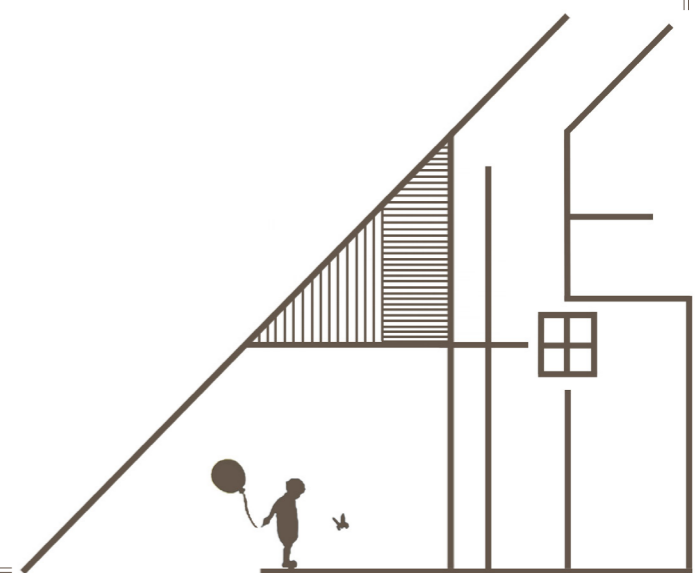*Not to us, O Lord, not to us, but to your name goes all the glory, for your unfailing love and faithfullness...*

-Psalm 115:1-

in a township

ALICE...

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by Colette Maritz

Submitted in partial fulfilment of the requirements of the degree of Masters in Architecture [Professional]

Faculty of Engineering, Built Environment and Information Technology

University of Pretoria

November 2012

Study Leader: Carin Combrinck
Cource Coordinator: Arthur Baker
Cource Coordinator untill July 2012: Jacques Laubscher

'ALICE Community Primary School'
an extroverted educational response...

Full dissertation title:	Alice in a Township_ Accessible Learning through an interactive communal educational environment
Submitted by:	Colette Maritz [Miss]
Student Number:	250 430 14
Study Leader:	Carin Combrinck
Course Coordinator:	Athur Baker and Jacques Laubscher
Degree:	Master of Architecture [Professional]
Department:	Department of Architecture
Faculty:	Faculty of Engineering, Built Environment and Information Technology
University:	University of Pretoria

Project Summary_

Programme:	Public Primary School
Site Description:	Olievenhoutbosch Ministerial Housing Estate, Rue Vista Ext 14
Client:	The Department of Education in association with the Department of Infrastructure Development's Independent Trust
Users:	Children that would benefit from foundation phase education up to Grade 7 as well as after school Adult Basic Education and Training [ABET]
Site Location:	On the corner of Reen Ave and Constantia Ave, Olievanhoutbosch, Northern Extension [Olievenhoutbosch Ministerial Housing Estate]

Architectural_

Theoretical Premise:	The investigation challenges the introverted dystopian character of current educational facilities in Olievenhoutbosch in the process of establishing an extroverted public identity for accessible learning.
Architectural Approach:	Developing a contextually generated conceptual ideal for educational sites, for them to be able to contribute as stimulus in the process of uplifting and integrating with the surrounding urban environment.
Research field:	Housing and Urban Environments

In accordance with Regulation 4[e] of the General Regulations [G.57] for dissertations and theses, I declare that this thesis, which I hereby submit for the degree Master of Architecture [Professional] at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my thesis has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

_____

Colette Maritz

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_____

Colette Maritz

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Introduction

Fig 0.1_ Tshepang Day Care Centre

0.1 Background to Study

Since South Africa's government was democratically elected in 1994 the Department of Education was faced with the challenge of addressing poor and unequal education opportunities and facilities in low income areas. Recognising the potential the educational system has on transforming societies it became a main priority [UNISCEF 2007]. With compulsory primary education and an 'education for all' approach the concept seemed to address previous problems of inequality. The physical environment however, failed to reflect this inclusive approach to the development of children in South Africa. Within a continuously growing population, cities and rural areas are constantly expanding. The growing cities are however failing the children in communities by ignoring their significance and needs [UNICEF 2012]. Due to this fact educational facilities are becoming increasingly important, especially in areas like Olievenhoutbosch, which has a high youth population that struggles mainly with a stagnant character [Philena Primary School Principal, Olievenhoutbosch].

"Places geared towards children's needs, often toward the needs of children of a particular age, are scattered like islands on the map of the city at greater or lesser distances form each other."

Christen, P, and O'Brien, M. 2003.
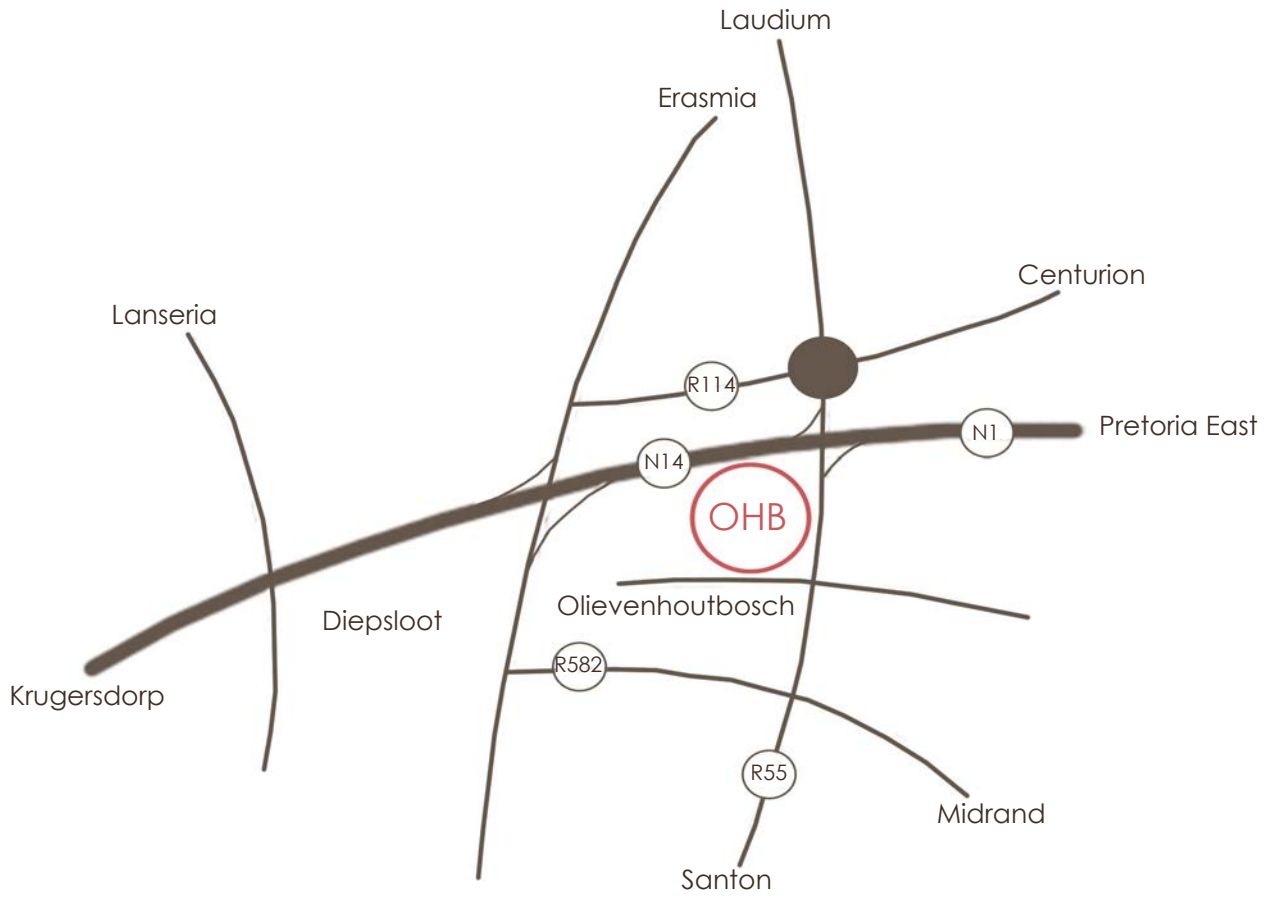
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N14

R55

Schools

S

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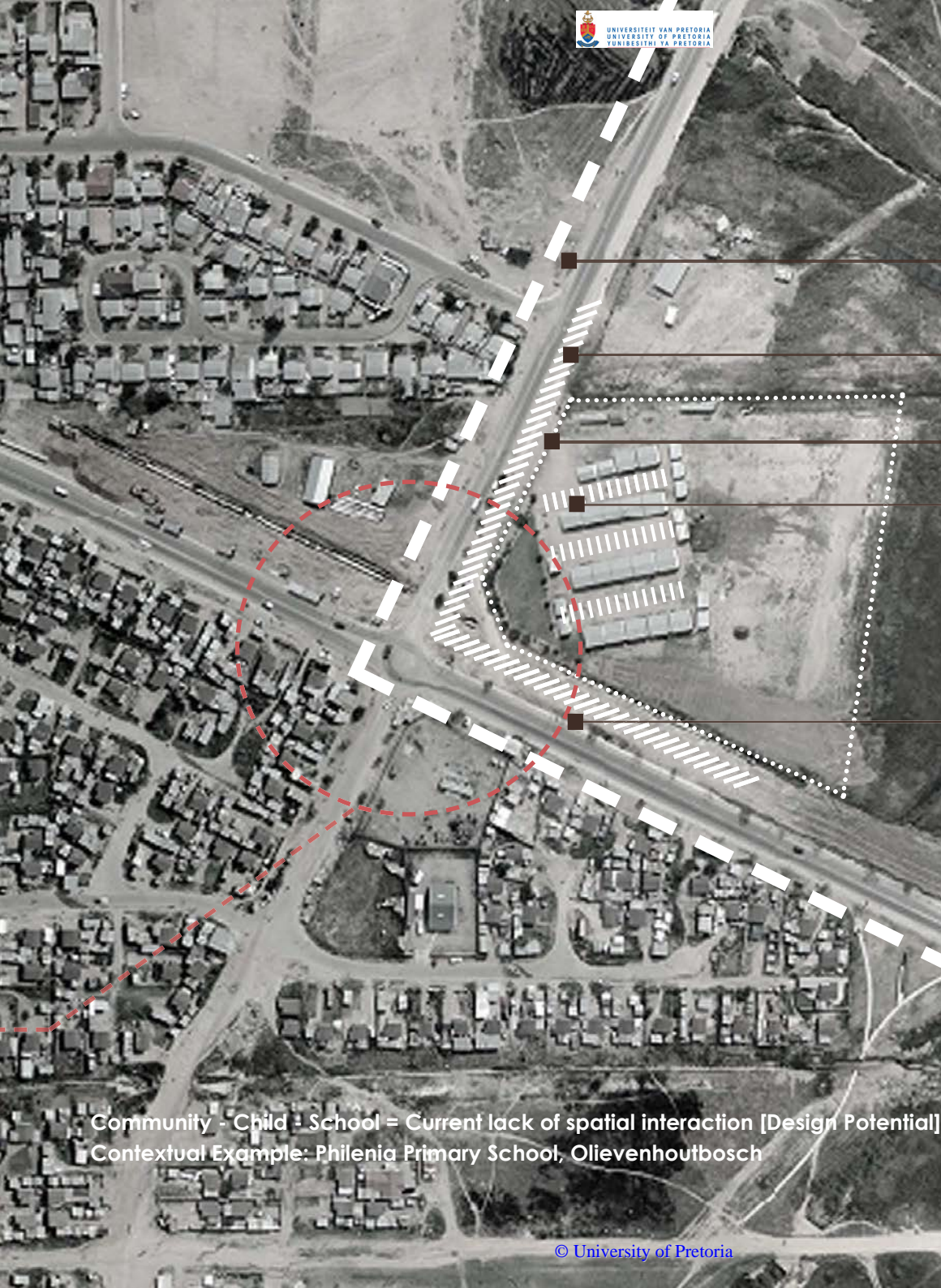
Community Edge

Dead Space - Potential

School Edge - Barrier

Dead Space - Potential

Potential Space for socail interaction

Community - Child - School = Current lack of spatial interaction [Design Potential]
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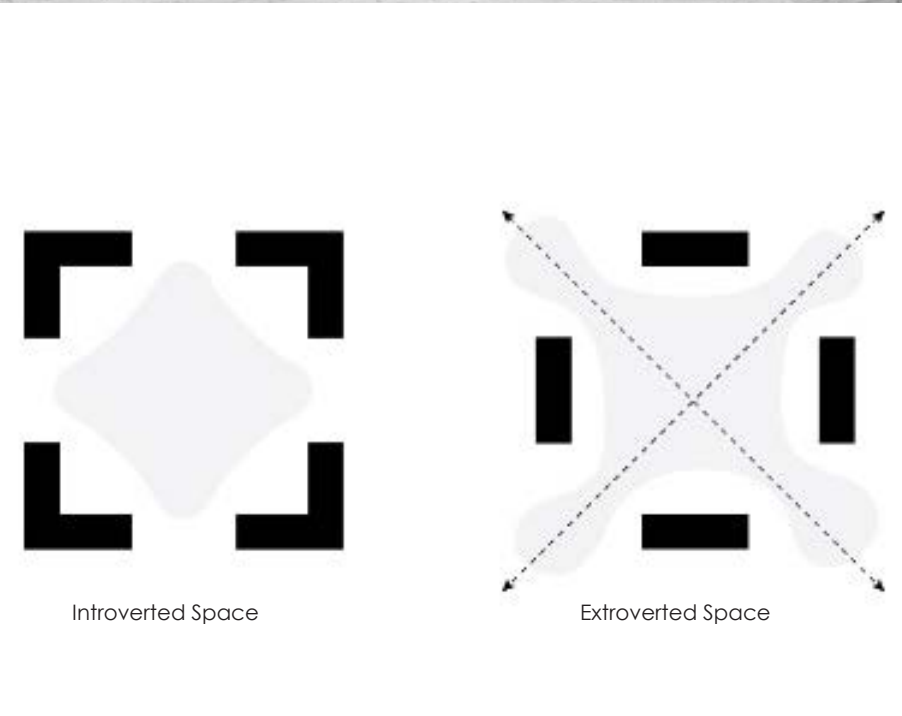
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0.2 Abstract

The Alice Project investigates the problem behind the lack of provision for children in developing areas. The project recognises the potential in formal educational facilities as being the most important designed children's space in townships [as developed transit camps]. The study will aim to address school environments in an extroverted or interactive manner. [Arch Daily: 2012] This will be done in order to transform the school grounds into a community children's 'city of learning' [H.Hertzberger.2008:127]. The study questions the one dimensional identity of current educational environments, while focusing on Olievenhoutbosch as the main research area [Olievenhoutbocsh Ministerial Housing Estate: July 2005]

The study identifies the problem behind the dystopian institutional character of current educational facilities as; introverted layouts, isolation, mono function and functionally dominant and intimidating spaces [H.Zeither.1996:16; H.Hertzberger.2008:71]. In order to address these elements of spatial alienation, the dissertation will investigate counter theories of contextual inclusion and humane places of interaction, using contextual informants of community use of spaces to assist in program allocation and determinants of spatial hierarchy, supported with theories by Jane Jacobs [1961] and Jan Gehl [2010 and 2011] on qualities of a humane compact city space. These theories will then be combined with educational design theories of learning spaces implemented as a city in miniature, ultimately allowing the educational environment to socially extrovert to include community life and achieve a social academic atmosphere through an interactive educational environment [Arch Daily: 2012].

0.3 Preface

This dissertation explores theory with regard to extroverted educational architecture.[Arch Daily:2012] The aim of the study is to address the dystopian institutional character of educational facilities, focusing on extending the public school typology to become a public space in itself. The study aims to allow the existing site narrative [opportunities and needs legible] to inform and determine the function of the educational intervention on a macro and micro design scale. This will be done in order to ultimately "de-school" the expected educational environment by encouraging certain permeability with the community beyond the school, drawing students and members of the community into the school just as it encourages students to interface outward [Arch Daily: 2012]

The final proposal challenges the Department of Education's National minimum uniform norms and standards for school infrastructure [2008]. It extends the school to become part of local facilities and ultimately form part of a community centre of activity, creating the opportunity to relocate schools from the periphery of the neighbourhood to the hub of communal life. The process will arrange communal and academic spaces as interactive neighbourly realms. This allows the school building to change from an educational institute to a house of learning and ultimately a learning city is formed. The child becomes a priority in the formulation of the master plan, thus the opportunity of a child friendly neighbourhood design is created. This relates to Herman Hertzberger's theory: a city that functions as a school and a school that functions as a city, where the key places are given to social exchange as part of the network of learning [H.Hertzberger.2008:70]. Christopher Alexander [1977] also refers to this concept in his book, "A Pattern Language", where he discusses a different patterns relating to a network of learning within a community.

Fig 0.7_ Olievenhoutbosch Primary School Pupils on play ground, interaction with sidewalk activity

"Thus, the social differentiation of childhood is re-flected in the urban landscape as segregation of places for children and for adults."

Christen, P, and O'Brien, M. 2003.

01 The Brief

Fig 1.1_ Tshepang Day Care Centre

1.1 Problem Statement

Over the course of a child's life the places that he or she uses or visits are ultimately linked through the child's individual life path. This forms a continuous connection of experiences. The sequence of these places constitutes his or her temporized life space. Through the lack of sufficient child orientated urban planning and modernistic views, children's spaces have become fragmented. Functional differentiation of provided children educational spaces increases conditions of eternal control imposed by fixed structural characteristics. This can be clearly read in educational spaces that are currently provided [H.Zeither.1996:16].

One dimensional structured function gives these spaces their dystopian institutional character. Further limited or controlled access to these children facilities causes these spaces to seldom be accepted as part of a child's individual life space. This isolation and introversion of children's educational spaces causes a separation between the school and community life which hinders the child to be able to develop his or her individual flexible structure of activities and relationships. A detachment from context, especially in the Olievenhoutbosch area, has lead to a general lack of ownership by the local youth.

Fig 1.2_ Philena Primary School

"Education breaks the generational cycle of poverty and disease and is key to a nation's development and prosperity."

UNICEF.2008.

As the only formal children's space in this area, the school environments are not contributing to the development of their local youth on a holistic scale [Philena Primary School Principal,15 March 2012]

The dissertation aims to respond to the study problem by applying an extroverted inclusive design strategy. Within this process the educational facility is seen as a 'city of learning'. This will be made possible by physically and theoretically creating links on a micro and macro design scale by incorporting strategic places of social interaction. This process will aim to generate an interactive layout that focuses and promotes community participation in a socially sustainable manner [H.Hertzberger:2008].

Fig 1.3_ Bathabile Primary School

"Infrastructure and services are not keeping up with urban growth in many regions and children's basic needs are not being met."

UNICEF.2010.

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1.2 Main Research Question

When considering the disadvantages of a functionally structured child educational environment as institution, how can future educational sites [school typology design] accommodate true community inclusion [urban space]? How can a school become flexible in program and space, while insuring child safety, in order to provide the children with more than just teaching spaces but an interactive and sustainable children community environment as a place of group or individual learning and development? [Shop front Education: Alexander, C:1977: page 420]

1.3 Sub Research Questions

1.

What aspect of the design needs to be considered in order to provide a sustainable community function beyond the program of the educational environment? [University as Market Place: Alexander, C: 1977: page 231]

Fig 1.4_ Photo Montage of child-adult street activity interac-

2.

How can the proposed educational environment be approached in order to establish a monitored permeability and multi functionality between the community and school? [Social Academic Environment].

3.

What is needed within the design to establish the educational spaces as self-confident hubs of activity, that can function as a whole as well as in sections, in order for the educational 'city' to communicate an extroverted character of interactivity and inclusion?

1.4 Assumptions

- This dissertation is informed by the Olievenhoutbosch Ministerial Housing Estate Urban Design Framework's proposal for additional school facilities and public amenities[Prepared by BIGEN AFRICA and ADA Urban Design, for Gauteng Department fo housing and City of Tshwane Municipality: July 2005].

The dissertation assumes that:

- the Department of Education, in association with the Department of Infrastructure Development's Independent Development Trust [IDT], will be responsible for the implementation of the new school typology as a symbol of community upliftment.
- school facilities are the most important formal children's space in Olievenhoutbosch area, but are unaccessible to pupils and the community members.
- Olievenhoutbosch does not provide adequate activity environments to stimulate development under the local community youth [Botshabelo, Home-Based Care and Early Childhood Edcuation Centre, Respondent: 22 January 2012].
- the youth of Olievenhoutbosch are left to a stagnant perception of life and community because of a lack of accessible informative environments that inspire life long learning [Revised National Curriculum Statement, Grade R-9 schools: May 2002]
- the current school pupils do not take ownership and pride in their schools, this leads to vandalism and crime. Mainly because of current structurally formalized facility spatial character [Philena Primary School Principal: April 2012].
- the current educational environment typologies do not address The Revised National Curriculum Statement: May 2002 [Grade R-9 schools] of creating awareness of the relationship between human rights, a healthy environment, social justice and inclusivity.
- the Olievenhoutbosch community makes a necessary plea that school facilities should be made public to a certain degree, which makes the renegotiating of educational environment pivate-public thresholds a relevant investigation [Philena Primary School Principal: April 2012].
- children are fostered by people and not by systems which makes community interaction relevant for environments of child development.[Children in the city: home, neighbourhood and community:2003]

Fig 1.5_ Photo Montage of Olievenhoutbosch Primary School

1.5 Delimitations

- The dissertation will focus on the Olievenhout-bosch   Ministerial Housing Estate Area and the area's needs concerning educational facilities as well as proposed developments.
- The investigation questions and addresses the current Minimum Uniform Norms and Standards for School Infrastructure as stated in the South African school act 84 of 1996.

This includes:
- Space requirements in schools: Core Educational Space, Administrative space, Support Educational space.[see chapter 3.6]
- Planning Norms: Size of school, Site location, School sizes and Site characteristics. [see chapter 3.6]

"...suggest how the street, a metaphor for all outdoor spaces within the public domain, acts as a liminal setting or a site of passage, a place which both makes possible and signifies a means of transition through which some young people move away form the restrictions of their childhood roots towards the independence of adulthood. I consider how the street is infused with cultural identity and how, in their attempts to claim socially autonomous space within the public domain, young people frequently collide with adults and with other groups of people"

Christen, P, and O'Brien, M. 2003.

Fig 1.6_ Existinh Proposed Mix of Public Amenities and Actvities

Legend:

- Business
- Community Centre/Market
- Clinic
- Mixed Use
- Education
- Creche
- Church
- Public Squares/ Open Space
- **S** Proposed Site

1.6 The Client

The proposed architectural intervention will encourage and facilitate a social academic and sustainable approach to educational environments. This will equip the pupils to have a more interactive and inclusive academic approach that supports the curriculum's intended objectives in terms of the child, teacher and community. The Department of Education in association with the Department of Infrastructure Development's Independent Development Trust [IDT] could invest in this project since it could assist in South Africa's process of providing accessible education opportunities for all. The stakeholders include all children that would benefit from foundation phase education up to Grade 7 and the community for after school adult basic education and training [ABET].

Fig 7.1_ Ingredients are organized into an Extended School

Fig 7.2_ and then given architectural unity

1.7 Aim of Study

Within the Northern Ministerial Housing Estate Development in Olievenhoutbosch the challenge lies in addressing the new proposed educational facilities in an inclusive manner, allowing the school environment to integrate into the children's life spaces by promoting a degree of permeability between child, school and community. The program of a community primary school typology aims to implement an extroverted spatial approach to school design in the process of establishing a sustainable interactive structure for child-adult interaction, an educational environment that motivates the pupils to experience learning through different mediums and informants. Creating a socially academic environment through an extended school system approach[H.Hertzberger.2008:169].

Fig 1.7_ Diagramatic of an Extended School organization

Fig 7.3_ in such a way as to permit a space for common use
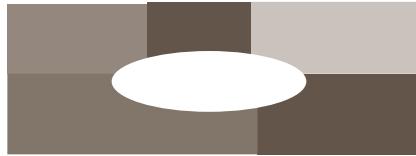
Fig 7.4_ with all components access primarily form the communal space

Fig 7.5_ this takes on the ambience of a central square

1.8 Research Methodology

The dissertation will aim to address the investigation of institutional spaces and edges as a progressive approach towards integrating formal children facilities [schools] into the surrounding community. The research process will include gaining data about:

- Research on institutions as designed children spaces [Children in the City: one, neighbourhood and community: 2003].
- Phenomenology theories on relativity and the concept of being-in-context [H.Lammars.Also van Eyck: 2012].
- Theories on Interactive Educational Environments of Social Permeability [Arch Dailiy: [2012].
- Theories on spaces of learning as a microcosm of the city and extended school typologies [H.Hertzberger:2008].
- Study of Defensible Spaces by Oscar Newman[1973]
- Theories of compact cities by Jan Gehl [2010] and Jane Jacobs [1961]
- Concept of New Urbanism on Micro and Maro design scale.

The literature investigation will be aided and informed by continuous research on contextual data from the local study area through observation, mapping and interviews. This will assist in the process of combining theoretical approaches with practical solutions and interpretations. The aim is to identify specific design requirements together with design responses that could prove the argument.

| Proposition | Experiment | | Document | Development |

Phenomenology of Relativity

Children in developing cities

Site Investigation

Client

Theoretical Investigation

Contextual Analysis

Framework Concept

Urban Approach

Precedent Studies

Case Studies

Concept

Intergration

Program Design

Design Development

Refinement

Design Product

Educational Environments: Interactive/Extroverted

| Proposition | Experiment | | Document | Development |

02 Theoretical Premise

BY 'US'

immutability and rest

concept of the mind

extension of collective behavior

vernacular of the heart

we can discover ourselves everywhere - in all places and ages - doing the same things in different ways, feeling the same differently, reacting differently to the same

when is architecture going to bring together opposite qualities and solutions?

change and movement

to discover anew implies discovering something new

FOR US

for each man and all men

get close to the centre - shifting centre - and build

Aldo van Eyck's Otterlo circles

we builders   we residents

classical harmony

'house'

individual concept

harmony in motion

vernacular of the heart

tradition / the archaic

'city'   *architecture / urban planning*

human nature – cultures

individual – collective

man / society

architect = designer = participant

Fig 2.1_Final Version of Aldo van Eycks 'Otterlo Circles'.

2.1 Introduction

This chapter explores the sub questions that are derived from the hypothesis of the research. It considers the possibility of how theories of relativity can be used to formally incorporate the school environment into community life, through visionary possibilities that could be derived from the existing contextual needs.

Accepting the idea of another type of school typology requires an understanding of a holistic philosophical design approach; questioning the dystopian character of institutional design by addressing issues of isolation, individualism, introversion and functional dominancy in educational architecture. [H. Hertzberger. 2008:71]. This allows for the consideration of the phenomenology of relativity as informed by Aldo van Eyck's theory on twin phenomena. [H.Lammars.2012:41]

This theory can be summarized as the understanding of the existing as a complex coherence of space, time, matter and energy. This as a unity shows itself as rich diversity. The main objective being the statement that the coherence of things does not exist due to their subordination to a central or dominant principle, rather that they exist due to their relationship to each other which is just as important as the thing itself. [H.Lammars.2012: 44] This theory is referred to as relativity. This is a state of dependence in which the existence of significance of one entity is solely dependent on that of the other [psychological, social or environmental context] [The Free Dictionary: 2012]

Adult

Child

to

Child

Community

Adult
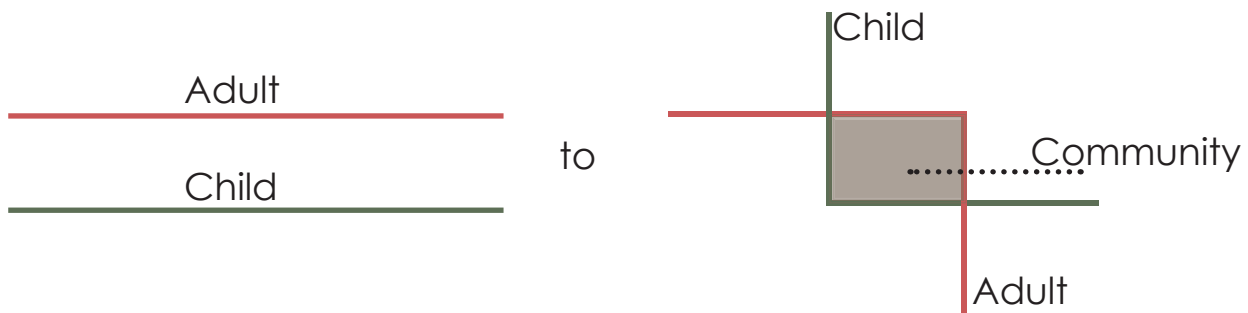
Fig 2.2_ Philena Primary School, Grade 3 Class

Fig 2.3_Olievenhoutbosch Primary School, Legacy Foundation youth group

2.2 Coherence through Relativity

Aldo van Eyck's theory on relativity [1960] comprises of three abstract notions: twin phenomenon, interiorization, and in-between realms.

Twin Phenomenon: Entities have no meaning besides through their relation to other entities.

Interiorization: The simultaneity of experience and memory. The idea of relativity into an understanding of human nature [mans relation to his environment and ultimately architecture]

In-between realms: This forms the architectural translation of twin phenomena. It refers to the articulation of transition spaces by means of defined in-between places, which will induce simultaneous awareness of what is significant on either side. [H.Lammars.2012:47]

The isolation and individualistic nature of current educational facilities in Olievenhoutbosch causes an ultimate lack of coherence. This not only causes a separation in spatial terms but also socially between adults and children. Diversity in cross discipline and age group interaction cannot reach its communal potential due to this fact. Institutional and inaccessible perception of place is thus formed because of the lack of contextual relationship between school and community.
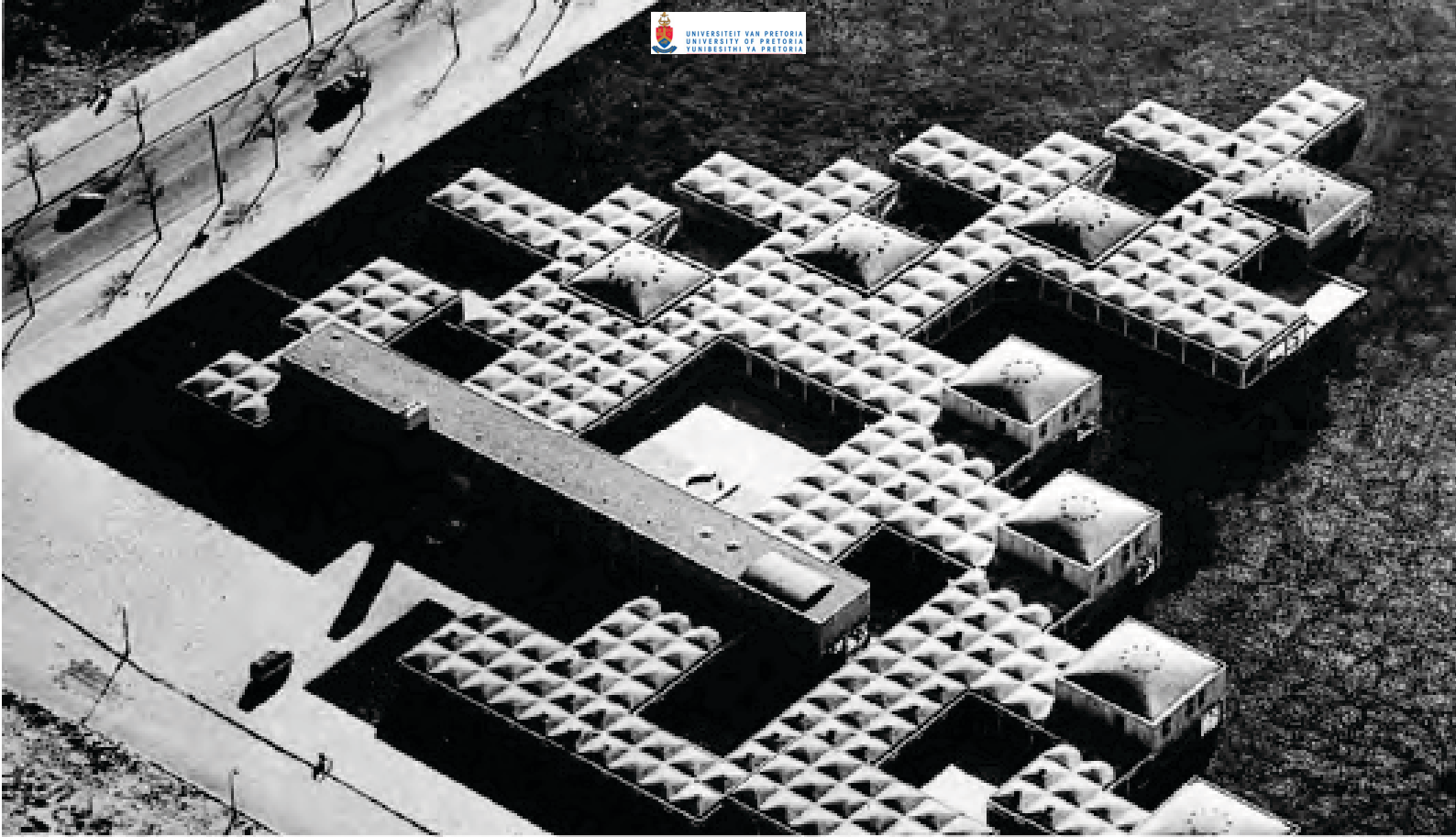
Fig 2.4_Aldo van Eyck, Municipal Orphanage

"it implies a break away from the contemporary concept [...] of spatial continuity and the tendency to erase every articulation between spaces i.e. between inside and outside, between one space and another. Instead I suggest articulation of transition by means of defined in-between places which induce simultaneous awareness of what is significant on either side. An in-between place in this sense provides the common ground where conflicting polarities can again become twin phenomena."

Lammars, H.2012.updated."Potentially..., Unravelling and reconnecting Aldo van Eyck in search of an approach or tomorrow"

2.3 An inclusive design language

Christopher Alexander [1977] refers to this perception of place as a 'language', built up of patterns of human behaviour which is ultimately contextually conscious. According to Alexander, when spaces have a moving and inviting effect on people it is reads as a 'place'. Aldo van Eyck [1960] also states that space in the image of man is place. The universal way in which these 'places' read gives them a universal language this is called a pattern language. This universal language can be understood as a language of life. If a place is alive it will usually be universally readable as a common language of live and would exist because of the area functions as a whole. This is to say everything functions relatively in accordance to the whole and ultimately forms an identity of rich diversity through collectivism.

Alexander [1977] also suggests patterns in accordance with educational enrichment through inclusion and interactivity, which is;

• A network of learning
• Children in the city
• Children homes
• Shop front education
• Teenage society
• University as market place
• Master and apprentice
[Alexander,1977:84-156]

Van Eyck's theory on twin phenomena and Alexander's theory on a pattern language of life both state the importance of relativity. In the absence of relativity between entities no coherence can be formed. In the absence coherence the pattern of place perception is broken. Thus the language cannot communicate life. This ultimately leads to meaninglessness through isolation of identity or individualism.

Fig 2.5_Inkwenkwezi Seconary School - introverted spatial layout

Fig 2.6_ Ratzebug School Complex - extroverted spatial layout

2.4 Being – in – Context

The phenomenology of relativity is thus a variant of contextualism[Rather,2006] Within the translation of contextualism into an architectural language two poles can be identified;

1. The ideal conceptual interpretation and
2. The conscious phenomena of place.

In an article by John Lobell in Artform [2004] these two poles are explored in terms of work by Louis Kahn and Robert Venturi. Lobell describes Louis Kahn's work as different from the rational modern architecture of the time. Kahn rather sought the eternal in things, which can only be found in its origin. He sought an architecture of meaningful 'order' of the thing which is not yet come into 'being'. Venturi on the other hand argued that the art of architecture lies in the subtle play between what is anticipated and what is perceived. A process that only takes place in context. Lobell concludes that architecture is not just about 'order' or 'being'; neither is it only about context: It is the balance between the two that can really form humanly meaningful architecture.[Artform:2004]

When this is considered, it brings the ideal into context or the vision into relativity of place. Ultimately being-in-context is the outcome. This also links with Steven Hall's phenomenological depth in architectural conceptualisation, where "critical regionalism" becomes the interpretation of the ideal within the phenomena of place [Yorgancioglu, D: 2004].

Fig 2.7_Olievenhoutbosch 'Marabastad' activity spine

Fig 2.8_Castelvittorio, Italy

2.5 Informed Vision

The relativity of educational space to its surrounding context is ultimately the goal and focus of the study, combining conceptual ideals with contextual relevance. This aims to be incorporated on a macro scale as well as a micro scale. The dissertation thus recognises that the spatiality of the educational facility forms part of a larger neighbourhood pattern.

Considering what could be according to need as well as what is according to context, the theory will lead the design towards an approach that will ultimately deinstitutionalise the institution and extrovert the isolated nature of educational space.

"In a school, the emphasis must be on the visual links between the different learning situations, as a single spatial network, comparable with the city, held together by a system of streets and squares or, like the brain, a network of paths linking the various centres.

Just as the brain functions not as a storehouse of knowledge but as a network of paths threading all knowledge together, you can regard the workings of an educational building as that of a brain, as a unit with many centres, which though sealed in themselves have the greatest possible openness towards one another."

Hertzberger. H. 2008. "Space and Learning: Lessons in architecture 3.

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03 Educational Design

Fig 3.1_ Olievenhoutbosch Pimary School pupil in classroom

3.1 Mass to Space

Many words relating to learning have a spatial connotation; develop, unearth, unfold, unveil, discover, explore depth and meaning [Hertzberger,2008:67]. The capacity of the brain to hold information is seen as storing data. The term 'store' is deceiving for it is often connected with the digital world. Thus it suggests that the brain can become 'full'. Hertzberger however suggests that learning rather involves the process of creating paths in the brain. This would mean that the brain is more a network of links than a mass. The more information that is accumulated would then result in an increase of links reducing the mass and increasing space. Learning removes barriers or restrictions and increase the making of space, ultimately forming an ordered structure.
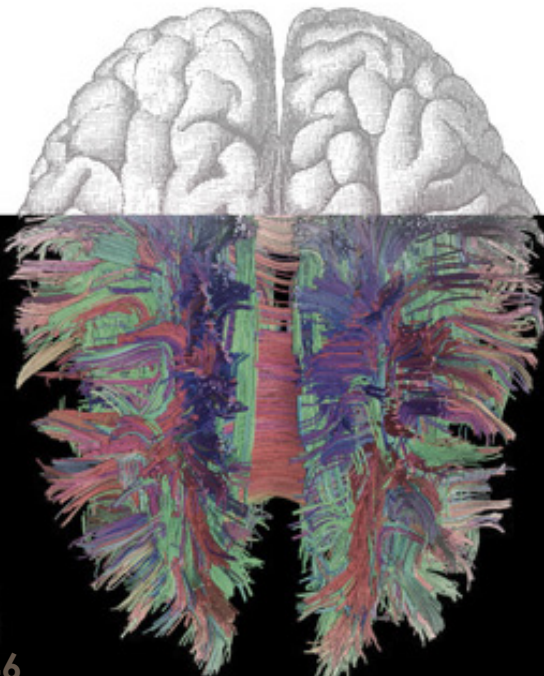
Fig 3.2_ Network of the Brain
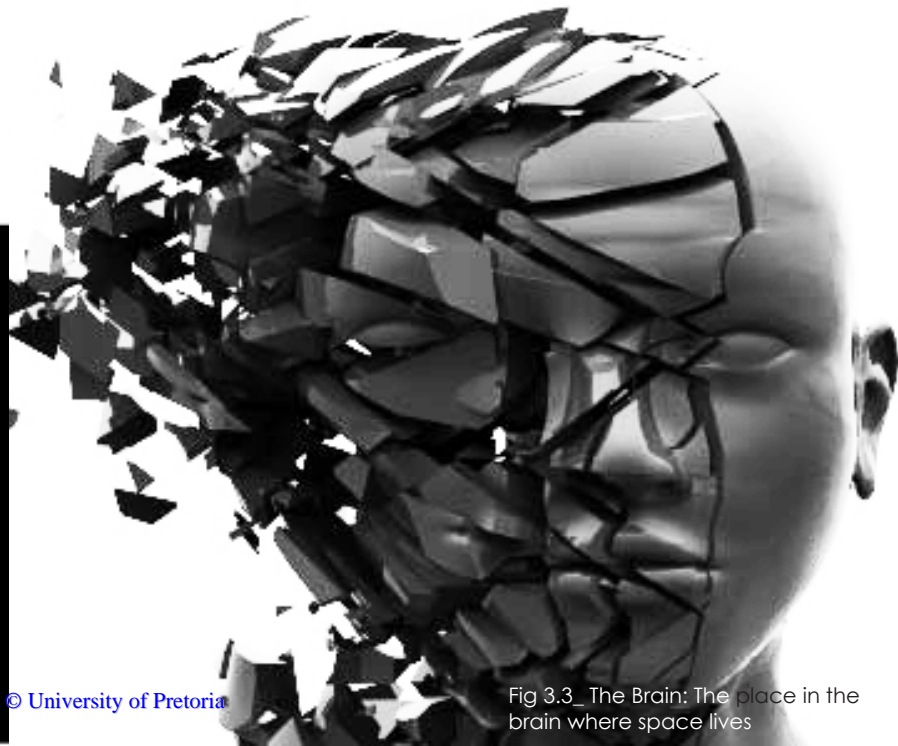
Fig 3.3_ The Brain: The place in the brain where space lives

3.2 Meaning through Links

This is also true then for three dimensional learning spaces. The links can be seen as a network of paths forming connections between centres. If this is considered then learning might be a logical approach to the concept of space, and in this case, educational space [Hertzberger,2008:67]. Accepting that learning space is indeed a network of links, it is logical that the increase of links will ultimately enrich the space itself. This would mean a relationship of relativity between child, teacher, school and community. The goal would be the de-schooling of educational institutes that rob the child of initiative and freedom, focusing on a learning space that is enriched with experiences due to its social relevance and opportunity. The presence of others or community members ultimately invests the school space with meaning. This 'meaning' becomes an element of familiarity and allows the learning process to create a place of belonging for the children of the community. The educational environment becomes a stimulating space that provokes the child to act and forms an inner world that strengthens the child's confidence and aspirations.

"Schools today cannot escape the "de-schooling" process. There is a greater or lesser shift in emphasis form obligatory schooling to more room for personal initiative and pleasure in learning. Hence the need for an environment more like that of a house: closer, less detached and more congenial."

Hertzberger, H. 2008. "Space and Learning"

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3.3 City in Miniature

Herman Hertzberger, author of 'Space and Learning' [2008], describes this approach as viewing the school as a city in miniature, seeing the school as a single spatial entity with key places of social exchange. The emphasis is placed on social space, on open and legibly organised structure that allows quality learning and thinking possibilities to be readily accessible. This means a school is in fact seen as a type of public space. This spatial relevance to city space can be interpreted through different components. These components act as elements that enable space to succeed in drawing people in. A new dimension to communal space, where corridors are seen as streets, the classroom as domestic domain and the junction of streets as the central square. According to Hertzberger [ibid] the square and streets are two basic forms of centralising rational space, referred to as the heart and artery. The school's central communal area forms the square while the corridors form the streets linking to the central communal area. The more private classrooms resemble the residential edge. The most important characteristic however is the need for open and ordered system of social space which allows and provokes communal interaction forming a network of learning.

Fig 3.4_ Piazza delle Erbe, Verona, Italy

Fig 3.5_ Placa, Dubrovnik, Croatia

The Street

The Square
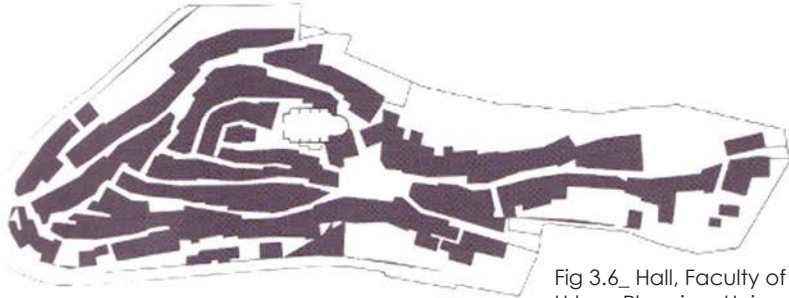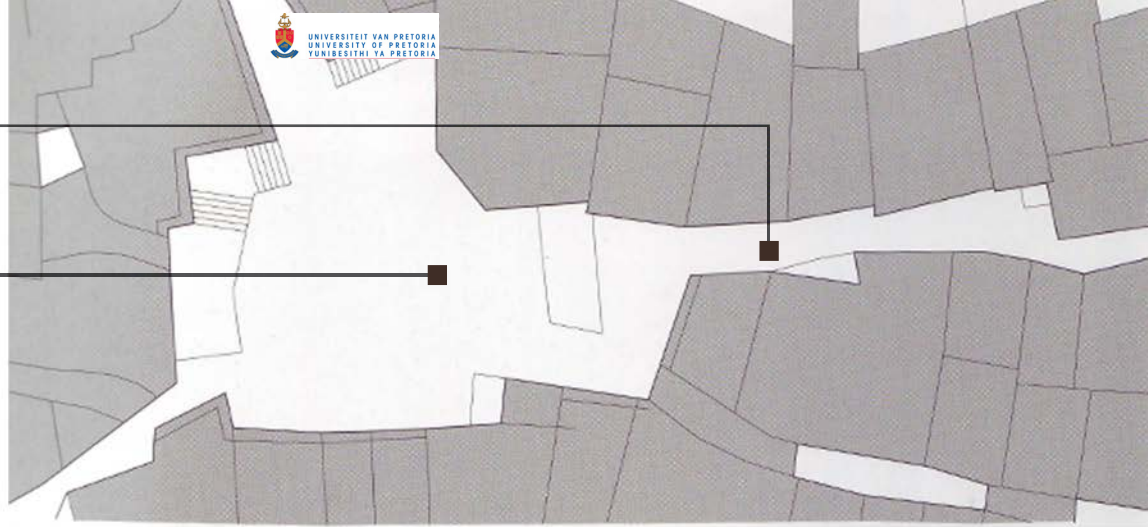
The Street

The Square

Fig 3.6_ Hall, Faculty of Architecture and Urban Planning, University of Sao Paulo, Brazil

Fig 3.7_ Piazza del Campo, Sienna , Italy
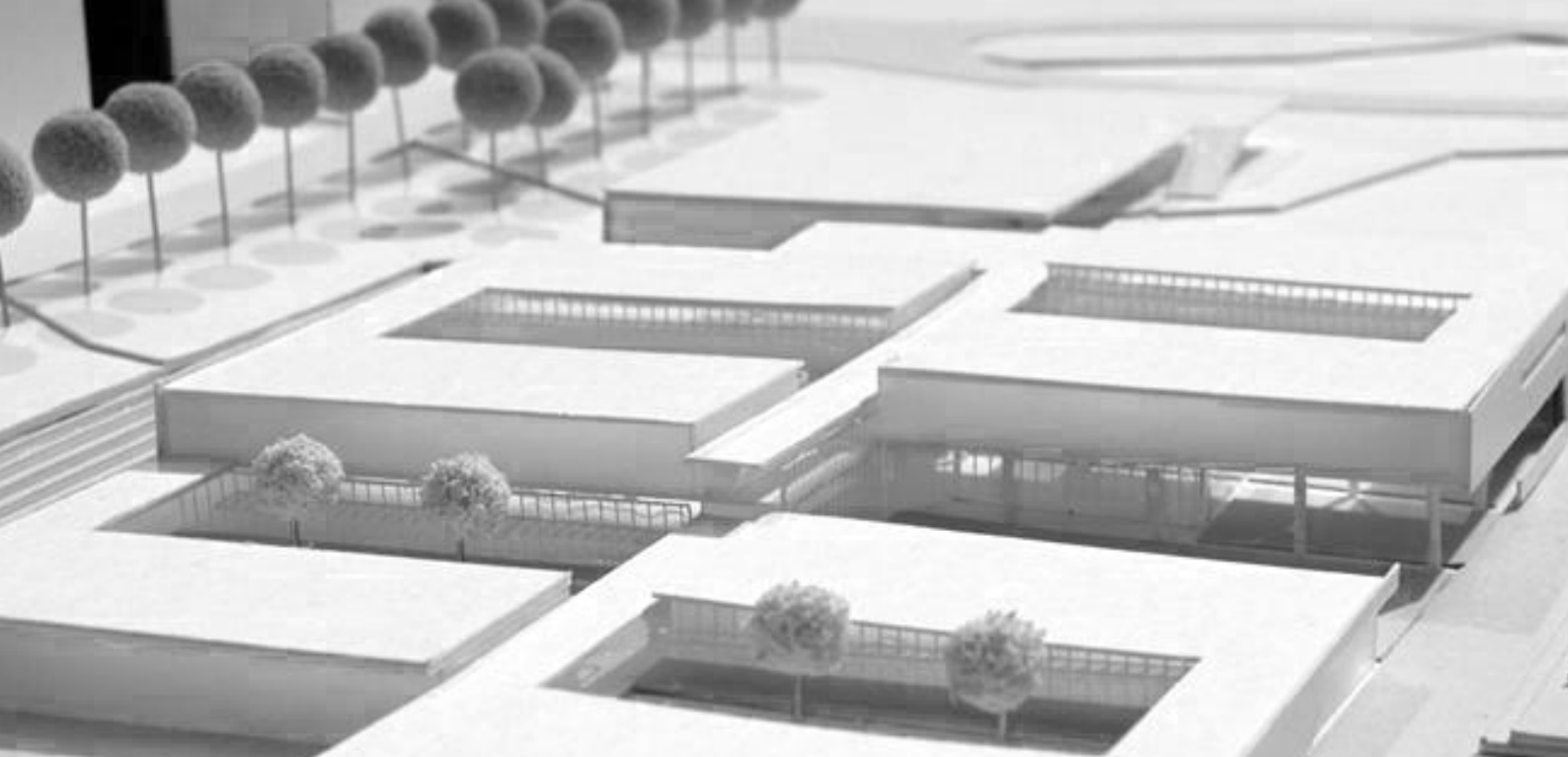
"...[we must] make each one of our schools an embryonic community of life, active with types of occupations that reflect the life of the larger society, and permeate throughout with the spirit of art, history and science."

Dudek,2000. "Architecture of Schools"

50

Fig 3.8_Photo montage of the Intergrated school complex in Rome - Romania School

3.4 Extended Schools

In order to expand on the concept of 'City of Learning', the communal element of education space could combine urban design strategies to strengthen the public school identity as a form of public space. This forms the last stage of the process of eliminating the traditional school building, integrating the educational facility into a 'sociocultural complex' also called 'Extended School' or 'Community School' [Hertzberger,2008:169]. Mark Dudek, the author of 'Architecture of Schools' [2000], refers to a similar concept called a 'Communiversity'. Usually this kind of project will be located in socially and economically deprived neighbourhood. The goal is to encourage the students to look outwards constantly making them aware of their relationship to the community which serves them. The educational process then focuses on a social academic process [Dudek,2007:19]. The extended school system takes it even further assembling schools in a neighbourhood or city area. These schools are then grouped with community facilities. This public facility intergration creates cross discipline interaction between adult and child while also allowing flexibility. This concept also links with Jan Gehl [2010] and Jane Jacob [1961] theories on com-pact cities, where different activities happen in close proximity and thus creating an intimate, vibrant and consequently safe pedestrian environment. Extended schools can result in unquestionably useful socio-spatial models where everything is in one place. When schools and local amenities join forces, it is obvious that the location should be at the centre of a neighbourhood [Hertzberger,2008:172]. 'Extended School' theory causes the educational facilities to move away from their traditional position on the outskirts of a community. The concept indicates the end of self-sufficient school building, introducing an extroverted character. Combining forces with other facilities of service providers allows a new form of school building to evolve. The hybrid type building evolves into a larger type of community centre, while the school building's border starts to blur, allowing their territory to become a spur to collaboration [Hertzberger,2008:172]. The children will then find themselves in an environment that is far richer in experience than traditional school buildings. The learning process then becomes more inclusive, a natural part of community life, a 'city of learning'.

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3.5 Conclusion

In concluding the Educational Design argument as part of the dissertation's process of "de-schooling", it is important to note that this process relates to theories by Alexander's 'Network of Learning'[1977] as well as John Dewey's 'embryonic community life'[School and Society:1899]. Ultimately the school's social role within the learning process becomes important or rather, the focus. Institutional school typologies need to evolve and are in fact in the process of change. This process of "de- schooling" provides opportunities concerning the sub questions in chapter 1 and supports the concept of relativity in chapter 2. This process will not only allow the dissertation to propose an incorporation of the school into community life, it will also create the opportunity to propose a child friendly community - interactive centre of learning and social activity, which is particularly absent in the township of Olievenhoutbosch. Linking the school with community life will expand the learning space and enrich the process of child development.

" The idea of a large and strongly built edifice as a school for children went
by the board long ago. To hold such a conception (and it was long held
as if in a large prison...The new school of tomorrow will be a garden city of
children; that is to say a place of many shelters - a township, if you will, of
small schools built as one community but with every shelter organized as
a separate unit designed to meet the needs of children of specific age or
stage of life... every shelter is in effect a small school, it is also a self con-
tained unit of school home..."

Dudek,2000: p25

Fig 3.9_Olievenhoutbosch Primary School pupils
playing in taxi on sidewalk

Domestic + City = Learning City

Domestic: Classroom
- Home Base
- Shelter
- Scale variation
- Multiple Centres
- Familiar environment
- Flexibility

City: Circulation and Communal Space
- Streets of chance encounter – elements of movement
- Squares as deliberate meeting space – element of centrality
- Social Links

Learning City: Extroverted School
- Socially Academic
- Compact
- Articulated for interaction
- Linked environments
- Sense of collectivity

"In the industrial era, schools developed as highly controlled environments to instil the discipline to thrive in a machine age. Now to prepare pupils for success in a knowledge economy, the evolving typology is more fluidly conceived to provide flexibility, connectivity and spaces for social and educational encounters."

Architectural Review,2012: p60
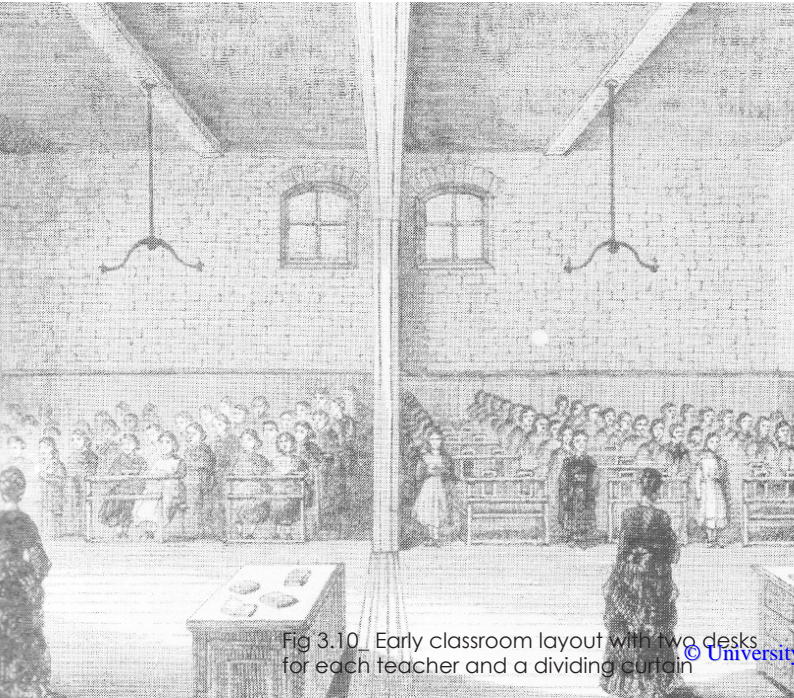
Fig 3.10_ Early classroom layout with two desks for each teacher and a dividing curtain
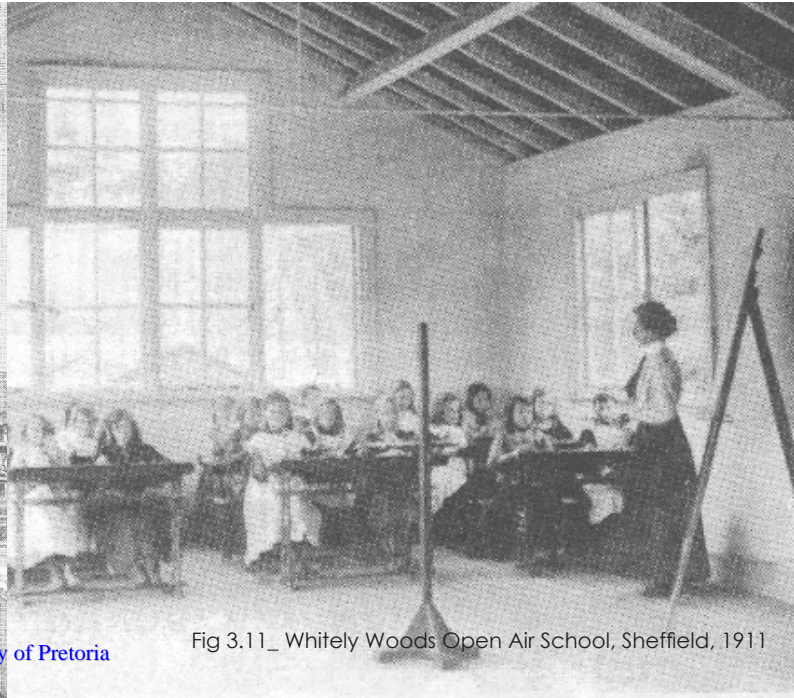
Fig 3.11_ Whitely Woods Open Air School, Sheffield, 1911

3.6 Educational Strategy

Organisation for Economic Co-operation and Development [OECD]: Key qualifications for successful life and well-functioning society [Rychen and Salgonik,2003]. Set of three essential qualifications"

1. Act autonomously
2. Interact in heterogeneous groups
3. Use tools interactively

Meaning:
1. Requires students to set their own goals, to take their own decisions and to assume responsibility for the re sult.
2. Relates to society that requires cross cultural under standing and co-operation, both on a local and global level. Also across different age groups within an aging society.
3. Relates to the importance of information requiring re sponsible users, who are able to tailor technology to their need.

Fig 3.12_ Urban Park and Integrated School, in Rome

Requirements:
- Moving away from a teacher directed system to a self-directed system
- Personalised learning, which reduces instruction time and increases project work.
- Dividing class into sub groups and creating new forms of learning partnerships
- Teaching in teams and cross disciplines
- Opening up the school to the network of learning that surrounds it physically and virtually.

School Building:
- Spaces for teams
- Well designed micro-environments
- Flexibility
- Clustering
- Common core
- Connectivity

[Architectural Review:2012]

Fig 3.13_ Panther Lake Elementary School, DLR Group

3.6.1 Thesis proposal in relation to SA Standards

Category	SA Minimum Uniforms Norms and Standards: DOE [2008]	
1. General	• Medium size Primary School: 620 Learners • 1,2m2-1,5m2 dimensions per child for interior space provision • 5m2-7m2 dimensions per child for exterior space provision • Access for people with special needs • Light, ventilation and acoustic considerations • Solidity and Durability	
2. Core Educational Space	• Classrooms • Laboratories • Workshops • Storage • Toilets • Libraries • Playground	
3. Administrative Space	• Principal's Office • Storage Rooms • Printing Rooms • Staff Rooms • Personal Care • Sick Rooms	

Thesis proposal in agrement with SA Standards ▮

Thesis proposal not in agrement with SA Standards ▮

Theoretical Strategy	Design Conclusion
• Spaces for teams • Well designed micro environments • Flexibility • Clustering • Common Core • Connectivity	• Social-Academic spatial integration • Multipurpose spaces for informal encounter or formal learning • Courtyards allows the sidewalk passerby to become part of the internal activities and focuses the entry point towards the central square • School Playground functions as a public play ground after school hours • School sports fields made public • School and sports facilities separated yet placed in close proximity and linked via a pedestrian dominant movement space. This way the school becomes less isolated and breaks up into areas of public interaction.
• Grouping of age group classroom spaces	• Flexible classroom spaces • Multi functional adult training facilities • Courtyards as classroom group organizing element • Classrooms as domestic domains linked via communal street and courtyard spaces connected to the central square
• Student-Teacher interactive environment • Adult-Student cross discipline interaction	• Administrative building integrated with academic spaces. • Placement for visual observation possibilities

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Category	SA Minimum Uniforms Norms and Standards: DOE [2008]
4. Support Educational Space	• Food Gardens • Sports Fields • Assembly Hall • School Kitchen
5. Planning Norms	• School site will not be located next to cemeteries, railway stations, taxi ranks, sewage, hotels and busy roads • 2,8h min school site size • A school should not be situated within a radius of 3 km around the community it serves • School sites should preferably be rectangular • At least 50% of the perimeter of a school site should be fronted by a street and should not be adjacent to residential or other sites • School will be provided with appropriate fencing around a school at 1,8m height • Structure should have 30 min fire rating • Classroom sizes vary between 48m2 and 60m2 for general classrooms • Grade R classes should be 60m2-80m2

Theoretical Strategy	Design Conclusion
• Community Programs incorporated into school as spaces of multi functional engagement	• Central Square functions as an amphitheatre and external Hall space for school gatherings • Cafeteria, Soup Kitchen, Multipurpose hall, digital library, library, market, workshops and playground placed as public edge linked to formal community hub
• Extended school system applied • Integration of school into a community core • Community facility and educational hub • Public School functions as public space • School perimeter as interactive space • Compact city theories on street interaction along site edges	• Centrally located site and urban layout • Site combined with community facilities • Site functions as public space • School building sections can be used individually to accommodate multi functionality • 100% street edge, boundaries developed as pedestrian space of encounter or gathering • School edge transformed into interactive surface for public use • Position of classroom clusters determined by age group and location of adult activity to ensure passive surveillance • School layout seen as city in miniature while the framework position explores the concept on macro scale • Educational facility seen as an extroverted spatial exploration of community interaction • A layout that accommodates for adult and child activities

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4 Contextual Analysis

Fig 4.1_ Olievenhoutbosch nolly map

63
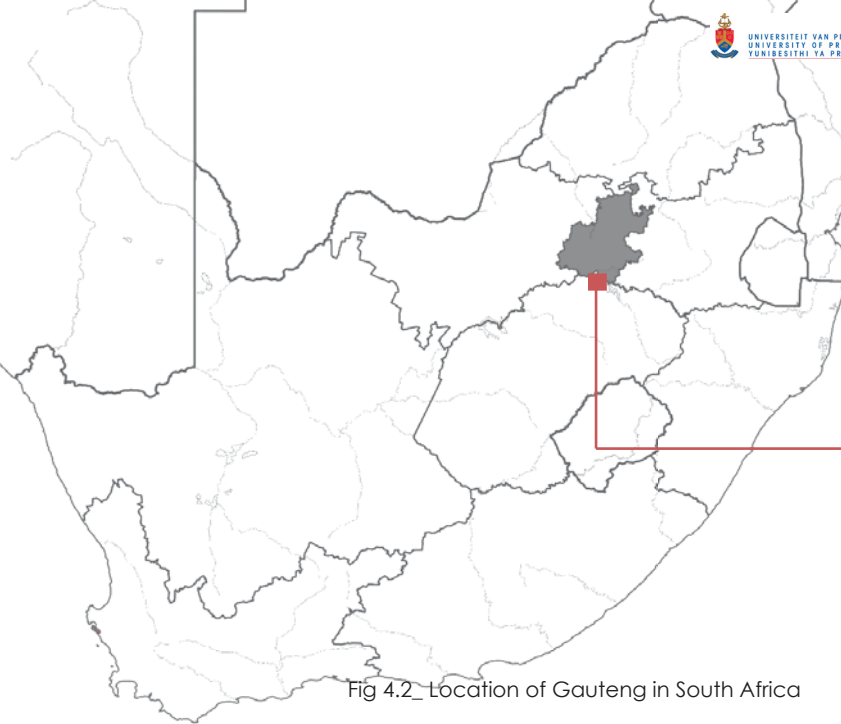
Fig 4.2_ Location of Gauteng in South Africa

Fig 4.3_ Gauteng Province

4.1 Introduction to Olievenhoutbosch

Olievenhoutbosch is a township located close to Midrand, Santon, Centurion and Pretoria, next to the R55 adjacent to the N14 highway. Its convenient location makes it a popular area to settle for workers that come from different rural locations. Consequently the area is diverse in cultures, but because of its rapid growth it is also diverse in density and development. Originating as a squatter, camp the formalization of Olievenhoutbosch started in 1996 when the National Party controlled Centurion City Council. After the 1994 Democratic elections the Centurion City Council under the leadership of the NP created a number of transit camps and removed all the squatters to these camps. Of all the transit camps, Olievenhoutbosch was the largest. From 1996 to the present day Olievenhoutbosch developed a diverse housing structure. This is made up of fully subsidised Reconstruction and Development Programme (RDP), as well as low cost housing. Informal shacks dominate the Southern Part of Olievenhoutbosch, while as one moves towards the North the infrastructure becomes much more formalized with the ABSA ministerial housing estate forming the northern extension of Olievenhoutbosch.[Kopitori:2012]

Fig 4.4_ Location of Pretoria within Gauteng

N14 Highway

29

28

27

30 31

26

25

32

33

24

23

34

22

R55

21

20 19

18 17

35

Route End_

38

44

36

37

39

43

13

12

14

11

15 16

40

9

10

8

41

42

7

5 6

4

Fig 4.5.1_ Aerial Photograph of Olieven-
houtbosch, Contextual investigation
route travelled form point 1-44

66

1

2

Start the route_

3
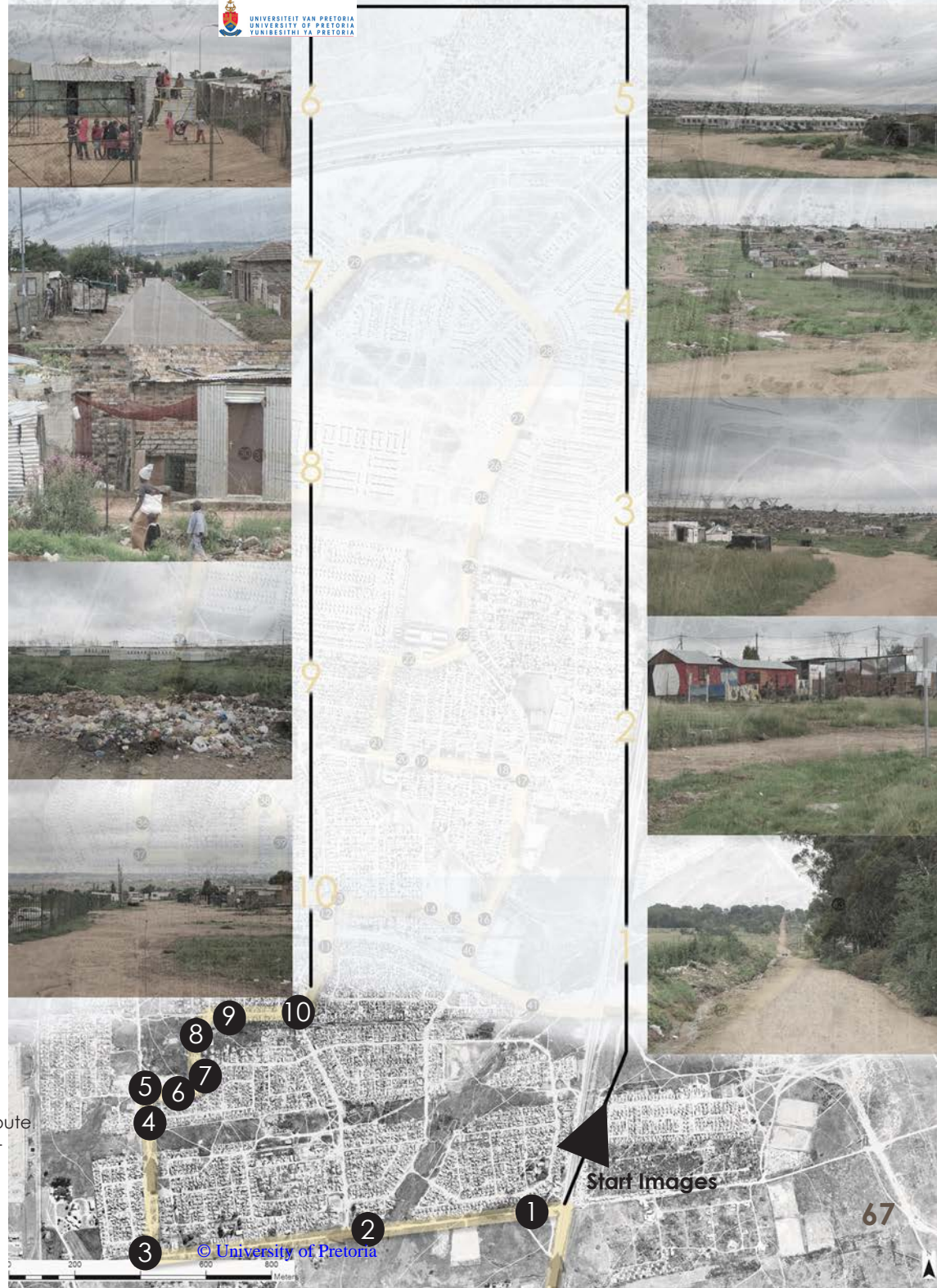
200   600   800
Meters

Fig 4.5.2_ Contextual investigation route form point 1-10, indicated by photographic images

Fig 4.5.3_ Contextual investigation route form point 11-20, indicated by photographic images
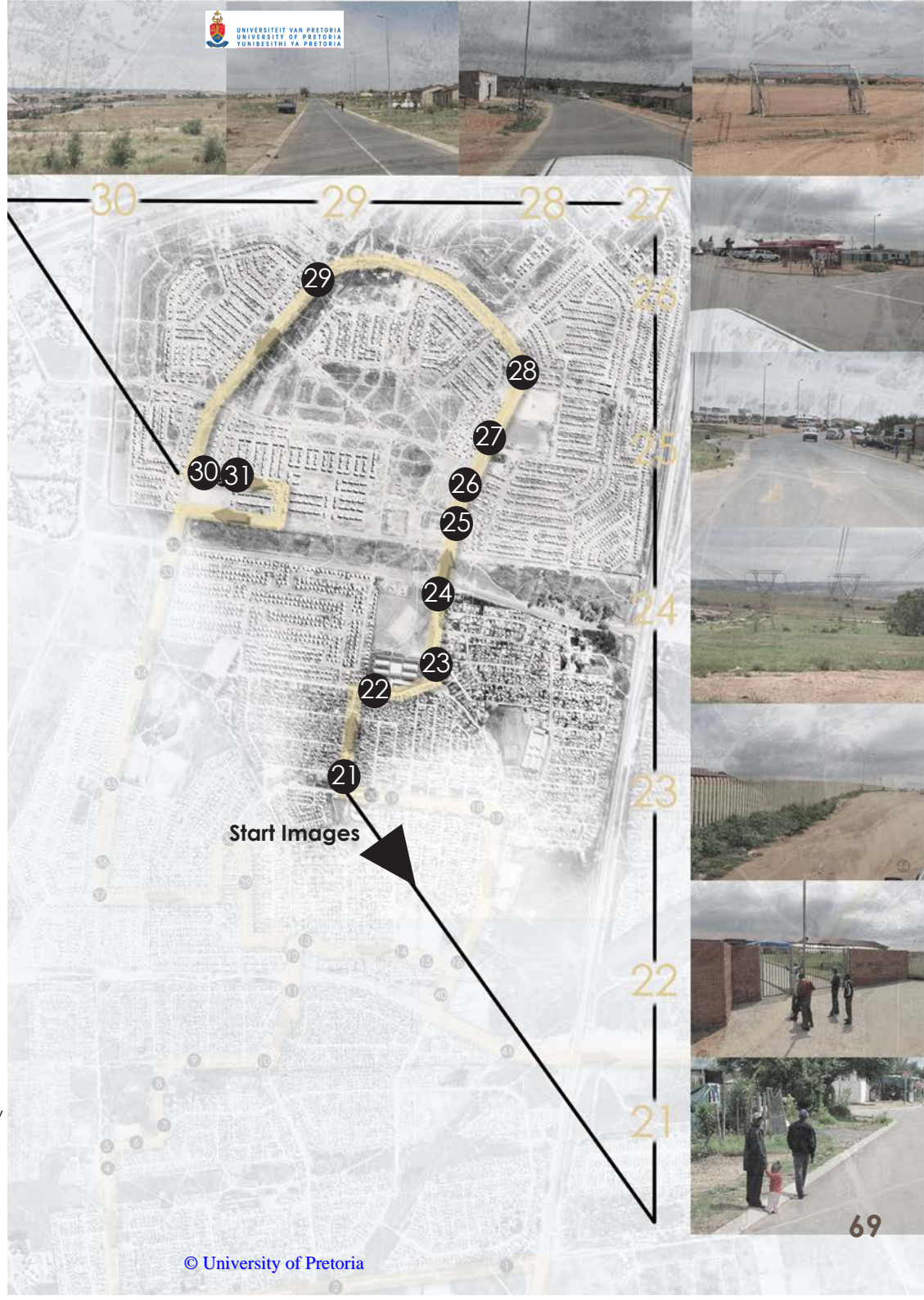
Start Images

Fig 4.5.4_ Contextual investigation route form point 21-31, indicated by photographic image

Start Images

29
28
27
26
25
24
23
22
21

30 31

30 29 28 27

69

Start Images

31 32 33 34

35

36

37

30 31

32
33

34

35

36
37

38

39

13
12
14 15 16

40

41 42

44

43 42 41 40 39 38

43

44 Route End

Start Images

Fig 4.5.5_ Contextual investigation route form point 32-44, indicated by photographic image

"Sprawl is destructive in any growth strategy. Contemporary suburbs have failed because they lack, as do many of the so-called "modern" new towns and edge cities, the fundamental qualities of real towns: pedestrian scale, an identifiable centre and edge, integrated diversity of use and population and defined public space. They have diversity in use and user, but these diverse elements are segregated by car. They have none of the places for casual and spontaneous interaction which create vital neighbourhoods, quarters or towns. Unless urban infill sites, suburban new development areas and satellite towns embody the qualities of the New Urbanism, they will fail too."

