

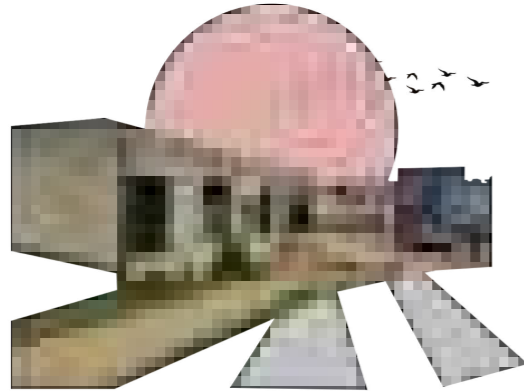
VIEDGESVILLE PRIMARY SCHOOL

"It is not beyond our power to create a world in which all children have access to a good education. Those who do not believe this, have small imaginations."

- Nelson Mandela -



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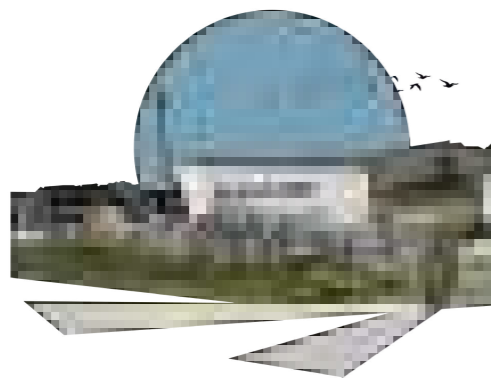
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PART A

INTRODUCTION



SUMMARY

The 2nd year design studio at Nelson Mandela University school of architecture was approached by NPO R-IGNITE founder, Pindelwa Mda, to produce design documentation to facilitate the funding process for the construction of a new primary school in Viedgesville. A semi-urban village 20 km from Umthatha in the Transkei; at the intersection of the N2 highway and the road to the coastal tourist village of Coffee Bay. The school is a vision by Pindelwa to replace an existing school in the village she was once raised and to a school that was established by late members of her family. The existing school facilities (4 classrooms, store room and a kitchen) are undersized and dilapidated and community parents and children are needing to look elsewhere for better school facilities - often requiring extensive travelling. The new school proposes to improve student numbers and afford the local community better educational facilities by replacing existing buildings and the addition of a library and computer space for students, and a multifunctional hall to serve the school and the community.

The contribution by the studio, as part of the architectural students' academic curriculum, is the development of initial design ideas and the production of design documentation that aims to enable:

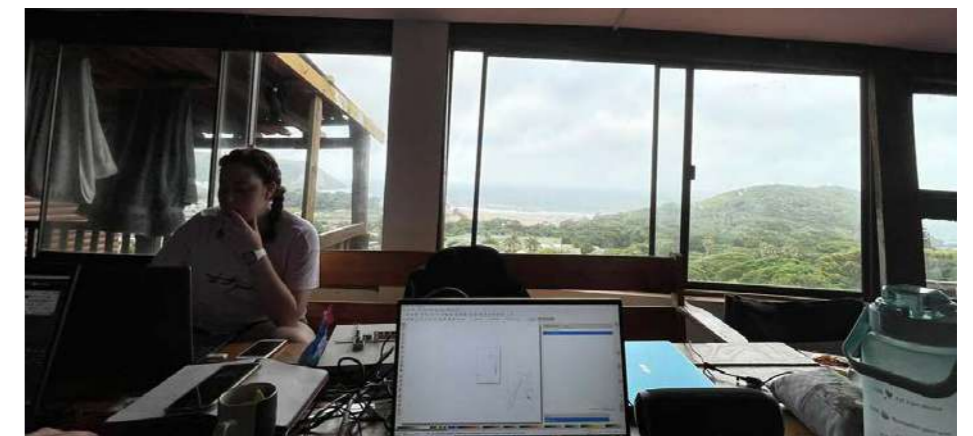
1. Initial costings to establish required funding;
2. content to obtaining funding – visions and images;
3. further discussions with representative members of the school and the community.

The design process began with early discussions with Pindelwa and school principal Tobela Ngubentombi and a visit to the site in the Transkei to develop the design brief which is articulated below. Once the brief had been set the students, while continuing to engage with Pindelwa and Principal Tobela, then set out to develop individual design ideas (1 week) from which 8 were selected for further development in teams (3 weeks), to five (2 weeks), and finally to 2. R-Ignite representative and the School Principal were present at the submission of each stages of the project and were part of the decision process in refining and selecting designs for further development.

Engaging with the Community and School Representatives at Viedgesville Primary School



Temporary studio workspace in the Transkei

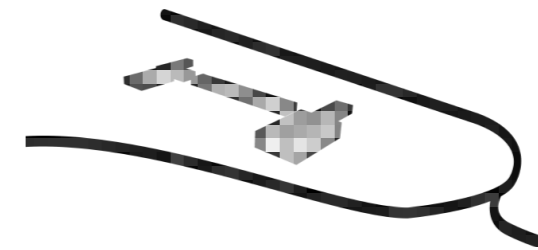


The final 2 proposals arise out of the unique position of the school at the fringe between the urban and rural landscape, a defining tension of the settlement of Viedgesville. A place where chickens and cows coincide with mechanics, motor cars and trucks; agriculture coincides with commerce; dense streets coincide with widespread pastures, rubber coincides with grass and mudbrick juxtaposes industrious corrugated iron.

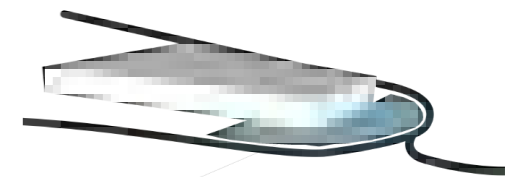


In response to the rural/urban fringe nature of the site the proposals present the possibilities of two primary potential design approaches - rural and urban. Where 1. Rural, proposes an architectural approach of a village of buildings set in the landscape; and 2. Urban proposes an edged mass that articulates the gateway to the village, street fronts and offers urban space to the greater community of Viedgesville. An advocate to the urbanization of the village. The response to this primary feature of the site has been central to the articulation of the following selected design proposals.

RURAL POTENTIAL DESIGN



URBAN POTENTIAL DESIGN



On the one hand is a school which prioritises the Urban future of the site and creates and contributes to the making of additional urban space for the community and the urban environment and the second a rural approach which in a more nostalgic fashion adheres to rural roots of the current settlement. This is not to say that a hybridization may not be possible, but the two options presents two polarized potentials of a response to the site. A rural option which is set in and extends into the landscape and composed of a "village" of buildings and an urban option which is a building with holds an urban edge along the street and proposes a new urban space for community interaction as part of the urban fabric.

Designs are conceptual and need further refinement and development, but aim to articulate for further discussion what is considered the primary consideration of the architectural project - is the school rural or urban? They hope to assist NPO (R-Ignite) to refine the scale and ambitions of the brief, while initiating funding requests and processes. Any involvement in further engagement, design or construction documentation and/or supervision still needs to be discussed by the involved parties.

PROJECT BRIEF

The following brief was developed in collaboration with R-Ignite's Pindelwa Mda and principal Tobela Ngubentombi over a series of discussions and during the development of design proposals

GENERAL

- Create a new facility that reignites the existing school to offer the community better learning facilities, so children don't need to seek education in surrounds. By accommodating additional classrooms, library, computer facilities and contributes to community through the making of a shared multi-function facility for assembly, community events and sport.
- Material selections should afford a dignified expression which contributes to learning and the expression of the community, while also acknowledging the tight budgetary restrictions of the project.
- A conducive environment for learning, which has been understood primarily as spaces that are safe, but also promote interaction at different scales. The community scale where learners interact with community, at an inter school scale between grades and finally at a class or grade level. The architectural consequence is a careful attention, not only to the classrooms as places of learning, but the spaces between buildings, where learning happens between formal classes.
- The building will be built by a contracting company (involvement of community will be managed by the contractor?).
- The existing school is required to continue during the construction of the new school.
- Existing buildings are dilapidated and deemed unfit and undersized for school functions and should not be reused in the new proposal. Except for more service or agricultural accommodations.
- The building should be built as a single entity and not in stages.
- The building needs to be off the grid using passive techniques for thermal control (orientation, insulation and shading), ventilation and lighting (natural vs artificial) and include solar panels, water tanks and septic tanks.

