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CONCLUSION

The project has succeeded in achieving to bridge the gap between able-bodied and disabled members of society in Pretoria by:

- **Integrating the disabled into able-bodied society.** The building gives the disabled an identity. They participate and contribute in the formal economy by taking the opportunity of producing greenhouse food and linking with the fresh produce market. Income is also derived from the specialised training and by performing other menial tasks, particularly packaging.
- **Implementing the objectives of the national constitution by applying effort and capital in the capacitation, inclusion and upliftment of the disabled.** The disabled can become economically independent and financially self-sustaining in an environment of reduced state grants and subsidies.

- **Optimising the building's ecological footprint on the earth, thereby symbolising the increasing contribution of the disabled to society.** The green nature of the building qualifies it for Clean Development Mechanism (CDM) funding, which warrants further investigation.
- **Complying with future planning parameters for Pretoria** by softening the Inner City edge and returning life and economic power to the CBD.

It is proposed that the concept of the *In-Vocational Training Centre for the Disabled* be replicated elsewhere in South Africa. Links can be forged with existing infrastructure for the disabled (in this case, Pretoria School and Prinshof School, etc.) while capitalising on the already existing comparative advantages for economic sustainability.

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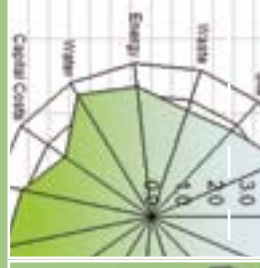
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APPENDICES

6



9.1 BASELINE DOCUMENT

9.1.1 Social issues

A.

| Criteria | Target Set |
|------------------------|---|
| | <u>Occupant comfort:</u> |
| Ventilation | <ul style="list-style-type: none"> The building will have a life cycle. Louvre windows (easily used by disabled) will allow occupants to control the amount of natural ventilation. |
| Thermal comfort | <ul style="list-style-type: none"> Temperatures in the building must be carefully monitored to keep the occupants comfortable and the food healthy. Occupants will be able to regulate drafts through the adjustable louver windows. Thermal mass of the building will increase temperatures in winter. Deciduous plants will limit sunlight in summer and heat the rooms in winter. Evaporative cooling systems to be incorporated. |
| Views | <ul style="list-style-type: none"> The view of the Union Buildings to the east will be accentuated. The view over the □ Views over □ “softening” the building. |
| Noise | <ul style="list-style-type: none"> A distinct □ This site is centered between 2 major contrasting noise sources and equilibrium must be reached in this building. South and East of Site = Taxi Rank = loud = constant hooting, sirens, buzzing and voices Block and dampen noise on southern side of Centre through façade design and acoustic design of training rooms and kitchen. North of Site = Prinshof School for the Blind = quiet Although the classrooms are very noisy, the part of the school bordering the site is very quiet and used for private agriculture to sustain the children in the hostels. There is no need to dampen the sound as much, thus the accommodation can be placed on northern side. The benefits would be that units will enjoy subtle sounds of children voices at specific hours as well as benefit northern sunlight in the rooms. <i>Acoustic elements:</i> <ul style="list-style-type: none"> Walls: Thick and solid walls absorb sound. Windows: 4mm and 6mm glass Floors: Soft, fibrous materials in designated areas will absorb sound wave energy. Ceilings: Increase the mass by installing heavy materials in ceilings. Planters with plants: Sound is diffused through the plants. |

| | |
|-----------------------|---|
| Indoor/Outdoor | <ul style="list-style-type: none"> Balconies on ☐ solariums. Northern balconies on the training facilities block ensure views over the courtyard. |
|-----------------------|---|

B.

| Criteria | Target Set |
|-------------------------------|---|
| | <u>Inclusive Design / Barrier-free design:</u> (See Design Investigation) |
| Circulation | <ul style="list-style-type: none"> Easy movement and navigation is of critical importance in this building. Access must be allowed to all parts of the building with level changes addressed by ramps/stairs and lifts. |
| Furniture | <ul style="list-style-type: none"> Height of wo☐ concern for wheelchair users. The material must suit the function and the light of the room. 50% of furniture to be manufactured on site by local labour. Other furniture can be bought from the cane workshop for the blind.. |
| Lighting | <ul style="list-style-type: none"> General principles for internal lightening include: light-coloured walls, floor and ceiling; vertical windows rather than roof lights; and light fittings which hav☐ comparison to the reflected light in a space. |
| Floor finishes | <ul style="list-style-type: none"> Provide navigational information. <i>Carpets:</i> Type of carpet has a great impact on wheelchair users. The harder the carpet the better to move. Low-pile looped or compressed-fibre carpets are recommended. Carpets and carpet tiles should be securely attached. Bold patterns can be used to guide people. <i>Linoleum:</i> Generally good, though noisy. Adhere firmly to the floor surface. Polished linoleum can be a serious threat. Use non-slip flooring polish. <i>Non-slip flooring:</i> <ol style="list-style-type: none"> grit applied to an epoxy carrier abrasive vinyl sheets rubberized tiles. |
| Toilets & Kitchens | <ul style="list-style-type: none"> Must be easily accessible to all. Have non-slip flooring. Warm water taps must be on the same side of the basin throughout the building and the cold water taps must be closest to the WC. Cupboards must be correct height and reachable for wheelchair users. Lights must be fitted under top kitchen cupboards, so as to shine on work surfaces without shining in persons' eyes. |
| Entrance | <ul style="list-style-type: none"> From the parking or drop-off area up to the entrance of the building must be legible and easily accessible (with a handrail) for both able-bodied and disabled people and without any distinction. The entrance must be well defined. |

| | |
|--|--|
| External areas, parking & paths | <ul style="list-style-type: none"> • Accessible car parking with correct dimensions. • Pathways that are well illuminated, firm, well drained with a non-slip surface. Intersections should be rounded or splayed for wheelchairs and clearly marked. • <input type="checkbox"/> • Channels, gratings and manholes must have a non-slip cover flush with the pavement. • Pedestrian crossings must be well lit with well-defined and maintained road markings. Dropped kerbs must be provided at intersections. |
| Transport | <ul style="list-style-type: none"> • Road and pedestrian connections are essential to the building. The Centre is located 50m or less from main public transport, namely Bloed Street Taxi Rank and the proposed tram line. |
| Doors | <ul style="list-style-type: none"> • Doors must be correct width, and placing with appropriate handles, kickplates and vision panels. |
| Fire and emergency escape routes | <ul style="list-style-type: none"> • See page 81. |
| Ramps, stairs & lifts | <ul style="list-style-type: none"> • All changes in level catered for with appropriate ramps of 1:12 fall, or lifts. • The right design and usage is of great importance, see page 60. |
| Edges | <ul style="list-style-type: none"> • All edges i.e. between walls and floors and stair nosings clearly distinguished through the use of contrasting colour (for visually impaired) |

C.

| Criteria | Target Set |
|---------------------------|--|
| | <u>Access to facilities:</u> |
| Schools | <ul style="list-style-type: none"> • The Prinshof School fo <input type="checkbox"/> from the site. Inner city schools are within 3km reach. |
| Tertiary education | <ul style="list-style-type: none"> • Damsa is located less than 100m from site. |
| Public transport | <ul style="list-style-type: none"> • The Bloed Street Taxi Rank is across the road from the Centre. The Centre is on the local bus route and near the proposed tram line station. |
| Banking | <ul style="list-style-type: none"> • ABSA in Pretorius Street and First National Bank in Vermeulen Street, both easily accessible by public transport (within 3km). |
| Retail | <ul style="list-style-type: none"> • <input type="checkbox"/>. Attention must be given to the sidewalks and crossings to accommodate disabled people to get to the retail stores. |
| Communication | <ul style="list-style-type: none"> • Postnet is situated in Schoeman Street. • Payphones would be placed in the accommodation block, in the internet café. • An Internet café is situated within walking distance in Bloed Street and one will be provided in the Centre. |
| Hospitals | <ul style="list-style-type: none"> • Pretoria Academic Hospital is within walking distance (\pm 400m) and is also on the local public transport route. |

| | |
|---------------------------|---|
| Recreation | <ul style="list-style-type: none"> The Zoo is within 200m from the Centre. |
| Sports grounds | <ul style="list-style-type: none"> The Oudst□ Centre. Sports grounds are situated on the corner of Nelson Mandela Drive and Schoeman Street and can be reached with public transport. |
| Theatres | <ul style="list-style-type: none"> The Pretoria State Theatre is 5 blocks away (within walking or public transport distance). |
| Work / Residential | <ul style="list-style-type: none"> Work for disabl□ public transport. Residential housing is also in the surrounding area. |

D.

| Criteria | Target Set |
|------------------------------|---|
| | <u>Participation & Control:</u> |
| Environmental Control | <ul style="list-style-type: none"> Building must be user and environmental friendly. Occupants have a certain amount of control over their environmental conditions, e.g. opening windows / blinds. The building forms part of the industrial ecology and green architecture approach. |
| User training | <ul style="list-style-type: none"> Every occupant should know how the building functions and know the emergency exit procedures and locations. |
| Amenities | <ul style="list-style-type: none"> Easy access to work, training and accommodation as well as ablution facilities. |
| Local community | <ul style="list-style-type: none"> Local community involvement within the building is an important aspect for community upliftment. Occupants in the building must interlink with the local community of the area; thus linking able-bodied with disabled people. |
| Social spaces | <ul style="list-style-type: none"> Informal / formal socializing will take place in the cafeteria, lounges and recreation area of the building. Seating along regular routes will be provided for social interaction. The greenhouse will not only produce healthy food, but will also provide for social interaction between occupants. |

E.

| Criteria | Target Set |
|----------------------------------|--|
| | <u>Health, Safety and Education:</u> |
| Recreation & exercise | <ul style="list-style-type: none"> See: 'access to facilities'. |
| Smoking | <ul style="list-style-type: none"> This will be a smoke-free building with allocated areas for smoking. |
| Air quality | <ul style="list-style-type: none"> Passive ventilation systems will ensure good air flow through the building with good interior air quality. |

| | |
|------------------------------|--|
| Safety & security | <ul style="list-style-type: none"> • Spacing surveillance. • Textures and types of pavement will warn occupants of danger. • Smoke detectors in all rooms. • Fire extinguishers are located in areas as per regulations. • Emergency doors will close in case of fire to prevent fire from spreading. • Security checkpoint at food delivery and distribution area. • Electrical appliances and sockets are on correct, safe level. • Ramps are of correct gradient so as to not produce speed wobbles for wheelchair users. |
| Education | <ul style="list-style-type: none"> • The building skills. |
| Health | <ul style="list-style-type: none"> • Information readily available on health, education, and career development issues. This could be in the form of a well-serviced notice board located at the lift. |