"Urban infill often succeeds because those urban qualities pre-exist and need only be preserved, not necessarily created. Nevertheless we see many urban infill projects which succeed in destroying these desirable pre-existing qualities. For smaller parcels in existing urban neighbourhoods the task is to complete the mix of community while honouring the unique qualities of place."

Katz,P,1994: page 12

4.2 Contextual Observation

Due to the rapid growth of the area, Olievenhoutbosch formed into three distinct suburban fabrics that are diverse and segregated. The elements of separation are primarily the electrical servitude and formal road access provision which divides Olievenhoutbosch into three parts with different urban identities that caters primarily for vehicular movement. The most recent development addition to Olievenhoutbosch is the ABSA Ministerial Housing Estate to the north. This extension proposal has the potential to lend a formal structure to Olievenhoutbosch as a whole.

Considering the existing infrastructure and the proposed development as provided by the Municipality of Tshwane, framework possibilities have been identified.

The three Olievenhoutbosch areas are linked to the larger region by means of two entrance points from the R55. Taxi stops and a main bus depot [that was established due to taxi violence in the area according to local interviews] provide public transport out of Olievenhoutbosch by being close to the entrances into the neighbourhood and linking with the R55. The eastern location of these transport hubs are however not ideal, for it causes the western part of Olievenhoutbosch to be isolated from public transport access points. This can also be seen when observing the road conditions that vary from more formal tarred road to the east and north, while gravel roads dominate the western and southern part of Olievenhoutbosch.

It is however clear that the area has been laid out for primarily vehicular access even though most of the neighbourhood functions through pedestrian movement. The bus and taxi transport systems act mostly as support for the local people allowing access to and from the surrounding cities. This creates a problem concerning public gathering and formal community space because pedestrian movement space has not really been considered. When one observes the general footpaths in the area one realises how pedestrian movement start to link the three distinct areas of Olievenhoutbosch and start to bind spaces together. Within the balance between vehicular and pedestrian movement systems the potential has been identified in the manner by which Olievenhoutbosch can be developed in order to spatially function as an integrated neighbourhood, especially to and from public services and institutions in the area which are mainly the primary and secondary schools , the community centre, retail and trade areas as well as two public parks. These public services are separated at present from each other through road systems that do not consider the relativity through which these services should function and ultimately causes a displacement and isolation of activities that could support each other as public spaces. [see fig7-10]
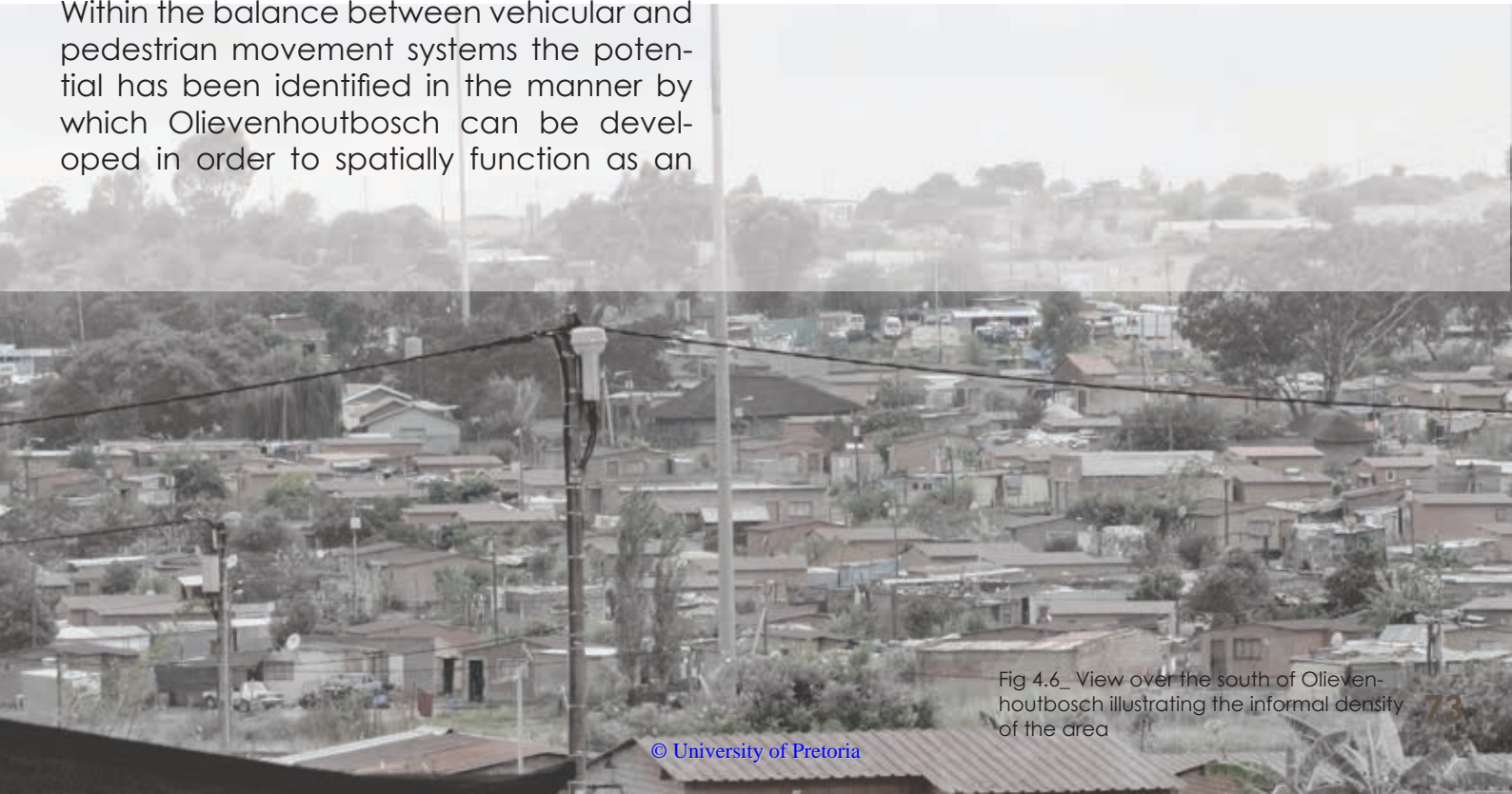
Fig 4.6_ View over the south of Olievenhoutbosch illustrating the informal density of the area

73

Low Density

Low-Medium Density

Medium Density

High Density
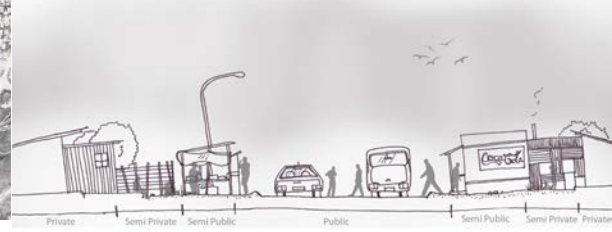
Fig 4.7_ Aerial photograph of Olievenhoutbosch illustrating various densities

Section 5

Section 4

Section 3

Section 2

Section 1

Fig 4.8_ Sectional exploration of route typologies within Olievenhoutbosch varied densities

Fig 4.9_ Photo montage of infrastructure typologies within Olievenhoutbosch varied densities
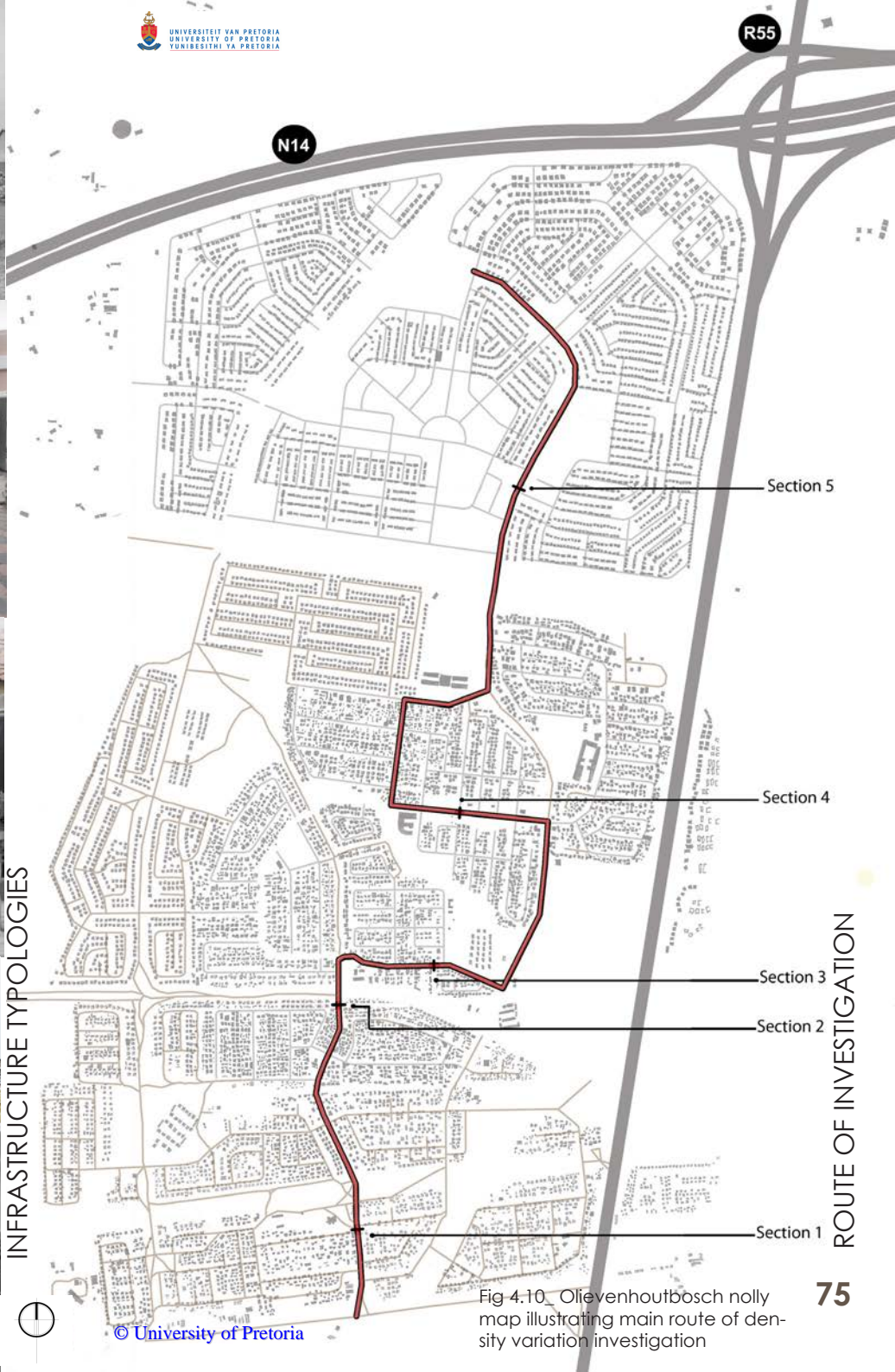
Fig 4.10_ Olievenhoutbosch nolly map illustrating main route of density variation investigation

INFRASTRUCTURE TYPOLOGIES

ROUTE OF INVESTIGATION

Section 5

Section 4

Section 3

Section 2

Section 1

N14

R55

75

4.3 Conceptual Framework: 'Osmosis'

Osmosis is the net movement of solvent molecules through a partially permeable membrane into a region of higher solute concentration, in order to equalize the solute concentration on the two sides.[Wikipedia:2012]

1. Fluid_ people, groups, typologies
2. Semi Permeable Membrane_ electrical servitude, roads running east-west, barriers.
3. Concentration of Materials_ density of urban fabric

The 'Osmosis' framework realizes Olievenhoutbosch's diverse character and aims to bring these 'parts' together in order to from an integrated holistic community. Theories of "New Urbanism" and the "New Urban" theory by Peter Katz [1994] informs the framework proposal in the process of formulating a strategy for designing an Olievenhoutbosch neighbourhood, the argument is simply that urban principles can also benefit suburban areas. The focus will be on the fundamental qualities of a real town in terms of diversity, scale and public space within context in order to formulate a strategy that is contextually relevant.

This includes:

- Housing for diverse population
- a full mix of uses
- walkable streets
- positive public space
- intergrated civic and commercial centres
- transit orientation
- accessible open space
- pedestrian scale
- identifiable centres and edges

Fig 4.11_ Olievenhoutbosch pedestrian identity

Movement

Activity Nodes

Sport Grounds

Schools

Rivers

Parks

Retention Dam

Community Service Centre
[CSC]

Power Line
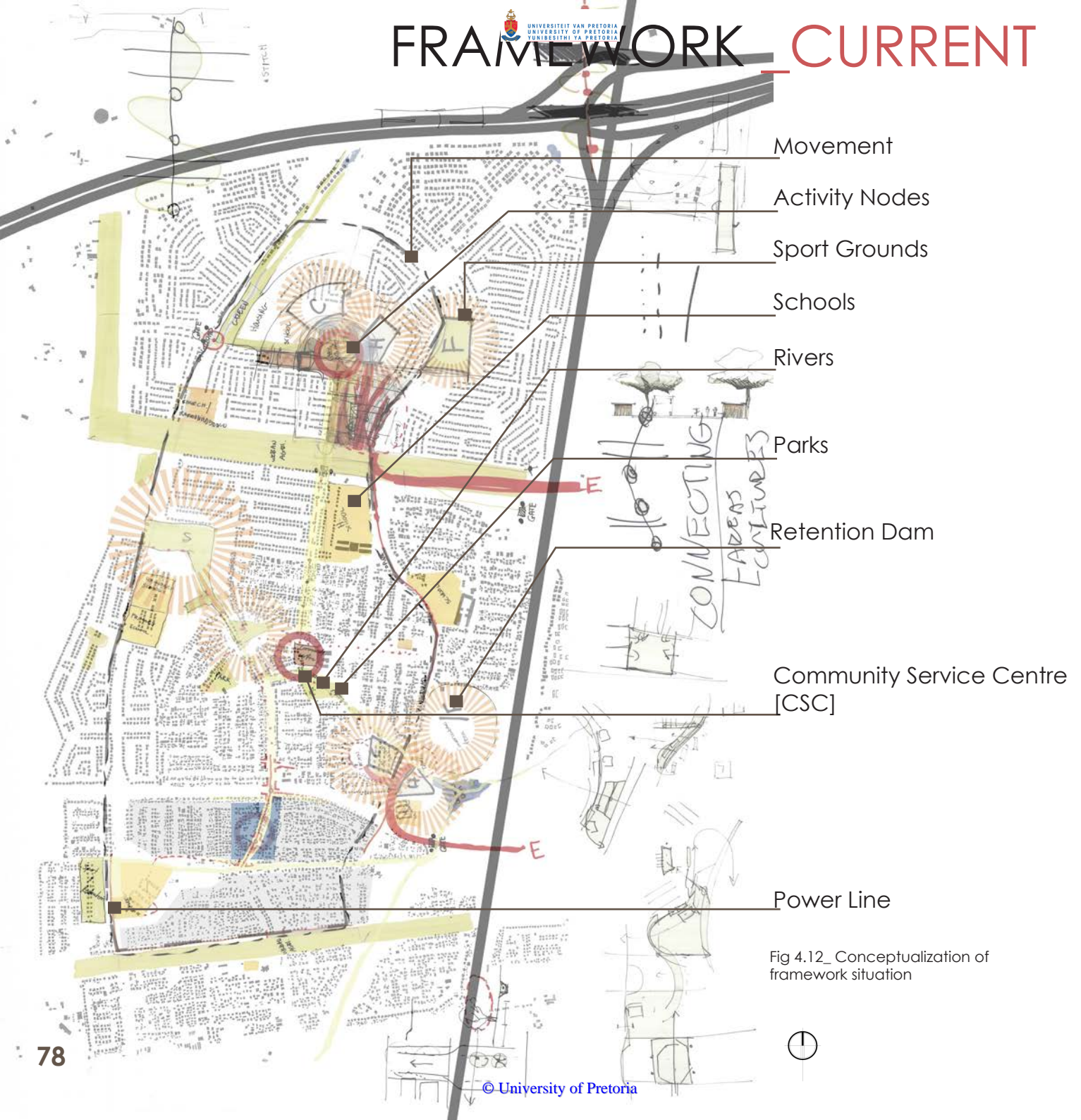
Fig 4.12_ Conceptualization of
framework situation

Fig 4.13_ Proposed framework development

N 14

residential
residential

entrance

a
[s]

b
[s]

[s.g]

[corp]
[c.c]

[t]

[b.s]

[a]
[a]
[a]

residential

[p]
[s]

[com 1]

[s]

[b.s]

[p]
[s]
c
[c.c]

d

[s]

[b.s]

[p]
[p]

[t]
[s.g]

residential

[com 2]

[t]
[t]

[p]

[a]

[s]

[r.d]

[csc]

entrance

[s.g]
[s]

[b.s]

residential
[b.s]

[s]

residential

[t]

[a]   : agriculture
[c.c]   : community center
[c.s.c] : community service center
[s]   : schools
[p]   : parks
[t]   : transport
[b.s]   : bus stops
[s.g]   : sports grounds
[r.d]   : retention dam
[com1] : informal trade
[com2] : semi formal trade
[corp] : corporate

79

N14

Tarred Roads

Main Connecting Road

Entrance

Gravel Roads

Entrance

Transport_ Current

Fig 4.14_ Illustrated current transport routes

Bus Depot

Taxi Stop

Taxi Stop
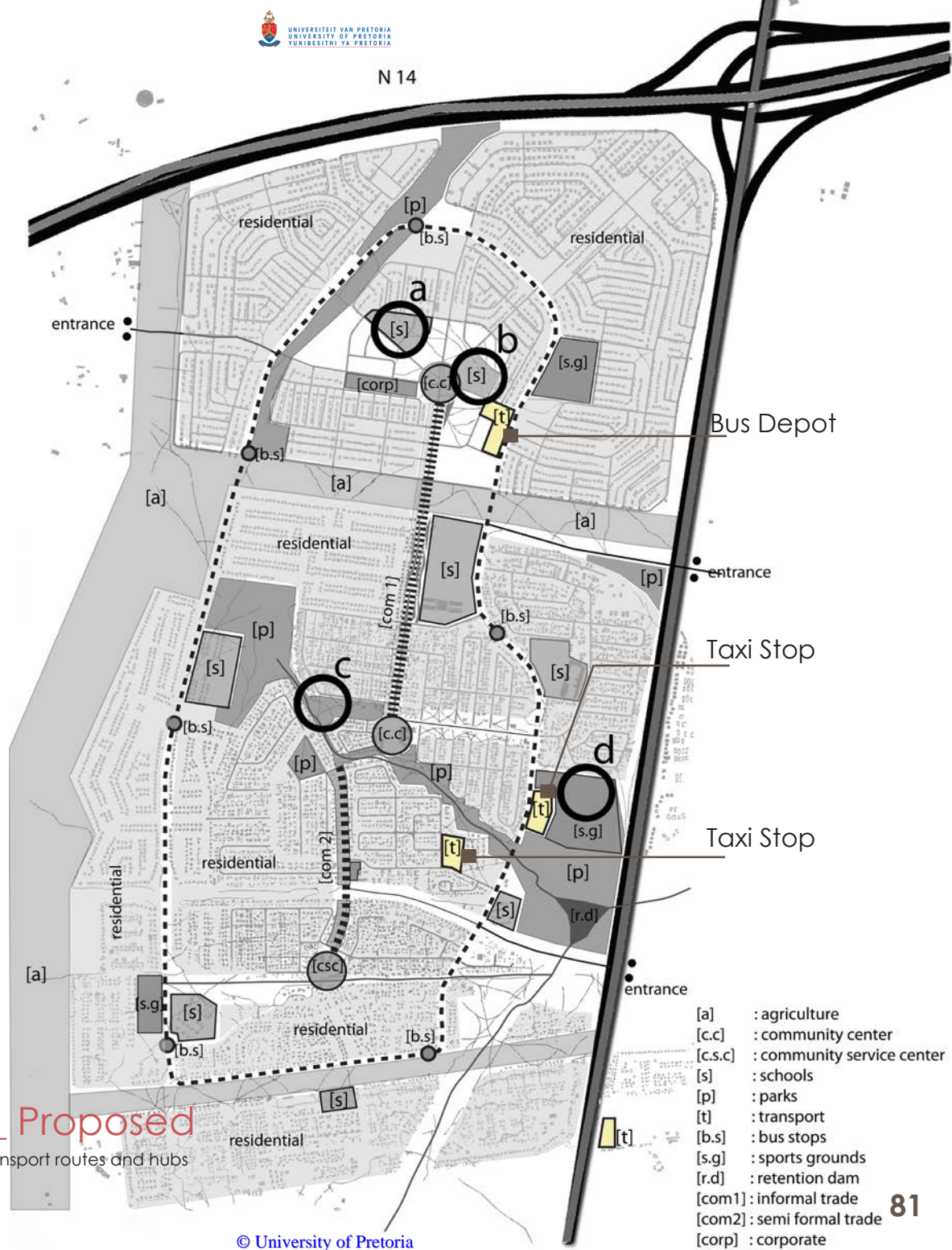
Transport_ Proposed

Fig 4.15_ Proposed transport routes and hubs

[a]	: agriculture
[c.c]	: community center
[c.s.c]	: community service center
[s]	: schools
[p]	: parks
[t]	: transport
[b.s]	: bus stops
[s.g]	: sports grounds
[r.d]	: retention dam
[com1]	: informal trade
[com2]	: semi formal trade
[corp]	: corporate

N14

Tarred Roads

Main Connectiong Road

Entrance

Gravel Roads

Pedestrian Paths

Entrance
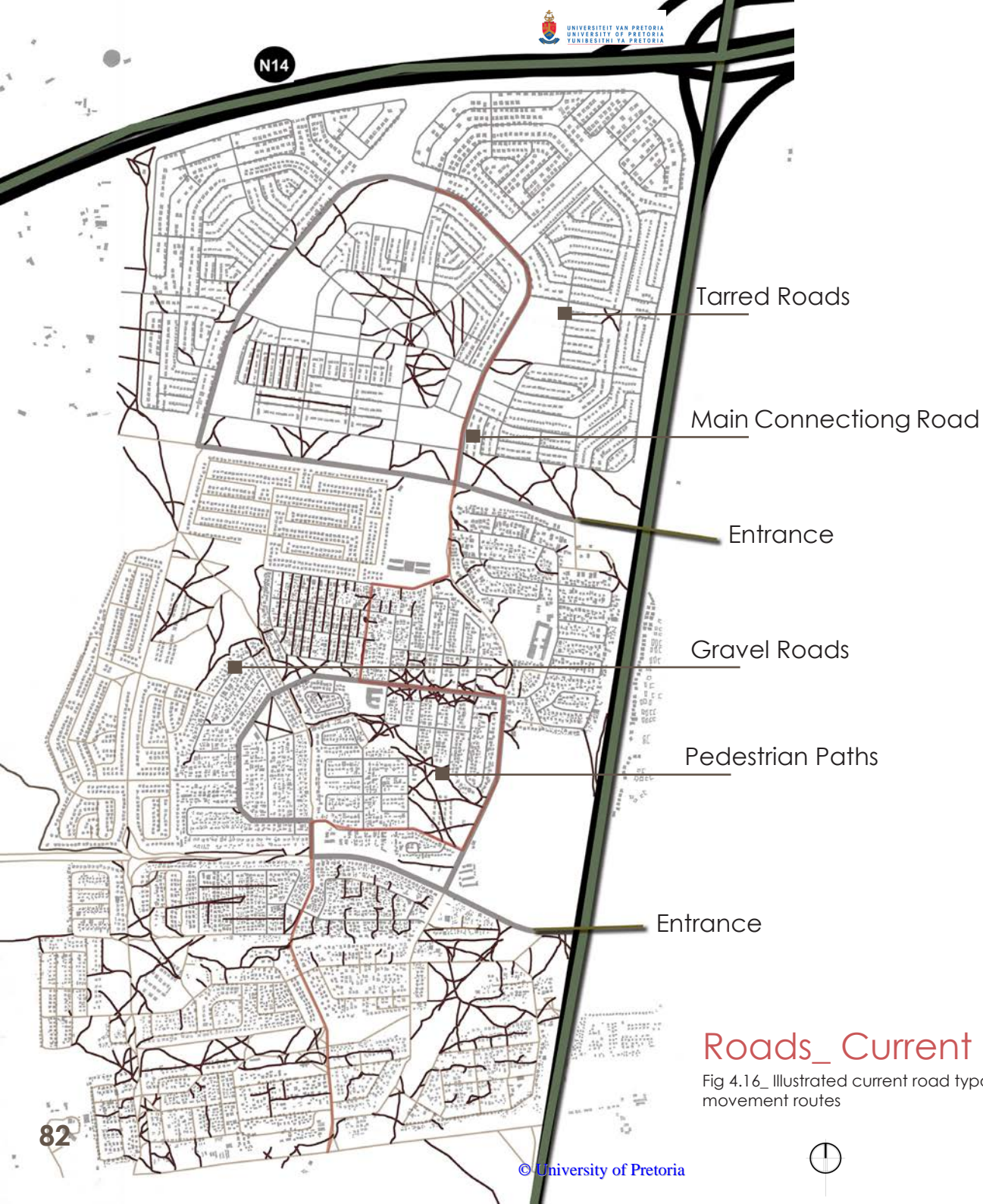
Roads_ Current

Fig 4.16_ Illustrated current road typologies as movement routes

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

residential

residential

entrance

[p]
[b]

a
[s]

b
[s]

[corp] [c.c]

[s.g]

[t]

Bus Stops

[b.s]

[a]

[a]

residential

[a]

[s]

entrance

[p]

[b.s]

[p]

[s]

c

[s]

Ring Road

[b.s]

[c.c]

d

[p]

[p]

[t]

[s.g]

[com 2]

[t]

residential

[com 1]

[a]

[csc]

[s]

[r.d]

[p]

entrance

s.g

[s]

[b.s]

residential

[b.s]

[s]

[t]

Roads_ Proposed

Fig 4.17_ Proposed movement routes

residential

[a]	: agriculture
[c.c]	: community center
[c.s.c]	: community service center
[s]	: schools
[p]	: parks
[t]	: transport
[b.s]	: bus stops
[s.g]	: sports grounds
[r.d]	: retention dam
[com1]	: informal trade
[com2]	: semi formal trade
[corp]	: corporate

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Legend

- **E** Education
- **T** Transport Nodes
- **●** Old Age Home
- **C** Community Centre
- ● Walking Circles
- **R** Shopping Centres
- — Connecting Routes
- **●** Power Station

Community Nodes_ Current

Fig 4.18_ Illustrated current nodes of community activity

N14

N 14

entrance

residential

residential

[p]
[b.s]

a
[s]

b
[s]

[s.g]

[corp]   [c.c]

[t]

[b.s]

[a]

[a]

residential

[a]

[s]

[p]   entrance

[com 1]

[b.s]

[s]

[p]

[s]

c

[s]

[c.c]

d

[b.s]

[p]

[t]
[s.g]

[p]
[com 2]

[t]

[p]

[t]

[s]

[r.d]

[a]

[csc]

entrance

residential

[s.g]   [s]

[b.s]

[s]

[b.s]

residential

residential

[t]

[a]   : agriculture
[c.c]   : community center
[c.s.c]   : community service center
[s]   : schools
[p]   : parks
[t]   : transport
[b.s]   : bus stops
[s.g]   : sports grounds
[r.d]   : retention dam
[com1] : informal trade
[com2] : semi formal trade
[corp]   : corporate
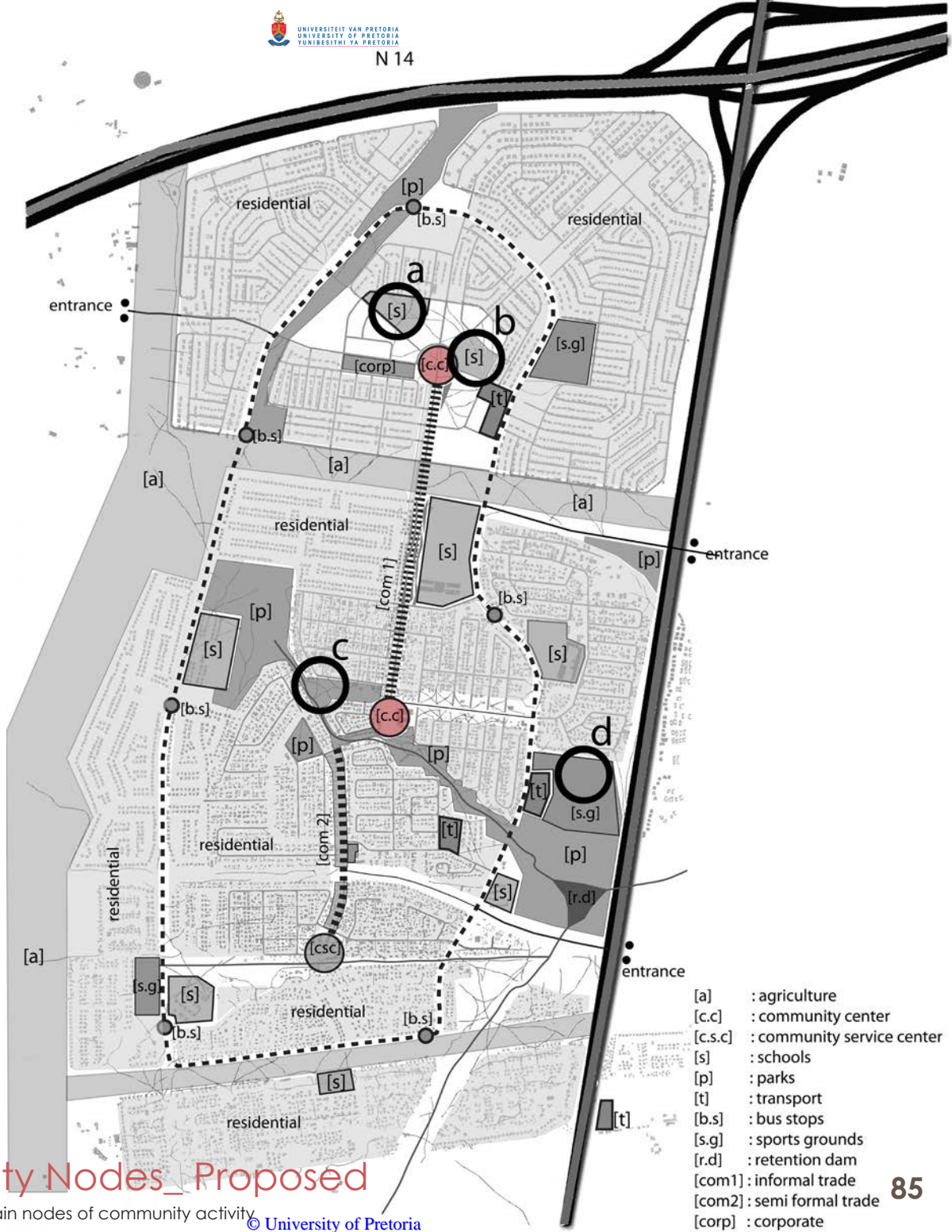
85

Community Nodes_ Proposed

Fig 4.19_ Proposed main nodes of community activity

Fig 4.20_ Illustrated current connecting spine of activity

Public
Semi Public
Semi Private
Private

Activity Spine_ Current

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

residential

residential

entrance

a
[s]

b
[s]

[corp] [c.s.c] [s.g]

[t]

[a]

[b.s]

[a]

residential

[a]

entrance

[s]

[p]

[com 1]

[b.s]

[p]

[s]

[s]

c
[c.c]

[b.s]

[p]

d

[p]

[t]

[t]

[s.g]

[com 2]

residential

[p]

[p]

[s]

[csc]

[s]

[r.d]

entrance

residential

[a]

[s.g]

[s]

[b.s]

residential

[b.s]

[s]

[t]
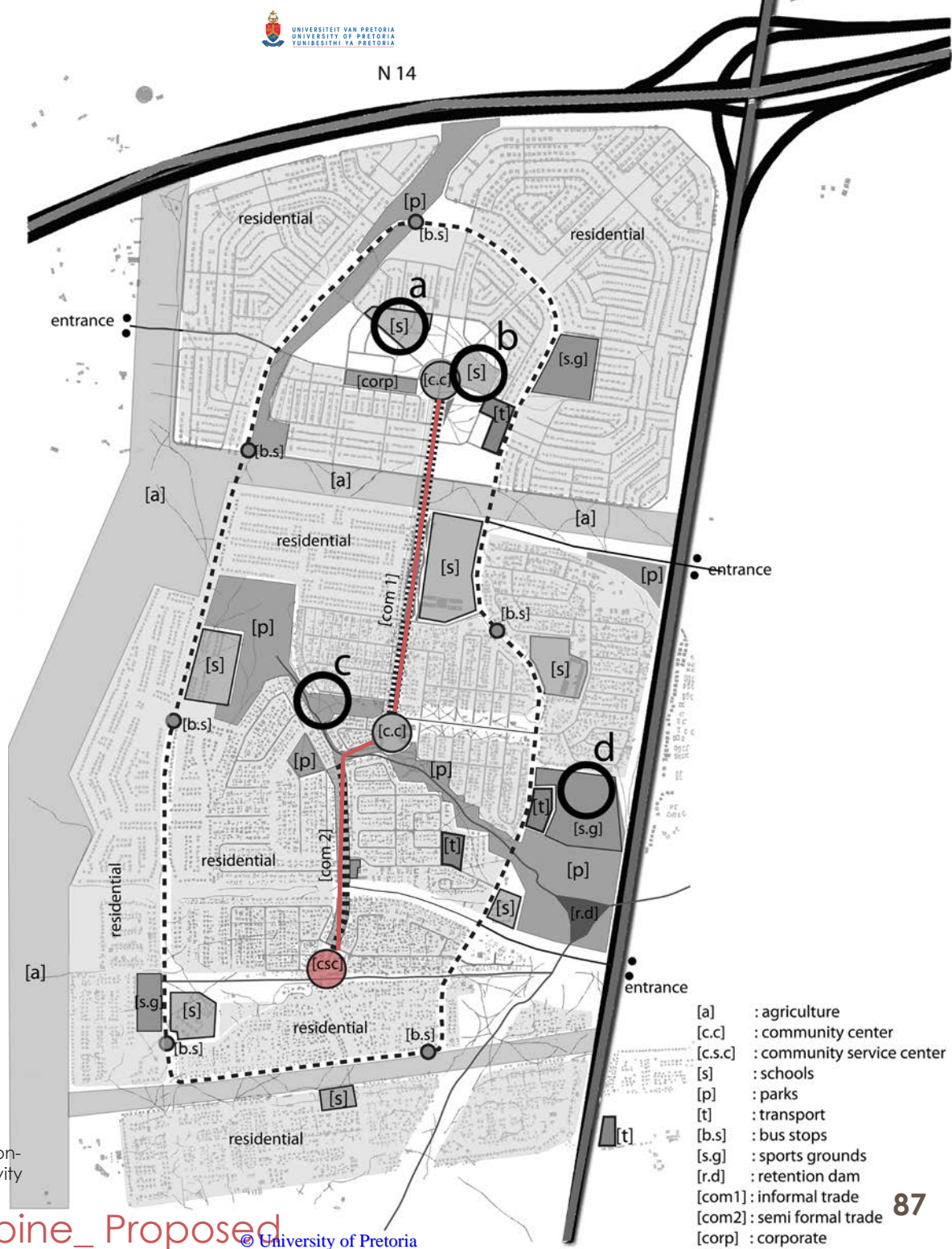
Fig 4.21_ Proposed con-
necting spine of activity

Activity Spine_ Proposed

© University of Pretoria

[a]   : agriculture
[c.c]   : community center
[c.s.c] : community service center
[s]   : schools
[p]   : parks
[t]   : transport
[b.s]   : bus stops
[s.g]   : sports grounds
[r.d]   : retention dam
[com1] : informal trade
[com2] : semi formal trade
[corp] : corporate

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Legend:

- **Water Spring**
- **Eskom Servitude**
- **Fluvial Zone**
- **Unused**
- **Parks**
- **Sports Grounds**
- **Trade Spine**
- **Agriculture**
- **Unbuilt**

Parks_ Current

Fig 4.22_ Illustrated current park green space

residential

entrance

residential

a

[s]

b

[corp] [c.c] [s]

[s.g]

[t]

[b.s]

[a]

[a]

residential

[a]

[s]

[p] entrance

[b.s]

[p]

[s]

[s]

[com 1]

[s]

[b.s]

c

[p]

[c.c]

d

[p]

[p]

[t]

[s.g]

[t]

[com 2]

[s]

[p]

residential

[r.d]

[a]

[csc]

entrance

[s.g] [s]

[b.s]

residential

[b.s]

[s]

residential

[t]

Parks_ Proposed

Fig 4.23_ Proposed park green space

[a]   : agriculture
[c.c]   : community center
[c.s.c]   : community service center
[s]   : schools
[p]   : parks
[t]   : transport
[b.s]   : bus stops
[s.g]   : sports grounds
[r.d]   : retention dam
[com1] : informal trade
[com2] : semi formal trade
[corp]   : corporate

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Water Spring

Eskom Servitude

Fluvial Zone
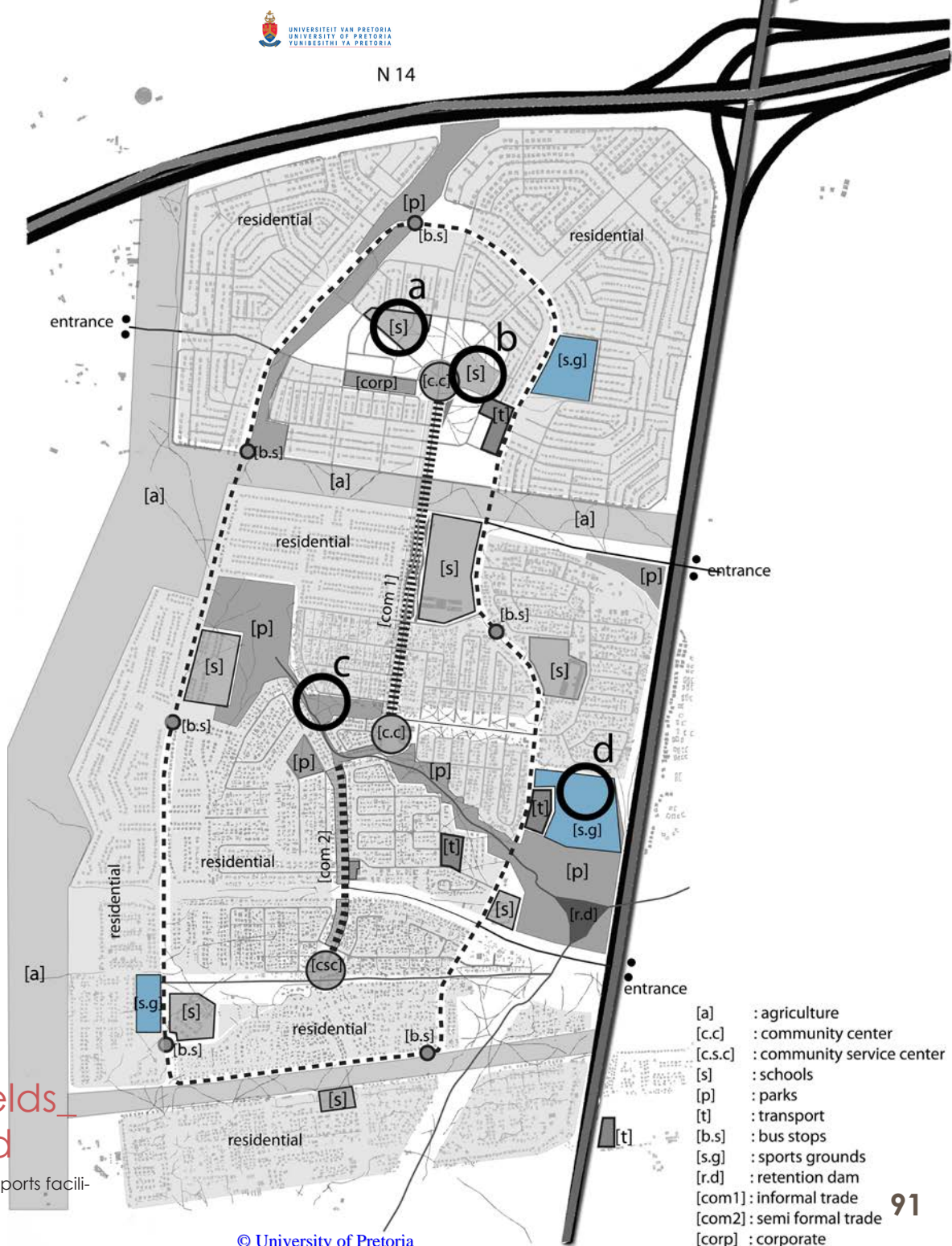
Unused

Parks

Sports Grounds

Trade Spine

Agriculture

Unbuilt

Sports Fields_
Current

Fig 4.24_ Illustrated current
sports facilities

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

residential

residential

entrance

a
[s]

b
[s]

[s.g]

[corp] [c.c] [s]

[t]

[b.s]

[a]

[a]

residential

[a]

[s]

entrance

[p]

[com 1]

[b.s]

[p]

[s]

[s]

[b.s]

c

[p]

[c.c]

d

[p]

[p]

[s.g]

[com 2]

[t]

[t]

[r.d]

residential

[s]

[p]

[csc]

[a]

[s.g] [s]

residential

[b.s]

[b.s]

[s]

residential

entrance

[t]

Sports Fields_
Proposed

Fig 4.25_ Proposed sports facilities

[a]	: agriculture
[c.c]	: community center
[c.s.c]	: community service center
[s]	: schools
[p]	: parks
[t]	: transport
[b.s]	: bus stops
[s.g]	: sports grounds
[r.d]	: retention dam
[com1]	: informal trade
[com2]	: semi formal trade
[corp]	: corporate

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1. Philena Primary School

2. Olievenhoutbosch Primary School

3. Walter Sisulu Primary School

4. Steve Tshwete High School

5. Bathabile Primary School

6. Secondary School

7. Olievenhoutbosch Christian School

8. Seshogong Secondary School

Schools_ Current

Fig 4.26_ Positioning of current Olievenhoutbosch School sites

N 14

New Proposed Schools

a

[s]

b

[s]

[corp]

[c.c]

[s.g]

[t]

entrance

[b.s]

[p]

[b.s]

residential

residential

[a]

[a]

[a]

[a]

residential

[s]

[com 1]

[p]

entrance

[p]

[s]

[b.s]

[s]

[s]

c

[b.s]

[c.c]

d

[p]

[p]

[s.g]

[t]

[com 2]

[p]

residential

[t]

[s]

[r.d]

[csc]

[s]

[a]

[s.g]

[s]

[b.s]

residential

[b.s]

[s]

residential

[t]

[a]   : agriculture
[c.c]   : community center
[c.s.c] : community service center
[s]   : schools
[p]   : parks
[t]   : transport
[b.s]   : bus stops
[s.g]   : sports grounds
[r.d]   : retention dam
[com1] : informal trade
[com2] : semi formal trade
[corp] : corporate

Schools_ Proposed

Fig 4.27_ Proposed school sites

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4.4 Educational Context

As Olievenhoutbosch developed, Educational Facilities became a definite need. The first temporary school that moved to this area was Philena Primary School in 1996. Seven additional schools followed, of which most of them are temporary structures. However temporary the educational facilities may appear, their community significance plays a fundamental role as revealed by interviews conducted with the Philena Primary School principle and teachers[March 2012].

The Olievenhoutbosch area consists mostly of a young community. The high youth population calls for an environment that caters for interaction and development. Within the current context it is clear that as Olievenhoutbosch grew, much more focus was placed on providing housing while the urban layout developed into a vehicle-oriented environment. This environment causes the educational facilities to be scattered and no provision for community gathering is made. The contextual situation causes a problem in terms of theories by Jane Jacobs [1961] concerning safety of children on city streets as well as theories by Oscar Newman [1973] on adult observation as part of passive surveillance. This separation of education facilities and their general location on the periphery of a neighbourhood further evolved into isolated sites, inaccessible and mono-functional because of security concerns. The community compensates for this current situation by creating neighbourhood sports fields that functions as public gathering spaces during weekend games. According to local interviews the general feeling was that school sports fields should be made public, mostly because school grounds are inaccessible and consequently the sports grounds are not used that often. When considering 'public' school sports grounds it also creates the possibility of schools sharing facilities with each other and with the general public. This creates an opportunity to address child orientated design together with educational design in the process of creating a more integrated urban approach.

Fig 4.28_ Olievenhoutbosch Primary School, Legacy Foundation youth group

4.5 Observation of Current Educational Facilities

Primary Schools: Current Condition
Classrooms:
- Rectangular prefabricated structures
- Linear, U-shape or H-shape arrangements of classroom buildings.
- Inadequate shelving and storage space.
- Insulation, ventilation and lighting concerns.
- Uniform classroom space and school character[identity].
- Classroom structure lifted form the ground[duct space for services].
- Row windows on each of the long sides of the rooms.
- Stepped entrance to classroom door[painted number on door as orientation element]

Ablutions:
- Rectangular prefabricated structures .
- Placed separate to the 'back' of the school grounds.
- Inadequate number of facilities is a concern.

Office and Administration:
- Rectangular prefabricated structures.
- Placed at the front area of the school grounds and near formal entrance to school grounds.
- Inadequate space for office and meeting space.
- Visual connection to school grounds is a concern.
- Inadequate shelving and storage space available.

Kitchen:
- Rectangular prefabricated structures or container rooms.
- Wash-up areas are placed next to the kitchen area, no seating area provided
- Main social gathering space.
- Provides children with one meal per day.
- Symbol of security and homeliness.

Fig 4.29-Photo montage of Olievenhoutbosch Primary School

Playgrounds:
- Lower grade teachers usually arrange a separate play area where their children will meet during break when they are on duty.
- Main play area usually to one corner of the site away from the classrooms.
- Children that play in-between and under classroom structures are a big problem because of safety concerns.
- Usually a single jungle gym is provided.
- Quiet space is found between and at the back of classroom structures
- Little to none orientating elements except for the painted door numbers.
- Most of the schools have no formal sports grounds or facilities.

School Grounds:
- Fenced spaces [palisade or wire mesh] separated from the surrounding rural fabric
- No trade or activity along the boundaries of schools except for an extra road barrier element.
- No public interface and guarded access.
- Little gardening and tree space.
- Vegetable gardening is mostly found on school grounds and provides for the school kitchens. These vegetable gardens are tended to by the parents for the pupils.
- Uncovered ground surface spaces between classrooms causes big problems when it rains because of the mud.
- No covered walking areas.
- Movement space is uniform and unidentifiable concerning spatial orientation.
- Parking areas are provided for staff and visitors but usually uncovered.
- No bus stop areas provided close to schools [child transit systems].
- Schools not used during weekends.

"To a far greater extent than private commercial arenas, public demo-cratically managed city space provides access and opportunities for all groups of society to express themselves and latitude for non mainstream activities."

Jan Gehl,2010:p28

Fig 4.30_ Olievenhoutbosch Primary School, space between classrooms

Children in the community [Interview with Philena Primary School Prinsiple:March 2012]

- Most of the children live in rented shack structures with little to no privacy.
- Poor living conditions cause children to seldom skip school where they-can receive a meal per day which they would not receive otherwise.
- Working parents causes the children to wonder around after school.
- Not enough after school activities for children in the area which is wors-ened by the lack of children spaces.
- Boredom causes children to go to shebeens to play games or wonder around in the parks where older children teach them to use drugs [drug use is becoming a big problem and is caused by boredom]
- Lack of community pride and general identity leads to child crimes and vandalism of school property.
- Non-private and overcrowded home environments lead to child rape concerns under primary school children.
- Lack of future progressive motivation and initiation.
- Children are mostly just left alone and not encouraged to participate and develop within the community and ultimately the world.

Local community members are however putting a system together where the children can become more active in the community through [Resident: April 2012] :

- Games and play groups
- Choirs and Music
- Competitive sport
- Reading sessions and story telling
- Community activity and pride
- Team building and history sessions

A lack of facilities and space for implementing these activities leads to an inconsistent process of child-centred support groups and slow progress leads to an increase of deterioration. At the moment the community focuses a lot of energy on the youth [Youth Councillor: Mogauwane] and future educa-tion motivation as well as informing them on educational possibilities. How-ever more effort should be placed on transforming teaching spaces into intergrated learning places for the youth of Olievenhoutbosch in order to initiate ambition and future possibilities.
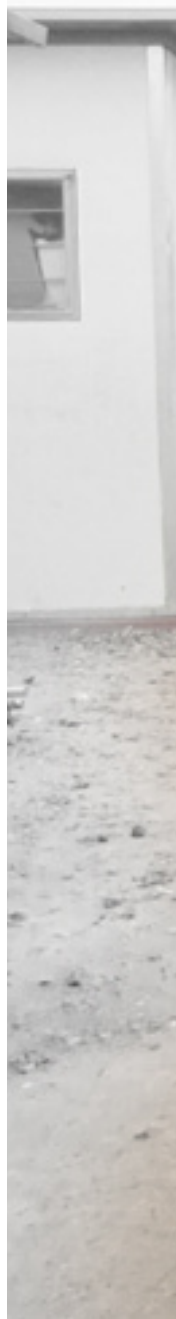
Fig 4.31_ Olievenhoutbosch Primary Sch4.ool, Legacy Foundation youth group
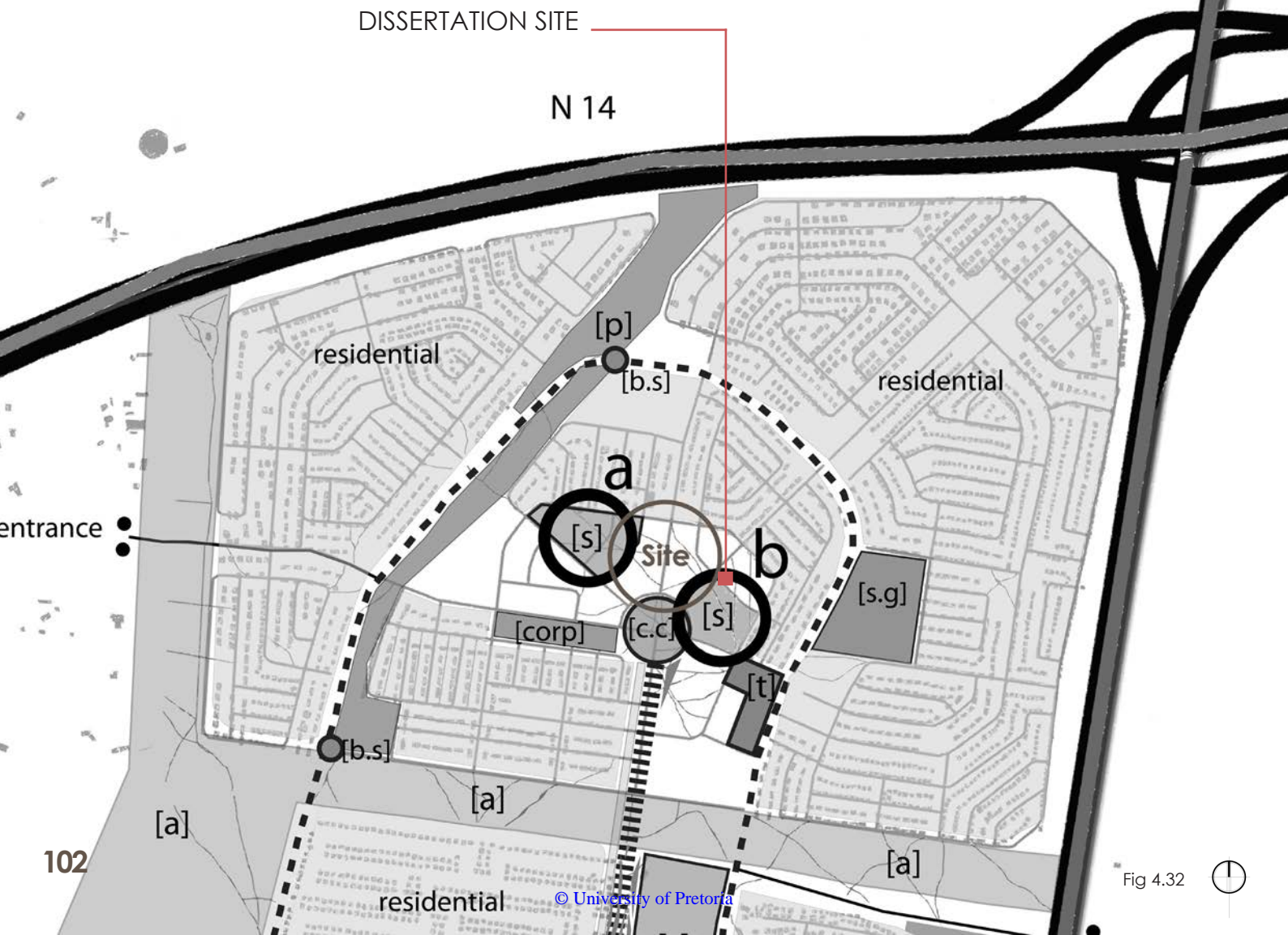
101

DETAILED STUDY AREA_

DISSERTATION SITE

N 14

residential

[p]

[b.s]

residential

a

[s]

Site

b

entrance

[corp]

[c.c]

[s]

[s.g]

[t]

[b.s]

[a]

[a]

[a]

Fig 4.32

residential

4.6 Contextual Conclusions

Contextual Concerns:

- Scattered school locations
- Absence of legible public space
- Schools placed on periphery of a neighbourhood
- Consequently schools become mono-functional and inaccessible
- School placement does not cater for a child-orientated neighbourhood layout.

Contextual Possibilities:

- Using the new ABSA Ministerial Housing estate, schools are proposed as platform for theoretical experiment [Extroverted Educational Environments]
- Linking Educational space with community places to create a integrated learning environment.[Public School as Public space]
- Using school design to focus children orientated urban layouts.[New Urbanism and Compact City theories, see Chapter 5]

Fig 4.32_ Proposed framework development of the Northern Extension of Olievenhoutbosch, indicating dissertation area on both macro and micro scale

05 □ Precedent Studies

Fig 5.1_ Meetse-a-Bophelo Primary School pupils

5.1 National Precedent Studies

Project Name: Seven Fountains Primary School
Location: Shayamoya Township of Kokstad, Kwazulu Natal, South Africa 2005-2009
Architect: East Coast Architects

Fig 5.2_ Seven Fountains Primary School, internal courtyard

Background:

- The project was driven by a community inclusive approach to school design. This allowed the school as institution to strengthen ties with the residents of Shayamoya and the facility is used and cared for by the under-resoursed community.
- The design focused on a sustainable school design on different levels.
- Key design interventions were used to improve the quality of teaching and learning spaces without extra cost.
- The design moves away from a 'one-size-fits-all' practice of blueprint based structures and focused on an architecturally guided emergence of a school which is originally connected to the community who built it and which it serves.

- Sustainability was incorporated in a holistic manner on a social, economic and ecological level.
- The design invested in incorporating school and community social space which is clearly arranged to ensure the safety of the pupils.
- This is attempted through the East-west and north-south pedestrian route that ends in a public square at the crossing that links with the private school grounds.

Alice Project Informants:
- The use of outdoor teaching areas as alternative learning environments.
- Multi-purpose classrooms for creative and cultural activities.
- Specialized rooms for library and computers were created as information hubs, centrally located to be easily accessible by community and school
- Mezzanine or loft areas in classrooms to provide breakaway spaces.
- The subtle differentiation of levels to define outdoor areas.
- Community square space incorporated into school grounds as communal spaces with adjacent public play grounds.
- Site position allows for a residential edge condition that encloses the site, allowing only for two vehicular entrance points.
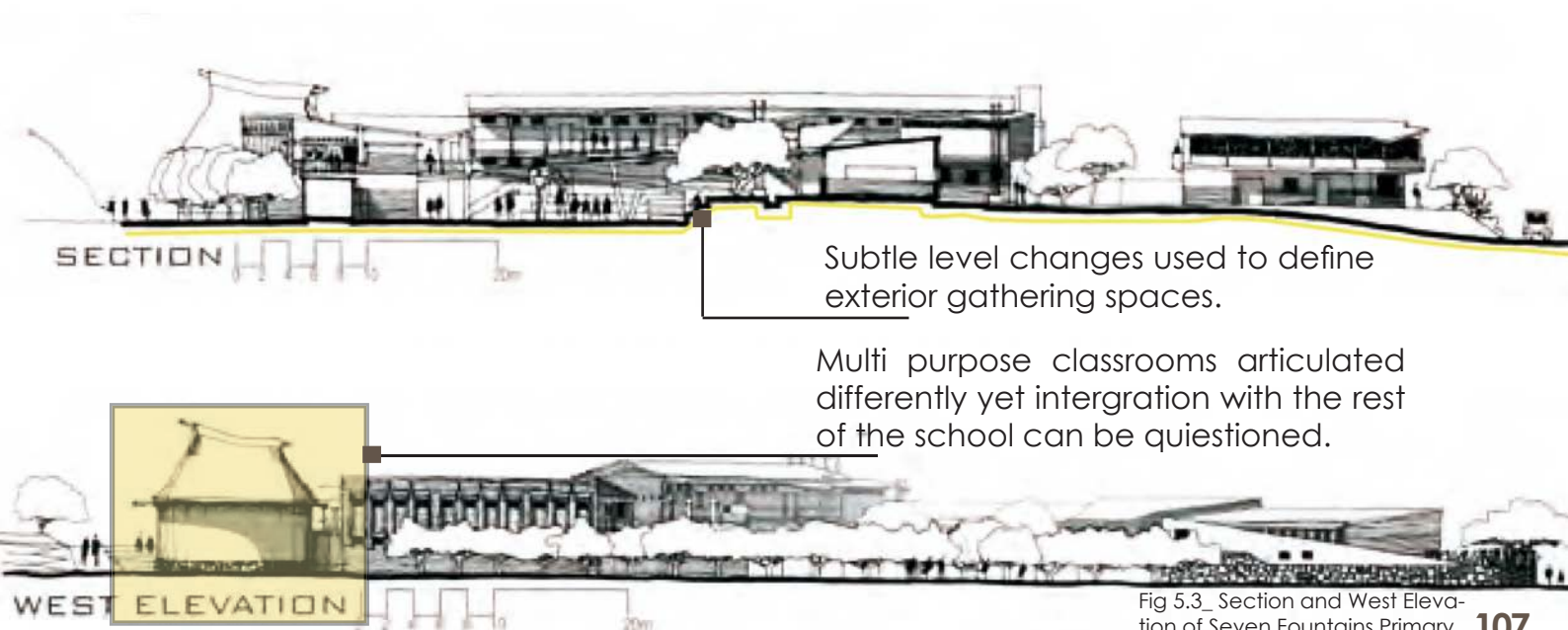
SECTION

Subtle level changes used to define exterior gathering spaces.

Multi purpose classrooms articulated differently yet intergration with the rest of the school can be quiestioned.

WEST ELEVATION

Fig 5.3_ Section and West Elevation of Seven Fountains Primary School

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Inward Directed Courtyards

Site isolated by housing edge
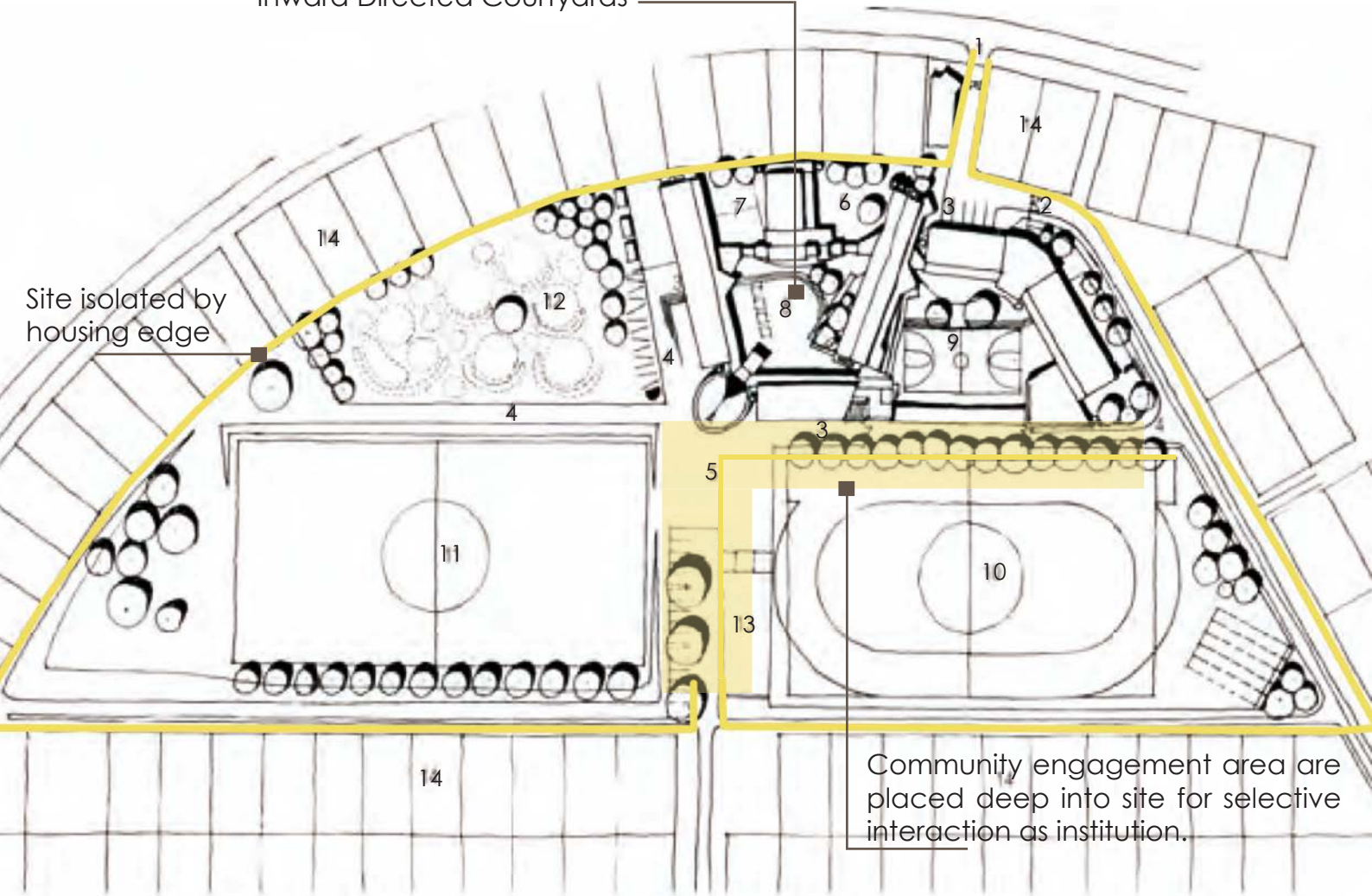
Community engagement area are placed deep into site for selective interaction as institution.

SITE PLAN

N

Fig 5.4_ Site Plan of Seven Fountains Primary School

1. Motor Entry
2. Motor Exit
3. Pedestrian Entry
4. Community Lane
5. Community Square
6. Grade R
7. Grade 1
8. Grade 2-4
9. Grade 5-7
10. School Fields
11. Community Field
12. Permaculture Garden
13. Resevoir Playground
14. Private Houses

Fig 5.5_ Seven Fountains Primary School classroom with loft extension

Critique:

- Community engagement with school facility is very limited in terms of spatial location. Little opportunity for child-adult engagement, see fig 4
- Use is limited to school hours and design embraces the concept of a school as institution, see fig 4
- Lives inward and shuts the surrounding community out, see fig 2 and 4

Project Name:	Meetse-a-Bophelo Primary School
Location:	Mamelodi East Township, Tshane [Pretoria] 2009
Architect:	Humphries Jooste Practive/Architects

Fig 5.6_ Meetse-a-Bophelo Primary School classroom courtyard

Background:

The Meetse-a-Bophelo primary school is one of ten new school build-ing projects in underprivileged areas by ArcelorMittal South Africa Foundation. The school design was developed on a site that was al-ready occupied by an existing school with temporary classrooms. The existing school needed to remain operational which meant the new design construction needed to be phased. Existing community school activities were incorporated into the new design e.g. the soup kitchen [now the central nutrition centre] and the community gardens. The project site edge consists of 50% residential zone and 50% commercial and high traffic zone. The design reinterprets the traditional school typology in order to move away from an institutional character to a more social interactive spatial layout.

Alice Project Informants:

- The reinterpretation of traditional school typologies to a design that is more focused on the individual.
- Classrooms arranged into three wings around a central nutrition centre as communal core space.
- Triangular courtyard space that enables a north orientation to as many classrooms as possible.
- Learning phases are grouped into three wings.
- Each age group's classroom is arranged around their own courtyard space. [Personal communal space]
- Footprint of school is designed to accommodate deferent site conditions.
- The triangular courtyards are rounded off at the corners edges with small brick amphitheatre spaces that function as external classrooms.
- The library and media centre is located next to the admin building close to the school entrance.
- Grade R area kept separate with it's own courtyard space and is visible from the staffroom and reception spaces.
- The school design aims to become a home away from home for the pupils.
- Nutrition centre becomes a space for the community and children after school hours

Fig 5.1 Photo Montage of Meeste-a-Bo-phelo Primary Schools' intimate courtyard spaces

Administration Building Central Courtyard

Staffrooms view to Grade R playground

Parking towards entrance

External Classroom Space

Sports Fields

1. Administration Building: Meeting Rooms, Reception, Staffroom, Kitchen and tiolets
2. Media Centre: Computer Room and Library
3. Classrooms to accommodate 2400 learners.
4. Laboratory
5. Ablution Building near Sports Fields
6. Workshop
7. Caretakers House

Fig 5.8_ Meetse-a-Bophelo Primary School Site Plan

Fig 5.9_ Circulation space forming transision point form classroom to communal are, Meetse-a-Bophelo Primary School

Critique:

- The site layout has a pedestrian quality that allows for an intimate spatial experience, see fig 6
- The journey through the school is not deliberate but more a chance encounter.
- The design layout does not address the site edge conditions and is consequently fenced.
- School layout has the opportunity to be much more interactive with the community since the three wings could have been designed to function separately as well as a whole.
- The entrance edge of the school could have been much more integrated with the administrative area of the school.
- Unfortunately the parking is part of the entrance journey and the site is pushed more to the back leaving the entrance bare because of street-site separation, see fig 8
- The design lives inward and shuts the surrounding community out, see fig 8
- Each classroom allows for separate storage and the Grade R 's have their own ablutions per classroom.
- The administration considered the social aspect of the teachers of the school with a staff room that allows passive surveillance to the lower grades and a central courtyard for social events, see fig 7 and 8
- The placement of community and admin activities close to the entrance is successful.
- Subtle level changes creates an effortless journey yet more seating space for group gatherings could have been incorporated, see fig 6,7 and 9
- All areas of the school is observable, thus incorporating safety into the spacial arrangement.
- Student Teacher interaction kept separate as evident by the placement and layout of the administrative building, see fig 7 and 8

Fig 5.10_ Sidelights and clerestory windows within classrooms, Meetse-a-Bophelo Primary School

Project Name: Usasazo Secondary School
Location: Khayelitsha, Cape Town, Western Cape
2004
Architect: Noero Wolf Architects

Fig 5.11_ Usasazo Secondary School, view from the street, showing temporary entrepreneurial teaching classrooms

Background:

In areas like Kahayelitsha the schools area usually the first public buildings and for a long time the only permanent, durable and expensive infrastructure. Thus the project realizes the critical role schools have to play in forming good quality urban environments. The Usasazo School design attempts to formalize the street character of this area in Khayelitsha. Thus the street facade becomes a strong image that is always associated with the school. A central circulation space is a formalised design response to the organic urban spaces created in formal settlements. Canopied edges frame the space to facilitate circulation on a scale of an individual and a crowd.

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Influences:

- In response to the need for land the school occupies the smallest possible area and leaves the remaining land for a communal sports field and productive agriculture use.
- Single story classrooms on the street edge are designed to be used for temporary entrepreneurial teaching with hatches that open up to the street to allow interaction with the public.
- Fragmented articulation of the street facade mimics the scale of the informal settlement around it.
- A central circulation space is similar in character to the spaces created in the informal settlements.