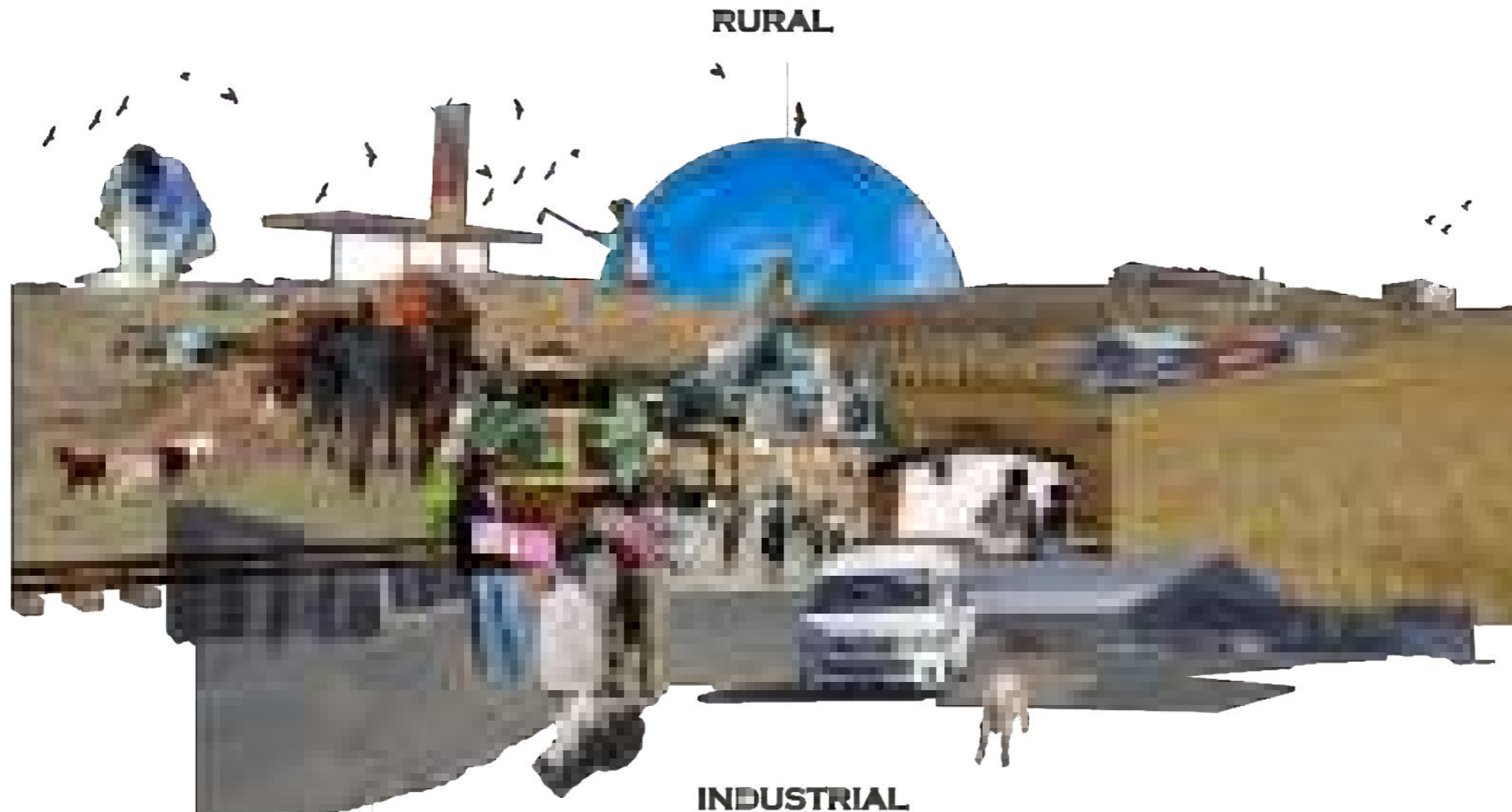
Accommodation

The accommodation schedule, size standards and allowance of required was developed in discussion with Pindelwa and Principal Tobela and set by the "South African Schools Act: Minimum uniform norms and standards for public school infrastructure" (https://www.gov.za/sites/default/files/gcis_document/201409/37081rg10067gon920.pdf) as per MEDIUM (9 Classrooms) classification of Minimum Education Areas for an enabling school Environment - Primary School, including a nutritional program which is already currently happening at the school. A community hall was also added to the accommodations with an intent of creating a facility that contributed and engaged with the community. The hall size was determined by a basketball court which is like the size of the hall for community and school gatherings, but also allows the hall to be used as an indoor multisport facility. The breakdown is preliminary and is as follows:

- 2 x Classrooms for Pre-Grade R and Grade R - 120 sqm
- 7 x Classrooms (Grade 1 - 7) – 280 sqm
- Science Laboratory - 60 sqm
- Library Space
- Computer Space
- Sick Room – 15 sqm
- Counselling Room - 15 sqm
- Principal's Office - 20 sqm
- Deputy HOD's Office – 15 sqm
- 2 x HOD Offices – 30 sqm
- Staff/Meeting room – 60 sqm
- Administration Office – 20 sqm
- Printing Room – 15 sqm
- Strong Room – 15 sqm
- Staff Kitchen – 12 sqm
- Staff Toilets Cleaning/Caretakers Store – 12 sqm
- Refuse Area – 15 sqm
- School / Community Hall – 120 sqm
- Hall Kitchen – 15 sqm
- Hall Storage – 12 sqm
- School Gathering and Play – 750 sqm
- Covered Circulation min 10% Arrival/Communal Spaces - 500 sqm
- Sports Field - 1000 sqm
- Playground - 200 sqm
- Vegetable Garden – 200 sqm

CONTEXT

A defining feature of the 27 400 sqm site is its unique position at the fringe of the village settlement and the landscape - where rural meets urban. Where *urban* is an industrious narrow yet busy vehicular street of large scale warehouses and spaza shops houses industrious services such as bulk food, hardware stores, metal yards, local mechanics. In the city centre behind the main street at the entrance to Viedgesville Warehouse and Build-It is a busy urban space which negotiates trade at different scales, trucks, vehicles, people and animals in a bustling village "centre". Surrounding is a Rural landscape of rolling hills and a life among animals, in widespread houses on small agricultural plots which are populated by crops, cows, goats and chickens which support the lives of a small agricultural community.



SITE AND EXISTING BUILDINGS



IMAGES OF SITE



CONTRIBUTIONS

R-Ignite - Pindelwa Mda

Viedgesville principal - Tobela Ngubentombi

2nd Year NMU Design Studio staff – John Andrews, Clayton Johnson-Goddard and document were produced and presented by the 2nd year Architecture students of Nelson Mandela University.

The Excursion Team - Aidan van Loggerenberg, Ané Meyer, Angelique Thirion, Connor Nilsen, Jed Gillard, Lehlohonolo Mothetsi, Tanith Dickson, Nduduzo Mkhize, Wehan Human, Zac Setzkorn

Additional Contributors - Angella Aziku, Antoinette Smit, Bayanda Dlamini, Charné Potgieter, Christiaan Bothma, Christofina Ekandjo, Courtney Peel, Jason Hendricks, Mark Williams-Jones, Mell Theunissen, Ngonidzashe Christmas, Omphemetse Moleli, Rivaldo Halters, Similo Javu, Siphe Nazo, Tashriqah September, Yamkela Mayisela, Yongama Ntlahta

The studio would also like to thank the NMU Engagement Office for contributing funding and the Viedgesville community and School Representatives for their engagements with the studio



PART B

RURAL vs URBAN RESPONSES

The project, having undergone various phases and reiterations, concluded with 2 final projects – The Edge and The Canopy. The pair, the Urban 'Edge' and the Rural 'Canopy', were selected not only on merit but on their concise, clear, and distinct approaches. The Edge building symbolizes the growth of a rural community with future urban prospects. The Canopy, being more grounded in its approach, unionizes the vernacular and the contemporary to produce a building more attuned to its current context. The former looking to the future and the latter the present. Part B provides a presentation and discussion of both strategies and responses.



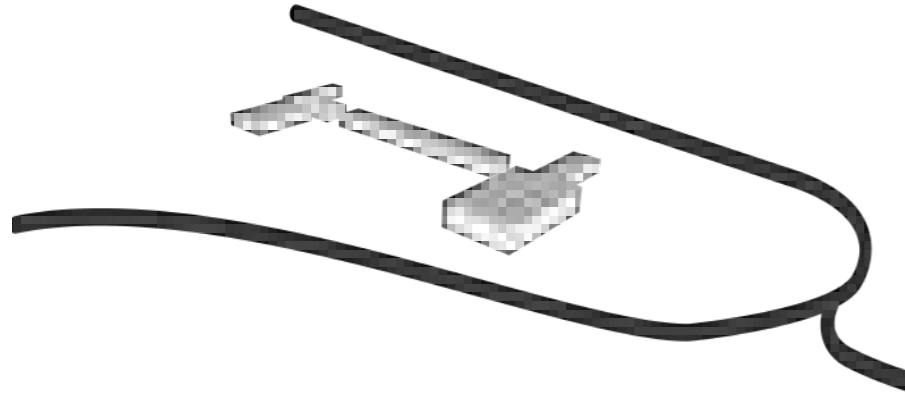


THE CANOPY

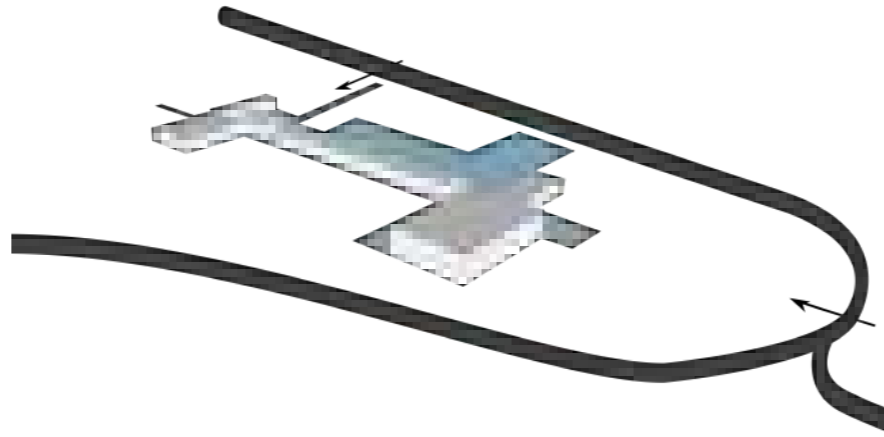
Characterized by a series of buildings gathering along a linear path, The Canopy is a project that takes on a traditionally sensitive approach welcoming the community and opening to the valley. As an object in the landscape the building adopts a rural approach integrating the vernacular homestead's (ikhaya) spatial qualities with a contemporary feel. Comprised of concrete blockwork, steelwork and IBR sheeting, the project aims towards a cost-effective design that retains a dignified expression. Solar panels, compost toilets and water tanks for rainwater harvesting are sustainable practices evident throughout the design. Skylights brighten up interior spaces and are strategically placed to imply movement and create ideal learning environments.