9.1.2 Economic issues

A.

| Criteria | Target Set |
|----------------------------------|---|
| | <u>Local Economy:</u> |
| Local contractors | <ul style="list-style-type: none"> • 80% of the construction will be completed by local contractors within Tshwane (in a 40 km radius of the Centre) with the aim of reducing embodied energy in regard to transport to and from the site. |
| Local material supply | <ul style="list-style-type: none"> • 80% of material will be sources from surrounding area and 20% of material will be produced within a 200km radius of the Centre. |
| Local components | <ul style="list-style-type: none"> • 80% of components to be produced within Gauteng. |
| Repairs & maintenance | <ul style="list-style-type: none"> • All repairs and maintenance to be done by either the local community or within the region of Tshwane, which will create continuous labour business around the site. |
| SMME support | <ul style="list-style-type: none"> • SMMEs can be used during and after construction. |

B.

| Criteria | Target Set |
|----------|------------------------------|
| | <u>Ongoing Costs:</u> |

| | |
|------------------------|--|
| Maintenance | <ul style="list-style-type: none"> • Aim to keep maintenance costs low by specifying low maintenance materials. |
| Cleaning | <ul style="list-style-type: none"> • Can be done by local workers (able-bodied). |
| Security | <ul style="list-style-type: none"> • Building to <input type="checkbox"/> with able-bodied security guards day and night (to be able to <i>run</i> after criminals -if needed) |
| Care taking | <ul style="list-style-type: none"> • The necessary medical and therapeutic provisions have to be made. A care giver will be staying on the ground level of the accommodation block to help extreme physically disabled occupants (e.g. with bathing). |
| Shared costs | <ul style="list-style-type: none"> • Spaces must be designed to be multi-functional, so as to share costs between different users, e.g. training centre can be used for vocational training for disabled during the day and for adult education at night. |
| Cost monitoring | <ul style="list-style-type: none"> • A <input type="checkbox"/> management. |
| Gardening | <ul style="list-style-type: none"> • <input type="checkbox"/> A link between <input type="checkbox"/> |

C.

| Criteria | Target Set |
|------------------------|--|
| | <u>Capital Costs:</u> |
| Existing flora | <ul style="list-style-type: none"> • Most of the trees will be conserved. |
| Efficiency | <ul style="list-style-type: none"> • No complicated shapes and construction. |
| Consultant fees | <ul style="list-style-type: none"> • Incentives provide for reduced capital costs and continuing costs. |

D.

| Criteria | Target Set |
|----------------------------|---|
| | <u>Efficiency and use:</u> |
| Space use | <ul style="list-style-type: none"> • By reducing the service space, more usable space is created. |
| Occupancy schedule | <ul style="list-style-type: none"> • The workshops will be occupied at a minimum of 35 hours per week (5days x 7hrs/day). • The accommodation will be occupied 90%-100% of the time. • The trai <input type="checkbox"/> |
| Management of space | <ul style="list-style-type: none"> • Spaces must be designed so as to not waste any space. • A correct management system must be put in place to ensure successful productivity of the building. |
| Use of technology | <ul style="list-style-type: none"> • The occupants will be provided with access to technology, e.g. internet. A central IT room will be provided. |

E.

| Criteria | Target Set |
|---|---|
| | <u>Adaptability & Flexibility:</u> |
| Vertical dimensions | <ul style="list-style-type: none"> The heights of neighbouring buildings must be kept in mind: <ol style="list-style-type: none"> Prinshof School = 1-3 storeys Residential area on western side = 1 storey Commercial buildings across Boom Street on southern side = 1-3 storeys |
| Internal partitioning | <ul style="list-style-type: none"> Adjustable internal partitioning for easy changing of spaces. Modular systems to be considered. |
| Structure | <ul style="list-style-type: none"> Structure placed to allow for open spaces. Three separate structural systems will be used. The three systems involve the way of living (by disabled), the process of energy production (work & training) and the act of organic food growth (greenhouse). The three systems (brick, concrete and steel) will have a metaphoric influence on the material used. |
| Circulation & service spaces | <ul style="list-style-type: none"> Easy access to be provided to all areas and services in the building. The main generator for the design is the movement through the building. Vertical and horizontal movement will mostly be dealt with by the use of ramps. |

9.1.3 Environmental issues

A.

| Criteria | Target Set |
|--|---|
| | <u>Energy:</u> |
| Transport | <ul style="list-style-type: none"> Public |
| Ventilation | <ul style="list-style-type: none"> Passive ventilation systems will reduce the energy consumption in the building. |
| Environmental control | <ul style="list-style-type: none"> Less mechanical building's life cycle. |
| Appliances and fittings | <ul style="list-style-type: none"> Energy efficient fittings to be used, e.g. fluorescent lighting. |
| Energy sources & renewable energy | <ul style="list-style-type: none"> Renewable energy sources to be used, e.g. solar water heaters and solar cookers to be considered. |

B.

| Criteria | Target Set |
|--------------------|---|
| | <u>Water:</u> |
| Rainwater | <ul style="list-style-type: none"> All rainwater to be harvested and used for irrigation of hydroponics or flushing of WCs. |
| Grey water | <ul style="list-style-type: none"> Grey water to be used for flushing toilets. |
| Runoff | <ul style="list-style-type: none"> Use of pervious surfaces maximizes the replenishing of groundwater and will reduce stormwater runoff. Hard landscaping will be minimized, e.g. car parking. |
| Water usage | <ul style="list-style-type: none"> Water efficiency devices to be used, e.g. WCs. Water will be used quite extensively in the Centre due to the plants and evaporative cooling pools, but it can be managed by efficient devices and environmental awareness of occupants. |
| Plants | <ul style="list-style-type: none"> Formal gardens to have indigenous plants that require less water. Vegetable and herb gardens to be strictly monitored as to amounts and times of irrigation. |

C.

| Criteria | Target Set |
|---------------------------|---|
| | <u>Waste:</u> |
| Organic waste | <ul style="list-style-type: none"> Recycled on site and used in permaculture process. Used as compost for vegetable and herb gardens. |
| Inorganic waste | <ul style="list-style-type: none"> Inorganic waste to be sorted, stored correctly and disposed of. A municipal wastage dump is located across the street from the Centre and was kept in mind whilst designing. |
| Toxic waste | <ul style="list-style-type: none"> Ensure safe disposal or recycling of products. |
| Sewage | <ul style="list-style-type: none"> Connect to main sewerage system. |
| Construction waste | <ul style="list-style-type: none"> Waste to be kept to the minimum through good management and design. Some construction waste products can be recycled within the composting process and be used for the urban agriculture. |

9.1.4 Site

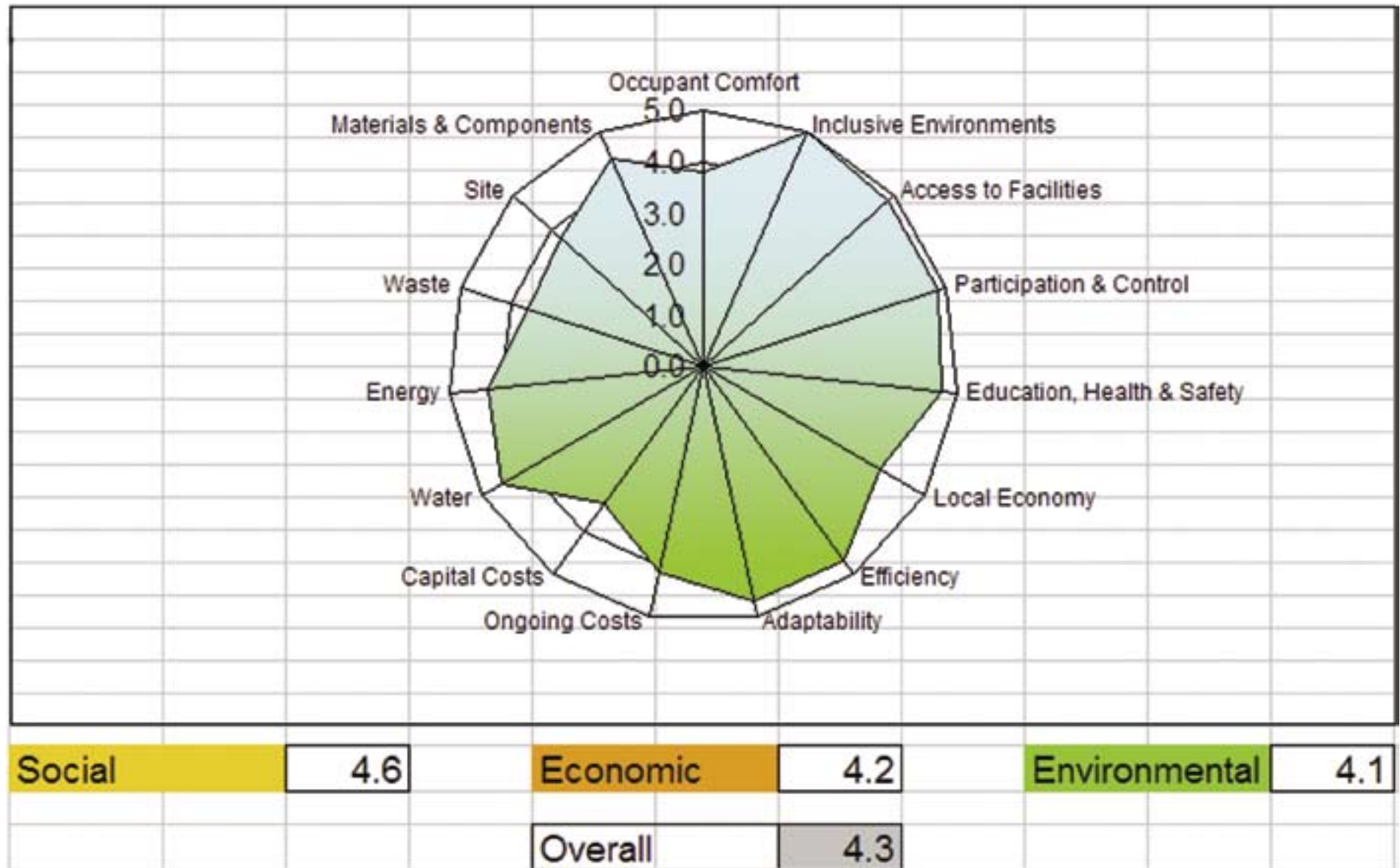
A.