Fig 5.12_ Aerial view of Usasazo Secondary School position within Khayelitsha, Cape Town

Communal Circulation Space
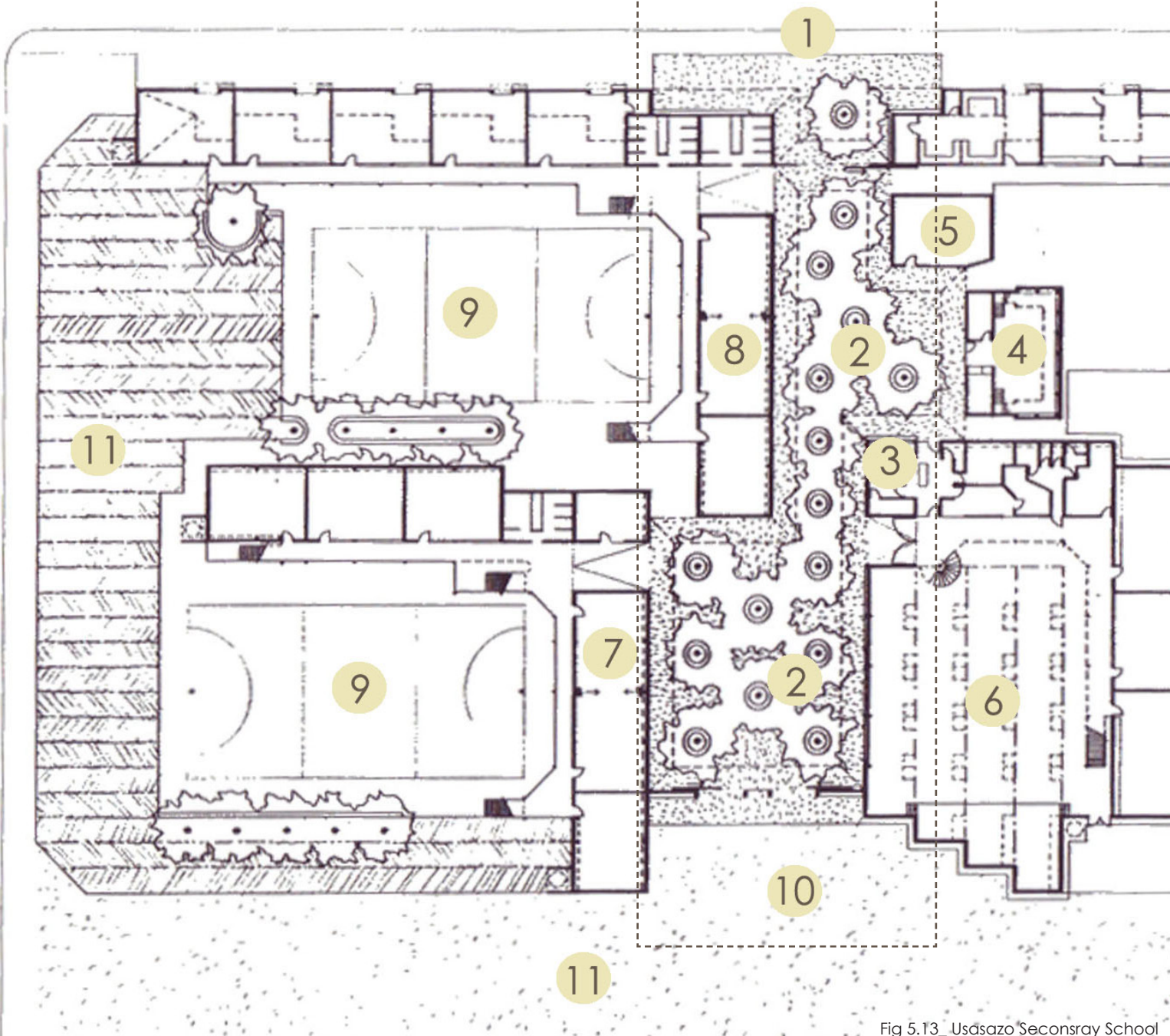
Fig 5.13_ Usasazo Seconsray School site plan layout

1. Main Entrance
2. Central Cirulation
3. Administration
4. Library
5. Computer Room
6. Hall
7. Senior Classroom
8. Junior Classroom
9. Netball Court
10. Soccer Field
11. Area of Agriculture

Fig 5.14_ Usasazo Secondary
School, photographic image of
corridor space

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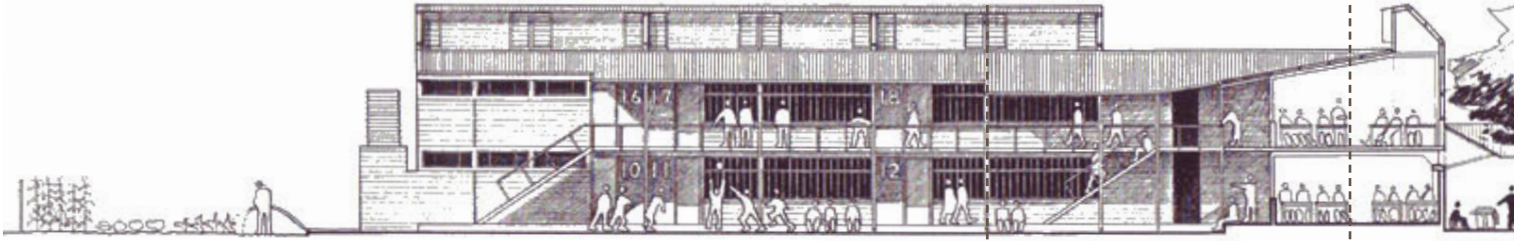
Central Circulation Space
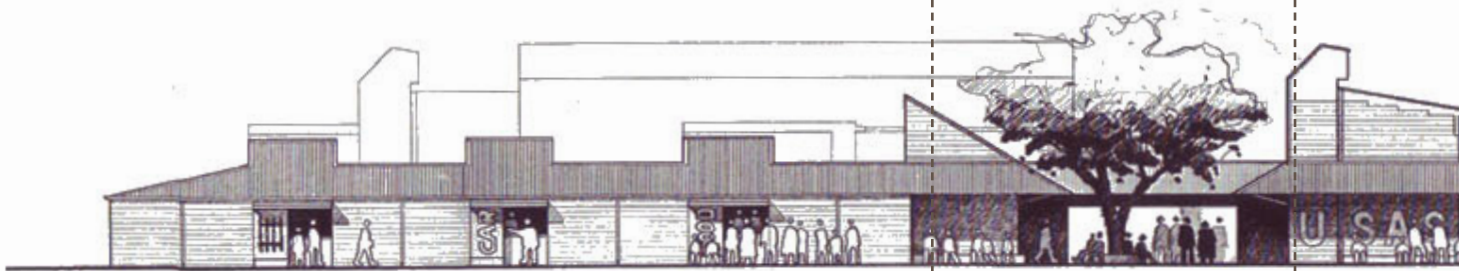
Roof Architecture Language to define scale variation within spaces
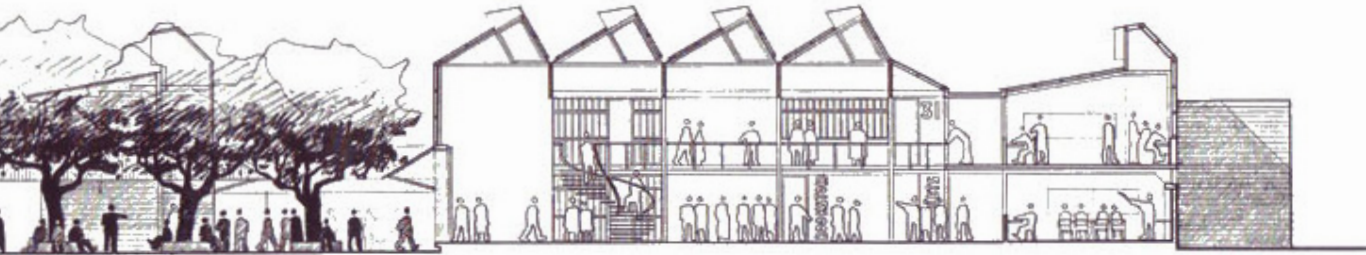
Section through Forum
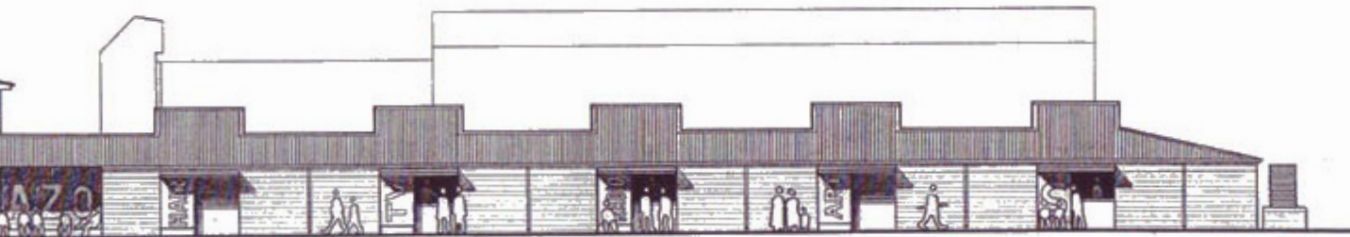
Street elevation
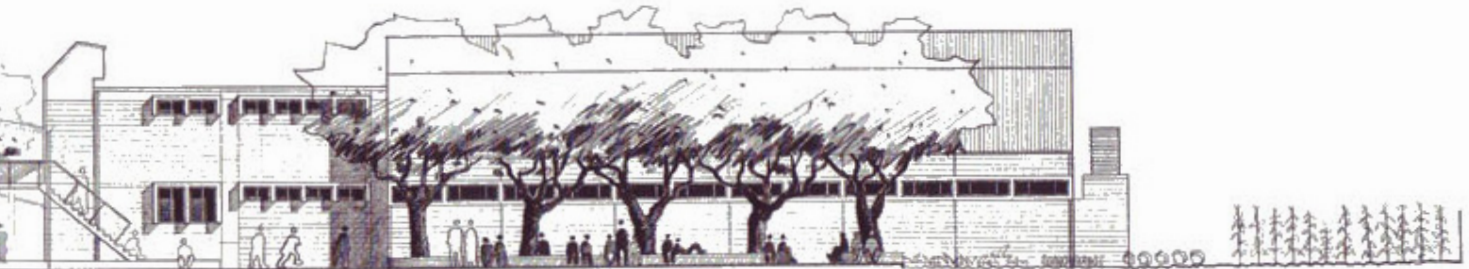
Section

Fig 5.15_ Usasazo Secondary School, street elevation and sections

Critique:

- Within this design the roof architecture is successful in allowing spatial scale variation and light provision, see fig 11and 15
- Street edge classrooms that also functions as workshops is an intriguing way to incorporate multifunctionality to the school. However the facade does not have the same interactive language as the plan communicates, see fig11,13 and 15
- The school's internal circulation space has a lot of possibility in combination with social, academic and community edge programs.
- The internalization of this space is however questionable since it removes itself form the street activities, see fig 13 and 15
- Regarding the position to the soccer field, it is very much isolated and the question arises if it does not exclude community participation, see fig 13
- The internalization of activities makes this educational facility read as an institution on street level, see fig 11
- The internal circulation space presents possibilities as a social-academic fusion space/square, see fig 13 and 15
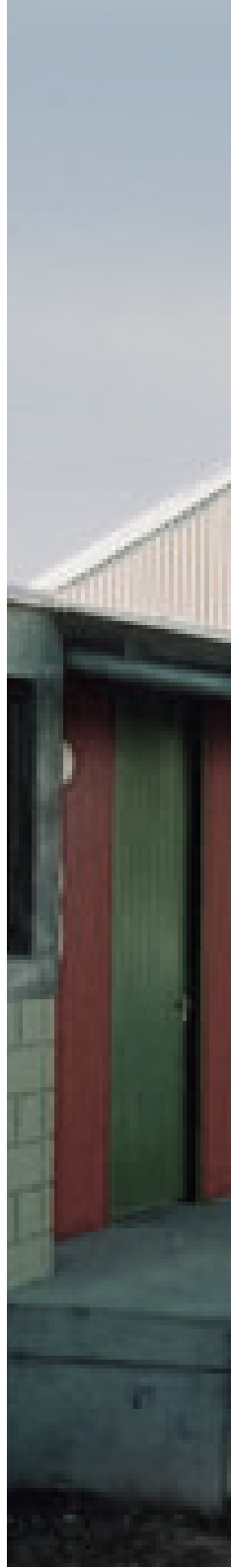
Fig 5.16_ Usasazo Secondary School
classroom-courtyard threshold

Project Name: Inkwenkwezi Secondary School
Location: Du Noon, Cape Town, Western Cape
2007
Architect: Noero Wolff Architects

Fig 5.17_ Inkwenkwezi Secondary School, aerial view of introverted courtyard and building mass

Background:

Situated on the periphery of the settlement the site has two edge conditions. The road to the north of the site is a very busy vehicular route which makes pedestrian access from it undesirable for children's safety. Thus the site can only be accessed via the quiet dead end road which is more appropriate for children safety. The location of the building on a sloping site on the edge of the settlement was exploited to develop a civic architecture that distinguishes itself from the surrounding residential fabric. The classroom 'wall' encloses the school's inner functions creating a protective barrier. The school brief is largely made up of repetitive classroom modules. The 'wall' architecture is devised to bind these modules together and sets the stage for the large scale undulations in plan which breaks the monotony of the block forms and the corridors.

Influences:

- Situated on the periphery of the settlement next to a sports field and on a dead end street.
- Access is from the quiet dead end road which allows children to linger safely.
- The school building creates an outer wall that protects the school grounds form vandalism and intrusion.
- The outer 'wall' of classrooms encloses an undulating court with an open end facing Table Mountain.
- The Hall design rises to a tall corner which is exaggerated by vertical fluting.
- The entrance facade is layered with the hall and library/administration block forming a composite facade.
- Layered wall architecture forms a recognisable edge character of the school.
- Aesthetics of the school building is derived from the way local people paint public buildings

Fig 5.18_ Aerial photograph of Inkwenkwezi Secondary School position within DuNoon, Cape Town

Critique:

- The internalized courtyard space onto which the classrooms face internalizes school activities and isolates the academic and social function of the school form the surrounding community, see fig 17
- This internalization is strengthend by the classroom positioning that forms a 'wall' that becomes a barrier because it only opens internally. This stregthens the school insitutional character, see fig 17 and 18
- A strong roof architecture creates interresting scale variations form the auditorium to the individual classroom, see fig 17 and 19
- No provision for external classroom gatherings where maid. This is evedent through the lack of seating and level changes to define internal courtyard space, see fig 17
- The architectural language of the educational insitution clearly reads as a beaken in the existing informal landscape and is successfull as a civic architectural language, yet does not allow community interaction, see fig 18
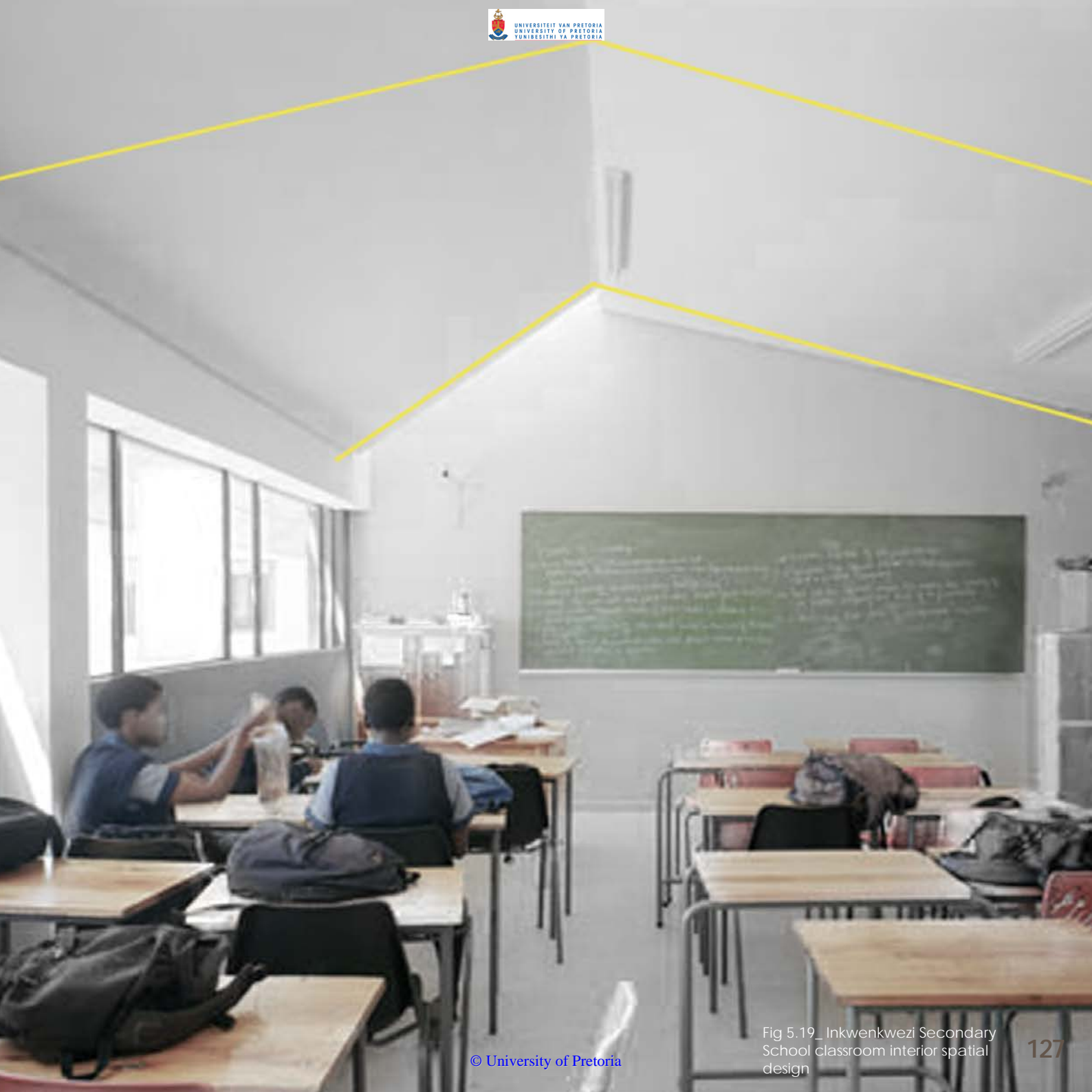
Fig 5.19_ Inkwenkwezi Secondary School classroom interior spatial design

5.2 International Precedent Studies

Project Name: Urban Park and Integrated Complex of Primary and
Secondary School and Public Facilities –Romania
School
Location: Palermo IT, Rome.
2010
Architect: Herman Hetzberger, Marco Scarpinato,
Dickens van der Werff

Fig 5.20_ Urban Park and Integrated Complex School, Rome, Italy,
site image

Background:

The project is located in a new urban centre within the area and
defines a new urban centrality with facilities for the community. The
complex is surrounded by an urban park with a teaching garden and
facilities for sport and playgrounds. Two opposite entrances area de-
lineated by squares for recreation and socializing. The complex forms
an integrated system with spaced dedicated to study and for
socializing.

Influences:

- The project is located in a new urban centre.
- Community facilities are integrated with learning spaces.
- The site is almost an entire story below the surrounding ground, and is accessed from the two flanking residential quarters.
- The two entrances lead to a central square which is also sunk into the ground and surrounded by steps for sitting on.
- The plan consists of basic architectural units each which comprises of two times four classrooms adjoining a connecting street.
- The classroom units are arranged around a central patio, echoing the design of a traditional roman house.
- The integrated complex alternate's spaces dedicated to study and for socializing through enhancing the interplay between inside and outside micro climates.
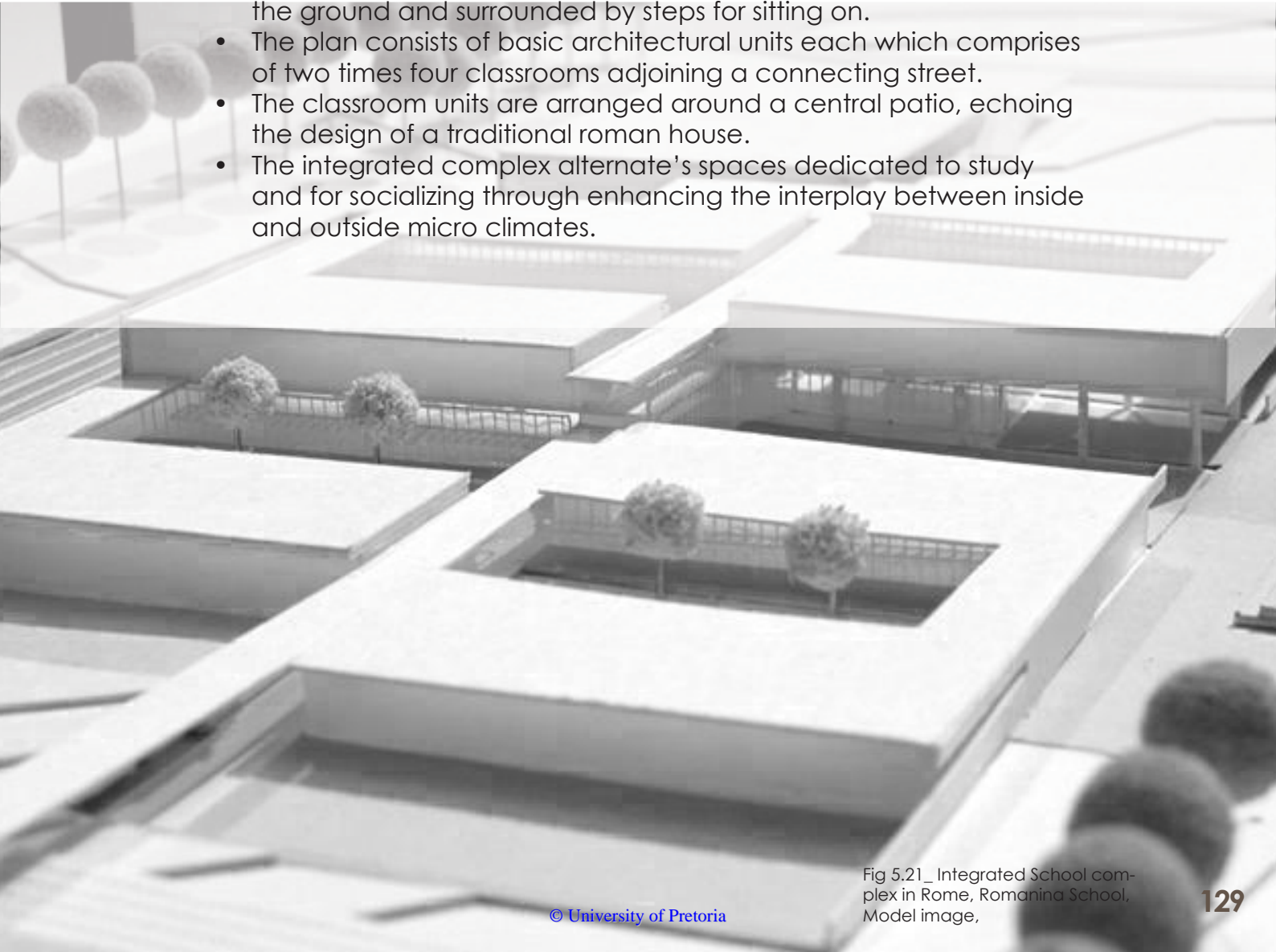
Fig 5.21_ Integrated School complex in Rome, Romanina School, Model image,

Fig 5.22_ Romanina School, Rome, Italy, sectional illustration

Fig 5.23_ Romanina School, Rome, Italy, steps for sitting in communal area

Fig 5.24_ Romanina School, Cafeteria space

Critique:

- The project reinterpret Public School facilities as interactive public spaces within a community, see fig 20
- The project is a clear example of Herman Hertzberger's theories on extended school systems, it allows for a new socio-cultural exploration of educational facilities.
- The way in which level differentiation is used allows the school perimiter to be defined yet not seperated form the public space that surrounds it, see fig 21 and 22
- A central square allows for school facilities to be linked to the surrounding community central gathering space. This promotes shared facilities and makes cross dissipline multi functional activities possible, see fig 23, 24, 25 and 26
- Academic and social spaces are successfully interactive, see fig 23
- The use of stairs, seating, ramps and courtyards allows for an unlimited range of exterior gathering and grouping of social or academic interaction, see fig 22,23,25 and 26
- The arrangement of administrative or communal programs in relation to academic spaces allows the school grounds to be closed off in sections which promotes more variation in uses, see fig 25 and 26

Communal Strip of Interaction

Ground Floor Plan

Connecting Street Space - Link

Communal Square - Place of Gathering

1. Main Entrance
2. Central Square
3. Cafeteria
4. Central Patio Space
5. Classrooms
6. Double Volume
7. Sports Facilities
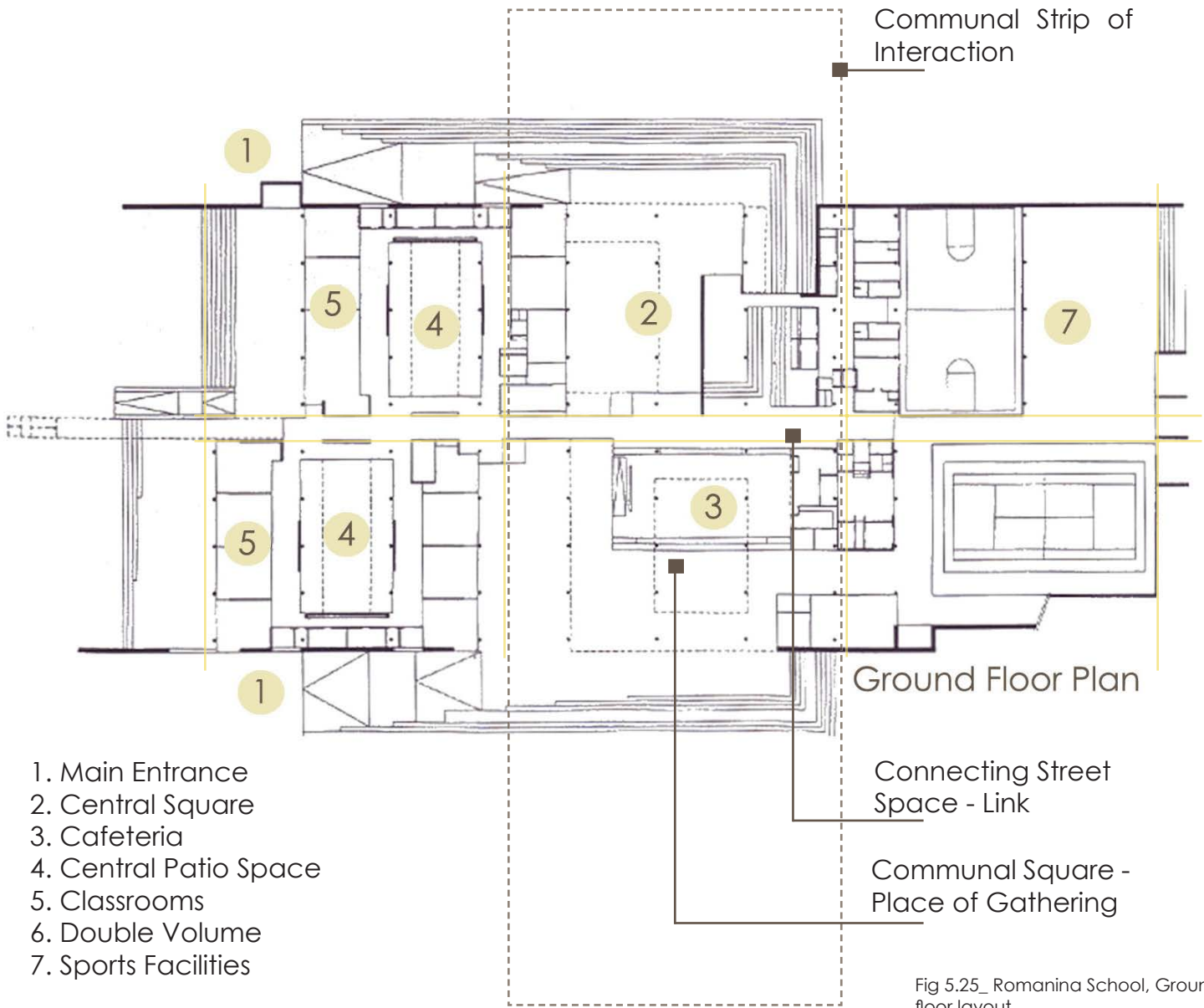
Fig 5.25_ Romanina School, Ground floor layout
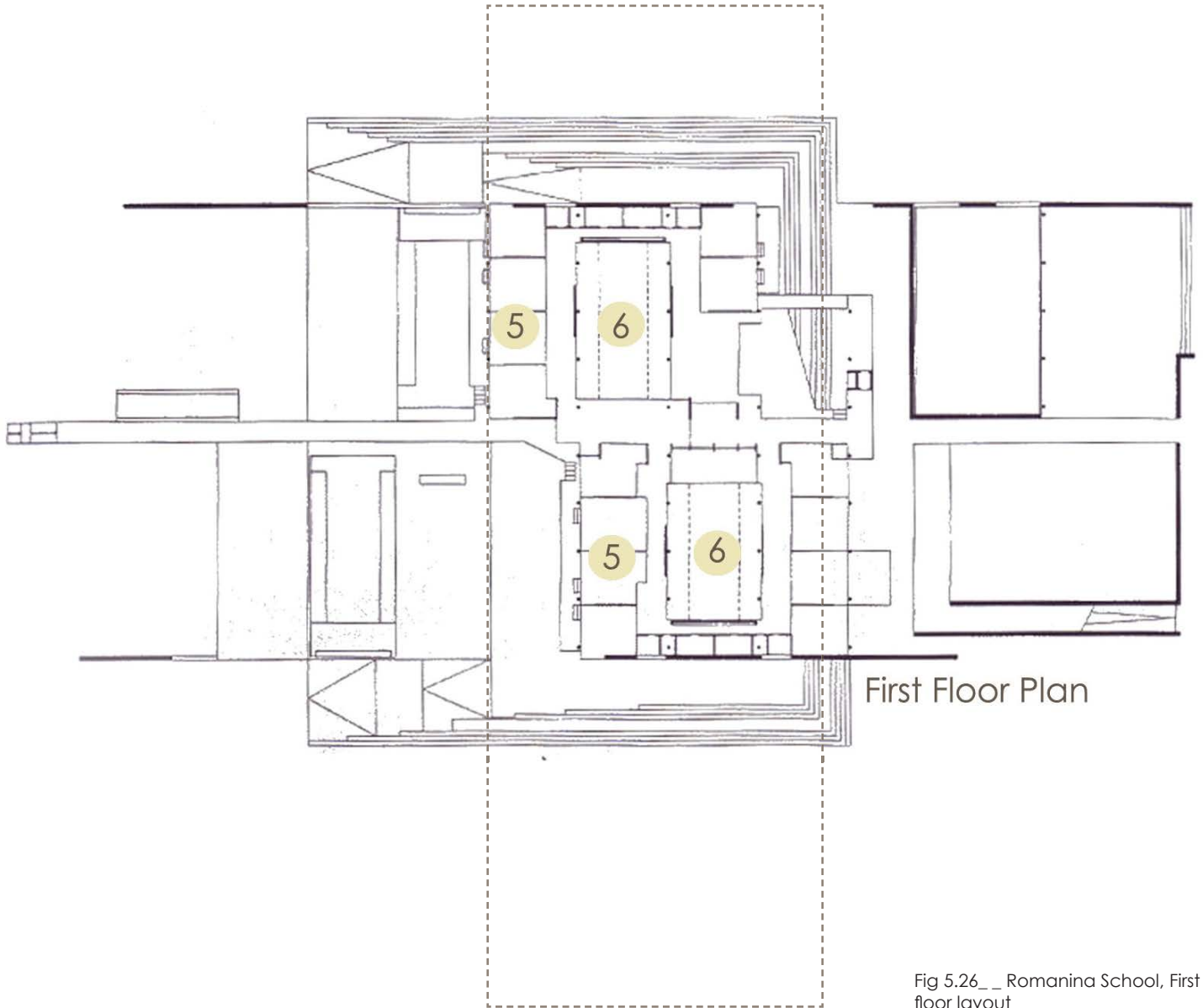
First Floor Plan

Fig 5.26_ _ Romanina School, First floor layout

Project Name: Panther Lake Elementary School
Location: Federal Way, Washington, United States
2009
Architect: DLR Group

Fig 5.27_ Panther Lake Elementary School, commons connecting space

Background:

The design focuses on a balance between the community and individual aspects of schooling. It is however equally important to design a building that would be functional for young children. Material choice and spatial layout emphasises the architects mission to create and educational environment that would allow children to learn on their own as well as with others.

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Influences:

- The design focuses on bringing together the schools learning and common areas in order to enrich the student's educational experience.
- Parallel learning spaces area connected by the common areas that run diagonally through the corridors.
- Various learning centres remain open to one another because of commons binding space.
- Each corridor is dedicated to different structural learning activities and varies in width and length depending on which classrooms they contain.
- Classrooms are not divided by curriculum, but by the learning activities that will take place there.
- The commons connector that links each to the corridors together consists of group learning areas.
- The group learning areas area not separated by a solid division but through connected open space.
- The common corridor encourages intermingling between students from different classrooms.
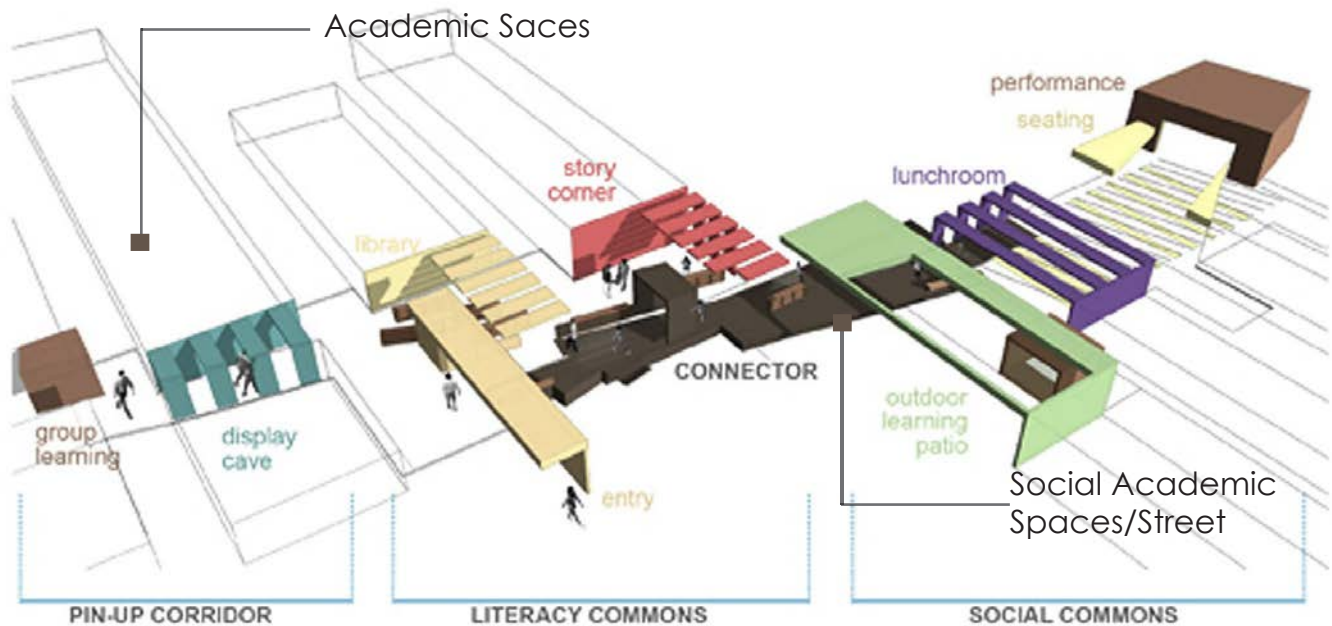
Fig 5.28_ Panther Lake Elementary School, initial spatial model

Critique:

- The importance of this project is the commons connecting element that allows for social-academic interaction (communal street),see fig 28 and 29
- Each of the classroom wings has the oppertunity to be closed off while the commons areas are used, which is important for multi-purpose use, see fig 29
- The main commons corridor plays with subtle level variations to form a number of defined break-away spaces of interaction and learning, see fig 27
- The layout promotes a 'learning jouney' through activity chance encounters.
- The surrounding community are however not allowed to partake in this social area.
- The school is very much layed out to form a community of its own.
- The commons area also reads different on plan and perspcetive which is very important. (Differentiation between social and academic spaces), see fig 27 and 29

1. Main Entrance
2. Pin-up Corridor
3. Literacy Commons
4. Transitional Open Area Commons
5. Social Commons
6. Music

8. Community
9. Conference Room
10. Kindergarten, Special Education and Technical Labs
11. Core Learning Classrooms
12. Small Groups/Offices
13. Kitchen

Commons Connecting Element

14. Gymnasium
15. Support
16. Storage
17. Faculty Workshop
18. Outdoor Learning Patio
19. Outdoor Learning Grounds

Fig 5.29_ Panther Lake Elementary
School, Plan Layout

5.3 Urban Framework Precedent Studies

Project Name: Seaside Development
Location: Gulf of Mexico in Florida's panhandle between
Grayton Beach and Seagrove Beach. 1988
Architect: Andres Duany
Developer: Robert Davis

Fig 5.30_ Aerial photograph of Seaside
Development, Florida

Background:

Seaside Development in Florida is the first fully New Urbanist town. The development began in 1981 on eighty acres [324 000 m2] of Florida Panhandle coastline. The design became internationally famous for its street quality and well defined public spaces. The town is mostly a tourist destination and featured in the movie 'The Truman Show'.

Influences:

- The development focus is to create a human environment.
- The scale of the design is pleasant.
- A walkable neighbourhood that contains a range of housing and job types.
- It encompasses principles such as traditional neighbourhood [TND] and transit-orientated development [TOD] [New Urbanism]
- The concept that neighbourhoods should be diverse in use and population.
- The development is derived from the argument that cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions.
- Urban places are intentionally framed by architecture and land scape design.
- The neighbourhood has a discernible centre.
- Most dwellings are place within a 5m radius of the centre.
- Variety of dwelling types is provided.
- Schools are located close enough so that most children can walk from their homes.
- Small playgrounds are provided and accessible to every dwelling.
- Buildings within the neighbourhood centre are placed close to the street to create a well defined outdoor room.
- Parking lots and garage doors rarely face the street.
- Streets are relatively narrow and shaded by rows of trees.
- The neighbourhood is organized to be self organizing.

Critique:

- The greatest shortcoming of Dauny and the Seaside development is the failure of recognizing that the form and complexity of tradition- al towns comes from the process that generated it.
- A mechanical method has been used to achieve this very large human scale effect.
- The framework is rigid and not derived form the organic give and takes events.
- The development has an 'unreal' quality which is probably why the town was an appropriate set for 'The Truman Show' movie.
- The layout of this urban design is however adaptabel and does al- low for appropiate interaction bewteen pedestrian and vehicualr systems.
- The layout allows for compactness of community facilities which is usefull for and intamate street character.
- Different activities have the oppertunity to become part of the cen- tral attractions because of appropriate access and adaptability
- Variation of activities are placed in close proximitry which allows for an interactive atmosphere of events that is desierable in terms of generating even more activity.
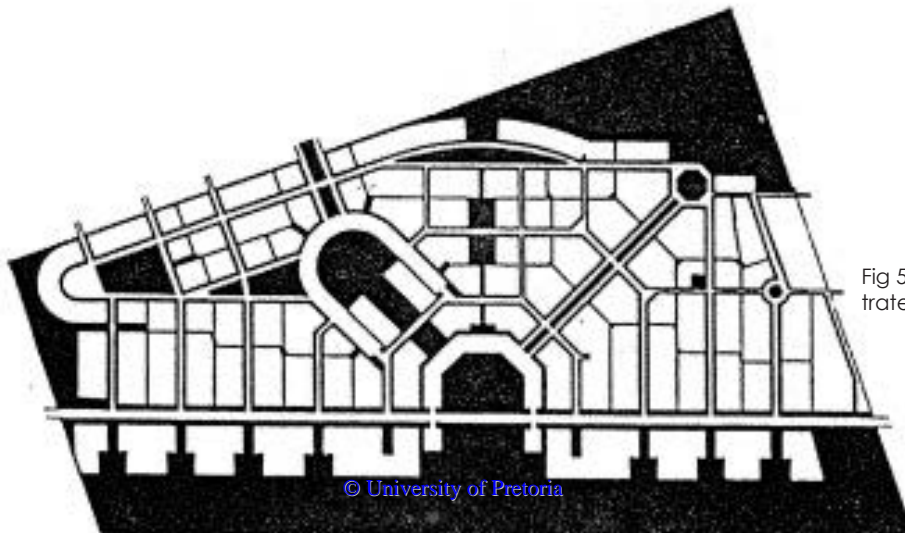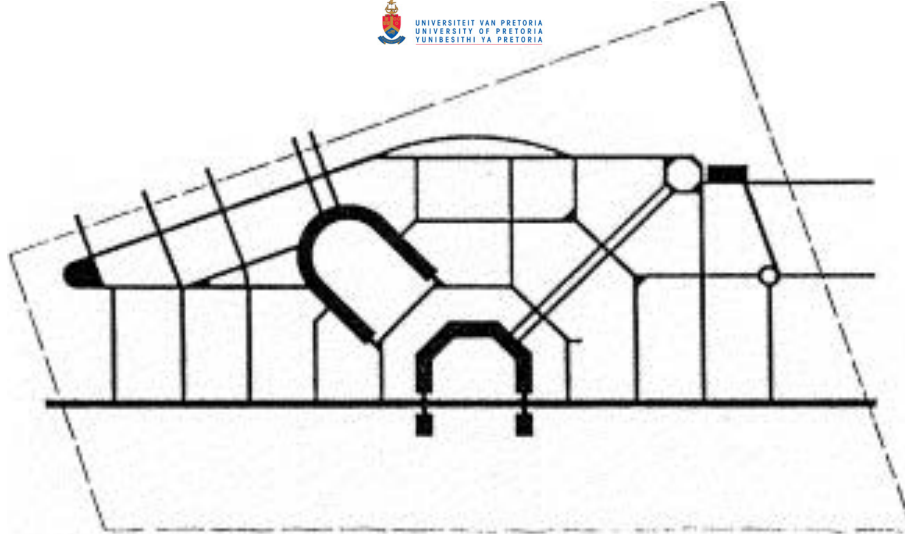
Fig 5.31_ Development, Florida, illustrated organizing design principles

06 Urban Framework

Fig 6.1_ The Campo Siena, Italy

"The Congress for New Urbanism views disinvestment in central cities, the spread of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society's built heritage as one interrelated community-building challenge.

We stand for the restoration of existing urban centers and towns within coherent metropolitan regions, the reconfiguration of sprawling suburbs into communities of real neighborhoods and diverse districts, the conservation of natural environments, and the preservation of our built legacy.

We advocate the restructuring of public policy and development practices to support the following principles: neighborhoods should be diverse in use and population; communities should be designed for the pedestrian and transit as well as the car; cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions; urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice.

We recognize that physical solutions by themselves will not solve social and economic problems, but neither can economic vitality, community stability, and environmental health be sustained without a coherent and supportive physical framework."

Charter of New Urbanism: CNU.com:2012

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Dissertation Stie

Fig 6.2_ Site Layout Plan, Existing
Urban Design Framework
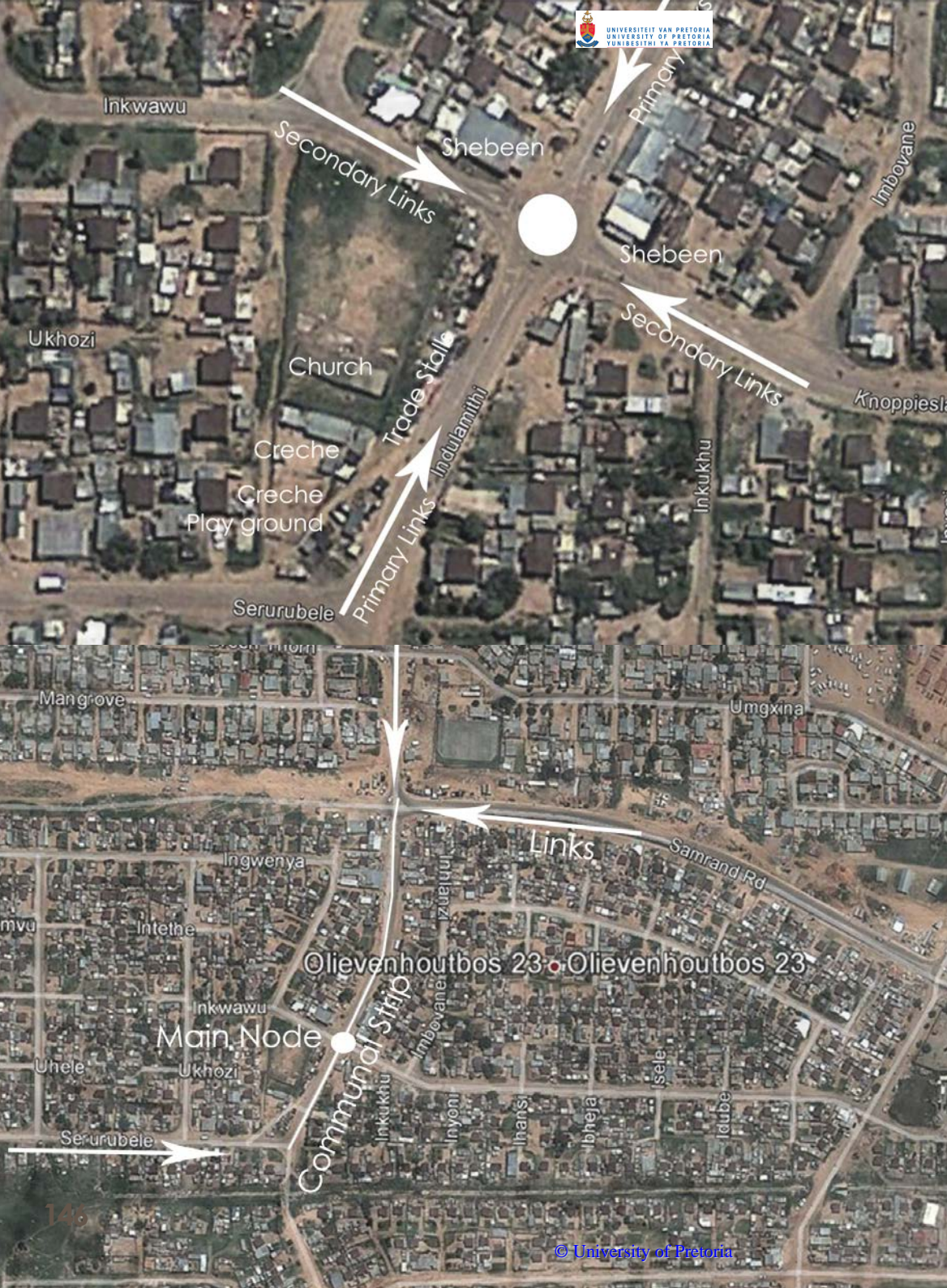
Fig 6.3_Communtiy life generated through linking space and activity - Olievenhoutbosch aerial photograph

6.1 Introduction

The "Osmosis" Framework proposal recognises the potential in the new urbanism theories in the process of transforming Olievenhoubosch Urban layout into a more integrated spatial framework. The existing proposal for the ABSA Ministerial Housing Estate will be used to incorporate a new spatial structure that aims to improve and enhance pedestrian life. This invesitgation aims to create a platform to incorporate child orientated design principles into the urban structure [child orientated design principles are complimented by new urbanism principles and supported by Jane Jacobs and Jan Gehl's theories, see chapter 4: 4.3]

Warm, intense contacts between people take place at a short distance. Small spaces and short distances convey a corresponding experience of warm, intense city environments, regardless of weather.

- Intimate Scale and Rhythm
- Street Transparency
- Appeal to many senses
- Texture and Detail
- Mixed Functions
- Vertical Facade Rhythms

Jan Gehl, 'Cities for People':2010

"Children, however too often get submerged within a public dominated by adults. The result for urban development scenarios is repeated 'collisions' between adults' and children's worlds, with children coming out the lower more often than not."

"To avoid such collisions it is necessary for planners to first acknowledge that children's interests should be explicitly acknowledged and represented in the planning process."

Creating Child Friendly Cities:2006

Indicators of community quality form children's perspectives as related to New Urbanism principles:

Positive Indicators:	New Urbanism Prinsiples:
1. Social Intergration: Children feel welcome and valued in their community.	Intergrated Diversity of use and population.
2. Cohesive community identity: The community has clear geogrphic boundaries and a positive identity that is expressed through activities such as art and festivals.	Identifieable Centres and Edges
3. Tradition of self-help: Residents are building their community through mutual aid organisations and progressive local imporvements.	Compactness and intimacy [Jan Gehl:2010]
4. Safety and free movement: Children feel that they can count on adult protection and range safely within their local area.	Pedestrian scale and personal interaction

"The New Urbanism is concerned with both the pieces and the whole. It applies principles of urban design to the region in two ways. First, urbanism defined by its diversity, pedestrian scale, public spaces and structure of bounded neighbourhoods – should be applied throughout a metropolitan region regardless of location in suburbs and new growth areas as well as within the city. And secondly, the entire region should be 'designed' according to similar urban principles. It should, like a neighbourhood, be structured by public spaces, its circulation system should support the pedestrian, it should be both diverse and hierarchical and it should have discernible edges."

Peter Katz:1994

Positive Indicators:	New Urbanism Prinsiples:
5. Peer gathering places: There are safe and accessible places where friends can meet	Defined public spaces
6. Varied activity settings: Children can shop, explore, play sports and follow up other personal interests in the environment.	Intergrated diversity of use and population
7. Safe green spaces: Safe, clean green spaces with trees, where formal or wild extensive or small, are highly valued when available.	Cities should be shaped by physically defined and universally accessible publc space.
8. Provision for basic needs: Basic services are provided such as food, water, electricity, medical care and sanitation.	Intergrated diversity of use and population
9.Security of tenure: Family members have legal rights over the properties they inhabit through either ownership or secure rental agreement.	Intergrated diversity of use and population

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6.2 ABSA Ministerial Housing Estate

The ABSA Ministerial Housing Estate forms the northern extension of Olievenhoutbosch [as introduced in Chapter 4: 4.1]. The development is much more formalized in comparison to the rest of Olievenhoutbosch. With no informal attachment or 'rent out' policies the development aspiers to a raised standard of living for the community. However in study-ing the proposed framework for the area as prepared by the Municipality of Tshwane, Gauteng Department of Housing, ABSA, ADA Urban Design, Bridge Africa and more, the 'Alice' dissertation project identified key problems to the placement of program, land zoning, and movement systems within the current proposal.

Fig 6.4_ Mix of Public Amenities and Activities
Site Layout, Existing Urban Design Framework

Business
Community Centre / Market
Clinic
Mixed Uses

Education
Crèche
Church
Public Squares / Open Space

Mix of Public Amenities & Activities
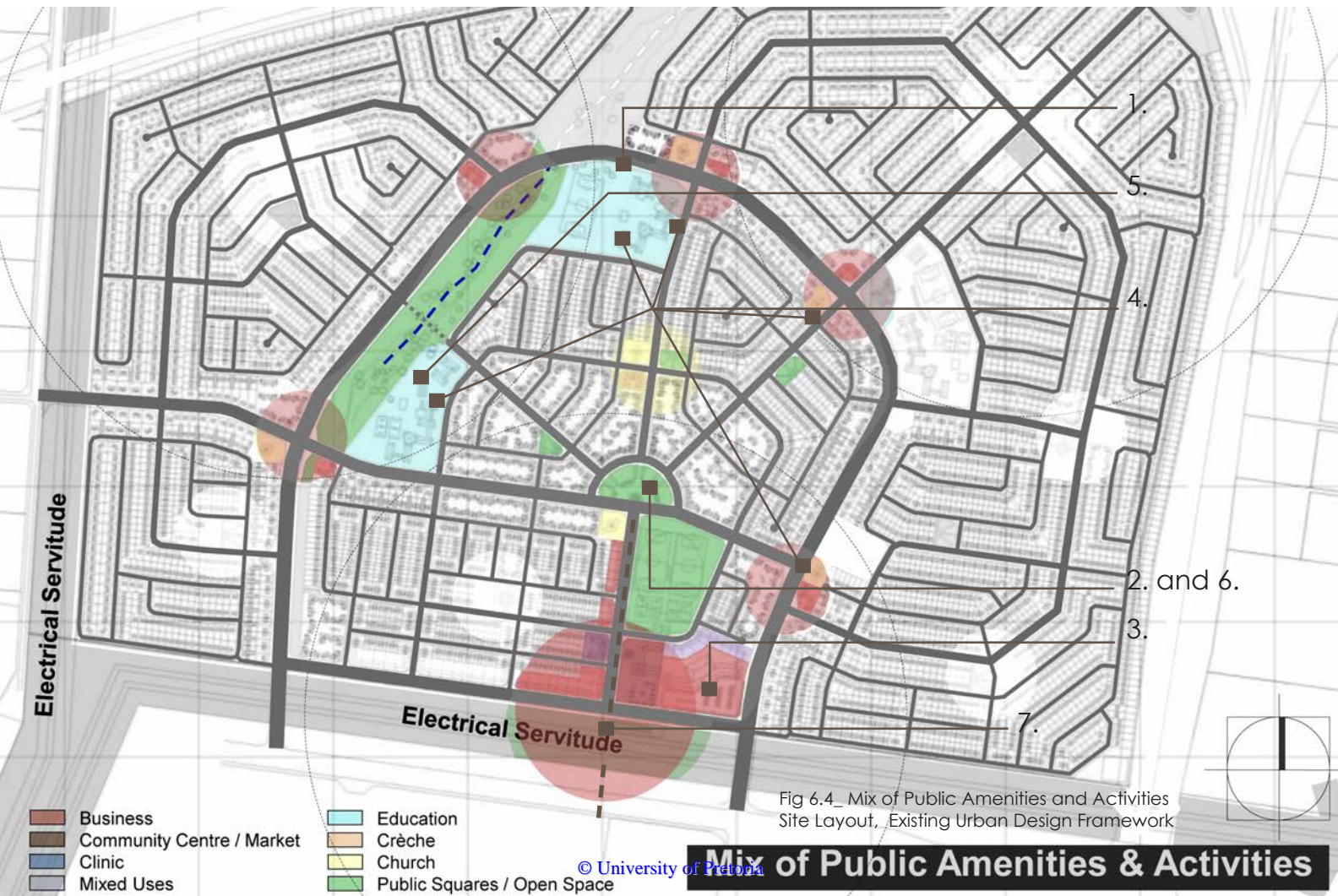
6.3 ABSA Proposal Critique

1. Vehicular orientated layout with limited pedestrian considerations concerning the link between the northern and southern parts of Olievenhoutbosch.
2. The proposed framework located a clearly defined neighbourhood centre point yet proposed that it be surrounded by social housing while it is seen as an open green space. This space has a lot of potential as a community gathering space and is currently poorly defined as such [Olievenhoutbosch desperately needs clearly defined community public spaces according to site analysis, see chapter 4]
3. The proposed business core is located on the edge of the framework with no indicated connecting element with the south of Olievenhoutbosch. It is also cut off by road systems with no pedestrian connection. This causes public amenities to be scattered and isolated and undermines their potential to function relative to each other.
4. Community facilities are currently spread out. A compact layout could improve location of public space and lend an intimate scale to a current isolated system
5. Schools are allocated next to protected green space that will cause a dead edge and poses a threat to school safety and multifunctional usefulness.
6. The proposal reveals a lack of defined and facility supported community gathering space. This is an existing problem within Olievenhoutbosch.
7. No proper link is proposed between the northern extension and the existing southern Olievenhoutbosch community core.

[see fig 4]

Community Cores

N14

Electrical Servitude

Electrical Servitude

	Business		Education
	Community Center/Market		Creche
	Clinic		Church
	Mixed uses		Public Square/Open Space

Deviding Elements - Servitudes

Fig 6.5_ Olievenhoutbosch nolly map, illustrating separated community cores through servitude strips as dividing elements

Connecting Ring Road

Mix of Public Amenities & Activities

Fig 6.6_ Mix of Public Amenities and
Activities Site Layout, Existing Urban
Design Framework

Pedestrian Link -
Promonade

Fig 6.7_ Olievenhoutbosch nolly map, illustrat-
ing separated community cores proposed link

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6.4 Osmosis Framework Possibilities:

- Incorporating a pedestrian orientated layout that is supported by transit systems and vehicles.
- Defining a legible community centre that is shaped and activated by community facilities and serves as a point of destination and orientation.
- Incorporating a connection system to link the newly formed community centre with the existing community core to the south via a pedestrian boulevard that can also support vehicular movement[this route is already starting to develop naturally].
- Providing a framework that allows many activities of daily living to be placed within walking distance allowing independence to those who do not and cannot use vehicular systems especially the elderly and the youth.
- Providing a community gathering space intended for intimate interaction for diverse age groups. This spatial arrangement aims to also serve as an extended school system in order to intergrate community education with community activities, while also incorporating formal development spaces for the youth of the community.

The proposed program allocation has been developed from the existing proposed: Mix of Public Amenities and activities [see fig 4]; as indicated on the ABSA Ministerial Housing Estate Framework.

The proposed amenities were relocated and extended in terms of local need to apply and strengthen the 'Osmosis' Framework: Detail Study Area in terms of New Urbanism and the Extended School theories.

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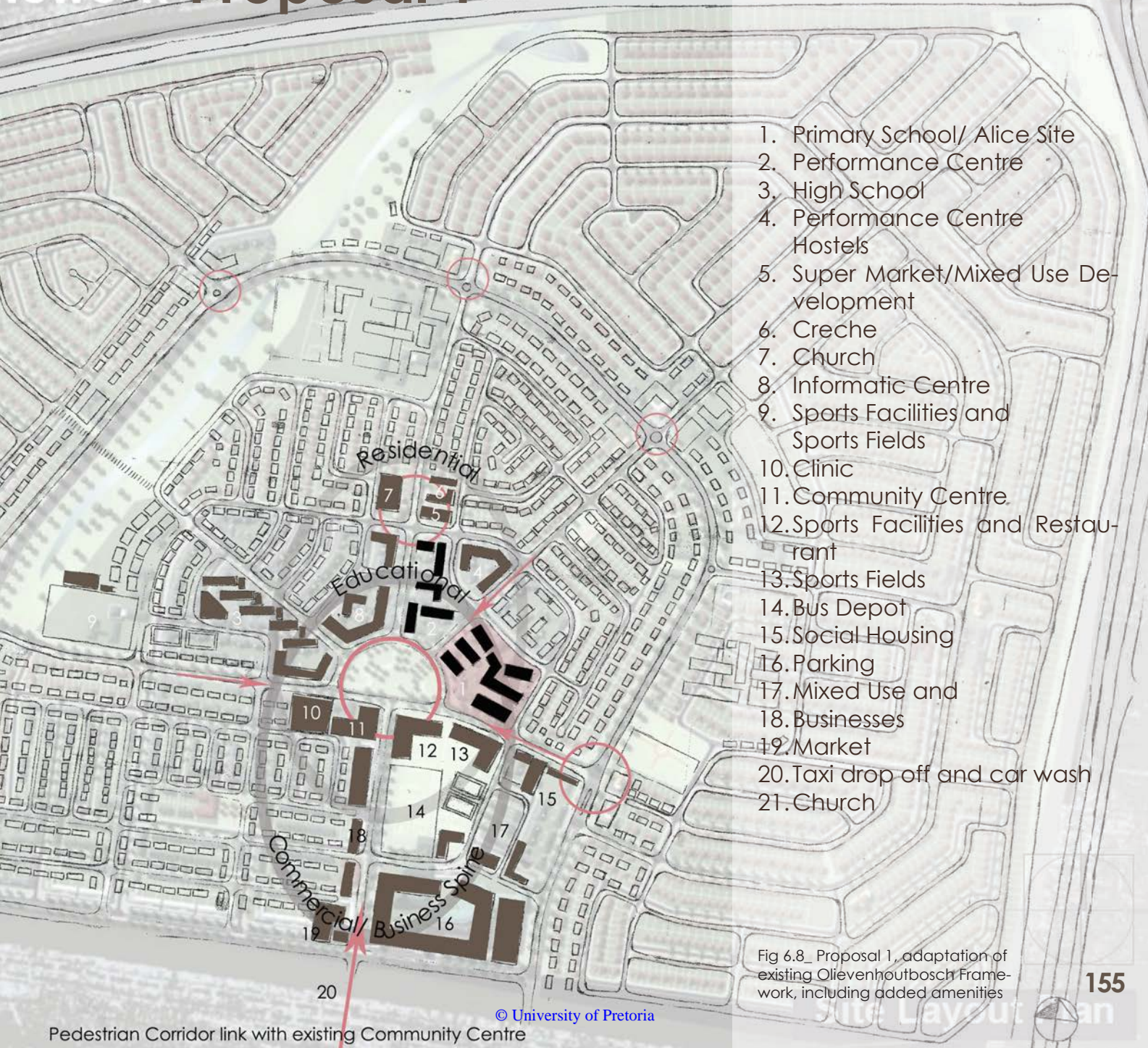
1. Primary School/ Alice Site
2. Performance Centre
3. High School
4. Performance Centre Hostels
5. Super Market/Mixed Use Development
6. Creche
7. Church
8. Informatic Centre
9. Sports Facilities and Sports Fields
10. Clinic
11. Community Centre
12. Sports Facilities and Restaurant
13. Sports Fields
14. Bus Depot
15. Social Housing
16. Parking
17. Mixed Use and
18. Businesses
19. Market
20. Taxi drop off and car wash
21. Church

Residential

Educational

Commercial/ Business Spine

Pedestrian Corridor link with existing Community Centre

Fig 6.8_ Proposal 1, adaptation of existing Olievenhoutbosch Framework, including added amenities

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'Osmosis' Framework: Detailed Study Area Proposal 1 improvements:

- The Performance Centre was relocated to strengthen the Educational and Community Centre's gateway from the south
- The relocation of the Performance Centre caused the Community Centre and Clinic to move up in order to strengthen the community core regarding balanced adult and youth activities
- Social Housing/Mixed Use was incorporated to increase central community core activity in terms of daily use diversity.

"Integration of various activities and functions in and around public spaces allows the people involved to function together and to stimulate and inspire one another."

Jan Gehl: 2011

Proposal 2

Educational and Community Facility Centre

'Alice' site

Residential

Educational

Commercial/ Business Spine
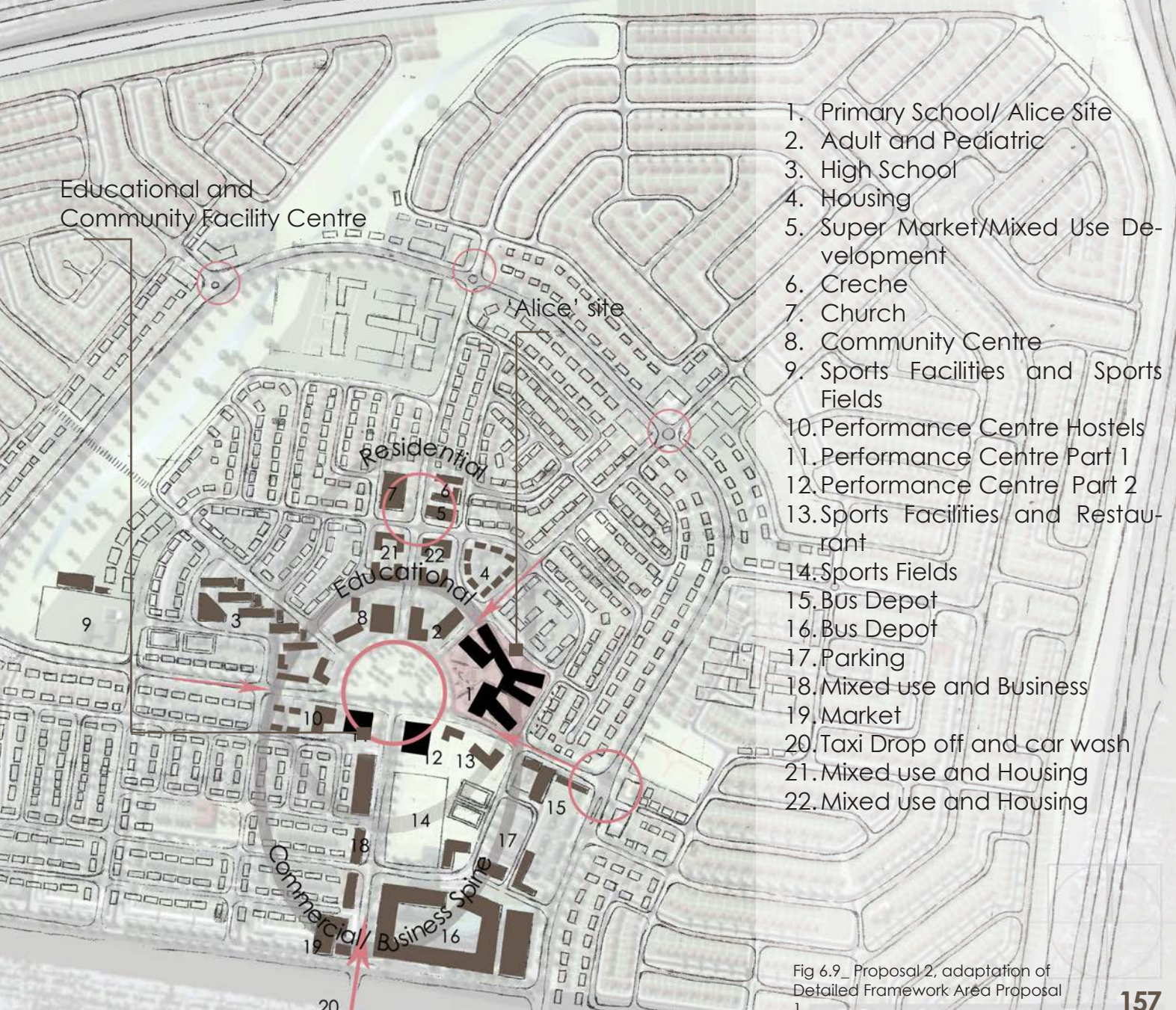
1. Primary School/ Alice Site
2. Adult and Pediatric
3. High School
4. Housing
5. Super Market/Mixed Use Development
6. Creche
7. Church
8. Community Centre
9. Sports Facilities and Sports Fields
10. Performance Centre Hostels
11. Performance Centre Part 1
12. Performance Centre Part 2
13. Sports Facilities and Restaurant
14. Sports Fields
15. Bus Depot
16. Bus Depot
17. Parking
18. Mixed use and Business
19. Market
20. Taxi Drop off and car wash
21. Mixed use and Housing
22. Mixed use and Housing

Fig 6.9_ Proposal 2, adaptation of Detailed Framework Area Proposal 1

Pedestrian Corridor link with existing Community Centre

Educational Hub

Agricultural Node

Community Node

Civic Centre

Sports Centre
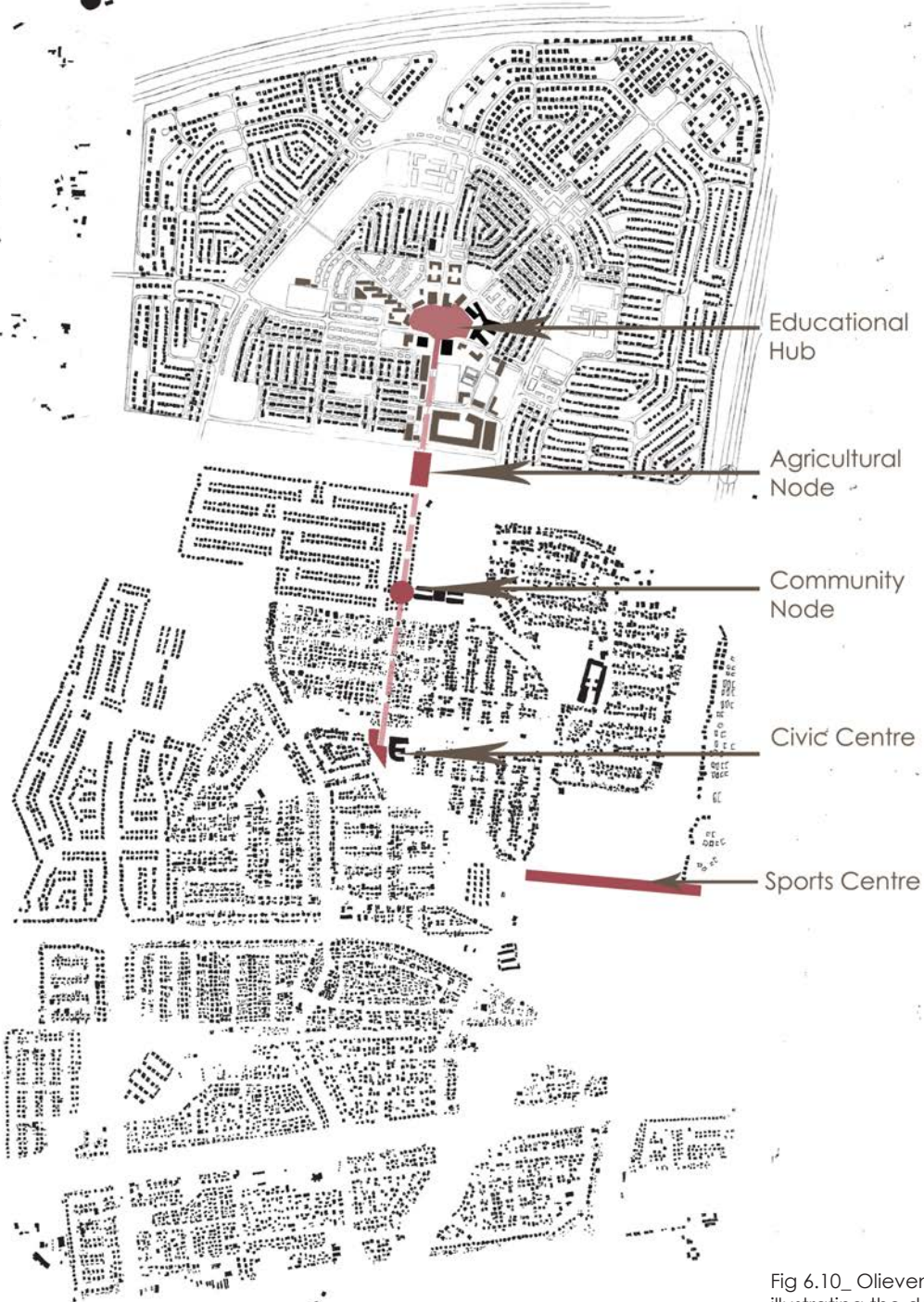
Fig 6.10_ Olievenhoutbosch nolly map, illustrating the development of nodal activity along the proposed pedestrian and community centred connecting

" As a concept, "life between buildings' includes all of the very different activities people engage in when they use common city space: purposeful walks form place to place, promenade, short stops, longer stays, window shopping, conversations and meetings, exercise, dancing, recreation, street trade, children's play, begging and street entertainment. Walking is the beginning, the starting point. Man was created to walk, and all of life's events large and small develop when we walk along other people. Life in all its diversity unfolds before us when we are on foot. In lively, safe, sustainable and healthy cities, the prerequisite for city life is good walking opportunities. However, the wider perspective is that a multitude of valuable social and recreational opportunities naturally emerge when you reinforce life on foot."

