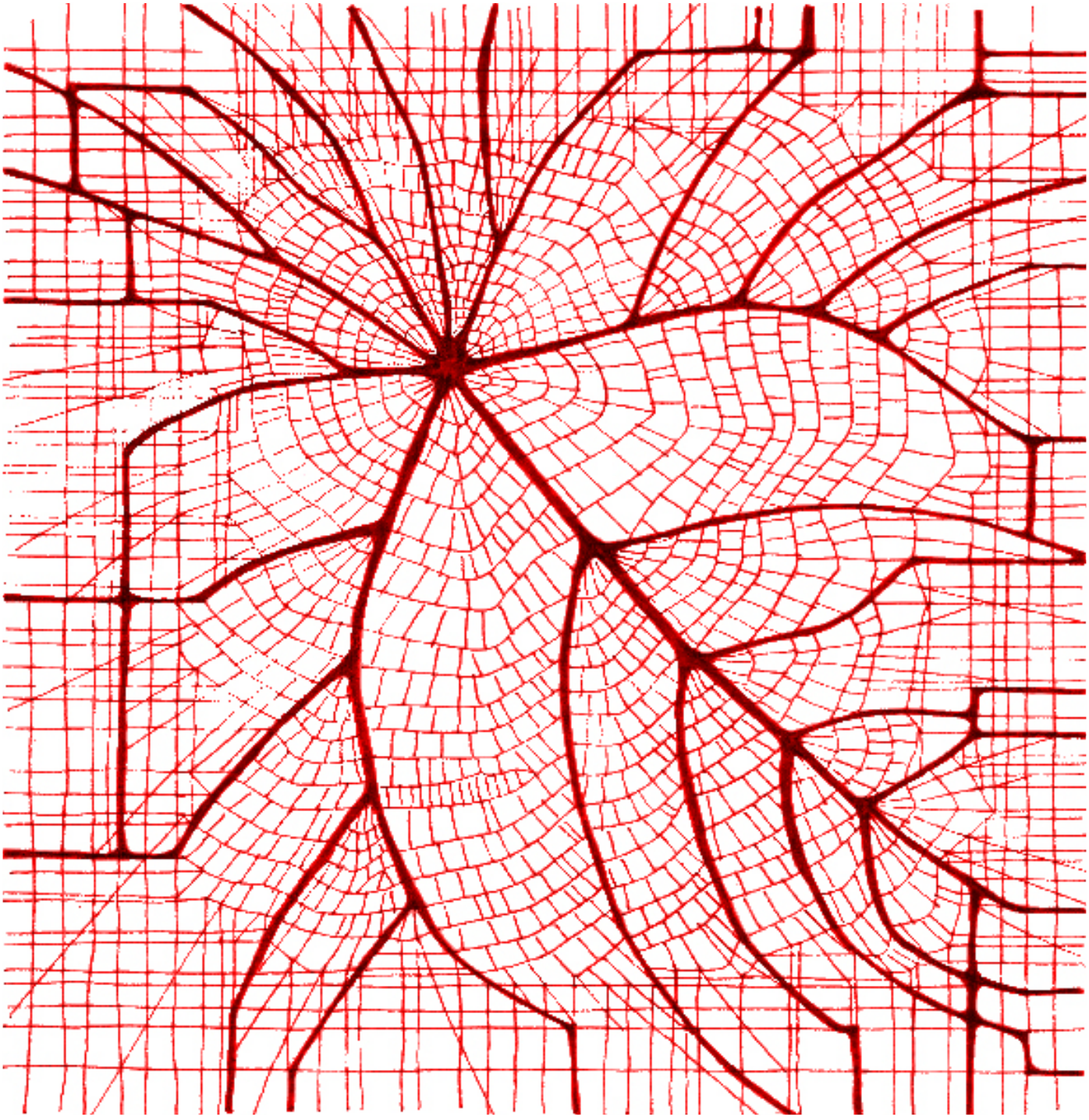


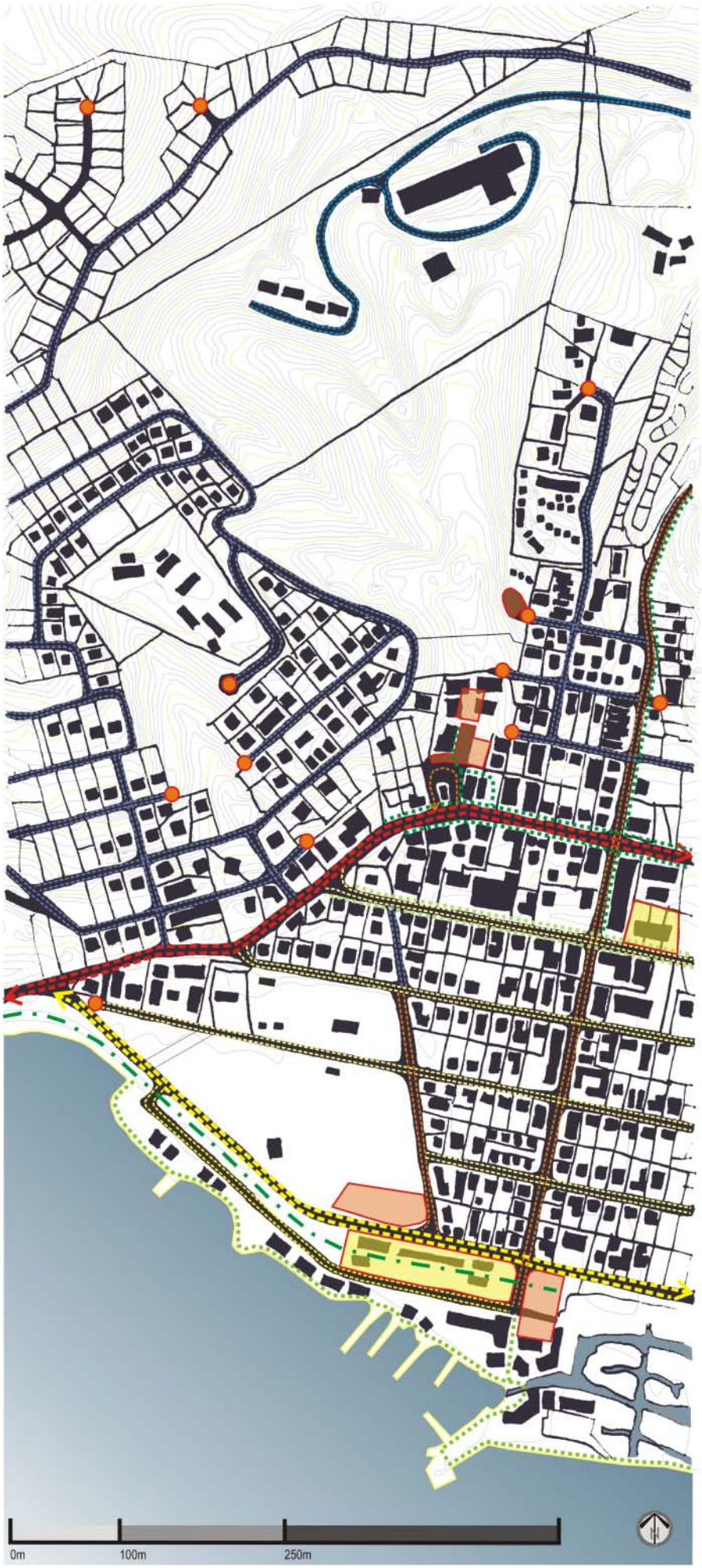
chapter 5
precinct intervention

5.1. PRECINCT ANALYSIS

5.1. Precinct land use (Knysna Municipality 2000 & Howard 2005)

KEY POINTS TO CONSIDER:

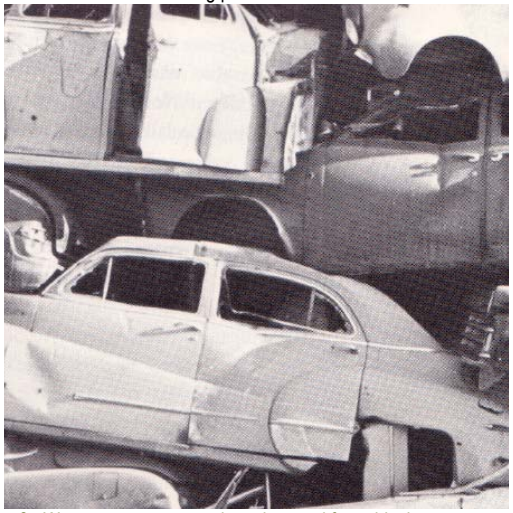
- No community facility, other than the user-specific Correctional Facility, Epileptic Centre and school, exist in this proposed precinct region
- Take the Correctional Facility into consideration by proposing the combination of ecological and social rehabilitation within the environmental management plan
- Create a link, be it physical or institutional, between Pledge Nature Reserve and the nearby school
- Promote the infiltration of indigenous vegetation into the surrounding residential areas by proposing the planting of popular indigenous street trees, special access into the reserve for the surrounding neighbours, and education about the positive impact of indigenous planting by demonstration methods
- Vacant, misused and underused sites are to be incorporated within the precinct master planning, especially those areas with the potential for community service and ecological rehabilitation, and with the possibility of added economic empowerment to the community
- Promote the accessibility of the estuary edge through precinct planning
- Explore the potential that this precinct region has for residential development, therefore preventing further urban sprawl into the valuable ecological surrounds
- Enhance existing open spaces through rehabilitation and improved planning, while increasing accessibility and connections to the surrounding environment
- Landuses proposed within the precinct development should be uniqe and should not replicate those of surrounding areas, therefore a unique need and character should be created within the precinct region



5.2. Precinct circulation and movement information (Knysna Municipality 2000 & Howard 2005)

KEY POINTS TO CONSIDER:

- Provide adequate, safe and legible pedestrian access to the various transport nodes and parking facilities
- Provide adequate parking facilities for all vehicle types near to the transport nodes and those facilities that require parking
- Taxi and bus stops should be positioned appropriately in the precinct
- Relate the functions of the proposed precinct to the intensity of traffic of the associated routes
- Where necessary alter traffic intensity by adequate design, such as traffic passifying methods and the 'Woonerf' concept (discussed in precinct design discourse)
- Route surfaces should be appropriate to the user requirements
- Create links to existing pedestrian routes



5.3. We must attempt to reduce the need for vehicular transport as much as possible, with the promotion of sustainable transport systems (Eckbo 1964)

5.4. Precinct ecology (Knysna Municipality 2000 & Howard 2005)

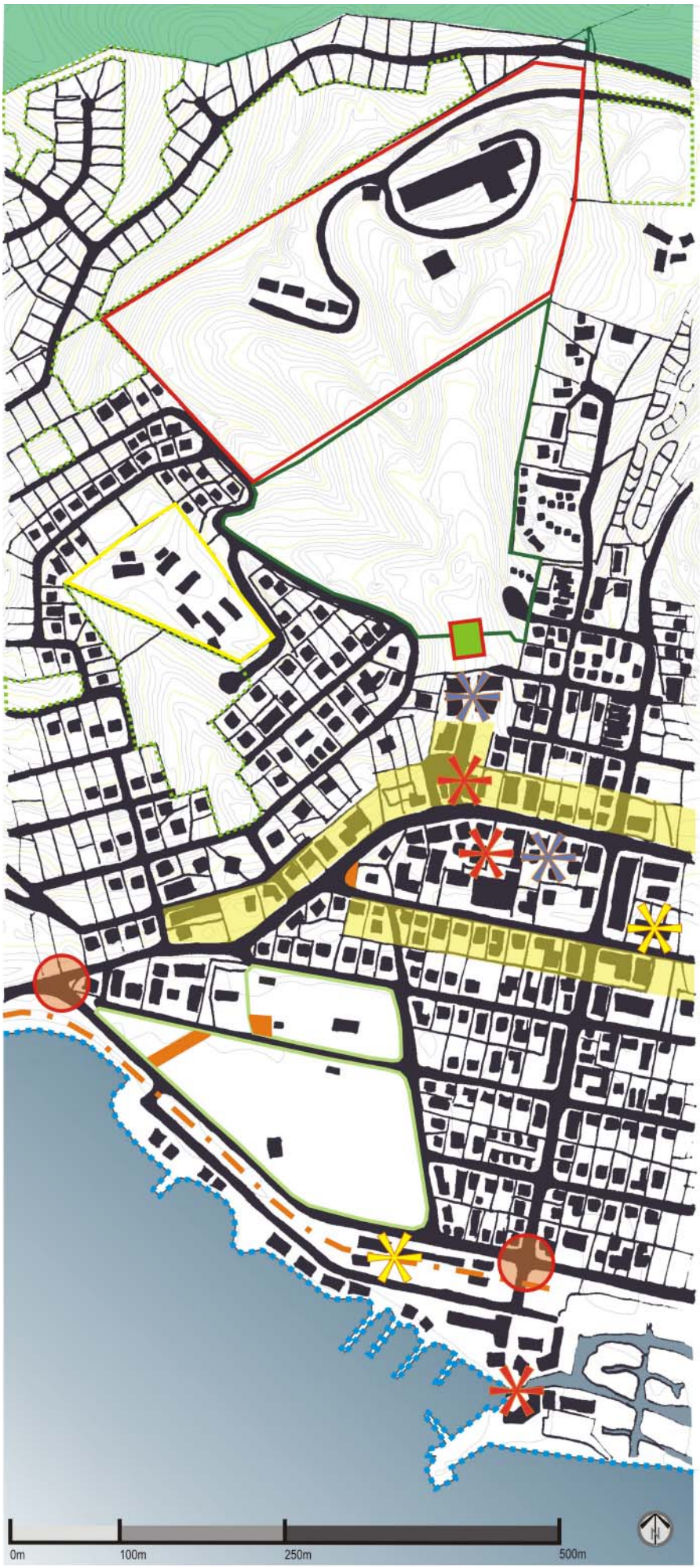
LEGEND: ECOLOGY

- HIGH VALUE INDIGENOUS HABITAT
- PREDOMINANTLY INFESTED WITH ALIEN INVASIVE VEGETATION, REHABILITATION REQUIRED
- LOW VALUE HABITAT DUE TO HUMAN INTERVENTION & LAND SHAPING, CONSERVATION & PROMOTION OF OPTIMAL USE REQUIRED
- INDIGENOUS & ALIEN VEGETATION MIX, REHABILITATION OF ALIEN INFESTED AREAS REQUIRED
- ESTUARY EDGE WITH HIGH AMOUNTS OF SEDIMENTATION, POTENTIAL AS RECREATION & EDUCATION AREA
- HIGH POTENTIAL VACANT & UNDERUTILIZED 'GREEN' SITES WITH MIXED INDIGENOUS & EXOTIC VEGETATION
- DEGRADED VACANT SITE WITH HIGH POTENTIAL FOR SOCIO-CULTURAL, ECONOMIC & ECOLOGICAL FUNCTIONS
- INDIGENOUS TREE
- ALIEN INVASIVE TREE
- EXOTIC STREET TREE WITH HISTORIC VALUE
- 2 METRE CONTOURS