DIAGRAMS

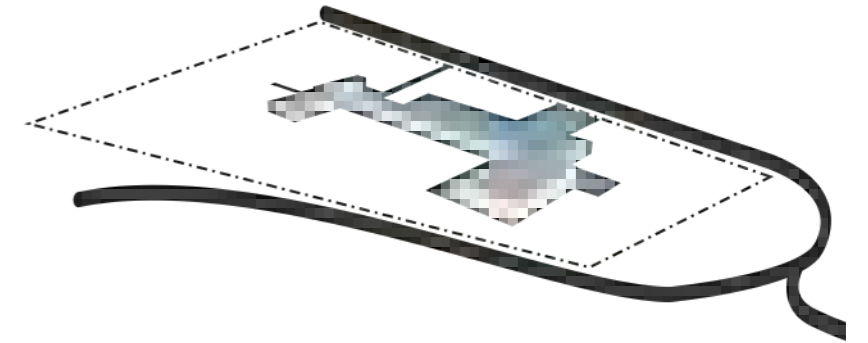
RURAL OBJECT BUILDING SET IN LANDSCAPE AKIN TO EXISTING RURAL HOUSES



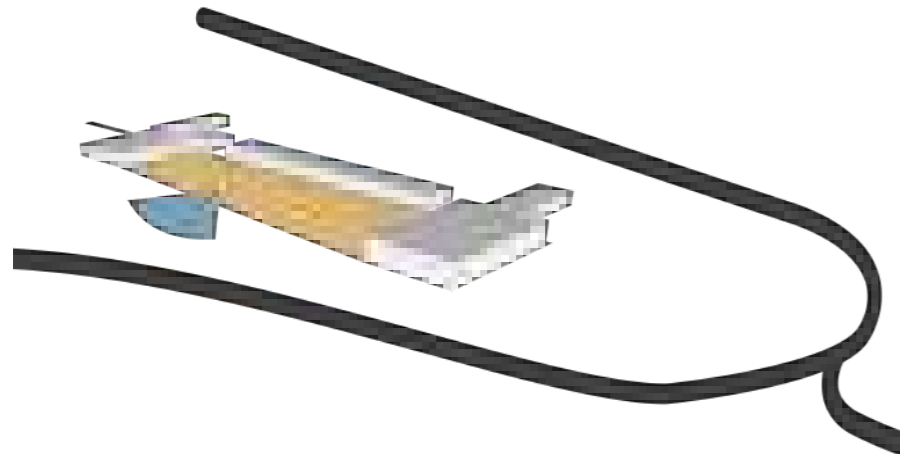
APPROACHES



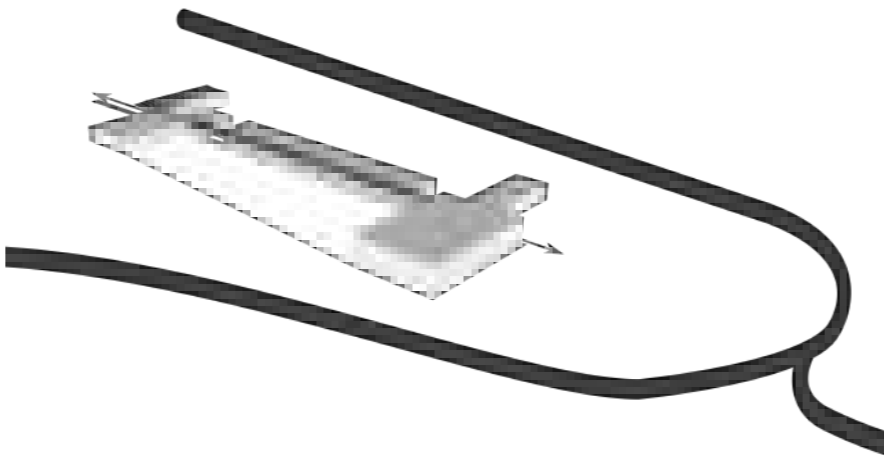
SITE FENCE



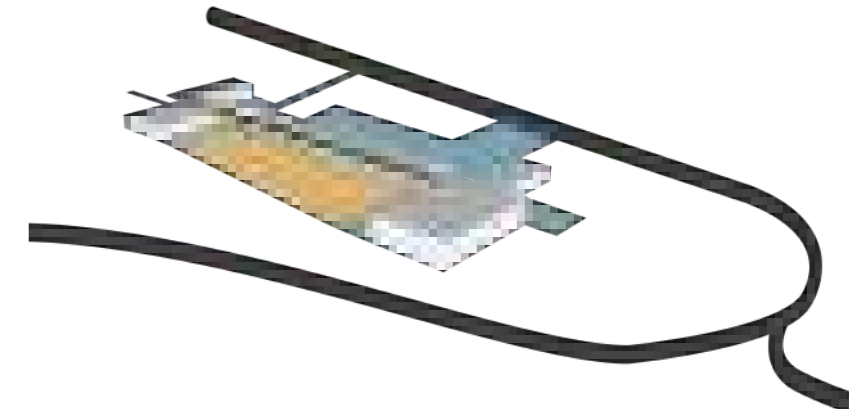
BUILDING CREATES A CENTRAL VILLAGE GREEN GATHERING AND AGRICULTURAL SPACE



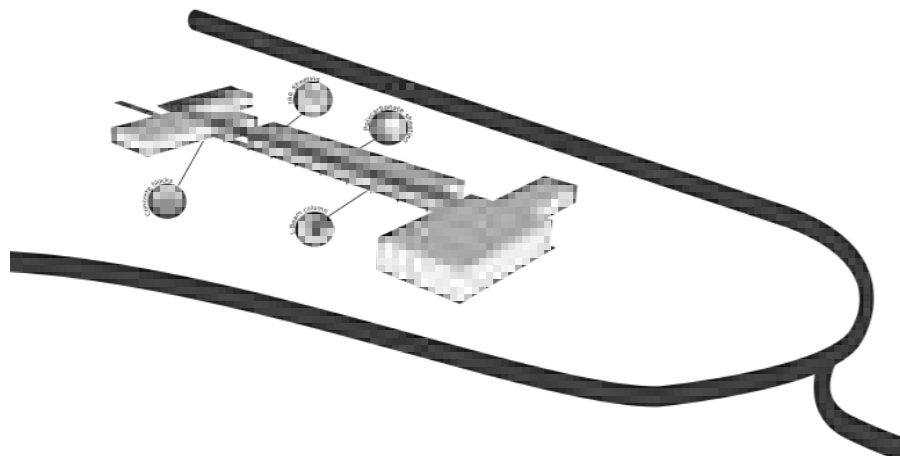
VERANDA AS MAIN ELEMENT THAT ORGANISES A COMPLEX OF BUILDINGS AND ACTS AS A SHELTERED GATHERING CENTRE



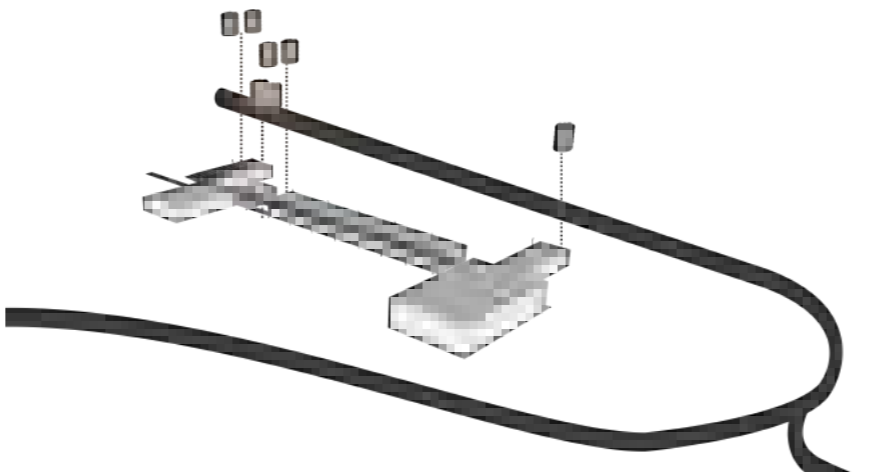
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MATERIALS



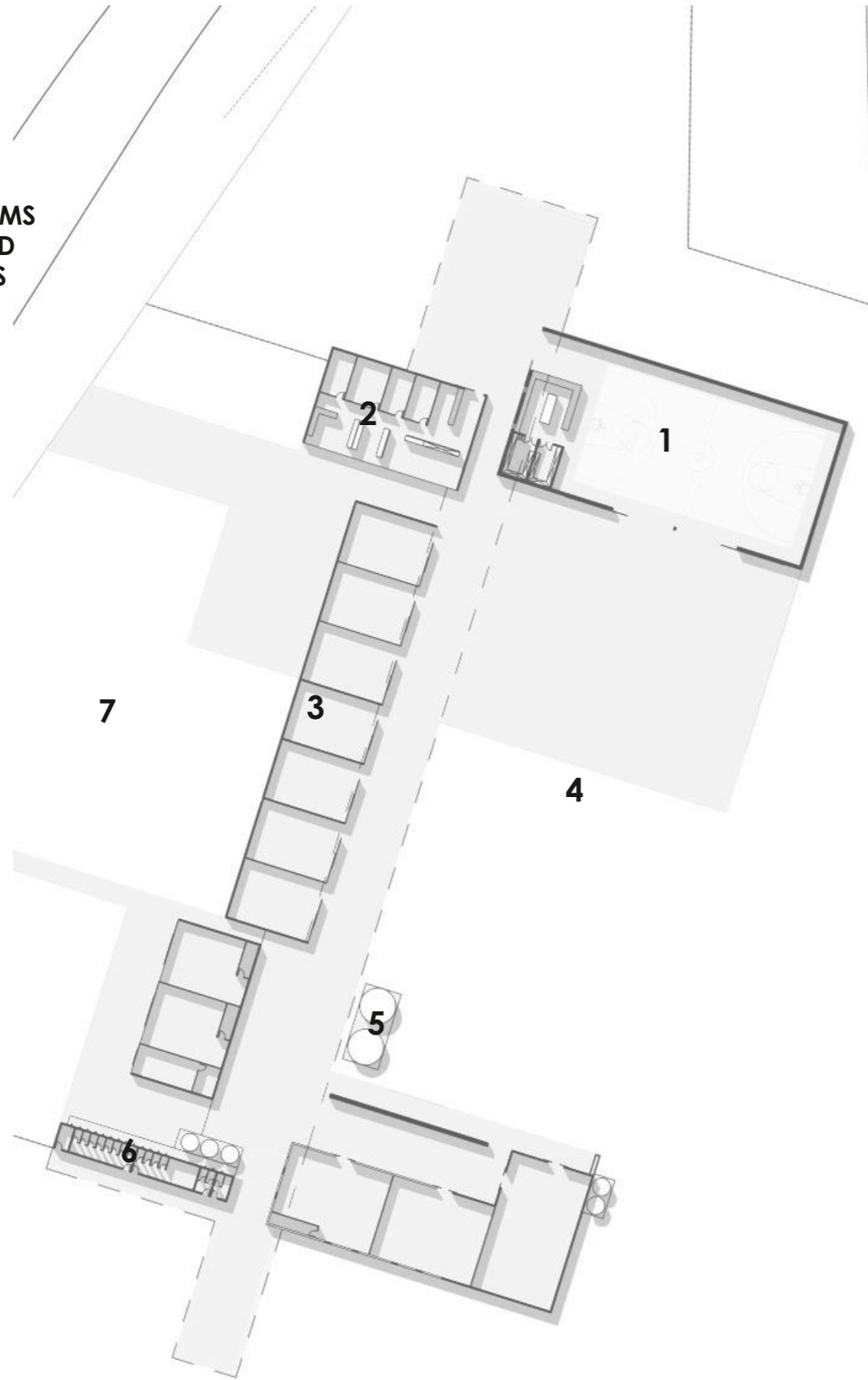
WATER TANKS



PLAN OF THE CANOPY

Spaces

1. HALL
2. ADMIN
3. CALSSROOMS
4. COURTYARD
5. WATERTANS
6. WC
7. PARKING



The Canopy is an object building – a building located centrally on site with no ‘edge’ – mimicking the vernacular homestead. Sitting lightly on the site, with a total footprint of 4 016m², the project adopts a humbler approach as a building attuned to the greater rural context.

