

EcoSUN

Sustainable Villages



- **Urban Concept**
Kroonvale - Graaff-Reinet in Camdeboo Municipality
- modular system for RDP houses
- Multipurpose Centre

Urban concept for RDP settlement in Kroonvale - Graaff-Reinet in Camdeboo Municipality

Graff-Reinet is located in the Karoo on the slopes of Sneeu Berg Mountains and is surrounded by a loop of Sundays River.

The site is located in Kroonvale a township of Graff-Reinet, parallel to a dry river that really carries water only every few years. The flood-safety zone is designated exactly in the digital survey plan. It is currently unkempt and littered, but the area of the dry river offers the possibility to plan and develop parks, sports- and playground facilities and throughways. The plot has a slight slope westwards towards down-town.

The settlement plan was revised in terms of the land use plan (zoning plan), which designates the western part for commercial use. The idea here is to offer the two-storey terraced houses, which can be expanded by the residents themselves for business purposes. On demand in the municipality it is basically possible that owners of RDP houses may supplement their houses for commercial purposes.



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MPC Multipurpose Centre

There is an old post office on the plot, which is used as an education centre. All necessary functions that are important for our ECOSUN project (MPC1), are currently placed in this existing building and in annexes to the existing building. The space for a bigger Multipurpose Centre (MPC), which can be built later, is kept free.

WCP Waste Collection Point

The recyclable material recovery is arranged laterally and has the size as required by our partner of GTS. The recyclable material container can be reached from the road with trucks. The office for advice and supervision in the old building is situated such as to give direct access to the site.

Park

Access to the green space is past the MPC, so control is also possible from there. The green area is divided into a sports and playground area, an area for 'constructed wetlands' and into recreational areas. The thoroughway is created based on the existing footpaths. A preparation of the plan is in the works.

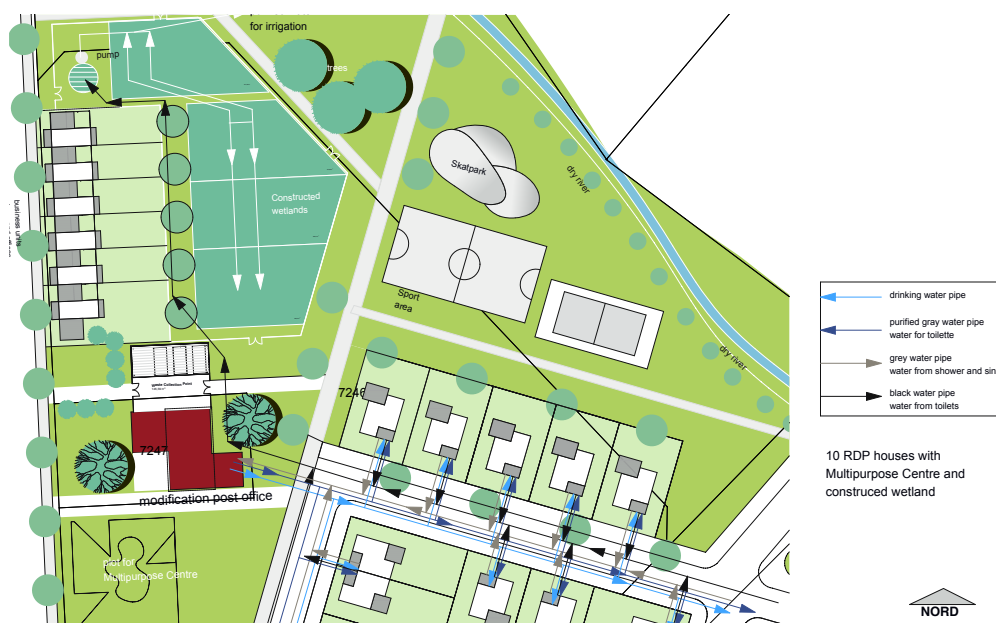
The blocks for the RDP houses are laid out as planned in our master plan. However, they are adjusted by the size of the plot. In the first block 10 houses are provided, which are to be built first, equipped with EcoSUN-technology.

