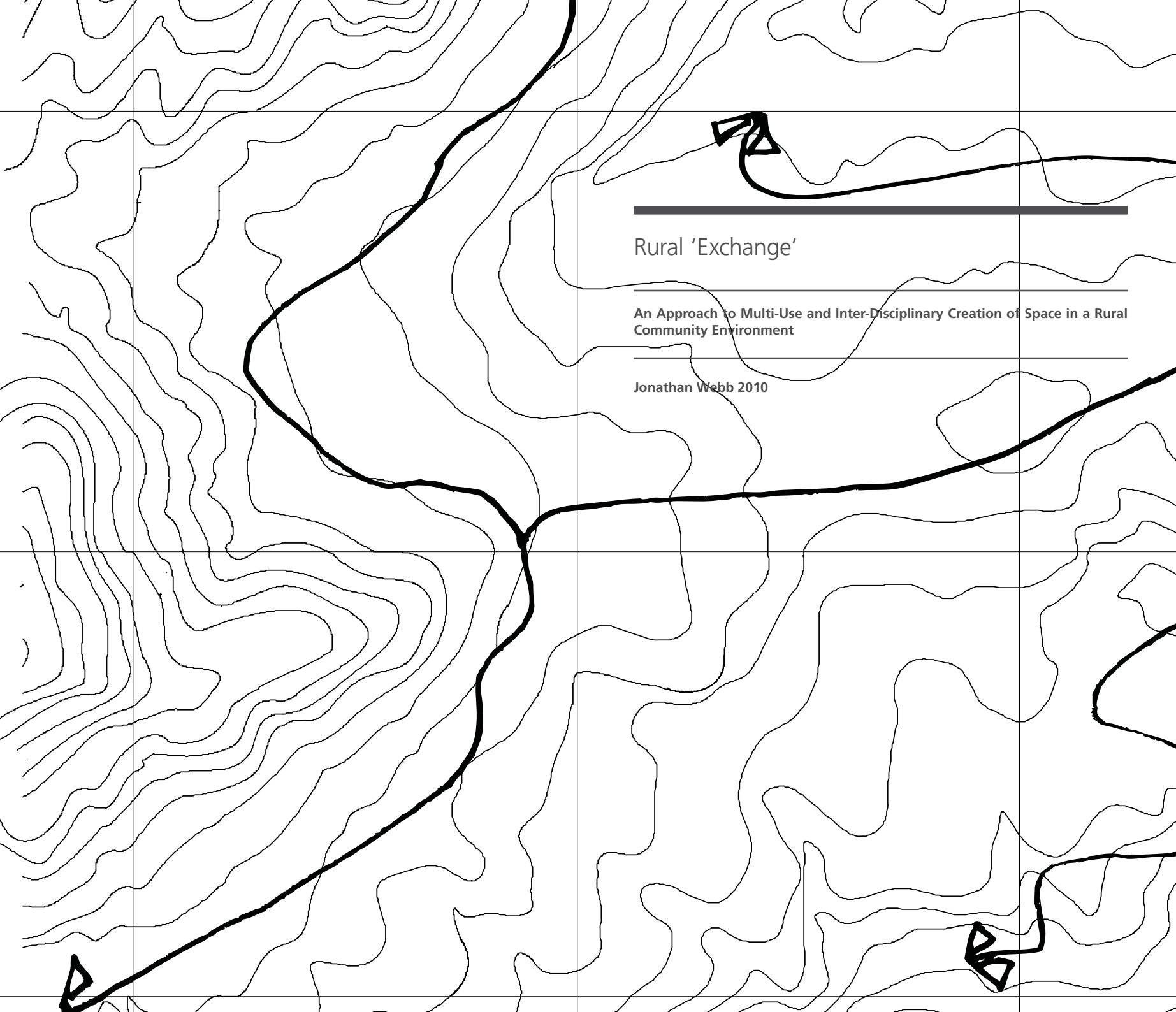

Rural 'Exchange'

An Approach to Multi-Use and Inter-Disciplinary Creation of Space in a Rural Community Environment

Jonathan Webb 2010

EXCH

Rural 'Exchange'

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'EXCHANGE'

leaving Maseru

Our journey takes us from of urban forms of colonial cities into the rural environment

Declaration

I, Jonathan Webb (374654), am a student registered for the course Master of Architecture [Professional] in the year 2010. I hereby declare the following:

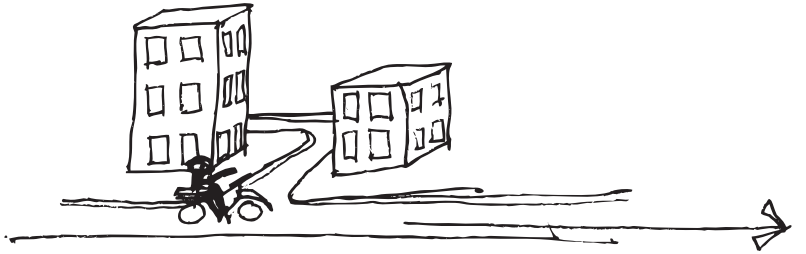
I am aware that plagiarism [the use of someone else's work without permission and/or without acknowledging the original sources] is wrong. I confirm that the work submitted for assessment for the above course is my own unaided work except where I have stated explicitly otherwise. I have followed the required conventions in referencing thoughts, ideas, and visual materials of others. For this purpose, I have referred to the Graduate School of Engineering and the Built Environment style guide. I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my unaided work or that I have failed to acknowledge the source of the ideas or words in my in my own work.

_____

Jonathan Michael Webb
November 2010

This document is submitted in partial fulfilment for the degree:

Master of Architecture [Professional] at the University of the Witwatersrand, Johannesburg, South Africa, in the year 2010.



the periphery

The rural-urban divide is most distinguished by this 'in-between', the post-rural, pre- suburb environment

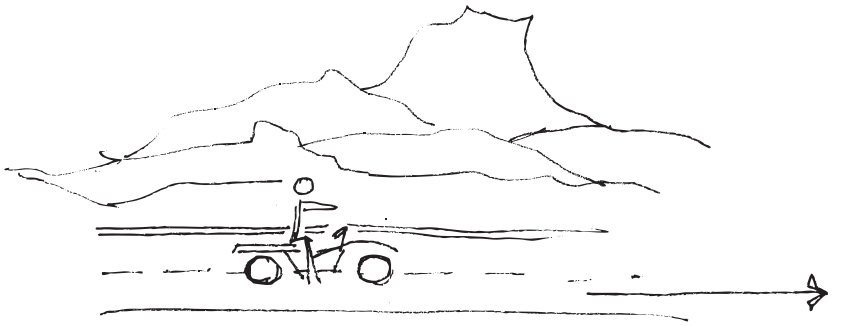
Abstract

With the urbanization of Modern society, much emphasis has been placed on communities living in or around cities, while the communities living in the rural environment are left, on the whole, ignored. The polar development and historic culture of colonial city development has left the most fragile sect of developing nations, most without the development drivers so badly needed.

The rapidly growing divide between the urban and the rural environment, is evident with the functions and forms within the buildings in such areas. The common trait of transplanting an urban system of function and building into a rural environment needs to be addressed.

Using a building as a catalyst of development and place-making in a certain area, to a certain community, is explored in this thesis. While the building acts as a agent for, and with the community, it is also a connection to the urbanization environment. The space 'in-between' is explored, bring the rural and urban in connection to each other , both in form, function and connections.

The building forms an envelope, in-which program is placed, yet the connections of those functions create 'exchanges', in the sense of physical space, rural-urban connections and personality inter-changes, all which reduces overall size of form, and creating a truly diverse and multi-use platform on which the community can connect.



my trusty steed

My modern chariot on which my exploration into the rural would not be possible.

Acknowledgements

My sincere thanks to:

My family, for looking after me and bearing with me through the long road this course has been. Thanks to my parents for supplying the moolah, clothing and Sunday night dinners. Thanks to Andrew for accommodation and lots of needed alcohol. Thanks to Chloe for shouting at me often when I am, or am not in the wrong, and thanks to Mathew for taking longer than me to do your Masters, therefore I will finally beat you academically for the first time.

Mohammed Munchi, for explaining again and again what is it that make a building of this nature, and for the ever helpful speed critical evaluations.

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The Malealea Lodge, for your invaluble help and knowledge

My guide and translator, Philip.

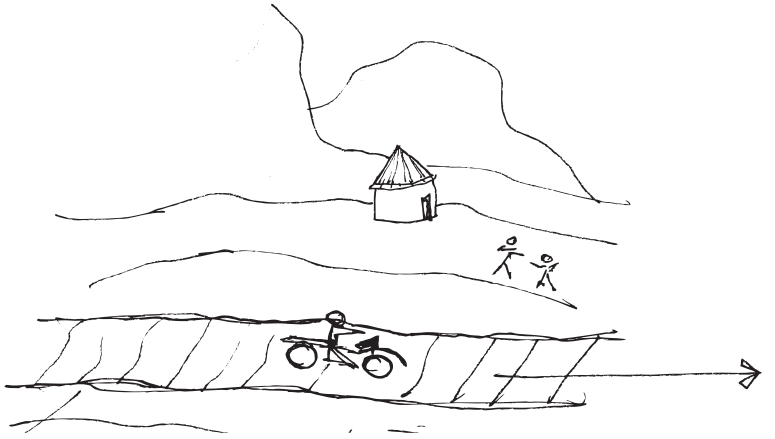
Tim for being the great drinking partner you are, and for all those many nights still to happen.

Ilona, for adding some fun into it, even at 4 in the morning.

To Horis, our local pet, may you grow strong and big.

Emile, for being the benchmark, because if you can do it, anyone can.

And finally, Matthew Evans, because you should be in here somewhere.



the rising hills

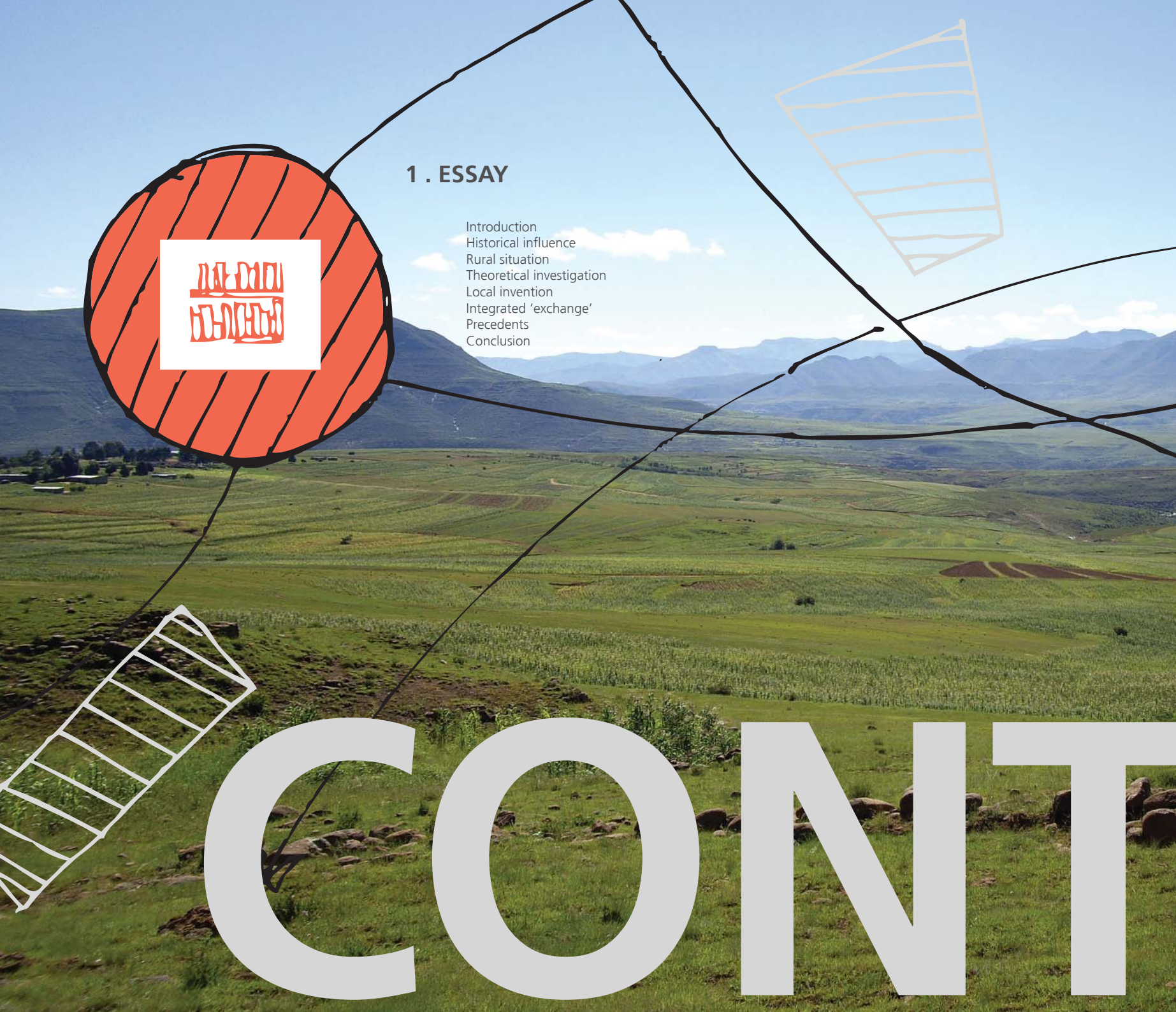
The approach to the foothills of the Lesotho Central Mountain range.

‘Malealea pass’

The only through-fare on to which the site is set.

Malealea Village

The setting for the exploration and development of this thesis.



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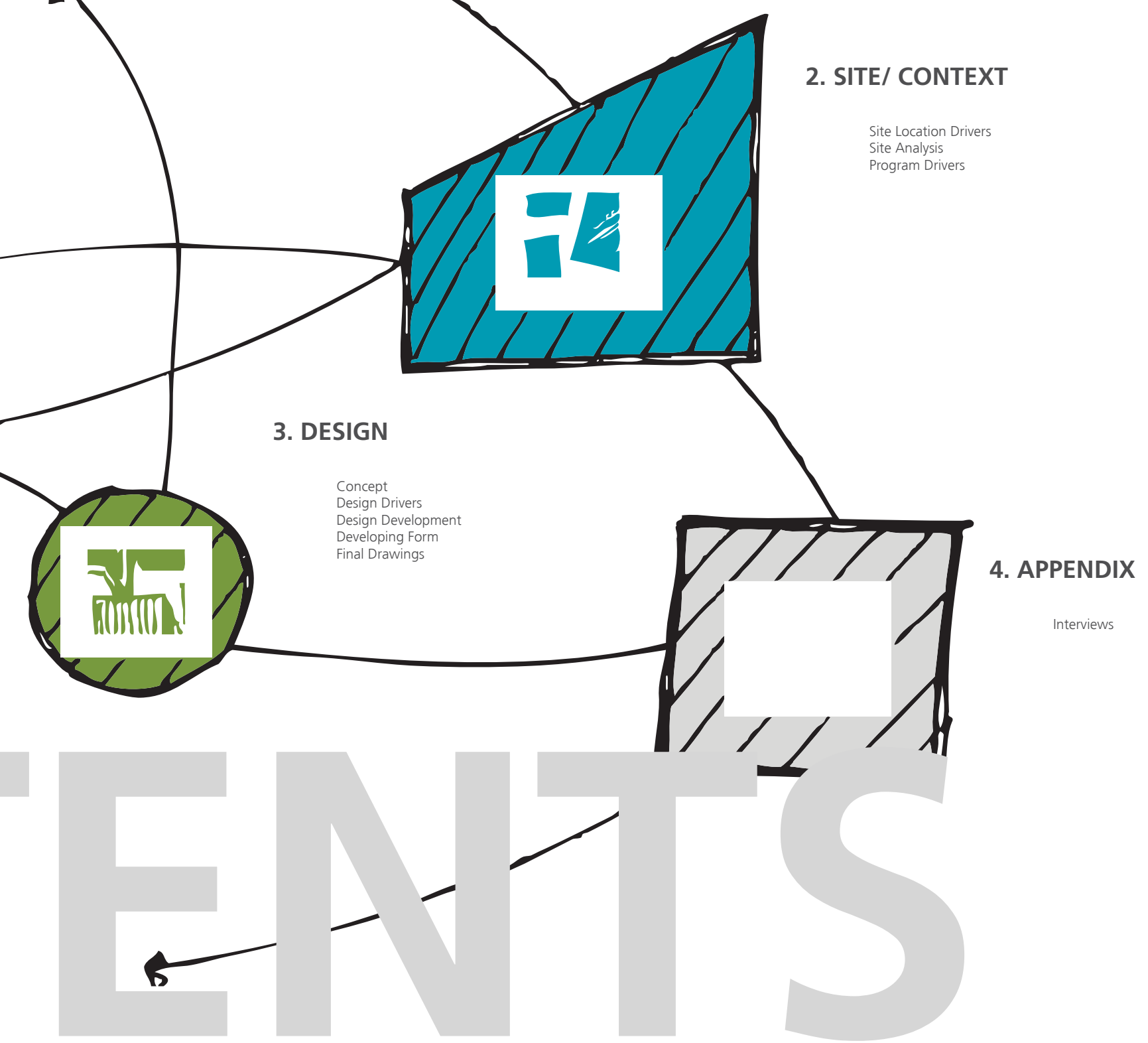

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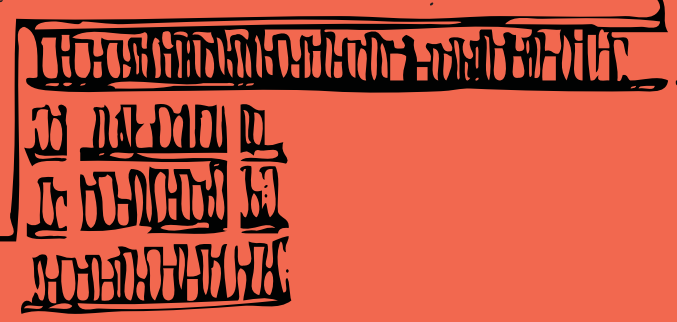

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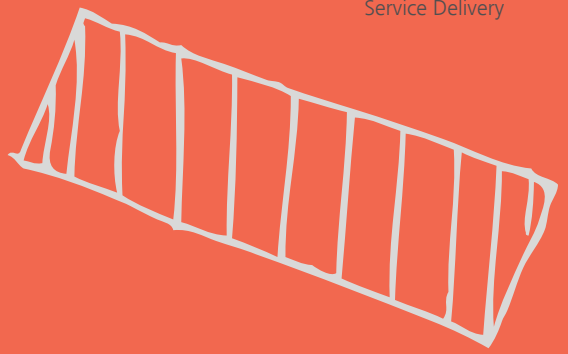

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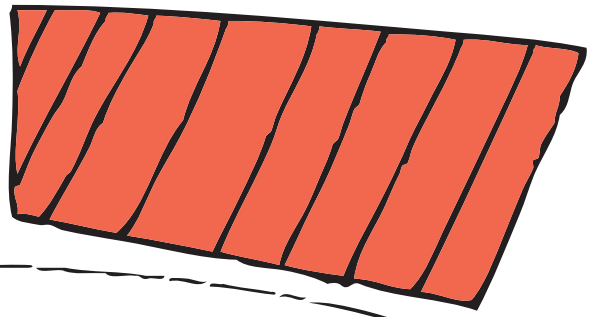

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Multi-Purpose Centre at Wiggins-Umkhumbane
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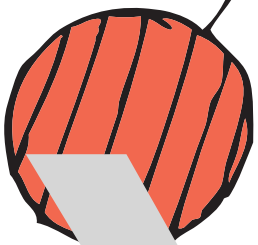
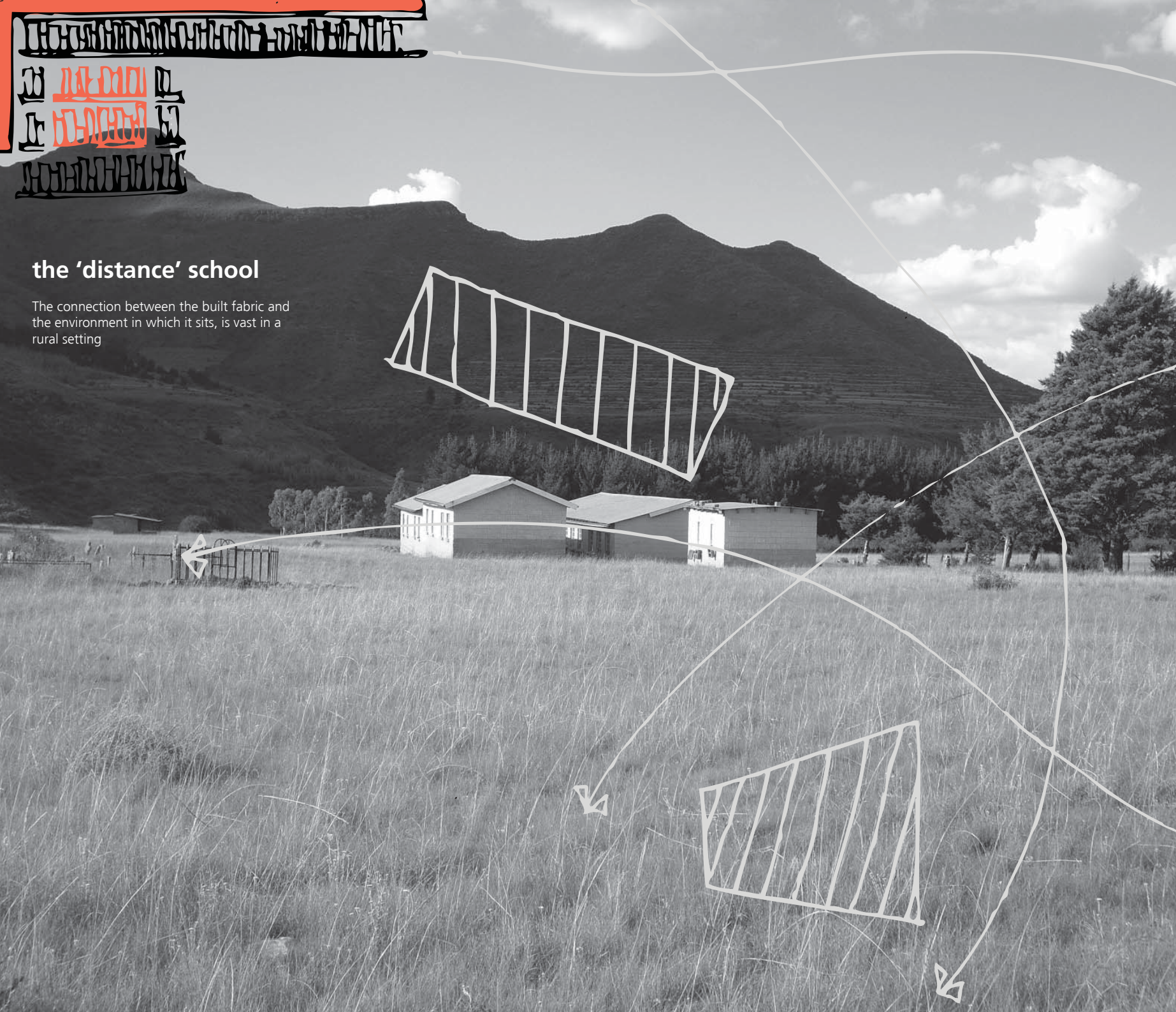


h. conclusion



the ‘distance’ school

The connection between the built fabric and the environment in which it sits, is vast in a rural setting

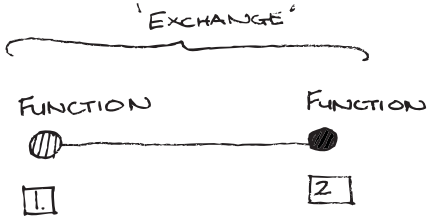
introductio
& thesis
premise

Thesis Premise

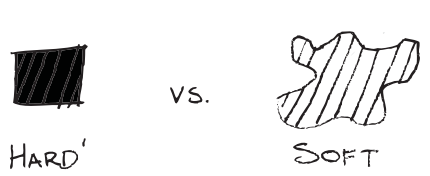
What is a platform for 'Rural Development?

This thesis aims to address the existing issues in the rural communities and provide an approach to alleviate some of the possible problems facing the community through architectural invention. The cluster of villages called Malealea, in the Mafeteng Province in the rural Highlands of the Kingdom of Lesotho, is the social and physical site for such exploration.

Within this thesis, a concept of a rural 'exchange' is investigated and developed. This 'exchange' term is used to describe how the inter-connections and inter-discipline of the personalities using the building and the functionality of the building 'cross-paths' in the multiple-use space. This thesis explores how hybridism of function and space can create and save space and provide a physical and intellectual model for the community to 'exchange'. These 'exchanges' can be tangible products such as agriculture food stuffs, small business venture products or water distribution, or, as a by-product to the primary 'exchange', non-tangible products such as knowledge, wisdom, education, community enrichment, political structure or religious ceremony. The involvement of different personalities engaging different functions within a building, whether they be young or old, literate or illiterate, small business ventures or subsistence farmers, creates a canvas for personality 'exchange' and connections.



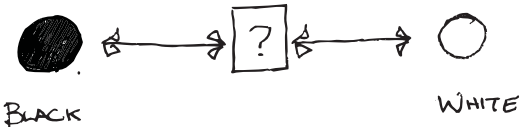
The thesis considers new platforms of physical and humanistic services that can be fused together into an architecturally built form. Using the concept devised by Tavasci, Marais & Davis, who categorise services and developing agents in a community as either 'hard' services, which are actual tangible elements such as electricity, housing, schools, hospitals and roads, or 'soft' services, which are the skilled services required to run those 'hard' services such as financial services, health care workers and school teachers (Tavasci, Marais, & Davis, 2006), this thesis aims to challenge how these two elements operate, and the divisions in-between.



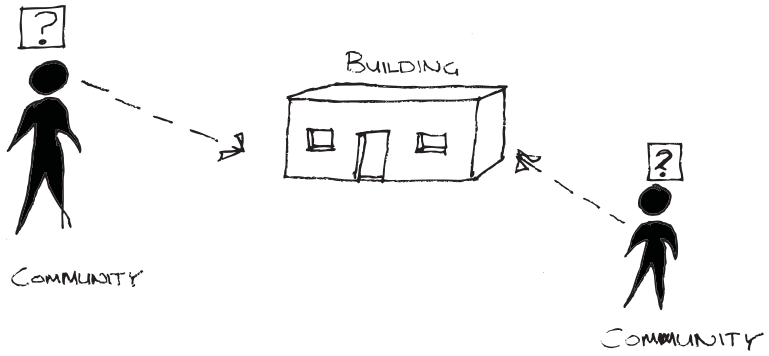
While a physical building is important in providing for the basic needs of a community, the periphery setting and context in which the building is placed is equally important. This is investigated in the 'Rural Dream' theory, which considers the imposition of western 'space' onto African 'space.' This theory is explored in this thesis as a method of designing a building that addresses the needs of an African rural community without sacrificing a completely westernised structure which they are expected to negotiate.

While this thesis aims to combine a system of services, it challenges the categorical method of how these services can be provided. This thesis aims to answer the question of what are 'hard' and 'soft' services, and why do such systems have to be differentiated and independent, as well as how does a service in a rural setting differ in interaction and integration from that of an urban setting?

While the concept of integration of services, providing 'hard' services and 'soft' services in one building is to be considered, the crux of the thesis is to explore how the spheres integrate and envelope each other, and how the space in-between can be created to challenge the public/ private thresholds with the building, the 'exchange' of space. Considering the 'hard and 'soft' services could be described as 'black' or 'white' spheres, strikingly different in form and function, the 'grey' matter in-between provides the 'exchange' in which these two functions operate and mesh. This space is the 'un-programmed' space which is investigated in this thesis.



vThe inclusion of supplementary spheres of community public space within the overall scheme is paramount to the success of the building, and to the 'exchange' concept. These public/ private thresholds are the most important spaces as they act as bridging functions, to create a fluid and inter-disciplinary creation of space, which can be opened up or closed off to allow different activities and interactions to perform.



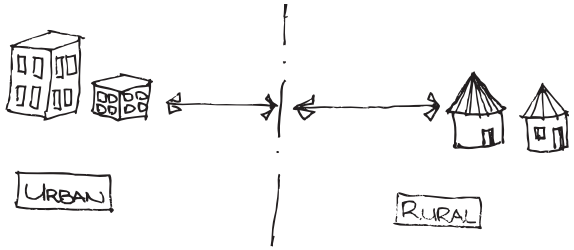
local creativity

While the building are built out of permanent materials, the same materials are re-used over again.

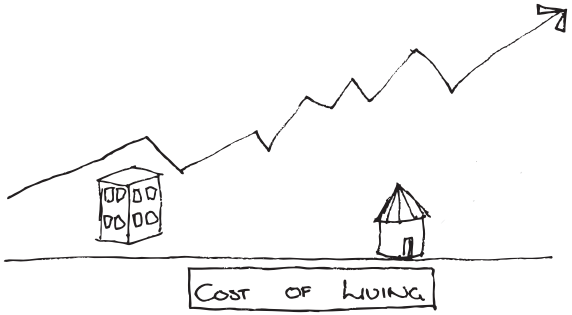
Background of 'Rural Issues'

Rural vs. Urban

The dramatic differences in wealth and economic sustainability are very apparent in Southern Africa; this can be seen across the cities, towns and small communities in the region. Polarised development and disparities in investment due to a number of factors such as colonisation, political history, and lack of planning and severe poverty has resulted in the development of rural areas being side-lined in favour of urban areas. This is even more apparent in rural areas that are not dedicated to agriculture.



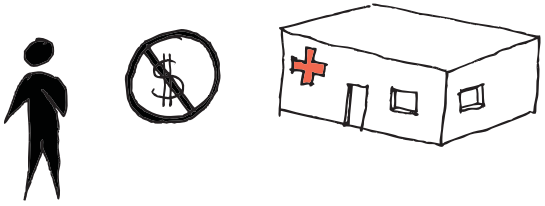
Rural areas are the most populated areas in the Southern Africa, yet the most fragile pockets of society. As per example in South Africa, "is characterised by high levels of poverty, especially in rural areas. Approximately 70% of South Africa's poor people live in rural areas" (RSA Government, 2000).



These areas have similar characteristics such as sole dependence on agriculture, a spatially dispersed population and limited opportunities for economic development and sustainability. These factors mean that services and goods delivery in rural areas are more costly and difficult to provide than in urban areas. Compounding the problem is the fact that the tax base is limited, so rural areas are rarely able to gather sufficient resources and finance to develop their own programmes. This leaves rural communities almost solely dependent on financial backing from the central government or NGOs. Also, "their cost of living is high because they spend relatively more on basic social services such as food and water, shelter, energy, health and education, and transport and communications services" (RSA Government, 2000).

Local economies in Southern Africa generally grow by shifting human and capital resources out of the primary sectors (agriculture, mining), and into the industrial sector and the tertiary services sector. This has also been the case in Southern Africa, "where the transition to a post-industrial age is already well under way, yet there is evidence to show that, this process occurred in such a distorted manner that a large number of people were excluded from the benefits of modernisation." (RSA Government, 2000). These people are largely in the rural subsistent farming sector.

Government, church missions or NGO's may be able to provide the 'hard' structures, such as schools, yet there are inherent problems with basic service provision. Due to "combined and uneven development, the cities absorb the best educated and most energetic layers of the rural population" (Hemson, Meyer, & Maphunye, 2004). This often leaves rural areas under resourced and unskilled personal. Therefore the remaining facilitators of the basic services, such as teachers and local government are the least inspired and trained for the job. Similarly, though infrastructure of 'soft' services, services that require more technology, financing and skills to acquire, such as clinics; there are problems with the government system.

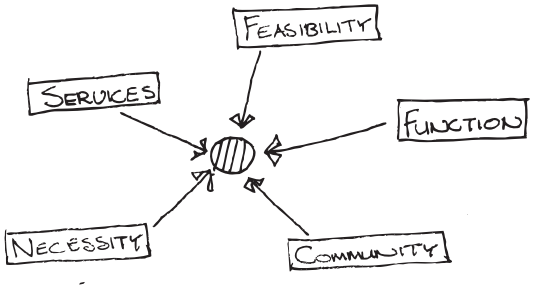


"Without an increase in rural livelihoods and incomes, the most significant services are threatened by the inability to pay and stay connected" (Hemson, Meyer, & Maphunye, 2004). Hence leaving the service dependant on the backing from which they were developed, such as a national or provincial government controlling body. This cutting and pasting of systems and services from an urban environment and placing them in a sensitive framework in the rural context, is done without thought of impact and overall development concern. A hospital in Johannesburg should not be the same as one in rural Free State Province. Though the final outcome of healthcare for the general population is the development goal, the system in which it is achieved should be different. The same can be said of a basic service such as a school or other built infrastructure.

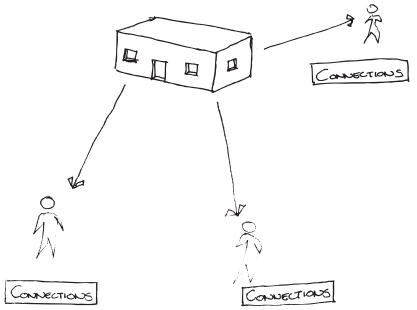
Building a Brief

Functional Requirements

The building composition of function and services provided is based on the necessity, aspirations and feasibility of the area concerned. The realistic framework of function and programme, set out in this thesis, is of the utmost importance as rural communities live in a fragile state, sensitive to changes and disruptions far greater than those of urban areas. Infrastructure and services provided set out in this thesis are individually equal to the community in terms of importance, and could stand alone as function, but using inter-disciplinary functions could help further develop service range and access. Combining these concepts into one close-knit and self-staining built form, with clear program and development hierarchy, lies the key to what could be achieved by expansive hybrid thinking in today's complex rural society.



This thesis requires an investigation into the architectural principal of multiple uses of space, the reduction of overall physical built form, and the cross-pollination of services, skill and interaction of community members involved with a building, and its vicinity. While opposing priorities of services are required for rural communities, the challenge in today's Sub-Saharan Africa, is where to start building a base from, and how does the 'exchange' help.



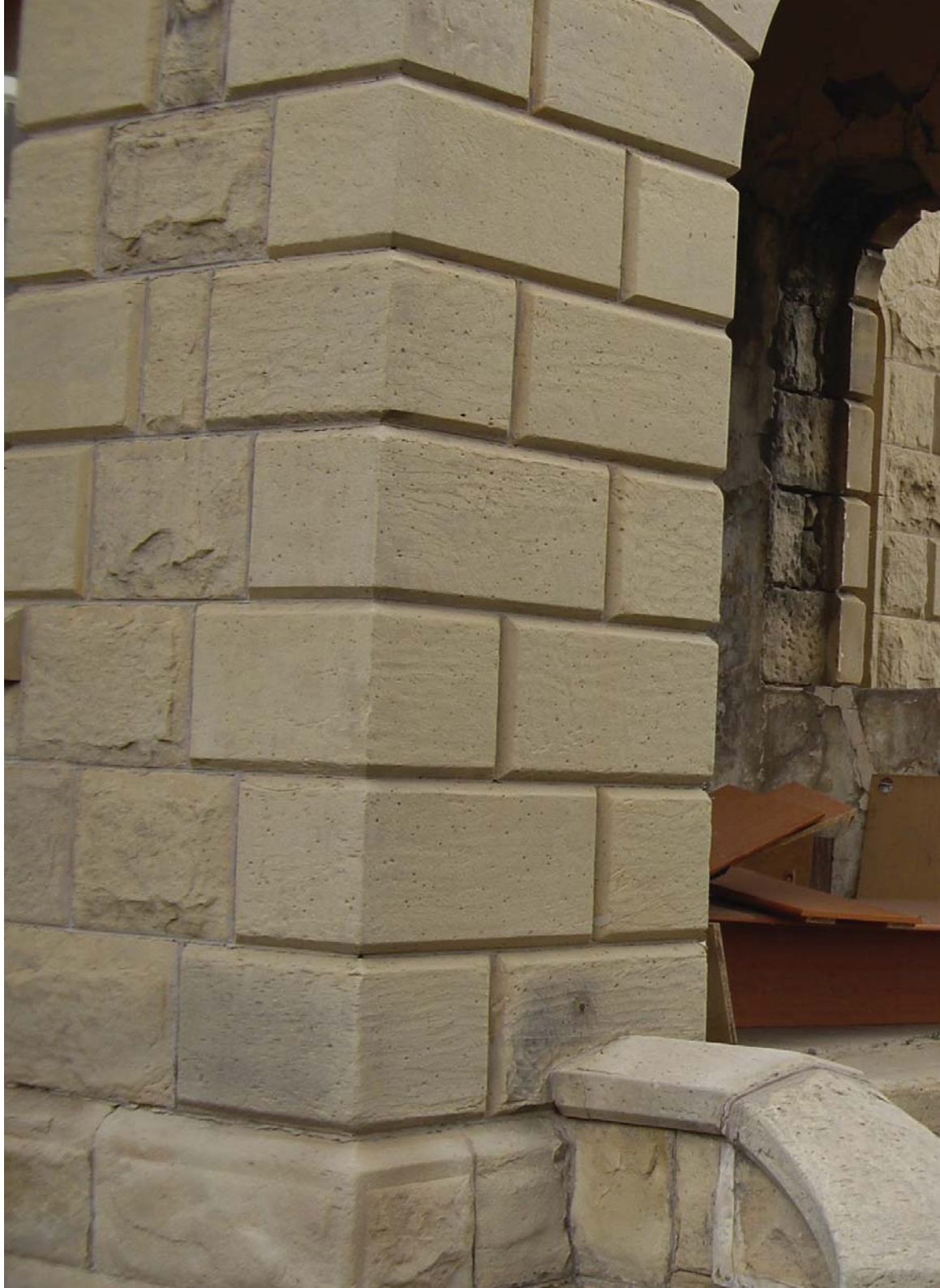
the local government

The governmental buildings in Maketeng are the Colonial built structure in the province, and only colonial investment.

historical
influence

the barracks

As in most small colonial outposts, the barracks was the most important and largest building in Mafateng



Pre-Colonial Period

Missionaries Influence

The Malealea village settlement is rather typical of the rural Highland Basotho people in terms of history.

Originally, the Basotho people were migrates when they came to live in what is now known as Lesotho in early 1700's. The mountainous country was inhabited by San people, known as the 'bush-men,' having travelled from the North-West of current South Africa. Upon settling in to the region, mainly as small scattered nodes of family based villages, the nation received increased threats from the growing Northern based Zulu nation. In 1824, Moeshoeshoe, a son of a Basotho chief in a Northern village, gathered a group of warriors and marched approximately 100km to the mountain of 'Thaba Bosiu', near established capital Maseru (de Villiers & Hirtle, 1997). From this flat mountain top, Moshoeshoe led many battles against the warring Zulus, Boers and British settlers. He subsequently became King Mashoeshoe I, and is considered to have founded Lesotho. The San gradually married into Basotho families, or moved onto other land. (Walton, 1956).

The introduction of Western culture influence began when King Mashoeshoe I invited missionaries from the Paris Evangelical Missionary Society in the 1860's. Itsits leader at the time, Eugene Casalis. Casalis, acted as translator and gave advice on foreign affairshelping to set up diplomatic channels and acquire guns for use against the encroaching British and Boer forces.

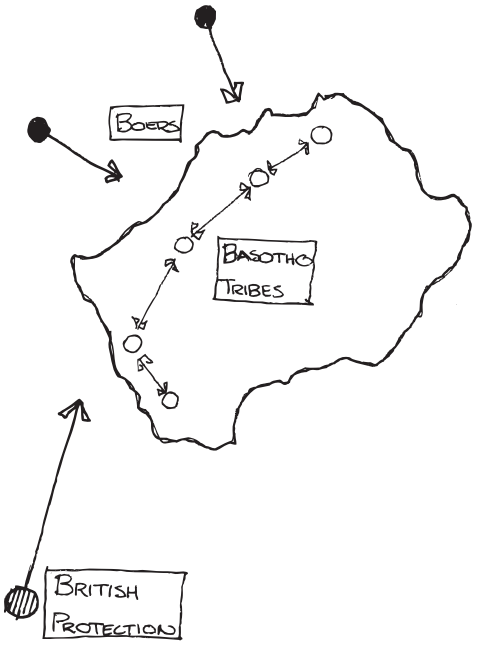
British Annexation

Colonization

In May/ June 1838, Boer trekkers began claiming rights to land on the Western borders of Basutoland, claiming that the land had been abandoned. King Mashoeshoe I led a series of skirmishes with the Boer and British forces on the Western lowlands, subsequently losing large tracts of land to the oncoming settlers.

While the disputes with the British ended in an agreement in 1852, the King still fought with the Boer settlers until 1868, when he appealed to Queen Victoria to make Basutoland a British protectorate. This, allowed the King and his people to be left in peace, but forced them to give up the Western lowlands to the order of the Boer settlers, effectively reducing his kingdom to half its original size.

Though future security of the Basotho people was assured under the British protection, their rights and political will as a nation were reduced dramatically until independence 100 years later (Spence, 1968).



Colonial Era

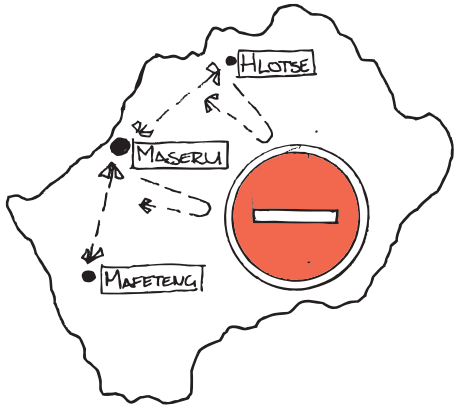
Polarized Development

Until 1966, Lesotho was a Crown colony of the British Empire. Though the region had a British governor, based in Maseru, the effective internal power was wield by the traditional chiefdom system. The British Administrators, under the Colonial Offices' orders, "made it clear that administration was to be construed as essentially negative in function" (Spence, 1968).

The administrator were instructed that "more could not be attempted at first than the protection of life and property, and the maintenance of order on the border, while the Basotho were encouraged to establish internal self-government sufficient to suppress crimes and settle inter-tribal disputes." (Spence 1968: 14)

Not surprising under this policy, very little attention was paid to developing economic and political potentials in the colony. The British administrators dedicated the costs of operating the Kingdom to a minimum. "Administrative responsibility for internal affairs was left on the whole to the Chiefs, who continued to exercise their traditional authority" (Spence, 1968). "Revenue was obtained by taxing native inhabitants, while the principle that expenditure should not exceed revenue, became the touchstone of administratative competence." (Spence, 1968).

This policy of non-interference and parallel government meant that though the traditionally based Basotho people had very little control and authority pressed on them by the British administrators, so too did they have any national political authority or financial reserves to fulfil any development strategy. With the tax base of the nation being sent to the British authorities, the Chiefs of various sub-areas had little or no financial capital to work with.



While there was a 'Paramount Chief' established in 1910, a native Basotho Chief, given a role in the British administrators' government, this was largely ceremonial and the Paramount Chief wielded little power over the Chiefs, particularly in the remote rural Highlands. The colonisation of the Basotholand was based around a simple government system in Maseru, on the Western boarders; the interior highlands were largely left alone. This was due to the inaccessibility of the region and the lack of commitment to investment to development by the colonial government. While there was a commitment by the British Colonial Development and Welfare Act in 1945, which to "allocated £830 000 over to Basotholand to spent over a ten-year period, despite an estimate by the local administration that two and a half million pound was required for the period to cover long-delayed improvements in education, public health services, agriculture and communications" (Spence, 1968). The development required was never possible due to the lack of funding, and the 'hard' and 'soft' infrastructures and services established, were mainly restricted to the urban areas of Maseru, where the capital lay, and the 9 provincial capitals.

Independence

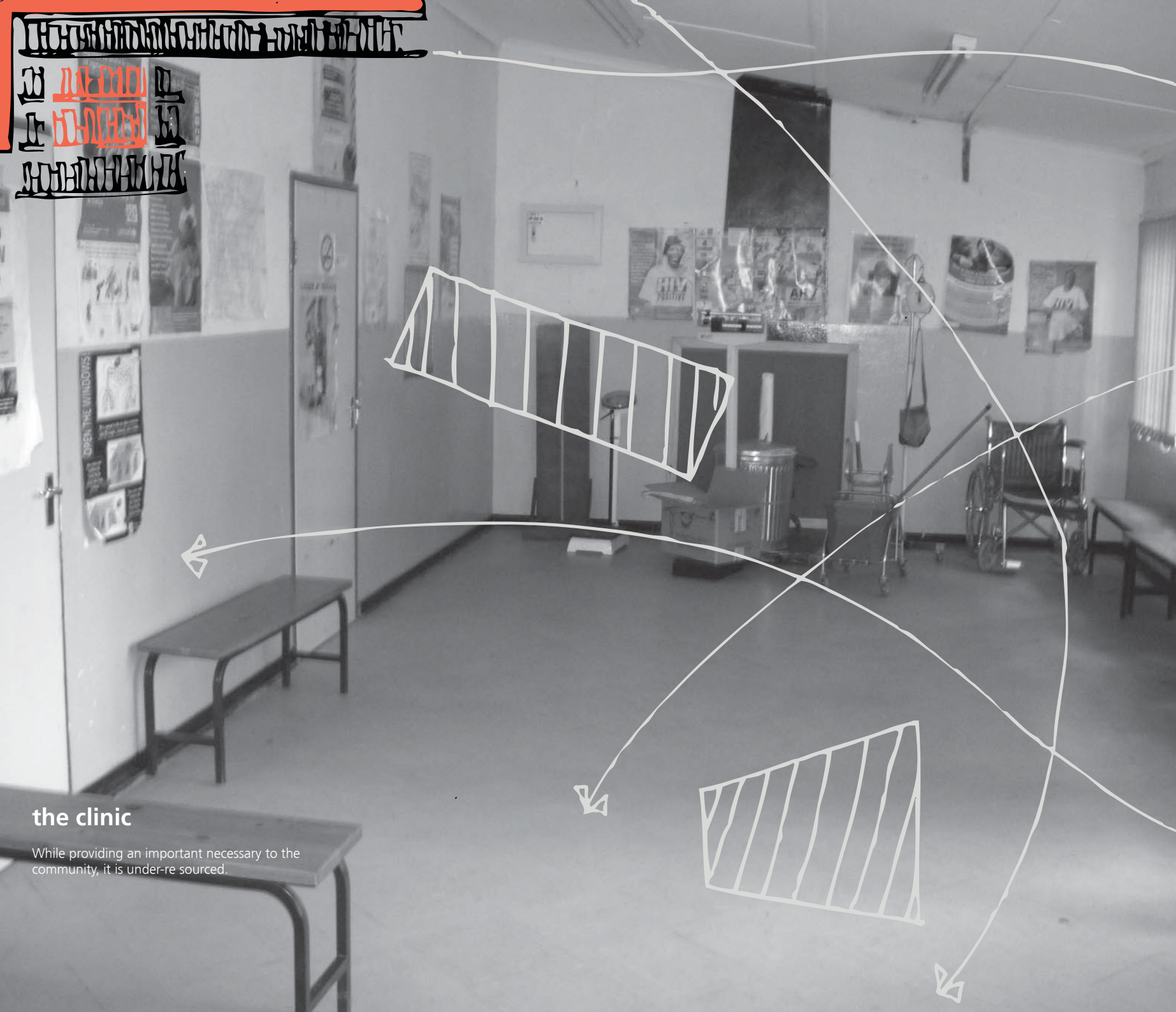
The 'struggle' continues

Since the independence in 1966, Lesotho has had to "to struggle since Independence in 1966 to maintain its sovereignty in the face of diverse political and economic adversities. Although classed as a Least Developed Country, the government has made substantial progress in many areas" (Lesotho Government, 2004).

The post-colonization period has led the government to establish various government ministries in mind for the development and framework for the Basotho people. The most notable and relevant being the Ministry of Finance & Economic Planning, and the Ministry of Local Government & Chieftainship Affairs.

"Due to lack of planning, inaccessibility, and financial restraints, the rural areas in the Lesotho highlands have been least effected by any development and planning initiatives. Though this was experienced during the colonial period, the difference in rates of modernisation and development has been greatest observed in the post-industrial age currently being experienced" (Spence, 1968).

While there is a steady development of secondary and tertiary industries in the urban areas, the rural areas have been disregarded and under-provided for, creating a severe imbalance to the society as a whole.



the clinic

While providing an important necessary to the community, it is under-re sourced.

rural
situation

Education

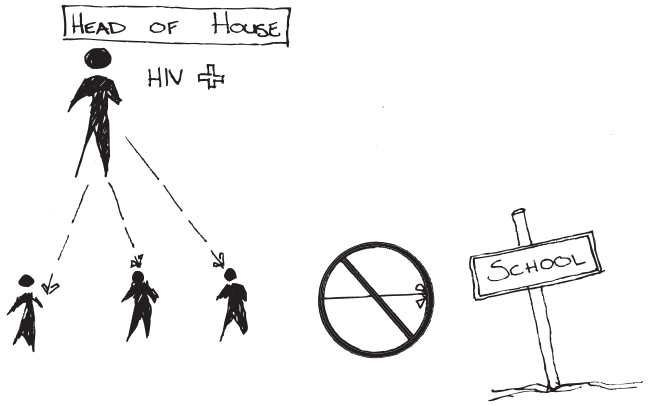
Providing the 'future'

Due to the high level of unemployment in Lesotho and lack of formal education, the connection to poverty is apparent. "Studies show that there is a strong relationship between educational attainment of the head of the household and the incidence of poverty. A Mosotho's chances of being in wage employment are determined by education, age and technical training, in addition to location and gender" (Lesotho Government, 2004).

The challenge to obtain an education in the rural communities is even more difficult. Due to topography, schools may be some distance from various villages, as most Highland villages are scattered over valleys, in small pockets, due to their heritage of family kraals. This may lead to the government department situating one school in amongst the villages, to serve them all. Often, access to schools developed and built in the past few years is hindered by failings in the political and economic situations where such basic necessities such as roads to get to the schools become impassable.

The government subsidises the education of Pre-school and Primary schools, government schools are free to public, with private schools requiring fees. This has greatly helped the ground work for the secondary schools since the 1990's, providing a higher enrolment for secondary schools from previous years.

Yet the secondary schools suffer from high dropout rates, "about two thirds of secondary enrolments drop out before graduating (Lesotho Government, 2004). This is mainly due the fees required by the high school for operating, approximately M4000/ year (Tello, 2010). Many young pupils fail to obtain the fees from their household heads due to the severe poverty experienced. The traditional means of producing subsistence agriculture in the rural areas, with emphasis on the 'barter' system of exchanging goods for goods, means that some household rarely comes into contact with actually money. Also rural banking facilities are underdeveloped, not allowing a savings or loan network to rural communities.

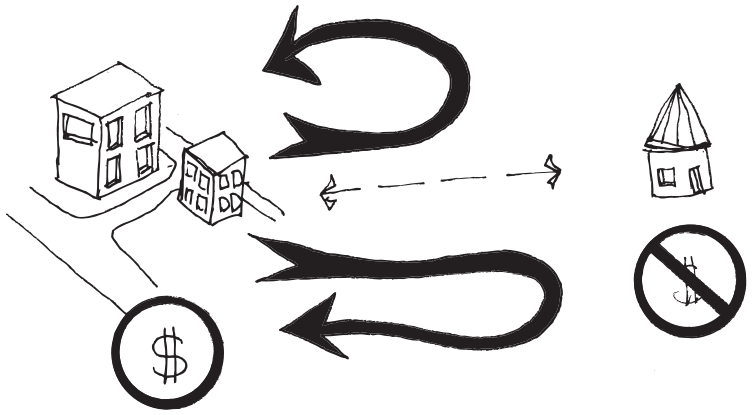


Many teenage pupils may be required to help with the subsistence farming of the household, particularly if a parent is sick, or a migrant worker in South Africa.
These factors may draw the pupil out from the school program, whereby the he/ she will find it difficult to return, if it does happen. Without the formal education, the teenager will find it difficult to obtain and secure a job or continue on to higher education facilities, effectively being trapped in the poverty stricken domestic situation.

Poverty

The containment of poverty

The most prioritize issue in rural development is the alleviation of poverty, according to Poverty Reduction Strategy (PRSP). In 1995, Data Research Africa analysed the issue by using welfare indicators such as income levels, monetarised expenditure, life expectancy as well as other health and human rights indexes. Their findings were that 68.3% of rural people and 56.9% of rural households were in poverty in sub-Saharan Africa (Data Research Africa, 1995). In 1997, "Southern Africa Labour and Development Research Unit African (SALDRU) data in conjunction with a World Bank derived poverty line to demonstrate that the poverty rate in rural areas stands at 73%, more than three times the rate prevailing in the metropolitan areas. Also, the average poor household in rural areas would need an increase in income of over 70% to reach the poverty line, compared to a little more than 40% in metropolitan areas" (Delius & Schirmer, 2001). This is evident in the Lesotho Highlands, where "repeated studies have consistently shown that the rural Highland areas of Lesotho, which are home to approximately one-third of the population, are significantly poorer on all but two out of 30 indicators. This is confirmed by the 2002 Core Welfare Indicator study which used an assets approach. It shows that extreme poverty is concentrated in the rural areas not only as a proportion of the population but also in absolute numbers" (Lesotho Government, 2004).



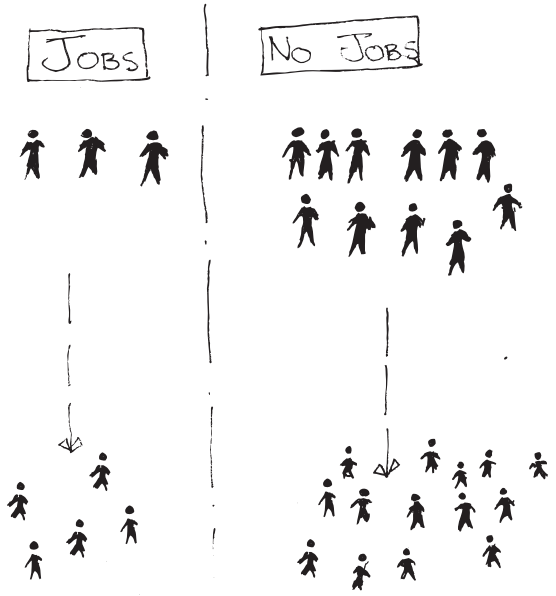
Malealea Pre-School

While under re-sourced, the small school provides many opportunities for the local children to proceed to high school.