Jan Gehl, 2010: page 19

Detail Study Area

Alice Site
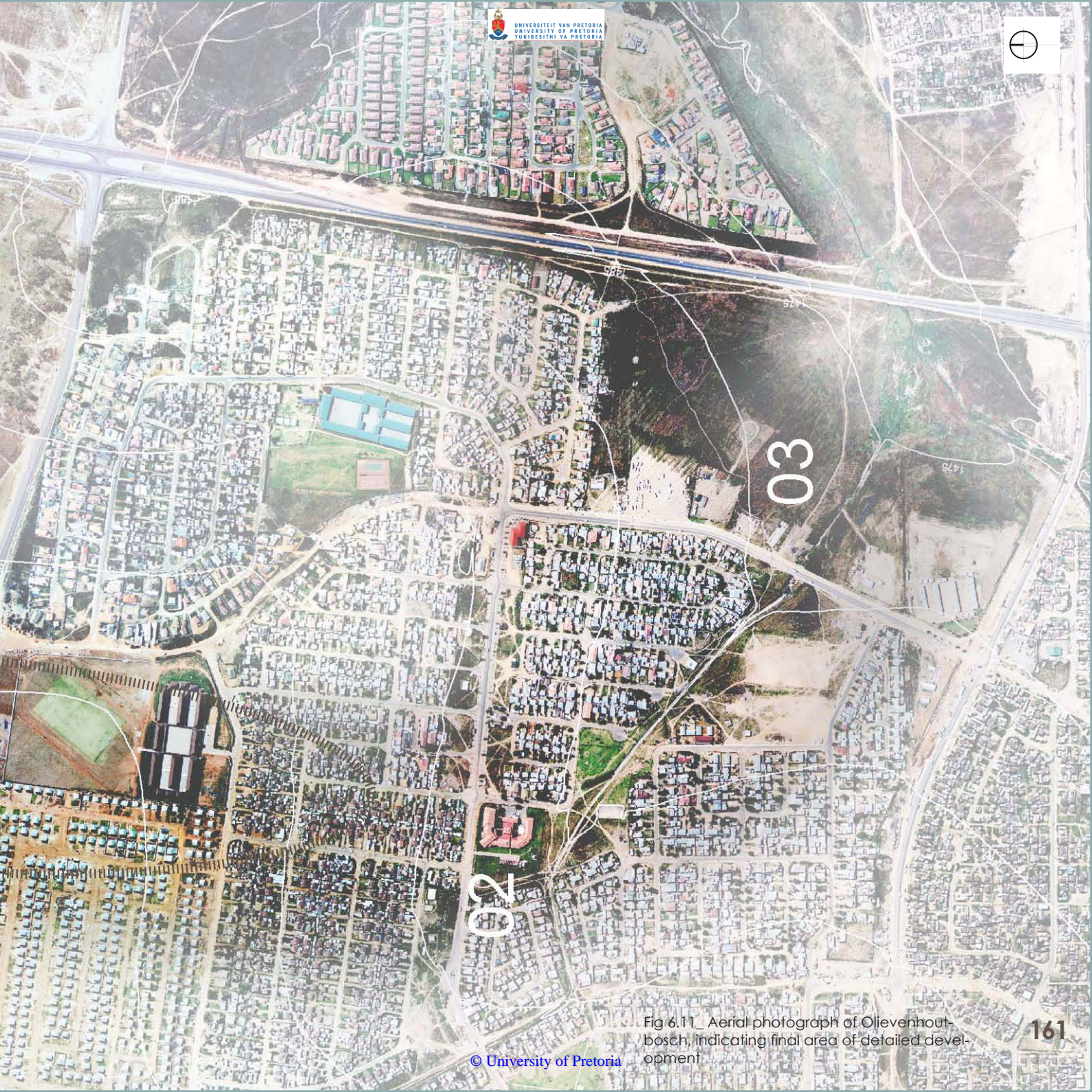
Fig 6.11_ Aerial photograph of Olievenhout-bosch, indicating final area of detailed development

Fig 6.12_ Final Development Framework Proposal, Land Use Framework existing and proposed conditions

Community

Business

1 Storey Residential

2 Storey Residential

Open Green Space

Urban Agriculture

Mixed Use
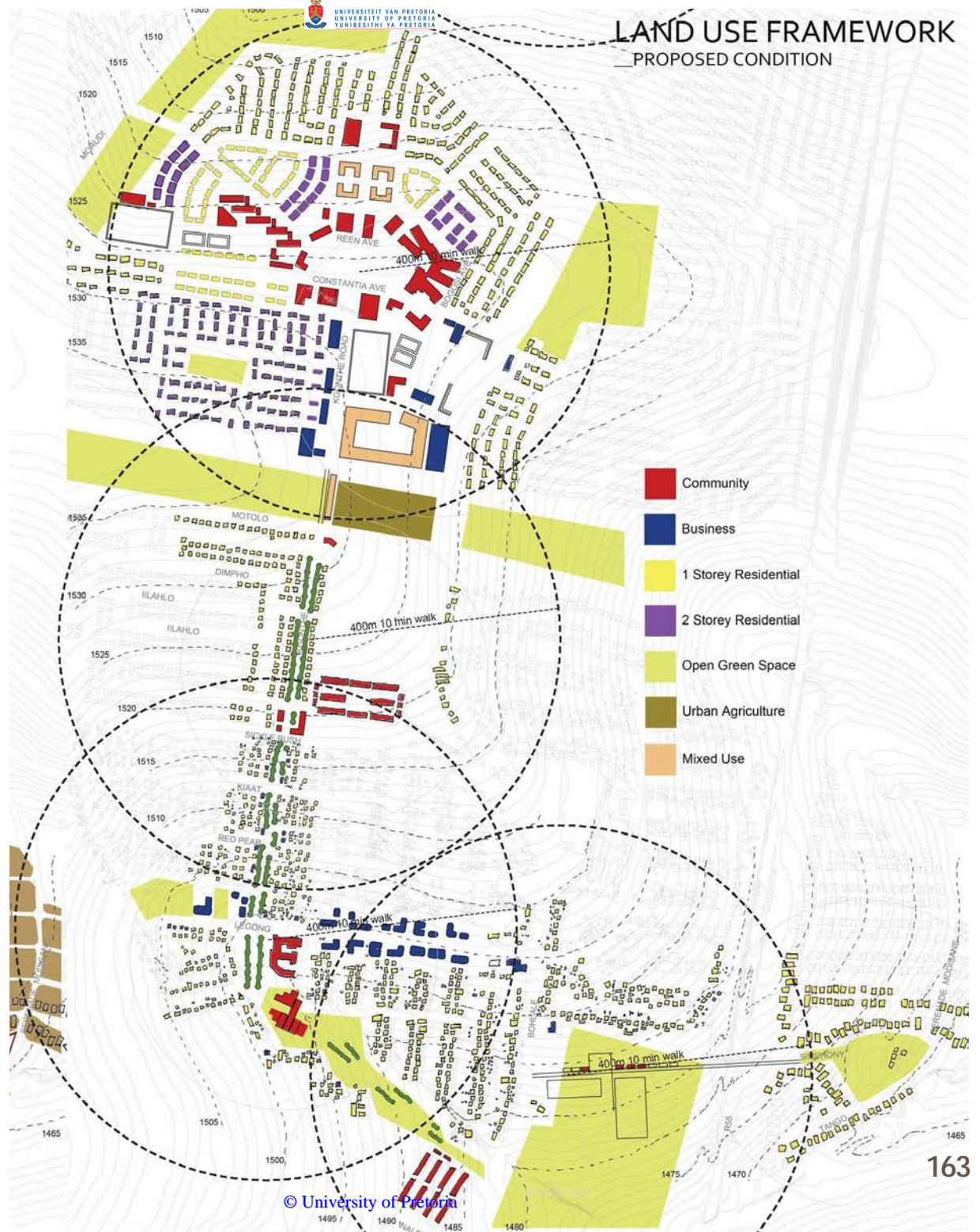
Fig 6.13_ Final Development Framework Proposal, Master Plan existing and proposed conditions

MASTER PLAN
__PROPOSED CONDITION

01

02

03

BUILT BLOCKS

PUBLIC PLACES

OPEN SPACES

Steve Tshwete
High School

Walter Sisulu
Primary School

400m 10 min walk

165

0   200   400   600   800
                              Meters
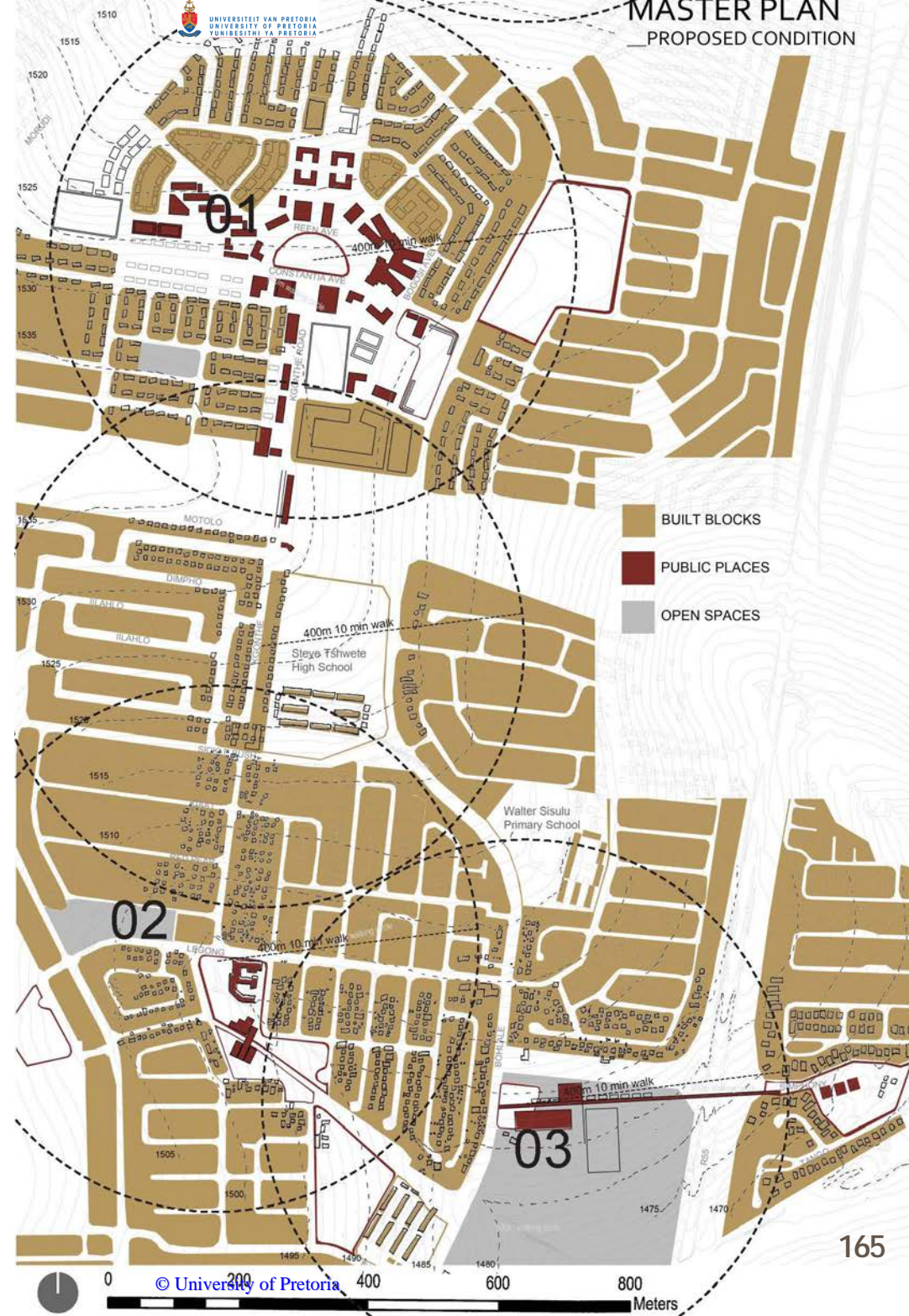
Fig 6.14_ Final Development Framework Proposal, Spatial Framework Plan existing and proposed conditions

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Primary Spatial Structure

Secondary Spatial Structure

400m 10 min walk

REEN AVE

CONSTANTIA AVE

MOTOLO

DIMPHO

IILAHLO

IILAHLO

SICKLE BUSH

KIAAT

RED PEAR

TANGO

R55

167

0   200   400   600   800
Meters

6.6 Theory on Macro Scale: Extended School System to Community facilities and educational centre:

After studying the existing proposal for ABSA Ministerian Housing Estate, possibilities revealed themselves on how this layout can be used to prove the theoretical argument of a 'learning city'. The existing framework has the following that pose useful:

1. A centrally located public space
2. Surrounding proposed schools that can be integrated.
3. A spine that runs from the newly defined community centre to the existing southern community core.
4. Proposed business and mixed use amenities that can be relocated.
5. A public sports facility south east of the proposed community public square that can be made public while serving as educational facility.
6. The main bus depot is located just east of the new community core
7. Urban layout has the potential to serve as a educational core that can serve and support child orientated urban design principles

The existing layout together with proposed improvements in terms of zoning and placement of public amenities support the extended school concept of:
• Central location as new urban centre
• Integrating community facilities with learning spaces
• Allowing the 'Alice' project to integrate spaces for study and socializing through creating opportunities to enhance the interplay between inside and outside micro climates.

The urban layout allows for a social spatial model where everything is in one place. Children and adult activities have the potential of integrating and cross discipline interaction becomes possible. This allows for a richer informed learning environment where children are also considered in the process of the urban layout design.

"The rejection of monofucntional areas is a prerequisite for the integration of various types of people and activities. If the possibilities are to be redeemed, planning and design work at the medium and the very small scale are decisive factors. For example, schools can be located in the middle of a housing development and still be effectively separate from the surroundings – by fences, walls, and lawns. But schools can also be designed as an integral part of housing. Classrooms, for example can be placed around the city public streets, which than serves as a corridor and playground. The cafe on the square doubles as the school cafeteria, and the city thus becomes a part of the educational process."

Jan Gehl:2011

Fig 6.15_ Northern Extension of Olievenhoutbosch, children street activity

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6.7 Detail Study Area: A.L.I.C.E Site

Contextual Oppertunities_

1. Location of 'Alice' Greenfield site
2. Proposed public green space that has not been developed to its full potential in terms of location [Proposed as part of the developed Ministerial Housing Estate]
3. Proposed sports facilities and soccer field that could function as the proposed 'Alice' school's sports fields and infrastructure [Proposed as part of the developed Ministerial Housing Estate]
4. Existing Bus Depot that will function as the children's public transport system from and to school.
5. Existing business strip with ABSA facilities
6. Informal business strip that leads activity towards the dissertation site
7. Proposed school grounds A [Proposed as part of the developed Ministerial Housing Estate]
8. Proposed school grounds B [Proposed as part of the developed Ministerial Housing Estate]
9. Proposed crèche and mixed use facilities [Proposed as part of the developed Ministerial Housing Estate]
10. Activity spine formed through the existing developed urban design layout leading towards the central green spaces, linking the centre with surrounding activity nodes to the north.
11. Existing ring road that functions as the bus services main route
12. Visual link connecting the southern Olievenhoutbosch community core with the new extension to the north [Olievenhoutbosch Ministerial Housing Estate]. This link already starts to function as a pedestrian activity link.
13. Secondary activity links connecting activity nodes on the periphery to the central community space.

Fig 6.16_ Contextual opportunities within study area

"Children in cities need a variety of places in which to play and to learn. They need, among other things, opportunities for all kinds of sports and exercise and physical skills – more opportunities, more easily obtained, than they now enjoy in most cases. However, at the same time they need an unspecialized outdoor home base from which to play, to hang around in, and to help form their notion of the world."

Jane Jacobs:1961

Fig 6.17_ Photo montage of surrounding site conditions

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Proposed Contextual Redevelopment [see page 170-171: Urban Framework Proposal 2]_

1. Location of 'Alice' Primary School site
2. Proposed public green space transformed to a central community square framed by educational and public amenities that will create an active urban edge around the square [Reen Ave]
3. Proposed Housing block with parking that will also provide the 'Alice' site with parking.
4. Existing bus depot will provide the area with accessible public transport
5. Children's bus stop will be provided for integrated safety of the local youth
6. Proposed sports facilities that will serve the public's needs as well as the proposed 'Alice' schools' across the road. A sports club house and restaurant facilities will frame the street in order to form an active urban edge along Constantia Ave.
7. Originally proposed school grounds to the north west will move south east to frame the square's north western edge. The original site will be transformed into public sport grounds that will also serve the school.
8. Newly proposed taxi rank activity node along proposed pedestrian promenade that will function as one of the promenades' activity generators.
9. Proposed pedestrian promenade along Kgnothe Road will function as a link between the newly developed community hub of the northern extension and the existing southern community core of Olievenhoutbosch
10. Proposed ring road bus route

8.

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Constantia Ave

7.

Kgonthe Road

Reen Ave

2.

1.

3.

11.

6.

5.

4.

9.

10.

Morudi Road
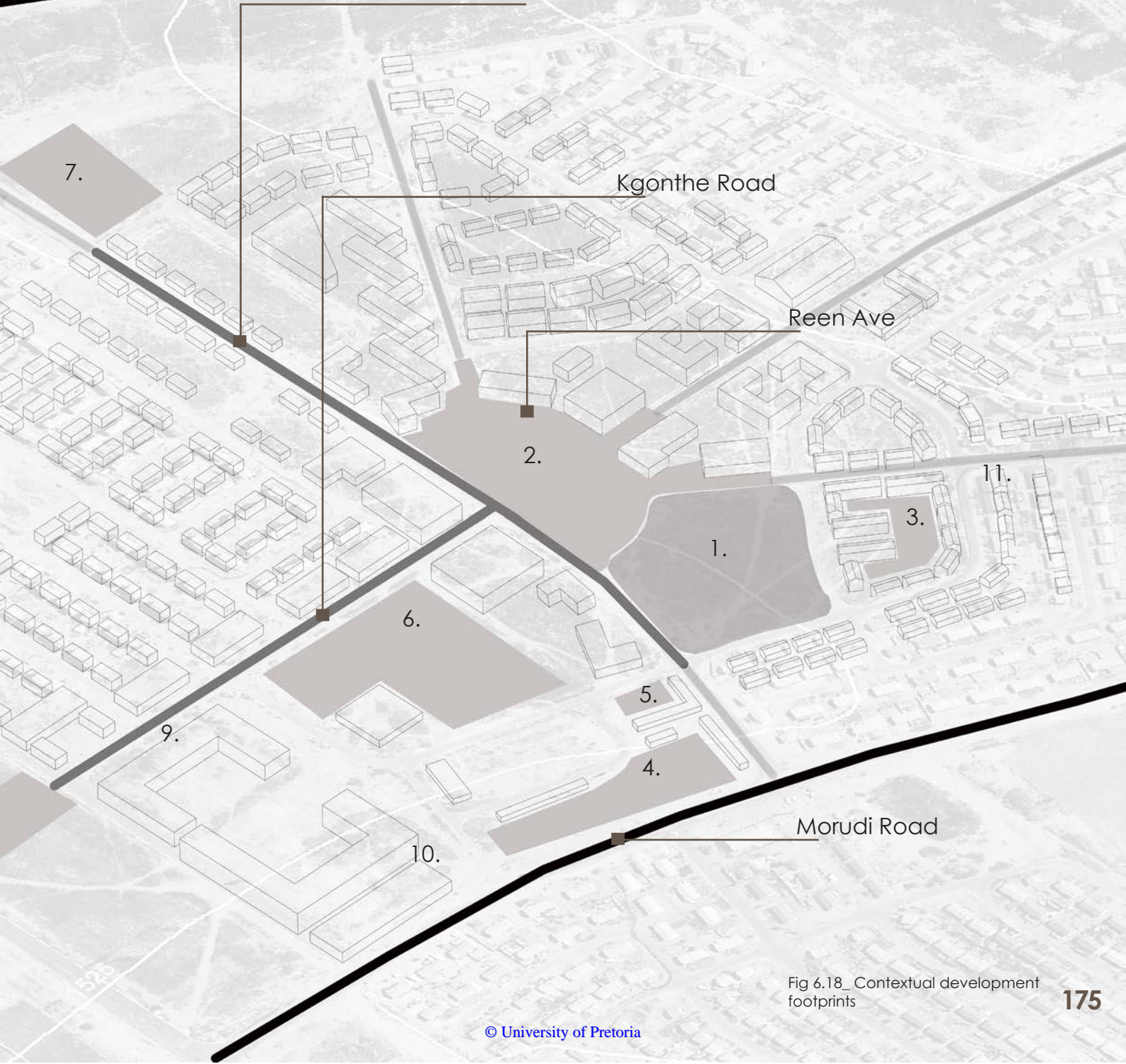
Fig 6.18_ Contextual development footprints

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Pragmatic Influences on mass development_

Edge:

A. Continuation of public space folding into site
B. Primary links feeding the site with activity
C. Ground level forming active urban edges feeding off public square activity
D. Secondary movement causes edge to be utilized as pause and movement spaces
E. Quiet edge for more intimate interaction
F. Central Space of activity integration framed by edges of 'urban' activity
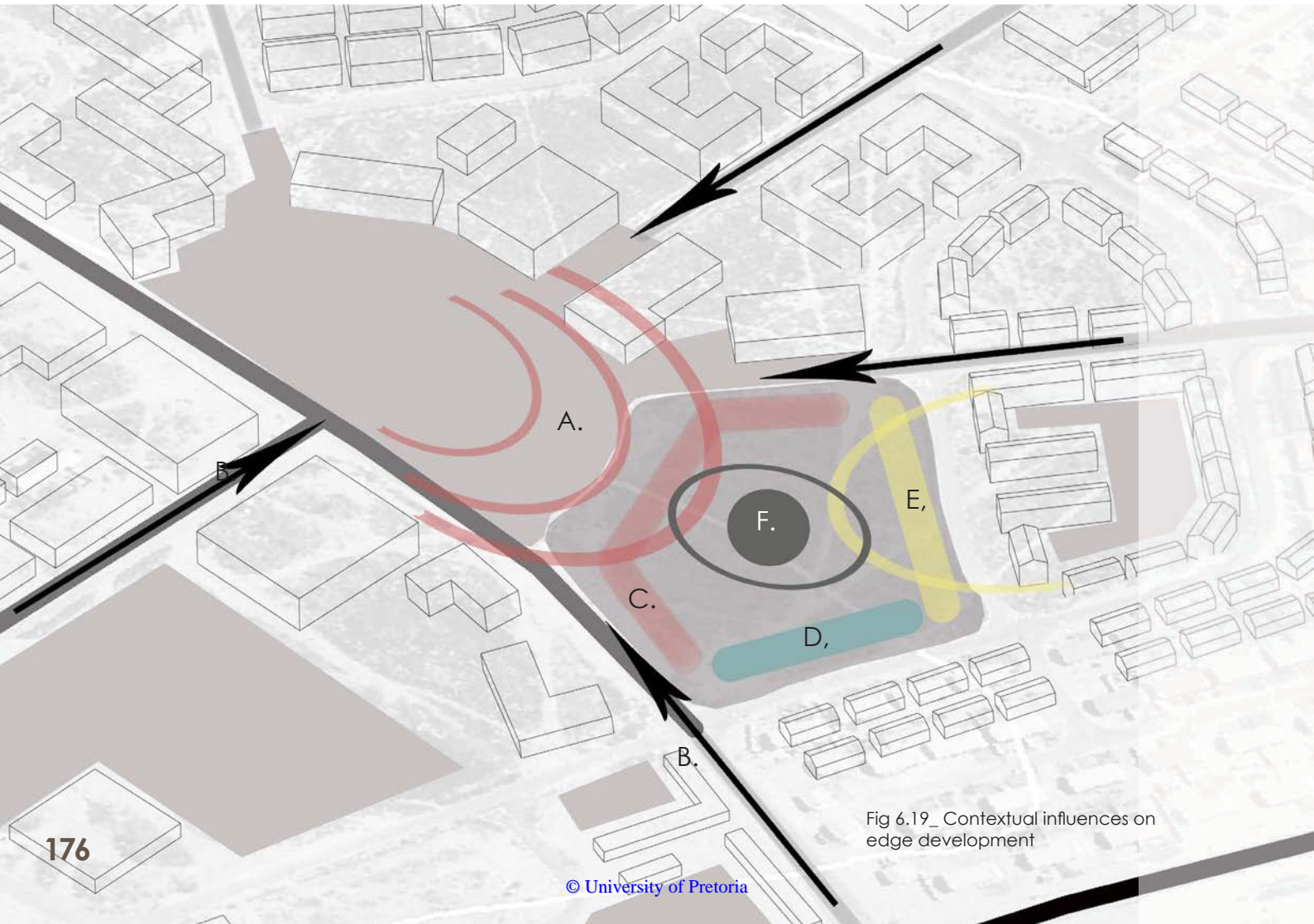
Fig 6.19_ Contextual influences on edge development

Access:

A. Proposed community square acts as main generator for the school's public program allocation and arrangement. It creates the primary link to the public square, addressing the schools double function as a public space and extending the macro scale theory into the micro scale design.
B. Secondary access point to public amenities provided by the school
C. Visual access to interior micro climate activities
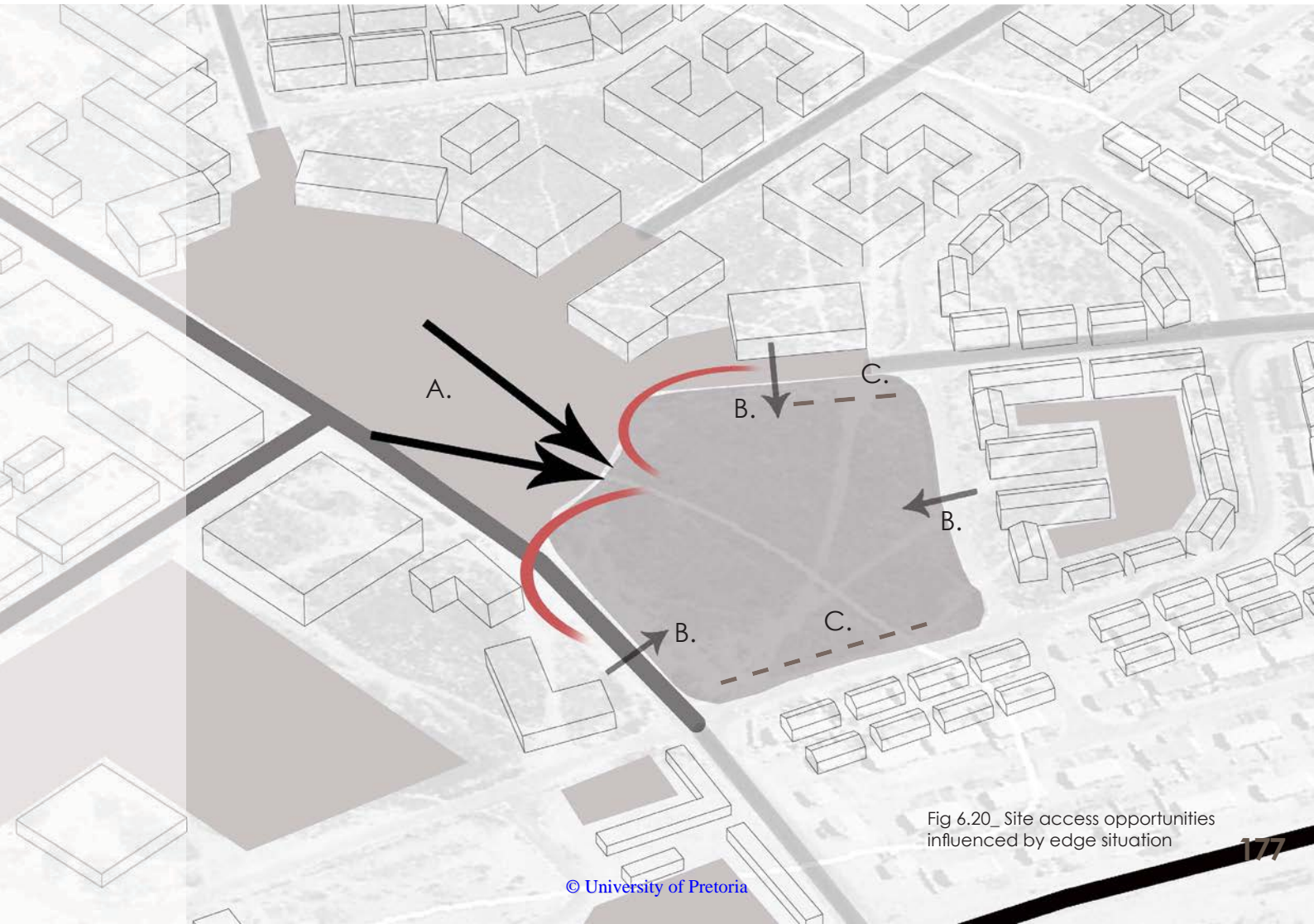
Fig 6.20_ Site access opportunities influenced by edge situation

Climate:

- The site is mostly open with a max of 3 storey masses to the NW and SW edges of the site.
- Courtyards will be positioned to cool down northern facades, allowing E to SE wind circulation through site in summer time while positioned massing will act as buffer for winter SW winds.

Sun

Wind
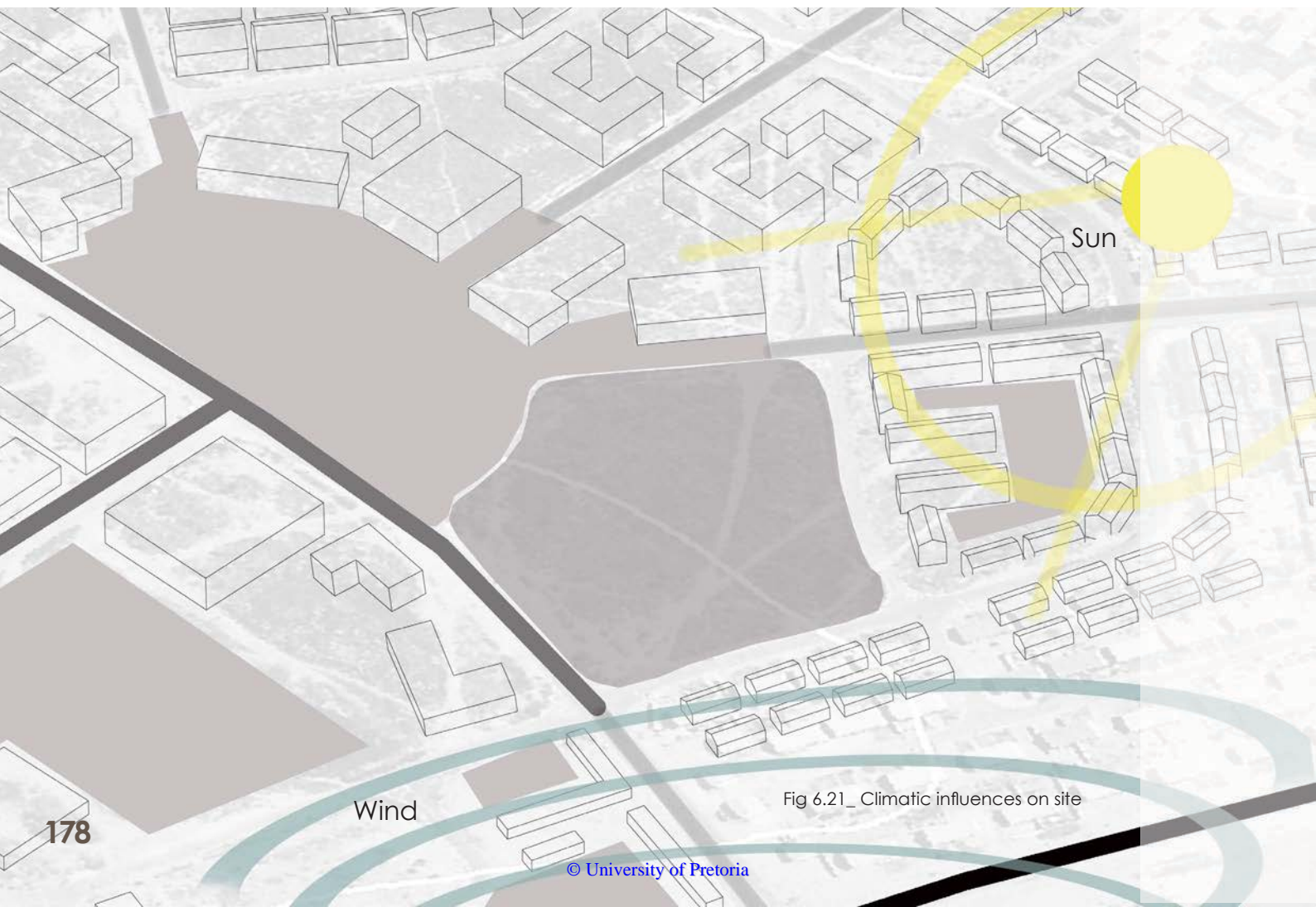
Fig 6.21_ Climatic influences on site

Routes:

A. The route from the public square forms a main artery that cuts through the site. It becomes a very important element in the site layout and positioning of public thresholds.
B. Secondary routes from the boundary activity links assist the primary route in strengthening site interior public spaces in terms of public program and spatial arrangement.
C. The street boundary route forms edge thresholds that respond to pedestrian and vehicular movement, including their response to interior micro climates.
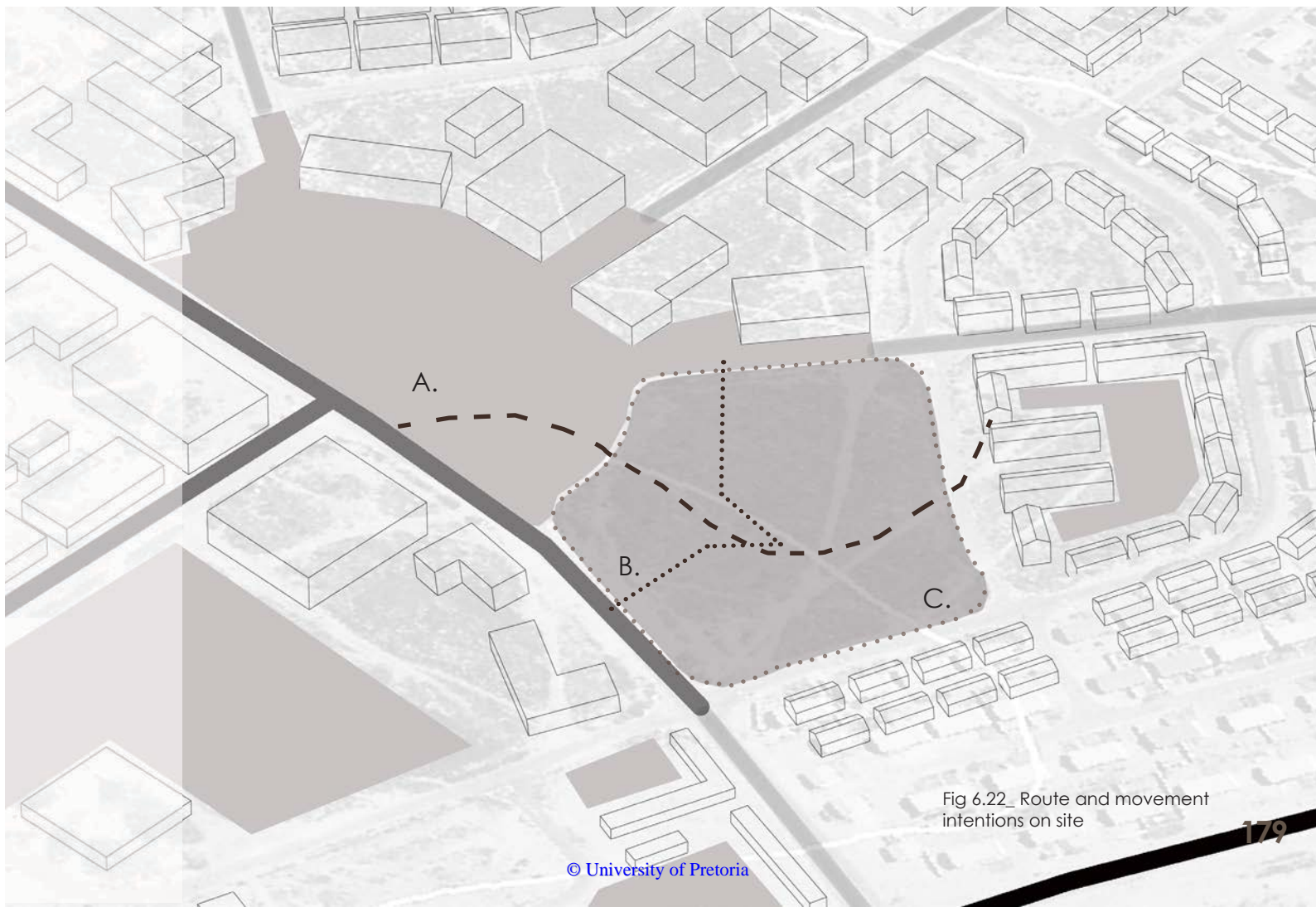
Fig 6.22_ Route and movement intentions on site

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"Planners do not seem to realize how high a ratio of adults is needed to rear children at incidental play. Nor do they seem to understand that spaces and equipment do not rear children. These can be useful adjuncts, but only people rear children and assimilate them into civilized society."

"The opportunity of playing and growing up in a daily world composed of both men and women is possible and usual for children who play on lively diversified city sidewalks. I cannot understand why this arrangement should be discouraged by planning and by zoning. It ought, instead, to be examining the conditions that stimulate mingling and mixtures of work and commerce with residences."

"The diversity, of whatever kind, that is generated by cities rests on the fact that in cities so many people are so close together and among them contains so many different tastes, skills, needs, supplies and bees in their bonnets."

Jane Jacobs: 1961

Fig 6.23_ Olievenhoutbosch,
'Marabastad" community corridor,
child-adult street activity

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Concept Development

07
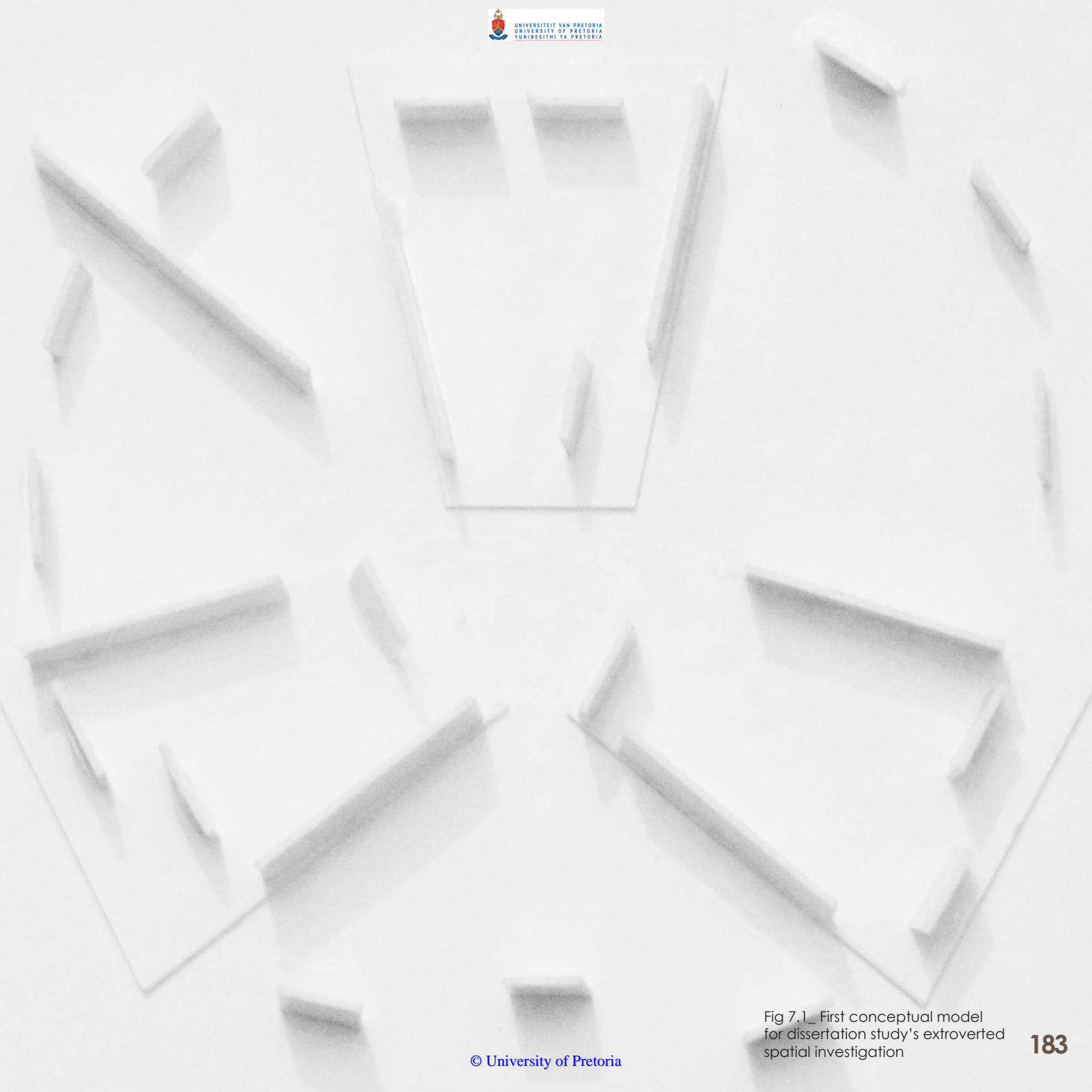
Fig 7.1_ First conceptual model
for dissertation study's extroverted
spatial investigation

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7.1 Theory on Micro Scale: School as City in Miniature

The concept behind the design development is based on the principle of relativity. This implies that the macro scale theory of the urban layout influences and informs the micro scale theory of the design.

Extended School Theory [City of Learning] - City in miniature Theory [Network of learning]

Relating back to the theoretical principles of Chapter 2 and 3 the conceptual development focused on strengthening and creating spatial links between the proposed 'Alice' Primary School and the surrounding community. The aim is to move away from the 'spatial mass' concept of institutional layout; which includes isolated, functionally dominant and intimidating spaces. The design rather aims to move towards a concept of a 'spatial network', linking academic and social spaces in the process of integrating with the surrounding urban context. The design process looks at learning as the logical approach to the concept of space creation, as discussed in Chapter 3, by translating the concept of 'links' to the idea of a network of 'paths' [visually and physically]. This idea is then related to the network of a city scape, and the components it comprises of [Hertzberger, H:2008]. These components than become the organizational elements by which the design is interpreted and developed as a 'City in Miniature'.

The city scape is interpreted through different components, which enables spaces to draw people in:
• Corridor as street
• Classroom as domestic domain
• Junction of the streets as central square

Spatial Organization Conceptualization: Educational Environment as a mother's womb

- Placenta – Site Edge Activity that sustains the internal space
- Chorion – Communal anchoring element of school grounds
- Umbilical cord – Accessible and controlled circulation
- Amnion – Cluster of functional space
- Fetus – Classroom / Core space
- Mother – Surrounding community neighbourhood
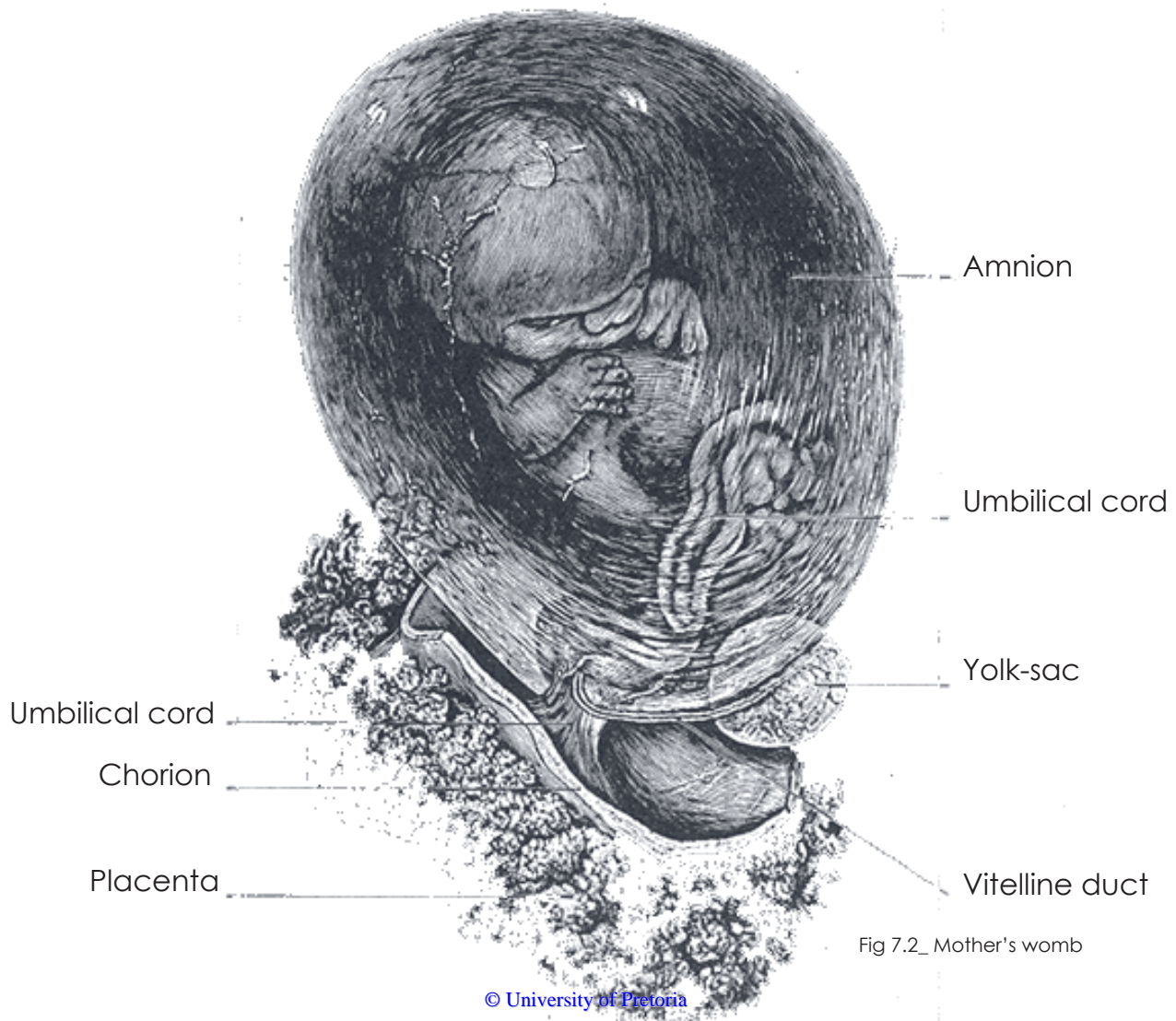
Fig 7.2_ Mother's womb

These components form a new dimension of communal space in the process of transforming the proposed public school into a public space. This requires the emphasis to be placed on the social spaces, creating an open and legible structure that allows quality learning and thinking possibilities to be readily accessible. This will be made possible through a system of academic spaces which allows and provokes communal interaction forming a 'Network of Learning'. Ultimately the design concept spatially focuses on a network that could systematically introduce and integrate the children into society by providing an experience parallel to the social network he/she is involved in [Scharoun,H:1978:16]. The concept is to extrovert the school spatially and functionally to the community beyond and allowing a children's space to become a dominant developing part of the community and its youth.

Macro Scale - Learning City

Links

Micro Scale - Network of learning
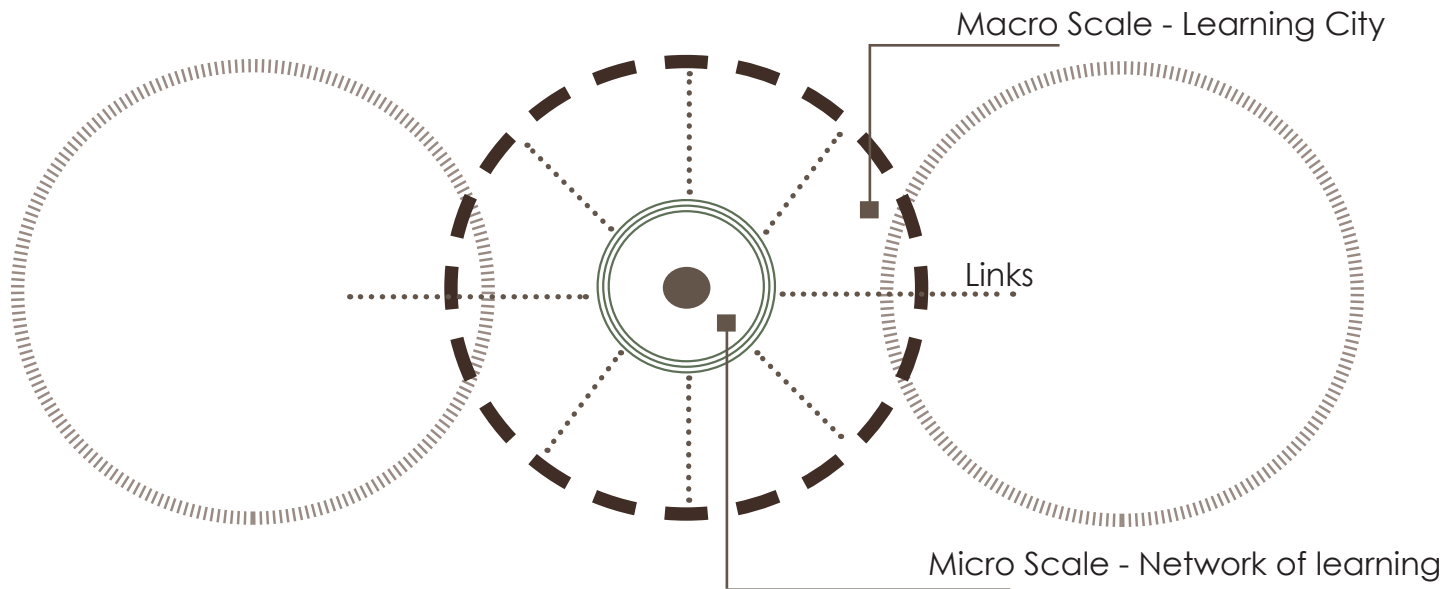
"I don't want a childhood city. I want a city where children live in the same world I do."

Ward 1978:204 – Children in the City

7.2 School Plan Typology Investigation

Legend:

- ■ Building Mass
- ■ Communal Space
- ■ Fenced Edge
- ■ Play Space

- **AD** Administration
- **E** Entrance
- **C** Communal
- **A** Academic
- **SF** Sport Fields
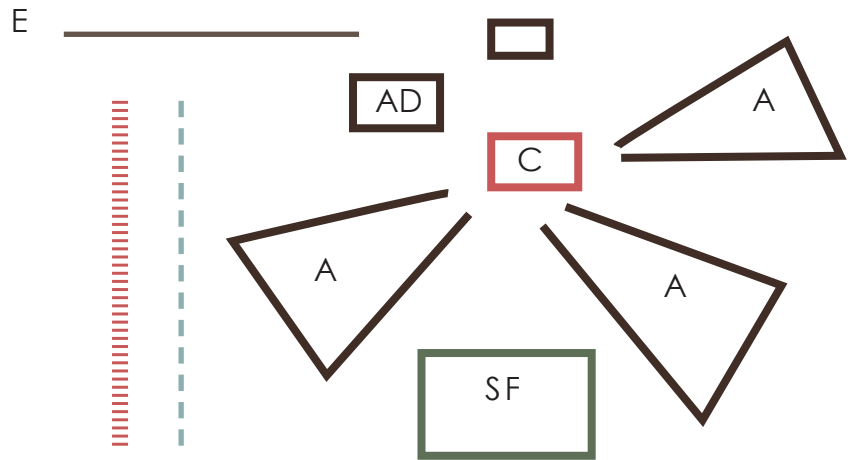
Typology 1_ Meetse-a-Bophelo Primary School
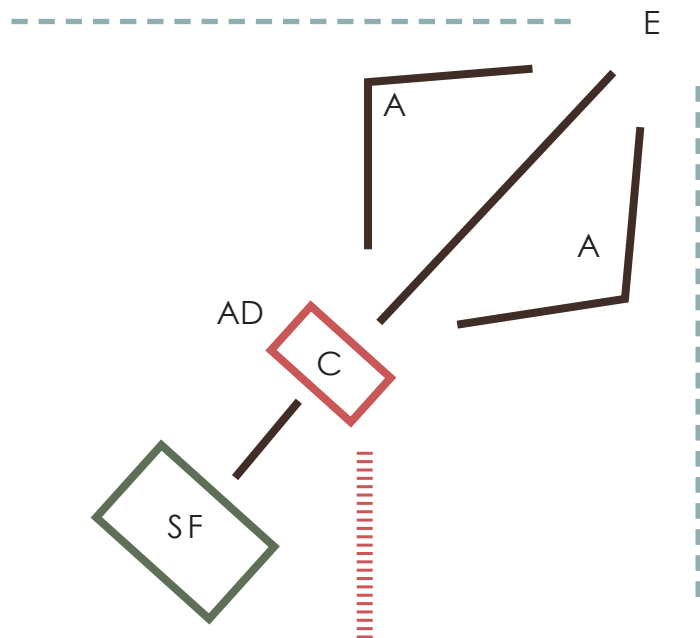
Typology 2_ Seven Fountains Priamry School
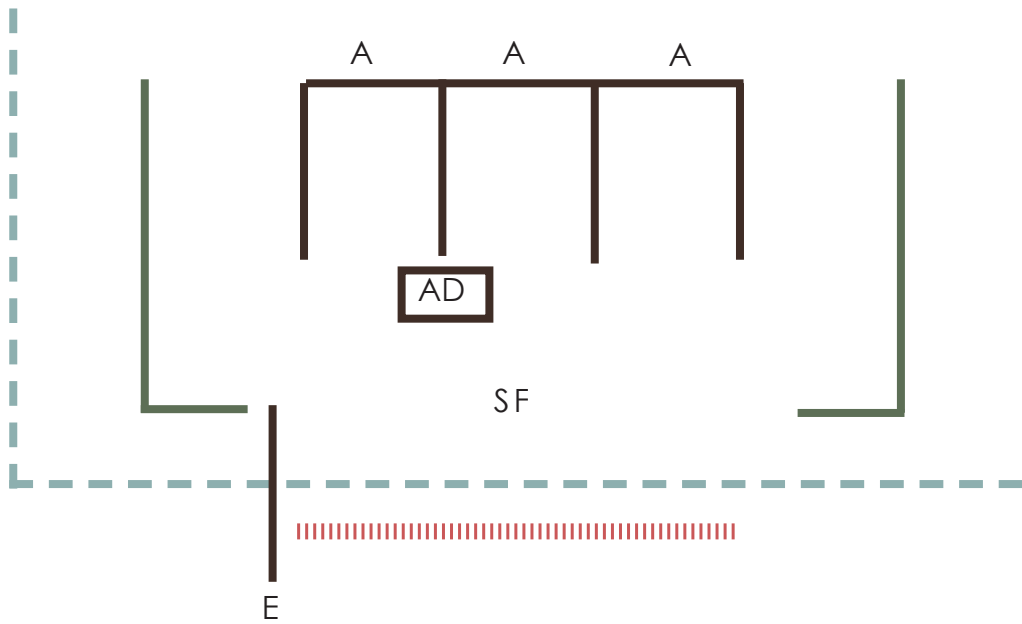
Typology 3_ Olievenhoutbosch Primary School
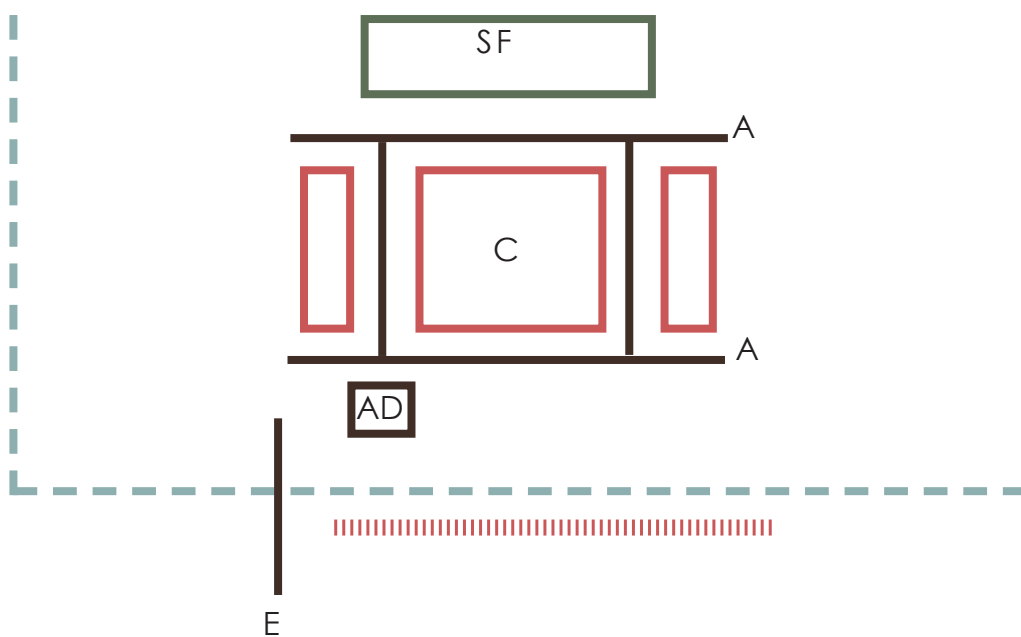
Typology 4_ Steve Tshwete High School, Olievehoutbosch

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Critique:

- No community interaction except for Typology 1, yet limited
- No street edge activity and interaction
- Controlled play space problematic except Typology 1 and 2
- No Multi functionality opportunities in spatial layouts, except Typology 1
- No semi private break out space except Typology 1
- Observation as passive surveillance problematic except for Typology 1 and 2

Opportunities:

- Internalized play space
- Clustered classroom according to age groups
- Public sports grounds
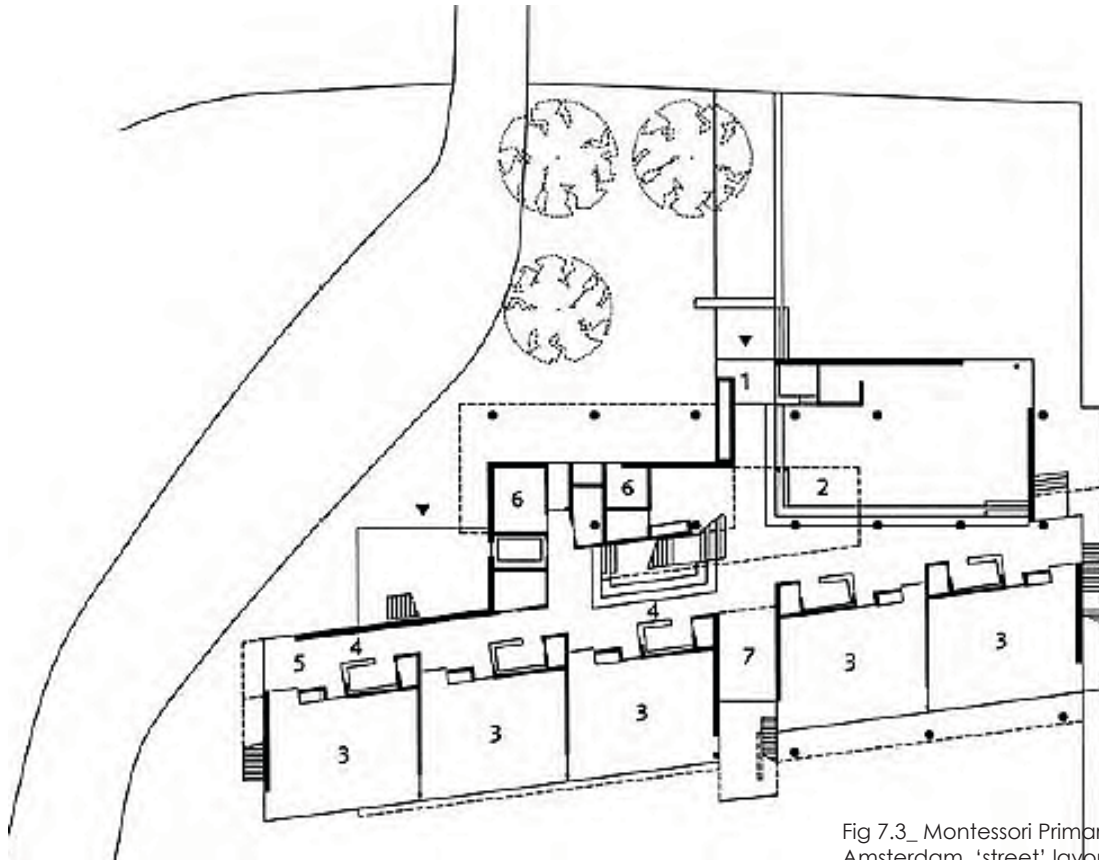
Fig 7.3_ Montessori Primary School, Amsterdam, 'street' layout typology,

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7.3 Spatial Configuration Investigation

Building Mass [as fenced edge]

Communal Space

Play Space

AD Administration

E Entrance

C Communal

A Academic

SF Sport Fields
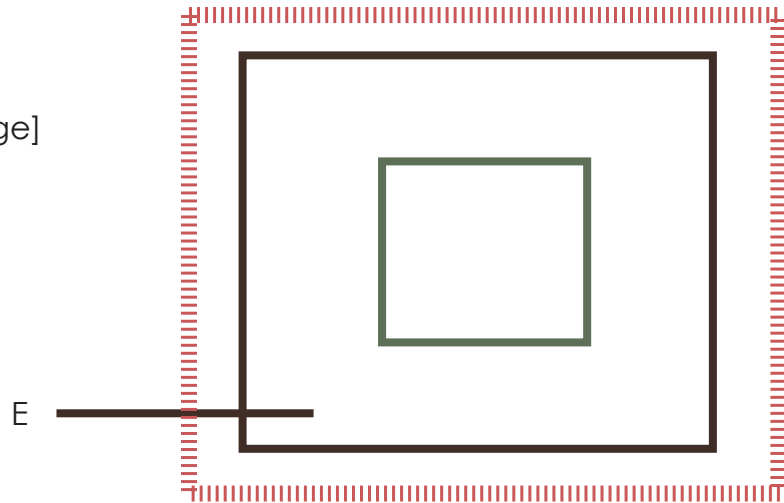
Configuration 1_
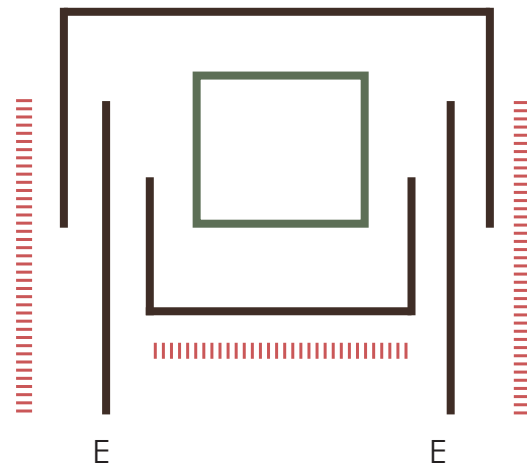
Configuration 2_
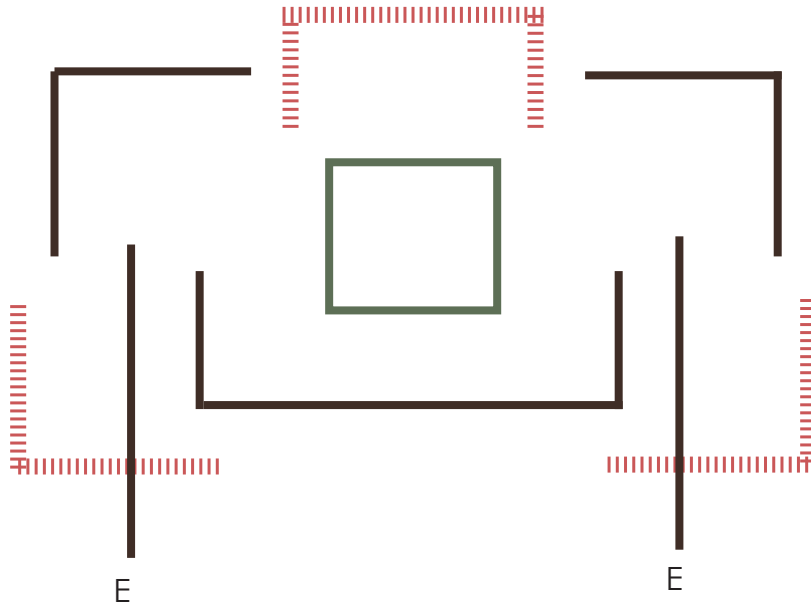
Configuration 3_
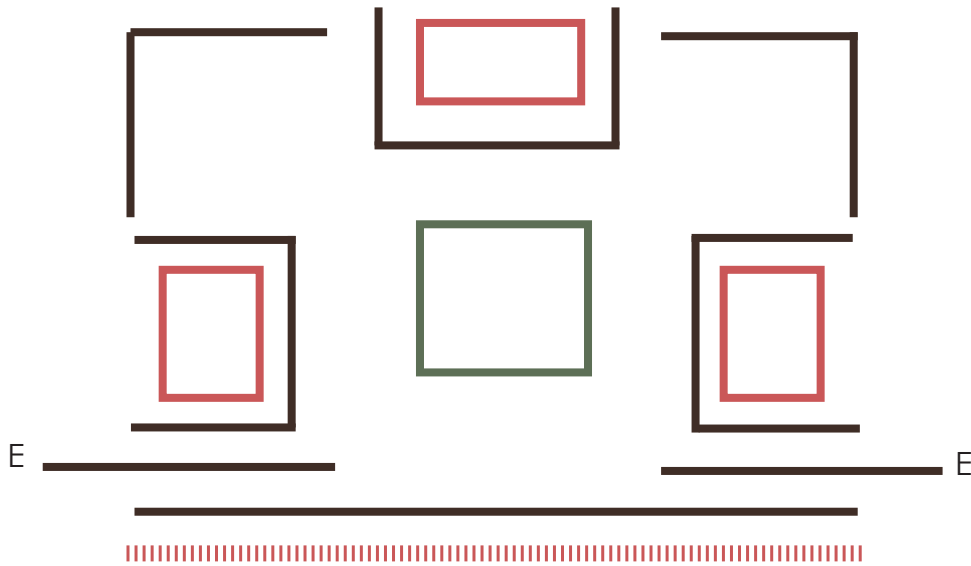
Configuration 4_

Obstacles:

- Noise Control
- Space per child
- Level of interaction allowed
- Security and surveillance

Opportunities:

- The building becomes the boundary
- Central Playground
- Separate breakout space
- Classroom clusters
- Community functions working into boundary and activating edge
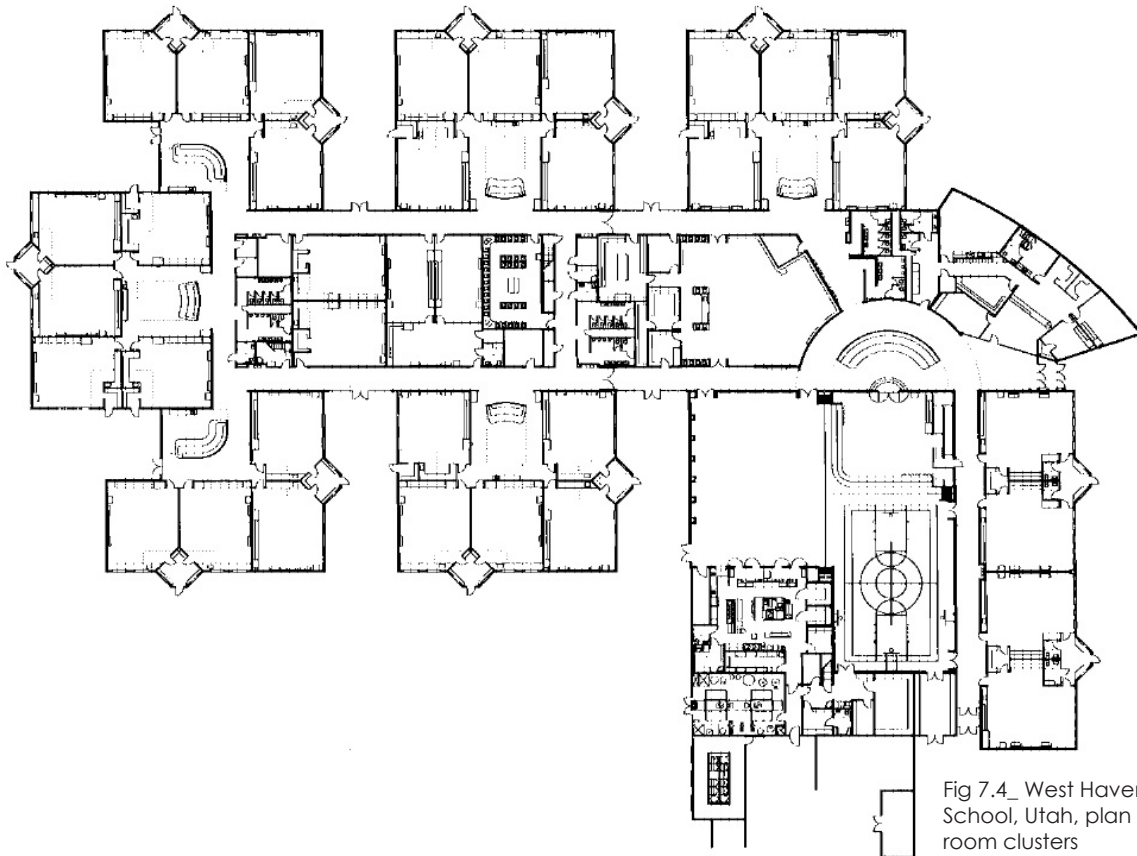
Fig 7.4_ West Haven Elementary School, Utah, plan showing classroom clusters

Diagram of break-out spaces in over sized double-loaded corridors.
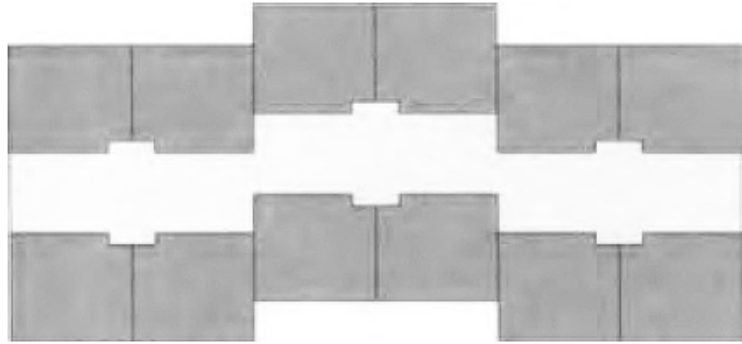
Diagram of intergrated break-out spaces.
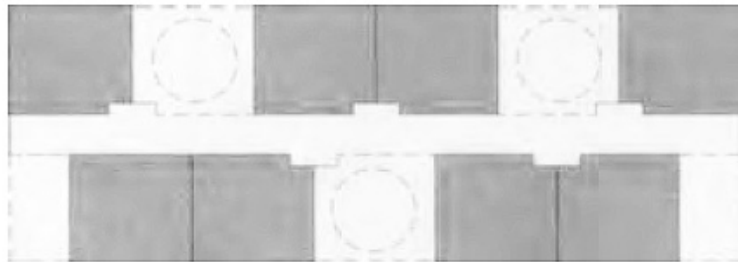
Diagram of break-out spaces in over sized single loaded corridors.
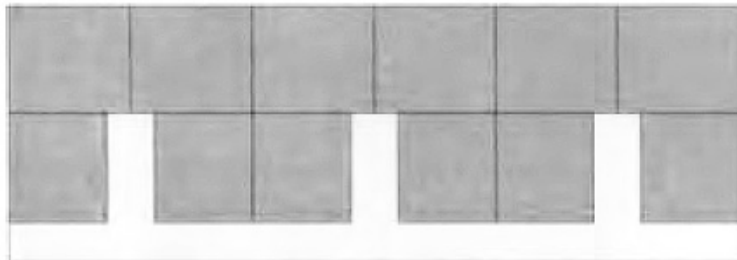
Fig 7.5_ Corridor break out space diagrammatic investigation

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7.4 Conceptual Plan Development

Public use facilities and main entrance :market, cafateria,library,administration offices, media library , and multi pur-pose gymnasium.

