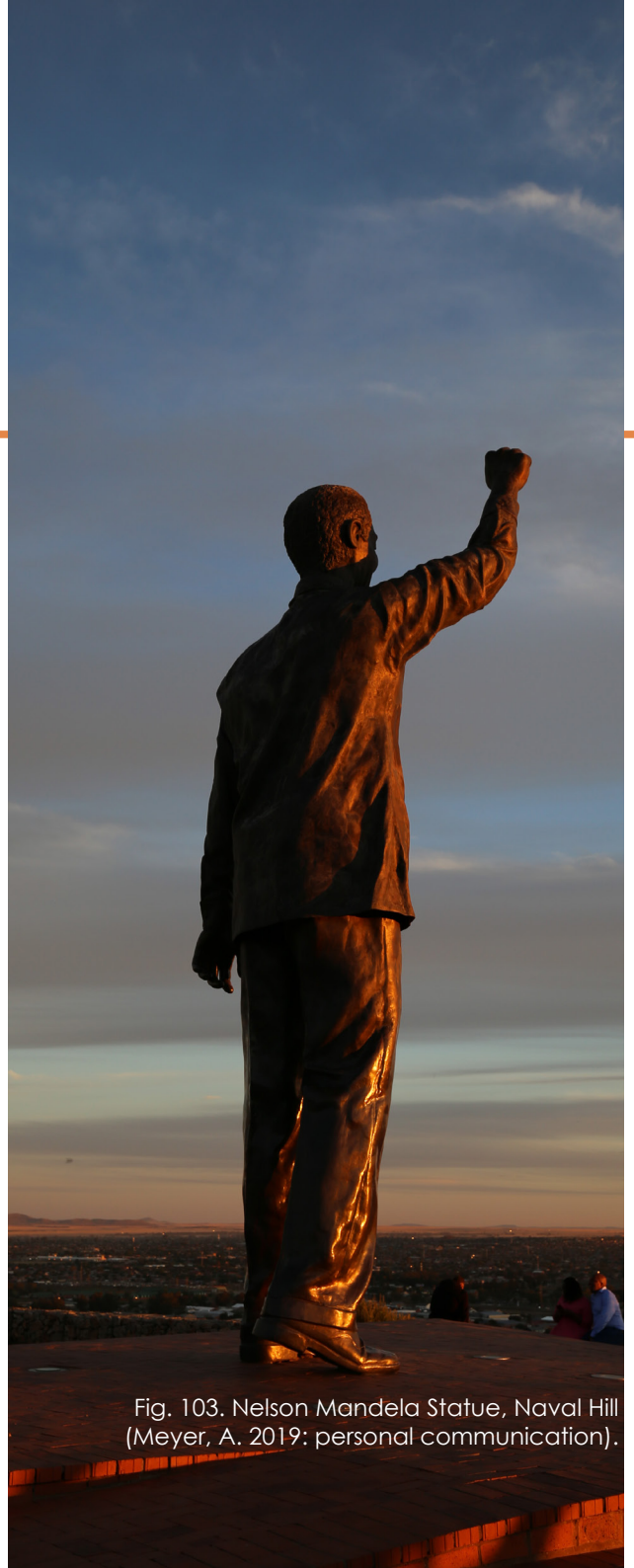


Fig. 103. Nelson Mandela Statue, Naval Hill (Meyer, A. 2019: personal communication).

MAPPING THE MACRO SITE

Fig. 104. Photo of Bloemfontein topography (Meyer, A. 2019: personal communication)

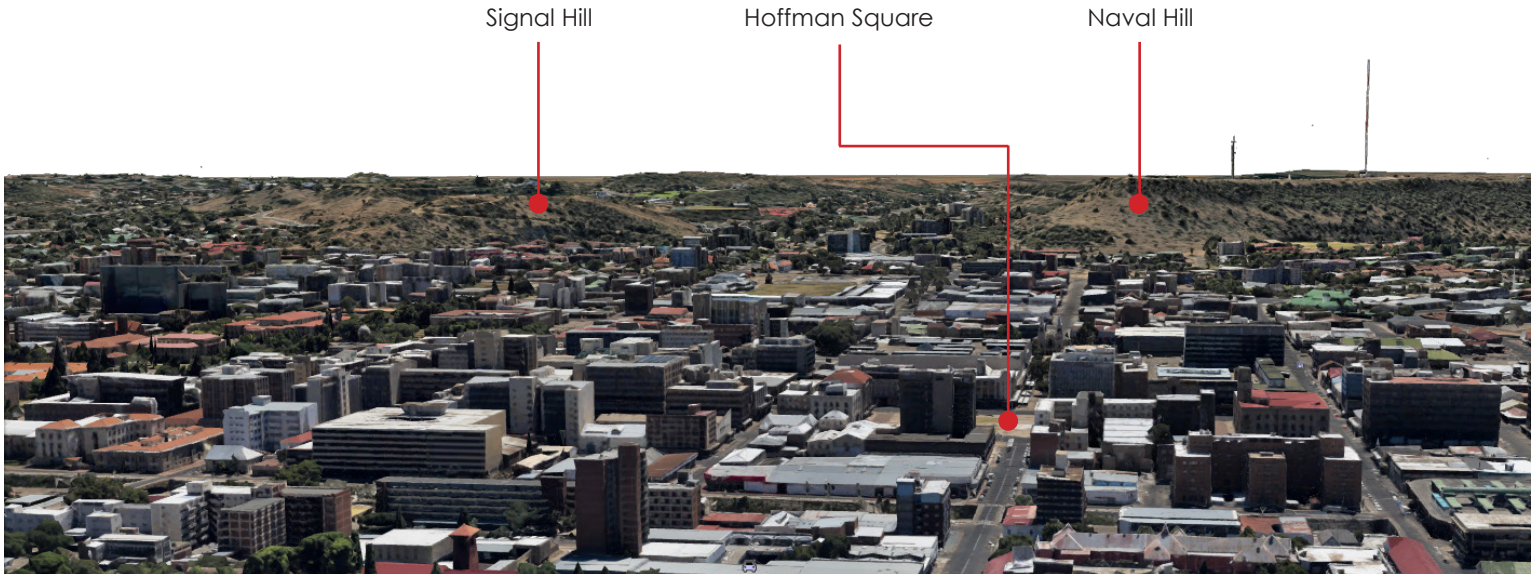
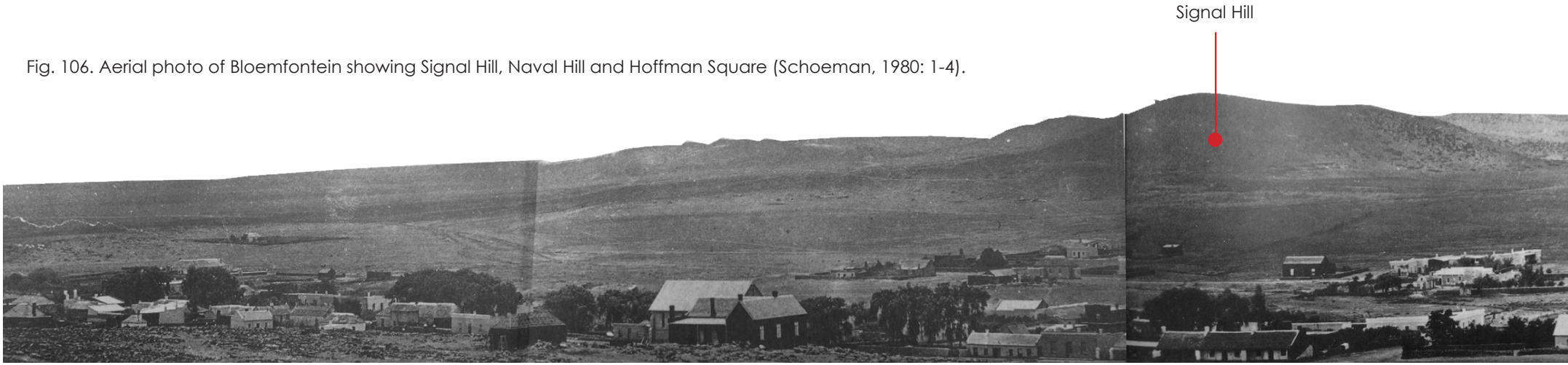


Fig. 105. Aerial photo of Bloemfontein showing Signal Hill, Naval Hill and Hoffman Square (Google earth, 2019: online).

Fig. 106. Aerial photo of Bloemfontein showing Signal Hill, Naval Hill and Hoffman Square (Schoeman, 1980: 1-4).



Bloemfontein is geographically situated at the centre of South Africa. It forms part of the Mangaung Municipality and is the capital of the Free State. Bloemfontein was established in 1846(Bain, 1850: Map) mainly around the market square which is known as Hoffman Square today. The town's topography was affected by three hills (Naval Hill, Signal Hill and Fort Hill) which created a natural barrier to drain water (Auret, 2016: 196). The water built up and fed the Bloemfontein Fountain which is why the streets of the city centre are orientated the way they are today (Auret, 2016: 197).
The ANC was founded in Bloemfontein in 1912 in the Waaihoek Township but was relocated to Batho, the first planned black township in Mangaung.

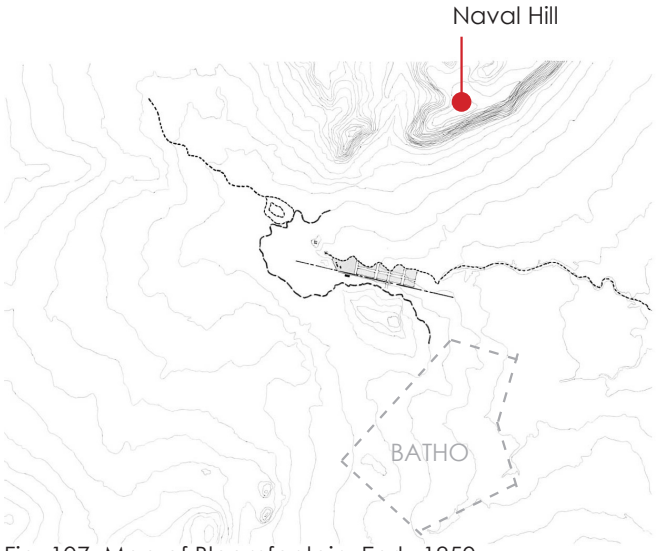


Fig. 107. Map of Bloemfontein. Early 1850

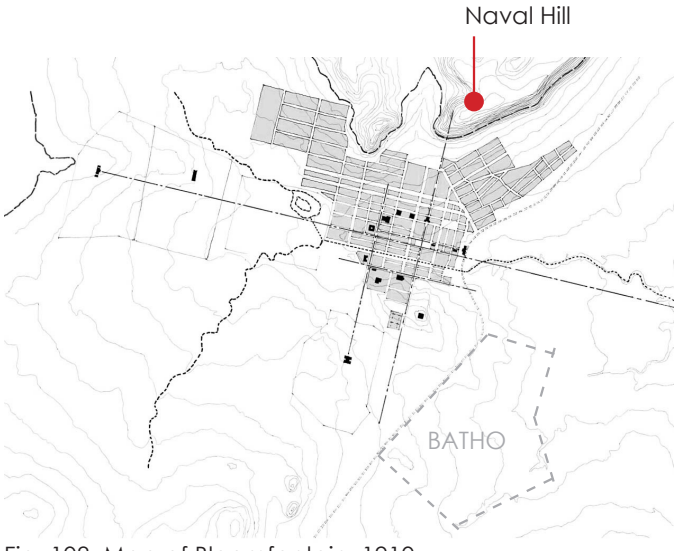
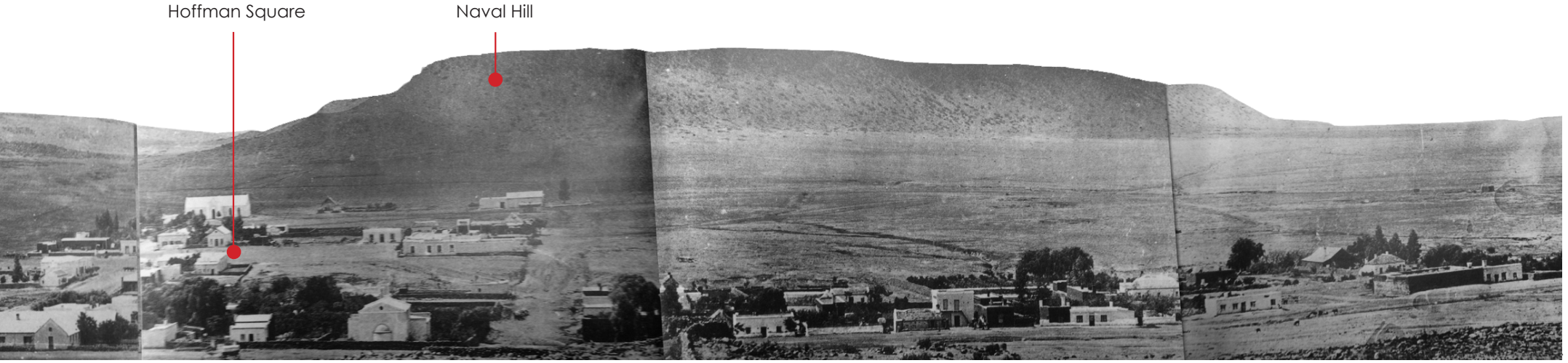


Fig. 108. Map of Bloemfontein. 1910

Fig. 109. Map of Bloemfontein. 1986



LOCATION OF THE SITE

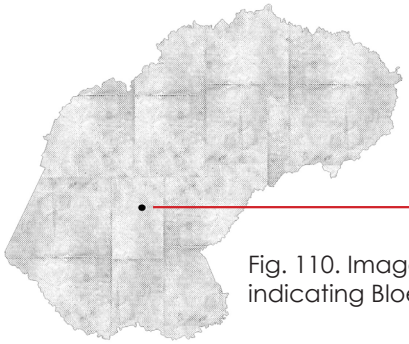


Fig. 110. Image of Free State indicating Bloemfontein

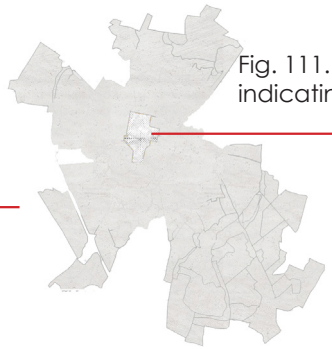


Fig. 111. Image of Bloemfontein indicating city centre

MAPPING MACRO SITE
BLOEMFONTEIN

1. Bloemfontein CBD
2. Naval Hill
3. Hoffman Square
4. University of the Free State
5. Hertzog Square
6. First Raadsaal Museum
7. Railway Station
8. Cooling towers and Power station
9. N1 Highway
10. Oliewenhuis
11. Loch Logan Waterfront
12. Grey College

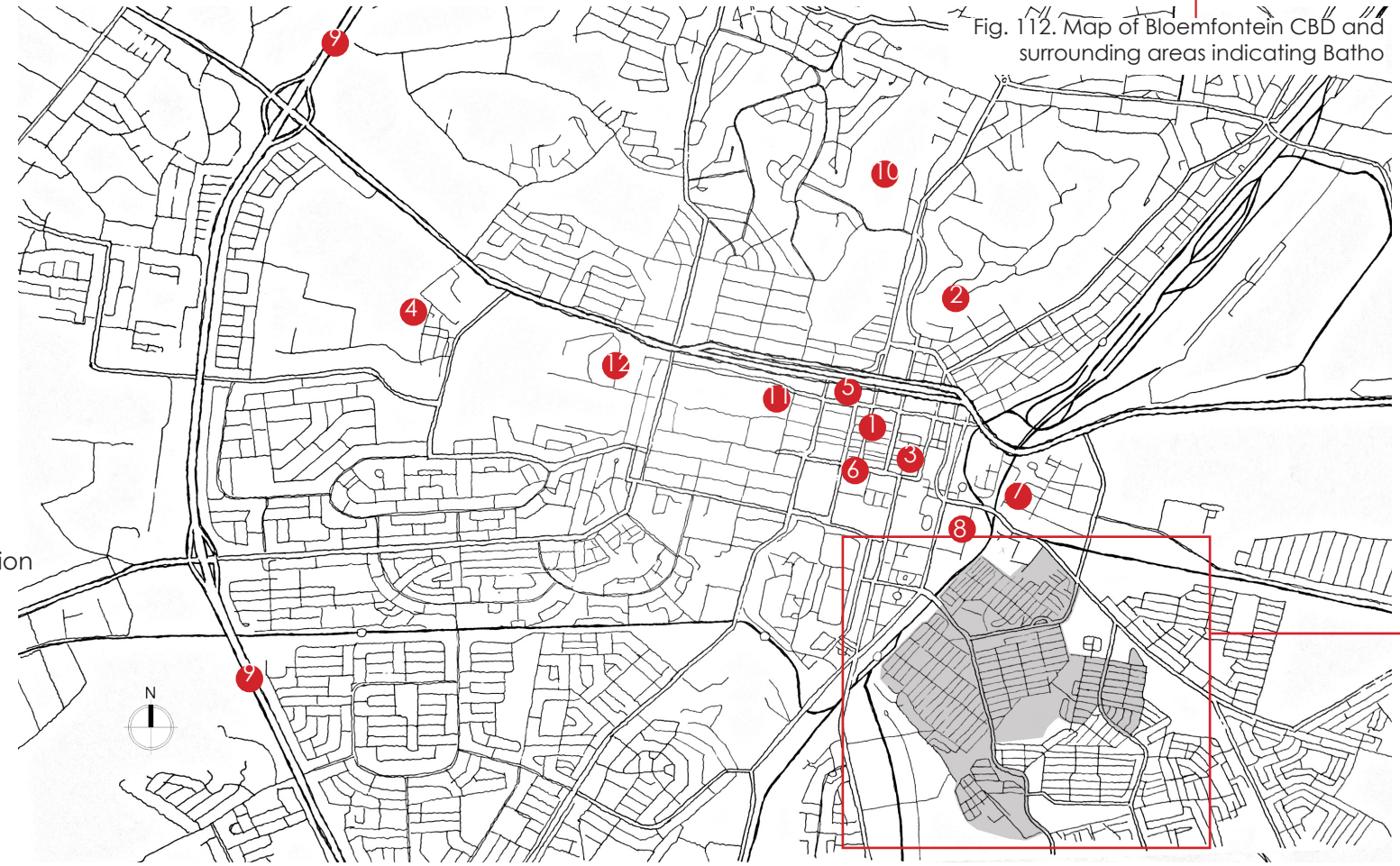
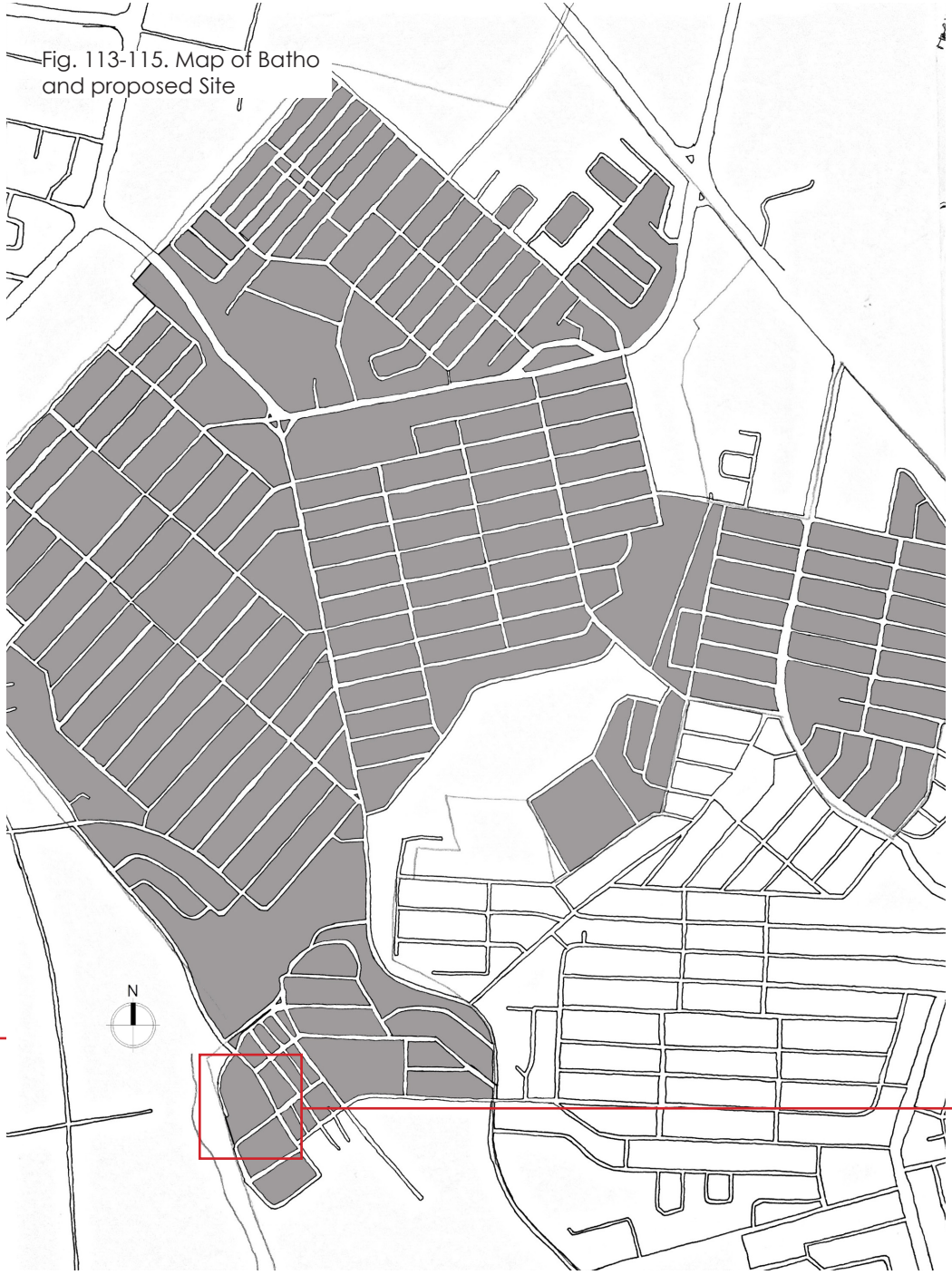
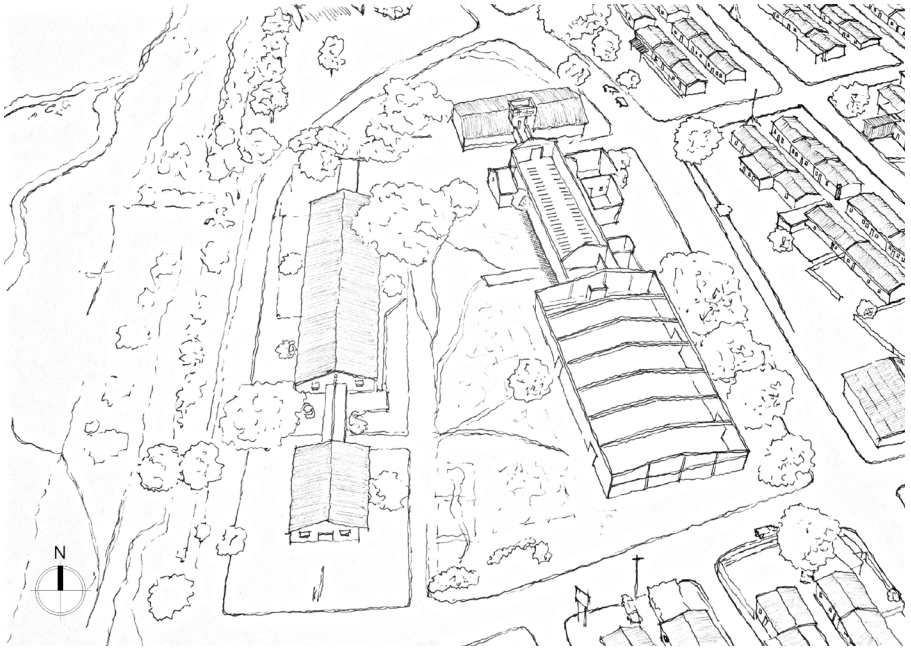


Fig. 112. Map of Bloemfontein CBD and surrounding areas indicating Batho

Fig. 113-115. Map of Batho and proposed Site





Geographic graticule -29.1476921°N, 26.2258515°W

MAPPING THE MESO SITE

Batho means "people". Moving through this township one understands why "people" is a significant name. The streets are buzzing with pedestrians and every once in a while you pass a house that has a group of people socialising on their stoep. (Nasmus.co.za, n.d.: online)

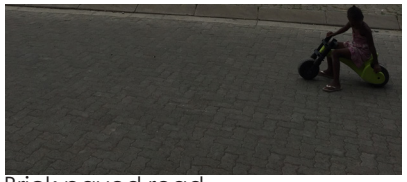
This can be seen as the same idea of learning in Ancient Greece and the Greek Agora, a place where people share ideas on a local stoep in Batho.

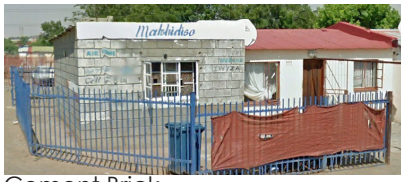
Different Textures in Batho


Plaster and paint

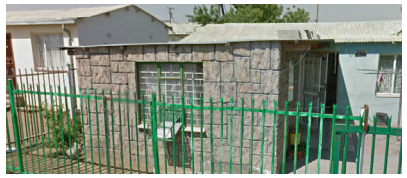

Stone


Corrugated Iron


Brick paved road


Cement Brick


Plaster and paint


Stone


Precast wall


Gravel road


Rubbish

Fig. 116-125. Textures in Batho

Fig. 116-125. Textures in Batho

Typical Batho street and house (a view towards the street when standing on the east side of the site)

Fig. 126. Typical view of Batho, photo taken from a view by standing in the site looking at ther street.

MAPPING MESO SITE
BATHO

Fig. 127. Street in Batho

1. Old Ramkraal Prison
2. CRC Phetoho Community Centre
3. Susanna Ollemans Creche
4. Batho Police Station
5. Mangaung Primary School
6. Batho Community Hall
7. Batho Magistrate Court
8. Sehunelo Secondary School
9. Batho Primary School
10. St Patrick's Anglican Parish
11. Legae Intermediate School
12. Mangaung Post Office
13. Academy of Excellence
14. Creche (Name unknown)

Fig. 128. Street in Batho

Fig. 129. Batho and important destinations

MAPPING THE MICRO SITE

The site is an empty ruin adjacent to a crèche in a residential part of Batho. (Image 131, pg 54).
Using this site will activate the pedestrian movement in this area and reintroduce life into a derelict building and site.

Since this project will introduce a new type of school and client, CURRO, into Batho, using a familiar building instead of designing a brand new building will help the community to accept this new educational concept.

By using the building's existing structure and incorporating it into a school with creative spaces and play areas will enhance how children think about architectural spaces, play and education.

The school will help restore the site by adding new meaning to it, translating it from an empty industrial building into a functional school. The school will represent the development and the future of the youth of Batho.

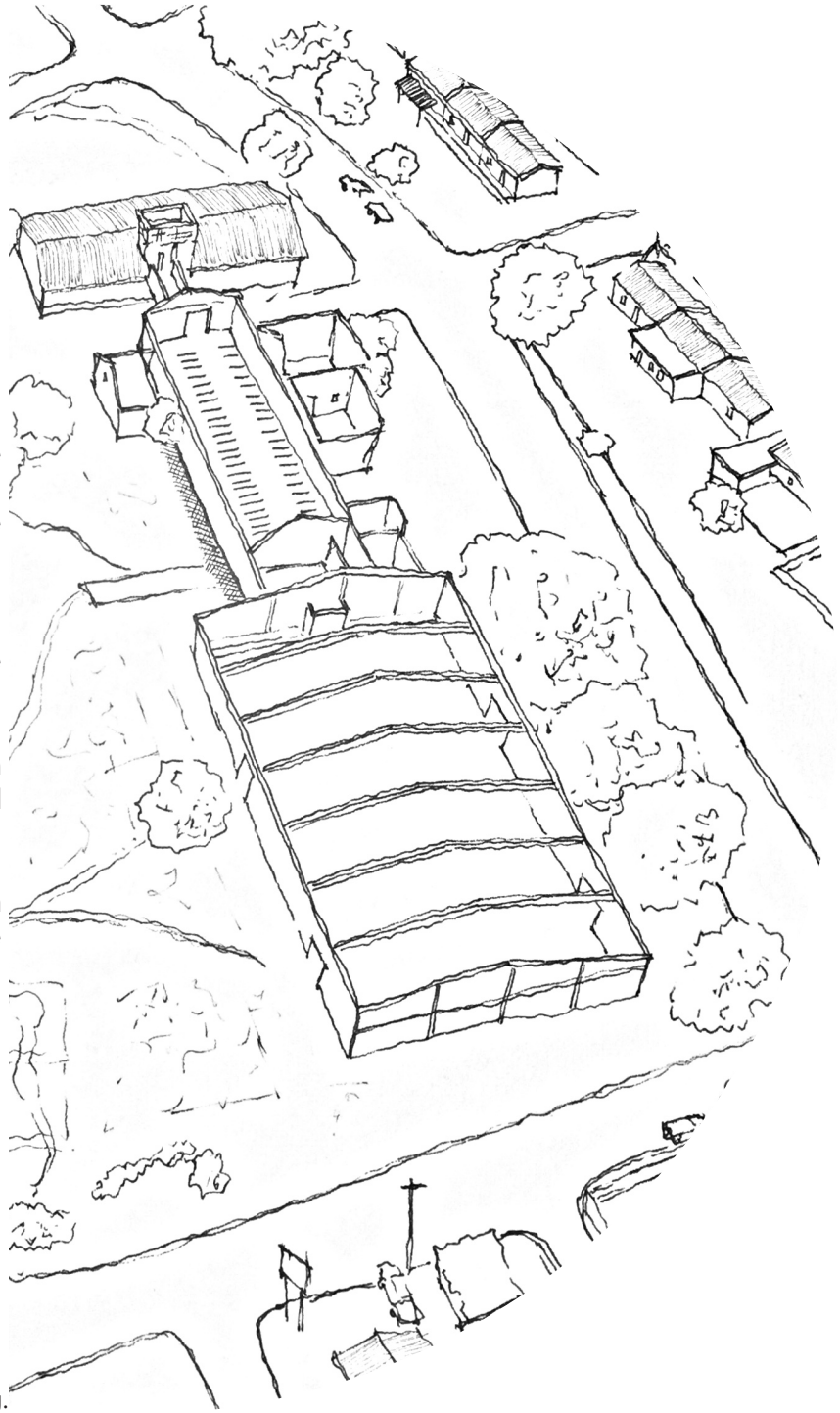


Fig. 130. Sketch of existing building.

NOLLI MAP

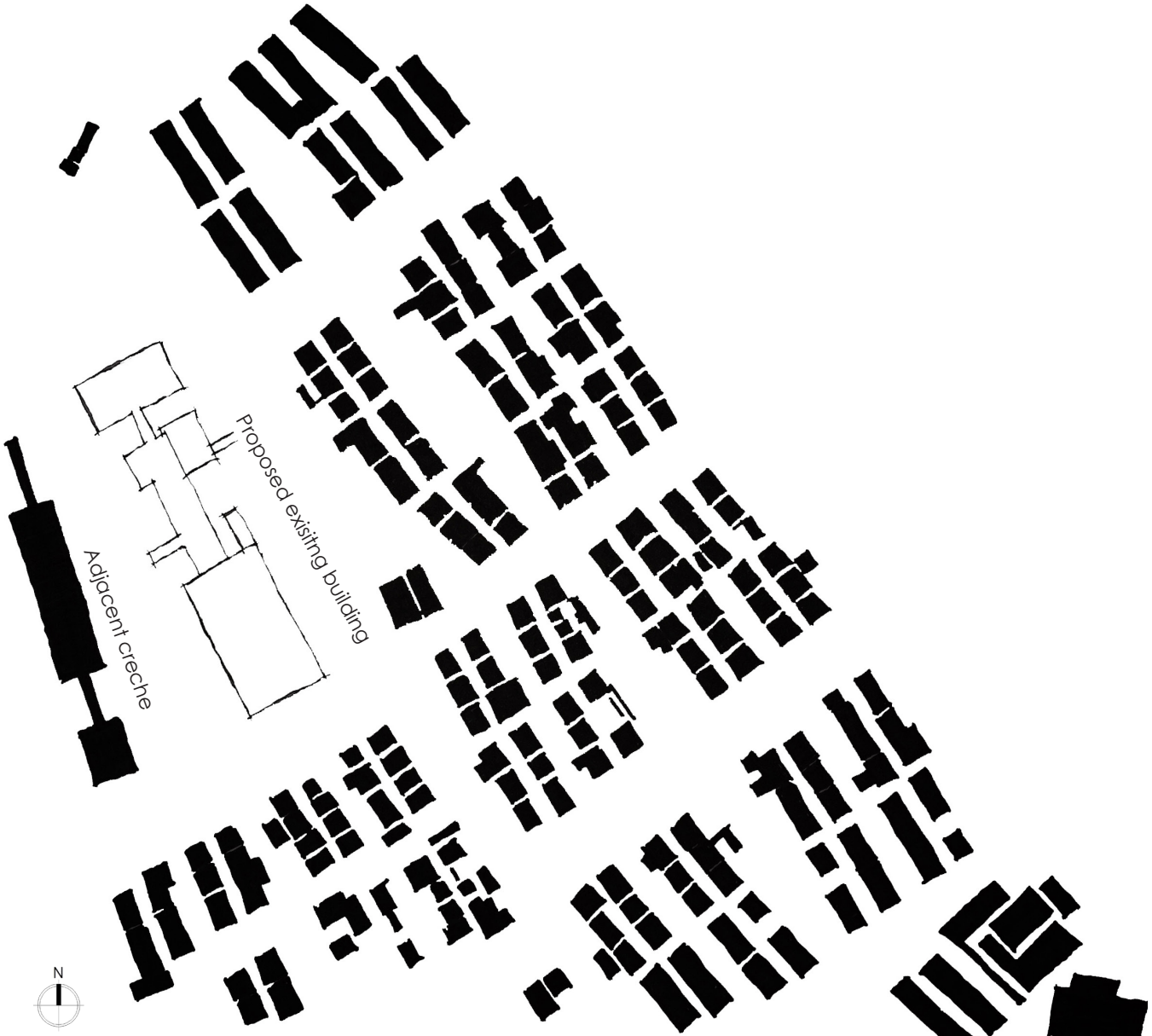


Fig. 131. Nolli diagram of site and context.

Fig. 132. Photo of existing building and structure.

SITE ANALYSIS
PROPOSED SITE

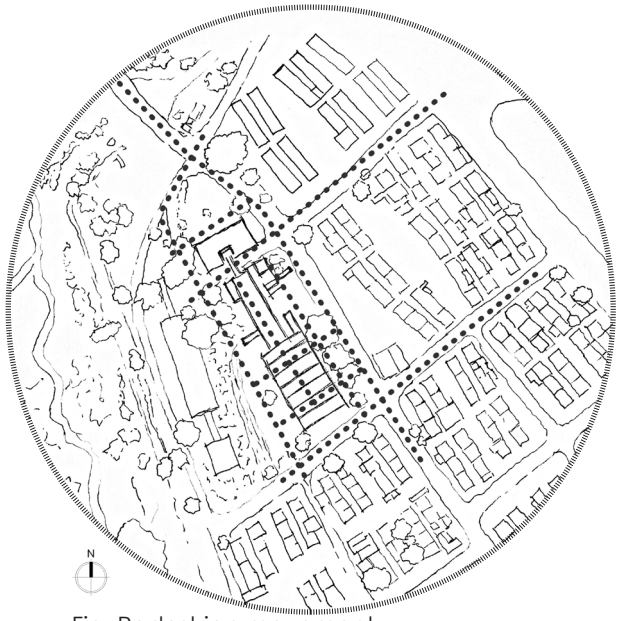


Fig. Pedestrian movement

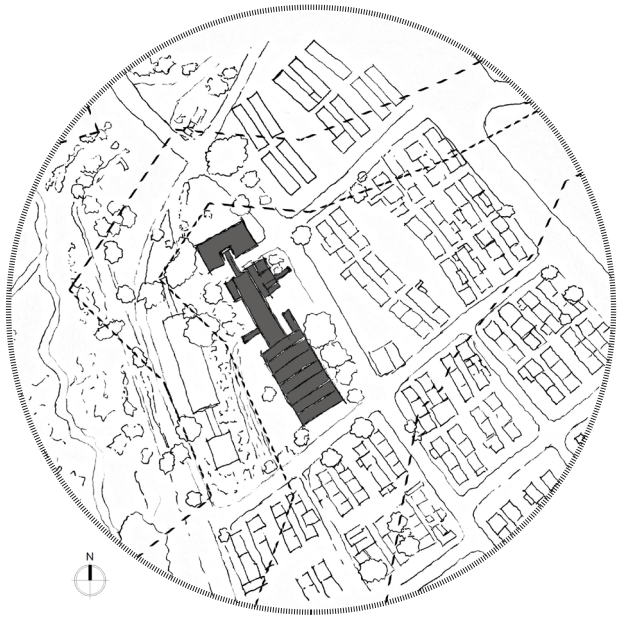


Fig. Contours

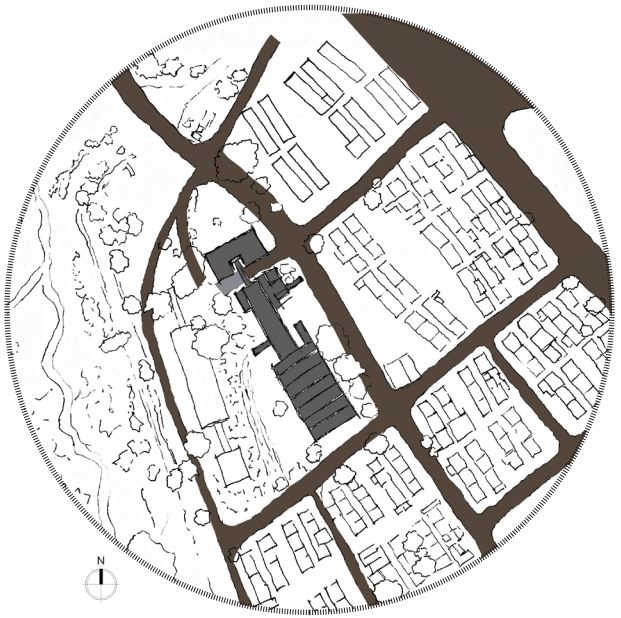


Fig. Roads

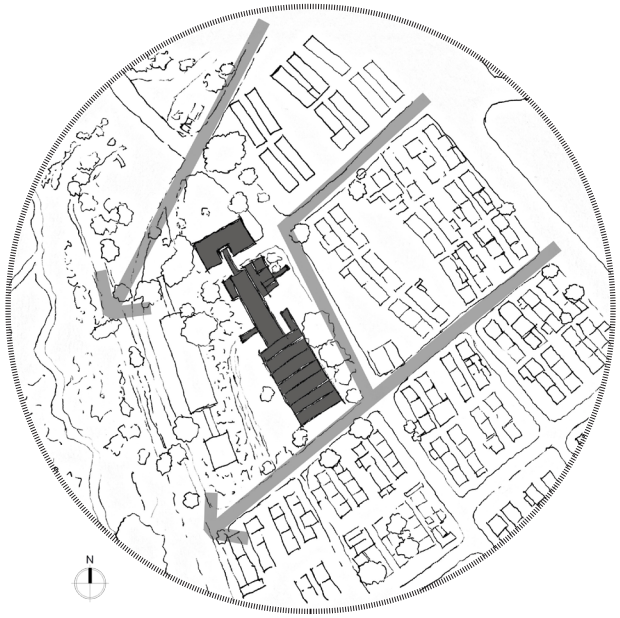


Fig. Surface drainage

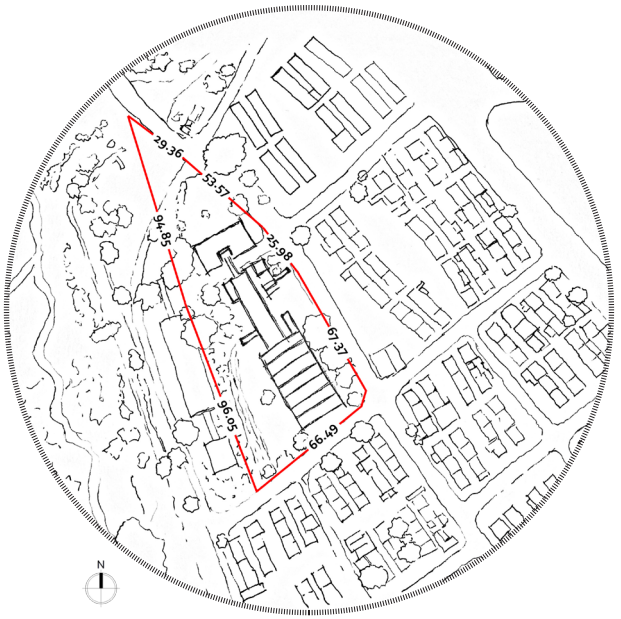


Fig. Size of site

 Fig. 132. Site analysis.

Fig. Vegetation

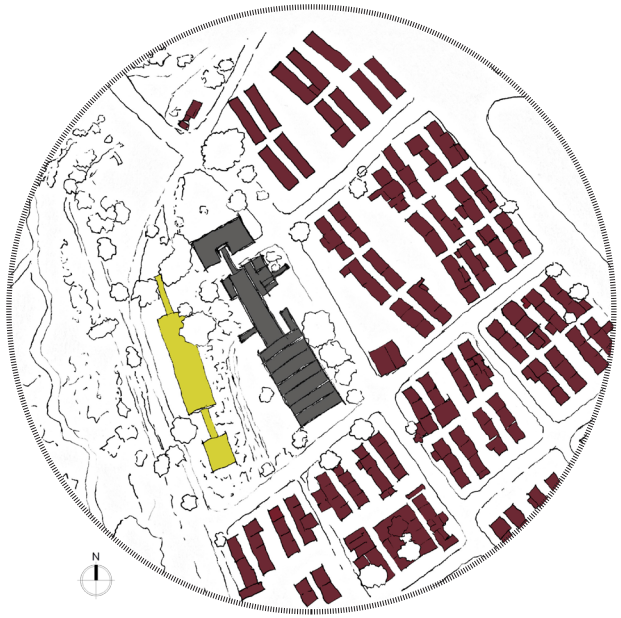


Fig. Zoning of adjacent properties.
Residential and commercial

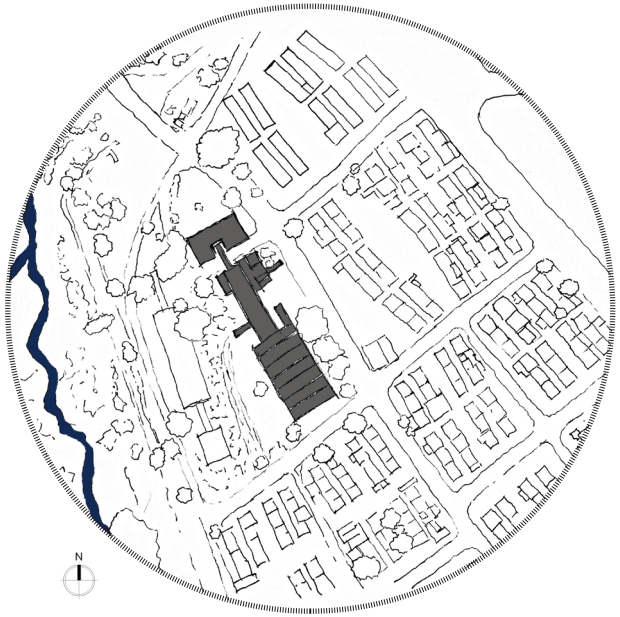


Fig Hydrography

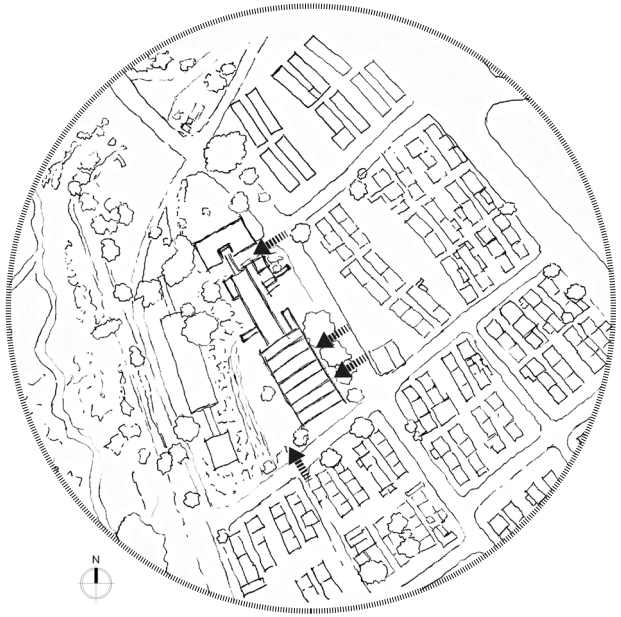


Fig. Access to site

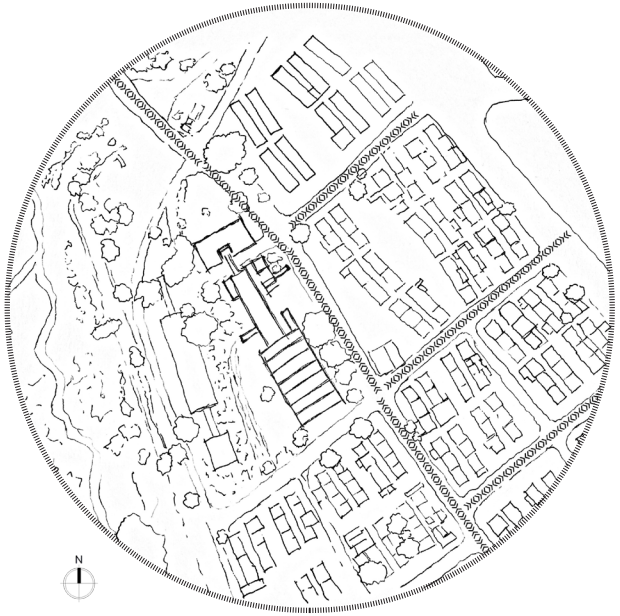


Fig. Vehicular

SITE ANALYSIS

PHOTOS

Fig. 133-150. Photos of site.


ASAP
GANG

MORPHOLOGY

Morphology refers to the form-giving elements of the proposed design. The typological and topological challenges influence the morphology and how the building presents itself. The morphology of the design is important because it creates an opportunity for the connection of the exisitng and the new by means of play. The identified challenges become tools to help solve the morphology of the project.

There are three identified morphological challenges and the project aims to:

- Address the form of the building to accommodate spaces that children can manipulate and use to their own liking.
- Change the morphology to fit the needs and scale of a 21st century educational institution.
- Invite the public to use dedicated parts of the building during and after school hours to engage creatively with an exisitng structure - exisitng ordeing system. Thus a mmetaphor for introducing a new education system where there are still traces of the old way of doing things.

TECTONICS

Tectonics refers to the detailing and construction of the morphology. Extending the morphological challenges into physical tectonic solutions forms an integral part of the design. This ensures that the physical architecture plays an active role in the brief of the project - designing a school which encourages creative play and education in a safe environment. The design and its technical resolution are challenged by how well the spaces change and adapt to the needs of the users and especially the needs of the children.

The way the existing structure interacts with the new is successfully implemented in the technical resolution of the project. The dialogue between architecture and play is threaded together by the morphological challenges and realised through tectonics.

