

## *\_02 building*

A number of details have been revealed as possible contents of programme for the envisaged development, which will support goals of the Makhado IDP.

These include:

1. Wholesale storage and retail space for both consumables and non-consumables.
2. A non-diurnal environment, which must therefore include a full spectrum of activity. Accommodation is thus included to achieve continual passive surveillance, indicating the scope of the development's users.
3. Retail space ownership made accessible to residents of the building. What follows is the provision for basic amenities within close proximity, including: Public spaces to celebrate the amalgamation of the different users, recreational space and health facilities.

Before this schedule of functions can become more specific, the appropriate site must be located for the scale of a such a development. An important question that has sustained throughout this brief urban investigation and context study however, is why are vacant portions of land inside the city's CBD not suggested for new development?

Surely further business and commercial interest will help contain much of and increase the density to the CBD, and thus prevent "green-field" development elsewhere?

Yes, the insertion of more mixed-use building programme into an existing system of infrastructure, commercial, business and retail will only support those design guidelines outlined.

The answer however is sourced from understanding the scale of the proposed development envisaged by both council and the author.

A scale of project that requires a large area of ground that can sustain the access requirement of the building's users, accommodating the existing urban fabric and suggestive of future urban development.

Under the auspices of macro-scale site identification and future urban development through to micro-scale, the following text hopes to clarify the eventual choice of site, whose location is not wholly within the bulk of the existing urban fabric, but is still intrinsically interdependent of it and will ultimately predicate future urban development.

Elementary urban planning principles are investigated, in particular, that of nodal development and the identification of strong activity corridors within the urban fabric of Makhado

## *baseline*

The governing design principles focus on key issues of sustainable environments. Challenge to its success is the full interpolation thereof, typical not only of the building's programme as a mixed-use type and the resulting design, but its application of the Environmental, Social and Economic systems.

Under the guidance of tools already established by Gibberd, J (2003), the following chapters hope to reveal the application of the tree tiers of sustainability.

These will be placed within the context of Makhado, in urban development and site location, the building's design and the technical inquiry following that.

These goals are set out premature to the design process and will thus be monitored in their use throughout, revealing the respective tiers' relevance.

To access this information easily, the baseline response will be indicated in red text.

# urban development

## in brief

The N1 is the main arterial that passes through the town and ultimately divides it into two portions.

From the historical context and urban composition already shared, the urban form west of the N1 is now clearly defined.

So too is the resultant development to the national road's eastern border, comprised of both early regime and current urban planning policies.

Bordering either side of the N1 lie large sections of servitude land, possibly for future roadwork?

Within the western portion adjacent to this, is a service road aiding a less than vibrant looking light industrial strip.

Travelling further north, vehicular traffic is brought to two stops, which by sheer local understanding negotiate the bulk of motorists east and more specifically west into the CBD of the town.

There have however been a number of incidents where traffic congestion and fast moving heavy loaded vehicles have caused serious accidents. Earlier this year, two children sitting on the back of a bakkie were killed as a overloaded truck - travelling south from the Soutpansberg Mountain pass, failed to stop, and crashed into the vehicle. This was not the first accident of this nature in the town, and by protest action of local residents, a traffic circle is to be built at the intersection. The aim is to maintain a continuous flow of traffic, accompanied by extra lighting and road signs to alert drivers . This is depicted in figures 2.2 and 2.3 - placed some 3km from the beginning of the climb up the pass. The newspaper articles referenced, suggest that the council of Makhado and the National Road Agency will also place traffic lights at the two other important intersections with the N1, those of Songozwi and Rissik streets respectively.



## Verkeersirkel op N1 'n proeflopie

Dié veiligheidstap binne 'n maand reg

Marietie Louw

'N Verkeersirkel op die N1 hoofweg deur Makhado (Louis Trichardt) in Limpopo sal binne 'n maand in gebruik wees. So sê mnr. Alex van Niekerk van die Nasionale Padagentskap. Volgens hom sal dié sirkel, by die laaste vieringstoptekens in die dorp op pad na Musina (Messina), 'n proeflopie wees. Die sirkel sal verkeer, veral swaar vrugmotors wat met die bergpas van Musina in Makhado inkom, dwing om spoed te verminder. Verkeer in die sirkel sal na regs moet toege. Dié maatreef is ingestel ná

'n ongeluk vroer vanjaar toe twee laerskoolleerlinge van die dorp by dié kruising dood is. 'n Wegvoelvrugmotor het uit die rigting van Musina gegaan en teen 'n bakkie gebots. Dewald (12) en Chantelle (8) die Preez het agterop die bakkie gesit en is deur die lug geslinger. Volgens Van Niekerk sal waarskuwingsborde by die kruising opgerig word wat bestuurders sal maan om verkeer in alle rigtings dop te hou. "Dit moet 'n vryloei-toestand wees waar voertuie die hele tyd sal beweeg." Dit sal voordelig wees vir swaar vrugmotors met oorverhitte remme ná die bergpas. Dit word ook oorweeg om spoedkameras by die stopte-

ken op te rig wat as 'n verdelende maatreef sal dien om stadiger te ry. 'n Sandput sowat 3 km voor dié stoptekens word getrukkie indien voertuie se remme ingee. Van Niekerk het gesê die verkeersbane op die N1 hoofweg deur die dorp is die afgelope maande verbreed. Bane is ook aangebring vir links en regs draai. Dié projek het sowat R8 miljoen beloop. Die twee ander vieringstoptekens wat Makhado en die N1 hoofweg verbind gaan moontlik verkeersligte en bykomende beligting kry. Van Niekerk het gesê gesprekke is aan die gang met die Makhado-munisipaliteit om deel van die koste van die verkeersligte te dra. ■ [miouw1@beeld.com](mailto:miouw1@beeld.com)

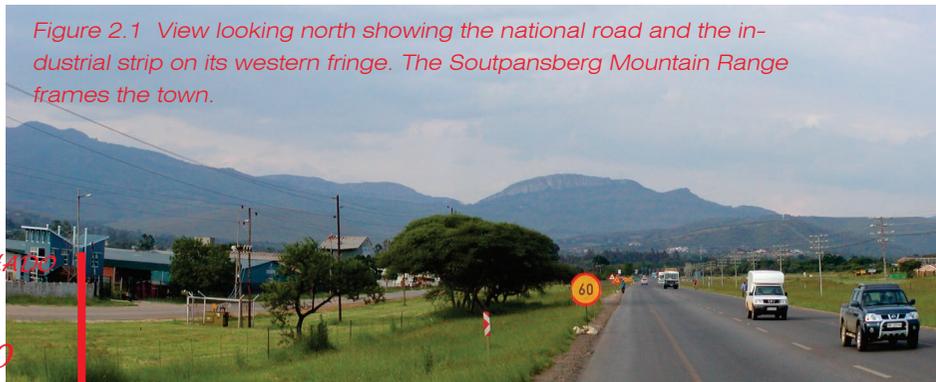


Figure 2.1 View looking north showing the national road and the industrial strip on its western fringe. The Soutpansberg Mountain Range frames the town.