Employment

Providing little for Many

The Lesotho "unemployment rate is 31% and the percentage without any form of waged employment is considerably higher" (Lesotho Government, 2004). There is a strong correlation to the high unemployment and the poverty in rural areas. "Creation of employment remains the best means of addressing poverty and creating the overall conditions for sustained economic growth and the further reduction of poverty. However, the creation of new jobs will not reverse the high levels of unemployment in Lesotho unless higher rates of economic growth can be sustained over many years." (Lesotho Government, 2004).



Service Delivery

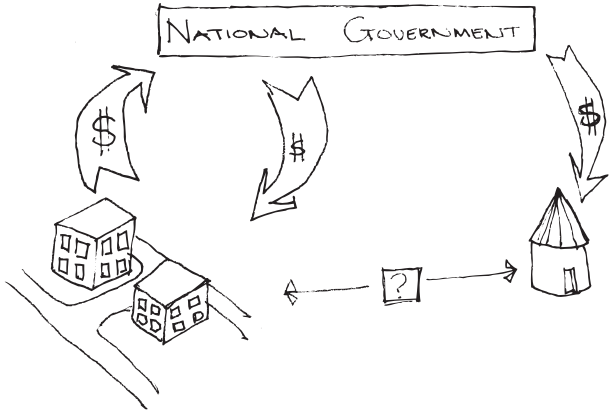
The Government influence

The Lesotho government has developed the social infrastructure in the last 30 years, with strong emphasis on rural road paving and water distribution systems. The water systems have "approximately 62% of the population now able to access 30 litres per capita per day within 150 metres of their homes (a standard higher than that of many African countries)" (Lesotho Government, 2004).

While this data is mostly related to the more accessibly lowland areas, the highland rural areas are still to be addressed in proper service delivery, "community members in the mountain districts expressed the concern that they had been forgotten by the government because very few developments occur in their areas, compared to those of their counterparts living in the lowland parts of the country" (Lesotho Government, 2004).

Yet the delivery of services found in the lowlands and urban areas to the rural highlands, has a much greater capita/ unit cost due to its inaccessibility. Also maintenance of the built facilities is stretched, as the roads are often difficult to negate, particularly regarding heavy construction equipment.

Due to these restrictions on the government developers, the PRSP advises that there should be a greater community capacity to manage and maintain community infrastructure, particularly water schemes. "Many rural water systems are not functioning at all or are not meeting Department of Rural Water Supply (DRWS) standards" and community plans that "encourages community ownership and management of completed water systems" (Lesotho Government, 2004). This will relieve the government of the need to the maintain all the built facilities, and offer training that develops the persons responsible to the system, whereby also granting the community engagement with their own responsibility and challenges regarding the system at hand.



Similarly the electrification of rural areas has been under developed, as linkage into main grids is mostly unobtainable due to topography, access and financial investment. Yet the government does plan of starting to the program through" identify economically productive/business centres in the rural areas for early electrification," (Lesotho Government, 2004) whereby creating nodes around profitable and social spaces, also giving a night-time perspective to the spaces. Due to the said challenges, these technologies will have to be developed independently to the country's mainframe system, hence working off a sustainable and renewable energy source such as solar or wind technology.

Health

The healthy life

The Lesotho Health system has been developed from a de-centralised base since the 1970's, in which government and church health providers set up "its own hospitals, clinics, village health posts, village health workers and traditional birth attendants, within designated health service areas. (Lesotho Government, 2004). This system has worked well for the poor rural communities, allowing accessible and affordable health care, "under a cost-sharing scheme consultations and medication are obtained for M10 (about $ 1.50) at Government health centres" (Lesotho Government, 2004).

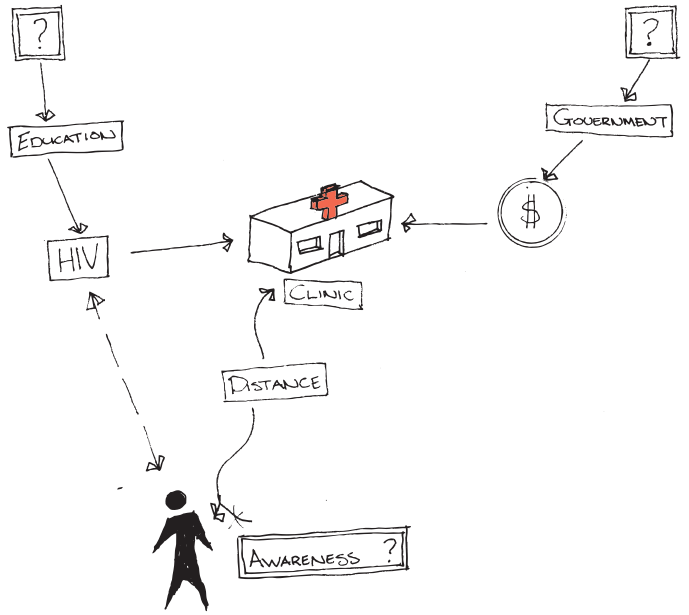
Following the 1990's, with the advent of new diseases, increasing poverty and disease resistance to drugs, mainly HIV/ AIDS and TB, the health care systems are being over-stretched. Whilst being over-stretched and increasing demand for the facilities, the health care workers and maintenance of the actually facilities are deteriorating.

In rural areas the health ministry can only provide one clinic per multiple villages, therefore the demand on the small facility is large. Also there may be problems delivering medical supplies, due to inaccessible topography. Similarly, the low levels of personal being skilled in the medical service compared with patient demand, shows a greater need for investment into the infrastructure and personnel of health care.

Links to the community are also important, as the clinic is fast becoming the main area of interaction and transition in a rural society, due to the increase of health related problems within communities.

The most significant problem is the HIV/ AIDS pandemic. HIV/AIDS is a universal strategic issue that poses extensive challenges to rural development in Sub-Saharan Africa. "The HIV/AIDS challenge is particularly significant because it impacts on a range of developmental factors including economic stability and long- term sustainability. Further, there are generally more limited resources available in rural areas (such as HIV/AIDS education and health care) and there is a concentration of poverty, which means that the vulnerability of households increases" (RSA Government, 2000).

HIV/AIDS affects not only the infected individual, but the entire household. This is particularly true where the most productive member of the household is infected, causing lose of human capital in relation to both health and skills, which have profound implications for productivity and outputs.
The reduction of the income potential of the household head can cause cutbacks in food consumption due to financial and production constraints. "The infection of one member of a household usually leads to the deterioration of the health of the whole household" (RSA Government, 2000). Also this may cause greater demands on the physical labour of household members not suffering from AIDS, such as pulling a teenager out of school to assist with subsistence agriculture of the family concerned.



This can be seen as "strategies for coping with HIV/AIDS have included reductions in investments in agricultural inputs, reduction of areas under cultivation (with consequent losses in food production and food security), reduced yields, cultivation of less labour intensive crops, shifts to non-agricultural activities, and a decline in the care and health of livestock. Such trends have important implications for household income, productivity, the division of labour in the household, social and human capital, and land tenure rights" (RSA Government, 2000).

modern technology attempts

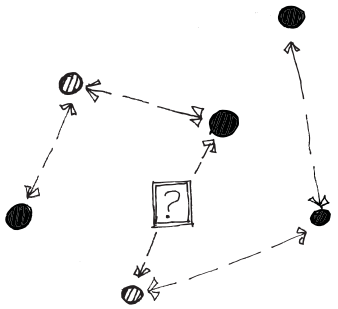
Provided for the Junior School, this wind turbine provides little electricity, and is therefore futile.

theoretical
investigati

Fading the Boundaries

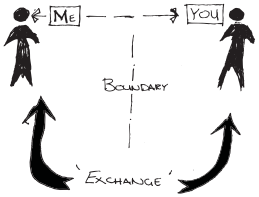
Forest vs. Field

The core to the thesis is the challenge of answering 'what is a service', categorised in modern terms as a 'hard' and 'soft' infrastructure network within a community. How does one merge the functions into one system to provide an economical and social conscience matrix, to further bind and promote physical and dialogue 'exchange'? This challenge is further evoked by the setting in which it is based, with a sensitive rural community providing additional and profound problems to be dealt with unaccustomed to urban environments.



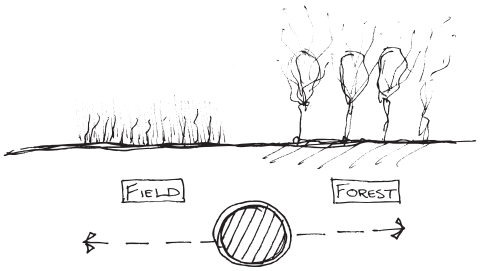
Contrasting architectural concepts are linked with the in-between space, the space of 'exchange'. This is the fundamental 'grey' of space that Venturi explains; "I prefer…. black and white and sometimes grey, to black and white. A valid architecture evokes many levels of meaning and combinations of focus: its space and elements becomes readable and workable in several ways at once" (Venturi, 1966). Venturi continues to explain of a modern architecture "of complexity and contradiction that has a special obligation towards the whole: its truth must be in its totality or its implications of totality. It must embody the difficult unity of inclusion rather than the easy unity of exclusion." (Venturi, 1966).

This concept is elaborated by Kurokawa, in which he describes Suzuli Daisetz's philosophy of the identity of opposites at the fundamental principle by which the contradictory opposites are revealed as existing in relation to each other (Kurokawa, 1991). The distinguishing of opposites is the essence that brings either opposite to life. The duals of opposites depend on each other for existence, such as light and dark, built form and natural form or interior and exterior spaces.



Venturi explains that dualism in architecture is created by "hybrid rather than 'pure,' compromising rather than 'clean,' distorted rather than 'straightforward,' ambiguous rather than 'clean,' and inconsistent and equivocal rather than direct and clear. I am for messy vitality over obvious unity. I include the non sequitur and proclaim the duality" (Venturi, 1966). The tension is created within the spaces between dualities, where the 'grey' matter exists, where the 'exchange' of space is formed. In order to prevent neglect of one or the other spheres of existents, providing the bridging 'grey' matter acknowledges and integrates the two.

According to Berrizbeitia & Pollak, a threshold can be explored as an ecological phenomenon; for instance, the place where the field meets the forest is more important than the forest or field, or a psychological threshold; a point where a stimulus begins to produce an effect. "Thresholds are the points where transformations begin, where exchanges between unlikely things occur, and where identities are declared" (Berrizbeitia & Pollak, 2003). These thresholds are the dynamic relations between different parts of architecture, functions and its setting. It is upon these thresholds that the 'exchange' occurs.



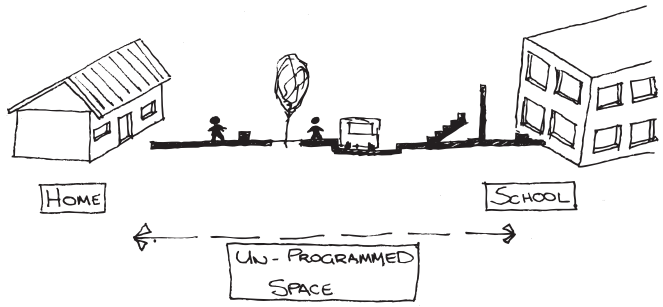
With an architecture dualist form-function, creates a "combination of fragmentation and multiplicity serves to open the architectural work in such a way as to be able to engage with the landscape, not as opposite, but as elements of connection and use, similar in kind to elements of architecture" (Berrizbeitia & Pollak, 2003). This breed of architecture is about breaking down and fading the boundaries, be it physical, functional and ecological to provide an 'exchange' that compliments all forms.

Un-Programmed Space

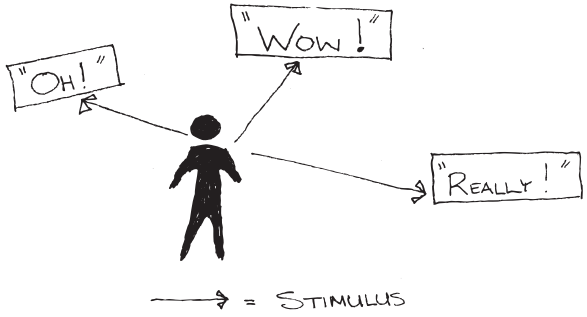
The In-between

The joint study by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and Massachusetts Institute of Technology (MIT) on the manner in which groups of young adolescents use and value their spatial environments is relevant to the main aim of this thesis. The study was to show how an adolescent perceives, understands and uses the environments in which they live, and how this perception can affect the subjects' lives.

The adolescents' common international trend was that they found the spaces between school and their dwellings to be the most important to them. "The similarities in the way children use 'unprogrammed' spaces near their dwellings: local streets, the courtyards and staircases." (Lynch, 1977). These spaces provide a window to the world outside the rules and barriers of schools and the domestic scale of house-holds. This is known as 'un-programmed' space.



While the time spent on the journey to and from the school is fractional compared to time spent in regimented classes during the day, the survey shows that this intermediate time browsing the landscape en-route is the most exciting and talked about part of the day. Like Berrizbeitia & Pollak explore the ecological threshold of the "the place where the field meets the forest is more important than the forest or field," similarly the survey states that the threshold between the school and their homes is the most important. This 'exchange' between two functions in the children's' lives provides the excitement that neither functions individually provide. Even a routinely taken path to school each school day captures the imagination of the adolescents, giving them 'un-programmed' space in which they can connect and interact with personalities of different ages and lifestyles, as well as the environment they live in.



The adolescents find that their physical and mental growth requires stimulus and interaction with other persons, particularly older generations which give a sense of awe and wonder to adolescents. As they interact, they "begin to assert their independence of the family, they are testing a society of their own, and the street is the place for it, as interesting things happen in the streets" (Lynch, 1977). This 'un-programmed' space of 'exchange' provides a micro-environment in the adolescents' larger environment that allows space to interact. "The shape of the local streets, stairs and courtyards is important to these children: the paving, the trees, the safety, the suitability for informal play, the corners, the doorways, nooks, and benches they can meet their friends, the opportunities those places give them to slip away from the parental eye while still being thought safe and under control" (Lynch, 1977).

This space of 'exchange' in a micro-environment is where paths cross, be it personal interaction, change in landscape or disruption on one's journey. The 'un-programmed' spaces serves as a stimulus and framework for greater learning and connections to the physical and psychological of the person concerned.

the separator

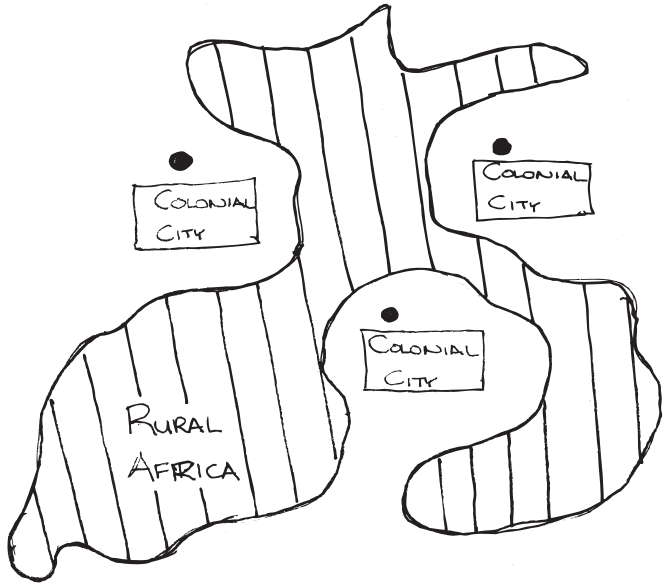
These trees provide an important measure to try prevent stop the severe soil erosion problem in the area.

The ‘Rural’ Dream

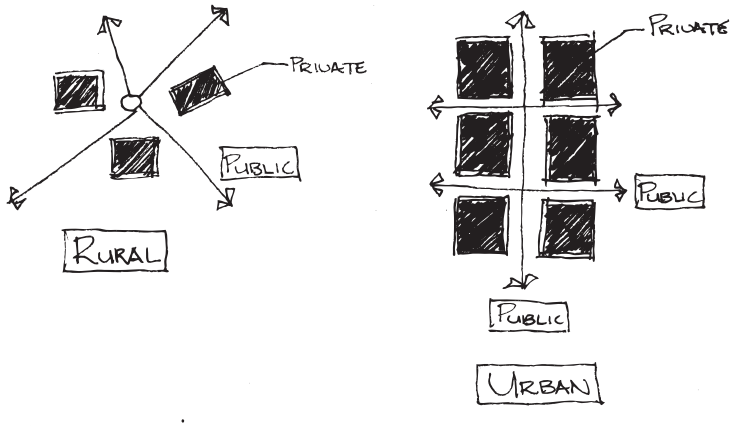
Rural vs. Urban

The boundaries of space are most apparent in the urban/ rural spheres in the Southern African pretext regarding colonisation and its after-effects. This is seen in the difference between European colonial and African tradition culture of space and their boundaries. European colonial cultural “tradition is never free of ‘ordering devices’, refined, in modern history during the Enlightenment. It is further infused by doubt; validation is through material, aesthetic experience,” while “African culture validates itself through personal and humanist values” (Lloyd, 2003).

This is best described in Lloyd’s ‘Rural Dream’ theory, which explains the difference between a Euro-centric and Afro-centric thought and its relation to the ‘exchange’ concept. “A ‘Rural Dream’, would, in African settlement, have understood that all space is public, excepting only that defined by ritual as private space,” while “in the European ‘Rural Dream’ all space would be private, except only for specifically designated and regulated public areas, defined through legal process, walls and fences” (Lloyd, 2003). This describes two opposing ideas of what is public/ private space, and the boundaries connected to those spaces.



The treatment of space in a traditional African culture is not bound by the boundaries seen in European architectural program. As du Plessis states, in rural "Africa, the interest of the community and not the individual is paramount," and the "community is the spill around which African built environments revolve. The built environment is used to express social relationships and its creation is a communal affair" (du Plessis, 2001). The social boundaries and public spaces in rural African environments are more inter-connected, illustrated in "rural African homesteads where the purpose of the dwelling is to have a protected place for sleeping, sex and sacred ritual. The house itself is not used for the everyday activities of living. These all happen in outdoor 'rooms', where the entire community can participate in one another's lives" (du Plessis, 2001).



This culture of interconnectedness and interdependence is described in "that most African community are holistic in outlook. All things are seen as interdependent and interrelated, including architecture. This sense of interconnectedness is very much a spiritual understanding of life that leads to a reverence and respect for all of nature that is expressed not only in ritual, but also in the way buildings are placed and resources used. In Southern Africa, this understanding is called Ubuntu" (du Plessis, 2001). This is a further development on the concept of 'exchange', developed into an every-day occurrence within a traditional African community.

In such a connected 'exchange' within the culture, the "context, wealth lies in social relationships and not in ownership. Social standing is achieved through sharing the benefits of wealth with the community. Development is, therefore, guided by the interests of the community and not individual profit" (du Plessis, 2001). The spatial forms of rural, agrarian-based cultures do not require rigid, forced geometries and defined edges to be placed, "the 'Rural Dream' in which, within a total public realm, private space may be minimal and understood through ritual, suggests that quite different system of land settlement and delivery are both possible and necessary" (Lloyd, 2003). As the distinction of private/public thresholds and form-function divisions in rural African culture is boundless and ever faded both in personal and built environments, so this reiterates the concept of intra-community 'exchange'.

the local building

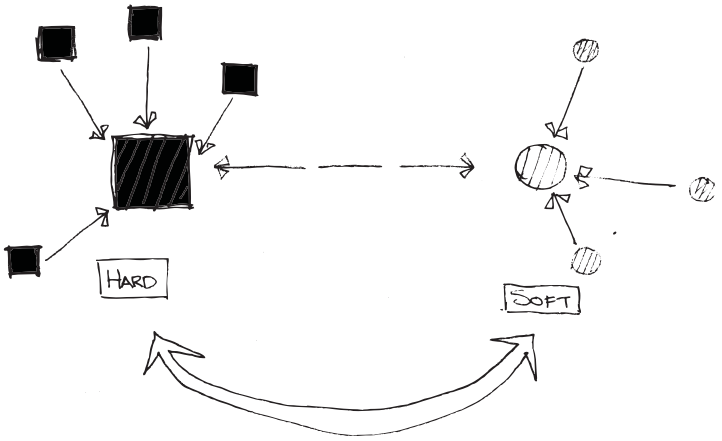
A method of rain-water collection

local
architectur
invention

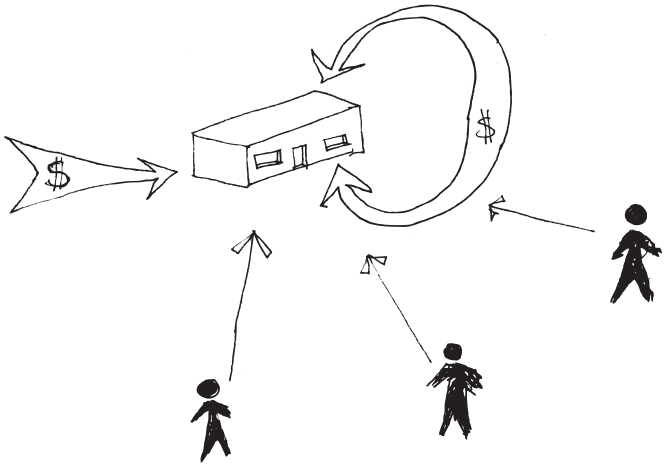
Invention

Hard vs Soft

The standard normative provision of services must include both a 'hard' infrastructure, with includes physical tangible systems for development, as well as 'soft' infrastructure onto the 'hard' elements can be supported, such tertiary services and skills development. "'Hard' infrastructure includes: electricity, housing, marketplaces, offices and business premises, roads and haulage providers, rails, air systems, sanitation, waste management, schools, shops, storage facilities, telecommunications, and water supply. "Soft" infrastructure includes: financial services, health care, welfare systems, markets, post offices, and training providers." (Davis, Evaluating and Disseminating Expriences in Local Economic Development: Observations on Intergrated Development Programmes of the Free State, Republic of South Africa, 2006)



While creating a specific-related framework is justified in the context, the thesis aims at pushing and fading the boundaries of constitutes such 'hard' and 'soft' service, and demonstrate how a building can evolve and change to provide different functions at different time and seasons, hence creating a system of interrelated function and form 'exchange'. The over-all project evolves from a distinct difference in 'hard' and 'soft' spheres, to a form-function relationship with-in a controlled system. The terminology of 'hard' and 'soft', used as a categorical measurement of service provision by government and NGO's policies, is dissolved into what becomes the 'grey' matter of form-function.

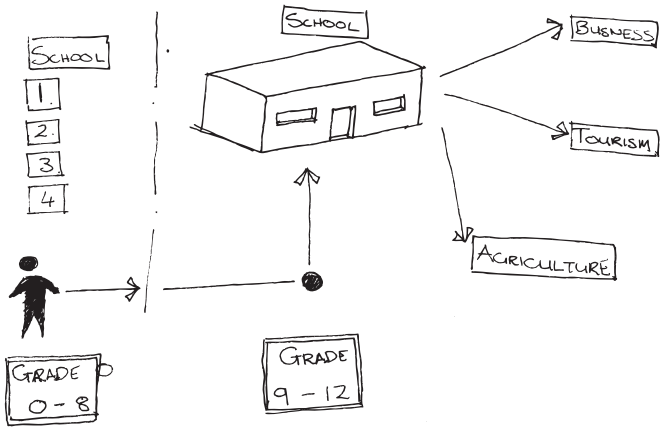


The development of education, health and service delivery, as stated in the background of this essay, is key to alleviate the problems occurring within the most poverty stricken areas of the rural Highlands, yet the manner in which the provision is created and layered as discussed in the theoretical investigation, is subject to intense investigation in order to provide for the best possible community 'exchange'. While social restrictions in the area such as the lack of localised economy, high expense of high school, adult illiteracy and numerous other issues require multitude development structures that cannot all be address in one building, to localise and develop a few of these issues into a solid interconnected statue is possible within the reach of this thesis.

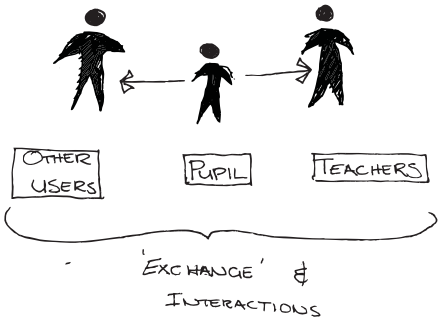
‘Exchange’ Input: School

Providing for the young

The current social and infrastructural issues facing the villages, as studied by interviews and areas mapping with the Chairman of Development Trust (Tello, 2010), the Chief, the headmen of the out skirting villages and general population, is that the most apparent problems is the need for a larger high school (with more technological and social inputs) and the lack of a centralised community location for all 11 villages. The current high school, situated in the inaccessible valley, curriculum extends only to Grade 9, with the older student having to attend grades 10 to 12 at another high school some 10km away. The proposal is to develop a ‘higher’ high school in the larger village of Malealea, the commercial and social centre, serving Grade 10 to 12.



With education ‘exchange’ function being at the building’s program core, it does not just concentrate on the high school curriculum of Grade 9 to 12, but rather an overall extension of the programs and functions contained within the facility, to the semi-urban and rural channels of the community. This key to the linkage to various nodes of social levels, such as the elderly, youth and middle aged provides a greater ‘exchange’ both in dialogue and in social interaction.



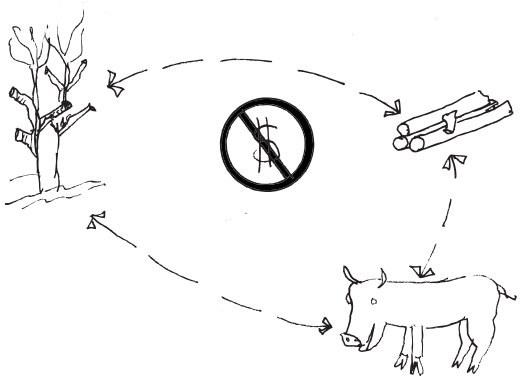
the junior High School

The last resort of schooling in the area,
after which, nothing is provided

‘Exchange’ Input: Market

Commercial Aspect

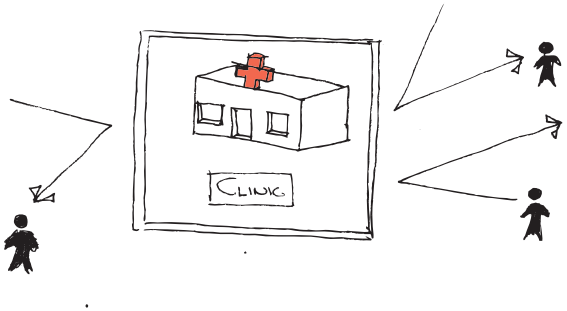
Through custom and necessity, the majority of the population within the Malealea valley are subsistence farmers, where the primary products being produced and processed being raw food stuffs and agriculture by-products. There are few commercial enterprises and services dealing with actual monetary exchange. This, unlike an urban system, is based on an agrarian system where the products are not exchanged for money, but rather a ‘barter’ system whereby goods are exchanged with subsistence neighbours and semi-urban dwellers for other goods as required. While there is no formal location of goods exchange, the proposal providing scope for such an occurrence within the functionality of the building.

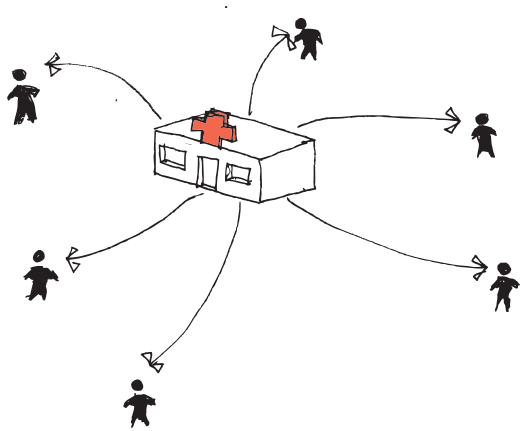


‘Exchange’ Input: Clinic

Healthy Life = Healthy Worker

The current clinic is well used, but under resourced and in need of refurbishment or reconstruction, therefore the proposal initiates incorporating all medical functions in the proposed building. The existing building to either be recycled literary by using the materials in the construction of the proposed building, or converting the structure into much-needed medical staff accommodation. The proposal brings the medical functions of the clinic into the ‘semi-urban’ centralised village. This provides a direct link to vehicular and pedestrian routes, as well as securing the important function to the greater population concentration in the area.



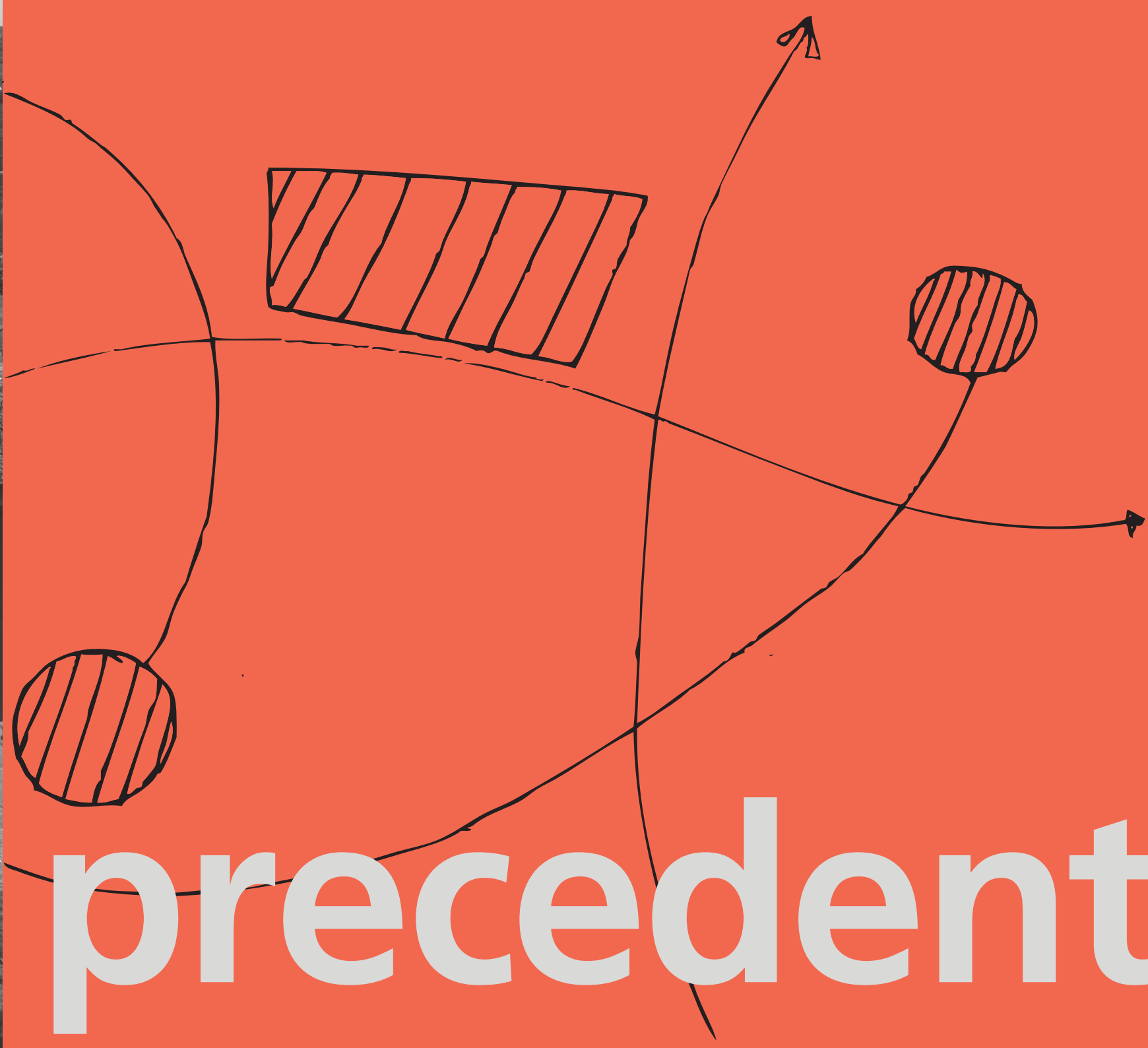


the clinic

The most populated civil element
in the community, yet the most distant
and isolated

built/ un-built

The building become part of the landscape, as the landscape adapts to the buildings



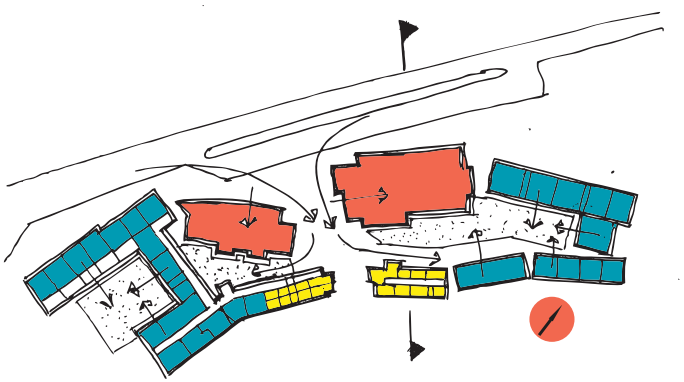
precedents

Wiggins- Umkhumbane

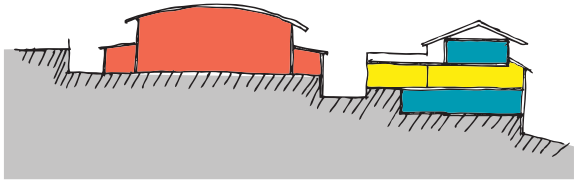
The Urban system

The Multi-Purpose Centre at Wiggins-Umkhumbane serves Cato Crest, one of the informal settlements of Cato Manor. The area and the community suffered during the apartheid planning practises due to lack of infrastructure and development. A massive redevelopment known as the Cato Manor Development Project was created to redress the low-income community by promoting a vibrant and self-sustaining entrepreneurial and education framework.

The project focuses on comprises a primary school for 800 learners, a secondary school for 1200, a community library, a sports field and a multi-purpose hall, all which needed to "demonstrate a new approach to institutional structures" (Haarhoff, 2001).



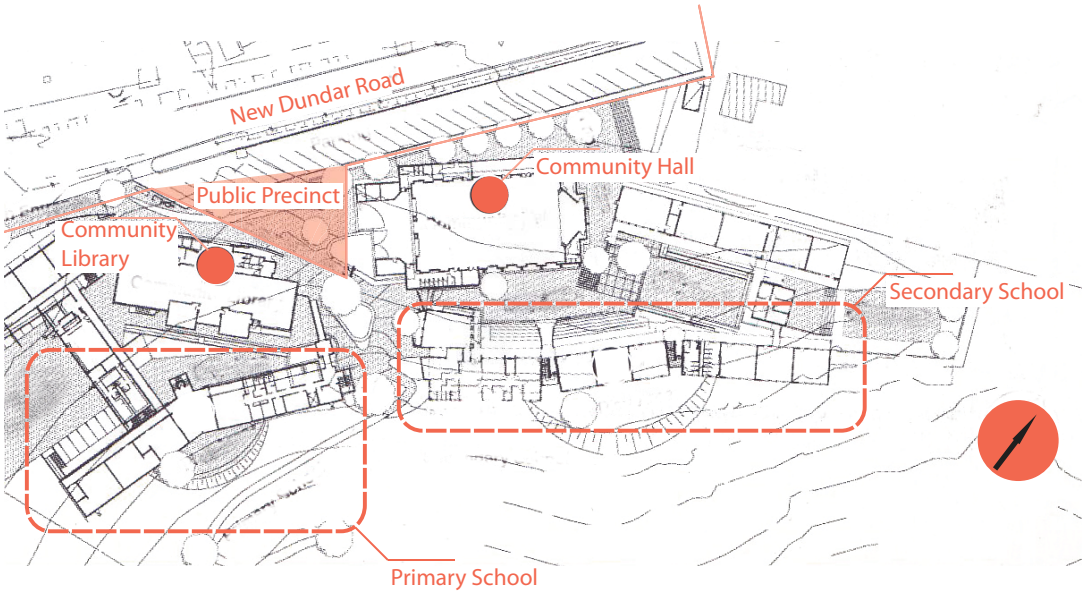
The Centre has been designed to enable school pupils and community members to share facilities, thereby maximising the use of limited resources. The buildings act to their functions of educational and community functions, yet the community as a whole is served is served by 'civic' spaces between the buildings, the 'un-programmed' spaces. Built on a small budget and on a site restricted by difficult terrain and soil conditions, the buildings are closely stacked in a dense plan. Within the denseness of the layout, "good spaces and spatial connections are established within and between the sets of buildings, to create a unified whole" (Haarhoff, 2001).



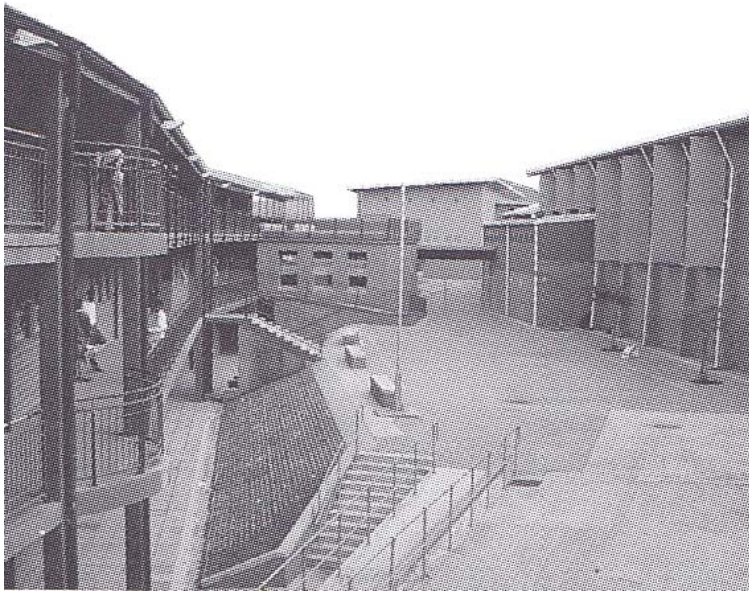
The community buildings are placed closest to the access road, accessible to the public but also creating a precinct for public-private threshold interaction. This area is of integration and 'exchange' between function of education and civic and also the personalities using the building such as the primary and secondary school scholars and the general public. "The uniqueness of the project lies in the close relationship of the various buildings to each other, and the nature of the interspaces unified by their relationships to the public precinct" (Haarhoff, 2001).

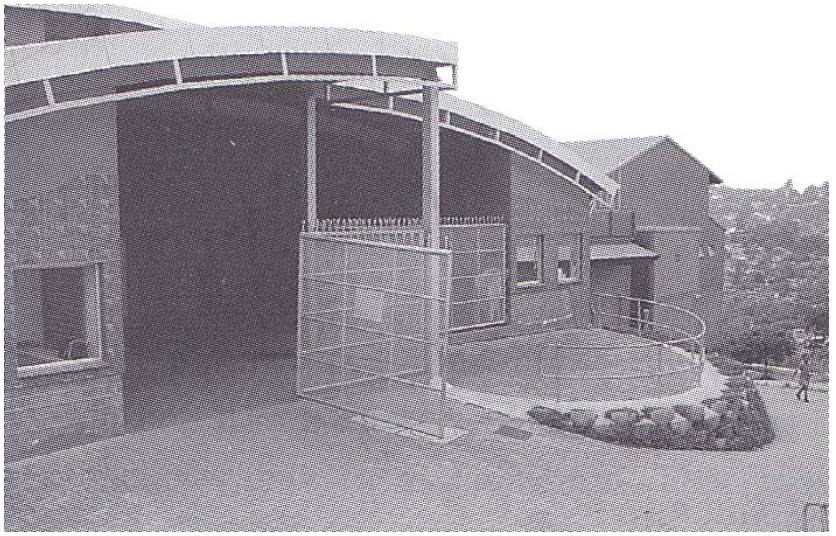
Four general purpose classrooms attached to the schools are utilised for adult education programmes, while the community hall, library and sports field are used by both school pupils and community members, depending on the period of time.

The facilities in the Centre are administered by the relevant government departments. The schools fall under the provincial Education Department, while the library, community hall and sports field will be administered by the Durban's Department of Culture and Recreation.



Plan underlay, Photos from Haarhoff (2001)





Vanguared Community Health Centre

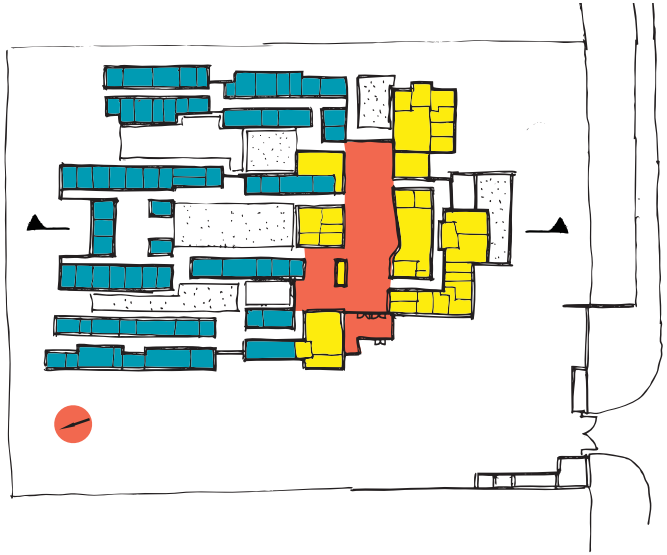
The Semi-Urban System

The Vanguard Health Centre was built by the Western Cape Health Department to not only provide health services to the area, but also provide a facility that could serve the needs of the surrounding communities. The concern was to make a health service "not institutional in nature, but user-friendly" (Grange, 2002).

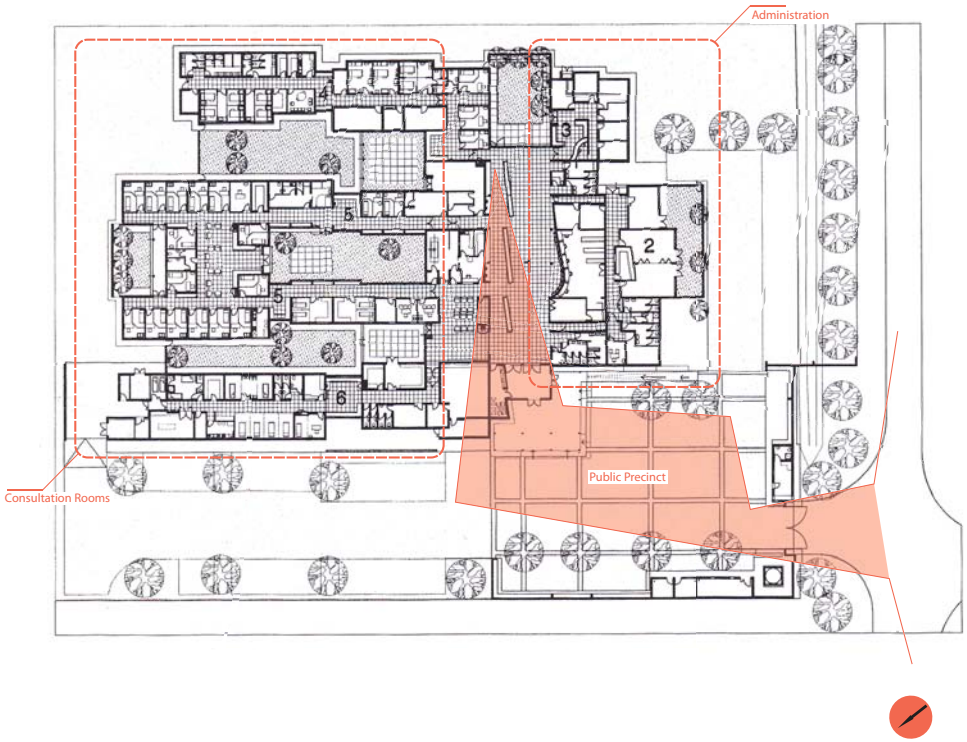
Consisting of a trauma section, a pharmacy, maternity unit, dental unit, X-ray facilities, primary curative care and preventative care units, as well accommodation for student nurses on site. The design was considered by the extent of the accommodation and health care given to the patients, as a process and as a movement in space.

Due to the high demand for health care in the area and the long procedures and waiting period till the patient is attend by medical staff, designers wanted to improve the experience for the patients and family members as much as possible. The design is based around a series of courtyards which connect to the various units and facilities of the building. The main internal courtyard, linked to the entrance portico, accommodates the main waiting area, which has open able facades that close or open the space depending on weather. The space is naturally day-lit to reduce electricity dependency and provide warmth in the cold winter months.

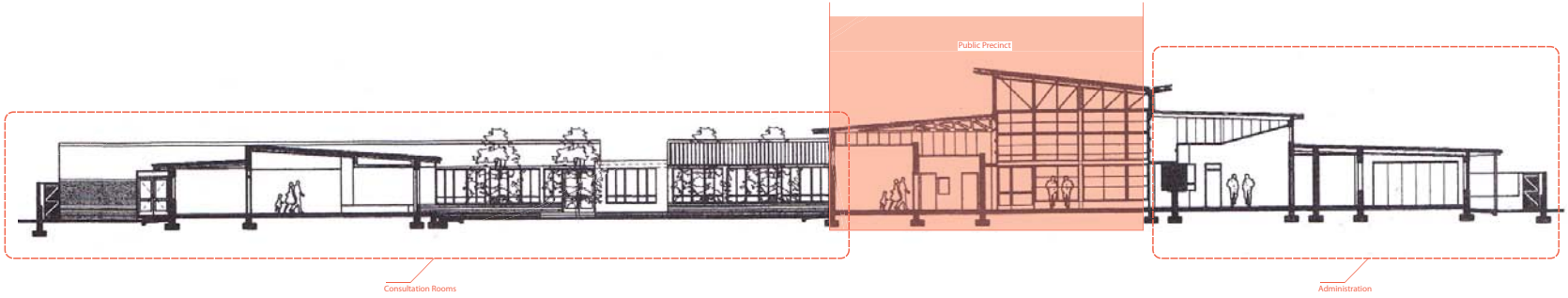
From the main courtyard, patients are directed Northwards to the various sections of the facility. The pathways to the units are a series of courtyards that reduce in size and height as the patient moves from the public spaces to the more private spaces of examination, security and comfort. These courtyards and circulation routes "were designed in relation to the layout of the different departments. The courtyards contain informal waiting areas where the patients congregate and are designed to allow light to enter into the various spaces (Grange, 2002). Environmentally these spaces are shielded by foliage or louvers to provide sunlight in winter and shade in summer. These spaces act as enclaves in the larger building, spaces were one can interact with fellow patients, comfortably await treatment or allow private areas for private moments such as condolences and final good-byes. The spaces can also act as outdoor classrooms and discussion spaces to the various educational needs of the health service, such as maternity courses.



The inter-connected spaces of the courtyards serve as circulation, spaces of function, spaces of waiting as well as intimate private spaces, all in a partially covered environment. The gradient from public to private is gentle, and dependant on the function the spaces serves, meaning that the building allows many different functions to co-exist depending the time, season and program within the adjacent health building. While the courtyards are essentially negative spaces serving the important positive spaces of the health centre, they, at various times, become positive spaces themselves, depending on the occurrence or gathering. This multi-use of space, which can adapt to the needs of the population or personalities using the space, is an example of space that 'fades the boundaries' between private and public space, and adapts not to the building's needs, but to the people using its needs.



Plan underlay, Photos from Grange (2002)



Welseyville Education Centre

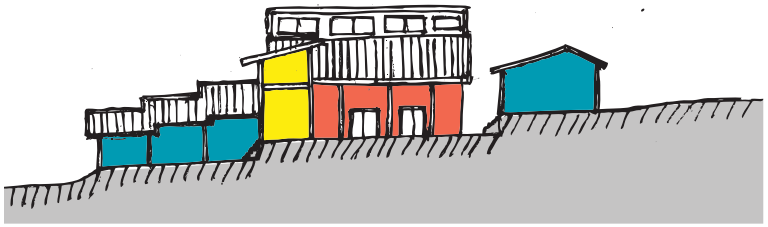
The Rural System

The Wesleyville Education Centre was built by a grant from the DaimlerChrysler Motor Company to play a more meaningful role in social upliftment of the Eastern Cape, where their South African operations are based.

The Centre was located in the small community of Wesleyville in the rural lands surrounding East London. The building "was designed to be as versatile as possible, with different spaces available to use at different periods, and those spaces be relevant to the community's needs and developments requirements" (Jacobs & de Beer, 2001) Hence exploring the concept of 'exchange' and the multi-use of space.

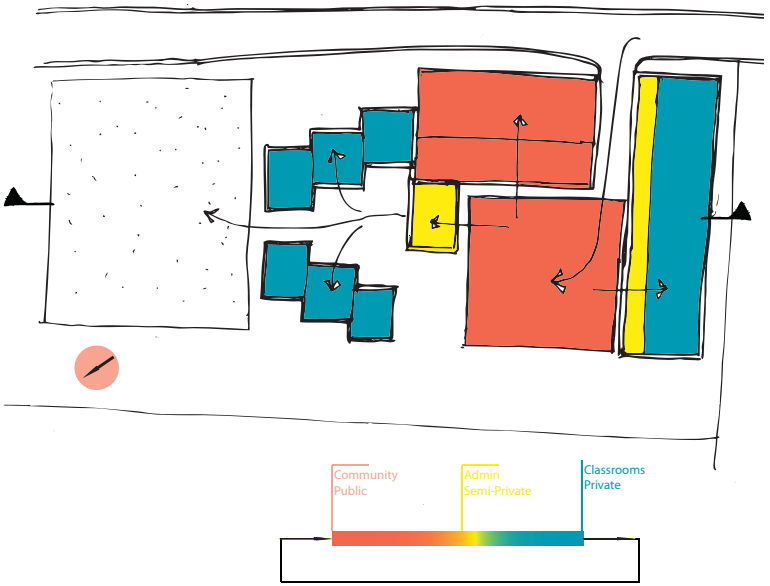
The building programme consists of a diverse and vast range of service and infrastructure, including a crèche, primary school for 400 scholars, library, computer centre, clinic, multi-purpose hall and staff and caretaker housing.

With a sloping site of 10 metres over its length, the building was based over 4 terraces over the drop in level. These would separate and allocate areas for different purposes and activities, giving hierarchy and division to activities, yet maintaining access and visual continuity between nodes.



The upper-middle terrace is the main private-public threshold interchange, with a community square with covered walkways surrounding. The walkway has built-in seating allowing the space to be used as a low raked amphitheatre. This space is used for community gatherings and informal markets, with smaller pockets of activities allowed to shift under the walkways during weather inclement. Surrounding the amphitheatre is the library, computer centre, clinic and multi-purpose hall. These functions operate to both scholars and general public, creating vastly different personalities using the building at times. While this integration occurs, it is limited to just the upper-middle terrace, as the other levels are for just the school pupils for security and noise restrictions.

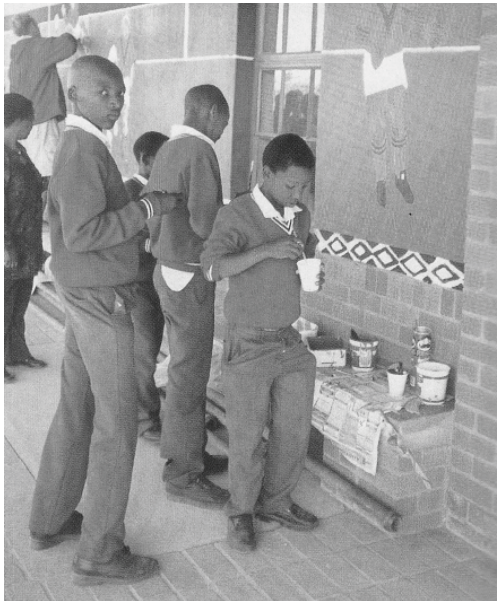
The upper level, with limited access is the crèche and caretaker's housing, where "natural levels create a safe and controlled play area for toddlers" (Jacobs & de Beer, 2001). The staff quarters and day-time offices are located on the lower-middle terrace, as a buffer zone to the public zone of the amphitheatre to the semi-private zone of the primary school located on the lowest level. The primary school is in a dense layout surrounding an intimate courtyard, over seen by the elevated staff offices and quarters.



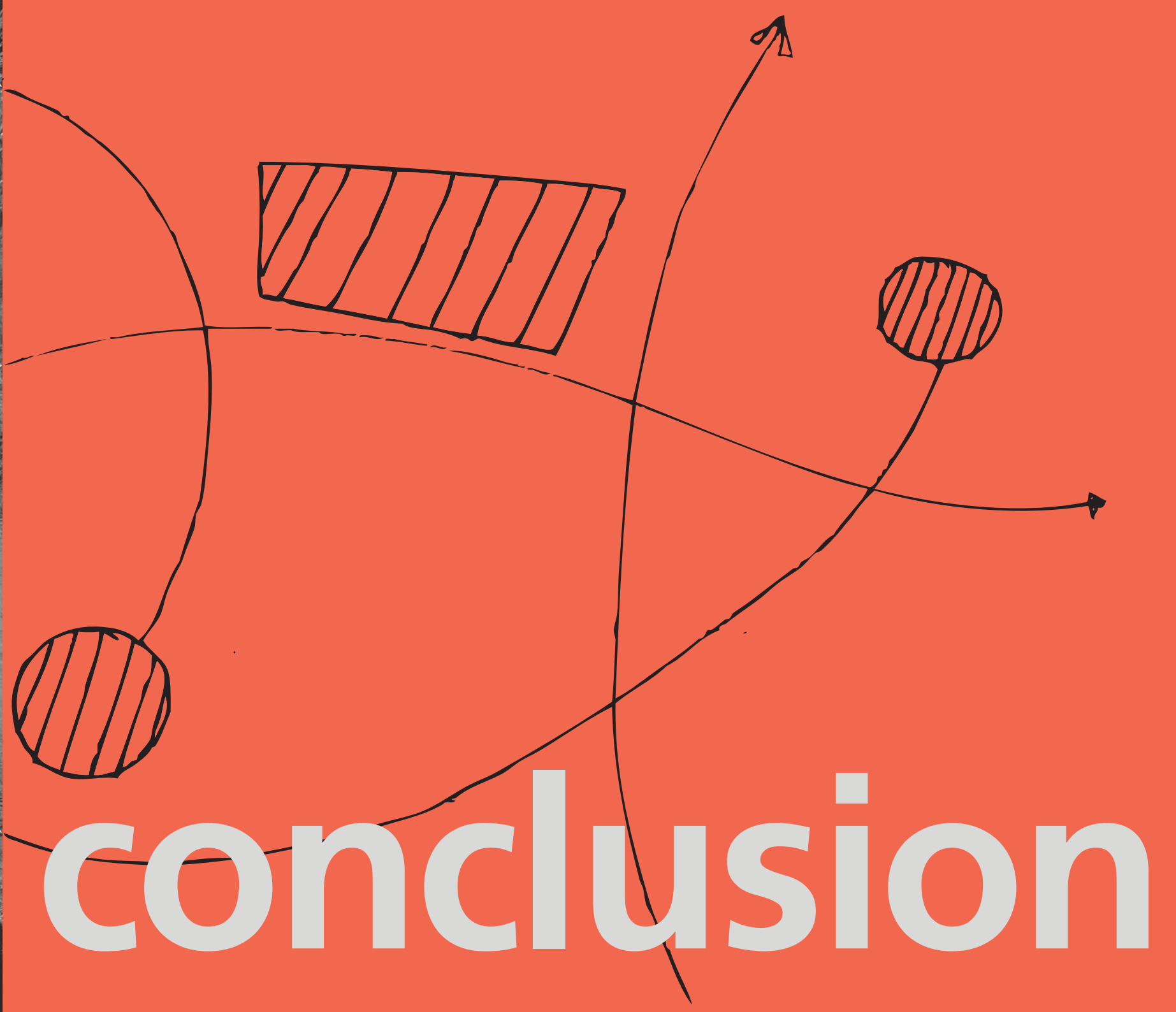
A playing field has been created adjacent to the primary school, with seating built-in to the back of the classrooms and direct access to the intimate courtyard. Due to the slope of the site, rainwater runoff could be collected and distributed to the playing field or to storages tanks for reticulation use. Due to an unreliable electricity supply, natural lighting was use as much as possible for day time activities, with electric lighting only used at night.