KEY POINTS TO CONSIDER:

- Only indigenous vegetation to be established within the precinct
- Promote the establishment of more street trees, while exploring the variation between mixed, random planting, and specific, proportional planting (refer to precinct design discourse)
- Plan for the rehabilitation of degraded areas by promoting habitat creation and development
- Eradicate all alien invasive species through an Integrated Pest Management Plan incorporated into the Environmental Management Plan
- Maintain exotic trees if they have historic value and high aesthetic value
- Each district and transition zone should have a specific approach to planting, as discussed the the precinct design discourse

5.5. The servitude alongside the sports field which requires rehabilitation to increase ecological value (Howard 2005)

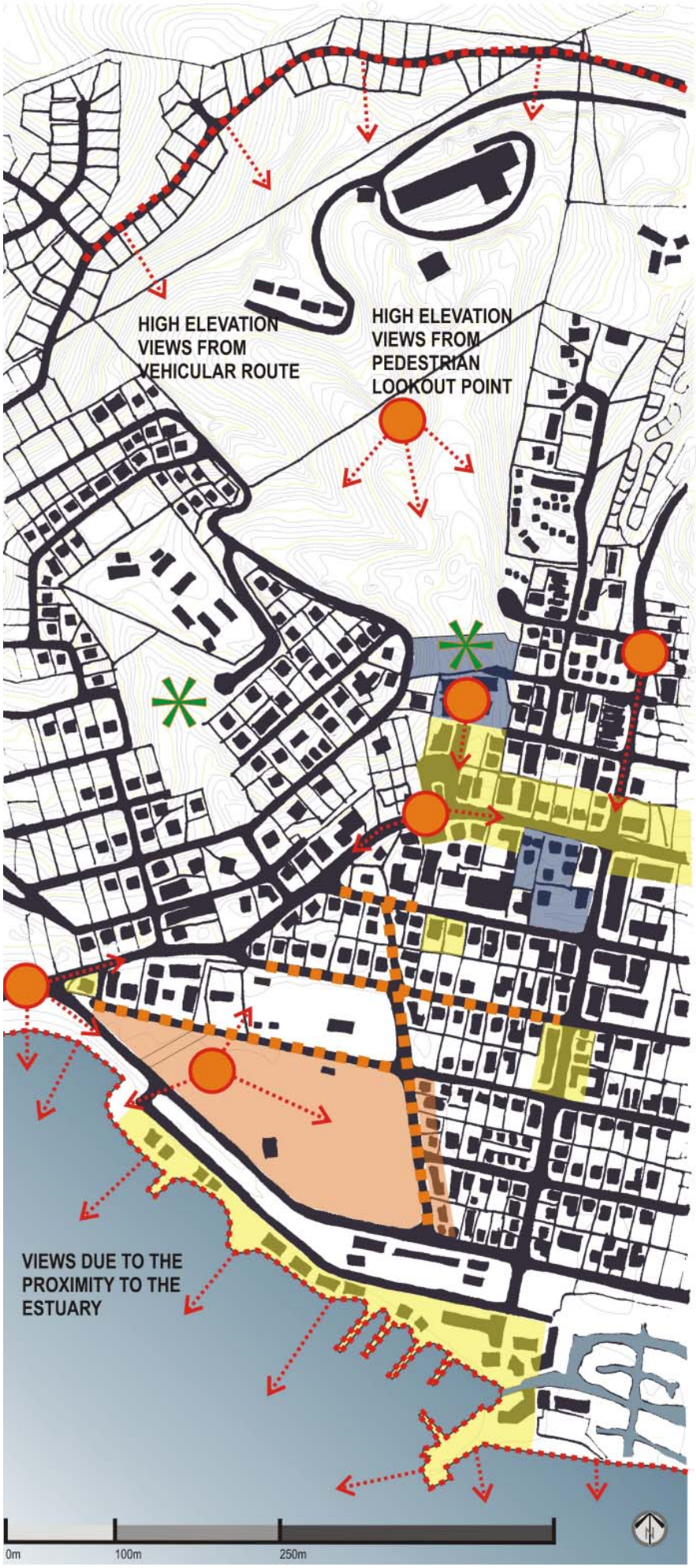


5.6. Precinct nodes, edges and landmarks (Knysna Municipality 2000 & Howard 2005)

KEY POINTS TO CONSIDER:

- Propose guidelines for the increased safety and improved permeability of existing open spaces
- Increase accesibility of community sportsgrounds while providing privacy where necessary, therefore create a mix of private, semi-private, semi-public and public spaces
- Create legible and safe, pedestrian-pleasant links to existing nodes and proposed nodes
- Explore the potential of creating gateways and landmarks at key areas within the precinct so that they have a role within the urban realm
- Enhance the vibrant commercial edge and use it to promote the precinct development by creatiing clear links and underlying connections through functions and aesthetics
- Provide nodes and paths along the estuary edge which are linked to nodes and paths of the precinct development

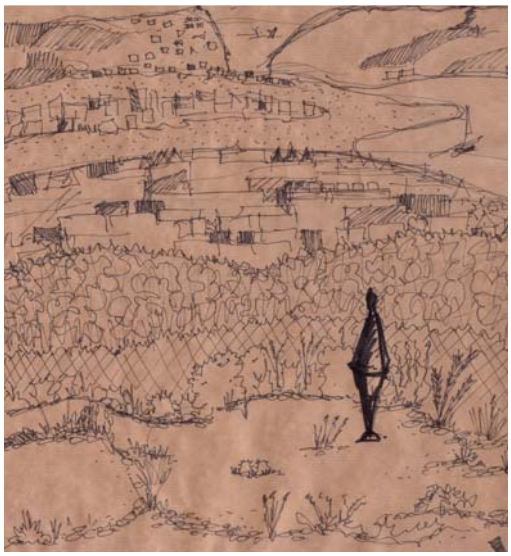
5.7. The commercial and tourist node directly south of Pledge Nature Reserve (Howard 2005)