MAKHADO T&T

20

## N1 kry dalk sirkel om botsings te keer

Planne beraam vir berugte kruising

Marietie Louw

'N Verkeersirkel op die N1 hoofweg by die kruising met die N1 hoofweg in Makhado (Louis Trichardt) in Limpopo sal binne 'n maand in gebruik wees. So sê mnr. Alex van Niekerk van die Nasionale Padagentskap. Volgens hom sal dié sirkel, by die laaste vieringstoptekens in die dorp op pad na Musina (Messina), 'n proeflopie wees. Die sirkel sal verkeer, veral swaar vrugmotors wat met die bergpas van Musina in Makhado inkom, dwing om spoed te verminder. Verkeer in die sirkel sal na regs moet toege. Dié maatreef is ingestel ná

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Figures 2.2 to 2.3. Newspaper articles sourced from the Beeld

It is behind the buffer of light industrial buildings, cellular state housing, local pubs and fuelling stations, that the “gut” of Makhado is exposed.

Low-rise buildings, with the help of the topographical character of the town, sustain some sense of density within the town’s main arterials.

Used predominantly by foot - banks, clothing stores, hair salons, discount and hardware stores and the traditional programme of a low to middle class CBD define more of this town’s character.

It is its prevailing source of agriculture however that sustains its survival, displacing the town’s borders into the farmlands that circumvent it. It is here that a great proportion of the surrounding rural communities are sourced for labour and included in the client market.

From labourers and predominantly white farmers, to the town’s residents themselves – each of these inhabitants play migrant roles, commuting to and from the town, and more specifically the CBD, on a daily basis.

With the bulk of heavy vehicular movement contained on the N1, the town is a crossroad to two other important arterials in the east-west direction. The R524 to the east serves important agricultural districts, such as Levubu, Sibasa and Thohoyandou.

This is also an alternative route to the Kruger National Park gate – Punda Maria.

The road oriented to the west is the R522, which is accessed via one of the main streets in Louis Trichardt (Rissik street).

Trucks and other light delivery vehicles thus use this route, and it especially serves as an alternative route to the Soutpansbeg pass for trucks en route to Musina. This is however illegal, due to overloaded trucks destroying the road, and strict legal action is carried out on truck companies that fail to obey the restrictions imposed on them.

The truck movement confined to the N1 is thus on the increase, and it is important that the traffic of the two main arterials (N1 and R524/R522) is captured – predicating site at macro scale.

# \_site development

The Central Business district of Makhado is accessed by a composition of 4 main movement lines for both vehicles and pedestrians, namely: the National Road (N1), Rissik Street, Krogh Street and Songozwi Street.

The N1 (north-south), the R524 (east) and the R522 to the west, predicate the ring-road like movement depicted in blue (figure 2.4), by supplying the bulk of traffic specifically from the surrounding areas to Makhado. This ring-road circulates traffic in and around the core of the town's centre, and is accessed by smaller streets from the residential and industrial precincts.

The bulk of the business district is comprised of retail, business and council owned land, reaching its intensity along the length of Songozwi Street and at its intersection with Krogh Street.

Commercial activity found here, includes banks, retail shops and office space.

Just south from this, the same content of activity thins out into a less dense building fabric with; large public open land adjacent to the Municipal buildings, large cash and carry warehouses contained to the fringe of Songozwi Street and car service and fitment yards lining Krogh Street.

Moving further south to Rissik Street, many suburban homes have acquired business rights and have added on the necessary rooms, carports and gables to adapt to their new uses - a strip of suburban development not unique to this town.

The length of Rissik Street is comprised of the insertion of this business type, with the collection of more wholesalers, car repair and service yards and light industrial buildings fronting its southern edge, contained between the N1 and Kruger Street.

The light industrial buildings of milling companies, fuel depots, engineering works and bulk storage buildings reach up to and over the railway line all the way to the agricultural small holdings that border the town's southern edge.

The locality of the railway line and station on relatively flat land in 1914, predicated much of the early industrial building activity, almost positioned outside the more affluent and business oriented portions of town contained to Krogh and Songozwi Streets (Trichardt Street).

Situated at the centre of the old main road of Krogh Street, the intersection of these two streets was the prominent point of access and trade for those entering the town, before leaving further north or south.

Found here too is the first Afrikaner church of the town - The Church of the Vow, built shortly after the town's independence in 1899.

The first Mosque, and Synagogue (which was later demolished), are also found within close proximity to the Central Business District.

It is here that the town first grew, and has since predicated the resultant form and areas of development visible today.

The demand of retail, commercial and business growth in the CBD has persisted, all the while supported by the industrial activity to the town's southern half.

A change in local commerce need has also asked for an extended supply of wholesale purchase typical to the region. The result is these buildings becoming more accessible to the CBD's user, and thus included in the town's urban fabric.