| Criteria | Target Set |
|-------------------------------|---|
| | Site: |
| Neighbouring buildings | <ul style="list-style-type: none"> The new Centre must not have a negative effect on the surrounding cityscape and environment, thus the following must be kept in mind while designing: <ol style="list-style-type: none"> Scale Materials Functions Adaptability |
| Ecosystem | <ul style="list-style-type: none"> The whole building forms its own ecosystem within the city, which specifically relates to the one function of hydroponic food production. The balance that has to be kept in the natural environment must also be kept in the built environment. This Centre with a successful economic outcome. |
| Landscape inputs | <ul style="list-style-type: none"> Permaculture principles to be applied with no artificial inputs. Industrial ecology will be exercised |
| Construction processes | <ul style="list-style-type: none"> Minimise negative impact on the site as much as possible during construction. |

9.1.5 Materials and components

A.

| Criteria | Target Set |
|--|---|
| | Materials & Components: |
| Material / component sources | <ul style="list-style-type: none"> 70% to be sourced from renewable resources. |
| Embodied energy | <ul style="list-style-type: none"> 80% of building to be made with low embodied energy, including locally produced and sourced timber, concrete & steel. |
| Manufacturing process | <ul style="list-style-type: none"> No environmental damage to be done during manufacturing. |
| Recycling & reuse of materials & components | <ul style="list-style-type: none"> Possible recycling and reuse of materials and components from surrounding construction sites. |
| Modular coordination | <ul style="list-style-type: none"> Aim to design |



9.2 TSHWANE INNER DEVELOPMENT AND REGENERATION STRATEGY – 2005

9.2.1 Tshwane vision

The City of Tshwane Metropolitan Municipality's vision is "To become the leading international African capital City of Excellence that empowers the community to prosper in a safe and healthy environment." (Tshwane Inner Development and Regeneration Strategy – 2005: 5)

The vision clearly sets out the development goal of becoming the African City of Excellence. The vision of Tshwane (and its implications for the Inner City) therefore focuses strongly on two components, namely:

- People and the betterment of their lives;
- The image and functionality of the Inner City as an internally important city.

9.2.2 Development approach

The Inner City Development and Regeneration Strategy is based on a "catalytic intervention" approach to influence the development of the Inner City through specific strategic interventions.

The proposal is to focus public budget expenditure on specific projects and catalytic developments. This will create strong stimuli for private sector investment to respond positively. An integrated, multi-disciplinary approach must be followed in addressing the complex issues of the Inner City, whereby integrating

physical, economic and social spheres and imply certain institutional arrangements.

The following are certain strategic interventions that are proposed in the Inner City, which will begin to create enabling environments for the regeneration of the Inner City.

9.2.3 Spatial and physical interventions

These interventions are based on eight building blocks:

Block 1: Announcing the destination

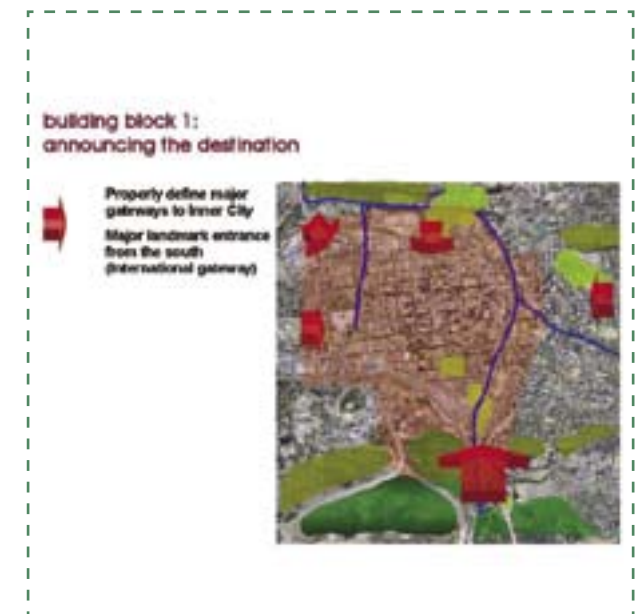
The Inner City must be announced by defining gateways into the city. On the south, the city is defined by a sense of significant green open spaces in the natural setting. According to the framework, a landmark comprising strong vertical lines is to be provided in the area of the old tram bridge in Nelson Mandela Drive.

The entrance from the north via Paul Kruger Street is already defined by a strong natural setting. The entrance could, however, be enhanced by creating a landmark at its point of entrance over the mountain, balancing it with the monumental Freedom Park at the southern end of Paul Kruger Street on Salvokop.

After analysis of the city another gateway was also identified. On the north-eastern side of the city, where Dr Savage Road, Boom Street and Du Toit Street connect, a new gateway is perceived.

- **Effect on/of In-Vocational Training Centre (IVTC):**

The IVTC is situated on the edge of the city where Boom Street enters Soutpansberg Road. The corner is perceived as an exit out of the Inner City. Therefore the IVTC will be a quiet building so as not to detract attention from the "entrance" of the city. The building hugs the street edge, whereby its horizontality is enforced. The street façade comprises of vertical columns placed at different intervals, creating a rhythm. Passers-by will experience the rhythm at different intervals when "exiting" the city.

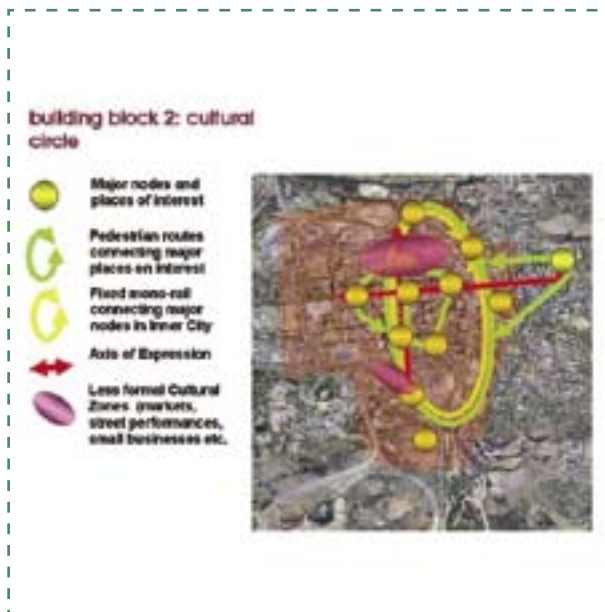


Block 2: Cultural circle

This concept is based on the identification of all existing cultural landmarks and facilities and the enhancement thereof.

- **Effect on/of In-Vocational Training Centre (IVTC):**

The site is perfectly situated on the proposed fixed mono-rail connection and pedestrian routes, linking the Zoological Gardens and the Mandela Corridor, with a view over the Union Buildings to the east and the Inner City to the south.



Block 3: Defining the Capital Precinct

The Inner City is framed by a road grid, creating a system of welcoming boulevards. Within the system of welcoming boulevards emerges a monumental grid, centered around the *Axis of Expression* (Church Street and Paul Kruger Street) linking Church Square, the Union Buildings and Freedom Park.

- **Effect on/of In-Vocational Training Centre (IVTC):**

The IVTC is situated on a framing grid/welcoming boulevard. Presently Boom Street's character stops directly next to the proposed site, where the boulevard of trees (London Planes) stop abruptly. Therefore the wide sidewalk next to the IVTC will be used not only to accommodate movement of people but also create an attractive environment. Trees and seating will be provided along the IVTC, enhancing the welcoming boulevard's character.



Block 4: Nelson Mandela Corridor and Apies River Promenade

Nelson Mandela Corridor

This corridor is a future focal area for arts, culture, government, business, entertainment and commercial development, with prime exposure on Nelson Mandela Drive. Within this framework emphasis has been placed on the pedestrian, cyclist and those dependent on public transport.

- **Effect on/of In-Vocational Training Centre (IVTC):**

The framework is a good example of how to apply traffic calming methods and how to balance movement networks. It will be used to create crossings in Boom Street for the disabled.



Apies River Promenade

The Apies River must be transformed to its original green state. The land to the north of the proposed Tshwane crossing along the Apies River is proposed to become recreational entertainment space.

- **Effect on/of In-Vocational Training Centre (IVTC):**

The site is a link between the Zoological Gardens and the Apies River via Boom Street and Soutpansberg Road. The streetscape will be designed to create a green link between the two. Trees and seats for pedestrians will be provided along the road.

Block 5: Tshwane Crossing – A Meeting Place for Opportunity

This crossing will be a meeting place, where the Apies River, the Walker Spruit, Nelson Mandela Drive and Church Street meet. It has been identified as a strategic location for a landmark

building block 5: tshwane crossing – a meeting place of opportunity



Block 6: Zone of Urban Regeneration

The northern, western and north-western (Marabastad) parts of the Inner City are highly neglected areas. Urban regeneration is desperately needed.

The area in front of the Zoological Gardens is very neglected. It is proposed that this area can provide small business opportunities for creative industries that will contribute to the creation of more tourism around the zoo.

- **Effect on/of In-Vocational Training Centre (IVTC):**

The IVTC can link with the proposed “Creative Industries”/SMMEs. The in-vocational training that will take place will form part of the creative industries (SMMEs).

building block 6: zone of urban regeneration



Block 7: Movement and Accessibility

The movement and accessibility aim for Pretoria comprises three main sub-strategies:

- Moving between Johannesburg, Oliver Tambo International Airport and Tshwane Inner City.
- Moving people between the Inner City and other destinations in Tshwane.
- Ease of movement within the Inner City.

- **Effect on/of In-Vocational Training Centre (IVTC):**

The IVTC will be located on or close to main transport routes. (Tshwane Inner City Development and Regeneration Strategy, 2005)

building block 7: movement



9.3 WHO IS DISABLED AND WHAT DOES DISABILITY MEAN?

9.3.1 Introduction

There are various definitions that can be looked at and they are classified as follows:

a) Definitions in terms of the World Health Organisation (WHO):

- *Impairment*: Any loss or abnormality of psychological, physiological or anatomical structure or function.
- *Disability*: Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.
- *Handicap*: A disadvantage for an individual, resulting from an impairment or disability, that limits or prevents the fulfilment of a role that is normal (depending on age, sex and social and cultural factors) for that individual.

b) Definitions in terms of the British Council of Organisations of Disabled People (BCODP):

- *Impairment*: Lacking part or all of a limb, or having a defective limb, organ or mechanism of the body.
- *Disability*: The disadvantage or restriction of activity caused by contemporary social organization which takes no or little account of people who have physical impairments and thus excludes them from the mainstream of social activities.