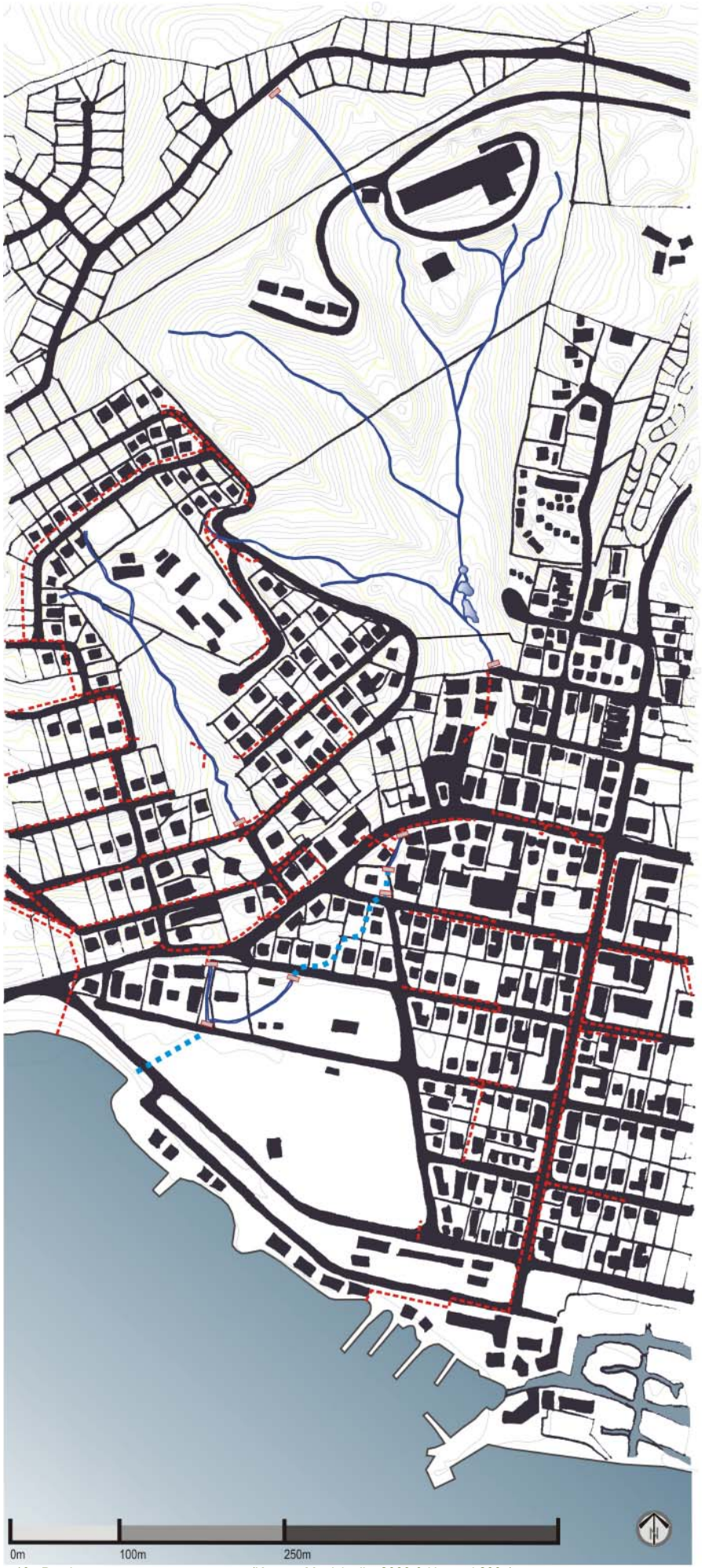
5.8. Precinct views, sense of place, energy and vitality (Knysna Municipality 2000 & Howard 2005)

KEY POINTS TO CONSIDER:

- Enhance existing views and create new views within the precinct development
- Explore the potential to create areas within the precinct with a high sense of place by providing unique functions and a specific user-friendly character in which the community feels satisfied
- Stimulate urban renewal projects through this urban precinct
- Increase vibrancy and activity in allocated areas, as these areas will act as catalysts for activity for the rest of the urban surrounds



5.9. Sketch of the view of Knysna from the look-out point of Pledge Nature Reserve (Howard 2005)

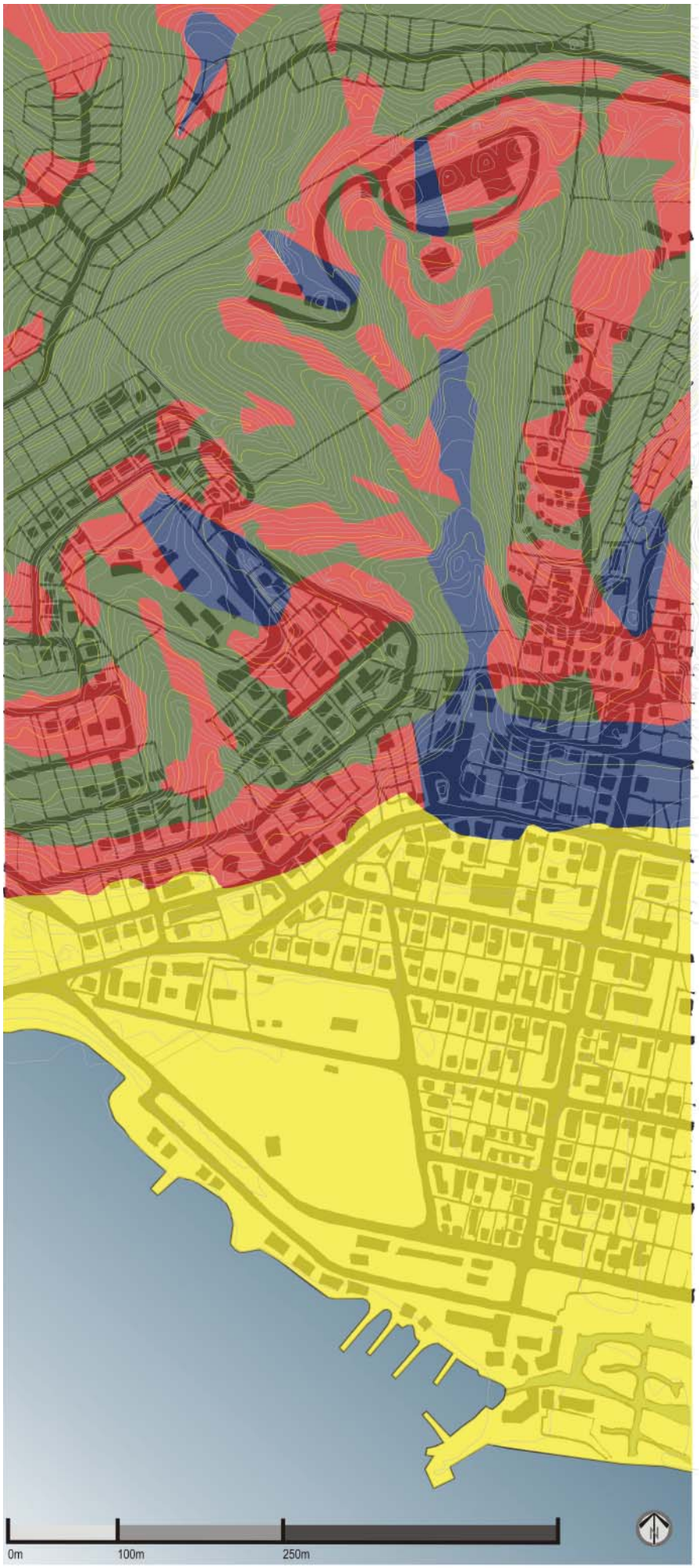


5.10. Precinct stormwater management (Knysna Municipality 2000 & Howard 2005)

KEY POINTS TO CONSIDER:

- Explore the potential of revealing subsurface water sources and drainage lines where possible in the precinct development
- Create symbolic representations of the water lines
- Design those areas of water tranisition from surface to subsurface so that both functionality and visual appropriateness is increased
- Stormwater should be retained and managed on site as much as possible, through retention, detention and infiltration methods
- Provide guidelines on flood management and prevention within the Environmental Management Plan
- Explore the idea of reconnecting people to water, so that the community has an understanding and consciousness of the importance of water quantity and quality within the urban environment
- Explore the potential of education via water through the precinct, as water and the symbolic representation of water is the primary feature and linking element within the precinct design (refer to precinct design discourse)

5.11. A stormwater outlet into the estuary. Siltation has become a problem in the hydrological environment (Howard 2005)



5.12. Precinct slope analysis (Knysna Municipality 2000 & Howard 2005)

KEY POINTS TO CONSIDER:

- Use the great variation in slope as a feature and gain design inspiration from various slope treatment methods
- See the slope as an opportunity rather than a challenge and explore the potential of terracing, retaining walls, berms and the combinations of these
- Explore various methods of slope stabilization and include these as guidelines within the Environmental Management Plan