The segmentation of the functions and the activities allow for many or limited functions to continue by opening or shutting down various parts of the building. With multiple entrances, with different scales and privacy depending on the function, the building considerably 'fades the boundaries' between private and public space, and provides a canvas for such a rural 'exchange' of built forms and functions using those forms.

Photos from Jacobs & de Beer (2001)



water point
A place of social interaction, usage, and connections



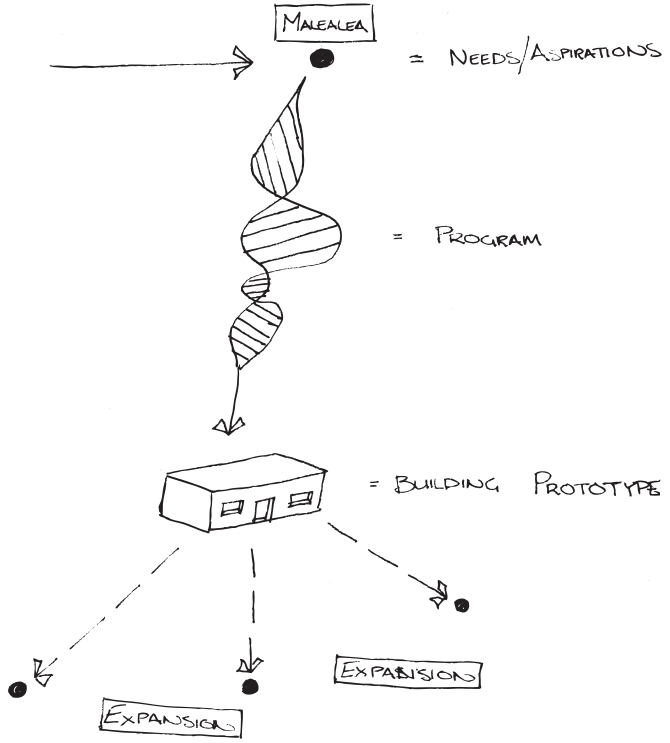
conclusion

Conclusion

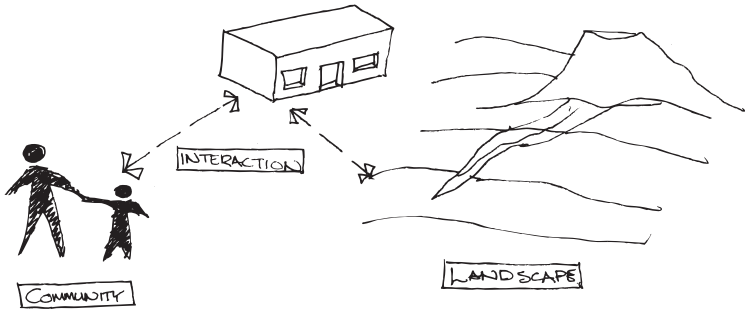
Forest vs. Field

Using the site of Malealea, in the rural Highlands of the Kingdom of Lesotho, this thesis addresses the social and physical issues involved in and around the cluster of villages. While the architectural invention within a single building cannot solve all aspects of the community's issues, the site is used as a built experiment as to the possibility of a more developed and integrated infrastructure design framework for communities.

The concept of a rural 'exchange' has been investigated and developed in this thesis to provide clarity into the role a building can provide in a small and low-income rural community. Describing the 'exchange' as inter-connections and inter-discipline within building users, and in the spaces of the building, this concept explains how the building provides a platform on which the community can use, interact and develop with the building, the surroundings, as well as themselves.



The 'exchange' within the thesis, based on a combination of necessity and desire, is the combination of a school-clinic-market. The diverse functions and spaces created by this program create an interchange of personalities that would normally not interact in such close daily occurrences. The distribution of space and locations of function is paramount to the concept of 'exchange'. Each space and function is to be considered to its periodic time-frame, noise, seasonal availability and population interaction. The by-products to the primary 'exchange' and sharing of physical space, is the non-tangible 'exchange' such as the school children- health workers-marketers interaction. The knowledge, community enrichment and education possibilities that these interactions provide to the community forms a whole, greater than the sum of its parts. The involvement of the young and old, literate and illiterate, skilled health workers and subsistence farmers engaging in different frameworks that the building provides, could be more valuable than the spaces and functions provided by a building. The sum of these small interactions should be more valuable than the bricks and mortar of a building's whole.



Considering the interaction and integration of a building in a 'rural' setting such as the Lesotho Highlands, the concept of the 'Rural Dream' theory must be acknowledged. The method of transplanting urban colonial based systems into a rural environment without adaptation requires to be addressed in the building design. The building must understand and consider its environment, both physical and cultural, to fully function as a working community centre and developer. The 'Rural Dream' theory understands that space in rural African communities are less established, and such, the building should reflect the traditional 'fading the boundaries' of space that is found in its environment.

This thesis also challenges the method in which services have been provided to the existing community, and how each service or function has been placed in a, individual and independent manner. The method of differentiating between 'hard' and 'soft' services and their placement in the community as separate entities has been common throughout Southern Africa. This method of delivery has had limited success in the maintenance and involvement of the communities in desperate need of the services. This thesis aims to question this method of service delivery, and provide an alternate solution with expansive hybrid thinking. With integration of space and the by-products of user 'crossing-paths', multiple spheres of the building functions can integrate and envelope each other. These in-between spaces create new public/private thresholds with the building and the community in the 'exchange' of space. This is the 'un-programmed' space so integral to the concept of thresholds in this thesis.

These public/ private thresholds are the most important spaces as they act as the gateway to the integration of functions and form. These spaces are the physical 'exchange' concept, creating fluid and inter-disciplinary spaces, which open up or close off to allow different activities and interactions to perform. This 'exchange' and movement within the building allows the multiple uses of space, the reduction of overall physical built form, allowance of contrasting functions and activities to take place simultaneously, provides a community developer and landmark, and is the platform for cross-pollination of services, skill and interaction of completely different personalities involved with the building, and its vicinity.

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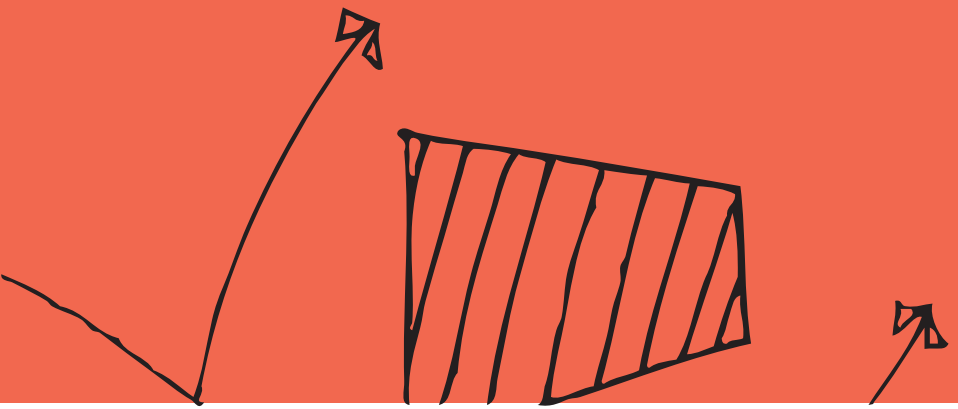
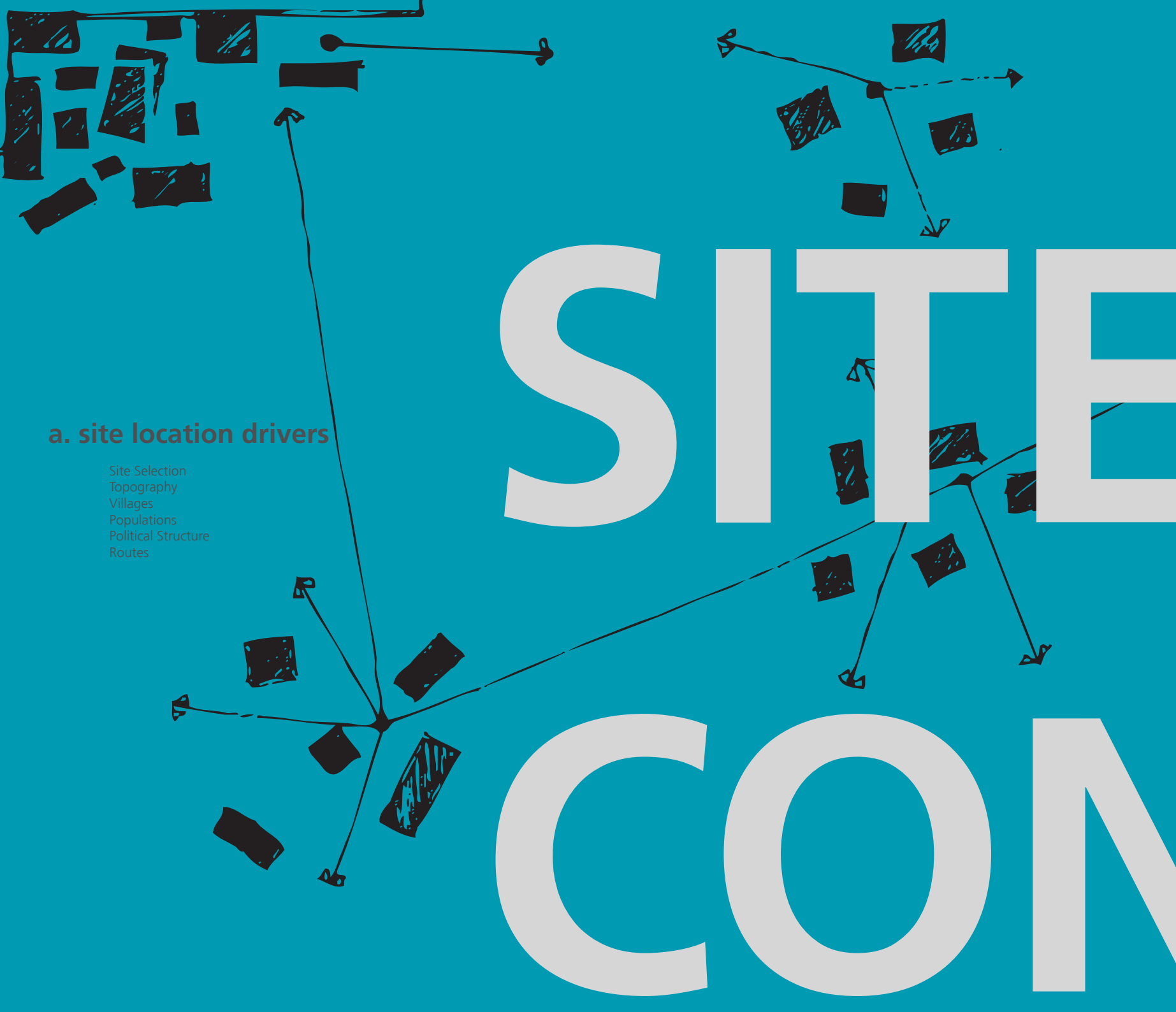


so what?

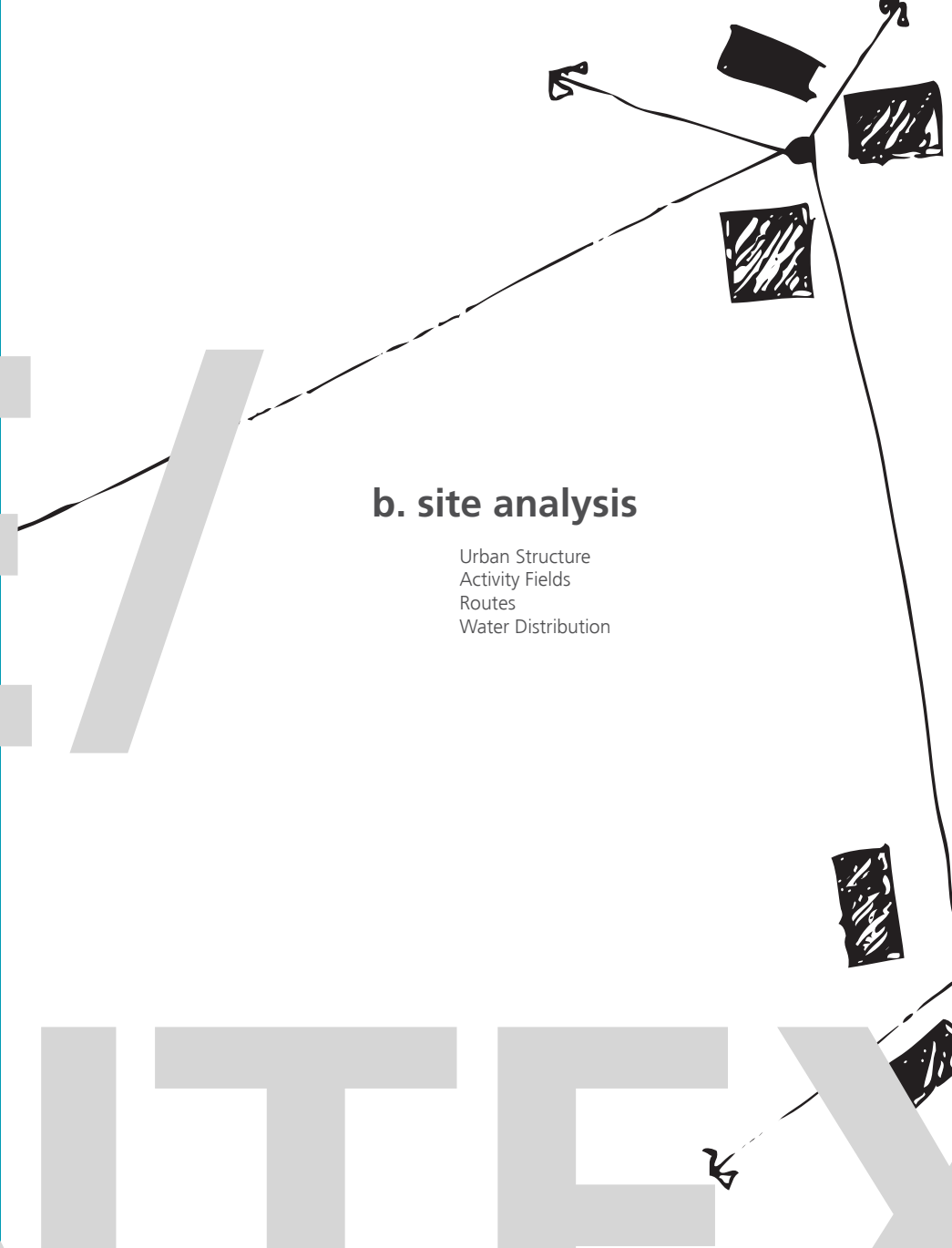


SITE

CON

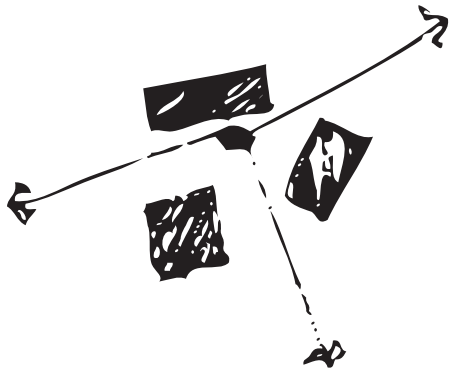
a. site location drivers

Site Selection
Topography
Villages
Populations
Political Structure
Routes



b. site analysis

Urban Structure
Activity Fields
Routes
Water Distribution



c. program drivers

Community Needs & Desires
Community Markerts/ HUbs
Schools
Clinic

NTEXT

community interaction

Myself and Tello, Head Guide fo the Malealea Pony Trekking.

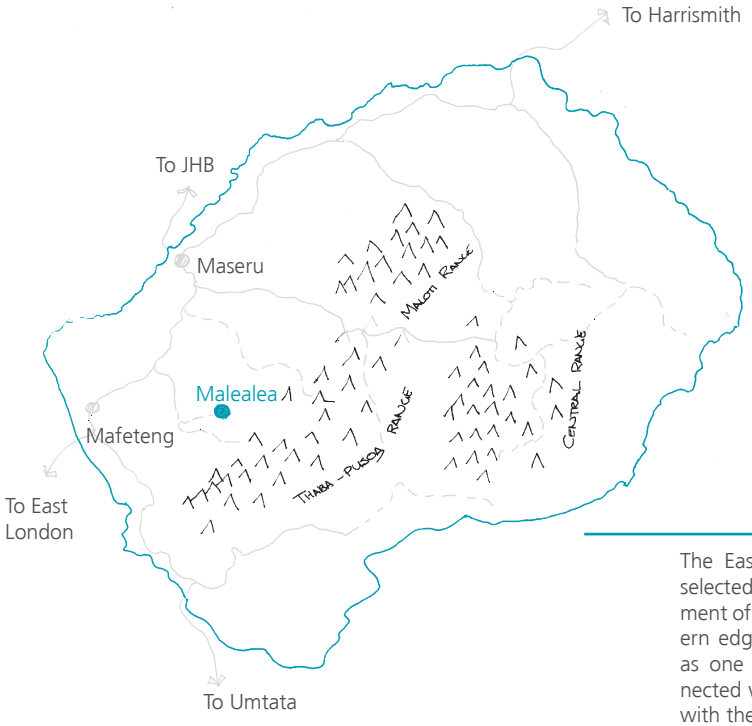
site locatio
drivers

connected, just

While there is road access to the community, the distance to the main road is long and arduous.

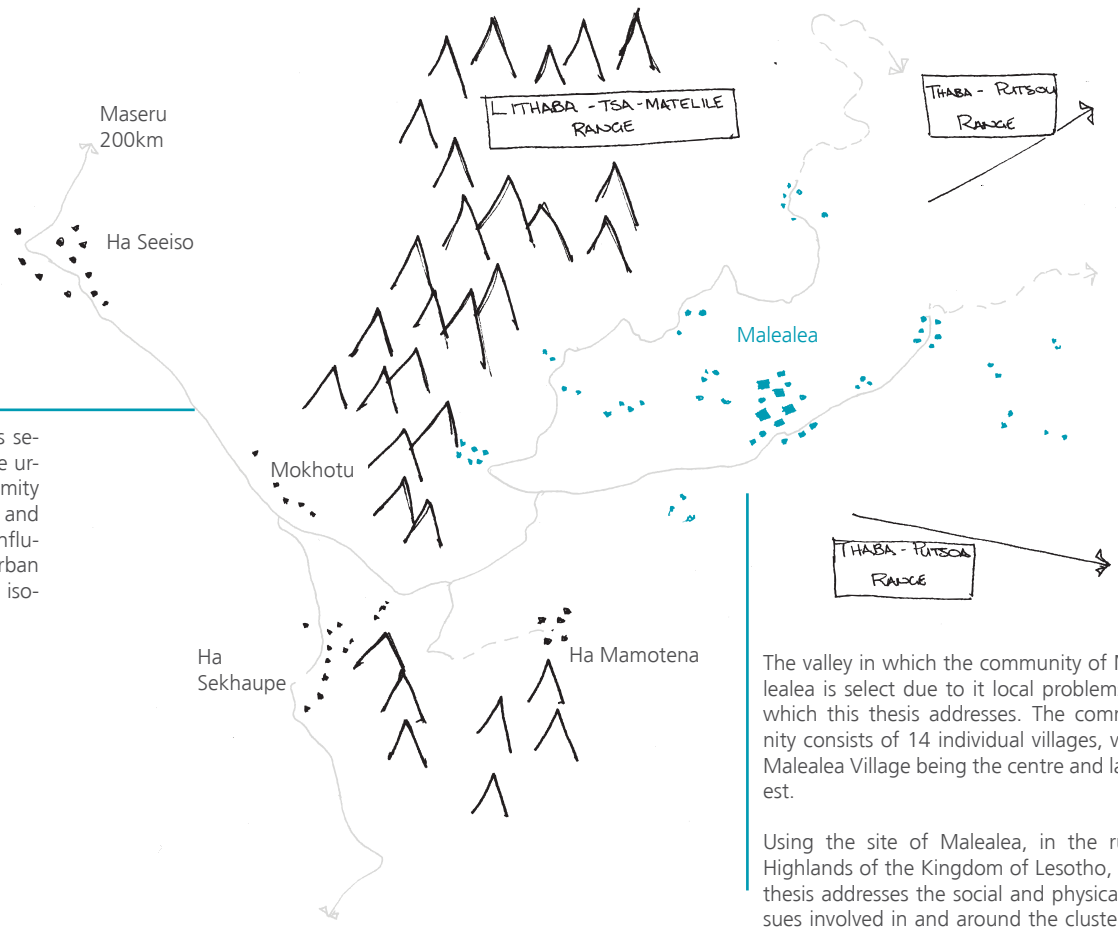
O.E
BOT'SOELA
PRIMARY SCHOO
No.125013
JOHANNESBURG
CAPE TOWN
DURBAN
BLOEMFONTEIN

Site Selection



The site is located in Lesotho, as it covered the requirement for a rural setting of this nature. The country is severely impoverished, with heavy reliance on external development drivers, and therefore open to new influences and mythologies.

The Eastern Escarpment of Lesotho was selected for the case study as the development of the country is greater on the Western edge, moving more rural and remote as one heads East. This gradient is connected with the landscape in which is lies, with the topography increasing Eastwards.



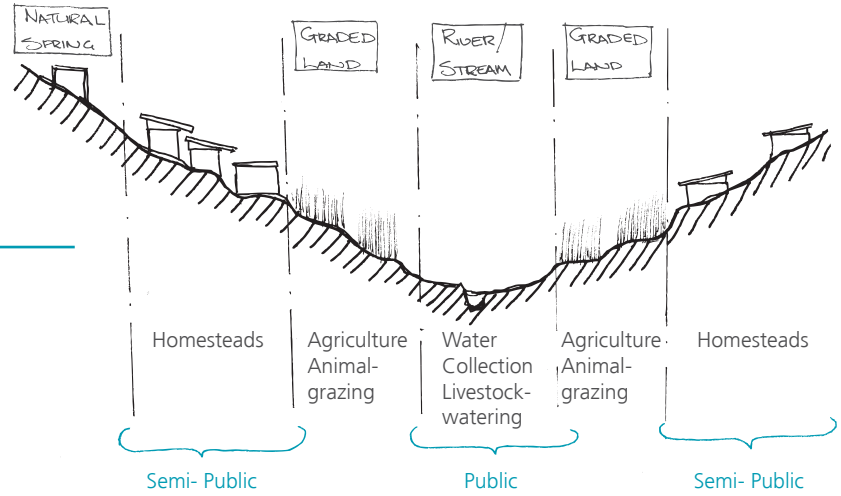
The rural community of Malealea was selected as the region is remote from the urban setting in culture, yet close in proximity to the Semi-urban towns of Maketeng and the capital of Maseru. These larger influences allow for connections to the urban environment, yet still be considerably isolated by culture and independence.

The valley in which the community of Malealea is select due to it local problems in which this thesis addresses. The community consists of 14 individual villages, with Malealea Village being the centre and largest.

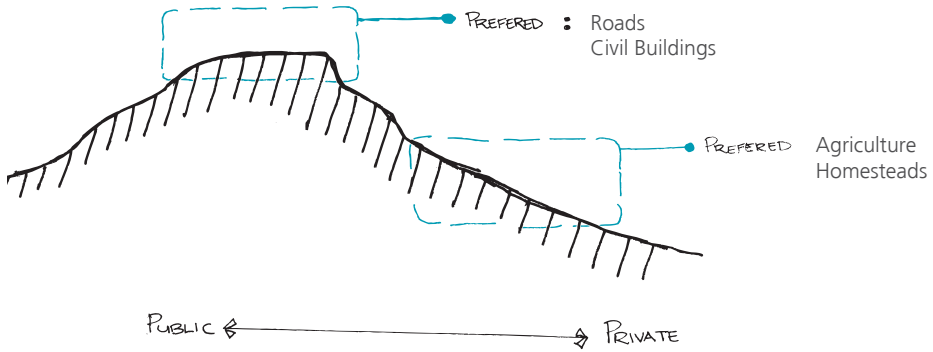
Using the site of Malealea, in the rural Highlands of the Kingdom of Lesotho, this thesis addresses the social and physical issues involved in and around the cluster of villages.

Topography

Contours at 25m intervals

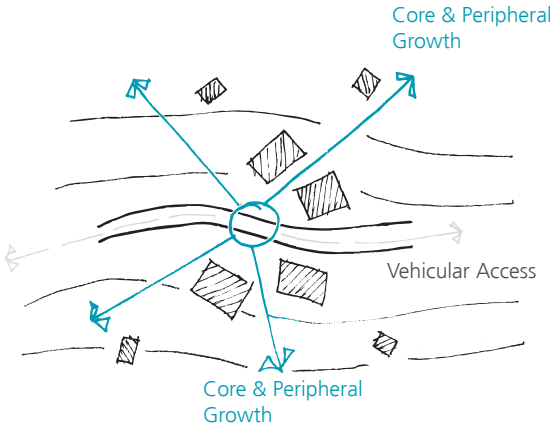


The steep topography of the area influences the realms of thresholds in the community. The closeness from the river's edge sets up areas for agriculture and livestock practises, while areas close to the access roads and spring water tanks, is favoured for homestead location. The public to private gradient is connected with the landscape it sit on.

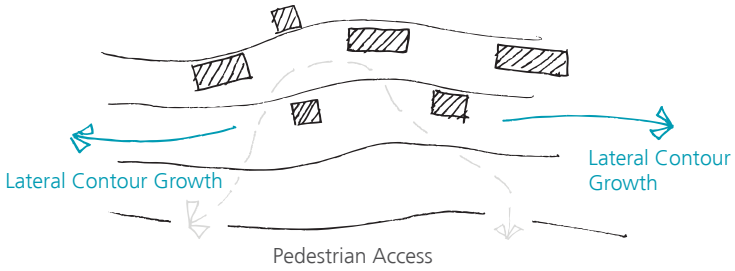


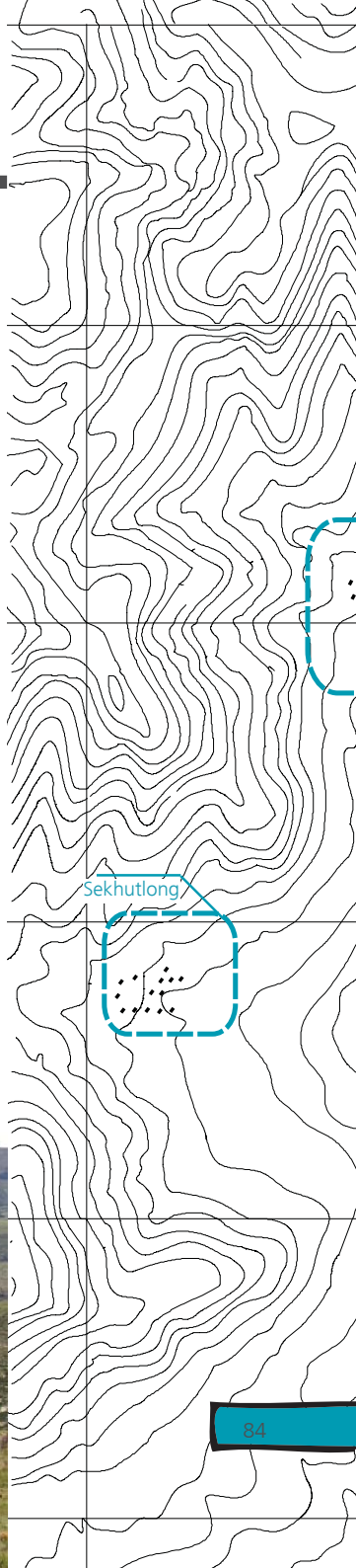
Villages

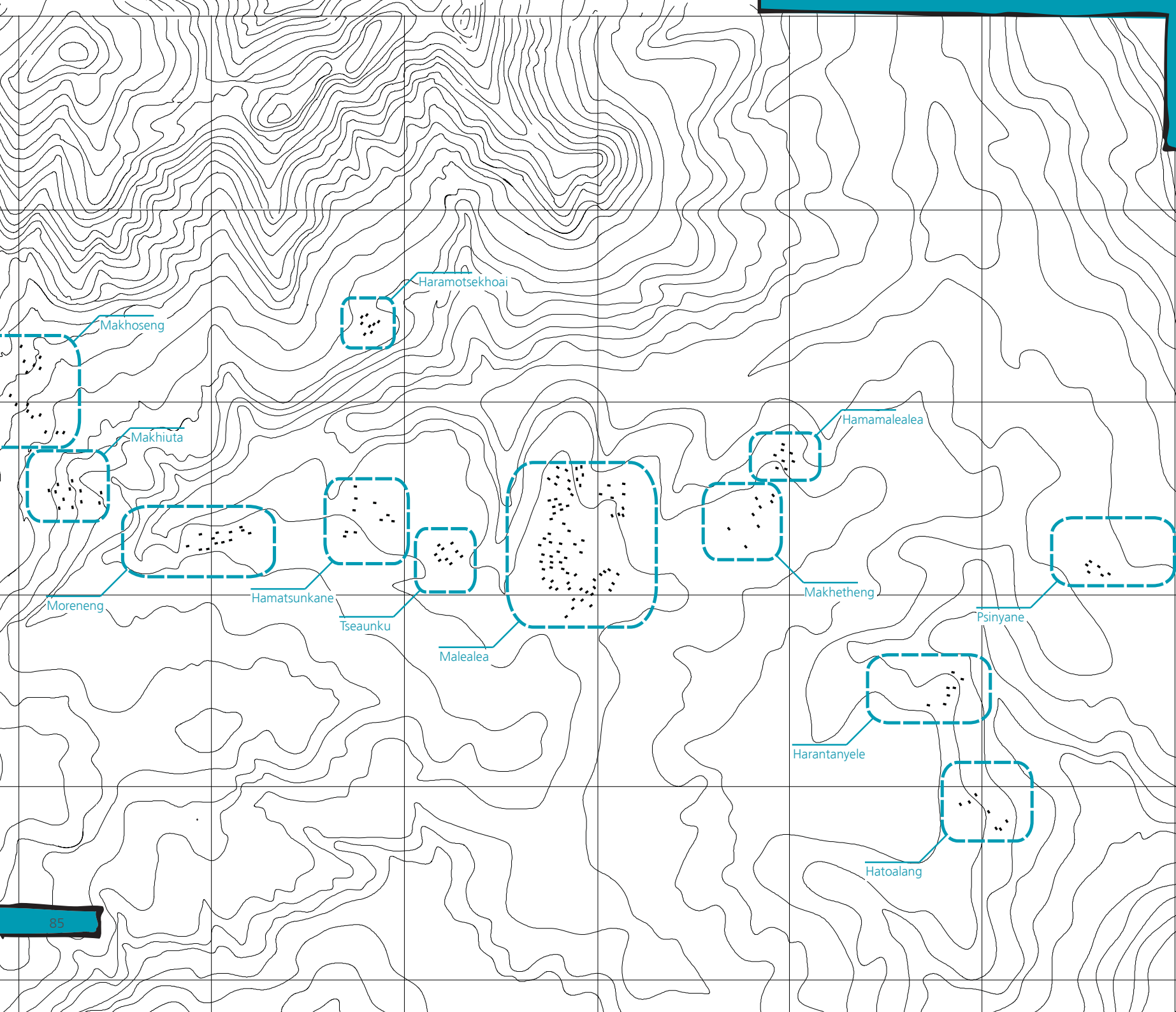
Contours at 25m intervals



The 12 individual villages that make up the community of Malealea, have been established primarily due to family 'kraals' expansion over the years. The villages' have different growth patterns mainly due to proximity to access roads, where by the village grows in a centrifugal pattern, or with no access road, where the grow is linear, along the contour path.

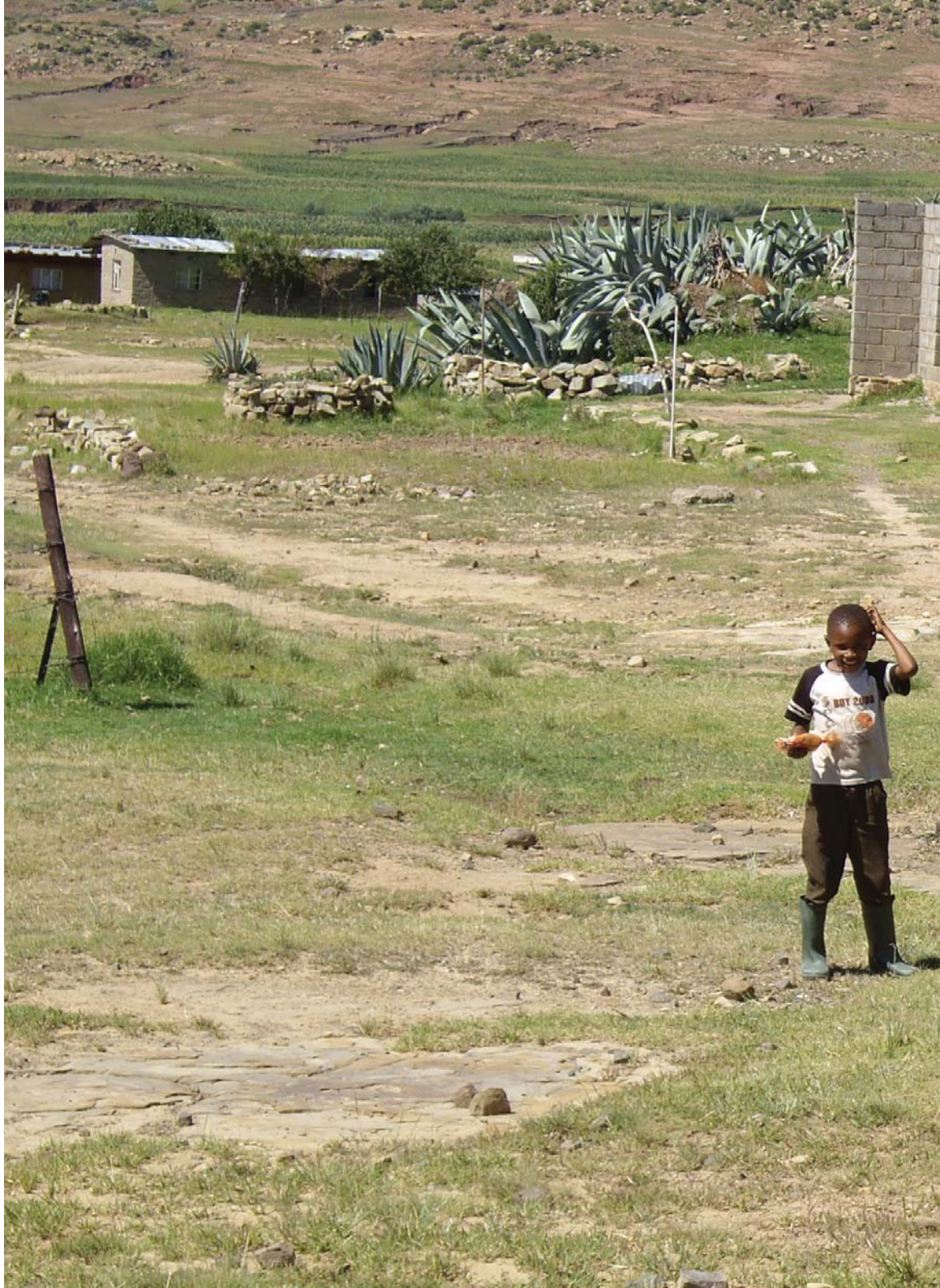





Haramotsekhoai
Makhoseng
Makhiuta
Moreneng
Hamatsunkane
Tseaunku
Malealea
Hamamalealea
Makhetheng
Psinyane
Harantanyele
Hatoalang

the young

The large majority of the population is young, with a need for schooling and proper health care facilities for further development potential of the area.



Populations

Circle = 5 persons

Fully Pedestrian Access Only/ Remote Villages

Vehicular Access/ Semi- Urban Villages

Profession

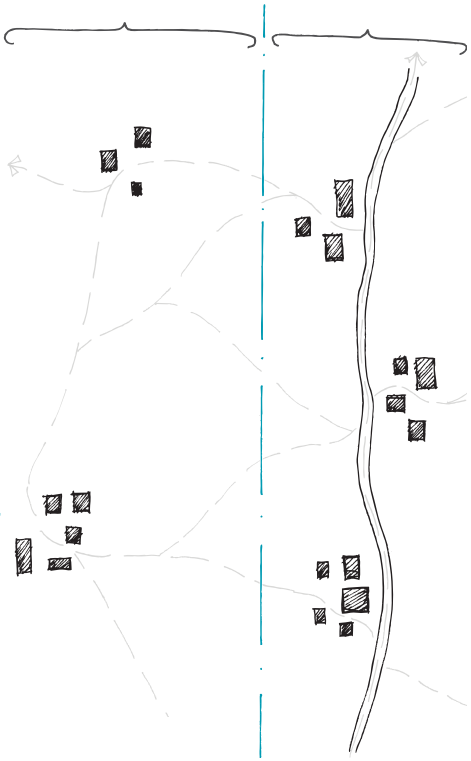
Subsistence Farmers
Unemployed

Average Children

6/ Household

Average visits to Main Villages

4/ Week



Profession

Tourism Industry
Store Owners
Shebeen Owners
Manufacturing
Crafts
Subsistence Farmers
School Teachers
Nurses

Average Children

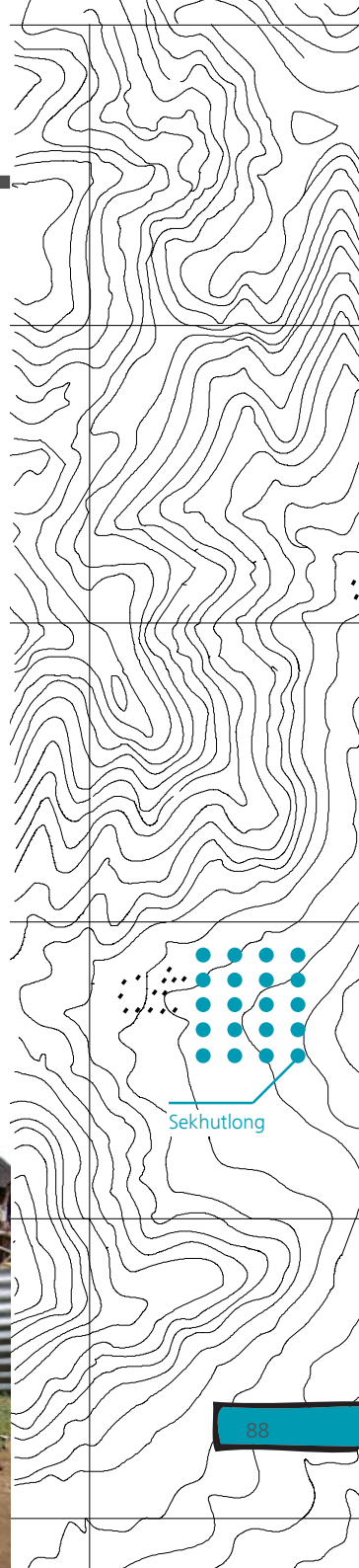
4/ Household

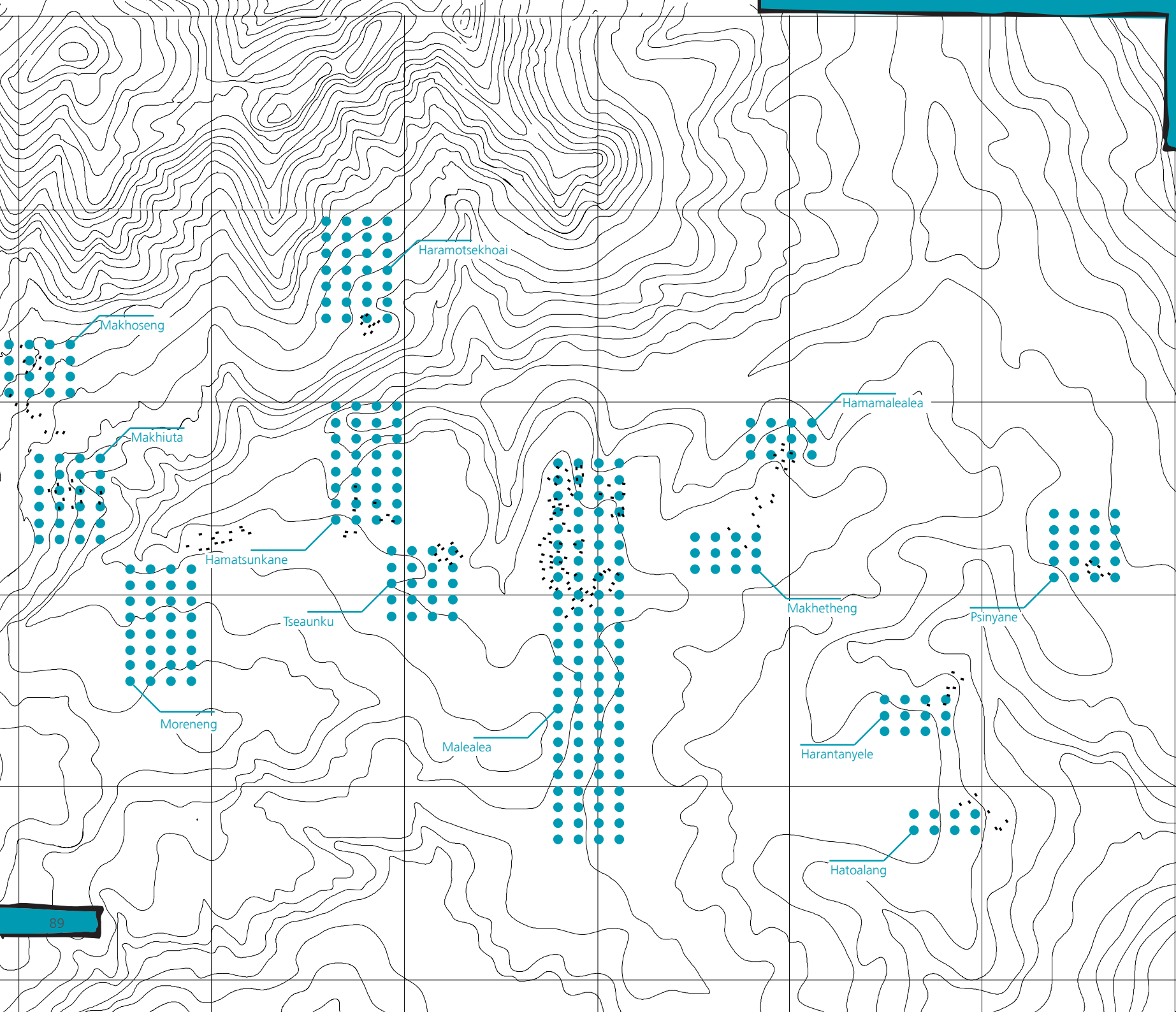
Average visits to Peripheral Villages

1/ Week

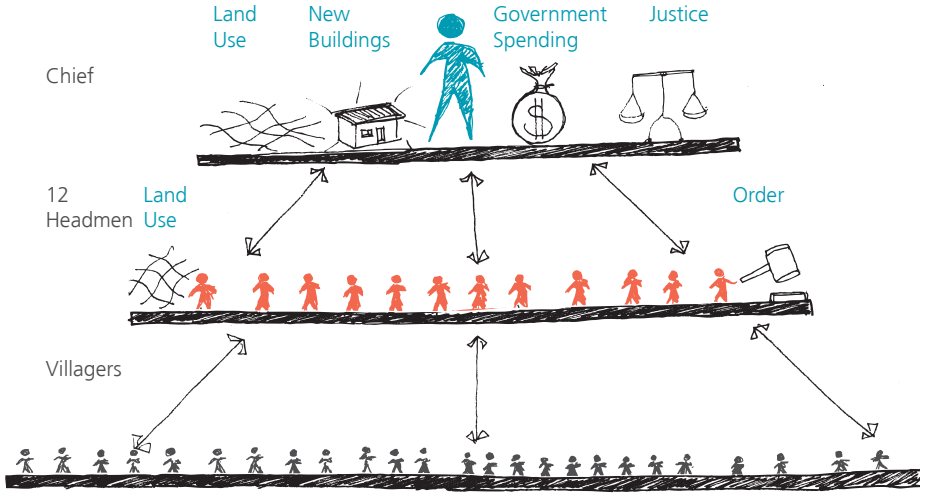
After intense surveying of the area, patterns emerged into the population build-up and the position from the main hub of Malealea. The periphery villages are more 'traditional' in subsistence farming practise, yet since frequent the main village often.

The Semi-Urban environment of Malealea allows for a greater spread of work opportunities to occur. This is mainly due th the tourism influence of the Pony Trekking Lodge, yet, due to the great number of population, by-product services occur such as small shops, social establishments and manufacturing enterprises.

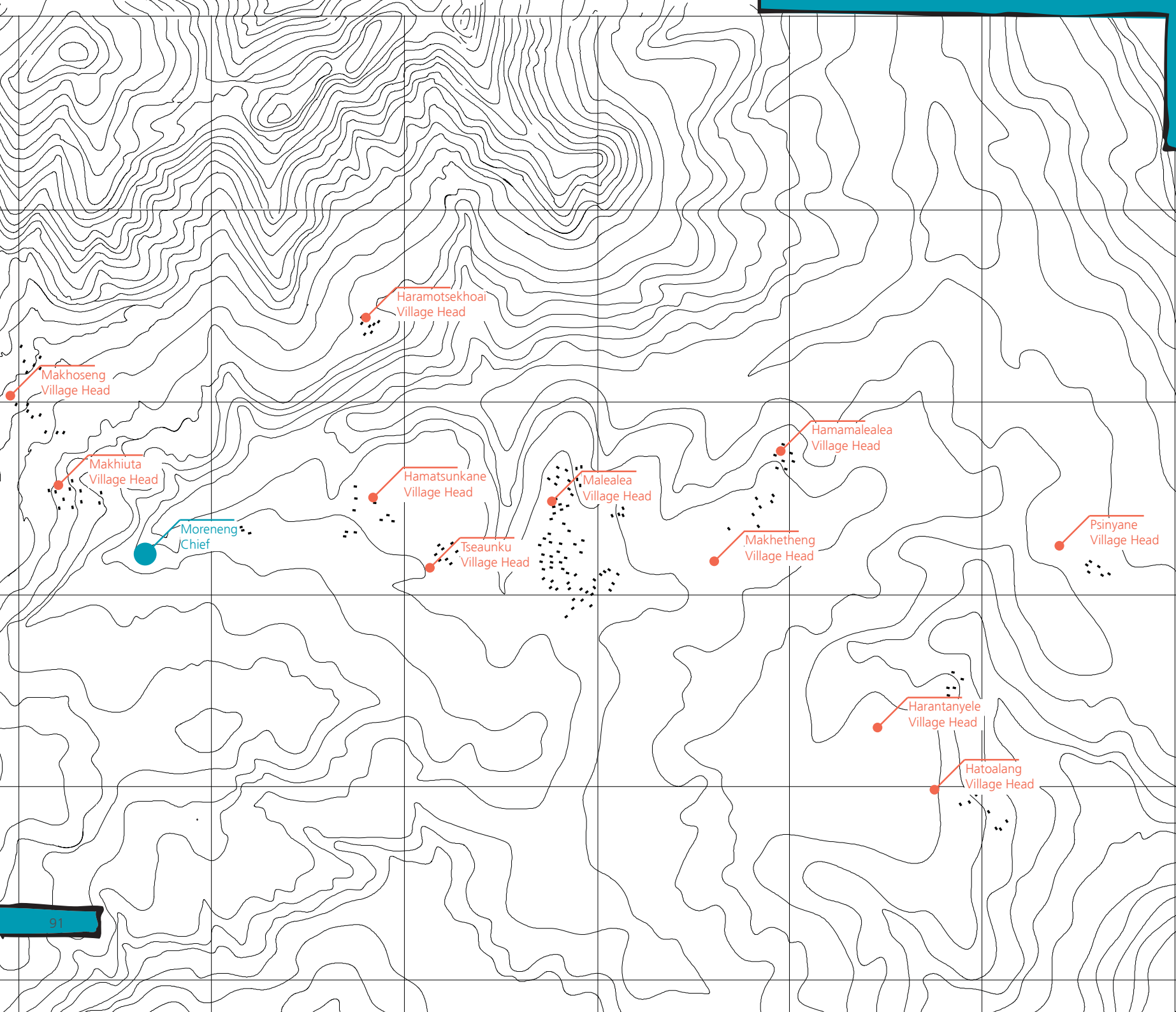



Haramotsekhoai
Makhoseng
Makhiuta
Hamatsunkane
Tseaunku
Moreneng
Malealea
Hamamalealea
Makhetheng
Psinyane
Harantanyele
Hatoalang

Political Hierarchy

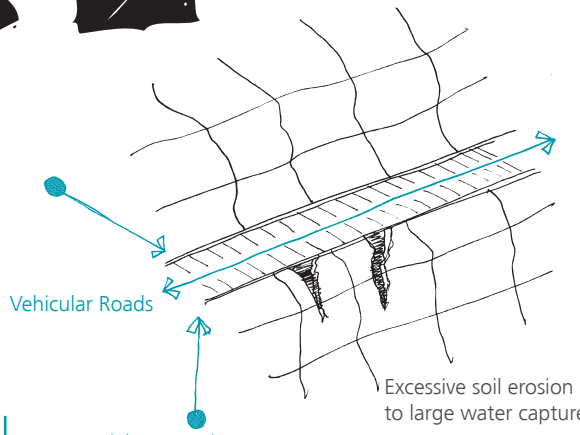


The political system is traditional in nature, with influences from the National Government. The Chief of the area (pictured), governs the 12 other village headmen, with collaboration of the government. Meetings occur every month with both the headmen, and the whole community, where various topics are discussed.