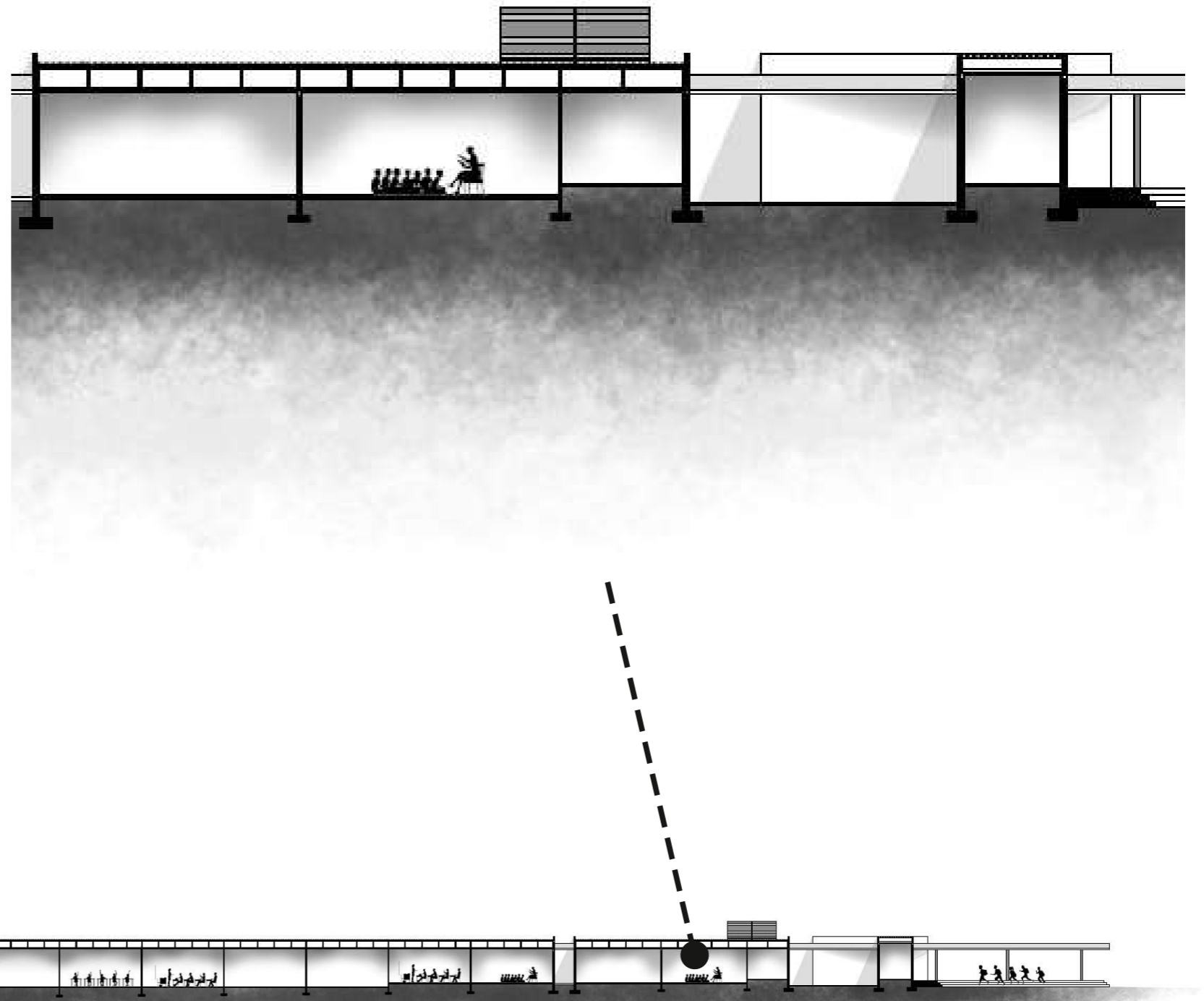
Strung along an axis the building adopts a linear, North to South, shape. This shape picks up on the natural movement through site, giving the building a very permeable feel. The canopy receives well dispersed natural lighting and capitalizes on natural ventilation with the wind moving through the buildings.

SECTIONS

CONSTRUCTION

Comprised of a complex of concrete blockwork buildings strung along the axis of a steel framed verandah with IBR sheeting used as roofing throughout the entire school – the Canopy boasts a humble and cost-effective structural configuration. Concrete blockwork acts as a cost-effective alternative to the ‘traditional brick’, used in public schools, whilst displaying the same properties as the brick. IBR sheeting used as roofing throughout the project helps mitigate heat gain through its reflective surface – providing a covering without the need for sub-structure.

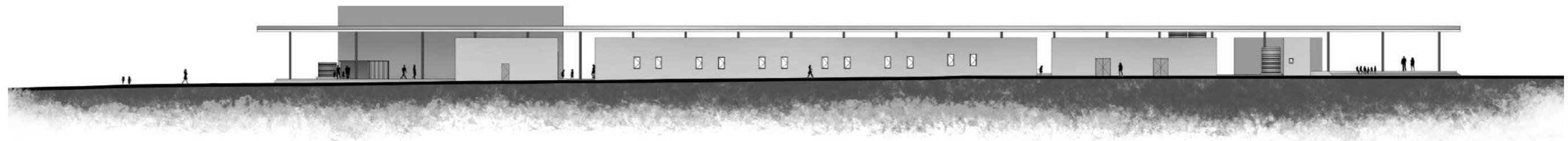
The steel frame aids in accentuating movement throughout the project in a linear fashion and covers 2443m² of site. The Canopy’s simple structural configuration and off-the-shelf approach (locally sourced materials) make it a fairly effortless build which helps open opportunities for community involvement. Resting on a strip foundation the project touches the earth lightly with a footprint of 34124m².



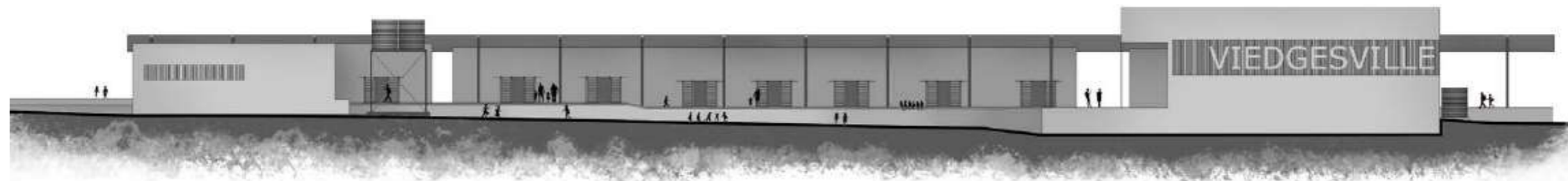
ELEVATIONS



NORTH ELEVATION



WEST ELEVATION



EAST ELEVATION

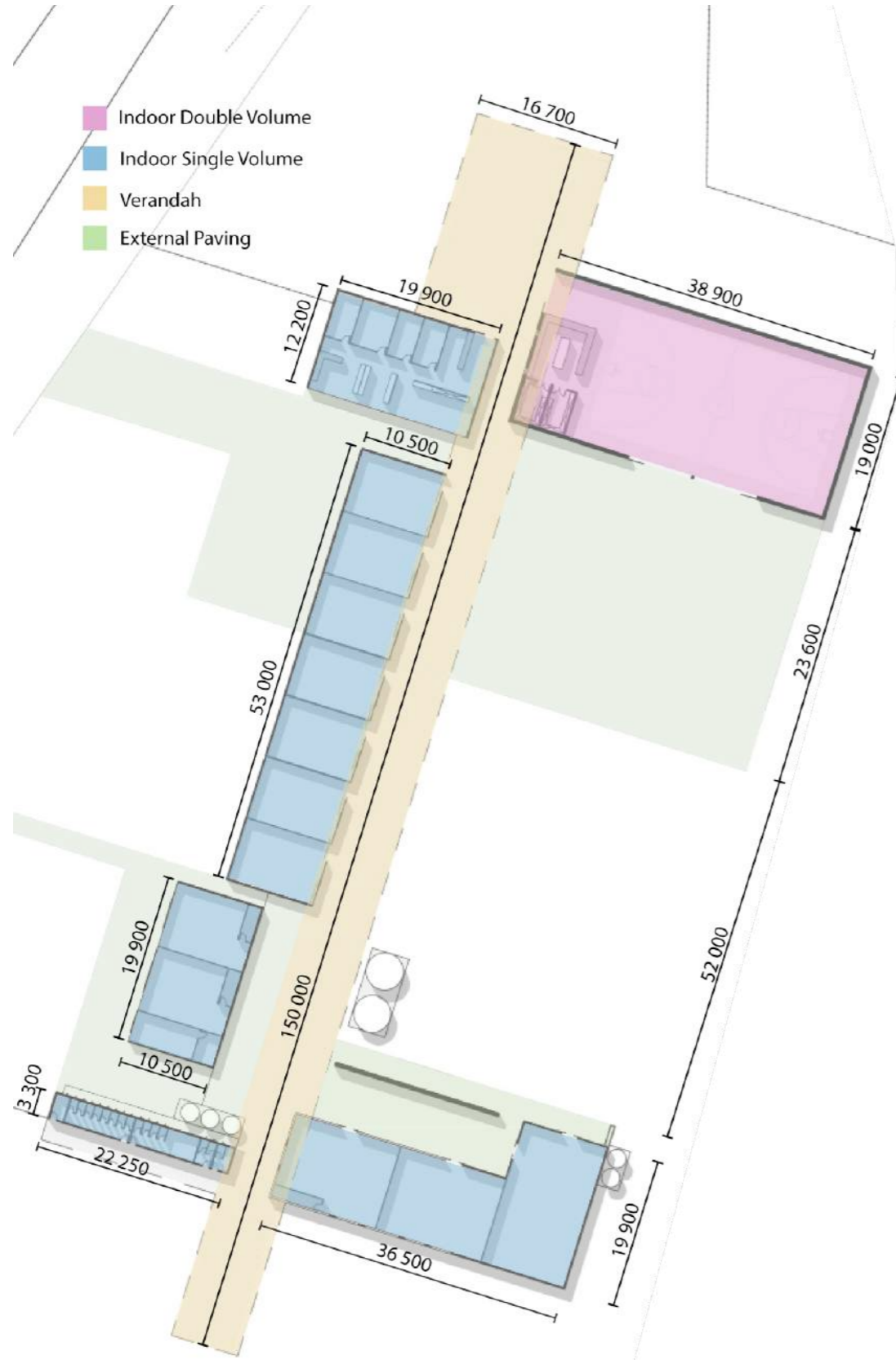
RENDERS



AREAS AND SPECIFICATIONS

COSTING AREAS:

- Indoor Double Volume: 736 sqm
- Indoor Single Volume: 1732 sqm
- Verandah: 1358 sqm
- External Paving: 3532 sqm



General Specifications:

Internal Single Volume Spaces:

- Foundations: Concrete strip foundations
- Walls: 390 x 190 x 190mm Concrete Blocks, bagged and painted.
- Windows and Doors: Standard steel frame windows and doors.
- Roof: Roof at 5 deg with 0.5mm thick and 890mm wide galvanised IBR roof sheeting on galvanised steel lipped channel purlins and rafters with painted ISO board insulation.