9.3.2 Recent developments

a) World report on disability and rehabilitation

During the World Health Assembly resolution of May 2005 it was found that “there is no agreement on definition and little international comparable information on the incidents, distribution and trends of disability or impairments”. It was also found that there was no global document that compiles an analysis the way countries have developed policies and responses to address the needs of people with disabilities.

Taking into account that the number of people with disabilities is growing as a result of factors such as population growth, ageing and medical advances that preserve and prolong life, it has become more and more important to address this matter. In terms of the world report it was decided that a world report will be developed between the end of 2006 and mid-2009 to ensure that global recognition and action is taken regarding the matter of addressing the needs of people with disabilities.

Key developments in disability legislation:

- * *Adoption of action plans or policies on disabilities at international level such as UN Standard Rules on the Equalisation of Opportunities for Persons with Disabilities.*
- * *Emergence and evolution of Community-based Rehabilitation (CBR).*
- * *Creation of organisations by people with disabilities and their families.*
- * *Paradigm shift from “medical model” to “social model” of disability.*
- * *Approval of new International Classification of Functioning Disability and Health (ICF) by the World Health Assembly.*
- * *Adoption of the United Nations Comprehensive and Integral International Convention on Promotion and Protection of the Rights and Dignity of Persons with Disabilities.*

b) The World Health Organisation Disability Assessment Schedule II (WHODAS II)

WHODAS II sets out a new measure of function and disability regarding the classification and function of disabilities. The domains of functioning assessed by WHODAS II include:

- Understanding and communicating
- Getting around
- Self care
- Household and work activities
- Participation in society

WHODAS II distinguishes itself from other measures of health status, disability and functioning in that it is

- compatible with an international classification system,
- cross-culturally developed, and
- treats all the disorders at parity when determining level of functioning.

The purpose of such a World Health Organisation Assessment Schedule would be that a single definition and action base could be defined and implemented in different countries and to this extent, this classification system does not only cross over the cultural differences found in the world but also the language barriers and in this regard the WHODAS II classification system has been translated in more than sixteen languages, which represent most of the spoken languages in developed countries.

c) World Health Organisation

The United Nations General Assembly adopted the *International Convention on the Rights of Persons with Disabilities* on 13 December 2006. In terms of this convention member countries are required to ensure that people with disabilities are granted equity under the law and freedom from discrimination.

The ratification process, which took place in March 2007, makes this convention legally binding on membership countries. A committee was therefore established that will be able to review claims by all on behalf of alleged victims of violations of the convention as well as to undertake enquiries in cases where it has reliable evidence of gross and

systematic violations of the rights of people with disabilities.

It is therefore the aim and ambit of this legislation to ensure that people with disabilities are treated fairly and equitably on an equal footing in all United Nations membership countries.

d) Legal rights

The legal rights of people with disabilities have been expanded over a long period of time and in the implementing of their rights, disabled people have worked to establish several important principles:

- Disabilities are to be evaluated on an individual merit and not stereotyped on assumptions about disabilities.
- Society must make certain changes to enable disabled people to participate more easily in business and social activities. Examples in this regard would be wheelchair access to public transport, building entrances, etc.
- Disabled people should, to the extent appropriate for each individual, be integrated with people who are not disabled.
- Medical models versus social models, taking into account that the World Report on Disability and Rehabilitation specifically aims to shift the mindset from the “medical model to the social model” of disability.

- Medical model of disability:

The medical model of disability is a model by which illnesses or disability are the result of a physical condition, specific to the individual may reduce individual's quality of life and causes clear disadvantages to the individual.

The purpose of the medical model is therefore to understand and learn to control or alter the cause of such a disability. It is therefore argued that a compassionate or just society invests resources in health care and related services in an attempt to cure disability medically, expand functionality and improve functionality, thus allowing disabled persons a more “normal” life.

Often a medical model of disability is used to justify large investments in these procedures, technologies and research when adaptation of the disabled person's environment could ultimately be cheaper and more attainable. It is therefore set out by the medical model that through science and the application thereof; it would be possible to reduce not only the disability as a percentage of society, but also the impact thereof.

In terms of the medical model vast investments in these developments are argued for.

○ Social model of disability:

The social model of disability proposes that barriers and prejudice of inclusion by society are the ultimate factors defining who is disabled and who is not. During the 1970s the UK organisation, Union for the Physically Impaired against Segregation (UPIAS), claimed that disability was *“the disadvantage or restriction of activity caused by a contemporary social organisation which takes little or no account of people who has physical impairments and thus excludes them from participation in the mainstream of social activities.”* This has consequently been the definition applied to the social model of disability.

Society is therefore asked to review itself in terms of its social responsibility towards disability rather than its mere medical impact. The social model of disability often focuses on societal challenges and in this regard accentuates four specific focuses, namely

✳ *Attitudes.* A more positive attitude towards certain mental traits or behaviour or not underestimating the potential quality of life of those with potential or actual impairments.

✳ *Social support.* The support rendered by society to people with disabilities with regard to overcoming barriers by providing resources, aid or positive discrimination to overcome them.

✳ *Information and the access thereto in formats that are accessible to the disabled.* Braille, for example, or specific levels of informatio.

✳ *Physical structures.* The access to and from buildings, public transport and normal day-to-day activities.

The social model of disability distinguishes between the terms “impairment” and “disability”. Impairment is used to refer to the actual attributes (or loss of attributes) of a person whether it be in terms of limbs, organs or mechanisms (including psychological). Disability is used to refer to the restrictions caused by society when it does not give equivalent attention and accommodation to the needs of individuals with impairments.

The social model also relates to economics. It proposes that people can be disabled by a lack of resources to meet their needs. It addresses issues such as under-estimating the potential of people to contribute to society and add economic value to society, if given equal rights and equal sustainable facilities and opportunities as others.

e) Conclusion

The main difference between the medical model and the social model can be summarised as follows:

In terms of the **medical model**, disabled people are defined as people with certain conditions or certain limitations on their abilities to carry out “normal day-to-day activities”.

In terms of the **social model**, employers and service providers are prompted to make “reasonable

adjustments” to their policies and practices or physical aspects of their premises to allow the participation of people with disabilities in the normal social and economic activities on an equal footing with able-bodied people.

9.4 STATISTICS

9.4.1 International statistics

In terms of the World Report it is estimated that 10% of the world’s population – approximately 650 million people of which 200 million are children – experience some form of disability.

9.4.2 South African statistics

According to the statistics acquired from Statistics SA, the following divisions are made from a population figure of 40 million:

| | |
|-----------------------|------------------|
| Sight disabled: | 1 091 022 |
| Hearing disabled: | 383 408 |
| Physically disabled: | 55 774 |
| Mentally handicapped: | 192 554 |
| TOTAL | 1 722 758 |

In other words, 4,3% of the South African population are disabled. According to the CASE report conducted on behalf of the Department of Health there are between 2,3 million and 2,5 million people with disabilities in South Africa.

According to the Central Statistical Service (SA Yearbook, 1998) at least 400 000 in 1995 were deaf or hard of hearing.

Of the deaf population:

- 68% live in informal settlements
- **70% are unemployed**
- 40% attend school
- 66% are illiterate

9.4.3 Statistics South Africa

Census 2001 reveals the following statistics:

a) Number of disabled persons by gender and population group

| Population group | Number | | | Percentage | | |
|------------------|------------------|------------------|------------------|------------|------------|------------|
| | Male | Female | Total | Male | Female | Total |
| African | 879 680 | 974 696 | 1 854 376 | 5,2 | 5,3 | 5,2 |
| Coloured | 88 583 | 80 095 | 168 678 | 4,6 | 3,9 | 4,2 |
| Indian/Asian | 21 550 | 19 685 | 41 235 | 4,0 | 3,5 | 3,7 |
| White | 92 230 | 99 463 | 191 693 | 4,4 | 4,5 | 4,5 |
| Total | 1 082 043 | 1 173 939 | 2 255 982 | 5,1 | 5,0 | 5,0 |

b) Number of disabled persons by province and sex

| Province | Number | | | Percentage | | |
|----------------|------------------|------------------|------------------|------------|------------|------------|
| | Male | Female | Total | Male | Female | Total |
| Western Cape | 96 549 | 90 301 | 186 850 | 4,4 | 3,9 | 4,1 |
| Eastern Cape | 173 229 | 199 037 | 372 266 | 5,8 | 5,8 | 5,8 |
| Northern Cape | 23 620 | 23 353 | 46 973 | 5,9 | 5,5 | 5,7 |
| Free State | 87 758 | 97 619 | 185 377 | 6,8 | 6,9 | 6,8 |
| KwaZulu-Natal | 219 685 | 250 903 | 470 588 | 5,0 | 5,0 | 5,0 |
| North West | 105 169 | 106 054 | 211 223 | 5,8 | 5,7 | 5,8 |
| Gauteng | 164 588 | 167 023 | 331 611 | 3,7 | 3,8 | 3,8 |
| Mpumalanga | 87 319 | 94 874 | 182 193 | 5,8 | 5,8 | 5,8 |
| Limpopo | 124 128 | 144 774 | 268 902 | 5,2 | 5,0 | 5,1 |
| Total | 1 082 043 | 1 173 939 | 2 255 982 | 5,1 | 5,0 | 5,0 |

c) Number of disabled persons by sex and age group

| Age group (years) | Number | | | Percentage | | |
|-------------------|------------------|------------------|------------------|-------------|------------|------------|
| | Male | Female | Total | Male | Female | Total |
| 0-9 | 101 838 | 88 822 | 190 660 | 2,2 | 1,9 | 2,1 |
| 10-19 | 156 980 | 148 755 | 305 735 | 3,2 | 2,9 | 3,0 |
| 20-29 | 149 422 | 134 806 | 284 228 | 3,7 | 3,2 | 3,5 |
| 30-39 | 165 153 | 145 787 | 310 940 | 5,4 | 4,3 | 4,9 |
| 40-49 | 165 871 | 168 727 | 334 598 | 7,5 | 6,7 | 7,1 |
| 50-59 | 142 602 | 155 928 | 298 530 | 10,8 | 10,3 | 10,5 |
| 60-69 | 102 815 | 138 168 | 240 983 | 13,7 | 12,5 | 13,0 |
| 70-79 | 62 396 | 111 578 | 173 974 | 16,9 | 17,7 | 17,4 |
| 80+ | 34 966 | 81 368 | 116 334 | 25,6 | 27,9 | 27,2 |
| Total | 1 082 043 | 1 173 939 | 2 255 982 | 5,05 | 5,0 | 5,0 |



Once the wheelchair is outside the vehicle, I must lean out of the vehicle without losing my balance by hanging on to the steering wheel of the vehicle to assemble the wheelchair by fitting its wheels, and laying the cushion I have to sit on without puncturing it, because it is an air cushion.