Haramotsekhoai
Village Head
Makhoseng
Village Head
Makhiuta
Village Head
Moreneng
Chief
Hamatsunkane
Village Head
Tseaunku
Village Head
Malealea
Village Head
Hamamalealea
Village Head
Makhetheng
Village Head
Psinyane
Village Head
Harantanyele
Village Head
Hatoalang
Village Head

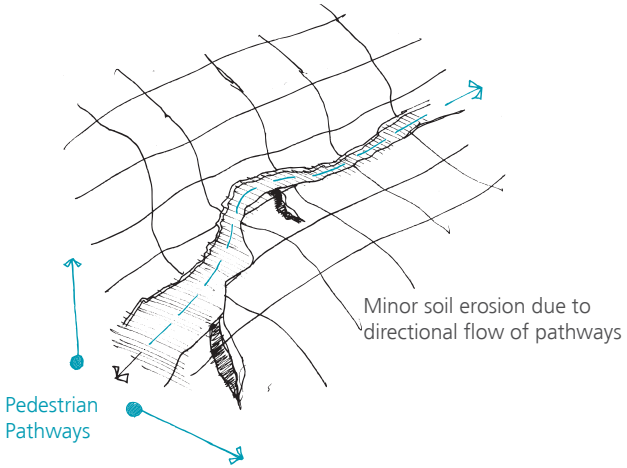
Routes

Vehicular & Pedestrian Routes Represented



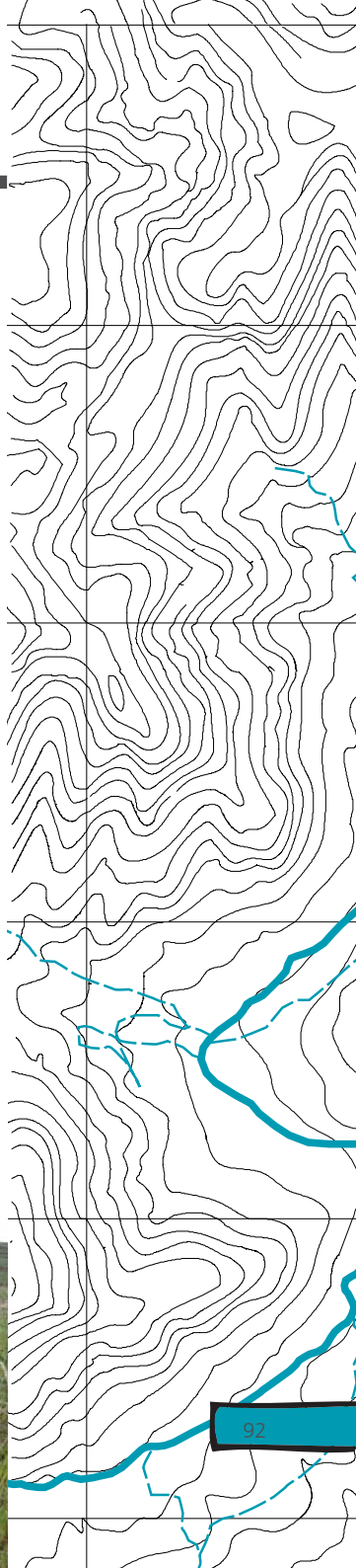
Commercial Enterprises & Services in close proximity

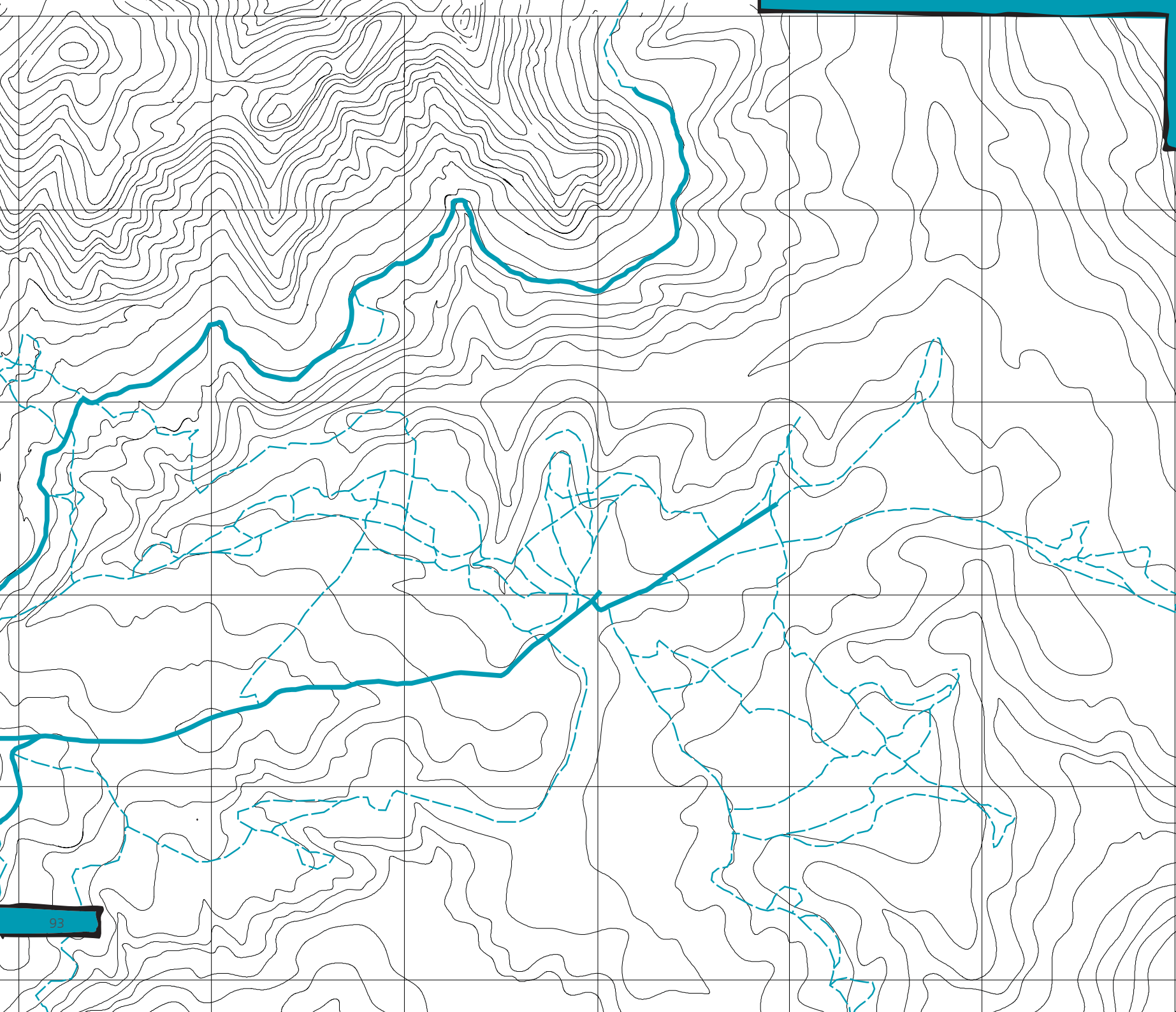
Due to lack of development, and hardship of access, the roads in the area are all gravel with limited water run-off. This causes excessive soil erosion in heavy rains, and muddy conditions during the wet season. All activities stem from the road itself, due to it the only connection to the 'outside' world.



Homesteads scattered around pathways

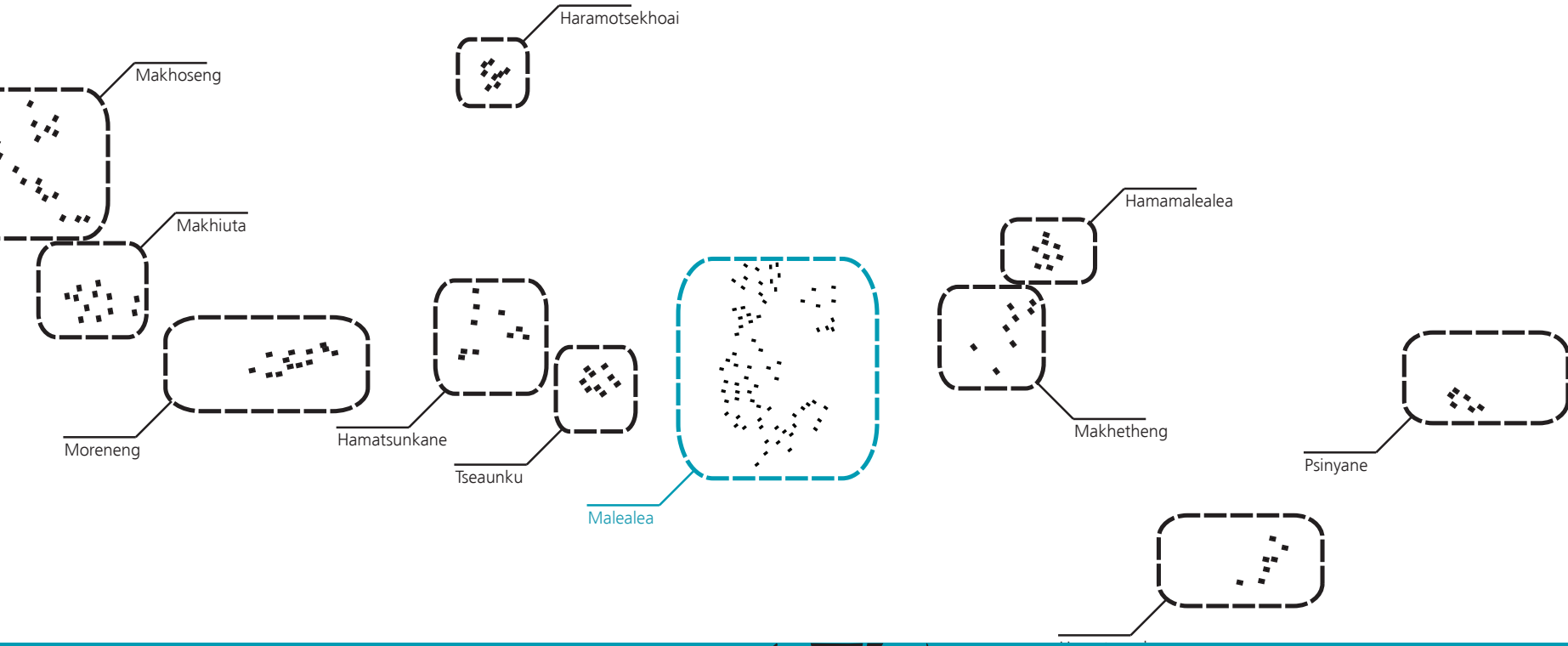
Secondary movement is followed through a set of pedestrian pathways. These are formed over time, and developed as the villages have changed in the area. The pathways are scattered in and around homesteads, with greater width and usage depending on the service, and topography.




93

Malealea Valley

Sekhutlong


Haramotsekhoai
Makhoseng
Makhiuta
Moreneng
Hamatsunkane
Tseaunku
Malealea
Hamamalealea
Makhetheng
Psinyane

so what?

the ‘distance’ school

The connection between the built fabric and the environment in which it sits, is vast in a rural setting

site analysi

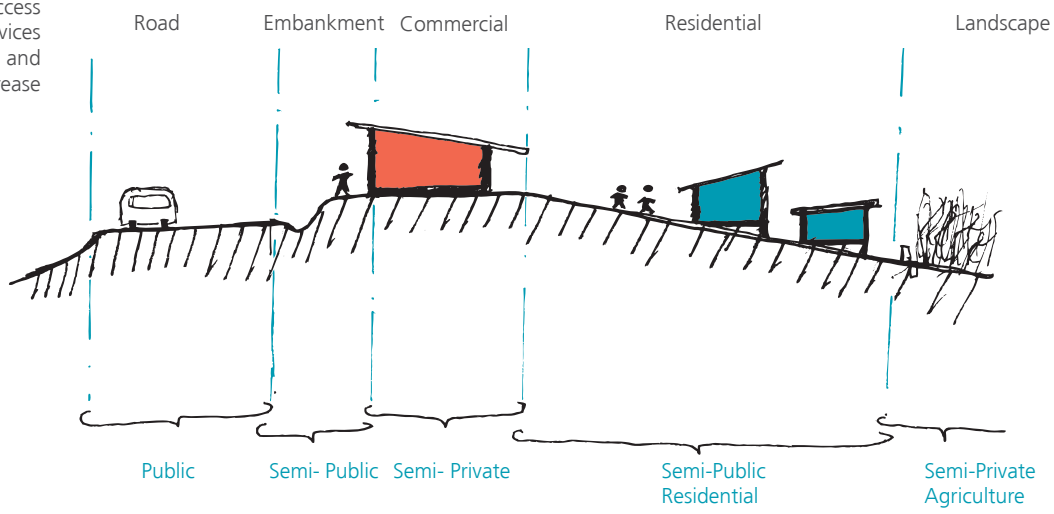
alternative transport

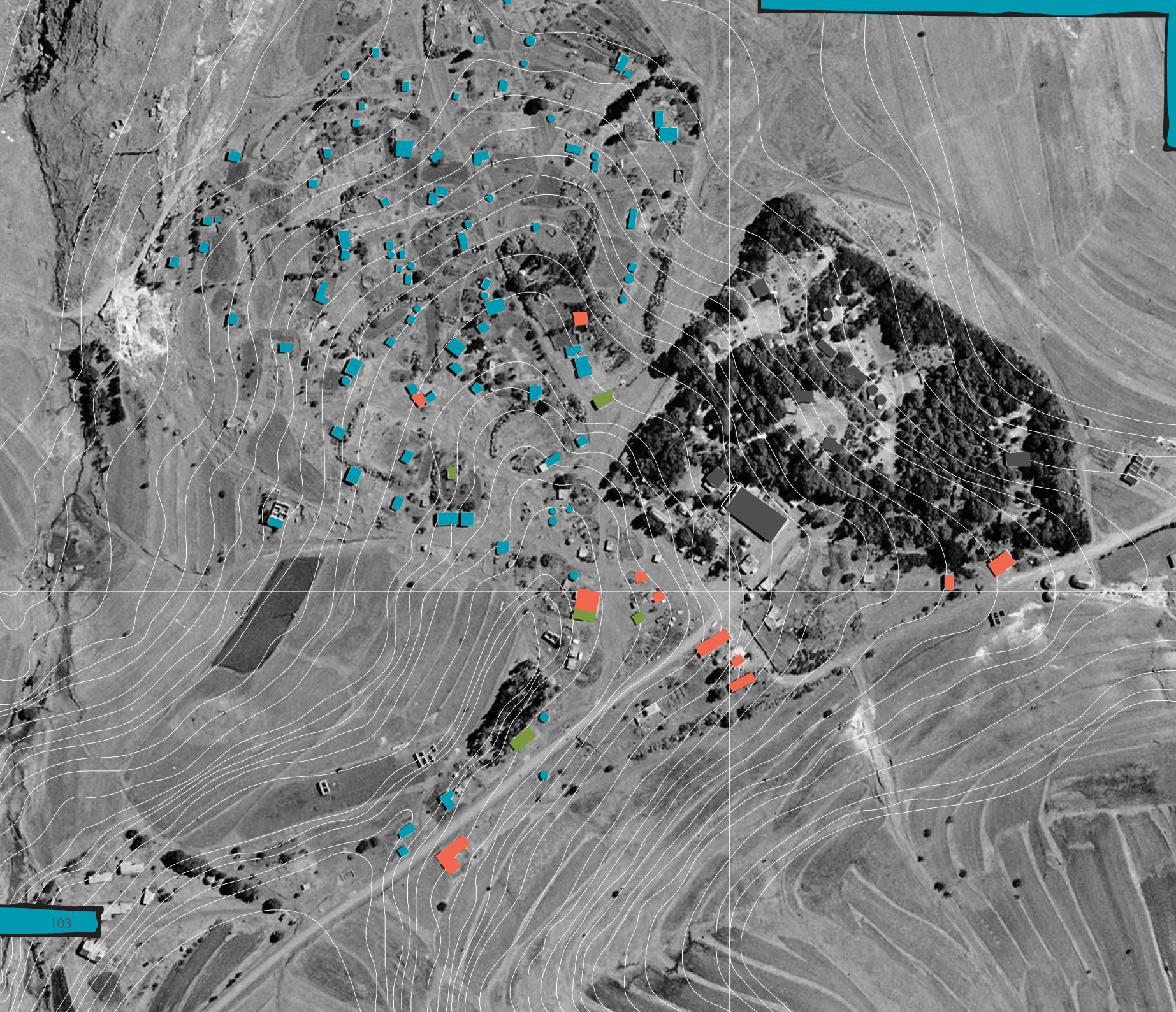
Due to the connection of the community to the foothills of the Central Escarpment, many relatives live or provide grazing to their livestock in the autumn months, hence, the heavy reliance on domestic animals for transport.

Urban Structure

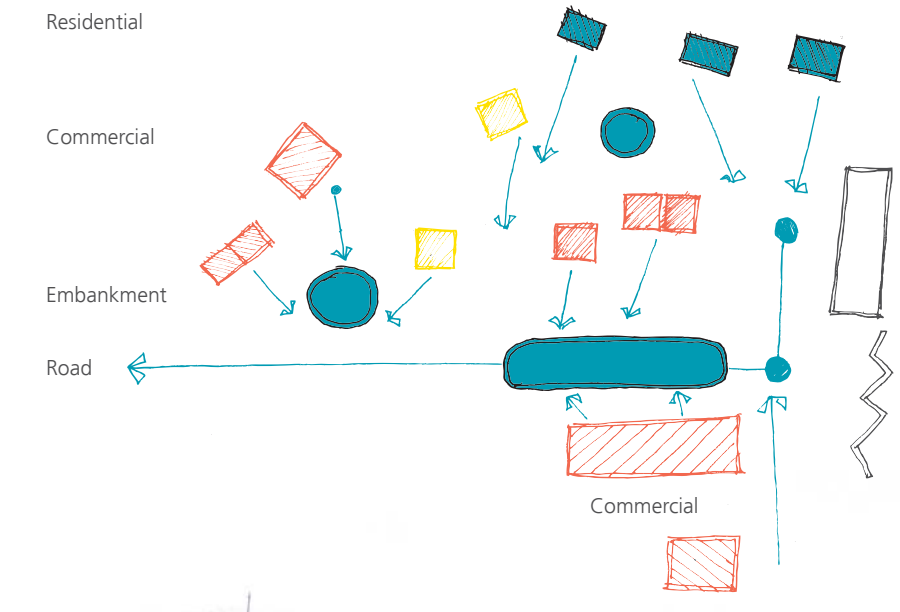
Residential
Commercial
Social

The urban structure is based around the proximity to the road, with the most access being given to commercial and services provision, and the scale of buildings and gradient to residential buildings decrease the further from the road.





Activity Fields



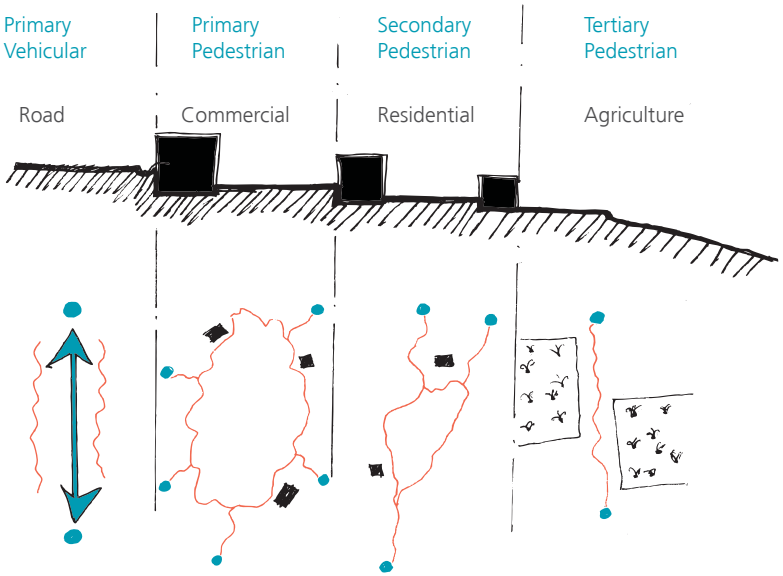
Enclosed Threshold

Open Threshold

The scale of open spaces relate to the function surrounding it. With larger spaces being filled with commercial and social establishments, smaller and tight spaces filter off the larger road side space, creating a gradient of hierarchy through the semi-urban village.

105

Routes



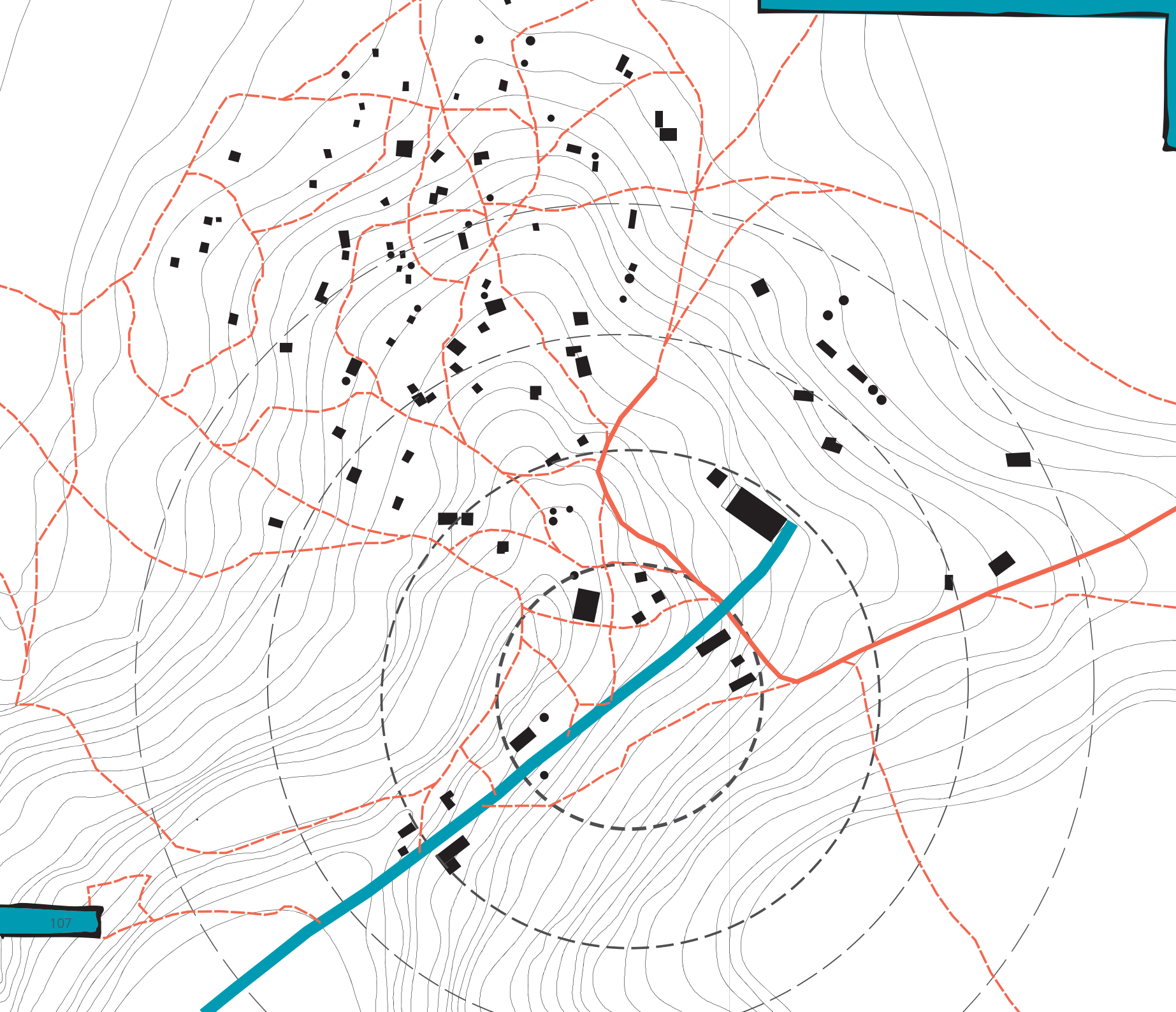
The Semi-urban environment allows for tight and lose spaces to exist, governed by the usage and function surrounding the space. While to linear road has small enclaves off it, these change between larger flatted ground surfaces and tight rural footpaths.

Direct Point to Point
Activity on Either side

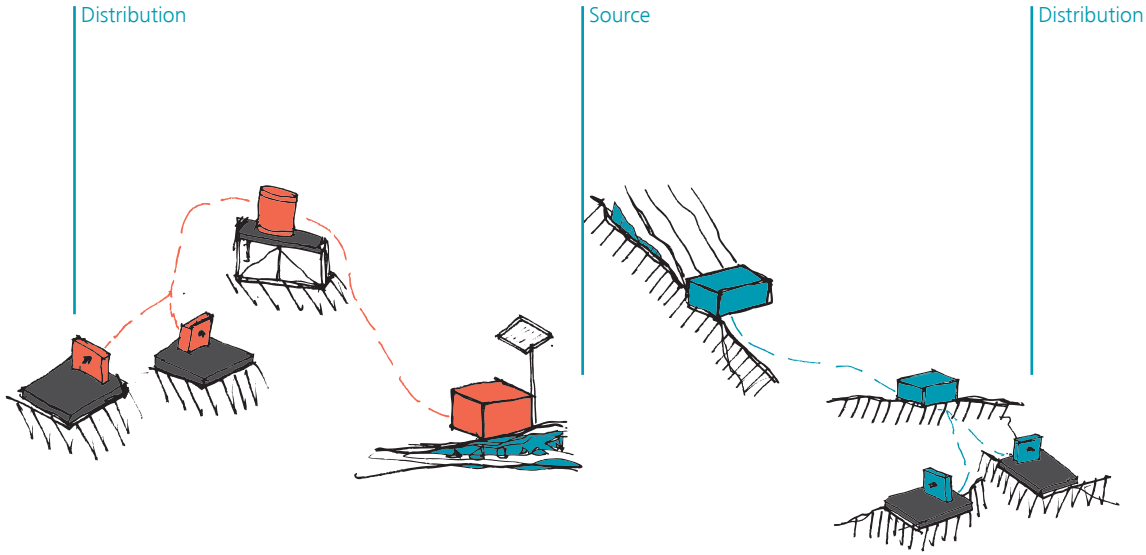
Indirect between points
Open areas caused by usage
Activity within

Direct Point to Point
Activity in Nodes

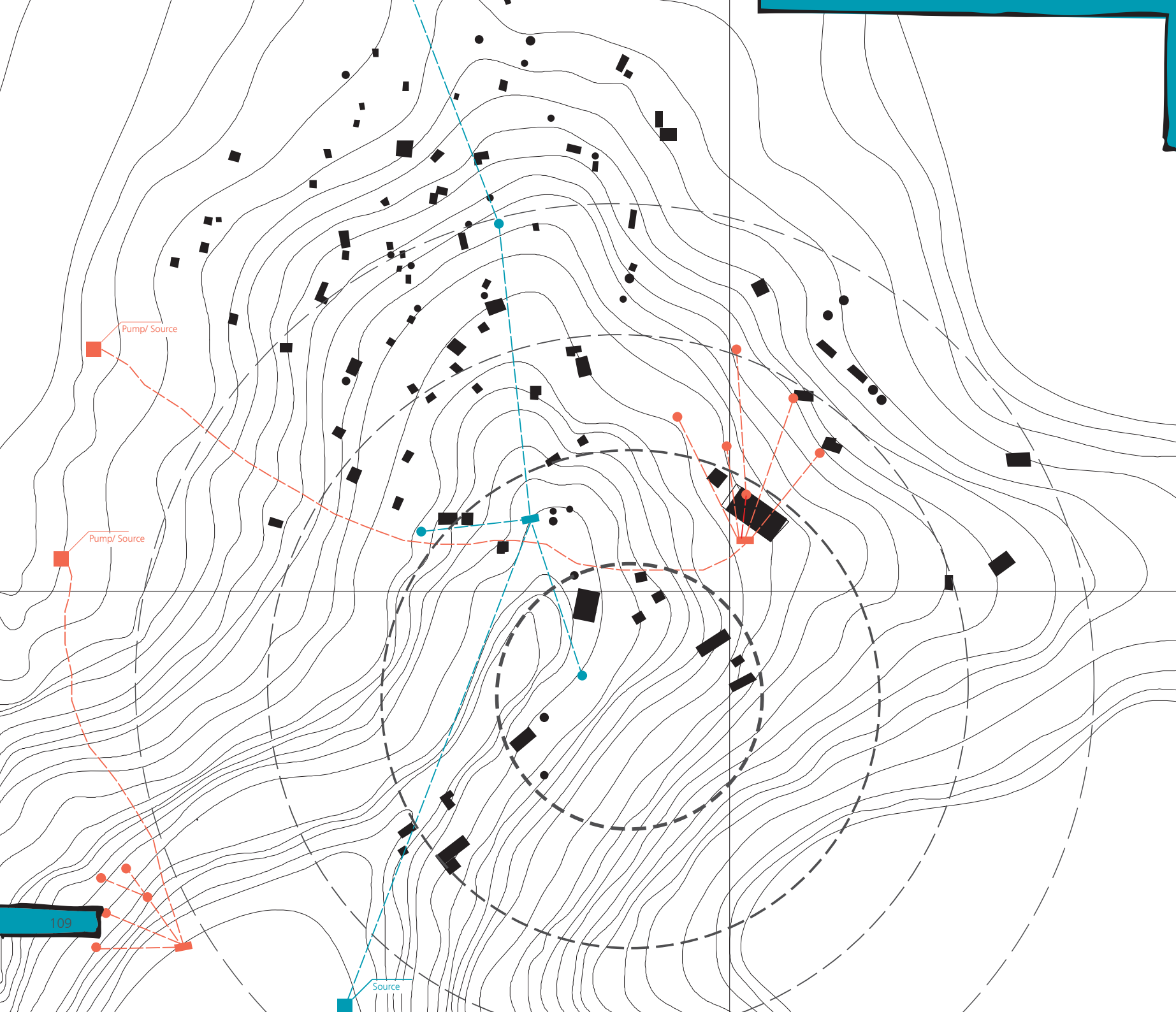
Direct Point to Point
Activity in Nodes


107

Water Distribution



Due to the steep topography, water collection is important to reduce the amount of travel distance to taps as much as possible. Due to the heavy rainfall, water is abundant most of the year, with the community water supply remaining flowing. The tourist lodge and the clinic have separate systems incase the governemnt system fails.

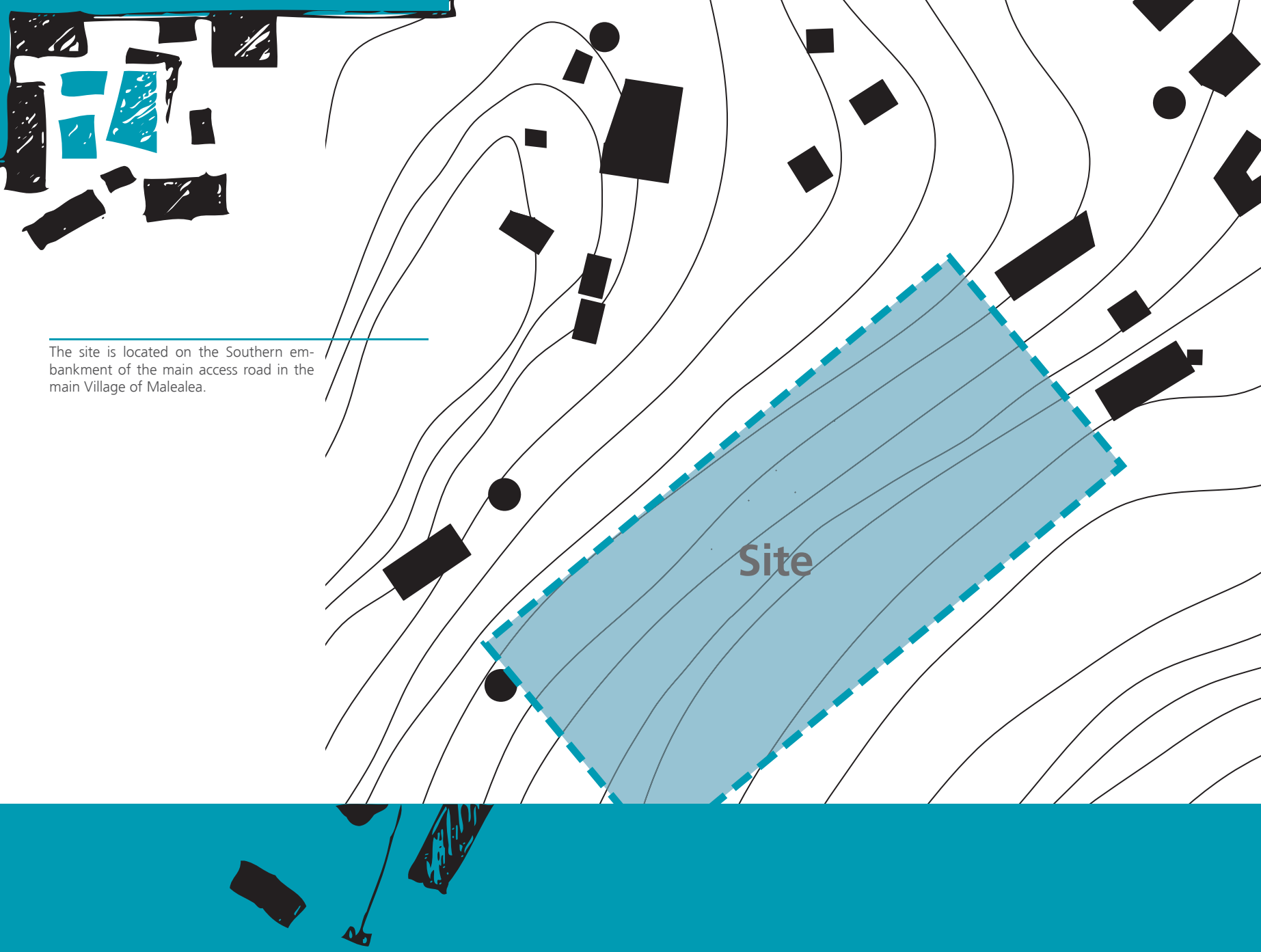

Pump/ Source
Pump/ Source
Source

site

The site is selected to the Southern side on the Malealea Village, in close proximity to the central commercial and social space.

Site

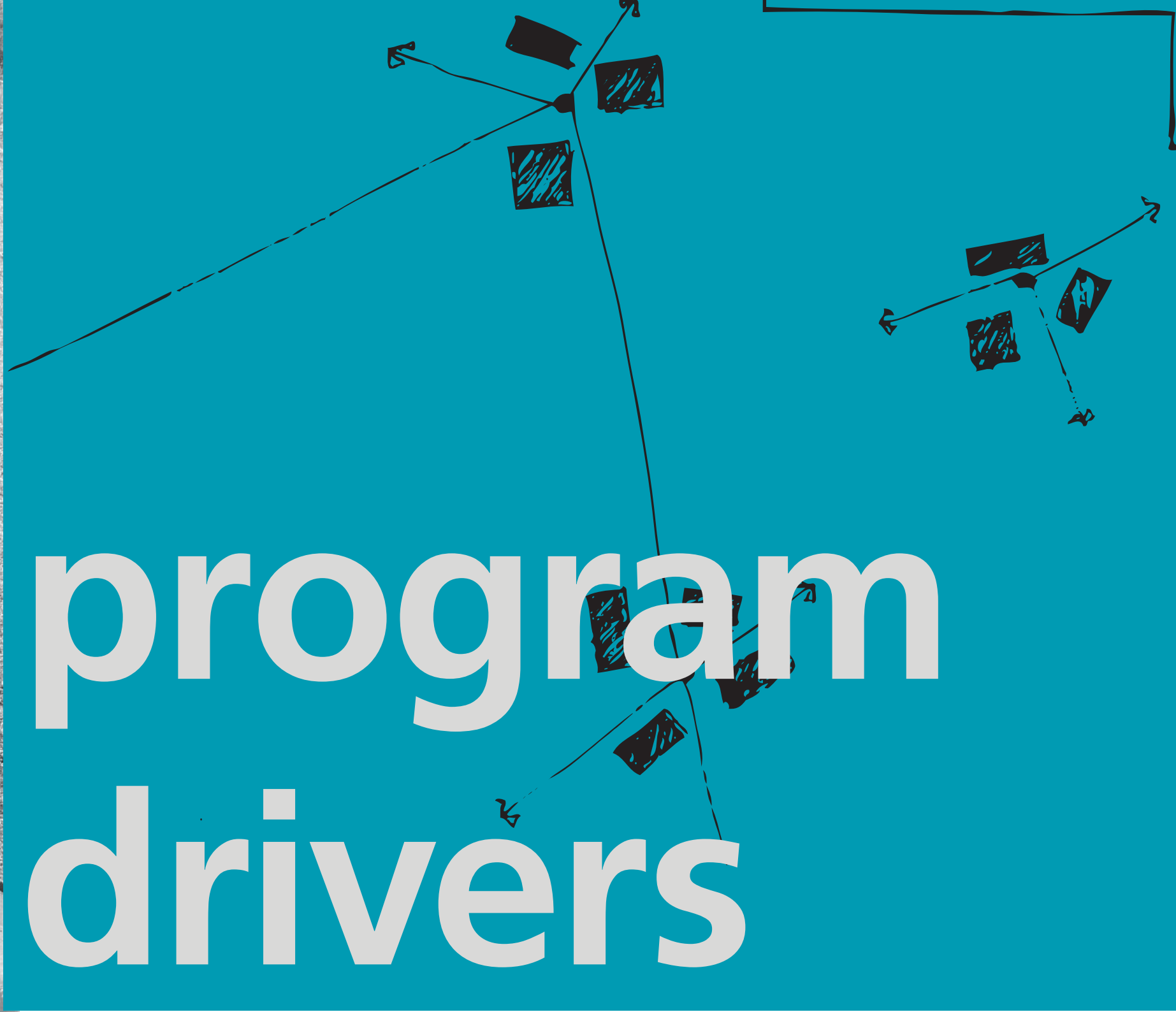
The site is located on the Southern embankment of the main access road in the main Village of Malealea.



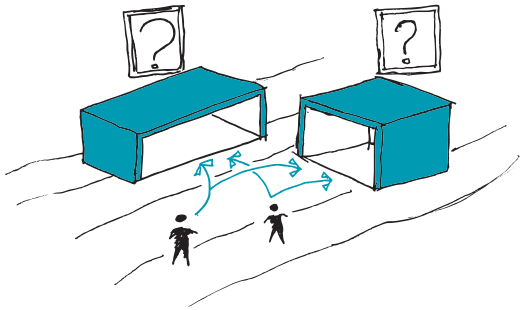
so what?

the ‘distance’ school

The connection between the built fabric and the environment in which it sits, is vast in a rural setting


program
drivers

Community Needs & Desires



The Program driver for the project are based on the community, their needs, and desires, of a new building to further promote and extend local deveolpment. The community was interviewed both in Malealea, and in the perihery, to get an understanding of the developing agents to be contained with in the building.

The large majority of the community, both in semi-urban and rural environment, expressed a need for a hight school extending beyond the current, a new clinic better situated, and an area of community hall and market place, all creating the Rural 'Exchange'.

'Hard' Services

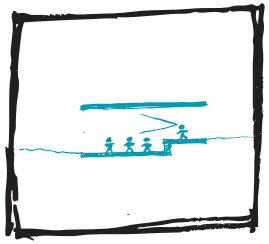
	%/ of Total	%/ of Total	
Community Centre/ Market	35%	30%	Priority Functions
High School	25%	30%	Priority Functions
Clinic	20%	20%	Secondary Functions
Road Improvements	10%	10%	Secondary Functions
Electricity/ Water Distribution	10%	10%	Secondary Functions

'Soft' Services

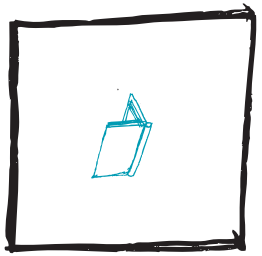
	%/ of Total	%/ of Total	
Skills Development/ Education	35%	30%	Priority Functions
Community Upliftment	25%	30%	Priority Functions
Job Opportunities	20%	20%	Secondary Functions
Development Drivers	10%	10%	Secondary Functions
Political Direction	10%	10%	Secondary Functions

Community Needs & Desires

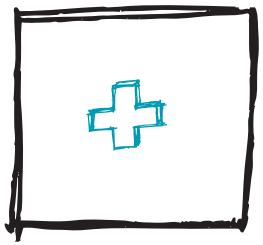
'Hard' Services



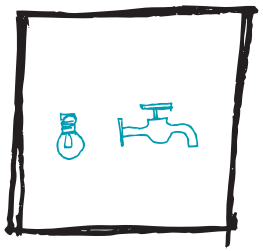
Community Centre/ Market



High School



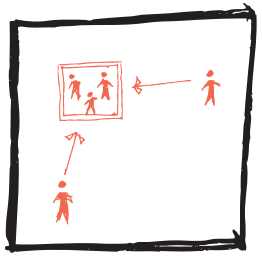
Clinic



Electricity/ Water Distribution

'Soft' Services

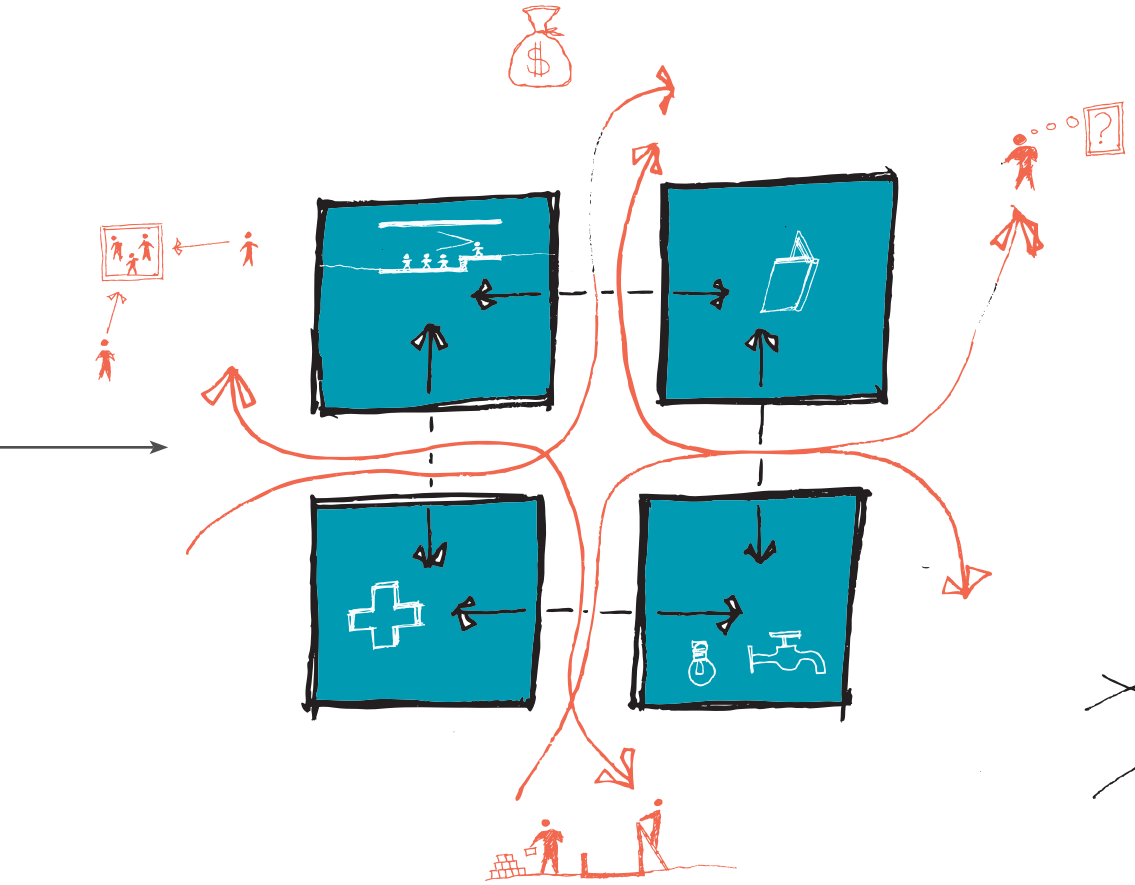
Skills Development/ Education



Community Upliftment

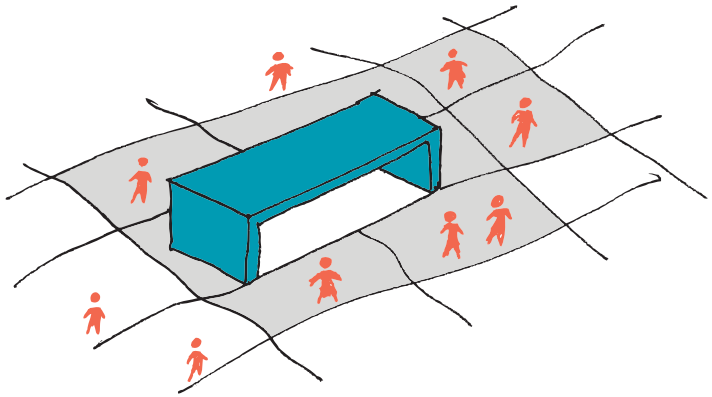
Job Opportunities

Development Drivers



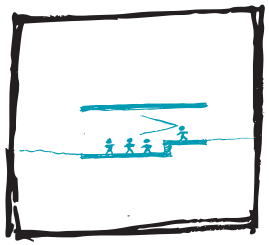
Combining both the 'Hard' and 'Soft' services into one form with multiple functions, is in what the thesis is exploring.

The program developed through the community interaction and conversations led to the programmatic diagram below, whereby the building as a physical form, but also multiple service provider, allowing a fully 'exchange' of program, facilities and connection.



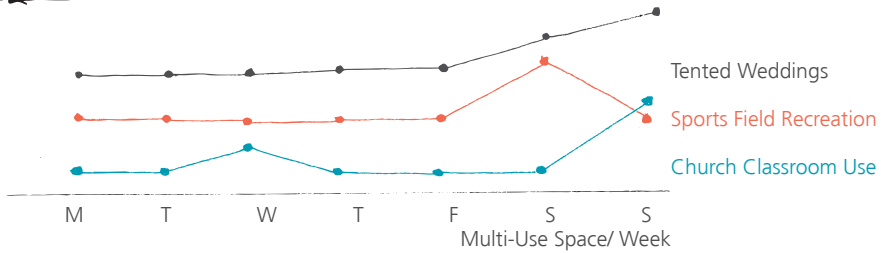
dis-used church

This church had been abandoned due to it long distance from the large population of users, hence, even in a sparse rural environment, it is still location of civil buildings is still vital.

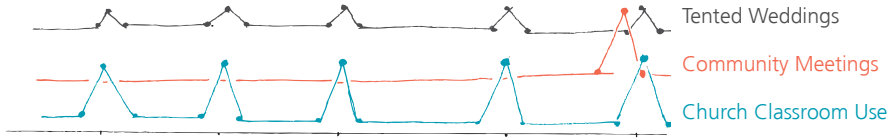


Community Markets & Hubs

The community need for an area of community function and gathering is apparent. The current usage of building for the community is based on available space for that function, and not proximity, proving a community area is required functioning all relevant activities.

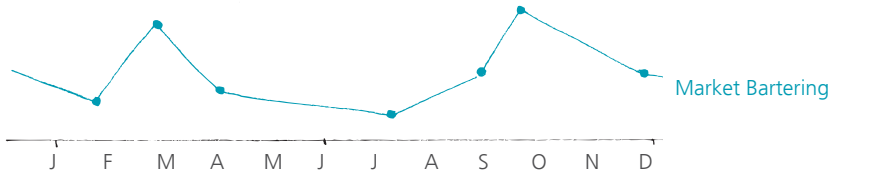


Multi-Use Space/ Week

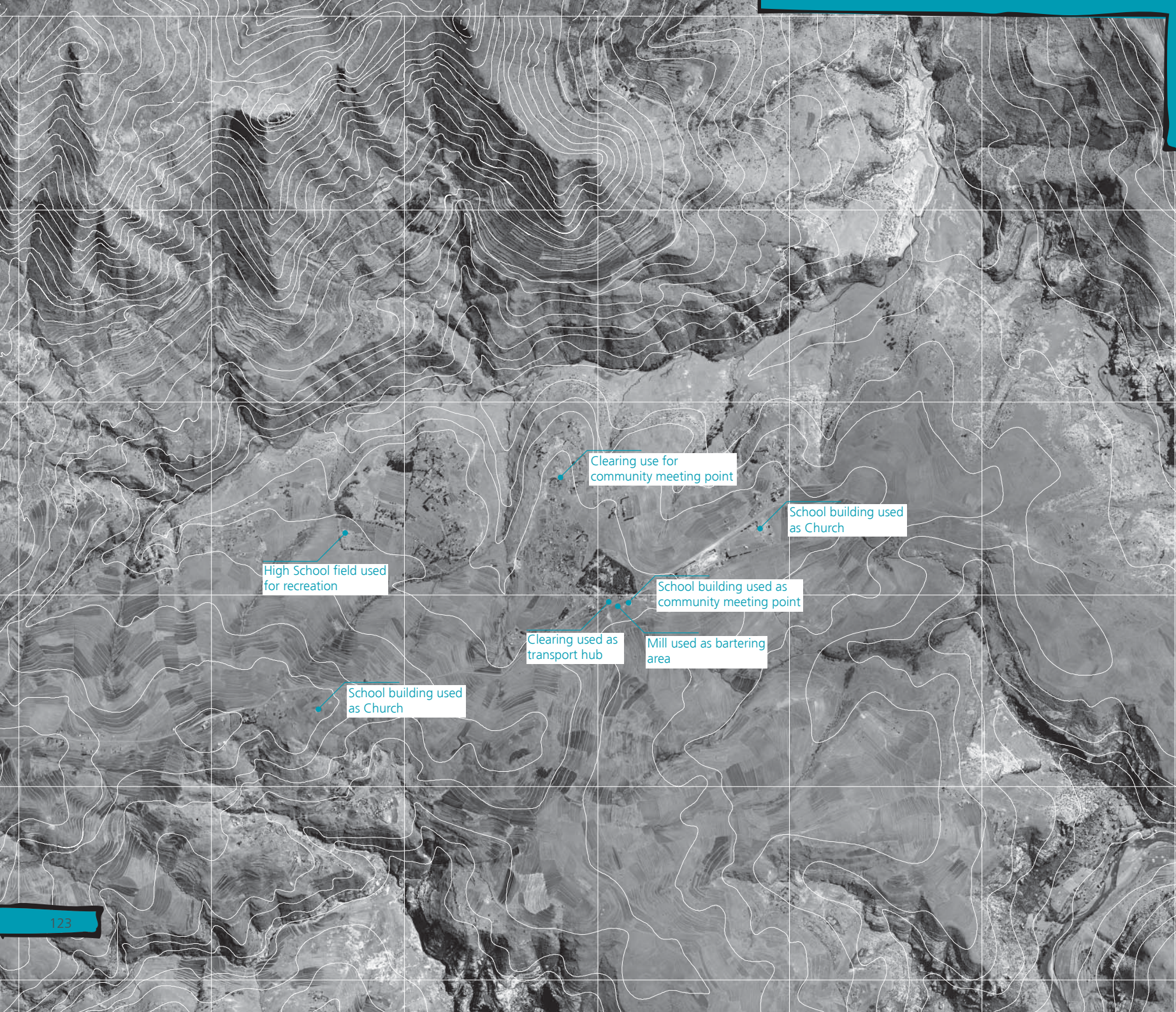


Multi-Use Space/ Month

Though the 'exchange' of agricultural products and by-products is a seasonal affair, the community still expressed a need for an area to be located for it.



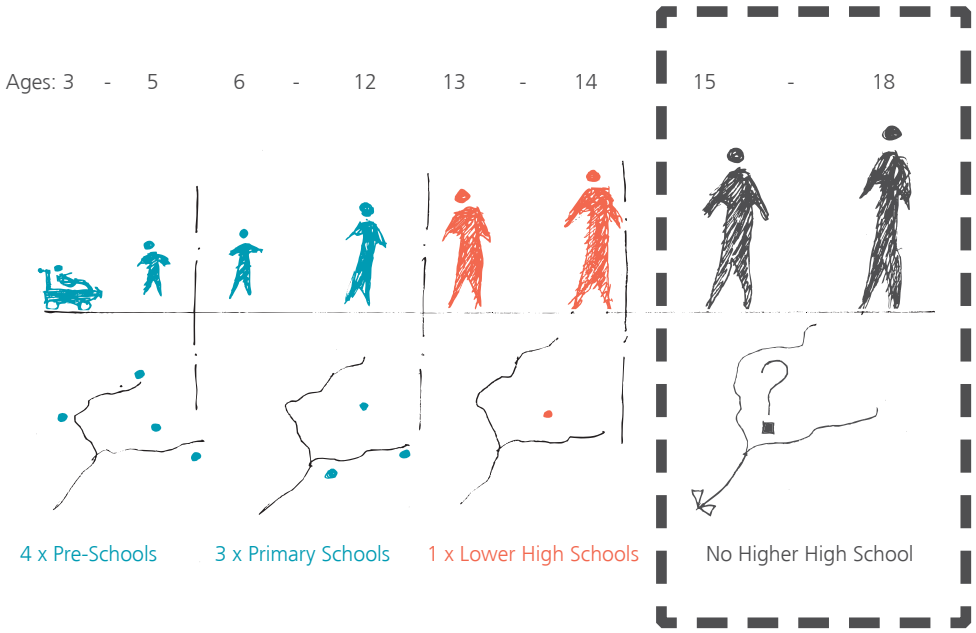
Intra-community Bartering / Year

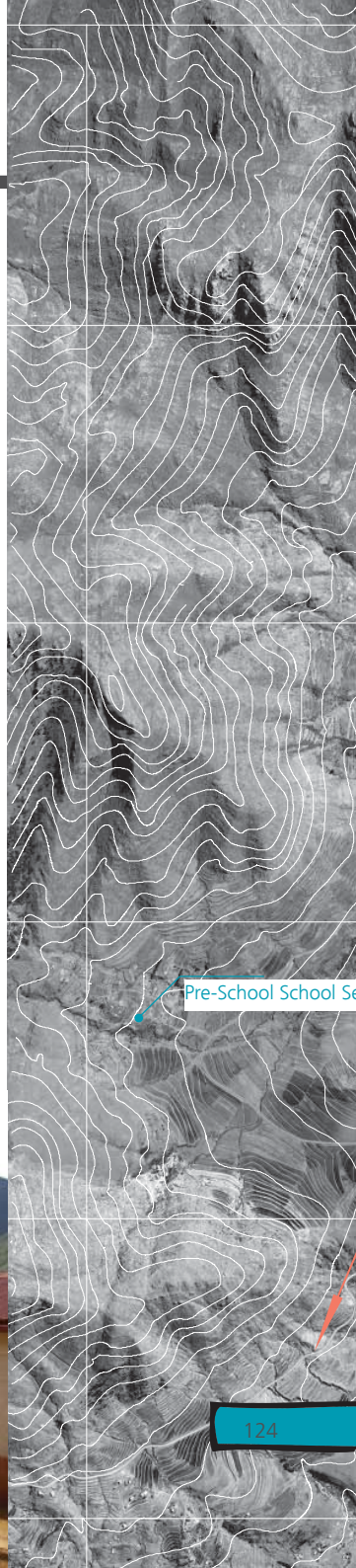

Clearing use for community meeting point
School building used as Church
High School field used for recreation
School building used as community meeting point
Clearing used as transport hub
Mill used as bartering area
School building used as Church

Schools

The community expressed need for a higher high school. The current high school only extends to Grade 9, whereby the pupils must attend the next closest one located 10km away, or not continue with their education.

Including the school into the program acts as the ground on which all other functions are laid. The school with its regular hours, large spaces, and consistent systems, needs that it becomes an anchor, providing a easy system on which more lose elements can branch from.

