

SECTION F: SUSTAINABLE DEVELOPMENT BASELINE

SECTION SYNOPSIS

This section provides a summary of the general sustainable development principles and guidelines. The relative legislation gives a context where in these principles and guidelines can be implemented. This is to ensure that the developments conform to the ideas of qualitative environmental design and environmental sustainability.

The Baseline consist of:

- a) Social Issues
- b) Economical Issues
- c) Environmental Issues

6. SUSTAINABLE DEVELOPMENT BASELINE

"Sustainable development implies the adoption of a holistic view of the interdependent relationship between human society and the natural environment. It acknowledges the links between the impact of human activities (particularly economic activities) on the functioning of physical and social environments and visa versa. Sustainable development has been presented, therefore, as a means for providing an integrating framework for the reconciliation of human economic and social needs with the capacity of the environment to meet such needs in the long term" (Thompson, J.W. & Sorvig, K. 2000: 2)

6.1 SOCIAL ISSUES

6.1.1 SOCIAL EQUITY

Social equity must be achieved to encourage the whole community to participate in sustainable practices. It can be achieved by:

The workplace:

- Promotion of diversity at all levels
- Policies to stop gender harassment/discrimination
- Support for training/education/professional development
- Empowerment of all staff, in particular historically disadvantaged people
- Incentive schemes for staff at all levels
- Fair and legal retrenchment procedures
- Promotion of health, safety and general wellness

The community:

- Local recruitment
- Support for local businesses
- Community participation in development planning
- Support for local schools and education
- Respect for and promotion of local cultures and heritages
- Social responsibility and environmental criteria when appointing contractors
- Providing access to the mainstream economy through tourism and agriculture

6.1.2 ACCESS TO PUBLIC FACILITIES

6.1.2.1 Public Transport

- ❑ Public transport travel distances and times for work trips should be limited to about 40 km, or one hour in each direction. This means that new settlements should be located no further than 40 km from the major work destinations (Adam E. et al 2000:2).
- ❑ To improve accessibility, a target has been set of reducing walking distances to public-transport facilities to less than about 1 km (Adam E. et al 2000:5).
- ❑ Provision for pedestrians and the disabled
- ❑ Potential cycle network plan.

6.1.2.2 Toilets

- ❑ Sites should primary be chosen for convenience of access to the potential users.
- ❑ Where possible they should be located next to facilities like schools, clinics and libraries, so that when individualised sanitation is provided, they can simply be incorporated into the public facilities. In this way redundant service provision can be avoided (Adam E. et al 2000:7).
- ❑ Although it is not possible to lay down rigid criteria for on-site sanitation, because soil and site conditions vary widely. Two basic criteria should, however, be considered, namely whether the soil can effectively drain the liquids brought to the site and whether there is any danger of pollution of the groundwater or surface water (Thompson, J.W. & Sorvig, K. 2000: 120).

6.1.2.3 Communication

- ❑ Public telephones need to be highly visible and accessible to the population served
- ❑ Public telephones should be located along activity routes within easy walking distance of users.

6.1.3 PARTICIPATION AND CONTROL

Ensuring that users participate in decisions about their environment helps ensure that they care for and manage this properly. Control over aspects of their local environment enables personal satisfaction and comfort. Both of these support sustainability by promoting proper management of landscapes and increasing productivity.

6.1.3.1 Environmental control

- ❑ Set up an community based environmental control group in the area
- ❑ Promote in the local community a sense of ownership to their environment

6.1.3.2 Social spaces

- ❑ Include the local community in the design of social spaces and give them the ownership of such spaces.

6.1.3.3 Community involvement

- ❑ Spaces or services must be shared or made available to the local community. This could include access to computers, teaching learning spaces, leisure facilities, and crèche.
- ❑ The local community can also participate in programs at the culture centre.