The morphological challenges resolved through tectonic resolutions:
- spaces that can be manipulated
- educational scale and needs accommodated
- public access

PROBLEM STATEMENTS

TYPOLOGY	**Typology of the school** Solve an educational problem which has not been properly addressed in South Africa yet.	**Typology of the existing building** Solve and redesign the existing building from industrial typology into educational - and to fit the language of the surrounding context.
TOPOLOGY	**Topology of Batho** Relate to the buildings' surrounding context in order for it to be relatable to its user.	**Topology of direct context** The language of the building has to strengthen its identity with Batho.
MORPHOLOGY	**Morphology of the spaces** Address the form of the building to accommodate spaces that children can manipulate and use to their own likeness as they see fit.	**Morphology of building** Adapt the morphology to fit the needs and scale of a 21st century educational institution. Invite the public to use dedicated parts of the building during and after school hours.
TECTONICS	**Tectonics of spaces** Spaces that can be manipulated which allow children to be active in their own educational development.	**Tectonics of building** The propsed building accommodates needs but has to be an appropriate response in scale, be inviting but not comprimise on child safety.

AIMS

The typological aims linked to the desig of an educational space to accommodate the needs of a 21st century student entails a sensitive approach. The sensitivity needs to lend itself to become a unifying platform between the child and their influence on their own education, as well as how the building sensitively interacts with, and invites the surrounding community.

The topological aim of the proposed site allows for the possibility to reactivate the derelict building and create an educational connection with Batho. In order to create an interaction between the building and the surrounding community, a public library is added. There are also opportunities for spaces to open up and be used when the school is not in session. This allows the public to use the building, ensuring it has a life beyond the school term.

The morphological aims are for the building to allow children to interact with architecture by means of play. In order for them to educate themselves in a safe environment, the morphology of the building has to allow for safe exploration on the child's own terms. Self-exploratory education should be part of children's daily life; moving in their urban surroundings and familiarising themselves with all the interactive possibilities the site presents to him.

The tectonic aim of the project is to design the building in such a way as to ensure that the children experience the best possible version of a day, week or year in their education. The structure aims to allow children to playfully interact with it and manipulate it to fit their needs at the given time of the game or activity. The design of the structure aims to have visible qualities of manipulation and its ability to change/move designed to fine detail. The various materials used serve as an indication to orientate children as they move and navigate as to where he finds themselves in the school and navigate him to the different functions available in the space.

PART 2

EXPLORATION & GROUNDING

RESEARCH QUESTION

How does an investigation of children's embodied experiences in the built environment, support the design of a self exploratory educational space in Batho?

TOUCHSTONE

The essence of the project is to create a space that allows children to learn creatively within a fixed educational system.

However, the question is: *How do we incorporate creative learning into a fixed system that has set architectural typologies and a set educational system?*

The touchstone is a combination of salvaged steel gears organised into a single composition. However, one of the gears is tilted slightly. This represents the new educational approach in a fixed school system being the physical school building (*set architectural typologies*) and curriculum (*fixed educational system*).

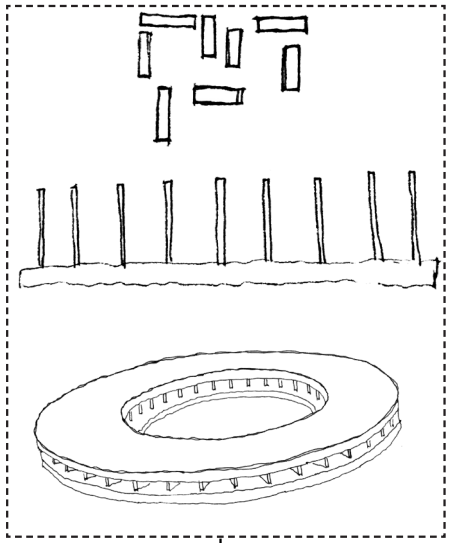


Fig. 151. Set Architectural Typologies

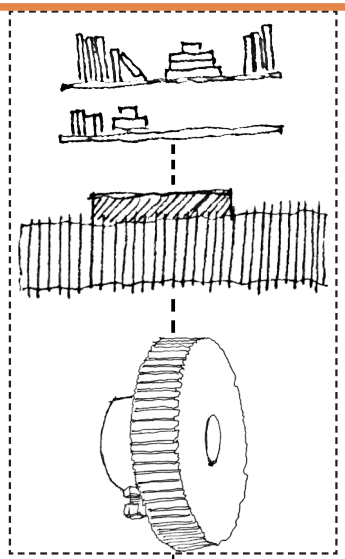
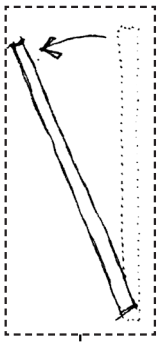


Fig. 152. Set Educational System

Fig. Introducing a new concept that shifts away from fixed systems



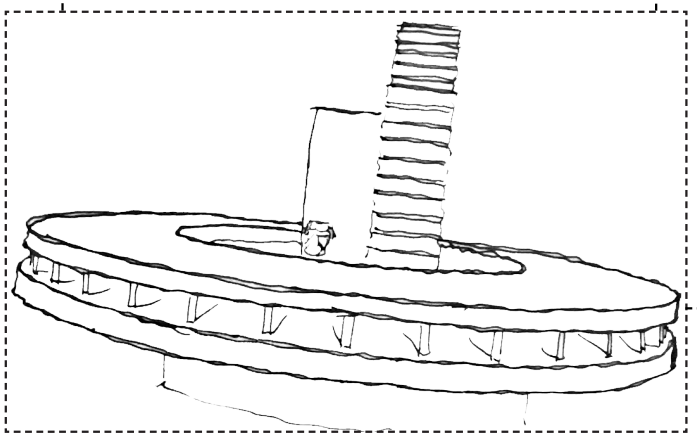


Fig. 153. Gears representing modern schools

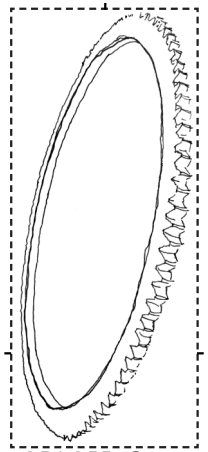


Fig. 154-155. Gears representing fixed educational systems

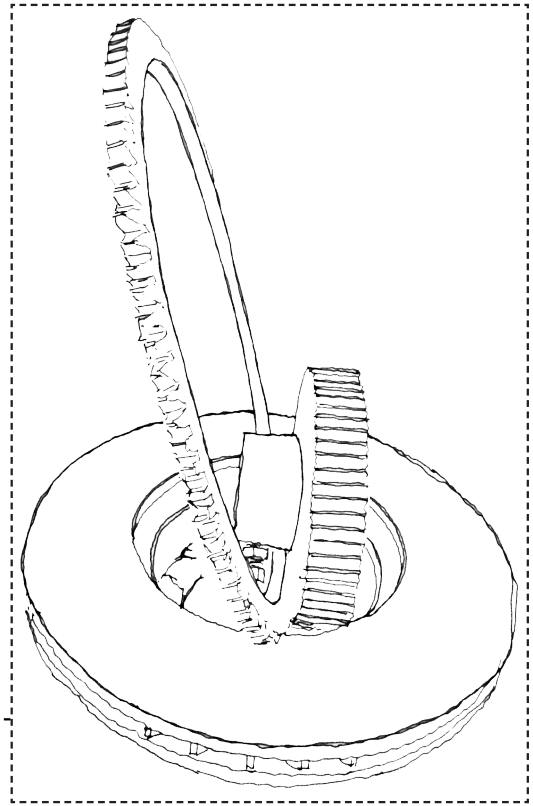


Fig. 156. The toughstone

The conclusion behind the touchstone becomes a possible reference point when creating a unique platform for a unique environment.

Joining the fixed subject and object (represented by the gears as interlocking systems) creatively results in a new typology that respects and uses the existing without destructing it but changes the assumed functioning and intent - the idea that gears should interlock.

In other words, the aim is to respectfully respond to the existing system, by exploring a path toward a new typology.

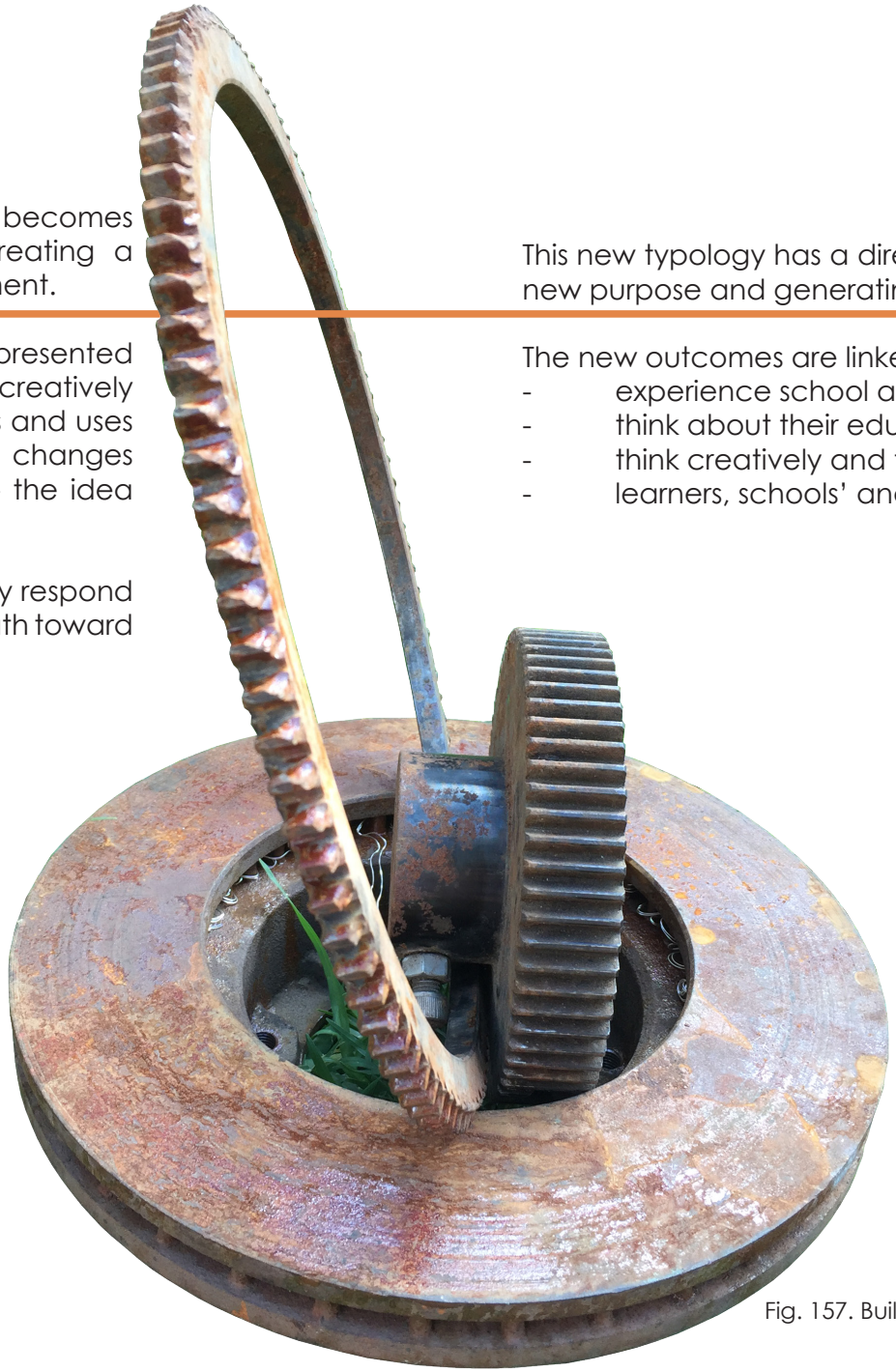


Fig. 157. Built Touchstone

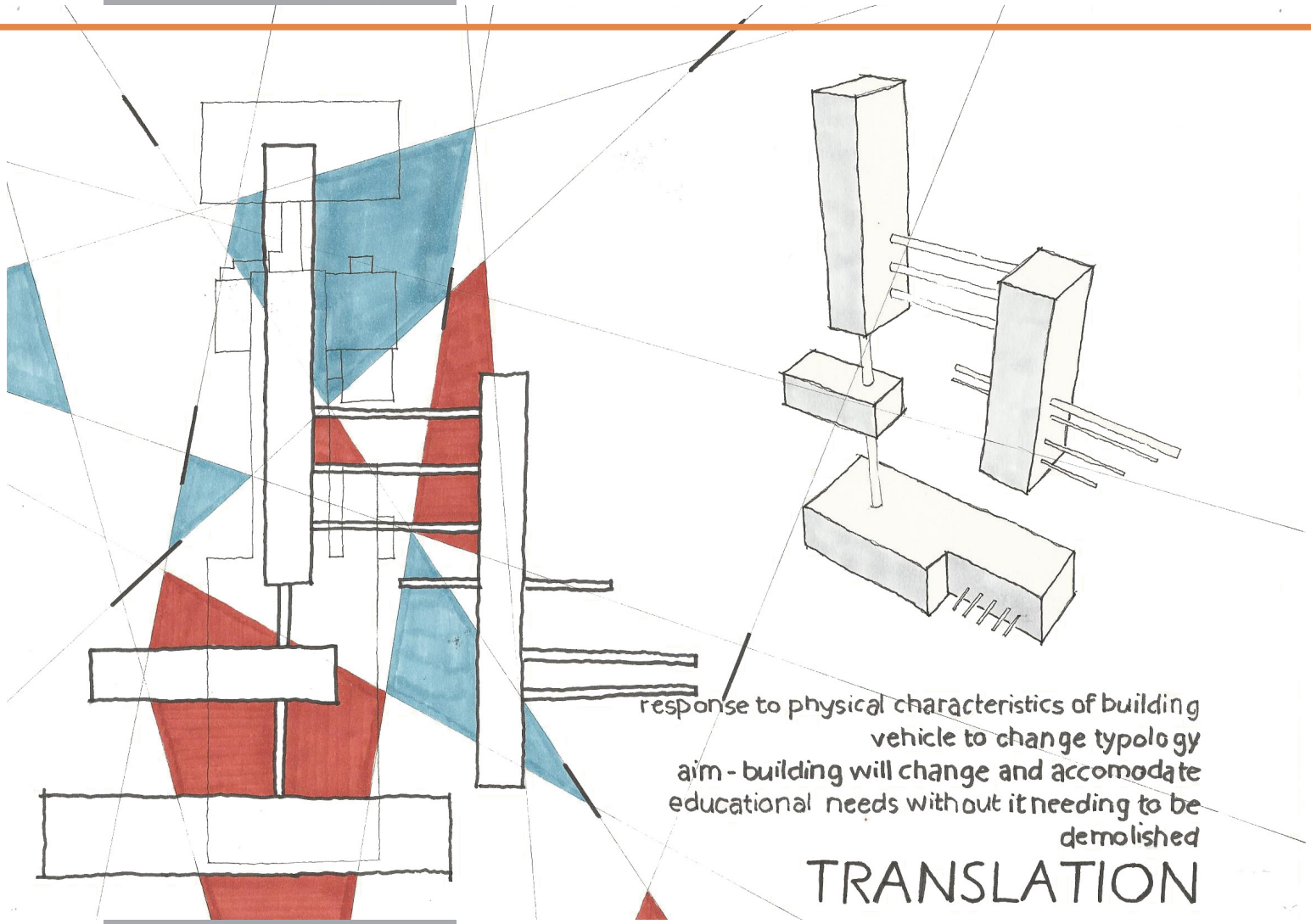
This new typology has a direct effect on the existing by giving it a new purpose and generating a new outcome.

The new outcomes are linked to influencing the way children:
- experience school architecturally
- think about their education
- think creatively and teach themselves outside classrooms
- learners, schools' and communities' view on education

CONCEPT | 1

TRANSLATION

The conceptual approach towards translation is a response to the physical characteristics of the existing building. Translation becomes the vehicle that helps to change the function and typology of the proposed site from industrial to educational.



TRANSLATION | APPLIED TO THE SITE

The aim of the conceptual approach, translation, is to show that the building will change to accommodate an educational facility without the need for demolition. So instead of erasing the existing building, the aim is to translate it and add new meaning so it is still recognisable but new and engaging.

Applying the concept to the site reveals how the building is translated to identify with both the user and the public. The application demonstrates how the existing building extends on both private and public ends of the building, in order to humanise the scale, relate to its surroundings and accommodate the typological (scale, site sensitivity, material and public inclusion) needs.

Fig. 158. Built *Translation* Model

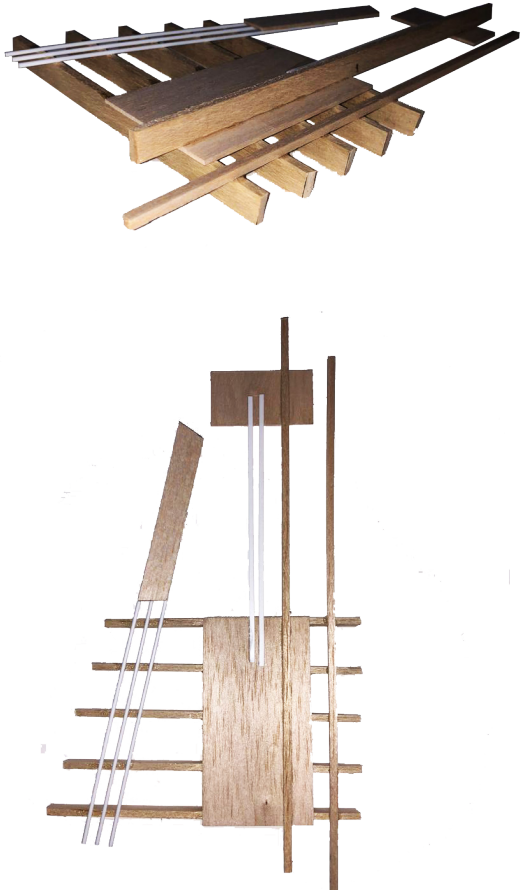


Fig. 159. Built *Translation* Model to site

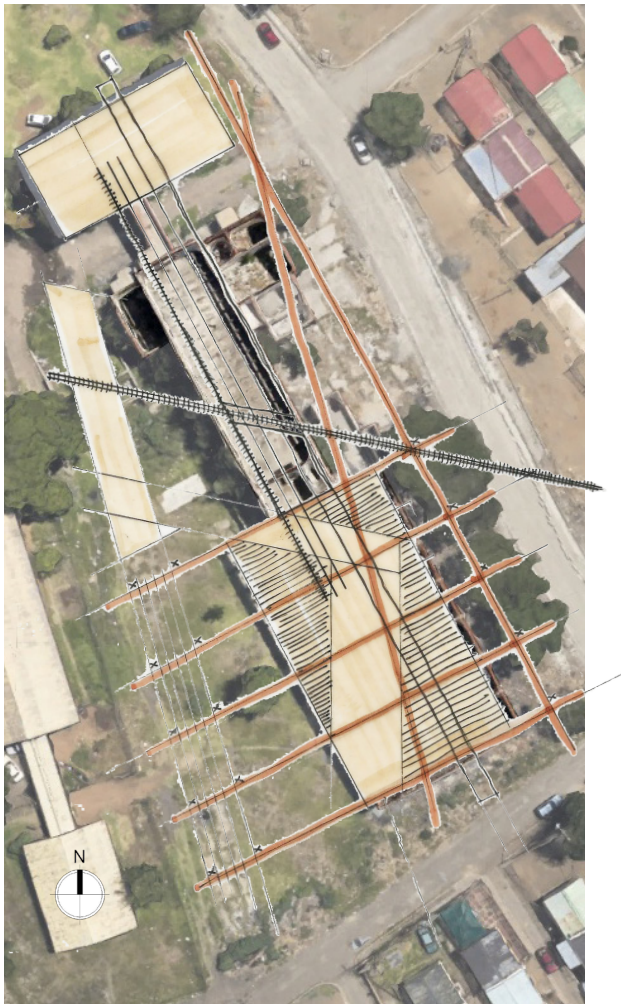
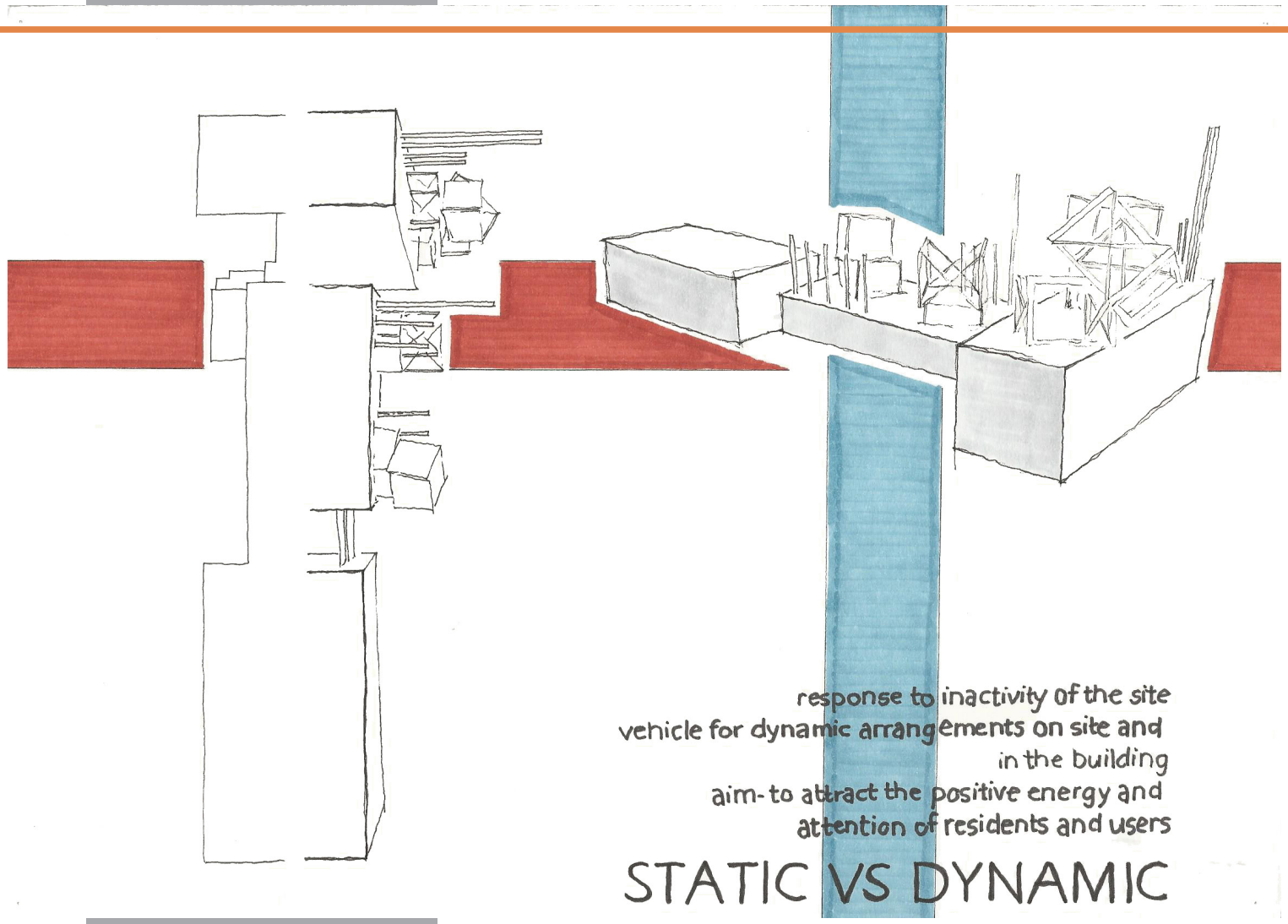


Fig. 160. Idea applied to site

CONCEPT | 2

STATIC VS DYNAMIC

The conceptual approach linked to the opposites of static and dynamic is a response the inactivity of the site. The movement of the design becomes the vehicle for the dynamic arrangements and qualities on site and in the buildings to be introduced to a static site.



In addition, the approach aims to attract the positive energy associated with dynamic movement and attention of its users.

Applying the concept to the site reveals how the public can be invited and included to interact with the building. The building's dynamic interface responds to and solves its inactivity by inviting the public to be a part of the functions and the micro environment associated with the proposed building.

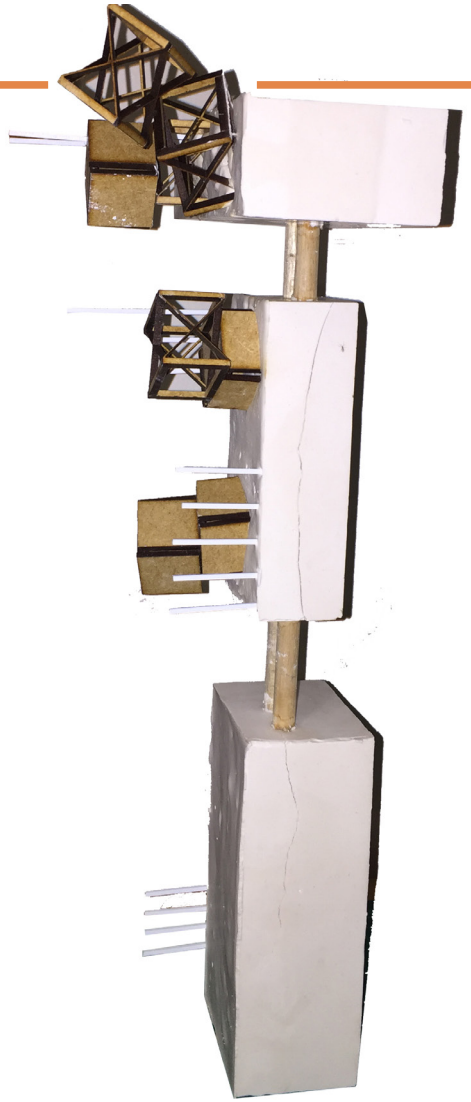


Fig. 161. Built *Translation* Model

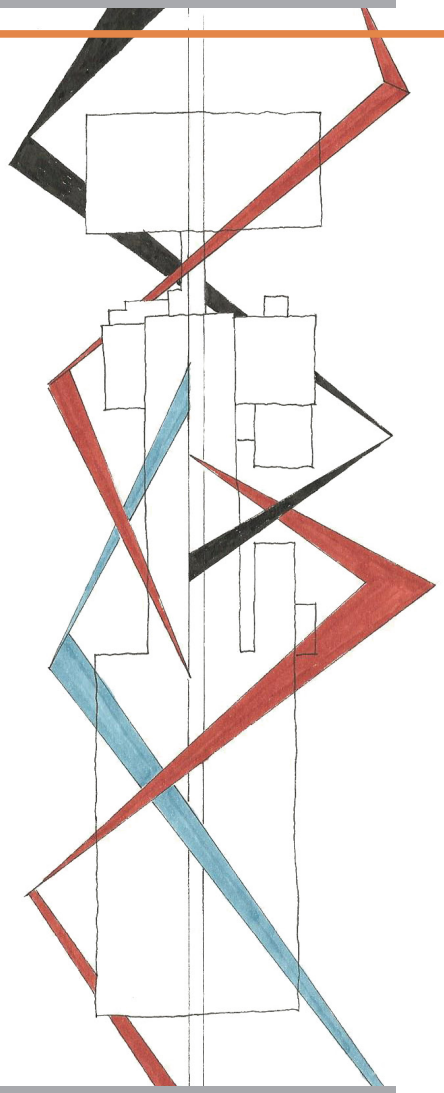
Fig. 162. Built *Translation* Model to site

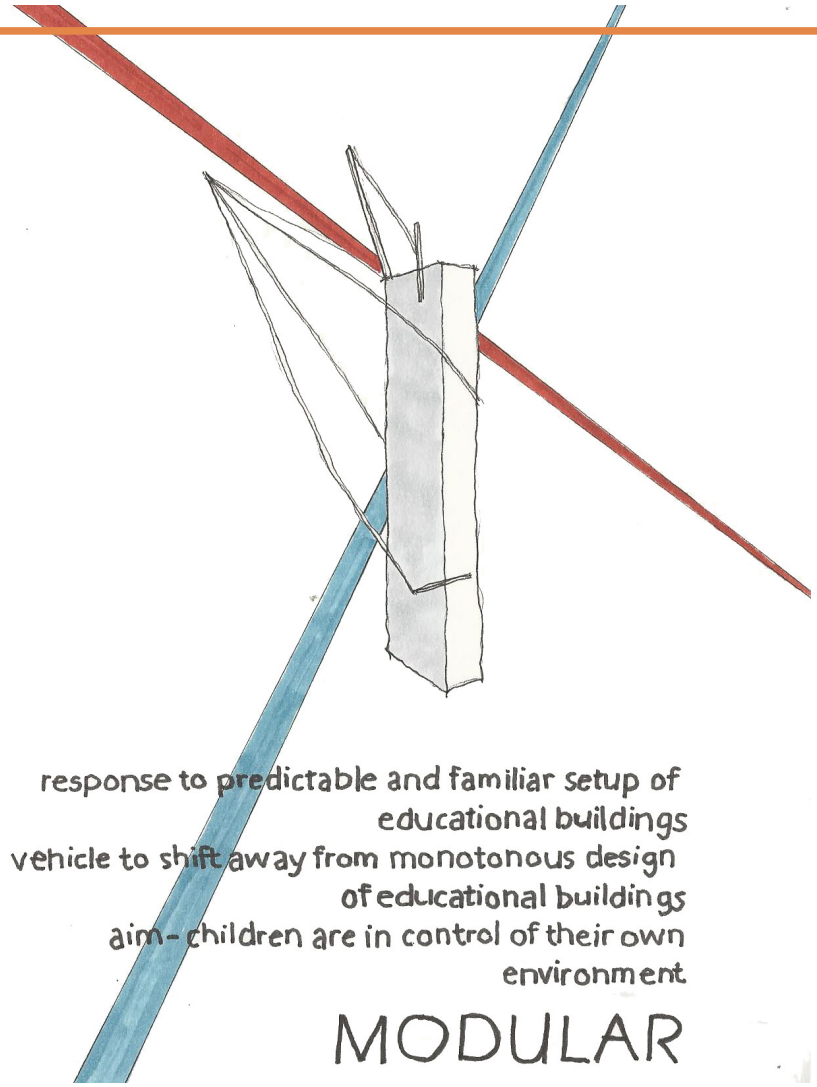
Fig. 163. Idea applied to site

CONCEPT | 3

MODULAR

The third conceptual approach is the idea of a modular system. It is a response to the conceptual approach towards modular is a response to the predictable and familiar set-up of typical educational buildings and in most cases government mandated. The department has very specific guidelines for schools that does not allow for deviation. Again a known system the modularity of the building and the way children are allowed to change their own environment becomes the vehicle to raise interest in the building and shift away from monotonous school designs.





The modular conceptual approach aims to create a space within a building where children are in control of their own environment.

In this case, the concept on site reveals how architecture can become a tool for children to interact and control their environment. The structural elements allow for manipulation of the building and the spaces change in terms of function and use, depending on the needs of the day.

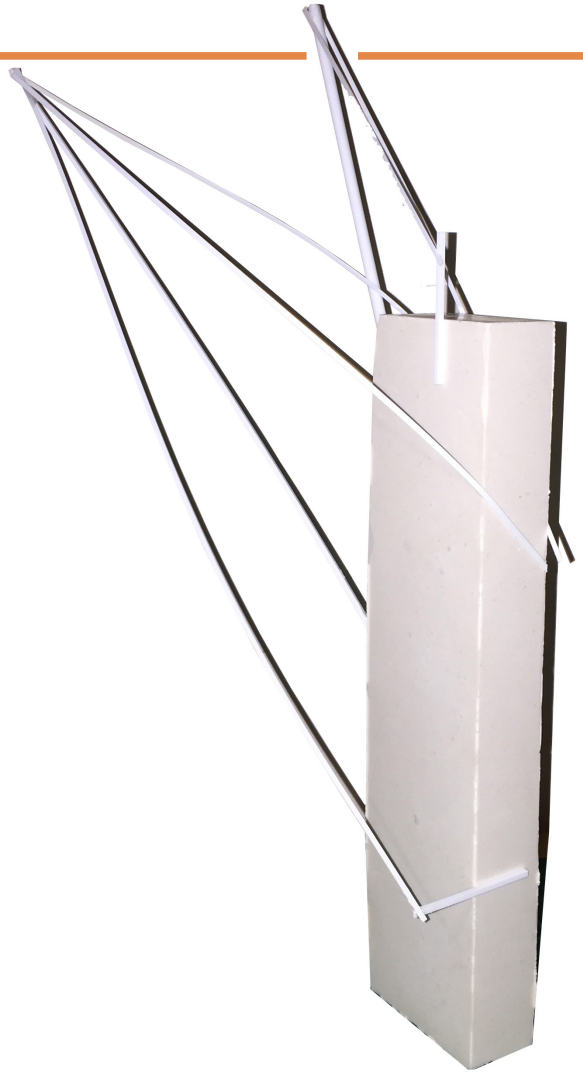


Fig. 164. Built *Translation* Model

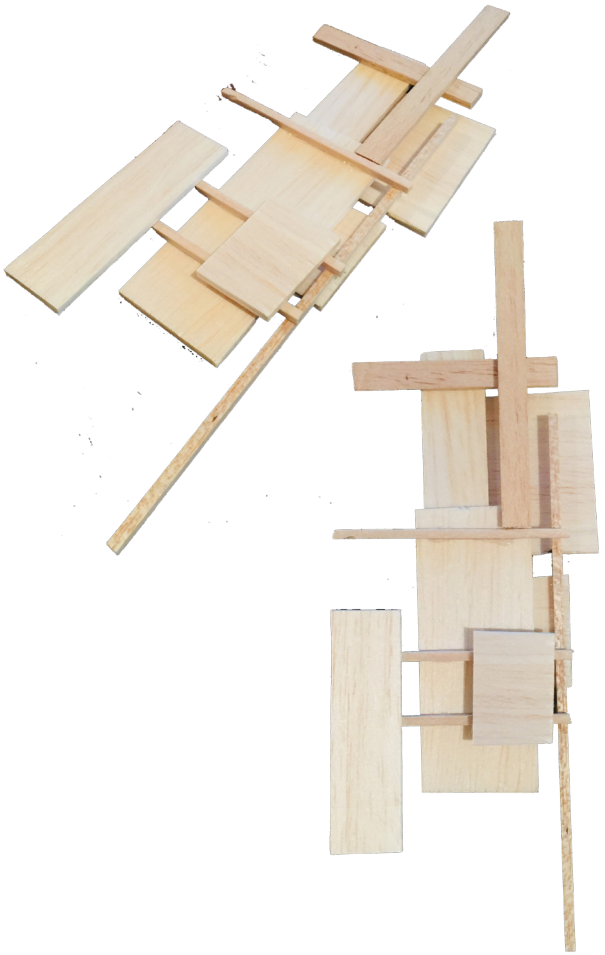


Fig. 165. Built *Translation* Model to site

Fig. 166. Idea applied to site

CONCEPTUAL FRAMEWORK

The conceptual framework guids the aims of the design. These conceptual framework ideas precede the design process and help to formulate the design, programme, morphology and other functional needs. All of these ideas originated from the research question, that is engaged with the way a building can be a flexible learning space.

Built-environment

Various environments, wether naturaal or built, has a direct impact on human well-being. Built-environments however are more about designed spaces. They give meaning to our presence in a place and are supposed to add value to our daily lives. We are surrounded by the built-environment and people's experiences of their surroundings lie in the hands of designers.

Co-mingling spaces

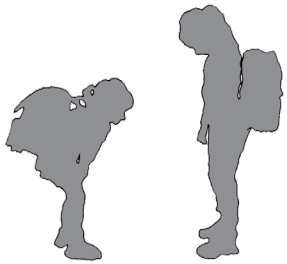
Co-mingling spaces refers to two or more spaces that overlap to form a communal space, allowing the opportunity for interaction. The overlapping spaces between the classrooms (creating courtyards) create opportunities for children to move, interact and socialise.

Dialogue

I use the term dialogue as a conversation because of two interdependent forces. These two forces have a tension because of their different origins but aim to reach a central meeting point in the conversation. Both exist on their own but for a successful outcome, they have to interact. This project's dialogue depends on how the children interact with their environment. The dialogue between the surrounding community and the building allows for an outcome where the school is actively used by the community and therefore serves a bigger purpose.

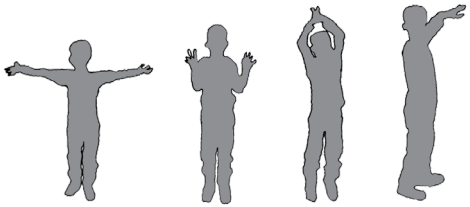
Experience

How a design affects the senses of the users. It is often believed that knowledge is acquired through the senses. However, we experience a space not only by responding to our senses but through our thoughts as well. The way a space makes us feel, what we take in with our senses and what our mind produces through thought, emotion and memory together become experiential.



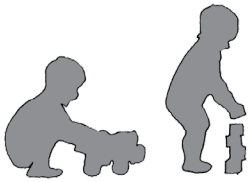
Rhythm

Rhythm is necessary in a kindergarten to create a sense of order. Just as the flow of music depends on the rhythm, the flow of children's development in a school depends on the rhythm of the architecture. The proportions, heights and arrangements of architectural elements bring clarity and organisation to a building. Rhythm does not mean that certain elements must be replicated but that elements should be repeated in order for a building to form a single composition.



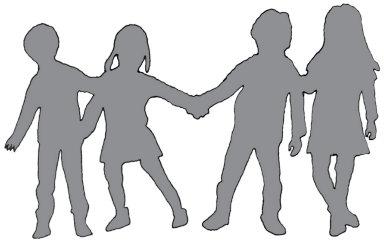
Self-exploratory education

Self-exploratory education means that children are left to explore their own curiosities. The child fulfills the self-chosen task at his/her own pace.

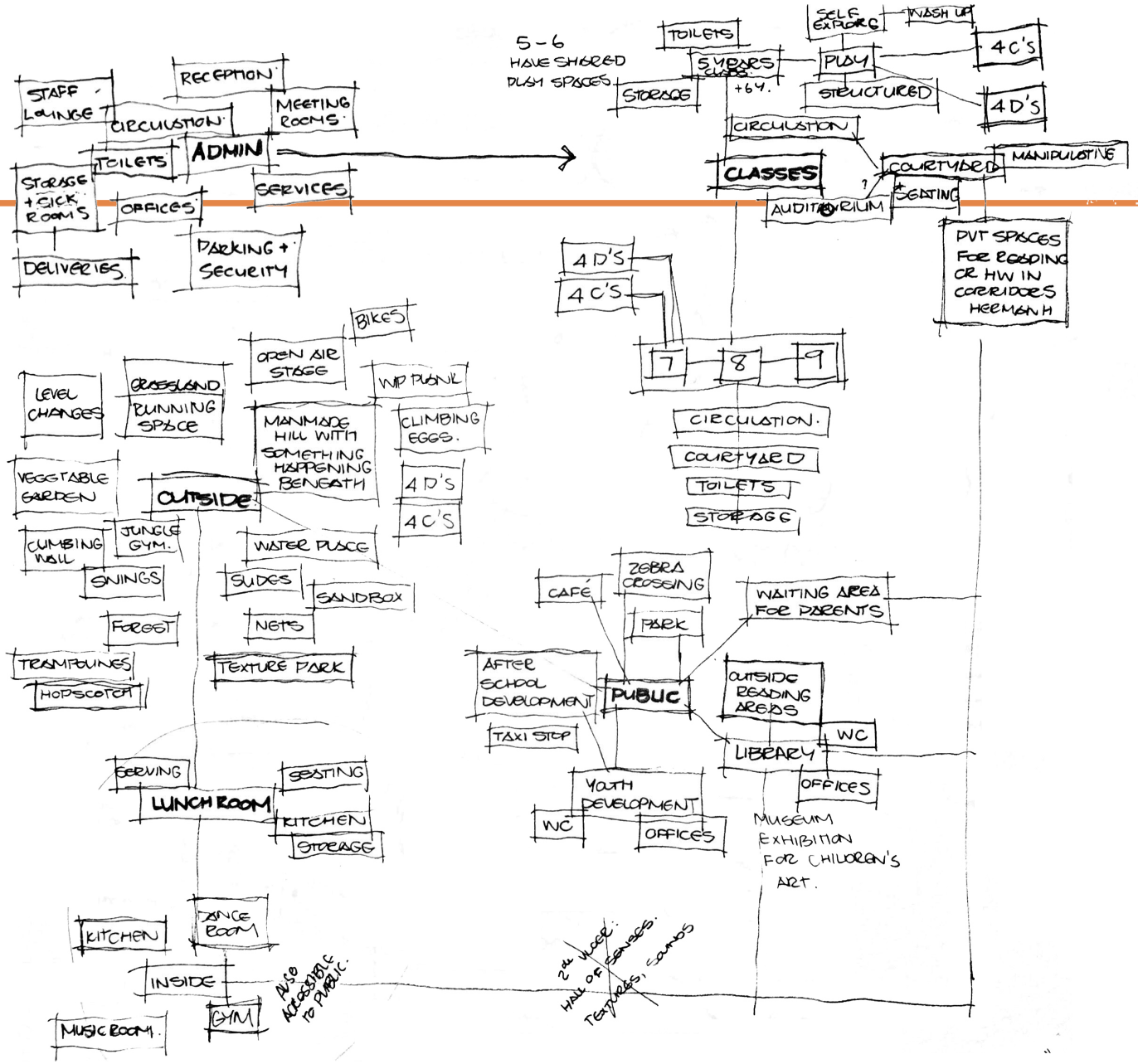


Threshold

The physical boundary when one moves from one space to another, for instance, moving from the outside to the inside. The type of threshold you cross depends on the type of building or space you find yourself in. It is important for private spaces to have more articulated thresholds. Because, in this project the threshold is not a tool to emphasise the separation of the different spaces but it connects and merges these spaces. The threshold becomes a subtle transition to create a bigger and unified space, thus it acts a a linking mechanism.



ACCOMMODATION LIST



Ground Floor:

Admin:

Teacher Staff Room		52.90m²
Office	Principal	16.42m²
	Vice Principal	15.03m²
Entrance Lobby and Reception		80.69m²
Board Room		10.54m²
Offices	(x2)	11.92m² x 2 = 23.84m²
Ablution	Gents	26.22m²
	Ladies	26.22m²
Storage		17.18m²
Safe		7.62m²
Disabled	(x2)	6.20m² x 2 = 12.40m²
Circulation		44.95m²
Corridor	(x2)	133.36m²
Children Meeting Room (x2)		9.80m²
Outside Area		17.54m²

Classrooms Total:

Classroom	5 y/o	88.31m²
	6 y/o	92.47m²
	7 y/o	97.61m²
	8 y/o	104.33m²
	9 y/o	109.34m²
Ablution	Boys (x2)	8.76m² x 2 = 17.52m²
	Girls (x2)	11.33m² x 2 = 22.66m²
Disabled (x2)		6.47m² x 2 = 12.94m²
Storage (x2)		2.16m²
Circulation		157.50m²
Seating in Corridors		42.31m²

Soccer Field		300.00m²
Ablution	Gents	33.30m²
	Ladies	32.56m²

Public Library Total:

Library		125.48m²
Circulation		9.83m²
Ablution	Gents	10.43m²
	Ladies	8.81m²
Storage		8.00

Indoor Playground	739.72m²

Therapy Total:

Reception and Waiting Area		78.83m²
Ablution	Gents	6.61m²
	Ladies	5.70m²
Disabled		7.13m²
Occupational Therapy		20.10m²
Play therapy		20.10m²
Storage		5.53m²

Kitchen Total:

Kitchen		185.53m²
Storage	Cold	11.13m²
	Dry	36.34m²
	Furniture	12.21m²
	Kitchen Education	15.45m²
Refuse Area		13.78m²

First Floor:

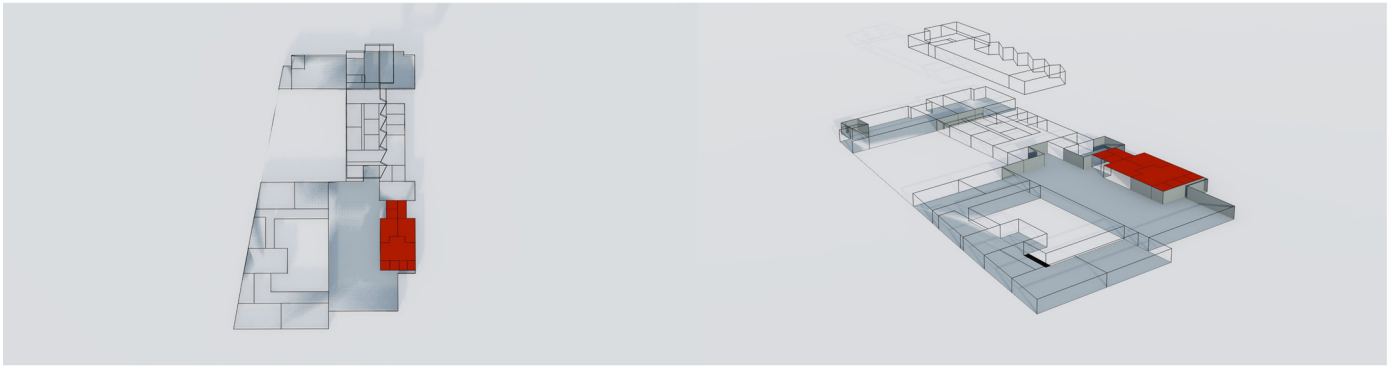
Public Library, Computer Lab and Reading Area	92.02m²

School Library	243.04m²
Walkway Entrance	41.71m²
Ablution	10.25m²

Total Floor Area: **3315.45m²**

Classrooms:
Classroom
Ablution Boys (x2)
Girls (x2)
Disabled (x2)
Storage (x2)
Circulation
Seating Area

Indoor Playground



Therapy:
Reception and Waiting Area
Ablution Gents
Ladies
Disabled
Occupational Therapy
Play therapy
Storage

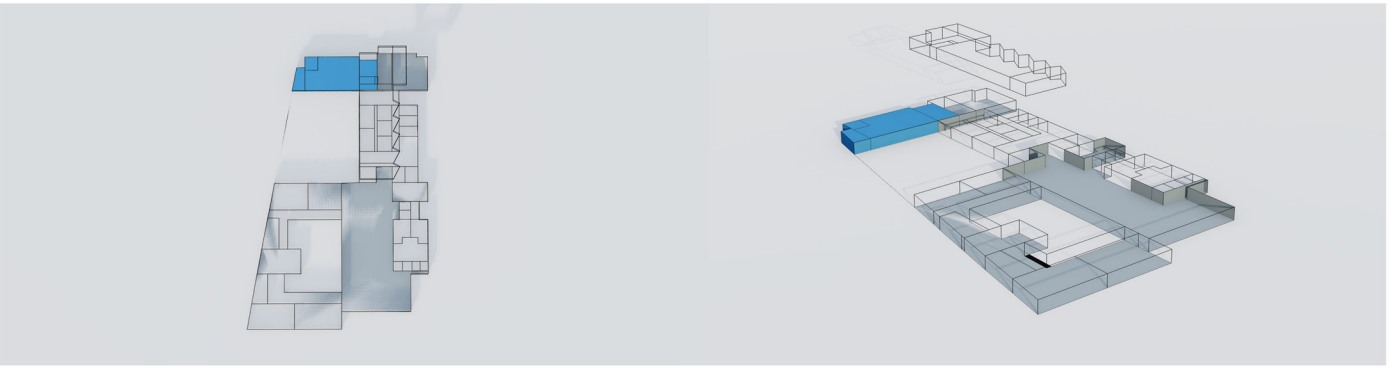
Admin:
Teacher Staff Room
Office Principal
Vice Principal
Entrance Lobby and Reception
Board Room
Offices (x2)

Storage
Safe
Children Meeting Room (x2)
Outside Area
Service Shaft
Storage

Public Library:
Computer Lab and Reading Area
School Library
Walkway Entrance
Ablution

Ablution:
Changing Rooms
Ladies and Gents
Disabled

Circulation:
Corridor
Staircase
Walkthrough



Kitchen:
Kitchen
Storage Cold
Storage Dry
Furniture
Kitchen Education
Refuse Area

Fig. Accommodation list located on site

PART 3

I measure myself
against a tall tree.
I find that I am much taller,
for I reach right up to the sun,
with my eye;
and I reach to the shore of the sea
with my ear.