The need for land to cater for both the commercial, industrial and light industrial sectors placed within easy access of the CBD, has demanded the adaptation of zoning rights. These two respective precincts are now reaching for each other, encroaching on the residual suburban land, leaving this portion of the town in a state of hiatus.

figure 2.4 *site development - meso scale* land-use analysis

LEGEND

Central Business District



Bird and Tree Parks  
- Green Buffer



Recreation -  
Sports grounds



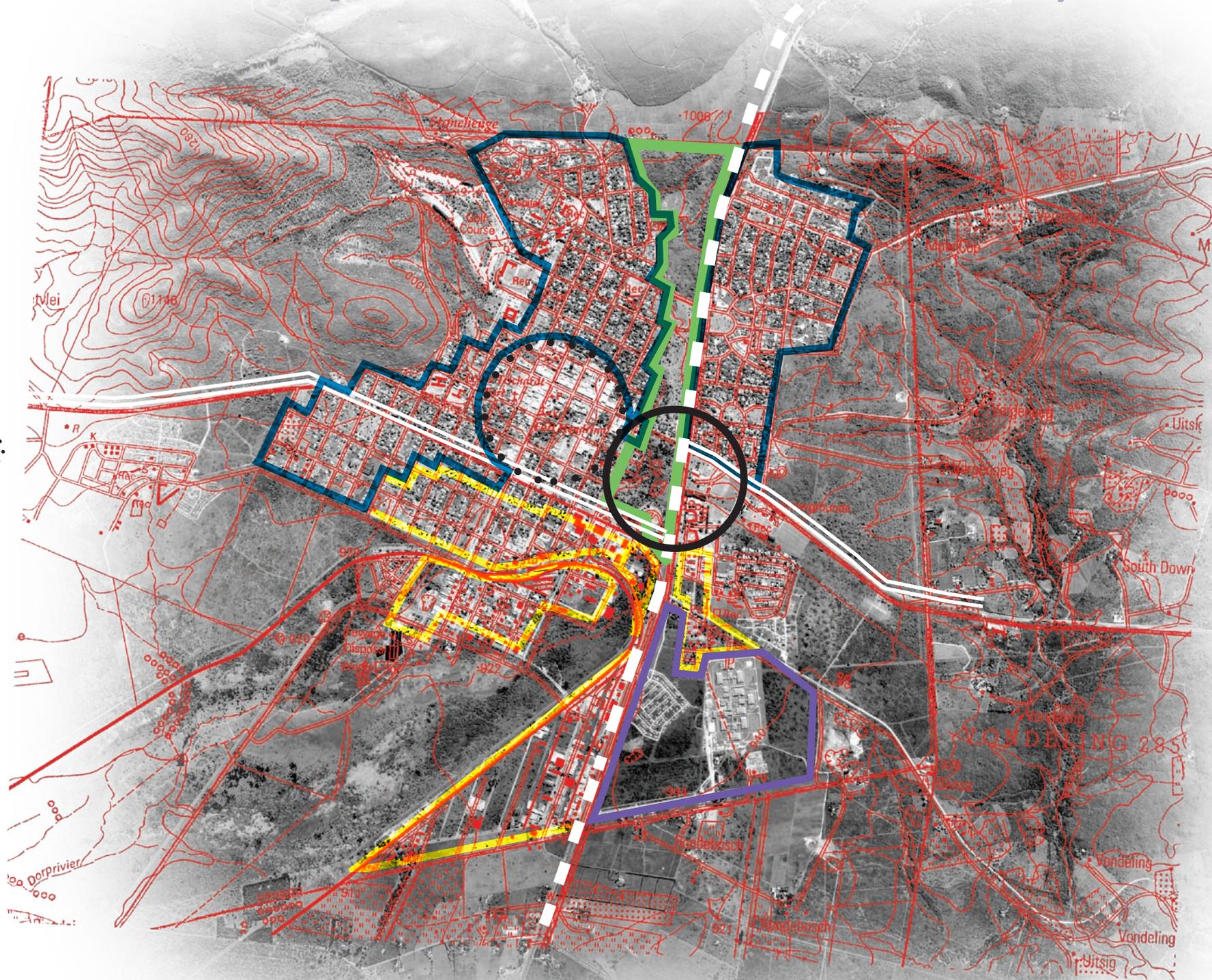
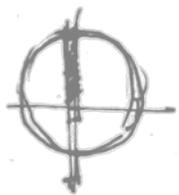
Light to heavy  
Industrial



Residential



Land earmarked  
for development



# site development *land use and movement analysis* figure 2.7

This grey area lacks a connection between the two portions of town - and is in need of a driving catalyst other than the delapidated activity of business and retail, that will initiate interest of investors to develop more prominently.

That portion of land earmarked for development by the council - figure 2.7, also represents a lack of activity. It is perhaps for this reason that this site was chosen by them. Some important urban design principles have been negated however, the most prominent being the the continuum of time.

If a large shopping centre complex was to be built there, the implosive character of its implementation will

undermine the possibility of a more mixed use building type just north of the R524. The residential neighbourhood will ultimately face the shopping centre, and perhaps its parking lot and receiving bays.

No time will be available for the edge of this residential precinct to respond appropriately - with for example a more mixed use and increased density building fabric.

The depicted site of the council's interest depicts the least amount of affected radius needed to support mixed-use development, while still sustaining some contact with the existing fabric.

Another factor not considered is the big leap the business district would have to make to reach the new de-

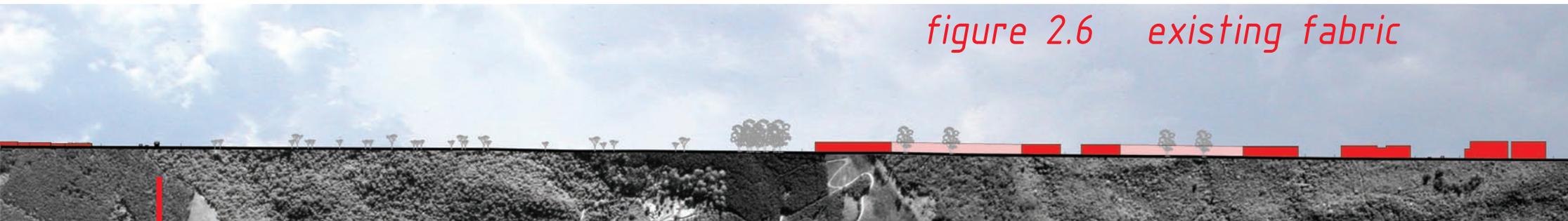
velopment, even if it were initially of a mixed use programme.

The remaining portions of Bird and Tree Park north-west and south-west of the N1 and Songozwi Street, cannot - merely by topographical nature, support development of the same intensity as found in the CBD.

We can safely assume that a new shopping centre will only exclude these factors and inevitably be built in isolation from the residing built form and activity. Void of housing, the pavilion building, guarded by palisade fencing, will remain exclusively accessible by the automobile.



*figure 2.6 existing fabric*





# site development *land use and movement analysis* figure 2.10

That portion marked as SITE in figure 2.10 is chosen to support development of a catalyst nature.

Development of an activity node here hopes to initiate long term development of a density similar to that in Songozwi Street, along Krogh and more specifically - Rissik Street. This street's importance within the heirarchical network of roads will once again be highlighted, and will serve even larger amounts of traffic of both vehicles and pedestrians.