6.1.4 EDUCATION, SAFETY AND HEALTH

The landscape needs to cater for the well-being, development and safety of the people that use them. Awareness, and environments that promote health can help reduce the incidence of diseases such as AIDS. Safe environments and first aid can help limit the incidence of accidents and where these occur, reduce the effect. Learning and access to information is increasingly seen as a requirement of a competitive work force. All of these factors contribute to sustainability by helping ensure that people remain healthy and economically active, thus reducing the 'costs' (to society, the environment and the economy) of unemployment and ill health.

6.1.4.1 Education

- ❑ Provision of educational facilities at the major recreational zones for the people who work at these places.
- ❑ Access to support for learning must be provided. This can be in the form of Internet access, structured courses, or the provision of learning material such as books, journals and newspapers (Adam E. et al 2000:9).

6.1.4.2 Safety

- ❑ Ensure high levels of visibility when landscaping parks, public squares or pedestrian routes.
- ❑ Provide sufficient and adequate lighting.
- ❑ Encourage pedestrian traffic and direct people along desired routes as this optimises passive surveillance.
- ❑ Create awareness of fire safety during the stakeholder participation process.

6.1.4.3 Health

- ❑ Provide water, sanitation and drainage within low-income communities (Adam E. et al 2000:10).
- ❑ Providing health care and emergency services within each area

6.2 ECONOMIC ISSUES

Economic efficiency and feasibility are generally recognized as one of the three imperatives to achieve sustainable development. In the proposed development every effort will be made to achieve the following

- ❑ Ensure that as a whole, the profit – and non-profit projects combine into a financially viable local economy that benefits all stakeholders, partners, employees the community and existing business enterprises.
- ❑ Promote the creation of new entrepreneurial and employment opportunities, and where practically possible, labour intensive construction, particularly to benefit the previously disadvantaged (Adam E. et al 2000:25).
- ❑ Choose environmentally responsible suppliers and contractors.
- ❑ Invest some of the proceeds from the use of non-renewable resources in social and human-made capital. To maintain the capacity to meet the needs of future generations (a trust must be set up and the voluntary levy funding there of)

6.2.1 Local Economy

The construction and management of buildings can have a major impact on the economy of an area. The economy of an area can be stimulated and sustained by buildings that make use and develop local skills and resources.

- ❑ 80% of the construction must be carried out by contractors based within 40km of the development
- ❑ The local community must be trained the necessary skills to help with the developments and be incorporated into the developments.
- ❑ Opportunities must be created and provision provided for small emerging businesses. This includes outsourcing catering, cleaning services and security as well as making space and equipment available for businesses to use for retail and education.
- ❑ Training of local people as maintenance workers should be seen as an integral part of capacity building within the community (Adam E. et al 2000:27).
- ❑ Providing of mortgages and cross-subsidies, which maximise the number of people to afford adequate quality housing.
- ❑ Support for innovative community actions to meet needs and reduce waste/resource consumption.

6.3 ENVIRONMENTAL ISSUES

In the proposed developments there will be a presumption in favour of the environment and a premium will be placed on the conservation of natural resources, wildlife and landscapes. Materials for new development will, for example must be from sustainable resources.

6.3.1 Environmental integrity

- ❑ Minimal ecological impact of materials used “ecological footprint”
- ❑ Preference to renewable resources
- ❑ Most efficient use of energy, water land and materials
- ❑ Lowest possible levels of maintenance
- ❑ Maximum recycling and re-use of waste and materials
- ❑ Pollution prevention (air, land and water)
- ❑ Construction of healthy non-toxic environments
- ❑ Promotion of biodiversity
- ❑ Minimise negative impacts on the scenic, cultural, historical, social and architectural landscape and on infrastructures

6.3.2 Water

Water is required for many activities. However the large-scale provision of conventional water supply has many environmental implications. Water needs to be stored (sometimes taking up large areas of valuable land and disturbing natural drainage patterns with associated problems from erosion), it also needs to be

pumped (using energy) through a large network of pipes (that need to be maintained and repaired). Having delivered the water, a parallel efforts is then required to dispose of this after it is used, i.e. sewerage systems. Reducing water consumption supports sustainability by reducing the environmental impact required to deliver water, and dispose of it.