Academic spaces

Semi Public Entrnace and facilities

Central communal space and playground
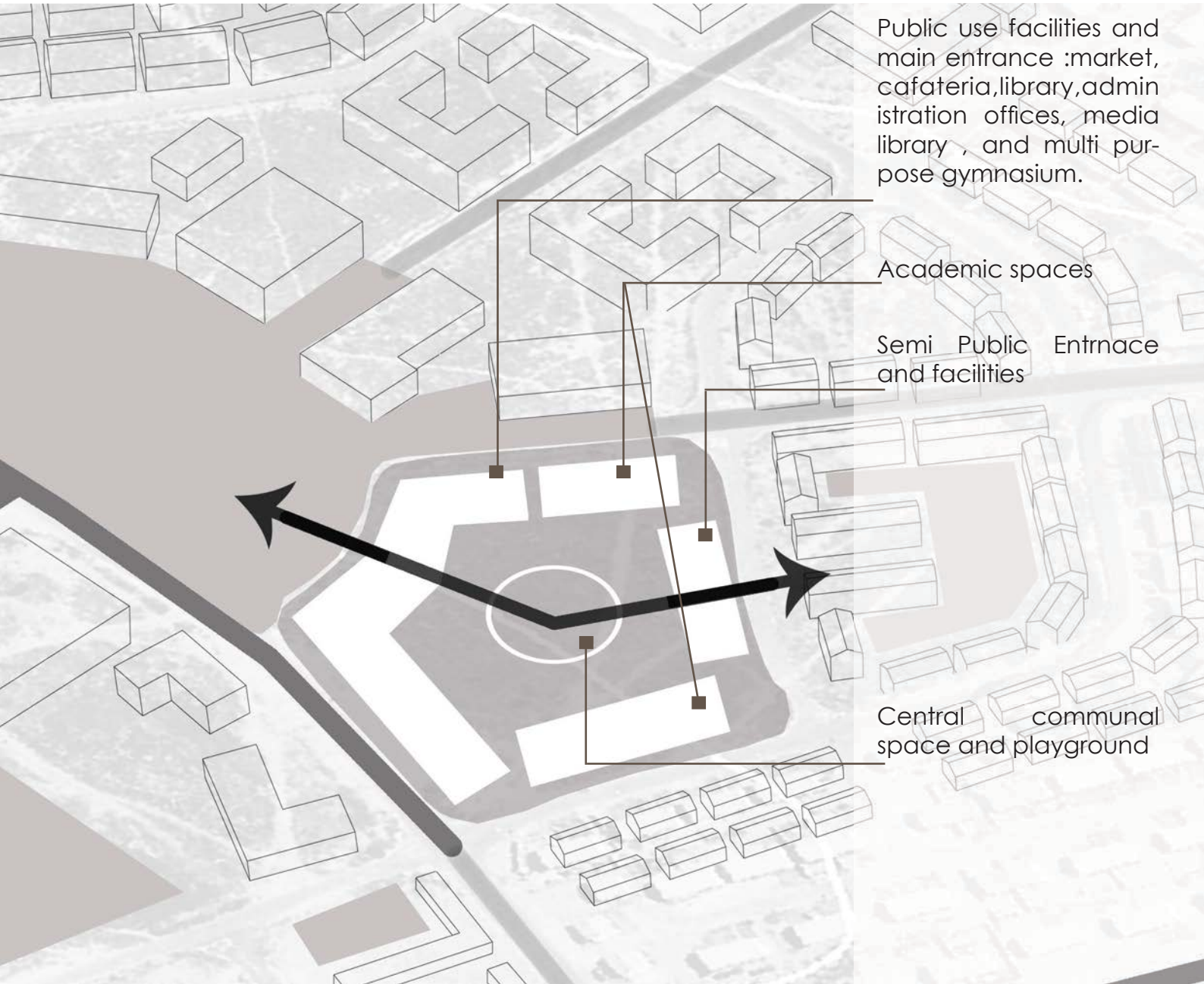
Fig 7.6_ Pragmatic Site Layout 1
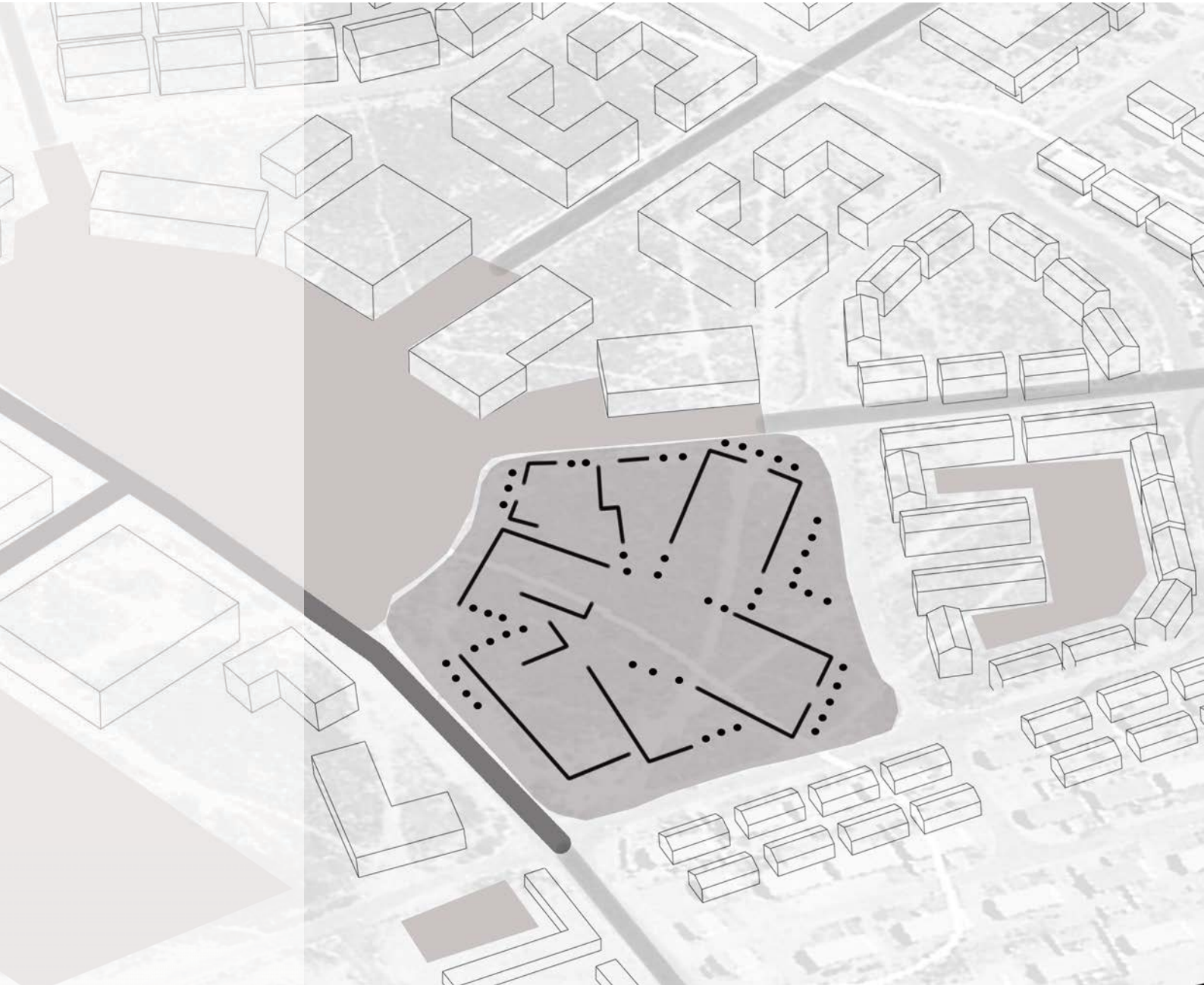
Fig 7.7_ Parti Diagram Development 1

Communal Edge
Central Core Playground
Classroom Clusters
Classroom courtyards linked to play core

Main site links
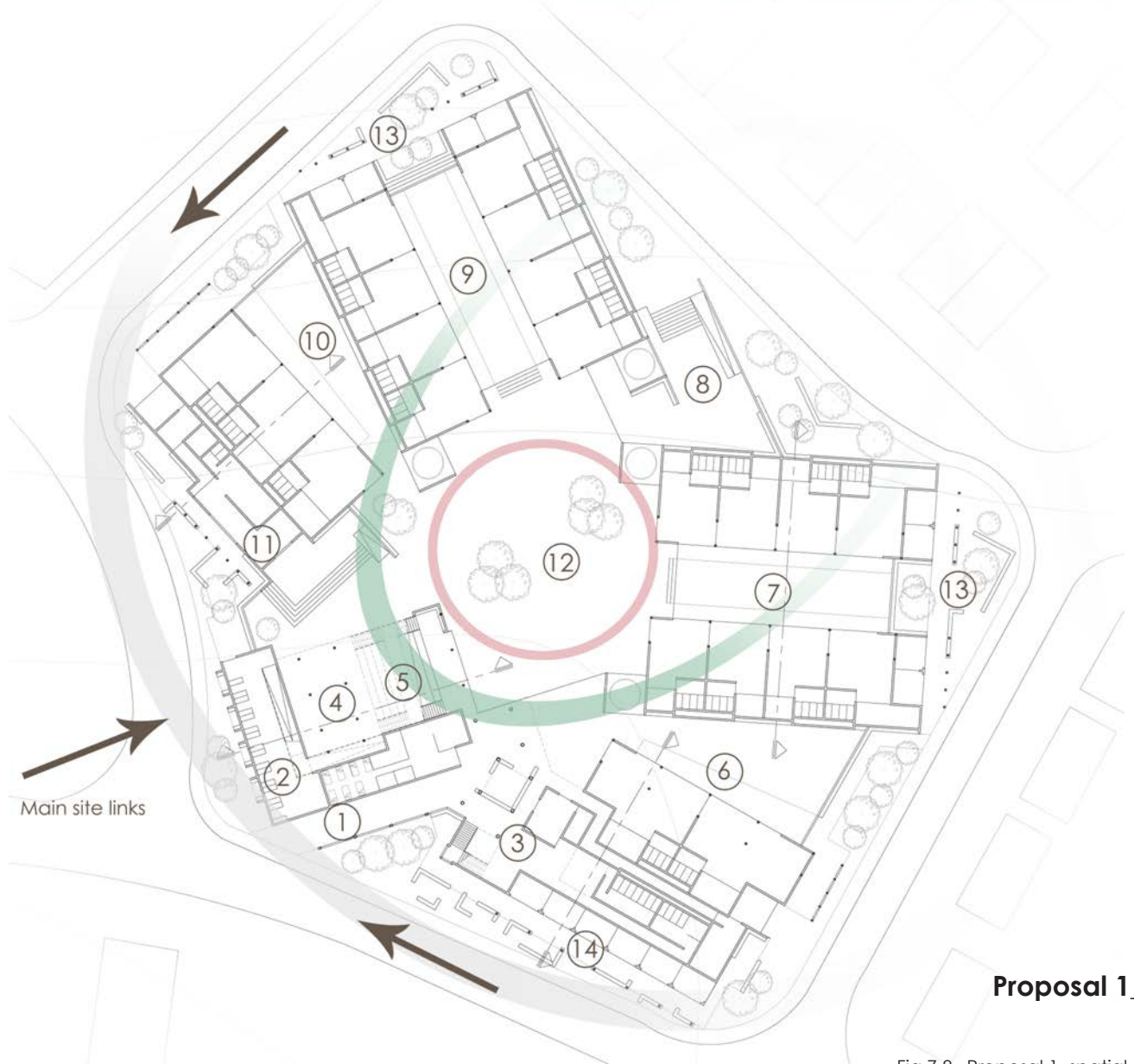
Proposal 1_

Fig 7.8_ Proposal 1, spatial plan layout

Program allocation:

Proposal 1_

1. Main Entrance
2. Media Centre
3. Reception and Lobby to Administration on first floor
4. Gym and Dining Hall
5. Auditorium
6. Courtyard to the Grade R classrooms
7. Courtyard to Grade 1,2,3,4 classrooms
8. Second Entrance
9. Courtyard to Grade 5,6,7 classrooms
10. Courtyard to Special Classrooms
11. Cafeteria and Kitchen
12. Central Playground Core
13. Trade Stall provision
14. Market

Fig 7.9_ Proposal 1, conceptual model

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Main site links
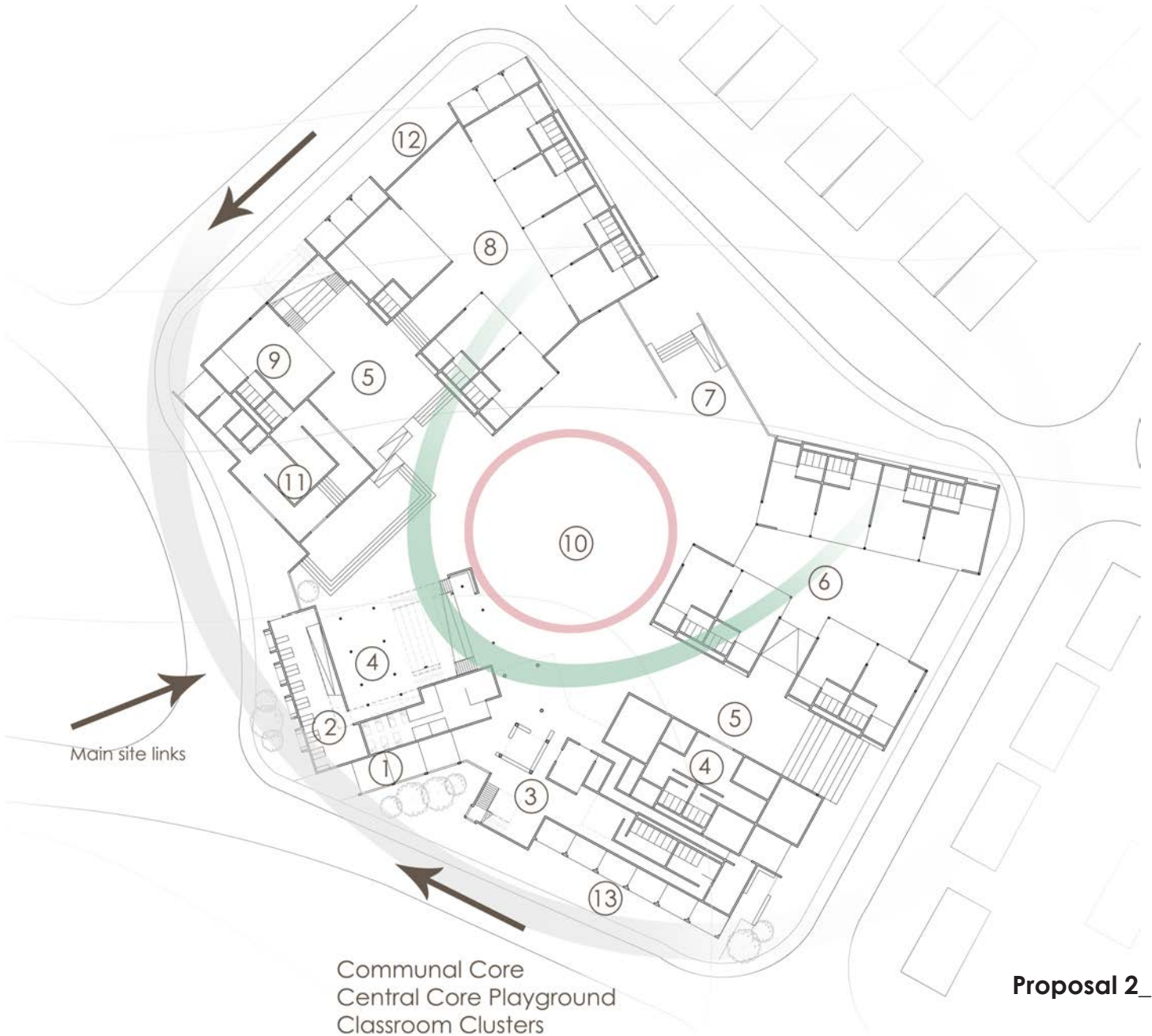
Communal Core
Central Core Playground
Classroom Clusters
Classrooms courtyards linked to controlled transition space
where it links with the play core

Proposal 2_

Fig 7.10_ Proposal 2, spatial model

Program allocation:

Proposal 2_

1. Main Entrance
2. Media Centre
3. Reception and lobby to staff room on first floor Administration
4. Transition street space to first floor
5. Grade 7,6,5 classrooms and Grade 1,2,3,4 classrooms.
6. Special Classroom Cluster
7. Second Entrance
8. Grade R Classroom cluster
9. Workshop
10. Central Playgroun Core
11. Cafeteria and Kitchen
12. Trade Stall provision
13. Market
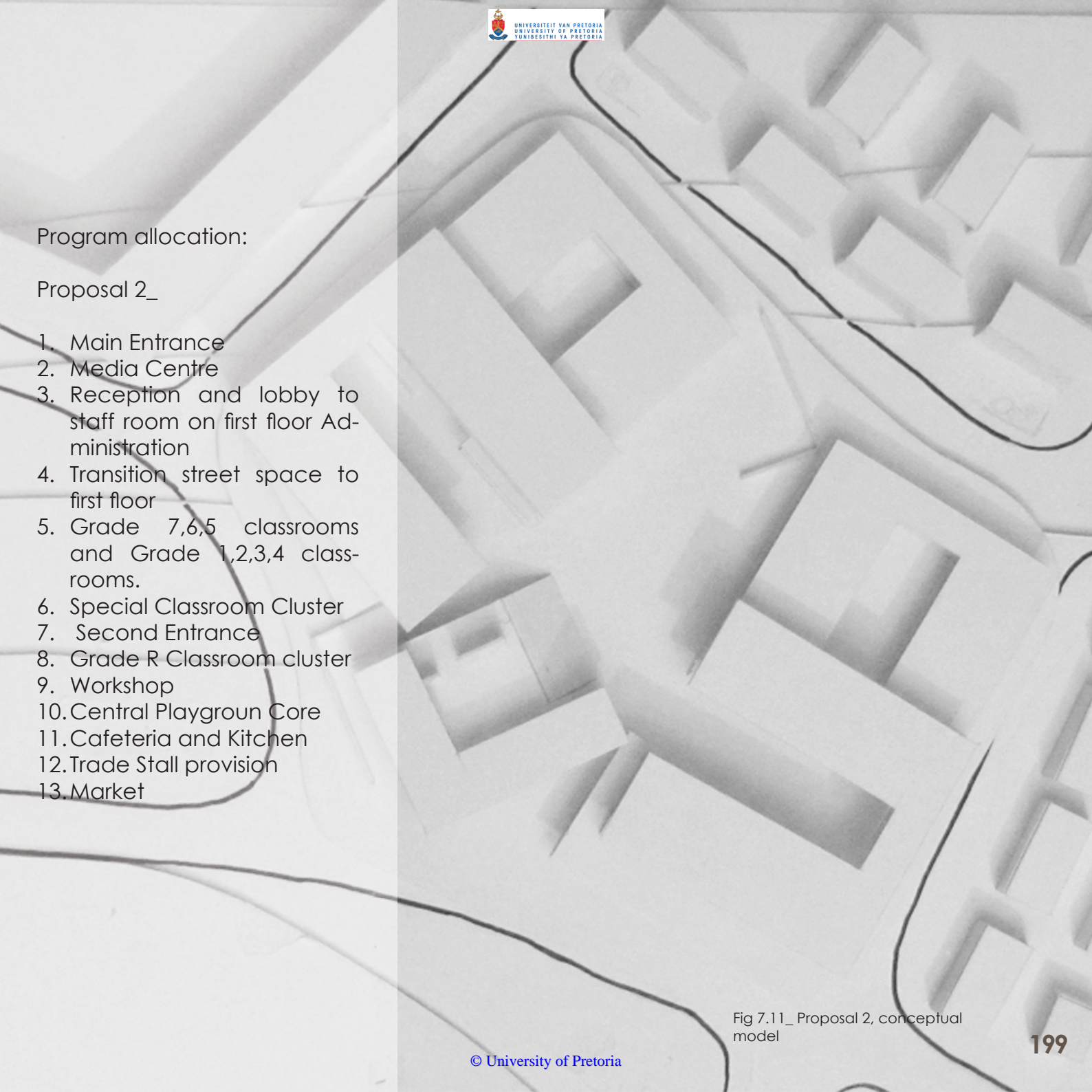
Fig 7.11_ Proposal 2, conceptual model

Proposal 1 and 2 Design Intentions:

- Campus Typology *[city scale]*
- Clustered classrooms around a courtyard space *[domestic scale]*
- Courtyards open up onto the central playground core as social plane *[city square]*
- A communal boundary formed to the south west towards the central communal square to form a controlled transition space into site
- Playground opens up toward the residential edge of the site *[social permeability]*
- Classroom courtyards are placed to have a visual link with the site edge allowing the site to give back to the community through green pause space along the side-walk.
- The active edges of the site are supported with trade infrastructure to accommodate the surrounding residential entrepreneurs.
- Classrooms arrangement aims to allow connections between communal sidewalk activity and classroom lessons *[learning from life]*
- Links between learning and social spaces are made for a social academic environment *[courtyard as street]*
- Micro environments are incorporated to allow a sense of comfort, ownership and safety for the children attending the educational facility *[scale]*
- Courtyards shaped to enclose the site and to form a scale variation at the entrance point between courtyard and playground.

Critique [see images 12 and 13]:

1. Hierarchy of transition spaces between academic and communal social spaces needs to be more clearly defined.
2. Active communal boundary isolates the sites' central playground [square] forms the urban layouts' community square, preventing the site to react successfully with its macro concept.
3. Open Edge towards the residential northern boundary causes an uncontrolled permeable space. Ultimately the site reacts towards the wrong edge. The communal square is more important to the framework and concept than the residential edge.
4. Residential northern edge needs to be activated spatially and programmatically.
5. The site lives inward and does not promote and extroverted, interactive spatial
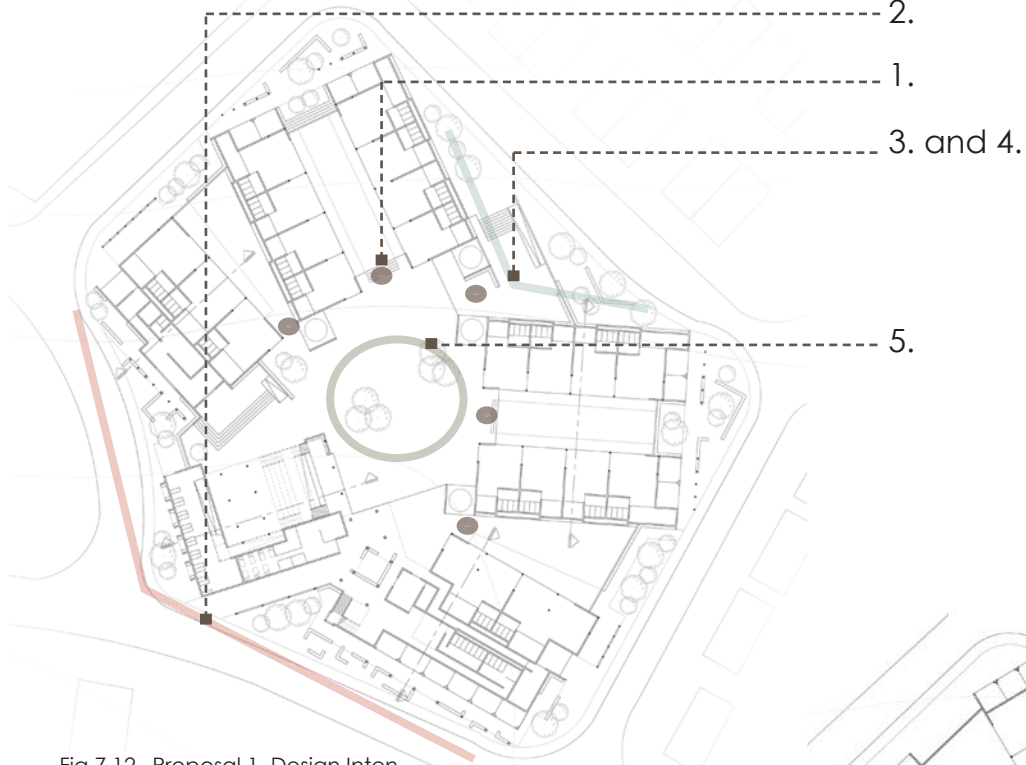
200

2.
1.
3. and 4.
5.

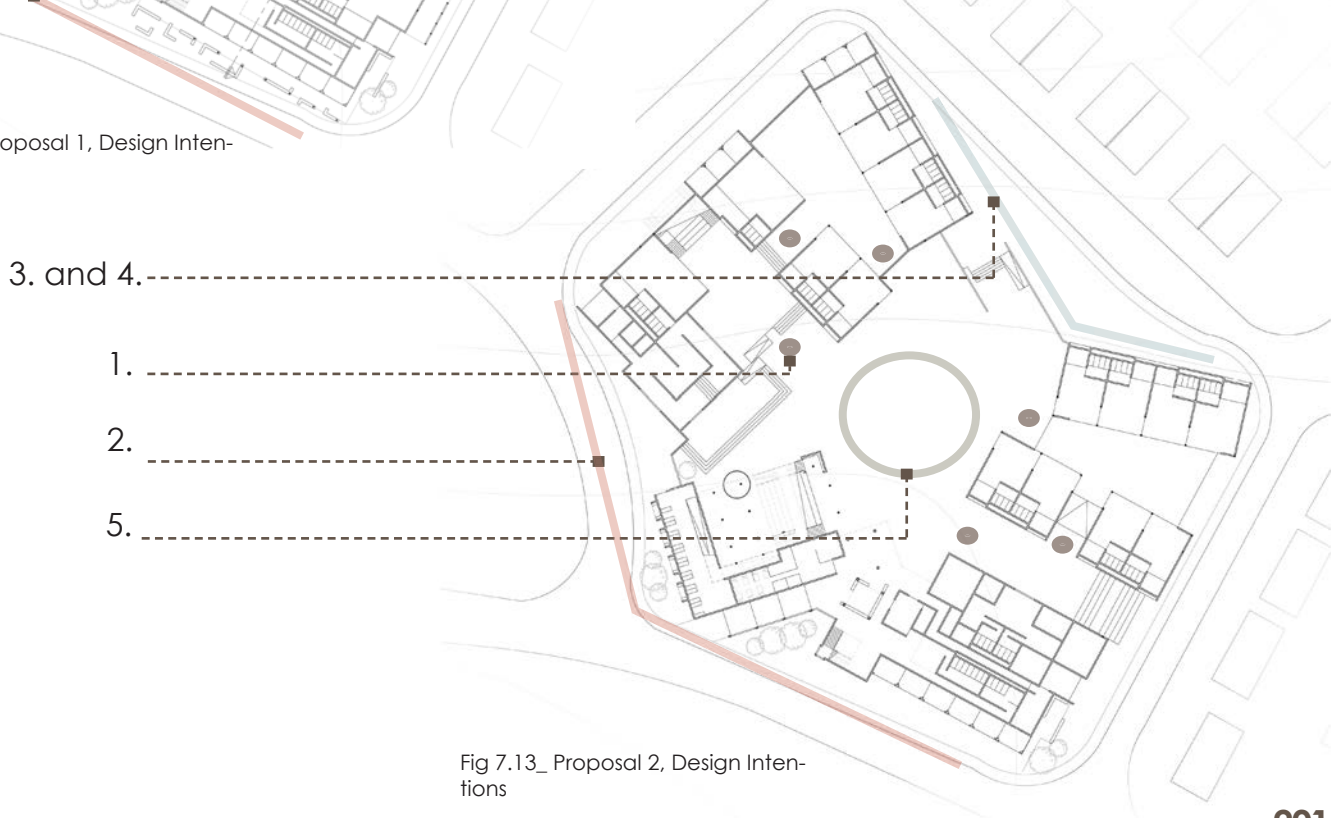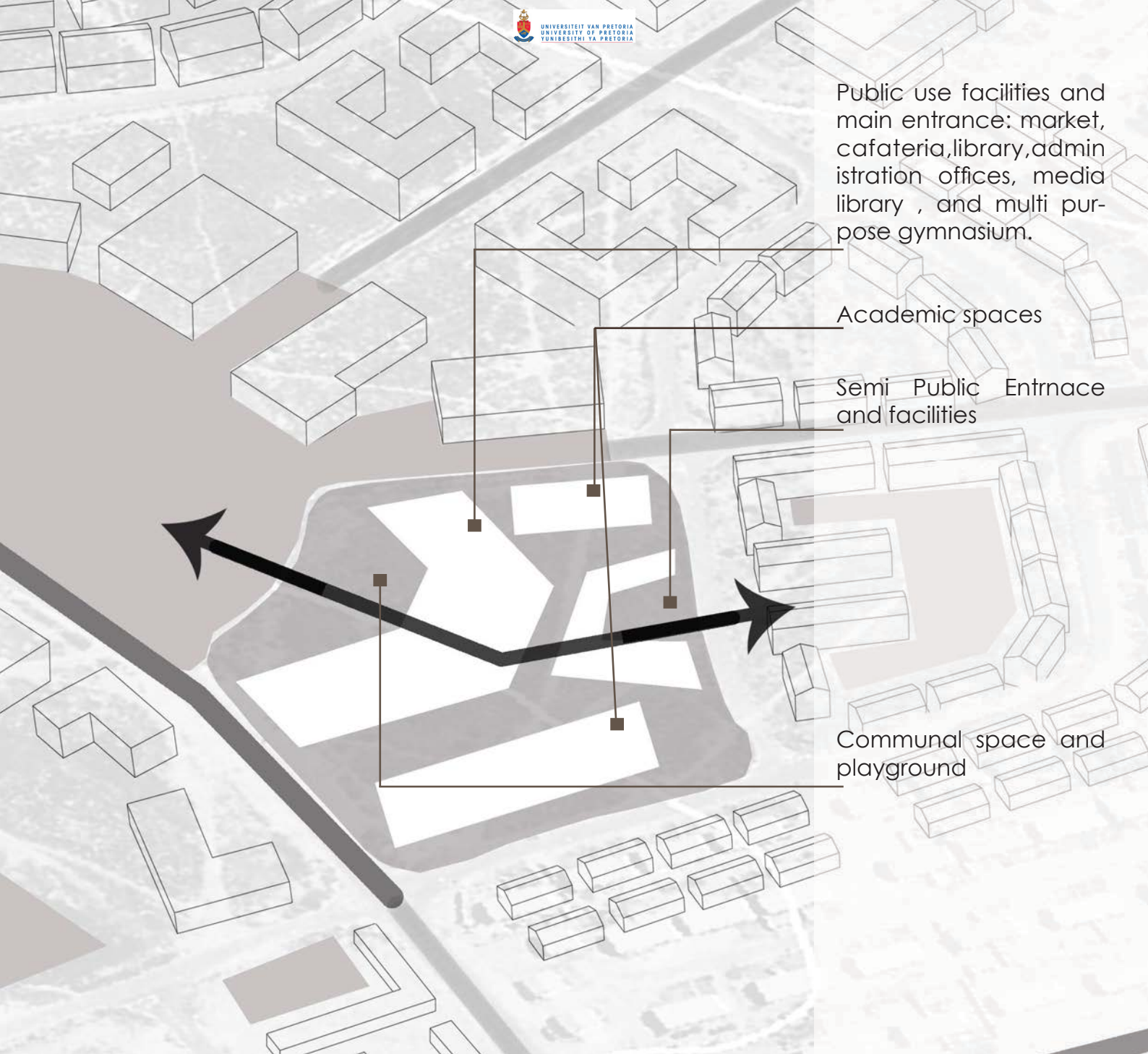Fig 7.12_ Proposal 1, Design Intentions

3. and 4.

1.

2.

5.

Fig 7.13_ Proposal 2, Design Intentions

Public use facilities and main entrance: market, cafateria,library,administration offices, media library , and multi purpose gymnasium.

Academic spaces

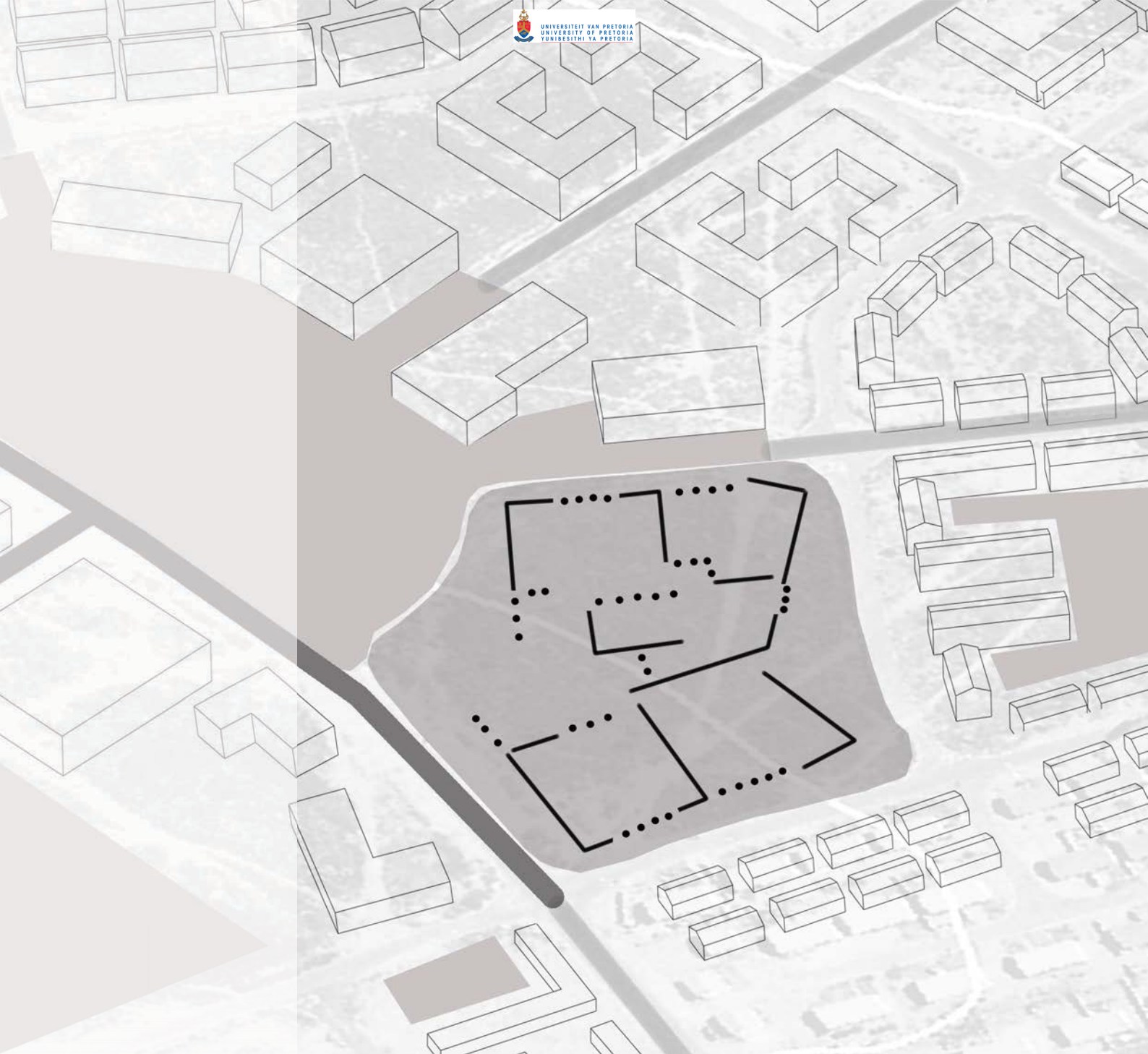Semi Public Entrnace and facilities

Communal space and playground

Fig 7.14_ Pragmatic Site Layout 2

Fig 7.15_ Parti Diagram Development 2

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Communal Edge starts to fold into school site
Central Core Playground starts to spill out onto
the neighbourhood communal square
Classroom Clustered environments linked to communal
transition space [street], to the central gathering
playground [square]
Site starts to extrovert

Main site links
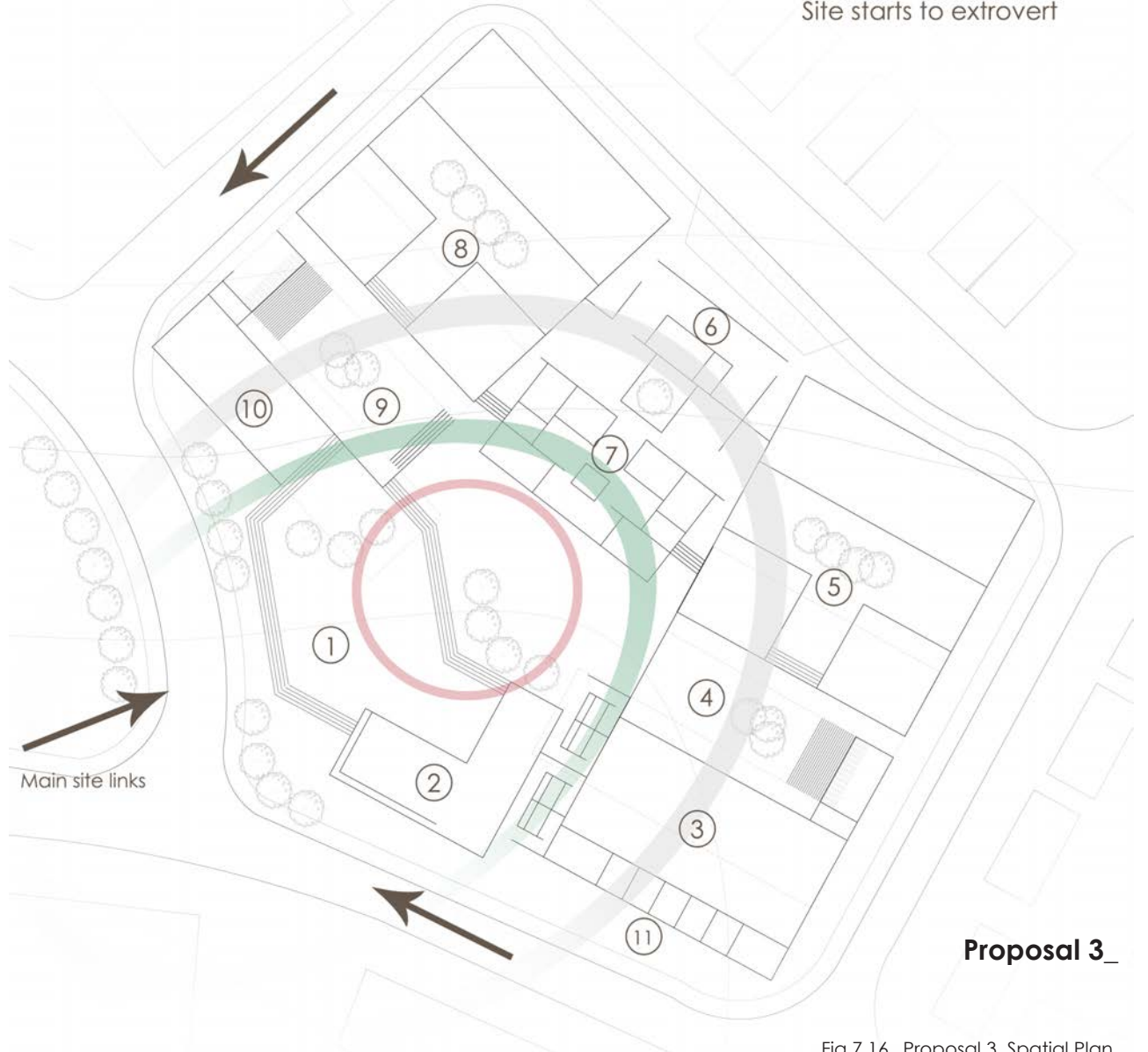
Proposal 3_

Fig 7.16_ Proposal 3, Spatial Plan
Layout

Program allocation:

Proposal 3_

1. Main Entrance
2. Media Centre
3. Library
4. Transition street space to first floor Gr 5, 6, 7 Class-rooms
5. Courtyard to Special class-rooms
6. Reception
7. Administration Offices
8. Courtyard to Grade R class-rooms
9. Transition street space to first floor Gr 1,2,3,4 Class-rooms
10. Cafeteria and Kitchen
11. Market

Fig 7.17_ Proposal 3, Conceptual Model

Main site links

Communal core folds into site
Playground and communal facilities start to form the same space
[square]
Both interior and exterior spaces meet where communal and
playground space come together[more links][streets]
Playground and classroom clusters are accessible yet controlled
by adult occupied transition spaces[social permeability]

Proposal 4_

Fig 7.18_ Proposal 4, Spatial Plan
Layout

Program allocation:

Proposal 5_

1. Main Entrance
2. Reception and waiting area
3. Administration Offices
4. Special classrooms workshop
5. Market
6. Transition street space to first floor Gr 5,6,7 classrooms
7. Courtyard to Special classrooms
8. School clinic
9. Media Centre
10. Gymnasium
11. Auditorium
12. Playground area and meeting space
13. Cafeteria seating
14. Cafeteria Kitchen
15. Grade R workshop
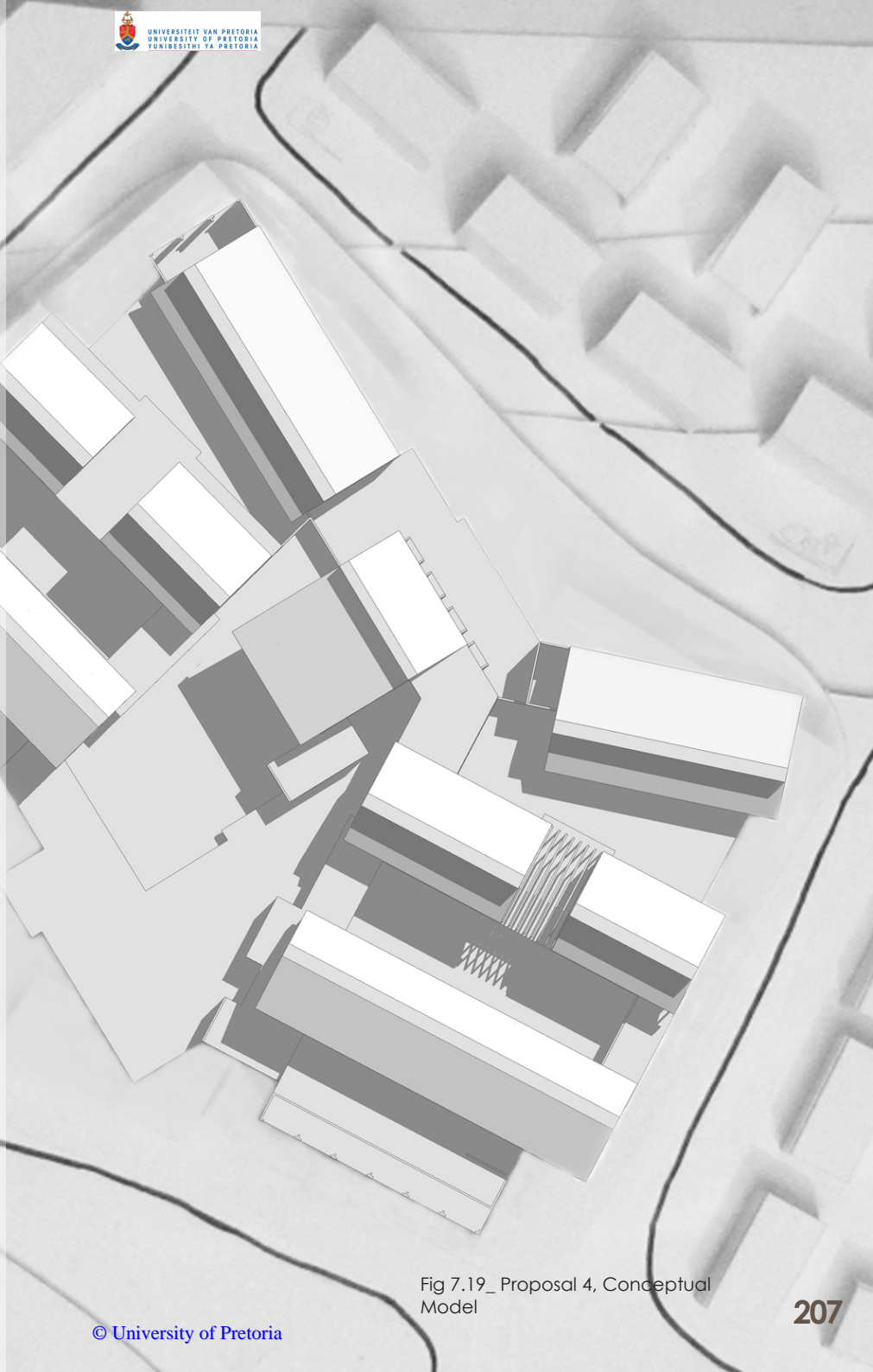16. Courtyard to Grade R classrooms
17. Trade stalls

Fig 7.19_ Proposal 4, Conceptual Model

Proposal 3 and 4 Design Intentions:

- Providing the plan with more clearly defined hierarchy of transition spaces between the classroom clusters and the communal school square through social street links [corridor as street- Street becomes courtyard]
- Moving the communal edge into the site [folding into the site] in order to define the boundary of the play area while activating it with adult and public activity and programs.
- Allowing playground to open up toward the neighbourhood central public square [relating to macro scale] allowing child and adult activities to be interactive.
- Providing interior and exterior links [transition areas] to the communal area of the school in order to achieve social permeability in a controlled environment [multi use clustering]
- Creating different micro environment that links appropriately with the macro environment to create a domestic feeling for age group classroom shelters that provides an intimate and safe scale for the children.
- Allowing the edge of the site to give back to the street through green pause space and market areas, which allows edge pedestrian activity to feed the site.
- Creating a hierarchy of linked spaces that allows for multi use possibilities within the school grounds [learning network].

Critique [see figure 20]:

1. Unsuccessful transition between the schools central playground and square with the urban layouts' community square. The connection forms awkward geometry and should be reinvestigated.
2. Question if the playground and square of the school's communal space should be combined.
3. Corridor and courtyard [street] connections with communal school playground [square] are spatially forced and unsuccessful, it should be reinvestigated.
4. Position of auditorium and gym causes the formation of awkward space geometry and should be reinvestigated.
5. The position of the cafeteria should be reconsidered in terms of the site's spatial interaction with the community square to the south west.
6. The communal edge arrangement should be reconsidered in terms of its function as a public threshold for the school playground.
7. The school design's main conceptual elements should be considered sensitively in terms of organizational elements to achieve; extroverted, interactive, multi functional and socially academic spaces [see 7.1 Theory on Micro Scale page 184].
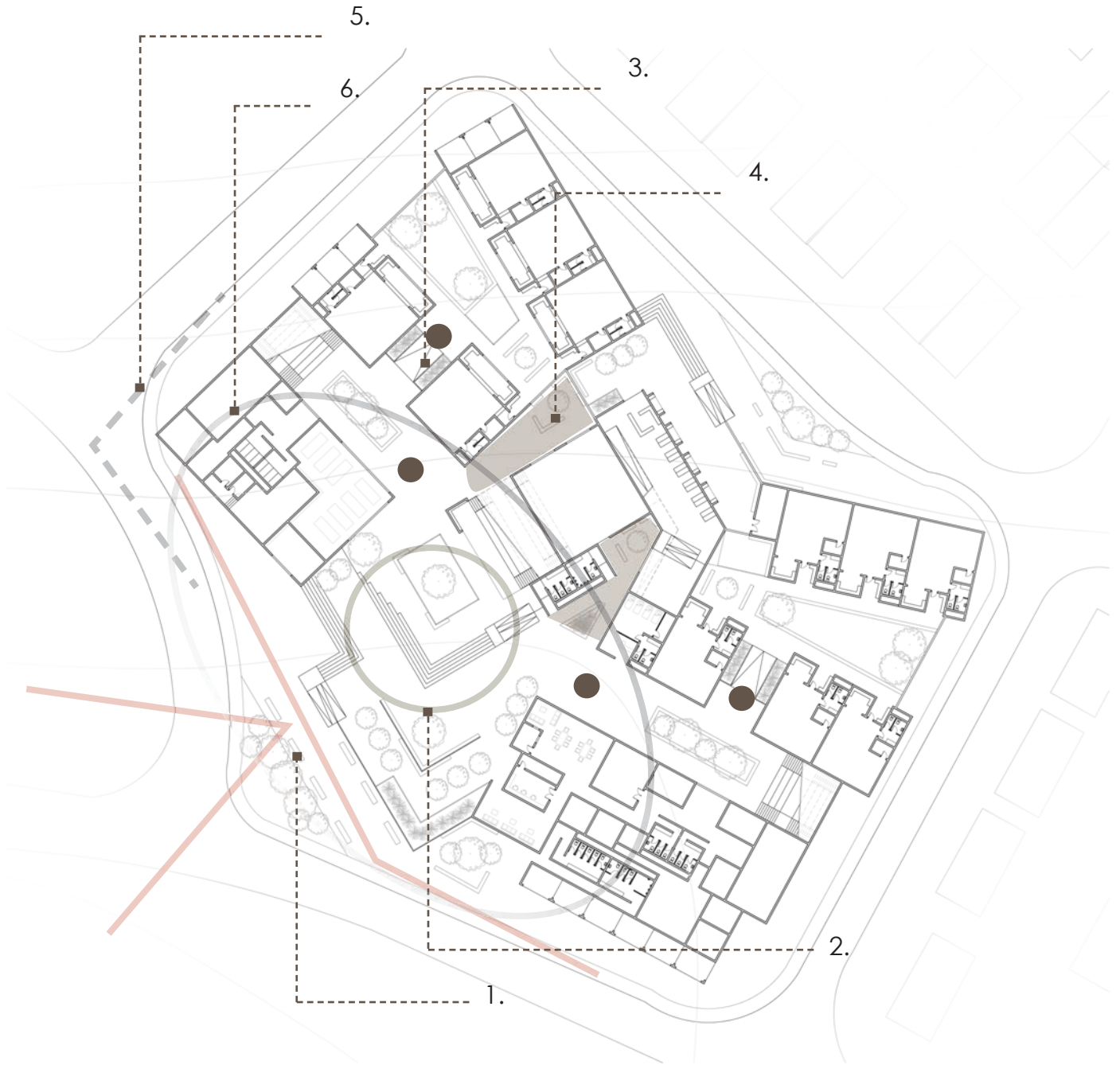
5.

6.

3.

4.

2.

1.

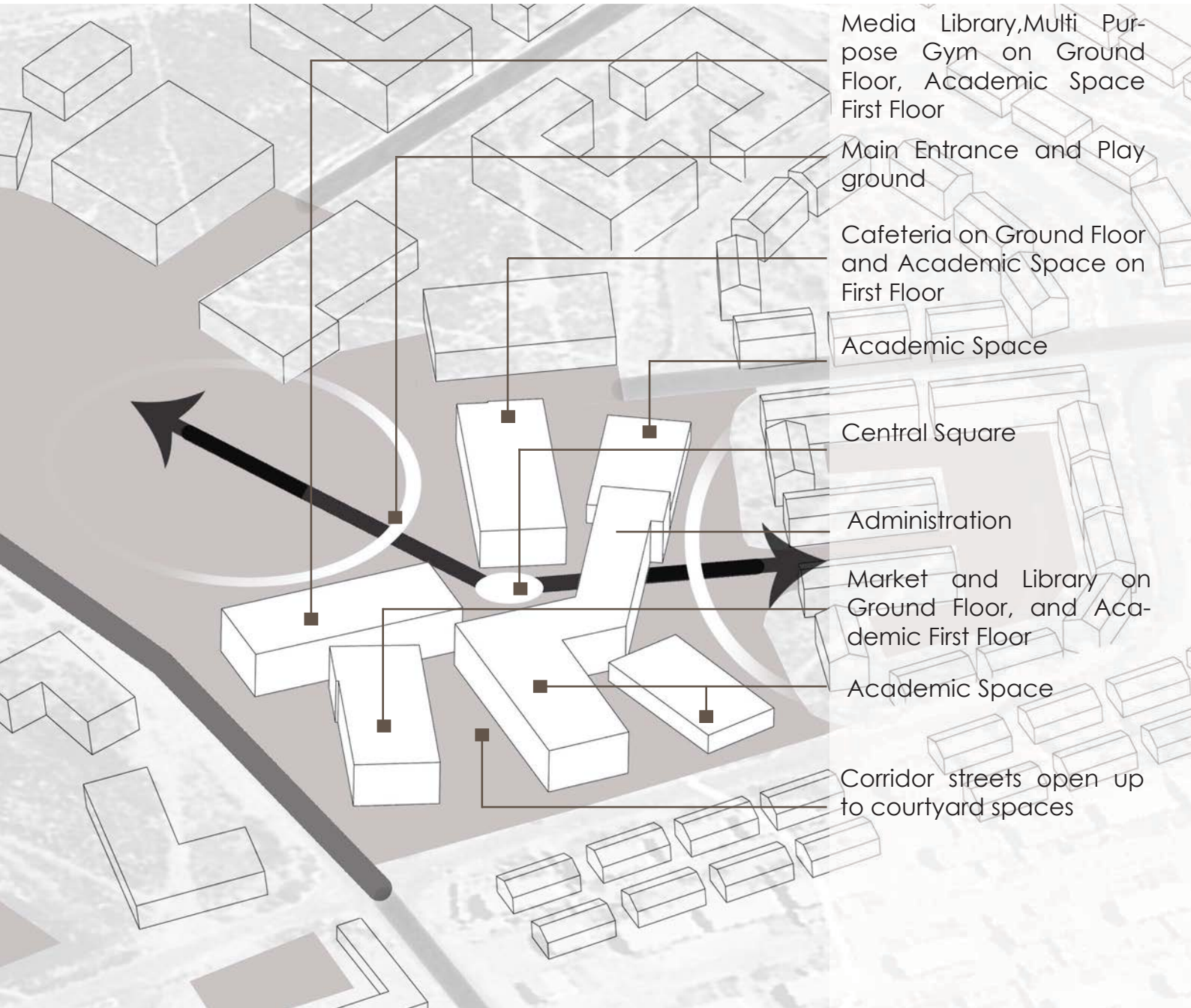Fig 7.20_ Proposal 4, Design intentions as developed form Proposal 3

7.5 Conceptual Plan Finalization

Media Library,Multi Purpose Gym on Ground Floor, Academic Space First Floor

Main Entrance and Play ground

Cafeteria on Ground Floor and Academic Space on First Floor

Academic Space

Central Square

Administration

Market and Library on Ground Floor, and Academic First Floor

Academic Space

Corridor streets open up to courtyard spaces

Fig 7.21_ Pragmatic Site Layout 3
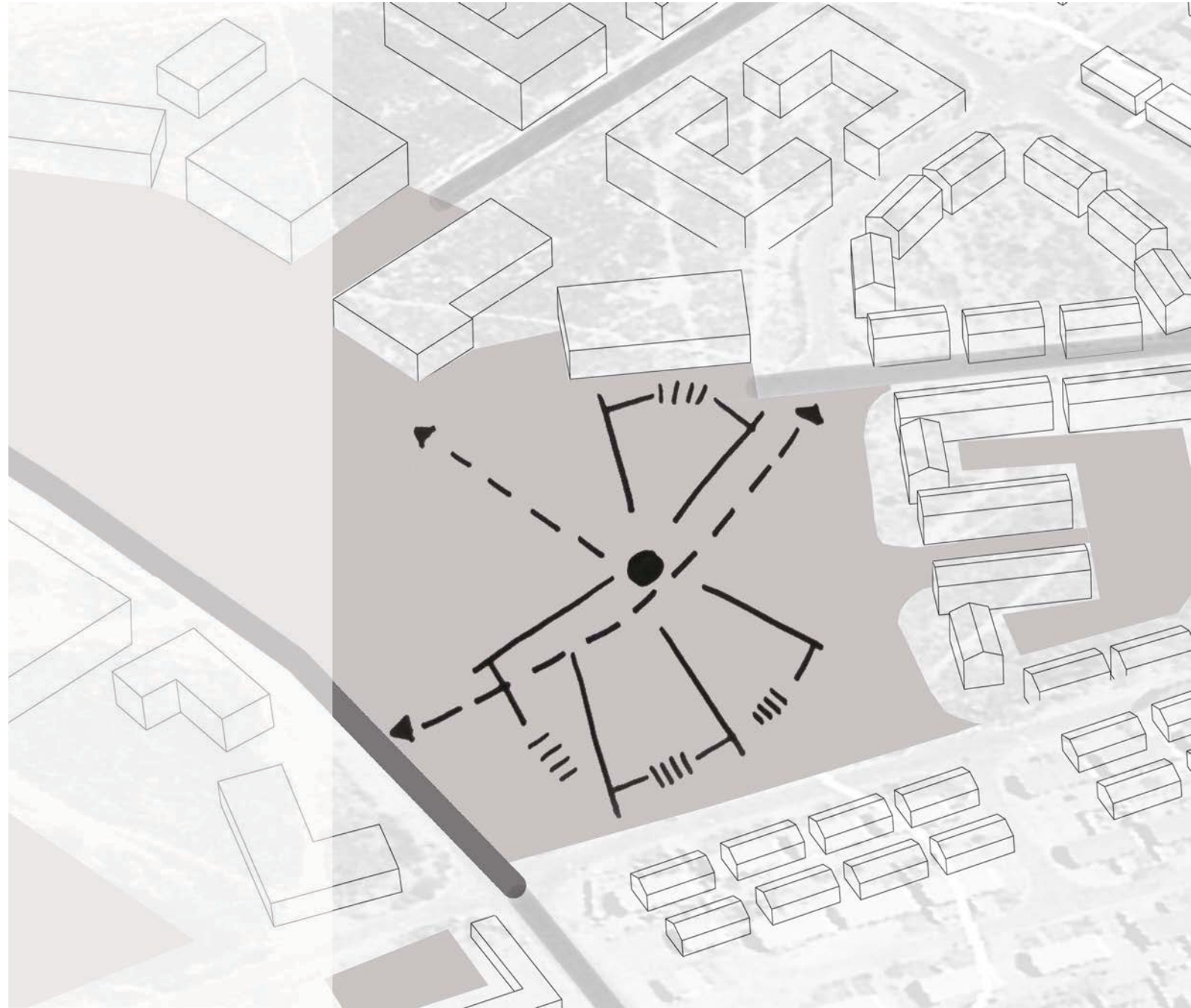
Fig 7.22_ Parti Diagram Development 3

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7.5.1 Developing the central design idea

Spatial Thresholds_

Social Thresholds

Academic Thresholds

Public-Social Transition Threshold

Social - Academic thresholds
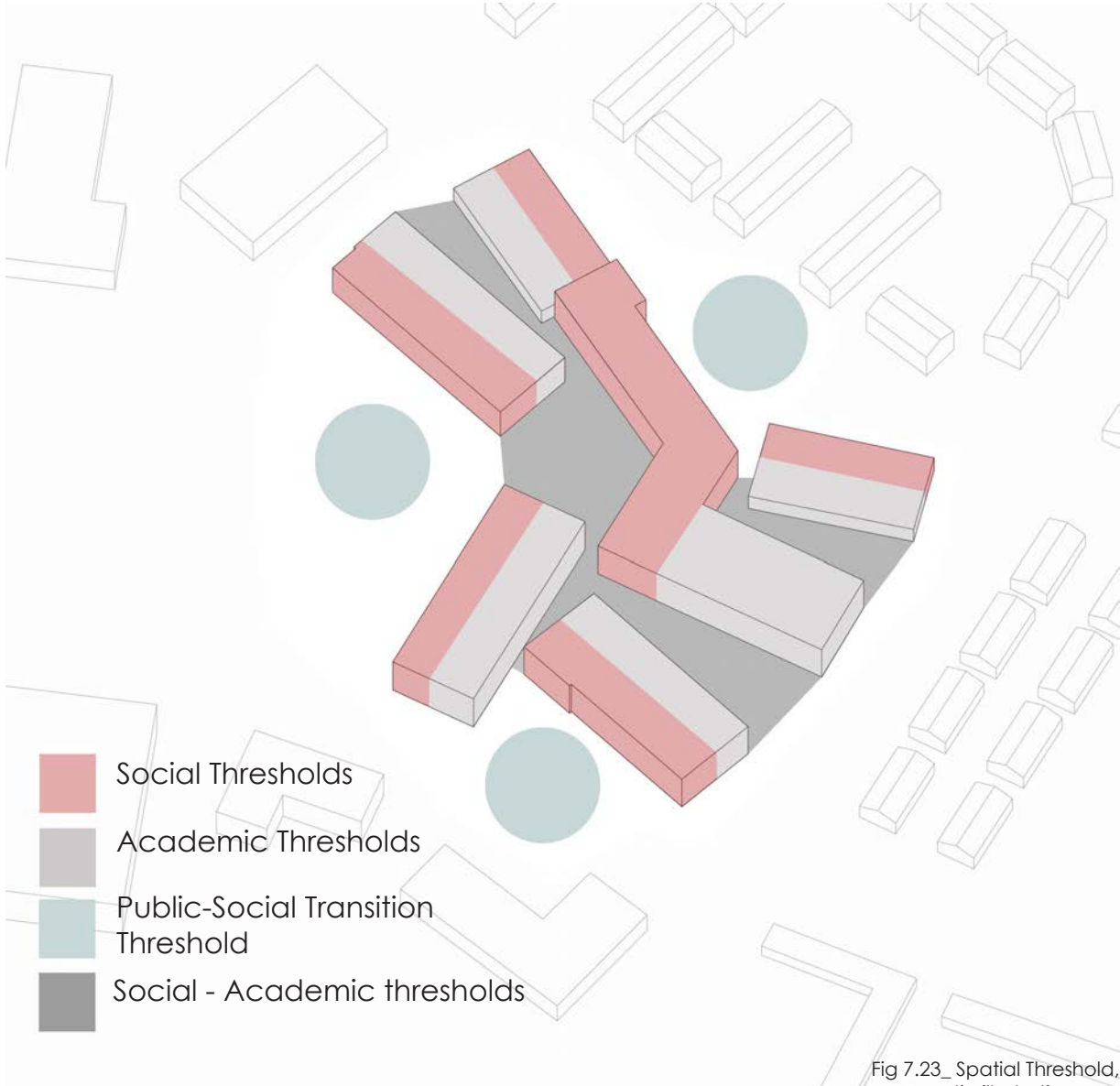
Fig 7.23_ Spatial Threshold, diagrammatic illustration

Movement_

Tertiary Movement

Primary Movement

Circulation Points

Secondary Movement
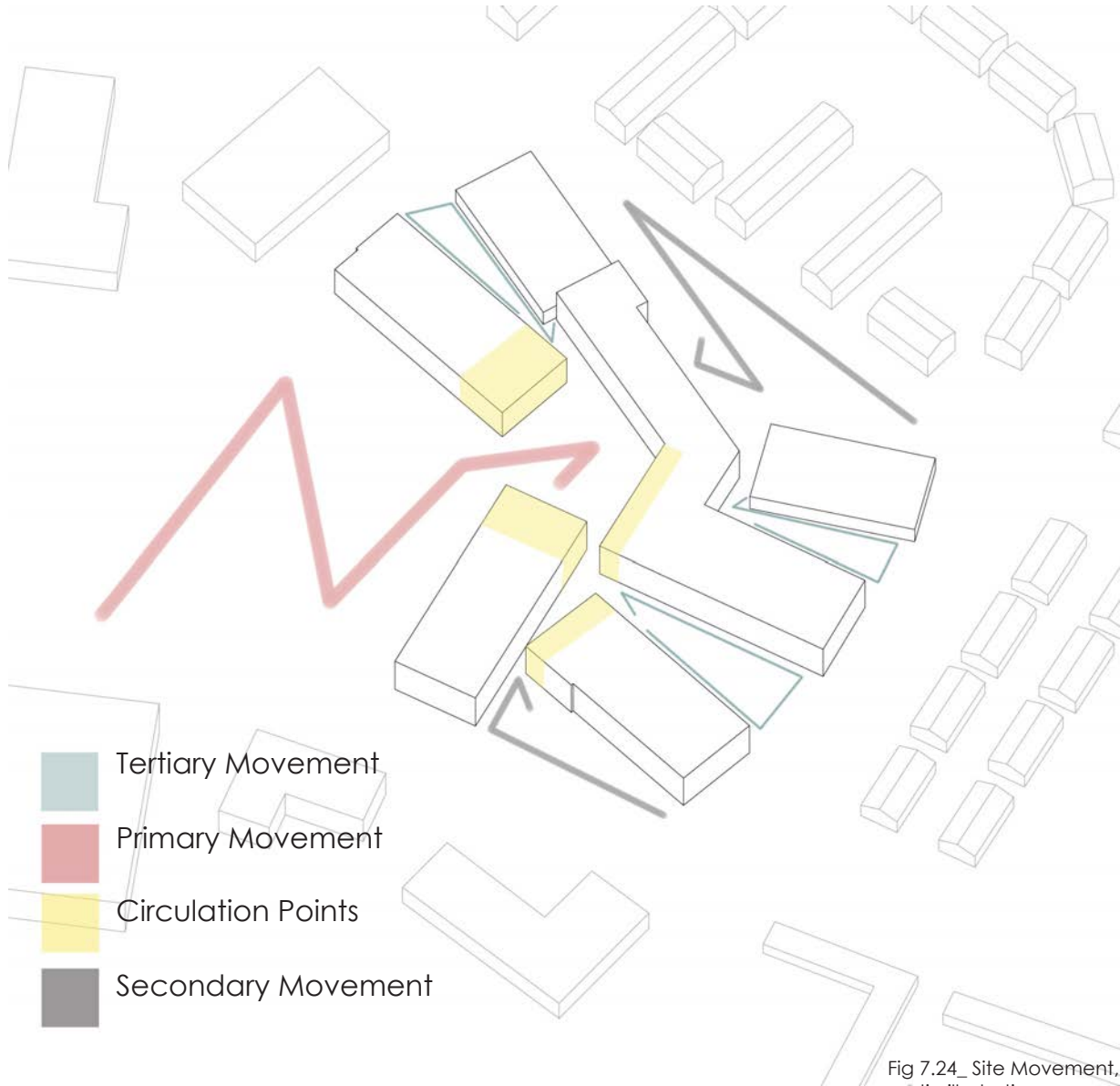
Fig 7.24_ Site Movement, diagrammatic illustration

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Structural Relationship_

Lightweight Structure [social]

Heavy Structure [academic]

Breaking up of layered volume
[interaction for integration]
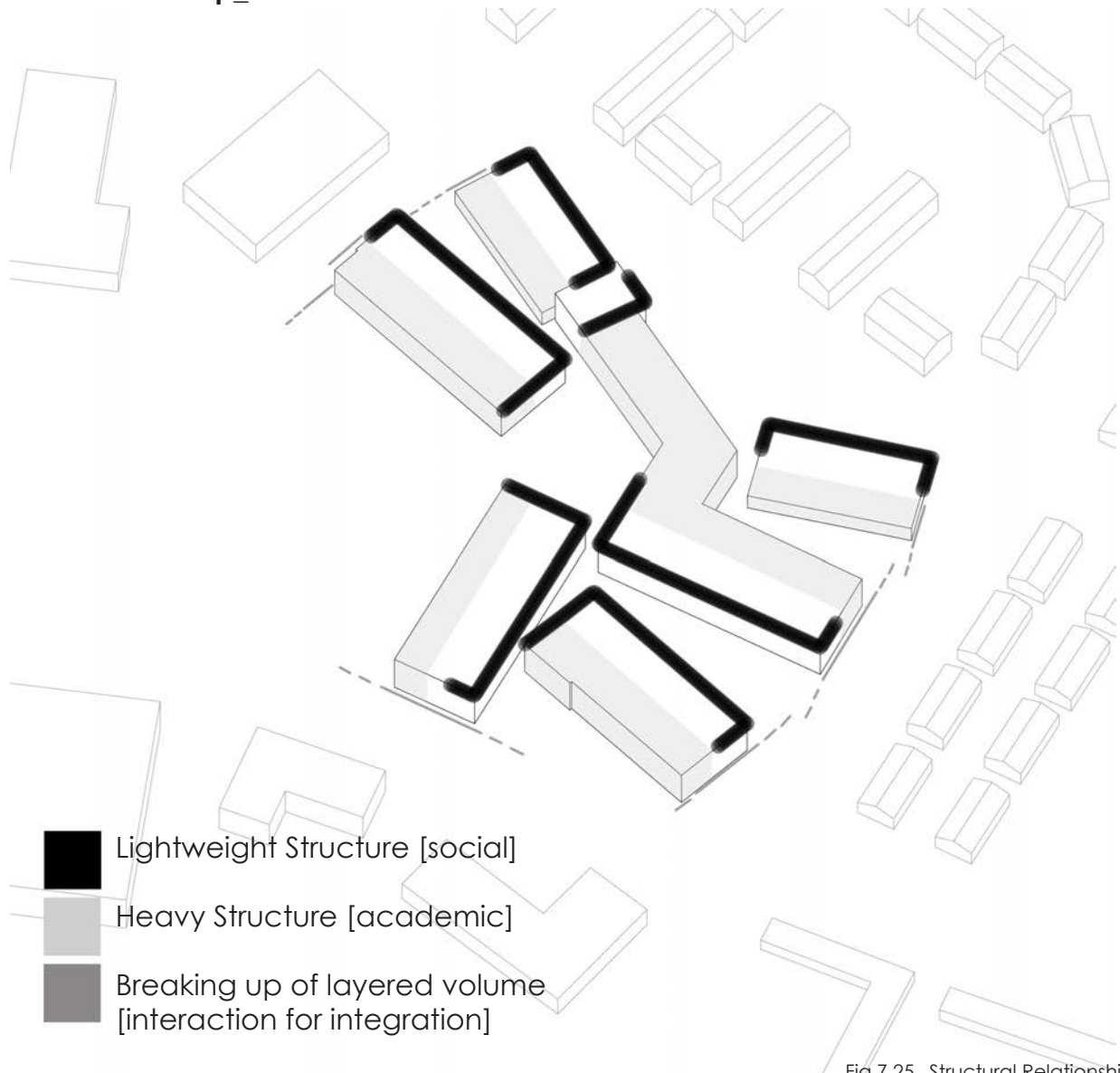
Fig 7.25_ Structural Relationship,
diagrammatic illustration

Spatial Sturcture_

Streets [corridors]

Domestic domains [classrooms]

Central Square [intersection]

Streets as courtyards [social interaction]
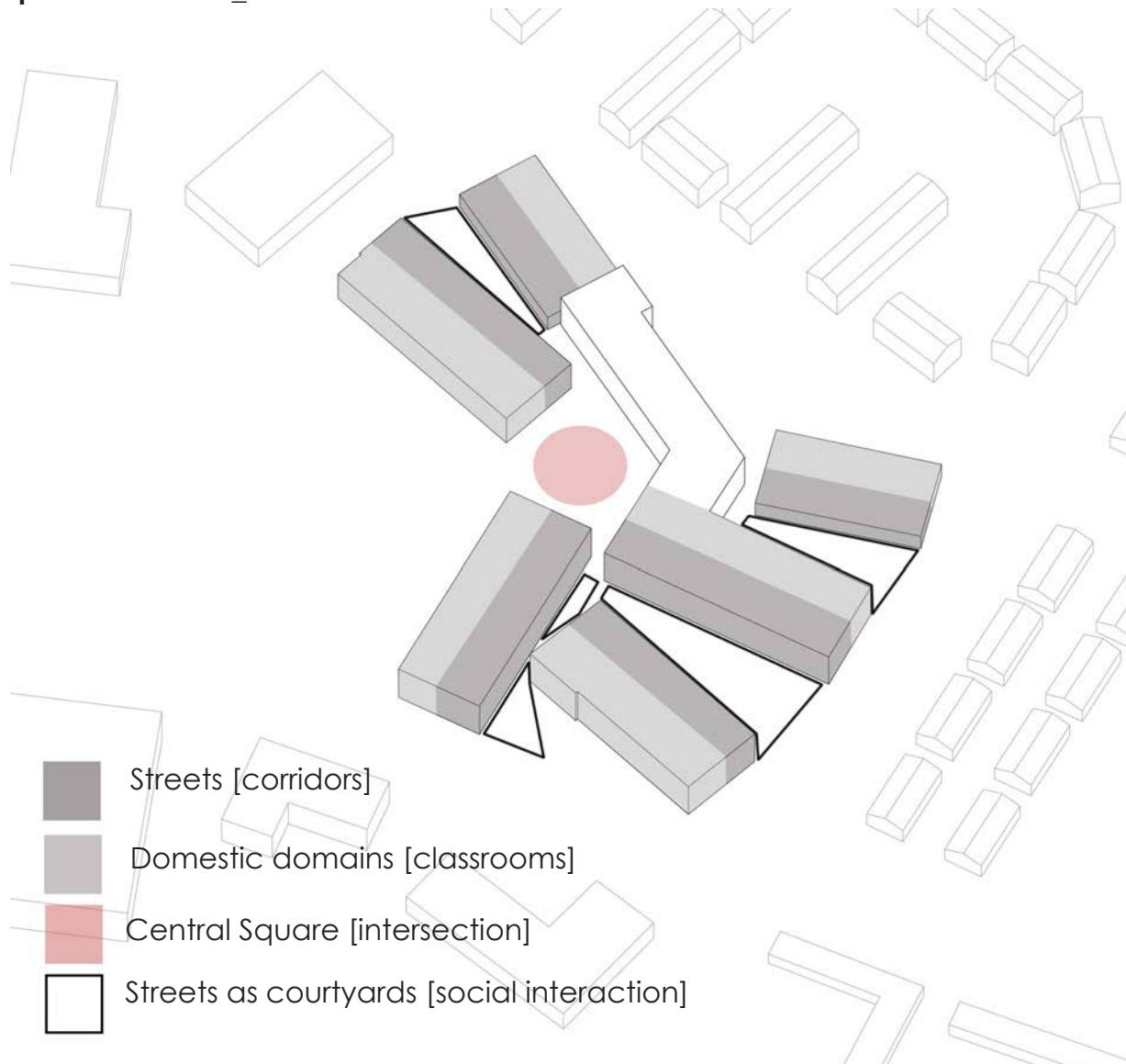
Fig 7.26_ Design Spatial Structure, diagrammatic illustration