This urban corridor is supported by making contact through its length with the light-industrial to industrial precincts and train station south of Rissik Street.

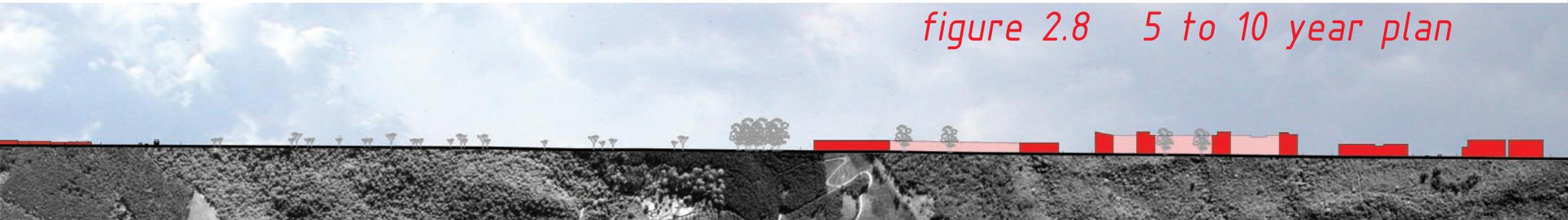
The hope is that development along this spine will rejuvenate this portion of the town with a more high-end order of activity.

Access to the interior of the precinct of Eltivillas is already favourable with the N1 and Rissik Street serving as main feeding arterials.

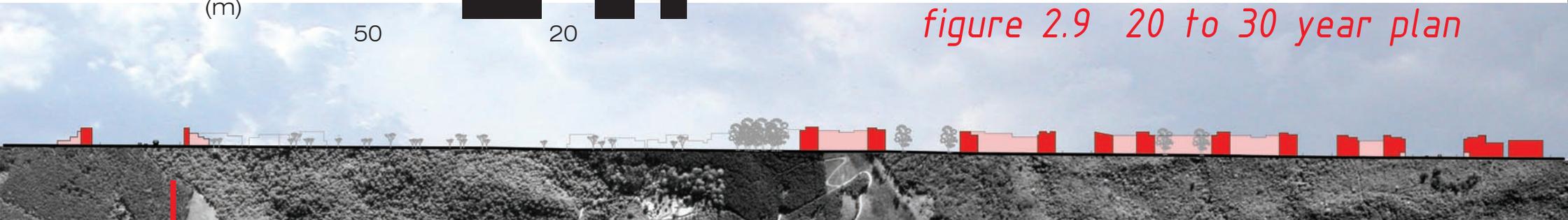
Wholesale and other commercial activity is already established here too, and will only support new development.

One of the major site locality generators is the existing transport node that serves mainly bus commuters who from there, either take a taxi into town or walk.

The site is thus a nucleus to vehicular and pedestrian movement, inter-dependant of the transport node in town, again accentuating the circulatory movement of both vehicles and pedestrians in and around the town's centre.



*figure 2.8 5 to 10 year plan*



*figure 2.9 20 to 30 year plan*



# site development *land use and movement analysis*

*figure 2.12*

The Proposed grid development diagram is largely a figurative attempt to accentuate the development of the site by the support of the the existing urban grid.

The structured grid on the interior is tempored with to test if it could perhaps join the existing road network in the Eltivillas precinct. This would conceptually be possible but is intervened by the large portion of green area that borders the town's eastern border. Comprised of a relatively large water system of river and collection dams, as well as the Indigenous Bird Park, penetrating this region will ask for demanding construction work and will be a detriment to the tree collection and birdlife kept there.

The visual importance of this green portion is also a factor that must be considered for future development, as for many residents it holds sentimental value and identity for the town.

Emphasis is rather placed on accentuating the east-west oriented activity corridor discussed as generator of contact with the residing CBD and interior of the town.

The proposed network of roads on the eastern portion, hope that by the development of the site, a connection between the Eltivillas Precinct to the south and the residential suburbs to the north will be fostered.

Figure 2.12 indicates how the N1 as ring-road movement arterial will be

substituted by a road not just used to carry traffic, but a street flanked by development. This then frees the national road for its sole initiative of carrying traffic north and south in the Northern Province.

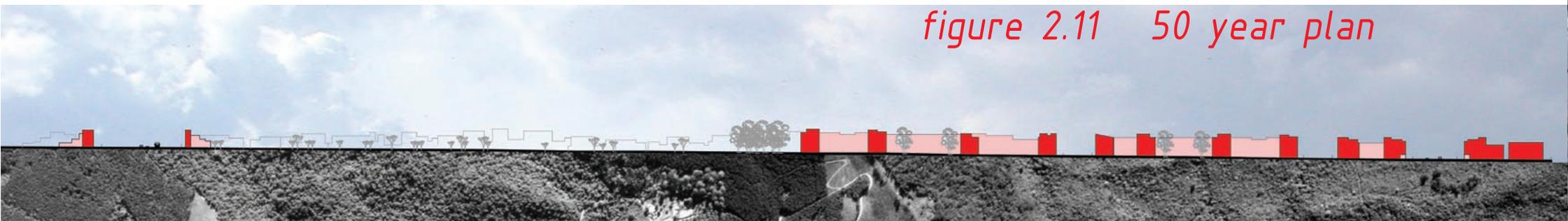
On a 20-30 year plan proposed in figure 2.9, two centres of activity will have developed, with the streets linking them subjected to consistent development.

From accentuating one activity corridor along Krogh and Rissik Streets, a dense building fabric and activity will have contact along the length of the corridor in a circulatory manner, spanning from the original CBD to the new development.

Figure 2.11 suggests perhaps idyllically an urban framework of 50 years time, where the Bird Park is circumscribed by development, enclosing it as a more publically active green space of the town.