William Stevens, “Six significant landscapes”

THEORETICAL DISCOURSE

INTRODUCTION TO THE THEORETICAL ARGUMENT

Schools are one of the many important tools in the growth and development of children and help the process of creating competent adults. It is important that the spaces provided in schools give the best opportunity for learning and growing children.

In this theoretical discourse the *theme*, *embodiment* is identified and introduced and the *major issue (21st Century Education)* of the project is summarised. The relation between these elements of the study two is structured into four questions that focus on how embodiment plays a role in a child's experience of their environment (familiar and built), the role that architecture plays in education and how a child's experience of their environment influences their self-exploratory educational development. Additionally I engage with these ideas and how it can support the design of a school and library in Batho

These discussed themes help to address the research question:

How does an investigation of children's embodied experiences in the built environment, support the design of a self exploratory educational space in Batho?

Theoretical Theme
Embodiment

Main Question
21st Century Education

Theoretical Theme related to the Major Issue
Embodiment related to Kindergaten

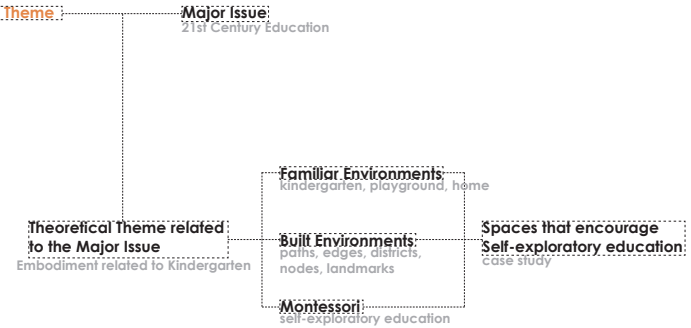
Familiar Environments
kindergarten, playground, home

Built Environments
paths, edges, districts, nodes, landmarks

Montessori
self-exploratory education

Spaces that encourage Self-exploratory education
case study

THE THEORETICAL THEME



Architecture has become a visual establishment that is disconnected from its environment. "Instead of being a lived embodied existential metaphor, today's architecture tends to project purely retinal images, architectural pictures as it were, for the seduction of the eye." (Pallasmaa, 2011:119). In the same vein, Merleau-Ponty writes that science treats the world and its things as mere objects, things without meaning (Merleau-Ponty, 1993: 121) and spaces should return to what Merleau-Ponty refers to as the "there is", the world created for our bodies. The architecture of the eye, disconnected from the body can be seen as an existing system, similar to the standard school building or basic curriculum that does not allow for experiential learning. The arguments of Merlaeu-Ponty and Pallasmaa, are helpful to understand the challenges linked to designing for children.

In science, Merleau-Ponty writes, "when a model has succeeded in one order of problems, it is tried out everywhere else." (1993:122). The architecture we live, work, move and play in dos not always complement the user's needs or the surrounding built environment. Merleau-Ponty (1993:122) metaphorically refers to it as a net thrown into the sea, one ever knows with absolute certainty - yet it is the responsibility of the architect to engage with variables, the unknown factors and the environment and cast the net to allow for the best possible result. Unfortunately the design of spaces has changed into finishing projects following a standard often government regulated and mandated rather than creating the opportunity to design a building that responds to the unique needs of the site and user.

Through his philosophy of embodiment, Merleau-Ponty reclaimed the body of a person to be at the center of his experienced world, a world where information is gathered to fully understand the environment rather than observing it from an isolated point. This allows one to move the body and the experiential senses (cognition and mobility) as one entity. "visible and mobile, my body is a thing among things; it is one of them." (Merleau-Ponty, 1993: 124).

He argues that at some point in time sight was seen as the most important sense for experience and that it was isolated form the other senses, consequently architecture and the built environment became disconnected to the body and environment and only a "seduction of the eye" (2011: 121). The senses are not five separate entities but works as a whole that collaborates in one's embodied experience.

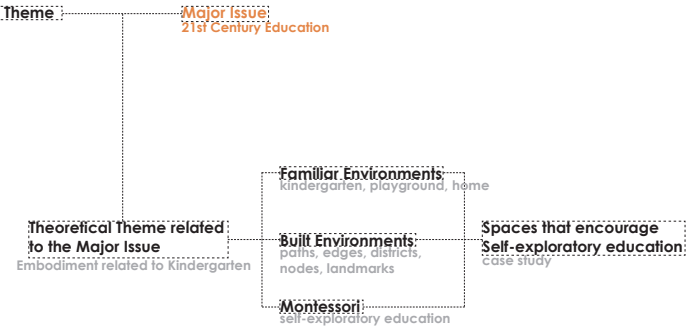
We sense our environment through more than just sight, "moreover, it is also true that vision is attached to movement." (Merleau-Ponty, 1993: 124). The experience a person has through his body and senses results in a reaction to his surrounding environment. Therefore the embodied experience of an environment is coherent to the human body. How people perceive and experience their world is emphasized through the body and how the body is situated in this world.

However, the mind and body are interdependent as the one cannot produce or move without the other. This concept is the same when it comes to experiencing architecture. Merleau-Ponty (1993: 123) refers to a painter that envisions a painting but cannot produce one without a body and vice versa. "The painter 'takes his body with him' says Valéry. Indeed, we cannot imagine how a mind could paint. It is by lending his body to the world that the artist changes the world into paintings."

The quantities of the world echo with the body, architecture becomes the middle ground between the world and our minds. It reveals to us ourselves, our history, and culture and gives a meaning to our daily experience. Like the painter, it is important to take more than just one aspect of a thing in consideration when producing something, "for I do not look at it as one thing, fixing it in its place. My gaze wanders within it as in the halos of Being. Rather than seeing it, I see according to, or with it." (Merleau-Ponty, 1993: 126) this means moving away from a self-centered approach when designing by considering the bigger picture. Creating architecture that is in harmony with the society and surrounding environment.

Children interact with a space or an object because it interacts with them. Therefor children's embodied experience affect the way they perceive their world. Taking into consideration how children experience their built environment reveals how a space transforms once they occupy it. Children reveal the different dynamics a space can accommodate and it awakens the different possibilities a space can have, this creates a dynamic between their body and their world. By arguing that the environment shapes our lives, one has to consider children in their environment because, the measure of a child's embodied experience, although similar to that of an adult, is different on many levels. However static a space, children always have the ability to see a possibility for play.

THE MAJOR ISSUE



Embodiment and embodied experience does not happen in isolation, children are constantly engaged in their world, their environments. It is how they learn. "Yet the task of architecture is not only to provide physical shelter, facilitate activities and stimulate sensory pleasure. In addition to being externalisations and extensions of human bodily functions, buildings are also mental extensions and projections, they are externalisations of our imagination, memory and conceptual capacities." (Pallasmaa, 2011: 119)

Our memory of meeting a friend at a coffee shop does not only consist of the friend itself but the environment and how it made you feel - the table, bookshelf, windows and lighting. All add to your experience of that particular moment in time. The same goes for children when they go to school. It is not only the friends or lessons but how the space makes them feel. Responsibility towards the environment and the child is the task of architecture, "to make the visible world that touches us." (Pallasmaa, 2011: 35)

The major issue is to design a space that allows children to educate themselves beyond what a curriculum requires. Merleau-Ponty (1993: 124) argues that environments cannot be viewed in isolation because they are not experienced as such. Therefore education and the child's ability to learn from their environment cannot be viewed in isolation or restricted to a classroom. Education is not limited to its dedicated space. The challenge in this project lies in the thresholds of the building, spaces outside and between classrooms where a child has the opportunity to learn something through experience, play, engagement through their bodies etc. This refers back to Pallasmaa's statement (2011: 35) that the task of architecture is to reveal the surrounding world. The same concept applies to schools, by revealing the world children are surrounded in and enhancing a space's possibilities one may understand how children experience them, and how one can design to fit their needs. Architecture becomes a tool that mediates between the world and consciousness.

"The architectural image relates to our experience of the world with the experience of our body through a process of unconscious internalisation, identification and projection." (Pallasmaa, 2011: 121). Architecture allows an embodied experience, "we behold, touch, listen and measure the world with our entire bodily constitution and experience and the experiential world is organised and articulated around the center of the body. (Pallasmaa, 2011: 125). Spaces, no matter how different is experienced comprehensively by all the senses, especially true when one consider children. As they learn through all their senses, exploring and testing, it bring the ideas back to the experience of children.

The curriculum is not necessarily written with this sensory experience in mind. The curriculum is also not the responsibility of the architect, but the environment is. It is important to understand how embodiment and education relate to a child's development, and in turn design a space suitable for self-exploratory education.

Classroom layouts, transitions between spaces and playgrounds invite an embodied experience. Careful consideration should be implemented when designing for children. The quality of the spaces are important because it becomes a tool for children to shape themselves. A space should be predictable in order to be navigable. This does not mean a space should not reveal secret moments and surprises in the building. It simply means that the user should rather get lost in the experience than the floor plan.

The next part of the document reveals how embodiment related to the major issue can become a tool to design appropriate educational spaces for children.

According to, Jelic, Tieri and De Matteis (2016: online), the dynamic interaction between body and architecture consists of three parts that contribute to how a person experiences his/her environment. The image is a schematic framework of the enactive approach the body has to architecture. The architectural experience arises through the concept of embodiment and is a dynamic interaction between an acting organism and its environment.

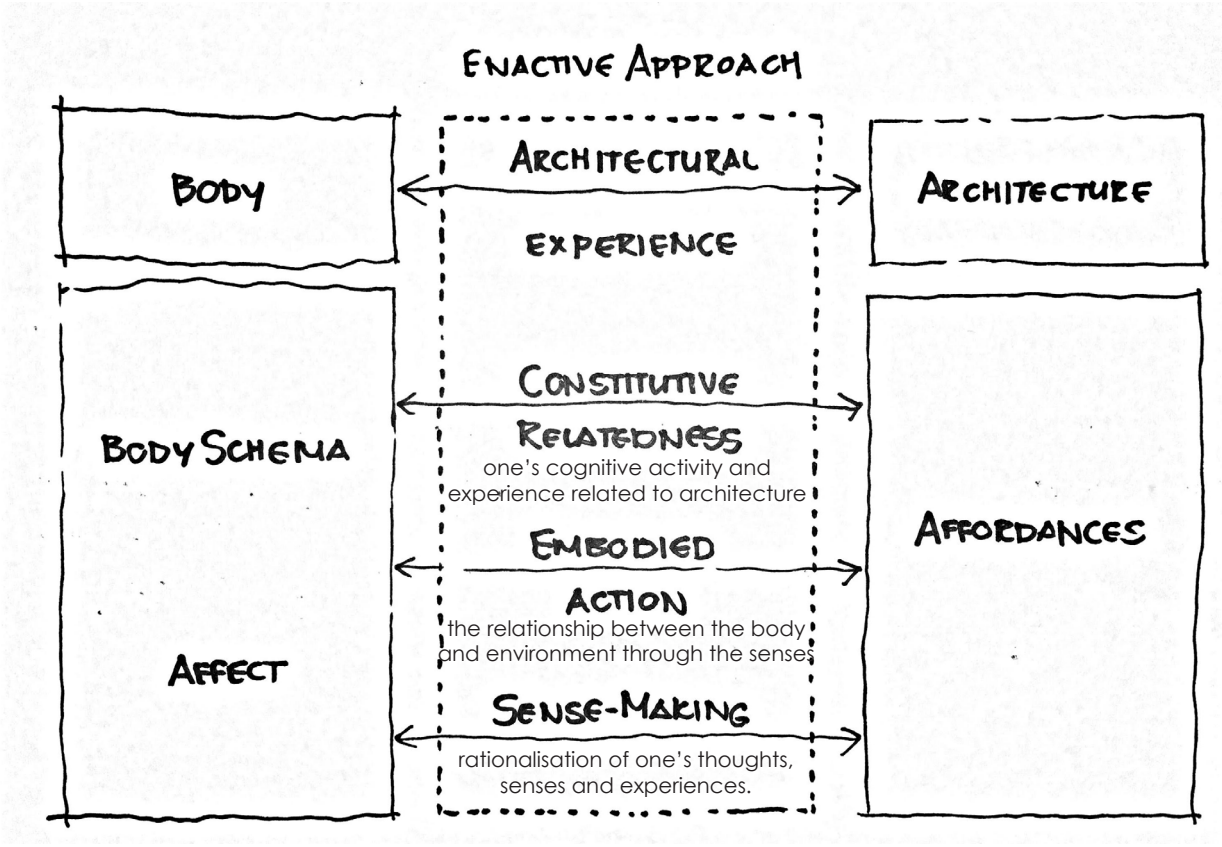
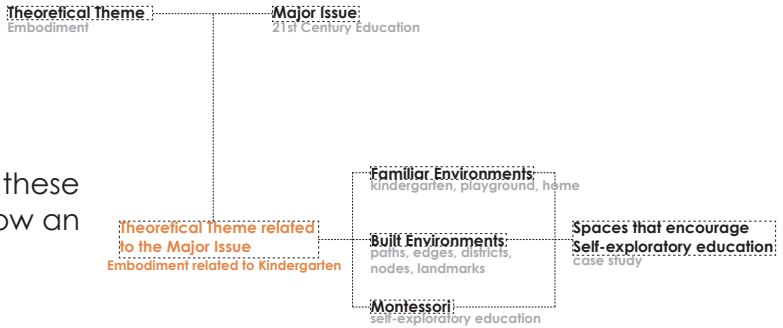


Fig. 167. Diagram on an *Enactive Approach* by author, after original by (Jelic, et al.2016: online)

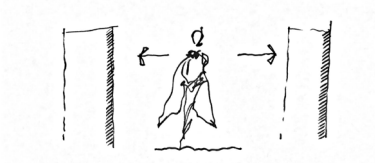
“My body is truly the navel of my world, not in the sense of the viewing point of the central perspective, but as the very locus of reference, memory, imagination and integration.” (Pallasmaa, 2011: 11)

THEORETICAL THEME RELATED TO THE MAJOR ISSUE

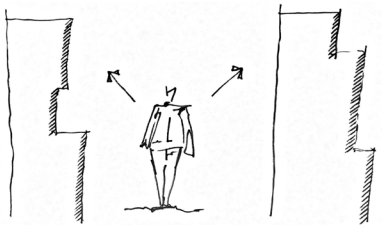


The theoretical theme relating to the major issue lead me to ask four questions. Each of these questions are linked to a child's embodied experience in different environments and how an investigation on these experiences can help to serve as a guide for design purposes.

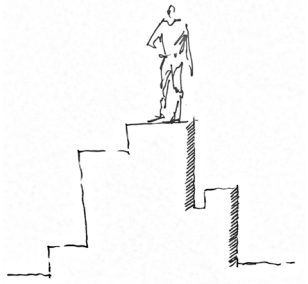
1. **How do children experience familiar environments?**
The three main spaces children interact with on a daily basis are the kindergarten, playgrounds and home.



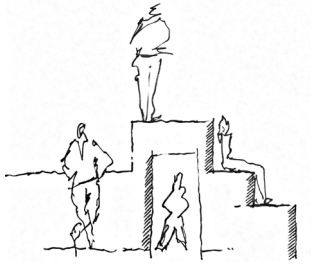
2. **How do children experience the built environment?**
An interpretation of Lynch's ideas on the five principles of the City image and it's elements. How people orientate and experience their surroundings As well as how one can formulate ideas around how children may experience spaces. How the school can apply these elements to relatable to the children.



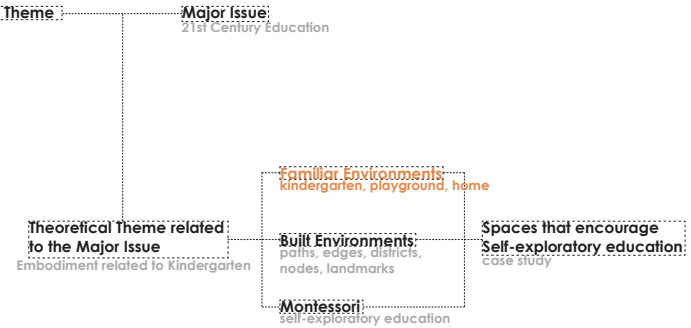
3. **How can a child be in charge of his own experience and educational development?**
A look at the Montessori method.



4. **How does the built environment accommodate children in self-exploratory learning and education?**
A practical view on what designers do.



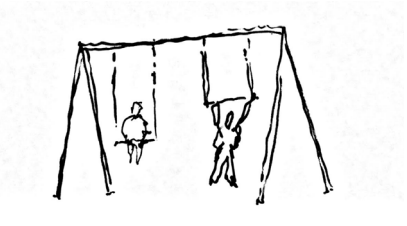
HOW DO CHILDREN EXPERIENCE FAMILIAR ENVIRONMENTS?



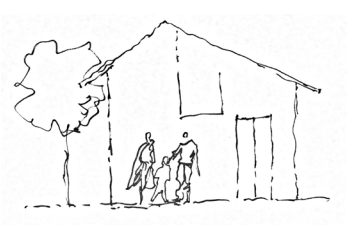
The physical characteristics of spaces determines to what extend and in what ways children engage with their surrounding environments. Architecture allows one to interact with the built environment in different ways, but it also has the power to determine to which extent this interaction takes place. Proportions, heights, nodes and thresholds, even seating, play a role in a persons' cognitive and physical experience of spaces. "The sense of self, strengthened by art and architecture, allows us to engage fully in the mental dimensions of dream, imagination and desire. Instead of creating mere objects of visual seduction, architecture relates, mediates and projects meanings." (Pallasmaa, 2011: 11). This statement is especially important for educational spaces. These spaces need to be designed for the bodies that will occupy them. How children move in spaces and position their bodies, is an indication of what the architecture can provide when they engage in certain activities. Architecture should do more than just provide shelter and safety, It can become a place where people engage, socialise, work or relax, not just four walls and a roof but a lived experience It should encourage children to explore as well as play throughout the building, not limited to a classroom and the architecture should not attempt to create limits to the experience if it can rather support and enhance it.

As mentioned, there are three main environments that children experience on a daily basis: the kindergarten, a playground, their home.
The aim of the project is to encourage self-exploratory education though play using architecture as the tool to link education and play. By investigating examples of these three environments, I am able to understand how children experience each – this serves as guide to incorporate opportunities for a embodied experience in the design.

kindergarten



playground



home

HOW DO CHILDREN EXPERIENCE FAMILIAR ENVIRONMENTS?
Kindergarten

Schools provide spaces where people learn. However, people learn different skills at different times in their lives, it is important that the space an eighteen year old and a nine year old occupy, are not experienced the same. "An architectural work is not experienced as a series of isolated retinal pictures, but in its fully integrated material, embodied and spiritual essence. It offers pleasurable shapes and surfaces molded for the touch of the eye and other senses, but it also incorporates and integrates physical and mental structures, giving our existential experience a strengthened coherence and significance." (Pallasmaa, 2011: 12).
Younger children, learn by means of experience and using their senses - their environment should reflect this. Their learning environment should therefore be safe and flexible. These types of spaces allow children to freely move from the one to the next without leaving the designated playground.

As previously mentioned, the body plays a role in how one experiences a space. Therefor a child is not isolated in this world but is always aware and engaged in his world. How architecture allows them to explore this world has an impact on their overall development.

Kindergarten | Precedent Study
Nakajima Kindergarten

Henmi Architect Office
2005
Nakajima Village, Japan


Fig. 168 Multi-functional corridor in Nakajima


Fig. 169. Built-in tree house


Fig. 170. Well lit corridor

Nakajima Kindergarten in Nakajima Village, Japan is designed for children to have diverse experiences as part of their daily life at school. The school has different indoor spaces that accommodate children's interests and activities and allows for interaction within the building. The feeling of nature extends indoors where the spaces are furnished with timber.
The textures, structures and windows (at children's height) allow for interaction with the building and the scale and niche spaces help aid interactions between friends. This stimulates and encourages curiosity and produces a positive educational experience.

HOW DO CHILDREN EXPERIENCE FAMILIAR ENVIRONMENTS?
Playground

Playgrounds are spaces where children roam freely and interact spontaneously with each other and the built structures of the space. On playgrounds, children develop physical, emotional and social skills either individually or through interaction. Children can also start to understand how the construction of certain structures works. For example, they may also start to measure and understand structures in terms of their bodies. For example, *ten horizontal timber steps take me to a higher space; if there are no steps, there must be another access.*

Rhythm is understood once you climb on monkey bars to move from one space to the next. People only concentrate on the first few steps when climbing stairs, as soon as the mind knows the rhythm, one does not look at the stairs anymore but simply climb without thinking.

As children experience the structure, they learn that untreated timber gives splinters and that to avoid splinters they must not move their hand along the grain of the wood. Metal slides are warm during midday and plastic slides can shock.
Firefighter poles make a screeching sound when your grip is tight enough as you slide down. The sand beneath the structure is coarse. Screams are louder in closed slides. All of these interactions are distinctly linked to a sensorial engagement and depends deeply on the body to measure the experience.

Playgrounds are blank canvasses with multiple access points and routes; children are in control of where they want to begin, where they want to end up and how they want to get there. The thresholds, volumes, spaces, nooks and proportions of the structure fit the proportions of a child.
Children embody these spaces by crawling, running, walking, climbing, sliding and sitting. It depends on the possibilities they see in the structure. Children learn how to use spaces in new or different ways, from experience, and from other children.

Senses, thoughts, feelings and memories are heightened when children play. How they experience the structure becomes part of a memory – a memory that will affect how they experience spaces when they are older.

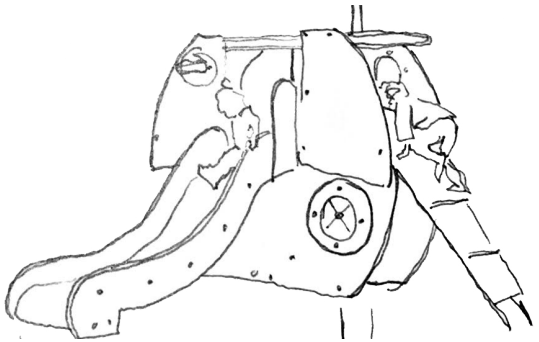


Fig. 171. Children playing on Playground


Fig. 172. Children walking on a bridge

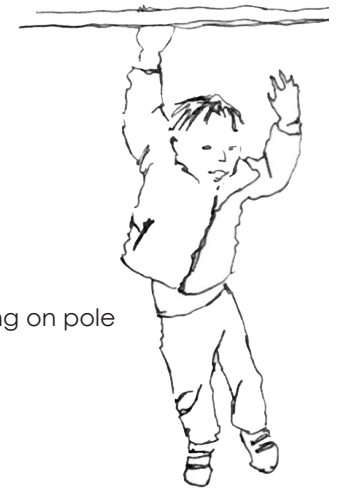


Fig. 173. Child hanging on pole

HOW DO CHILDREN EXPERIENCE FAMILIAR ENVIRONMENTS?
Playground | Precedent study

Five Fields Playground

Matterdesign & FR
2016
Lexington, Massachusetts, USA

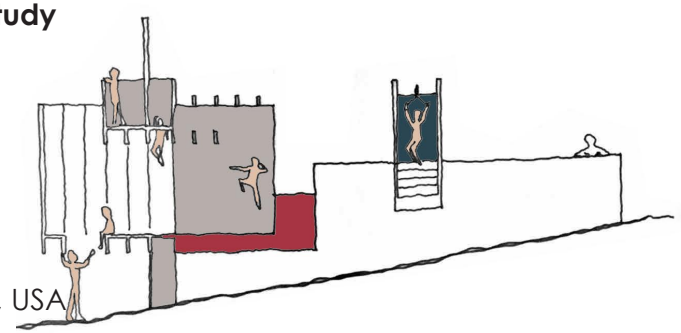
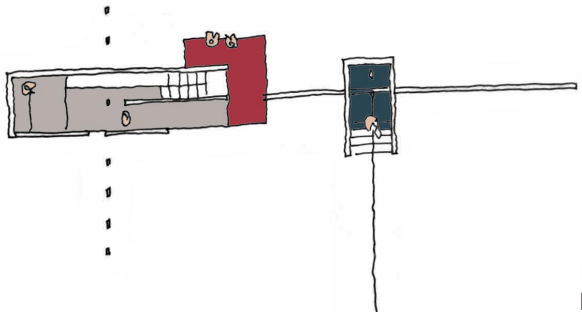


Fig. 174. Section and Floor plan of Five Fields Playground



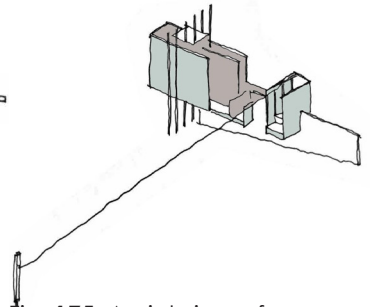


Fig. 175. Aerial view of Five Fields Playground

The Five Fields Play Structure, situated on common land of a community in Massachusetts, is at the centre of a group of houses. It is designed to stimulate children's imagination and give them the opportunity to play.

The designed structure has no purpose as shelter, but instead functions as play space, as a blank canvas for children's imagination and exploration. The structure has defining moments that encourages creativity in multiple ways. There are many ways of accessing the structure through doors and stairs that lead nowhere specific in the eyes of the adult, but to a box where children can play. There are hidden thresholds and volumes and the different connections, nooks and passageways let children interact with the structure and each other in different ways not dictated by a specific programme.

Fig. 176. Five Fields Playground

The spaces in the playground are accessible to adults but adults are not as mobile in contrast to children; they are able to move through the spaces as quickly as they want to. The playground prioritises the child as the user but also ensures that no severe risks are involved when playing – older children climb over structures and younger children crawl under.

The structure also includes a climbing wall, zip line and climbing rope, while other elements like staircases, a ladder, a lookout and ledge offer additional opportunities for play and exploration.

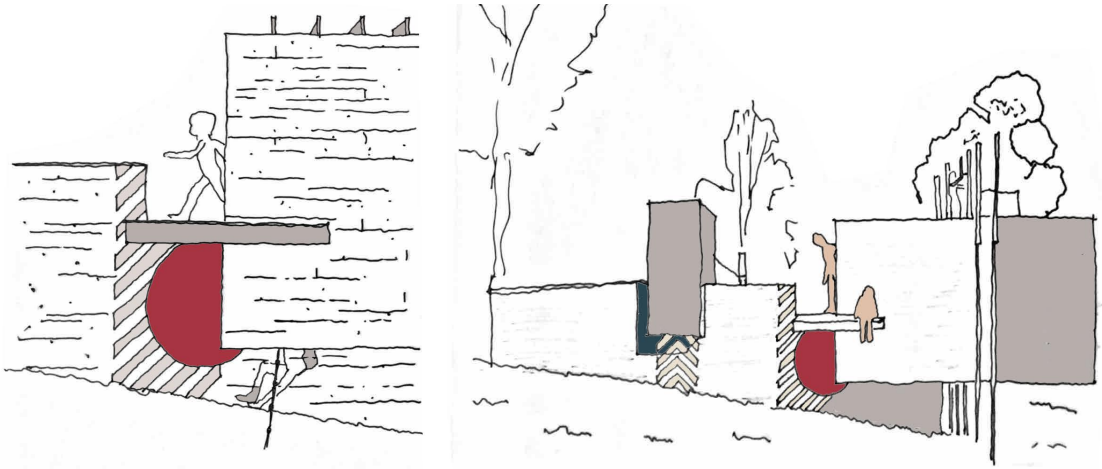


Fig. 177-178 Five Fields Playground accommodating the proportions of the primary user, children

HOW DO CHILDREN EXPERIENCE FAMILIAR ENVIRONMENTS?
The Home

The homes we grow up in become the reference to how we experience buildings in the present. Memory is what allows us to experience surfaces, textures, smells and sounds even when we do not come in direct contact with them. Children have more freedom in their homes, a space where they are more likely allowed to sit on tables, climb on chairs and use daily objects as toys. Here their freedom allows them to manipulate their environment and expand their imagination.

The next part of the document is a personal observation of a child embodying her own home. Charlotte was four years old at the time, surrounded by one younger and two older siblings. At four she could express herself verbally; she knew what she wanted and was not afraid to tell you. As a middle child, she is a good median for the observation.

After school, the letter hole in the door loses its function to receive letters and briefly, because it is at the perfect height, becomes the OBJECT to announce her return from school. The entry foyer changes into a space where all the unnecessary stress of the day is undressed, shoes in the right cupboard, jacket in the left. Her bare feet on the woven textured carpet anchor her to the feeling of home as she makes her way to the kitchen.

Charlotte slides the wooden step across the timber floors. First she climbs onto the smooth, cold countertop and retrieves well-deserved *Smarties* for her and her siblings. Then she slides the step to all the cupboards and drawers to fix herself a sandwich and a drink. Sometimes the step becomes seating because the legs bend at the perfect angle to place a plate on top of her knees.

Fig. 179. Children pushing each other on furniture as if surfing

Fig. 180. Child sitting on a step, perfect for eating a quick snack

Fig. 181. Child using a step to reach into spaces that are normally too high

When Charlotte plays downstairs, all the cushions in the living room and all the chairs in the dining room transform into walls and roofs. This allows for perfectly constructed forts, mazes and hiding spots. The ottoman turns into a surfboard and blankets into magic carpets; everyone pushes and pulls each other around. The back and armrests of the chair become seating, the flower vase is the perfect spot to store treasured *Legos*.

The dining table has more functions than a place where we gather to eat; it becomes a fort for the furious to hide. However, when the music is just at the right volume it might, for a brief moment, become a dance floor – only to turn into a fort again because dancing on tables is frowned-upon.
All the cupboards become platforms for all the toys to land and slide down. The carpet covering the stairs is lava at all times and it is important to walk up the stairs with all your attention, careful not to touch the lava.

Fig. 182. Children dancing on furniture

Fig. 183. Child using back rest of chair as a seat

Fig. 184 Child not using a seat at all to sit, but still sitting

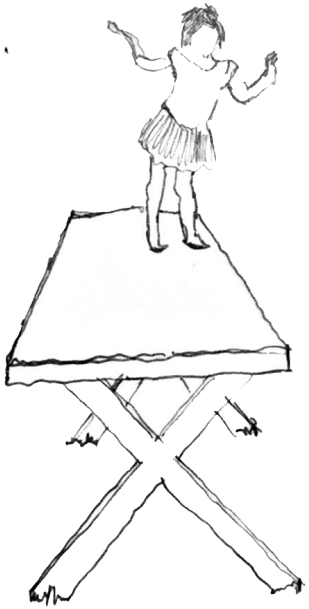


Fig. 185. Child dancing on a table

Fig. 186. Children using a window sill for seating which perfect height for watching television

Charlotte's room is a small world. The bed is an aeroplane; the windowsills, situated at different heights, are rooms and platforms for the toys. Charlotte is the only one who has access to the top of the cupboard when she stands on her bunker bed. This has evolved into the best stash for candy wrappers of sweets mysteriously going missing in the house. The stairs leading to the bunker bed transform into a platform where one jumps to the ground. In this room, she is allowed to dance on the table as long as no one sees or knows.

The garden is magical; the hosepipe becomes a snake to run from or attack on a summer's day. The trampoline gives special superpowers that allows her to sneak a peek over the hedges and observe the people on the street. The outside furniture outside becomes the best hiding spots for a game of hide and seek or the safest place when the floor is lava.

Fig. 187. Children playing in shopping carts

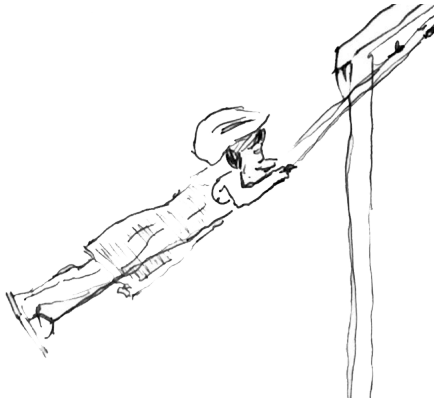


Fig. 188. A child using a swing to fly to the moon

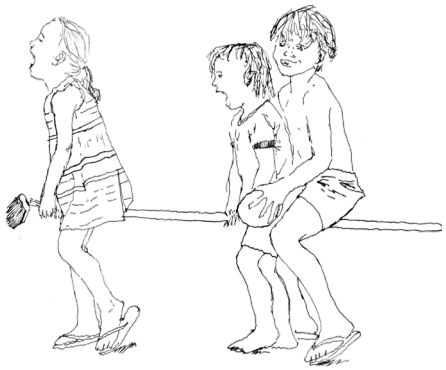


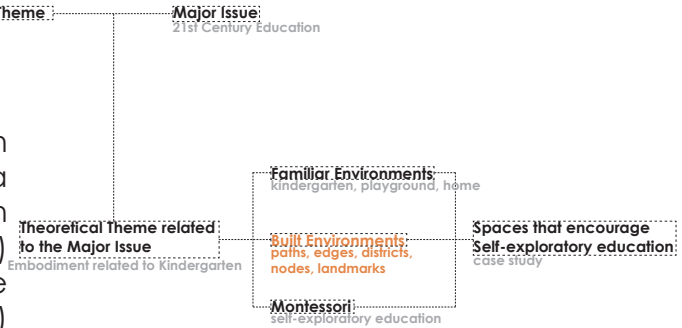
Fig. 189. Children playing with a broom

The way Charlotte experiences, manipulates and transforms her daily environment at home, makes one realise that children learn and educate themselves in any possible environment.
Spaces that children familiarise themselves with, play a fundamental role in their well-being. The personal experience and memory built up while engaging with people, spaces and activities help to develop the child's cognitive abilities. These memories and cognitive abilities add value to the experience of an unfamiliar environment.
Experiencing a home and experiencing a school are two different things. However if we are to familiarise ourselves with a place, we relate to the new and unfamiliar spaces with the memory of our familiar spaces.
In the end how we engage with the space determines how we understand it, spaces therefore have to:

- allows and encourage interaction.
- allow to be manipulable spaces where objects and furniture is re-arranged.
- and in conclusion allow a trigger association to the place.

(Goldhagen, 2017: 205)

HOW DO CHILDREN EXPERIENCE THE BUILT-ENVIRONMENT?



How children experience familiar environments (classroom, playground and home) has an influence on how they experience environments that are not as familiar to them. In this case it is a new school. When a space, house or playground is familiar children find new ways to engage with them, developing them physically, socially and sometimes intellectually. Kevin Lynch (1960: 46-49) describes the five elements that help people to understand their cities. These five elements are applied to the design principles of the proposed school in order to make it this small city (school) relatable to the children. Schools can be overwhelming to new and especially small children. The children applying to this school will be between five and nine years old, in order for it to be a little less overwhelming the functions and elements have to relate to each other and the context.

Cognitive senses can move into non-conscious states. When one gets used to an environment, the way one thinks becomes autonomous. The type of environment a child finds himself in has an effect on how well he develops his senses from a young age. Chaotic and uncontrolled spaces correlate with disorder and have an influence on the overall development of a child. Children need to feel that they have control over their environment (with ground rules) to give them a sense of safety and motivation. Disruptive or disordered spaces steal children's sense of safety in a space that is supposed to encourage them to explore and learn freely and can have a negative influence on their development. (Goldhagen, 2017: 3-6).

Enriching environments move us toward more cognitive-conscious states where we are aware of our surroundings. Spaces have to be designed to shift the child's experience from ordinary, to out of the ordinary, in order to make them aware of their surroundings. This experience comes from spaces that ignite multiple triggers, stimulate the senses and make a space more desirable. Designs should reflect what the primary user (the child) needs because it influences our experience of the building. An enriching experience makes the user want to revisit the place, this is important in a school environment and children returning because they like to learn. It is necessary to create an environment, which effects the child's development and their relationship with learning. (Goldhagen, 2017: 116-117).

This part of the document focuses on how children identify with spaces, as well as how they orientate and navigate within spaces. The arrangement of spaces, furniture, play areas and objects should trigger association and interaction. The built environment therefore becomes a place that adds social meaning and creates a stronger attachment between children and their education.

Identifying with a space through embodiment.

How a child identifies with his environment enhances his interaction with it. Children engage with buildings differently to adults. Their sight line is much lower and sometimes they are not able to experience how some buildings are designed to be experienced. The body and proportions of a child need to be kept in mind at all times to make a space comfortable and identifiable and to enhance the intended experience for a child. The concern with proportion is especially relevant to a school.

Orientation and navigation in spaces.

The way spaces are organised, help children orientate themselves within the type of space they occupy. People orientate themselves by the simple use of patterns and visual connections. In his book *The image of the City*, Kevin Lynch (1960: 46-49) mentions five elements of city images he had studied up to that point. These elements are discussed to understand how children relate to the built-environment but more specifically, the school.

The five elements described by Lynch are paths, edges, districts, nodes and landmarks. These are elements that help the public with the image of a given city. As each city dweller is unique so are their experiences, however certain elements in a city influence and define its character, gives meaning to the user and effects its embodied feel towards the user.

This also becomes applicable to schools and the children who experience them. In a sense, a school is a small city a child moves in. Elements to which the child can relate to orientate himself helps with the schools relatability, character and overall experience. When the child experiences the school and becomes familiar with it, he becomes comfortable to explore his own interest. Therefore the layout and relationships between the built elements need to be relatable to each other and the children. The childs' experience becomes fun and he wants to go to school to learn and develop.

PATHS | EDGES | DISTRICTS | NODES | LANDMARKS

Paths
The pathways between classrooms, or classrooms and playgrounds, guide children to and from spaces. The paths are connected to other physical elements (the built environment) and help the child to orientate himself in the school on the direction he is moving and when he is moving towards a specific type of space.

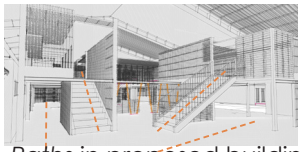


Fig. 190. *Paths* in proposed building

Edges
Edges are boundaries between two spaces, like a playground and classroom. These are not dominant features, in a school the user is the child and districts can be compared to classrooms as spaces that orientate the user on site.

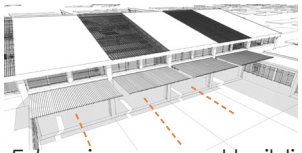


Fig. 191. *Edges* in proposed building

Districts
In this case, districts c an be described as the different identifiable spaces within a school. A district has a common identifying character. A classroom is a different district than a playground, communal courtyard or entrance foyer.

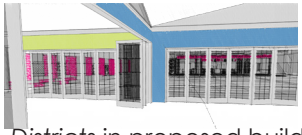


Fig. 192. *Districts* in proposed building

Nodes
Nodes are strategic focus points. In a school setting this can the entrances to the building an different functions, a playground structure that defines the room or a higher roof.

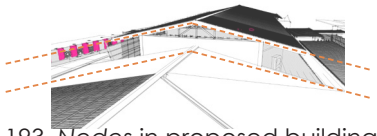


Fig. 193. *Nodes* in proposed building

Landmarks
Landmarks are external focus points but act as references for direction and navigation. They are usually specific to a place's character and can be used as a form of identification. In schools, landmarks become an important tool for children to familiarise themselves with certain spaces. Landmarks can include elements such as colour finishes in classrooms, floor textures, the height of roofs and open or closed spaces.

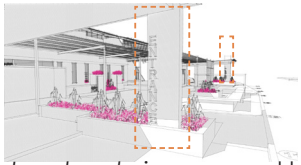
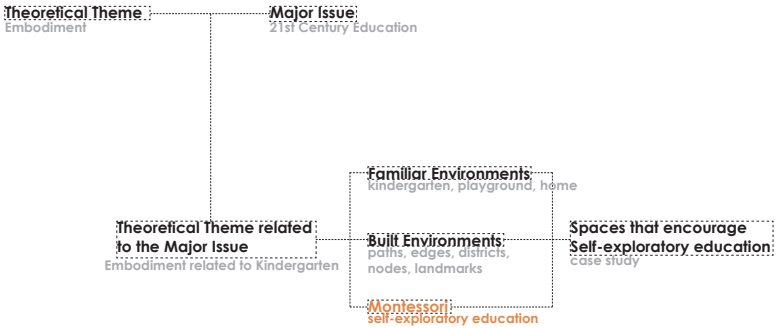


Fig. 194. *Landmarks* in proposed building



HOW CAN A CHILD BE IN CHARGE OF HIS OWN EXPERIENCE AND EDUCATIONAL DEVELOPMENT?

Montessori

Brief History

Maria Montessori (1870-1952) was a medical doctor who developed a special interest in the educational development of children. In 1901, she started her own studies on educational philosophy and the teaching and lecturing methods for students. Through her studies and practice, she observed how children are able to learn when the environment they find themselves in supports their natural instinct and drives them to educate themselves. (Living Montessori Education Community, 2019: online)

Maria developed the Montessori Method, which changed the way some societies saw schools and the educational development of children.

Children can be in charge of their own education when the teacher, curriculum and the designed spaces allow them to do so within boundaries. (FAMM, 2016: online)

Fig. 195. Maria Montessori

What is a Montessori?

Montessori is a different approach on childhood education. Children are in control of their learning development therefore their educational experience works together with their nature of learning instead of against it. Montessori programs allow children to work on a subject they chose themselves. They also have the option to work further on a subject that a teacher has explained, they may pursue the interest in the subject for as long as they want. The classroom environment accommodates the child where he has the power to choose to work individually, or in a group in a provided space in the class. (Montessori Teacher Training & Professional Development, 2019: online)

Children work repetitively until they fulfill their desire of accomplishment; they do the work for the joy of it.

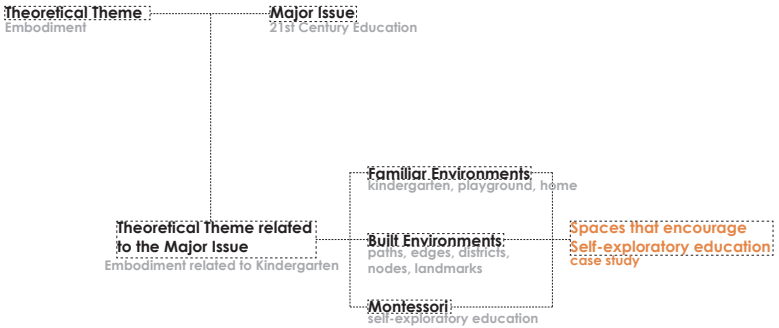
A key benefit of this method is:
A key benefit of this method is that children are observed, followed and encouraged to learn on their own during their most sensitive period where the mind is still very absorbent.
Children are born with the inner drive and motivation to educate themselves. They do not learn at the same pace or have the same interests as other children, therefore the Montessori school creates an environment that accommodates their desired subject of interest. (Hawthorne, 2018: online)

Freedom:
Children have the freedom to choose their subjects in controlled environments with ground rules. The environment is neat, organised and on a scale that children can easily find the things they need to educate themselves.

Encourage independence, confidence and responsibility:
Children have the choice and ability to make their own decisions and quickly learn that when they can do something for themselves, an adult does not need to do it for them. The realisation encourages independence and gives the child an opportunity to further develop a known skill. They approach things that are unknown to them with more confidence because of the independence they gain during self-chosen tasks.

Provide the right setting (Classroom setup):
Different furniture layouts, colours, grouping of subjects, communal spaces, quiet spaces are all examples of a classroom setup to stimulate and encourage education.

Mixed age groups (Classroom setup):
Younger children learn from older children. This gives them an opportunity to develop social, educational and communication skills between students.



HOW DOES THE BUILT ENVIRONMENT ACCOMMODATE CHILDREN IN SELF EXPLORATORY LEARNING AND EDUCATION?

Kindergarten | Case Study
Carroll Bell Elementary

RVK Architects
2018
San Antonio, Texas

The case study is analysed on six identified design parameters (identified by the principal and teachers); colour, choice, complexity, flexibility, light and connectivity. These design parameters were the focus points when the school decided to renovate the building and its interior spaces. According to them it is these parameters that make children feel welcome and safe in school classrooms. The aim of the renovation was to open up the classrooms to allow more natural light but also to greaten the floorspace, allowing the teachers and children more space in the room to manipulate and move around in.

Carroll Bell Elementary opened again in 2018, it is a modern school building with larger classrooms, open spaces and teachers that had an input in the classrooms layout and furnishings. The school is transformed into a dynamic vibrant space that accommodates the needs of developing students. (Rvk-architects.com, 2018: online)

This precedent study can be viewed under the parameters of Herman Herzberger's Delft Montessori as well. After the renovations, the classrooms became a home-base for the students. It is welcoming with it's warm colours, different spaces within one room and furniture that is fun and easily movable by children. Children feel comfortable to interact because the space feels like theirs, they now have the flexibility to sit on their own or participate in a group task.

Fig. 196. Maria Montesorri

COLOUR | CHOICE | COMPLEXITY | FLEXIBILITY | LIGHT | CONNECTIVITY

Fig. 197. Colourful classrooms

colour - bright colours in furnishings, furniture (tables and chairs) are coloured by grade level to give a sense of identity.

Fig. 198. Classroom furniture

choice - the choice of furniture and furnishings is relaxed which gives a sense of safety and acceptance, this is also known as soft classrooms.

Fig. 199. Complexity in Classrooms

complexity - how technology and other mediums of education are integrated into the school.

Fig. 200. Flexible classroom with movable furniture

flexibility - furniture can be moved around, this allows for the space to become multi-functional and children use their excess energy. The choice of different seating options help children to choose seating which fit their need for the type of subject they will be doing. Reading on a soft chair, math and a chair with back support, group work in a chair that allows for more movement.

Fig. 201. Natural light in classroom

light - well lit classrooms and especially natural lit classrooms, help boost creativity and concentration, children are more motivated to learn.

Fig. 202. Furniture that fit height and porpotions of children

connectivity - how children connect to their environment outside the classroom without getting distracted.

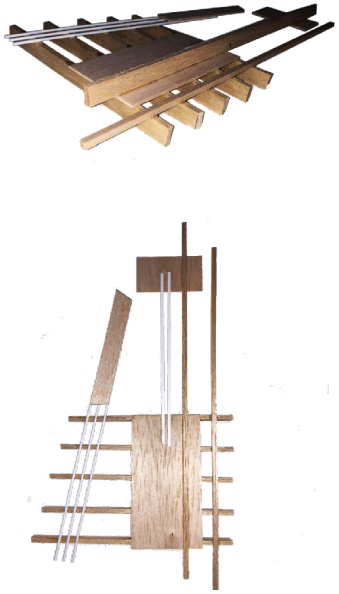
The principal stated that since the changes to the school, the "Students love coming to school now, and our attendance is up" (Specialty, 2019: online)

PART 4

DESIGN & TECHNICAL SYSNTHESIS

CONCEPT TO FORM

MODULAR | APPLIED TO THE SITE



TRANSLATION | APPLIED TO THE SITE

STATIC VS DYNAMIC | APPLIED TO THE SITE

DESIGN DEVELOPMENT

PHASE | **1** conceptual - Identifying function and spaces

Phase one of the design development is an exploration and integration of the concepts together with a preliminary accommodation list. The functions and their place within the plan are explored. Figures 204-209 show rough bubble diagrams to identify entrances, a reception, classrooms and the playground.
Figure 203 show types of play methods and their structures and how the site can accommodate them.