Constructed Wetlands

The design by the engineering company Markert conditioning of 'constructed wetlands' is adapted to the situation. It is located at the lowest point of the site, in buildable area and within sight of the Multipurpose Centre. The purification tanks are overgrown by reeds and surrounded by a 1m high fence. Walkways pass through between the basins.

The piping system is shown in the site plan. The dirty water flows in natural slope directly to the septic tank. The 3-chamber pit made of concrete with a diameter of 5.5 m and a height of 5 m is let into the ground. From there, the pre-clarified waste water is pumped into the purification basins with vertical filters with coarse sand and reed.

The clarified water can be used to irrigate the park





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modular system for RDP houses

These drawings document the old and the proposed new standard of RDP houses. In the design of the basic module for the new „core house“ keeping the defined cost structure were important. The existing RDP type are a 3-room housing units with kitchen and bathroom within the given gross floor area of 40m².

There are manifold improvements.

The design idea is to shift the two parts of the house against each other and to improve the construction system.

By shifting the house, areas arise, that can be easily expanded later by the residents themselves into rooms. The optimization of the design creates further expansion possibilities.





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modular system for RDP houses with individually variable extension options

RDP House new
Standard RDP House new
40 m²

RDP House new
Standard RDP House new
extra bedroom build by owner
46 m²

RDP House +
Standard RDP House new
extra bedroom, extra kitchen build by
owner 46 m²



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All house types are planned so they can be equipped with solar panels immediately or later.

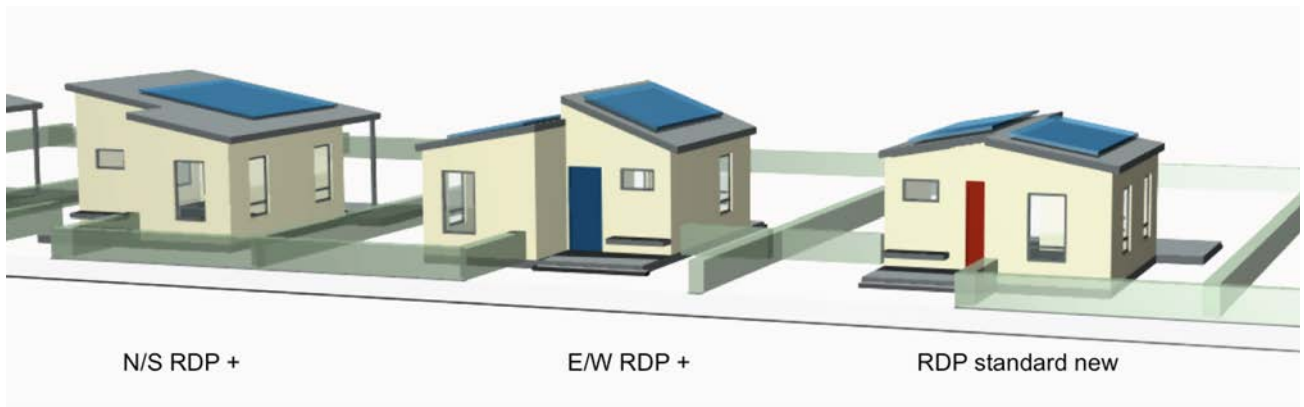
To respond to a variable urban location, aligned for east/west and north/south houses, different roof shapes are useful.

The construction direction of the roof is always the same because of costs, and to make sure the higher roof part is always in the living room. The RDP standard houses (east /west oriented) get gable roofs or a staggered gable roofs with skylights for ventilation and to place the solar panels oriented east and west faces.

The simple new RDP house may also be oriented north/south. Then only the northern side of the roof will be covered with solar panels.

The better solution for north/south oriented houses is a pent roof, since only the northern roof surfaces can be fitted with solar panels.

Even for a double house a solution is presented.



One block with ten houses - view from south west



One block with ten houses - view from north