*figure 2.11 50 year plan*





# site development - micro scale

Figure 2.13. Aerial photograph of site

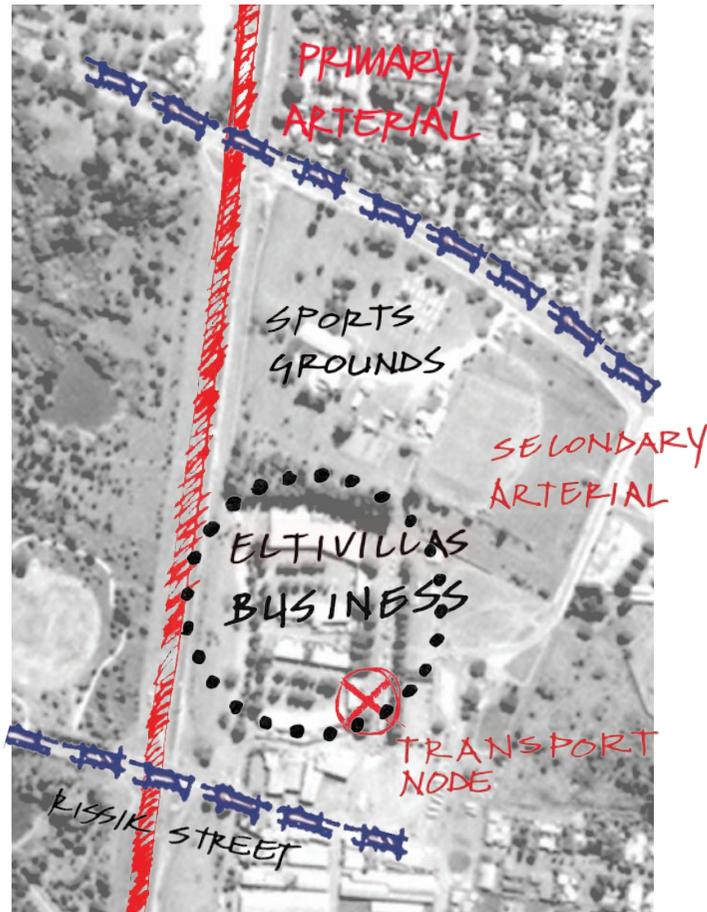


Figure 2.14. The backside of the existing complex faces onto taxi commuters. Informal trading of predominantly fresh-produce is found here



The site chosen is now established by its potential as catalyst at urban development vision.

Located within the existing Eltivilas shopping and business complex, the site is served by a bus and taxi transport node. These buildings were built in 1978 for the Indian community, as well as the commuting black population from the surrounding homelands. Since the change in government however, the most successful businesses moved into the CBD of Louis Trichardt. The result has seen the slow and eventual slump of a once abuzz commercial district.

The existing businesses survive merely on the odd visit by a commuter from the transport facilities east of the complex.

The current shop variety is constrained to low-income non-brand clothing and pawn stores, interspersed with the odd liquor store and pool-playing rooms.

The council suggests that if there were a strong consumable brand name retailer there, as well as banking facilities, the commercial value of this property would be quite different.

Accessibility to the site with reference to the envisaged urban development plan is favourable, as is vehicular access from the three main arterials of the N1, R522 and R524 that border the site.

With the proposed accentuation of road network hierarchy, the site is also well portioned for maximum land coverage. The scale and density of the new building fabric is however more overpowering than the existing buildings on site.



Figure 2.17. Interior parking  
Figure 2.18. View of the existing business complex

Figures 2.15 and 2.16. View of the taxi rank and informal trading stalls





Figure 2.19 The collection of eucalyptus borders the sportsgrounds



Eucalyptus

Harpiphyllum  
Caffrum

The business complex is built predominantly with load-bearing masonry and the odd structural column. Lack of maintenance to the one story buildings and unfavoured footprint orientation, prescribe that they be removed. This could however be rather contentious, not just because that there may be the opportunity to use some of the existing materials, walls and structure, but largely because these buildings represent a legacy rich in the town's historical context.

The new building seeks not to be a memorial to "what was" however, and salvaging parts of walls or floor slabs for use for exhibition purposes is rather ephemeral.

The important visual iconography of the complex and district as place is however acknowledged, which

can be retained by using only parts of the existing roads, making use of the transport terminus and keeping all trees.

The trees are specifically important, as the large portion of eucalyptus north of the complex was planted as buffer to hide the "unsanitised activities" (Templehoff), and the large trees within the complex itself are placed on old town planning principles. These are Harpiphyllum Caffrum (wild plum), and will be used as indicators of new site orientation and scale for buildings.

The existing buildings were placed to front the National road and catered for vehicular parking inside their U-shaped forms. This beacons off the different users and essentially, the building turned its back on the bulk of the users from the bus and taxi ranks that served it.

Figure 2.21 to 2.24. The Harpiphyllum Caffrum trees were planted on town planning principles. They are also used by the trucks collected there for shade



Figure 2.20. Aerial photograph of site depicting the existing trees

The N1 also always remained a hard edge, playing inactive to development either side of it, largely because of the Bird Park to the west.

This characteristic is evident still today, as the National road has only become strengthened in its role as a primary vehicular movement arterial.

Between Songozwi and Rissik Streets, it is however used by residents with little concern for its regional importance, becoming just another road in the town.

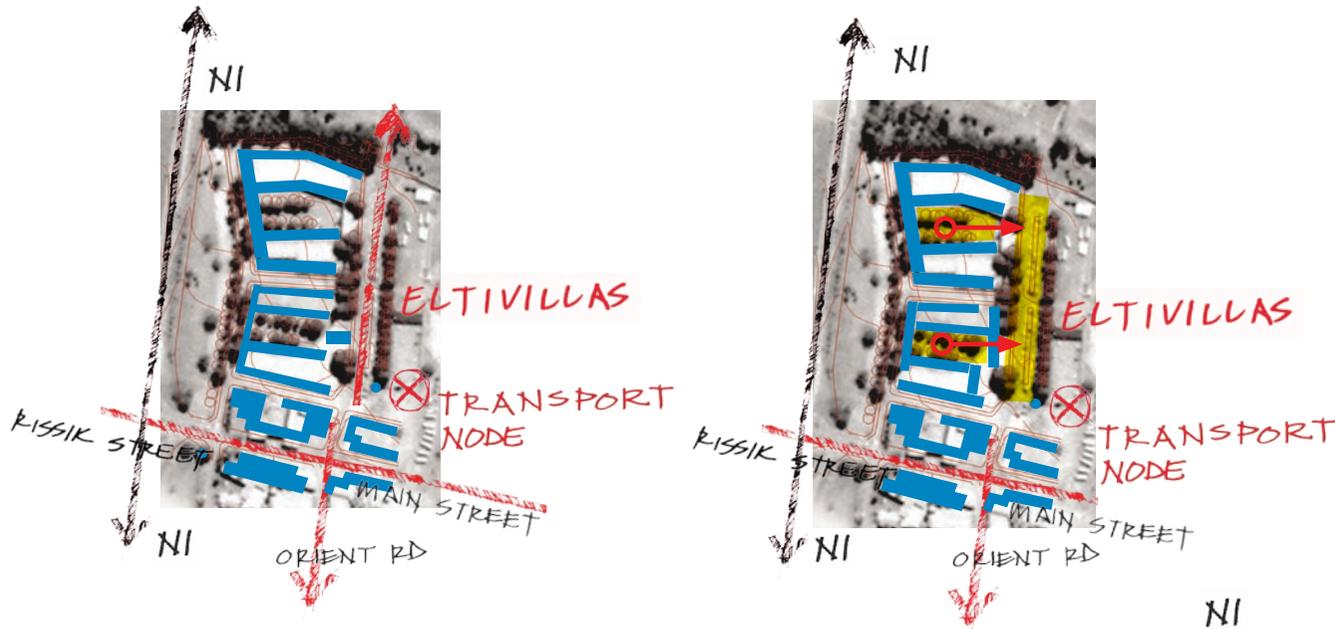
The diagram to the right depicts rather the acknowledgement of the N1 as a hard edge, and initial experimentation of new building form turns its inactive side to the road, with full exposure facing the transport node.