5.13. The varied topography of Knysna. The town's altitude stretches across approximately 150m (Howard 2005)

5.14. An art sculpture created as a feature around a litterbin at the Knysna Waterfront (Howard 2005)

5.2. PRECINCT ANALYSIS SUMMARY

5.2.1. OPPORTUNITIES

- Areas with high ecological value having potential for habitat creation and community environmental education
- Vacant and underutilized sites that have potential for community upliftment projects as well as urban greening
- Stunning views in all directions to be utilized
- Existing infrastructure and services throughout the precinct area
- Proximity to the lagoon and harbour edge
- Proximity to the CBD, therefore decreasing vehicle-use
- Proximity to public transport nodes
- Proximity to schools
- Working within a dynamic community of entreupeneurs and artists, who have respect for the natural environment
- Great opportunities exist due to the topographical variance of the town

5.2.2. CHALLENGES

- Achieving effective ways of linking the various spaces to create an open space system
- The community's reliance on vehicular transport
- Flooding of Pledge Nature Reserve during heavy rains
- Designing for permeability while maintaining security
- Motivating the use of a portion of the sports grounds for medium density housing
- Raising streams from their subsurface positions
- Riverine and slope stabilization
- Financing of the project, especially those sections of the project that are community and not economically orientated
- Controlling and eradicating alien vegetation species
- Controlling sedimentation within the riverine system and estuary
- Pollution control
- Habitat protection in public areas

5.15. A portion of an exposed stream which is polluted, and has low ecological value (Howard 2005)

5.16. A concrete channel which has no ecological value (Howard 2005)

5.17. This area adjacent to the Knysna Main Road has great potential as a high value open space (Howard 2005)

5.3. PRECEDENT STUDIES

The approach to each study varies according to what the desired objective and outcome is. The precedent studies chosen have definite similiarities to the thesis proposal, either due to location, function, challenges and opportunities, symbolism, ideals, or a combination of these. A summary of the key points will be provided as a guideline for the future design process.

5.3.1. BOGOTÁ DRESSES IN GREEN

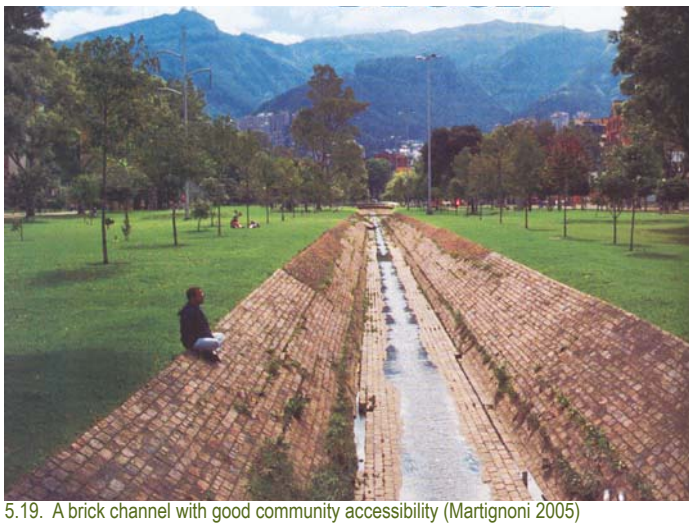
Between 1997 and 2003, Bogotá, Columbia's capital city, invested in public space like never before. The city is bounded on the east by a ridge of mountains, the East Hills, and on the west by the Bogota River. Many streams flow toward the city from the mountain basins, and secondary rivers run along the edges to finally merge with the Bogotá River. This system of rivers, lakes, and wetlands provides drinking water for the city as well as rich habitat for fish and wildlife. (Martignoni 2005)

Poverty and crime had physically degraded many neighbourhoods, and negative impacts were felt due the city's rapid and unplanned expansion with the building of urban and suburban settlements in environmentally vulnerable areas. Bogotá city went about creating and implementing a public space renovation plan, which consists of three sections, namely the Wetlands Restoration Plan for the Bogotá River Greenbelt, a Management Plan for Bogotá's Mountain Preserve and its reconnection to the city's green spaces, and plans for urban park system revitalisation and reforestation. (Martignoni 2005)

The Wetlands Restoration Plan was required due to problems of flooding and poor water quality. Because the lakes and wetlands naturally collected and stored stormwater runoff, flooding was not an issue in the city's early years, but in the nineteenth century, when settlement started to sprawl without any planned drainage or sewerage systems, those water bodies became the sole repositories for all urban waste and served as natural sewerage-treatment plants. To alleviate increasing water pollution the growing city built aqueducts, drainage systems, and treatment plants; and over time, the four primary rivers were transformed into underground canals, erasing them from view, and consciousness. Residents eventually lost awareness of the vital link between the city's physical and cultural landscape and the natural environment. The plan for the Bogotá River Greenbelt was to recreate the river's natural characteristics and native flora, including the aquatic ecosystems throughout the city, and establish new ones as part of a connected wetlands network. One popular wetland, the *Santa Maria del Lago*, illustrates how successful rehabilitation of a degraded place can elicit a conscientious response from its users, as before commencement of the project, the 7,3 hectare wetland, located in a residential area, was an unofficial dumping ground, filled with trash and closed to the public. Untreated sewerage seeping into the site mingled with stormwater. The project team went about piping the wastewater into the city sewerage system and allowed the natural depression that forms the wetlands to capture free-running stormwater. They replaced sickly eucalyptus and acacia trees with an assortment of native aquatic plants, shrubs, and trees. A grassy expanse with benches, paths, and other amenities now surrounds a roughly circular shallow lake, the natural form of the original site. Today the spot is popular with community residents, who take excellent care of it. In some cases the rehabilitation of existing wetlands has been controversial with the public because some of the designs lack a naturalistic appearance, for example the use of concrete to contain and channel surface water. (Martignoni 2005)

5.18. A study of the rehabilitation of the Bogotá wetland system (Martignoni 2005)

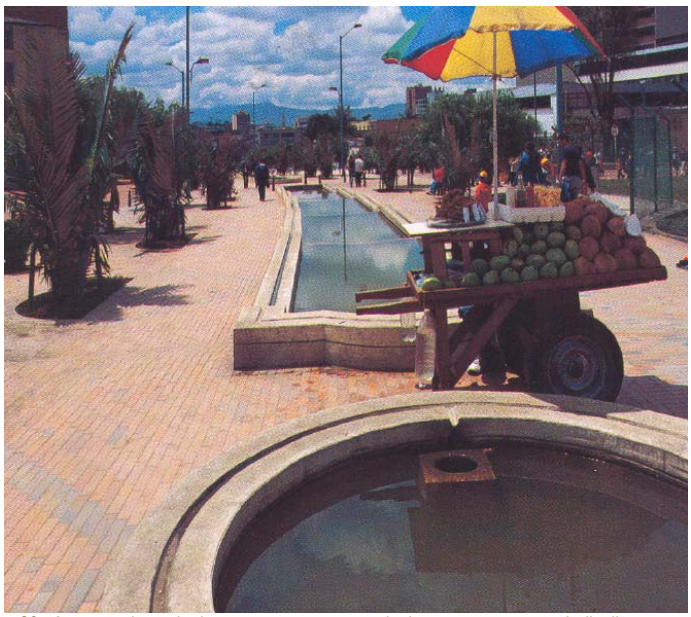
The Management plan for the Mountain Preserve and the reconnection plan for the City Green create intriguing links, both visual and ecological between Bogotá's natural and built landscapes. The fundamental purpose of the reconnection plan is the preservation of the cultural and natural components of the mountain landscape, understood as a whole, and its relationship with the city. This relationship was historically both visual and functional, taking the forms of rivers and streams flowing from the mountain into the city, but as most of the rivers and streams dried up or were piped underground, that link was lost. The plan strives to recreate that unique connecting ecosystem. (Martignoni 2005)