Transferring myself from the vehicle into the wheelchair is really challenging.

Once in the wheelchair the experience truly begins. Even locking the vehicle manually with a key without losing balance, is not easy.

Pushing myself up the ramp into the shopping centre takes a great amount of upper body strength. Luckily for me, the shopping trolley was inside the centre; otherwise I wouldn't have got to the top of the ramp.

Pushing the trolley and the wheelchair was a big struggle, not to mention steering the trolley into the right direction. Luckily there were trolleys, because

baskets are out of the question. A basket on the lap makes it almost impossible to push the wheelchair.

Just getting around in a shopping centre without the trolley is a big challenge, never mind steering the trolley and myself through mazes and a whole city of people trying to shop.

No sympathy or empathy from anyone, just another person in a wheelchair.

Trying to take items from the shelves and putting them into the trolley is not the easiest thing to do. Not even trying to read the prices on the shelves – written too small. To reach for something in the back of a lower level shelf is very difficult, never mind the higher shelves.

Trying to pay at a normal pay point is a matter of impossibility. The wheelchair can not fit through a normal aisle at a pay point. The writing pad to write on and the pay point desk is too high to see properly. Trying to unload the trolley onto the pay point desk -- what a task!

After payment has been made, steering the trolley back to the vehicle, down the ramp and trying to stop the trolley and wheelchair from not bumping into another vehicle or landing in front of a moving car, is a very challenging affair.

Now the whole reverse exercise of getting back into the vehicle.”

(Victor, 2007)

9.5 WHEELCHAIR EXPERIENCE

A day in the life of Jozef Victor – a man in a wheelchair.

“To start off with, just getting into a secure parking for disabled without making a fool of yourself trying to get the attention of the security to open the parking area.

Now to get out of the vehicle without help, is the trickiest part. I need to fold down the backrest of the seat I am sitting in to make space for the wheelchair to pass between myself and the steering wheel.

9.6 CRIME PREVENTION STRATEGIES ACCORDING TO THE INNER CITY DEVELOPMENT FRAMEWORK

| CRIME PREVENTION | INNER CITY DEVELOPMENT FRAMEWORK'S STRATEGY |
|-------------------------------------|--|
| Awareness of the environment | <ol style="list-style-type: none"> 1. Improved and adequate lighting <ul style="list-style-type: none"> • Proper placement • Proper protection and maintenance 2. Good sight lines <ul style="list-style-type: none"> • Visible entrances • Users to see and be seen through boundaries • Appropriate landscaping 3. Design out entrapment spots <ul style="list-style-type: none"> • Avoid entrapment spots adjacent to main movement routes • Provide adequate security measures if entrapment spots are unavoidable 4. Provision of a variety of choices through an environment <ul style="list-style-type: none"> • Provision of alternative routes through the environment |
| Visibility by others | <ol style="list-style-type: none"> 5. Create an environment where people can be seen <ul style="list-style-type: none"> • Informal surveillance "eyes on the street" • Avoid blank facades at street level • Ensure that routes to and from parking lots are overlooked • Provision of activity at street level to ensure informal surveillance 6. Ensure 24-hour use of environments <ul style="list-style-type: none"> • Ensure that the scale of the development is consistent with the surroundings and that people will not lose touch with the street 7. Intensify specific usage <ul style="list-style-type: none"> • Place activity generators in active areas • Multi-functional use of areas 8. Increase sense of ownership <ul style="list-style-type: none"> • Ensure that the new development in the neighbourhood is similar in character to that of the neighbourhood to ensure that residents can identify with the development • Ensure that open spaces are overlooked by residents • Enable and ensure proper maintenance |
| Finding help | <ol style="list-style-type: none"> 9. Enhance and improve signage <ul style="list-style-type: none"> • Strategic location of signage • Maintenance • Understandable and appropriate to all social groups 10. Enhance legibility <ul style="list-style-type: none"> • Ensure that the design of a place makes the function of the space clear |

(Heyns, 2004: 164)

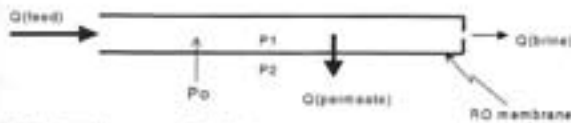
9.7 REVERSE OSMOSIS

In the reverse osmosis process, an external hydraulic pressure is applied to a concentrated solution; forcing pure water through a membrane against osmotic pressure of the system. The external pressure must be higher than the osmotic pressure.

There are four types of Reverse Osmosis module designs used commercially namely, tubular, plate and frame, spiral wound, and hollow fibre modules.

The table below compares the four module designs. When comparing their energy requirements, one will immediately conclude that spiral reverse osmosis is the required module to link with a solar-powered water supply.

A Schematic Description of the Reverse Osmosis Process



P_o = Osmotic pressure of feed water
 P_1 = inlet pressure (after high pressure pump)
 P_2 = Pressure in permeate stream

$P_1 - P_2 - P_o$ = Effective pressure driving force

Recovery = $100 \times Q(\text{permeate})/Q(\text{feed})$

Comparison of Reverse Osmosis Types

| CRITERIA | ORDER OF COMPARISON |
|---------------------------|--|
| System Costs | Tubular, Plate & Frame >> Hollow Fibre, Spiral |
| Flexibility in Design | Spiral >> Hollow Fibre > Plate & Frame > Tubular |
| Cleaning Behaviour | Plate & Frame > Tubular > Spiral > Hollow Fibre |
| Space Requirements | Tubular > Plate & Frame > Spiral > Hollow Fibre |
| Susceptibility to Fouling | Hollow Fibre >> Spiral > Plate & Frame > Tubular |
| Energy Requirement | Tubular > Plate & Frame > Hollow Fibre > Spiral |

9.8 NEWSPAPER ARTICLES



Cecil Masha and Yolanda Herbst are currently doing in-service training, courtesy of the Building Tomorrow programme of the Pretoria School for pupils with disabilities. They spoke to Colita van der Westhuizen about the programme.

In-service training bridges gap

Stephen Selahake

Three years ago Pretoria School for Pupils with Disabilities launched a programme called Building Tomorrow, which is a bridge between school and the workplace.

"The aim of the programme is to prepare pupils socially, physically and emotionally for the outside world," says occupational therapist, Leonora Nel.

"The pupils get the opportunity to do in-service training that enhances their chances of obtaining permanent employment," says Leonora.

The school has a total of 330 pupils of which 24 are involved in this programme. Yolanda Herbst is an 18-year-old former pupil of the school. She is now doing in-service training at Jankransdorp hospital, in the administrative section.

"I am enjoying working at the hospital and the people are friendly and helpful. They do not judge people with disabilities," says Yolanda.

Yolanda encourages people with disabilities not to give up hope and to believe in themselves. Cecil Masha, aged 19, also attended the same school.

He is now doing in-service training at Dynamism, working in graphic design. "The Building Tomorrow programme prepares people with disabilities for the working environment when they finish school."

"Everything becomes possible if you are confident in life, irrespective of your circumstances," he says.

Programme that helps challenged pupils

CORNELIA DU FLOOY

The Building Tomorrow programme is a unique initiative aimed at physically and mentally challenged pupils. The programme allows for a transition period between the school environment and the workplace.

By providing in-service training to pupils in different occupational fields that interest them, they are able to try and find a job with a better understanding of what is expected of them once they enter the market.

For the past three years the Building Tomorrow programme has been successful with great success at Pretoria School.

Leonora Nel, occupational therapist, said: "We realised early on how valuable the programme

is. It used to be that once the pupils had finished school they finished in an inert and ill-adjusted state. Their in-service training allowed them to gradually adjust to the workplace by participating in the Building Tomorrow programme."

With the programme, Pretoria School has proved professionals within the community to help the pupils try their hand at different jobs, ranging from administrative training work to graphic design to nature conservation. The Pretoria School hosted a "thank you day" for those involved in the Building Tomorrow programme. Those involved professionals who had not only their time to provide in-service training to the pupils.

Yolanda Herbst, a former pupil at the school, and programme participant, said: "I work at Jankransdorp Hospital doing administrative work in the pharmacy. I enjoy it and since my in-service training is complete I think I want to continue with Admin work. It really interests me."

Cecil Masha is being trained at a graphic design company. "The time I have spent there has encouraged me to pursue distance learning and to qualify as a graphic designer."