By urban design intervention discussed earlier, the concentration of development and movement activity is hopefully by now contained to Rissik and Main Street, and Orient road. The responding building form now accentuates and strengthens this initiative by facing onto it.



figure 2.25 micro-site plan development

Figures 2.26 and 2.27. Conceptual exploration of the site's develop-



Again the point of focus is capturing people from the transport node (yellow) into the softer interior of the building (yellow to orange). This space was chosen for this function because of its centred access from the transport spine, and the large potential of design that the trees exhibit - specifically landscaping.

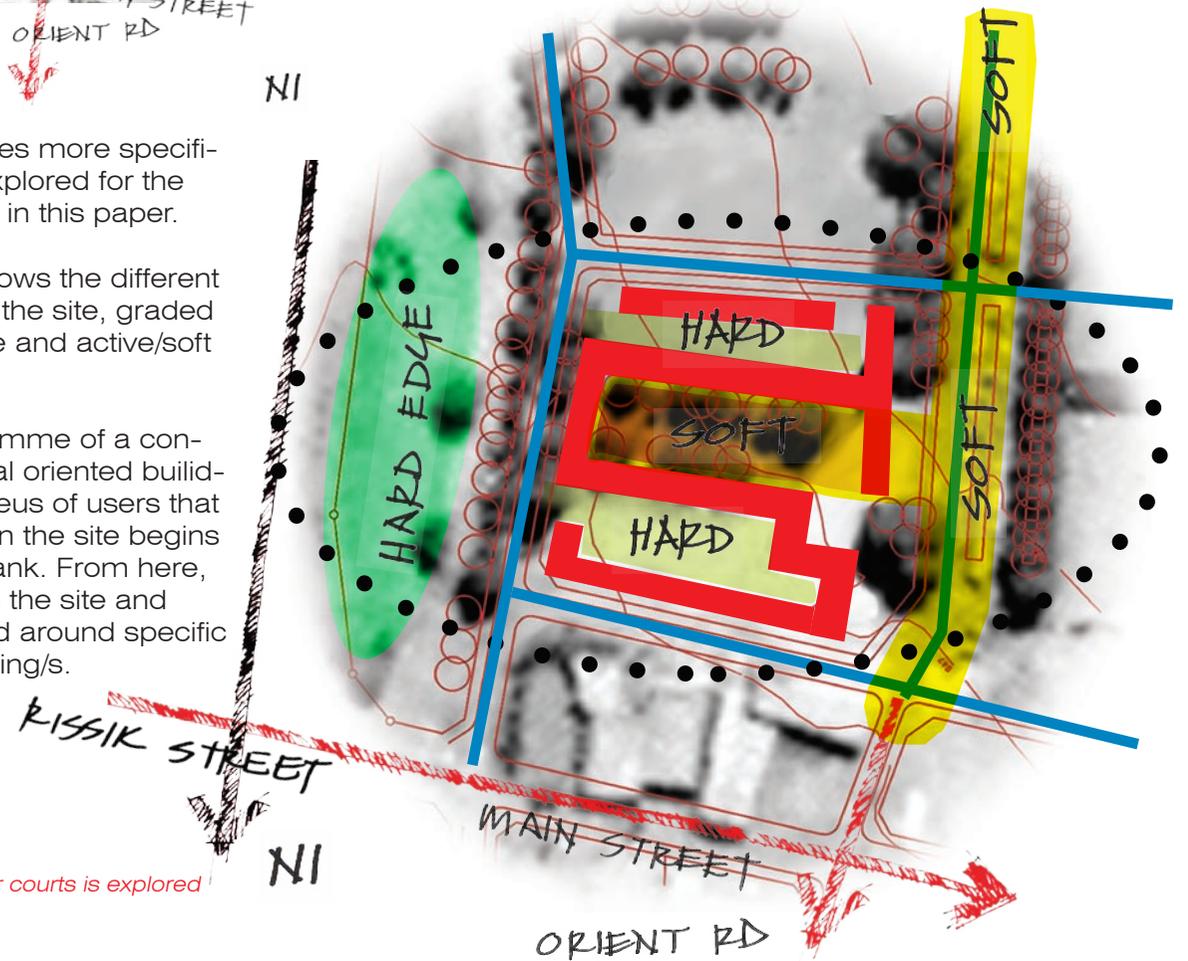
Further conceptual footprint diagrams explore maximum coverage with 10m-12m wide portions of building, while still revealing ample space for possible soft interior spaces for courts or parking. Building form development at the intersection of Rissik/Main Street and the N1 is also investigated, to accentuate and establish the corners as gateway markers into the Eltivilas precinct.

In figure 2.28, particular importance is placed on developing such courts in and around the collections of trees oriented east to west. Shaded in yellow, these spaces are seen as similarly active public or soft spaces.

This figure also locates more specifically the site to be explored for the building programme in this paper.

The use of colour shows the different space use layout on the site, graded from public to private and active/soft to inactive/hard.

With an initial programme of a consumer and residential oriented building in mind, the nucleus of users that will support activity on the site begins at the bus and taxi rank. From here, users will filtrate onto the site and ultimately be oriented around specific functions of the building/s.