5.19. A brick channel with good community accessibility (Martignoni 2005)

The aims and vision of the City of Bogotá was to work beyond the level of aesthetics while fostering social and environmental sustainability through urban design. Specific focus was placed on community participation, restoration of the natural environment, and improvement of the quality of built public space. (Martignoni 2005)

Water served as the unifying theme in all three projects, symbolically emphasising water's cultural and historical importance to Bogotá, while water sources were physically restored wherever possible. Water was treated as a visual thread linking the mountains to the city via channels lined with stone, brick, grass and other materials, through parks and linear green spaces, forested avenues and streets, bike paths, and walkways. Therefore water is the vital link, not only between diverse sites, but also between past and present, space and time. In everything the design team considered how to revitalize the river and wetlands as ecological and recreational sites and how to recover their original functions and natural attributes. (Martignoni 2005)



5.20. At some places in the open space system design streams are symbolically represented by water features (Martignoni 2005)

5.3.2. DURBAN COMMUNITY OPEN SPACE SYSTEM

In order to demonstrate the advantages of improved environmental management to local communities, a project was undertaken to create recreational open spaces in high-density residential areas that would contribute to the ecological functioning of Durban's open space system. (Ethekwini Municipality 2005)

The project was also intended to address issues such as:
1.Poverty alleviation
2.Improved quality of life
3.Equal access to resources
4.Job creation (Ethekwini Municipality 2005)

The Environmental Management Branch was granted capital funds for the project and worked in partnership with Parks Department officials (the implementing agent for the project) and local councillors in selecting project sites in five previously disadvantaged community areas. In all the projects it was stipulated that part of the budget should be used for the production and erection of educational signage. A further requirement was that local labour should be used in the development of these sites wherever possible. (Ethekwini Municipality 2005)

The different types of open spaces developed included:
1.Children's and sports playgrounds
2.Riverine walking trails
3.Picnic sites (Ethekwini Municipality 2005)

The key problems encountered were:
1.Operational funds were not budgeted for by the Parks Department (they had assumed these would be forthcoming from the Environmental Management Branch)
2.Vandalism
3.Wasted resources as a result of poor project management, and
4.Disgruntlement of local communities at being involved in the development but not the maintenance of the project areas (Ethekwini Municipality 2005)

The problems encountered in the five project areas highlighted a number of issues that have relevance for sustainability planning in general namely,
1.The need for linked capital and operating budgets.
2.The need for effective and well-coordinated project management from cradle to grave.
3.The need for effective communication between line functions and formal definitions of project responsibilities.
4.The need to maximise stakeholder ownership through involvement in all stages of the project cycle: planning, implementation and management.
5.The realisation that the cheapest solution is not always the most sustainable one. (Ethekwini Municipality 2005)

5.3.3. JOHANNESBURG OPEN SPACE GUIDELINES

The following guidelines for open space planning for the province and Greater Johannesburg have been compiled by Gauteng Nature Conservation (Grobler, 1996):
1.Large open spaces are better than small ones, as bigger areas will maintain a higher diversity of species. Such areas tend to withstand disturbances for longer periods of time, as natural processes function more effectively;
2.The principle of concentric zoning should be applied where a core open space exists with minimal human activity (passive recreation), surrounded by a buffer area where more human activities are allowed (active recreation). It is therefore not advisable that high density development takes place on land directly neighboring a core nature area;
3.No development should take place in the 1 in 50 year floodline, plus an additional 40 meters outside this line (to accommodate higher floods due to densification in the catchment). This 40m distance will also keep indigenous vegetation intact and allow for rehabilitation of the area;
4.Evaluate whether waste land and disturbed land could form part of an open space system;
5.When developing and managing open spaces, the safety aspect should be recognised and addressed;
6.Consolidated open spaces are better than fragmented spaces;
7.Where land needs to be conserved as open space, but ownership vests in a private person, development restrictions should be applied to that area;
8.Any new vegetation planted should be indigenous;
9.Disturbed open spaces should be rehabilitated and managed with the emphasis on removing aggressive invasive plants and replacing them with indigenous species;
10.Open spaces should not only have a recreational function but should simultaneously have a conservation function;
11.Adopt an ecological approach when assessing the amount of open space to be provided; and
12.A policy should be formulated for areas where red data species occur. (Greater Johannesburg Metropolitan Council 2000)

According to the Local Agenda 21 Process the following issues still need attention:
1.Encroachment onto and use of public open spaces for business purposes
2.Stringent measures to control use of open space
3.Design of public open space and parks
4.Assessment of whether there are sufficient open spaces and parks in the Inner City
5.Pathways and paving throughout parks
6.Greening of the Inner City (Greater Johannesburg Metropolitan Council 2000)
7.Control of use of parks

According to the Metropolitan Open Space study completed by Mark Wood Consultants in 1994 the main problems associated with open space are:
1.Implementation and funding
2.Spatial planning
3.Status of, or attitude towards open space
4.Environmental conservation
5.Social needs
6.Public participation (Greater Johannesburg Metropolitan Council 2000)

5.21. A view of Johannesburg from the perimetre gold mine dumps (Dodd & Donald 2004)

5.3.4. THE COMPANY'S GARDENS, CAPE TOWN

Key points regarding the planning and design of open space corridors were observed during a visit to the Company Gardens in Cape Town.

- The treatment of stormwater and existing streams in surface vegetation- and rock-lined channels. These features are both aesthetical and ecological, as water is dissipated and aerated, and habitats are created in and along the water body
- Pedestrians are the primary users of this corridor with pedestrian-friendly and safe routes and pathways
- Signage is made legible with symbols and pictures
- Elements in the landscape, such as lighting features, have added functions of promoting the awareness of current social issues, such as HIV-Aids
- There is a clear distinction between private, semi-private and public spaces
- Primarily indigenous vegetation is utilized, with the exception of roses and other similar plants in the formal gardens
- Views are accentuated as far as possible
- Historic elements, both ecological and human-made structural features, have been kept within this greenway, and are well-maintained and protected
- The space is well-utilized by a variety of users, namely tourists, school excursion groups, businessmen and women, students from nearby universities and colleges, and people that live and work in the area

5.23. Company's Gardens signage (Howard 2005)

5.24. A rock channel adjacent to the primary pedestrian route in the Company's Gardens (Howard 2005)

5.22. *Stelitzia juncea* in the Company's Gardens (Howard 2005)

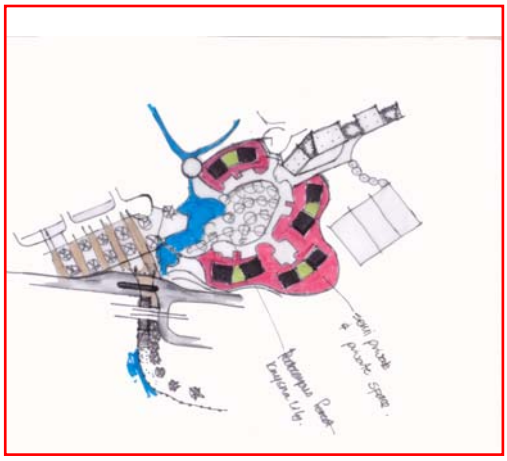
5.25. High permeability pedestrian boulevard adjacent to historic features in the landscape (Howard 2005)