Internal Double Volume Spaces:

- Foundations: Concrete strip foundations
- Walls: 390 x 190 x 190mm Concrete Blocks with, bagged and painted.
- Windows and Doors: Standard steel frame windows and doors. Doors to community hall to be industrial sliding style doors.
- Roof: Roof at 5 deg with 0.5mm thick and 890mm wide galvanised IBR roof sheeting on galvanised steel lipped channel purlins and rafters with painted ISO board insulation.

Verandah Spaces:

- Foundations: Concrete pads for columns
- Floor: 100mm Concrete surface bed
- Roof: Roof at 5 degrees with 0.5mm thick and 890mm wide galvanised IBR roof sheeting on galvanised steel lipped channel purlins and rafters. No Ceiling.

Siteworks:

- External Paving – Concrete block pavers
- Soccer Field
- Levelling for Play Areas
- Levelling for Parking Area
- Access Path
- Fencing Around Site



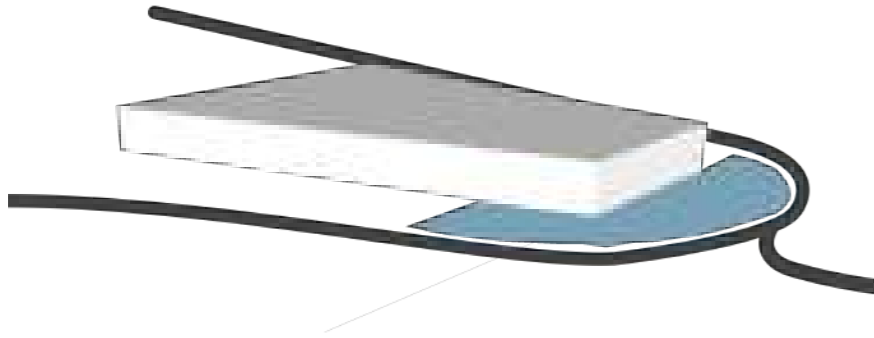
THE EDGE

Rooted on a concern for the unification of education and community, the Edge is a project that symbolizes the growth of a rural community with future urban prospects. Getting its name from its site response, the Edge engages with the site boundary, producing a building that picks up on the road's progression out of Viedgesville's industrial centre. This allows the road to act as a gateway into the school. The project, inspired by that progression, adopts a distinct asymmetrical U shaped configuration with the hall at the front and two parallel wings extending to the ends of the site. The community gets connected to the school through its frontal façade which creates a new space for congregation.

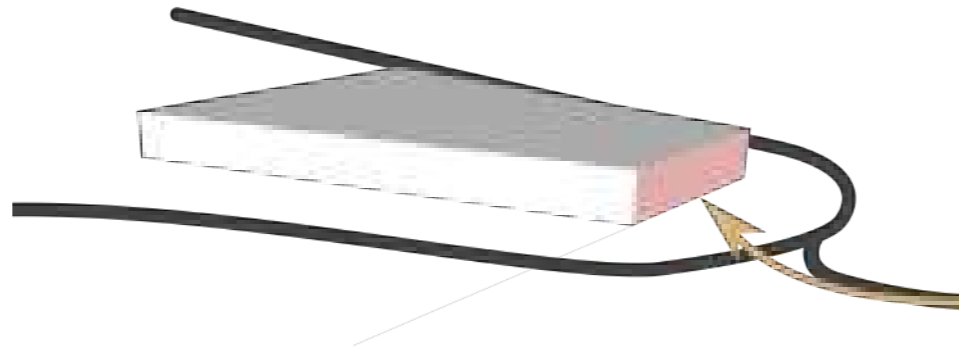
Acting as a threshold, the hall separates public-community spaces from private-educational spaces. The project, sourcing materials from local hardware stores, uses a steel structure with clay brick infill and kliplok roof sheeting. Capitalizing on its large singular roof, the Edge incorporates solar panels as well as an interior gutter system for water harvesting.

DIAGRAMS

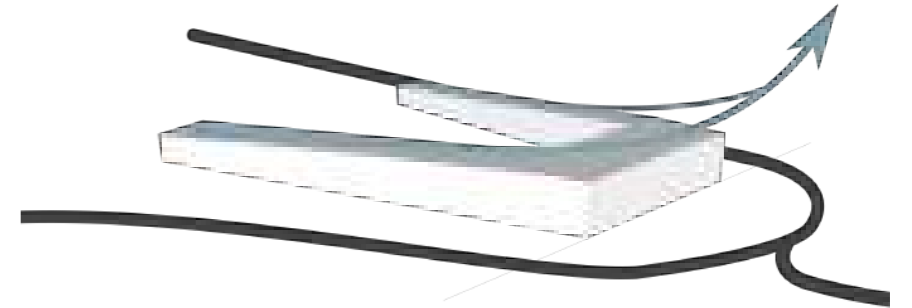
BUILDING PLACED AT EDGE OF SITE TO PRODUCE URBAN SPACE AND EDGES



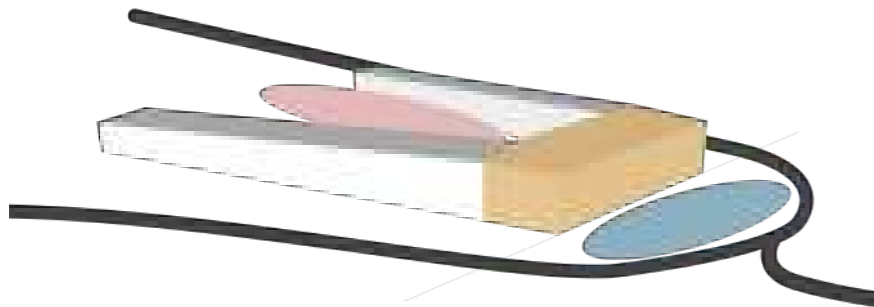
BUILDING EDGE CREATES AN AXIAL END TO THE MAIN STREET IN VIEDGESVILLE COMMUNITY ENGAGEMENT



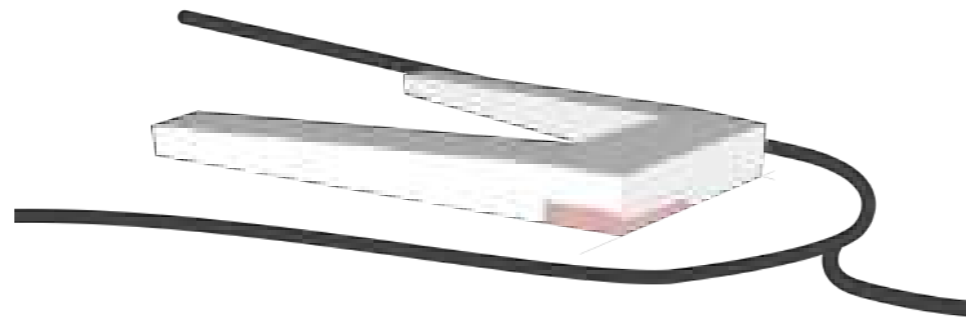
BUILDING TILTS TO CREATE HEIRARCHIES FOR DIFFERENT FUNCTIONS AND ARTICULATE THE HEIRARCHIES OF THE URBAN ENVIRONMENT