Figures 2.28. The development of soft interior courts is explored

figure 2.29

The accentuation of movement space definition is investigated

Portions north and south shaded in lime green-figure 2.28, indicate harder spaces, comprised either of vehicular movement only, or strict and controlled access to those buildings.  
The road reserve is depicted as a hard edge in green.

The concept plan in figure 2.29 also depicts the gradation of soft to hard space, sought after in concept to help define different activities and their intensities on the site. The soft centre space is representative of the hearth of public activity, and as abstract is protected from outside to in by building form and function.

A revealing characteristic of the site pertinent to informing the schedule of accommodation and thus early design principles at site development stage, is the collection of trucks on the road reserve, east of Commercial Street.

Trucks travelling north and south on the N1, often overnight or rest during the day under the trees that border the Eltivillas complex. Access to this piece of ground from the national road is easy and allows the driver to buy refreshments from nearby shops.

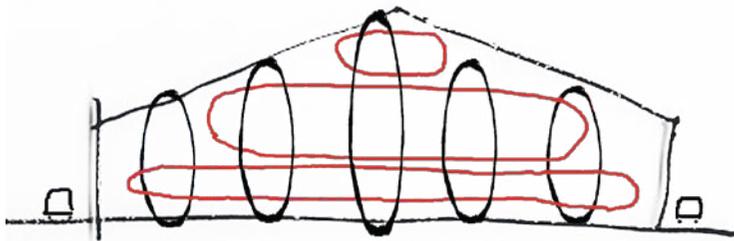
This activity is acknowledged, and suggests the inclusion of this user in later building programme definition.



Figures 2.30. Conceptual sketch of portal frame construction



Figures 2.31. The use of space of the portal form is explored



The building's programme now extends to detail the collection of: wholesale storage and purchase, small scale retail, and housing.

Initial concept sketches depict the exploration of the portal-framed warehouse, often used for storage and wholesale purchase.

This form is investigated purely as generator to ordering the building's programme collectively on the site.

Figures 2.30 and 2.31 depict the questioning of use of space of the portal frame building, where finally a full spectrum of functions can be contained, using the maximum potential of space provided.

Unused spaces are challenged, asking for a resolution of space definition, if a mixed-use programme

was inserted therein.

These sketches also suggests the lexical value of such a form - typical of many other buildings in the town and the light industrial precinct of Eltivillas.

This form study, together with the size of the existing trees, help prescribe scale in height, of between 10m to 12m (4 storeys).

Another imformative of scale, not only in height but intensity of site coverage, is the catalytic nature of the buildings, placed in the invisaged spectrum of urban development of the town.

The outcome is clear volume definition to cater for the complexes' preliminary programme - figure 2.32.



Figures 2.32 Development of the market street

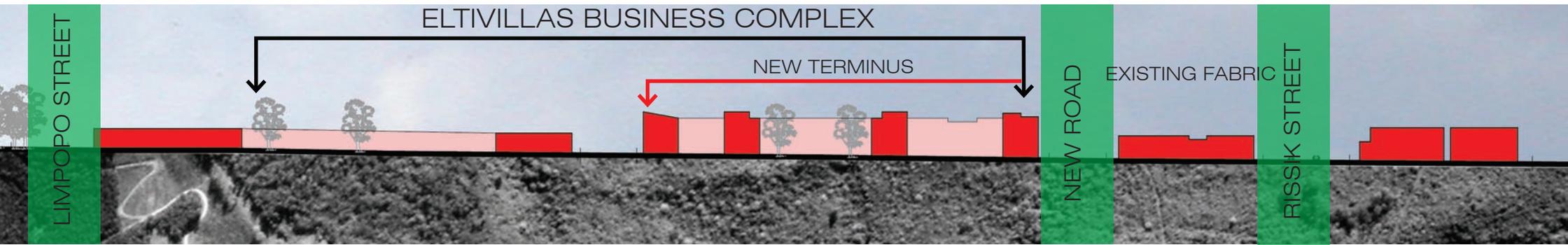
The market street centre to the arrangement reflects the zoning of different space use and quality - ranging from public to private of trade and housing, through to the harder activities of wholesale storage and purchase. The site is bound by roads (New road, Oranje Street and Commercial Street) circulating traffic, with the interior court/street shielded by the progression of hard to soft activity. The portion assigned as bussiness is done to accentuate Orient Street as the new favoured commercial and movement spine.

The progreesion of scale and detail is similarly prescribed as design guideline through the section of building programme, responding proportionately in building texture, colour and form.

What may at first seem overpowering in isolation, the new buildings ultimately continue a scale and density not too far removed from the surrounding buildings in the precinct, and predicate these principles for future development.



Figure 2.24. Eastern elevation from the National Road



The wholesale and storage building in figure 2.25 is served by the bulk supply of either fresh produce, from the agricultural districts of Makhado, or non-consumables from other major wholesale centres. Retail traders will then use this facility as the local wholesale depot.

The “hard” court where trucks and other small delivery vehicles will access the wholsale building, serves as interface between the bulk supply of goods to smaller retailers fronting the market street.

The defragmentation of the wholesale market to smaller reatail shops is thus initiated to give competitive retail prices for the market street’s user.

Housing is included on the first to third floors, making up a softer and more detailed building that provides the enclosure to, and interaction with the market street. Residents now have the possibility of renting shop space, providing further incentive for occupation.

Questions such as noise and access control are answered by the allocation of time of use for these respetive functions. Delivery to the wholosale depot takes place either at night or the early hours of the morning, and can result in aggravated noise levels for the housing residents.