5.26. Vegetated channel (Howard 2005)

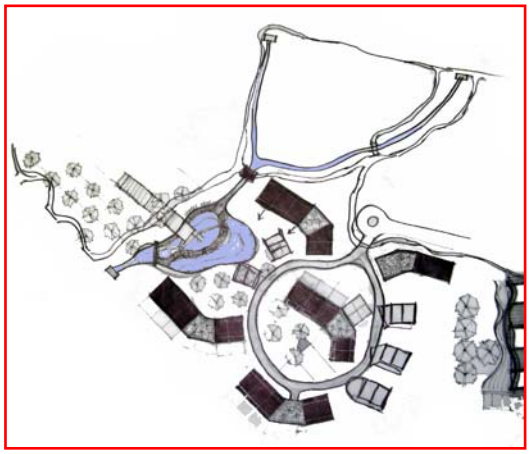
5.27. Pergola with historic value restored and maintained as a feature (Howard 2005)

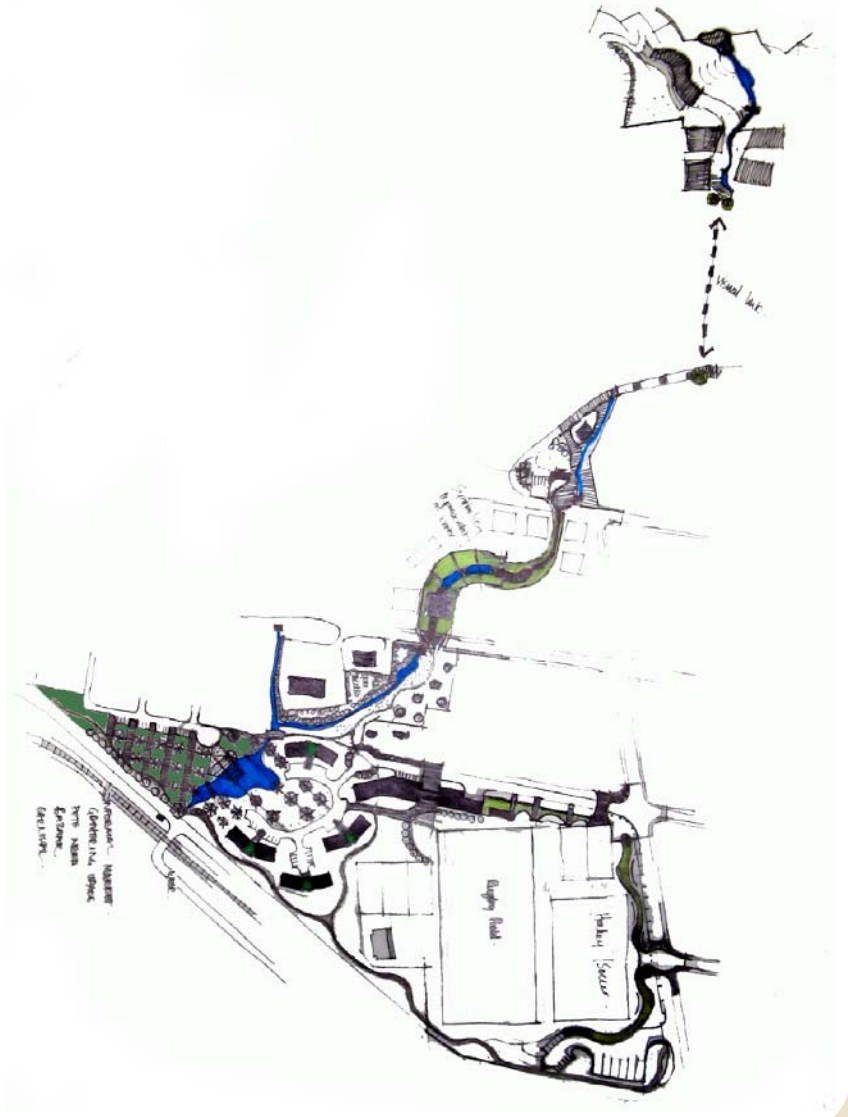
5.4. PRECINCT VISION STATEMENTS

- Add socio-cultural, economical and ecological value to existing urban open spaces,
- While responding to the community requirements and the context of the environment
- Creating unity throughout the precinct by using a design language which evolves within each unique space and function,
- And maintaining the baseline design principles so that what is achieved within the precinct may permeate into the rest of the urban environment.



PRECINCT DEVELOPMENT





5.5. MASTER PLAN

TRANSITION ZONE 1:
Infiltration of endemic vegetation from the nature reserve into this area. Social rehabilitation through ecological rehabilitation.

DISTRICT 1:
Environmental Management Plan to ensure the rehabilitation and continued ecological improvement of the reserve, therefore acting as an ecological node within the town.

TRANSITION ZONE 2:
Crucial link between Pledge Nature Reserve and the urban fabric of Knysna, as this area is to act as the primary access point into the reserve.

DISTRICT 2:
The southern portion of the reserve to be rehabilitated and designed to function as an environmental education centre, and as an integration region between nature and the surrounding urban setting.

TRANSITION ZONE 3:
Primarily a visual and superficial physical link is created between District 2 and 3 with the symbolic representation of the sub-surface stream, constructed of blue-pigmented concrete pavers and in situ concrete.

DISTRICT 3:
The proposed soup kitchen and community craft centre whereby unemployed individuals make products primarily of recycled elements.

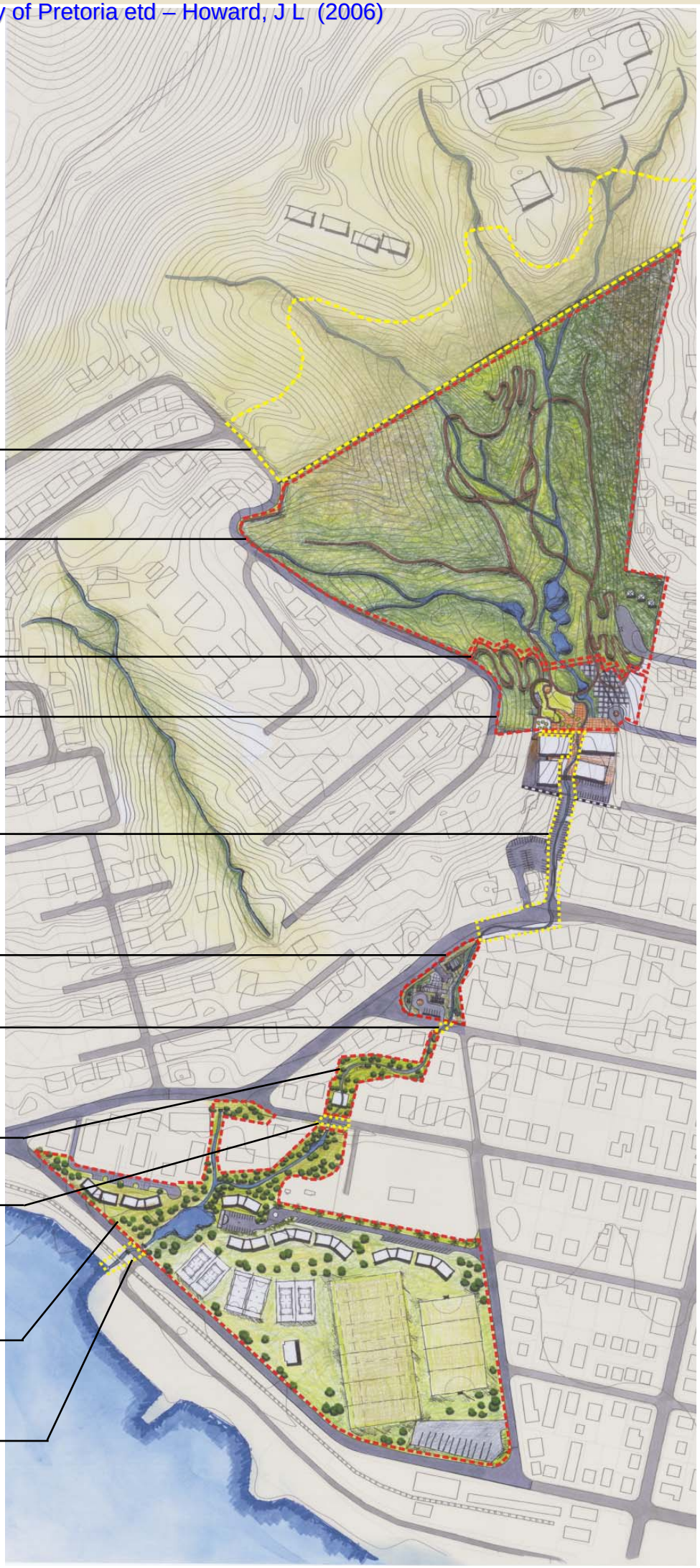
TRANSITION ZONE 4:
Pedestrian crossing and traffic passifier over the symbolic stream feature.