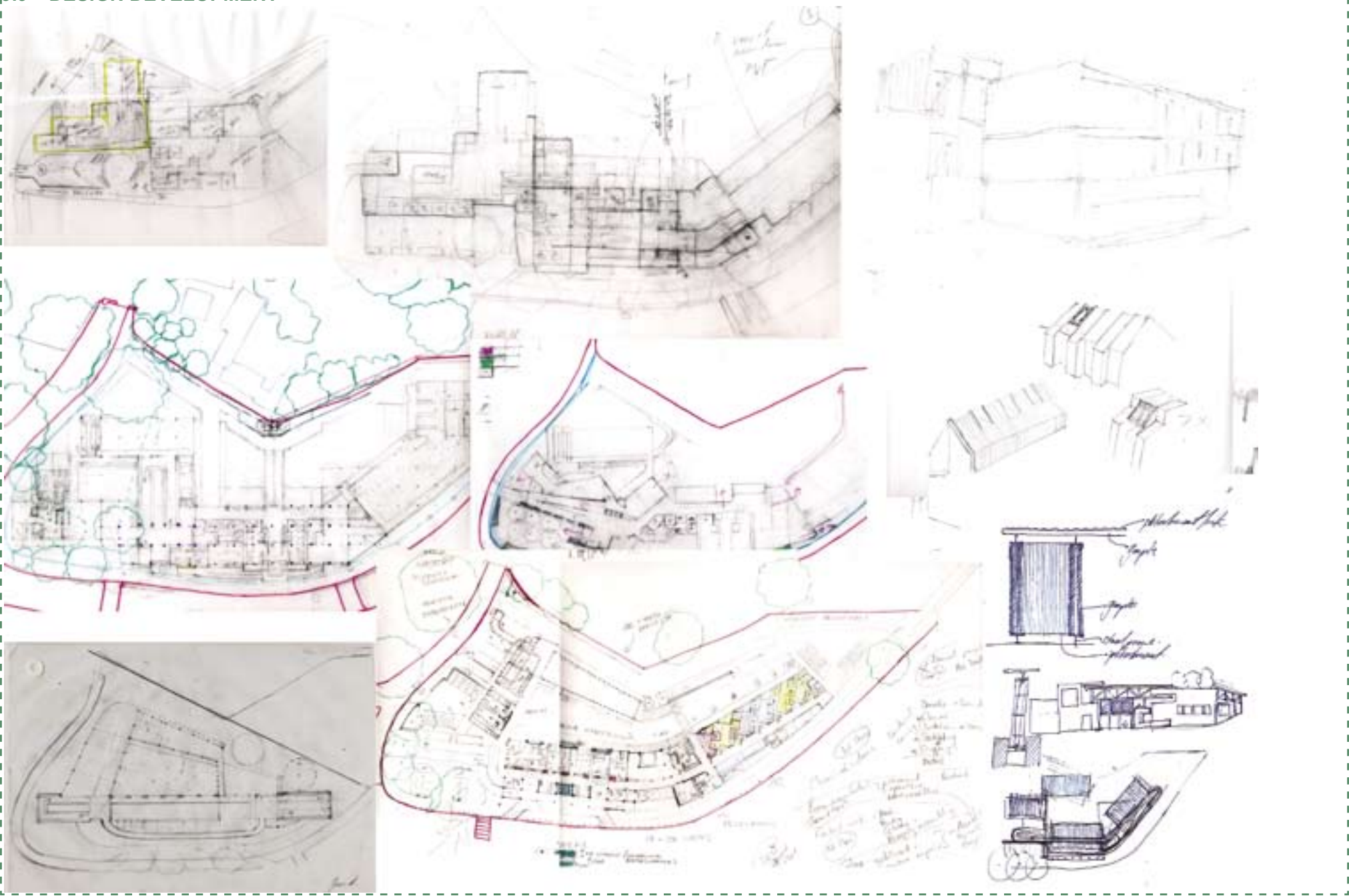
She said: "The most rewarding part of the programme is knowing that you have contributed to society because being whole."

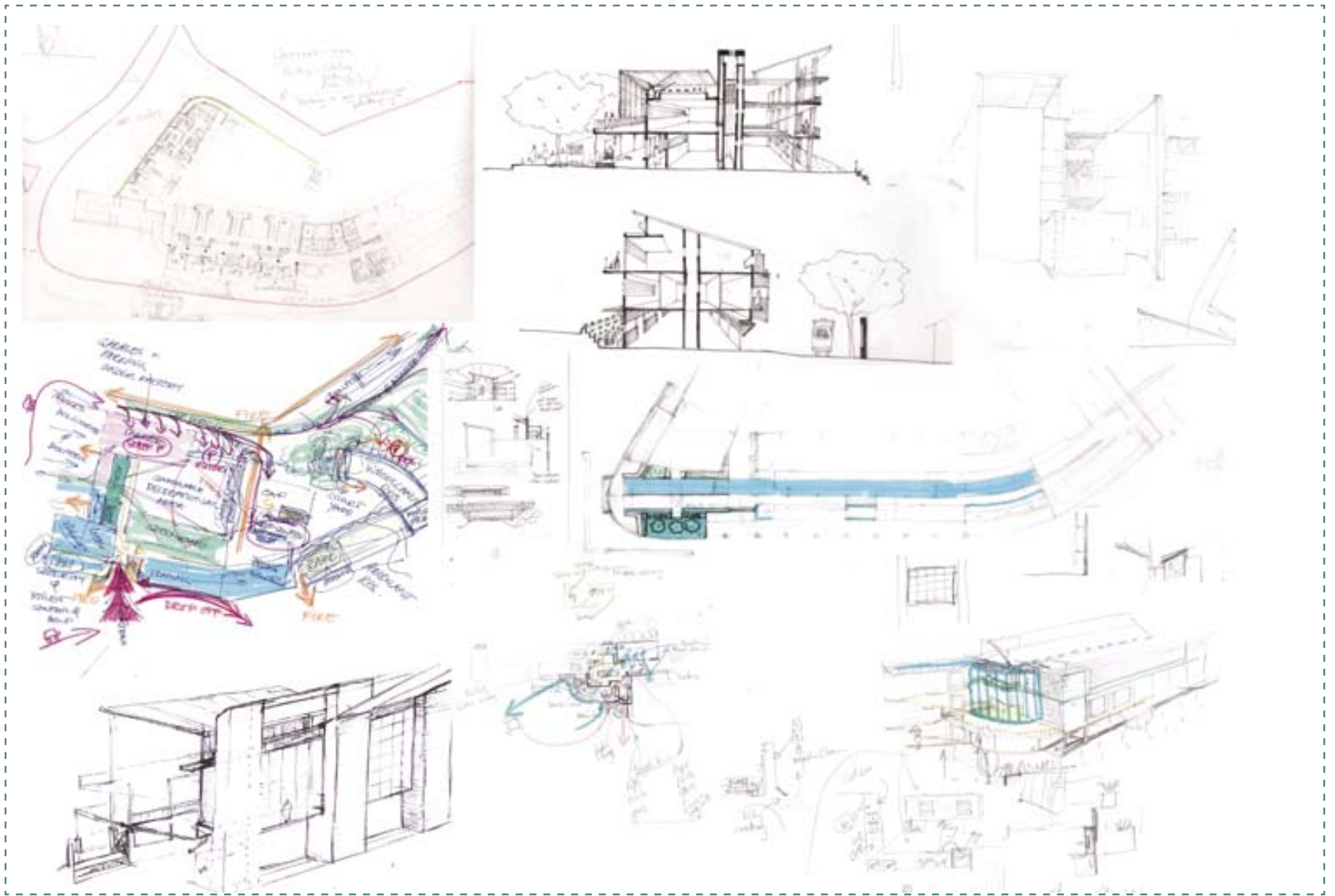


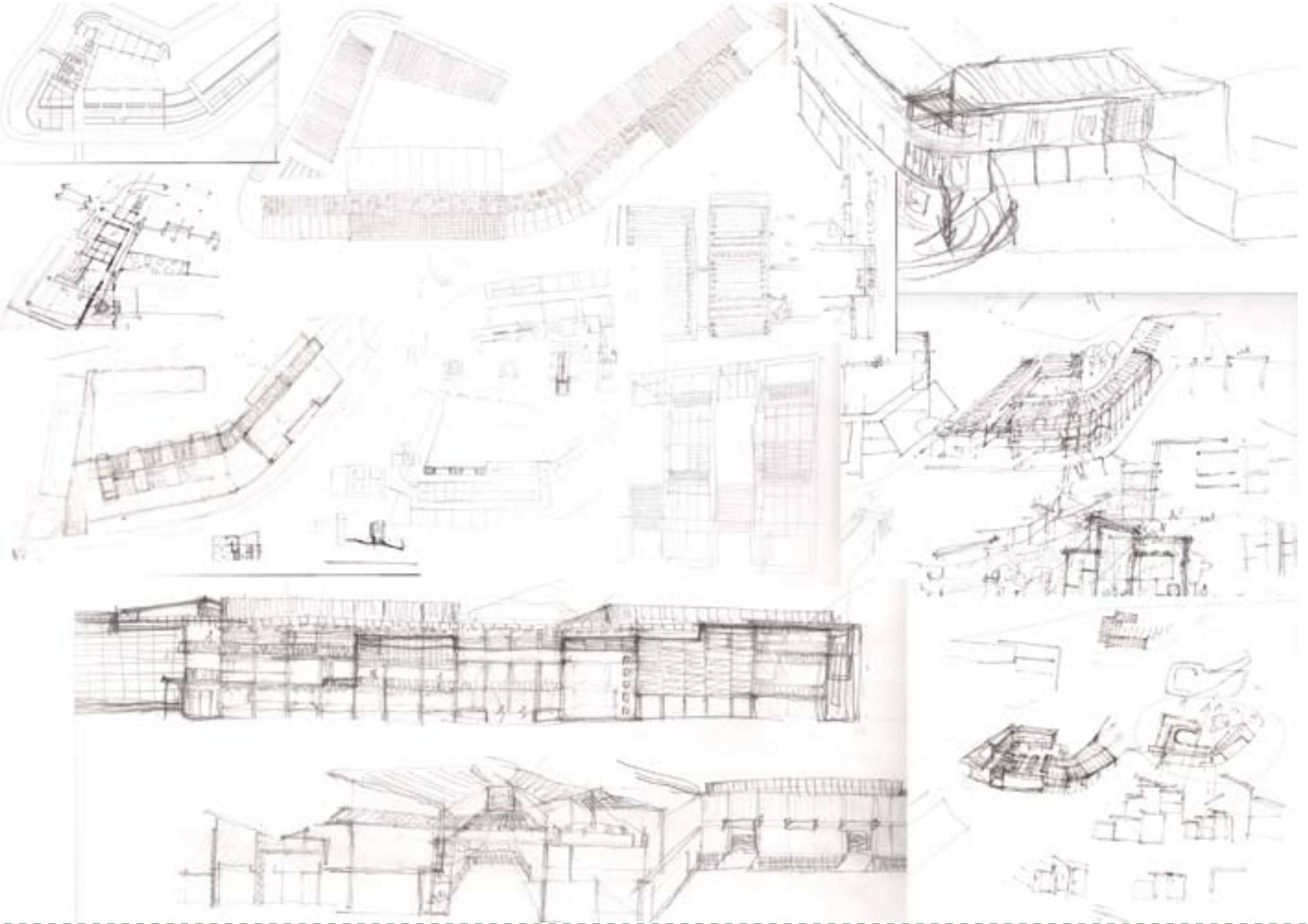
DINING FOR A CAUSE: Richard Roux and Tony Raposo, the Living Link Centre held a successful fundraising dinner at Rodizio Brazilian Restaurant in Fourways last Friday. The centre cares for adults with intellectual difficulties and provides life skills training for its members. "We assist them in living independently from their families and help place them in jobs," explained Julia Wilkinson, director of Living Link.