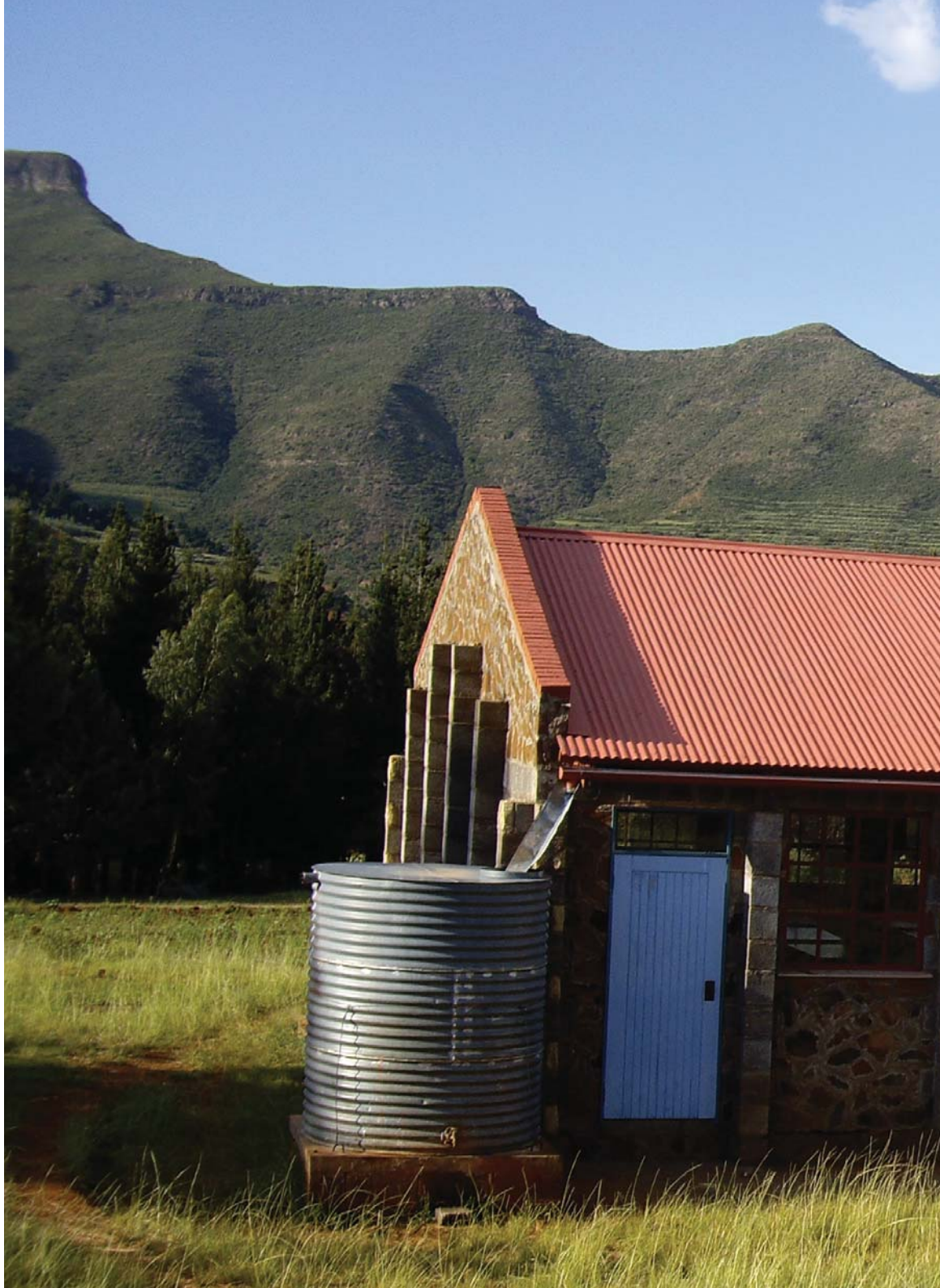




Pre-School
Haramotsekhoai
Primary School 1
Primary School 3
High School 1
Pre-School
Tseaunku
Pre-School
Malealea
ekhutlong
Primary School 2
Ha Seeiko High School 10km

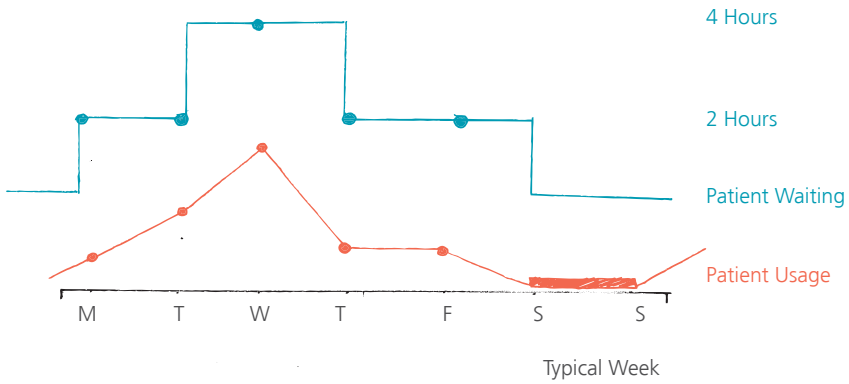
the lower high school

The last built addition to the school was the science building, with a enterprising materiality usage of commonly found rock and cheap concrete block technology.



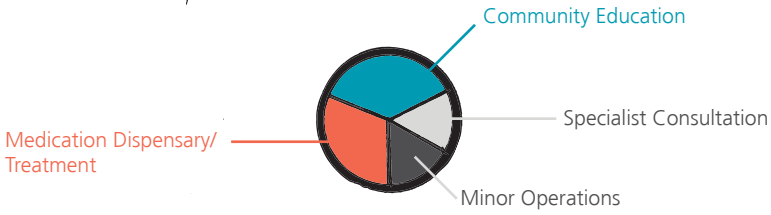
Clinic

The community expressed need for the clinic to be re-novated, and another one built. This was due to the building being dilapidated and not providing space for the visiting patients. Also, in conversation to the medical staff the need for a minor surgery room was strong.

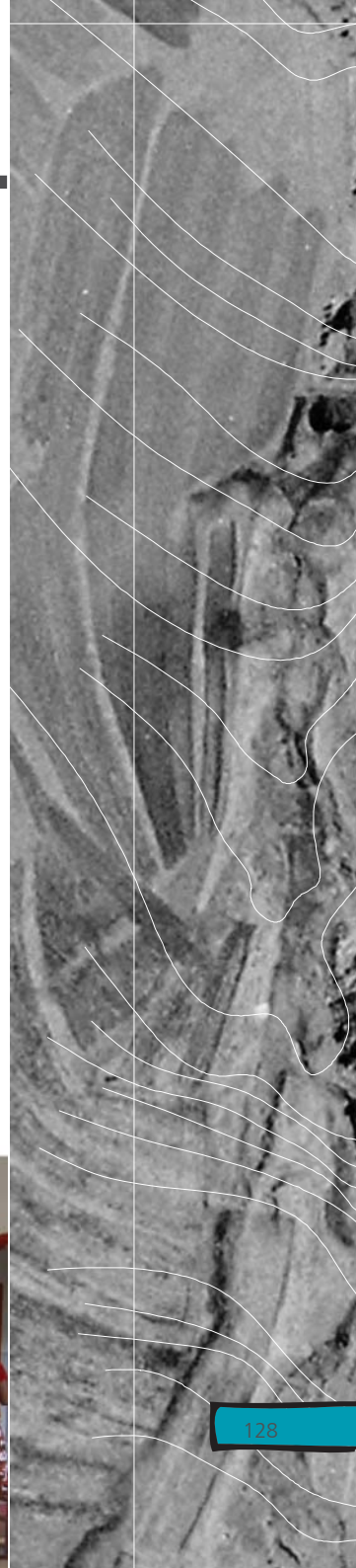


Typical Week

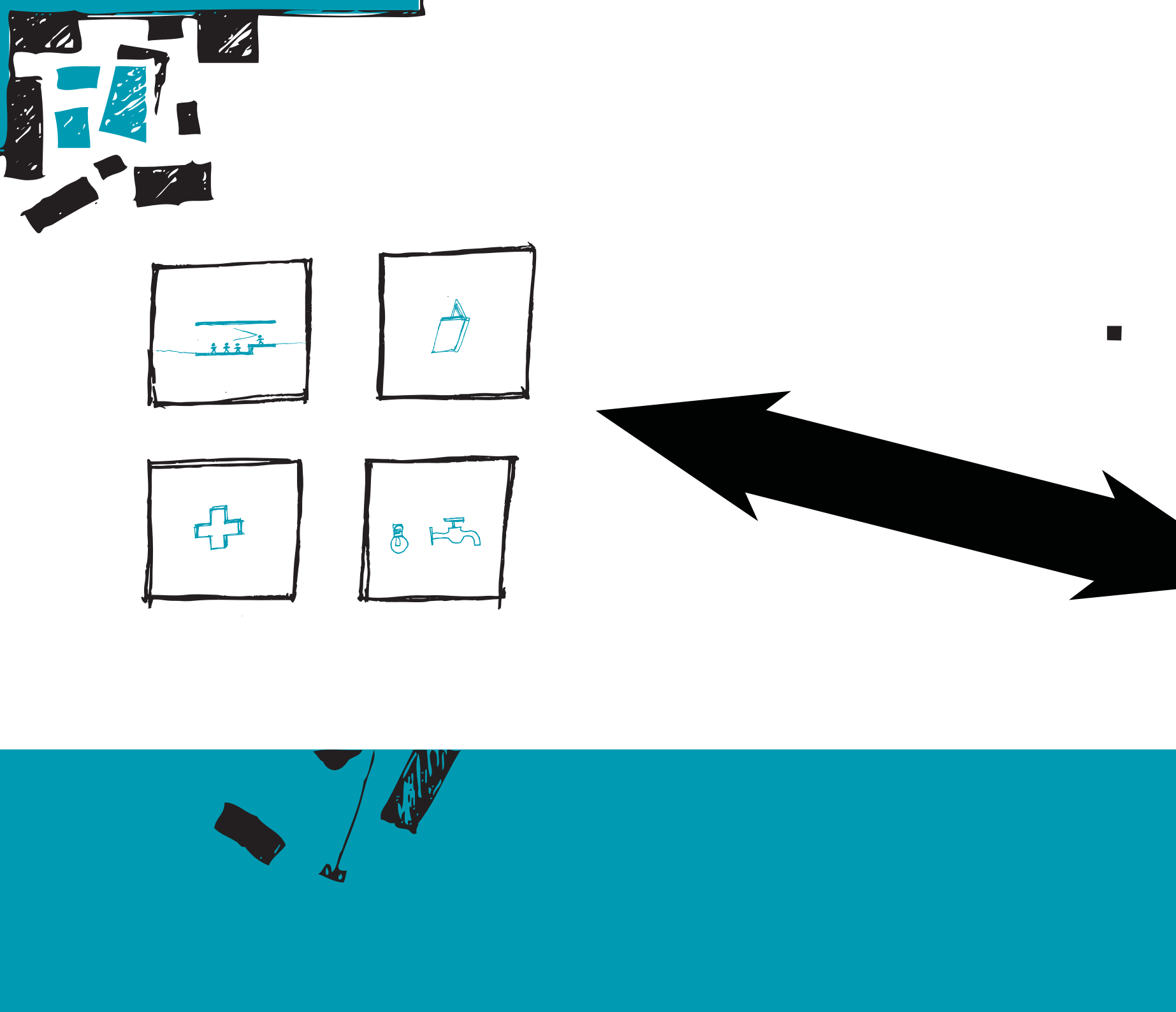
The programatic use of the clinic in conjunction with the school and community space, allows for the influence of the older generations, sick and the needy to connect with the younger, furthering the 'exchange' concept. Also functions and facalities can be shared do to the shared nature of the facailities.



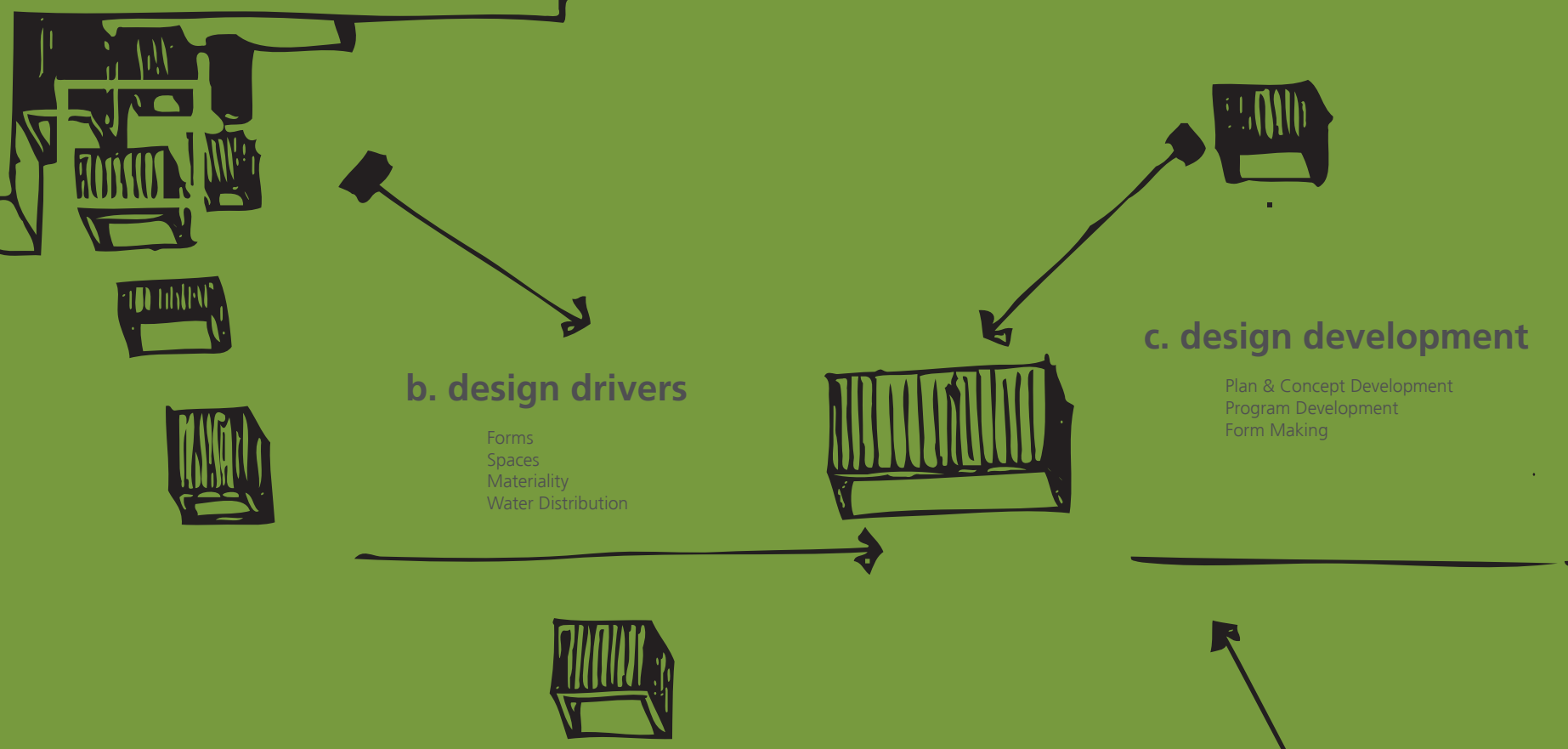
Typical Week



Staff Residences
Main Entrance
Multi-Use Building
Main Clinic Building



so what?



a. concept design

Program
Space
Integration
Application

b. design drivers

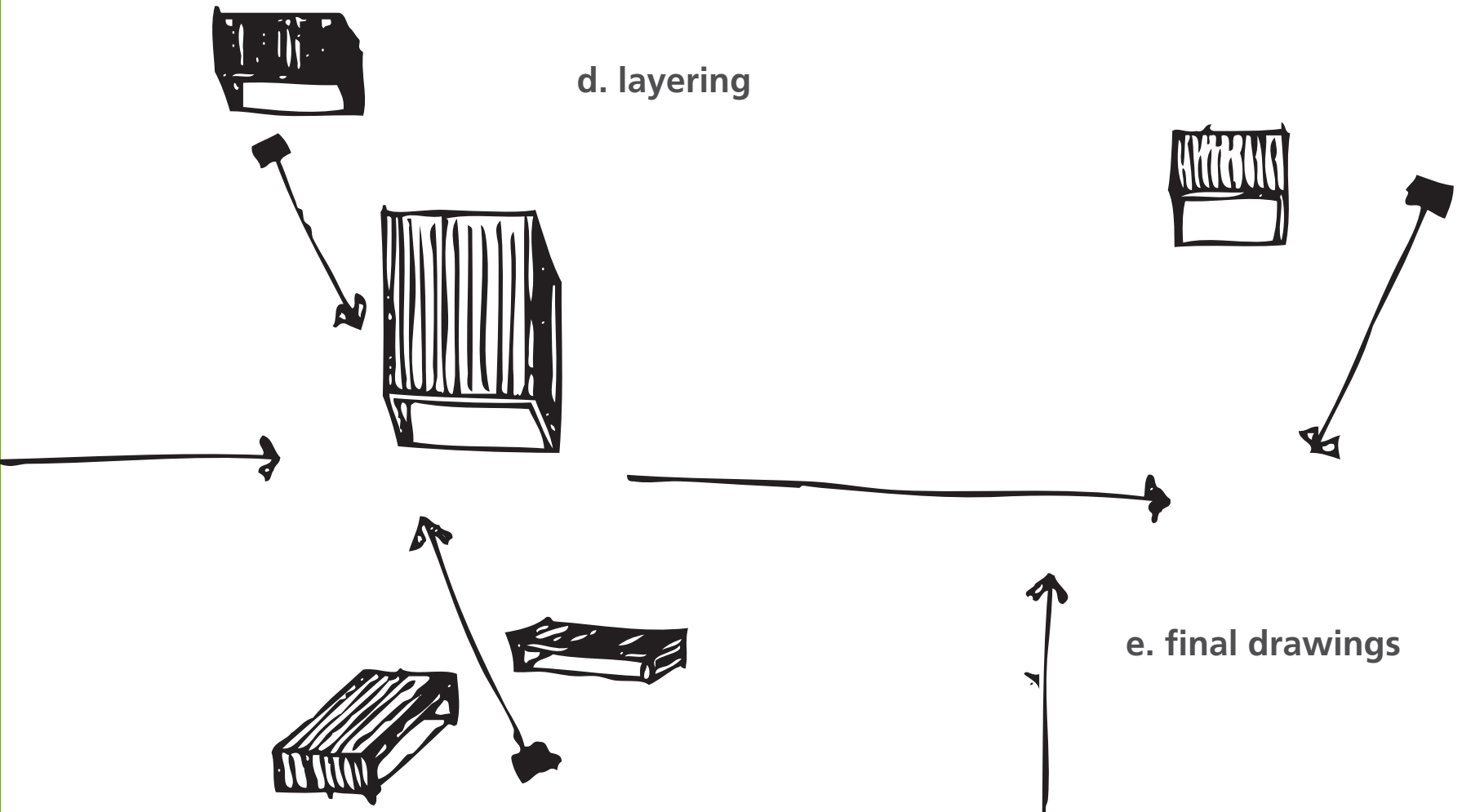
Forms
Spaces
Materiality
Water Distribution

c. design development

Plan & Concept Development
Program Development
Form Making

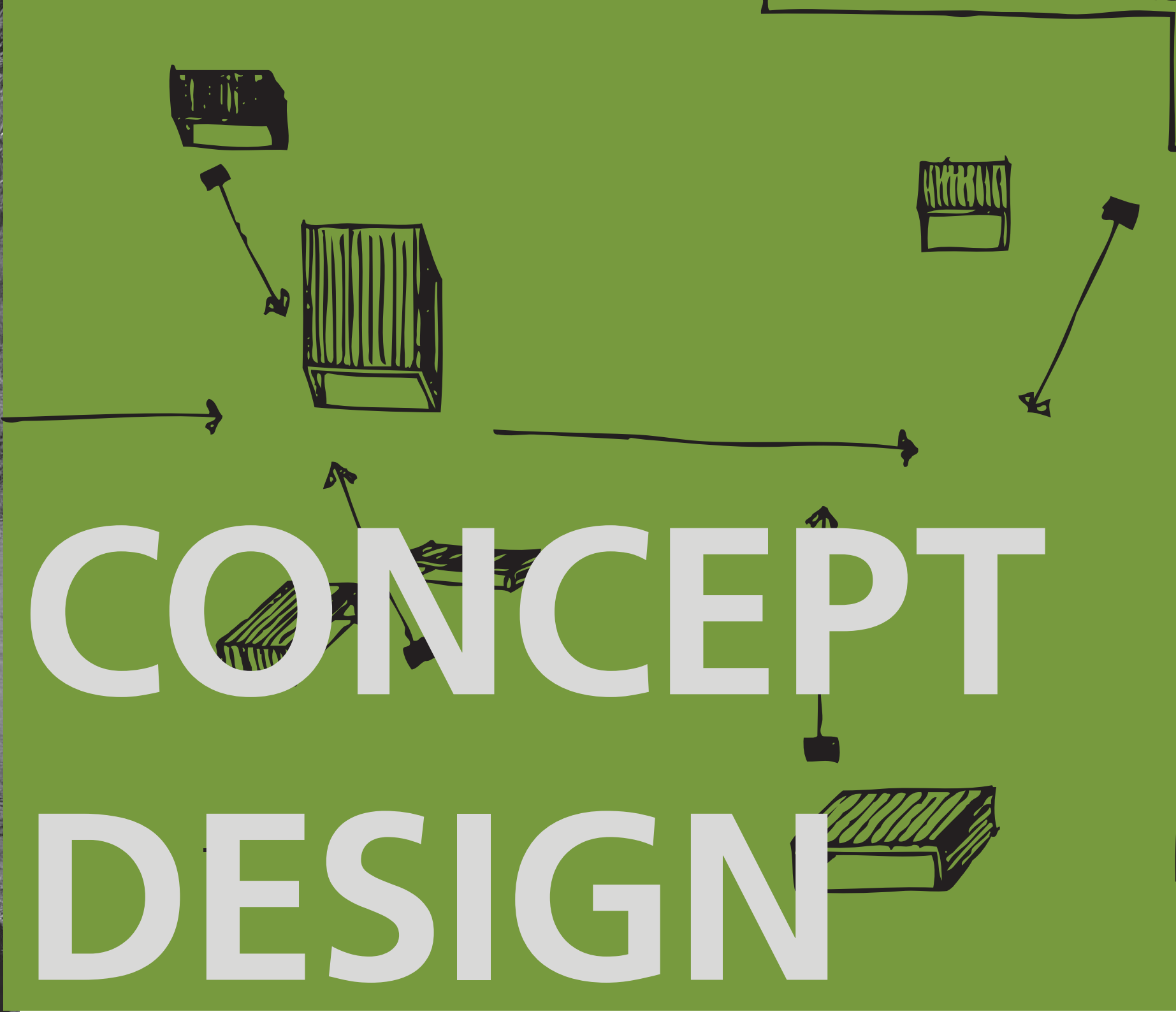
DES

d. layering



e. final drawings

IGN

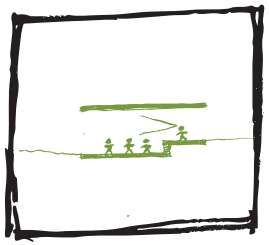

CONCEPT
DESIGN

Thresholds of Space

Combining multiple different functions with different privacy levels, means that a series of threshold must be in place to set the the levels of interaction between functions and 'exchanges'. The most important is the Public space, the main connection between building and context.

Public Space

Community Hall/ Market

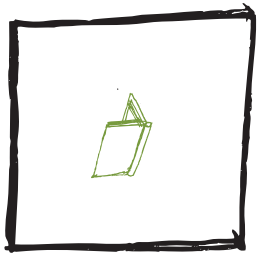


Covered Hall 500m2
Un-covered Area 200m2

of Total Public Space 90%

of Total Community Space 81%

School

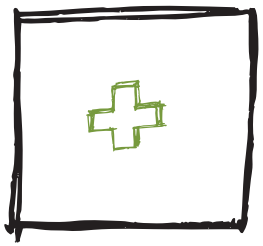


Entrance 20m2
Reception 20m2

of Total Public Space 5%

of Total School Space 5%

Clinic



Entrance 20m2
Reception 20m2

of Total Public Space 5%

of Total Clinic Space 14%

Semi-Public Space

The Semi-Public space in the bilding is the main threshold in which most function operate in or around. The gradient between open-closed, tight-loose is all separeted by the Semi-Public space.

Stage Area 50m2
Prop/ Storage 40m2

of Total Semi-Public Space 09%

of Total Community Space 10%

Records 10m2

Class Room 80m2
Class Room 80m2
Class Room 80m2
Class Room 80m2
Class Room 80m2
Class Room 80m2
Library 200m2

of Total Semi-Public Space 71%

of Total School Space 83%

Records 10m2

Consultation Room 30m2
Consultation Room 30m2
Consultation Room 30m2

Minor Surgery 50m2

Clean Utility 10m2
Dirty Utility 10m2

Landry Room 20m2

of Total Semi-Public Space 20%

of Total Clinic Space 67%

Private Space

The private space is in which the core functions of the building takes place. These small spaces are closely controlled by the two previous thresholds, and the last placement in the gradient.

Plant/ MEP 10m2
WC Facilities 60m2

of Total Private Space 31%

of Total Community Space 08%

Office 10m2
Staff Room 20m2

Plant/ MEP 10m2
WC Facilities 60m2

of Total Private Space 44%

of Total School Space 12%

Office 10m2
Break Room 20m2

Plant/ MEP 10m2

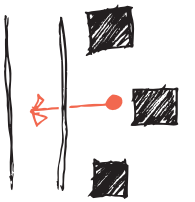
Drug Storage 10m2

Cold Storage 5m2

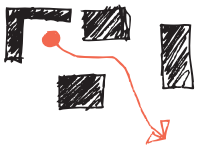
of Total Private Space 24%

of Total Clinic Space 19%

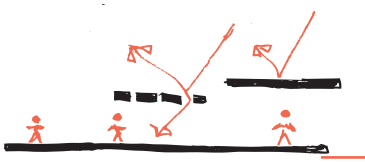
Public Space



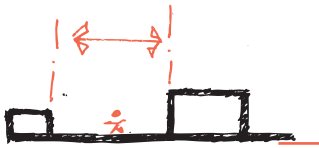
The public space should have strong connection to the street edge, as it is the main artery the context, and further. Due to the site being adjacent to the road, the connections to it are periodical, and must be acknowledged so.



The public space needs to have connection with the context in its surrounds, with clear and open vistas and direction.



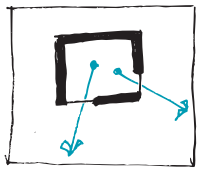
The public space is controlled by various means of encloseure and transparency, allowing influences and connections to partake, depening on the level of openess. These spaces are also flexible in that they can be moved/ shifted in changing function of weather.



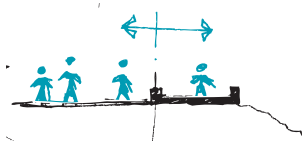
The scale of public space is important to allow correct hiernchy through the gradient of the building

Semi-Public Space

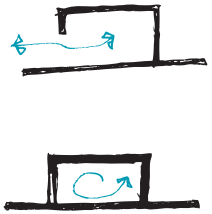
The semi-public space acts as the threshold between public and private, allow both of the functions to interact or be separated.



The enclosure of semi-public space allows connection to the public or private space, depending on the heaviness of form.

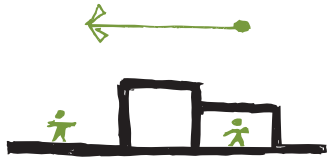


The threshold between public and semi-public is a small diffirence in architectural planning, such as a wall or level change, but still allows visual connections



The semi-public space can be easily opened out to form public space, or closed in to form private space. This duality allows for multi-usage and flexibility.

Private Space



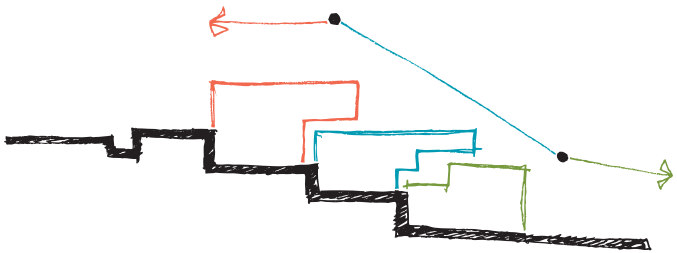
The private space is the tightest function within the gradient of public to private thresholds.

While the most private of spaces, there are still visual connections to other spaces, but with sensitive and pronounced forms and voids.

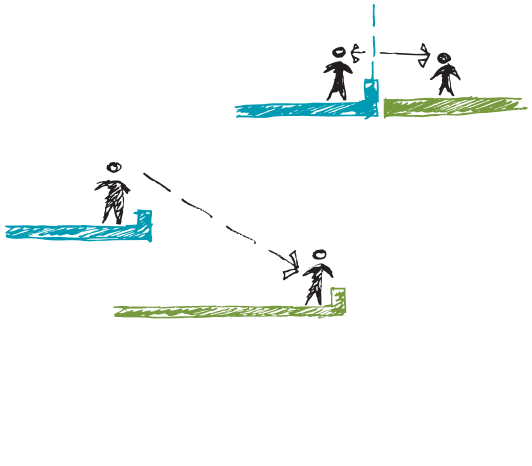
The private space has the most buffering to the noise and commotion from its environment.

Private space has the least flexibility to the form in sustains, and the most shelter form the elements.

Design Principles

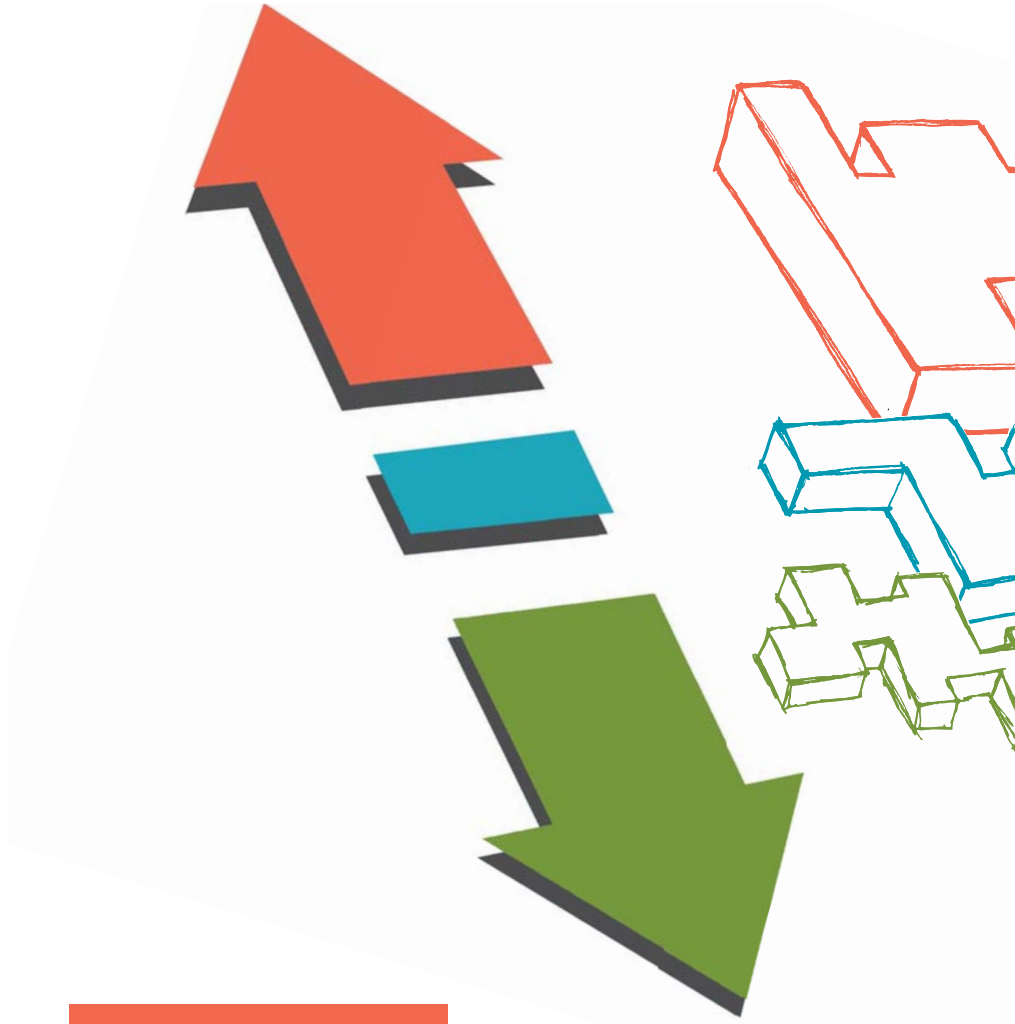


1 Setting up the concept of stacking the public to private forms from the road Southwards, away from the activity point to the quiet.



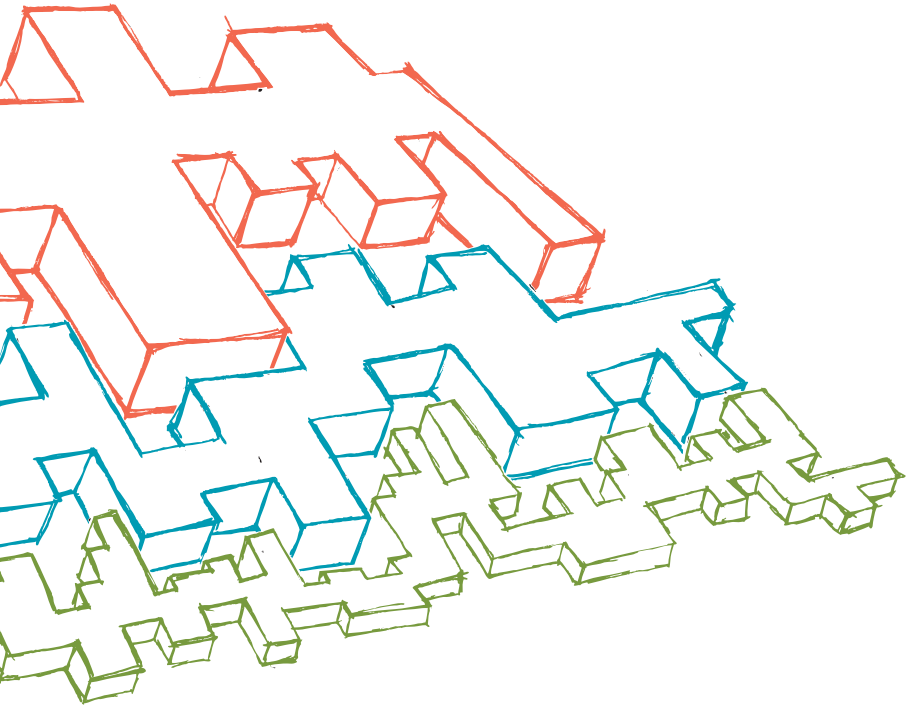
2 The setting up of thresholds, that transpire the architectural forms, but still maintains visual connections

Public Space

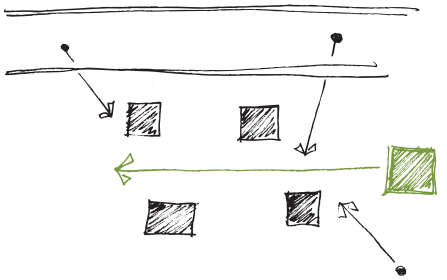


Semi-Public Space

Private Space

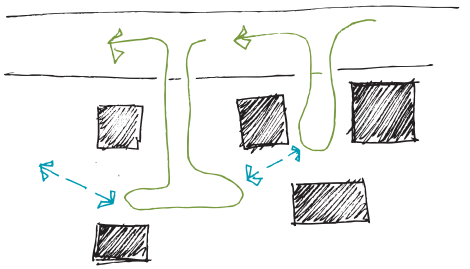


Public Space

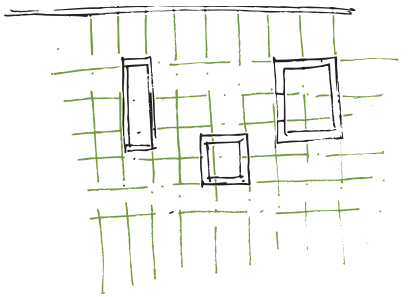


3 Creating a starting point against the Northern end of the site, from which the building can grow from.

5 Creating non-building, as floor, enclosure and roofing as different layers, additive or subtractive depending of function and time-frame.



4 Creating enclosures of public and semi-public space.



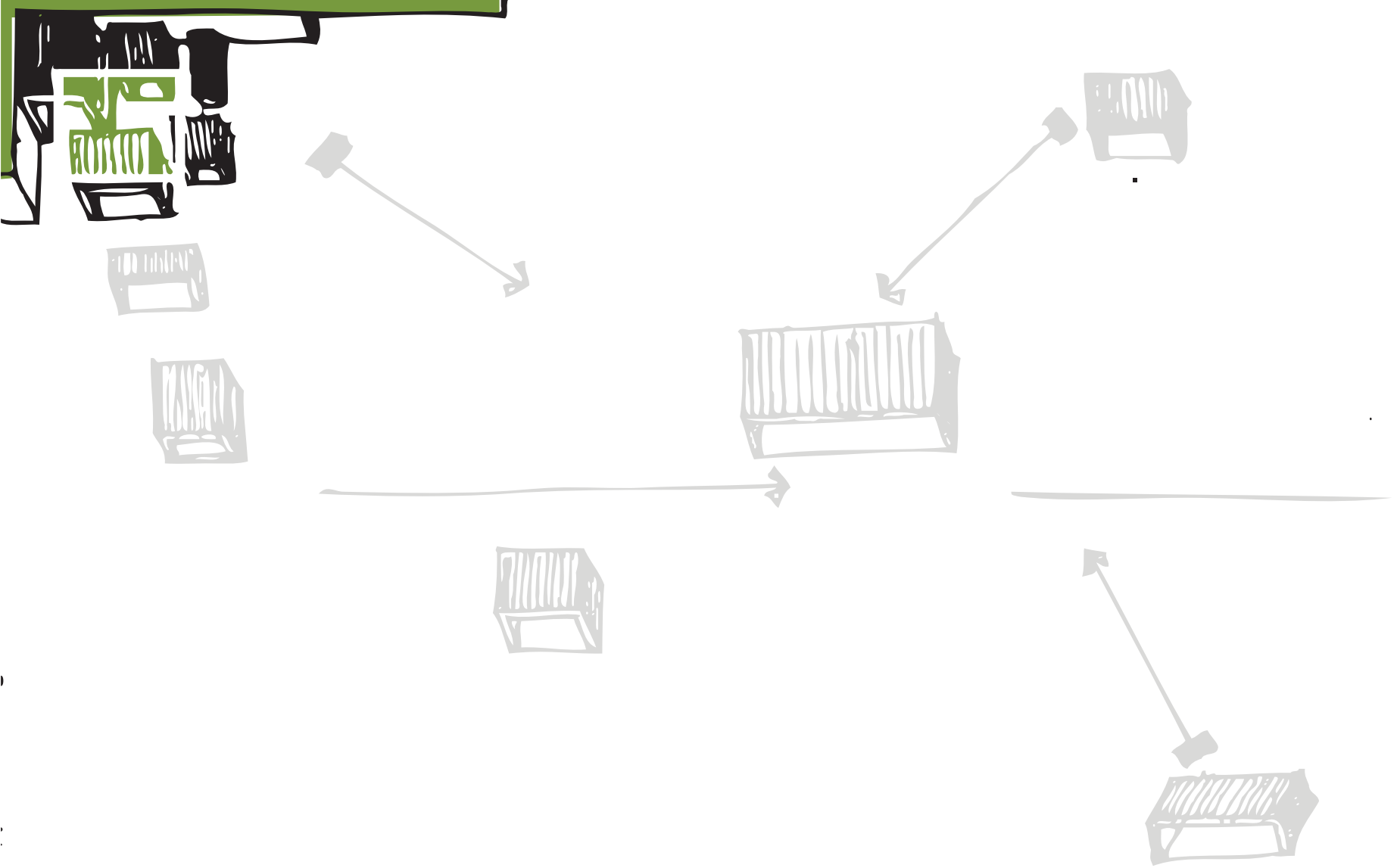
6 Applying a grid to the site, from where further development can grow and proceed from.

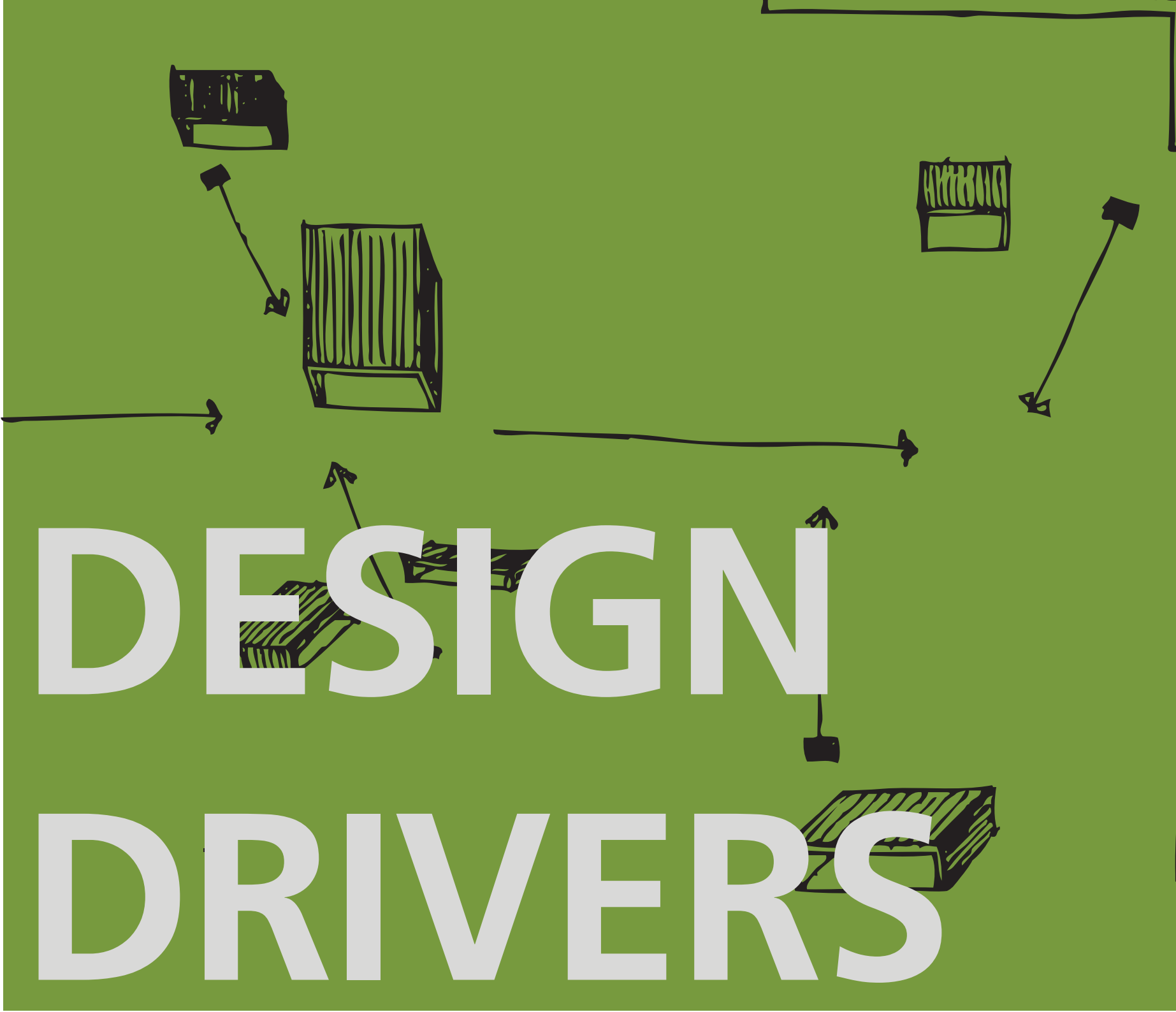
Semi-Public Space

Private Space

Using the North East edge of the site from which the building grows from, with public interface adjacent to the road, which reverberates between entering spaces for looseness or closing space down.

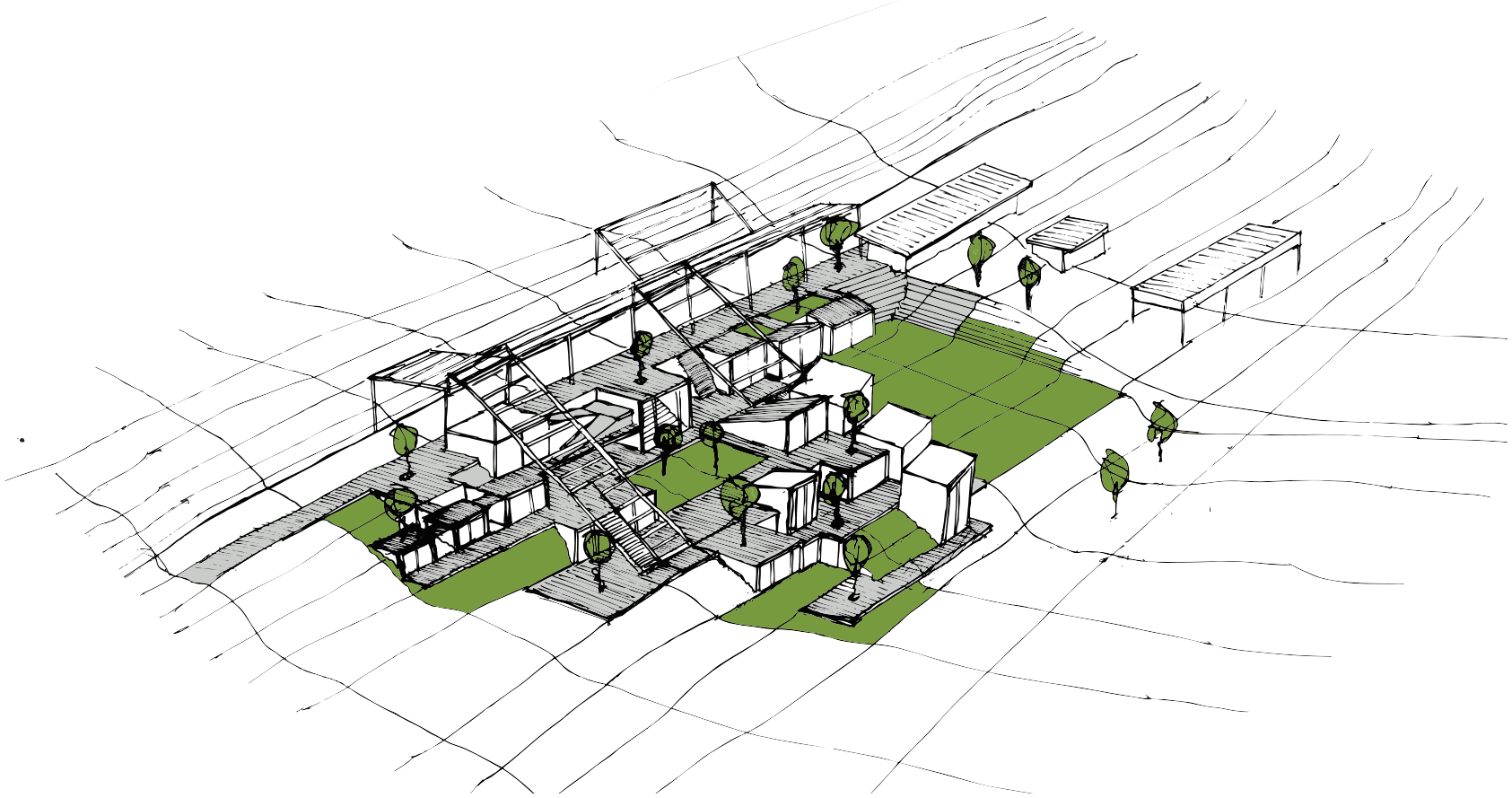
providing for the ‘everybody’





DESIGN DRIVERS

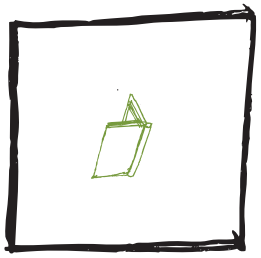
Developing Form

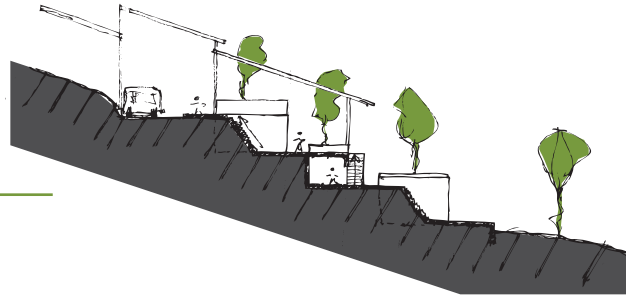


Creating building form by a series of steps and spacial connections through the gradient of the site. These provide visual connections, multi-use space and complete 'exchange' between personalities of users.

Spaces Required

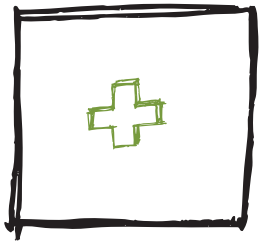
School

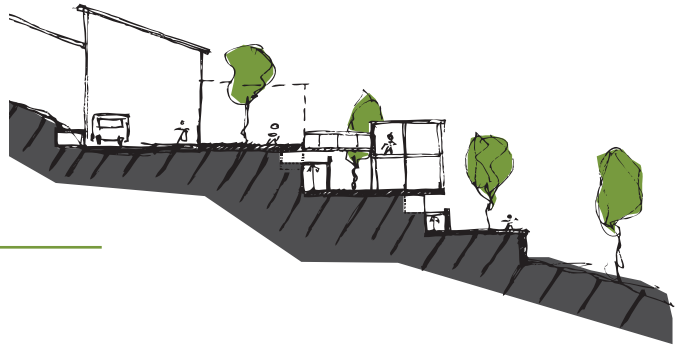




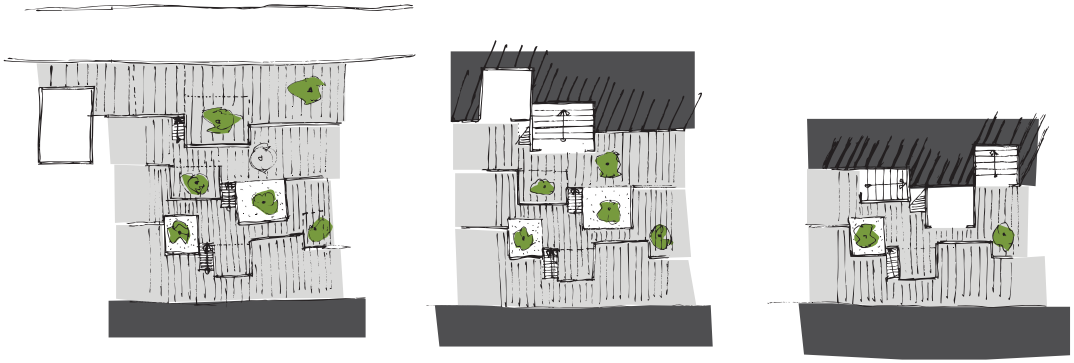
The school function requires large spaces, with a balance between void and solid. The spaces cant have multiple level changes and enclaves of private areas, but requires a large open courtyard for periodic assemblies.

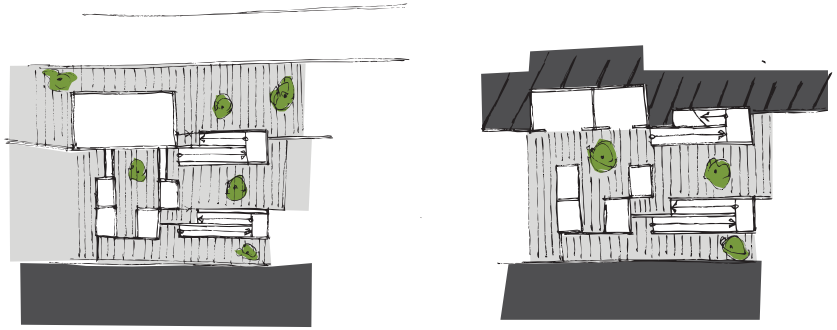
Clinic





The clinic requires less space, but a more processed and direct method of entering. Due to the thresholds between arrival and consultation, the process provides for slower movement and more waiting areas. The level difference must be fewer, to allow for the sick or weak to cope.





Materiality

The materiality of the building is closely related to the context in which it sits. The use of rubble stone is common, but generally used as a in fill to the preferred concrete masonry block construction.

Both material are available and to be used for different aspects of the building. The concrete masonry allow a grided structure to be easily constructed to a designed form, while the stone in fill is in-expensive and reusable.

The methodology of creating a temporary envelope, such as steel panels, as the initial cladding, to be replaced by the permanent masonry construction, is explored.

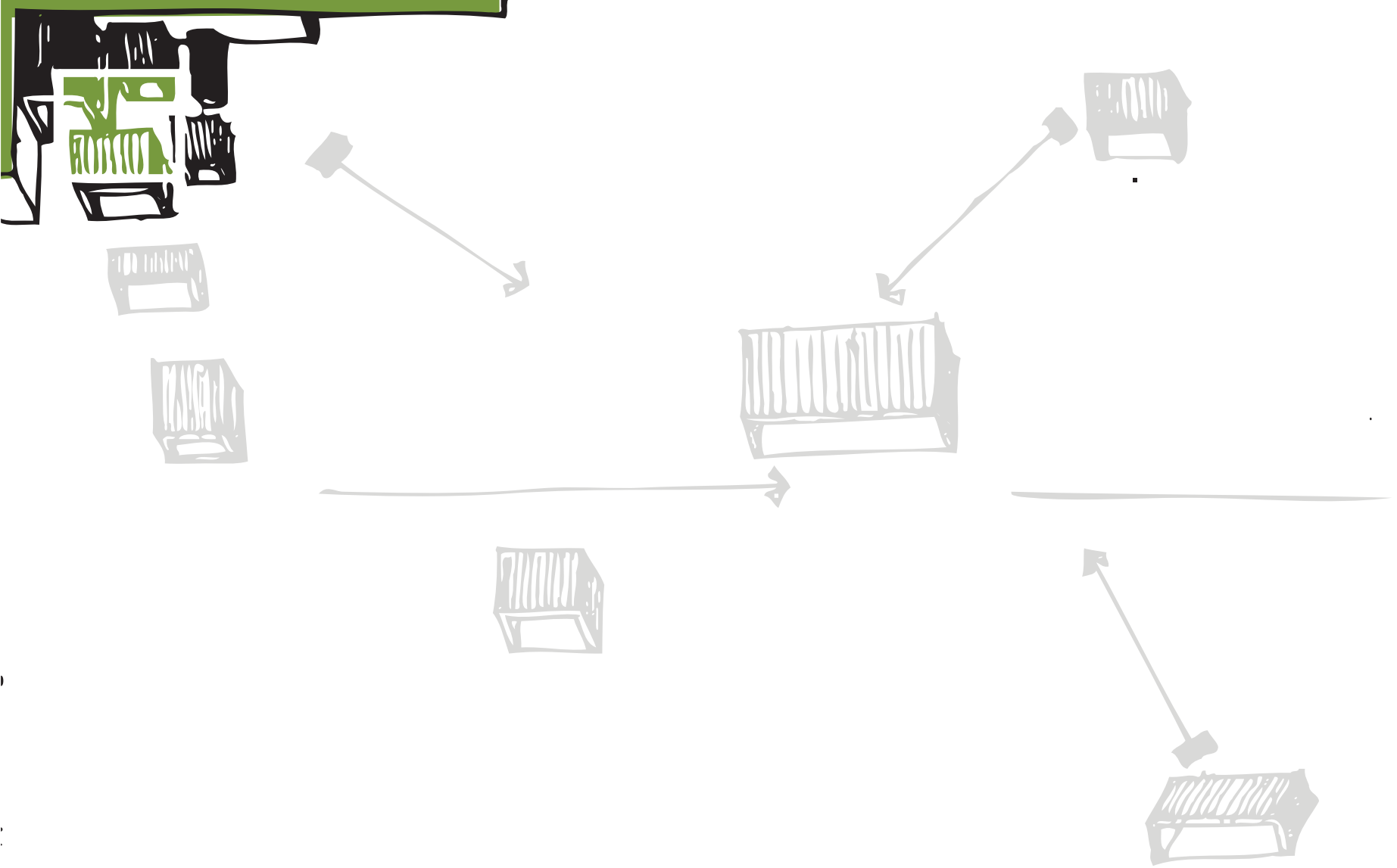
The steel panels can the be used in further project expansions as building material.