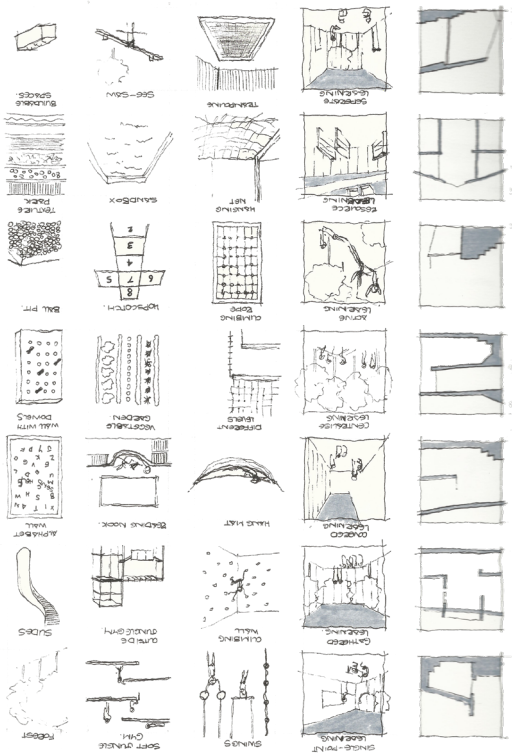
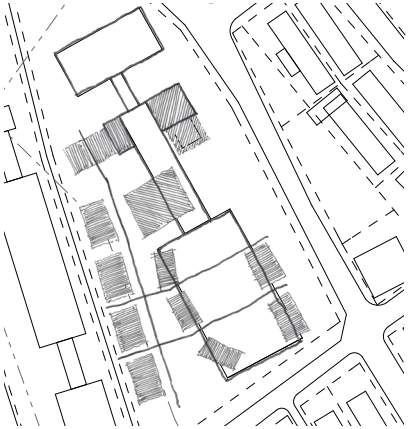


Figure 203. Playground possibilities.

Phase one is an attempt to explore how diverse the accommodation list can be as well as the type of functions that can be accommodated. However, as one proceeds to the other phases it is clear that the first phase changes as the functions and typology develops.

Figure 204-209. Exploring and identifying functions.

PHASE | 2



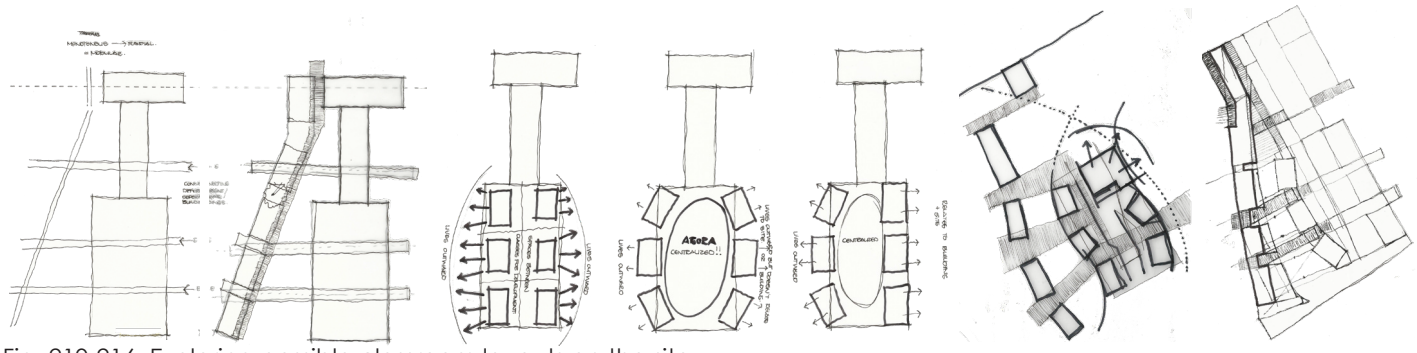


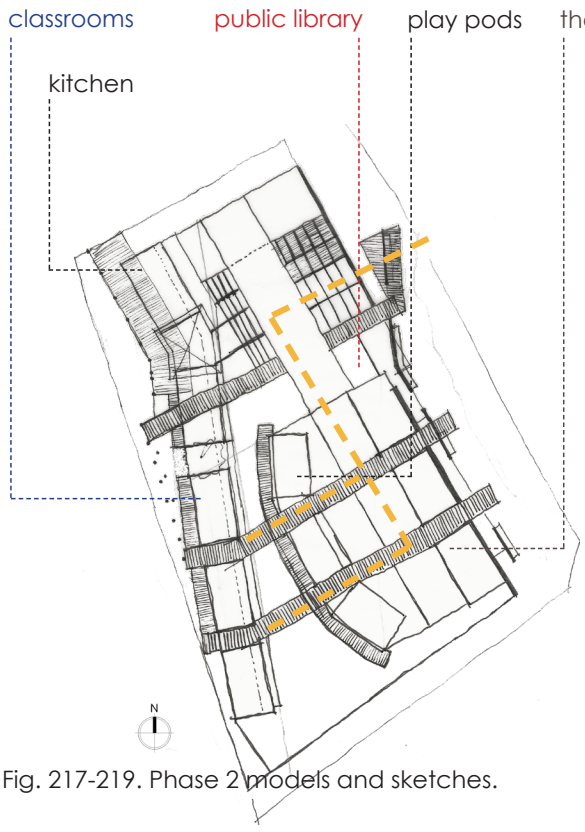
Fig. 210-216. Exploring possible classroom layouts on the site.

Classrooms
Located outside existing building on the west side of the side, linked by a walkway that provides protection from the western sun. The walkway leads one to the kitchen also located on the far north side of the site.

Reception and main entrance
Located on the far north side of the site. Children enter and walk through the existing building to their classrooms or playground.

Public Library
Central on the site, adjacent to the public eastern façade. It is located opposite the reception.

Therapy
Located on the far south side of the site, facing the public but can also be accessed by the school when needed.



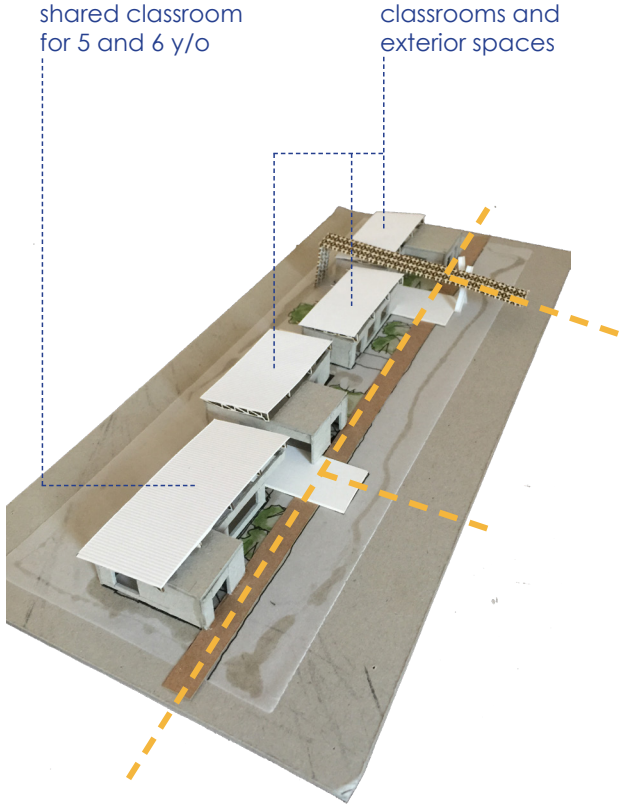


 Fig. 217-219. Phase 2 models and sketches.

PHASE | 3

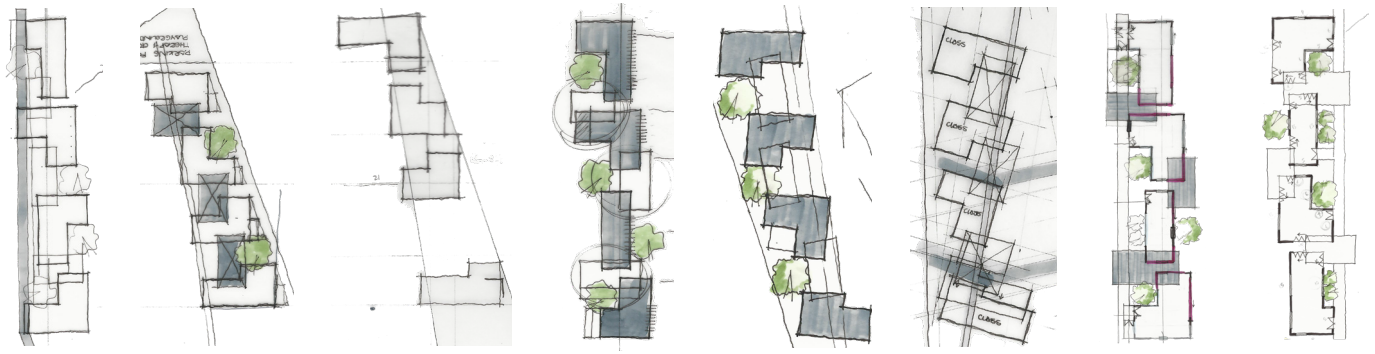


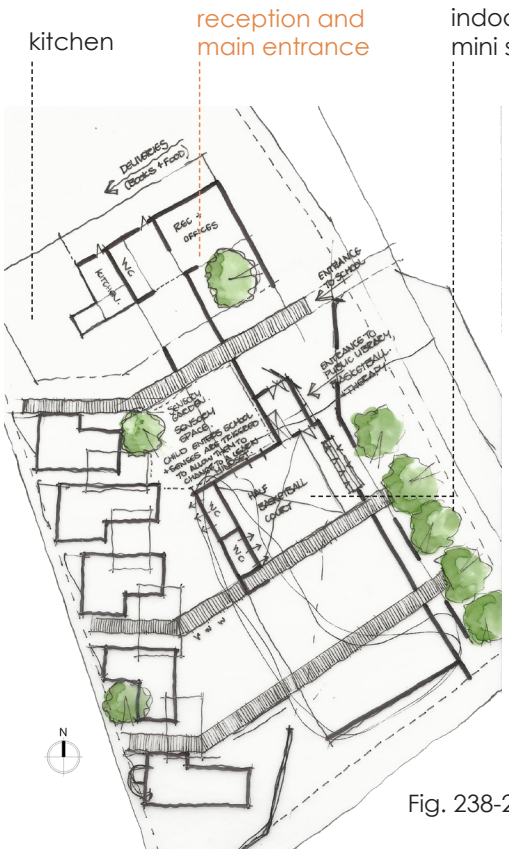
Fig. 220-237. Exploring possible classroom layout designs.

Classrooms
Still located on west side of the site but turned to face north, now connected by patios in order to extend classroom space to the outside. Children from adjacent classes can interact and play.

Mini soccer field
Located inside the indoor playground. However, it is only half a field and becomes a small space for any possible sporting events the school would like to host.

Kitchen
The change in classroom orientation creates a space outside the kitchen for children to sit during break.

Therapy
The therapy rooms are moved inside the building to try and incorporate their play rooms with the indoor playground.



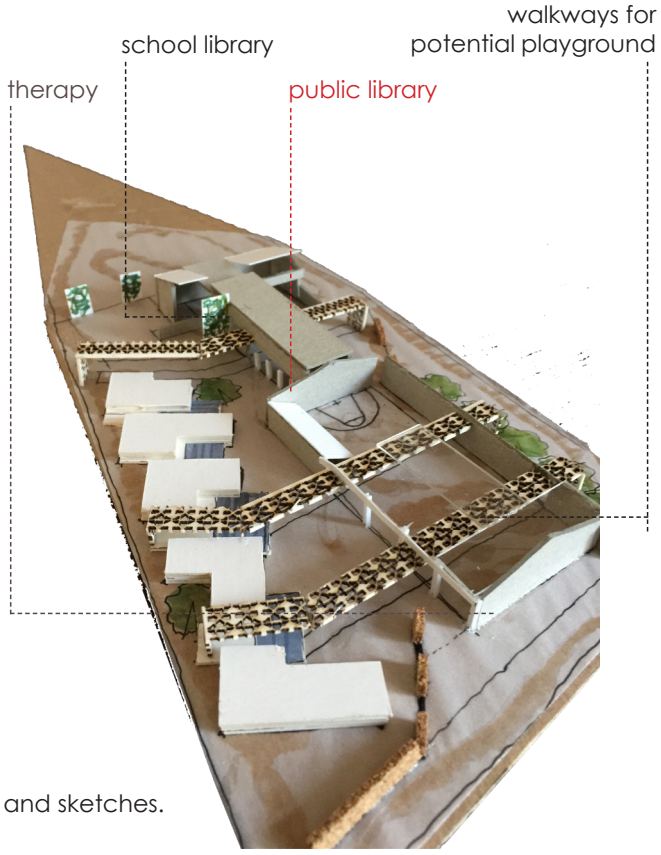


Fig. 238-240. Phase 3 models and sketches.

PHASE | 4

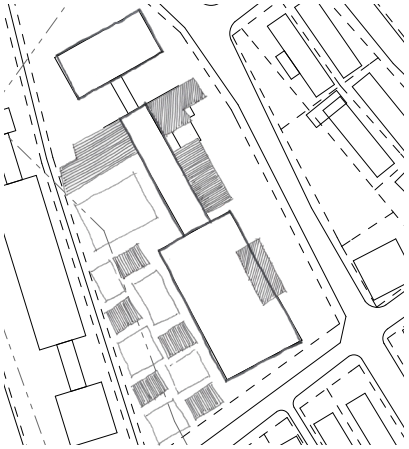


Fig. 241-244. Exploring possible classroom and indoor playground layouts.

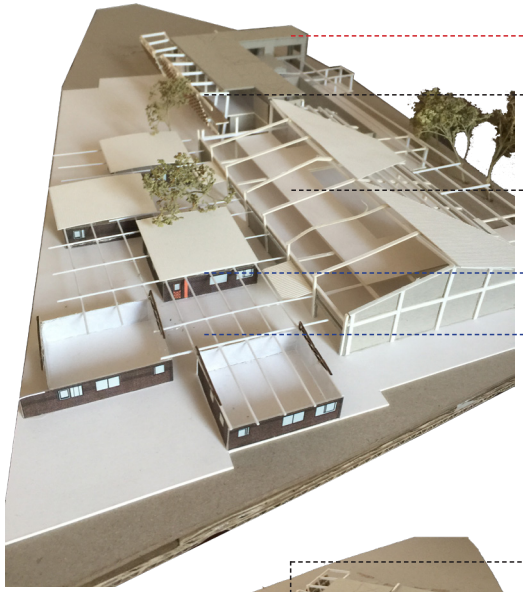


Fig. 245-246. Phase 4 model scale 1:200

Classrooms

The classrooms are moved on site to create small courtyard spaces between them. The courtyards become playgrounds. Ages 5 and 6 play together and ages 7-9 play together during breaks.

Mini soccer field

Moved outside the kitchen. Allows for sporting events to be hosted outside regular school times.

Public Library

Located on the far north of the site and has access to a part of the first floor space.

Roofs

A concrete roof is added above the public library. The indoor playground receives a type of roof that allows natural light to enter the building, but still create enough shade against the eastern and western sunlight.

Therapy

The therapy rooms are moved back to the public façade inside the indoor playground space.

School Library

The school library, located on the existing first floor receives a walkway on the west side of the existing building. Children therefor walks over the outside playground and has an outside view before entering the library. On the eastern façade a pod is created by adding north-facing windows, this allow natural light to flow into the library. The north facing windows creates a space that become reading pods for the children.

Reception and main entrance

The reception is moved more central on site for better surveillance, security and control on site.

Walkways

On the public façade (east) walkways are added to accommodate the different functions on the site (therapy, main school entrance and public library).

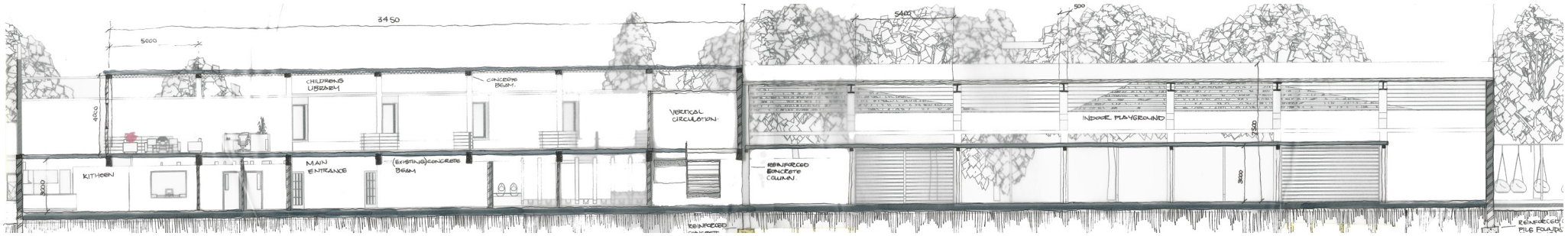


Fig. 247. Long section through school library and indoor playground

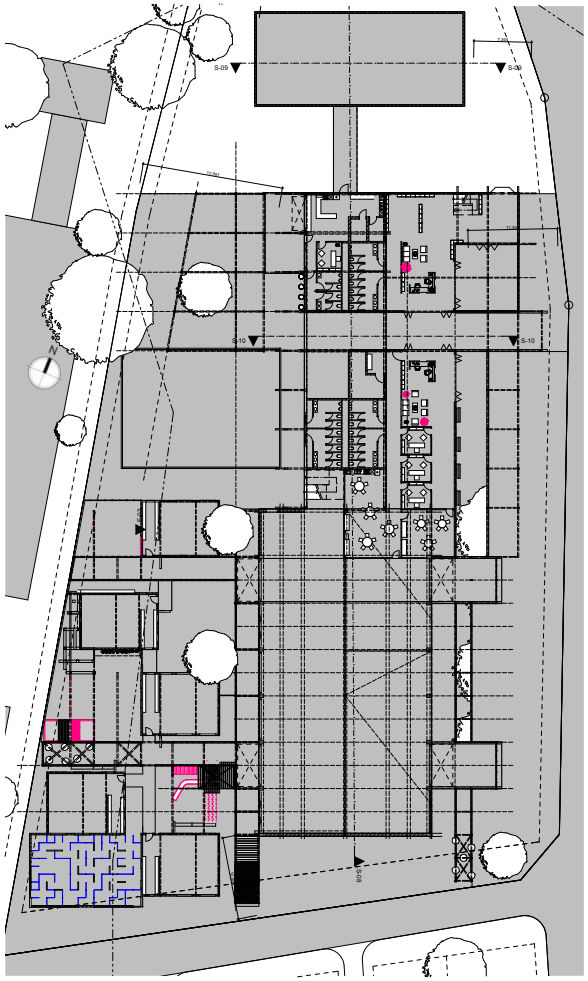


Fig. 248. Ground Floor Plan (not to scale)

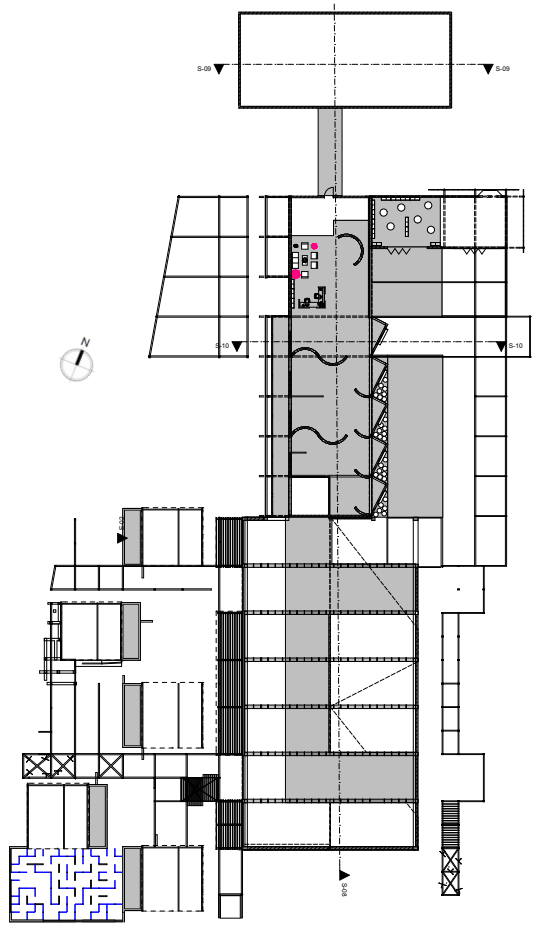


Fig. 249 First Floor Plan (not to scale)

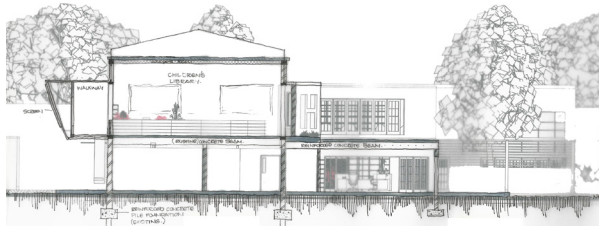
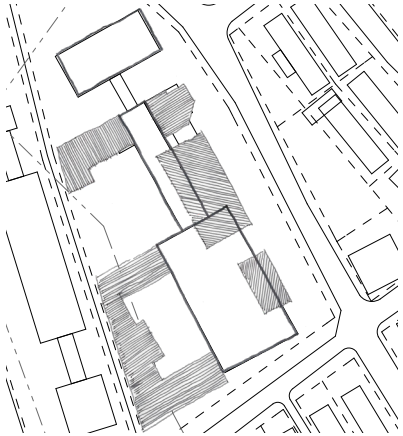


Fig. 250 Cross section through school library and reception

Fig. 251 Render of proposed building roofs

Fig. 252 Render of play structures between classrooms

PHASE | 5



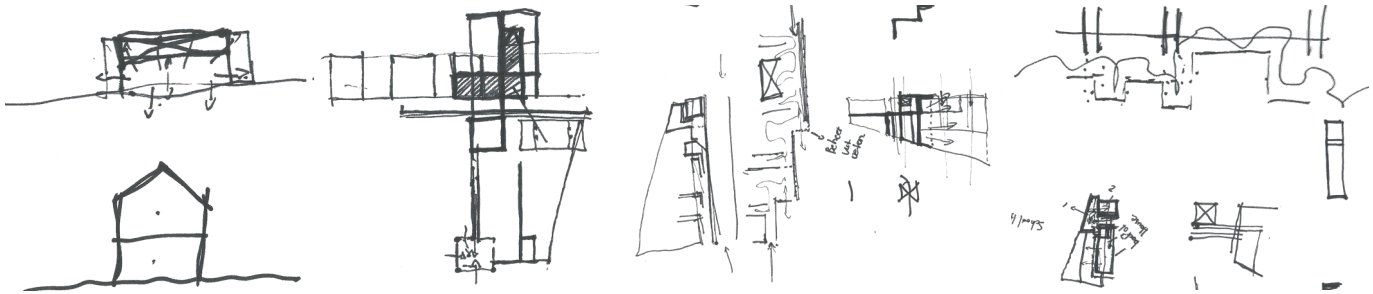


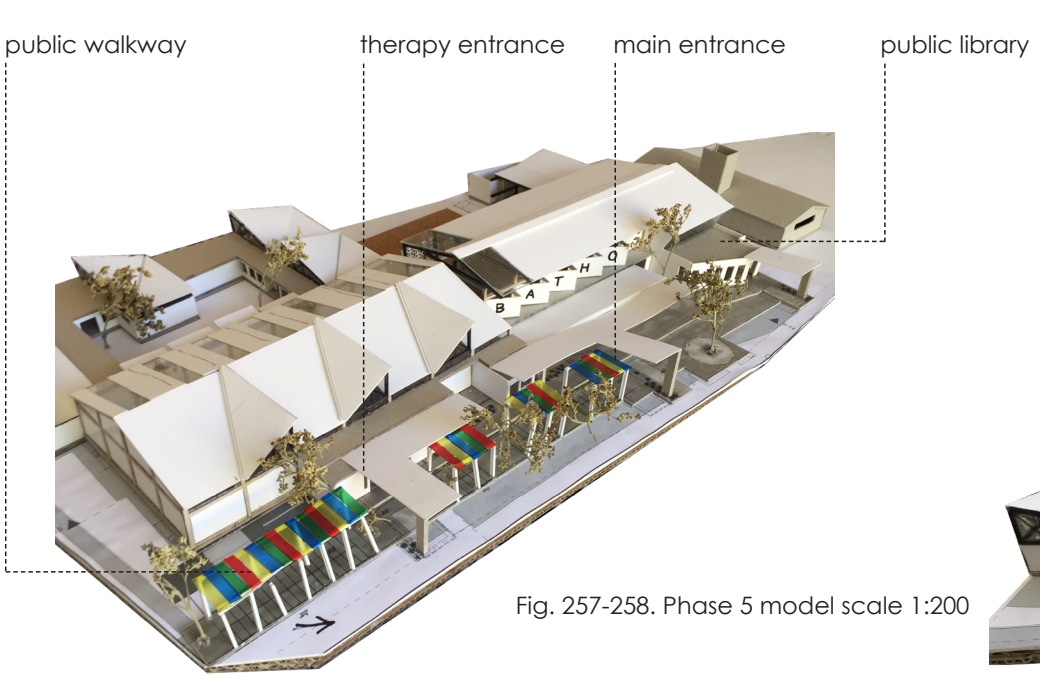
Fig. 253-256. Exploring possible school entrance and public facade layouts.

Classrooms
The classrooms are moved in the shape of a "u" to create a communal courtyard that connects to the indoor playground. All classes face north and are linked by indoor corridors that face the courtyard.

Reception and entrances
The reception and main entrance is located central on site for security and surveillance. The public library is far north side of the public facade to separate the public from the school entrance. The therapy entrance is on the south side of the public façade and is also accessible by the school through the indoor playground when needed.

Public Library
The public library is situated on ground floor, however it also accommodates a computer room and reading space on the first floor of the existing building it is next to.

Therapy
The therapy space faces the public and is easily accessible without disturbing the flow of children upon arrival or leaving the school. The therapy rooms are easily accessible from inside the school when needed.



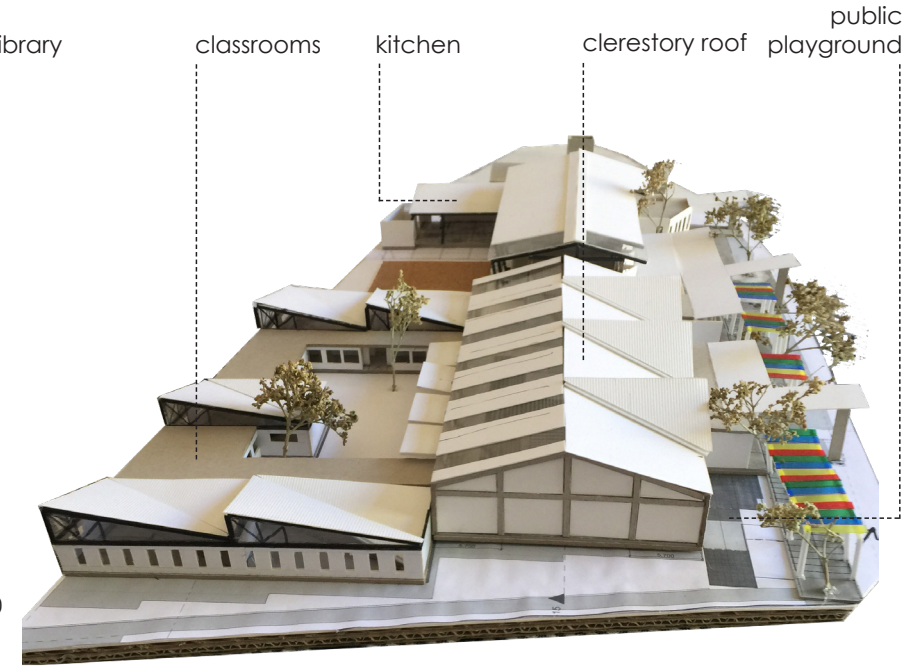


Fig. 257-258. Phase 5 model scale 1:200

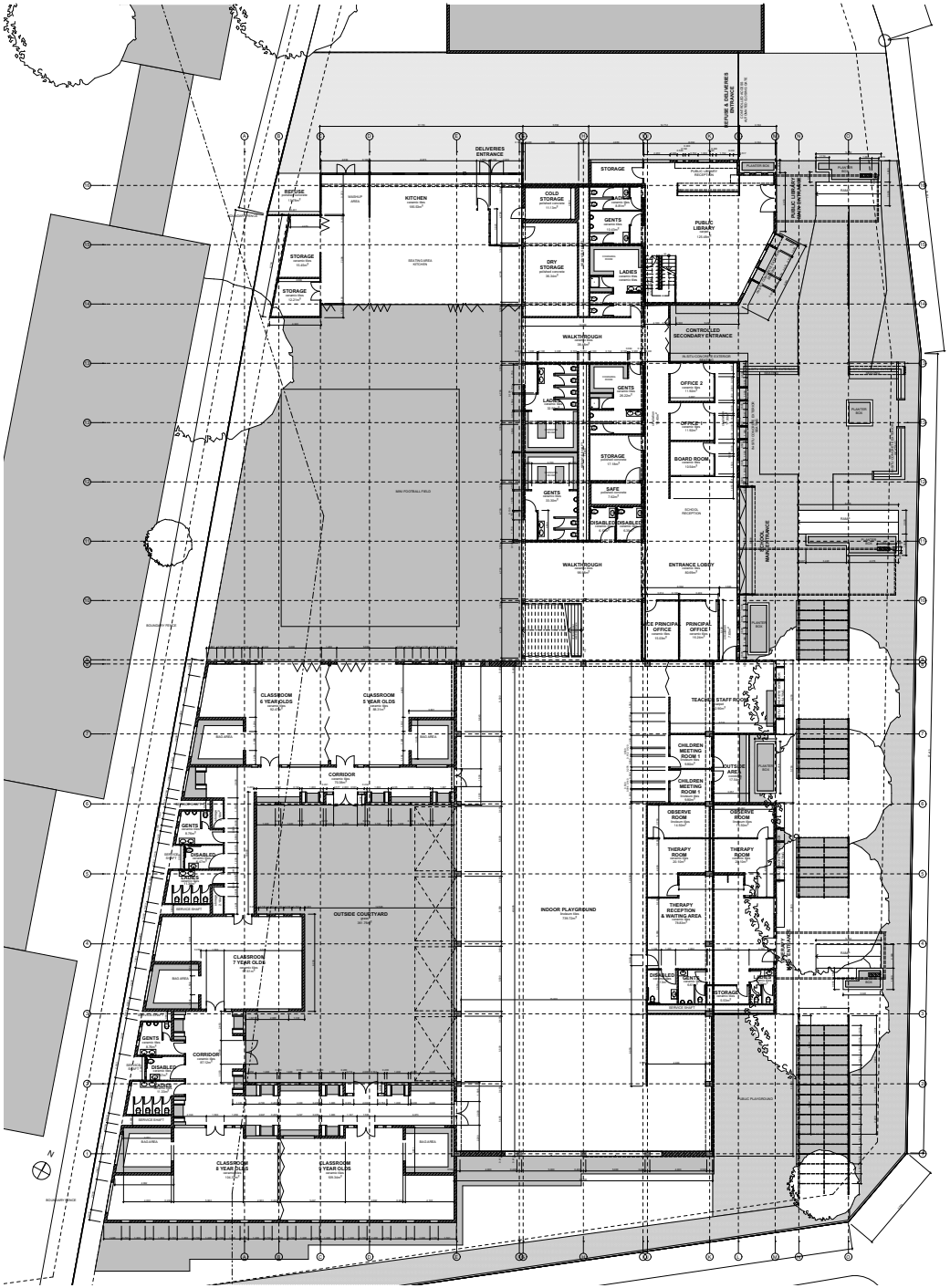


Fig. 259. Phase 5 Ground Floor Plan (not to scale)

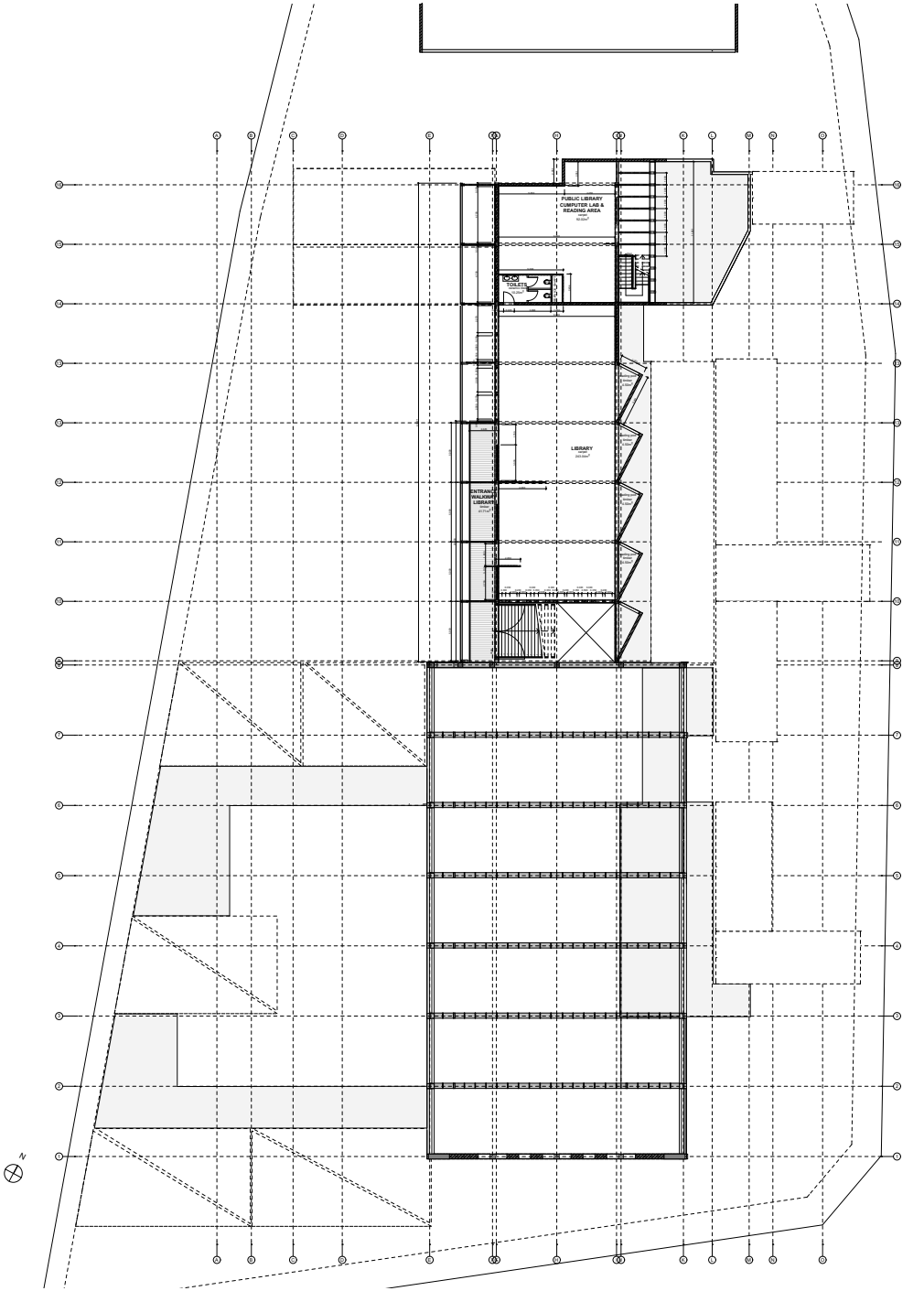


Fig. 260. Phase 5 First Floor Plan (not to scale)

Fig. 261. Render of kitchen.

Fig. 262. Render of indoor playground and south facade of school library.

Fig. 263. Render of school library.

Roofs
The clerestory roofs on the classrooms face south allowing as much as possible natural light without creating a glare.
The clerestory roofs on the existing building with the indoor playground allow natural northern light into the space.
The south side of the pitched roof on top of the library is polycarbonate sheets to allow light into the corridor that leads one from the reception to the school, light into the indoor playground as well as light into the school library.

Walkways
The walkways on the eastern public façade connect the three entrances and create a walkway that lead pedestrians through the public side of the site.

Mini soccer field
The mini soccer field as part of the space outside the kitchen, children can sit here during lunch breaks or when in need on a sport day, the mini soccer field has enough seating around it to accommodate parents who are watching

Corridors
The corridors of the classrooms accommodate seating in order to become learning streets like Herman Herzberger designed the corridors in the Delft Montessori (see page….). The corridors are therefore not dead spaces but used before school, during class or in the breaks.

Kitchen
The kitchen can accommodate events held by the school by providing food when needed. But is also functional during school to provide food for the children during breaks.

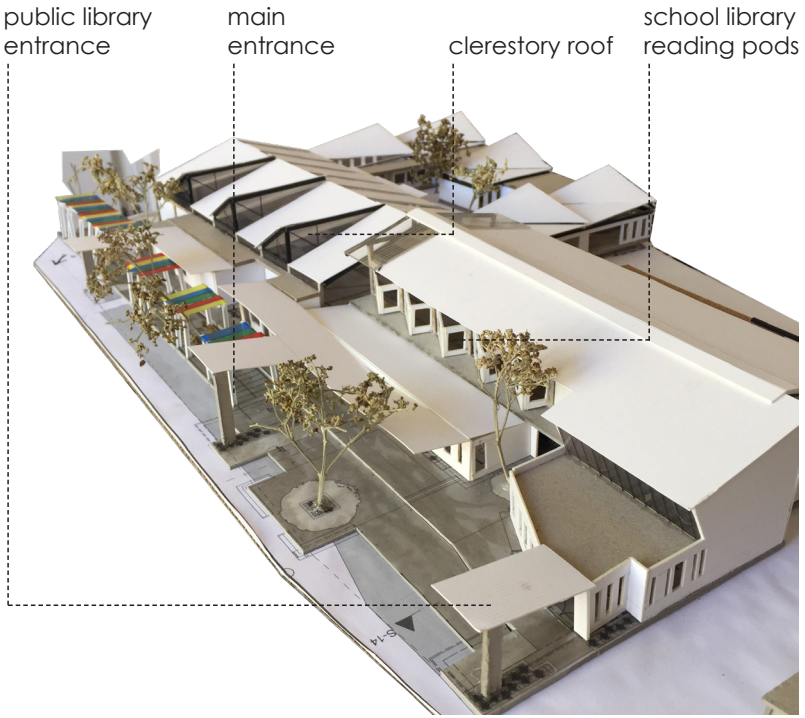


Fig. 264-265. Phase 5 model scale 1:200

Fig. 267. Render of Proposed building.


Fig. 268. Render of public walkways.

Fig. 269. South render of proposed building.

Fig. 270. Render of Main entrance.

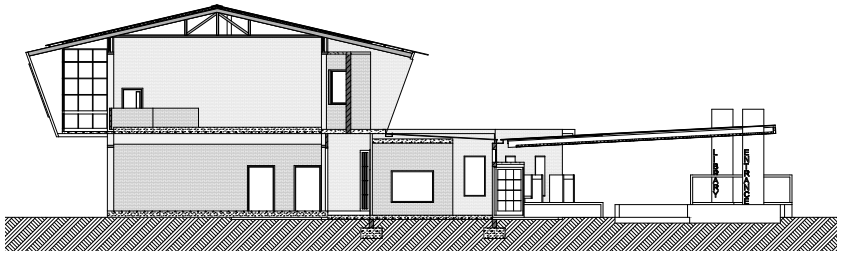


Fig. 271. Cross section through school library and reception.

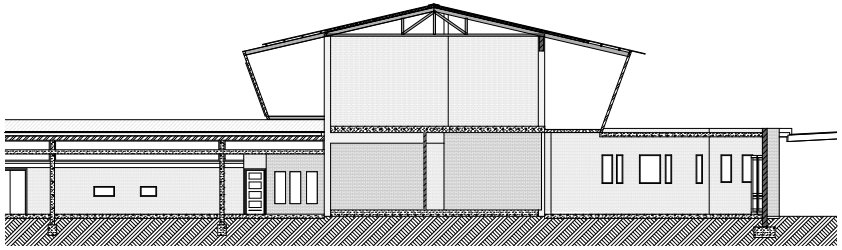


Fig. 272. Cross section through school library, kitchen and reception.

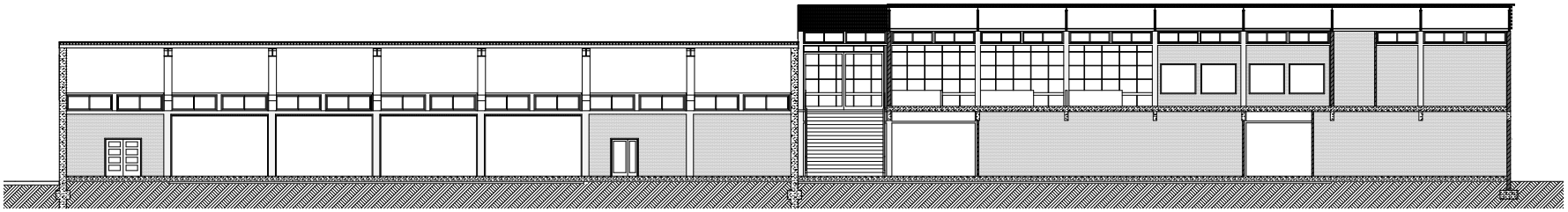


Fig. 273. Long section through indoor playground, school library and admin.

Fig. 274. Render of public facade.

Fig. 275. Arial render of Kindergarten.

PLAN EXPLORATION

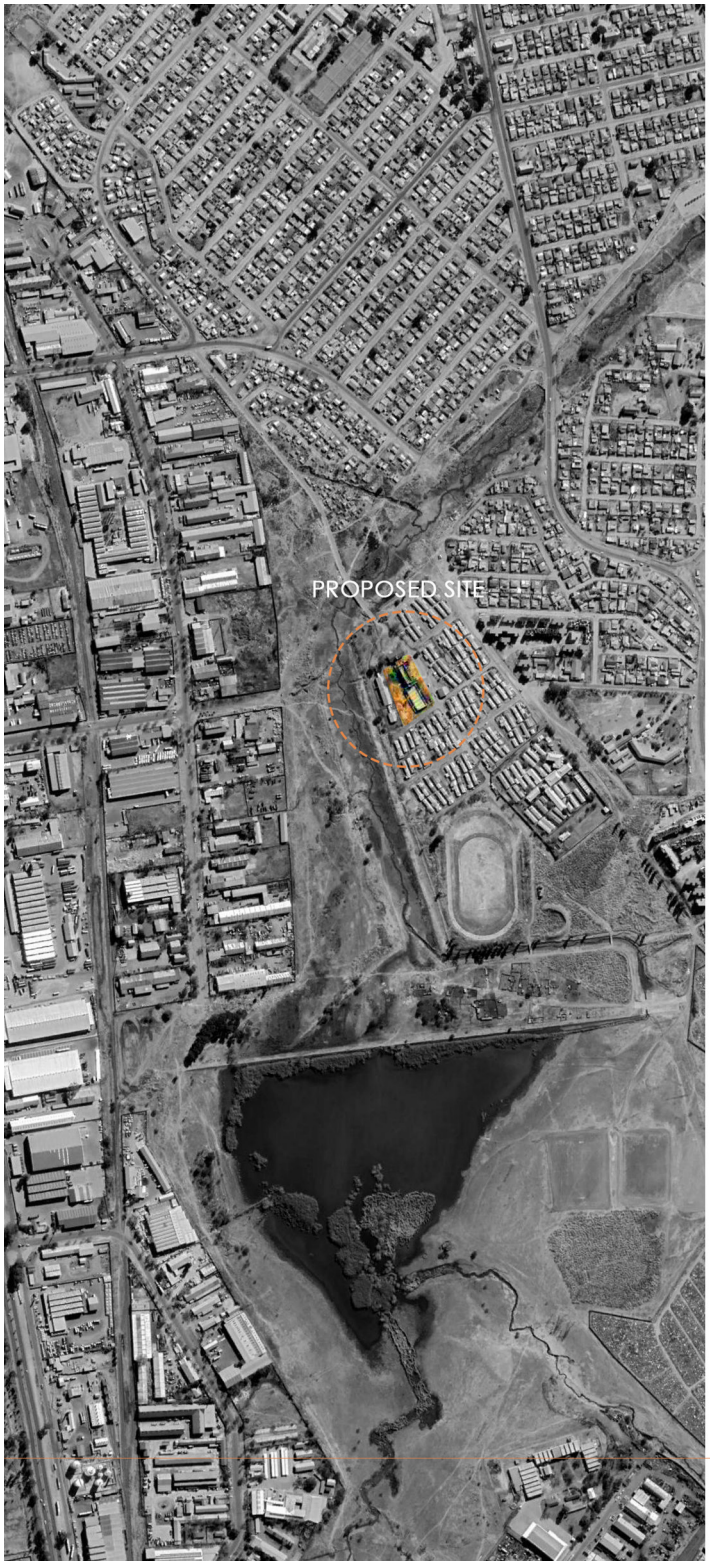
FIRST FLOOR PLAN

GROUND FLOOR PLAN

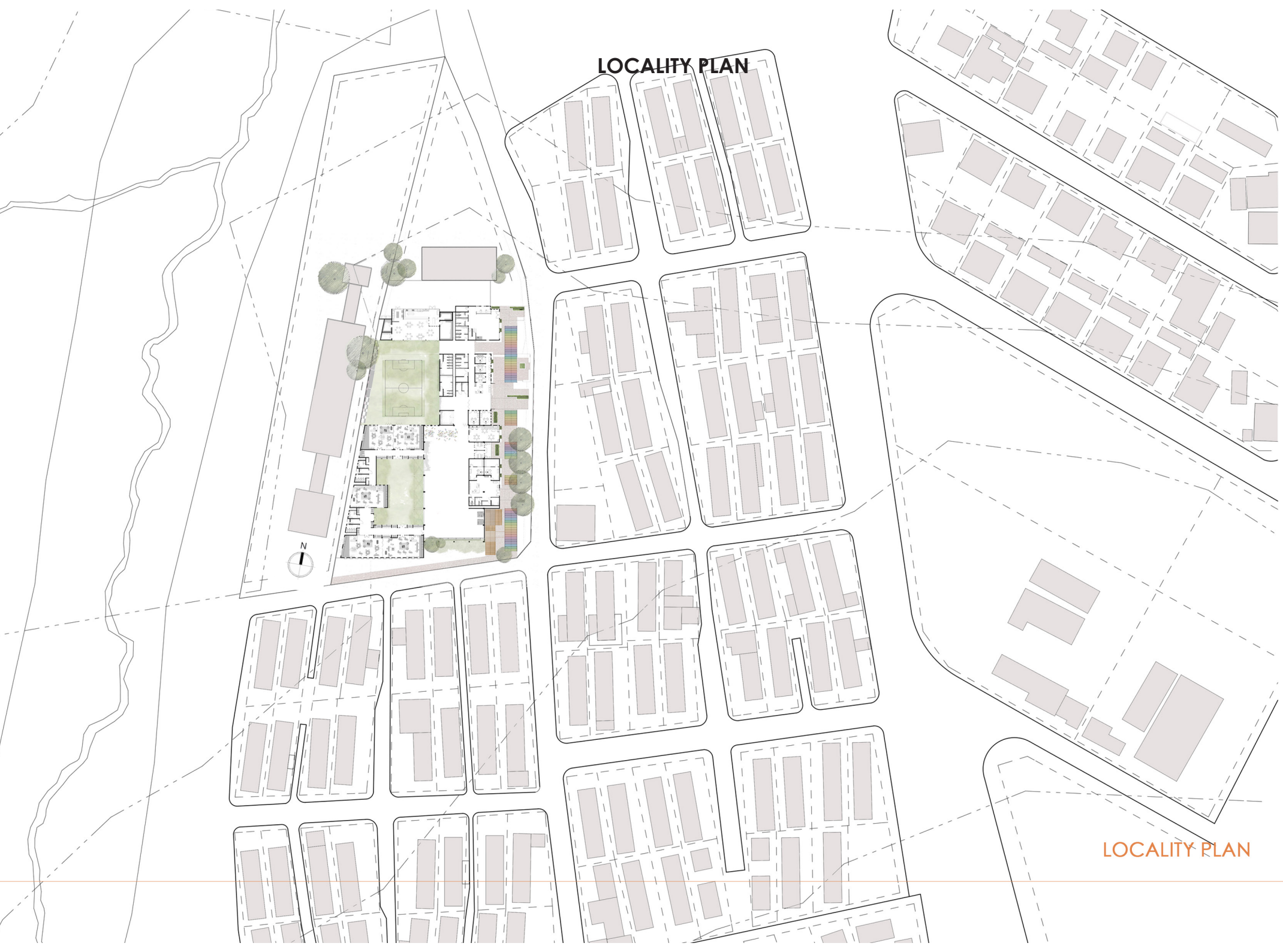
SITE PLAN

LOCALITY PLAN

Fig. 276. Axonometric of Plan Exploration.