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Surface Structure_

A   B   C   D   E

D	Private Play [secure scale]
B	Public Play
A	Arrival
E	Public [Pedestrian]
C	Gathering
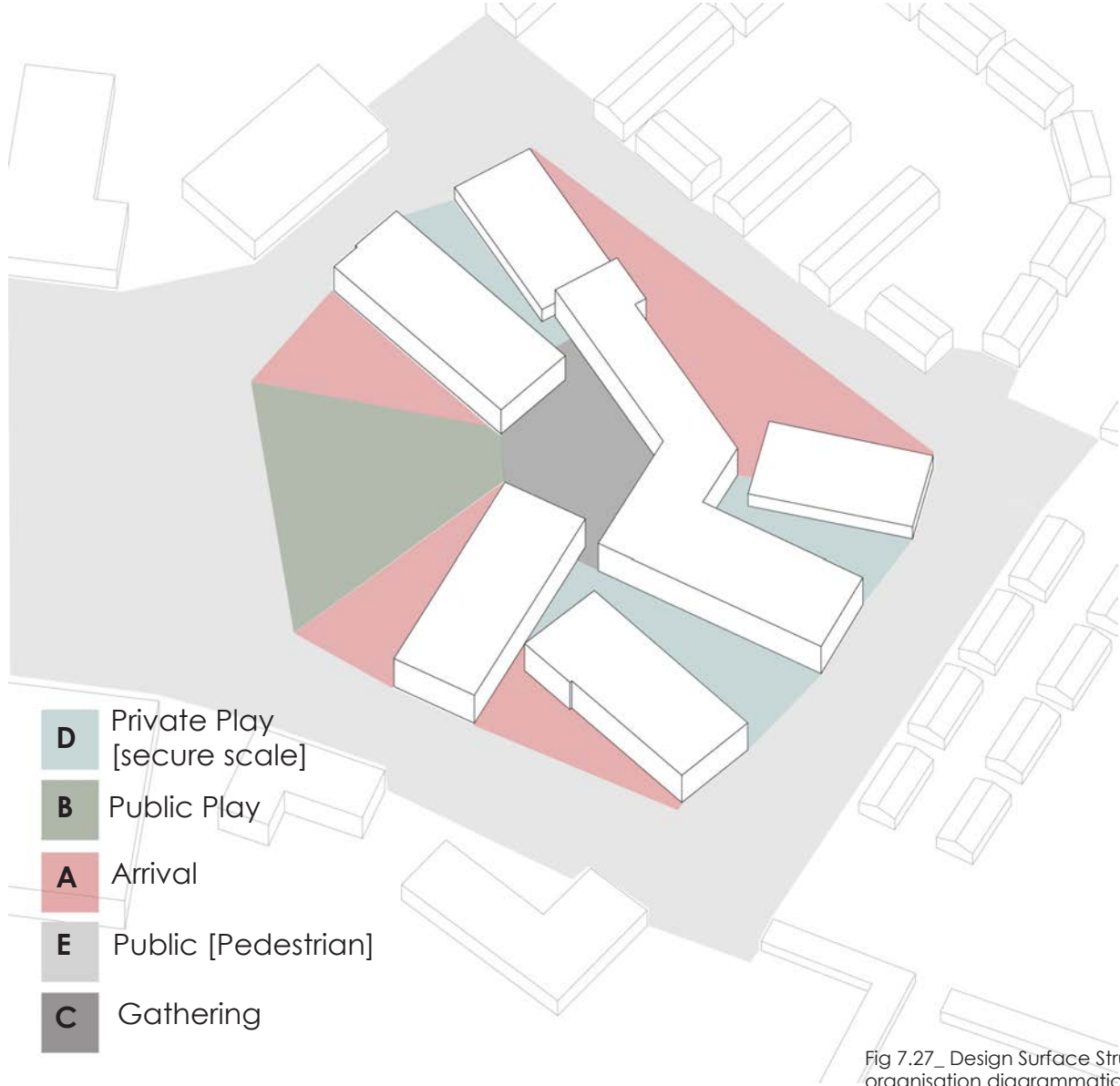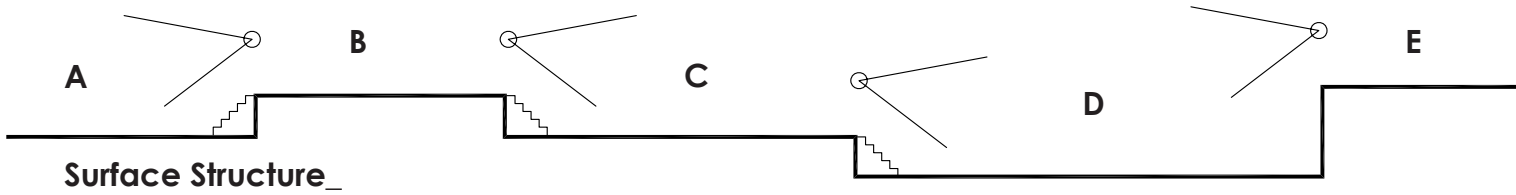
Fig 7.27_ Design Surface Structure, organisation diagrammatic illustration

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Sectional Order [development]_

Lightweight Structure [Social]
Interactive space

Heavy Structure [Academic]
Controlled Space

Volume as layered entity, deconstructing
to form interactive thresholds
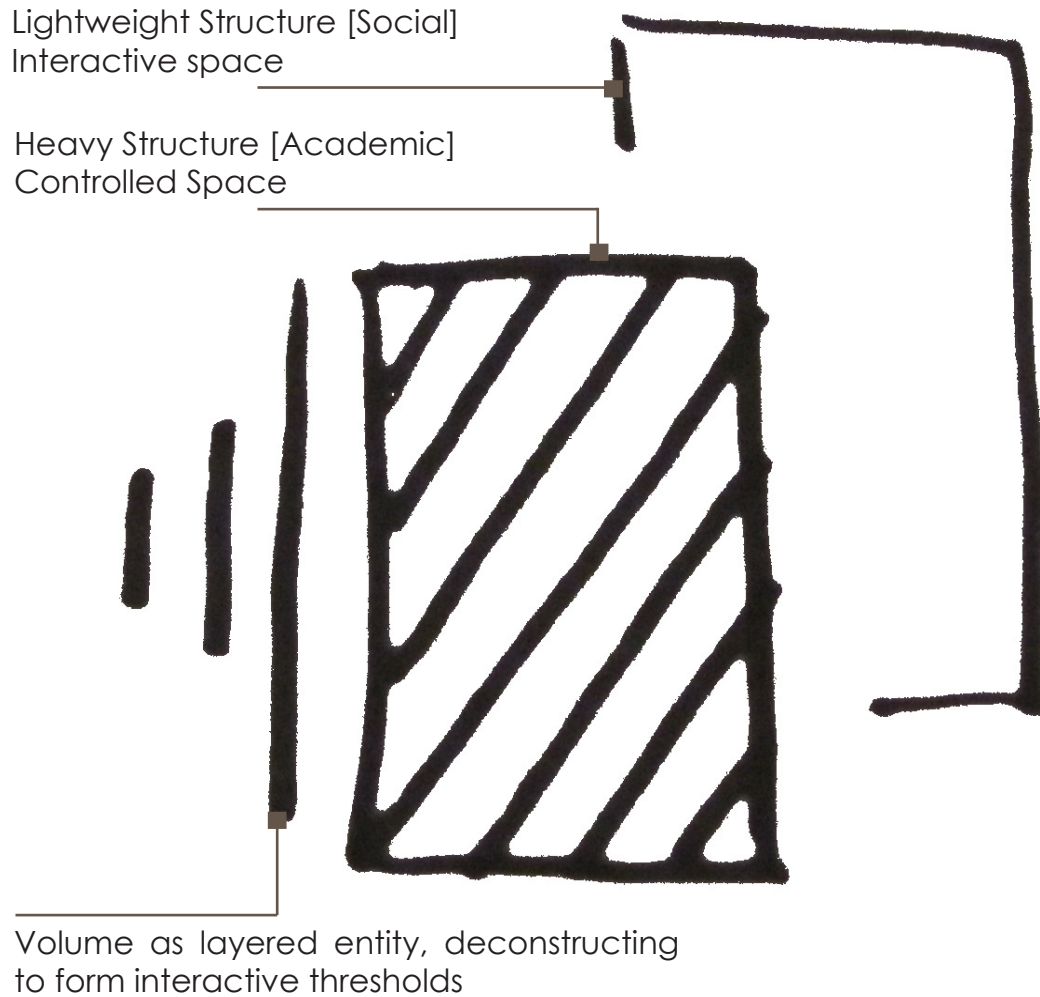
Fig 7.28_ Sectional Order, central
design idea diagram

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Fig 7.29_ Final Design organization, Ground Floor Plan

Ground Floor Plan 1-200

Fig 7.30_ Final Design organization,
First Floor Plan

First Floor Plan 1-200

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Program Allocation:

1. Main Drop off point and playground
2. Communal Square and Auditorium
3. Administration Reception
4. Sick Room
5. Grade 1 and 2 Classrooms
6. Courtyard as extensions of corridor streets
7. Grade R Classrooms
8. Library
9. Multi use Gymnasium
10. Media Library
11. Cafeteria
12. Kitchen
13. Special Classrooms
14. Secondary Entrance
15. Multi Purpose Classroom
16. Grade 6 Classrooms
17. Circulation Areas
18. Grade 5 Classrooms
19. Grade 3 and 4 Classrooms
20. Administration Staff Room
21. Laboratory
22. Grade 7 Classrooms
23. Community Square

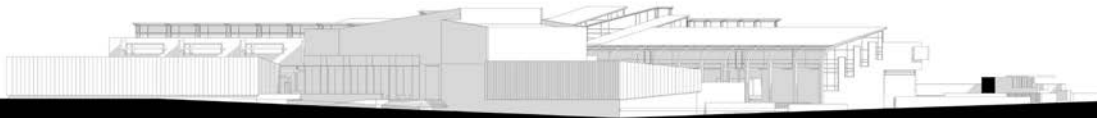Fig 7.31_ Final Design, spatial perspective development
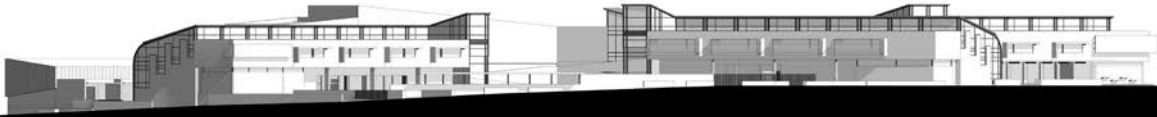
West Elevation

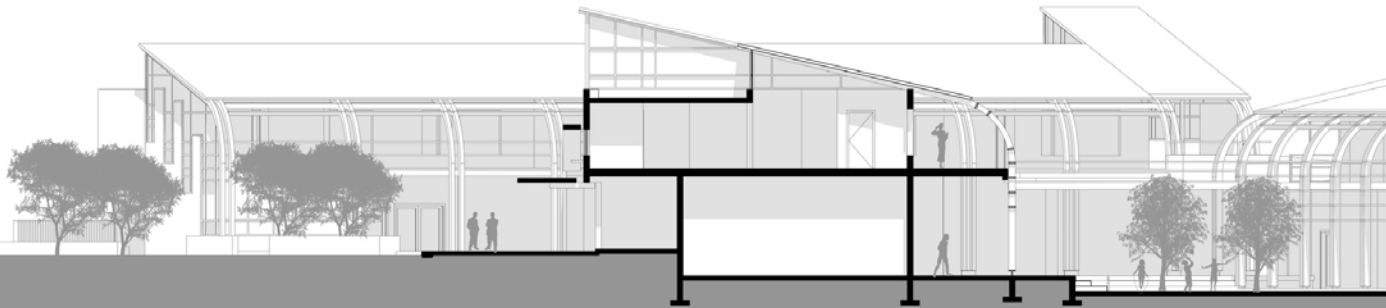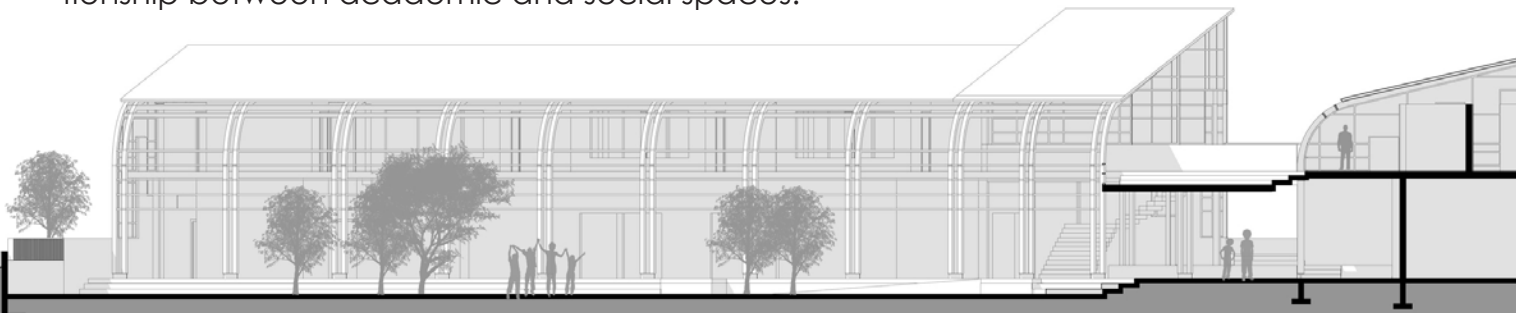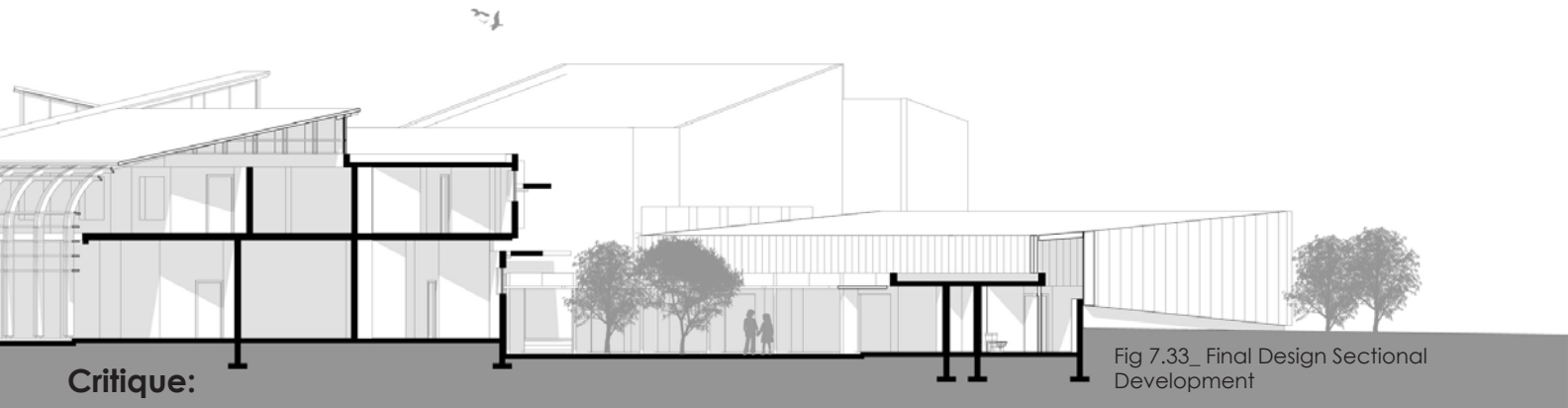East Elevation

North Elevation

South Elevation

Fig 7.32_ Final Design Elevation Development

Proposal 5 Design Intentions:

- Establishing a strong interactive space between the community square and the school playground.
- Moving cafeteria space and reorganising the south east corner of the site to transform the communal edge of the playground into a public interactive boundary from which activity filters into the school.
- Arrangement of building mass and open courtyard spaces allows the layout of the school to be able to close off sections and use them separately. This allows the school design to function successfully as an educational facility and a space of public use[Public School as public space]
- The plan is laid out to ensure that ground floor spaces are able to function as public facility spaces.
- The 'city in miniature' concept is spatially achieved through corridor streets that frame the courtyards and intersect to become a communal square of activity. This communal square extends to form the playground and ultimately becomes part of the community square, which links the site and design to the macro context and concept.
- Classrooms as domestic domains form a 'urban' edge along the corridor streets through carefully placed entrance lobbies and seating and so doing creates and interactive relationship between academic and social spaces.

Fig 7.33_ Final Design Sectional Development

Critique:

- Building site edges need to be more sensitively defined, especially the playground edge.
- Entrance to site is unclear and should read much stronger.
- Ramp position on the south elevation of the administration building closes up the elevation causing the administration building to have awkward access points to the communal square. Position should be revaluated.
- Consider the option of having the grade R and special classrooms open up towards the north, activating the northern edge of the site with possible after school community class room activity. This would give those classrooms a double function that relates to the rest of the sites' ground floor public function arrangement.

Addressed in Design Refinement

Fig 7.34_ Final Design Sectional Development
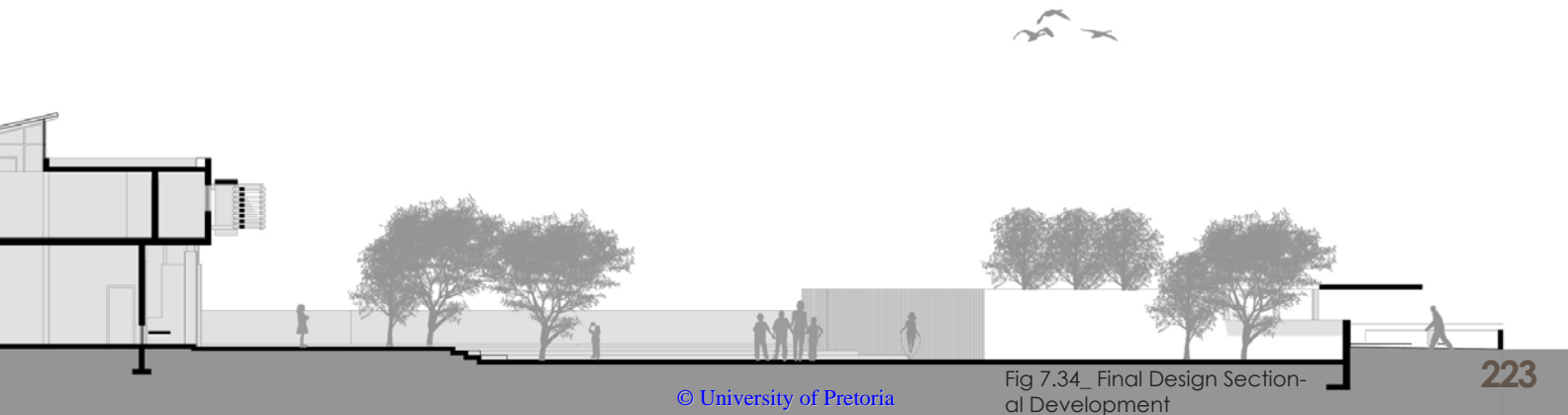
08 Design Refinement

Fig 8.1_ Concept sketch

225

8.1 Design Finalization:

"We must answer the functional requirements of the moment in such a way that the resulting built form has a permanent validity. Tomorrow will inherit only space. Our ultimate responsibility is therefore the creation of noble space. Consider, therefore, the Hunstanton School as having two lives: an everyday life of teaching children, noise, furniture, and chalk dust, as equals with the building elements, all of which add up to word "school". And a secret life of pure space, the permanent built Form which will persist when school has given way to Museum or Warehouse, and which will continue to exist as idea even when the Built Form has long disappeared. It is through built form that the inherent nobility of man finds release."
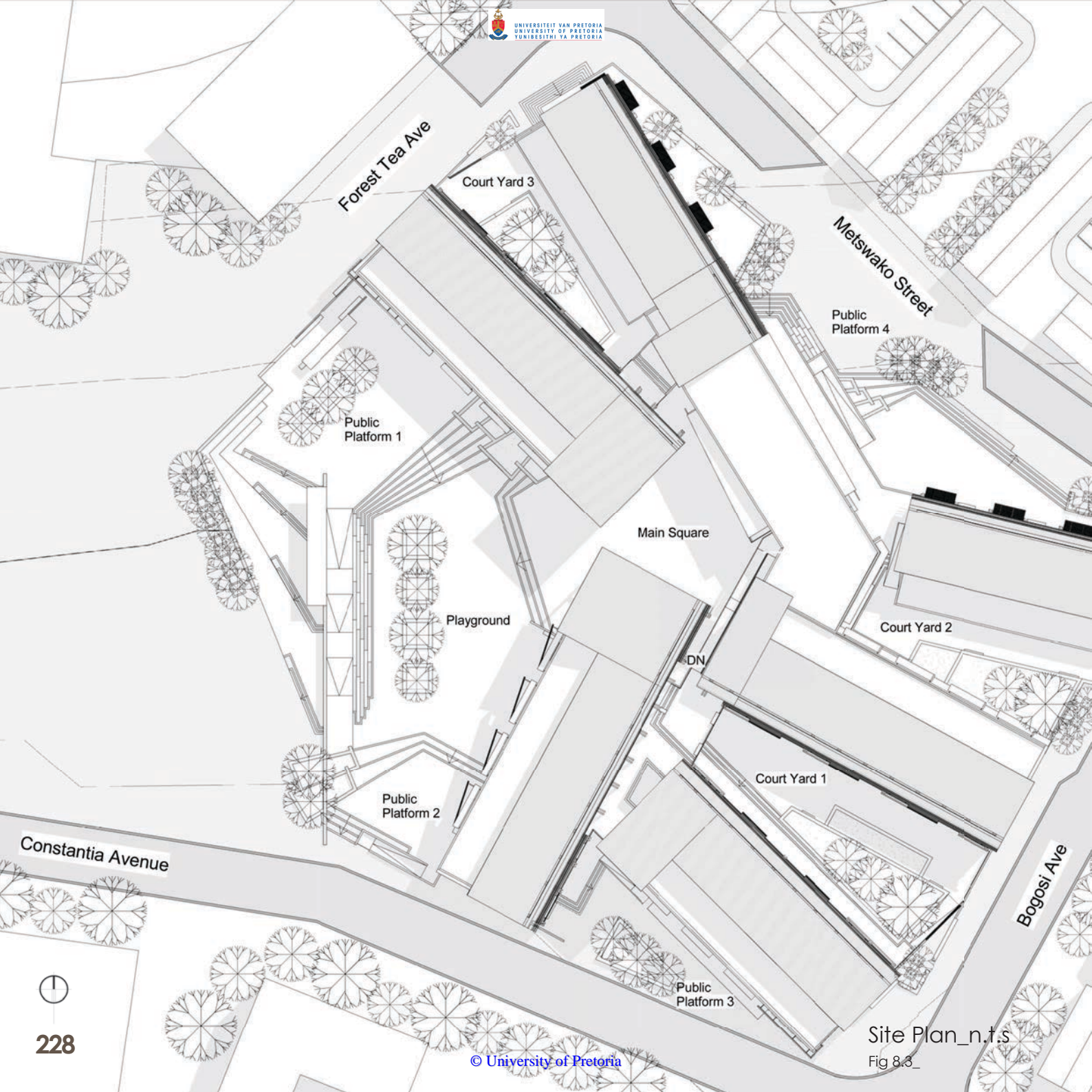
Peter Smithson 1954, in: 'Reflections on Hunstanton Becoming a school: Space and Learning, page 2

1.
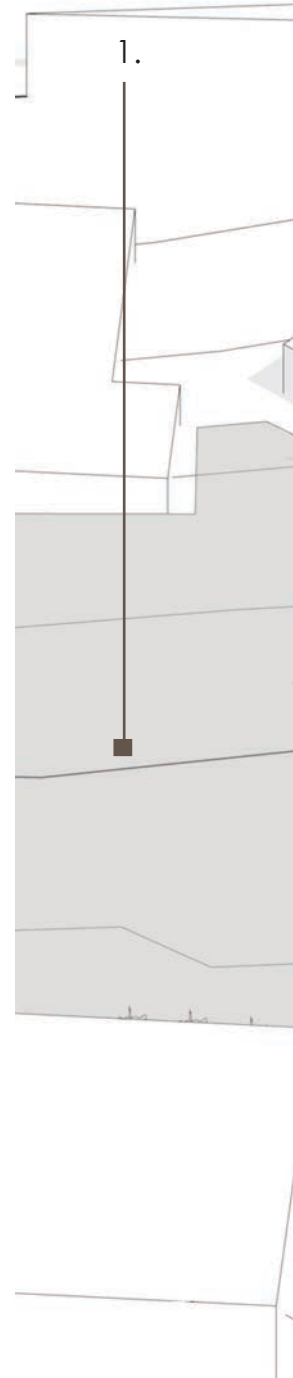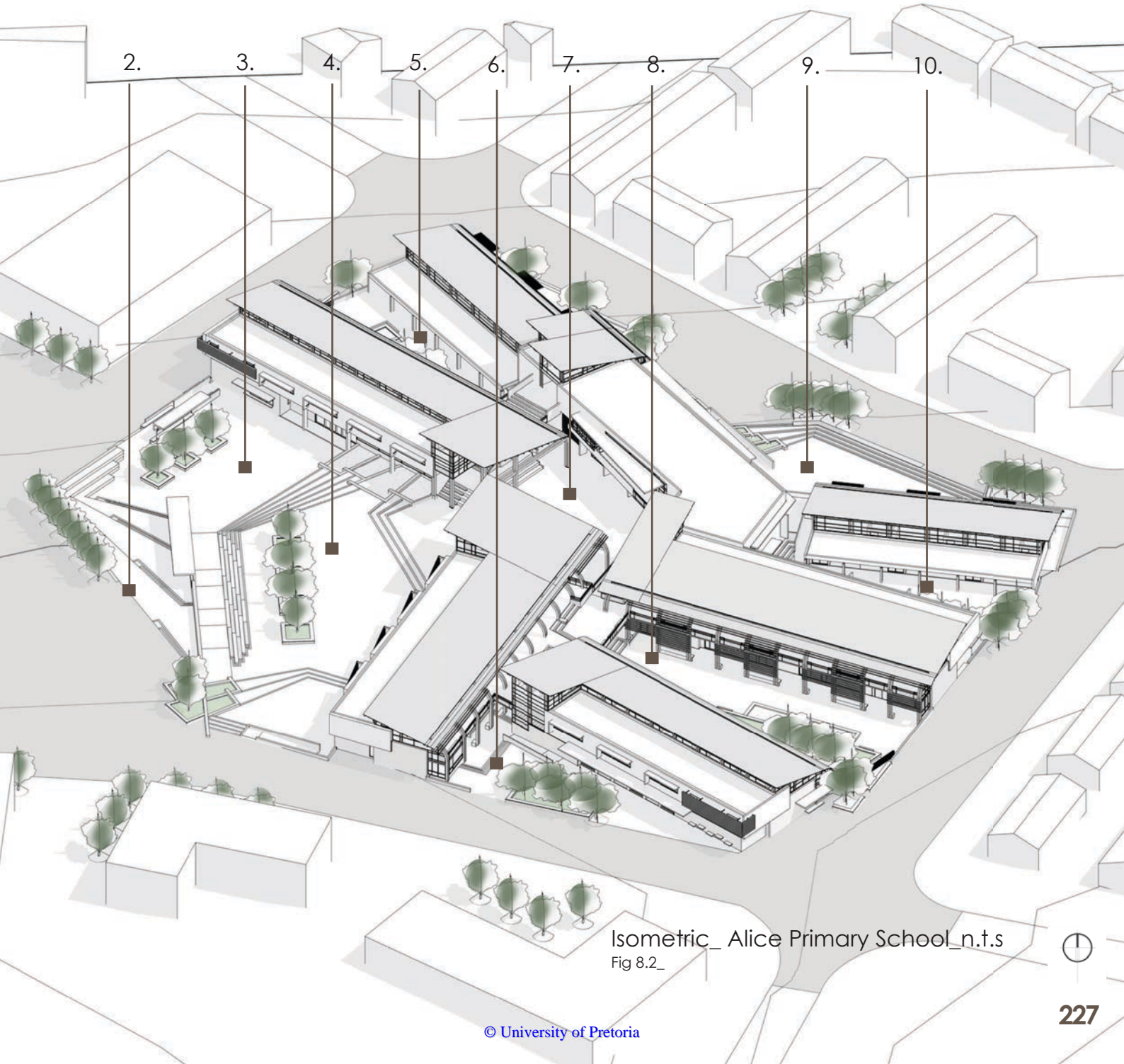
Isometric_ Alice Primary School_n.t.s

Fig 8.2_

Forest Tea Ave

Court Yard 3

Metswako Street

Public Platform 4

Public Platform 1

Main Square

Court Yard 2

Playground

DN

Public Platform 2

Court Yard 1

Constantia Avenue
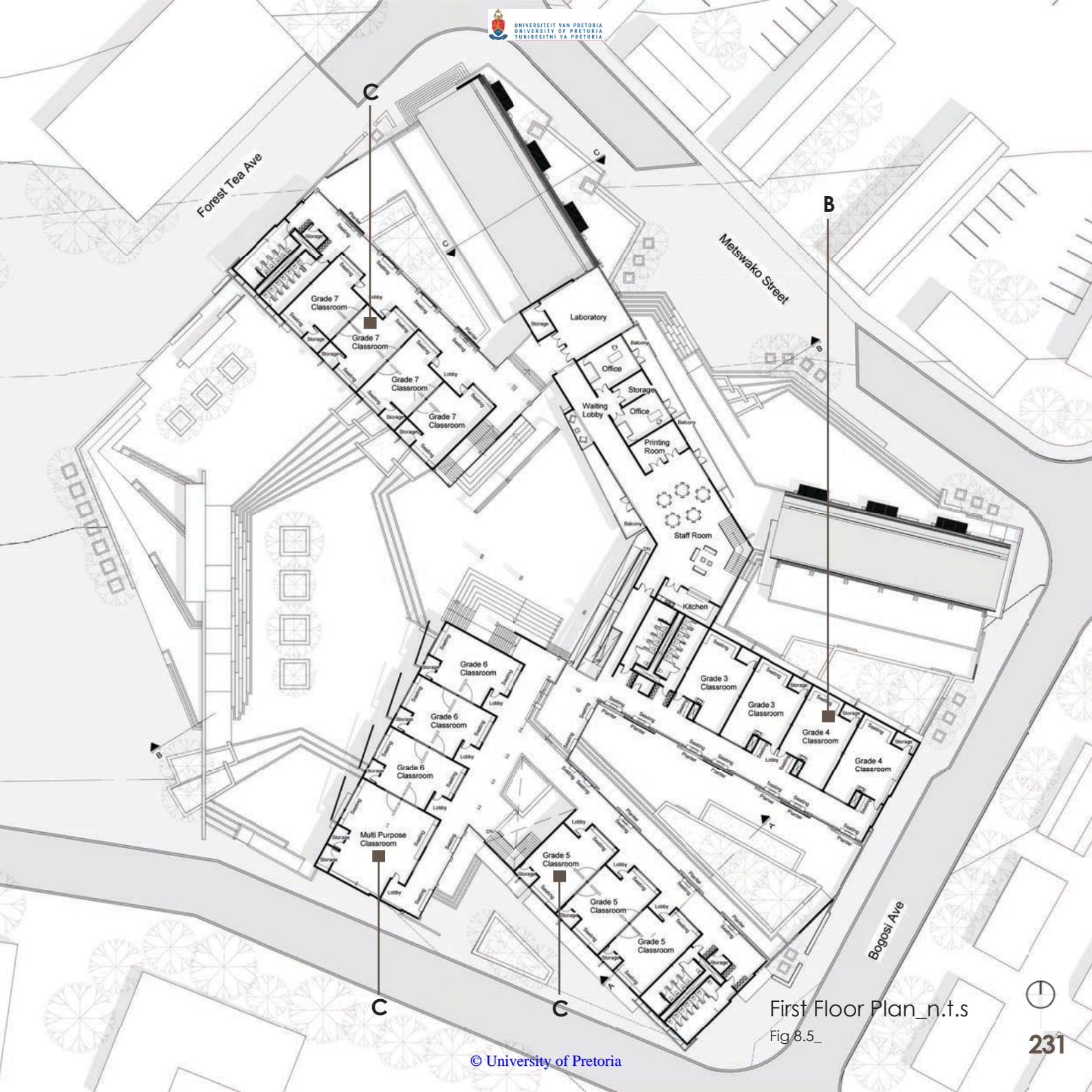
Bogosi Ave

Public Platform 3

Site Plan_n.t.s

Fig 8.3_

1. Community Public Square as part of Extended School design, indicated and discussed in Urban Structure Chapter, page 168
2. Main Entrance to 'Alice ' site, where the community square folds into the site and becomes an extension of the public schools' public platforms.
3. Public Platform 1 becomes the public space that is activated by the cafeteria and soup kitchen. This space also forms a transition platform for the public activity that moves from the community square to the public playground.
4. Playground space that becomes part of the community square through connecting public platforms. This playground will be used by the school during school hours, but is positioned to function as a public playground after school hours.
5. Courtyard 3 as private play area for special classroom pupils. Formed and positioned to be able to function as a separate unit.
6. Public Platform 3 functions as public entrance point to the media Library and School Library space. The platform also functions as a market area, taking advantage of the activity link, Constantia Avenue, along this edge [learning from life]
7. Main Square that functions as the schools gathering auditorium space. This is the point where the classroom corridors [streets] intersect. This area also functions as the main entrance platform to the administration reception area [from the community square direction]
8. Courtyard 1 as a private play area for Grade 1 and 2 pupils [including first floor activity of the Grade 3-6 pupils]. Formed and positioned to be able to function as a separate unit.
9. Public Platform 4 that functions as a public entrance and gathering point for the reception area, afterschool adult education classrooms, special classrooms, and Grade R classrooms.
10. Courtyard 2 as private play area for Grade R pupils. Formed and positioned to be able to function as a separate unit.

[See Isometric Image, page 227]

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Gound Floor Plan_n.t.s

Fig 8.4_

Forest Tea Ave

Metswako Street

B

Laboratory

Grade 7
Classroom

Grade 7
Classroom

Grade 7
Classroom

Grade 7
Classroom

Office

Waiting
Lobby

Storage

Office

Printing
Room

Balcony

Staff Room

Kitchen

Grade 6
Classroom

Grade 6
Classroom

Grade 6
Classroom

Grade 3
Classroom

Grade 3
Classroom

Grade 4
Classroom

Grade 4
Classroom

Multi Purpose
Classroom

Grade 5
Classroom

Grade 5
Classroom

Grade 5
Classroom

Bogosi Ave

C

C

First Floor Plan_n.t.s

Fig 8.5_

231

© University of Pretoria
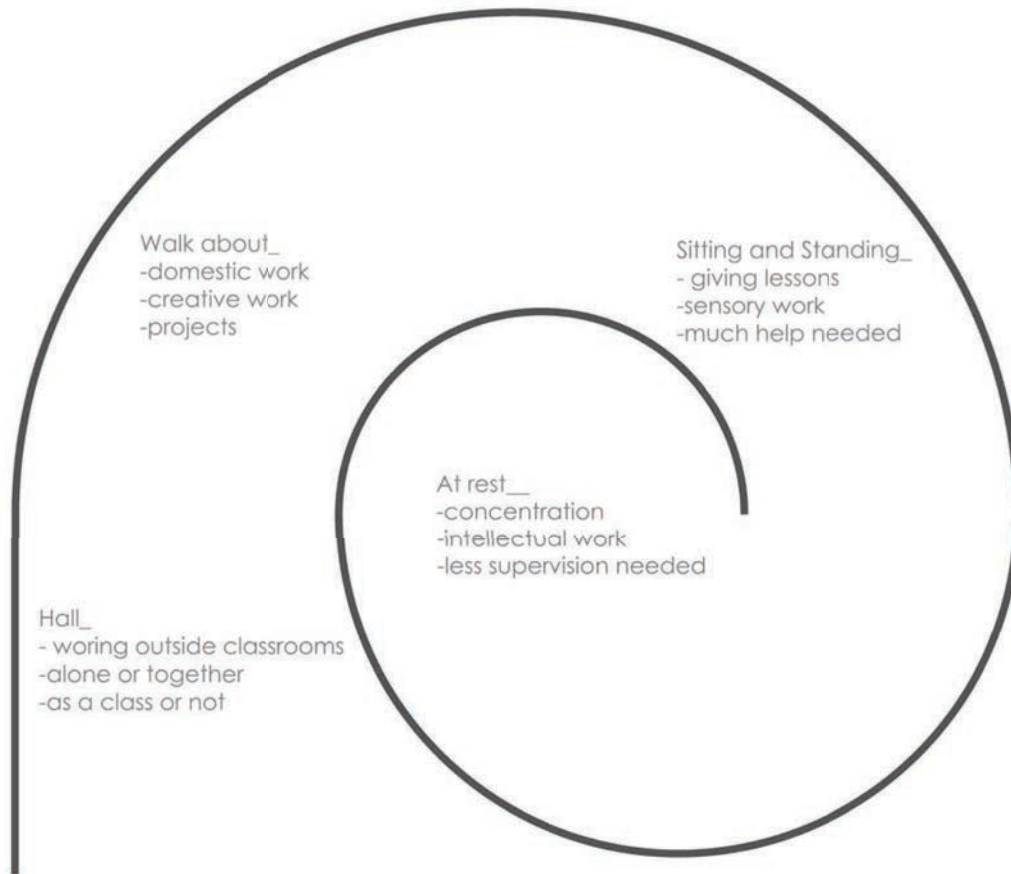
8.1.1 Classroom Articulation:

Age Group Differentiation: Spatial Design and Layout_

"An unarticulated rectangular classroom lends itself best to instruction, the unidirectional transfer of knowledge that forms the basis of teaching-fronted lessons. The primitive paradigm gives teachers the ideal overview of their pupils. An articulated space by contrast is less easily survey able and provides more places for different groups or individuals to engage in different activities simultaneously in a room without being unduly distracted by each other. So the number of options are greater here, there being several centres of attention rather than just one."
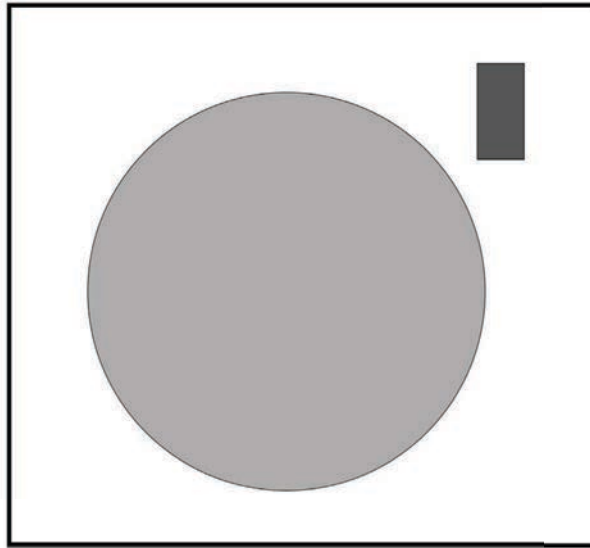
H.Hertzberger: 2008

Herman Hertzbergers' theory on the 'articulated classroom' has the potential to be used in combination with Hans Scharouns' theoretical expression in his design of the Volschule [a mixed primary school] developed in 1951. Scharoun not only used classroom articulation but focussed on the classroom cluster arrangements of the different age groups the school contained. The way in which the classroom and units are arranged spatially, laid a particular emphasis on the way in which an educational process should gradually integrate the individual pupils into the community, making him/her spatially responsible without repressing his/her individuality. [H.Scharoun: A Monograph: 1978]

The dissertation realizes the potential of combining these two theoretical approaches in the process of strengthening the design in terms of its extroverted and interactive approach to the educational process. This articulated approach has the potential to further integrate the school with the surrounding community on an intimate scale through defined micro environments.
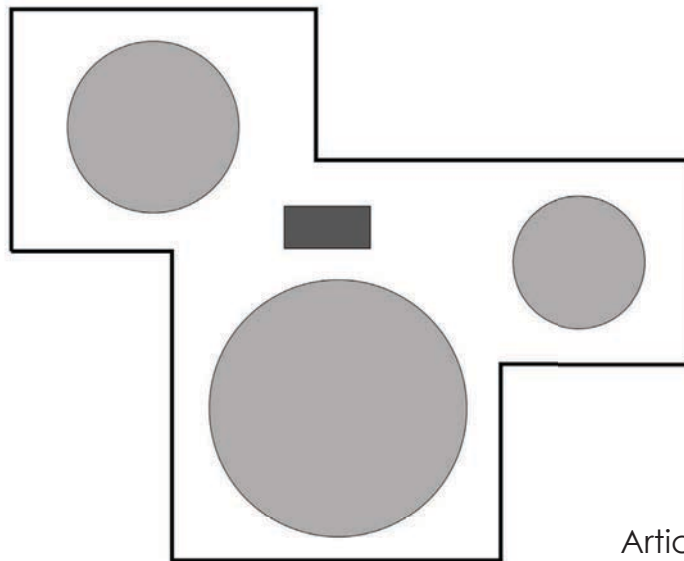
Walk about_
-domestic work
-creative work
-projects

Sitting and Standing_
- giving lessons
-sensory work
-much help needed

At rest__
-concentration
-intellectual work
-less supervision needed

Hall_
- woring outside classrooms
-alone or together
-as a class or not

Classroom Articulation_

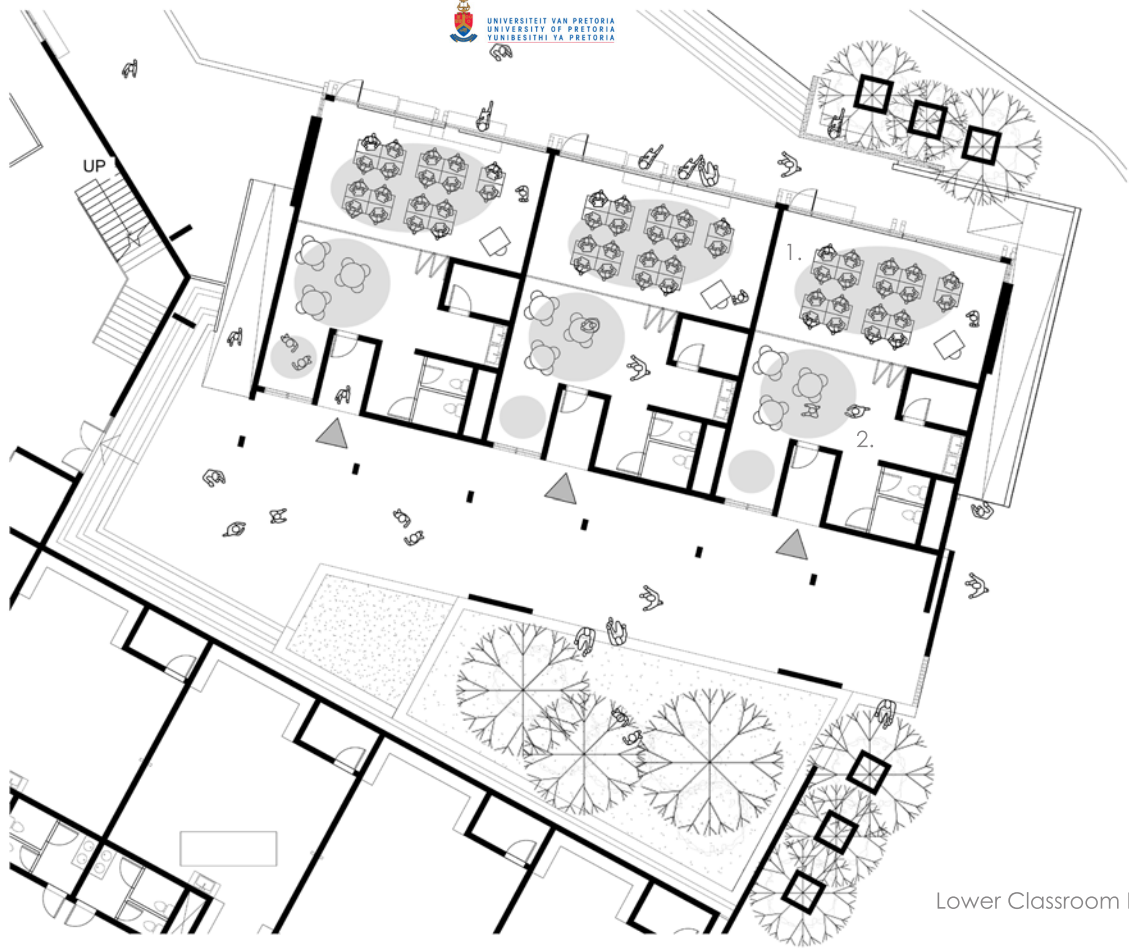Fig 8.6_ Apollo school classroom articulation

233

Basic Classroom_

Articulation Classroom_

Fig 8.7_ Articulation lead to multiple centres

Lower Classroom Diagram
1. 50m2
2. 51m2

Fig 8.8_ Lower School classroom articulation illustration

The Alice project aims to use these theories on the articulated classroom units to form the next step in the process of integrating the public school into the surrounding community. By doing so the design creates a harmony of relativity between pupil, school and community. [H.Scharoun: A Monograph: 1978]

Lower School [**A**]:
Welcoming and protective space – focussing on play

Location:
- Quiet edge of site with private entrance
-Secure environment

235

Middle Classroom Diagram
1. 55m2
2. 8.7m2
3. 8.1m2

Fig 8.9_ Middle School classroom
articulation illustration
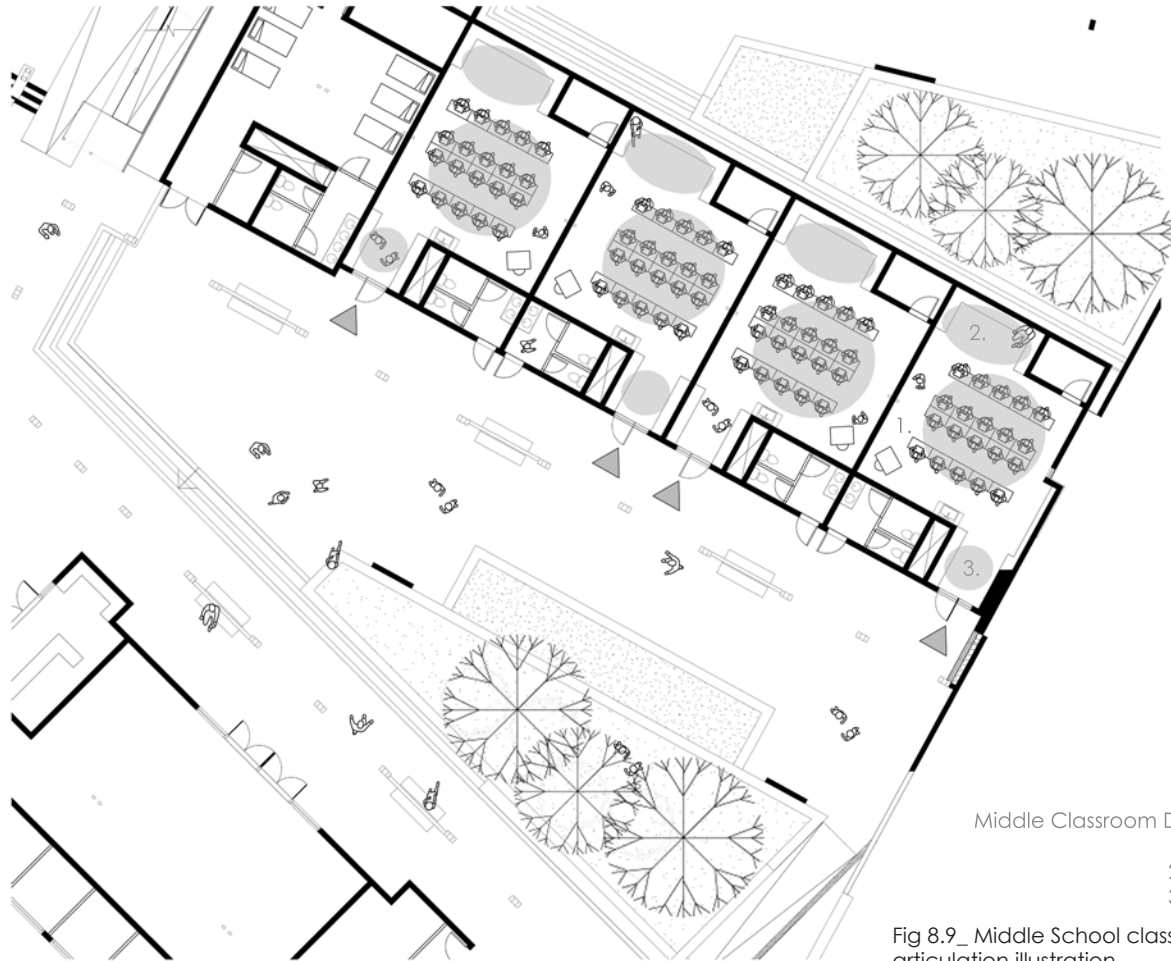
Middle School[**B**]:
More focussed learning space – serious learning

Location:

- Classroom cluster share courtyard with School Library
-Position more exposed

Upper Classroom Diagram
1. 57m2
2. 12.5m2
3. 9.6m2

Fig 8.10_ Upper School classroom articulation illustration
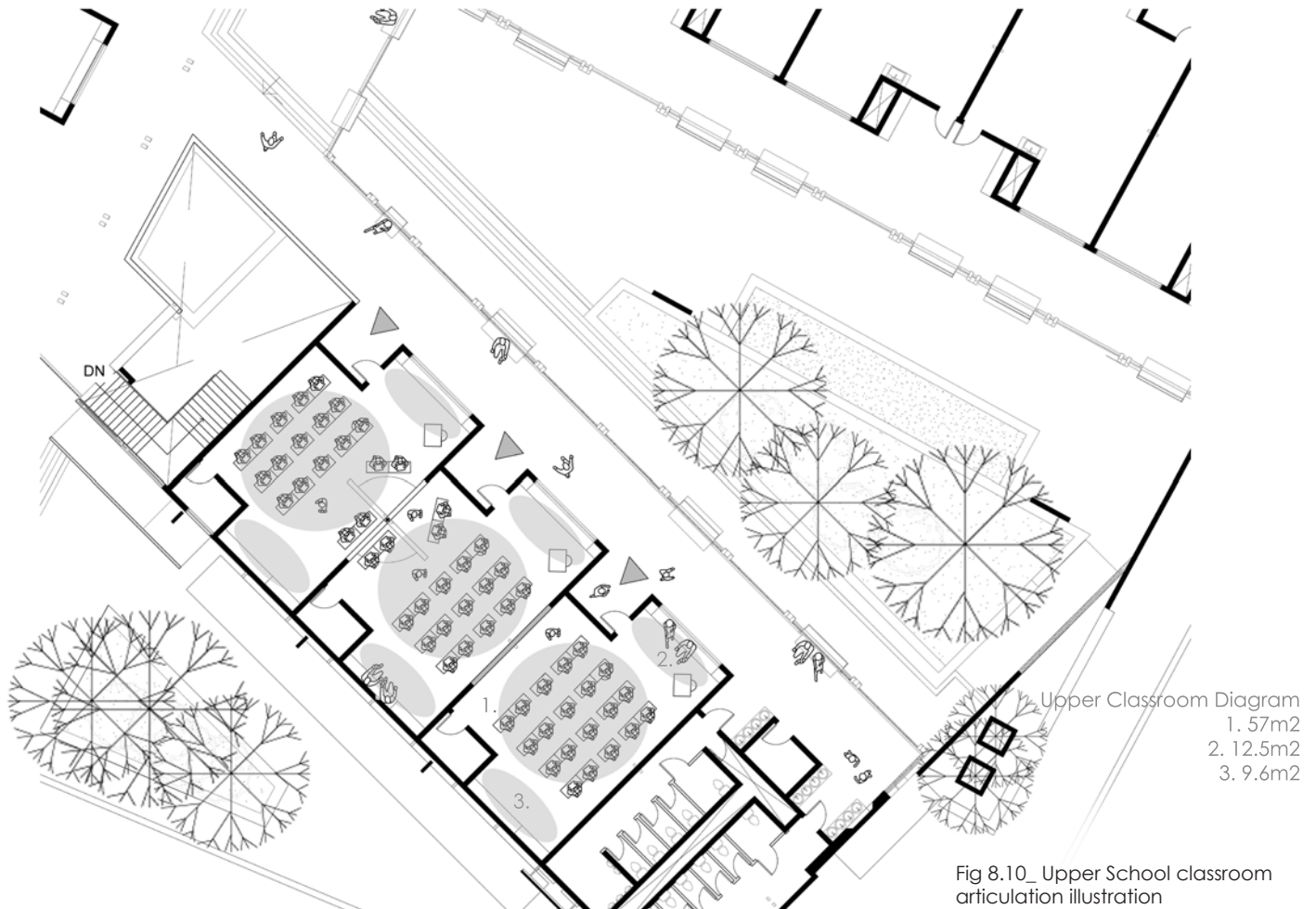
Upper School [**C**]:
More accommodating and less rigid – freedom for decision making

Location:

-   Classroom cluster forms part of the public program edge [first floor layer of activity]
-   Position is exposed to public activity

"This discussion exposes architecture's two-faced stance towards the designing of schools. By this is meant the wedge driven between those organizations geared to education [and teaching] and architecture, as though it were a choice between alternative, one a question of fitness for purpose and the other a free-ranging idea hovering above it. There is only one kind of architecture, however: an architecture that must make space for education [in other words teaching and learning] and even incite such space-making. What may be exposed of the space that constitutes a school and what conditions can be achieved within the domain of architecture?"

H.Hertzberger:2008

Fig 8.11_ Olievenhoutbosch Primary School Grade R classroom

Articulated classroom:
- Individuality
- Interaction

Classroom cluster arrangement:
- Process of gradually integrating the individual pupil into the community
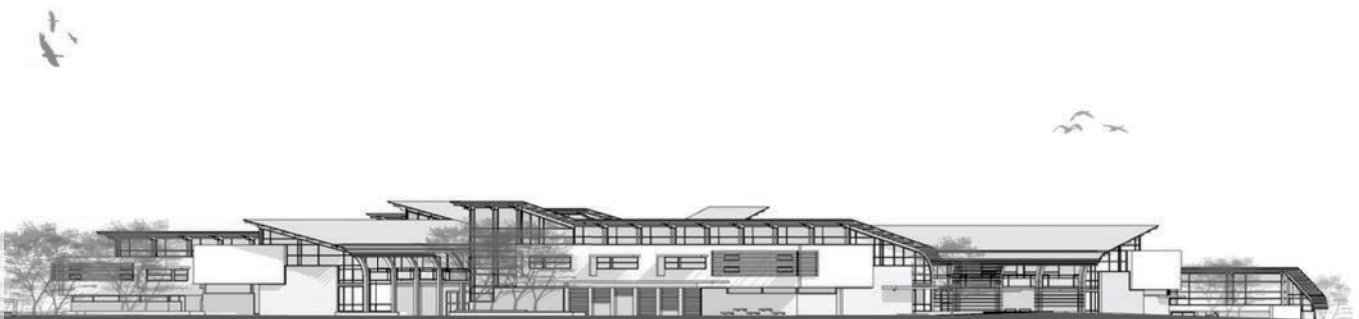
School as 'city-in-miniature':
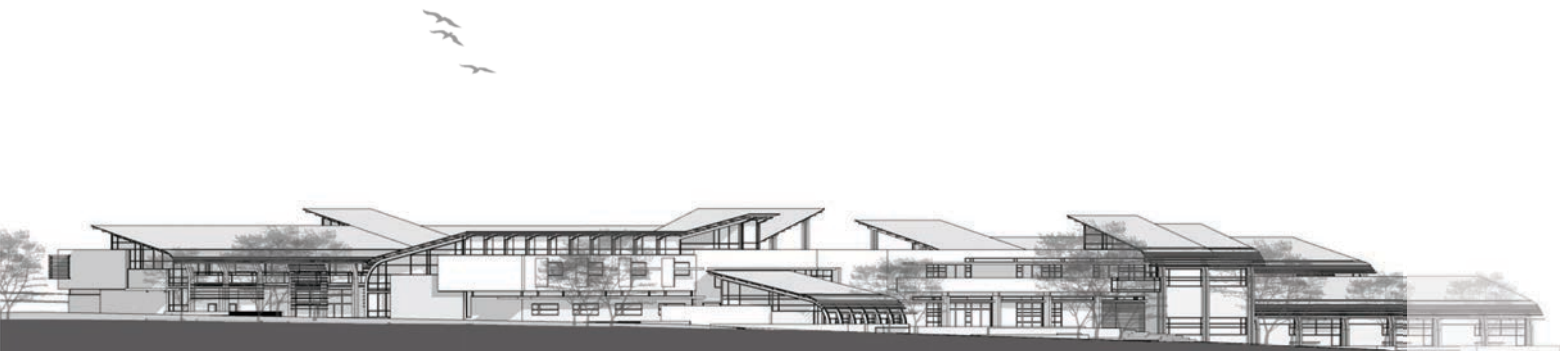- Educational process as a 'network' to enrich the development process

Extended School:
- Community facilities grouped for cross discipline interaction

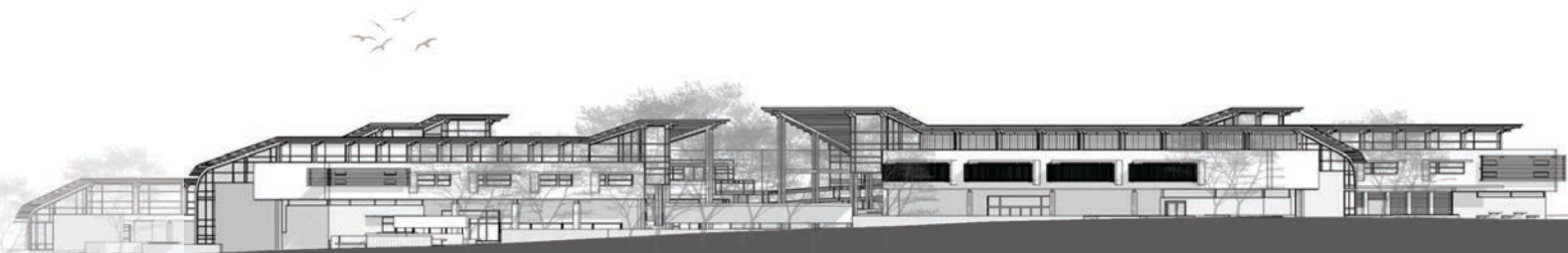**Public School as Public Space**

239

North Elevation n.t.s

Fig 8.12_

South Elevation n.t.s
Fig 8.13_

East Elevation n.t.s
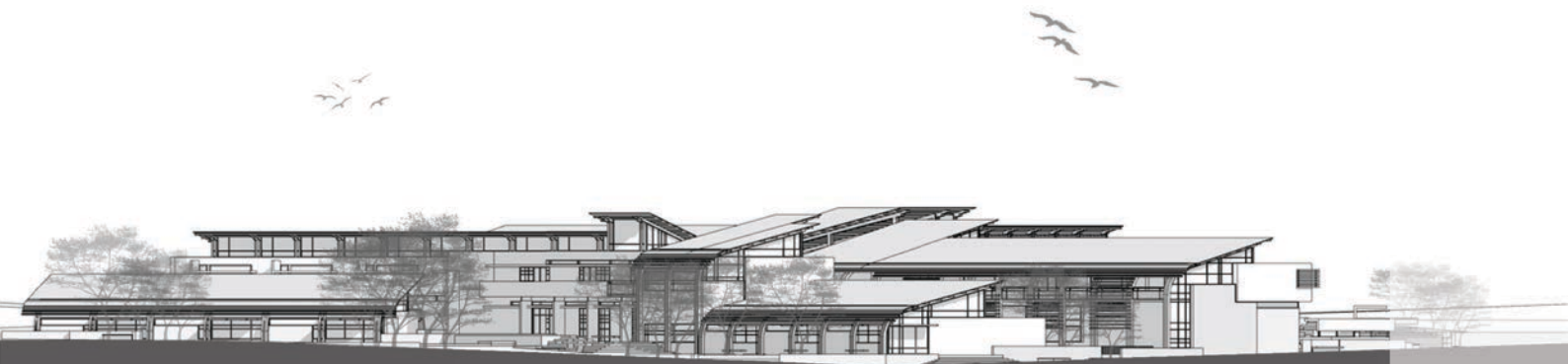
Fig 8.14_

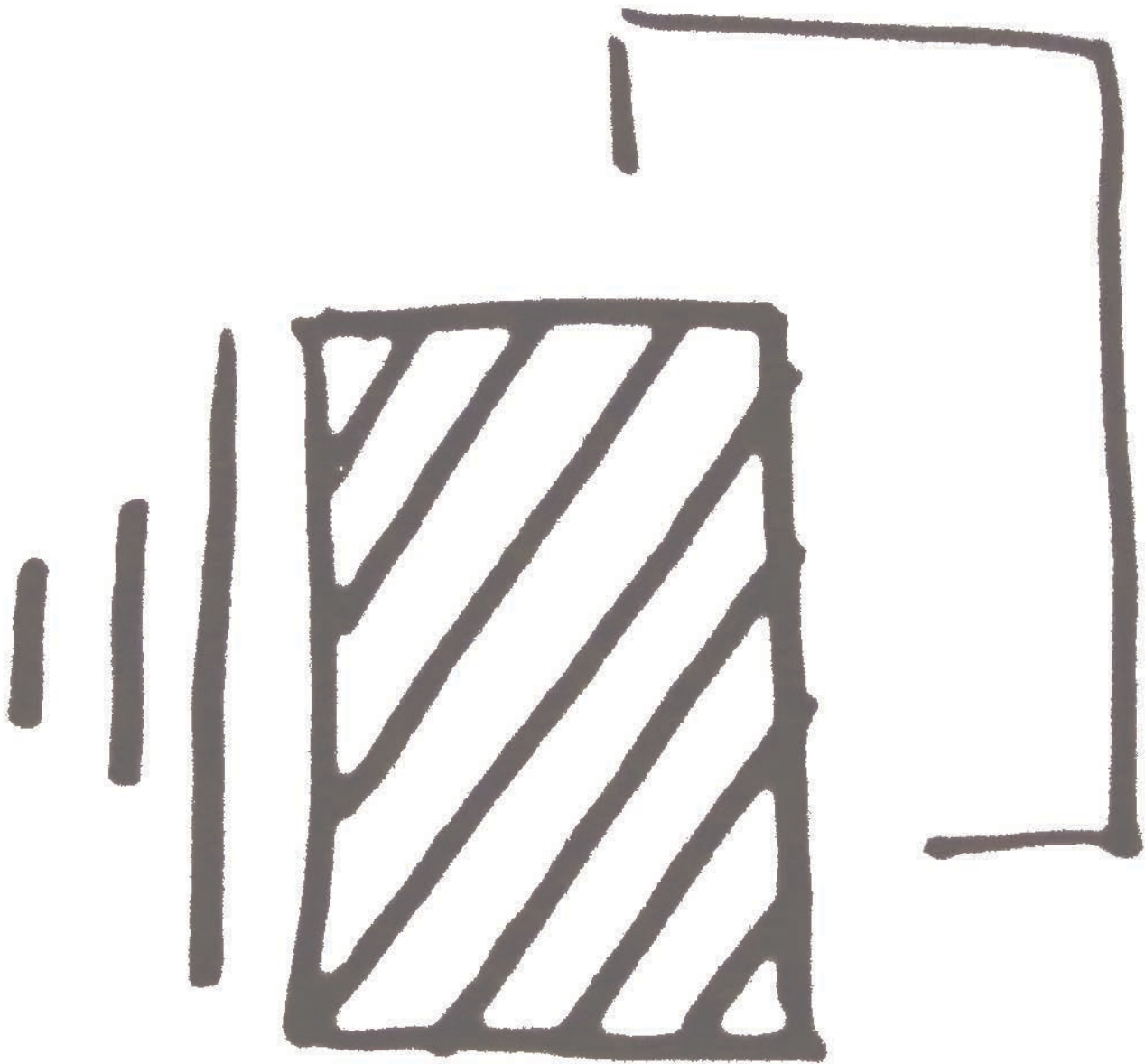West Elevation n.t.s
Fig 8.15_

9 Technical Resolution

Fig 9.1_ Conceptual sketch of sectional order

9.1 Structural Theory:

In the process of creating a learning environment that resembles the city, the design should keep in mind that a city environment is constantly in the process of change. There is always the balance between spatial evolution as part of a challenging environment and the reality of familiar territory. As such the school design components should be able to have the capacity to change without affecting the whole. To enable this requirement Herman Hertzberger suggests the creation of a physical environment that is able to absorb the images and things we like to have around us so that we have the opportunity to engage with them [H.Hertzberber, 2008.page 101]. Through this process the physical built elements are able to react relatively to the environment that surrounds it as well as its occupants. To be able to realize this concept Hertzberger suggests that building components should be seen less as two-dimensional elements and more in terms of three dimensional 'zones'. In order for the design to implement its building components as 'zones', the building elements should become much more than simply surfaces of separation, but rather elements that have the capacity to contain and therefore give substance and meaning to the space. This 'capacity to contain' requires that everything we build has a thickness or depth in order to provide volume for manipulation.

The dissertation study recognizes the potential in this theory by Hertzberger and suggests that the built 'volumes' are in effect built up out of layers. The deconstruction of the 'volume' leads to the peeling away of the volumetric layers that ultimately leads to the formation of different thresholds of interaction. This interaction, with the formed thresholds that materialized from both social and academic spaces, will in fact determine the degree of recognition and change that the dynamic educational environment requires. The design aims to incorporate this process of deconstruction by allowing the academic [brick work] structural volume to peel away layers that will form shading elements, seating surfaces, and volumetric recesses [break away spaces], articulating the built form as an interactive volume. The social [steel work] structural volume that folds over the academic space, to communicate its flexible sustaining function, reveals its volumetric layers as it bends downward towards the courtyard spaces of social academic activity. The curved steel form that communicates a surface of continuity fromcourtyard to corridor gradually breaks up to become a volume of seating, services, shading, and safety, communicating a lightness that is supported by its 'academic' anchoring mass [heavry sturcture].

Aesthetic Informants_

Fig 9.2_ Photo montage of aesthetic informants

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9.2 Structural Composition: Heavy Structure [Academic]_

Primary

- Load bearing 220mm brick structure
- Face brick Wolkberg Bronze Read Brick, stretcher bond, raked joint for lower level finish
- Brickwork, white plaster and painted upper level finish, lead free paint should be used
- 220 x 500mm White plaster and painted brick parapet wall with concrete coping on outer concrete roof edge

Secondary

- 255mm Reinforced cast in place concrete roof with lightweight screed to fall min 25mm, "Torch-on" waterproofing layer on top of screed, followed by 25mm insulation layer, a drainage layer, filter fleece and retention material layer to hold the rain water.
- 500mm Reinforced cast in place concrete up stand beam on inner concrete roof edge
- 255mm Reinforced cast in place concrete floor slab with 25mm screed on top of concrete surface with flooring material as finish.