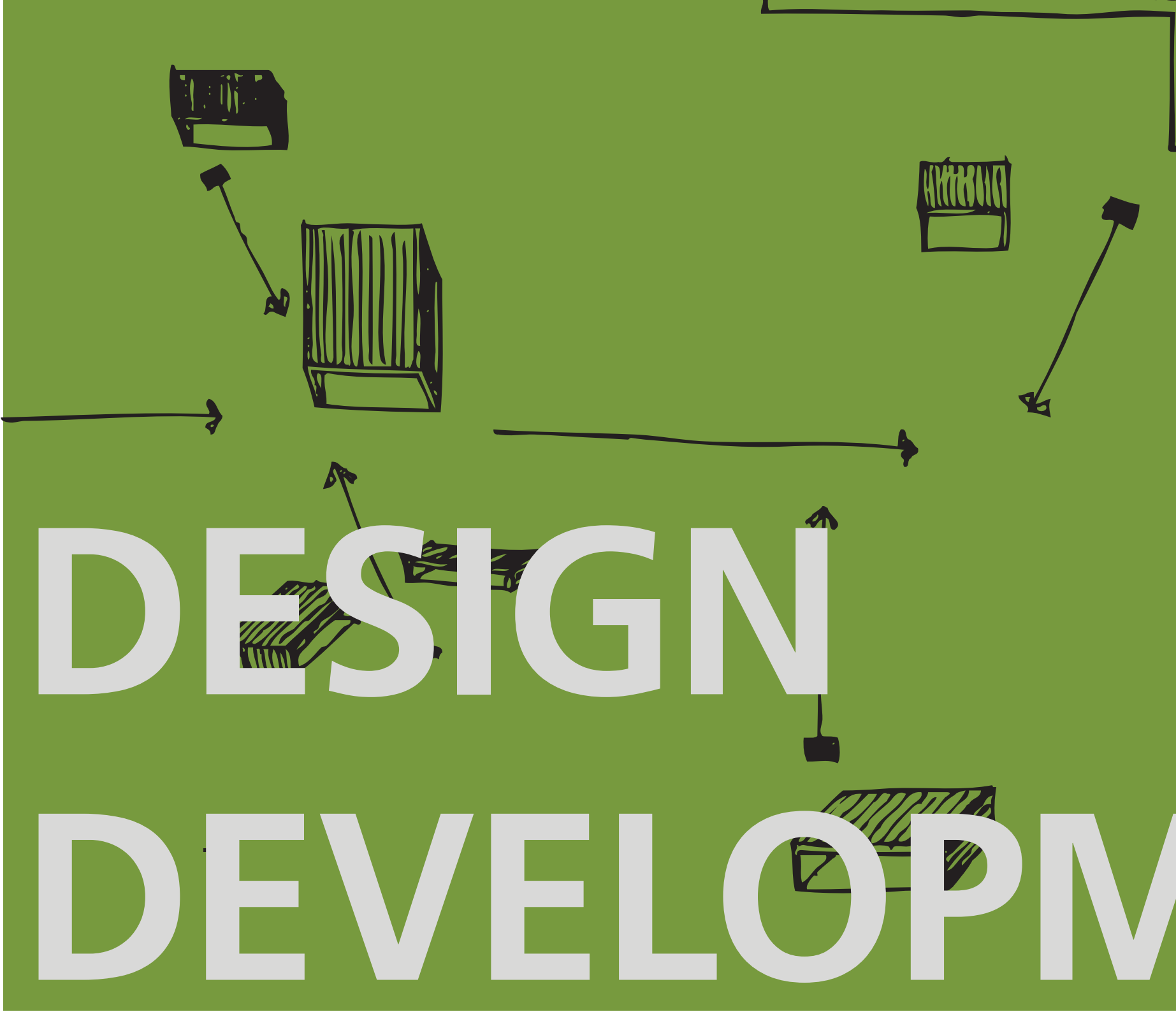
Water Distrubution

Due to the high rainfall in the Lesotho highlands, the building uses the rainwater collection as a means of design drivers. The collection in the public and semi-public buildings are a series of box gutters running parallel to the road. These act as visual datums and thresholds as one transcends down the site. The small private building forms have collection gutters perpendicular to the road, acting as a contrast to the heavy primary functional buildings.

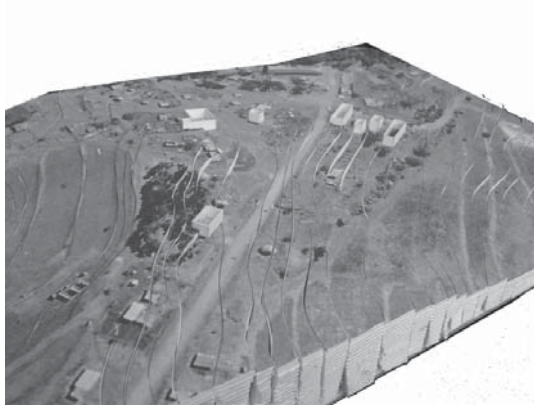
Within the collection of water in the adjacent matter to the road, the tank systems in which the water is collected is used as dividers between public and semi-public spaces. These points also act as social and interaction spaces from where the funtions distribute out from.

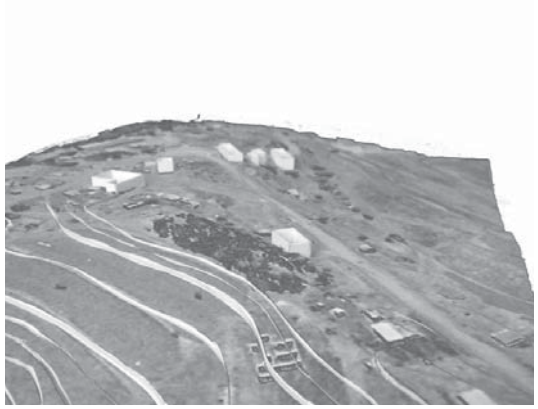
the ‘distance’ school

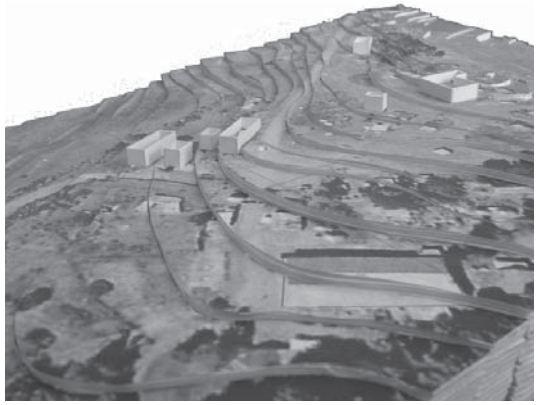


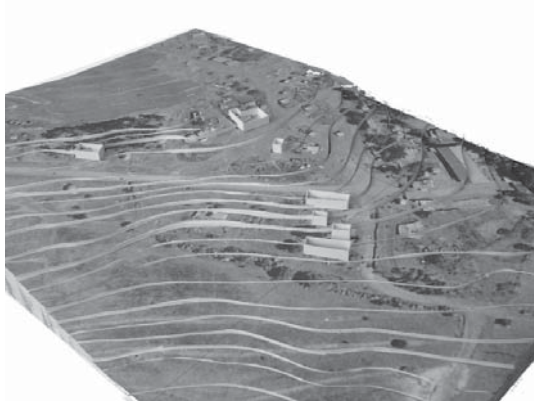

DESIGN
DEVELOPM

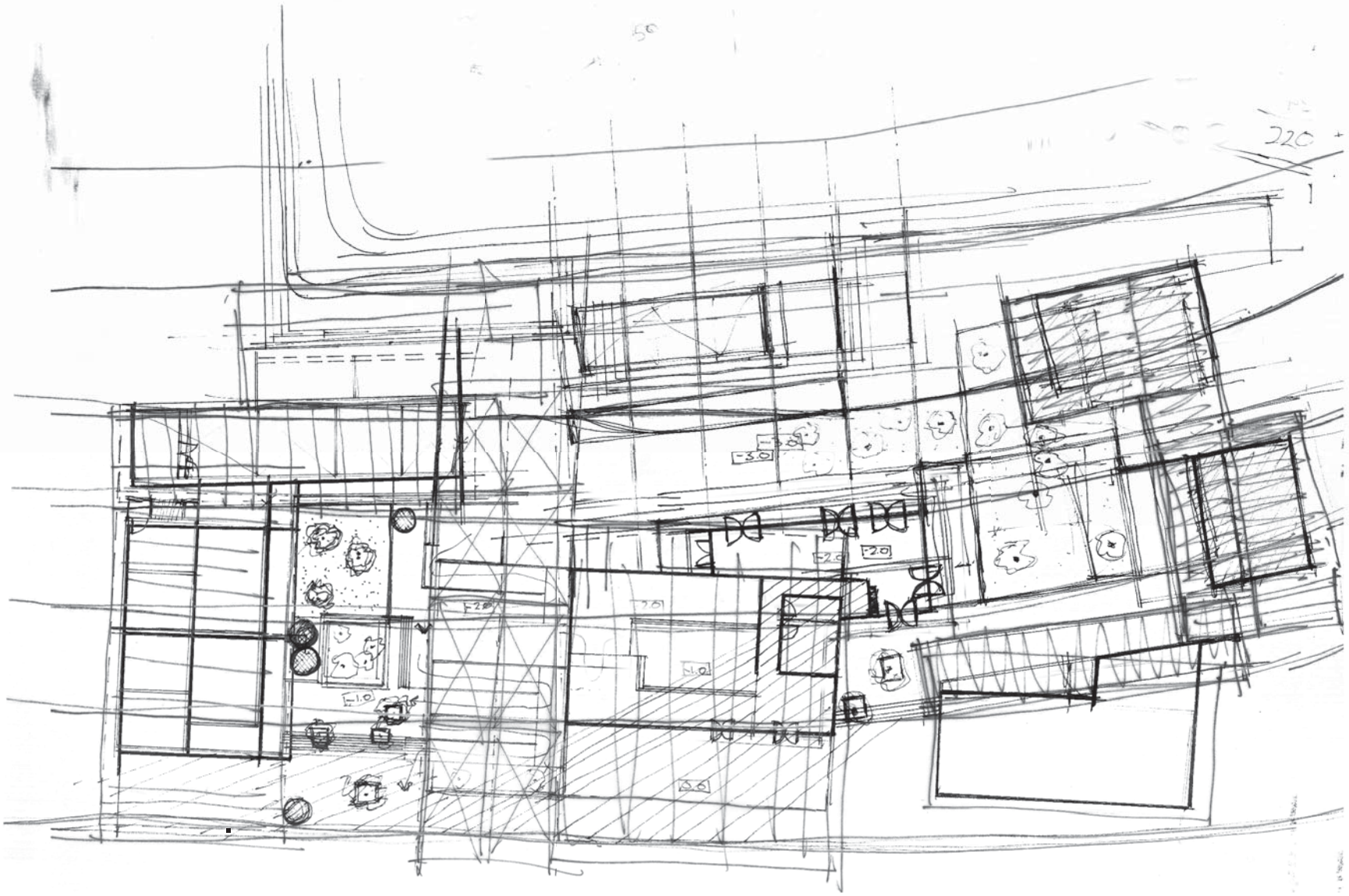
Site Form understanding







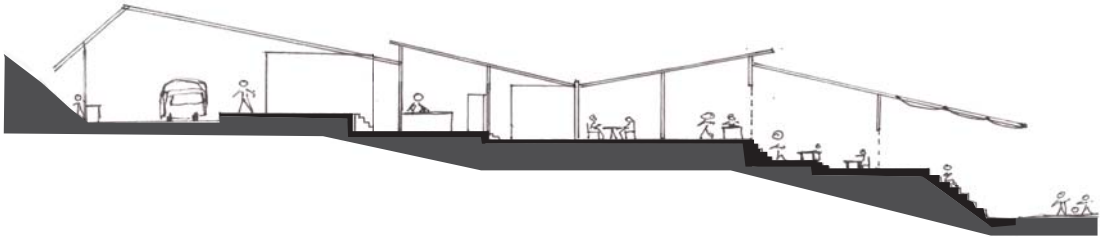


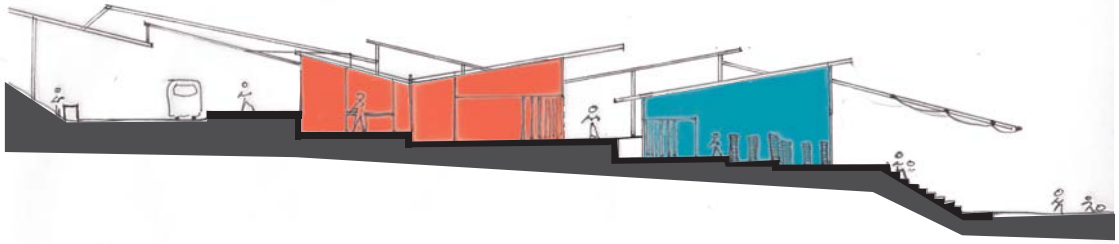


Development of plan

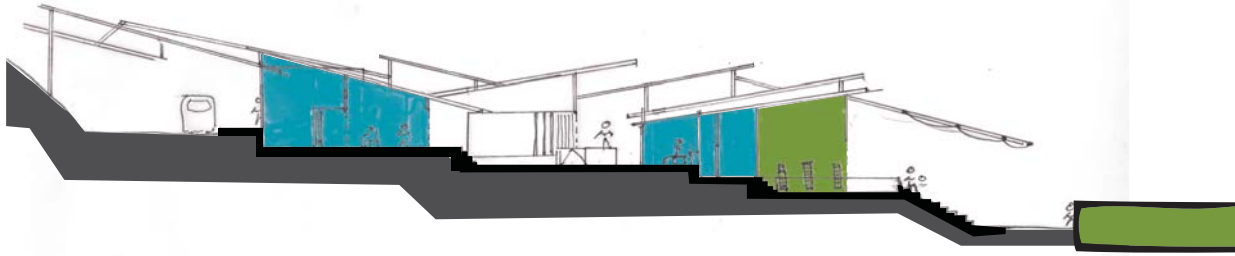
Program Development

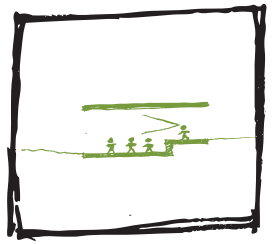
Using a base of solids and voids to transcend down the site landscape. Creating a building in harmony with the context, and lightly placing form in some instances, while creating larger elements breaking the earth form in others.





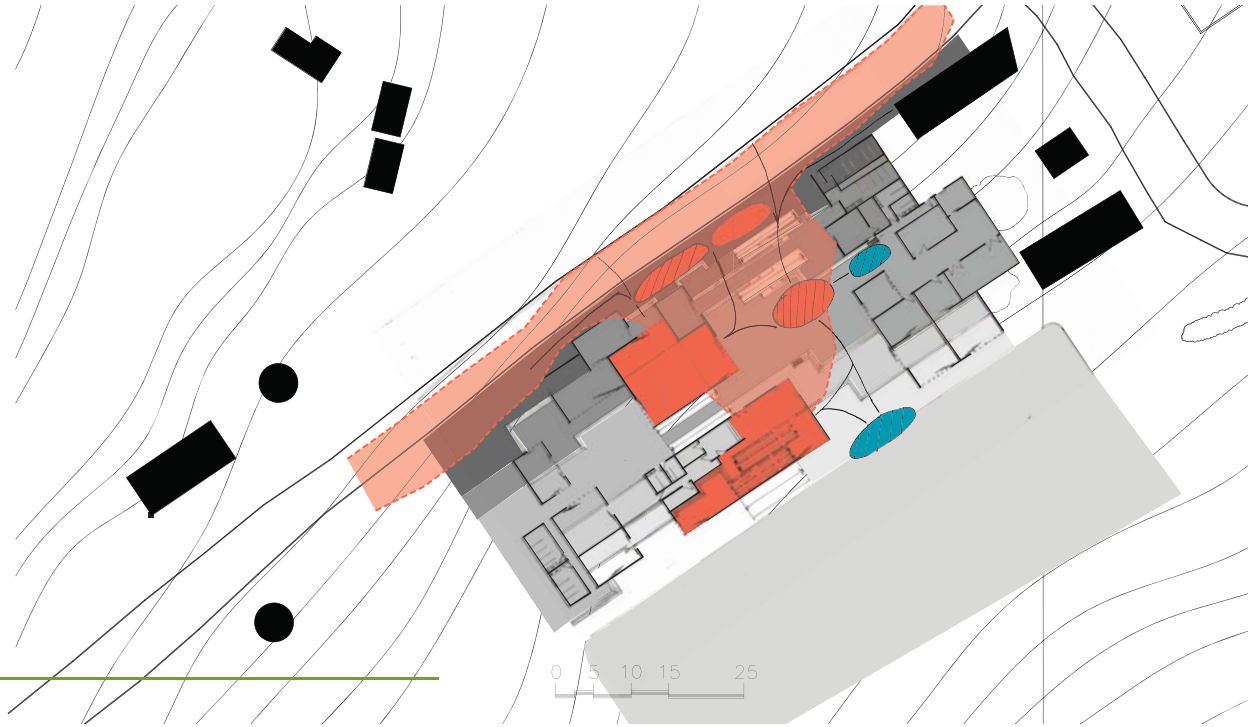
Placing function and over the base and using stepping methods to splay the functions over the solid and form forms created.

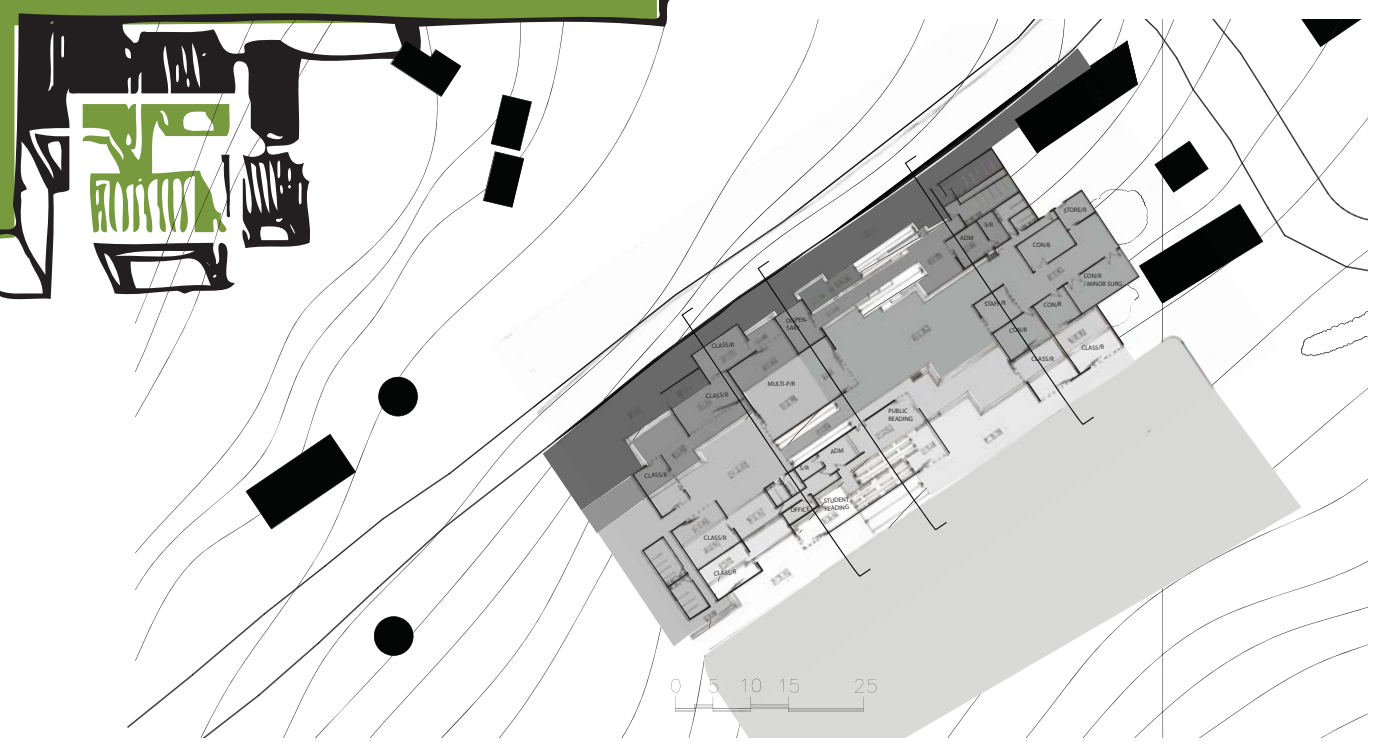




Community Hall/ Market

Between the tight and loose element of the clinic and school respectively, lies the library and multi-use spaces. These light touch the ground, enclosing various functions and public and semi-public space.




STORE/R
S/R
ADM
CON/R
CON/R
/MINOR SURG
STAFF/R
CON/R
CON/R
CLASS/R
CLASS/R
CLASS/R
MULTI-P/R
PUBLIC
READING
ADM
S/R
STUDENT
READING
OFFICE
CLASS/R
CLASS/R
CLASS/R
0 5 10 15 25

STORE/R
S/R
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PUBLIC
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OFFICE
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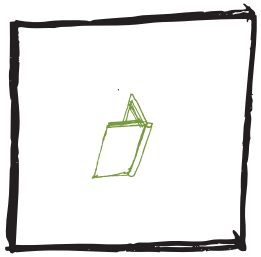
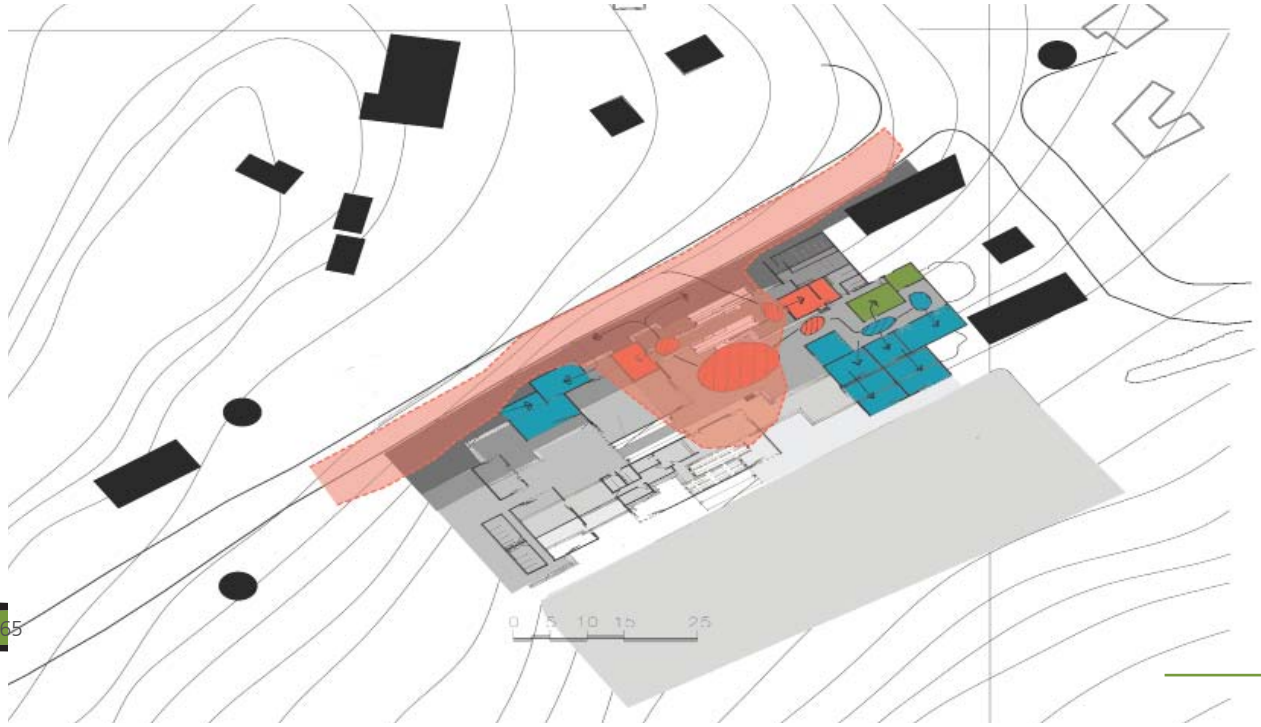
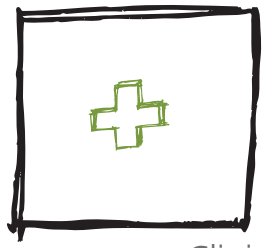


School

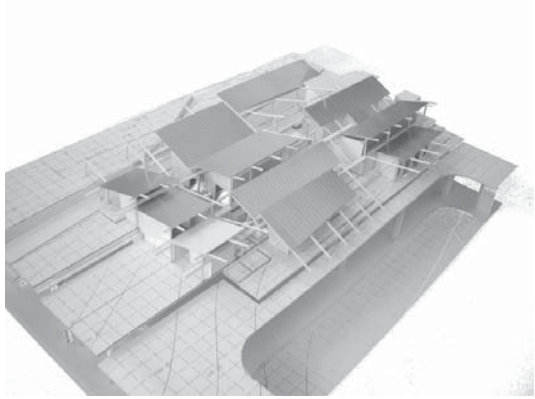
Placing the school elements to the South where the contours open out. This allows for the multiple difference functions of the school to grow out from the head of the Northern end of the site.

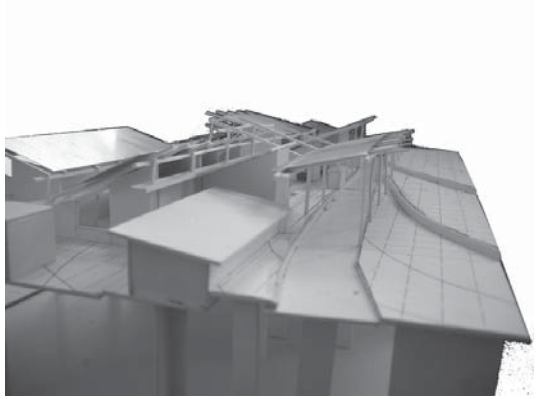


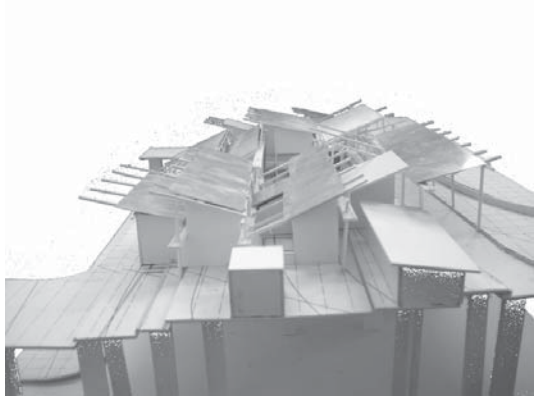


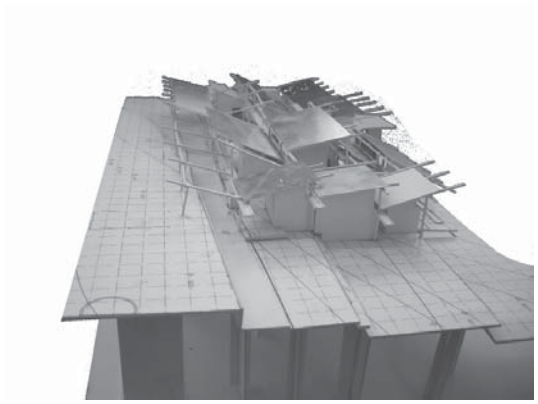
Clinic

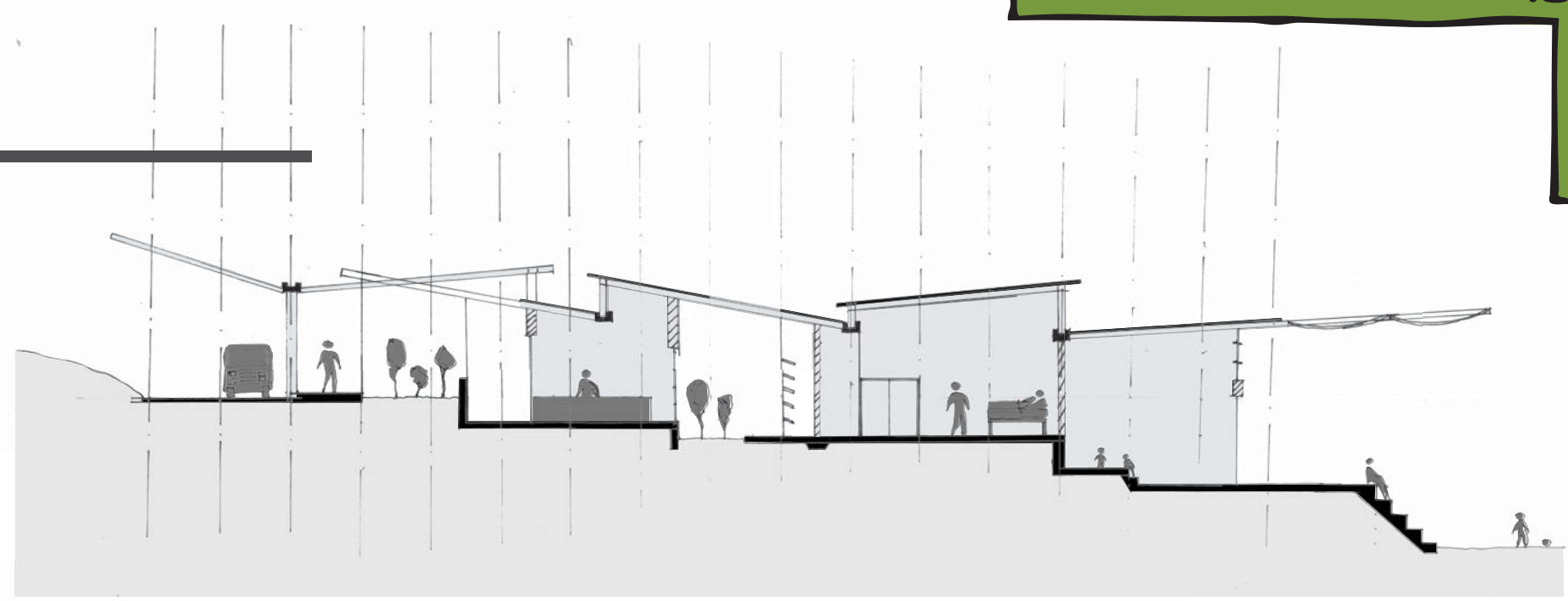
Creating the tight clinic spaces at the Northern end of the site, where the site is steepest. This allows for multiple hierarchy of space and overlaying elements of form.

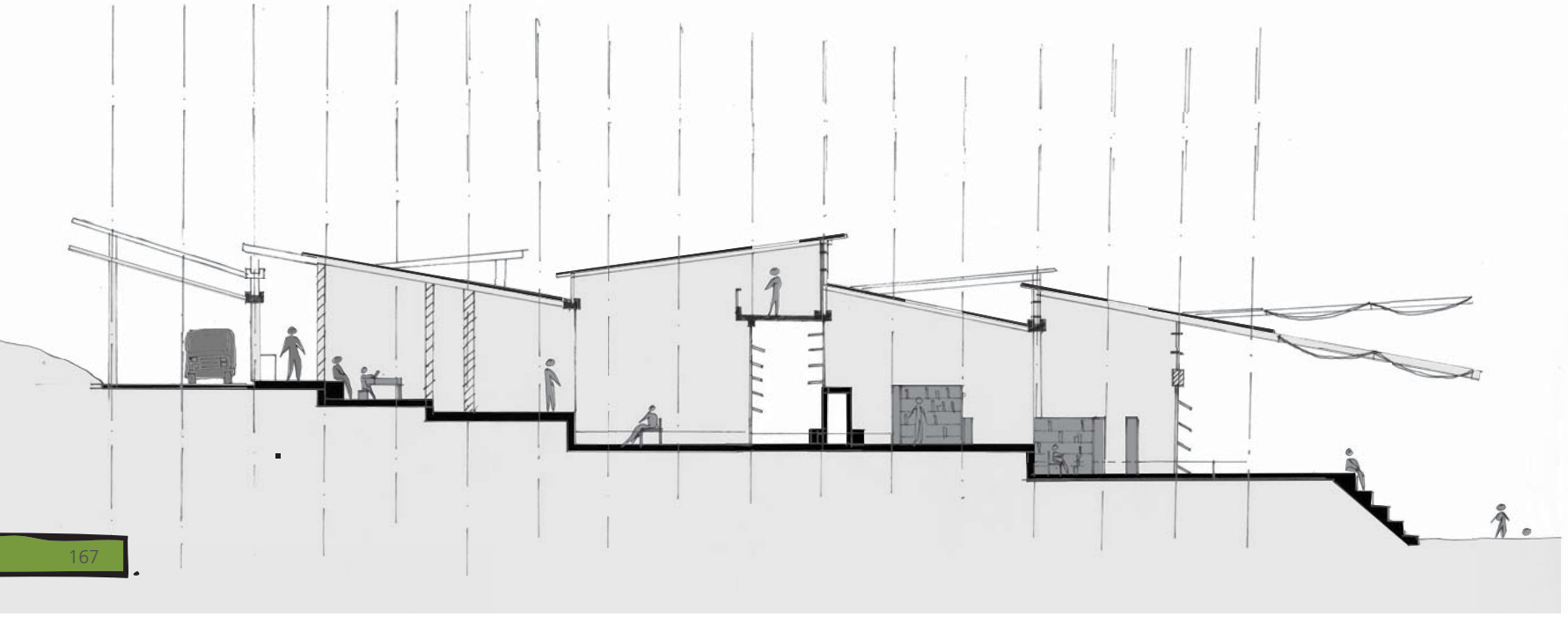


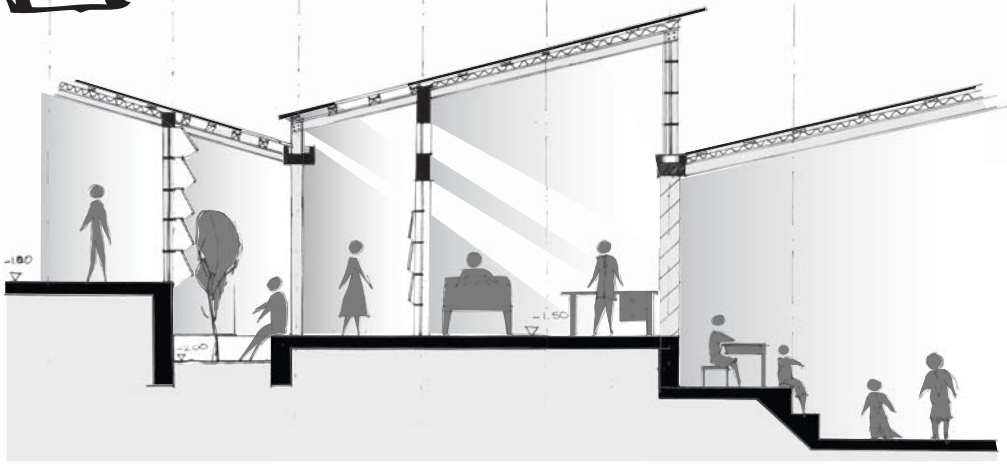


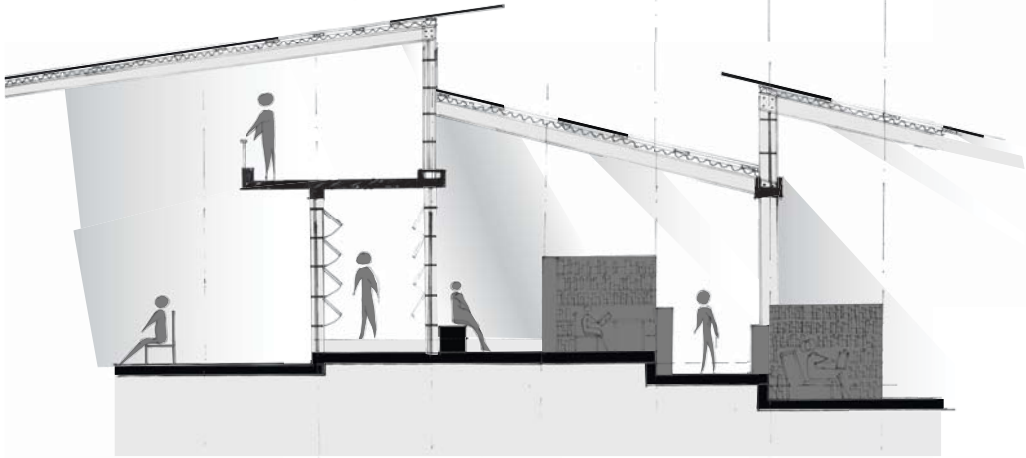


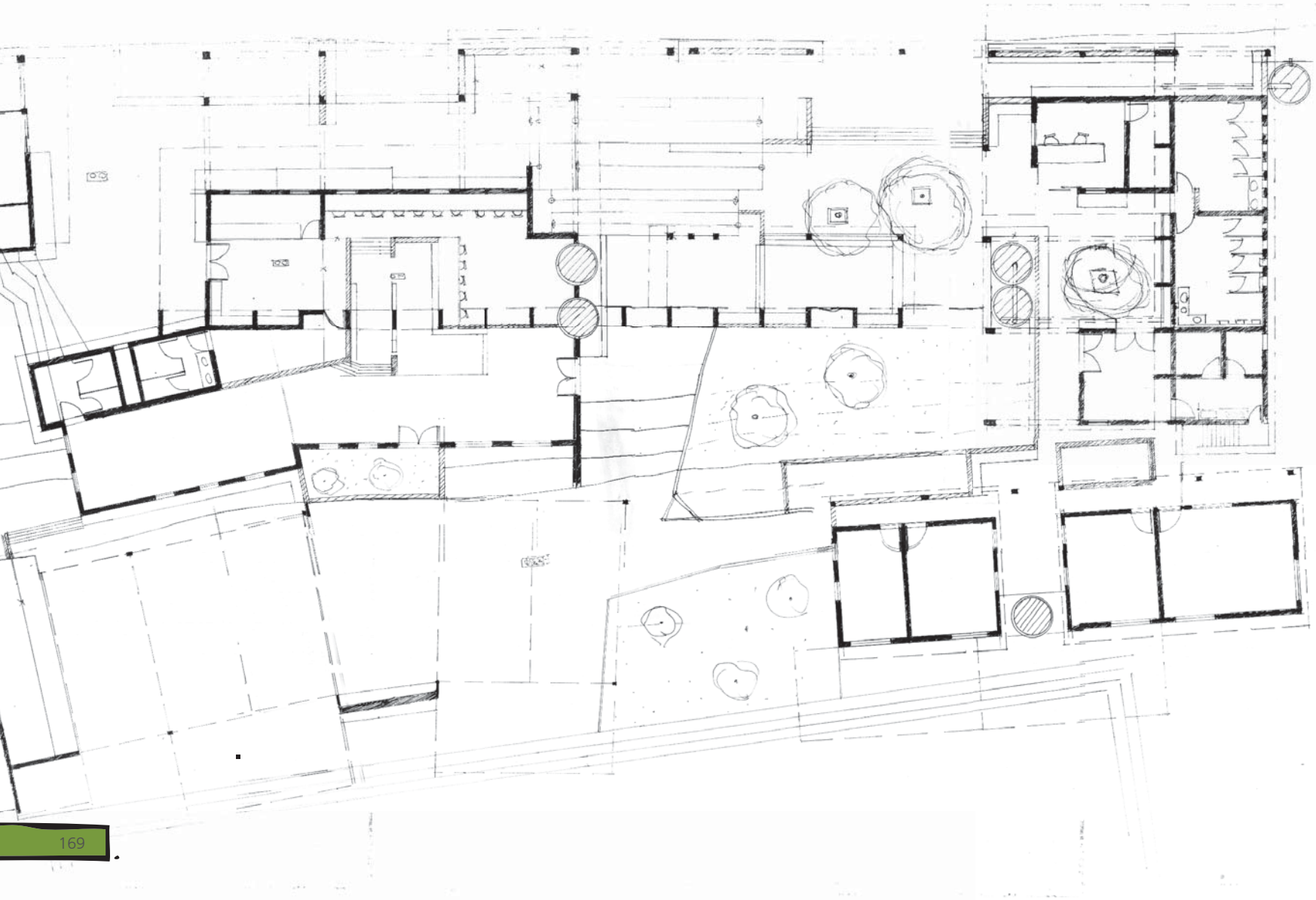




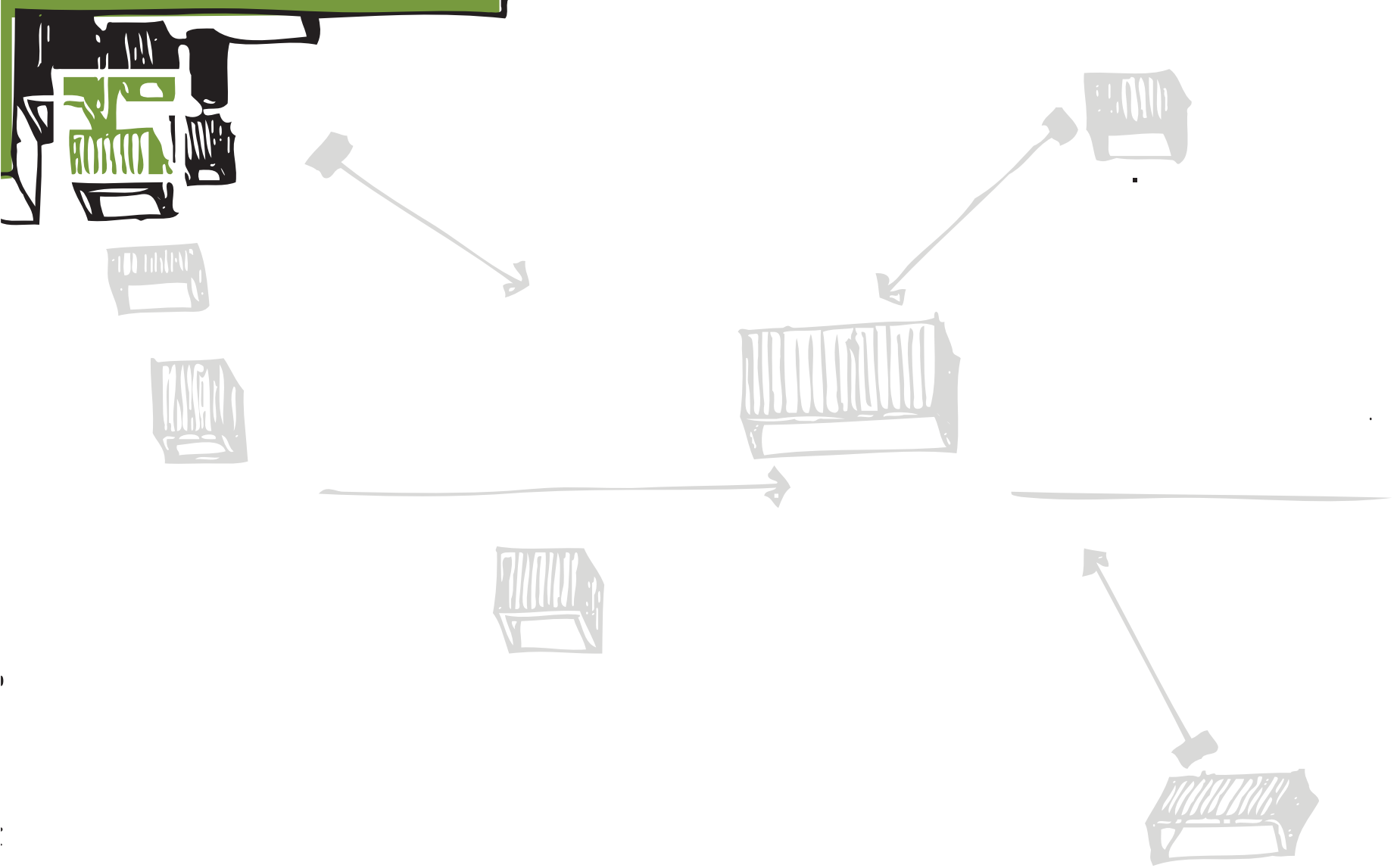


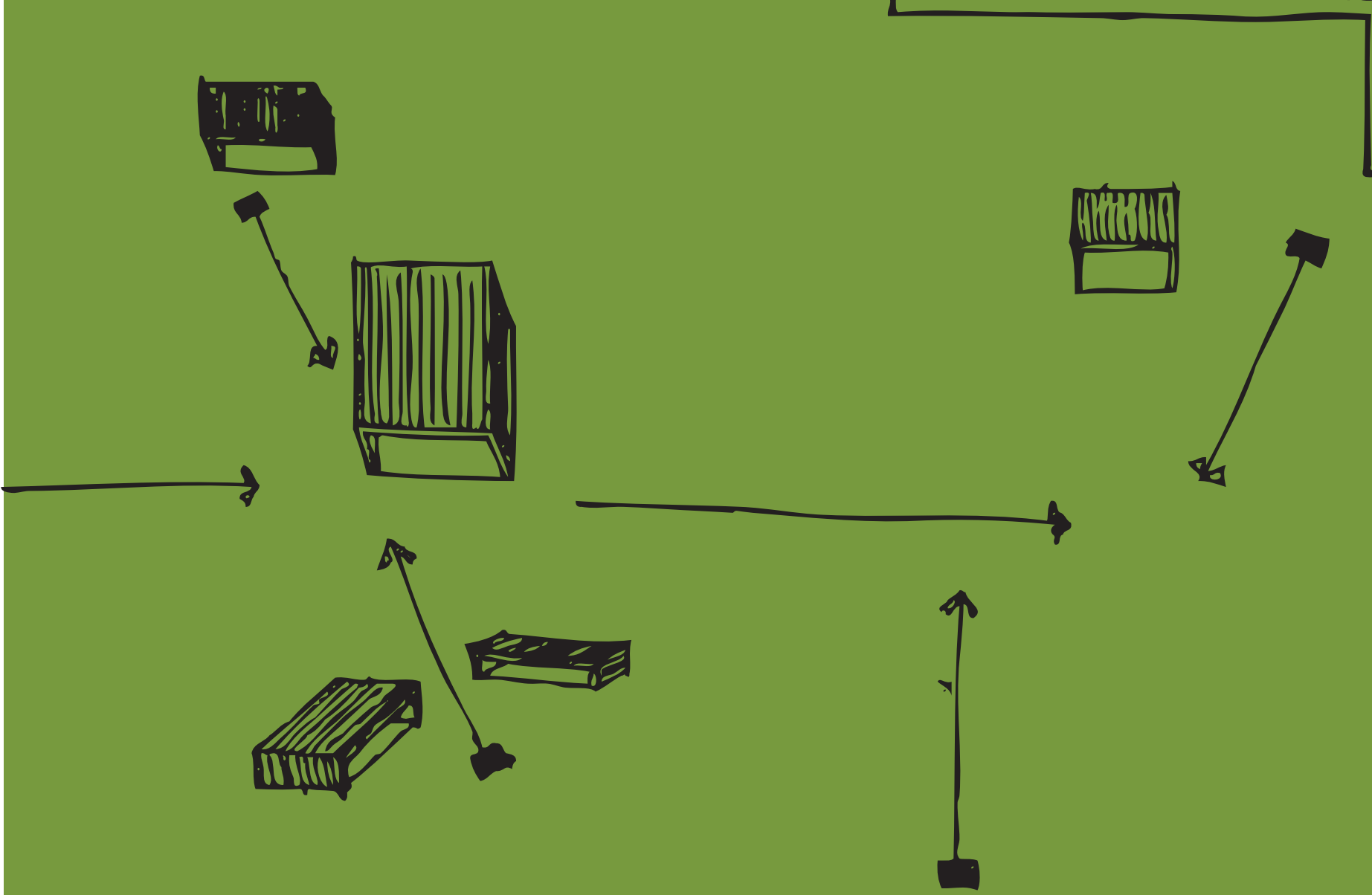




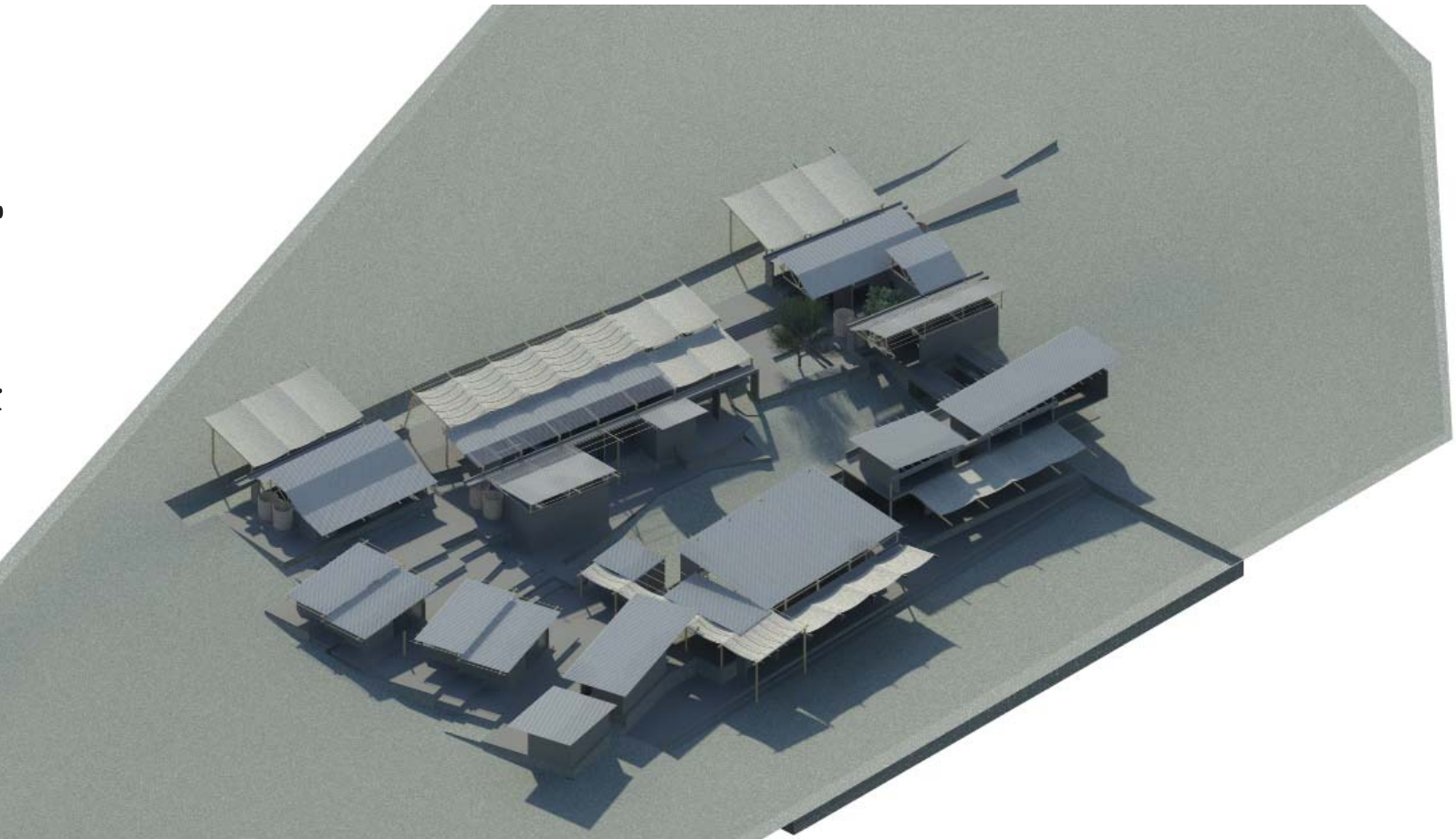


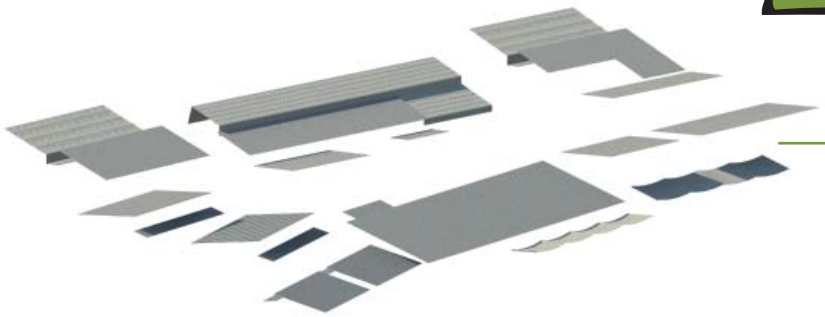
the local boys





LAYERING





All roofing IRB corrugated sheeting in standard sheet sizes.

Roofing

Standard agricultural steel framing elements of 150x150mm hollow channels and 150x75mm C-channels used for external construction framing. Internal framing by standard 114x38mm timber trusses.

Structural Framing

Due to the availiblity of aggragate for concrete block production, and the ease of transportation of materials, the standard 390x190x190mm concrete block is used. This size may be produced using a portable trailer die, or on site. All blocks used in construction standard size or dimesional variants thereof.