PROPOSED SITE


PROPOSED SITE
N


LOCALITY PLAN
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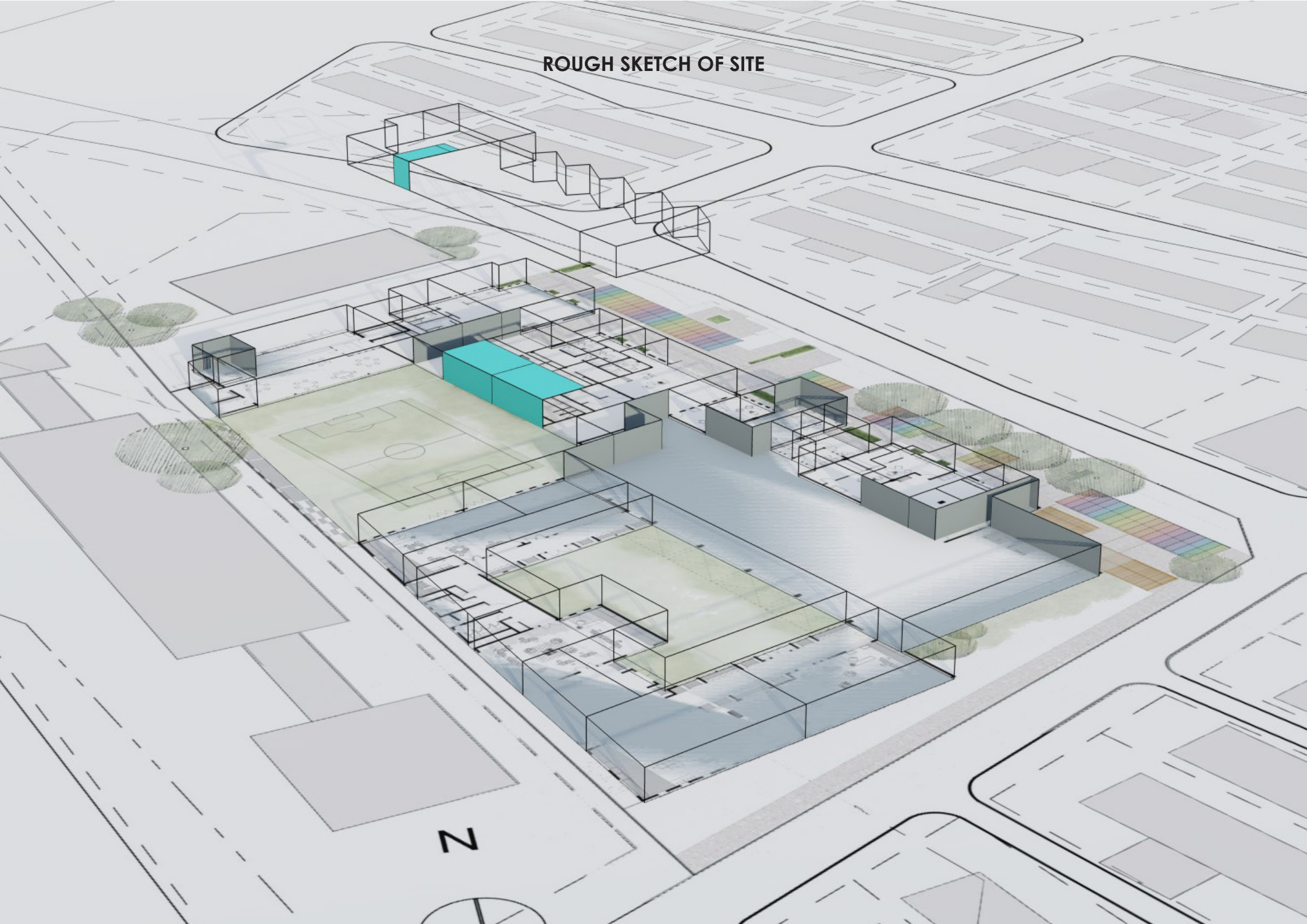
LOCALITY PLAN

SITE PLAN

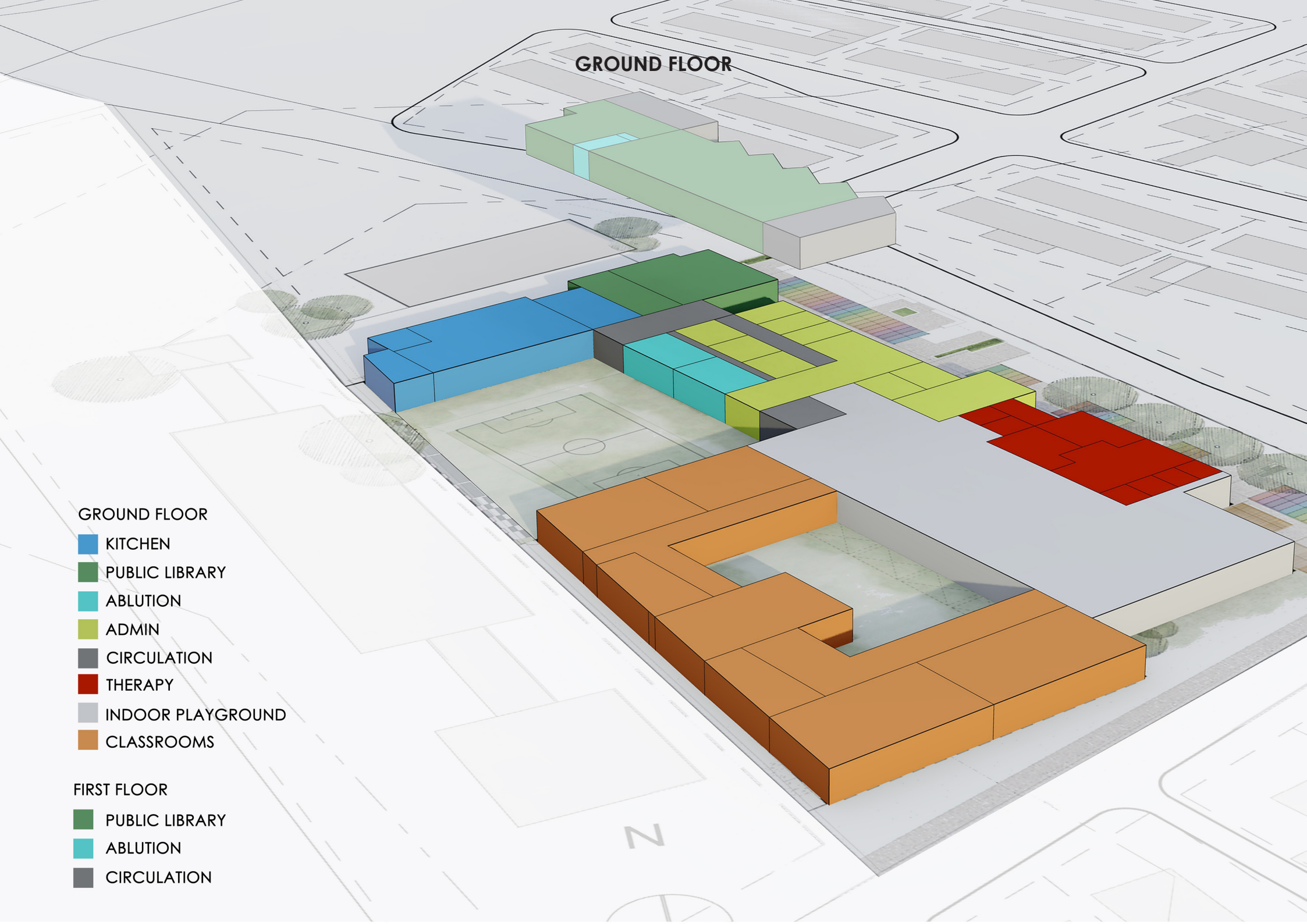
SITE PLAN

ROUGH SKETCH OF SITE

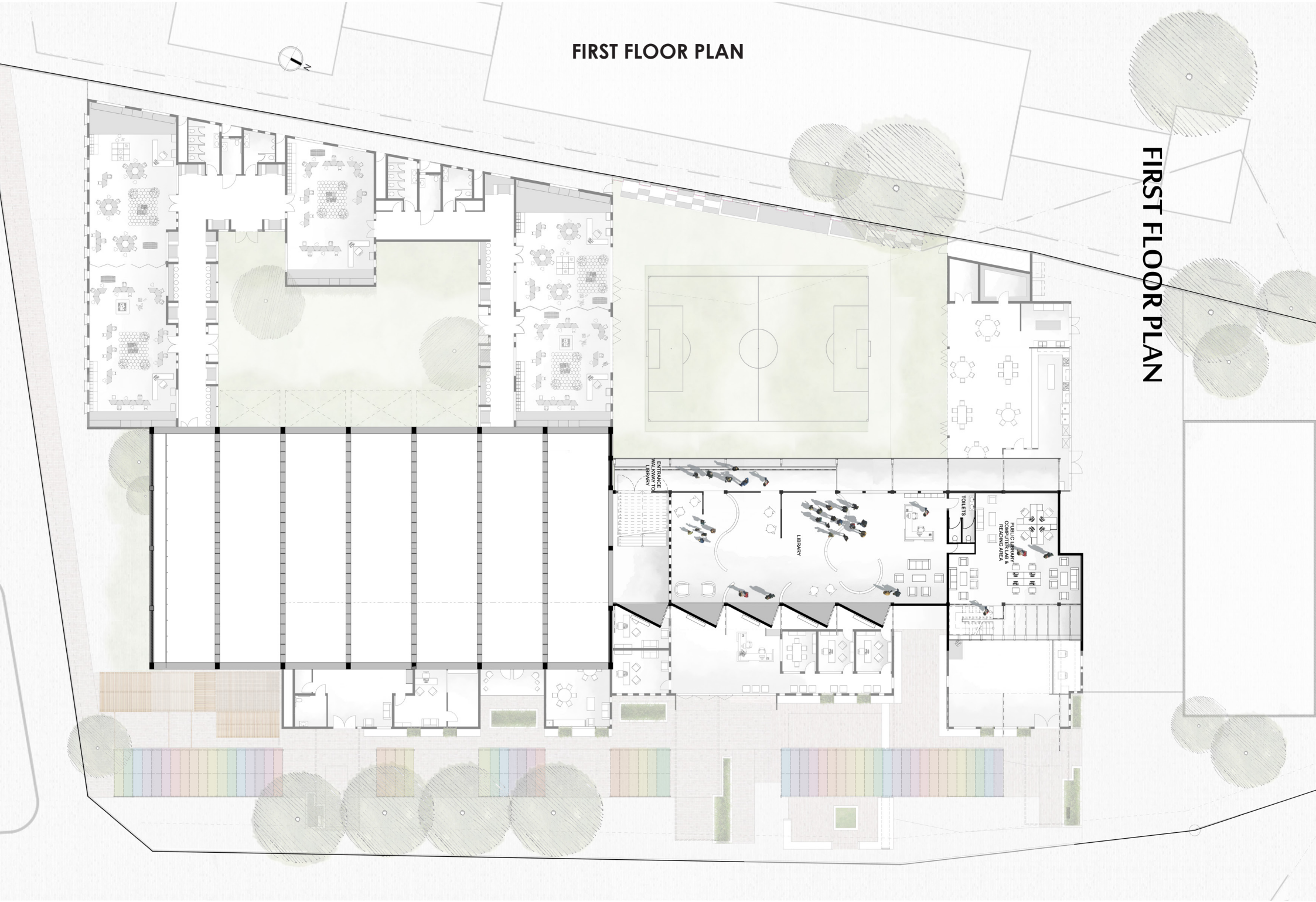


GROUND FLOOR PLAN

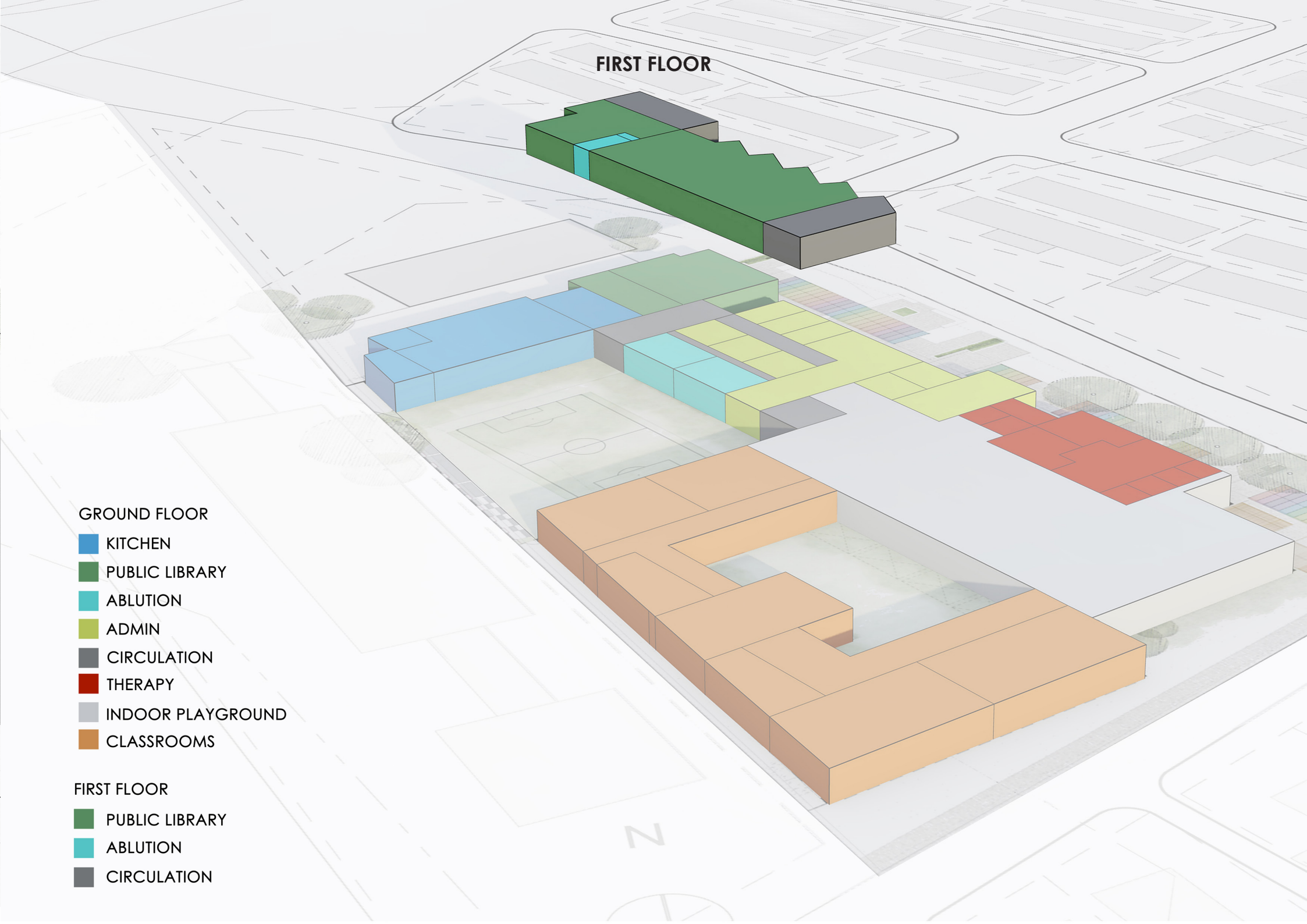
GROUND FLOOR PLAN


GROUND FLOOR
GROUND FLOOR
KITCHEN
PUBLIC LIBRARY
ABLUTION
ADMIN
CIRCULATION
THERAPY
INDOOR PLAYGROUND
CLASSROOMS
FIRST FLOOR
PUBLIC LIBRARY
ABLUTION
CIRCULATION
N

FIRST FLOOR PLAN

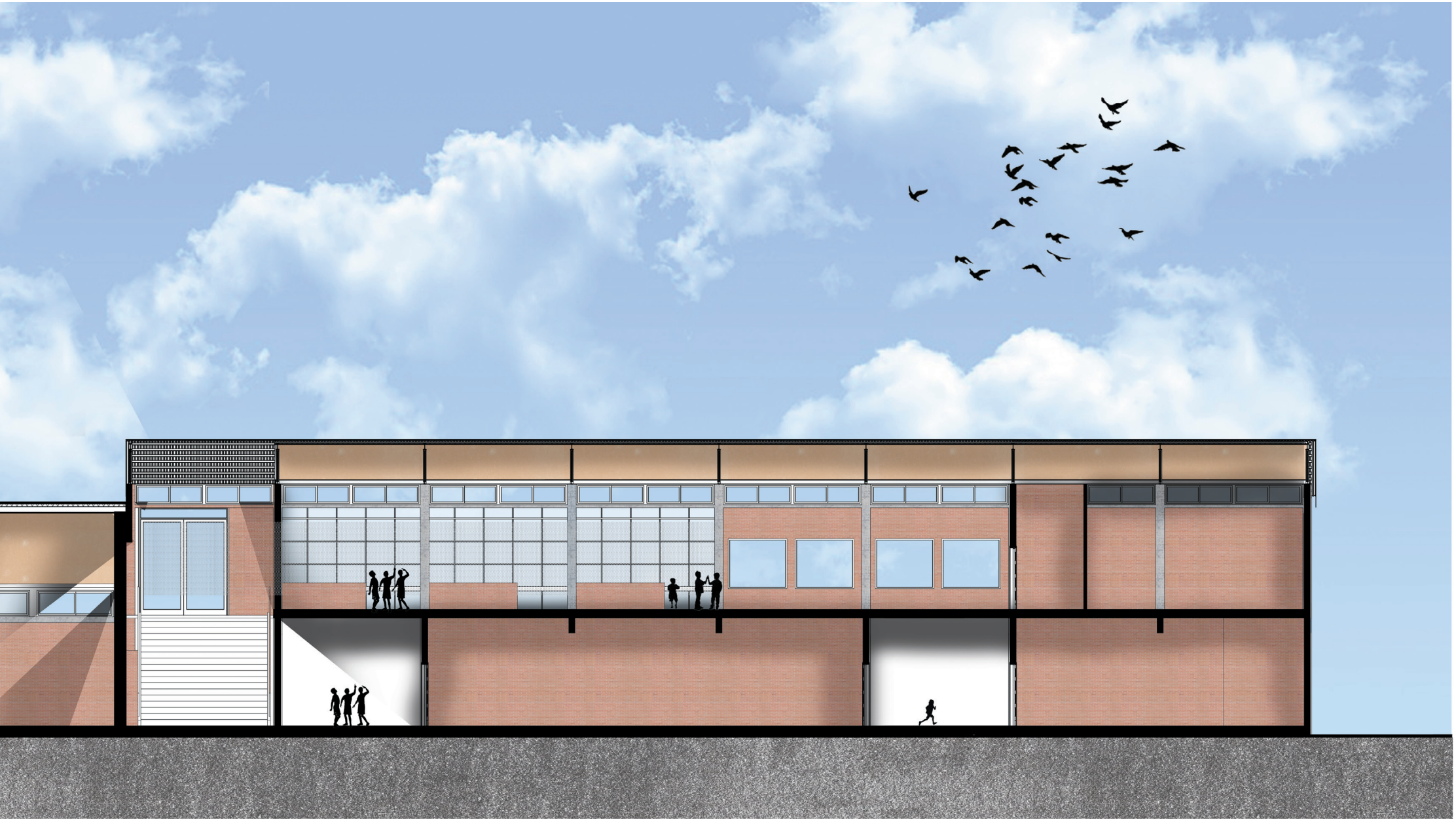


FIRST FLOOR PLAN


FIRST FLOOR
GROUND FLOOR
KITCHEN
PUBLIC LIBRARY
ABLUTION
ADMIN
CIRCULATION
THERAPY
INDOOR PLAYGROUND
CLASSROOMS
FIRST FLOOR
PUBLIC LIBRARY
ABLUTION
CIRCULATION

LONG SECTION | AA

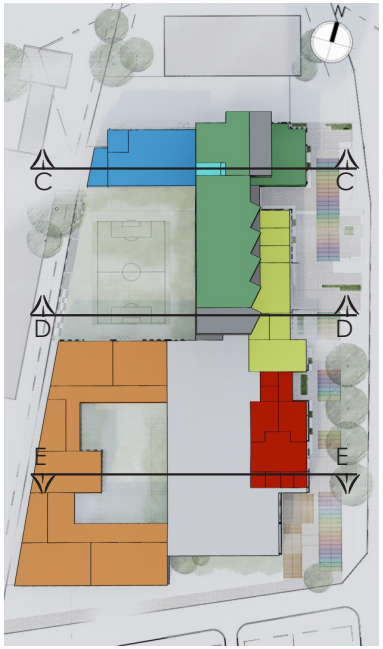
Fig. 277. Section | AA.



LONG SECTION | BB

Fig. 278. Section | BB.

CROSS SECTIONS & VIEWS



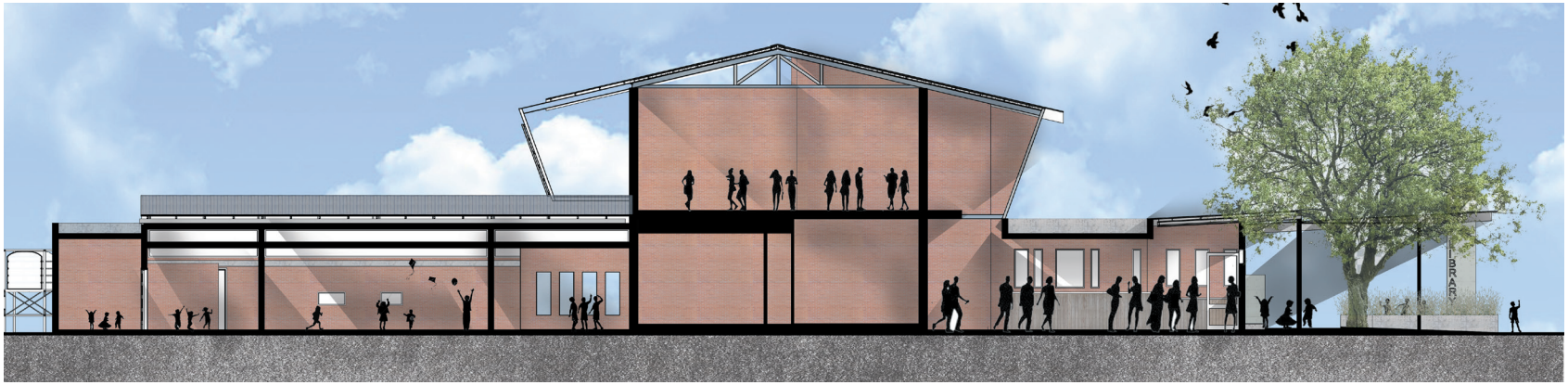


Fig. 279. Section | CC

Fig. 280. School ibrary walkway.

Fig. 281. Kitchen.

Fig. 282. Section | DD

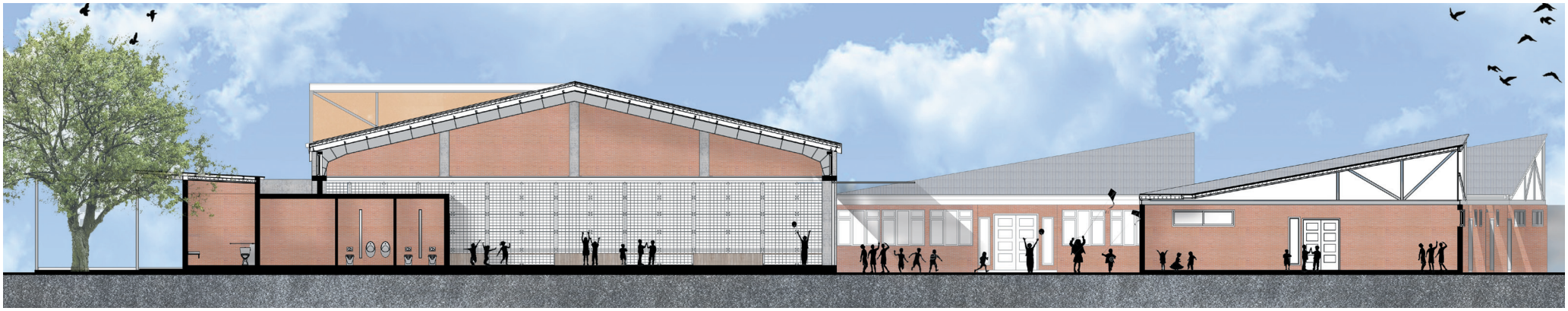


Fig. 283. Section | EE

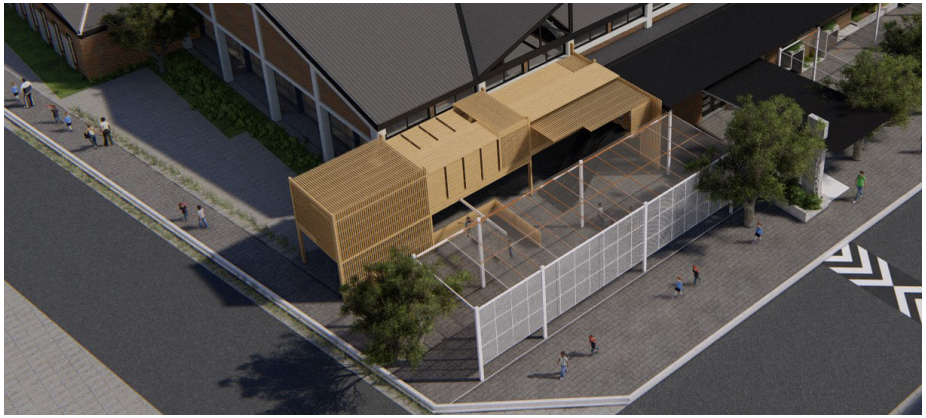


Fig. 284. View of public playground.

Fig. 285. Sectional view of school library reading pods.

ELEVATIONS

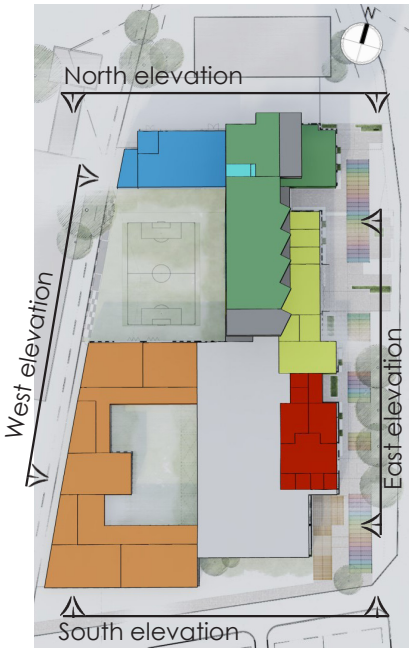


Fig. 286. East Elevation.

Fig. 287. West Elevation.

Fig. 288. South Elevation.

Fig. 289. North Elevation.

Fig. 290. Perspective of kitchen on North Elevation.

Fig. 291. Perspective of East Elevation.

Fig. 292. Perspective of South Elevation.

EXTERIOR SPACES

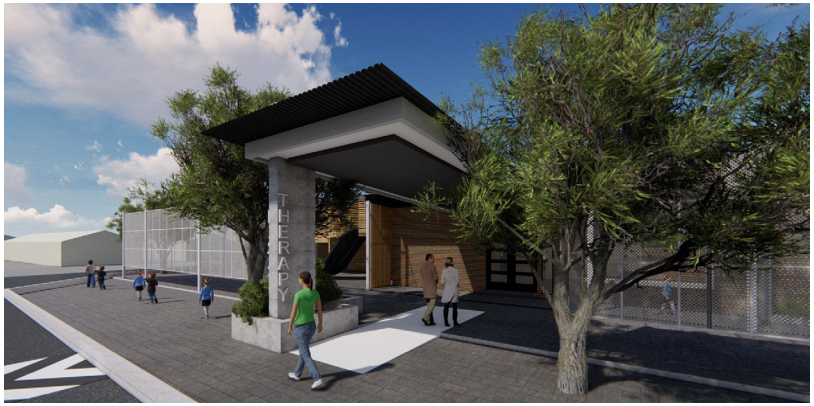


Fig. 293. Therapy Entrance.

Fig. 294. Main entrance to kindergarten.

Fig. 295. Main entrance to public library.

Fig. 296. Street perspective of main entrances.

Fig. 297. Main entrance to kindergarten.

Fig. 298. Interactive wall on west facade with facing the soccerfield.

EXTERIOR SPACES

Fig. 299. Perspective of walkways.

Fig. 300. Sandpit in courtyard between classrooms.

Fig. 301. Mini soccer field and interactive wall

Fig. 302. Mini soccer field, interactive wall and library screen facade.

INDOOR PLAYGROUND

Fig. 303. Play structures on South wall at indoor playground.

Fig. 304. Timber playground structure in indoor playground.

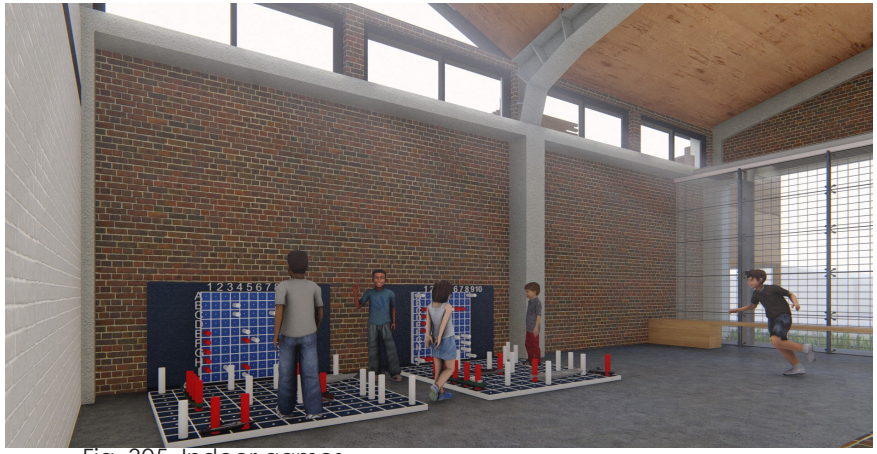


Fig. 305. Indoor games.

Fig. 306. Manipulable boxes in indoor playground.

Fig. 307. Timber playground structure and colourful roof.

Fig. 308. Child reading at manipulable boxes.

Fig. 309. Timber playground structure and colourful roof.

Fig. 310. Interior of the claassroom.

Fig. 311. Interior of the claassroom.

Fig. 312.Interior of the claassroom.

Fig. 313. Interior of the claassroom.

Fig. 314. Corridor as a learning street.

Fig. 315. School reception.

Fig. 316. Office.

Fig. 317. School library.

Fig. 318. Staff room.

Fig. 319. School reception to indoor playground.

Fig. 320. Corridoor in admin area.

Fig. 321. School reception.

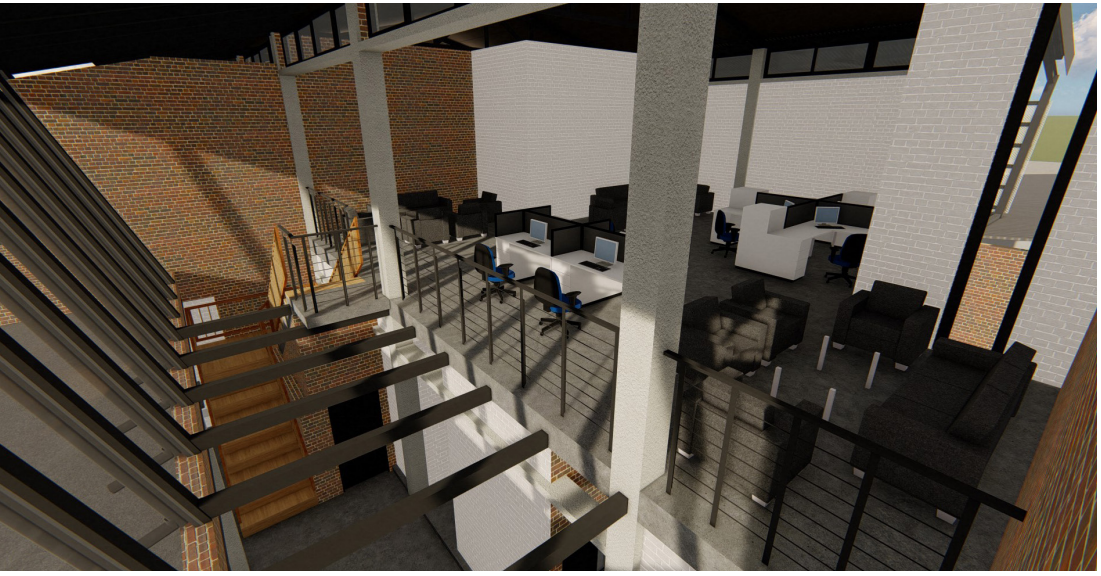


Fig. 322. Public library - reading and computer room.

Fig. 323. School library.

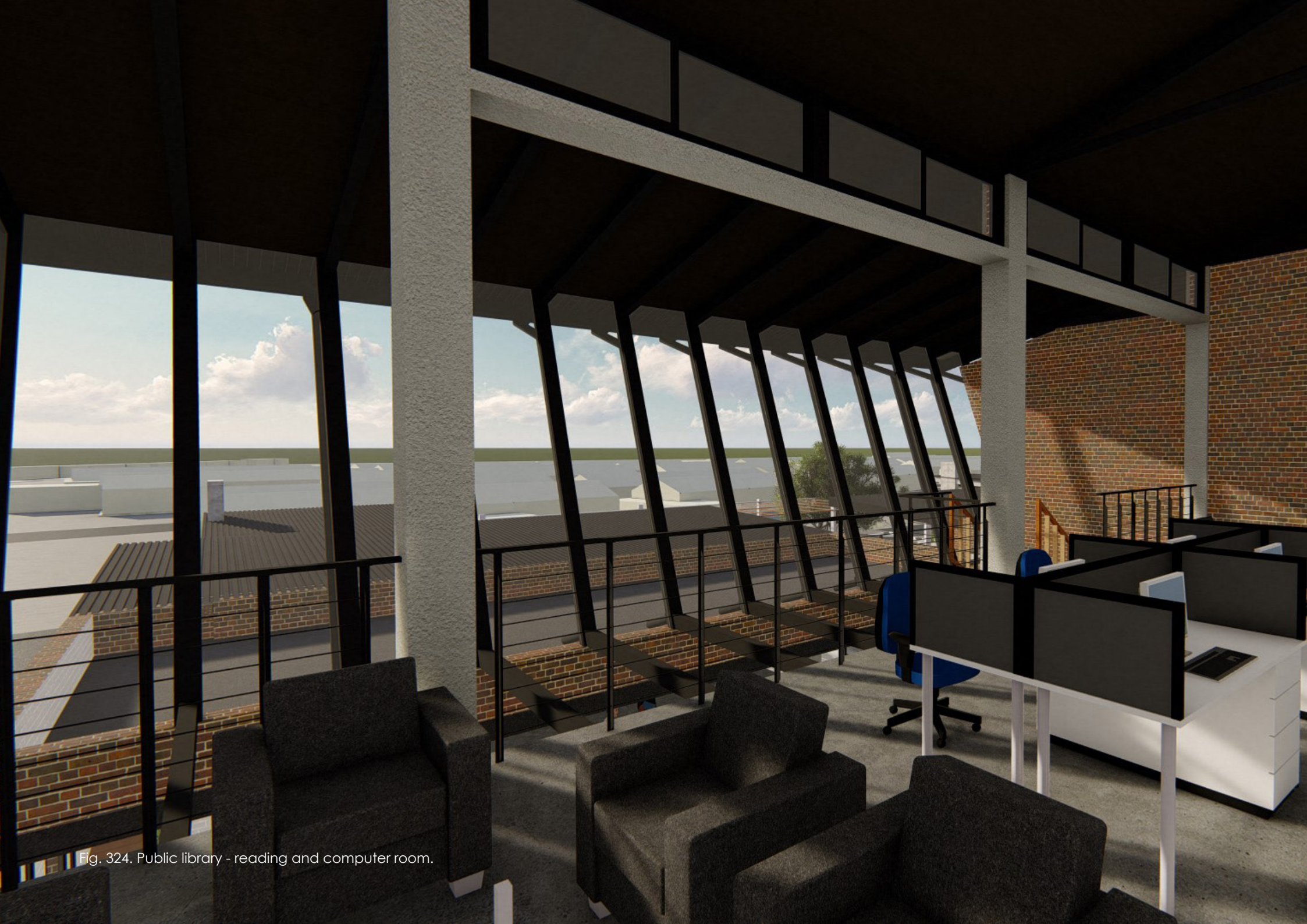


Fig. 324. Public library - reading and computer room.

PART 5

5

TECHNICAL REPORT AND RESOLUTION

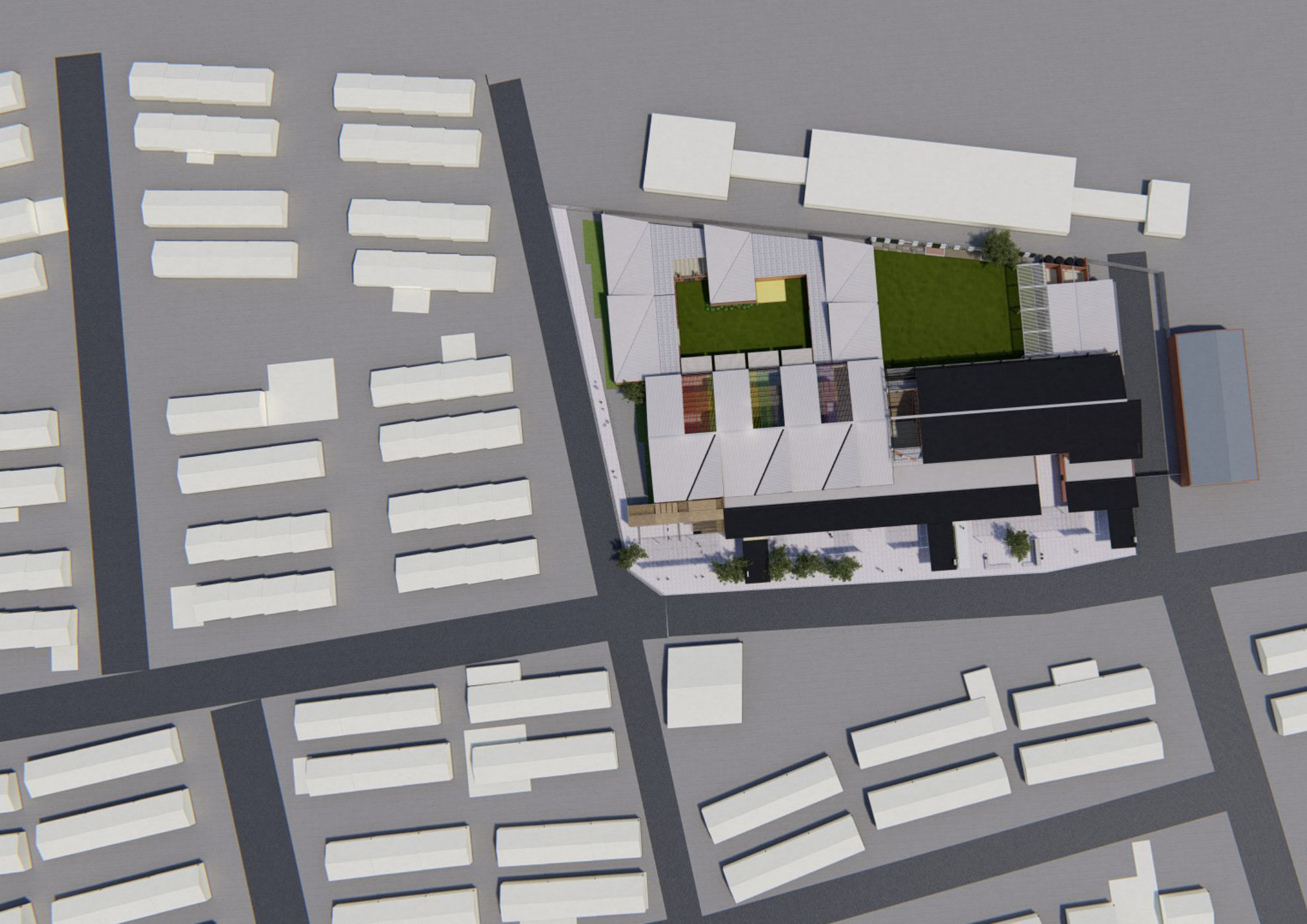
1. INTRODUCTION

The proposed project is a kindergarten situated in an existing but derelict building in Batho, Bloemfontein. The project aims to introduce a new type of school in Batho where children are given the opportunity to be creative in a school environment as a whole. The technical report is integrated with the design process to find a possible resolution for the proposed building's structure, services and other technical challenges.

The aim of the technical investigation is to find a possible solution that accommodates the daily educational needs of the primary users, the children. The essence of the proposed building structure is to encourage self-exploratory and flexible education among students while keeping sustainability and safety in consideration.
The aim of the structure is to allow children to interact with the building and spaces as much as possible and most importantly to allow for flexibility inside and outside a classroom environment.

This chapter is a thorough investigation on the; site, sustainabillty, material, services and structure in order to explain what the approach and conclusions toward a technical resolution is.

Fig. 325. Proposed building in context



The proposed site is situated on ERF 2921 Batho, Bloemfontein. There is an adjacent to an existing creche is nexrt to the proposed building is connected to an existing building by means of a bridge on the firstt floor, this existing buidling is occupied, it is an office during the day and a place of worship over the weekends.

Fig. 326-330. Proposed building in context

Fig. 331. Proposed building in context

2. SITE ANALYSIS: TOPOGRAPHY

An investigation and analysis of the site led to a better understanding of the surrounding context and how the proposed project can accommodate and transform it. In order to determine an appropriate structural approach the topography, climate, geotechnical, cadastrial, vegetation and soil of the site where investigated on the appropriate scale.

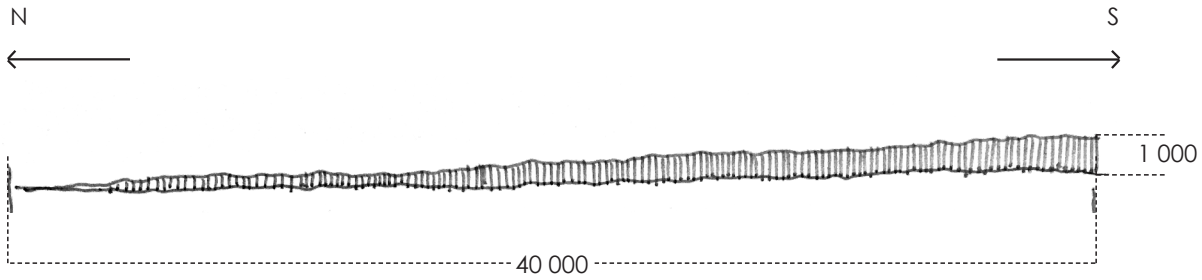


Fig. 332. Section through the proposed site.

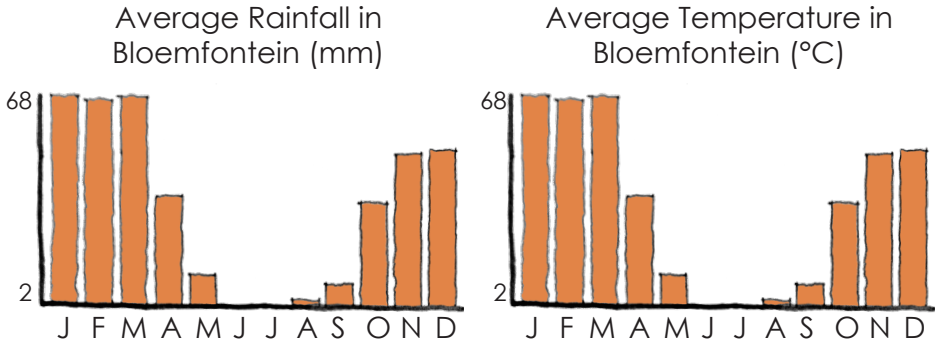
Fig. 333. Location of the Site in the context of Batho

BLOEMFONTEIN CLIMATIC CONDITIONS AND DESIGN RESPONSE

South Africa is divided into six distinctive climatic zones. The design of the building can affect the natural heating and cooling methods to achieve the best human thermal comfort. An investigation is done on the climatic zones of South Africa and Bloemfontein. This reveales a passive design response and options for a possible comfortable human environment. According to SANS 10400 - XA, Bloemfontein is located in climatic zone 1 - cold interior climatic conditions.

1. cold interior
2. temperate interior
3. hot interior
4. temperate coastal
5. sub-tropical coastal
6. arid interior

Fig. 334-337. South African climatic condidtions.



DESIGN RESPONSE

- Passive solar heating and high thermal mass
- Maximise north facing walls and glazing
- Minimize east, south and west glazing
- Adjustable shading, double glazing and insulating frames
- Minimum external areas on east and west side
- Cross ventilation and solar access
- Protection from cold winds
- Reflective insulation during hot summers
- Bulk insulation

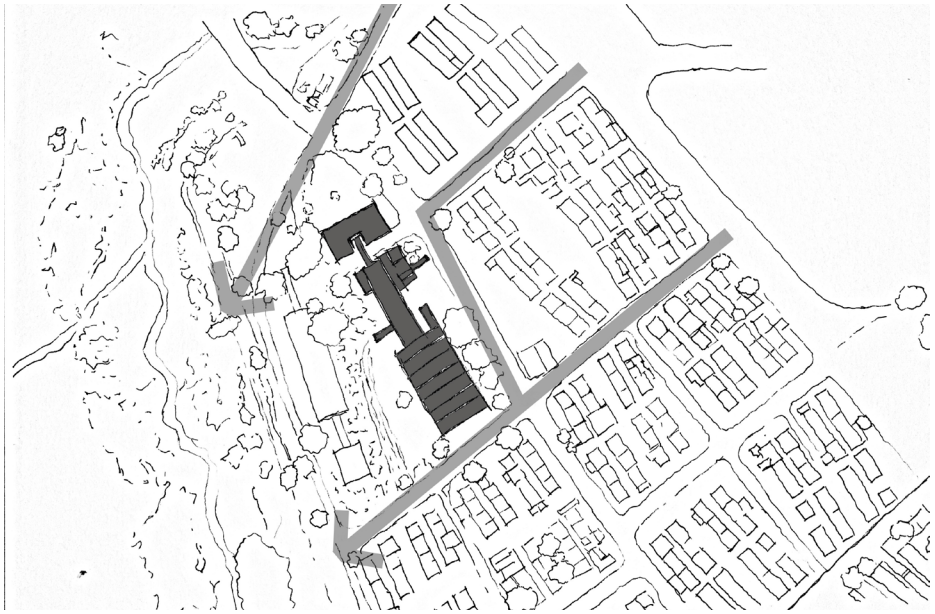


Fig. 338. Storm water

There is no existing pit for excess storm water to flow into and be carried away by a municipal storm water system. Several visits to the site indicated that storm water flows as indicated by the gray arrows into a nearby stream.