DISTRICT 4:
Proposed intermediate formal urban open space which links District 3 and 4. Surrounding buildings to open up and gain value from this space.

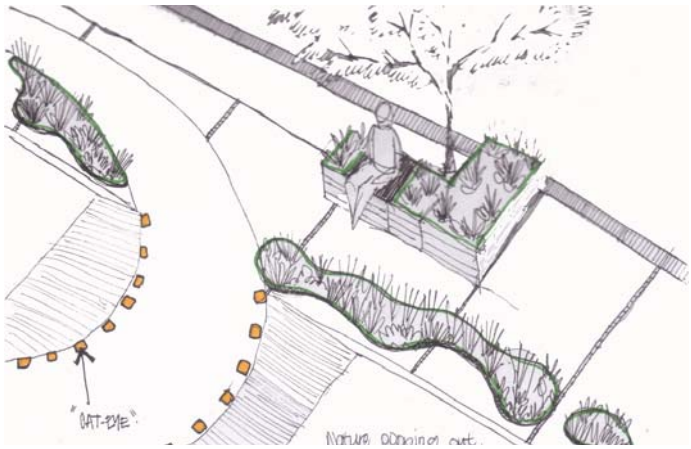
TRANSITION ZONE 5:
Pedestrian crossing and traffic passifier over the symbolic stream feature.

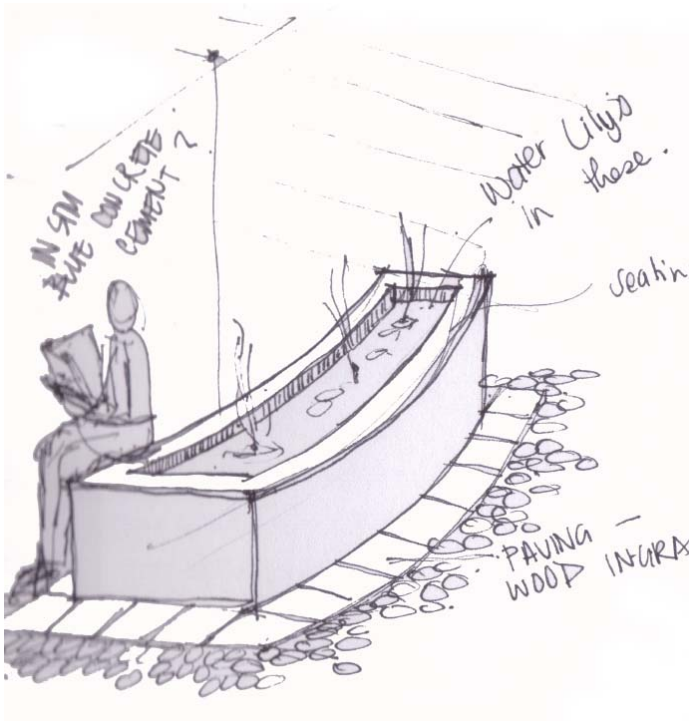
DISTRICT 5:
Proposed urban recreational park to be situated around proposed low- to middle-cost housing. The presernt sports ground to be replanned to improve efficiency of space and accessibility to the Knysna community

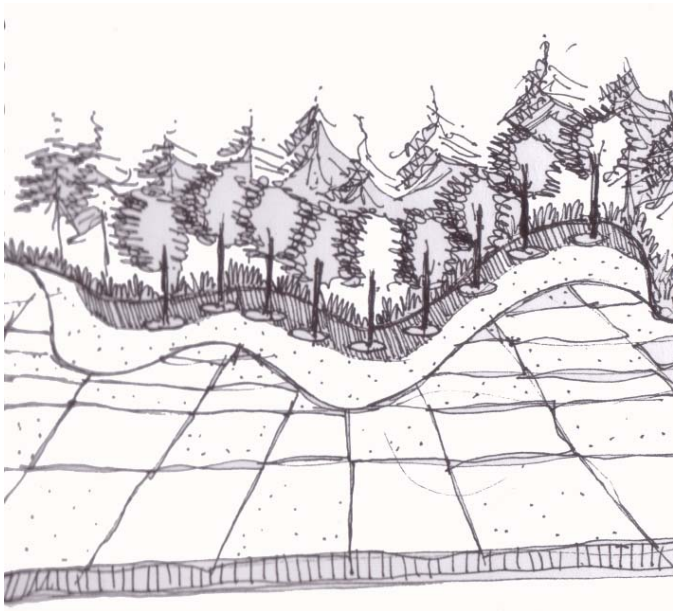
TRANSITION ZONE 6:
Pedestrian crossing and traffsic passifier over the symbolic stream feature. This tranisition zone is the final link between the proposed urban open space system and the estuary and its perimetre walkway.

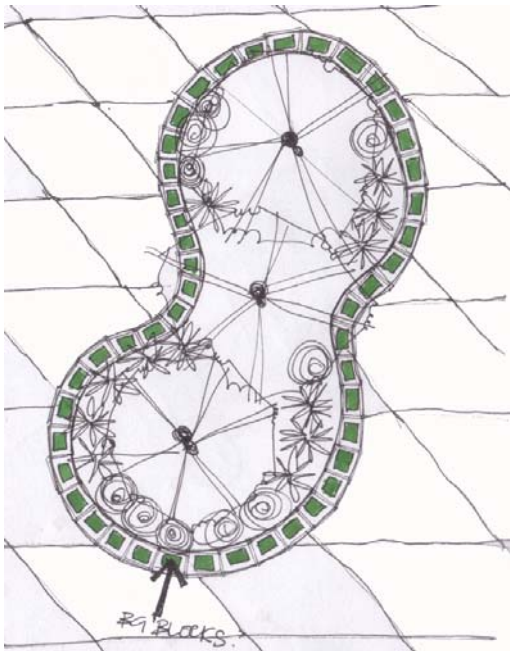


CONCEPT SKETCHES









CONCEPT SKETCHES