Fig 9.3_ Semi Exploded model view of south-east building mass

Light Structure [Social]_

Primary
- 300x100mm Galvanized steel, parallel flange channel battened portal frame structure
- 285x285x10mm Hot formed square hollow section interior columns as part of portal frame
- 160 IPE beam connection of portal frame to brick structure along corridors

Secondary
- 150x75x20x3.0 Cold formed lipped channel purlins that act as structural bracing members
- 150x75x3.0 Cold formed rectangular hollow sections that form a continuation of the purlin rhythm down the facade for bracing and aesthetic purpose.
- Bondek concrete slab along corridors support by portal frame beam connection to brick structure
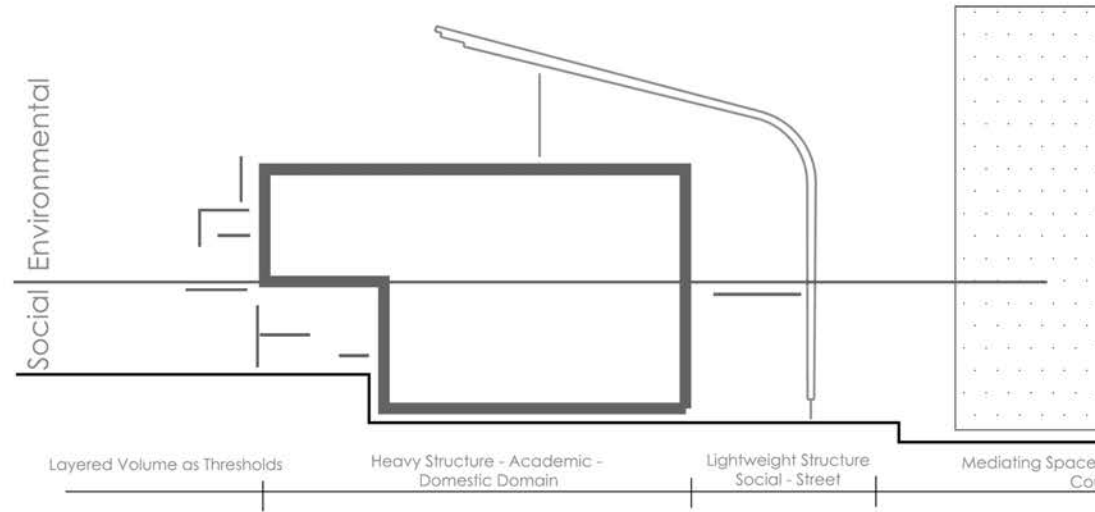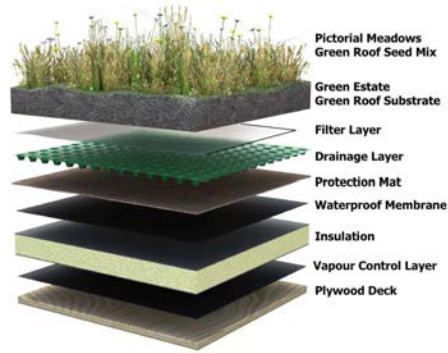

Fig 9. 4.. Semi Exploded model view of north-east building mass

Heavy Structure_

Tertiary
- Precast concrete shading panels and exterior seating to be built into brick wall, white painted finish on upper level, exposed concrete on lower level, lead free paint should be used
- Extensive green roof as part of concrete roof insulation
- Pre cast reinforced concrete portal frame footings as seating

Pictorial Meadows Green Roof Seed Mix
Green Estate Green Roof Substrate
Filter Layer
Drainage Layer
Protection Mat
Waterproof Membrane
Insulation
Vapour Control Layer
Plywood Deck

Social | Environmental

Layered Volume as Thresholds

Heavy Structure - Academic - Domestic Domain

Lightweight Structure Social - Street

Mediating Space Co

S

Sectional Order Diagram_ Fig 9.5_ Sectional Order Diagram

Tertiary

- Galvanized steel section infill panel frame system.
- Enamel steel infill panel, solid and perforated
- 'Klip-Lok' profile roof sheeting with Global coat finish, 50mm ISO board insulation material to be placed under roof sheeting

- Social/Academic - urtyard

Lightweight Structure - Social - Street

Heavy Structure - Academic - Domestic Domain

N
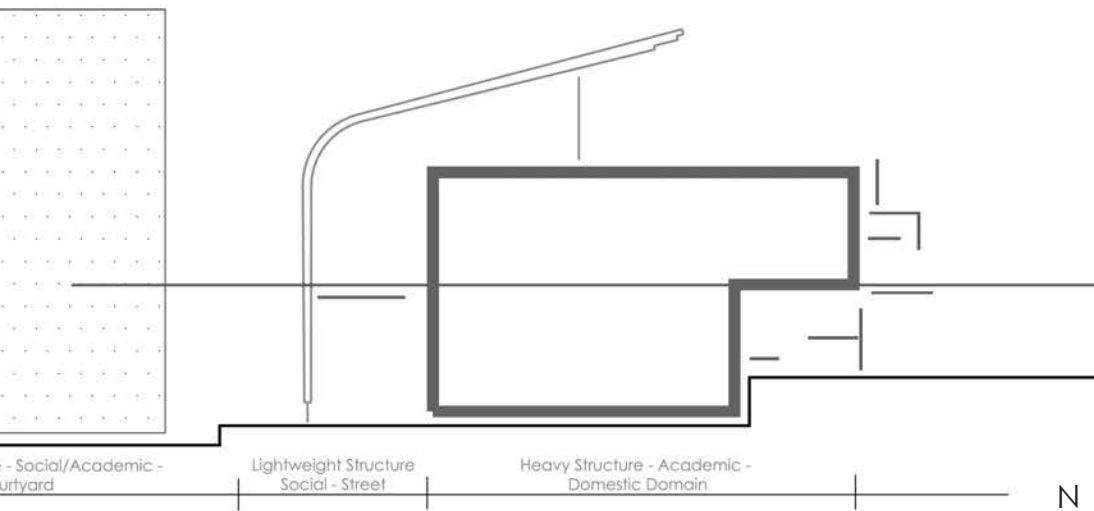
Fig 9.6__ Photo montage of building materiality concept

41

700mm cover width

Fig 6_

251
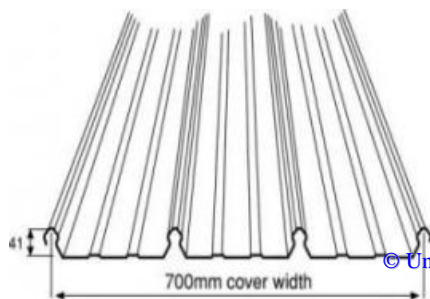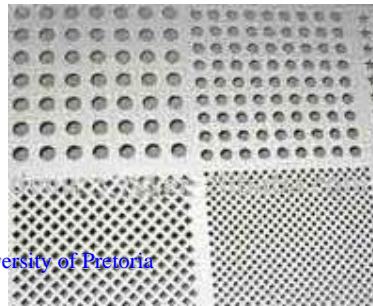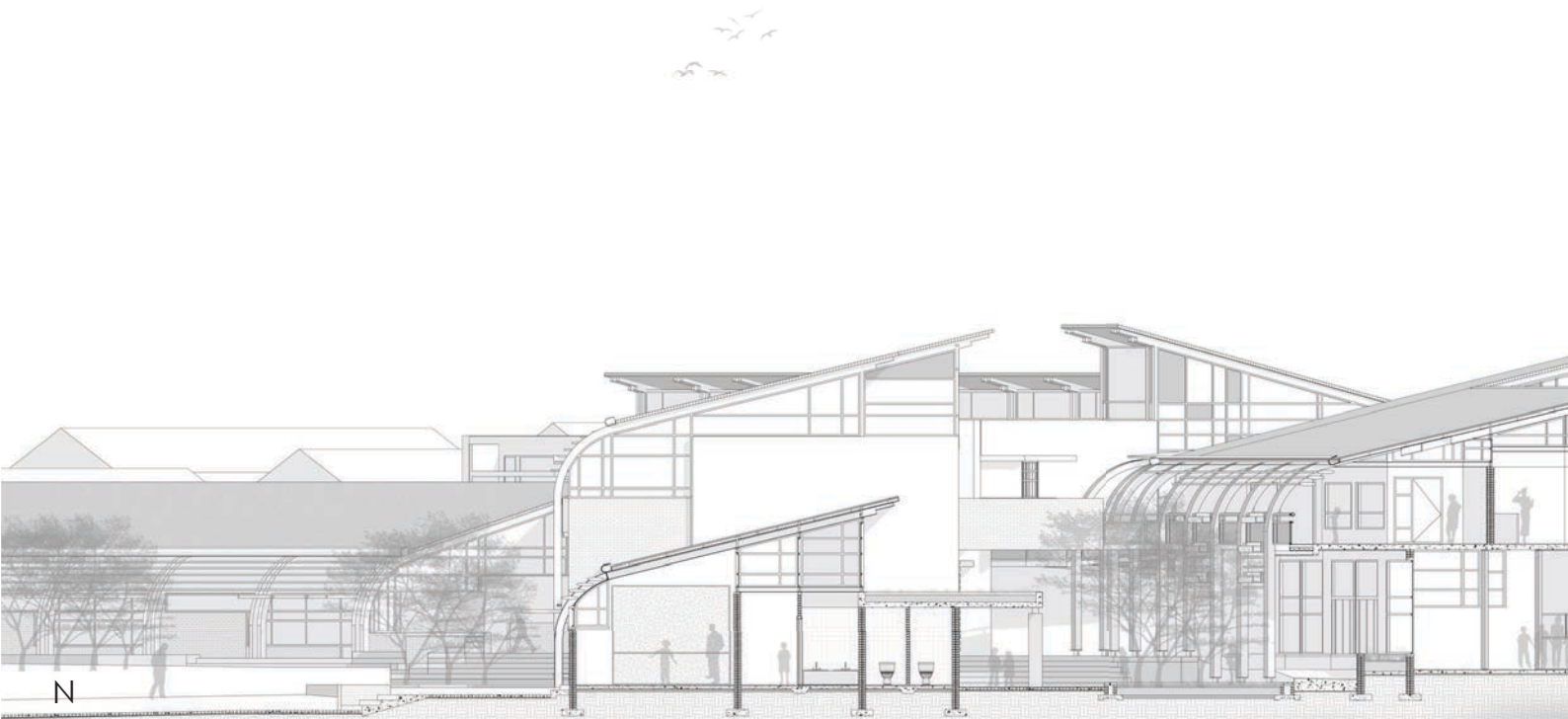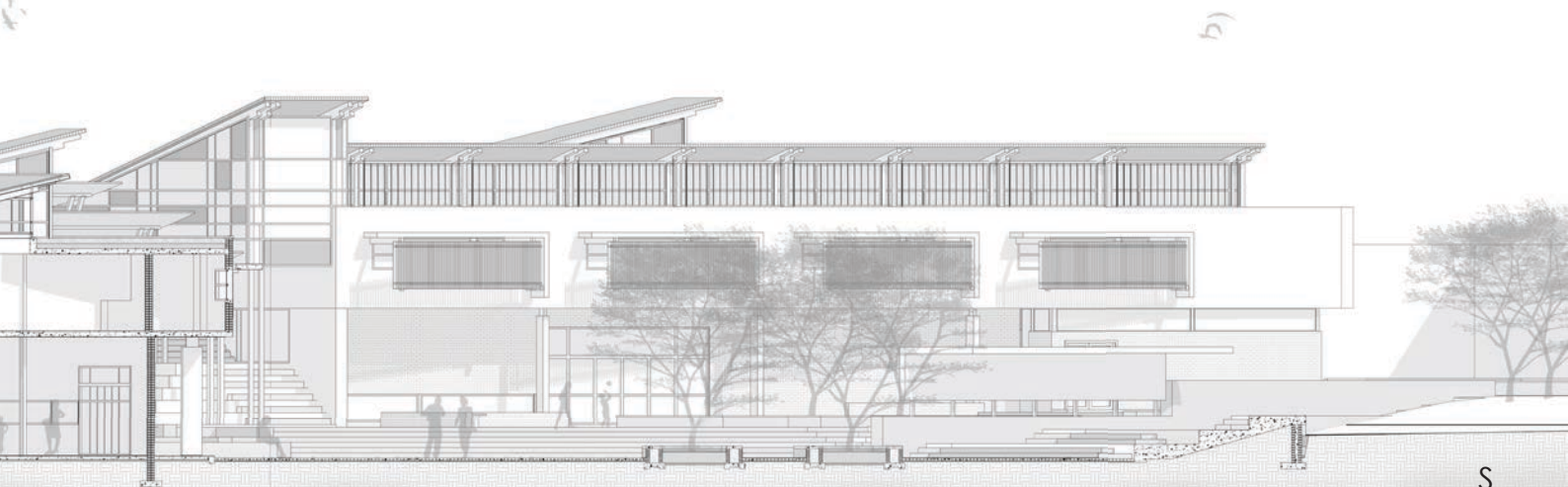
9.3 Sectional Development:

N

1-50 Section c-c_ n.t.s
Fig 9.7_

Section C-C
Scale 1-50
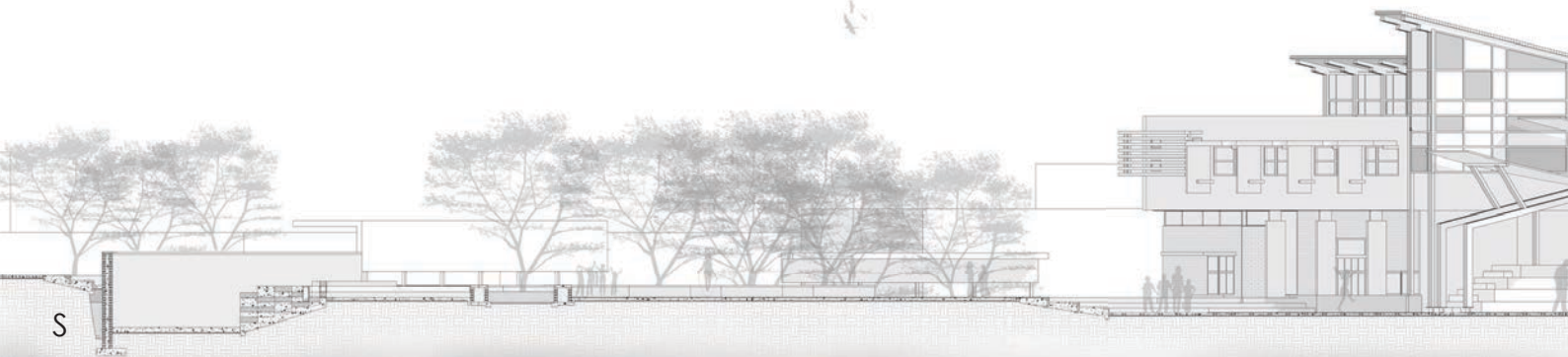
S
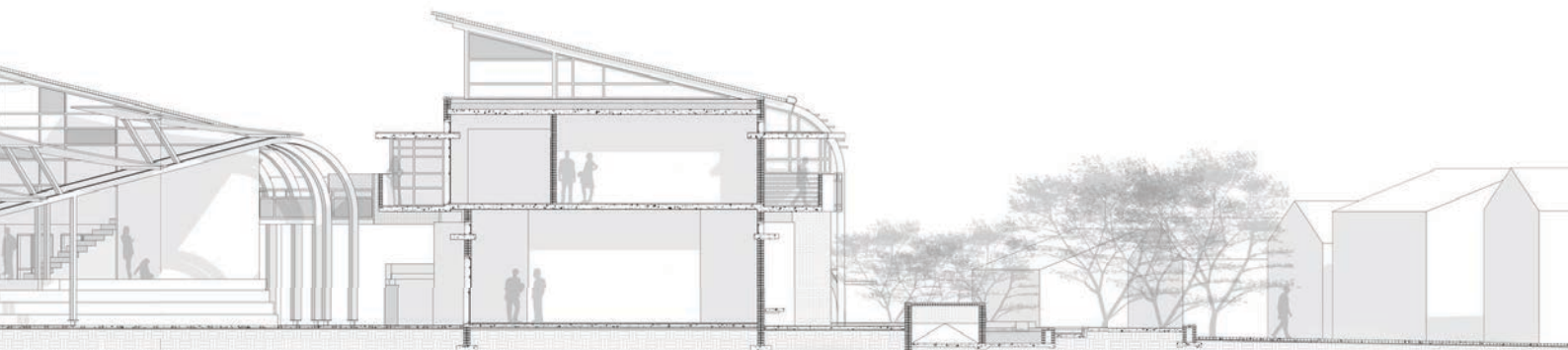
1-50 Section b-b_ n.t.s

Fig 9.8_

Section B-B
Scale 1-50

1-20 Section a-a

Detail Section A-A

S
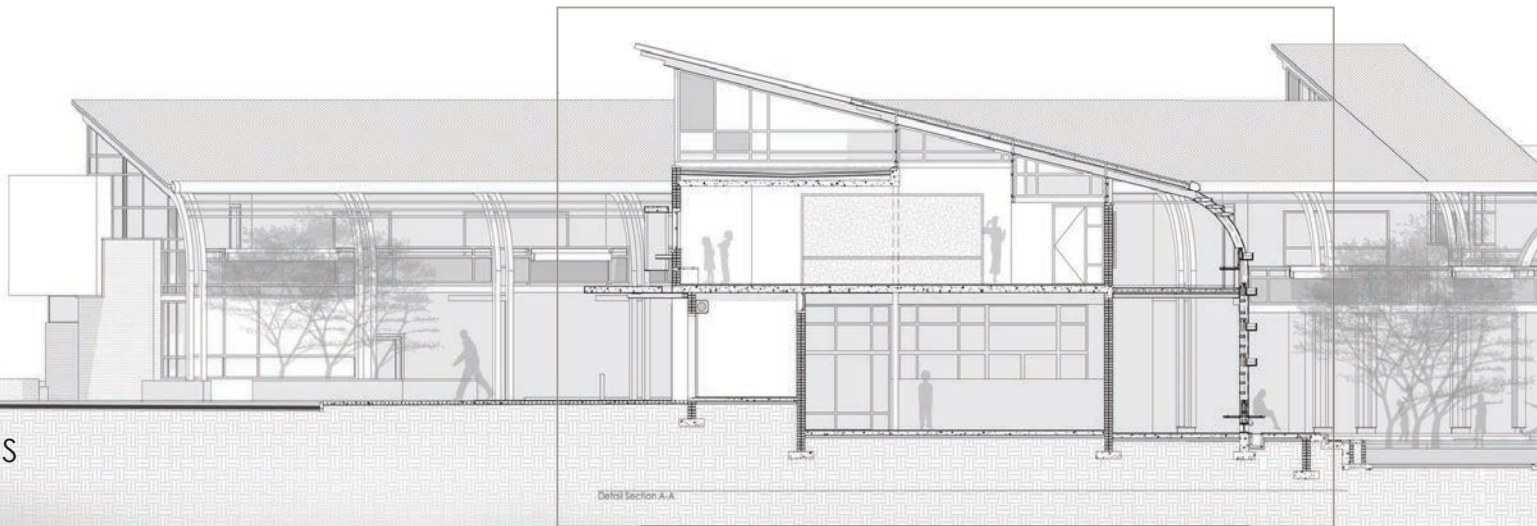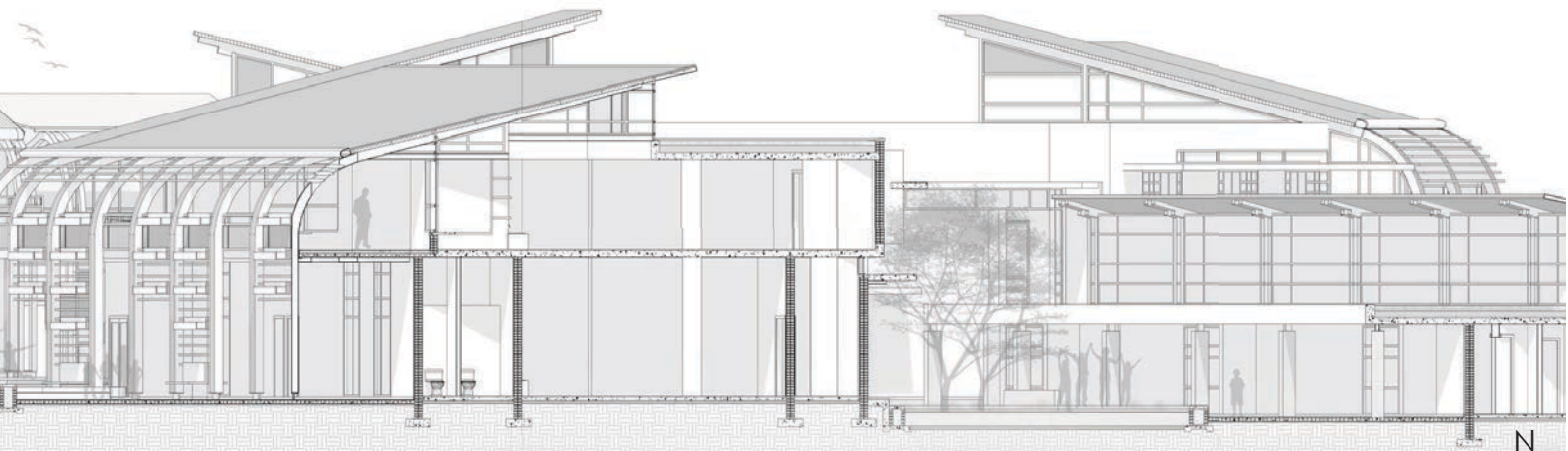
1-50 Section a-a_ n.t.s

Fig 9.9_

N

Section A-A
Scale 1-50
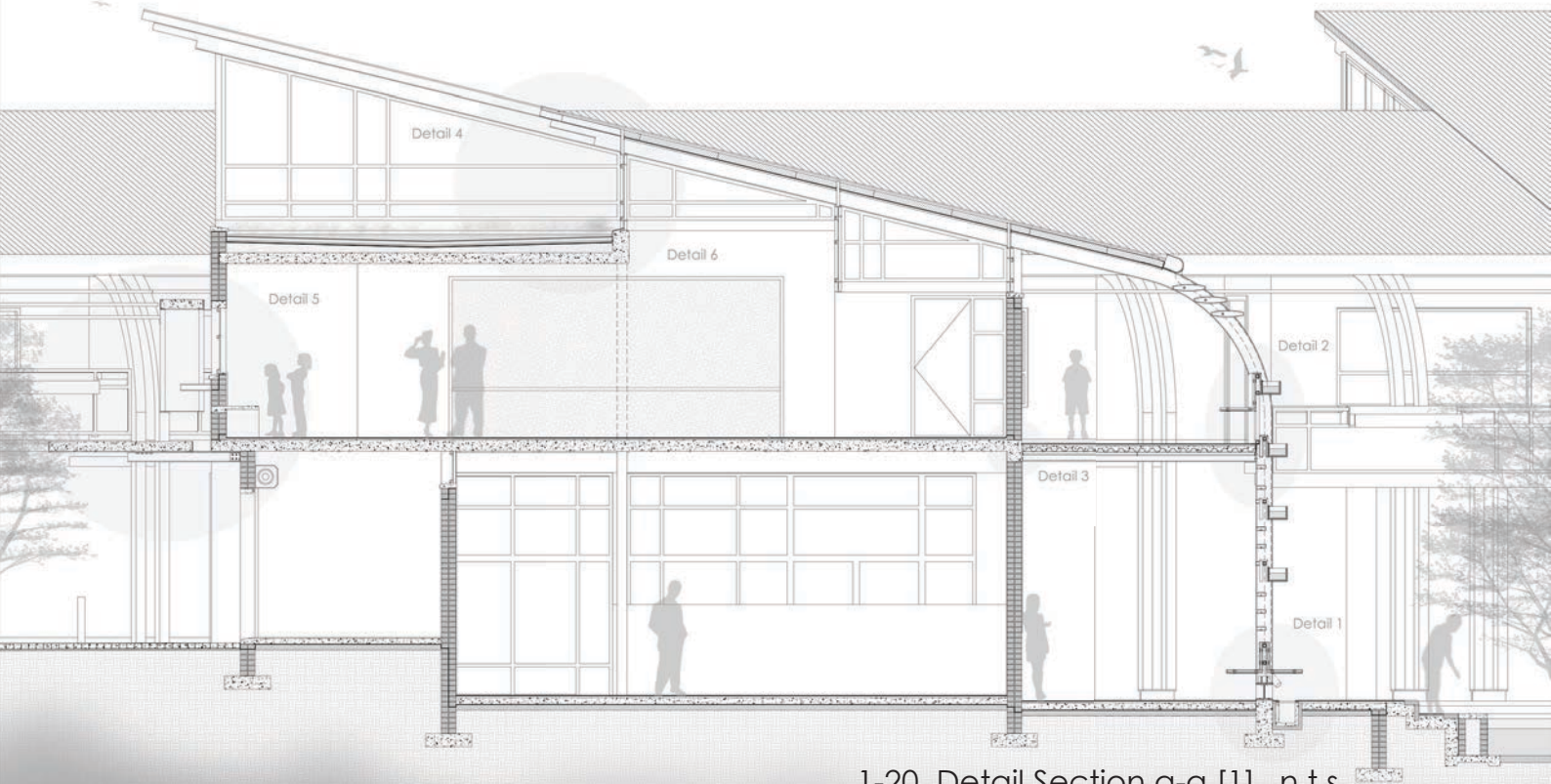
1-20 Detail Section a-a [1]_ n.t.s

Fig 9.10_

Detail 4

Detail 5

Detail 6
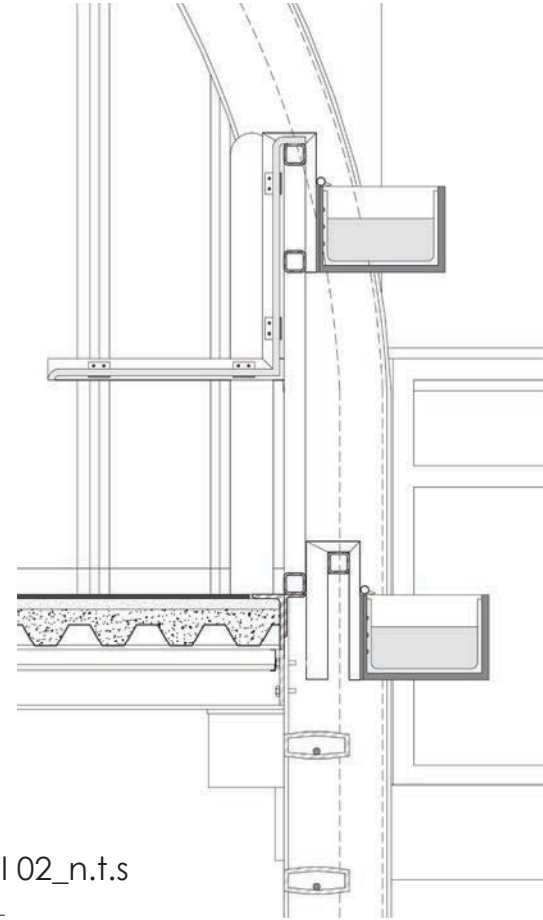
Detail 2

Detail 3

Detail 1

Detail Section A-A
Scale 1-20

1-20 Detail Section a-a: Resolution 1 Critique_

Steel structure components and connections fail to clearly communicate the designs technical concept of the light [social] structure attaching onto and folding over the solid [academic] structure, sustaining the program [see Sectional Order Diagram, page 250]

- Attention should be given to the courtyard facade detailing in terms of simplification
- Steel portal frame footing reads to heavy and does not communicate the conceptual intention as indicated on Sectional Order Diagram, ultimately meeting the ground lightly.
- Steel seating and vertical planter detailing should be reconsidered in terms of simplification
- Detail 5's precast concrete shading panels and canopy connections to heavy [academic] structure should be simplified in order to clearly communicate the, 'building elements as layered volumes', theoretical concept
- Gutter detail and curved roof facade deconstruction towards courtyard space should be reconsidered in terms of the manner in which it breaks up the continuation of the curved surface as the concept intended
- Roof as light [social] surface element that folds over the heavy [academic] structure should be accentuated by allowing the roof surface to react as prominent 'light floating' element
- Ultimately the sectional detailing should be simplified in order to communicate conceptual intention of allowing the academic structure to read as anchoring element while the social structure to become a light floating component.

Fig 9.11-9.12_ Sectional Resolution 1 detailing

Detail 02_n.t.s
Fig 9.11_
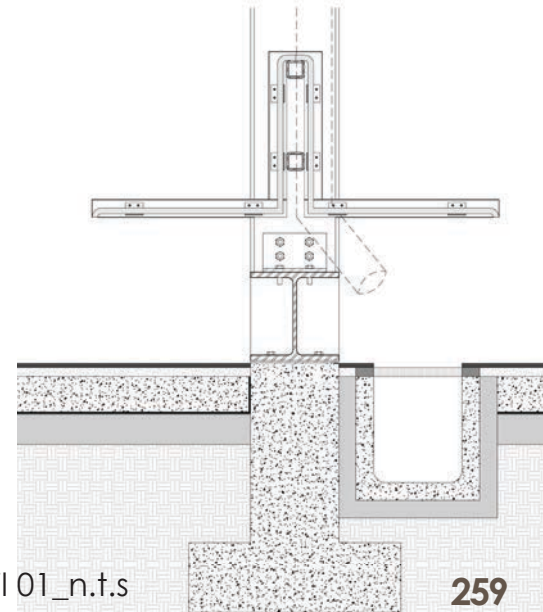
Detail 01_n.t.s
Fig 9.12_

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1-20 Detail Section a-a [2]_ n.t.s

Fig 9.13_

Detail 04

Detail 05

Detail 07

Detail 06

Detail 02

Detail 03

Detail 01

Detail Section A-A
Scale 1-20

1-20 Detail Section a-a: Resolution 2 Comments_

- Steel design detailing is simplified by removing vertical planters and steel seating, defining the deconstructing light surface by continuing the purlin rhythm down the facade [along courtyard space]
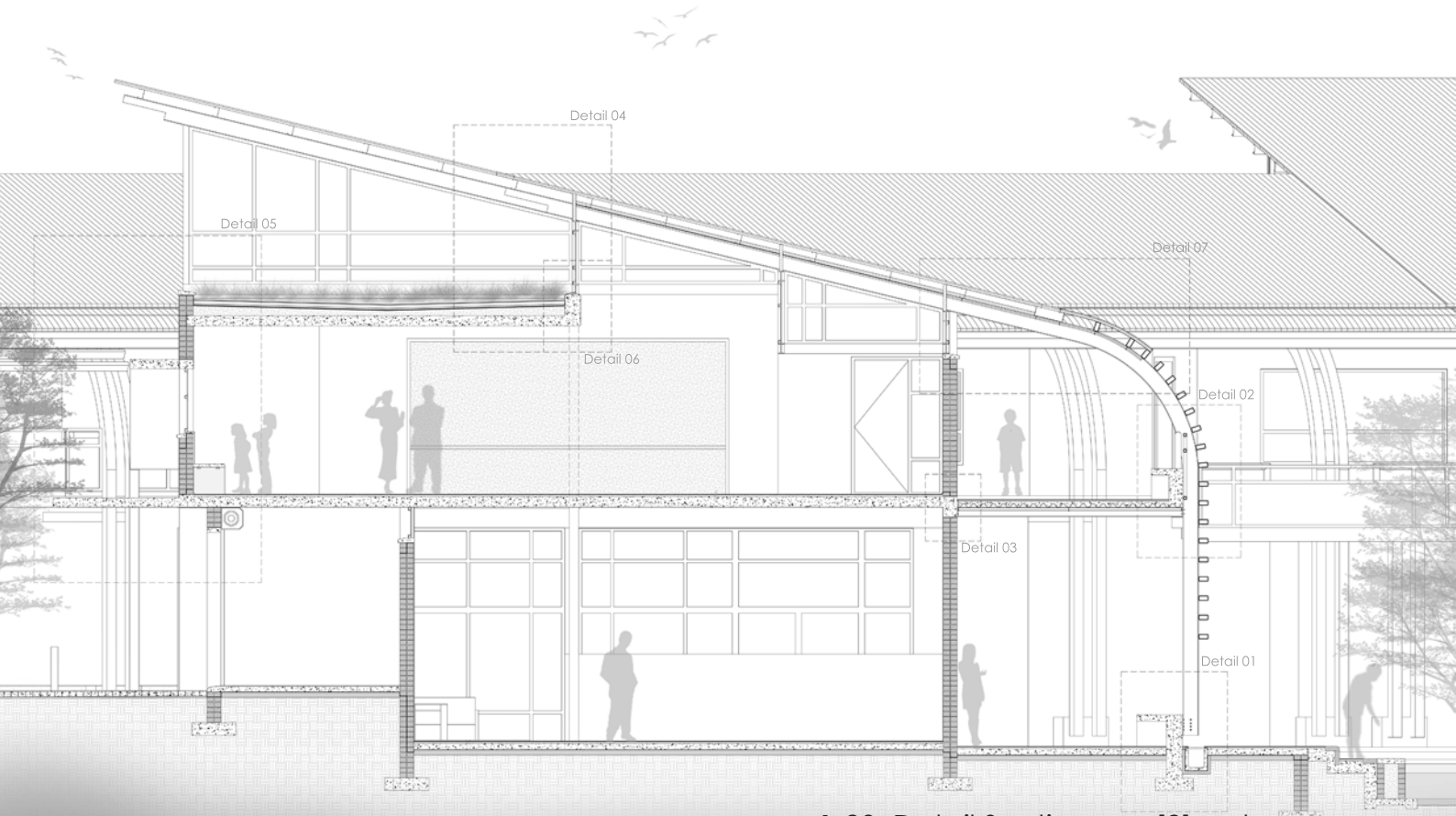- Edge of first floor corridor is defined by precast concrete upstand that functions as seating and planter component as well as an intermediate connection point support for bullstrading
- On ground floor level the concrete floor surface folds up to meet the steel portal frame structure column.
- The concrete footing element also functions as seating and planter component form which the planting can extend vertically up the facade
- The concrete column footing design aims to strengthen the designs technical concept by allowing the steel portal frame to float above ground floor, accentuating the lightness of the building element and the light structures' dependence on the heavy brick structural volume [academic].
- The gutter detail is refined by concealing the channel component between the roof purlins, allowing the roof to curve uninterrupted before deconstructing down the facade. This strengthens the structures character as continuous enclosure.
- The lightness of the steel structure is further accentuated by extending the roof overhangs over the heavy [academic] volume [see elevations from page 240]. This allows the roof structure and ultimately the steel structure to read as a light floating element anchored by the heavy brick [academic] volume

Fig 9.14-9.15_ Sectional Resolution 2
detailing
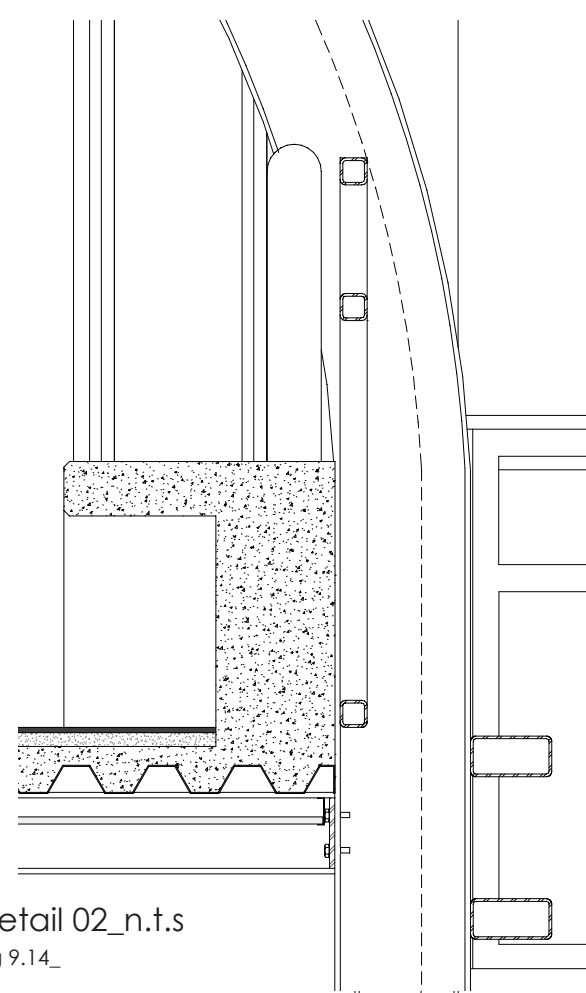
Detail 02_n.t.s
Fig 9.14_
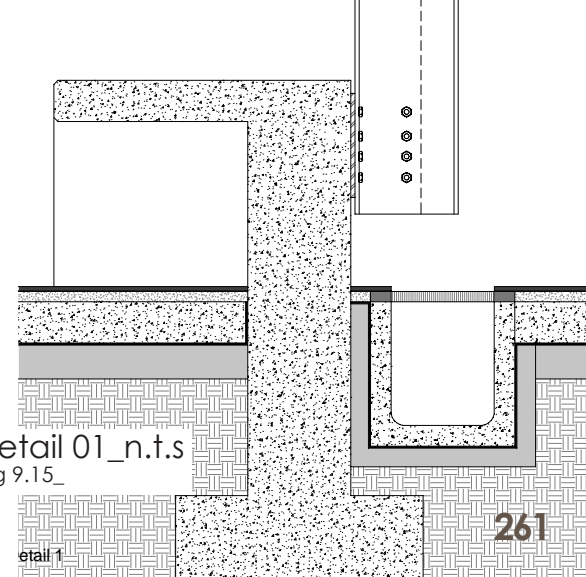
Detail 01_n.t.s
Fig 9.15_

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300x100mm Galvanized steel parallel flange channel forming Battened Portal Frame Structure

150 Dia Down Pipe

Precast Concrete Column Footing,to slope towards inside, used as public seating

25mm Screed on top of concrete surface bed, with 10mm floor finish

100mm Concrete Surface bed

0.25 Polyolefin DPM

Hardcore filling

Precast concrete storm water channel

Grid storm water channel cover panel, supported by 50x50x6mm steel angle edge frame bolted to concrete channel

Concrete column footing foundation according to engineer specifications

Detail 01_n.t.s
Fig 9.16_

262
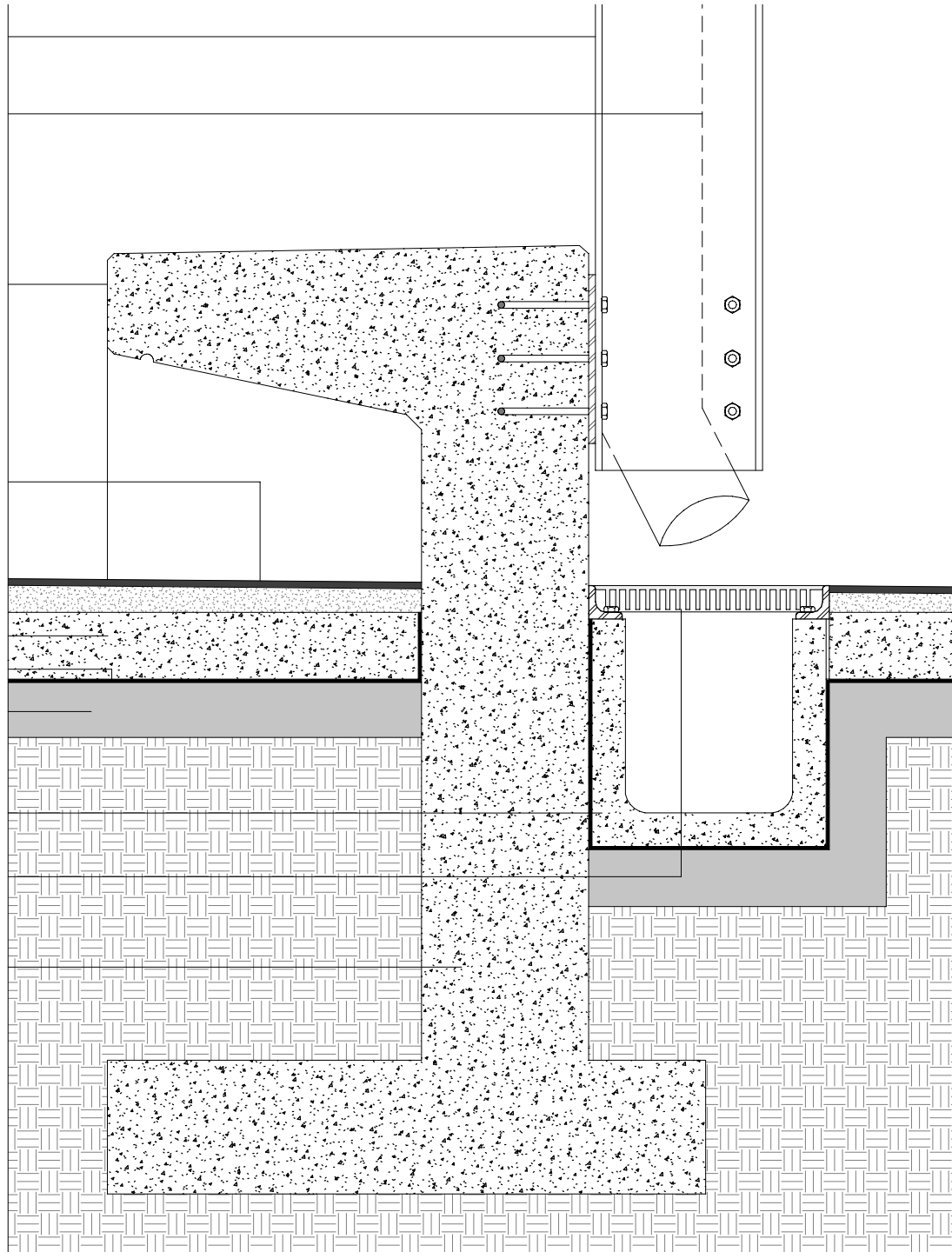
- The heavy [academic] structure as layered volume is simplified by allowing the precast shading panels to be built into the structural brick walls and extending it into the interior space as part of thelintel and window cill elements. This detailing communicates more clearly the threshold layers' relationship to the main structural volume it deconstructed form.

Fig 9.16-9.21_ Sectional Resolution 2
detailing development

220mm Brick wall, Wolkberg Bronze Facebrick, exposed up to 1400mm above finished floor level

220mm Brick wall, plaster and paint finish, paint to be lead free paint

25mm screed to top of concrete floor slab, with 10mm impact resistant flooring

255mm Cast in place concrete floor with interior edge downstand beam for bondek slab connection, offshutter interior cocnrete finish with exposed service runs

Hardboard spacer with silicone joint

200mm Bondek concrete slab, with 25mm screed to be placed on top of concrete surface, 10mm floor finish

Perforated steel exterior ceiling panel system

Galvanized steel 160 IPE Beam, bolted connection to concrete downstand beam

220mm Brick wall, plaster and paint finish, paint to be lead free paint

Detail 03_n.t.s
Fig 9.17_

263

300x100mm Galvanized parallel flange channel forming Battened Portal Frame Structure

101.6x3.0mm Circular Hollow section handrail grip,1000mm height form finished floor level

48.4x4.0 Circular Hollow section handrail grip, 700mm height form finished floor level

50x50x4.0mm Square Hollow section balustrade frame with perforated steel infill panels, 25x25mm grid openings

150 Dia Down Pipe

Precast Concrete Column Footing,to slope towards inside, used as public seating

150x75mm Rectangular hollow section to form a continuation of purlin rhythm down the facade

25mm Screed on top of concrete slab with 10mm floor finish

200mm Bondek slab according to engineer specifications

Perforated steel exterior ceiling panel system

Galvanized steel 160IPE beam, bolted connection to portal frame structure

100x50mm Parallel Flange Channel slab edge trim

264
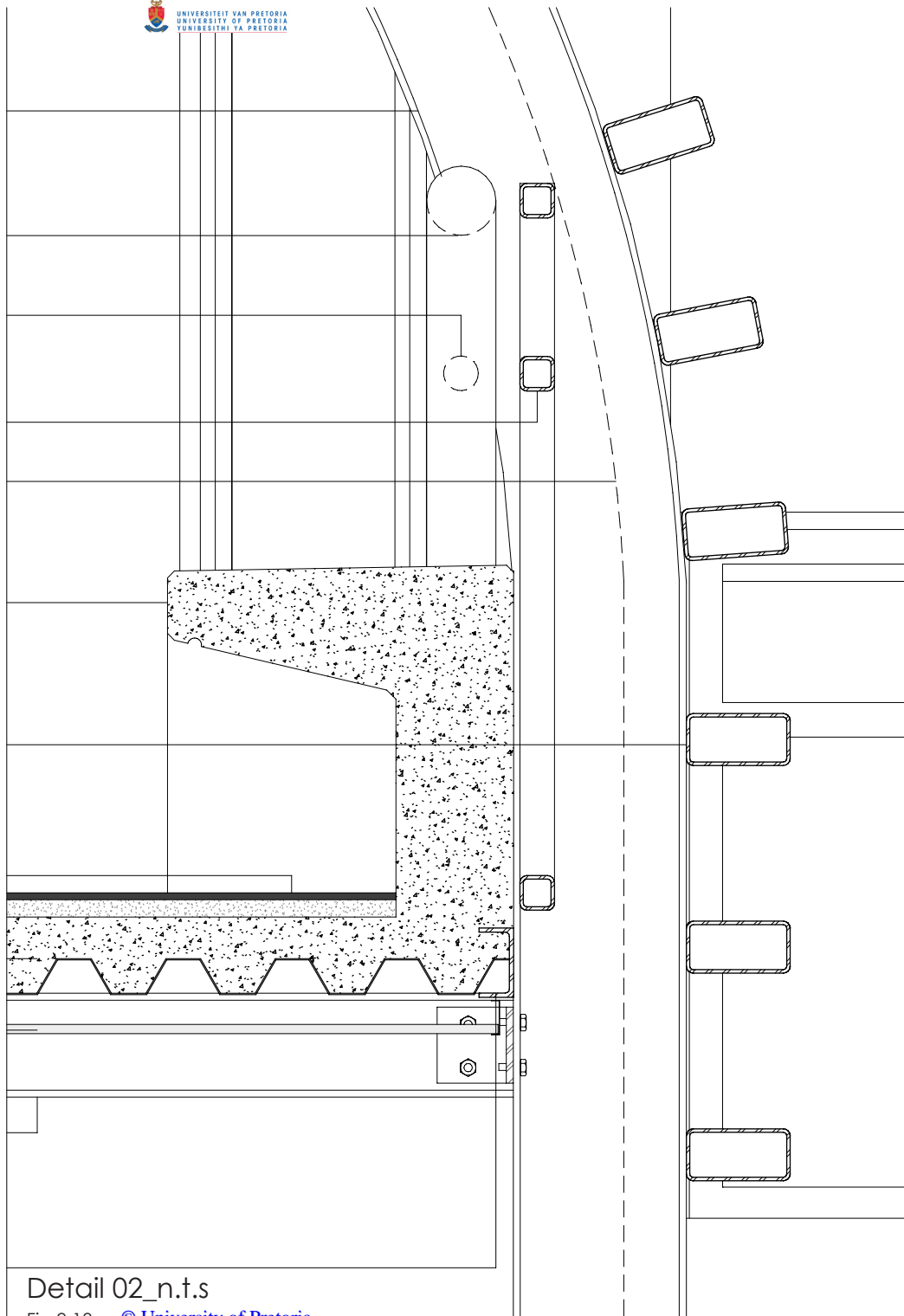
Detail 02_n.t.s

Fig 9.18_ © University of Pretoria
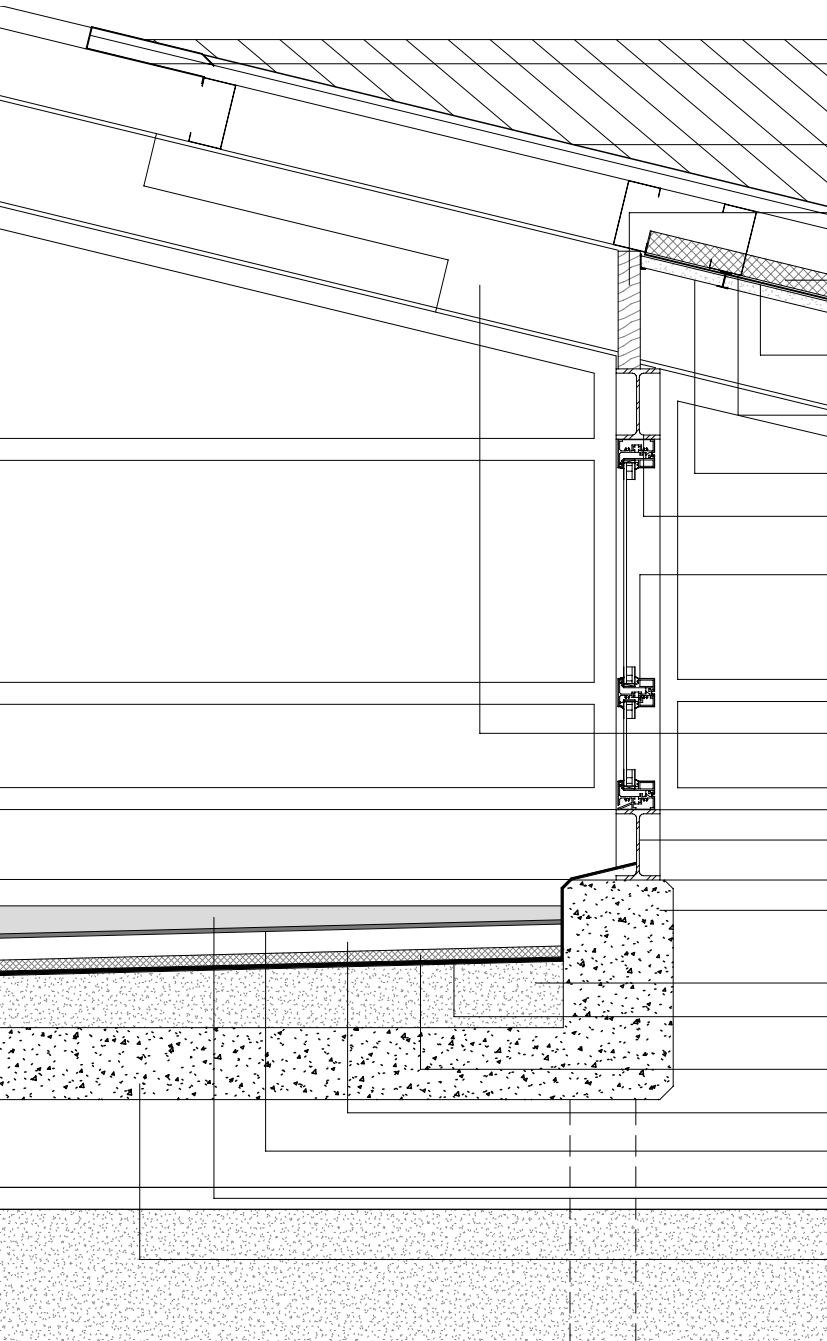
1.2mm Galvanized mild steel cover flashing

'Klip-Lok' profile roof sheeting with global coat finish

Laminated timber infill panel

50mm Sonowool insulation material to be placed under roof sheeting in 1200x600mm panels

Reflective foil laminates

150x75mm Lipped Channel purlins @ 1200mm ccs

Acoustic ceiling panels system

100 IPE Beam, paint finish

Powder coated aluminium window frame with clear glazing and solid colored infill panels to comply with SANS 10400 N:2012, must be able to open

300x100mm Galvanized steel parallel flange channel Battened Portal Frame Structure, stepped end trim

100 IPE Beam, paint finish

500mm Reinforced concrete beam according to engineer specification

Lightweight screed to fall min 25mm

"Torch-on" waterproofing layer on top of screed
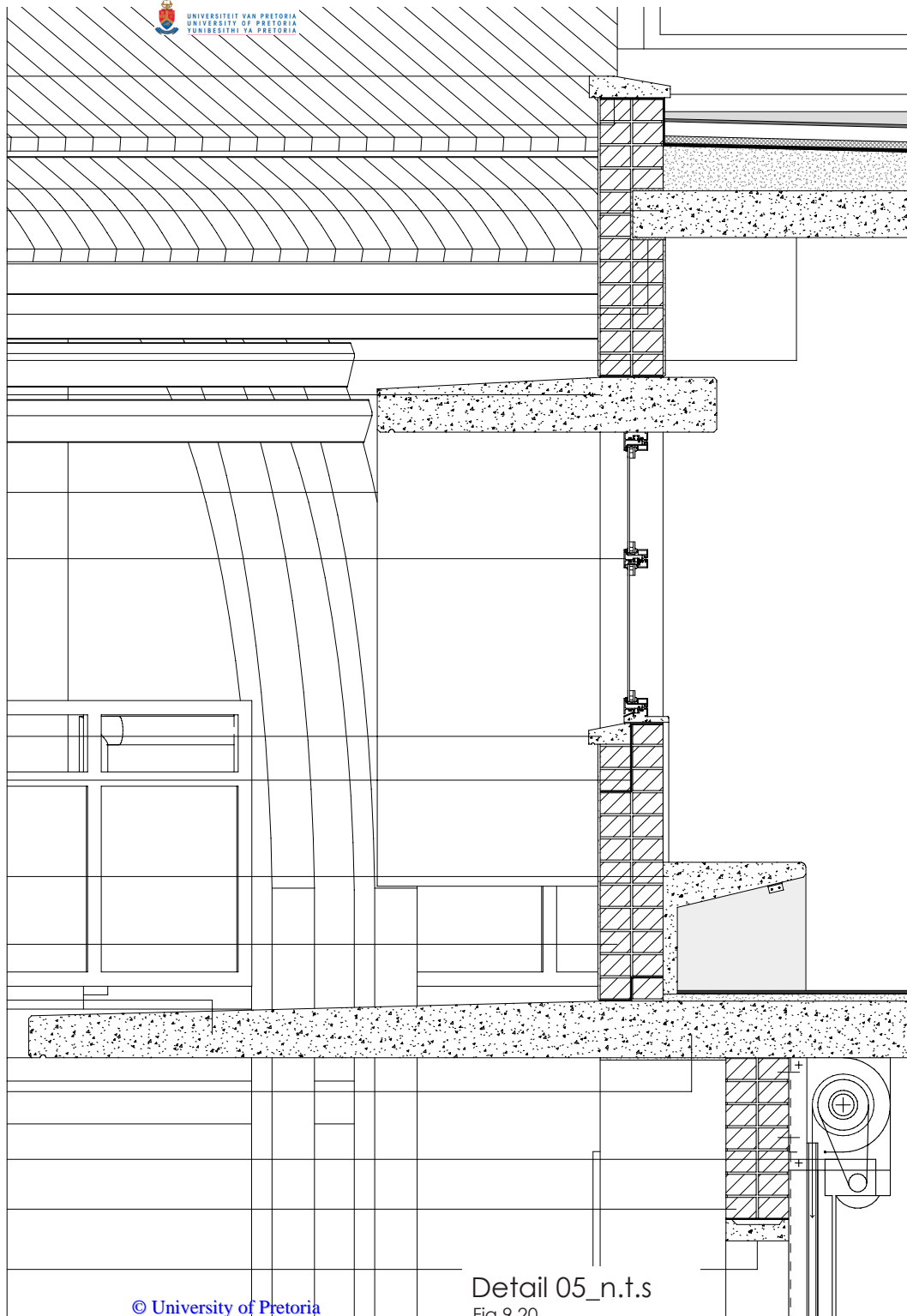
25mm Insulation layer

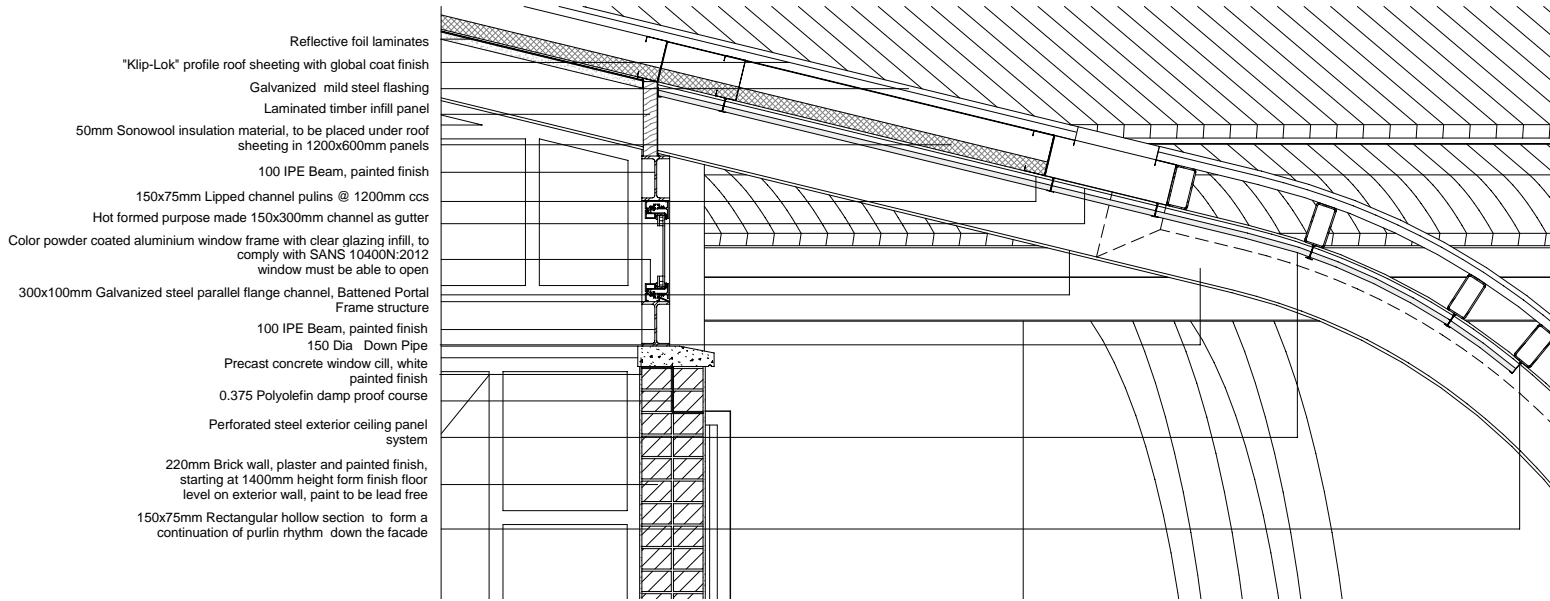Drainage Layer for extensive green roof system

Filter Fleece for extensive green roof system

Retention material layer for extensive green roof system

255mm Reinforced concrete roof slab, with offshutter interior concrete finish

Detail 04_n.t.s
Fig 9.19_

265

Precast concrete coping to fall towards inside

0.375 Polyolefin damp proof course membrane to lap over "torch-on" waterproofing layer

Reinforced concrete roof with lightweight screed to fall min 25mm, "torch-on" waterproofing layer on top of screed, followed by 25mm insulation layer, a drainage layer added for extensive green roof, followed by a filter fleece and retention material layer to hold the rain water

10mm Polystyrene isolation joint

Offshutter concrete interior finish with exposed service runs

Precast concrete shading panel to extend into interior as part of lintel

Precast concrete shading panel to be built into brickwork, top surface to fall toward outside, white painted finish

Colored powder coated aluminium frame with clear safety glazing to comply with SANS 10400N:2012, window should be able to open

Precast concrete window cill, white painted finish

0.375mm Polyolefin damp proof course

Precast concrete interior seating surface as part of classroom bay window

220mm Brick wall with plaster and paint exterior and interior finish, paint to be non lead paint

Cast in place concrete canopy as extension of floor slab, top of surface to fall towards outside, white painted finish

255mm Reinforced concrete floor slab with 25mm screed on top of concrete surface, finished with 10mm impact resistant flooring

Manually operated perforated steel roller shutter

220mm Brick wall, Wolkberg Bronze facebrick, stretcher bond with raked joints

Precast concrete lintel

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Detail 05_n.t.s
Fig 9.20_

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Reflective foil laminates

"Klip-Lok" profile roof sheeting with global coat finish

Galvanized mild steel flashing

Laminated timber infill panel

50mm Sonowool insulation material, to be placed under roof sheeting in 1200x600mm panels

100 IPE Beam, painted finish

150x75mm Lipped channel pulins @ 1200mm ccs

Hot formed purpose made 150x300mm channel as gutter

Color powder coated aluminium window frame with clear glazing infill, to comply with SANS 10400N:2012 window must be able to open

300x100mm Galvanized steel parallel flange channel, Battened Portal Frame structure

100 IPE Beam, painted finish

150 Dia Down Pipe

Precast concrete window cill, white painted finish

0.375 Polyolefin damp proof course

Perforated steel exterior ceiling panel system

220mm Brick wall, plaster and painted finish, starting at 1400mm height form finish floor level on exterior wall, paint to be lead free

150x75mm Rectangular hollow section to form a continuation of purlin rhythm down the facade

Detail 07_n.t.s

Fig 9.21_

9.4 Environmental Considerations: Natural Systems_

Olievenhoutbosch Climatic Zone: Northern Steppe
This climatic zone can be described as a distinct rainy and dry season area with large daily temperature variation and strong radiation.
The humidity levels are moderate [Holm.D,1996:page 69]
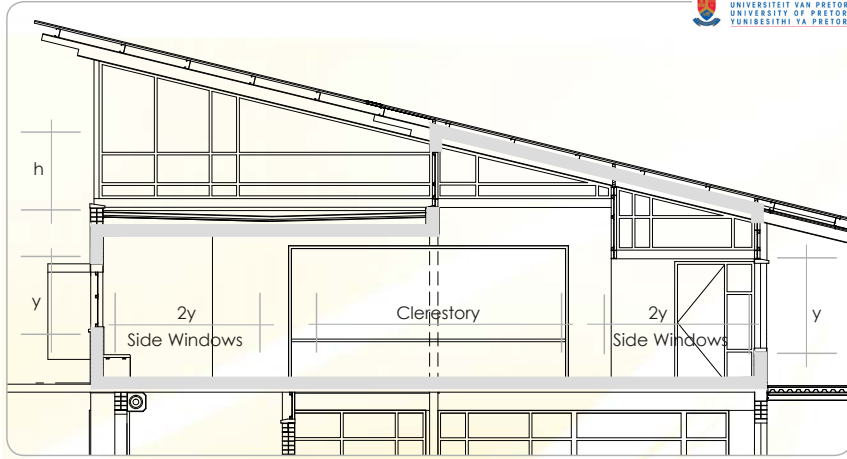
9.4 .1 Natural Daylighting_

Within this climatic zone it is recommended that summer sun be screened and winter sun be allowed to penetrate [Holm,1996]

Daylighting strategies for Alice School design:

• Provide adequate amount of light where needed while ensuring no visual discomfort and good visual performance
• Simple yet effective daylighting strategies include both side-lighting as well as top-lighting principles, where daylighting is distributed form both ceiling and sides of the classroom

Daylighting principles that was considered in the design of the school:

• Building is elongated along the east-west axis
• Apertures placed high in the wall in the form of clerestory or tall side windows
• Bringing daylight form two different directions in order to reduce the chance of discomfort glare[Dudek, M. 2007]

h=y/2

Within the diagram:

h

y

2y
Side Windows

Clerestory

2y
Side Windows

y

Solistice [21 Martch/23 Sept]
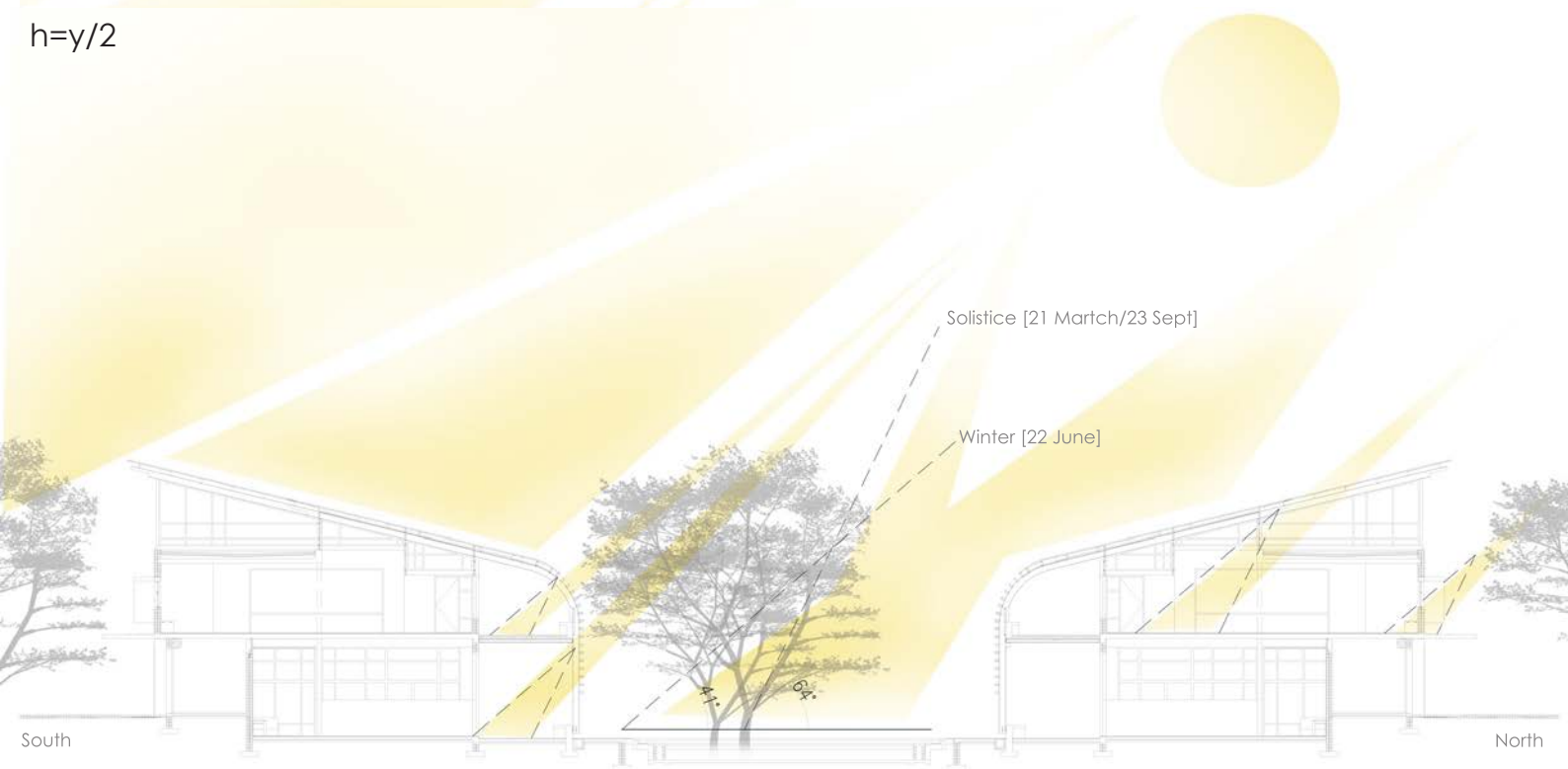
South

North

Natrual Daylighting Diagram
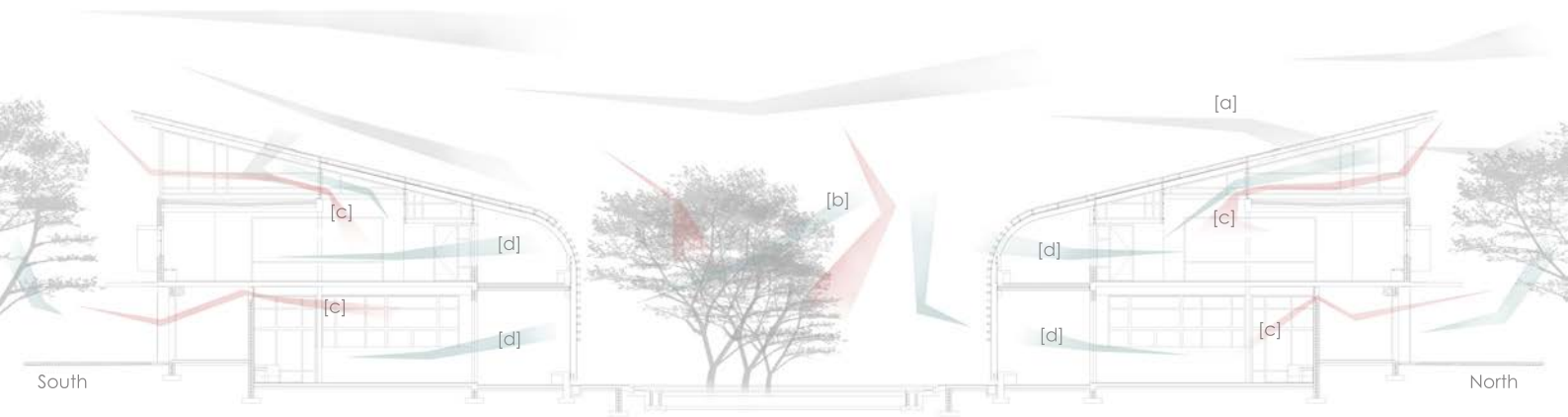Fig 9.22_

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9.4.2 Natural Ventilation_

Within the Northern Steppe Climatic Zone the summer winds are predominantly south-westerly with a fair amount originating from the northeast. The Pretoria windrose indicates a predominant north-east to southeast summer wind direction which is also illustrated on the year chart [Holm,1996.page 70]

Ventilation Strategy for Alice School design:

- The ventilation design primarily uses the natural movement of the outside air into the school building by using the warm air leaving the classroom, or prevailing winds, to draw the fresh air into the room [Dudek,2007].
- Courtyard landscaping, facade planting and green roof systems was used to cool down the air as it moves into the classroom. The evaporative cooling effect aims to cool down the air in order for it to descend.
- Clerestory windows create a higher point of extraction where warm air can escape towards the outside.

South

North

Natrual Ventialtion Diagram
Fig 9.23_

9.4.3 Water Strategy_

The water strategy concept for the Alice school design is based loosely on East Coast Architects' Seven Fountains Primary Schools' water design. The strategy includes rainwater to be collected form impermeable sur- faced [roof and paved areas] throughout the school and stored in un- derground reservoir tanks that is located in each courtyard, thus dividing the plan into catchment sections. Each courtyard has a link to the main municipal water line as backup system. Solar powered pump systems will pump the water to header tanks form where it is distributed to flush toilets and water green roofs. The design also proposed low consumption fit- tings and appliances to reduce the volume of water used.

Rain

Green Roof

Run Off

Run Off

Run Off

Run Off

Rain

Green Roof

South

North

Planting

Service Access

Inlet flow

Catchment Tank

Outlet flow

Inlet flow

Out let flow

Pump Room

Water Level

Pump Room

Out let flow

Filter System

Filter System
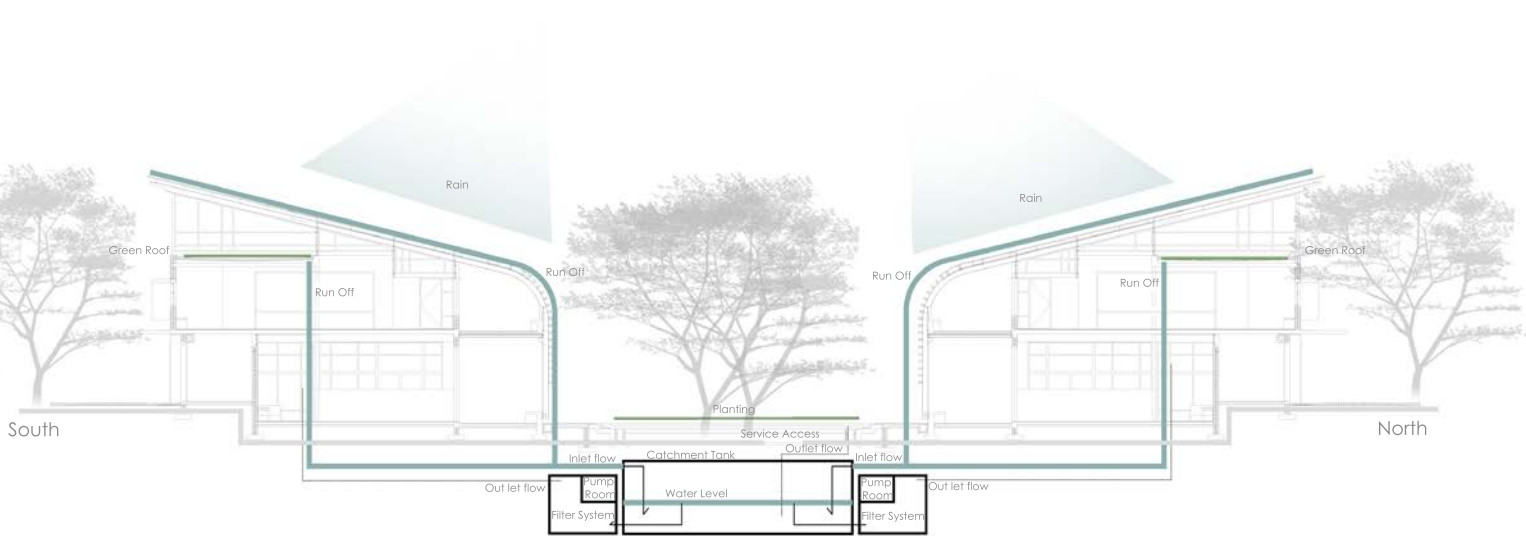
Water Catchment Diagram
Fig 9.24_
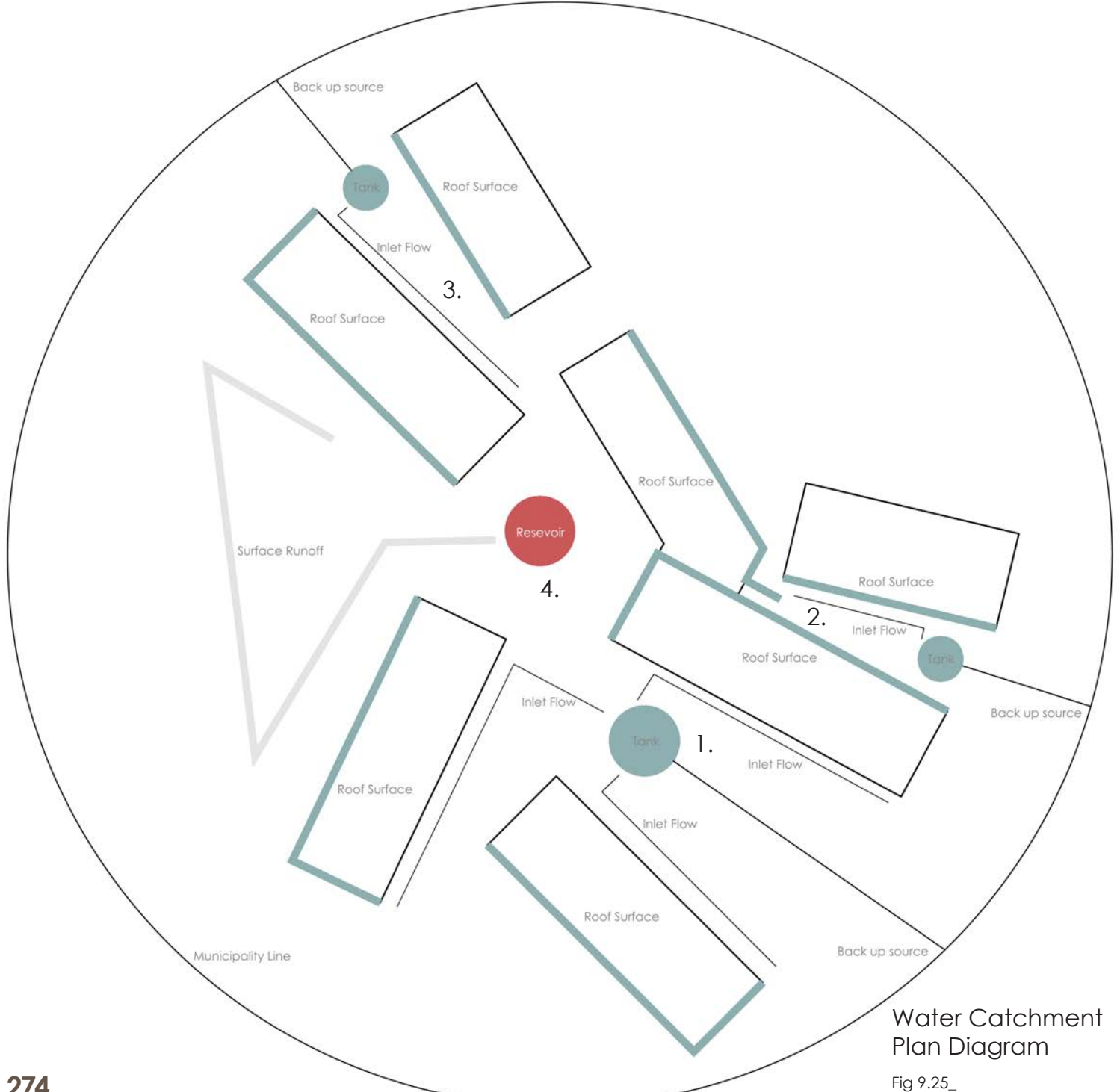
Water Catchment
Plan Diagram

Fig 9.25_

Tank Size Calculation:

Average tank size calculation per building surface:
Roof area: 652.55 m2
Average number of occupants per building: 150 pupils
Average usage per pupil: 20L/day
Total average usage per day/building: 150 x 20L/day =3000L/day
Total average usage per month/building: 3000L X 30 =9000L/month
[winter usage]
9000L/month x 1.5 = 13 500L/month
[summer usage]

Average tank storage needed per courtyard:
1.   Courtyard 1: 40 500L Tank storage needed
2.   Courtyard 2: 13 500L Tank storage needed
3.   Courtyard 3: 27 000L Tank storage needed
4.   Square: 40 500L Tank storage needed

The dissertation proposes that Abeco pressed steel, portable water reserve below surface tanks be used

9.5 Child Safety Requirements: BSAT_Building Safety Assessment Tool

The BSAT Assessment Tool is an evaluation system that was formulated as a manipulation of the SBAT Assessment document format. The tool was compiled from child safety design standards accumulated form USA, Germany as well as South African documentation on child safety design guidelines and standards as part of the Housing and Urban Environment course in the 2011 Honours in Architecture program. The tool aims to function as guideline tool to inform designs that focuses on children's spaces and programs. This allows the designer to be sensitive to the standards that accompanies child orientated design in terms of safety [spatially, physically and psychologically].