6.3.2.1 Rainwater

- ❑ Rainwater must be harvested, stored and used.

6.3.2.2 Water use

- ❑ Water efficient devices

6.3.2.3 Grey water

- ❑ Grey water (water from washing etc) must be recycled (to flush toilets or water plants) to minimise water use.

6.3.2.4 Runoff

- ❑ Run off must be reduced by using pervious or absorbent surfaces (Thompson, J.W. & Sorvig, K. 2000: 45).
- ❑ Hard landscaping can be used as water catchments, storing rainwater for landscape irrigation.
- ❑ Previous surfaces must be specified for car parking and paths (Thompson, J.W. & Sorvig, K. 2000: 45).

6.3.2.5 Water Quality.

- ❑ Reduction in water quality due to soil erosion is caused mainly during rainstorms this is due to a lack of vegetation cover.
- ❑ A management plan for storm water and on site pollution control must be compiled and implemented to acceptable ecological standards, and to the satisfaction of the relevant provincial authority or the local authority.
- ❑ Water runoff from barren ground, roads, paving areas, and built structures must be properly managed to prevent soil erosion and water pollution (Thompson, J.W. & Sorvig, K. 2000: 67).

6.3.3 Plants

- ❑ Promote the use of endemic indigenous species.
- ❑ Use drought tolerant plants.
- ❑ Use plants with low maintenance requirements.
- ❑ Reuse the plants that are in the way of the development.
- ❑ Plant deciduous trees near buildings for summer shade and winter sun.
- ❑ Plant evergreen trees for windbreaks and year round shade.
- ❑ Support local nurseries to provide plants

6.3.4 Recycling and Reuse

Recycling is essential in the elimination of waste and also ensures sustainability in natural ecosystems. Sites as well as materials can be recycled and be reused.

- ❑ Reducing the use of Greenfield sites.
- ❑ Reduce the use of new materials and components in developing the area.
- ❑ Reduce waste by recycling and reuse; it supports sustainability by reducing the energy consumption and resource consumption (Thompson, J.W. & Sorvig, K. 2000: 78).
- ❑ Community-level recycling, this includes the reclamation and reuse as well as direct use of wastes (e.g. composting, use of waste water) (Adam E. et al 2000:23).
- ❑ Recycle organic waste on site for compost,
- ❑ Incorporate waste minimisation and recycling within area of development.
- ❑ Minimise construction waste through design and careful management of construction practices.
- ❑ Minimise the contribution to mains sewerage from toilet through the use of compost toilets, and other 'local' systems.

6.3.5 Vegetation

- ❑ Vegetation clearing must be avoided under all circumstances.
- ❑ Where unavoidable, measures must be implemented to avoid loss of topsoil through uncontrolled run-off.
- ❑ Grazing must be managed to ensure maximum yield of flowering plants.
- ❑ Ploughing must be managed to ensure the minimum disturbance to the grass biome (DEAT 2002/3).
- ❑ Fire management plans must be completed and approved by the relevant provincial conservation authority before the development / activity may proceed.
- ❑ Off-road vehicles should be restricted to low impact tolerant areas.
- ❑ The clearing of grassland for the production of monoculture crops (including commercial tree plantations) should be prohibited unless the relevant provincial nature conservation authority approves an environmental impact assessment and prescribe appropriate and effective mitigation measures that may also include compensative investment (DEAT 2002/3).
- ❑ The collection of firewood from indigenous wood sources must be managed to ensure the sustainable use of the resource.
- ❑ Where woodlands and forests occur in the riparian zones of rivers and water bodies, no clearing of vegetation should be done other than the removal of alien species (DEAT 2002/3).

- ❑ Vegetation that is maintained as protective buffer zones, and for harvesting of wood resources, around indigenous forests should be maintained.
- ❑ As required under the National Water Act No 36 of 1998, all alien and invasive species must be removed a part of the conditions under which development may proceed.
- ❑ Commercial forestry must abide by the legal requirements by registering for water use.
- ❑ Alien species must not be used for rehabilitation or for aesthetic gardening purposes (DEAT 2002/3).