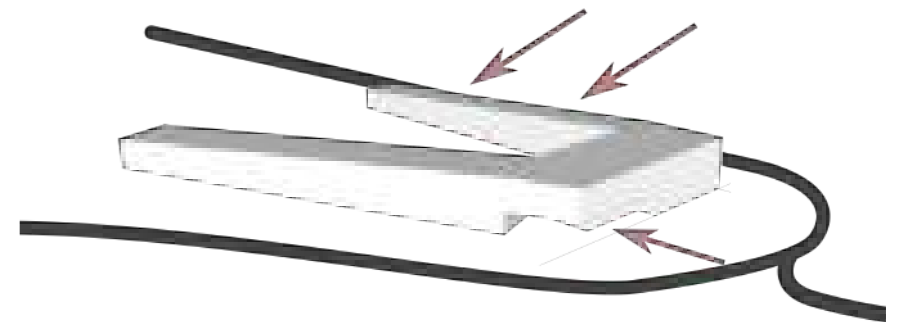
HALL MEDIATES PUBLIC AND PRIVATE REALMS



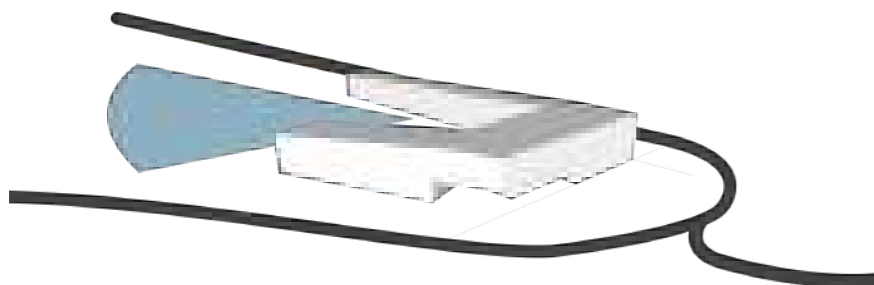
VERANDAH ALONG PUBLIC EDGES OF THE BUILDING



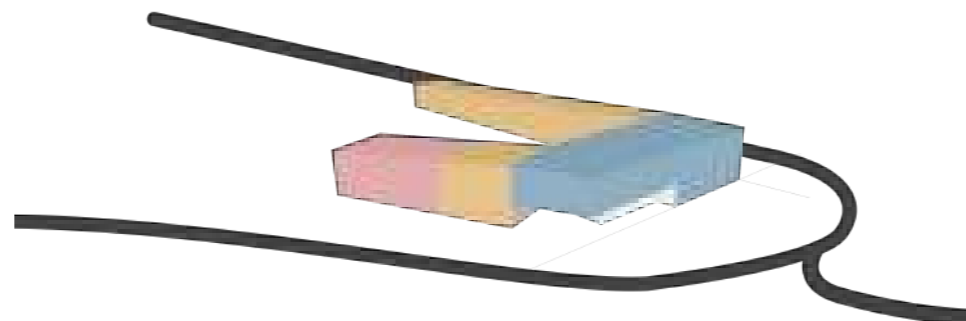
ENTRANCES



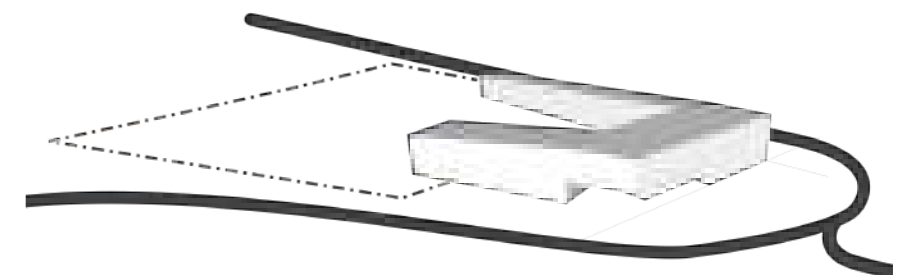
EDGE SET BACK TO OPEN UP VIEWS OVER THE ADJACENT LANDSCAPE



ZONING OF CLASSES HALL AND STAFF SPACES



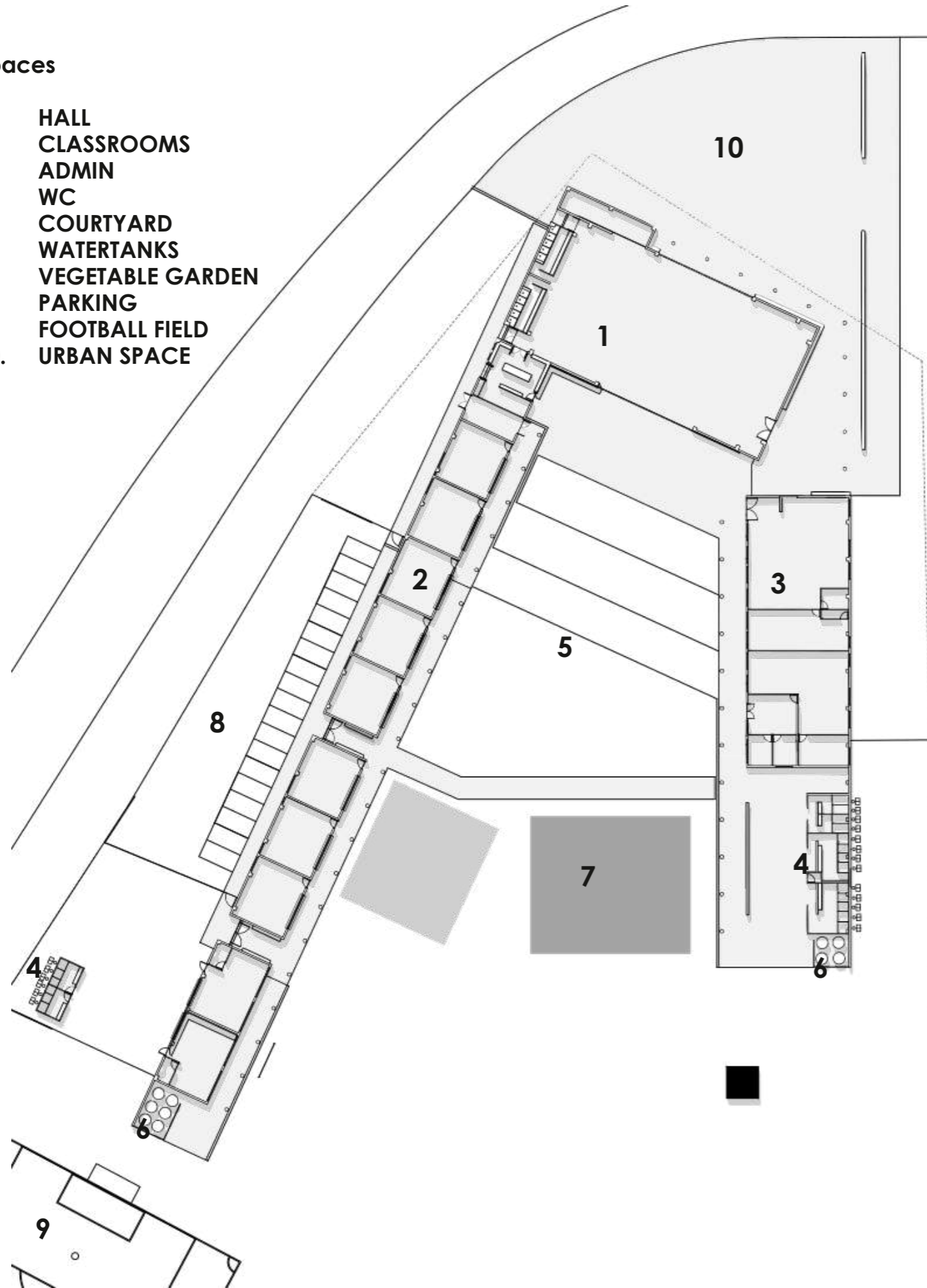
FENCE LINE



PLAN OF THE EDGE

Spaces

1. HALL
2. CLASSROOMS
3. ADMIN
4. WC
5. COURTYARD
6. WATERTANKS
7. VEGETABLE GARDEN
8. PARKING
9. FOOTBALL FIELD
10. URBAN SPACE



Located further north of site, the project engages with the site's edge to produce a civic, communal space. The building holds this edge intentionally to foster community engagement connecting the school to the community. The type of space produced at the front is of a public and urban nature. The North orientated façade experiences great daylighting without obstructing the opposing wings.

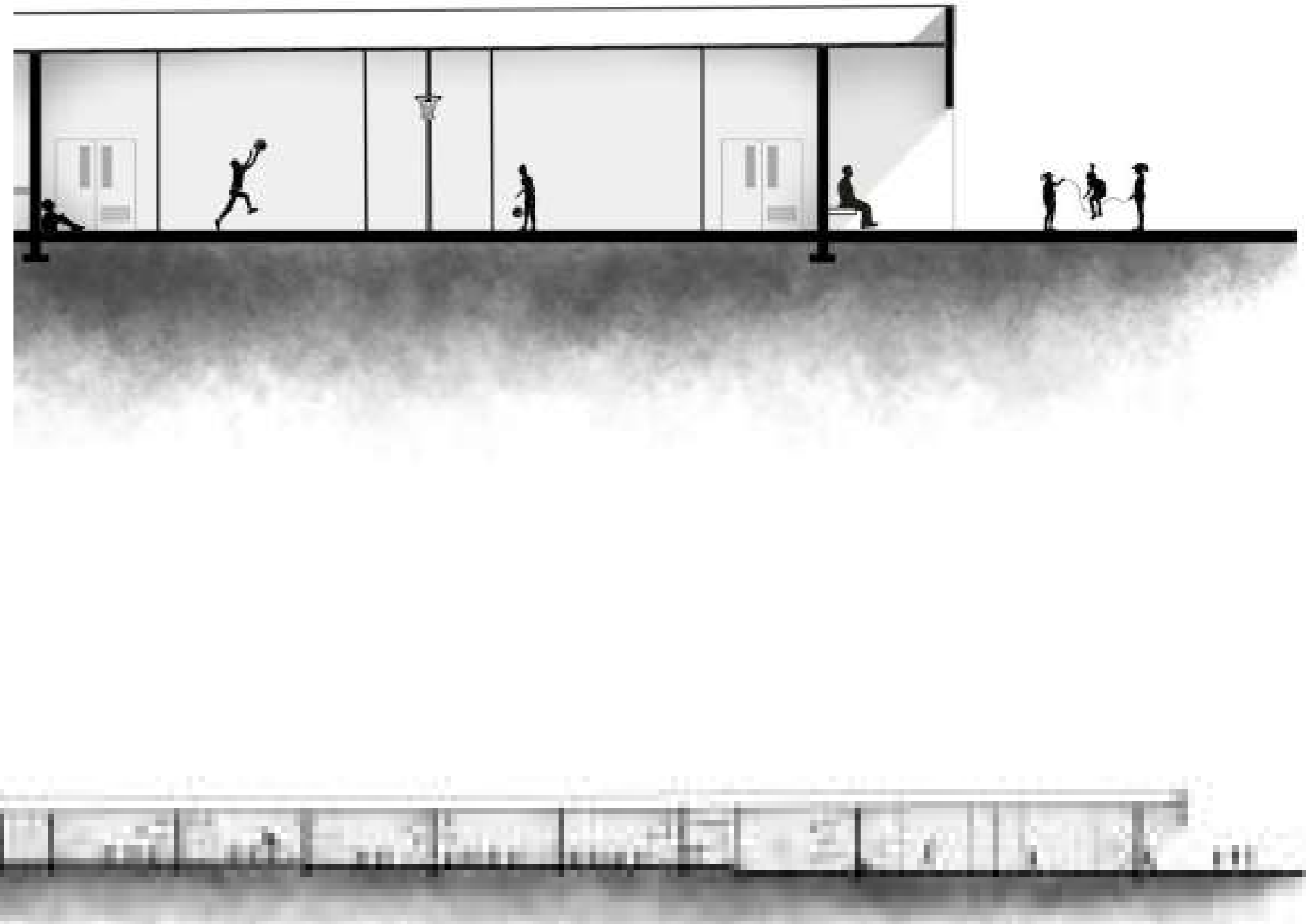
Picking up on the roads progression the building runs parallel to the road and creates an edge on the east and west sides of site. The building's asymmetrical Ushape produce a form that mimics the 2 roads the site is nestled between.

The building, growing thinner towards the south, fades into the landscape producing a light, private end to a public, bold front. This end opens up to capitalize on great views.