Within the proposed design the vegetation on site help with storm water drainage. Water the gathers on sidewalks and pavements will be guided by slopes to the nearest vegetation. Water run off from roofs drain into tanks for renewable on-site use.

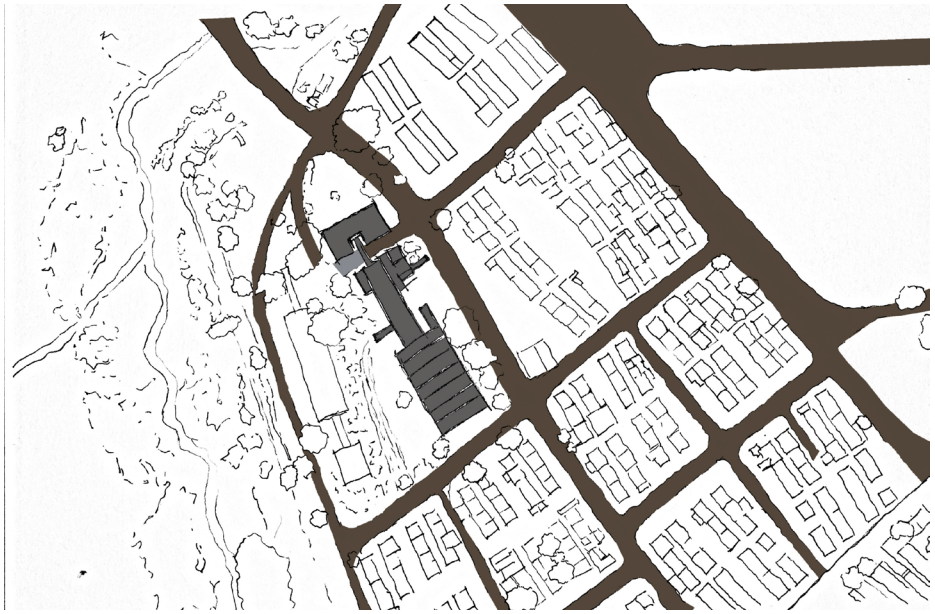


Fig.339. Main roads surrounding site

Most of the roads in Batho is paved, but the roads around the site consists of masonry brick.

Fig. 340. Paved brick road next to site

GEO TECHNICAL ANALYSIS: Soil Conditions

The general soil conditions of Bloemfontein is a combination of sand, silt and clay, the silt and gravel content has the highest presence in the soil. (Hensley et al., 2006: 12)

The soil conditions of Batho and the proposed site is mainly composed of sand/gravel. All over the site and around the existing building grows big patches of *scutch grass* (common couch). The main soil conditions for *scutch grass* to grow is sand/gravel, meaning there is a bigger significant concentration of sand and gravel soil and less clay soil on the proposed site. (King, 2019: online)

The vegetation surrounding the site compared to the rest of Batho is quite dense. There is very little vegetation on the side walks which means there is not much natural shade created for pedestrians walking within the urban fabric of Batho.

The trees on the east side of the building will be retsined and various green spaces where the developed building and on the site.

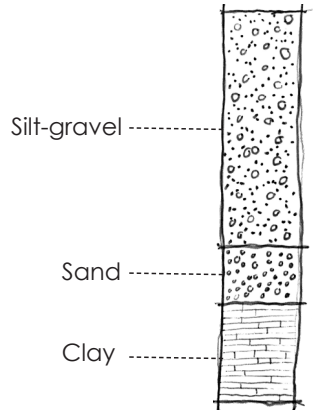


Fig. Soil Classification in Bloemfontein

 Fig. 341. Vegetation, by author, based on google image.

Fig. 342. Image of existing trees on east side of the building

SCHEDULE OF RIGHTS AND SANITARY POPULATION

SCHEDULE OF RIGHTS			
PROPERTY DESCRIPTION			
Erf/Portion	2921	Site Area	Bloemfontein
Township	Batho, Mangaung	Title Deed No.	------
ZONING INFORMATION			
Town Planning Scheme	Mangaung Town Planning Scheme	Amendment Scheme No.	27 January 2019
Use Zone	------	Annexe no.	1

DEVELOPMENT CONTROL MEASURES		
Permissible	**Control**	**Actual**
------	Height of buildings	10 026mm
6 287 m²	Coverage	3 206 m²
------	Floor Area Ratio	50.9%
------	Floor Area	3000m²
------	Density Zone	------
5m from Street Front 3m from adjacent building fence	Building lines	5m from Street Front 3m from adjacent building fence

CLASSIFICATION AND DESIGN OF OCCUPANCIES

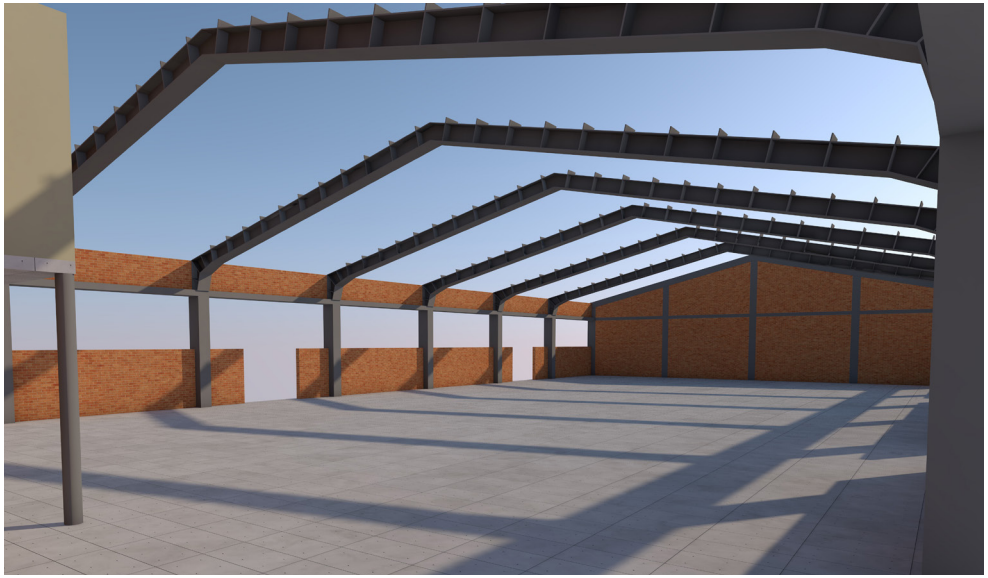
According to the SANS 10400 1990, pg 34, the proposed project's classification of occupancy falls under an A3 - **Places of instruction** (Occupancy where school children, students or other persons assemble for the purpose of tuition or learning. The design population on pg 35 indicates that every 1 person occupies 5m ²

Sanitary Population Schedule							
School (children)	Area	2213 m²	School population	125			
			Male	65	Female	60	
Office	Area	555 m²	Office Population	25			
			Male	10	Female	15	
REQUIRED							
MALE				FEMALE			
WC	U	HWB	S	WC	U	HWB	S
------	------	------	------	------	------	------	------
PROVIDED							
MALE				FEMALE			
WC	U	HWB	S	WC	U	HWB	S
7	13	10	1	19	------	10	1

3.1 STRUCTURAL INVESTIGATION

EXISTING BUILDING

PORTAL FRAMES OF EXISTING BUILDING



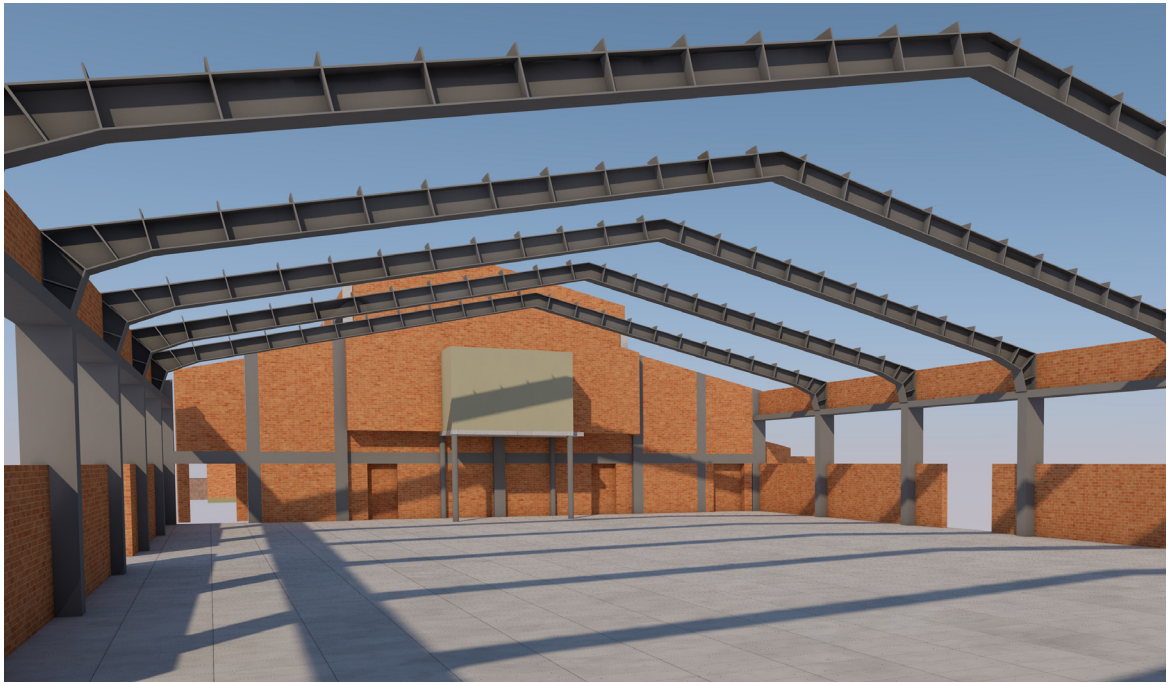


Fig 343-346. Photos and renders of existing trees portal frame

ANALYSIS OF EXISTING BUILDING - MATERIALS

COLUMNS

In order to allow for flexible floor spaces industrial buildings require few or no columns in the middle of the space.

Brick is used as infill between the concrete columns.
The portal-frame building has reinforced concrete columns of 400mm x 600mm that reach up to 5m high. The concrete beams and columns are connected by means of both being cast on the site when the building was first constructed.

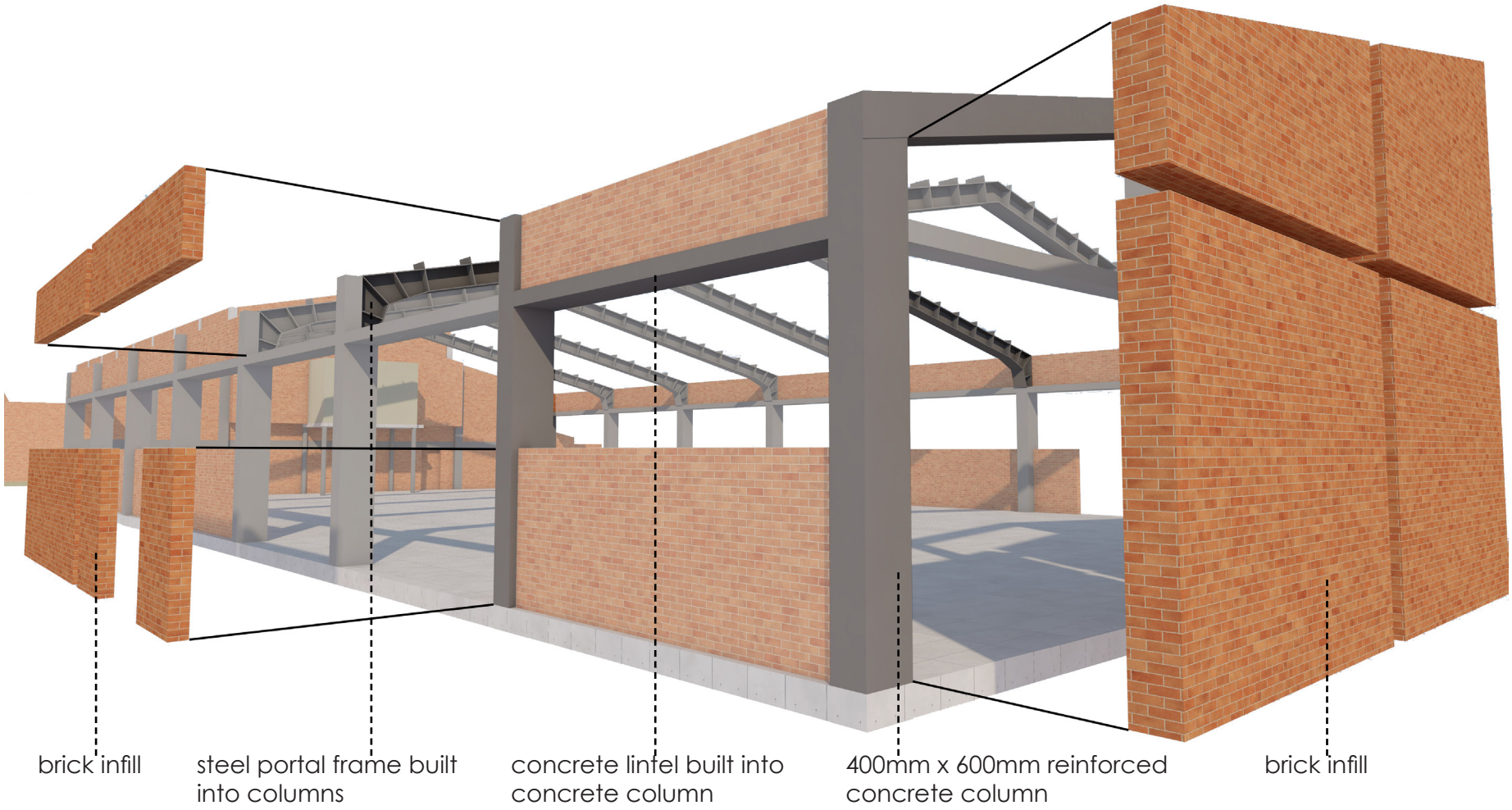


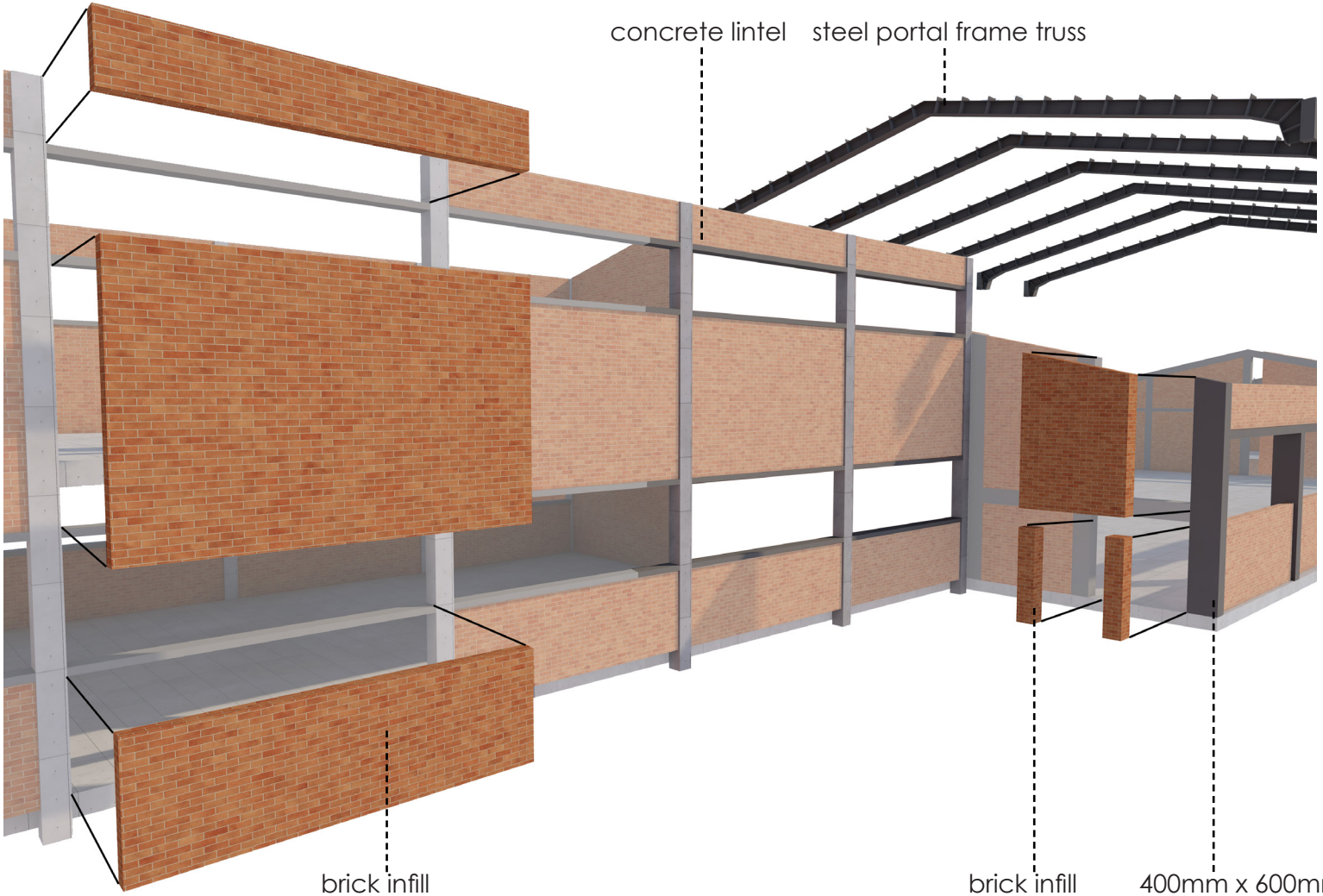
Fig 347-348. Exisitng building exploded showing materials

WALLS

The column-and-beam building has reinforced concrete columns of 300mm x 300mm that reach up to 8m high. The concrete beams and columns are monolythic.

ROOF

The sheeting on the portal-frame building has been removed, this allows for a sustainable design regarding the existing roof structure and not needing to construct a complete new structure.



VIEWS AND PHOTOS OF EXISTING BUILDING

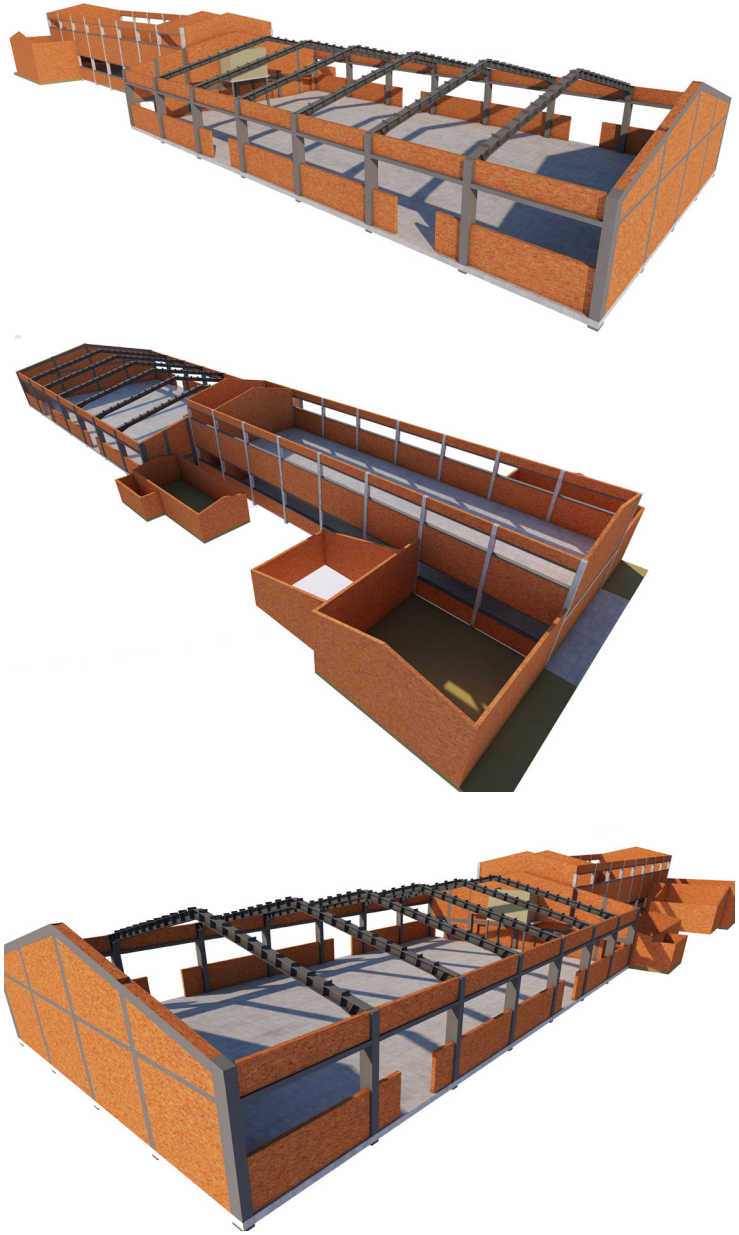


Fig 349-351. Renders of exisitng building

Fig 352-354. Photos of exisitng building

EXPLODED AXONOMETRIC VIEWS

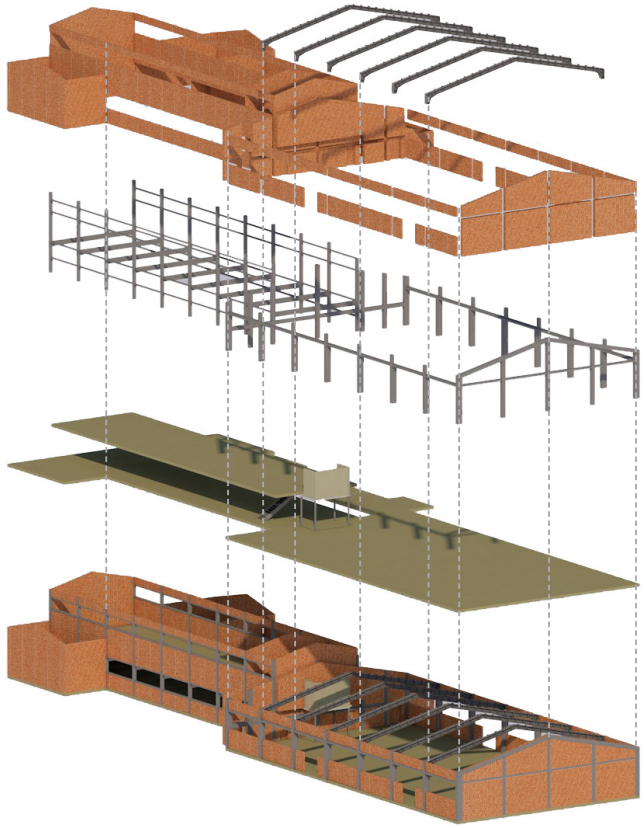


Fig 355-356. Exploded axonomatric views, looking north

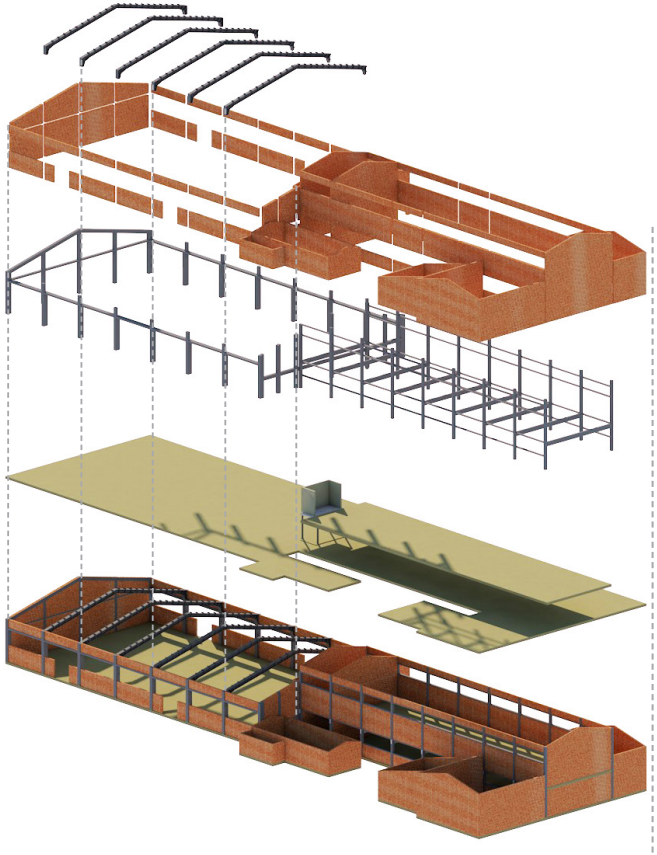
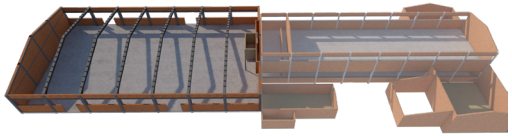


Fig 357-358. Exploded axonomatric views, looking south

CROSS SECTION | SCALE 1:100 | EXISTING PORTAL FRAME BUILDING



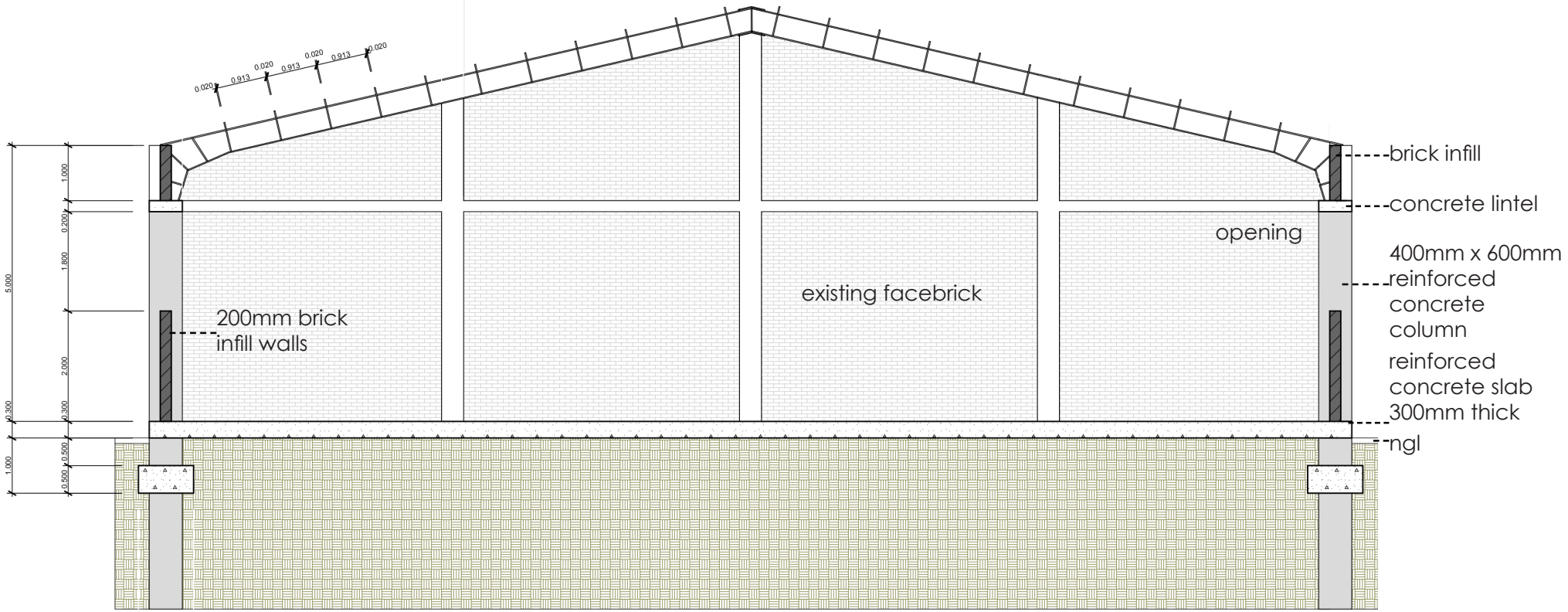


Fig 359. Section of exisitng portal frame building

VIEW OF CROSS SECTION | EXISTING PORTAL FRAME BUILDING

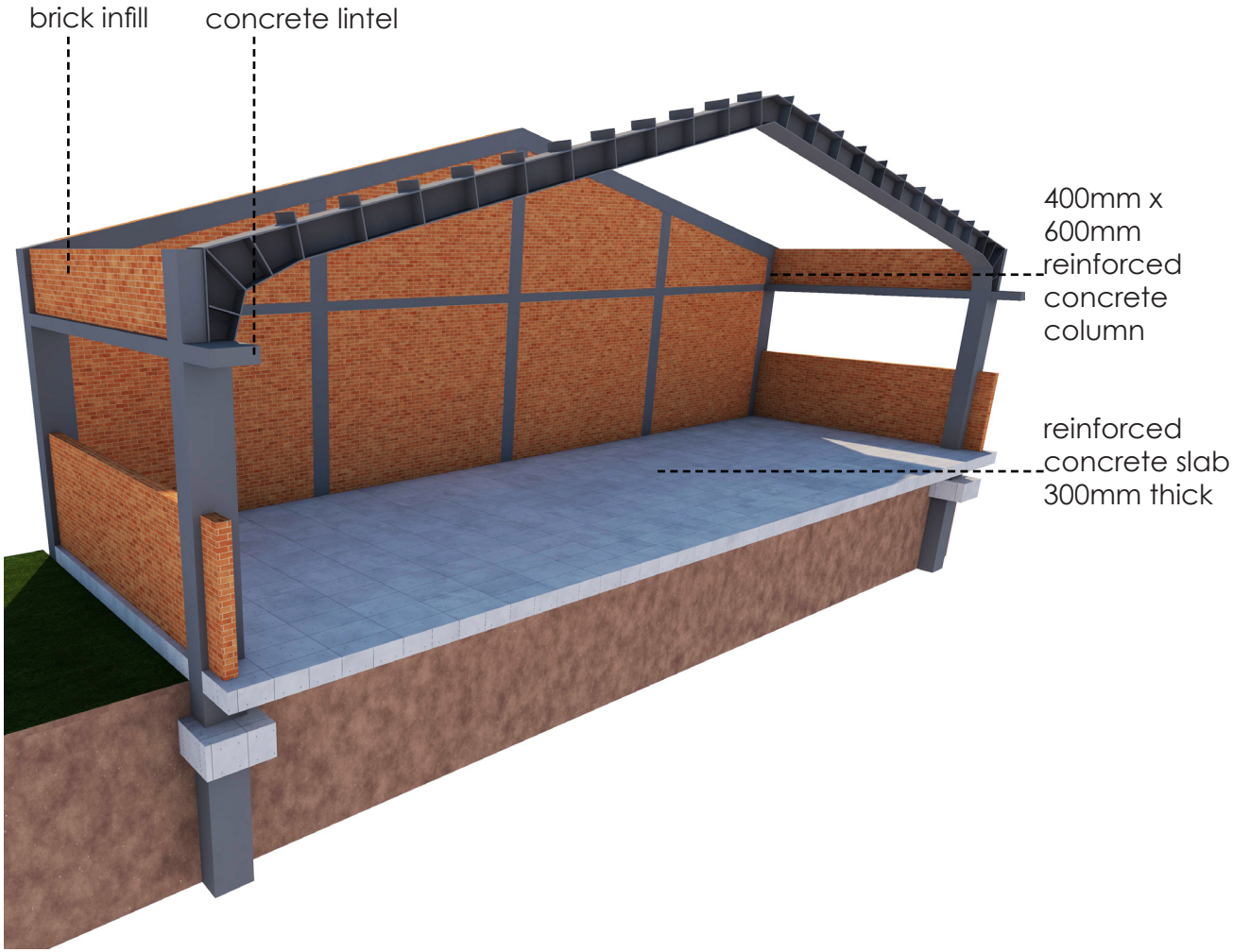


Fig 360. Render section of exisitng portal frame building

Fig 361. Photo of the inside of existing portal frame building

Fig 362. Photo of the inside of existing portal frame building

EXISTING PORTAL FRAME | RIDGE

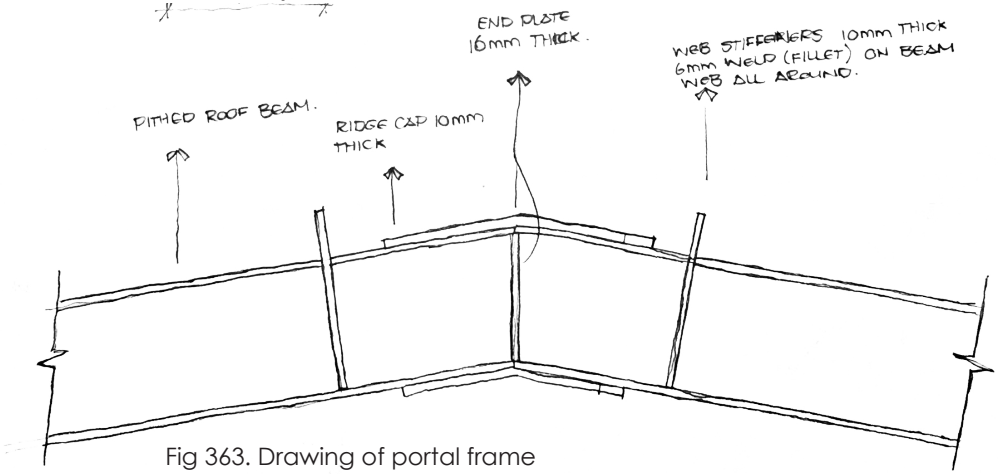


Fig 363. Drawing of portal frame

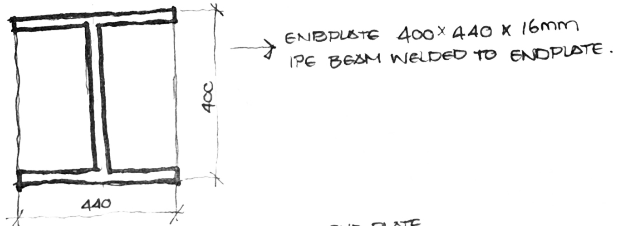


Fig 364. Drawing of I-beam

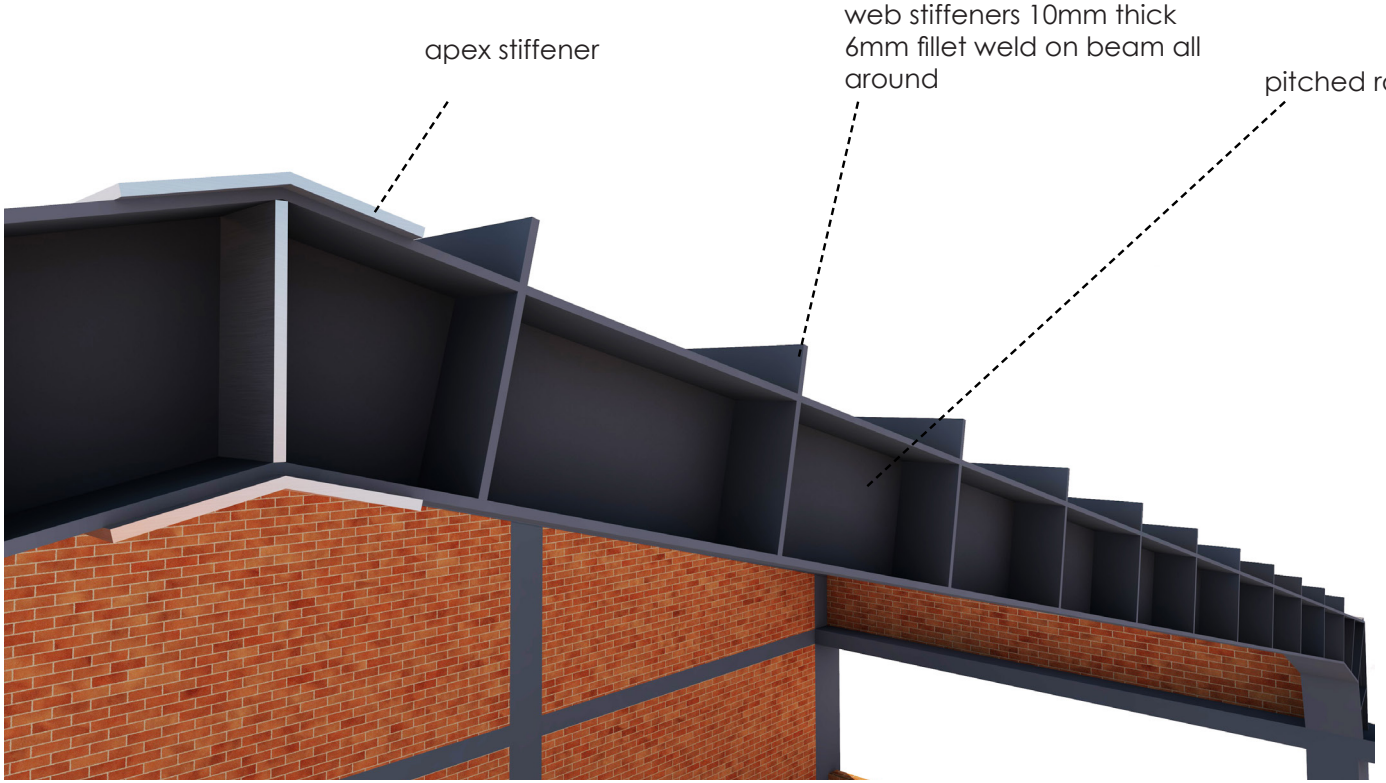


Fig 365-369. Render and potos of exisitng portal frame building

EXISTING PORTAL FRAME | KNEE BRACKET

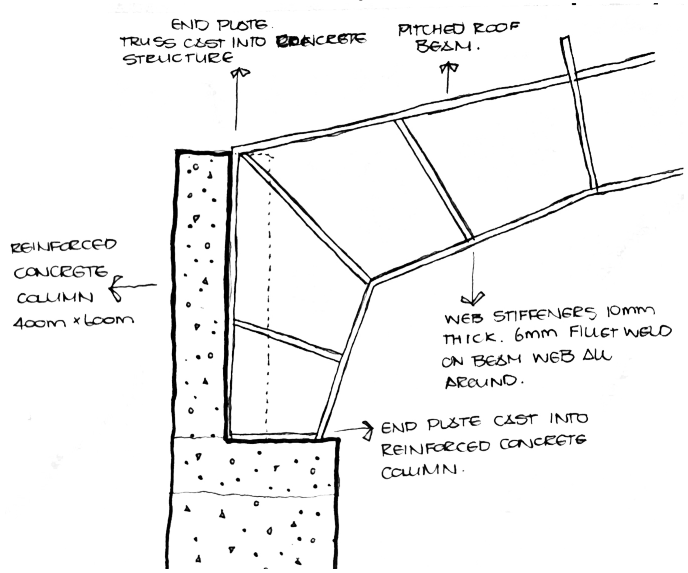


Fig 370. Drawing of nee bracket

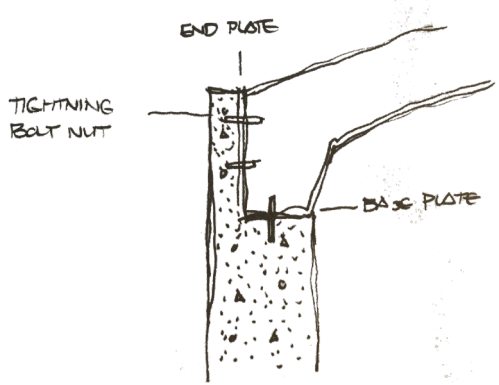
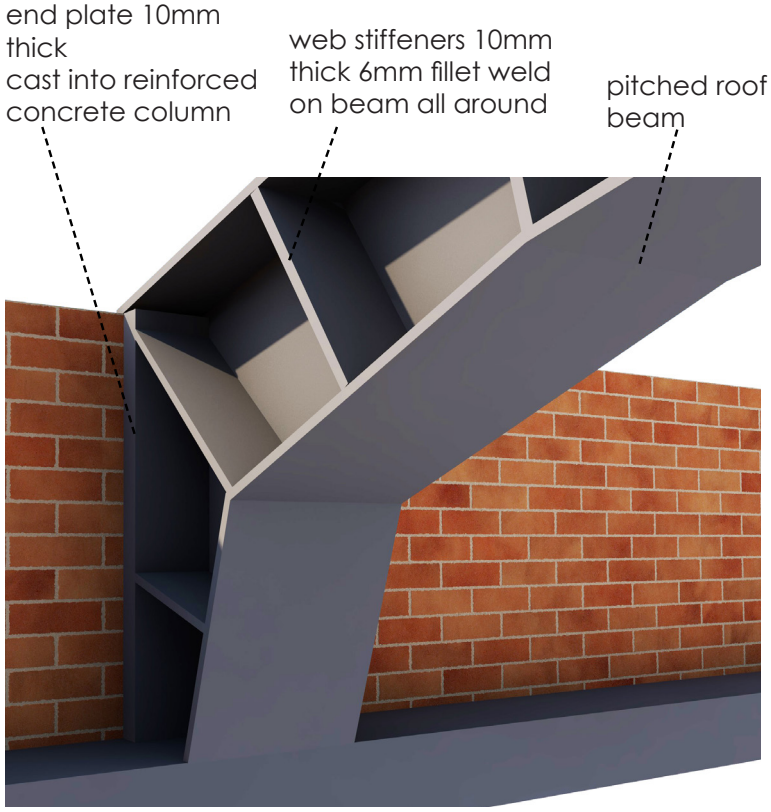
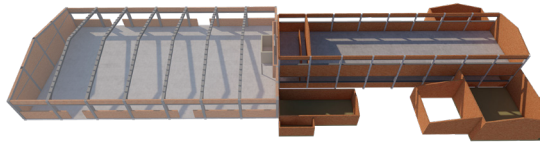


Fig 371. Section of possible knee bracket to concrete column connection



CROSS SECTION | SCALE 1:100 | CONCRETE AND MASONARY BUILDING



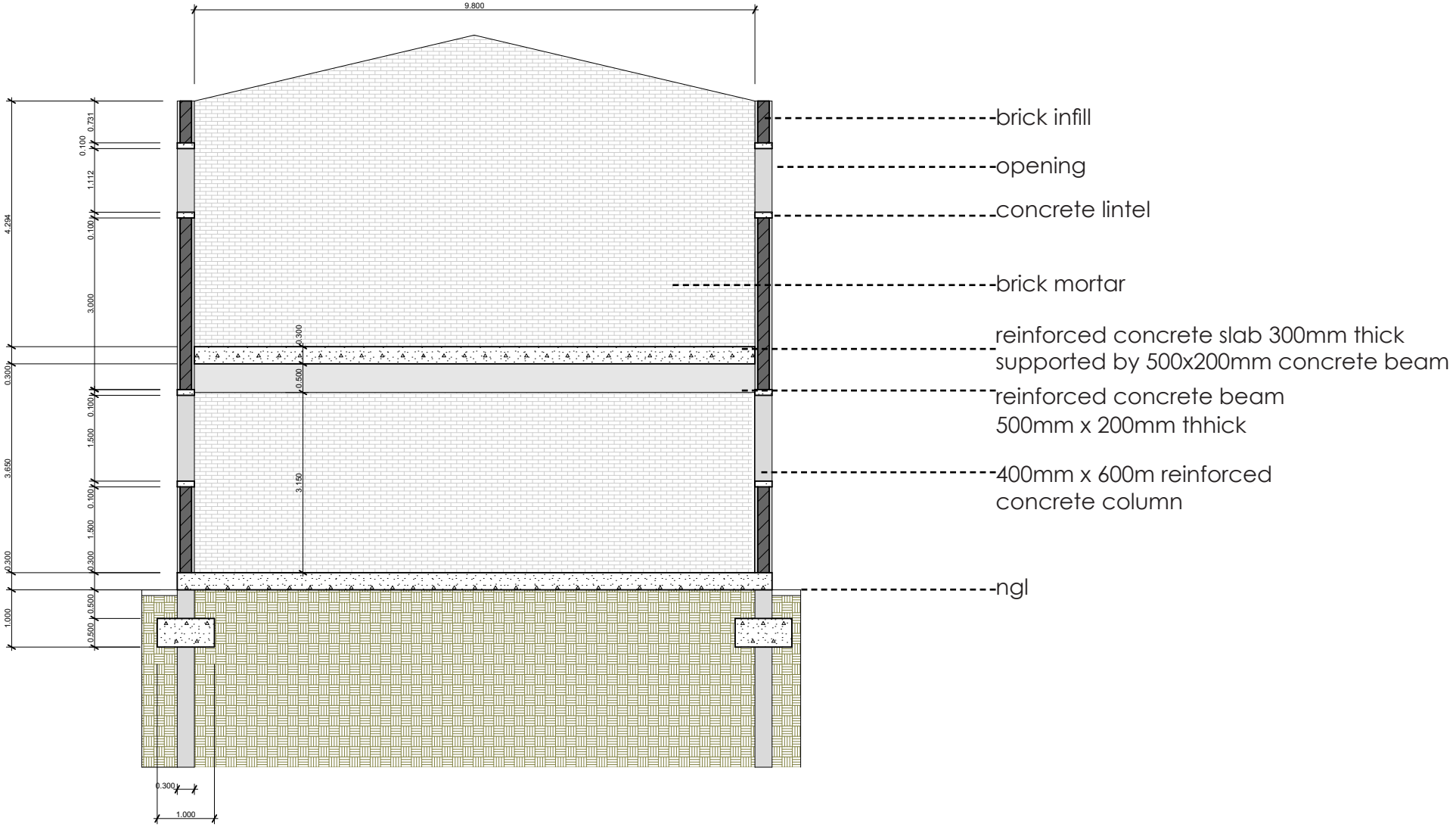


Fig 372. Section of exisitng building

VIEW OF CROSS SECTION | CONCRETE AND MASONARY BUILDING

Fig 373. Render section of exisitng portal frame building

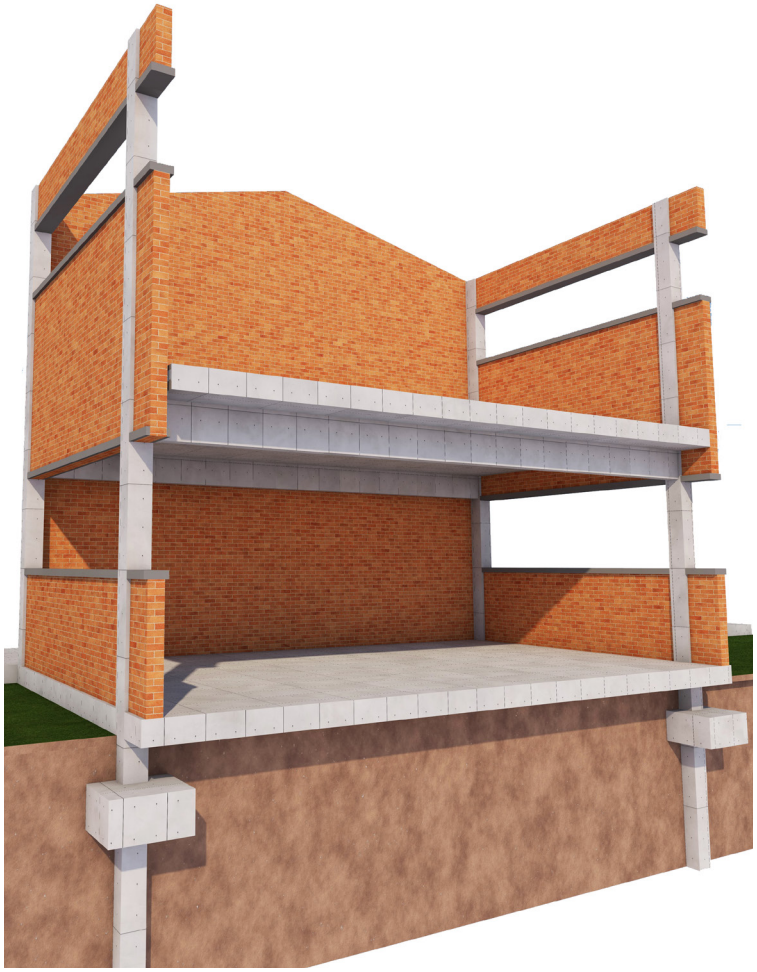


Fig 374. Render section of exisitng portal frame building

LINGS SECTION | SCALE 1:200

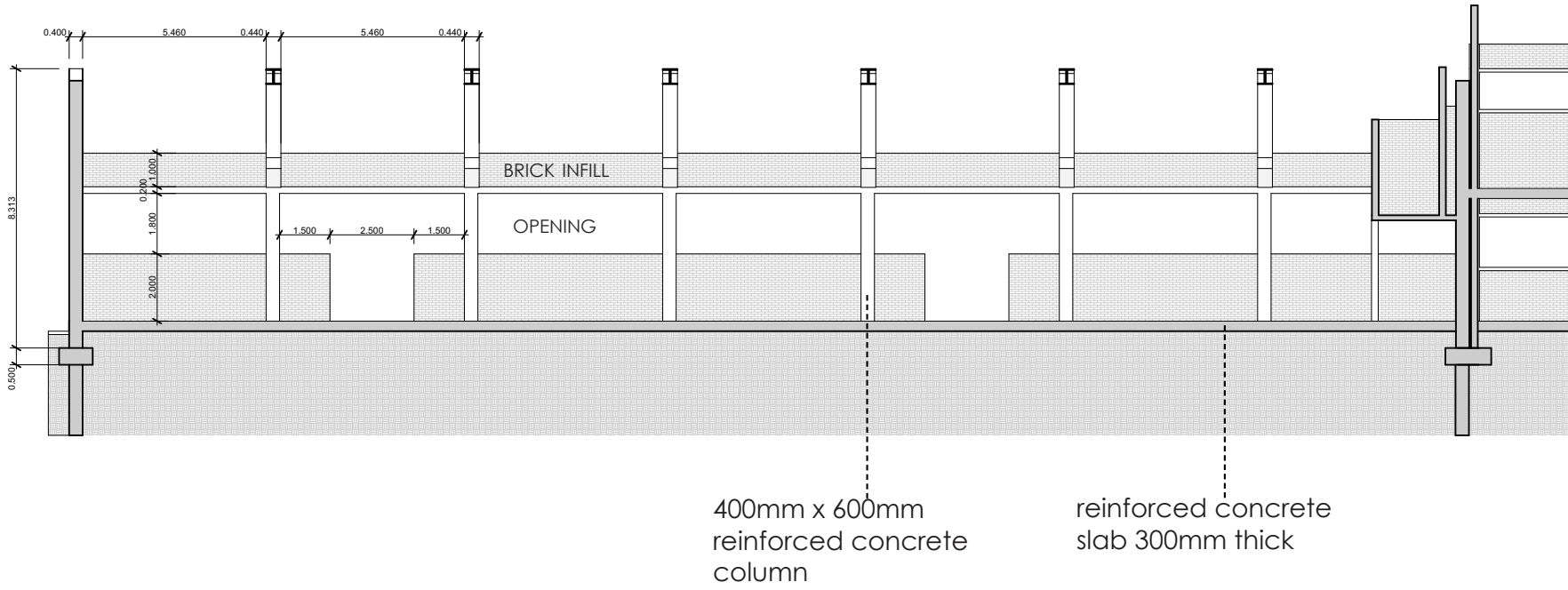
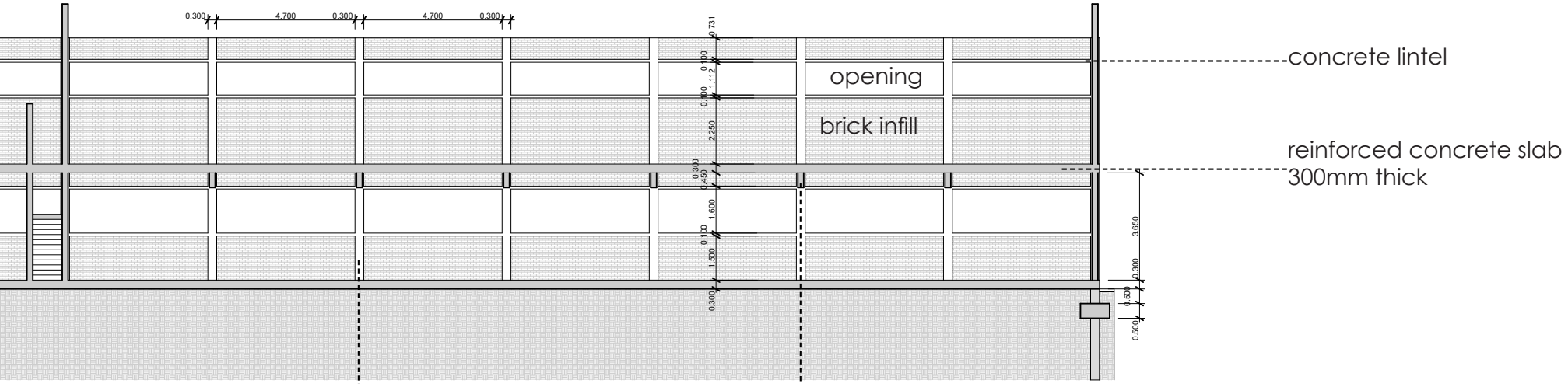


Fig 375. Section of exisitng building



400mm x 600mm
reinforced concrete
column

reinforced concrete
beam 500mm x 200mm
thick

3.2 STRUCTURAL INVESTIGATION

PROPOSED BUILDING

Most of the existing building is reused and no0t demolished. The fact that the building did not have any existing roofs excepts for the existing portal frames allowed for flexibility regarding the roof design, natural lighting and sustainability. The newly designed roofs guided the typological language of the rest of the building. A language that fits the built context of batho and addresses the technical challenges.
The type of typologies investigated during the technical process focused on the same typology as the existing building because of its strong language.