6.3.6 Land use

- ❑ The area must be managed in a way that retains or improves the ecological functions.
- ❑ Natural habitat corridors and streams must be maintained to ensure the natural function of these resources, and stream corridors must not be channelled (DEAT 2002/3).
- ❑ The impact of the development on landscape elements, such as bird watching areas, natural features, cultural features, distinctive landscapes, which have value for tourism, must be assessed and effective preventative and mitigation measures must be adopted.
- ❑ Urban open spaces must be developed and maintained for the benefit of the local residents, visitors, and especially the local wildlife, such as bird populations, small mammals (DEAT 2002/3).

6.3.7 Land cover

a) Key Vegetation Community: Fynbos.

- ❑ The introduction of the Argentine Ant (destroy fynbos seeds) must be prevented through the introduction of approved and effective measures (DEAT 2002/3).
- ❑ The rehabilitation and self-regeneration potential of the vegetation is low.
- ❑ Disturbance must be restricted to the absolute minimum.
- ❑ Adopt appropriate and effective preventative and/or mitigation measures (DEAT 2002/3).

b) Cultivated land: Agriculture

- ❑ Crop production. Irrigated and dry land.
- ❑ The potential impact of pesticides and fertilisers on groundwater and river systems must be assessed.
- ❑ The use of fertilisers and bio-chemicals for agriculture must be carefully managed and monitored (DEAT 2002/3).
- ❑ All cultivation must be in accordance with good agricultural practices that include rotation and resting periods.
- ❑ Contact the regional agricultural resource agent and local Agricultural Research Council office for assistance for information (DEAT 2002/3).
- ❑ Subsistence farming must be practices according to the traditional methods, which do minimum destruction to the environment (DEAT 2002/3).

- ❑ The areas must be managed according to best soil protection methods and best farming methods to include rotational crop planting.
- ❑ Irrigation schemes must be properly designed, managed and maintained

c) Vacant Land / Unspecified

- ❑ The area must be managed in a way that retains or improves the ecological functions.
- ❑ Natural habitat corridors and streams must be maintained to ensure the natural function of these resources, and stream corridors must not be channelled.
- ❑ The impact of the development on landscape elements, such as bird watching areas, natural features, cultural features, distinctive landscapes, which have value for tourism, must be assessed and effective preventative and mitigation measures must be adopted.
- ❑ Urban open spaces must be developed and maintained for the benefit of the local residents, visitors, and especially the local wildlife, such as bird populations and small mammals.

6.3.8 Soils

- ❑ Effective measures to prevent wind erosion of soil must be adopted.
- ❑ Erosion removes the topsoil and in severe cases the subsoil of an area where uncontrolled and concentrated water flows over areas devoid of vegetation.
- ❑ To prevent erosion, ensure that a vegetation cover is maintained on the area.
- ❑ Once erosion has started, stop it by installing gabions or other methods to break the velocity of the water and dissipate the stream into smaller streams.
- ❑ Erosion and the loss of topsoil due to wind are detrimental process and must be avoided by retaining a vegetation cover on the land (DEAT 2002/3).
- ❑ The nature of the soil requires specialist assessment to determine appropriate construction guidelines in respect of foundations and other structural elements that may be affected by the soil.

6.3.9 Slopes

- ❑ No development should be allowed on slopes that exceed the ability of the geology and the soils to retain its structure and the development upon it.
- ❑ Ridges and cliffs are of scenic value and the aesthetic quality of these must be maintained.

6.3.10 Geology

- ❑ Stability: geological stability for structures must be assessed and the results must be incorporated in design solutions.
- ❑ Fossils: the geological feature may contain fossil material or rock paintings. Determine whether fossil beds occur and ensure that appropriate and effective measures are adopted (DEAT 2002/3).