The BSAT Assessment Tool was compiled by Colette Maritz [author] as part of the Housing and Urban Environment course assignment that formed the final research and design investigation module for the Honours degree in Architecture, 2011. The evaluation document was mainly created to assess early childhood development centres, but was used as guideline for primary school phase child safety design principles. The sources that were used to compile the BSAT Assessment Tool can be viewed in Chapter 10 as part of the Chapter 9 reference list.

BUILDING SAFETY ASSESSMENT TOOL (BSAT- P) V1

PROJECT		ASSESSMENT	
Project title:	Alice Primary School	Date:	23-10-2012
Location:	Olievenhoutbosch, Pretoria	Undertaken by:	Colette Maritz
Building type (specify):	Public Primary School		

Number of users: 900
Building life cycle stage (specify):   Design
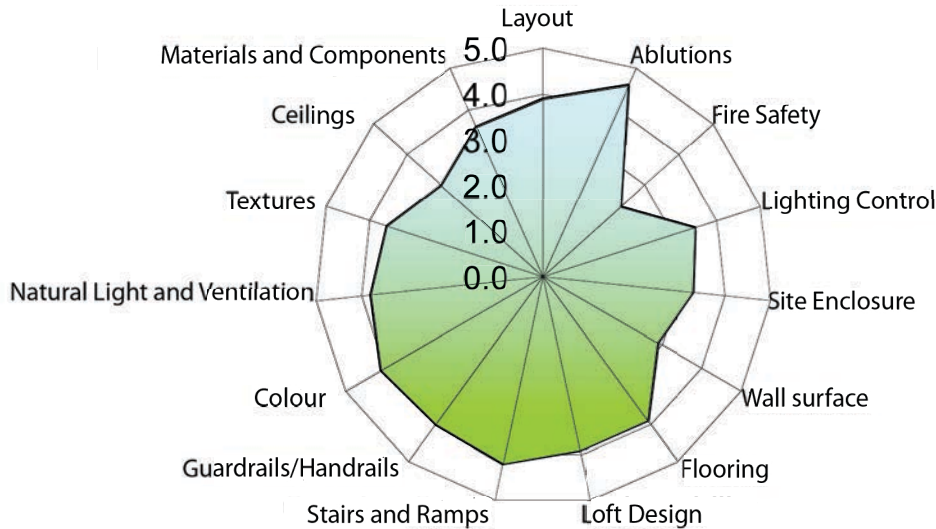
Spatial Safety	3.5

Physical Safety	3.8

Psychological Safety	3.6

Overall	3.6

Fig 9.26_ Building Safety
Assessment Report

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Reference	Criteria	Description	Examples of quantified performance indicators
SO1	Layout according to child development	Classroom space design play an important role in children's development progress and thus should be designed to accomodate the different stages of child growth.	
SO2	Ablutions	Ablution design at children facilities faces the challenge of accomondating the staff as well as children in different age groups. This is not just a design responsibility ito child development but also a challange ito scale in accordance with regulations.	
SO3	Fire Safety	Fire safety design regarding children facilities should comply with national building regulations. Care should be taken to accomondate appropriate escape routes, an appropriate spatial layout and building structure in order to ensure the safety of the children within the facility.	
SO4	Lighting Control	Children facility design is not only conserned with providing natural light into the classrooms, but also conserned with the safety design of the lighting openings. Windows are to be designed in accordance with the safety conserns for children of different ages and in different development phases.	
SO5	Site Enclosure	Children facility classrooms, social spaces and play yards should be appropriately enclosed to allow ease of supervision of children and to protect them form unauthorized entry of individuals and vehicles.	
EC1	Wall Surfaces	Wall design within a childrens facility is important to considers because of the childs interaction with the surface. Considering different age development groups a variety of safety issues should be covered, however structure, finish and form all influences the outcome.	
EC2	Flooring	The floor becomes an interactive surface within a childrens facility. Considering different activities that may take place in a space the floor finish and thickness must be considered to create a safe environment for children to play and learn.	
EC3	Loft Design	Level changes becomes an important element in different age group development stages. However considering height increase as the development age progresses, the safety considerations should be taken seriously. The main element of focus is preventing the child from falling, and in that event also providing safety surfacing to ensure minimal inguries. Visual contact with the children should be possible at all times to ensure proper supervision and it makes the childen feel secure.	
EC4	Stairs and Ramps	Within a childrens facility the public areas should be able to cater for children as well as adult movement, however within the classroom the space should be designed to child scale and espetially to age or stage of development which will inform the designer of the child's motor skills and movement ability.	
EC5	Gaurdrails/ Handrails	Public ramp and stair spaces within childrens facilities should be able to cater for both the safety of the adults as well as the children, this should be shown through the design detailling. Hanrail heights and positions should be informed by child age groups as well as child development stages and should be considered carefully not only in the circulation areas but also within the classroom and play areas where level changes also accurs.	
EN1	Colour	Appropriate colour choise in a classroom is important since colour has the ability to stimulate children's behaviour in a sertain way. In order to create the right atmosphere for learning, play, sleep and ultimately appropriate development the colour choise becomes an important element to manipulate the mood to a sertain degree.	
EN2	Natural light and ventilation	Natural light is essential to appropriate interior classroom design. Allowing the child to visiualy and physically have acces to natural light improves the childs ability to consentrate and ultimaly learn and develop with more ease. It creates a sence of freedom that allows the child to maintain a connection to the outside space and activities.	
EN3	Textures	According to different age and development stages children interact with surfaces in diferent ways. The sence of touch is directly related to cognitive development and forms part of childhood development design.	
EN4	Ceilings	Ceilings becomes an importnat part of classroom design since it greatly influences the feeling of a space. Ceiling height differentialtion greatly alters spatail scale that determince to a great extent how the child will interact or react to the space.	
EN5	Materials	The construction of buildings usually requires large quantities of materials and components. These may require large amounts of energy to produce. Their manufacture may also require processes that are harmful to the environment and consume non-renewable resources. It is therefore important to carefully select materials and components and construction methods.	

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Building Performance - Spatial Safety

	Criteria	Indicative performance measure	Measured	Points	
SO 1	**Layout according to child development**	Explanatory notes		3.9	
SO 1.1	Visibility	Visible connection between teacher and child should be maintained to the maximum extent feasible.	80	0.8	
SO 1.2	Environment	Safe, stimulating environment according to development stage.	80	0.8	
SO 1.3	Scale	Furnishing and equipment need to be scaled for this age to encourage growth toward independence.	80	0.8	
SO 1.5	Facilities	Storage and food preparation areas should be provided according to child development stage.	100	1.0	
SO 1.5	Views	Visual connection on eye level should be provided according to child age height.	50	0.5	
SO 2	**Ablutions**	Explanatory notes		4.6	
SO 2.1	Number	Appropriate number of toilets according to class occupant numbers.	80	0.8	
SO 2.2	Enclosure	Appropriate cubical enclosure and toilet sizes according to children's age difference.	100	1.0	
SO 2.3	Fixtures	Sanitary fixtures according to children height and use.	100	1.0	
SO 2.4	Space	Accessible space to disabled ablutions as well as public ablutions.	100	1.0	
SO 2.5	Safety	Ablutions layout aiming to address possible security risk.	80	0.8	
SO 3	**Fire Safety**	Explanatory notes		2.3	
SO 3.1	Classroom	Located classrooms are on levels of exit discharge.	30	0.3	
SO 3.2	Common Paths	Centre has at least two means of egress which distances does not exceed 23 m	0		
SO 3.3	Room travel distance	The travel distance between any point in a room and an exit does not exceed 45m	100	1.0	
SO 3.4	Centre travel distance	The travel distance between any door intended as an exit access and an exit does not exceed 30m	0	0.0	
SO 3.5	Min Exit	Each classroom and activity space have been provided with one direct exit to the outside.	100	1.0	
SO 4	**Lighting control**	Explanatory notes		3.5	
SO 4.1	Glazed safety	Screened operable windows area provided with guards or fitted with safety glass if windows are lower than 915mm	60	0.6	
SO 4.2	Interior Glass	Interior glazed panels fitted with safety glass according to regulations	80	0.8	
SO 4.3	Finger entrapment	No openings between 88mm and 229mm area provided to prevent finger entrapment.	80	0.8	
SO 4.4	Horizontal Mullins(Mullions)	Horizontal window mullins are located between 600mm and 1100mm above finished floor level	80	0.8	
SO 4.5	Window Heights	Max window heights provided for infants (450mm above ffl), toddlers (600mm above ffl) and school children (750mm above ffl).	50	0.5	
SO 5	**Site Enclosure**	Explanatory notes		3.3	
SO 5.1	Automobiles	Bollards, raised planters or other devices are provided to prevent automobiles form veering into the play yard area	60	0.6	
SO 5.2	Play yard	Play yard enclosure are provided by a 2100mm min fence height or as an alternative, shorter fencing with planting or landscaping.	80	0.8	
SO 5.3	Fencing	Except for the top and base rail of fences, horizontal elements are avoided to prevent climbing.	60	0.6	
SO 5.4	Centre Perimeter	The perimeter of the centre should be treated as a controlled filter with only one primary means of public access and egress	50	0.5	
SO 5.5	Approach	Entry approach designed to be visible by centre staff.	80	0.8	

Building Performance - Psychological Safety

|	Criteria	Indicative performance measure	Measured	Points
EN 1	**Colour**	Explanatory notes		4.1
EN 1.1	Stimulating colours	The use of simulating colours where used instead of colours that excites the brain and raises blood pressure	80	0.8
EN 1.2	Neutral colours	Above the level of wainscot the predominant colour that is used is a neutral colour, in order to achieve a reflectance of 80% or greater	100	1.0
EN 1.3	Vivid colours	More vivid colours where used on one side of corridors or along the rear walls of classrooms, to achieve a reflectance of 65%	50	0.5
EN 1.4	Avoid	The use of primary colours where avoided	100	1.0
EN 1.5	Toxic paint	Non toxic interior paint is used and complies with the National Building Regulations	80	0.8
EN 2	**Natural Light and Ventilation**	Explanatory notes		3.8
EN 2.1	Natural Light	Natural lighting is essential in child care centres and the design provides natural lighting coming form at least two directions.	100	1.0
EN 2.2	Windows	The design provides windows that gives adequate light and also allows the children to see the outside areas	60	0.6
EN 2.3	Location	Classrooms area located along the exterior perimeter of the building	60	0.6
EN 2.4	Glass	Clear glass is used with adequate consideration in terms of orientation and shading	100	1.0
EN 2.5	General	Maximum access to natural light is provided in each class room as well as circulation of air according to wind direction and design orientation	60	0.6
EN 3	**Textures**	Explanatory notes		3.6
EN 3.1	Placement	Textures provided area placed in reach of children	50	0.5
EN 3.2	Soft textures	Soft textures area used in areas where children sleep to promote relaxed and quiet behaviour	50	0.5
EN 3.3	Hard textures	Hard textures are used for more appropriate large motor activity areas where livelier activity occurs	80	0.8
EN 3.4	Natural textures	Natural textures are provided where possible as they are soothing and interesting to children	80	0.8
EN 3.5	Maintenance	Textures are chosen according to their clean ability and durability	100	1.0
EN 4	**Ceiling**	Explanatory notes		3.0
EN 4.1	High ceilings	Classrooms with high ceilings are provided with mobiles or suspended ceiling panels at a min height of 2035mm above finished floor level	0	0.0
EN 4.2	Differentiation	Very ceiling heights are used to give the classroom differentiation in scale	80	0.8
EN 4.3	Acoustic tiles	Acoustic ceiling tiles are used, with a thickness between 20mm and 25mm for an effective ceiling treatment	60	0.6
EN 4.4	Colour	Neutral ceiling colour are used for maximum reflection	100	1.0
EN 4.5	Gupsum board	Painted gypsum board area used in areas with soffits, ceiling height changes, vaults and wet areas	60	0.6
EN 5	**Materials & Components**	Explanatory notes		3.6
EN 5.1	Walling	Materials used for walling area to comply with SABS standards, be non-toxic, children interaction friendly, appropriately coloured and durable	80	0.8
EN 5.2	Flooring	Materials used on floors does comply to SABS standards, impact resistance flooring is provided under fall zones, easily cleaned, non-toxic and durable	80	0.8
EN 5.3	Loft	Loft structure material can absorb impact, easily assembled and disassembled, economical, lightweight and durable	0	0.0
EN 5.4	Play area	Play area materials area resilient and provides for both fall zones and gross motor areas	100	1.0
EN 5.5	Wet areas	Materials used in wet areas area to be impervious, easily cleaned and durable	100	1.0

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**Building Performance - Physical Safety**

	Criteria	Indicative performance measure	Measured	Points
EC 1	**Wall Surface**	Explanatory notes		**2.9**
EC 1.1	Finishes	Wall finishes does not contain any chemicals (VOC) that may be consumed by the child and possibly have harmful effects in the long term	50	0.5
EC 1.2	Edges	All exposed wall comers are rounded with a 13mm min radius	80	0.8
EC 1.3	Wet Areas	Impervious wall finishes are used in areas where the walls may get wet	50	0.5
EC 1.4	Interior	Indoor wall finishes are washable, soft elements that allow groups of children or adults to sit in close proximity for conversation or comforting	50	0.5
EC 1.5	Maintenance	Wall finishes are easily maintained in order to be kept in good repair.	60	0.6
EC 2	**Flooring**	Explanatory notes		**3.9**
EC 2.1	General	Generous amount of impervious floor are provided under eating and messy aeas as well as wet areas.	100	1.0
EC 2.2	Gross motor areas	Gross motor areas are provided with soft floor materials that is easily cleaned	80	0.8
EC 2.3	Play areas	Play areas area provided with a combination of resilient surfaces, however a min of 10mm impact resistant surfacing are provided under raised play equipment	80	0.8
EC 2.4	Quiet areas	Soft areas are provided using antislip and easily cleaned floor finishes	80	0.8
EC 2.5	Levels	Vary floor levels are provided with finishes according to accessibility for maintenance purposes	50	0.5
EC 3	**Loft Design**	Explanatory notes		**0.2**
EC 3.1	Visibility	Loft Design and placement allows visibility to the staff and surfaces area generally designed flat	0	0.0
EC 3.2	Infants	Infant loft design provides for soft surface with a max of 76mm-102mm unenclosed level change and a max of 455mm enclosed level change.	0	0.0
EC 3.3	Toddlers	Toddler loft design does not exceed a height of 915mm enclosed space	0	0.0
EC 3.4	Preschool	Preschool loft design does not exceed a height of 1370mm enclosed space	0	0.0
EC 3.5	Protective Barriers	All raised surfaces above 250mm-610mm are enclosed with protective barriers according to age group	20	0.2
EC 4	**Stairs and Ramps**	Explanatory notes		**4.2**
EC 4.1	Stairs	Stair raiser height is approximately 125mm for toddlers and 280mm for preschool children with a single tread depth of 304mm and a double tread depth of 533.4mm and a min width of 915mm	80	0.8
EC4.2	Climbers	Flexible climbers are securely bolted at both ends with an anchoring device that is installed below ground level and beneath the base of the protective surfacing material	100	1.0
EC4.2	Climber openings	Climber net openings area less than 432mm or greater than 711mm	100	1.0
EC4.3	Ladders	Spacing between the horizontal and vertical components of ladders and climbing grids are designed to prevent entrapment hazards. Centre-to-centre spacing of horizontal ladder rungs are no more than 305mm	80	0.8
SO 4.5	Ramps/Slides	Toddler and Preschool ramps provides 1:8 slopes with a single width of 482mm and a double width of 762mm while slide chutes have a slope no greater than 24 degrees up to 30 degrees with a width between 203mm and 305mm	60	0.6
EC 5	**Guardrails/Handrails**	Explanatory notes		**4.0**
EC 5.1	Public areas	Second set of handrails are provided at ramps and stairs that serve as element constructed for children	100	1.0
EC5.2	Mounting height	Mounting height provided at 508mm - 711.2mm form ramp surface or stair nosing to the top of the gripping surface	100	1.0
EC 5.3	Toddlers	Toddlers raised platforms are provided with guardrails at a height of 609mm top edge distance and 76.2mm bottom edge distance	0	0.0
EC5.4	Preschool	Preschool raised platforms area provided with guardrails at a height of 736.6mm top edge distance and 88.9mm bottom edge distance	100	1.0
EC 5.5	Entrapment	Vertical infill openings area not between 88mm and 229mm while smaller openings between 9mm and 25mm are also avoided for entrapment prevention reasons	100	1.0

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Fig 9.27_ Perspective rendered image of
Alice Primary School, public platform

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9.6 Fire Design Strategy_
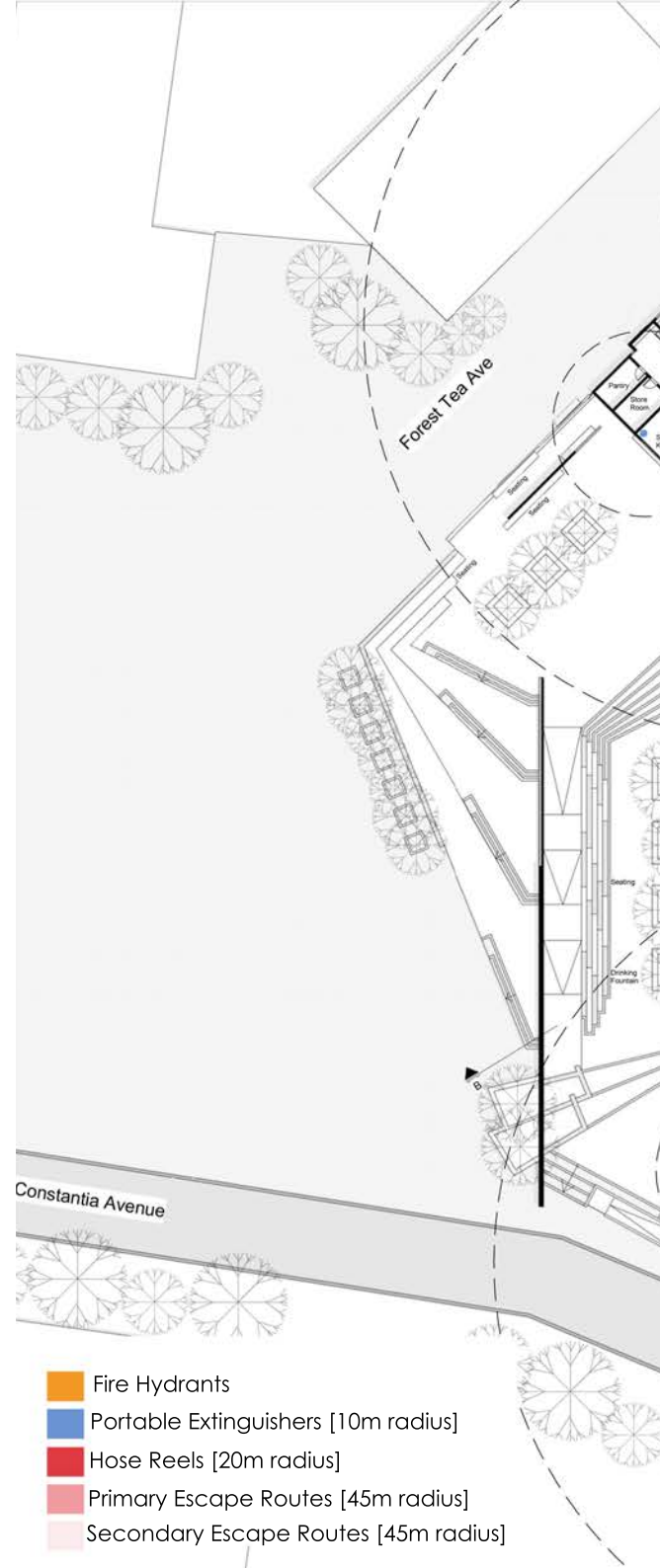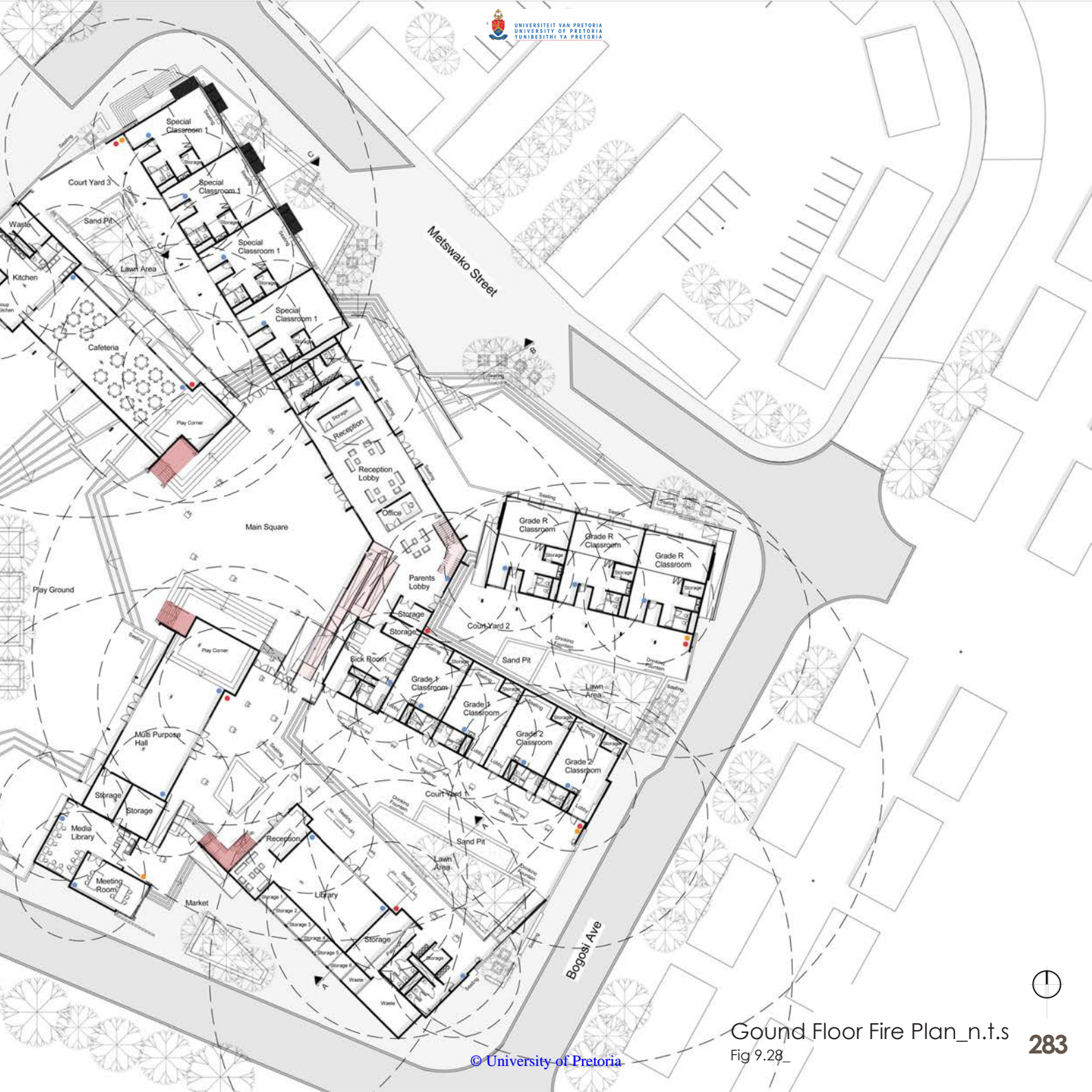
Fire Hydrants
Portable Extinguishers [10m radius]
Hose Reels [20m radius]
Primary Escape Routes [45m radius]
Secondary Escape Routes [45m radius]

Gound Floor Fire Plan_n.t.s
Fig 9.28_

Constantia Avenue

Fire Hydrants
Portable Extinguishers [10m radius]
Hose Reels [20m radius]
Primary Escape Routes [45m radius]
Secondary Escape Routes [45m radius]

First Floor Fire Plan_n.t.s
Fig 9.29_

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10 Conclusion

Fig 10.1_ Rendering of Market Public Platform **287**

Isometric_ Alice Primary School_n.t.s

Fig 10.2_ Isometric of Alice Primary School
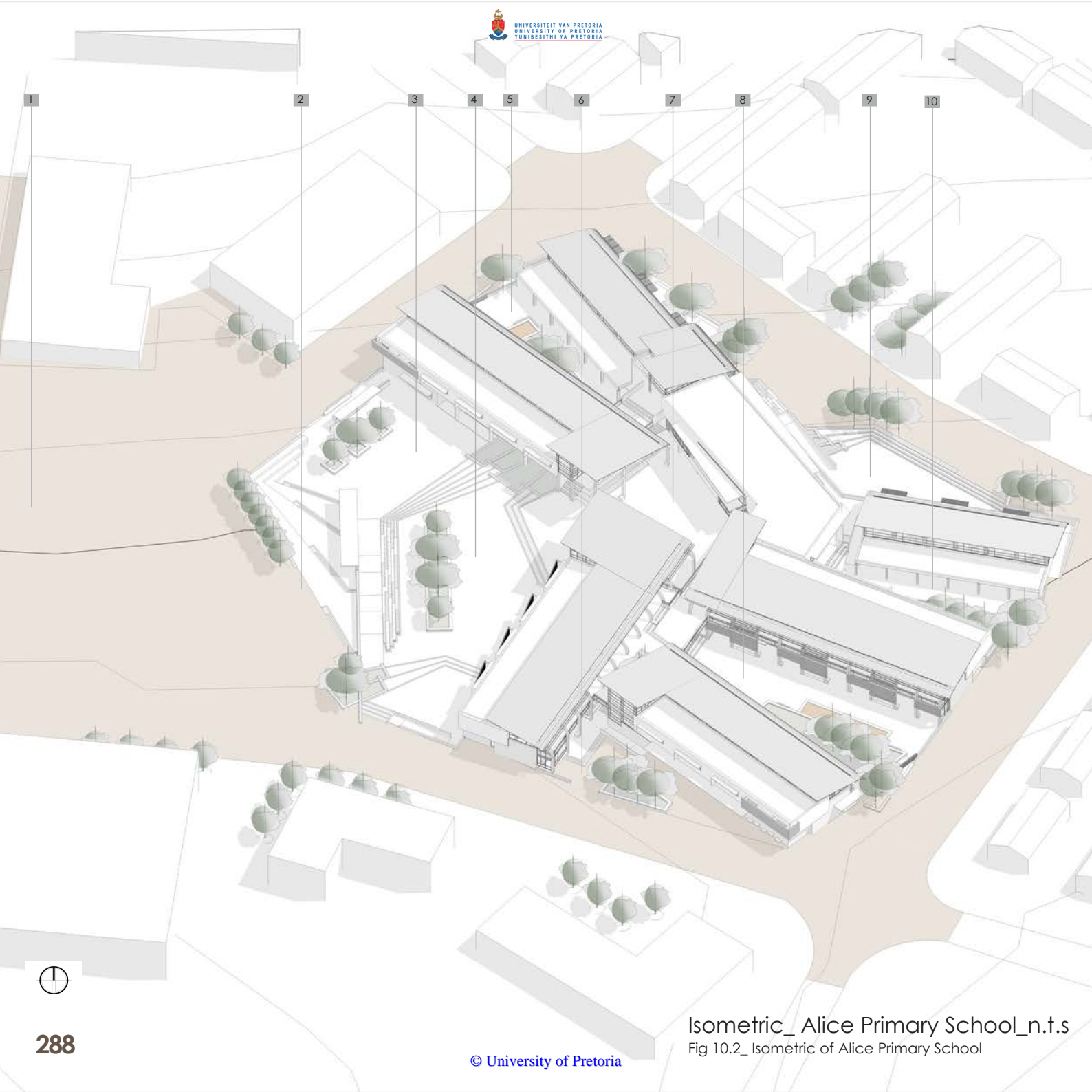
Fig 10.3_ Isometric Rendering of Alice Primary School

1. Community Public Square as part of Extended School design, indicated and discussed in Urban Structure Chapter, page 168
2. Main Entrance to 'Alice ' site, where the community square folds into the site and becomes an extension of the public schools' public platforms.
3. Public Platform 1 becomes the public space that is activated by the cafeteria and soup kitchen. This space also forms a transition platform for the public activity that moves from the community square to the public playground.
4. Playground space that becomes part of the community square through connecting public platforms. This playground will be used by the school during school hours, but is positioned to function as a public playground after school hours.
5. Courtyard 3 as private play area for special classroom pupils. Formed and positioned to be able to function as a separate unit.

Site Plan_n.t.s

Fig 10.4_ Alice Primary
School Site Plan

Fig 10.5_ Isometric Rendering of Alice Primary School

6. Public Platform 3 functions as public entrance point to the media Library and School Library space. The platform also functions as a market area, taking advantage of the activity link, Constantia Avenue, along this edge [learning from life]

7. Main Square that functions as the schools gathering auditorium space. This is the point where the classroom corridors [streets] intersect. This area also functions as the main entrance platform to the administration reception area [from the community square direction]

8. Courtyard 1 as a private play area for Grade 1 and 2 pupils [including first floor activity of the Grade 3-6 pupils]. Formed and positioned to be able to function as a separate unit.

9. Public Platform 4 that functions as a public entrance and gathering point for the reception area, afterschool adult education classrooms, special classrooms, and Grade R classrooms.

10. Courtyard 2 as private play area for Grade R pupils. Formed and positioned to be able to function as a separate unit.

Gound Floor Plan_n.t.s

Fig 10.6_

First Floor Plan_n.t.s

Fig 10.7_

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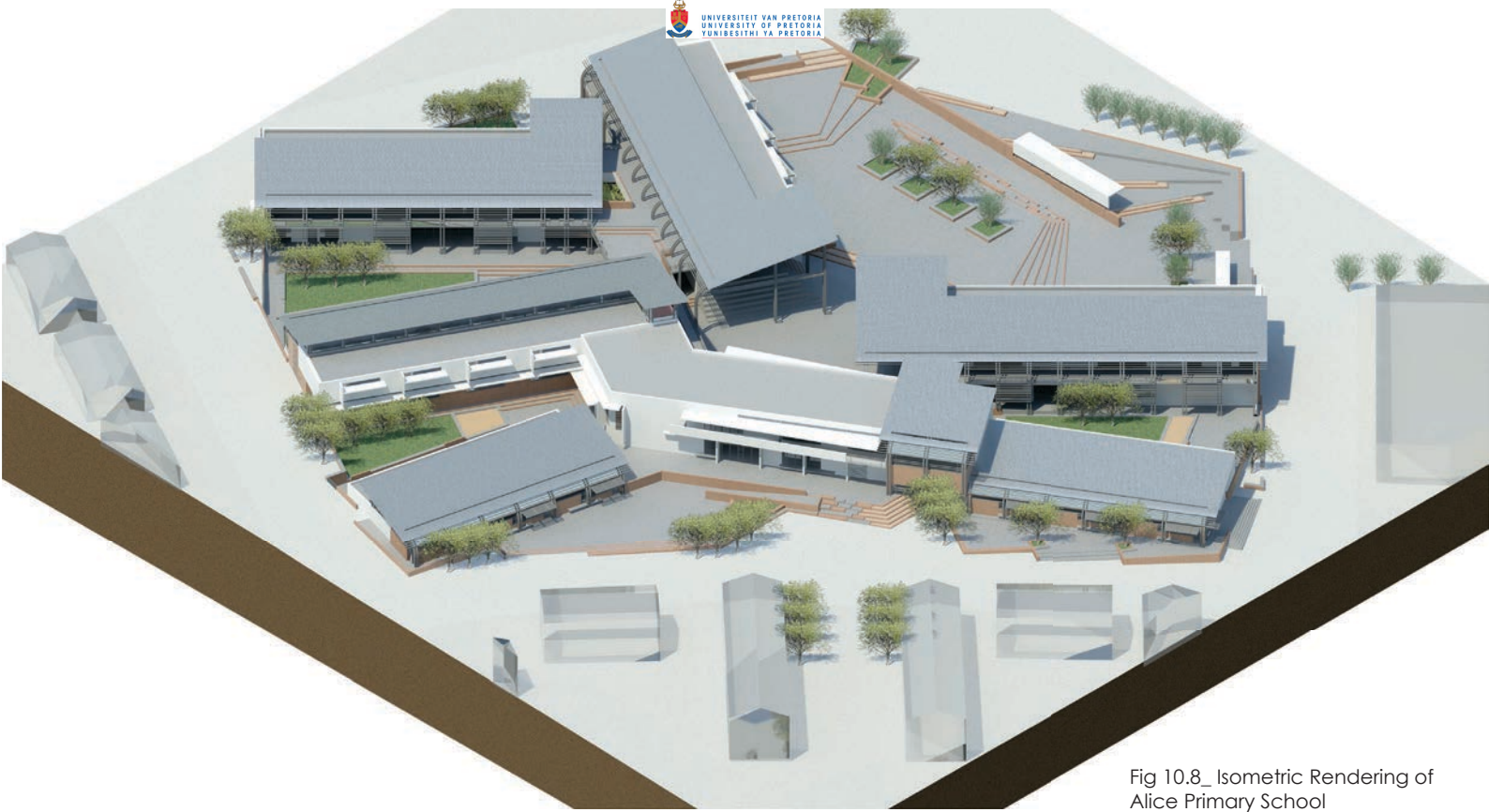
Fig 10.8_ Isometric Rendering of Alice Primary School

Fig 10.9_ Rendering of Playground Entrance from main Community Square
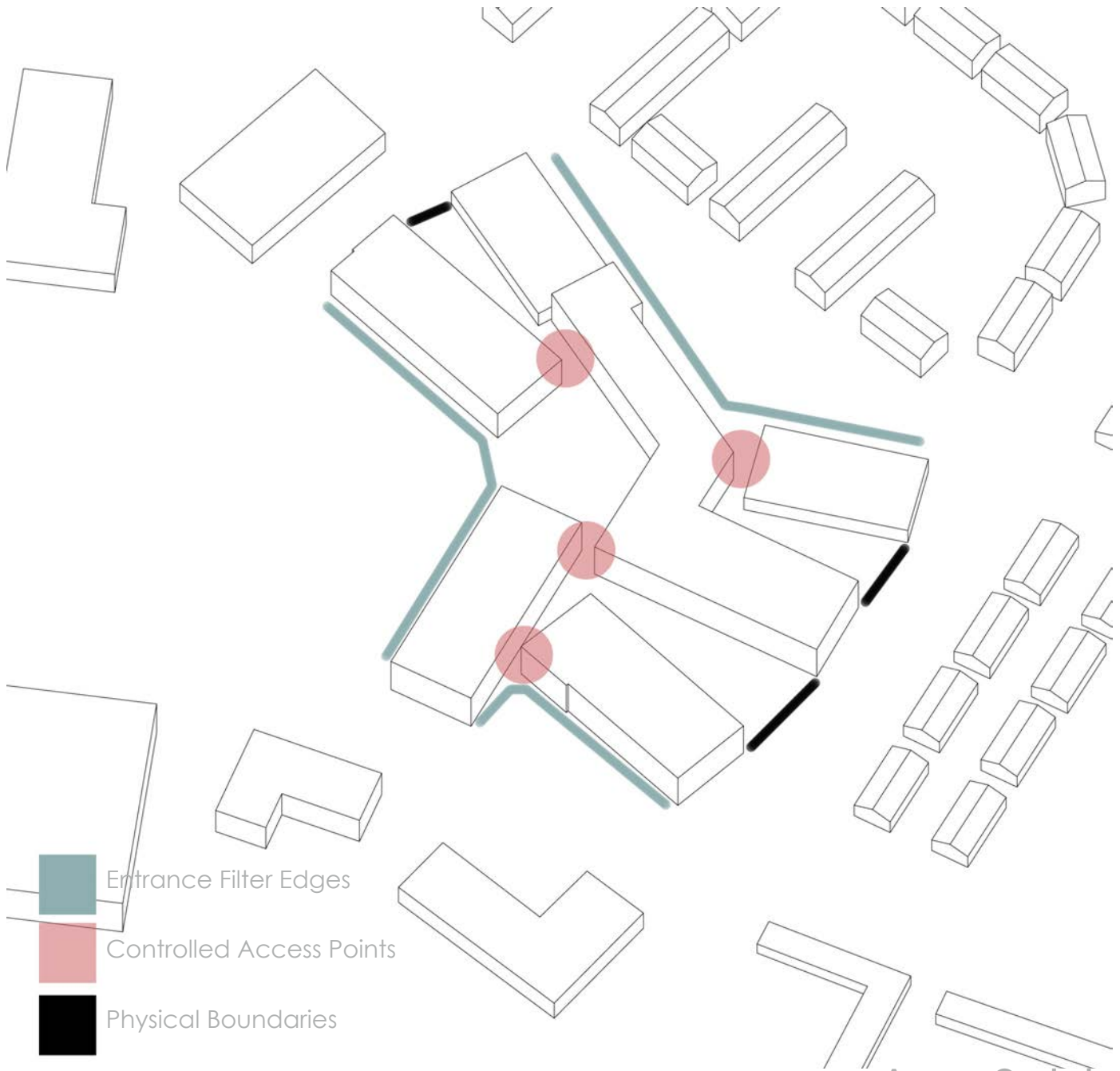
Entrance Filter Edges

Controlled Access Points

Physical Boundaries

Fig 10.10_ Design Access Control
Diagrammatic illustration

295

East Elevation_n.t.s
Fig 10.11_

West Elevation_n.t.s

Fig 10.12_

North Elevation_n.t.s

Fig 10.13_

South Elevation_n.t.s
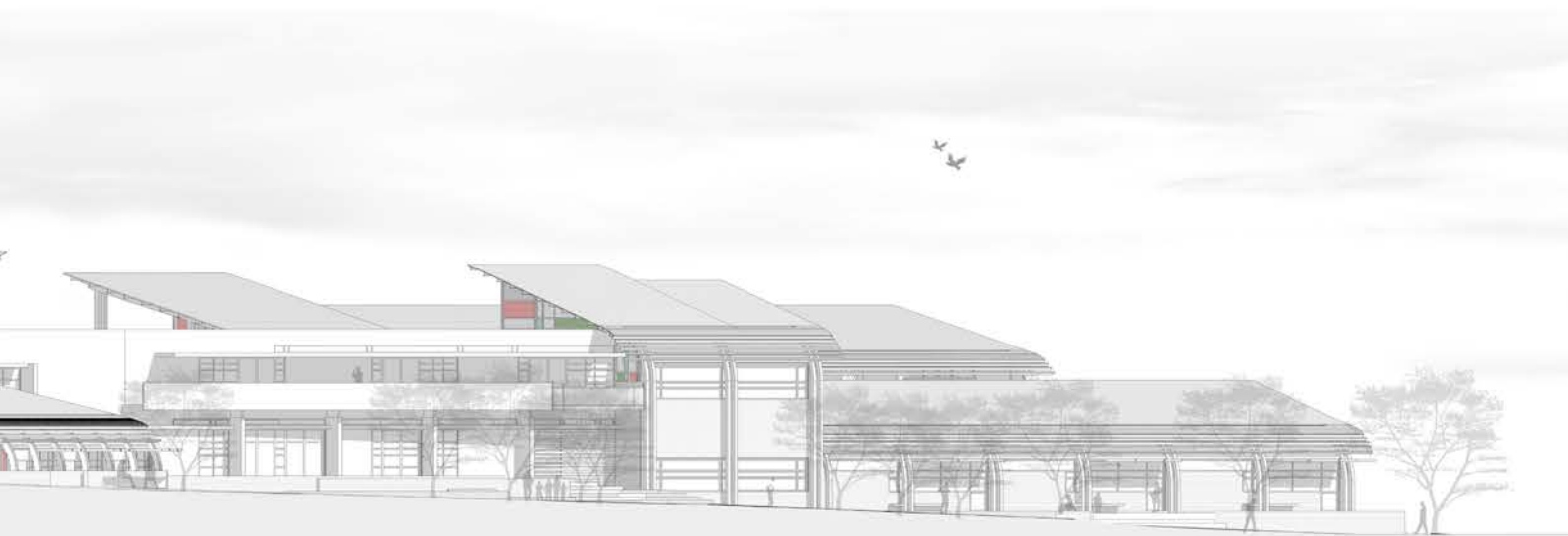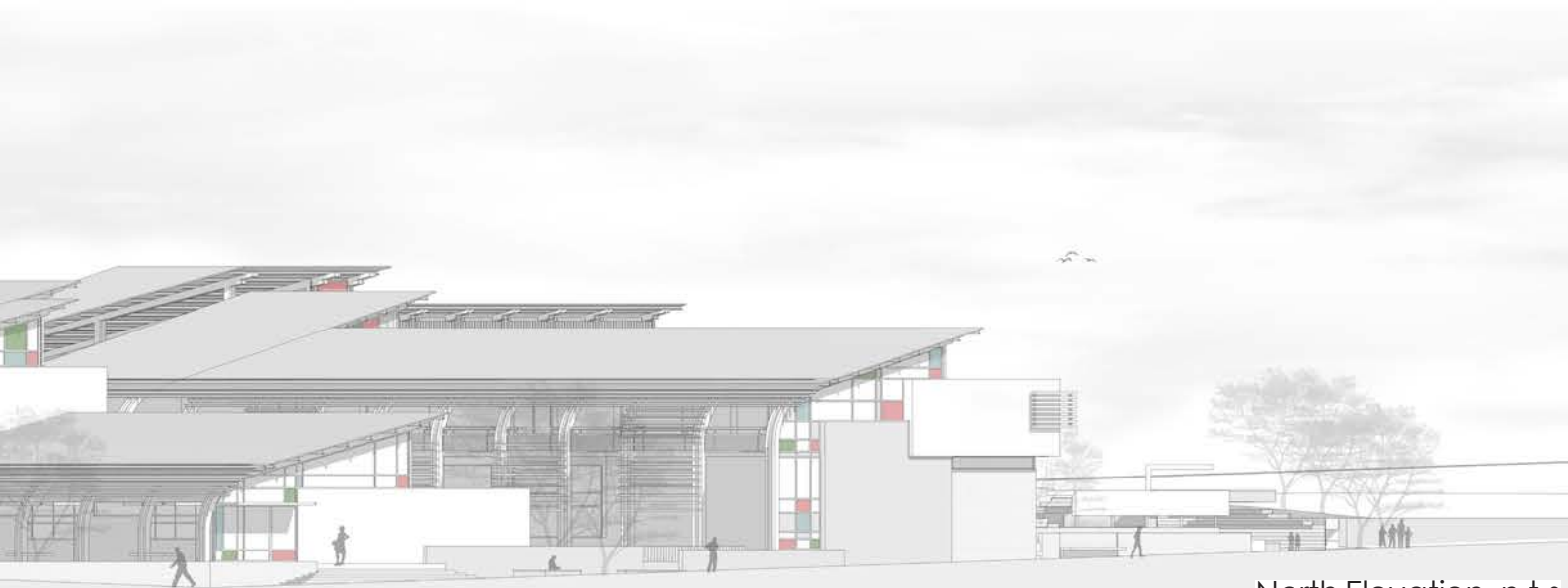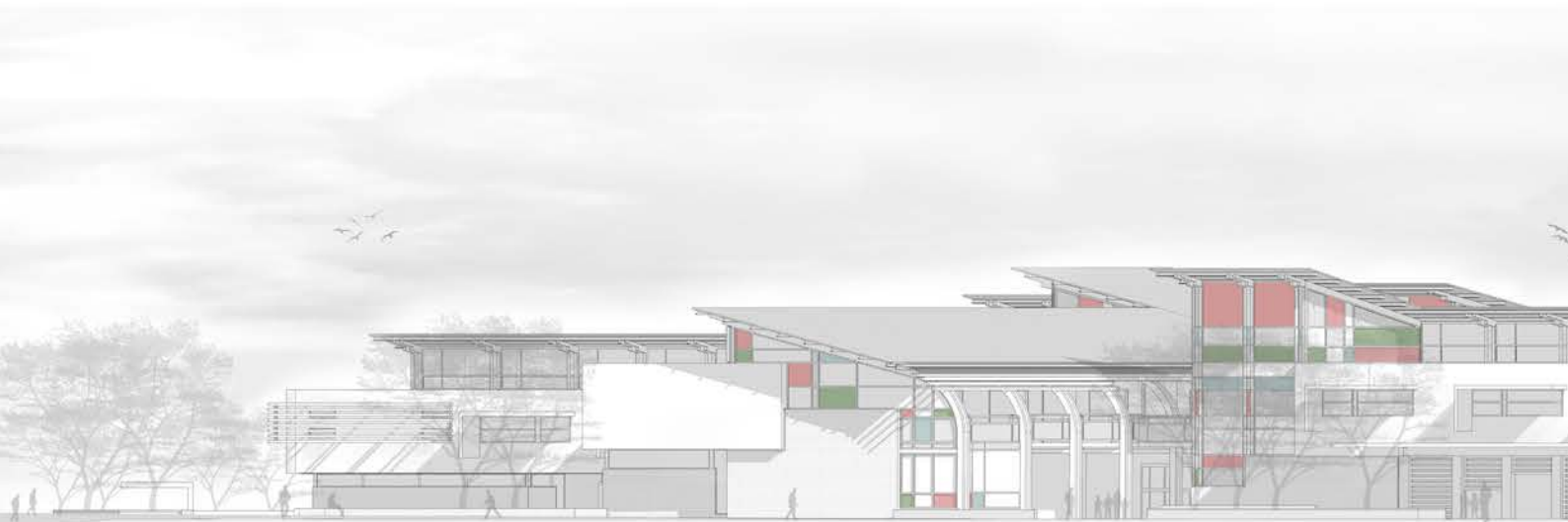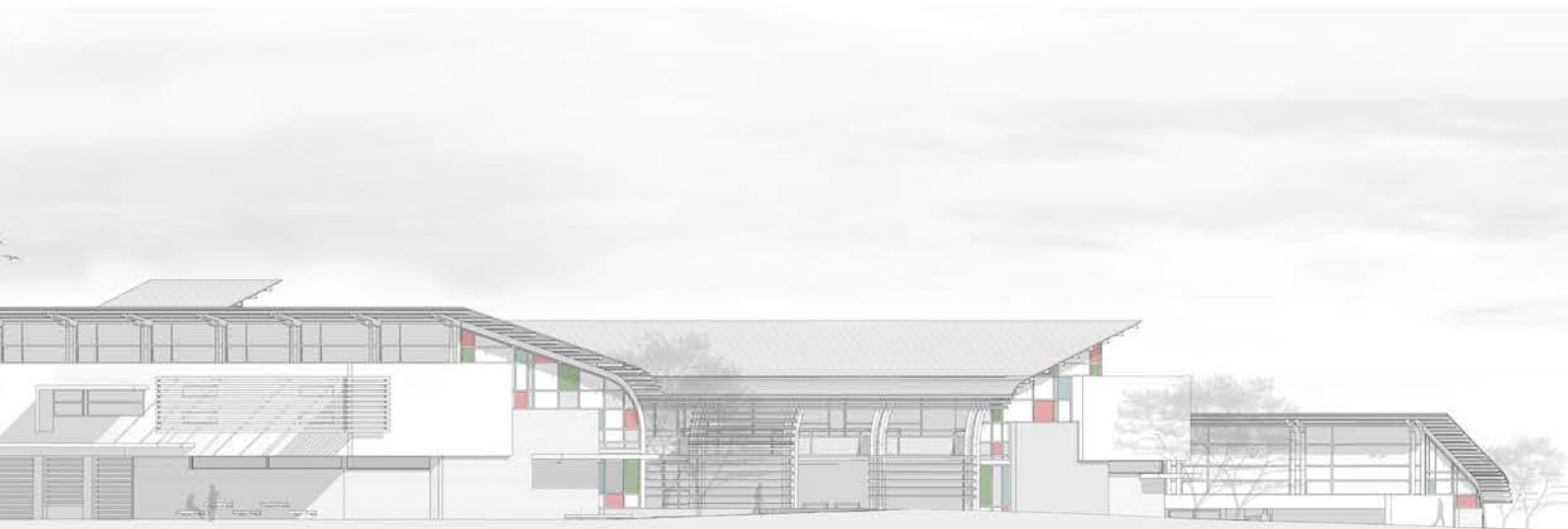
Fig 10.14_

Fig 10.15_ Rendering of Cafeteria Public Platform

Fig 10.16_ Rendering of after school community classrooms and administration Public Platform

Fig 10.17_ Rendering of Market Public Platform

Fig 10.18_ Rendering of Central Gathering Square

Entrance form Public Square

Public Playground

306

School Central Square

Water Catchment Tank, Filter and Pump Room

Balcony

Passage

Printing Room

Balcony

Reception

Public Platform

Section b-b_n.t.s

Fig 10.19_

Public Platform

Special Classroom

Courtyard 3

Corridor

Gr. 7 Cl

Cafeteria

Section c-c_n.t.s

Fig 10.20_

Market Platform

Market Storage
Space

Grade 6 Classroom

Library

Corridor

Courtyard 1

a-a

Grade 4 Classroom

Grade 2 Classroom

Corridor

Courtyard 2

Grade 6 Classroom

Section a-a_n.t.s

Fig 10.21_

1160x3000mm Vitrex Writing Wall Steel Panels , acoustic insulation core material, instillation according to specialist

Engineered growth medium in Greed Grid growing
Filter Fleece layer for extensive green roof systems
drainage layer, on Moisture retention/Matt protectio
25mm Insulation layer, on Durbigum SP4 Waterpro
system on top of Lightweight screed to fall, on 200
Reinforced Concrete Roof slab according to eng, w
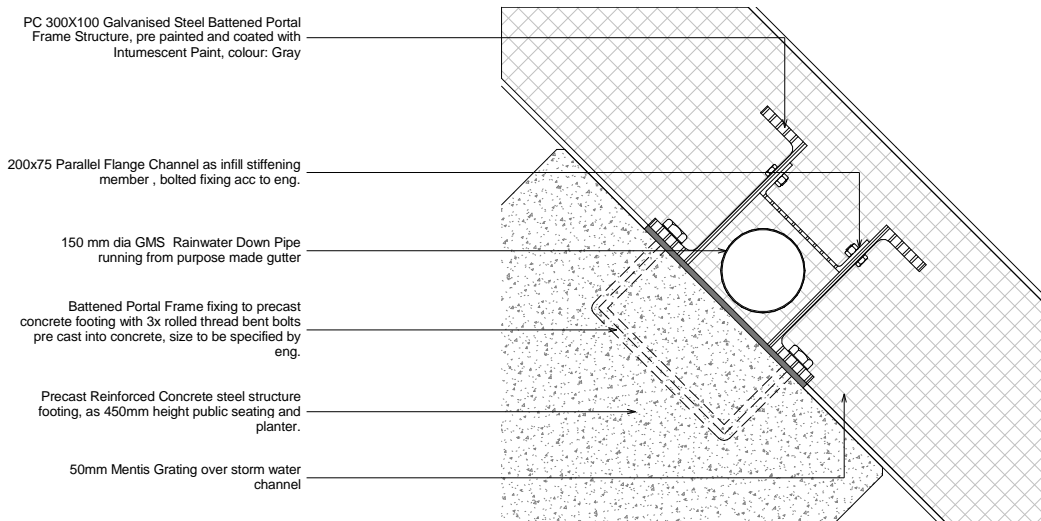offshutter interior concrete finish acc to specialist

Vitraclad Heavy Gouge Vitreous Enameled Perforated and
Solid Steel Panels , Combination of C-Type and F-Type fixed
to Steel frame according to specialist
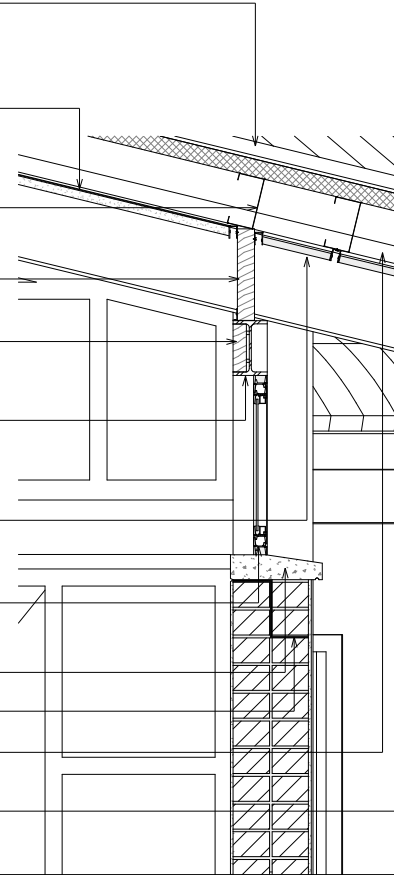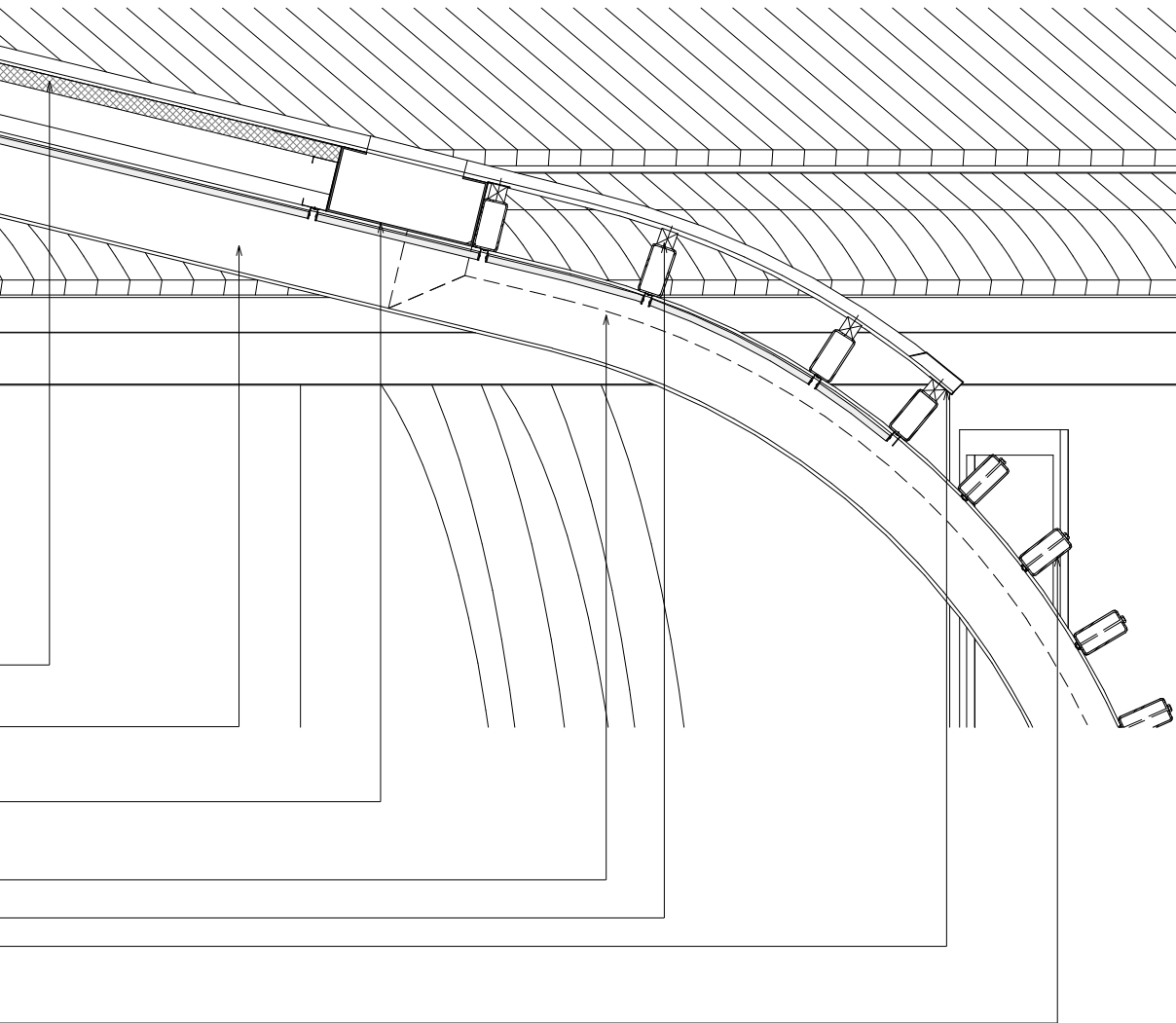
"Klip-Lok" 406 profile roof sheeting @ 10degree pitch,
with Global Coat finish, colour: Dove Gray, fixed strictly
according to manufacturers specifications to
150x75mm Lipped Channel purlins spaced @ 1200
c/c, fixed to PC 100x300 Galvanised Battened Portal
Frame Structure

b

50mm Laminated Timber in-
between frame rafters

320mm height, 220mm Brick Parapet with concrete
coping to fall towards inside

PC 300X100
Structure, pr
Paint, Colour

220mm Load bearing Structural Brick Wall with plaster and
paint finish, interior; Dulux Acrylic PVA paint and exterior; Dulux
Weatherguard Ultrasmooth Paint, colour: white

04

R
P

Precast Concrete Shading Panel to be built into brickwork
according to engineer specifications, prepainted, colour: white

05

Level 7381

Break away Space

Grade 6 Classroom

Precast Concrete interior seating as window seating to
run form wall-to-wall with steel bolted angle fixing
according to specialist.

10mm Neoflex 700 Series Recreational Flooring, colour:
700-007, to manufacturer specifications, on 25mm cement
screed, on 255mm Reinforced Concrete Floor Slab acc to
eng

Level 4515

Market Public Platform

Market Storage Space

200mm Reinforced Concrete Canopy as extension of
floor slab, prepainted, colour: white

Secudoor Push-up Operation Galvanised Steel Roller
Shutter door, with Fenestra Slats, according to specialist

Open jointed concrete brick paving

OWAAcousitc S
wool ceiling tile
white pain
exposed d
comprising g
tees suspende
not exceed
OWAconstruc
200m

Level 1500

Level 585

Non-slip Epoxy screed, on 100mm Reinforced
concrete surface bed, on 250 micron DPM, on
50mm clean sand binding, on min 300mm
well rammed earth filling, to eng spec

Vitraclad Heavy Gouge Vitreous Enameled Steel Panels , Combination of C-Type and F-Type, core material of acoustic insulation, fixed to Steel frame according to specialist

50mm ISOboard insulating board fixed to 150x75mm Lipped Channel Purlins spaced @ 1200 c/c

300x150mm Deep purpose made steel box gutter to fall to 150mm dia gms rainwater down pipe, to act as beam element, according to engineer specifications

24mm Vitraclad Heavy Gouge Vitreous Enameled Perforated Steel Ceiling Panels fixed to underside of 150x75mm Lipped Channel Purlins and 75x50mm Lipped Channel Purlin subframe installed according to specialist

150mm Dia GMS Rainwater down pipe running from 300mm purpose made gutter

Polybutton Closer

trays on , on JDrain n layer, on oofing mm th

ll panel fixed

Galvanised Steel Battened Portal Frame painted and coated with Intumescent Gray

eflective foil laminates, to be laid over PC 100X300 Battened ortal Frame, fixed to bottom of Lipped Channel Purlins. stalled according to specialist

150x75mm Lipped Channel Purlins spaced @ 1200 c/c

75x50mm Lipped Channel purlin subframe installed according to specialist

Break away Space and entrance

Corridor

150x75 Rectangular Hollow Steel Section spaced @ 300mm c/c, hidden bolted fixing to Battened Portal Frame, to form a continuation of purlin rhythm vertically down the facade

Non-slip Epoxy finish on 25mm cement screed on Multideck 60-V2 Steel Decking on 160 IPE beams at max 4000 c/c to eng

50x50x4 Square Hollow Section balustrade frame, fixed to precast reinforced concrete upstand with 4x rolled thread bent bolts precast into concrete, sized to be specified by eng, with Vitraclad Heavy Gouge Vitreous Enameled Perforated Steel infil panels, 25x25mm grid perforated openings acc to child safety regulations

Library

infonia Premium biologically absorble mineral s, size 600x600x15mm with square-edge and ted finish, laid on fire rated OWAconstruct S3 emountable Butt-cut T24 suspension system, alvanised main tees and cross tees with main d by means of galvanised hangers at centers 1200mm with ceiling perimeter finish with t shadowline W-trim, plugged and screwed at m centers, and all installed to manufacturers instructions.

Corridor

Courtyard 1

Precast reinforced concrete upstand, as 45mm public seating and planter

160 IPE Galvanised beam, bolted fixing to Battened Portal Frame, prepainted and coated with Intumescent paint, colour: Gray

220mm Load Bearing Brick Wall Structure, exposed exterior Wolkberg Bronze Satin Corobrick Facbrick, above 1400mm height from ffl will receive plaster and paint finish, Dulux Weatherguard Ultrasmooth paint, colour: white

Battened Portal Frame fixing to precast concrete footing with 3x rolled thread bent bolts pre cast into concrete, size to be specified by eng.

Reinforced Concrete Channel laid to fall to underground water catchment tank for reuse

Brick on edge stair nosing

Precast Reinforced Concrete steel structure footing, as 450mm height public seating and planter

Reinforced Concrete Footing acc to eng

mm Reinforced cron DPM, on 50mm clean sand binding, on min 300mm well rammed earth filling, to eng spec

Section a-a_ 1-20

Detail Section a-a_n.t.s
Fig 10.22_

PC 300X100 Galvanised Steel Battened Portal
Frame Structure, pre painted and coated with
Intumescent Paint, colour: Gray

150 mm dia GMS Rainwater Down Pipe
running form purpose made gutter

Battened Portal Frame fixing to precast
concrete footing with 3x rolled thread bent
bolts pre cast into concrete, size to be
specified by eng.

200x75 Parallel Flange Channel as infill stiffening
member , bolted fixing acc to eng.

Precast Reinforced Concrete steel structure
footing, as 450mm height public seating and
planter.

Non-slip Epoxy screed, on 100mm Reinforced
concrete surface bed, on 250 micron DPM, on
50mm clean sand binding, on min 300mm
well rammed earth filling, to eng spec

Reinforced Concrete Channel laid to fall to
underground water catchment tank for reuse

50mm Mentis Grating over storm water
channel

50x50x4 Equal leg steel angle frame, fixed
to Reinforced Concrete Channel with M4
rolled thread bolts precast into concrete

Reinforced Concrete Footing acc to eng.

Detail 01_n.t.s

Fig 10.23_

314

PC 300X100 Galvanised Steel Battened Portal Frame Structure, pre painted and coated with Intumescent Paint, Colour: Gray

150mm Dia GMS Rainwater down pipe running from 300mm purpose made gutter

101.6x3.0mm Circular Hollow Steel Section handrail,1000mm height from ffl

48.4x4.0 Circular Hollow Steel Section handrail, 700mm height form ffl

50x50x4 Square Hollow Section balustrade frame, fixed to precast reinforced concrete upstand with 4x rolled thread bent bolts precast into concrete, sized to be specified by eng, with vitreous enamel coated perforated steel infill panels, 25x25mm grid perforated openings acc to child safety regulations

Precast reinforced concrete upstand, as 45mm public seating and planter

150x75 Rectangular Hollow Steel Section spaced @ 300mm c/c, hidden bolted fixing to Battened Portal Frame, to form a continuation of purlin rhythm vertically down the facade.

Non-slip Epoxy finish on 25mm cement screed on Multideck 60-V2 Steel Decking on 160 IPE beams at max 4000 c/c to eng

160 IPE Galvanised beam, bolted fixing to Battened Portal Frame, prepainted and coated with Intumescent paint, colour: Gray

100x50 Parallel Flange Channel as steel decking edge trim

Detail 02_n.t.s

Fig 10.24_

315

220mm Load Bearing Brick Wall Structure, exposed exterior Wolkberg Bronze Satin Corobrick Facbrick, above 1400mm height from ffl will receive plaster and paint finish, Dulux Weatherguard Ultrasmooth paint, colour: white

220mm Load Bearing Brick Wall Structure, interior plaster and paint finish, Dulux Acrylic PVA paint, colour: white

10mm Neoflex 700 Series Recreational Flooring, colour: 700-007, to manufacturer specifications, on 25mm cement screed, on 255mm Reinforced Concrete Floor Slab acc to eng

Non Slip Epoxy Finish on 25mm screed on Multideck 60-V2 Steel Decking on 160IPE beams at max 4000mm c/c to eng

Edge Hardboard spacer with silicone movement joint

160 IPE Galvanised beam, bolted fixing to concrete downstand beam supported by load bearing brick structure, fixing acc to eng, prepainted and coated with Intumescent Paint, Colour: Gray

OWAAcousitc Sinfonia Premium biologically absorble mineral wool ceiling tiles, size 600x600x15mm with square-edge and white painted finish, laid on fire rated OWAconstruct S3 exposed demountable Butt-cut T24 suspension system, comprising galvanised main tees and cross tees with main tees suspended by means of galvanised hangers at centers not exceeding 1200mm with ceiling perimeter finish with OWAconstruct shadowline W-trim, plugged and screwed at 200mm centers, and all installed to manufacturers instructions.

220mm Load Bearing Brick Wall Structure, plaster and paint finish, interior: Dulux Acrylic PVA paint and exterior: Dulux Weatherguard Ultra smooth paint, colour: white

Detail 03_n.t.s

Fig 10.25_

"Klip-Lok" 406 profile roof sheeting @ 10degree pitch, with Global Coat finish, colour: Dove Gray, fixed strictly according to manufacturers specifications to 150x75mm Lipped Channel purlins spaced @ 1200 c/c, fixed to PC 100x300 Galvanised Battened Portal Frame Structure

1.2 Galvanised Mild Steel cover flashing

150x75mm Lipped Channel Purlins spaced @ 1200 c/c

Polybutton Closer

50mm Laminated Timber in-fill panel fixed between frame rafters

100 IPE Galvanised Portal Frame column, structure to engineer specifications, fixed to 300x500mm Reinforced Concrete upstand beam with admixture, to eng spec

30mm Laminated in-fill panel fixed to specialist specifications as interior finish to 100 IPE beam.

15mm OWAacoustic Sinfonia Premium biologically absorble mineral wool ceiling panels, fixed to underside of Lipped Channel purlins and subframe Lipped Channel purlins, installed by specialist specifications

Custom made Duro School Type Steel Window, top hung with outward swing, fixed to 100 IPE frame, according to specialist, Gazing to comply with SANS 10400-N: 2012

75x50mm Lipped Channel purlin subframe installed according to specialist

50mm ISOboard insulating board fixed to 150x75mm Lipped Channel Purlins spaced @ 1200 c/c

Reflective foil laminates, to be laid over PC 100X300 Battened Portal Frame, fixed to bottom of Lipped Channel Purlins, installed according to specialist

Engineered growth medium in Greed Grid growing trays on Filter Fleece layer for extensive green roof systems, on JDrain drainage layer, on Moisture retention/Matt protection layer, on 25mm Insulation layer, on Durbigum SP4 Waterproofing system on top of Lightweight screed to fall, on 200mm Reinforced Concrete Roof slab according to eng, with offshutter interior concrete finish acc to specialist

Detail 04_n.t.s

Fig 10.26_

320mm height, 220mm Brick Parapet with concrete coping to fall towards inside

375 micron Polyolefin DPC Membrane to fold over parapet under concrete coping and lap over Durgigium SP4 waterproofing layer

Engineered growth medium in Greed Grid growing trays on Filter Fleece layer for extensive green roof systems, on JDrain drainage layer, on Moisture retention/Matt protection layer, on 25mm Insulation layer, on Durbigum SP4 Waterproofing system on top of Lightweight screed to fall, on 200mm Reinforced Concrete Roof slab according to eng, with offshutter interior concrete finish acc to specialist

100mm PVC Down Pipe to be positioned in brick duct, leading to underground water catchments tank

220mm Load bearing Structural Brick Wall with plaster and paint finish, interior; Dulux Acrylic PVA paint and exterior; Dulux Weatherguard Ultrasmooth Paint, colour: white

Precast Concrete Shading Panel to be built into brickwork according to engineer specifications, prepainted, colour: white

Custom made Duro School Type Steel Window, top hung with outward swing, fixed to 100 IPE frame, according to specialist, Gazing to comply with SANS 10400-N: 2012 and safety glazing requirements

Precast Concrete window cill, prepainted , colour: white

375 micron Polyolefin DPC under window cill

30mm Laminated Wood backing panel for window seating, fixing according to specialist finishing treatment should be lead free

Precast Concrete interior seating as window seating to run form wall-to-wall with steel bolted angle fixing according to specialist.

375 micron Polyolefin DPC where brick wall and floor slab meets

200mm Reinforced Concrete Canopy as extension of floor slab, prepainted, colour: white

10mm Neo Flex 700 Series Recreational Flooring, colour: 700-007,to manufacturers specifications, on 25mm cement screed, on 255mm Reinforced concrete floor slab, according to eng spec

220mm Load bearing Structural Brick Wall, Wolkberg Bronze Satin Corobrick facebrick, stretcher bond with raked joints

Precast Concrete Lintel

Secudoor Push-up Operation Galvanised Steel Roller Shutter door, with Fenestra Slats, according to specialist

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Detail 05_n.t.s

Fig 10.26_

318

PC 300X100 Galvanised Steel Battened Portal Frame Structure, pre painted and coated with Intumescent Paint, colour: Gray

200x75 Parallel Flange Channel as infill stiffening member , bolted fixing acc to eng.

150 mm dia GMS Rainwater Down Pipe running from purpose made gutter

Battened Portal Frame fixing to precast concrete footing with 3x rolled thread bent bolts pre cast into concrete, size to be specified by eng.

Precast Reinforced Concrete steel structure footing, as 450mm height public seating and planter.

50mm Mentis Grating over storm water channel

Detail 07_n.t.s

Fig 10.27_

319

"Klip-Lok" 406 profile roof sheeting @ 10degree pitch, with Global Coat finish, colour: Dove Gray, fixed strictly according to manufacturers specifications to 150x75mm Lipped Channel purlins spaced @ 1200 c/c, fixed to PC 100x300 Galvanised Battened Portal Frame Structure

Reflective foil laminates, to be laid over PC 100X300 Battened Portal Frame, fixed to bottom of Lipped Channel Purlins, installed according to specialist

150x75mm Lipped Channel Purlins spaced @ 1200 c/c

50mm Laminated Timber in-fill panel fixed between frame rafters

30mm Laminated in-fill panel fixed to specialist specifications as interior finish to 100 IPE beam.

100 IPE Galvanised Portal Frame column, structure to engineer specifications, fixed to 300x500mm Reinforced Concrete upstand beam with admixture, to eng spec

24mm Vitraclad Heavy Gouge Vitreous Enamelled Perforated Steel Ceiling Panels fixed to underside of 150x75mm Lipped Channel Purlins and 75x50mm Lipped Channel Purlin subframe installed according to specialist

Custom made Duro School Type Steel Window, top hung with outward swing, fixed to 100 IPE frame, according to specialist, Gazing to comply with SANS 10400-N: 2012

Precast Concrete window cill, prepainted , colour: white

375 micron Polyolefin DPC under window cill

75x50mm Lipped Channel purlin subframe installed according to specialist

50mm ISOboard insulating board fixed to 150x75mm Lipped Channel Purlins spaced @ 1200 c/c

PC 300X100 Galvanised Steel Battened Portal Frame Structure, pre painted and coated with Intumescent Paint, Colour: Gray

300x150mm Deep purpose made steel box gutter to fall to 150mm dia gms rainwater down pipe, to act as beam element, according to engineer specifications

150mm Dia GMS Rainwater down pipe running from 300mm purpose made gutter

Polybutton Closer

1.2 Galvanised Mild Steel cover flashing

150x75 Rectangular Hollow Steel Section spaced @ 300mm c/c, hidden bolted fixing to Battened Portal Frame, to form a continuation of purlin rhythm vertically down the facade.

320

Detail 06_n.t.s

Fig 10.28_

Fig 10.29_

Fig 10.30_   323

324

Fig 10.31_

Fig 10.32_ **325**

326

Fig 10.33

Fig 10.34_ **327**

Fig 10.35_

Fig 10.36

Fig 10.37_ Rendering of Market Public Platform

Fig 10.38_ Rendering of Courtyard 1

Conclusion_

The dissertation investigation showed that a 'public' quality can be ingrated into former institutionalized educational design perspectives and is expressed as an 'extroverted' execution of architectural expression both spatially and physically. The 'Alice' design established 'extroversion' through the relationship of relativity between the different spatial scales of the design [Macro [urban] and Micro [architectural] scale]. The dissertation presented a spatial model where the children's spaces become part of community life through the careful placement of access filter zones and interactive boundaries.

Intergrating and interactive on an urban as well as architectural scale [educational] the 'Alice' design transformed the public school into a public space and ultimately an accessible community 'city of learning' is formed.

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