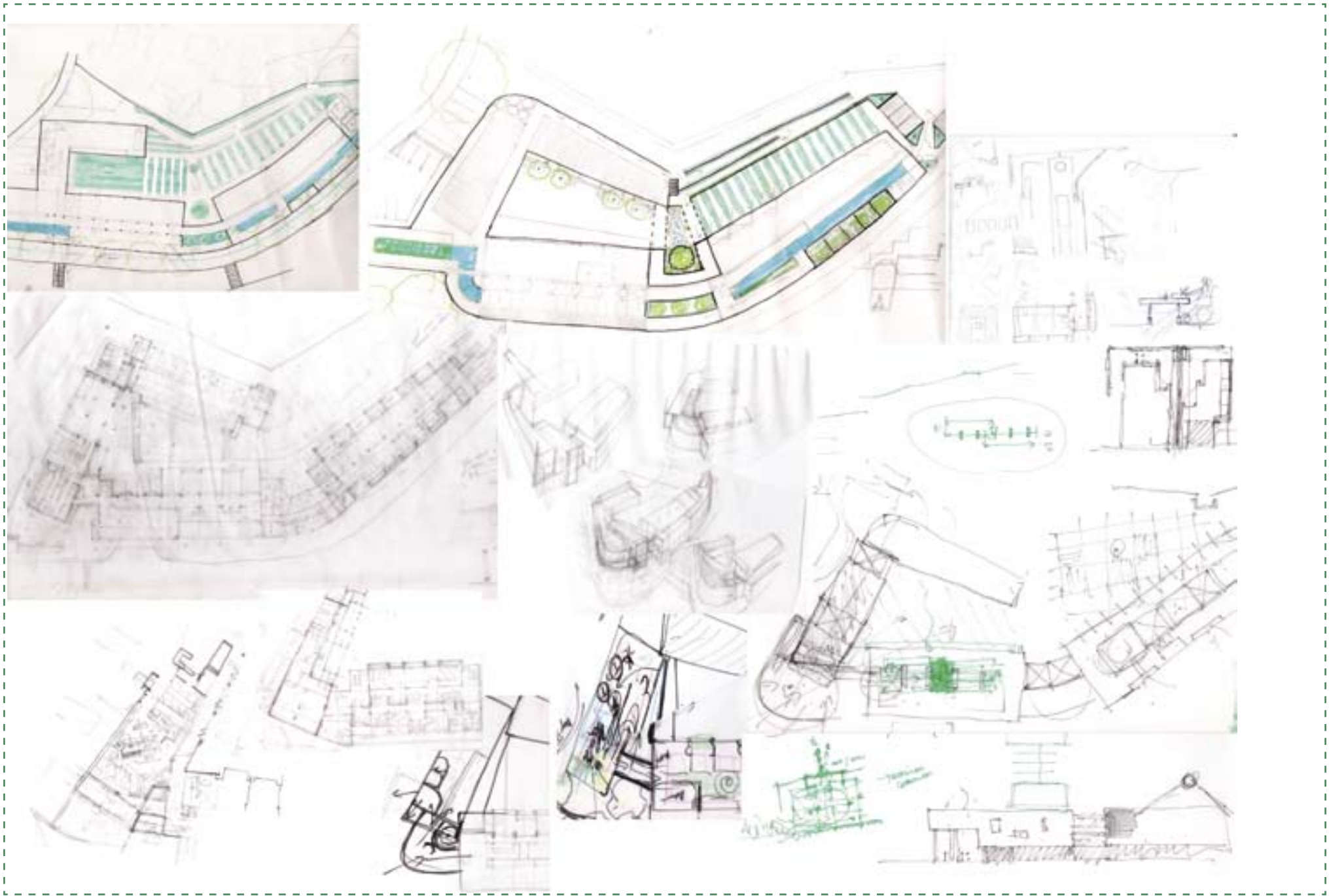
Photo: Lisa Thomas

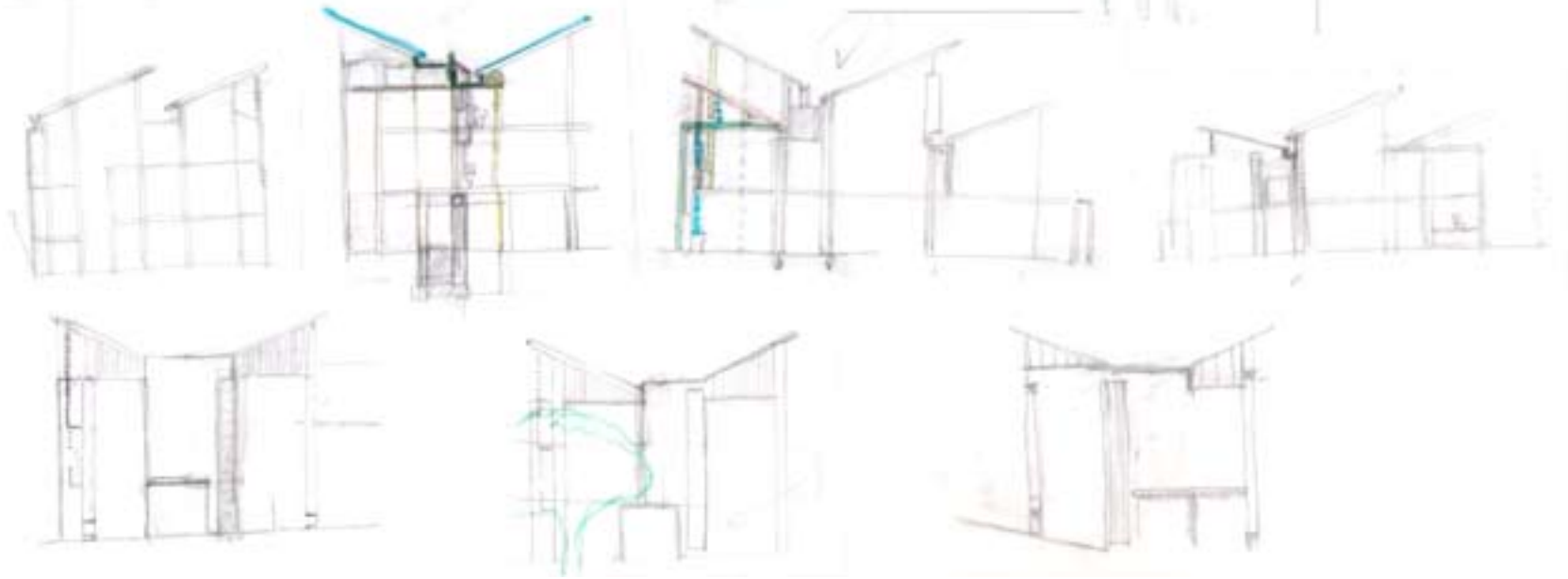
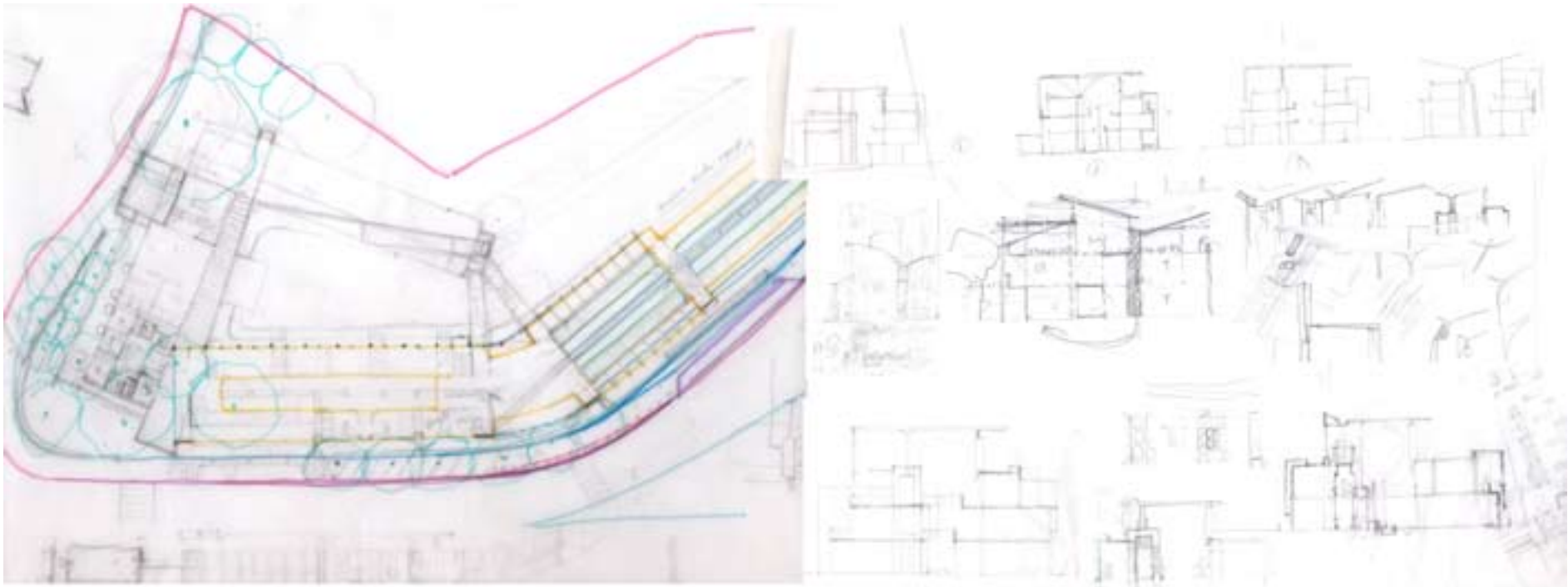
9.9 DESIGN DEVELOPMENT