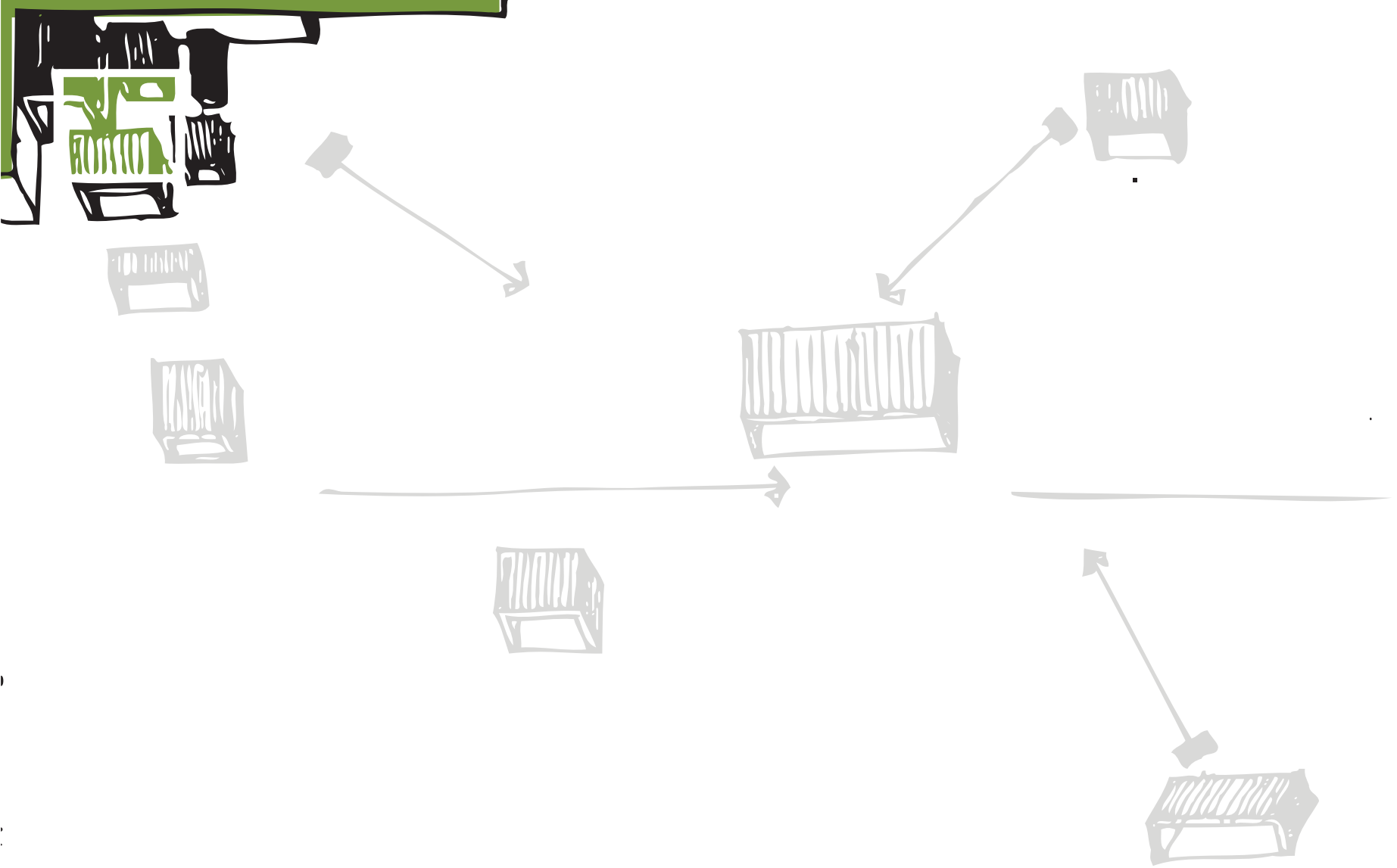
Concrete Block Masonary Walling

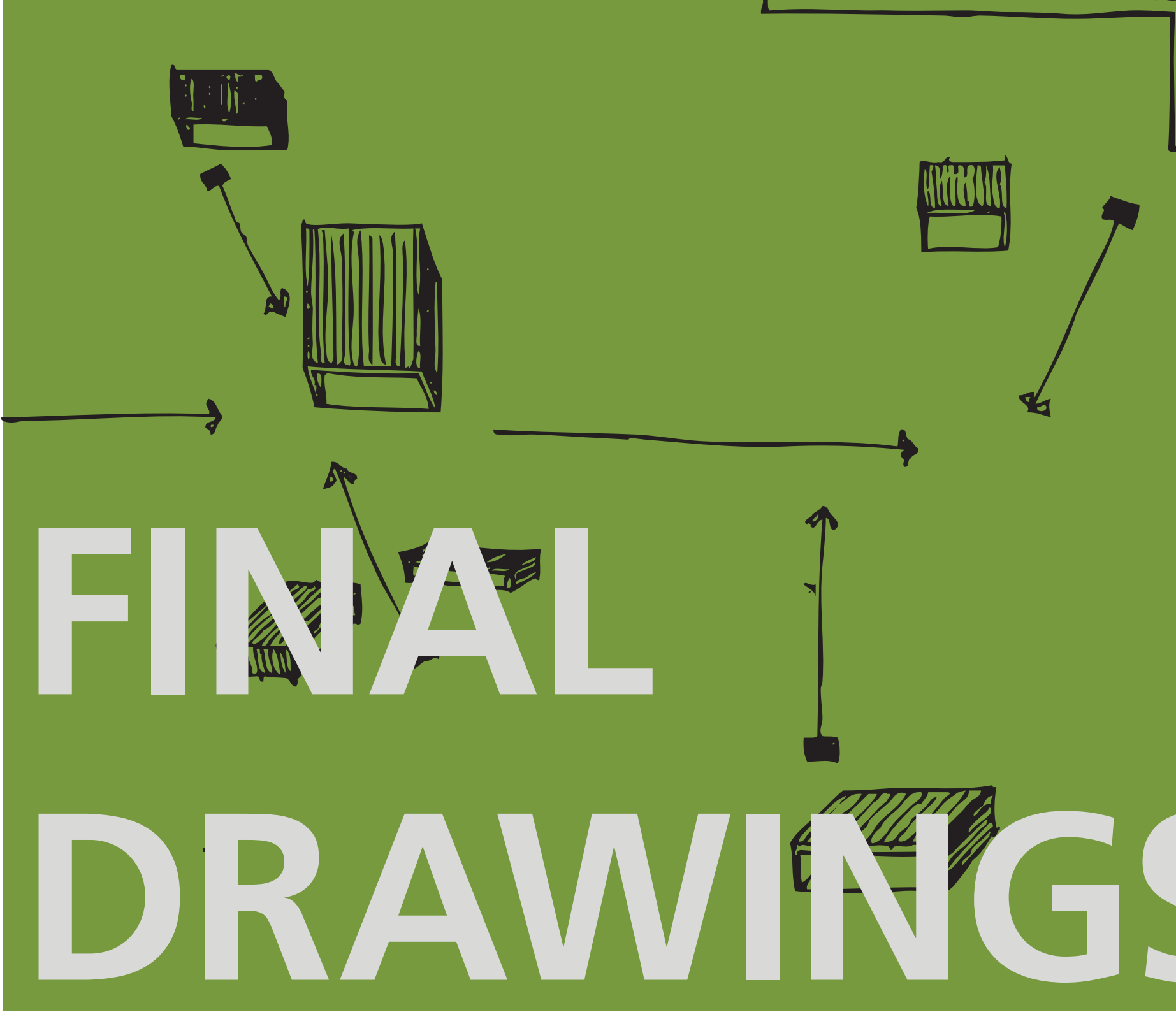
The terraced slabs on the site will be cast in-situ as the construction progresses. Due to the cost and labour required for total building construction, the casting wil proceed on funds available and transportation deliveries.

Cast In-Situ Slab

Due to the steep topography of the site, a cut and fill landscaping will be required. The excess soil will be used for concrete block aggregate and soil erosion preventive measures around the site.

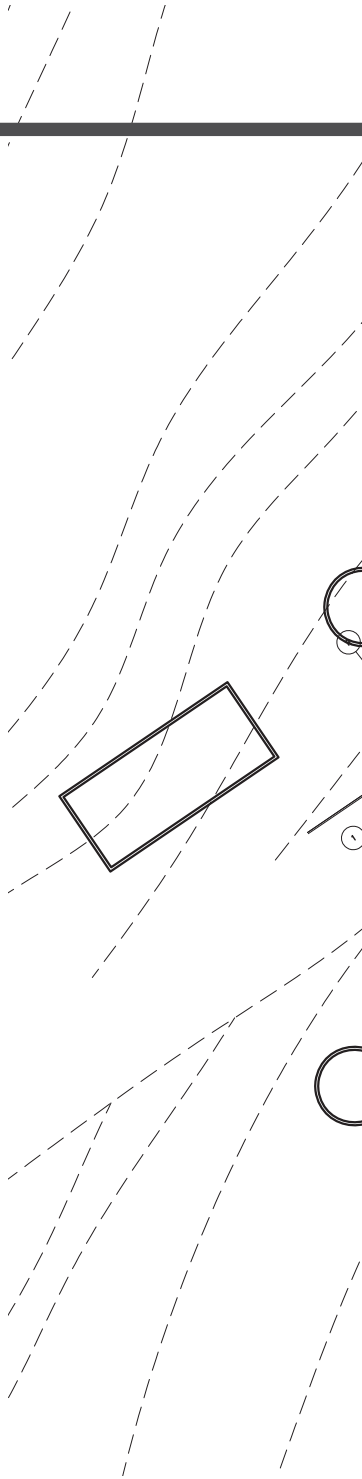
Cut & Fill Landscaping

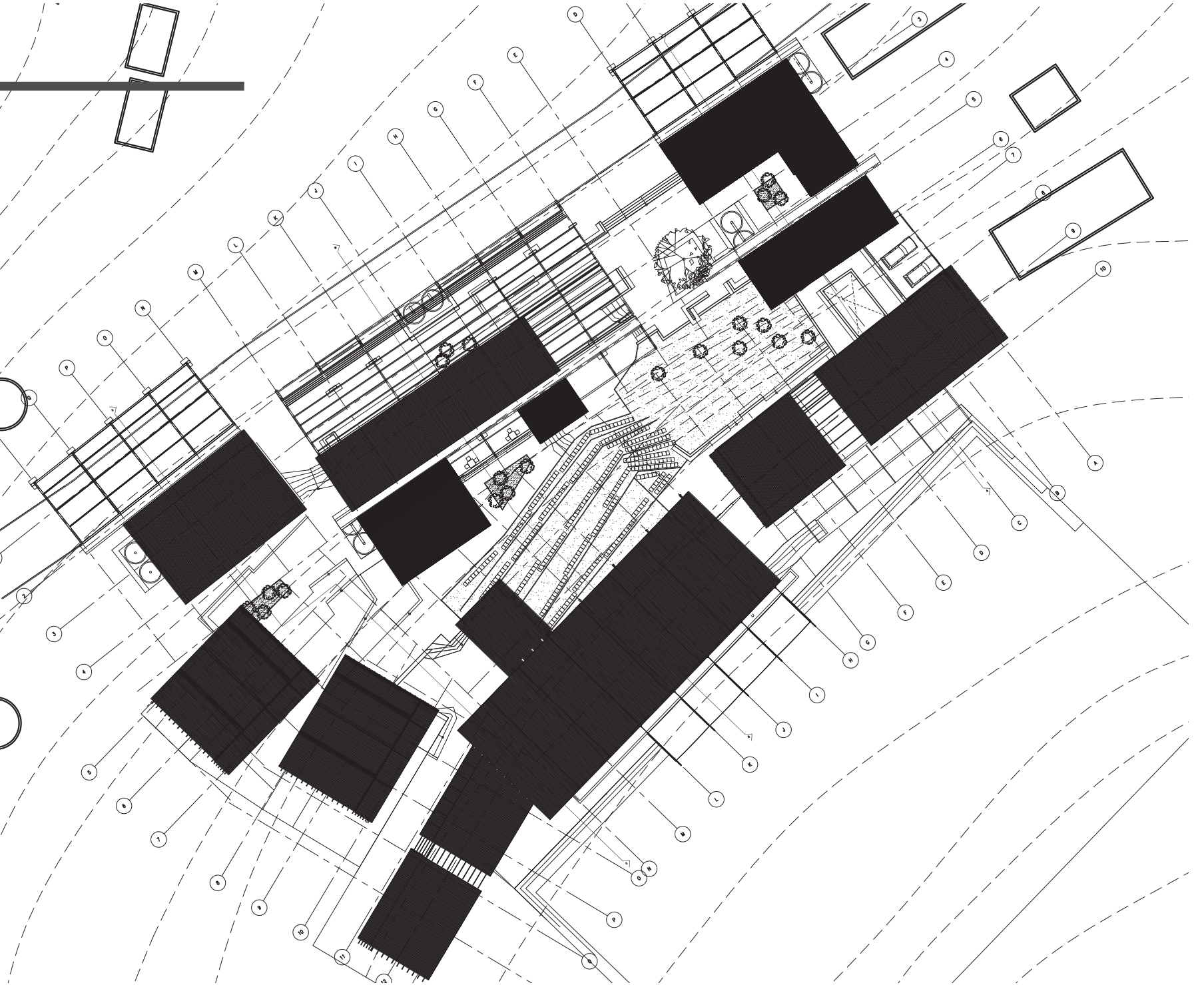




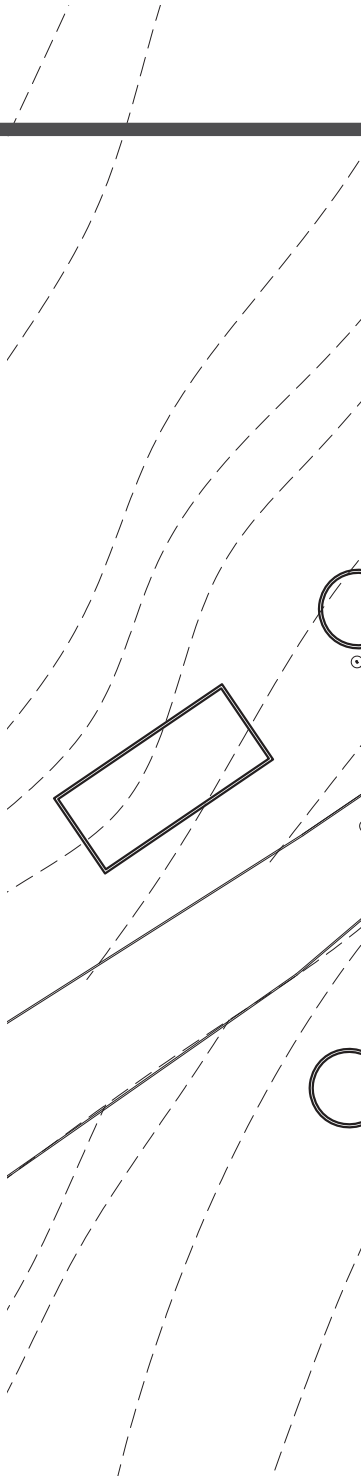
FINAL DRAWINGS

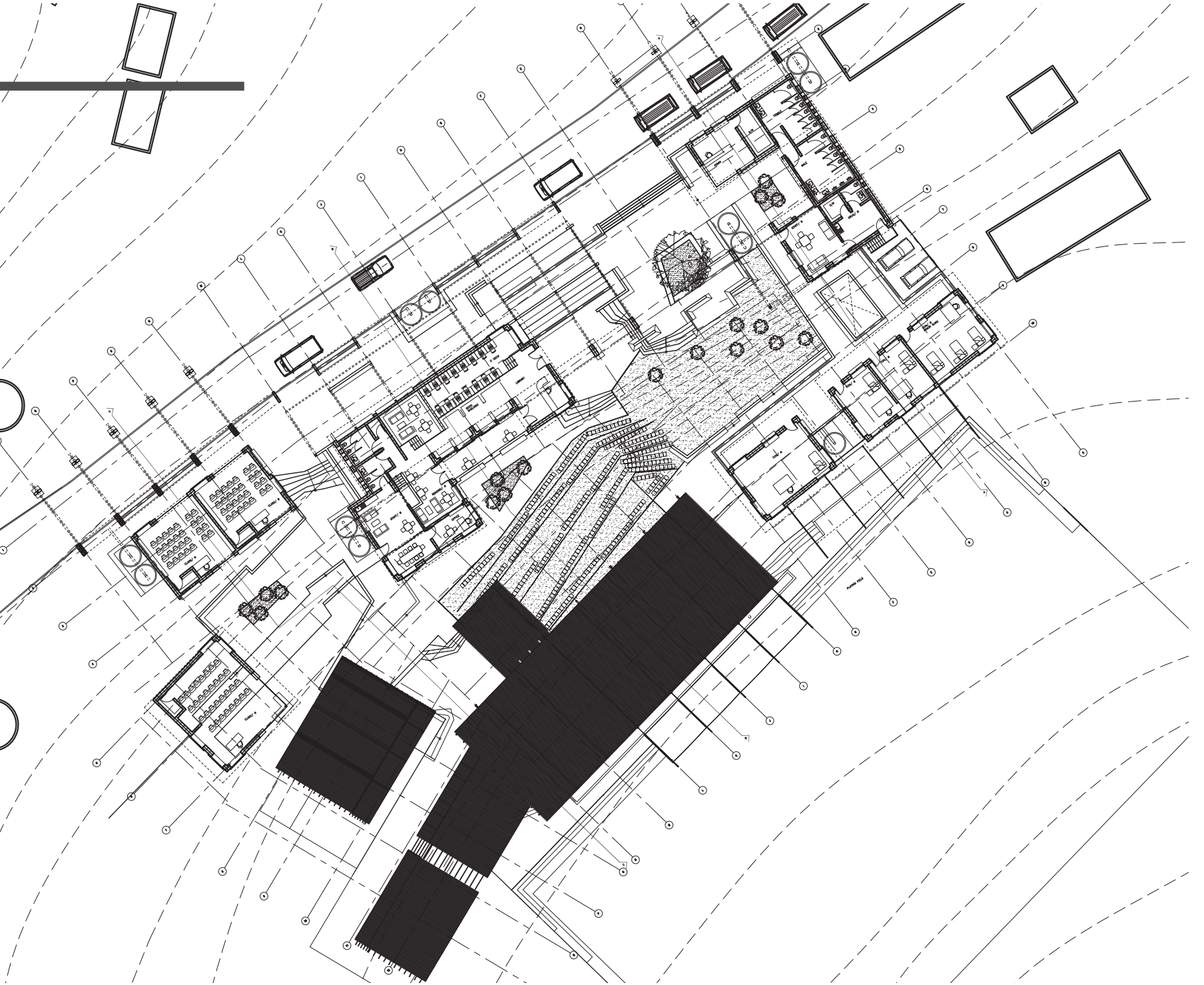
Plan Site 1/500



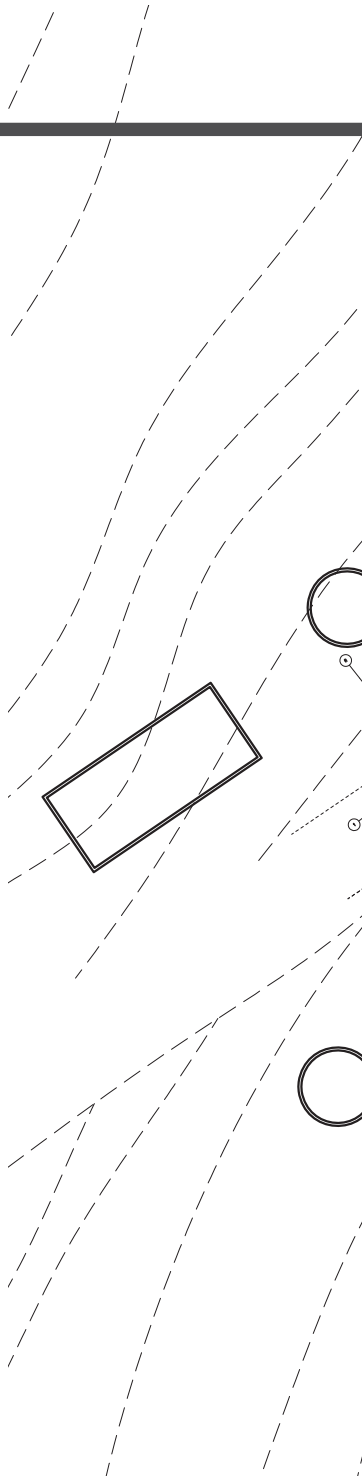


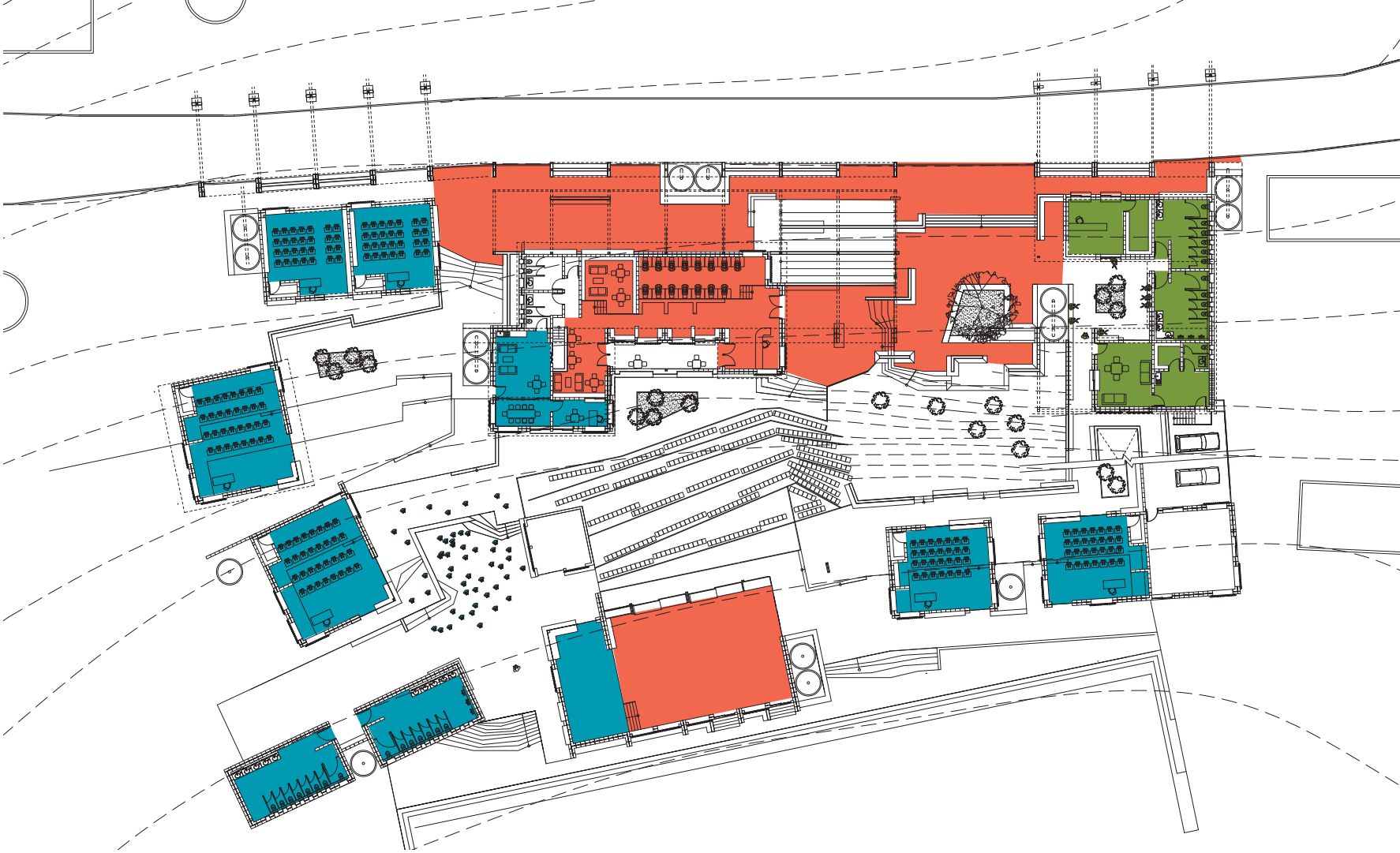
Plan Ground 1/500

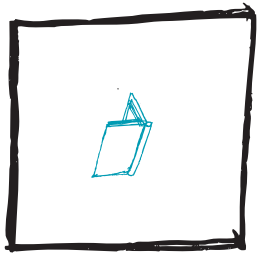




Plan Lower Ground 1/500

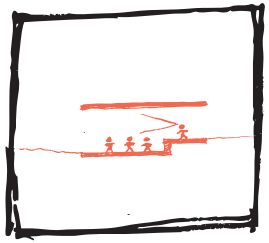






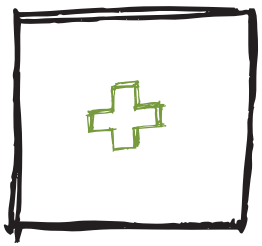
While the school functions within the same building envelope, its areas of classrooms are separated by void, allowing noise reduction and privacy during operations times.

High School



The public space is limited to the streets cape during school hours, with only few connections through to the multi-purpose hall.

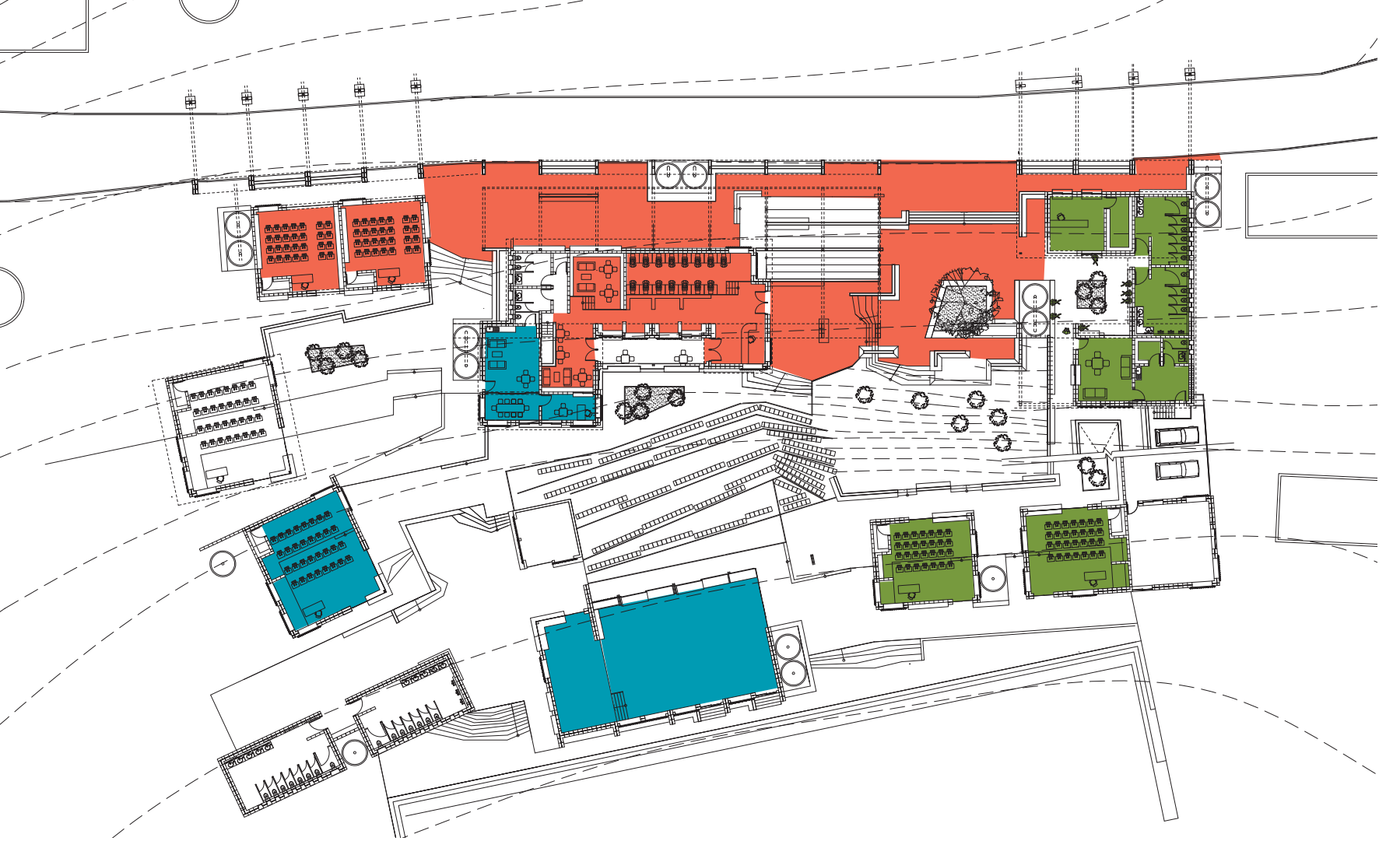
Community Centre/ Market

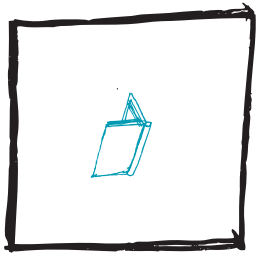


The clinic operates independently due to its directional programmatic nature

Clinic

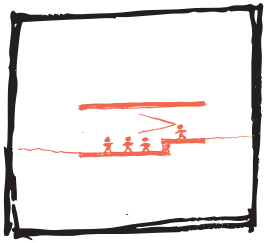
School Day Scenario: 8am to 2pm





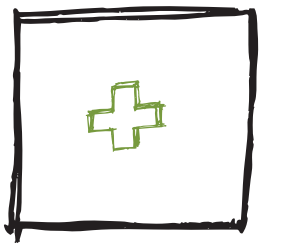
After school hours space is allocated to extra-mural activities either in the classrooms or part of the multi-purpose hall.

High School



After school hours, public space can be drawn into the building fabric, allowing road-side classrooms for small community usage.

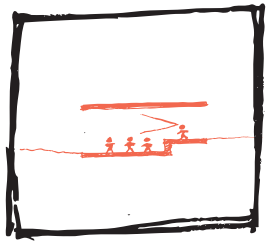
Community Centre/ Market



The clinic side classrooms can be used as medical educational facilities, extra space for consultation and meeting spaces.

Clinic

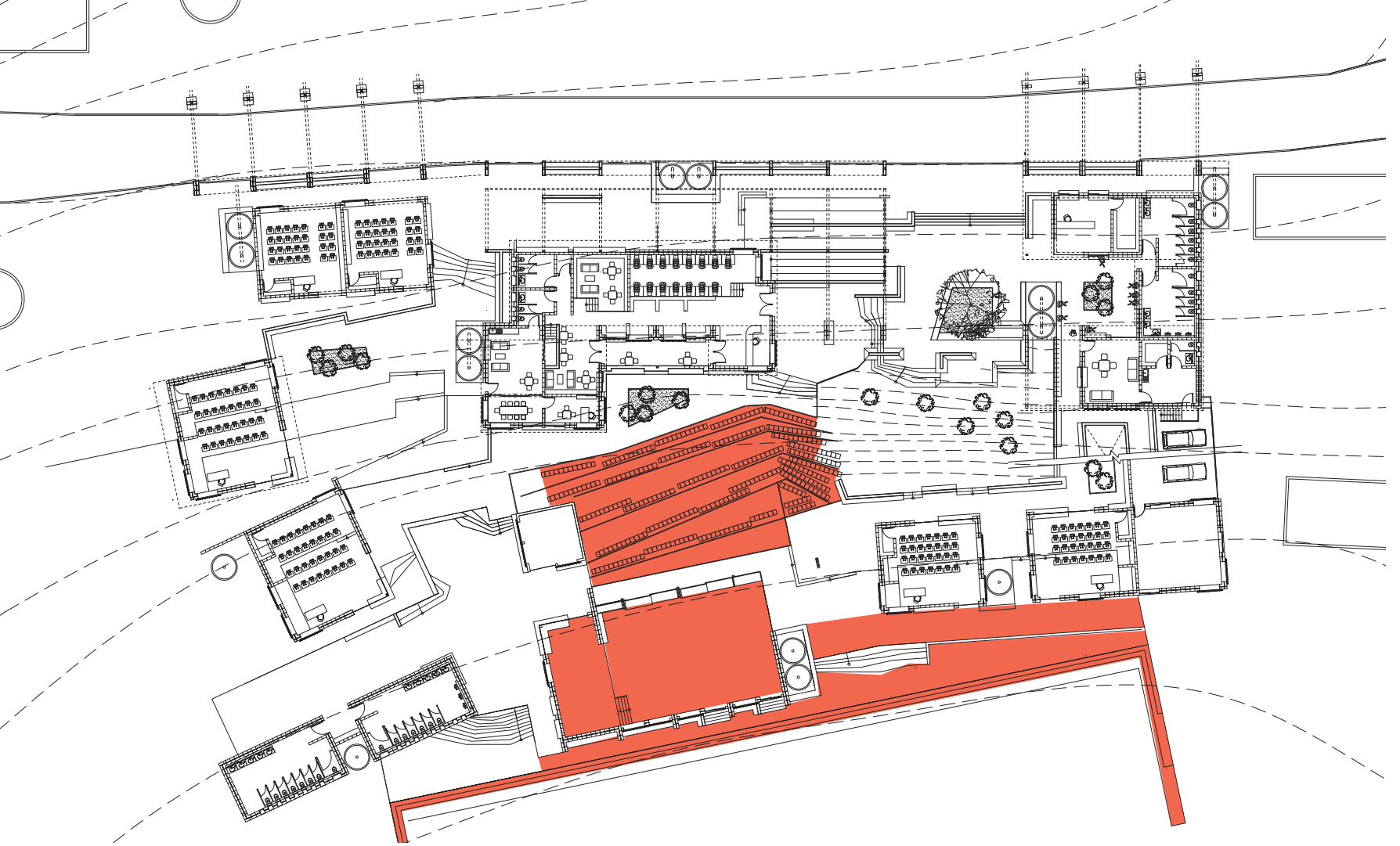
School Day Scenario: 2pm to Night

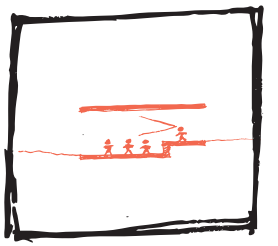


Due to the lack of electricity, the street scape lighting wil be the only nocturnal lighting apart from the tourist lodge. The placement of the lighting will be under the canvas roof, where seating and safety is provided.

Community Centre/ Market

Night Scenario

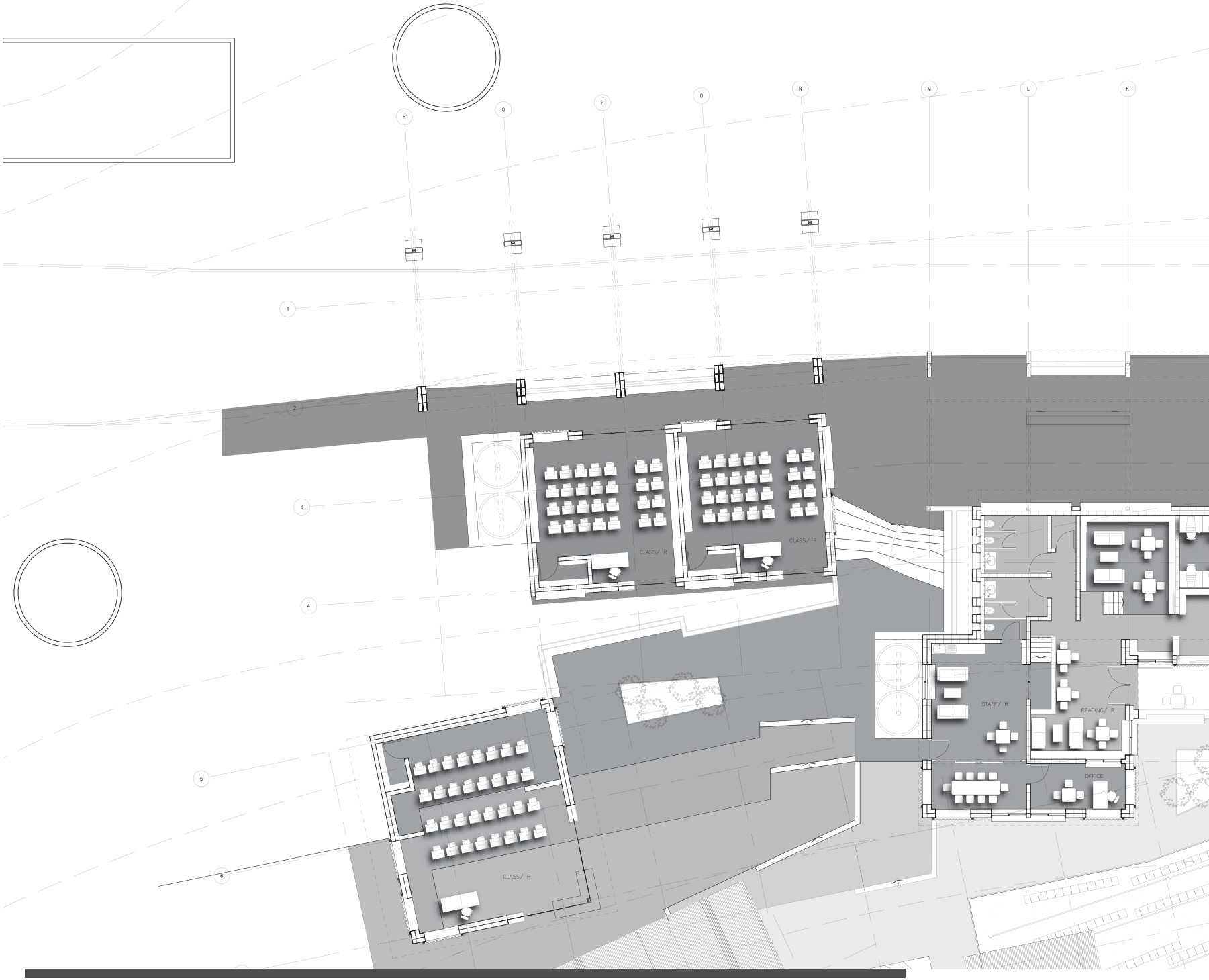




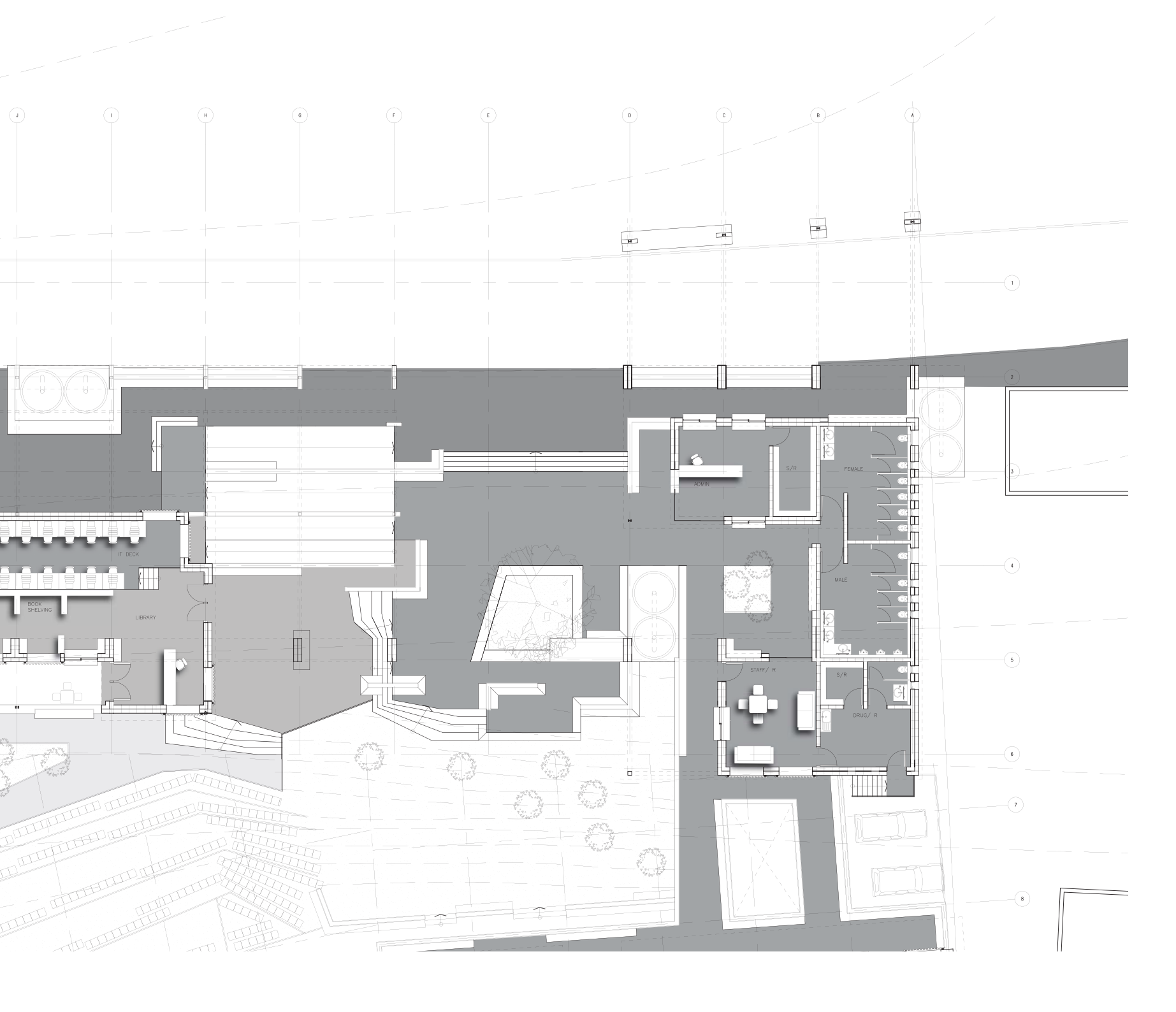
While the regular functions are served in provided buildings, large events are possible within the building fabric, where-by the multi-purpose hall can open up to form an amphitheatre, and enclosed hall and an continuation of the sports field seating.

Community Centre/ Market

Special Occasions Scenario



Plan Ground 1/200


J
I
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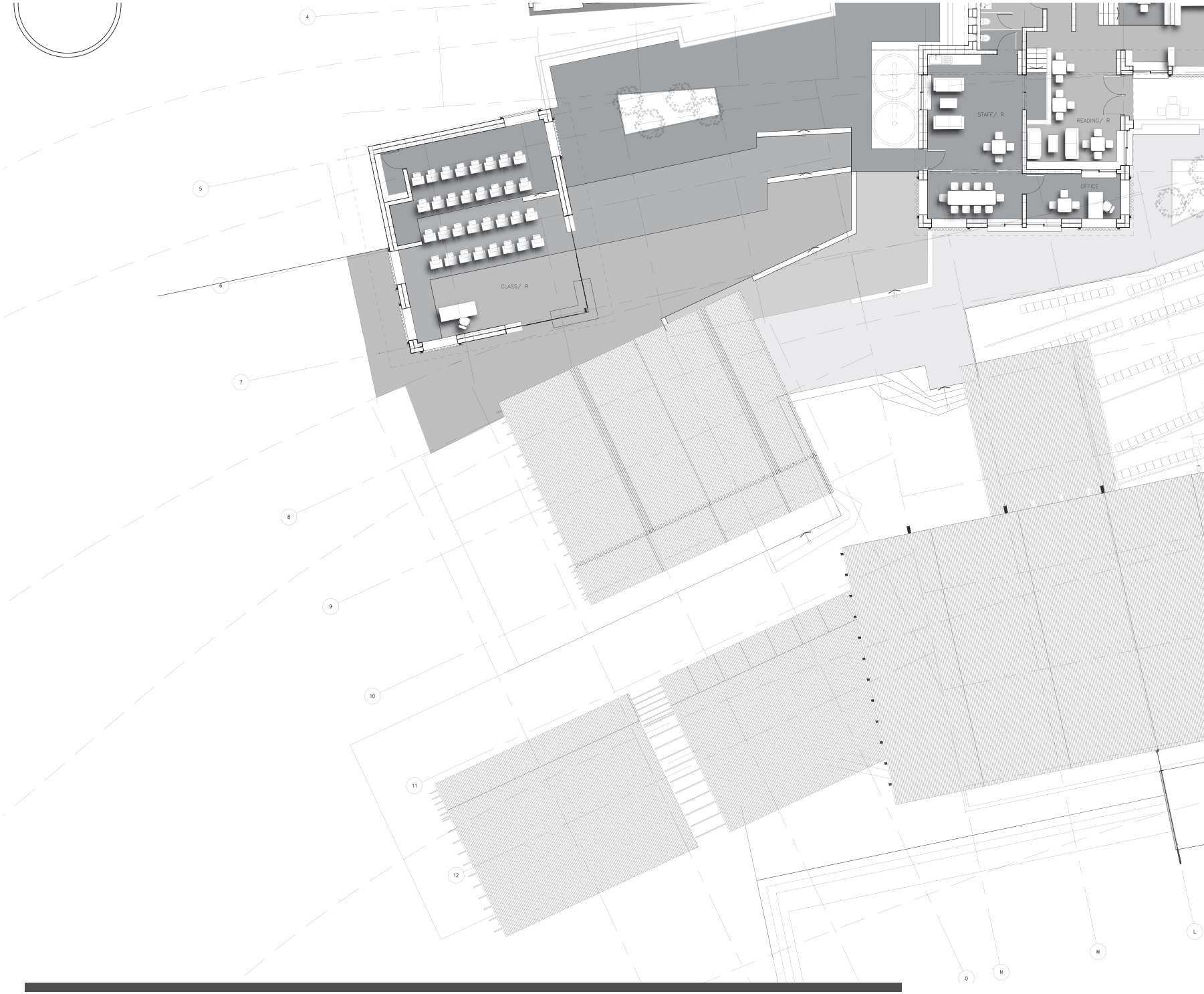
1
2
3
4
5
6
7
8
IT DECK
BOOK SHELVING
LIBRARY
ADMIN
S/R
FEMALE
MALE
STAFF/ R
S/R
DRUG/ R



Plan Ground 1/200

BOOK SHELVING
LIBRARY
STAFF/ R
S/R
DRUG/ R
CON/ R
CON/ R
CON/ R
CON/ R
MINOR SURG
PLAYING FIELD
5
6
7
8
9
10
A
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C
D
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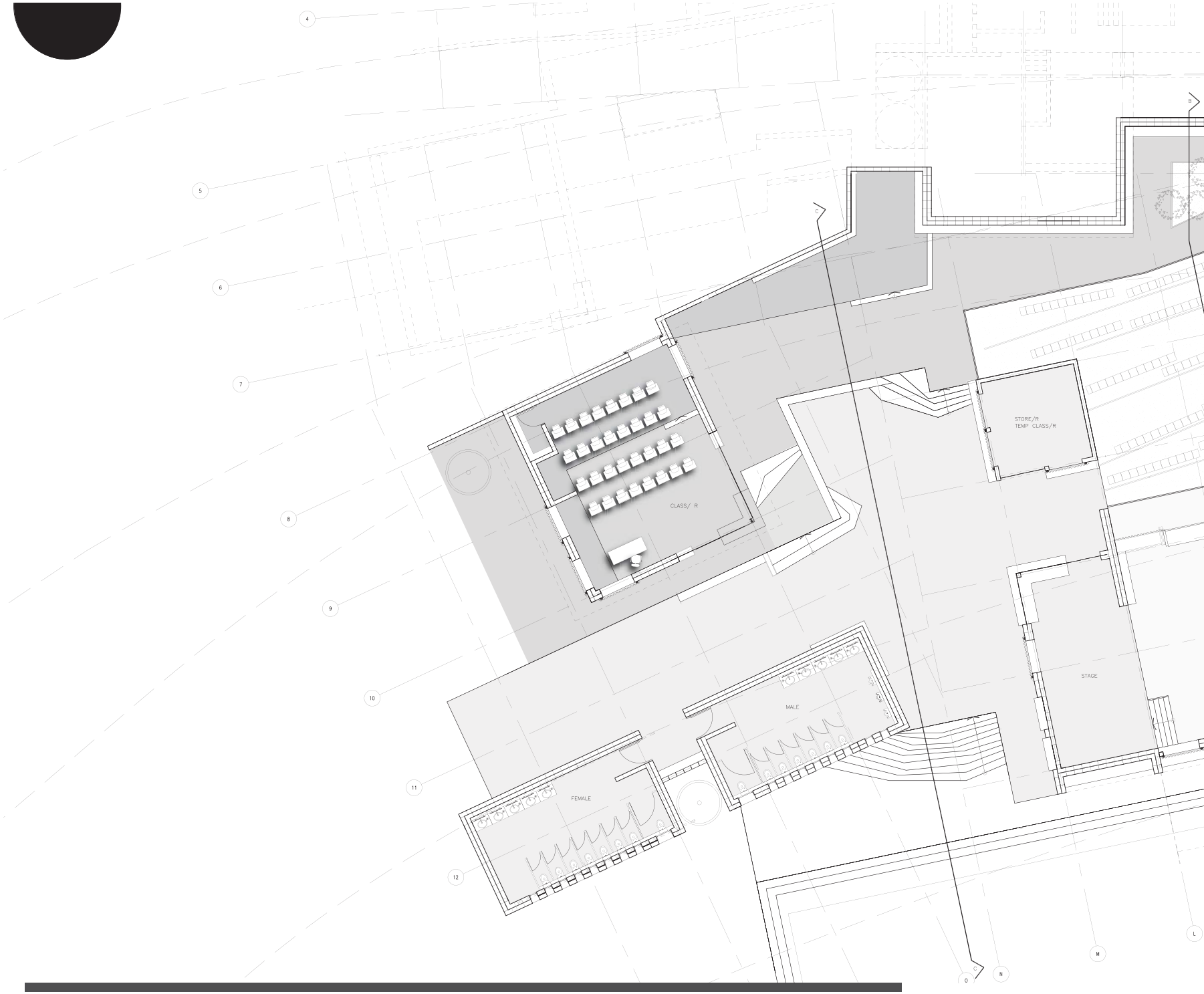
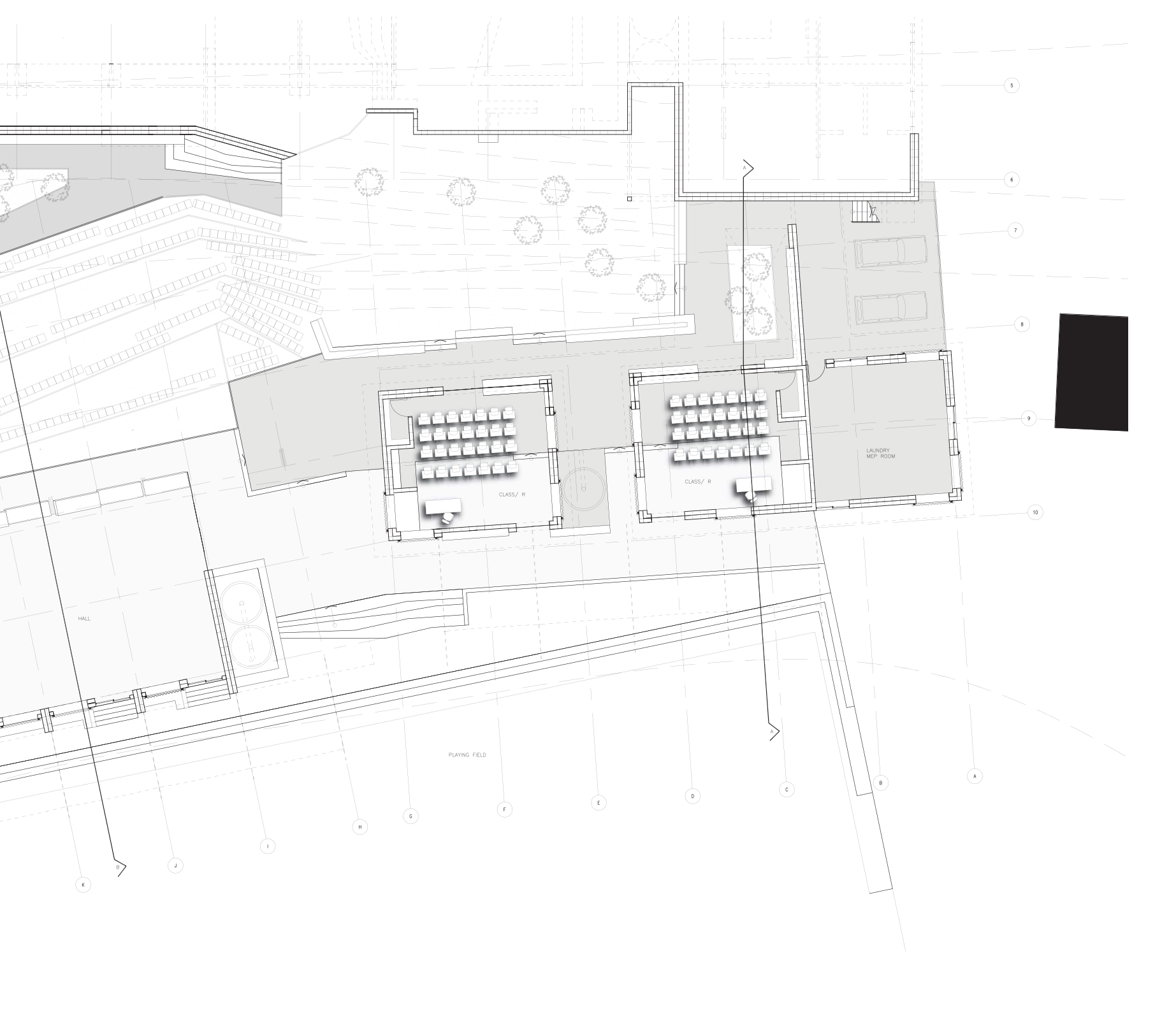
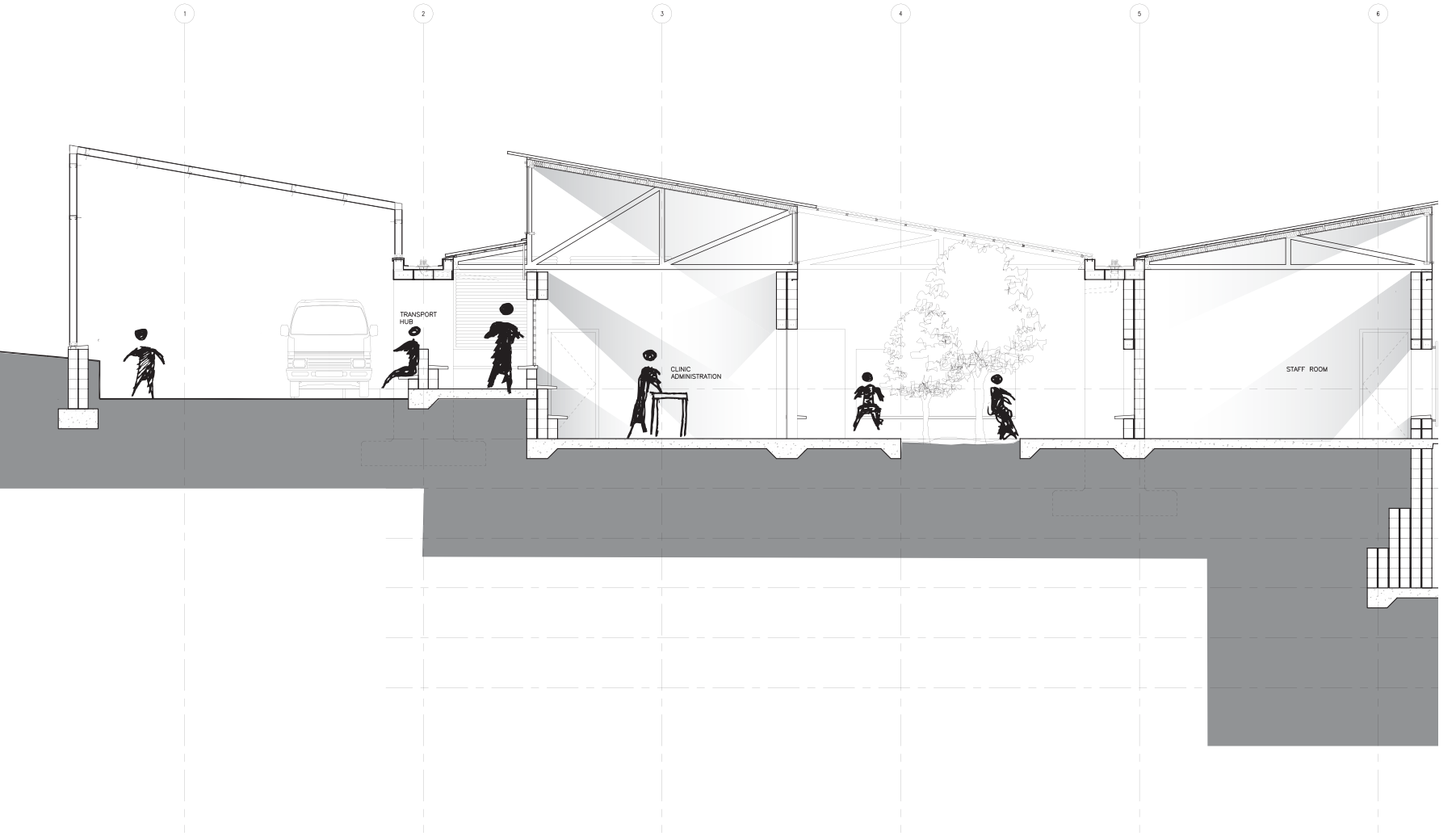
I
J
K