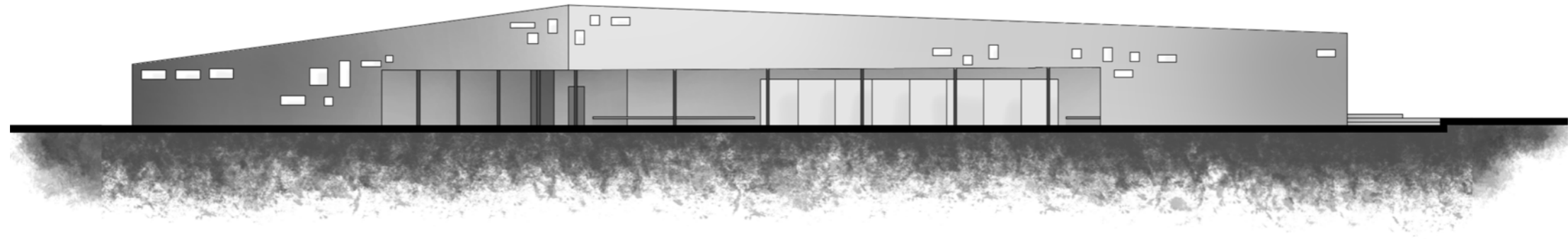
SECTION

CONSTRUCTION

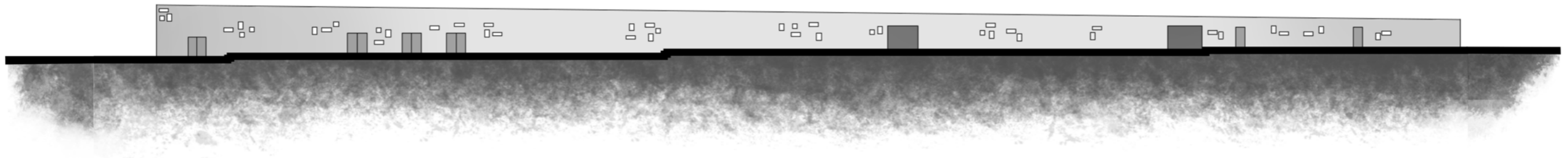
Founded on a reinforced strip foundation the Edge is an asymmetrical U-shaped building comprised of clay bricks, held by a steel frame, and covered by a large single roof. Its heavy appearance is due to its use of clay bricks - a heavy, durable and sound absorbent material that provides insulation through its mass. This material aids in controlling thermal shifts in the building without the use of heating, ventilation, and air conditioning (HVAC) systems. Boasting a roof surface area of 2333m² this large single roof plane is covered with Kliplok sheeting which provides a reflective surface to mitigate heat gain whilst reducing the need for roof decking and sub-structure. Located in a drought-stricken region the project captures a large amount of rainfall water and distributes water to tanks strung along the wings. The steel frame structure upholding the roof, also works as an ordering system and aids in the creation of a verandah and a permeable frontal façade



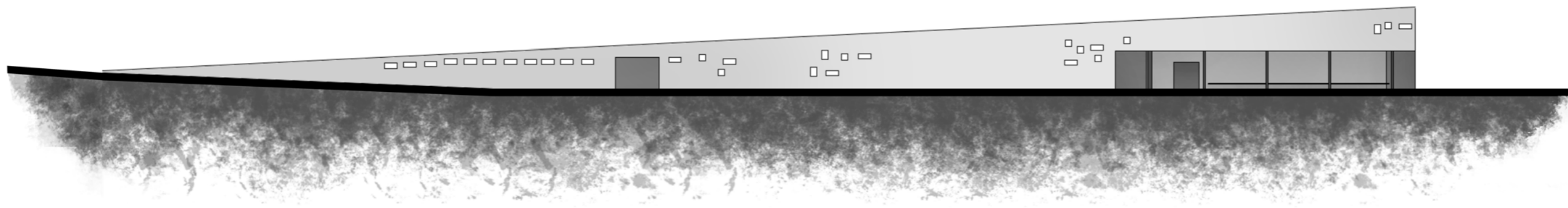
ELEVATIONS



NORTH ELEVATION



WEST ELEVATION



EAST ELEVATION

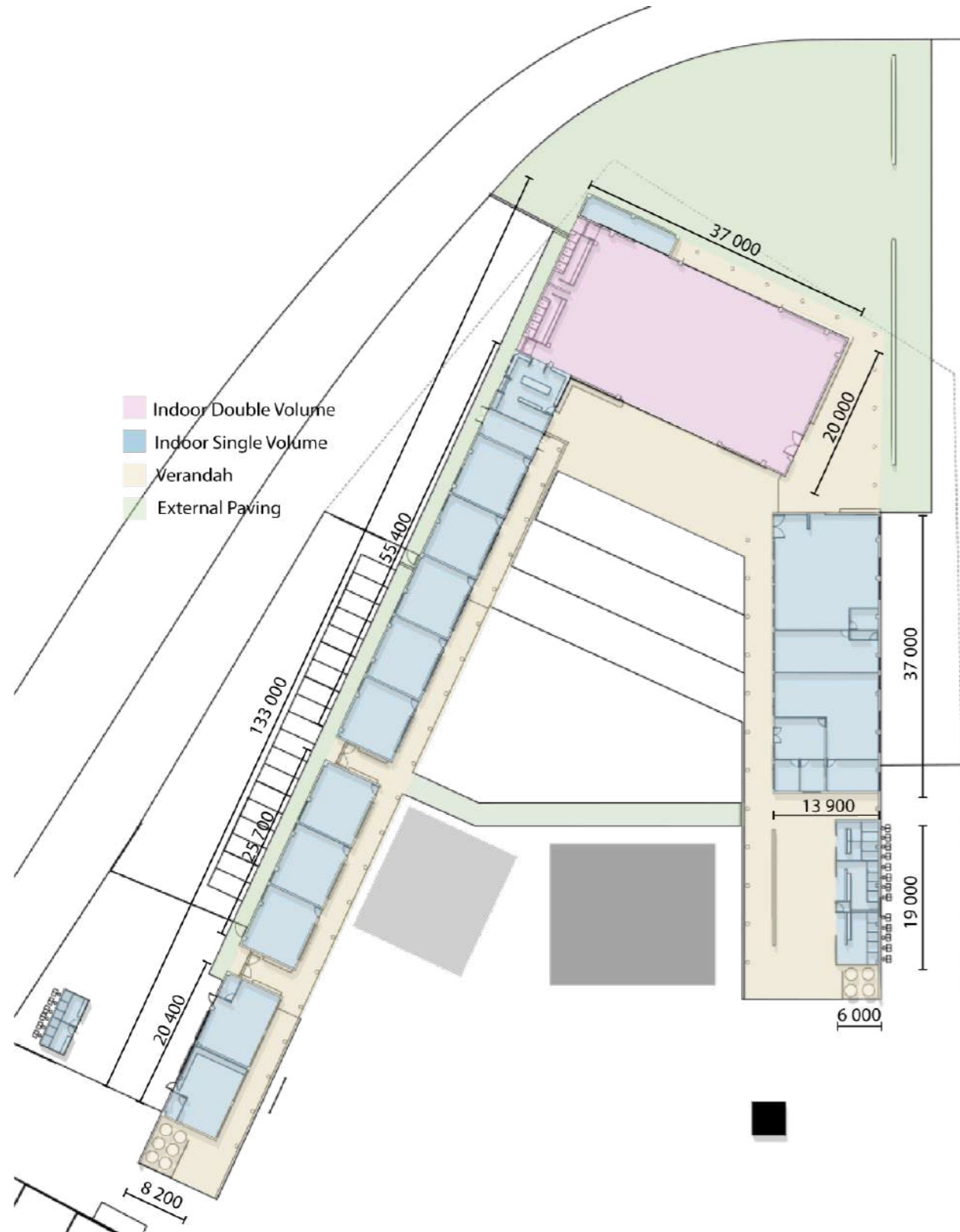
RENDERS



AREAS AND SPECIFICATIONS

COSTING AREAS:

- Indoor Double Volume: 680 sqm
- Indoor Single Volume: 1530 sqm
- Verandah: 1140 sqm
- External Paving: 2152 sqm



General Specifications:

Internal Single Volume Spaces:

- Foundations: Concrete strip foundations
- Walls: 390 x 190 x 190mm Concrete Blocks, bagged and painted.
- Outside Parapet Walls: 390 x 190 x 380mm double skin concrete Blocks, bagged and painted
- Windows and Doors: Standard steel frame windows and doors.
- Roof: Roof at 5 deg with 0.5mm thick and 890mm wide galvanised IBR roof sheeting on galvanised steel lipped channel purlins and rafters with painted ISO board insulation.

Internal Double Volume Spaces:

- Foundations: Concrete strip foundations
- Walls: 390 x 190 x 190mm Concrete Blocks with, bagged and painted.
- Windows and Doors: Standard steel frame windows and doors. Doors to community hall to be industrial sliding style doors.
- Roof: Roof at 5 deg with 0.5mm thick and 890mm wide galvanised IBR roof sheeting on galvanised steel lipped channel purlins and rafters with painted ISO board insulation. Skylight over Community Hall to be considered.

Verandah Spaces:

- Foundations: Concrete pads for columns
- Floor: 100mm Concrete surface bed
- Roof: Roof at 5 degrees with 0.5mm thick and 890mm wide galvanised IBR roof sheeting on galvanised steel lipped channel purlins and rafters. No Ceiling.

Siteworks:

- External Paving – Concrete block pavers
- Soccer Field
- Levelling for Play Areas
- Levelling for Parking Area
- Access Path
- Fencing Around Site

PART C

ALTERNATE OPTIONS EXPLORED

The Viedgesville Primary School community resulted in 5 final projects which explore various approaches The Edge, The Canopy, The Forest, The Beacon and The North Verandah. These projects explore different site and design responses varying from rural and urban concepts to climatic and vernacular/contemporary ideas. The Forest, The Beacon and The North Veranda, which were alternate projects that were developed are presented below with brief descriptions drawings and images.