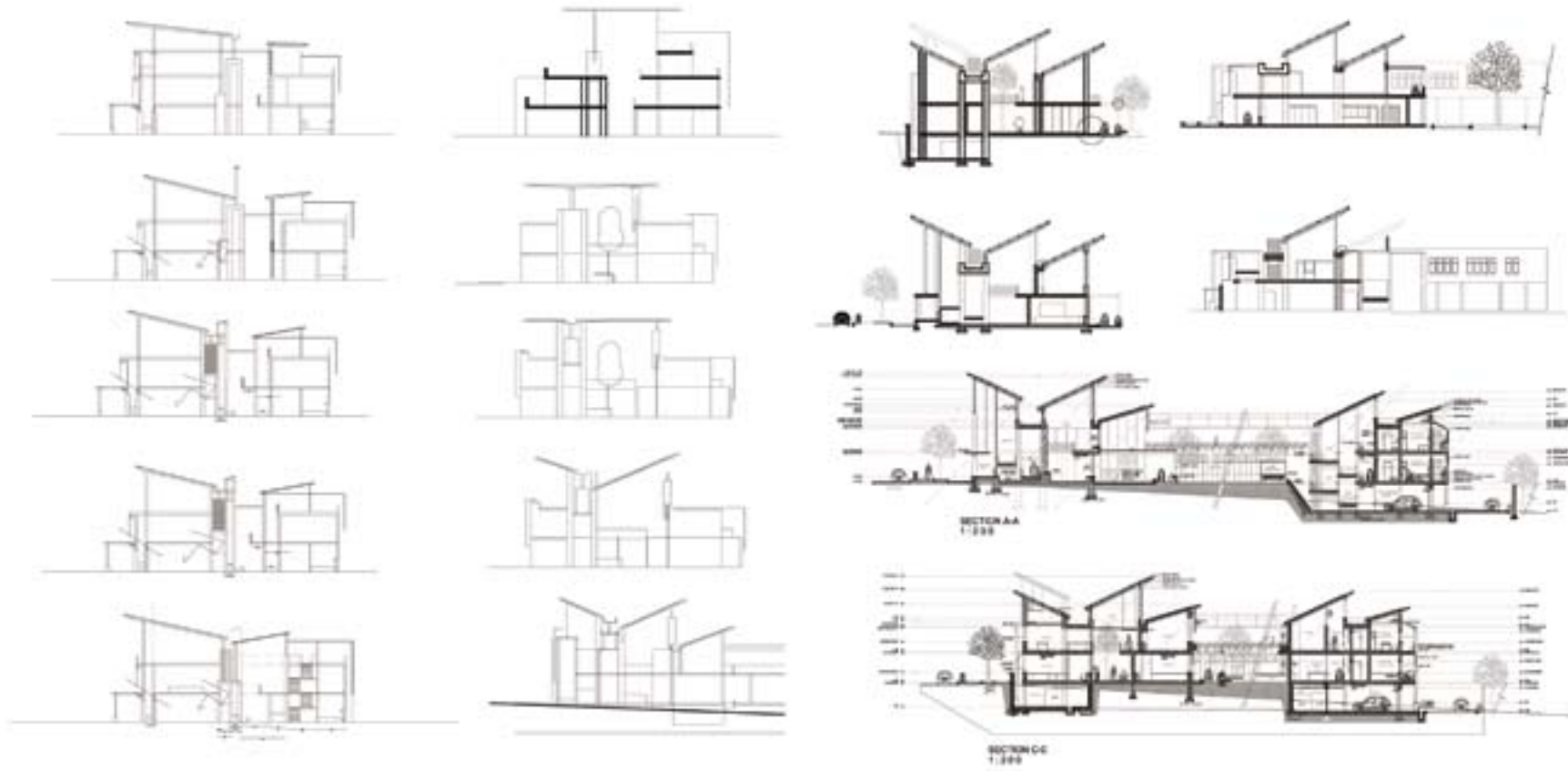


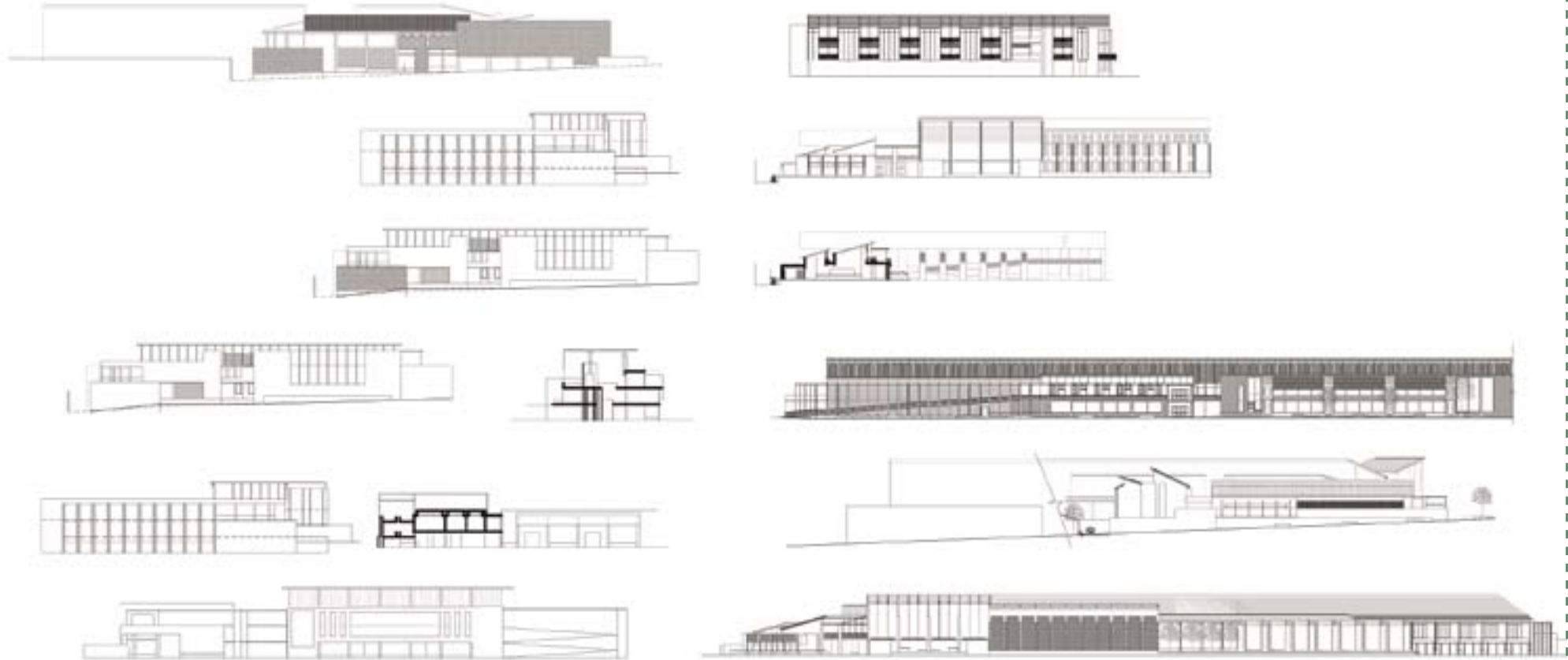


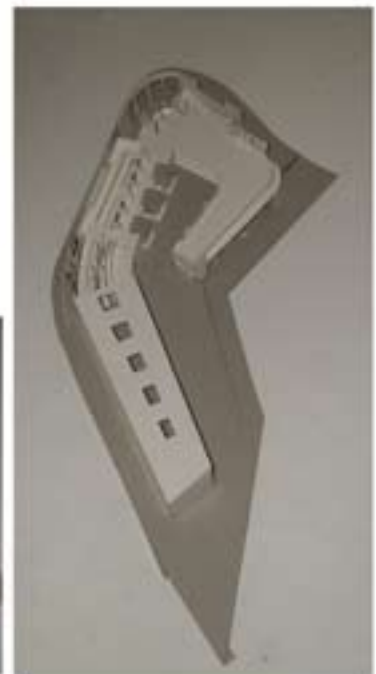
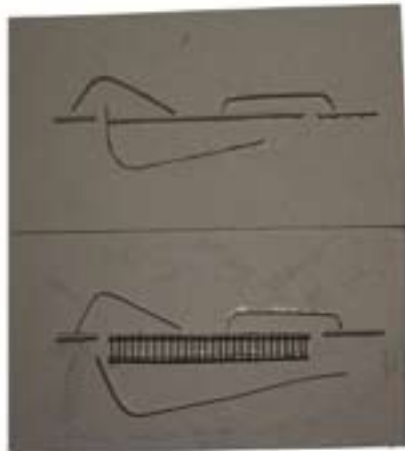




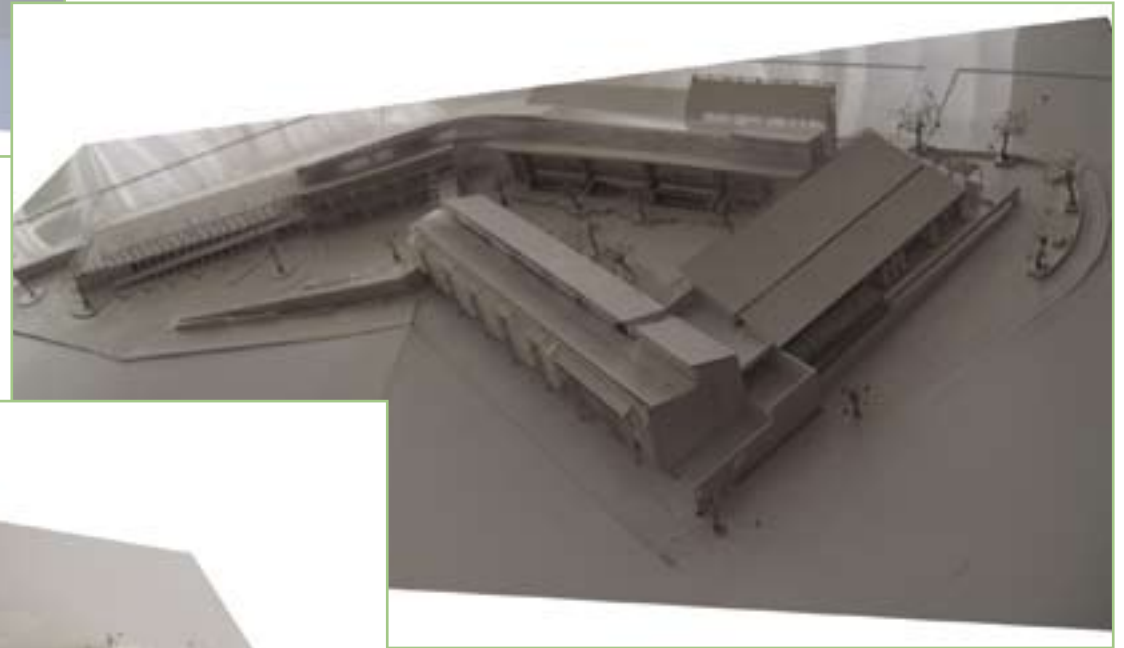








concept models





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