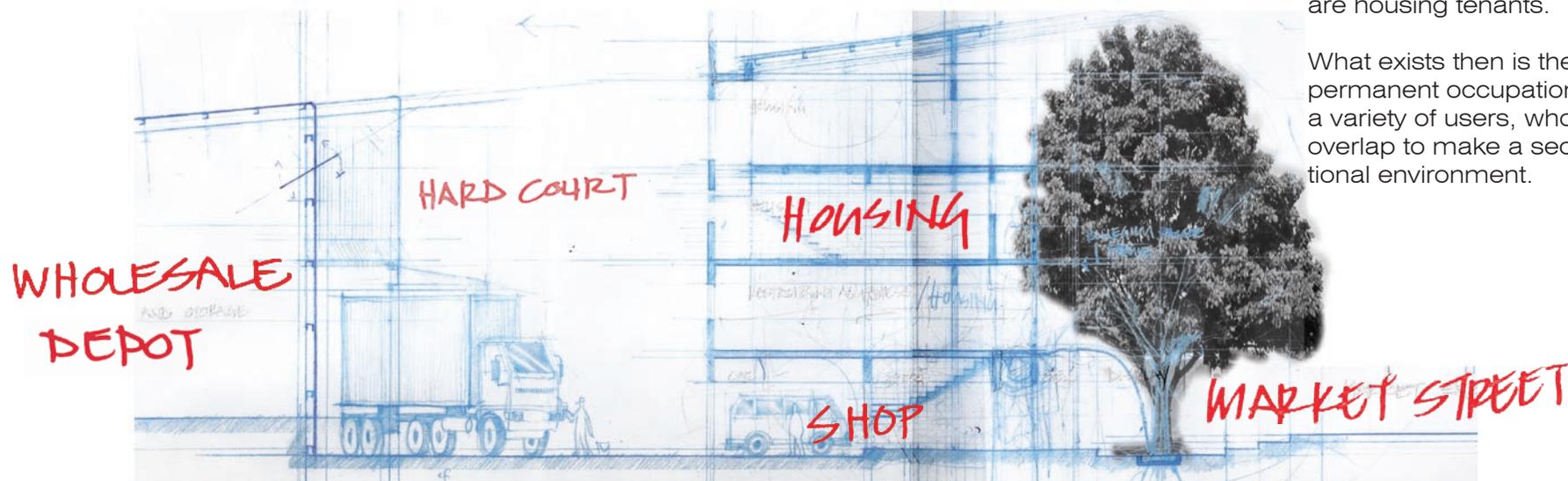
This is partly resolved by assigning delivery points to the depot on Oranje Street, giving easy access and sufficient turning space for large trucks. The portal framed building thus acts as a noise buffer for the housing.

The purchase of wholesale goods is concentrated to normal retail hours of- 06:00 to 15:00. During this time, many of the housing residents will be at work or shool, thus avoiding not just problems of noise, but possible traffic conjection in the hard court.

Passive surveillance must be exercised in order to restrict access of unwanted users to certain spaces. A variety of housing types is thus explored to attain non-diuranl occupation of some residents. Older family members of an extended family unit for example, will always reside here and become familiar with those partisans of the complex who are housing tenants.

What exists then is the temporal and permanent occupation of spaces by a variety of users, whose time frame’s overlap to make a secure and functional environment.

Figure 2.25. Development of the concept



# baseline feedback

What follows is a brief description of sustainable tools set out by Gibberd, J (2003) and their implementation within the respective tiers of Environment, Economic and Social, specific to the urban and site studies conducted.

## Environment

The impact the project asserts environmentally is not solely confined to its immediate footprint, or the site of proposed development. It includes pockets of land and manufacture not even within walking distance from the site. Energy is expended on materials, water and building components for their delivery to site, suggesting the daunting spectrum of these elements' life-cycle even before they are used.

Hereunder follows a brief description of guidelines pertaining the access to and use of these elements within the project and site.

## 1. Site

The given site of any project serves as generator to a number of design outcomes, sourced from actual biophysical information. These and other factors need be considered to support the most sensitively accurate choice or potential of site as a sustainable environment.

- Locality – distances travelled either to source materials and water, or simply as a site accessible by foot or other means of transport.

### \_Locality

1. Choice of site with regard to accessibility proved paramount at the beginning of the project, with the national road and other main arterials circumventing the site revealing ideal locality for the desired programme.

2. Regeneration of a Brownfield site also scores well, with the potential of reusing materials from the buildings to be removed.

Existing municipal connections of water and electricity also diminish costs.

3. With regard to access by public transport, the existing bus and taxi node adjacent to the site make the site choice ideal for access to the town's CBD, and walking distance there too does not exceed 1km.

## 2. Water

Even though the site is connected to the local municipal water reserve, and the district itself receives between 500mm and 700mm of rain per year, the preservation and efficient use of water is paramount to the project, as Louis Trichardt is periodically placed under water restrictions.

### \_Invader Plants

Invader species local to the site will for obvious reasons be removed. The most notable however is the potential clearance of the wood of eucalyptus north of the site

Removing these trees will indefinitely contribute to the number of staff employed for site clearance and possibly, the timber can either be taken to a pole treatment yard to be prepared for use, or simply sold.

#### Recycling and reuse

Energy consumption levels can be constrained and controlled by monitoring and practising the reuse of waste. These include:

- Inorganic waste – collected and disposed responsibly
- Organic waste – recycled
- Sewerage – composting toilets or methane gas harvesting systems.
- Construction waste – used as ground fill elsewhere and incorporating modular construction systems.

#### Construction waste

1. The residual building rubble from the demolition of the existing buildings on the site can either be used as ground

infill for site development, or by money rendered to be sold to other building contractors who are developing elsewhere. All other materials attained during the removal of existing buildings, such as corrugated sheeting from the roof, window frames, light fittings and attachments can be used for the new buildings, or similarly sold to other contractors or manufacturing businesses. If the material cannot be recycled by its use on site, it should be sent to be recycled.

#### Economy

There exist a number of Economic parameters pertinent to achieving sustainable building performance. By their implementation - efficient, self-governed and maintained building developments that are accommodative of physical change and diverse economic input, are attained. The following text will briefly identify these parameters applicable to this study of site.

#### 1. Local Economy

Development should acknowledge the potential of the local economy as contributors to the development in the following ways:

- Local contractors
- Local building material supply
- Local component manufacture
- Maintenance

It is important that “local” be a variable measured against comparative costs to those of a more regional nature. Also, the area defined as local should be constrained to between 40 and 60km – this applicable to Louis Trichardt, who’s next closest service centre is Polokwane, 100km away.

#### Social

The indicator that perhaps bears the most weight on the three tiers of this Baseline study, is that of the Social dependency and quality that firstly the building initiates, and secondly,

during the working life cycle of the building.

#### 1. Inclusive environments

The overall objective of the project has already been outlined, with integrated and exclusive environments serving as overriding principles.

Aspects such as location to existing Public transport nodes, with the proposed mixed-use type - both in urban development and building activity, further supplements the application of this principle. By nature of the project too then, access to facilities is largely accommodated for, with those that are lacking easily accessible via the public transport system in place.