VIEW OF EXPLODED EXISTING BUILDING - MATERIALS

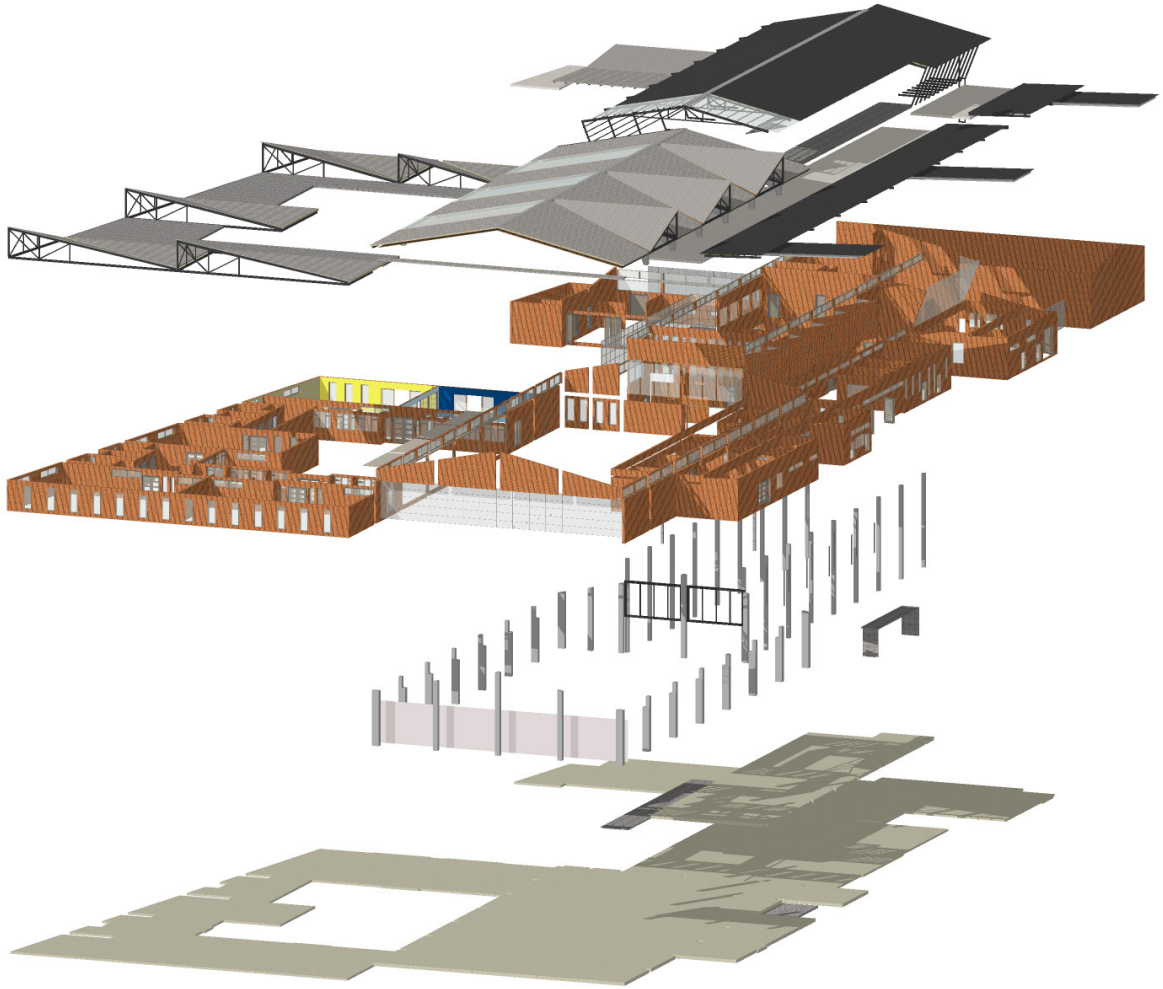


Fig 376. Propsed building exploded to show materials

CROSS SECTION | SCALE 1:100 | EXISTING PORTAL FRAME BUILDING

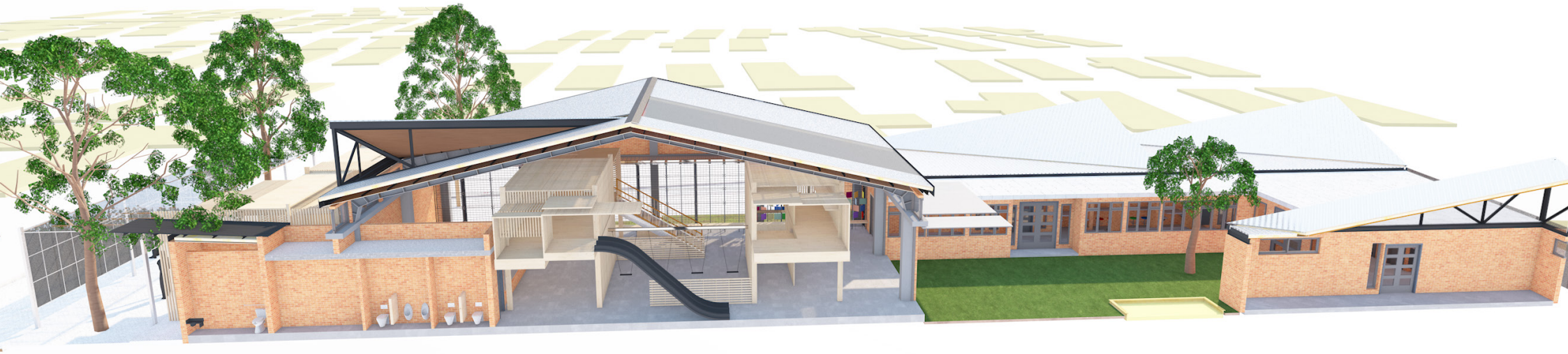


Fig 377. Cress render section of propsed building

VIEW OF CROSS SECTION | EXISTING PORTAL FRAME BUILDING

Fig 378. Cress render section of propsed building

4. FUNCTION OF THE BUILDING, SERVICES and HEALTH & SAFETY

Ground Floor:

Admin:

Teacher Staff Room		52.90m²
Office	Principal	16.42m²
	Vice Principal	15.03m²
Entrance Lobby and Reception		80.69m²
Board Room		10.54m²
Offices	(x2)	11.92m² x 2 = 23.84m²
Ablution	Gents	26.22m²
	Ladies	26.22m²
Storage		17.18m²
Safe		7.62m²
Disabled	(x2)	6.20m² x 2 = 12.40m²
Circulation		44.95m²
Corridor	(x2)	133.36m²
Children Meeting Room (x2)		9.80m²
Outside Area		17.54m²

Classrooms Total:

Classroom	5 y/o	88.31m²
	6 y/o	92.47m²
	7 y/o	97.61m²
	8 y/o	104.33m²
	9 y/o	109.34m²
Ablution	Boys (x2)	8.76m² x 2 = 17.52m²
	Girls (x2)	11.33m² x 2 = 22.66m²
Disabled (x2)		6.47m² x 2 = 12.94m²
Storage (x2)		2.16m²
Circulation		157.50m²
Seating in Corridors		42.31m²

Soccer Field		300.00m²
Ablution	Gents	33.30m²
	Ladies	32.56m²

Public Library Total:

Library		125.48m²
Circulation		9.83m²
Ablution	Gents	10.43m²
	Ladies	8.81m²
Storage		8.00

Indoor Playground	739.72m²

Therapy Total:

Reception and Waiting Area		78.83m²
Ablution	Gents	6.61m²
	Ladies	5.70m²
Disabled		7.13m²
Occupational Therapy		20.10m²
Play therapy		20.10m²
Storage		5.53m²

Kitchen Total:

Kitchen		185.53m²
Storage	Cold	11.13m²
	Dry	36.34m²
	Furniture	12.21m²
	Kitchen Education	15.45m²
Refuse Area		13.78m²

First Floor:

Public Library, Computer Lab and Reading Area	92.02m²

School Library	243.04m²
Walkway Entrance	41.71m²
Ablution	10.25m²

Total Floor Area: **3315.45m²**

BUILDING FUNCTIONS: Public Library

Entrance

The entrance to the public library invites the pedestrian from the sidewalk into the space. The public library entrance is not close to the school's main entrance for safety and security reasons. The roof overhang at the entrance provides shelter against the western sun.

Public library interior

The interior is inviting and easily movable. The roof is high but not overwhelming, allowing breathing space and the user to feel comfortable.

Reading room and computer labs

The computer room is shared with a reading room on the first floor. It is excluded from any excessive noise coming from downstairs but does not cut the user off from whats happening downstairs completely.

BUILDING FUNCTIONS: Public Therapy Rooms

View of the entrance

The entrance to the public library invites the pedestrian from the sidewalk into the space. Once the space is entered the design reveals a peaceful and trusting environment.

View of the interior

The reception is not far from the entrance, there is a waiting area, toilets and a space where children who wait can play.

View of the therapy rooms

The therapy rooms are quiet and comfortable to make the guests feel the same. There is a playroom with one-way glass where the child receiving therapy can be observed.

BUILDING FUNCTIONS: Private, Kindergarten

View of the entrance

The main entrance to the school is inviting and spacious to allow for major foot-traffic during mornings (before school) and afternoons (after school).

School reception, foyer and corridor

The reception is immediately visible and has control over who enters the school. The space is inviting and colourful, fitting the possible energy of the child arriving at school.

Indoor playground

Other than the football field, the indoor playground is immediately visible once one enters the school, it is inviting and has different spaces with different educational games for the children.

Classrooms: separate and shared

The classrooms can be separate, where children from the same age group work together, or the doors can be opened where children with different ages and mix and be educated together.

Classroom corridors functioning as learning streets

The corridors are not wasted spaces and children have the opportunity to work outside possible noisy classrooms but still under supervision of a teacher.

Kitchen

The kitchen is mostly functional during breaks and when it is needed for after-school activities. It is also available for use when children do cooking or baking classes for educational purposes.

SITE SERVICES

Refuse

The refuse area is easily accessed by refuse trucks to remove refuse.

Deliveries Library and School Admin

The delivery trucks have easy access onto the site to unpack delivery goods and distribute them to their needed places in the kindergarten.

Deliveries Kitchen

The delivery trucks have easy access onto the site to unpack delivery goods and distribute them to their needed places in the kitchen.

According to the SANS 10400 1990, pg 34, the proposed project's classification of occupancy falls under an A3 - **Places of instruction** (Occupancy where school children) as shown on p140.

Type of occupancy and population, A3, requires specific types of sanitary fixtures in order for the building to comply with the necessary building requirements and standards. (Table 6)

REQUIRED SANITARY FIXTURES

TABLE 4 — PROVISION OF SANITARY FIXTURES

1	2	3
Type of occupancy and population	Fixture	Exceptions
A1: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	a) In any building where facilities in accordance with Table 6 are available to both personnel and the public or visitors, no separate facilities shall be required for the public or visitors. b) No separate facilities for the public or visitors shall be required within any shop having a floor area of less than 50 m² . c) In any group of shops under one ownership or in any shopping complex on a single site — i) facilities for personnel may be situated at convenient locations and not necessarily in any particular shop or shops; ii) facilities for the public and visitors may be situated at convenient locations and not necessarily in any particular shop or shops; iii) facilities for personnel may be grouped or combined with those provided for the use of the public or visitors. d) In any occupancy where personnel are exposed to high risk substance, dirt, filth, dust, soot, oil, grease or any similar substance, exposure to which is such that showers are necessary, at least 1 shower per 15 persons shall be provided separately for each sex and such showers shall be located in, or have direct access to, a change room.
A2: Personnel Public and visitors Peak demand No peak demand Participants in sports	Table 6 Table 7 (part a) Table 7 (part b) Table 8	
A3	Table 6	
A4: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
A5: Public and visitors Peak demand No peak demand Participants in sport	 Table 7 (part a) Table 7 (part b) Table 8	
B1, **B2** and **B3** Personnel Public and visitors	 Table 6 1 WC pan 1 washbasin	
C1 and **C2** Personnel Public and visitors	 Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
D1, **D2** and **D3** Personnel Public and visitors	 Table 6 No separate provision	

TABLE 6

1	2	3	4	5	6
For a population of up to —	Number of sanitary fixtures to be installed relative to the population given in Column 1				
	Males			Females	
	WC pans	Urinals	Washbasins	WC pans	Washbasins
15	1	1	1	2	1
30	1	2	2	3	2
60	2	3	3	5	3
90	3	5	4	7	4
120	3	6	5	9	5
	For a population in excess of 120 add 1 WC pan, 1 urinal and 1 washbasin for every 100 persons			For a population in excess of 120 add 1 WC pan for every 50 persons	For a population in excess of 120 add a washbasin for every 100 persons

Referring to table 6 on p126 of the SANS 10400 1990, the number of fixed sanitary requirements are shown.

The user of the building will add up to more or less 150 people, therefor:

Males (75): 3 WC pans
5 Urinals
4 Washbasins

Females (75): 7 WC pans
4 Washbasins

The proposed building currently accommodates more than the required sanitary fixtures:

Males (75): 7 WC pans
13 Urinals
10 Washbasins

Females (75): 19 WC pans
10 Washbasins

The reason for this being that there are 3 main accommodating functions in the building, two of which (Public library and therapy) are public. These public users cannot mingle with the children in the school. The other main reason for the many sanitary fixtures is because children from ages 9 and under should not walk too far alone to toilets during school time because they are young and it might be unsafe. Classrooms ages9, 8, 7 share toilets. Classrooms 6 and 5 share toilets. This allows students from age 9 to not share toilets with students aged 5

5. SUSTAINABILITY

1. Introduction to Sustainable Buildings

2. Passive Heating
- Reducing heat loss through glazing
- Air flow through building
- Orientation of the building
- Sun Panels

3. Passive Cooling
- Passive cooling through glazing
- Orientation of the building
- Cool roofs
- Landscaping
- Ventilation

4. Natural Lighting
- Roof designs and glare
- Natural lighting advantages
- Techniques for natural lighting

5. On-site Resources
- Rainwater collection
- On-site harvesting
- Green materials
- Community Building
- On-site resources

Introduction to Sustainable Buildings

In this chapter the sustainability and passive design influences of the project are investigated and discussed.

Well-insulated buildings with good thermal mass and orientation help to maintain a passive design (Bainbridge and Haggard, 2011. p5). The proposed buildings consist of large spaces and need careful investigation to ensure it is sustainable. The use of on-site resources and aa passive integrated design approach help with comfortable internal environments.

The existing building is east west orientated and do not naturally allow the best possible solar heating and thermal mass opportunities. Solutions like clerestory light frame roofs and careful window placement optimises the buildings' ventilations, natural lights and passive design methods. The proposed new building is a skin dominated building which means that the building envelope dominates thermal loads. This requires both good insulation and thermal mass.

Other than being sustainable, human comfort is also very important. Human comfort is a complex subject but if the user can wear the necessary clothes for the planned activities, only to wear shorts in summer or add a vest during winter, the spaces can be seen as comfortable.

Passive Heating

Reducing heat loss through glazing

Windows at library facing north. Glazing in roofs of big building facing north.
Double-glazed windows on west façade walkway to reduce heat loss during winter, and heat gain during summer.
Screens and overhang roof to reduce east and west façade heat and sun glare.

Air flow through building

There is a controlled airflow through the building through windows and can be closed during winters.

Orientation of the building

The building faces mostly east west, the requirements for as much as possible northern sunlight allowed for creative solutions within the building facade.

Sun Panels

Installed for use on cloudy days and when the building requires electricity in the evenings.

Passive Cooling

Passive cooling through the use of suitable glazing

Northern facing windows have the best heat gain during winter, and lowest heat gain during summer.
Overhangs and screens on the west and east facades help control heat gain during summers.
Larger buildings have a higher demand for cooling. (Bainbridge and Haggard, 2011. p87)
Replacing electrical lighting with more natural lighting help control heat gain. (Bainbridge and Haggard, 2011. p88)
Keep windows in shade during summer.

Orientation of the building

The north and south sides of the building get considerable less sun during the summer time this helps with temporary control in building.
The east and west facades that do have windows in the proposed building are protected by roof overhangs.

Cool roofs

Insulated ceilings reduce heat gain from the roof.
Light coloured profile sheeting is used for the external roof material.

Landscaping

The Urban heat island effect is controlled on both east and west sides of the site by trees, grass and planter boxes
Trees on east and west sides of a building allow summer shading and undisrupted winter sun.

Ventilation

Allows efficient airflow through the building. Large overhangs provides protection from the sun.
Windows are controlled by the user to allow air flow, fresh air and ventilation.
In larger buildings cross ventilation is very important, therefore the windows should operate and be controlled by the user.

Natural Lighting

Roof designs and glare

The clerestory roofs in the classrooms allow natural light to enter the room but produce no glare because they are south facing.
Natural northern light enter the library through the reading pods. The indoor playground building allow for as much as possible natural light through its saw tooth clerestory roofs – this also reduces heat gain. (Bainbridge and Haggard, 2011. p138).

Natural lighting advantages

Visual comfort
Minimal glare
Maximum use of daylight
Integrated with other building systems, passive heating and cooling
Low cost
Reduced environmental impact - sustainable

Techniques for natural lighting

Clerestory windows shaped in saw tooth roof provides fairly even light distribution inside the building.
In the kitchen, lighting shelves are designed to accommodate the built-in kitchen furniture, maximise possible northern light, and the shelves become a windowsill for plants to grow. Natural lighting and improved air quality through plants help the sustainability of the building. In the classrooms, higher windows are incorporated to maximise use of daylight but minimize distractions happening outside. (Bainbridge and Haggard, 2011. p137).

On-site Resources

Rainwater collection

Rainwater collected from roofs flow into water tanks through gutters (concrete and steel). The captured rainwater is used for on-site irrigation which are planter boxes and vegetables grown on site by the students. (Bainbridge and Haggard, 2011. p188).

On-site harvesting

A passive approach to sustainable buildings is also an interactive approach. As part of their education, children will have the opportunity to grow and maintain vegetable gardens on site. This teaches them about harvesting, and living green and sustainable. (Bainbridge and Haggard, 2011. p164).

Green materials

The use of locally available materials reduces transport costs. The existing brick from the brisk infill walls , that is still in good condition,can be re-used. bricks that cannot be reused, can be recycled for the use of other building projects in Batho. The largest part of the building is existing which reduces costs during foundation laying. The new roof is made from recycled steel.

Community Building

Using local human recourses, the community becomes involved in the building process and maintenance of the building, this develops local skills and decreases external labor costs. (Bainbridge and Haggard, 2011. p170).

On-site resources

Trees – provide shading and reduce the urban heat island effect
Artificial grass – reduces urban heat island effect and diffuses sunlight. Artificial grass works well in play areas beacause of its low maintenance and durability. (Bainbridge and Haggard, 2011. p170).

6. Renders of existing building in relation to proposed building

Figures 379-398 show renders of the exisitng building in relation to the new proposed building.

On the left side of the page is an image of the building as it exisits at this moment.
On the right side of the page is an image of the new propsed school.