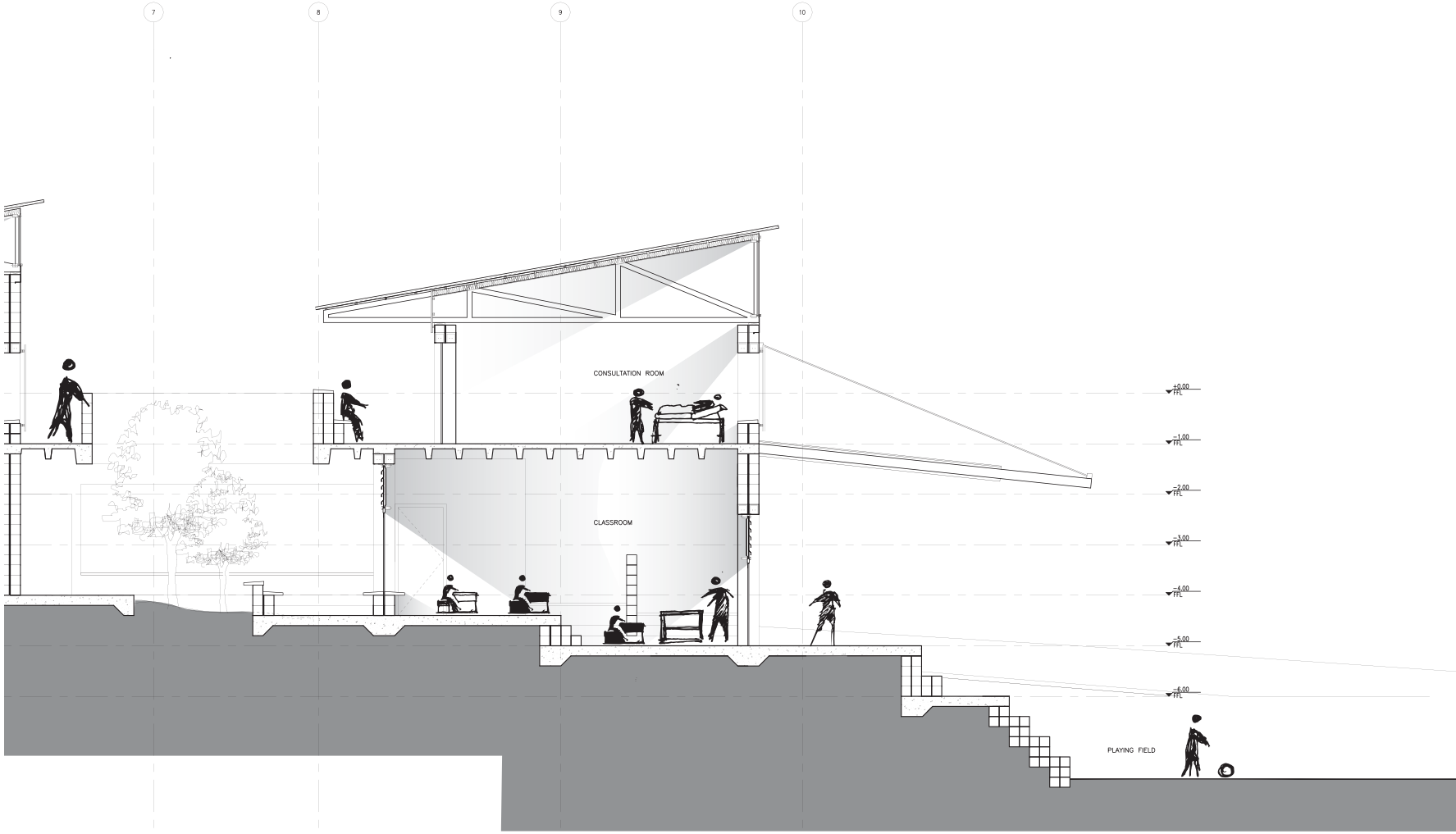


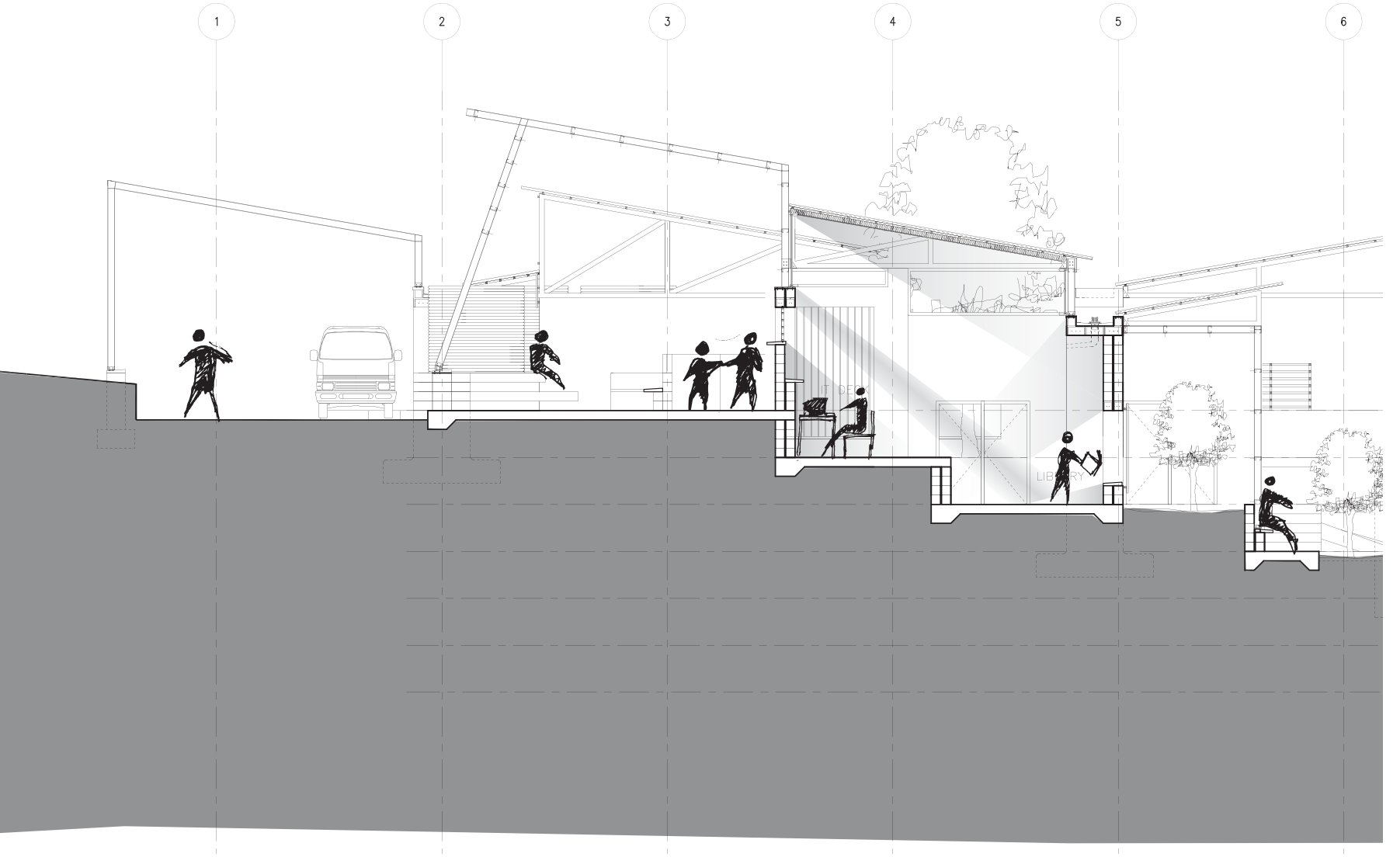
Plan Lower Ground 1/200


CLASS/ R
CLASS/ R
LAUNDRY
MEP ROOM
HALL
PLAYING FIELD

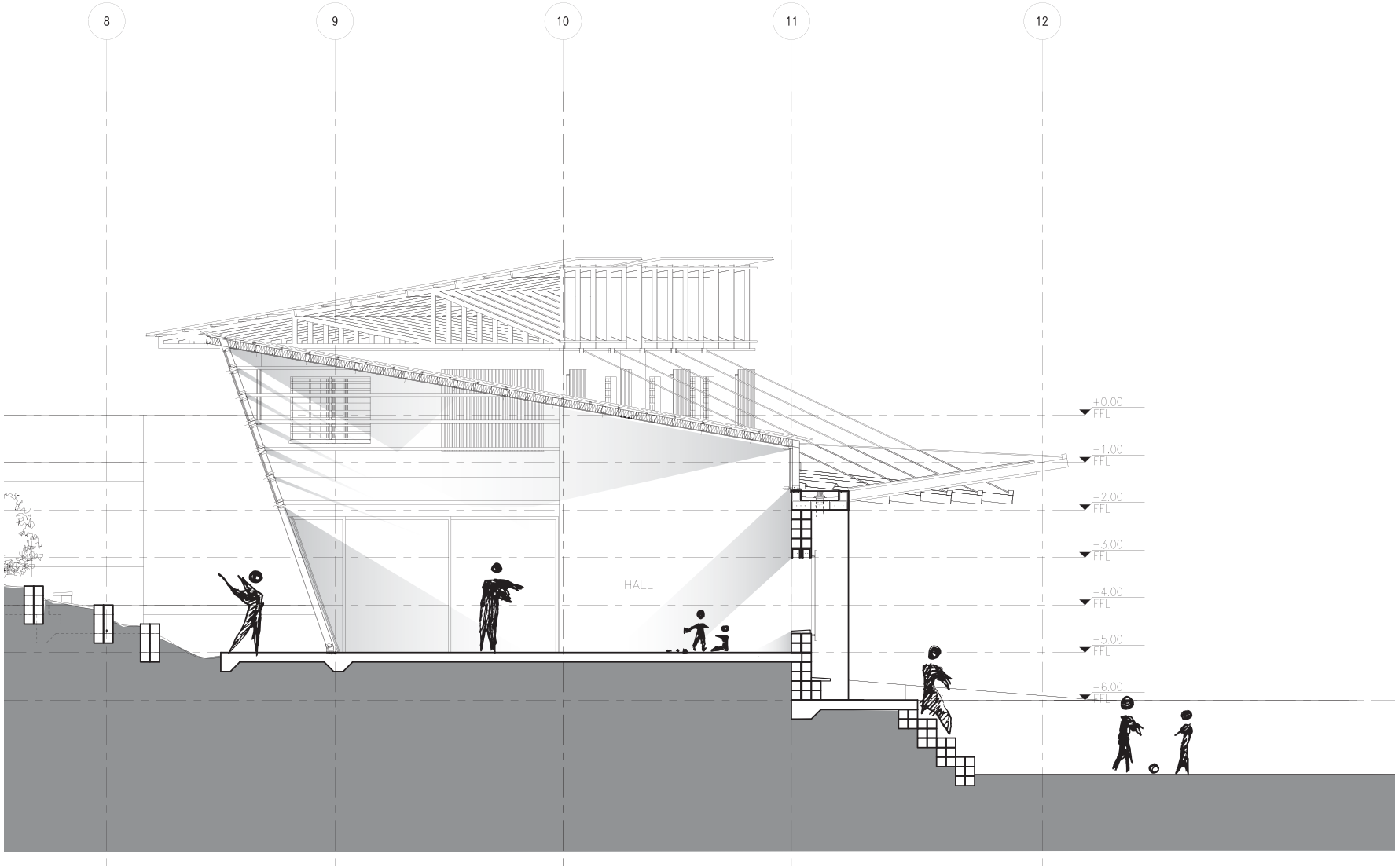


Section AA 1/150


7
8
9
10
CONSULTATION ROOM
CLASSROOM
PLAYING FIELD
+0.00 FFL
-1.00 FFL
-2.00 FFL
-3.00 FFL
-4.00 FFL
-5.00 FFL
-6.00 FFL



Section BB 1/150


8
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HALL
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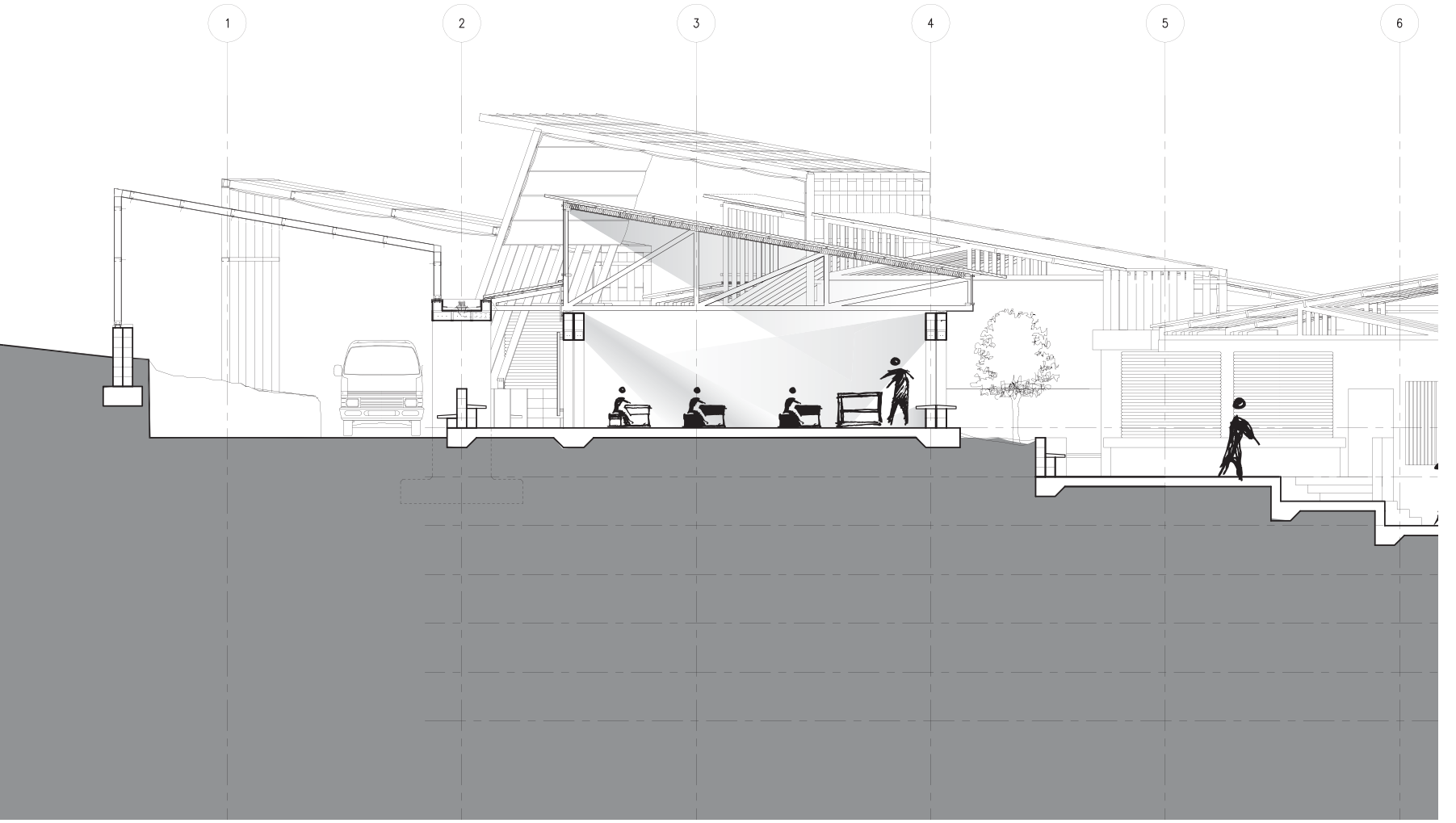
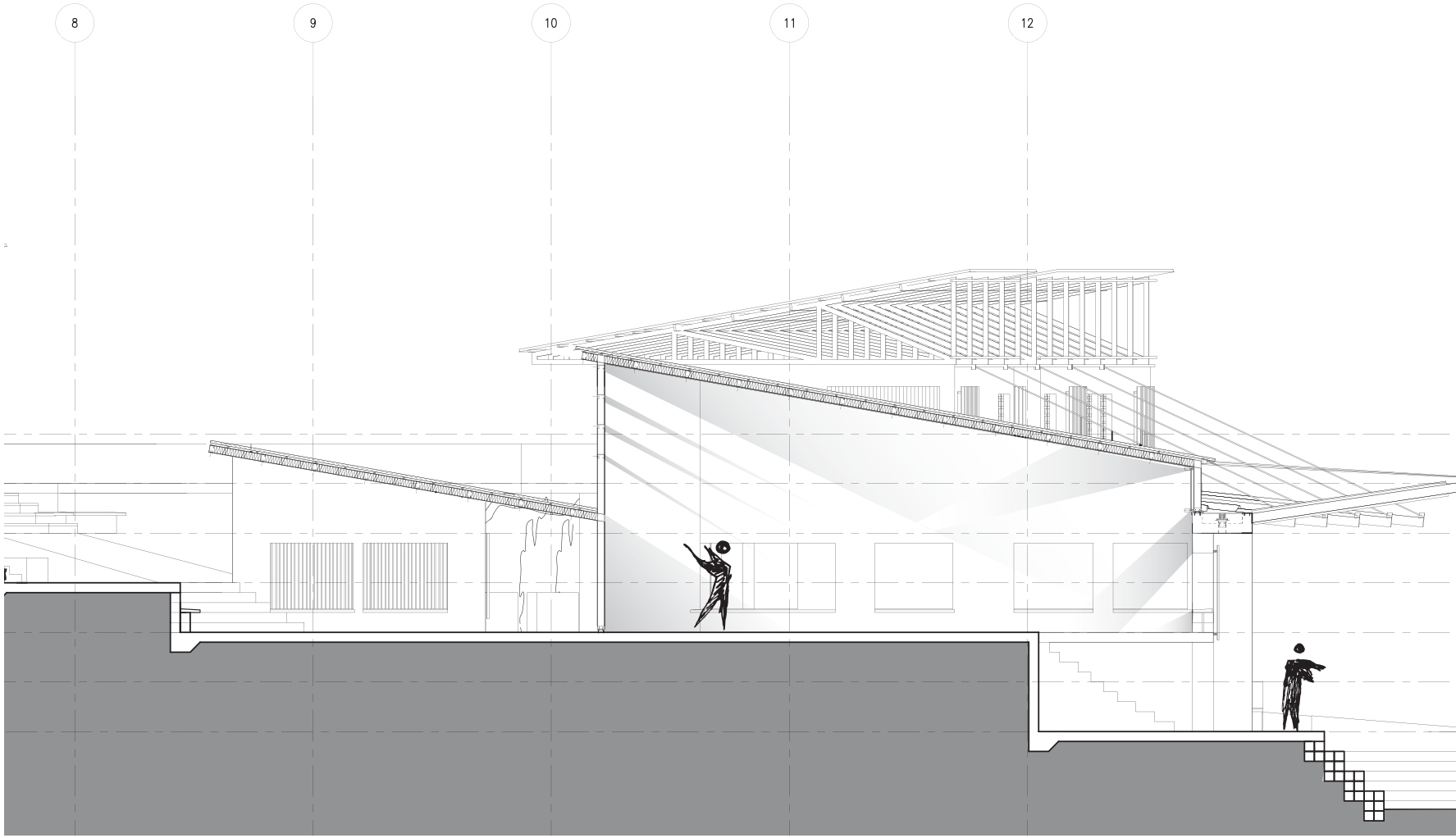
FFL



Section CC 1/150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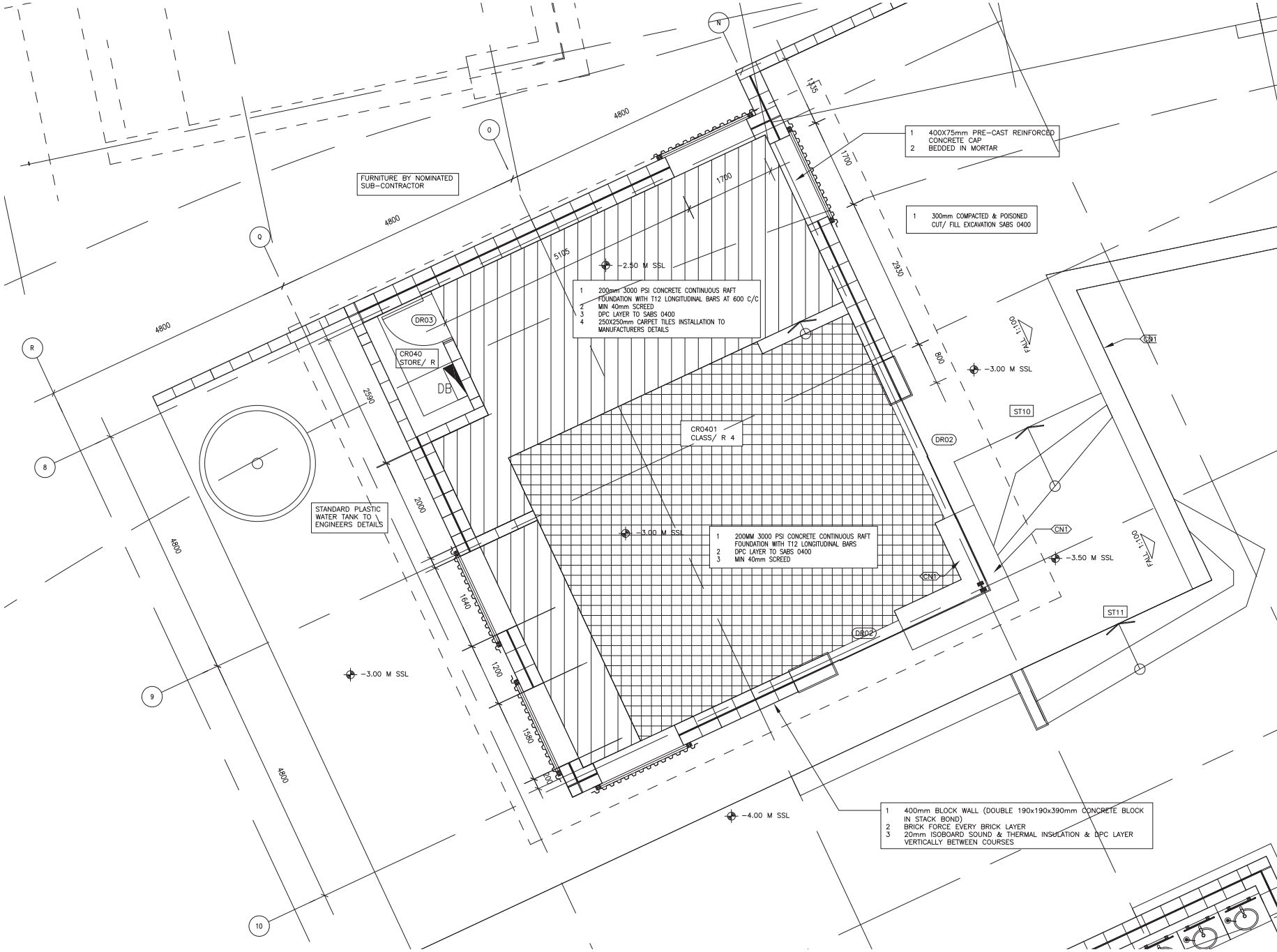
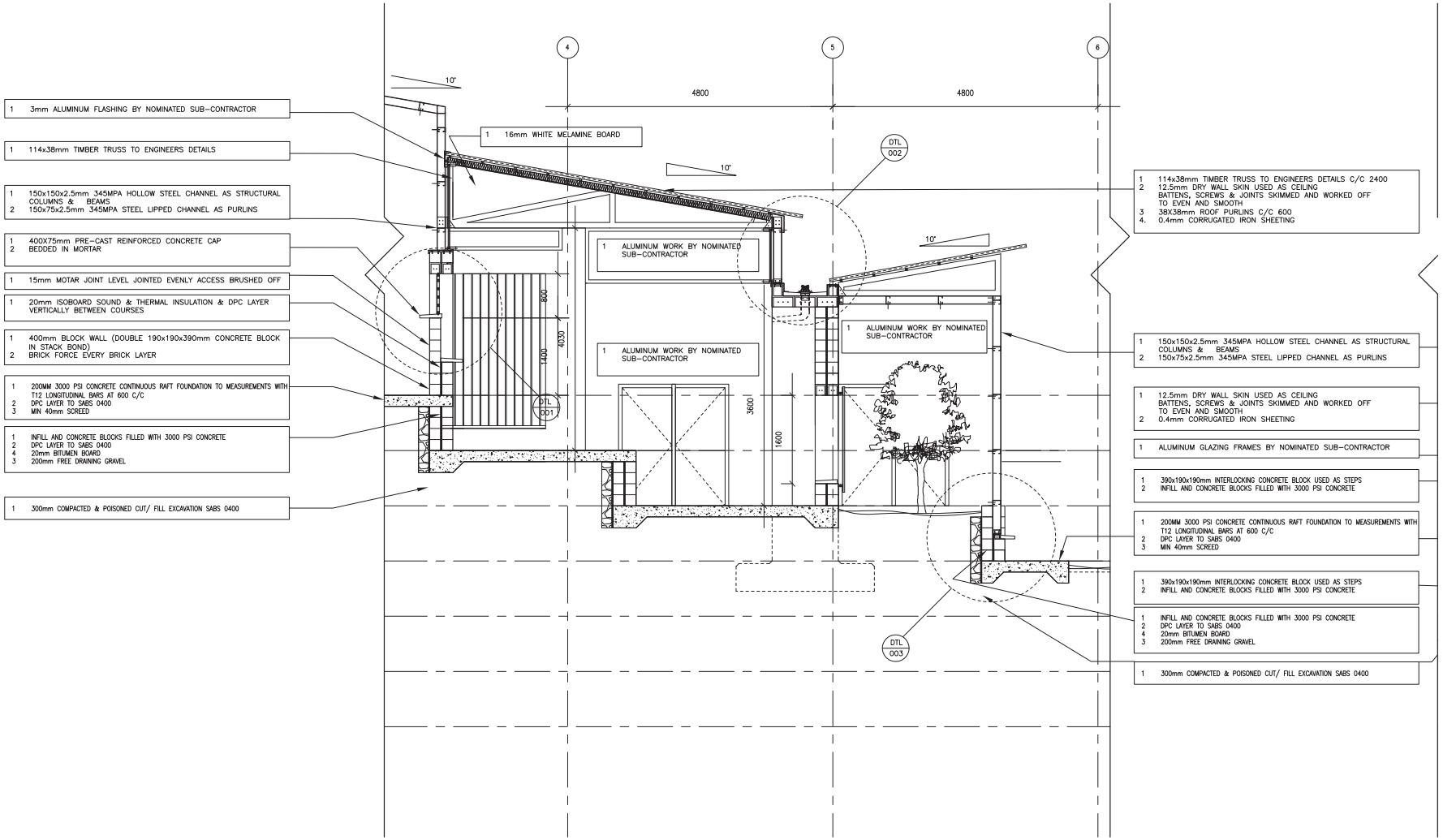
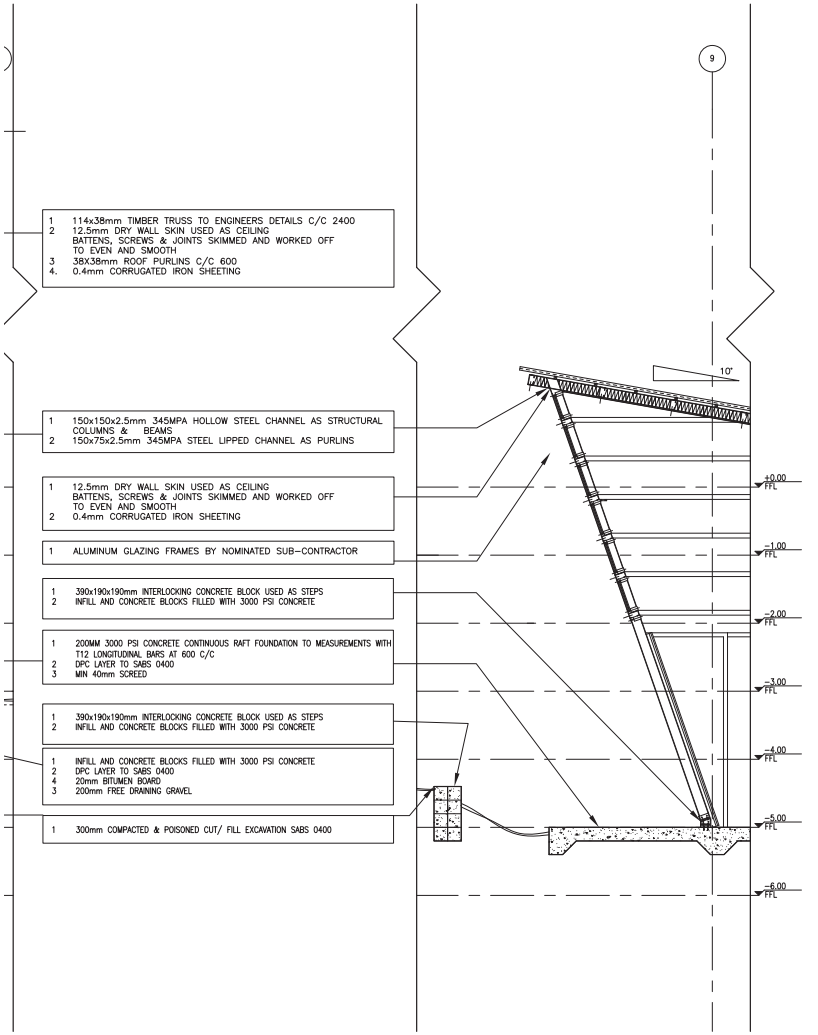


FURNITURE BY NOMINATED SUB-CONTRACTOR
1 400X75mm PRE-CAST REINFORCED CONCRETE CAP
2 BEDDED IN MORTAR
1 300mm COMPACTED & POISONED CUT/ FILL EXCAVATION SABS 0400
-2.50 M SSL
1 200mm 3000 PSI CONCRETE CONTINUOUS RAFT FOUNDATION WITH T12 LONGITUDINAL BARS AT 600 C/C
2 MIN 40mm SCREED
3 DPC LAYER TO SABS 0400
4 250X250mm CARPET TILES INSTALLATION TO MANUFACTURERS DETAILS
DR03
CR040 STORE/ R
DB
CR0401 CLASS/ R 4
-3.00 M SSL
ST10
DR02
CN1
-3.50 M SSL
ST11
FALL 1:100
STANDARD PLASTIC WATER TANK TO ENGINEERS DETAILS
1 200MM 3000 PSI CONCRETE CONTINUOUS RAFT FOUNDATION WITH T12 LONGITUDINAL BARS
2 DPC LAYER TO SABS 0400
3 MIN 40mm SCREED
-4.00 M SSL
1 400mm BLOCK WALL (DOUBLE 190x190x390mm CONCRETE BLOCK IN STACK BOND)
2 BRICK FORCE EVERY BRICK LAYER
3 20mm ISOBOARD SOUND & THERMAL INSULATION & DPC LAYER VERTICALLY BETWEEN COURSES
4800
5105
2930
2590
2000
1640
1200
1580
1700
1335
800

Detail 1/100


1 3mm ALUMINUM FLASHING BY NOMINATED SUB-CONTRACTOR
1 114x38mm TIMBER TRUSS TO ENGINEERS DETAILS
1 150x150x2.5mm 345MPA HOLLOW STEEL CHANNEL AS STRUCTURAL COLUMNS & BEAMS
2 150x75x2.5mm 345MPA STEEL LIPPED CHANNEL AS PURLINS
1 400X75mm PRE-CAST REINFORCED CONCRETE CAP
2 BEDDED IN MORTAR
1 15mm MOTAR JOINT LEVEL JOINTED EVENLY ACCESS BRUSHED OFF
1 20mm ISOBOARD SOUND & THERMAL INSULATION & DPC LAYER VERTICALLY BETWEEN COURSES
1 400mm BLOCK WALL (DOUBLE 190x190x390mm CONCRETE BLOCK IN STACK BOND)
2 BRICK FORCE EVERY BRICK LAYER
1 200MM 3000 PSI CONCRETE CONTINUOUS RAFT FOUNDATION TO MEASUREMENTS WITH T12 LONGITUDINAL BARS AT 600 C/C
2 DPC LAYER TO SABS 0400
3 MIN 40mm SCREED
1 INFILL AND CONCRETE BLOCKS FILLED WITH 3000 PSI CONCRETE
2 DPC LAYER TO SABS 0400
4 20mm BITUMEN BOARD
3 200mm FREE DRAINING GRAVEL
1 300mm COMPACTED & POISONED CUT/ FILL EXCAVATION SABS 0400
4
5
6
4800
4800
10°
10°
10°
1 16mm WHITE MELAMINE BOARD
DTL 002
1 ALUMINUM WORK BY NOMINATED SUB-CONTRACTOR
1 ALUMINUM WORK BY NOMINATED SUB-CONTRACTOR
1 ALUMINUM WORK BY NOMINATED SUB-CONTRACTOR
DTL 001
DTL 003
800
1400
4030
3600
1600
1 114x38mm TIMBER TRUSS TO ENGINEERS DETAILS C/C 2400
2 12.5mm DRY WALL SKIN USED AS CEILING BATTENS, SCREWS & JOINTS SKIMMED AND WORKED OFF TO EVEN AND SMOOTH
3 38X38mm ROOF PURLINS C/C 600
4. 0.4mm CORRUGATED IRON SHEETING
1 150x150x2.5mm 345MPA HOLLOW STEEL CHANNEL AS STRUCTURAL COLUMNS & BEAMS
2 150x75x2.5mm 345MPA STEEL LIPPED CHANNEL AS PURLINS
1 12.5mm DRY WALL SKIN USED AS CEILING BATTENS, SCREWS & JOINTS SKIMMED AND WORKED OFF TO EVEN AND SMOOTH
2 0.4mm CORRUGATED IRON SHEETING
1 ALUMINUM GLAZING FRAMES BY NOMINATED SUB-CONTRACTOR
1 390x190x190mm INTERLOCKING CONCRETE BLOCK USED AS STEPS
2 INFILL AND CONCRETE BLOCKS FILLED WITH 3000 PSI CONCRETE
1 200MM 3000 PSI CONCRETE CONTINUOUS RAFT FOUNDATION TO MEASUREMENTS WITH T12 LONGITUDINAL BARS AT 600 C/C
2 DPC LAYER TO SABS 0400
3 MIN 40mm SCREED
1 390x190x190mm INTERLOCKING CONCRETE BLOCK USED AS STEPS
2 INFILL AND CONCRETE BLOCKS FILLED WITH 3000 PSI CONCRETE
1 INFILL AND CONCRETE BLOCKS FILLED WITH 3000 PSI CONCRETE
2 DPC LAYER TO SABS 0400
4 20mm BITUMEN BOARD
3 200mm FREE DRAINING GRAVEL
1 300mm COMPACTED & POISONED CUT/ FILL EXCAVATION SABS 0400

Detail 1/100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1 114x38mm TIMBER TRUSS TO ENGINEERS DETAILS C/C 2400
2 12.5mm DRY WALL SKIN USED AS CEILING BATTENS, SCREWS & JOINTS SKIMMED AND WORKED OFF TO EVEN AND SMOOTH
3 38X38mm ROOF PURLINS C/C 600
4. 0.4mm CORRUGATED IRON SHEETING
10°
1 150x150x2.5mm 345MPA HOLLOW STEEL CHANNEL AS STRUCTURAL COLUMNS & BEAMS
2 150x75x2.5mm 345MPA STEEL LIPPED CHANNEL AS PURLINS
1 12.5mm DRY WALL SKIN USED AS CEILING BATTENS, SCREWS & JOINTS SKIMMED AND WORKED OFF TO EVEN AND SMOOTH
2 0.4mm CORRUGATED IRON SHEETING
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1 390x190x190mm INTERLOCKING CONCRETE BLOCK USED AS STEPS
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2 DPC LAYER TO SABS 0400
3 MIN 40mm SCREED
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2 INFILL AND CONCRETE BLOCKS FILLED WITH 3000 PSI CONCRETE
1 INFILL AND CONCRETE BLOCKS FILLED WITH 3000 PSI CONCRETE
2 DPC LAYER TO SABS 0400
4 20mm BITUMEN BOARD
3 200mm FREE DRAINING GRAVEL
1 300mm COMPACTED & POISONED CUT/ FILL EXCAVATION SABS 0400
±0.00 FFL
-1.00 FFL
-2.00 FFL
-3.00 FFL
-4.00 FFL
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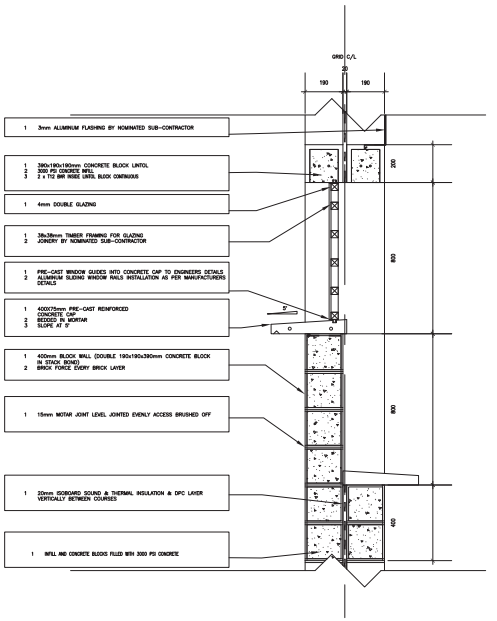
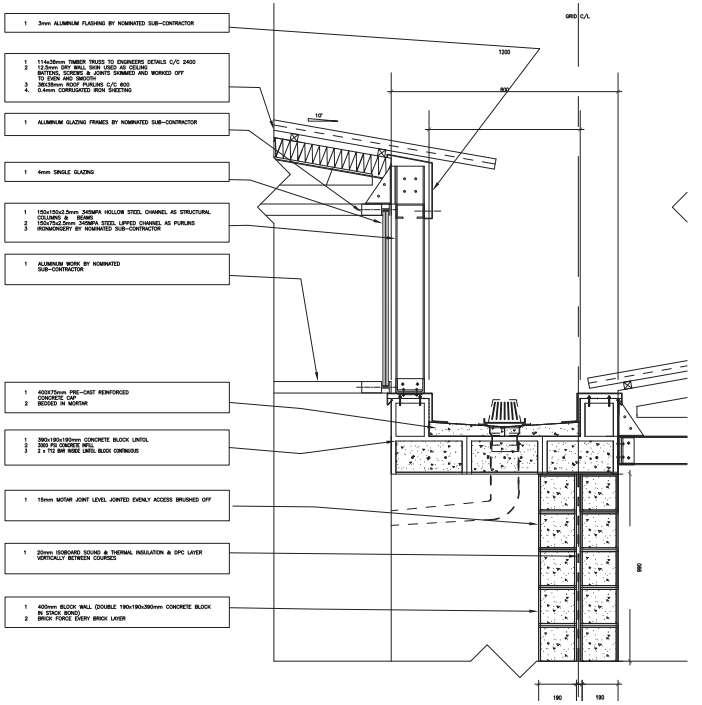
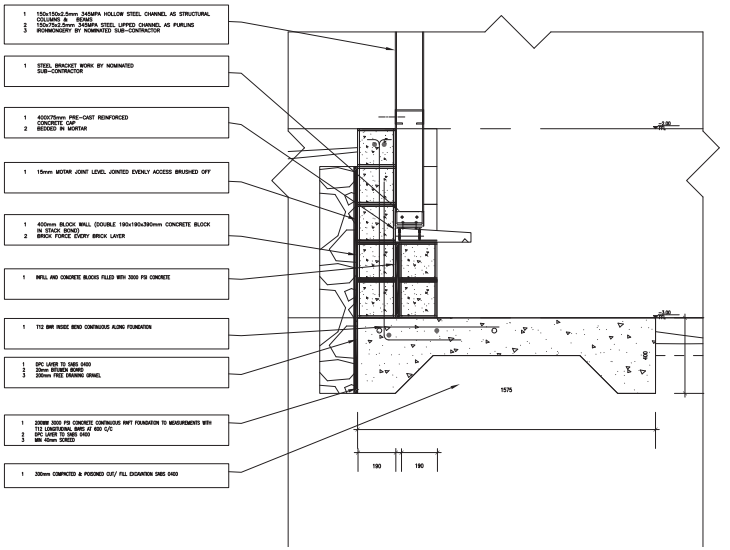

GRID C/L
20
190
190
1 3mm ALUMINIUM FLASHING BY NOMINATED SUB-CONTRACTOR
1 390x190x190mm CONCRETE BLOCK LINTOL
2 3000 PSI CONCRETE INFILL
3 2 x T12 BAR INSIDE LINTOL BLOCK CONTINUOUS
1 4mm DOUBLE GLAZING
1 38x38mm TIMBER FRAMING FOR GLAZING
2 JOINERY BY NOMINATED SUB-CONTRACTOR
1 PRE-CAST WINDOW GUIDES INTO CONCRETE CAP TO ENGINEERS DETAILS
2 ALUMINIUM SLIDING WINDOW RAILS INSTALLATION AS PER MANUFACTURERS DETAILS
1 400X75mm PRE-CAST REINFORCED CONCRETE CAP
2 BEDDED IN MORTAR
3 SLOPE AT 5°
1 400mm BLOCK WALL (DOUBLE 190x190x390mm CONCRETE BLOCK IN STACK BOND)
2 BRICK FORCE EVERY BRICK LAYER
1 15mm MOTAR JOINT LEVEL JOINTED EVENLY ACCESS BRUSHED OFF
1 20mm ISOBOARD SOUND & THERMAL INSULATION & DPC LAYER VERTICALLY BETWEEN COURSES
1 INFILL AND CONCRETE BLOCKS FILLED WITH 3000 PSI CONCRETE
200
800
800
400
5°


GRID C/L
1200
800
10°
1 3mm ALUMINIUM FLASHING BY NOMINATED SUB-CONTRACTOR
1 114x38mm TIMBER TRUSS TO ENGINEERS DETAILS C/C 2400
2 12.5mm DRY WALL SHIN USED AS CEILING
BATTENS, SCREWS & JOINTS SKIMMED AND WORKED OFF TO EVEN AND SMOOTH
3 38X38mm ROOF PURLINS C/C 800
4. 0.4mm CORRUGATED IRON SHEETING
1 ALUMINIUM GLAZING FRAMES BY NOMINATED SUB-CONTRACTOR
1 4mm SINGLE GLAZING
1 150x150x2.5mm 345MPA HOLLOW STEEL CHANNEL AS STRUCTURAL COLUMNS & BEAMS
2 150x75x2.5mm 345MPA STEEL LIPPED CHANNEL AS PURLINS
3 IRONMONGERY BY NOMINATED SUB-CONTRACTOR
1 ALUMINIUM WORK BY NOMINATED SUB-CONTRACTOR
1 400X75mm PRE-CAST REINFORCED CONCRETE CAP
2 BEDDED IN MORTAR
1 390x190x190mm CONCRETE BLOCK LINTOL
2 3000 PSI CONCRETE INFILL
3 2 x T12 BAR INSIDE LINTOL BLOCK CONTINUOUS
1 15mm MOTAR JOINT LEVEL JOINTED EVENLY ACCESS BRUSHED OFF
1 20mm ISOBOARD SOUND & THERMAL INSULATION & DPC LAYER VERTICALLY BETWEEN COURSES
1 400mm BLOCK WALL (DOUBLE 190x190x390mm CONCRETE BLOCK IN STACK BOND)
2 BRICK FORCE EVERY BRICK LAYER
990
190
190

Details 1/50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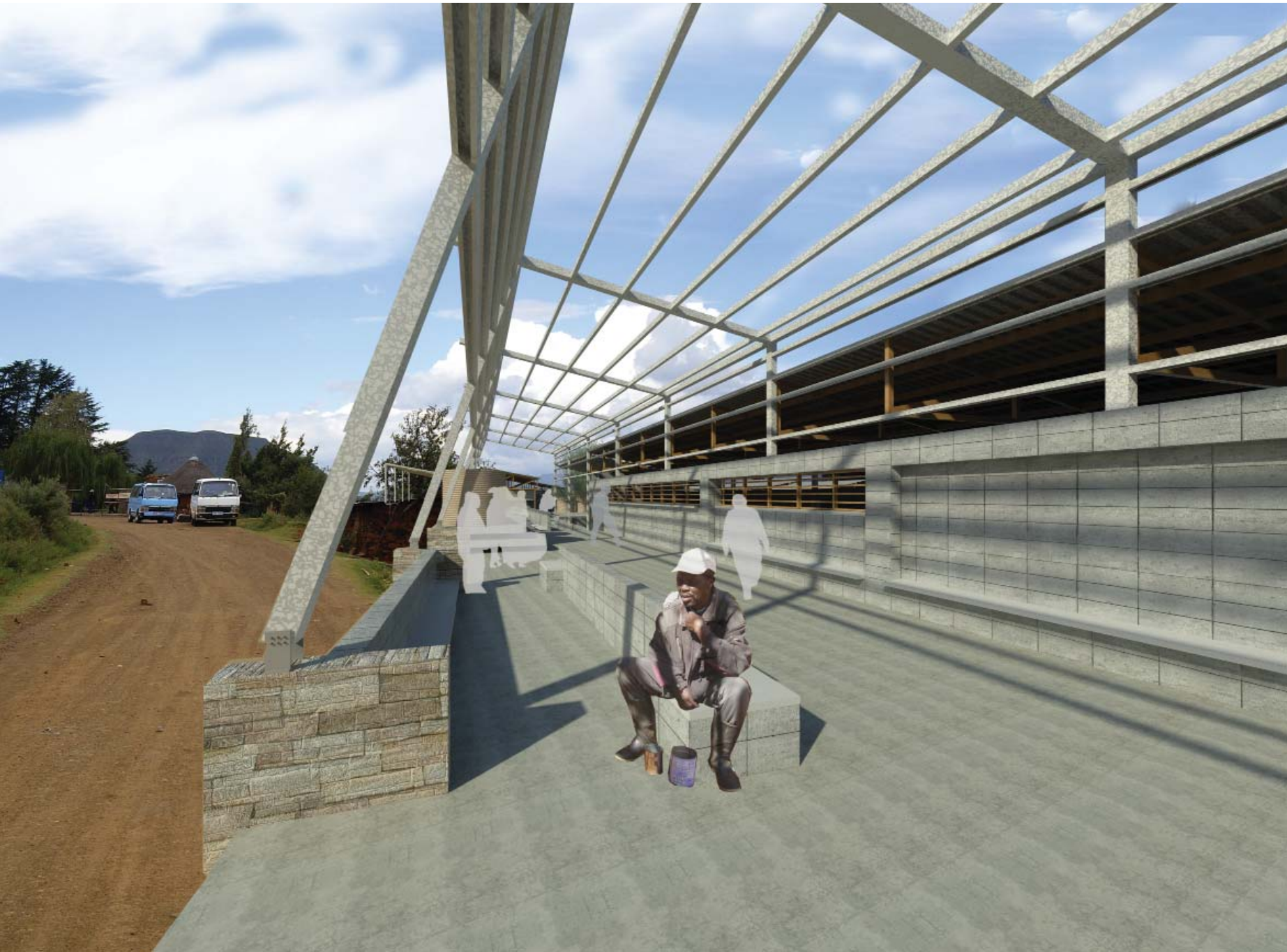
1 T12 BAR INSIDE BEND CONTINUOUS ALONG FOUNDATION
1 DPC LAYER TO SABS 0400
2 20mm BITUMEN BOARD
3 200mm FREE DRAINING GRAVEL
1 300MM 3000 PSI CONCRETE CONTINUOUS RAFT FOUNDATION TO MEASUREMENTS WITH T12 LONGITUDINAL BARS AT 600 C/C
2 DPC LAYER TO SABS 0400
3 MIN 40mm SCREED
1 300mm COMPACTED & POISONED CUT/ FILL EXCAVATION SABS 0400
-2.00
-3.00
400
1575
190
190

Roadside Perspective

Roadside Perspective

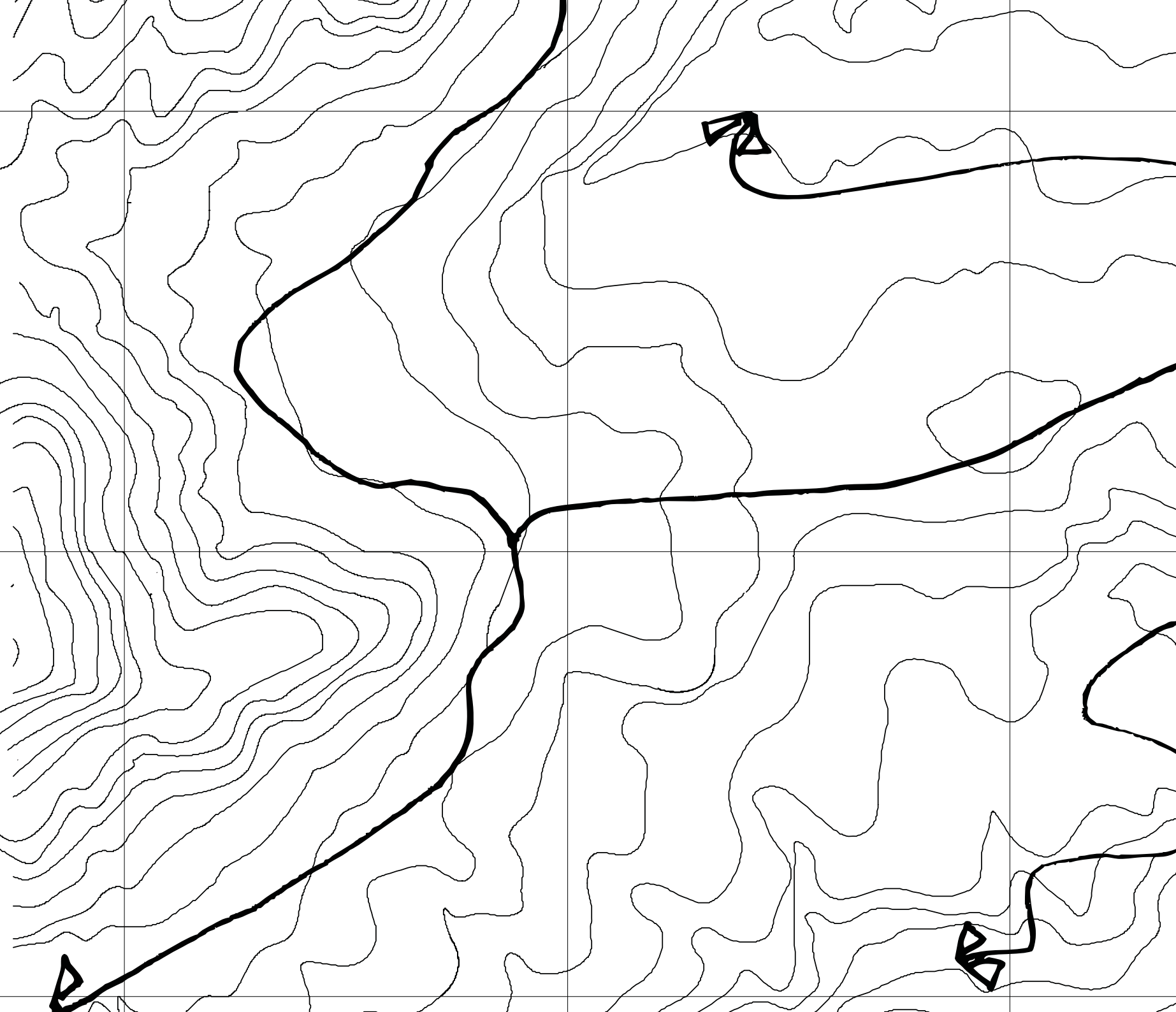


Library Perspective

Taxi Hub Perspective

School Yard Perspective

Classroom Perspective



SCHOOL OF ARCHITECTURE & PLANNING

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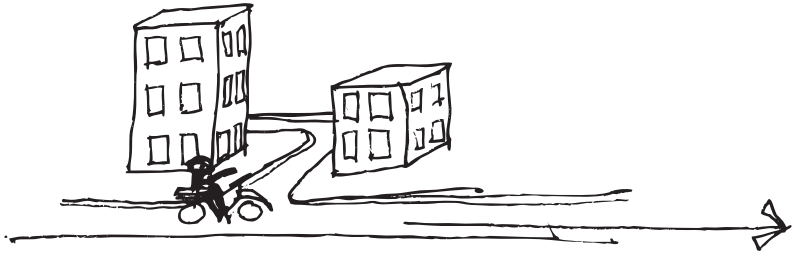
Rural 'Exchange'

An Approach to Multi-Use and Inter-Disciplinary Creation of Space in a Rural Community Environment

An Architectural dissertation by Jonathan Michael Webb,

November 2010

Masters of Architecture (Professional)

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