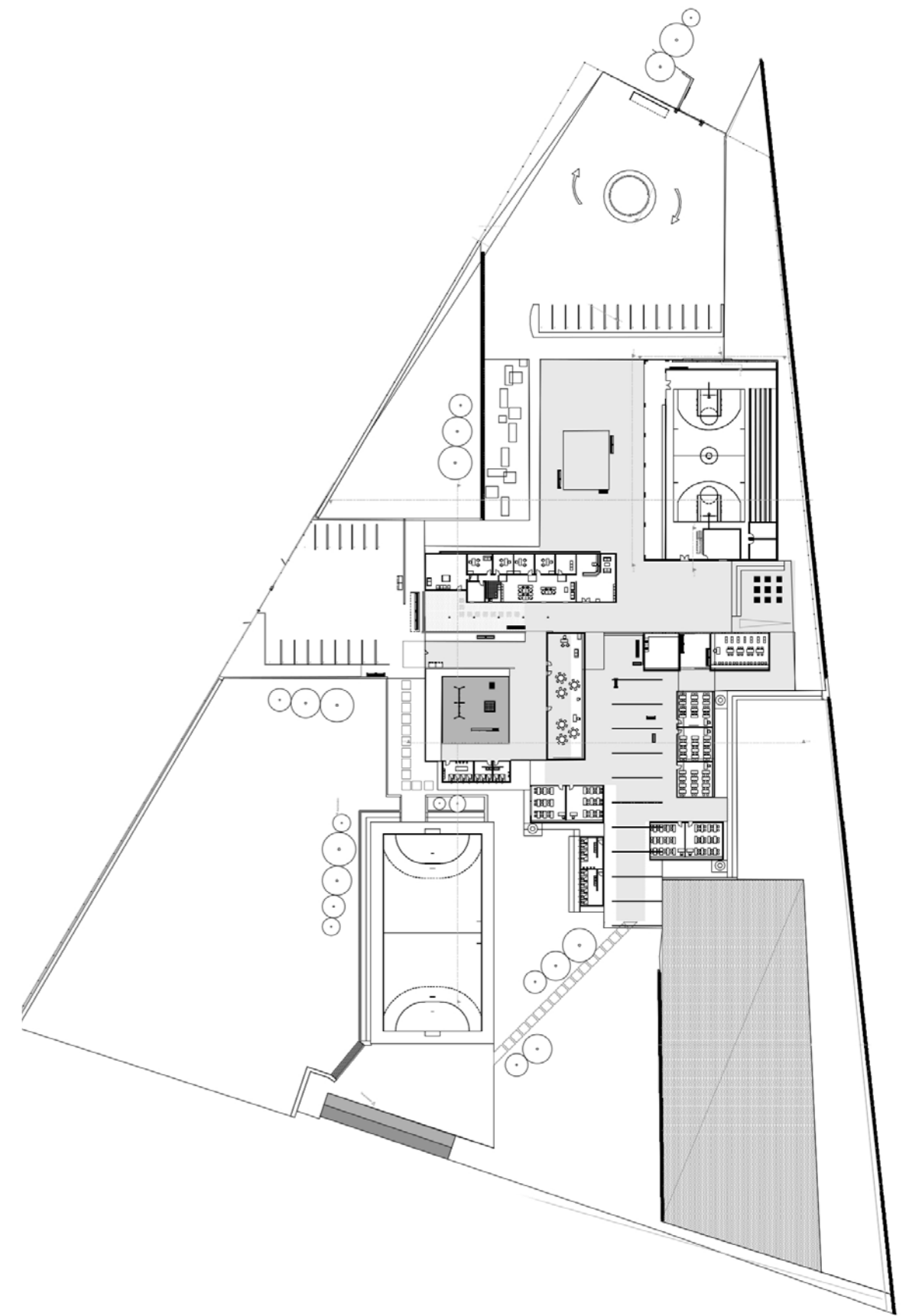
The Forest is a community of buildings adapting a homestead inspired spatial arrangement. It looks to a 'new vernacular' to retain the spirit of Viedgesville while at the same time pursuing a contemporary aesthetic. The North Veranda prioritized the natural environment and the Northern light, setting itself perpendicular to the site to create a North veranda and minimise its footprint by going double storey The Viedgesville Beacon, driven by communal and cultural elements, draws its inspiration for its forms and materials from the rolling hills of the Transkei. The project consists of a series of buildings that produce a variety of learning and play spaces with a landmark beacon at the centre.



THE FOREST

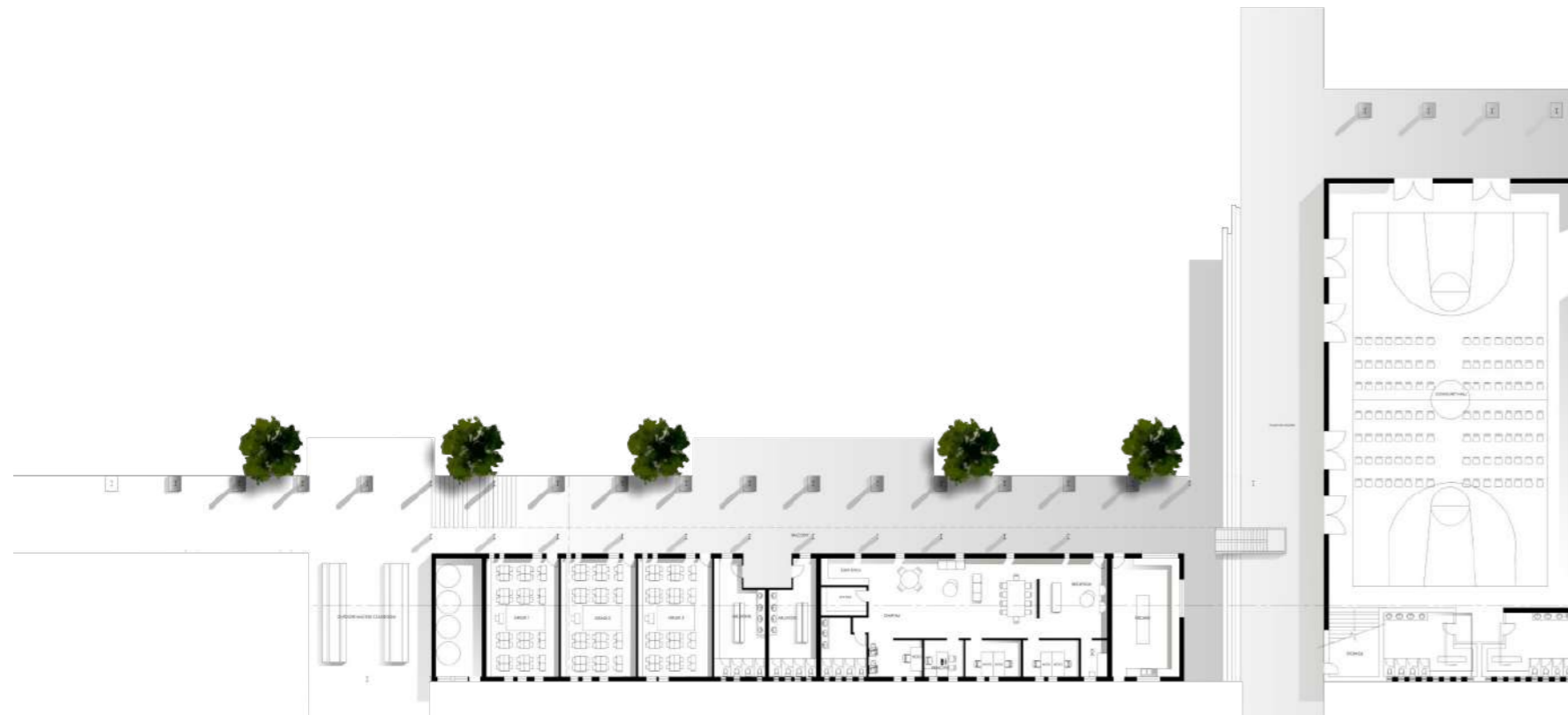
The project takes material inspiration from the ruralurban context to fit into the Viedgesville landscape while pursuing a contemporary look. Materials like red brick, concrete blockwork and steel creates a new vernacular, pursuing a costeffective yet aesthetically suitable design while adapting a homesteadinspired spatial arrangement. The Forest is a community of buildings resting on a single straight line. Its roofscape, inspired by flower petals, accentuate movement through the school while sheltering students from rain or heat. Classrooms are nestled along this line while the nursery school faces the gravel road with its own entrance, providing a secure and welcoming environment for younger students.

The iJojo Community Hall, enveloped with a red brick screen, acts as a social link between the community and the school, which is located closer to the entrance, emphasizing its engagement with the community, and acting as key frontal feature in the project. The project, comprised of concrete blockwork, red bricks, and steel, sources materials from local hardware stores. Solar panels are arranged on the highest roofs, facing North for maximum solar exposure. The rainwater collected in tanks feeds bathroom basins, the kitchen, and the vegetable garden. The vegetable garden, through subsistence farming, feeds the school creating a closed, self-sufficient, and sustainable food network. Passive design measures are incorporated through the introduction skylights and windows allowing daylight into the hall and admin. The Forest looked to a 'newvernacular' to keep the spirit of Viedgesville while at the same time producing a contemporary school design



NORTH VERANDAH

Centred around the concept of the verandah as a social space used by the students and letting the site breathe. The project, designed as a climatic response to site, allows natural ventilation and maximum sun exposure due to its North orientation and linear shape. The slope allowed for a design of a building that appeared to emerge from the ground. The design divides the school building into three separate blocks to accommodate spaces for the community (hall and amphitheatre), the main school and nursery school. A simple approach was taken in its structural configuration through the use of steel portal frames with concrete block infill for feasibility. Sustainable principles were incorporated using solar panels to generate electricity and composting toilets to compensate for lack of water on site. The North Veranda is a double storey building with various teaching and management facilities dispersed throughout the floors. The admin building, grade 13 classrooms and the Nursery are located on ground floor, with the Nursery having its own private entrance. Foundation and senior phase students (grade 47) are located on the first floor with the science lab and media centre placed on the far end of the floor. The hall is a separate building facing the entrance with the amphitheatre located in front of it. North Veranda prioritized the natural environment and student-social space under one roof



VIEDGESVILLE BEACON

The Beacon is a project that draws inspiration from the Viedgesville community, its traditions, and the Transkei landscape. The project, inspired by Xhosa traditions, incorporates umbacho, a traditional patterning technique, on its landmark Beacon. The landmark library (the Beacon) is located centrally and stands as a symbol of hope, new beginnings, and new opportunities. The Viedgesville Beacon is a school with pedestrian and vehicular entrances and a main route within the school connecting all major buildings (hall, admin, multimedia, science lab and toilets) together. The roofscape, mimicking the rolling hills of the Transkei, emphasizes this connection throughout the project giving the visual impression of a 'house under one roof'. Upon entry one encounters a communal assembly space located in front of, and connected to, the school hall. Classrooms are divided into zones to accommodate the various grades. The nursery classrooms are located close to the admin block addressing safety and security concerns. An off the shelf approach was adopted in the sourcing materials from local hardware stores like BuildIt. The project uses a portal steel structure and double leaf brickwork infill to capitalize on thermal massing – creating thermally comfortable classrooms. Solar panels are located on all North facing roofs for maximum solar exposure. Rainwater is harvested through a butterfly roof and collected in tanks for reuse on the school premises. The Beacon prioritised landscape and cultural engagement whilst producing conducive play and learning spaces



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