EASTERN PUBLIC FACADE | EXISTING BUILDING

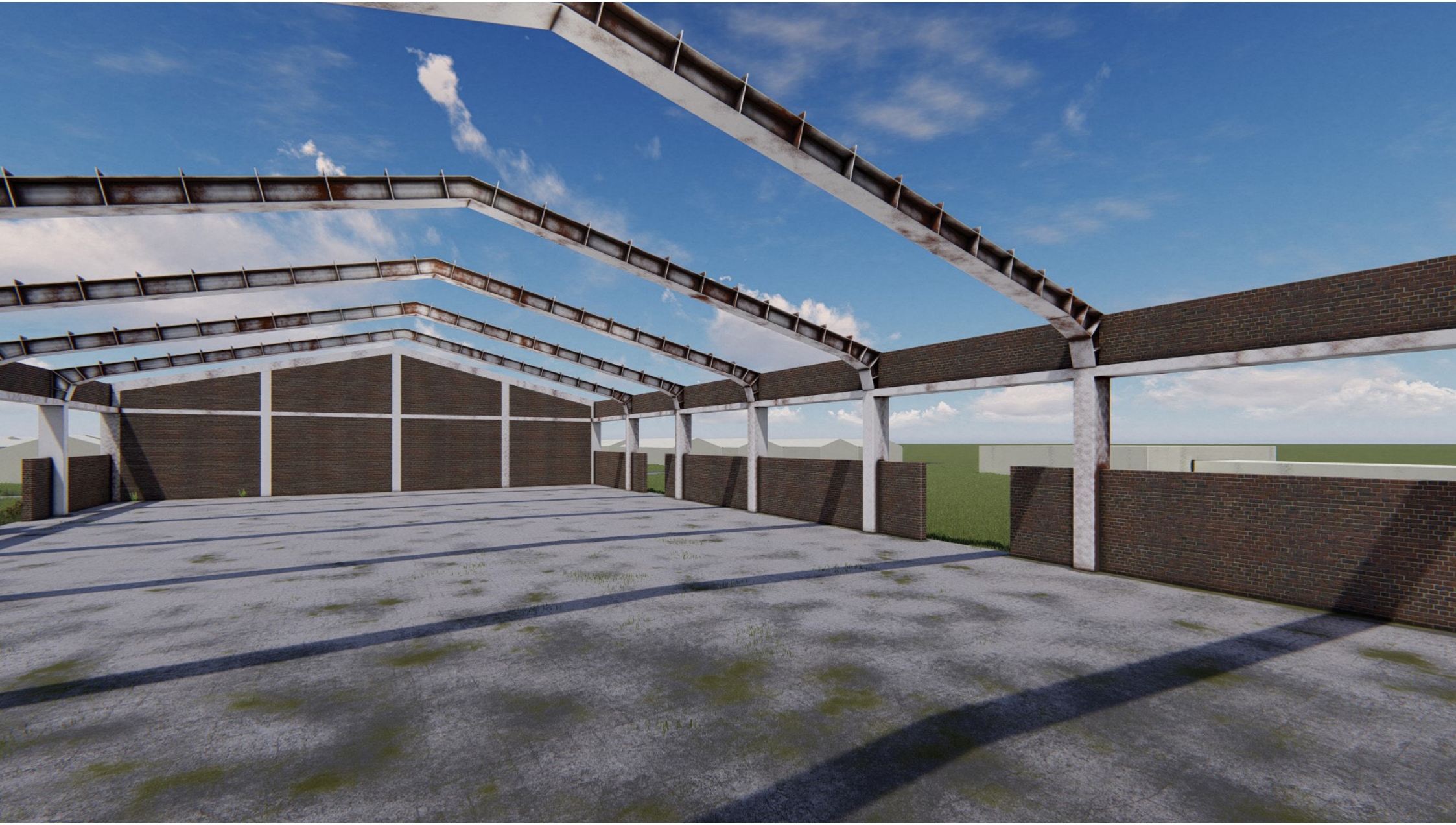
EASTERN PUBLIC FACADE | PROPOSED BUILDING

EASTERN PUBLIC FACADE | EXISTING BUILDING

EASTERN PUBLIC FACADE | PROPOSED BUILDING

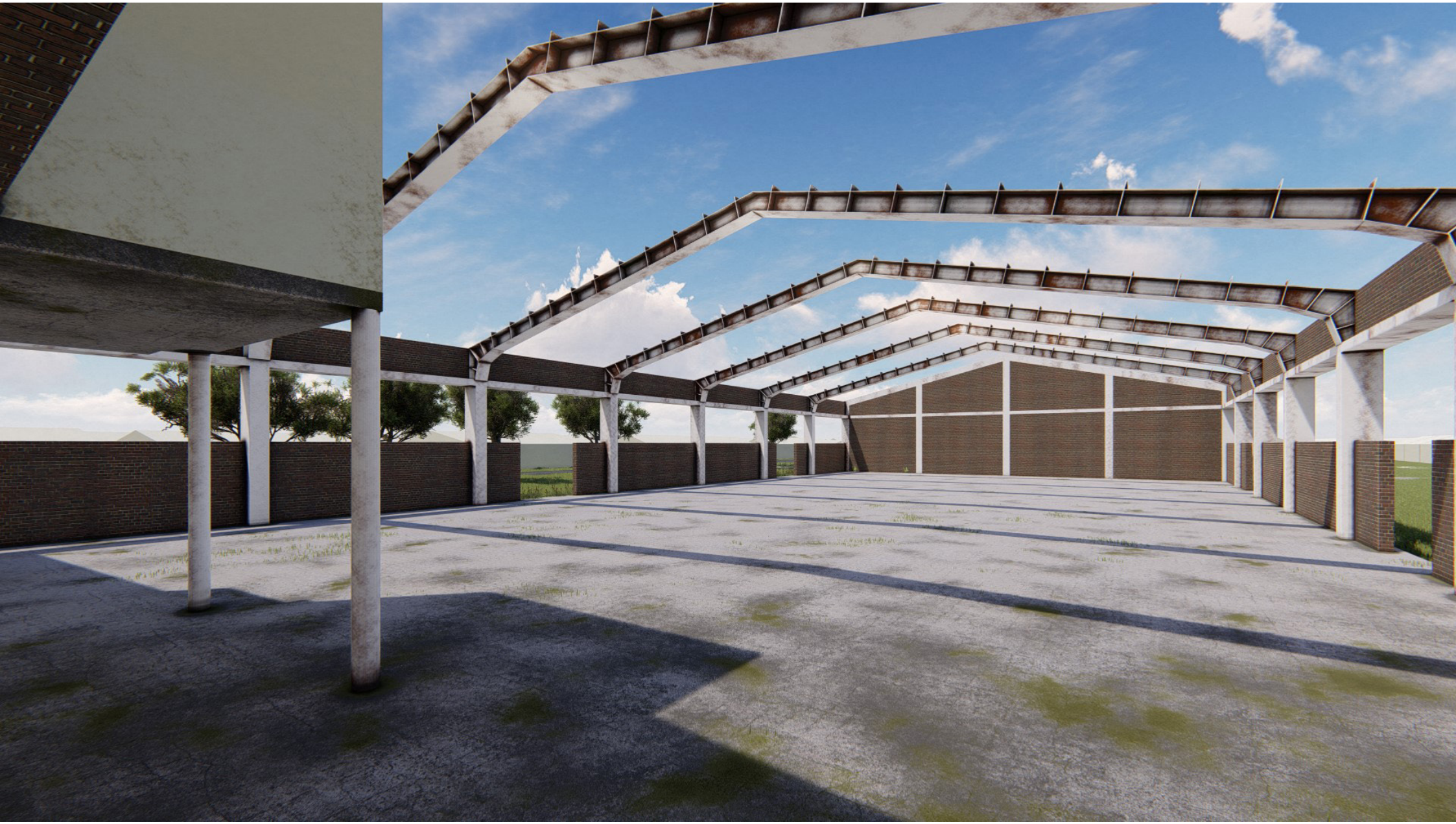
BIRD'S EYE VIEW | EXISTING BUILDING

BIRD'S EYE VIEW | PROPOSED BUILDING



INDOOR PLAYGROUND | PROPOSED BUILDING

INTERIOR | EXISTING BUILDING



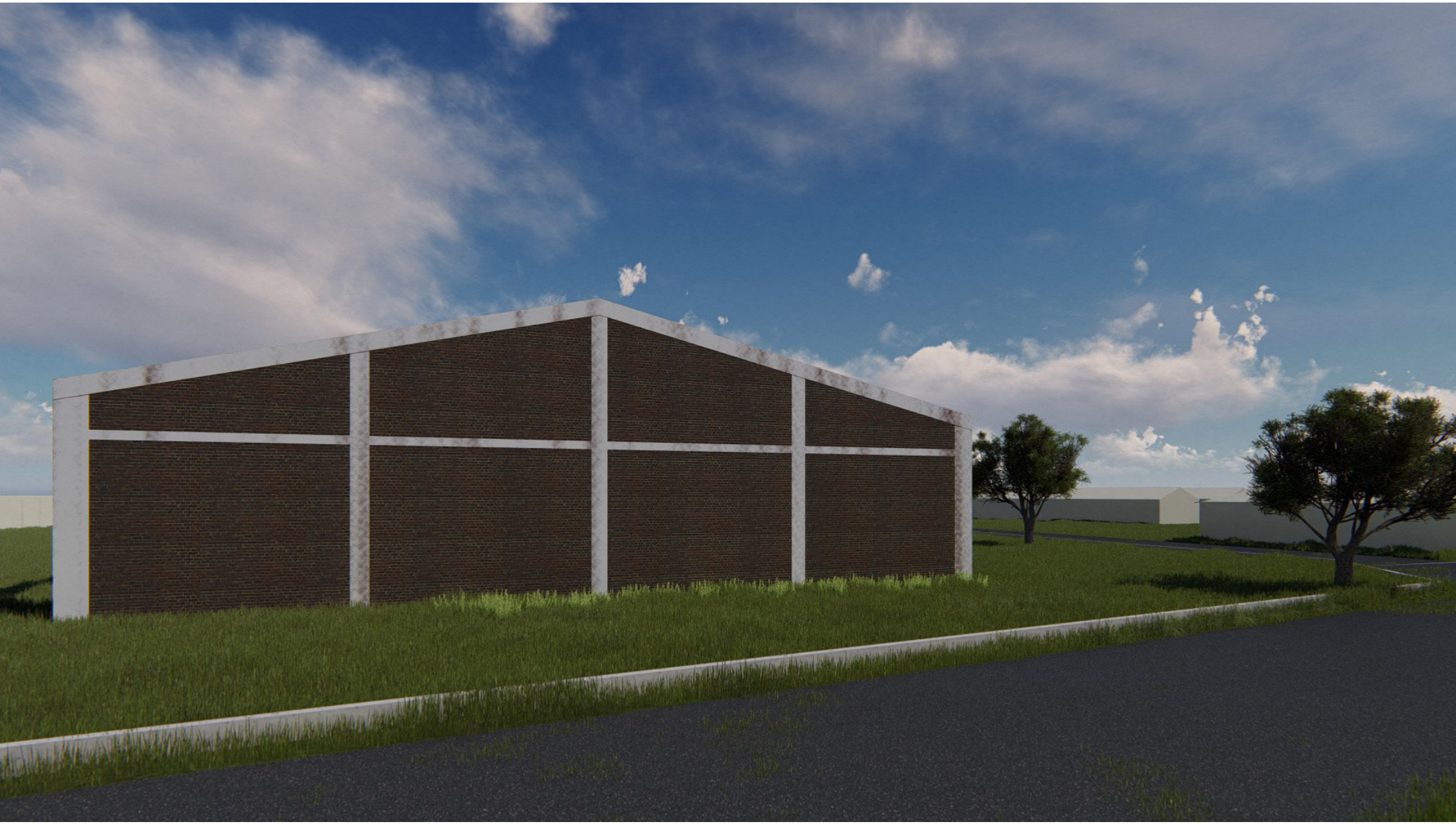
INDOOR PLAYGROUND | PROPOSED BUILDING

VIEW OF WINDOW CREATING VISUAL THRESHOLD BETWEEN THE SCHOOL LIBRARY AND INDOOR PLAYGROUND | PROPOSED BUILDING

EASTERN FACADE | EXISTING BUILDING

EASTERN PUBLIC FACADE AND WALKWAYS | PROPOSED BUILDING

SOUTHERN PUBLIC FACADE | EXISTING BUILDING

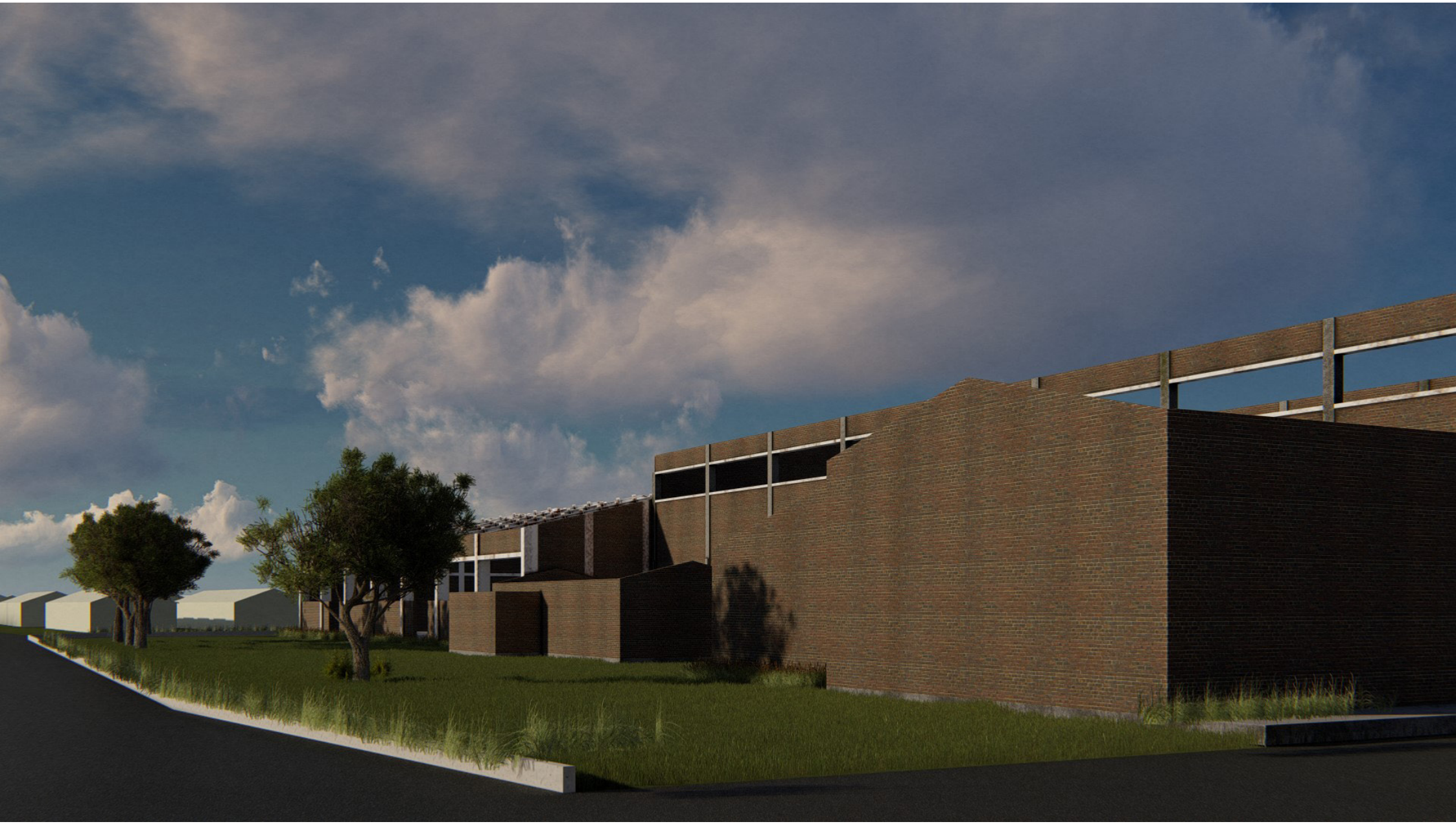


SOUTHERN PUBLIC FACADE SHOWING PUBLIC PLAYGROUND AND SHOPFRONT | PROPOSED BUILDING

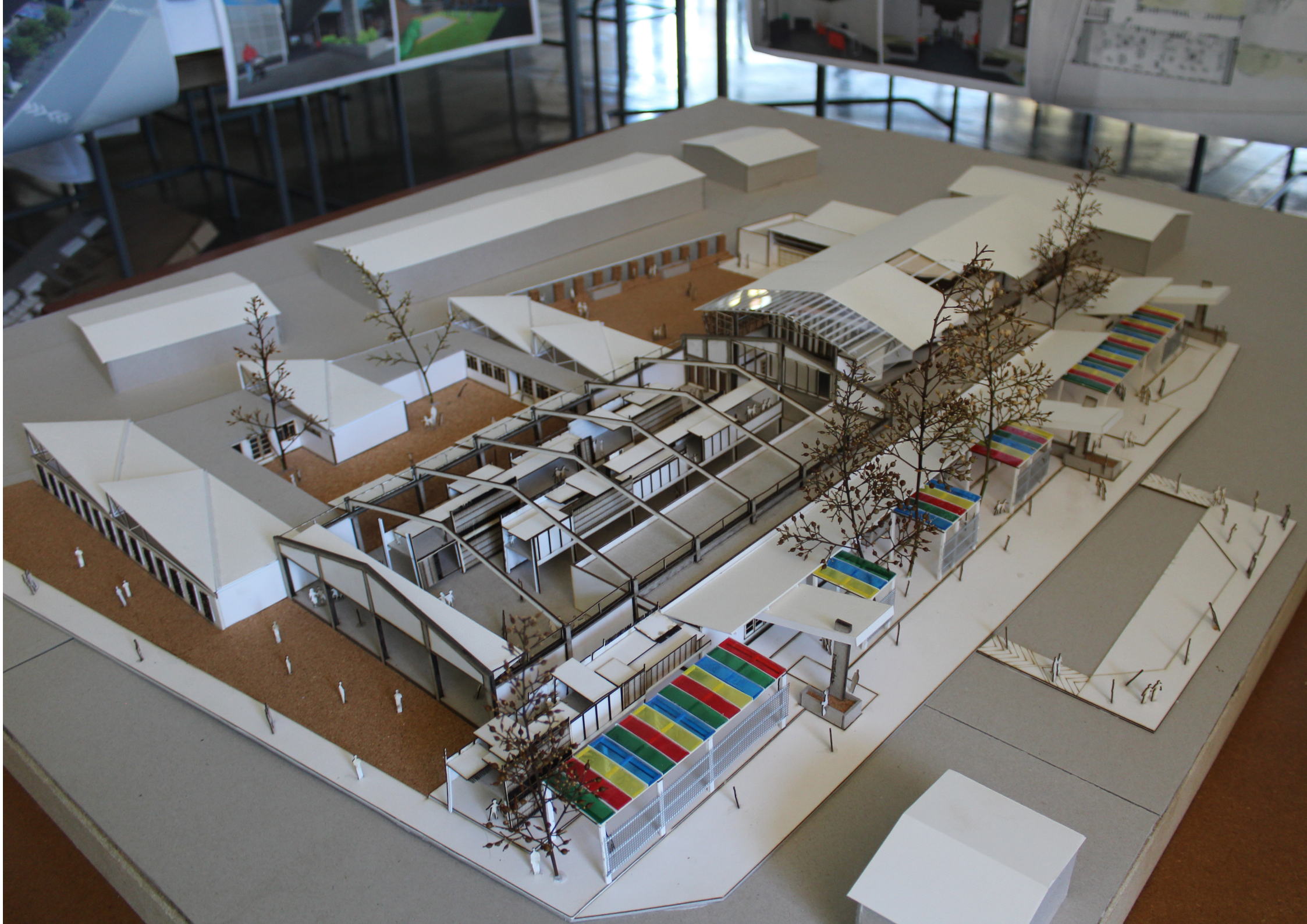
WESTERN FACADE | EXISTING BUILDING

WESTERN FACADE SHOWING SCREENS PROTECTING SCHOOL LIBRARY | PROPOSED BUILDING

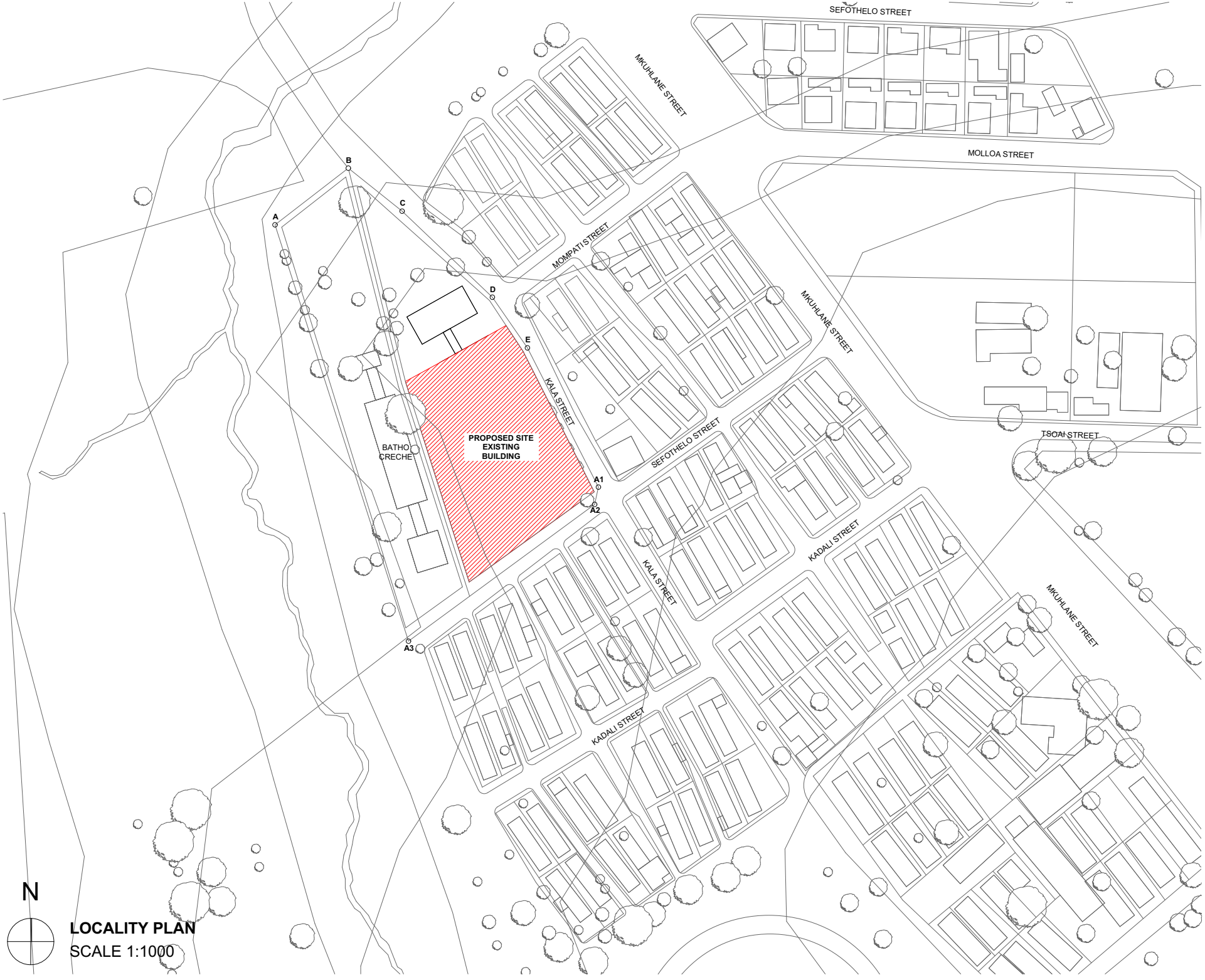
EASTERN PUBLIC FACADE | EXISTING BUILDING



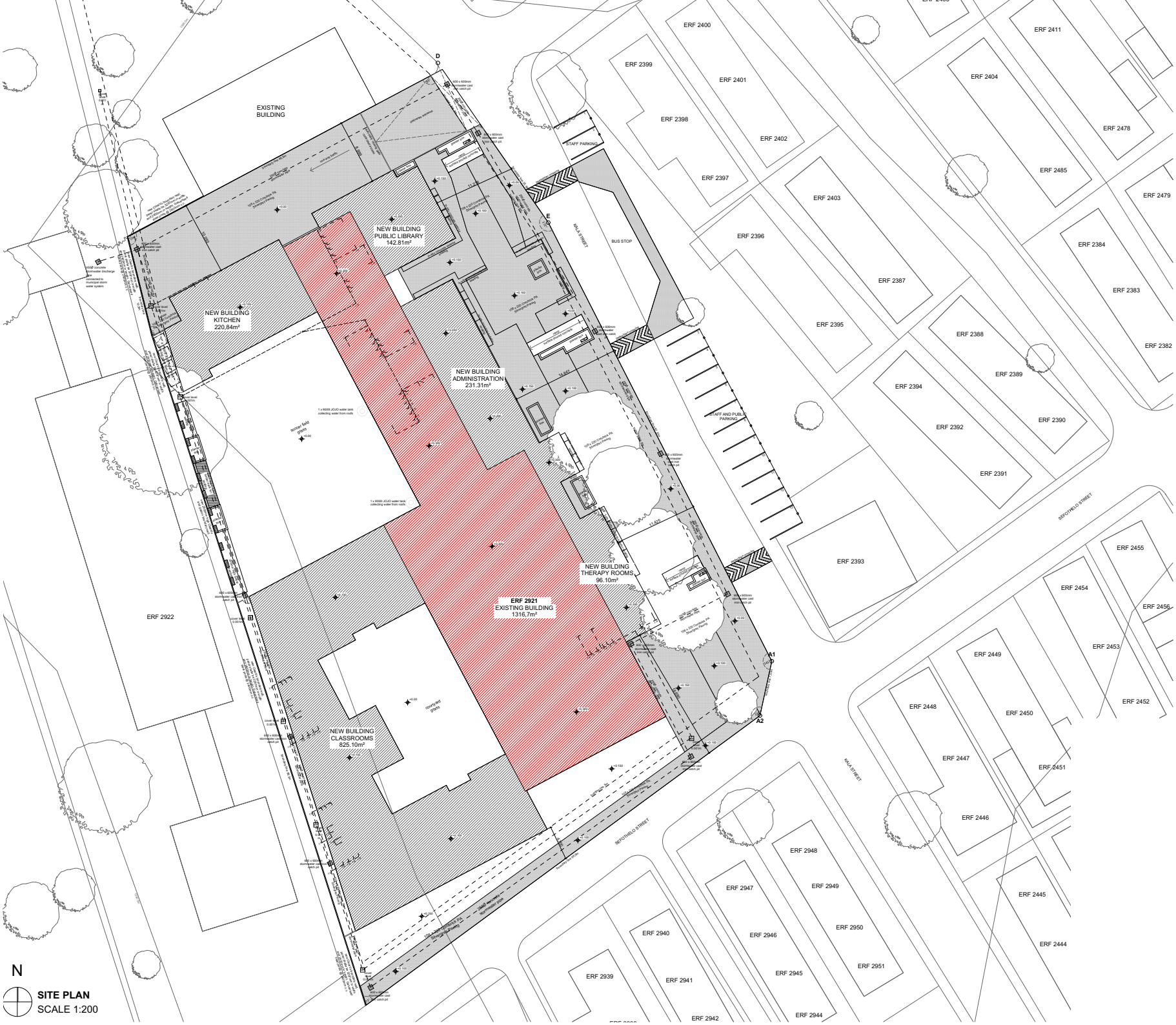
EASTERN PUBLIC FACADE AND PUBLIC LIBRARY | PROPOSED BUILDING



7. Final plans and drawings



LOCALITY PLAN
SCALE 1:1000


EXISTING BUILDING
NEW BUILDING PUBLIC LIBRARY 142.81m²
NEW BUILDING KITCHEN 220,84m²
NEW BUILDING ADMINISTRATION 231.31m²
NEW BUILDING THERAPY ROOMS 96.10m²
ERF 2921 EXISTING BUILDING 1316,7m²
NEW BUILDING CLASSROOMS 825.10m²
ERF 2922
STAFF PARKING
STAFF AND PUBLIC PARKING
BUS STOP
KALA STREET
ISEFOTHELO STREET
ERF 2400
ERF 2411
ERF 2399
ERF 2401
ERF 2404
ERF 2398
ERF 2402
ERF 2478
ERF 2397
ERF 2485
ERF 2403
ERF 2479
ERF 2396
ERF 2384
ERF 2387
ERF 2383
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ERF 2947
ERF 2949
ERF 2445
ERF 2940
ERF 2946
ERF 2950
ERF 2444
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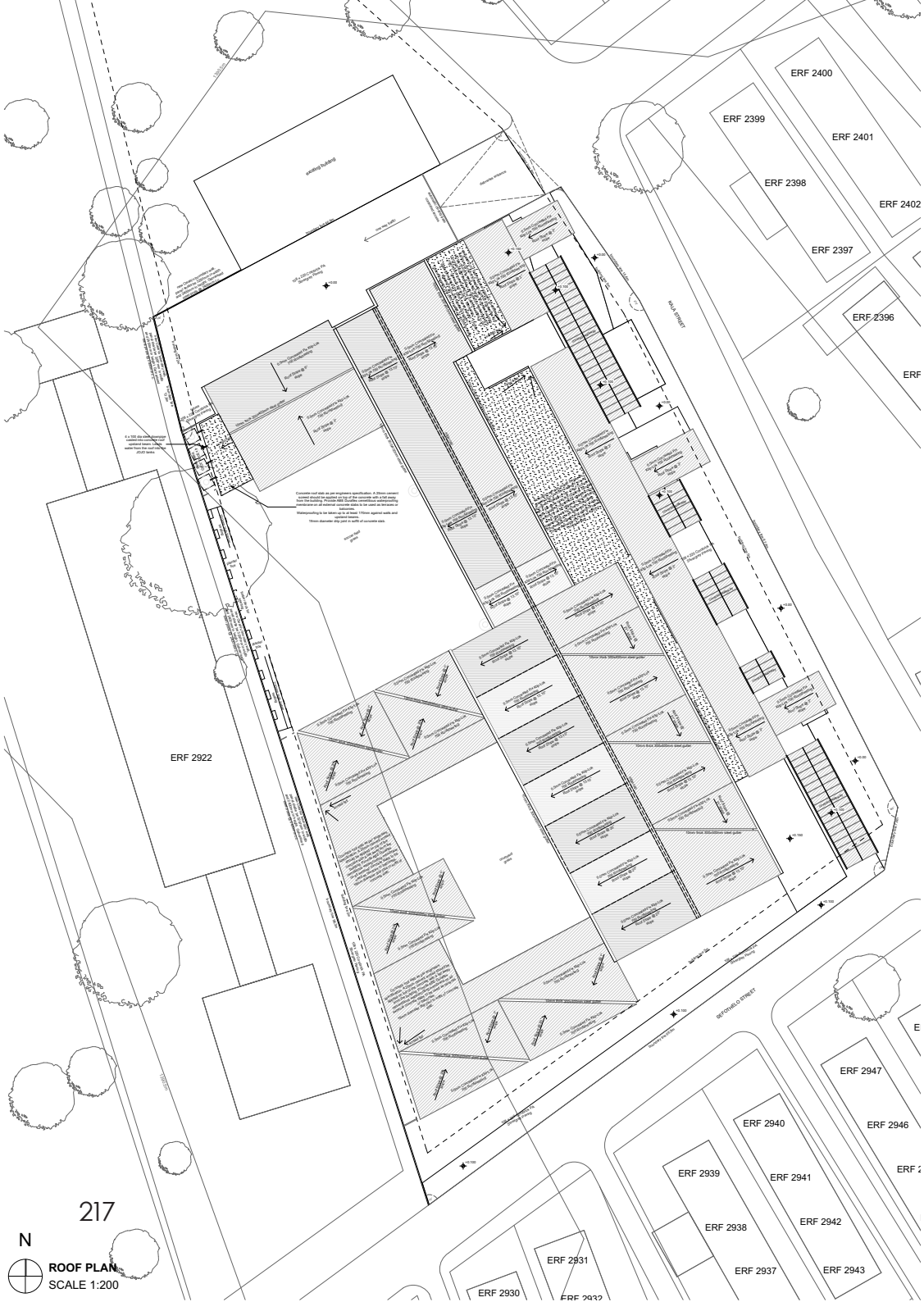
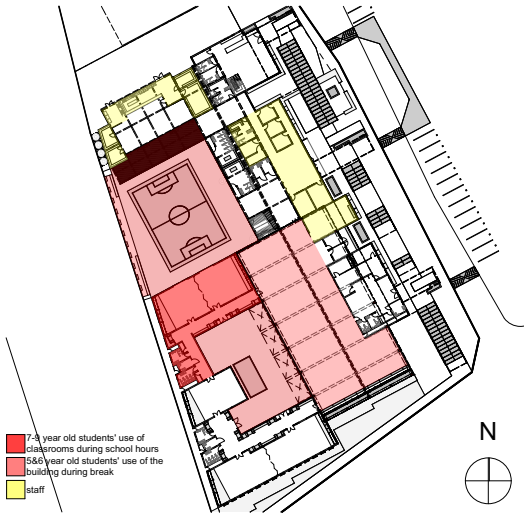
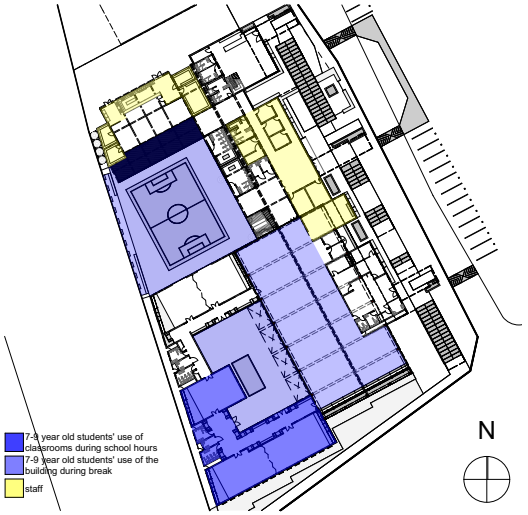
ERF 2941
ERF 2945
ERF 2951
ERF 2942
ERF 2944
N
SITE PLAN
SCALE 1:200

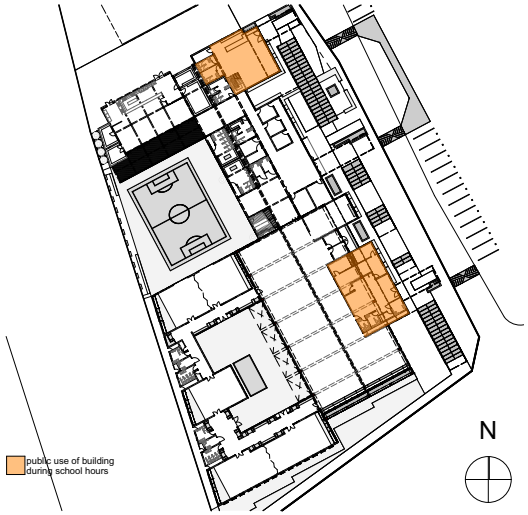


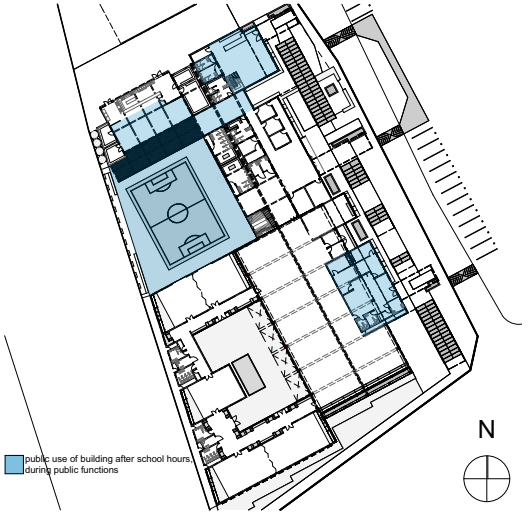
217

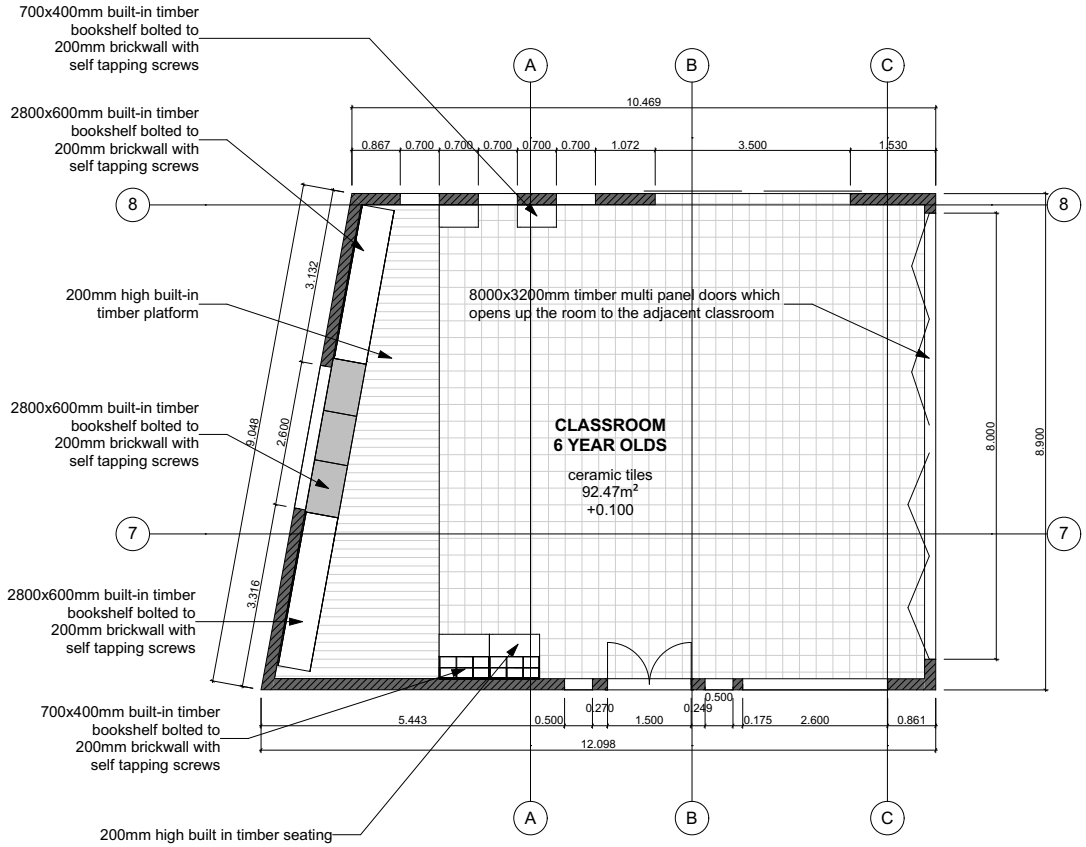
ROOF PLAN
SCALE 1:200







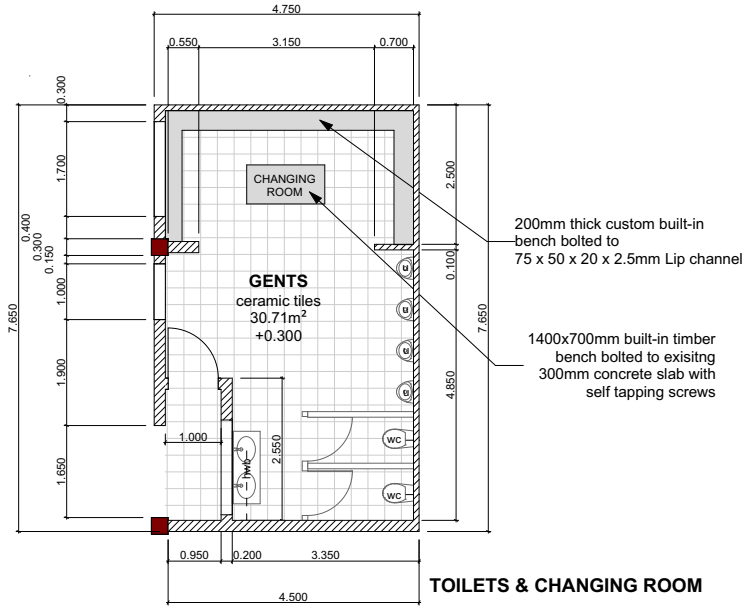




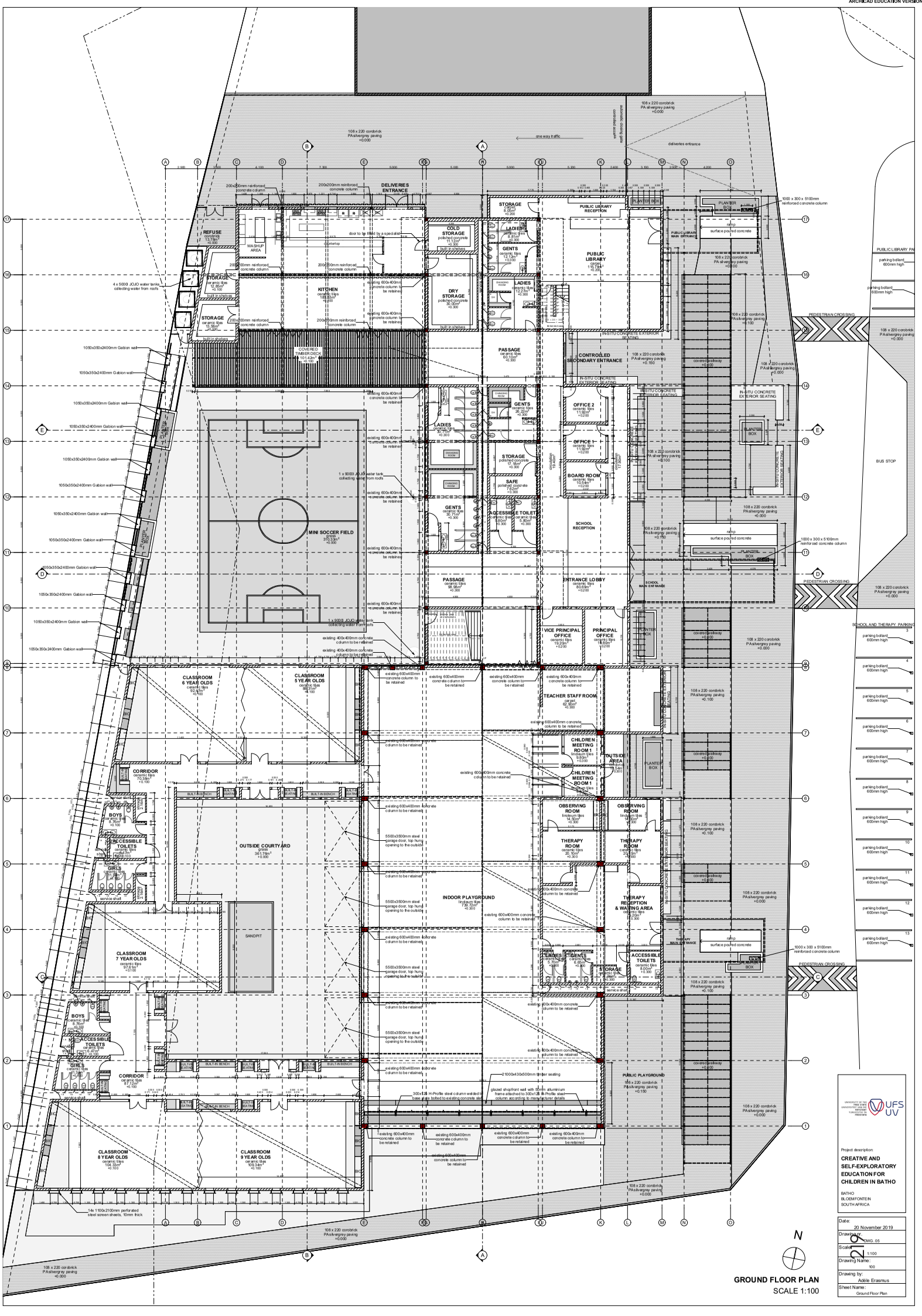
CLASSROOM

N

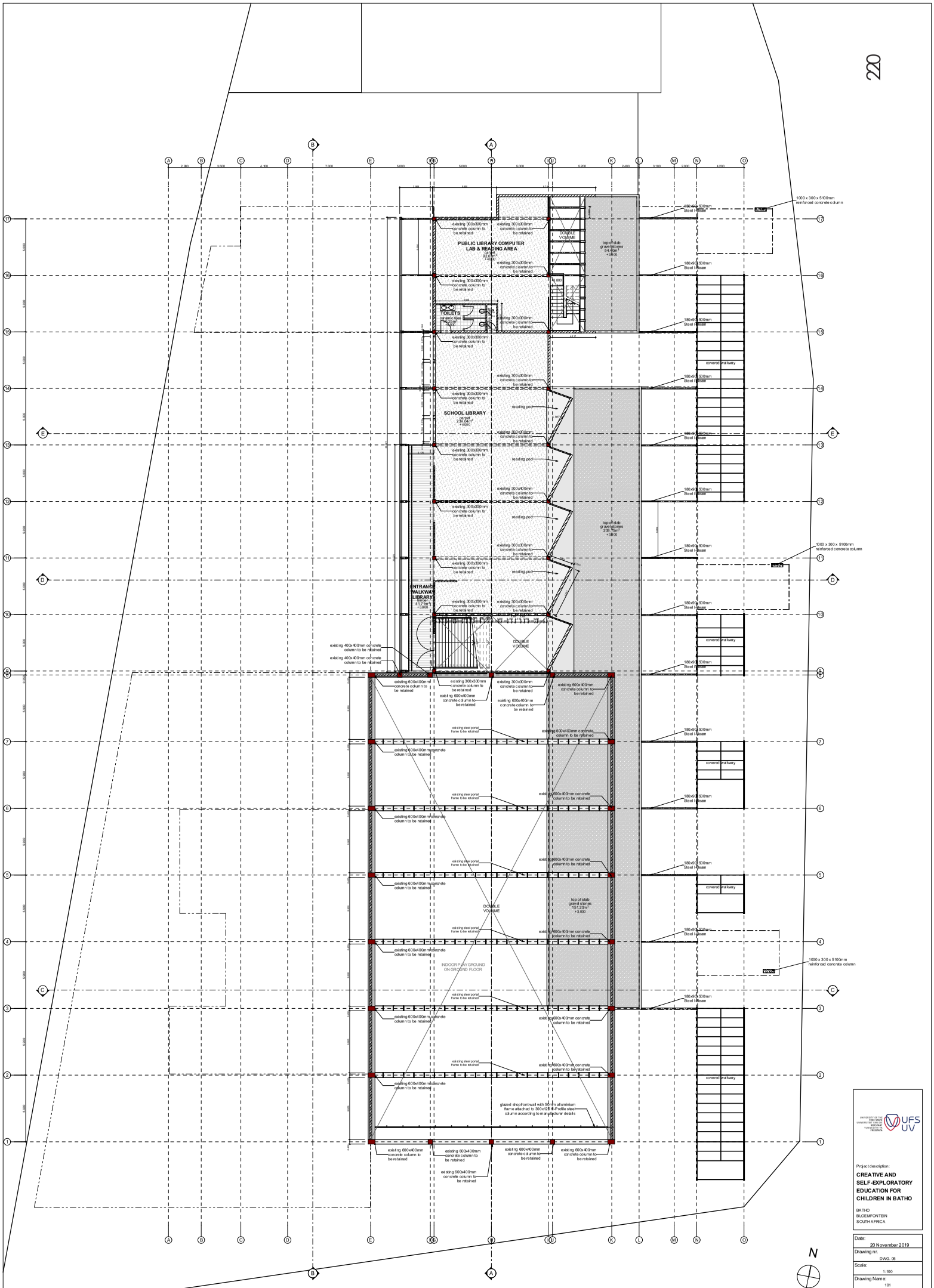
DETAILED FLOOR PLANS
SCALE 1:50



TOILETS & CHANGING ROOM



220



FIRST FLOOR PLAN
SCALE 1:100

N

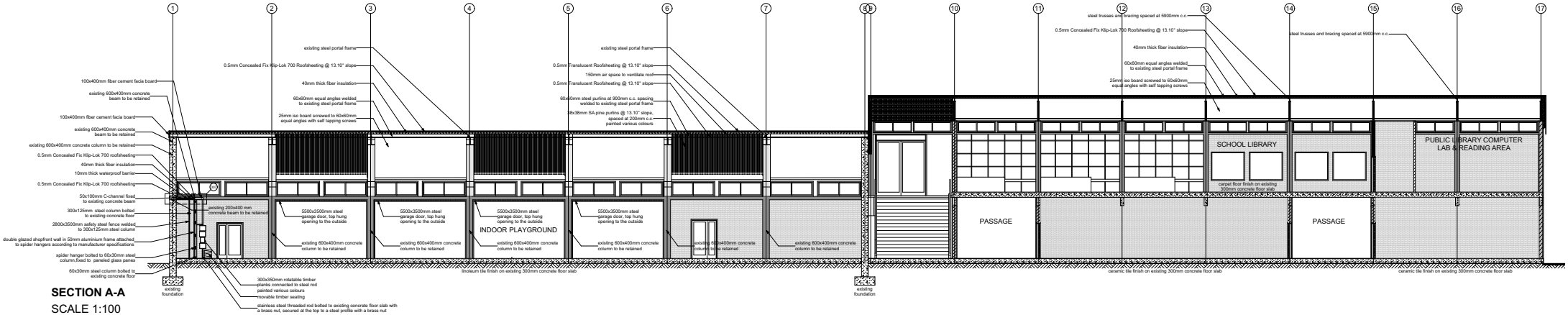
UFS UV

Project description:

CREATIVE AND SELF-EXPLORATORY EDUCATION FOR CHILDREN IN BATHO

BATHO
BLOEMFONTEIN
SOUTH AFRICA

Date:	20 November 2019
Drawing nr.	DWG. 06
Scale:	1:100
Drawing Name:	101
Drawing by:	Adéle Erasmus
Sheet Name:	First Floor Plan



SECTION A-A
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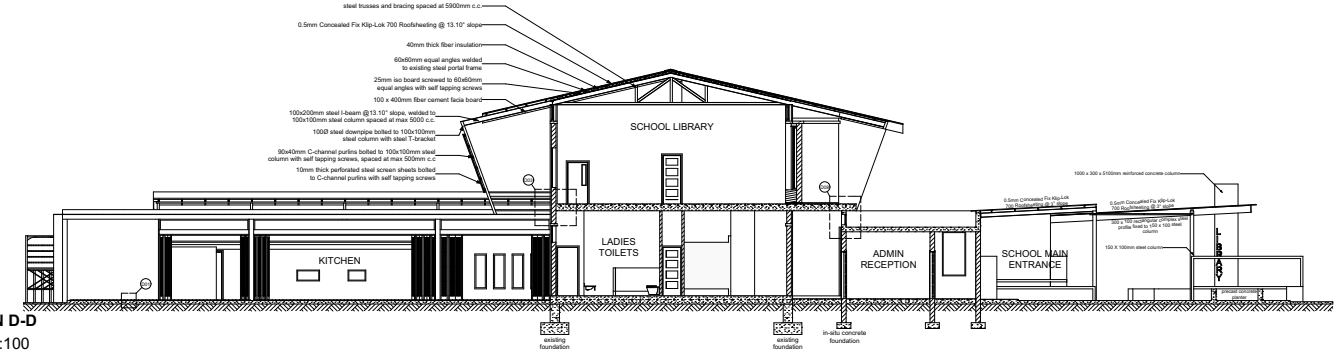
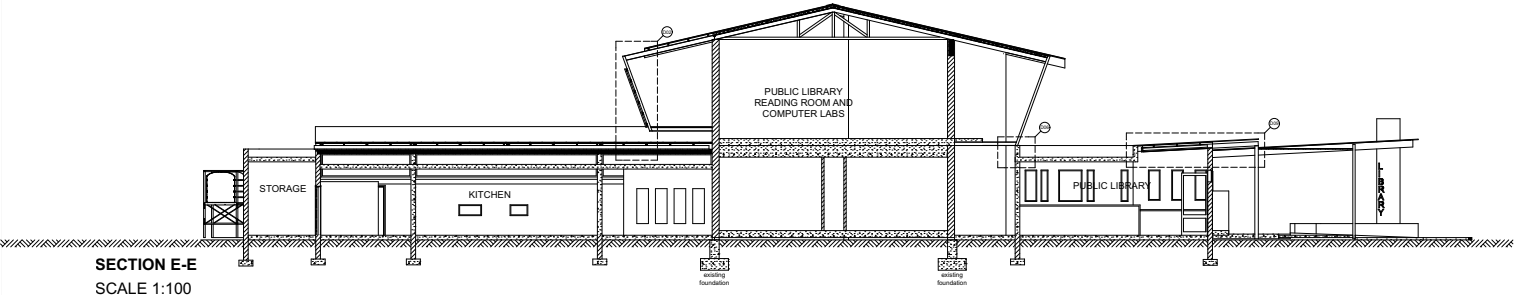


SECTION D-D
SCALE 1:100



SECTION E-E
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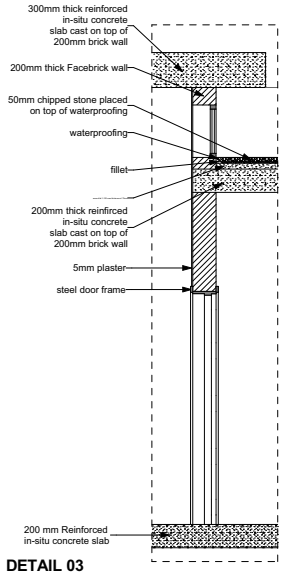
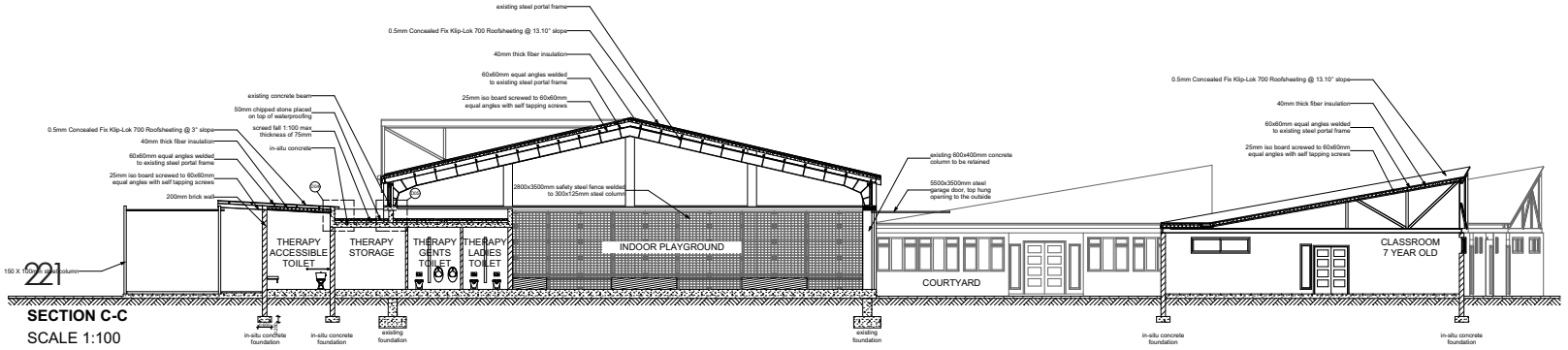
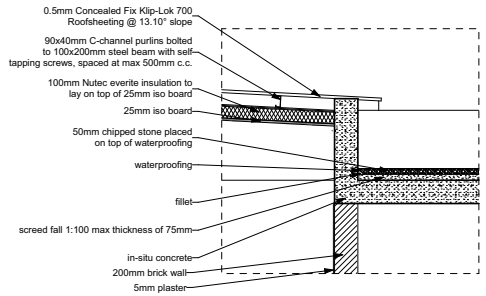


DETAIL 03
SCALE 1:20



SECTION C-C
SCALE 1:100



DETAIL 04
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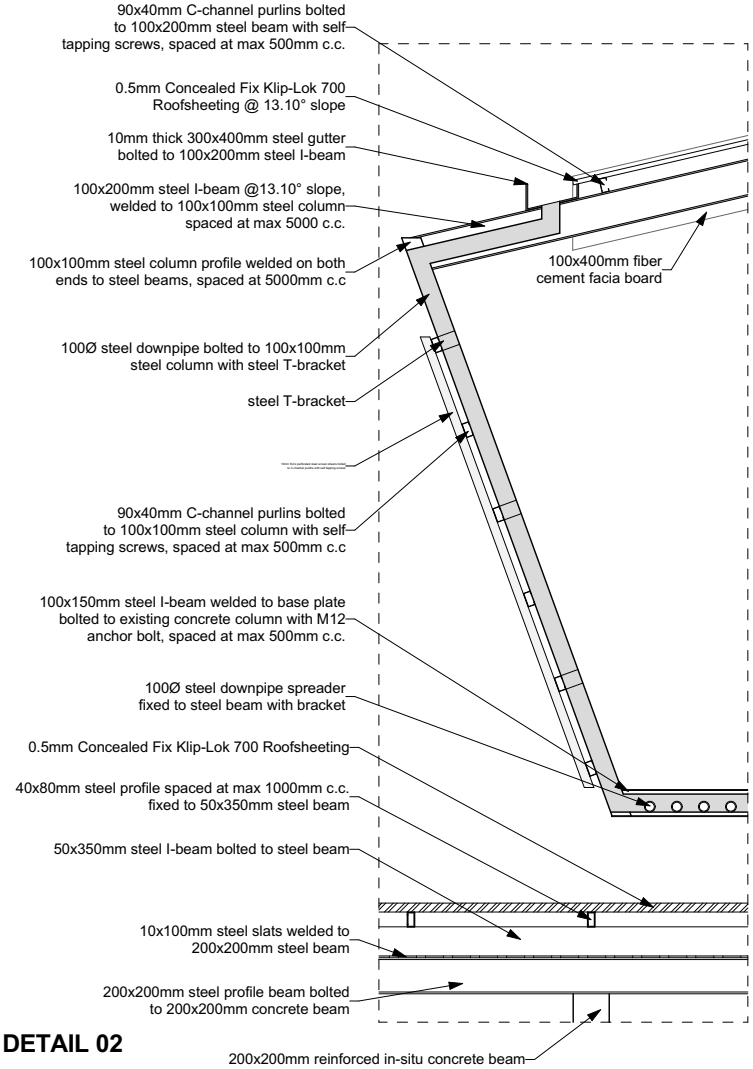
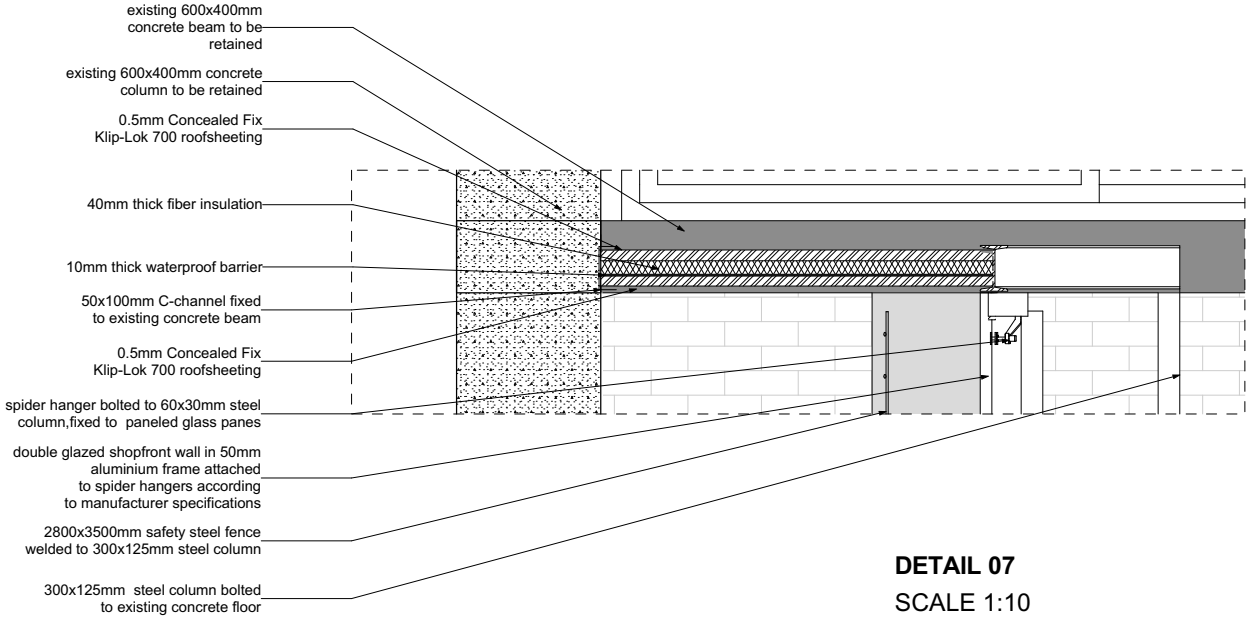


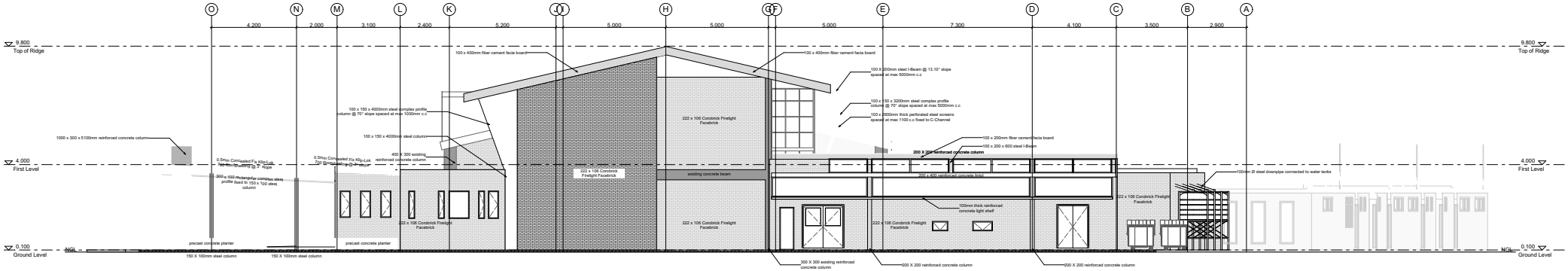
DETAIL 02

SCALE 1:20

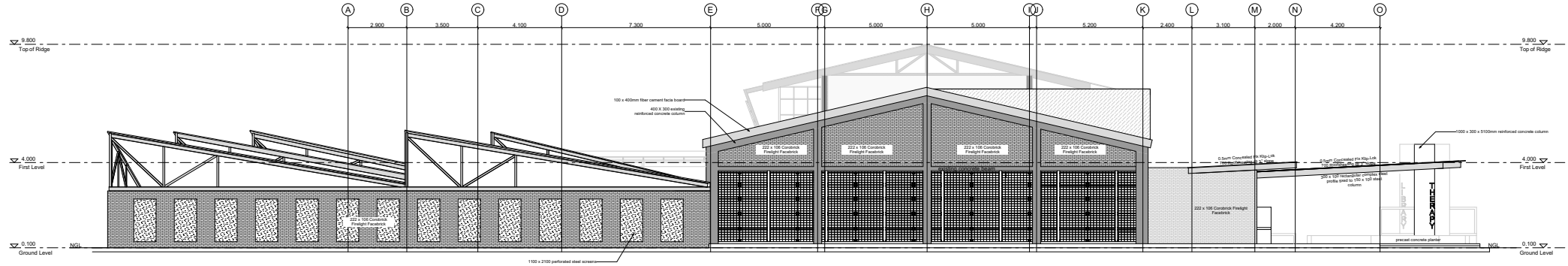


DETAIL 07

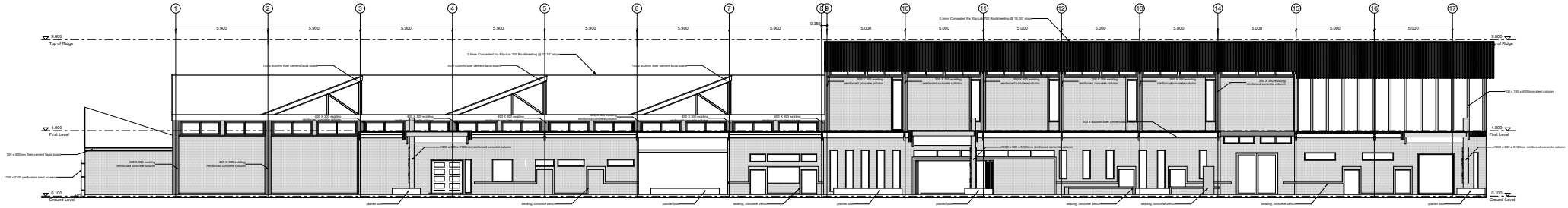
SCALE 1:10



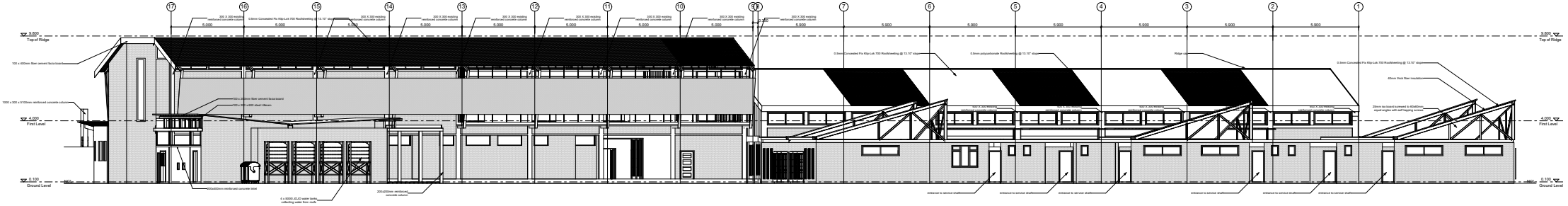
NORTH ELEVATION
SCALE 1:100



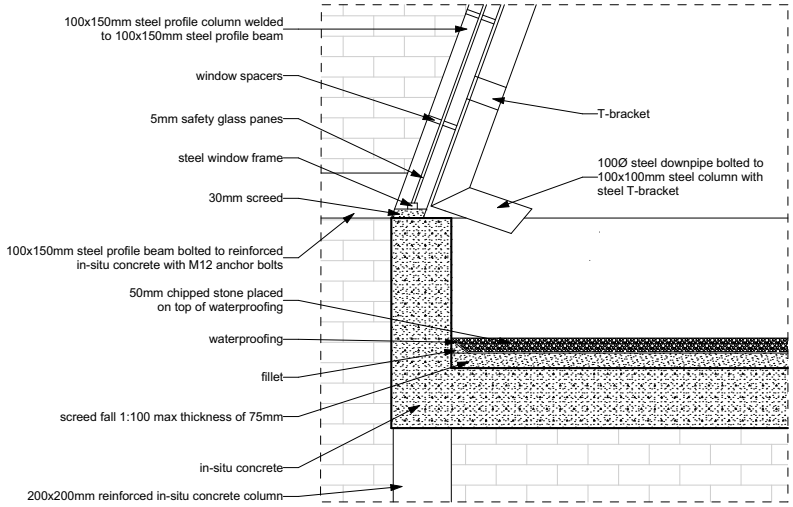
SOUTH ELEVATION
SCALE 1:100



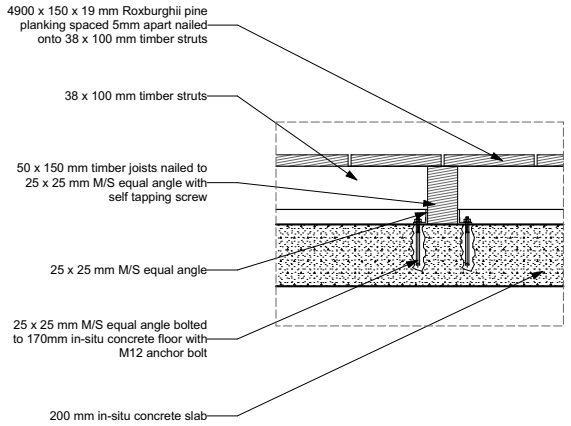
EAST ELEVATION
SCALE 1:100



WEST ELEVATION
SCALE 1:100



DETAIL 06
SCALE 1:10



DETAIL 01
SCALE 1:5

PART 5

6 REFLECTION & EVALUATION

REFLECTION

Reflecting back on the Year I realise how much I have learned and grown during the process of finishing my masters degree. This has, by far, been the most challenging chapter of my life - coming from someone who looked after four children for a whole year!

No one can prepare you on the mental and physical challenges that awaits throughout the year, but wow! what a journey.

I have been told that studying and practicing Architecture is both challenging and SATISFYING because of the diverse line of work one does on a single project.

The proposed thesis of designing a Creative school in Batho, Bloemfontein countered me with so much more than architectural questions and problems, but moral as well.

How does one design a school for children where they can truly learn outside the perimeters of a planned education?

This question was the toughest, because one quickly responds with what teachers HAVE to do in classrooms. However, I had to force myself to change the project from questioning a social challenge and transforming it into an architectural challenge!

And this is where the journey began, taking the project brief into my own hands. I had to incorporate some personal experiences I had encountered on specifically the growth of the children throughout my year as an au pair. Reflecting back on that year, looking through photos, and discovering how the children have grown during that year, and why, immensely helped as a guide on what children might understand and how they may experience SPACES.

The initial aim of project was to design a school where children safely play and be educated among peers and objects. A building that is not final and still has the potential and gives the opportunity for the children and teachers to manipulate the spaces (indoor playground, classrooms, courtyard and even the school library) to fit the needs of the children's creative growth.

This is a building where the child has the opportunity to attend a school that COVERS the basic needs of education, but also provides the opportunity and the space to freely move around with their friends (social development), playing new games (intellectual development) discovering new games (physical development all while moving around in a safe environment (emotional development).

Even though this year was really tough, I enjoyed the opportunity to explore this topic and be able to experience the challenges I went through this year.
I not only learned, beyond my expectation, more on architecture, but also about myself. I will always look back on 2019 as the toughest but most rewarding year of m life, so far.

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